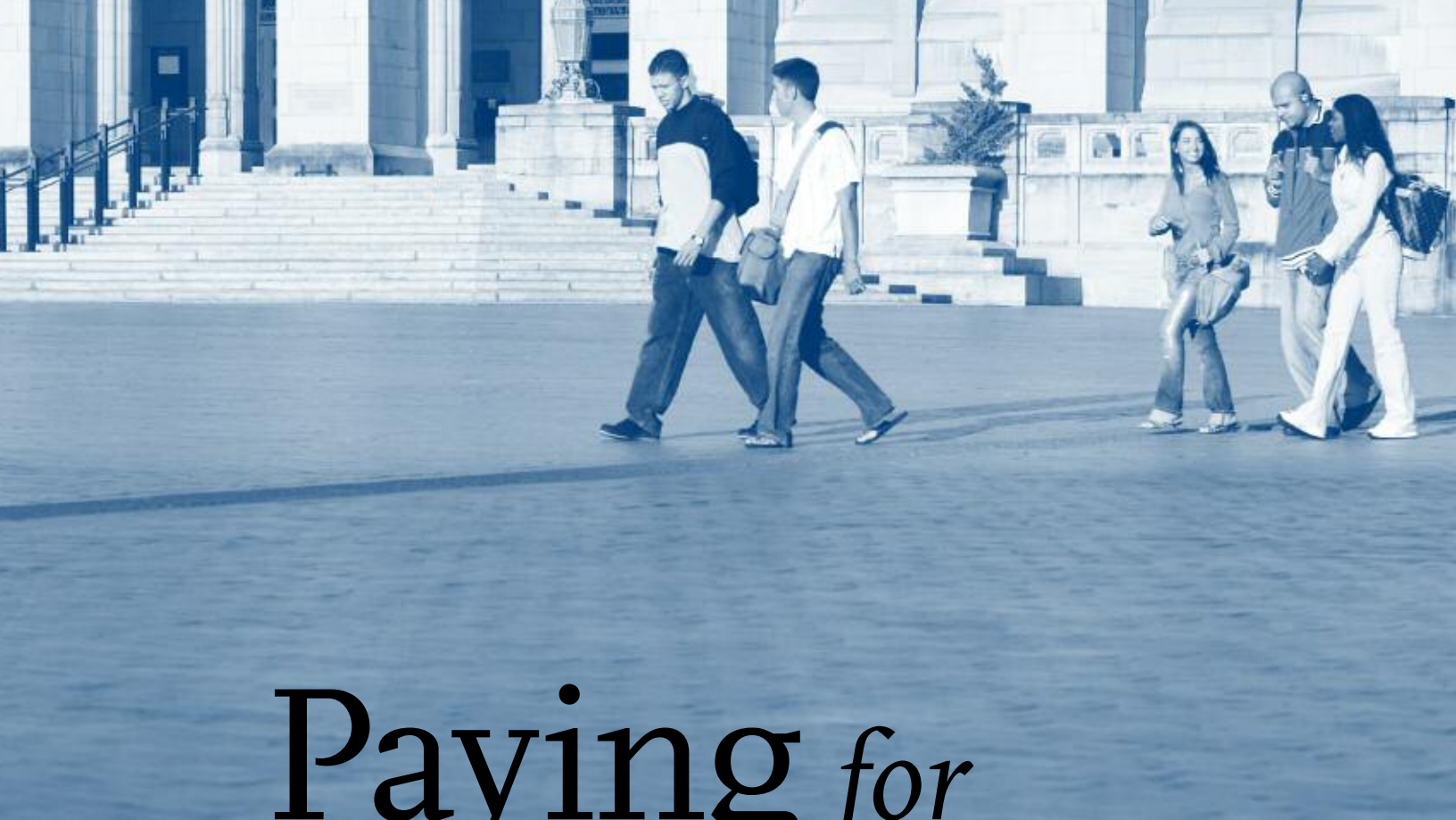




Paying *for* College

The Rising Cost of
Higher Education

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10 YEARS

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The Rising Cost of
Higher Education

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APRIL 2006

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April 2006

Dear Friend:

MassINC is proud to present *Paying for College: The Rising Cost of Higher Education*, a report made possible by the generous support of Blue Cross Blue Shield of Massachusetts.

At the same time that a college education has become the ticket to the middle class, college has become less affordable. The situation in New England is worse than it is nationally. Even though incomes are higher in the region, families are likely spending a higher share of their income to pay for college. In 2003-04, families with students attending a community college in New England spent 17 percent of their annual income to cover the costs of college. Families are stretching even more to attend a public four-year college in the region, spending 21 percent of their income. Private colleges are the most expensive, requiring that families spend a stunning 33 percent of their income.

Although family incomes and grant aid have increased over past decade, they have not increased enough to offset the increases in tuition prices. As a consequence, more students and parents are taking out loans to finance their college education, and the amount of debt that students are carrying has increased significantly during the past ten years. The increase in loans has shifted a greater amount of risk to students and their families, and the consequences of this shift deserve more public discussion.

While the long-term value of a college degree may well justify the cost and accompanying debt, a substantial number of students who start college leave without earning a degree. Many, if not most, college dropouts have debt that still must be repaid, without the advantages of a college degree. Thus, a renewed focus on getting students *through* college and not just *into* college is needed.

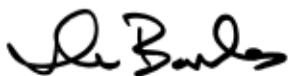
In Massachusetts, there has recently been increased attention to state funding of public higher education. However, unless the state government is prepared to make an open ended commitment to higher education—or students and families are willing to assume even greater amounts of debt—the expenditures side of the ledger must be analyzed anew in order to look for opportunities for greater cost savings.

The challenges around affordability are of national concern, but they deserve particular attention in Massachusetts and New England. The region's community colleges and private four-year colleges are less affordable than those nationally. While our public four-year colleges cost about the same as those nationally, the decline in affordability has been much more steep, and if similar trends continue, they too will be less affordable in short order. In a region already struggling with high cost of living and the out migration of young families, the high cost of college should be of concern to policymakers.

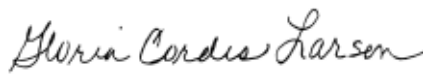
We are grateful to Bridget Terry Long. As this project became more complex than we imagined, she helped us understand its implications and importance, while pushing it to completion. We would also like to thank the many reviewers whose critical insights have strengthened this report. Lastly, we owe special thanks to the research team at MassINC of Dana Ansel and Greg Leiserson for their excellent work in shepherding this research to such a successful conclusion. Finally, we would like to thank our sponsors at Blue Cross Blue Shield of Massachusetts, who have been generous and enthusiastic partners.

We hope you find *Paying for College* a timely and provocative resource. As always, we welcome your feedback and invite you to become more involved in MassINC.

Sincerely,



Ian Bowles
President & CEO



Gloria Cordes Larson
Co-Chair



Peter Meade
Co-Chair

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The Rising Cost of
Higher Education

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EXECUTIVE SUMMARY

With a college education increasingly becoming the ticket to the middle class, the number of people earning a college degree has grown substantially. In 1950, only 6 percent of adults in the nation had completed at least four years of college. By 2000, that number had risen to over 25 percent; in Massachusetts it was 33 percent. The number of people entering college has also steadily increased, and Massachusetts has one of the highest rates of college enrollment. In 2000, 57 percent of Massachusetts residents had completed at least some college. Among recent Bay State high school graduates, nearly two-thirds entered college immediately after graduation in 2002, and many more enrolled in college during the years afterward.¹

The boom in higher education has also introduced a new financial responsibility—paying for college. In the United States, in 2005-06, the average annual cost of tuition and required fees was \$2,191 at a public community college, \$5,491 at a public four-year college, and \$21,235 at a private four-year college. Prices are high and have risen rapidly over the past decade. It is then no surprise that students and their parents everywhere are worried about paying for college. A 2003 MassINC poll on the Quality of Life found that 57 percent of parents in the Bay State believe that the issue of higher education affordability needs to be addressed.

As more students seek a college education, a number of questions follow: How affordable is college and how has affordability changed over the last decade? Using the most detailed data possible, this report finds that college has become less affordable.² Why has this happened and how are families coping with the rising costs? How do the costs that families in New

England face compare with those nationally? The report answers these questions and discusses issues related to controlling costs and improving graduation rates.

Across the nation, families are spending more of their income to pay for a college education than they did even ten years ago. Families in New England have been hit especially hard.³ Even though their incomes are higher than the national average, New England families are still likely spending a larger share of their income on college. In 2003-04, families with students attending a community college in New England spent 17 per-

FAMILIES ARE SPENDING MORE OF THEIR INCOME TO PAY FOR COLLEGE

cent of their annual income to cover the total cost of college for one year, while families nationally spent 13 percent.⁴ Families with students at a public four-year college in New England spent 21 percent of their annual income on college. Nationally, families spent the same. And families with students at private colleges in New England spent a stunning 33 percent of their annual income to cover one year of costs, more than the 30 percent that families nationally spent.⁵

There are a number of factors that help to explain why college has become less affordable. First, sources of revenue for colleges have fluctuated considerably. Public colleges rely on state appropriations as a major source of revenue, and the amount of public money allocated per student has risen and fallen with the economic cycle. This has contributed to sharp increases in tuition and fees at public four-year colleges in Massachusetts. From 2001-02 to 2005-06, tuition and fees

increased 69 percent at the UMass campuses and 68 percent at the state colleges. Second, colleges are spending significantly more money per student. While some of these increases are directly related to educational quality, there are concerns that others are not. Finally, although grant aid has increased significantly during this period, it has not increased enough to offset the increases in tuition prices. As a consequence, more students and families are taking out loans to finance their college education, and students' overall debt has increased considerably during the last ten years.

Despite the rising costs, the number of students attending college has increased. For some, this fact indicates that the increased cost is not a problem; students and their families believe that the value of a college degree justifies the expense. This view, however, is incomplete and does not

consider implications of college pricing. As tuition costs increase, they affect who goes to college, with low-income students particularly sensitive to price changes. Research has found that high-achieving low-income students are significantly less likely to attend college than high-achieving high-income students.⁶ High cost and unmet financial need are common reasons cited for not attending college and also for dropping out of school. Thus, the cost of college affects who attends and graduates from college. Students and families have to find a way to cover the cost of college before the benefits of a college degree can be realized.

In addition, demographic trends also explain the increasing enrollment numbers. Thanks to the baby boomers' children, the United States will have the largest cohort of high school graduates ever in 2008. The number of high school

Key Facts:

- After accounting for grant aid, families with students attending private colleges in New England spent 33% of their annual income in 2003-04, up from 25% in 1992-93. Nationally, families spent 30%.
- Families with students attending public four-year colleges in New England spent 21% of their income in 2003-04, up from 18% in 1992-93. Nationally, families spent 21%.
- Families with students attending community colleges in New England spent 17% of their income in 2003-04, up from 16% in 1992-93. Nationally, families spent a smaller percentage of their incomes (13%).
- Students in New England are more likely than their national peers to take out loans (44% vs. 35%). In 2003-04, at private colleges in New England, 56% of students took out loans. Since 1992-93, the share of students at public four-year colleges in New England taking out loans nearly doubled from 25% to 48%. Only 7% of community college students in New England took out loans.
- The total amount of debt that students carry has also increased considerably. The average debt for 4th-year students at private colleges in New England was \$23,491, an increase of 49%, after accounting for inflation, since 1992-93. And the average amount of debt for 4th-year students at public four-year colleges was \$15,399, a 39% increase since 1992-93.
- In 2004, the share of first-time freshmen from Massachusetts who attended a public college in their home state was much lower than the national average (48.9% vs. 67.4%).
- First-time freshmen from Massachusetts are much more likely to go to a private college. In 2004, 43.4% of Massachusetts freshmen attended a private college, compared with 26.4% of their peers nationally.
- In 2004, first-time freshmen from Massachusetts were more likely than their national peers to attend an out-of-state college (28.5% vs. 15.8%). The vast majority of Massachusetts freshmen (86%) stay in New England.

graduates in Massachusetts is expected to peak in 2007 and then begin a steady decline. Starting soon, colleges will be competing to attract a smaller number of high school graduates. A second trend is the increasing number of older, nontraditional college students. The growth of nontraditional students, who have a different set of needs, has implications for colleges and the state.

Finally, while the long-term value of a college degree might justify the cost, the reality is that a substantial number of students who start college leave without earning a degree. Many college dropouts have debt that still must be repaid without the advantages of a degree. Thus, a renewed focus on getting students *through* college not just *into* college is needed, especially in light of the loans students are taking out to finance their college educations.

ES Table 1

Enrollment Trends of First-Time Freshmen

	1994	2004
PERCENT ATTENDING AN IN-STATE PUBLIC COLLEGE		
United States	72.1%	67.4%
Massachusetts	51.7%	48.9%
PERCENT ATTENDING AN OUT-OF-STATE COLLEGE		
United States	14.8%	15.8%
Massachusetts	23.2%	28.5%
PERCENT ATTENDING A PRIVATE COLLEGE		
United States	21.7%	26.4%
Massachusetts	42.0%	43.4%

Source: Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System, National Center for Education Statistics

Enrollment Trends: Where Do Massachusetts Freshmen Go to College?

As students get ready to start college, families face a number of choices about where to attend. There are important differences in the choices that Massachusetts families make. Compared with

- The average cost of tuition and fees in New England and in Massachusetts are higher than the national averages. In 2005-06, the average cost of community colleges in Massachusetts was \$3,477, 59% higher than the national average. The average tuition and fees at the public four-year colleges in Massachusetts was \$7,340, 34% higher than the national average.
- From 2001-02 to 2005-06, tuition and fees increased by 69% at the UMass campuses and by 68% at the four-year state colleges—in real terms. Nationally, they increased by 33% at public four-year colleges during the same period.
- In 2004-05, the state of Massachusetts allocated \$7,712 per FTE student, substantially higher than the national average of \$5,833. While above average, the level of public funding has been volatile and declined in recent years. In 2000-01, the state spent \$9,911 (inflation-adjusted) per FTE student.
- Both family incomes and the amount of grant aid have increased since 1992-93 but not enough to offset increases in tuition and fees.
- The amount of money colleges spend per student has increased significantly. From 1990-91 to 2000-01, expenditures at public colleges per FTE student increased 28% nationally and 29% in Massachusetts, in real terms.
- Total expenditures per student at public four-year colleges in Massachusetts in FY04 were \$24,020, slightly higher than the national average of \$23,880. Expenditures per student at public community colleges in Massachusetts were \$9,775, also higher than the national average of \$8,939.
- The public four-year colleges in Massachusetts are among the smallest in the nation, with an average size of 5,391 FTE students in Fall 2002. The national average of public four-year colleges is 8,527. Massachusetts ranks 41st in the nation, with number 1 representing the state with the largest public four-year colleges.
- Many students leave college without earning a degree. The six-year graduation rate at UMass Amherst for the students who began in the fall of 1998 was 62%. For UMass Dartmouth, it was 50%, 46% for UMass Lowell, and 28% for UMass Boston. At the public state colleges, less than half of students who entered college in 1998 (48%) had graduated six years later.

their national peers, Massachusetts high school graduates are: 1) less likely to attend an in-state public school; 2) more likely to attend an out-of-state college; and 3) more likely to attend a private college. These choices have important implications for cost.

Massachusetts high school graduates are much less likely to attend their own state's public colleges, compared with their national peers. Nationally, 67.4 percent of all first-time freshmen went to a public college in their home state in 2004, while only 48.9 percent of first-time freshmen from Massachusetts went to a public college in the Bay State.⁷ Community colleges are the most common choice, with 30.2 percent of all freshmen attending a Massachusetts com-

munity college and 18.7 percent attending a public four-year college. While the absolute number of freshmen attending Massachusetts public colleges has increased over the last ten years, the overall share of first-time freshmen entering the public system has declined slightly.

Massachusetts freshmen are much more likely as their national peers to attend an out-of-state college. In 2004, 28.5 percent of Massachusetts freshmen went to an out-of-state college, compared with only 15.8 percent of students nationally. Since 1994, the share of Massachusetts students choosing an out-of-state college has increased from 23.2 percent to 28.5 percent. Nearly three-quarters of those leaving the state for college attend a private college, and the vast

What do we mean by affordability?

There are three components to our measure of affordability. The first is the total cost of education, including tuition, required fees, room and board, and other expenses. This is the total student budget as determined by the institution and includes all living expenses. The second piece is the amount of grant aid received from all sources. Because grants do not need to be repaid, they discount the price of college. Finally, we use the median total incomes of families and students. For dependent students, income is parental income. For independent students, income is the student's and spouse's (if married).

We calculate affordability separately for community colleges, public four-year colleges, and private four-year colleges. For each sector, we calculate the net cost of college which equals the total cost of education minus grant aid. We then compare the net cost of college to the median family income of students attending that type of college. Thus, in this measure, we quantify the actual financial burden that families with students in college face. We also compare how the college cost burden has changed over time. It is important to note that the affordability numbers are only based on those

who choose to attend college. We are unable to determine affordability for students who elect not to enroll, and thus, we cannot detail whether or how the population of students at colleges has changed due to the increasing costs.

The data come from the National Postsecondary Student Aid Survey (NPSAS), administered by the federal Department of Education. It is the most comprehensive dataset available that documents the aid that undergraduates receive, but it only allows a regional analysis, and it is based on the location of college. Because the vast majority of students from Massachusetts and New England attend college in New England, our measure accurately reflects the issue for the region's families.

The data also capture trends at Massachusetts colleges. According to the *Digest of Education Statistics*, just over half of students in New England attend college in Massachusetts. Thus, Massachusetts colleges are major drivers for the region. While the numbers are not perfect matches for Massachusetts residents or for Massachusetts schools, they provide the most accurate picture possible.

majority stays in New England. In 2004, 85.6 percent of the freshmen from Massachusetts attended college in New England. On balance, however, Massachusetts imports more college students than it exports, for a net gain of almost 8,000 college students in 2004-05.

A defining characteristic of Massachusetts freshmen is their preference for private colleges, reflecting the state's long tradition of private institutions. In 2004, more than four out of every ten freshman from Massachusetts (43.4%) attended a private college. In sharp contrast, nationally, only 26.4 percent of freshman attended one, although the national share has been increasing in recent years. It is important to note that the majority of students at private colleges in Massachusetts (63.3%) are from other states. For Massachusetts freshmen, Northeastern University is the most common private school choice, followed by Boston University, Suffolk University, and Boston College. The share of Massachusetts freshmen attending private schools has remained roughly constant over the last decade.

The Bottom Line for Families: How Affordable Is College?

The bottom line is that families are required to spend a large share of their annual income to pay for college, and the share of income required has increased since 1992-93. This affordability analysis focuses on colleges in New England, rather than just Massachusetts, due to the unavailability of information at the state level. However, because 86 percent of the Massachusetts high school graduates who go onto higher education attend college in New England, the data capture the affordability issues that the vast majority of Massachusetts families faces. Families of students attending college in New England are likely to spend an even greater share of their income

ES Table 2

Share of Income Required to Cover the Cost of College

	1992-93	2003-04
PUBLIC TWO-YEAR		
United States	10.0%	12.7%
New England	15.9%	16.6%
PUBLIC FOUR-YEAR		
United States	19.9%	20.9%
New England	18.1%	21.4%
PRIVATE FOUR-YEAR		
United States	25.0%	29.9%
New England	25.3%	33.4%

Source: National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System

to pay for college at public community colleges and at private colleges. On average, families with students in the region's public-four year colleges pay roughly the same share of their income as their national peers. Although grant aid and incomes have increased during this period, they have not increased enough to offset the increases in tuition and fees.

Although public community colleges in New England are the most affordable, families still spent 17 percent of their annual incomes for a student to attend these institutions. This is a slight increase from 1992-93 when families spent 16 percent of their annual income. The costs at community colleges in New England require that families spend a greater share of income compared with their national peers, who spent 13 percent of their income.

Families and students are stretching even more to attend the public four-year colleges. In 2003-04, families in New England spent 21 percent of their income for one student to attend a public four-year college. Of course, they are spending much more if they have more than one child in college at the same time. This is a substantial increase from 1992-93, when families spent 18 percent of their income. Nationally, at 21 percent,

the share of income required for students at public four-year schools is the same and a slight increase from 20 percent in 1992-93. The share of income required to attend public four-year colleges has increased more rapidly in New England than in the nation over the past decade.

Private colleges are the most expensive, both nationally and in New England. In 2003-04, families in New England spent a remarkable 33 percent of their income for a student to attend a private college, up significantly from 25 percent in 1992-93. Nationally, families spent 30 percent. The high cost of private colleges is particularly salient for Massachusetts families because of their strong preference for private schools. Recall that 43.4 percent of freshmen from Massachusetts attend private colleges, compared with only 26.4 percent of freshmen nationally. Thus, a much larger share of New England families faces the challenge of paying the bill of private colleges.

College Tuition and Fees

Tuition and fees are high, and they have also increased much faster than inflation. In the United States, the average cost of tuition and fees at a public community college increased 30 percent, after accounting for inflation (i.e. in real terms), to \$2,191 from 1995-96 to 2005-06. During this same period, the average cost of a public four-year college increased 54 percent to \$5,491. And,

the average cost of a private four-year college increased 37 percent to \$21,235.

The average cost of tuition and fees in New England and Massachusetts is even higher. In 2005-06, the average cost of private colleges in Massachusetts was \$27,780, 31 percent higher than the national average. The average cost of community colleges in Massachusetts was \$3,477, 59 percent higher than the national average. The average cost of all the public four-year colleges in Massachusetts was \$7,340, which was 34 percent higher than the national average. In 2005-06, the average tuition and fees at the state colleges—excluding the UMass campuses—was \$5,448. Tuition and fees at our state colleges are comparable to the national average for all public four-year colleges, which includes other states' flagship schools and major research institutions. The average tuition and fees at the UMass campuses was \$8,697. The average tuition and fees of the UMass system surpass those of its peer university systems.⁸

The tuition and fees in Massachusetts have been very volatile. During the recession of the early 1990s, tuition and fees jumped, in real terms, 53 percent at the UMass campuses and 56 percent at the state colleges. After those large increases, there were several years of small increases and then from 1995-96 to 2000-01, there were modest but steady decreases in tuition and

ES Table 3

Average Tuition and Fees, enrollment-weighted (Constant 2005 Dollars)

	PUBLIC TWO-YEAR COLLEGES		PUBLIC FOUR-YEAR COLLEGES			PRIVATE FOUR-YEAR COLLEGES	
	U.S.	MASS	U.S.	UMASS SYSTEM	MASS STATE COLLEGES	U.S.	MASS
1995-96	\$1,686	\$3,195	\$3,564	\$6,281	\$4,227	\$15,489	n/a
2005-06	\$2,191	\$3,477	\$5,491	\$8,697	\$5,448	\$21,235	\$27,780
10 year % change	30.0%	8.8%	54.1%	38.5%	28.9%	37.1%	

Source: College Board and Massachusetts Board of Higher Education

fees, in real terms. Starting in 2001-02, there have been large increases in Massachusetts and the nation. The increases coincided with the national economic recession that resulted in reductions in state appropriations per student. Nationally, tuition and fees at public four-year colleges increased 33 percent over the last four years. The increases in Massachusetts were much more extreme. From 2001-02 to 2005-06, tuition and fees at the UMass system increased, in real terms, by a whopping 69 percent and by 68 percent at the four-year state colleges.

As a consequence, students in the public system have faced an unpredictable bill for college, leaving them with little ability to plan and also with little recourse. Once a student has started college, that student has very limited options to respond to such drastic increases. They can take out more loans, increase their work hours, transfer to another school, or drop out. Moreover, the cost of a college degree will vary considerably depending on the luck of the year of enrollment and how it corresponds to the state's economic cycle.

Tuition and fees are not the only costs students and families face. Our measure of affordability includes tuition and fees as well as living expenses, such as room and board. Room and board adds a substantial cost on top of tuition and fees. Nationally, in 2005-06, the average cost for private colleges, including room and board was \$29,026 and \$12,127 at public four-year colleges.⁹ While these numbers seem shockingly high, it is important to remember that they are the "list" price, or the price advertised in the college catalogue. The majority of students who attend college receive some financial aid in the form of grants, which discounts the price they pay for college.

ES Table 4

Share of Students Receiving Grants

	1992-93	2003-04	CHANGE
U.S. Average	38.1%	50.7%	33%
New England Average	39.6%	56.7%	43%
U.S.			
Public Two-Year	28.4%	39.8%	40%
Public Four-Year	38.5%	51.7%	34%
Private Four-Year	57.9%	73.5%	27%
NEW ENGLAND			
Public Two-Year	33.8%	53.5%	58%
Public Four-Year	33.7%	49.9%	48%
Private Four-Year	45.5%	67.0%	47%

Source: National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System

Grant Aid

Looking at tuition and fees provides only a partial picture because of the substantial amount of grant aid given to students. The majority of grant aid comes from the federal government. States then follow one of two broad strategies in terms of subsidizing public colleges. Either, they greatly subsidize the price of college but give little in student aid ("low price—low aid") or they do less to subsidize the price of tuition but support the stu-

**FAMILIES ARE REQUIRED TO SPEND
A LARGE SHARE OF THEIR ANNUAL
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dents through a lot of direct aid ("high price—high aid"). Massachusetts is a "high price—high aid" state. This strategy has some advantages in that families who can afford to pay for college are not highly subsidized, and financial aid can be targeted to those who need it the most. But, there is also the question of whether the grant aid keeps up with the increases in tuition.

Recently, there has also been a trend of shifting financial aid toward merit-based aid. Until recently, Massachusetts had no significant aid pro-

ES Table 5**State and Local Support for Public Higher Education in Massachusetts**

YEAR	STATE AND LOCAL APPROPRIATIONS PER FTE STUDENT				
	IN CONSTANT 2004 DOLLARS			ADJUSTING FOR INFLATION AND COST OF LIVING	
	U.S. AVERAGE	MASS	RANK	MASS	RANK
1990-1991	\$6,740	\$7,399	13	\$6,065	36
1991-1992	6,358	6,267	23	5,183	43
1992-1993	6,127	6,905	15	5,747	33
1993-1994	6,200	7,440	12	6,225	24
1994-1995	6,406	7,768	13	6,516	24
1995-1996	6,480	8,241	7	6,987	15
1996-1997	6,690	8,761	6	7,492	12
1997-1998	6,891	9,177	6	7,828	11
1998-1999	7,060	9,361	6	7,970	11
1999-2000	7,114	9,723	6	8,175	11
2000-2001	7,121	9,911	6	8,339	9
2001-2002	6,873	8,772	7	7,288	14
2002-2003	6,291	8,421	8	6,913	12
2003-2004	5,949	7,256	9	5,957	20
2004-2005	5,833	7,712	7	6,331	15

Source: State Higher Education Executive Officers (SHEEO), State Higher Education Finance (SHEF) data collection obtained via the NCHEMS Information Center, <http://www.higheredinfo.org/analyses>.

grams based solely on merit. However, in 2005, the John and Abigail Adams Scholarship program began, and this program will shift resources to merit aid. The Governor's office has estimated that the cost of this program will rise to \$34 million by the fall of 2008.¹⁰

There has also been a growing use of institutional financial aid, which is aid that comes from the college. This is especially true in New England. Institutional financial aid allows colleges to differentiate the price that they charge students. Colleges have become adept at targeting financial aid toward students who are financially needy or meritorious in order to discount the price for those students. To fund this financial aid, colleges have increased the tuition prices and are in effect redistributing funds between students.

Over the last decade, the share of students receiving grant aid has increased—both in the

United States and in New England. Between 1992-93 and 2003-04, the share of undergraduate students in the U.S. receiving grants has increased considerably, from 38 percent to 51 percent.¹¹ In 2003-04, an even higher share of students in New England received grants (57 percent), and the share receiving grants in New England increased at a faster rate, from 40 percent to 57 percent.

During this time, grant aid has increased the most at community colleges—both nationally and in New England. While students at private four-year colleges are the most likely to receive a grant (67 percent), more than half (54 percent) of community college students receive a grant. This is up from roughly one-third (34 percent) of students in 1992-93.

In New England and in the nation, the average amount of grant aid has also increased, even after accounting for inflation. Of all the undergraduates in New England in 2003-04 who received a grant, the average grant amount was \$5,942, an increase of 16 percent since 1992-93. It was also substantially more than the national average of \$4,019. Without these increases in grant aid, families and students would be required to pay an even greater share of their income to attend college. But, these increases have done little to stem the increasing cost for families—either in New England or in the nation.

State Appropriations for Public Higher Education

As high as tuition and fees are, they do not fund the full cost of running a university or college. Private schools rely on tuition revenue, donations, and endowment income, while public colleges are highly subsidized by public money. The two main sources of revenue for the operating costs of public colleges are tuition and fees and state appropriations.¹² In Massachusetts, each year the

Legislature approves a single appropriation for the University of Massachusetts system and then single-line-item appropriations for the nine state colleges and 15 community colleges. State appropriations for higher education in Massachusetts reached a peak of \$1,186,500,000 in 2001-02. Then, between 2000-01 and 2003-04, it declined by 16 percent, in real terms, to \$997,800,000. In the most recent year, 2004-05, it increased to \$1,059,700,000.

It is helpful to consider state appropriations in relation to the number of students served by the system.¹³ As noted earlier, the use of the Massachusetts public higher education system is much smaller than elsewhere in the nation. In 2004-05, the state allocated \$7,712 for the equivalent of each full-time student, substantially higher than the national average of \$5,833. Massachusetts ranked 7th highest on this measure in the nation. Because of the state's high cost of living, it follows that the cost of running a public university system would also be higher. After adjusting for our state's high cost of living, Massachusetts drops to 15th highest in its appropriations per full-time equivalent (FTE) student, which is still above the national average.¹⁴

The level of state funding has been volatile, though, rising and falling with the economic cycle. In the recession of the early 1990s, state spending, in real dollars, decreased per FTE student. As the state recovered from the recession, state spending per FTE student steadily increased to \$9,911 in 2000-01. Then, when the state faced the most recent recession, public spending per student declined to \$7,256 in 2003-04 and then just increased to \$7,712 in the most recent year.

The increases and decreases in state appropriations correspond inversely with increases and decreases in tuition and fees. In the recession of the early 1990s, as state appropriations per

ES Table 6

State Support and Tuition and Fees in Massachusetts

YEAR	CHANGE IN REAL STATE APPROPRIATIONS PER FTE STUDENT	CHANGE IN REAL TUITION AND FEES		
		UMASS SYSTEM	STATE COLLEGES	COMMUNITY COLLEGES
1991-1992	-15.3%	20.4%	22.0%	21.4%
1992-1993	10.2%	0.5%	3.1%	0.4%
1993-1994	7.8%	3.4%	-0.3%	7.6%
1994-1995	4.4%	1.8%	-1.1%	10.8%
1995-1996	6.1%	-1.1%	0.3%	-0.8%
1996-1997	6.3%	-4.0%	-4.1%	-2.4%
1997-1998	4.7%	-3.0%	-4.6%	-5.7%
1998-1999	2.0%	-3.7%	-4.4%	-6.9%
1999-2000	3.9%	-3.2%	-6.5%	-7.7%
2000-2001	1.9%	-3.6%	-4.1%	-4.7%
2001-2002	-11.5%	-1.8%	-2.0%	3.7%
2002-2003	-4.0%	20.9%	24.0%	22.0%
2003-2004	-13.8%	14.8%	20.0%	12.8%
2004-2005	6.3%	20.3%	7.8%	0.6%

Source: Tables 39 (page 67) and 41 (page 70).

Notes: The percentage changes are relative to the previous year. Inflation adjustments are made using a producer price index for the real appropriations and the consumer price index for tuition and fees.

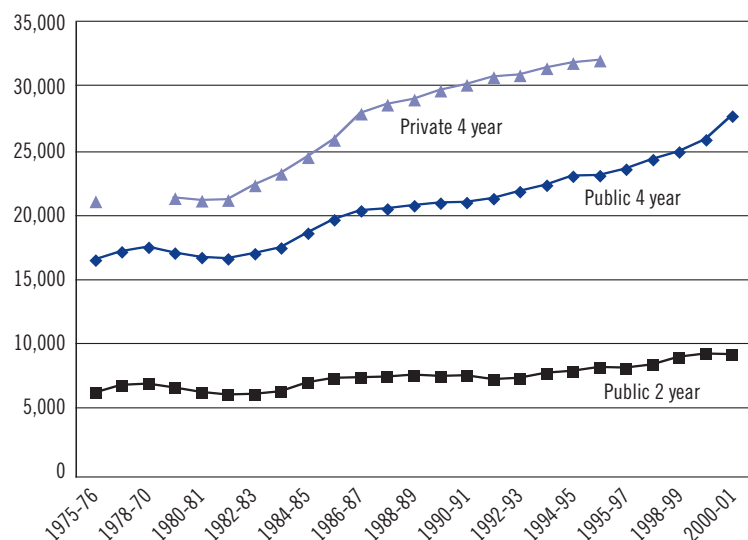
student dropped, tuition and fees at the public colleges increased. In 1996-97, when state appropriations increased by 6.3 percent per FTE student, tuition and fees at the UMass campuses dropped by 4.0 percent. More recently, in 2003-04, state appropriations per FTE student decreased 13.8 percent, and tuition and fees increased 14.8 percent.

Increased Expenditures by Colleges

Fluctuations in state spending partially explain the large increases in tuition and fees in Massachusetts. But, the question of why college has become so costly is tightly connected to the rising costs of running a college. Colleges now spend substantially more money per student than they did in the past. Colleges compete to offer the best product to students, helping to create what some call a "spending arms race." In just one decade (from 1990-91 to 2000-01), the expenditures at

ES Figure 1

Expenditures per FTE Student, United States (constant 2000-01 dollars)



Source: U.S. Department of Education, National Center for Education Statistics, Higher Education General Information Survey (HEGIS), "Financial Statistics of Institutions of Higher Education," 1975-76 through 1985-86, "Fall Enrollment in Colleges and Universities," 1975 through 1985; Integrated Postsecondary Education Data System (IPEDS), "Finance," 1986-87 through 1999-2000, and Spring 2002 survey, "Fall Enrollment," 1986 through 1999, and Spring 2001 survey; and Bureau of Labor Statistics, Consumer Price Index.

public colleges per FTE student increased 28 percent nationally and 29 percent in Massachusetts, in real terms. In Fiscal Year 2004, expenditures per student at public four-year colleges in Massachusetts were \$24,020, slightly higher

THE TOTAL DEBT STUDENTS ARE CARRYING HAS INCREASED SIGNIFICANTLY

than the national average of \$23,880. At community colleges, expenditures per student were \$9,775, also higher than the national average of \$8,939.¹⁵ These figures are clearly much higher than the tuition and required fees.

There are a variety of reasons why the costs have increased. The largest expense that colleges face is personnel costs, including faculty and staff.

As faculty members, many of whom are Baby Boomers, get older, colleges face increases in salaries and benefits. The cost of benefits, such as health care, has also risen dramatically for all employees. In addition, funding technological advancements for teaching, research, and improved student services is costly. Other things, such as government mandates and regulations as well as the upkeep of facilities, have also contributed to increased costs. In the future, the cost of maintenance for public colleges is likely to rise because of a large backlog of deferred maintenance projects. For instance, in Massachusetts, a 2003 report estimated that the capital needs at the state colleges and community colleges would cost \$1.2 billion, and each year that the projects are not done, the costs increase.¹⁶ Finally, there are increasing demands from students for more services and amenities. Colleges across the country are all grappling with these same issues. As schools spend more and then charge higher tuition, their competitor schools follow suit.

Massachusetts is no different from other states in facing these challenges, but there are two noteworthy differences. First, as a high-cost state, the expense of running a college will likely be more costly in Massachusetts than in other places. In general, salaries are higher, and other costs, such as construction and energy costs, are also higher than the national average.

The second difference is the size of the state's public four-year colleges. The public four-year colleges in Massachusetts are among the smallest in the nation. The average size of a Massachusetts public four-year college is 5,391 students, compared with a national average of 8,527. Massachusetts ranks 41st in the nation, with 1st representing the state (Iowa) with the largest public colleges.¹⁷ Small public colleges are common in New England: Connecticut ranks 44th; New

Hampshire ranks 46th; Maine ranks 48th; and Vermont ranks 49th. Rhode Island is the one exception; Rhode Island's two public four-year colleges are larger than the national average.

There are a number of advantages to smaller colleges. They are dispersed throughout the state, guaranteeing that students will not have to travel far to attend college. For nontraditional students who are often working and balancing family demands in addition to attending school, the proximity of college can make a difference in their ability to attend. Smaller schools might also offer a more personalized environment for the student. In addition, public colleges serve an important role within their larger environment, often acting as an economic engine and anchor for the surrounding communities.

At the same time, there are additional costs associated with maintaining a large number of campuses because of the fixed costs associated with running each campus. The UMass campuses act collectively on a number of issues, in order to benefit from economies of scale and create a sense of cohesiveness throughout the system. However, each Massachusetts state college and community college is currently in charge of all of its administrative functions—from registration to technology to purchasing to accounting and finance. This organization increases the fixed costs of running the Massachusetts state and community colleges. The campuses do benefit from the Massachusetts Higher Education Consortium and the volume discounts it offers members, as well as the state contracts that the Commonwealth negotiates. There is likely, however, the potential for additional savings by sharing more services across campuses.

Maine has taken this approach. Maine also has some of the smallest public colleges in the nation, ranking 48th in the country. In order to

ES Table 7

Average Size of the Public Four-Year Colleges, Fall 2002

RANK	STATE	NO. OF PUBLIC FOUR-YEAR COLLEGES	AVERAGE NO. OF FTE STUDENTS
1	Iowa	3	21,380
2	Arizona	5	18,908
3	Michigan	15	15,836
4	California	34	15,519
5	Florida	15	14,916
6	Illinois	12	14,217
7	Kentucky	8	11,715
8	Indiana	14	11,657
9	Utah	7	11,559
10	Tennessee	9	11,453
41	Massachusetts	15	5,391
42	West Virginia	12	5,096
43	Pennsylvania	44	5,081
44	Connecticut	10	5,048
45	Montana	6	4,890
46	New Hampshire	5	4,529
47	North Dakota	7	4,030
48	Maine	8	3,260
49	Vermont	5	2,839
50	South Dakota	9	2,819
	U.S.	634	8,527

Source: *Digest of Education Statistics*

help control costs, 30 years ago, Maine began to implement systems of shared services. For instance, in Maine, information technology (IT) services, accounting and finance, and purchasing are handled jointly. The volume allows for steep discounts in purchase prices, and then the shared systems are easier and cheaper to administer. By their estimates, Maine has annual savings of \$25 million, and they are currently pursuing other opportunities for shared services.¹⁸ Such an approach in Massachusetts could substantially reduce costs while also maintaining the benefits of a system of many small public colleges.

An Increase in Loans: How Families are Paying for College

Students and their families are coping with the rising cost of a college education by taking out loans, allowing them to defer payments into the future. In the United States and in New England, there has been an overall shift in financial aid packages from grants to loans. In 1992-93, the average financial aid package in New England was 55 percent grants and 36 percent loans (including student and PLUS loans to parents, but not other parental loans). By 2004-05, it was 47 percent grants and 48 percent loans. The shift to loans is happening faster in New England than in the rest of the country.¹⁹

In 2003-04, 44 percent of students in New England took out loans. This is a large increase from the 26 percent who took out loans in 1992-93. It is also considerably higher than the national average (44 percent versus 35 percent). While students at private colleges are the most likely to

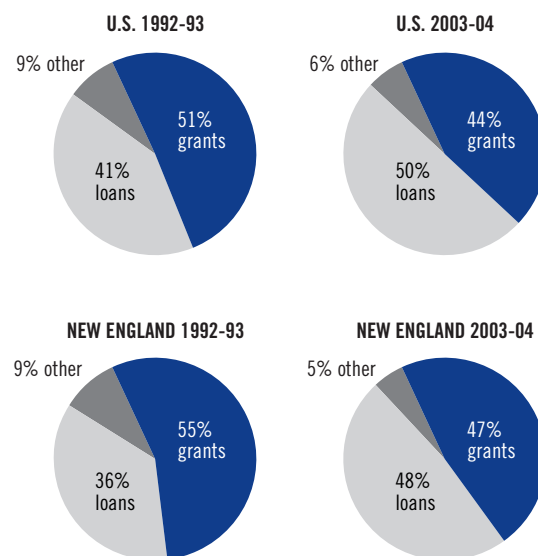
take out a loan, the most notable change occurred at the public four-year colleges in New England. Since 1992-93, the share of students taking out loans at public four-year colleges has nearly doubled from 25 percent to 48 percent. Overall, New England students at four-year colleges are only slightly more likely than their national peers to take out a loan (48 percent versus 45 percent), but there has been a more rapid change over the last decade. In contrast, only 7 percent of community college students in New England took out a loan in 2003-04. Students at New England community colleges are less likely than their national peers to take out a loan (7 percent versus 12 percent).

The size of loans that New England students took out in 2003-04 is larger, on average, than those of their national peers (\$7,842 versus \$6,628). This difference is driven by large loans that students at New England private colleges are taking out—the average amount was \$9,794 in 2003-04. At public four-year colleges, the average loan that New England students took out is actually slightly smaller than the national average (\$6,025 versus \$6,392) and has increased at a slower rate. New England community college students also took out smaller loans, on average, than their national peers (\$3,478 versus \$3,727).

The total debt that students are carrying has increased considerably over the past decade, with students at private colleges carrying the most. As the debt burden of students increases, there is growing concern that students' future career choices will be constrained. In New England, the average total debt for 4th-year students at private colleges was \$23,491, which was 49 percent higher—in real terms—than in 1992-93.²⁰ And, students at private colleges in New England are carrying more debt than their national counterparts (\$23,491 versus \$21,946). At the public four-year

ES Figure 2

Shift in Financial Aid Packages to Loans



Source: National Postsecondary Student Aid Survey (NPSAS)

colleges in New England, the average amount of debt of 4th-year students was less than that of their peers nationally (\$15,399 versus \$17,507), but was still a 39 percent increase, in real terms, from 1992-93. Unfortunately, it is not possible to estimate the overall debt burden for community college students in New England. Nationally, the total debt for 2nd-year students at community colleges was \$8,296. These numbers provide only a partial picture of the growing debt burden, because they do not likely include all private loans or any loans taken out by parents. During this period, there has been a large increase in the share of parents taking out loans to help finance their children's college education. In New England, federal PLUS loans (to parents) accounted for 3.4 percent of the total financial aid package. By 2003-4, federal PLUS loans accounted for 9.3 percent. Thus, the total debt figures have increased substantially over the past decade and are even higher than these numbers suggest.

Performance Outcomes: Who Graduates from College?

As families and students are increasingly stretching themselves to finance a college education, it is equally important to ask what happens to students after they start college. The reality is that many students—and at some schools the majority of students—start college but leave without a degree. For individual students, whether or not they earn a degree has important consequences. Dropouts are often left with substantial debt without the benefits of a college degree. Consider that among students who began college in 1995 but who dropped out, the median debt of those who borrowed money was \$7,000, and about one-fifth of the dropouts with debt defaulted on at least one of their loans.²¹ Concern about outcomes is also a public issue. The taxpayers heavily subsidi-

ES Table 8

Share of Students Receiving Loans in the United States and in New England

	1992-93	2003-04	CHANGE 1992-93 TO 2003-04
United States Average	20.6%	35.3%	71%
New England Average	26.2%	44.2%	69%
UNITED STATES			
Public Two-Year	6.5%	12.2%	86%
Public Four-Year	26.7%	44.9%	68%
Private Four-Year	36.9%	56.8%	54%
NEW ENGLAND			
Public Two-Year	3.2%	6.8%	117%
Public Four-Year	24.8%	47.8%	93%
Private Four-Year	34.4%	55.8%	62%

Source: National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>).

Sample weights were used to reflect the total population of undergraduates.

Notes: The total amount of loans includes: all federal loans to students (Perkins, Stafford, and federal loans through the Public Health Service), state loans, institutional loans (from funds provided by the educational institution), and private/alternative loans (the amount of alternative commercial or private loans received by students including personal loans secured through financial institutions or lenders like TERI or Sallie Mae; does not include loans from family or friends). Also includes PLUS loans (both the Federal Family Education Loan and Direct loan programs).

ES Table 9

Total Debt Burden by Full-Year Students (in constant 2003-04 dollars)

	1992-93	2003-04	CHANGE 1992-93 TO 2003-04
UNITED STATES			
Public Two-Year			
2nd year undergraduates	\$4,031	\$8,296	106%
Public Four-Year			
4th year undergraduates	\$9,928	\$17,507	76%
Private Four-Year			
4th year undergraduates	\$13,939	\$21,946	57%
NEW ENGLAND			
Public Two-Year			
2nd year undergraduates	--	--	--
Public Four-Year			
4th year undergraduates	\$11,052	\$15,399	39%
Private Four-Year			
4th year undergraduates	\$15,722	\$23,491	49%

Source: National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: The symbol "--" indicates the number of cases is too small to produce an estimate. Includes all loans ever borrowed for undergraduate education. Does not include parent PLUS loans. Data were collected from the National Student Loan Data System (NSLDS), a repository of federal loan information. However, because student may also borrow from other sources, self-reported and institutional information were also used.

ES Table 10**Six-Year Graduation Rates—University of Massachusetts Campuses**

	GROUP	1995 COHORT	1996 COHORT	1997 COHORT	1998 COHORT
UMass Amherst	Institution	59	61	64	62
	Peers	63	65	65	NA
UMass Boston	Institution	28	35	34	28
	Peers	37	37	38	38
UMass Dartmouth	Institution	51	53	50	50
	Peers	NA	NA	55	NA
UMass Lowell	Institution	37	44	42	46
	Peers	40	42	42	NA

Source: University of Massachusetts 2005 Report on Annual Indicators.

Notes: Peer data for UMass Boston and Lowell are from *U.S. News and World Report*, and they are four-year averages. Peer data for UMass Dartmouth is a three-year average from *U.S. News and World Report*. Except for UMass Amherst, all of the schools include aspirant peers in their peer group. "NA" indicates the information was not available.

dize higher education. And, from an economic point of view, the investment in higher education is tied to the health of the Massachusetts economy, which depends on a highly educated workforce.

Although measuring student outcomes is complicated, both conceptually and technically, graduation rates are important indicators. The graduation rate for a school will be related to the academic preparation and family background of its students. However, by comparing similar insti-

four years. The six-year graduation rate at UMass Amherst for the students who began in the fall of 1998 was 62 percent. There is a wide range of graduation rates among the other three UMass campuses. The graduation rate for UMass Dartmouth was 50 percent, 46 percent for UMass Lowell, and 28 percent for UMass Boston. Because of the significant differences in the student bodies at the campuses, it is more appropriate to compare individual schools with peer institutions.²² The graduation rates at Amherst and Lowell campuses are roughly on par with their peers, and the graduation rate at Dartmouth is slightly lower. At 28 percent, the average graduation rate for UMass Boston is significantly lower than that of its peers, which is 38 percent.²³

At the four-year state colleges, less than half of students (48 percent) who entered college in 1998 had graduated six years later. There are also considerable differences between the colleges. Westfield State had the highest graduation rate, which was 55 percent, and Salem State had the lowest—38 percent.²⁴ Again, because of the differences among the student bodies at the colleges, it is appropriate to compare colleges with their peer institutions. Compared with their peers,

A RENEWED FOCUS ON GETTING STUDENTS THROUGH COLLEGE AND NOT JUST INTO COLLEGE IS NEEDED

tutions, one can get a sense of an individual college's effectiveness. The graduation rate at private colleges varies significantly and is related to the institution's level of selectivity. Our focus here is specifically on the public colleges and universities in Massachusetts.

There are large differences in the graduation rates of the public four-year colleges in Massachusetts. Looking at the graduation rates over six years is the typical time frame, given that the large majority of students do not graduate in

ES Table 11**Six-Year Graduation Rates—State Colleges**

	GROUP	1996 COHORT	1997 COHORT	1998 COHORT	AVERAGE
Bridgewater State College	Institution	47.0	45.8	51.4	48.1
	Peers	50.6	50.6	51.5	50.9
Fitchburg State College	Institution	44.0	47.7	47.1	46.3
	Peers	36.3	38.1	35.1	36.5
Framingham State College	Institution	38.7	42.0	44.4	41.7
	Peers	33.5	35.4	34.5	34.5
MA College of Liberal Arts	Institution	45.7	46.7	45.0	45.8
	Peers	52.8	50.1	53.2	52.0
Salem State College	Institution	34.1	37.0	42.4	37.8
	Peers	38.1	39.0	40.1	39.1
Westfield State College	Institution	56.4	55.7	53.1	55.1
	Peers	37.8	40.7	41.2	39.9
Worcester State College	Institution	35.6	40.5	43.2	39.8
	Peers	33.1	33.5	33.5	33.4
MA College of Art	Institution	50.7	65.3	65.7	60.6
MA Maritime Academy	Institution	64.5	56.7	61.9	61.0

Source: Massachusetts Board of Higher Education (2005) Performance Report for 2004.

Note: Mass Maritime and Mass Art have special mission status and, for purposes of six-year graduation rates, are not compared to peer institutions.

three state colleges underperformed their peer groups, while four outperformed their peers.²⁵ There has been some improvement in recent years, and the state colleges seem on target to reach a 50 percent graduation rate within five years, the goal set by the Massachusetts Board of Higher Education (BHE). Nonetheless, substantial work remains to be done to improve graduation rates, given the consequences for the students and the state.

The graduation rates at community colleges, which are measured over three years, are much lower. Of the community college students who began in 1999, only 17 percent of students completed a degree within three years. Some student take longer than three years to get a degree, and thus the graduation rates increase when a six-year time frame is used. In addition, the low rates reflect the difficulty in accurately capturing

transfer students as well as the fact that many community college students do not intend to get a degree. While attention to appropriate outcome measures for community college students is important, a consensus that graduation rates matter coupled with a clear strategy to help improve them is needed. The BHE has recently convened a task force to look into these issues.²⁶

To be clear, there is a shared responsibility for improving outcomes. The students themselves must take responsibility for their own success. The state's high schools and workforce development programs must do a better job of preparing students for college. In addition, the colleges must take responsibility for improving graduation rates. Given that graduation rates vary considerably, even among schools with similar students, it is clear that colleges can make a difference in terms of their students' success. The BHE task

force should investigate the policies and practices of colleges with high graduation rates. And, colleges must be adequately supported, financially and otherwise, by the BHE and the state Legislature.

Concluding Thoughts

Over the last decade, college has become less affordable, meaning that families and students are paying a greater share of their incomes to finance a college education. While this research does not examine how access to college has changed as affordability has declined, other research has found that low-income students are particularly sensitive to price increases. Thus, the decline in affordability is likely affecting the composition of college students.

The challenges around affordability are of national concern, but they deserve particular attention in Massachusetts and New England. The region's community colleges and private four-year colleges are less affordable than those nationally. While the region's public four-year colleges cost the same as those nationally (21 percent of a family's annual income), the decline in affordability is much more steep, and if similar trends continue, they too will be less affordable in short order. It is well known that Massachusetts has a high cost of living. As families are required to pay an even larger share of their incomes to attend colleges, it raises important questions about the ability to attract and retain families, both are key to the state's economic vitality.

Students and families are digging deeper and deeper into their pockets to finance a college education. To cover the cost of college, more students and their parents are taking out large loans—at both public and at private colleges. The increase in the loans has shifted a greater amount of risk to students and their families, and the

consequences of this shift deserve more public discussion. Given that the debt burden has increased so much in a short period of time, the consequences of students taking out large loans is not yet known. Who has been most affected by the shift, and what policies can be put in place to help increase the odds of students earning a degree?

The cost of attending community colleges has been the most effectively controlled. In New England, only 7 percent of community college students took out a loan in 2003-04, and the average loan amount was \$3,478. Moreover, the share of the financial aid package that was grants increased for community college students. Nonetheless, the community colleges in New England are still less affordable than those in the nation. This reflects the fact that the typical income of the community college student in New England is quite low, and thus the cost is still high relative to their income.

Students at private colleges are the most likely to take out a loan and are also taking on the largest amount of debt. At the same time, students from Massachusetts disproportionately choose to attend private colleges, which are significantly less affordable than the public colleges. Better information on performance indicators—including graduation rates—that allows for comparisons between schools should be widely available so that families and students can make informed choices.

While there is a long tradition of private colleges in New England, their increasing cost suggests the future could be different. With a price tag that requires families to spend 33 percent of their income, the cost of private colleges could be on the verge of being cost-prohibitive. If private colleges are unable to fill their seats, they might reduce their tuition and fees.²⁷ Alternatively, more

students may seek to enroll in the state's public colleges, offering a real opportunity for the state's public higher education system to expand and play a more prominent role. This opportunity also raises important questions about the potential capacity of the public colleges and whether the institutions are strongly positioned to absorb new students without sacrificing their mission of accessibility.

Recently, public attention has focused on the decline in public dollars dedicated to higher education. There is currently legislation—An Act Supporting Access and Excellence in Public Higher Education in the Commonwealth—being considered to address some of the major challenges facing public higher education in Massachusetts. First, it would change higher education funding to a system based on a formula, which takes into account a comprehensive set of factors that affect the cost of running an institution. Adopting a formula would create a transparency in funding between the different colleges. However, the details of the formula are critical in order to create the right reform incentives.

In addition, the current legislation calls for the creation of a rainy-day fund at each campus, which would help address the volatile funding stream that this research has documented. Such volatility has created an unpredictable environment for schools and ultimately for students and their families, who have been forced to cope with dramatic increases in tuition and fees. Finally, in exchange for a predictable level of funding, the current legislation limits the rate of increase for tuition and fees, with exceptions in extenuating circumstances. It is important to consider the best way to put boundaries around tuition increases, taking into account the many costs colleges face. However, it would make the cost of college for families much more stable.

There are several other important issues that should also be addressed. Unless the state government is prepared to write a blank check for higher education, the expenditures of colleges must be analyzed in order to look for opportunities for greater efficiencies and cost savings. Colleges across the country face the challenges of an aging workforce, skyrocketing health care costs, and other costs associated with providing a quality education. While some of the increases are likely unavoidable and others clearly justified, the expenditures of public colleges must be more transparent and subject to greater public scrutiny.

A place to start is an analysis of the organization of the public higher education system.

THE INCREASE IN LOANS HAS SHIFTED A GREATER AMOUNT OF RISK TO STUDENTS AND THEIR FAMILIES

Massachusetts currently has, on average, some of the smallest public four-year schools in the nation. There are substantial fixed costs associated with maintaining so many campuses. However, there may also be potential savings opportunities by sharing more services across campuses. For instance, Connect, a consortium of the five public colleges in Southeastern Massachusetts, jointly bid for banking services, which allowed for both savings and improved banking services. The Massachusetts Higher Education Consortium also allows the campuses to benefit from volume discounts. But more could be done. A comprehensive cost-benefit analysis of different shared services options would provide important information about the best opportunities for cost savings.

Other cost-control measures should also be considered. Some options may require an initial investment but would ultimately lead to greater

savings in the long term. For instance, dual enrollment programs allow high school students to take college courses and receive both high school credit and college credit. Dual enrollment programs serve a number of purposes, including decreasing the number of credits a college student will need in order to graduate from college, which reduces the cost. In addition, such programs are thought to help ease the transition to college, especially for first-generation college students. More effective advising and use of technology could also help lower costs. For instance, several of the state's community colleges use software to help students track the courses needed for a major, allowing them to make informed decisions. In addition, more effective advising of transfer students could be beneficial, since they often take unnecessary classes, prolonging their time in college and adding to the cost. Finally, careful use of long-distance learning options could help reduce the costs.

Regionally, the New England Board of Higher Education's Regional Student Programs (RSP) allows students in New England to receive steep tuition discounts at out-of-state colleges that offer programs not available in their home states. RSP encourages only a few colleges in the region to develop and run specialized programs, and the other colleges benefit by not investing time and money into running certain high-cost academic programs. A regional summit that discusses other opportunities for regional collaboration could be beneficial. In addition, it is worth asking whether a similar approach could be beneficial within the state. Can course offerings be more effectively shared across campuses, creating areas of expertise at campuses while reducing course offerings at other campuses? Overall, a comprehensive cost-savings strategy should be analyzed and implemented.

Families also need to take responsibility for planning and saving for college. In recent years, federal and state governments have created a number of college savings options for families. Massachusetts has both prepaid tuition plans and a college savings plan (a 529 plan). Both plans have significant tax advantages. There is also often a lack of awareness of financial aid options, meaning that some families do not get the best possible financial aid packages. Colleges, the BHE, and other stakeholders should consider better ways to inform families about the savings and financial aid opportunities available.

At the same time that the state considers a different system of funding for higher education, a more explicit system of accountability should be discussed. There should be accountability to the taxpayers who are subsidizing public higher education as well as to the students and their families, who are assuming greater risk to attend college. Currently, the Performance Measurement reports compiled by the BHE and the UMass system are important sources of information, presenting data on a range of indicators related to access, affordability, and quality. The information presented in these reports should be given much more attention and scrutiny. What types of interventions are needed to help students who are not on track? In addition, strategic plans with benchmarks should be developed for institutions that are not performing adequately and are not improving.

The Legislature should consider changing the way it funds public colleges to create incentives for schools to improve their graduation rates. Instead of considering the total number of enrolled students, funding could be weighted toward seniors, rewarding institutions for retention. Alternatively, the state should consider including money tied to improvements in graduation rates

within the funding formula. Such efforts must be implemented carefully so that the public mission of access is also maintained and that colleges are not pushed into rejecting students that they would have otherwise accepted.

The economic future of individual students and the state are closely related. At the same time that a college degree is more important than ever for workers, the Massachusetts economy is also highly dependent on an educated workforce. The

state relies on the strength of its workforce to attract the critical industries that then drive the state's economic growth. Our state's highly educated population is our competitive advantage. Thus, it is in everyone's interest to increase the number of college graduates in the state.

ENDNOTES

1. See <http://www.higheredinfo.org>. Based on information from Tom Mortenson, "Postsecondary Education Opportunity."
2. This research is based on a variety of data sources. We use the National Postsecondary Student Aid Survey (NPSAS) from the National Center for Education Statistics, the Integrated Postsecondary Data System (IPEDS) from the National Center for Education Statistics, College Board data, data from the Massachusetts Board of Higher Education, as well as data from other sources.
3. Because state-level information is not available, our analyses of affordability focuses on students at New England colleges. More of the reasoning is discussed in the section "What Do We Mean By Affordability?"
4. This analysis includes both traditional and nontraditional students.
5. The affordability data come from the National Postsecondary Student Aid Survey (NPSAS), administered by the federal Department of Education. It is the most comprehensive dataset available that documents the aid that undergraduates receive, but it only allows a regional analysis and it is based on the location of college. The vast majority of students from Massachusetts and New England attend college in New England, so it accurately captures how much they pay for college, and how that differs from their national counterparts. Private colleges are limited to nonprofit four-year institutions, and we use the terms community college and public two-year institution interchangeably to refer to all public two-year institutions.
6. See Bridget T. Long, "How Have College Decisions Changed Overtime? An Application of the Conditional Logistic Choice Model," *Journal of Econometrics*, vo. 121, no. 1-2, pp. 271-296 and Thomas J. Kane, "Rising Public College Tuition and College Entry: How Well Do Public Subsidies Promote Access to College?" National Bureau of Economic Research Working Paper 5164, 1995.
7. U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). The data include first-time freshmen only. It does not capture returning students or student transfers.
8. According to University of Massachusetts *2005 Report on Annual Indicators*, the peer university systems for the UMass system include: University of Connecticut, University of Colorado, University of Maryland, University of Missouri, University of Illinois, and University of California. In 2004-05, the tuition and fees at these institutions ranged from \$3,500 to \$8,000. The tuition and fees at the different UMass campuses ranged from \$7,800 to \$9,000.
9. College Board, "Trends in College Pricing," 2005. It is worth noting, however, that students would incur costs for room and board, even if they don't attend college.
10. Anand Vaishnav, "Board OK's MCAS Scholarship Plan," *The Boston Globe*, June 16, 2004.
11. These figures come from the National Postsecondary Student Aid Survey (NPSAS). They include all grants and scholarships from the federal government, state government, institution, and other sources including charities and employers.

12. Research universities also receive research grants, but these funds tend to be more restricted in their use.
13. Another way to consider state spending on higher education is to compare the amount of state appropriations dedicated to higher education with the income level of the state. While Massachusetts has one of the highest levels of per capita income, it ranks near the bottom in terms of spending per dollar of personal income.
14. State Higher Education Executive Officers (SHEEO), State Higher Education Finance (SHEF) data. See <http://www.sheeo.org>.
15. This information comes from MassINC calculations using the National Center for Education Statistics Data Analysis System with IPEDS data (<http://nces.ed.gov/das>). The numbers for Fiscal Year 2004 excludes spending for hospitals. Because of a change in the accounting system, the amount of expenditures per student after 2000 are not comparable to earlier years, and private colleges use a different accounting system, which is not directly comparable.
16. "Matching Facilities to Missions: Strategic Capital Program," Prepared by Eva Klein & Associates, Ltd., Prepared for the Massachusetts Board of Higher Education, July 2003.
17. The public community colleges in Massachusetts are average in their size. Their average size is 3,247 students, compared with a national average of 3,366. The state's community colleges rank 17th largest in the nation.
18. University of Maine, "System Services: Supporting Maine's Public Universities," May 2005.
19. The loan data come from the National Postsecondary Student Aid Survey (NPSAS). It includes: federal, state, institutional, and private loans to the students and PLUS loans to the parents. It does not include loans by family and friends to the student. The number of private loans products has increased substantially over the last decade, but it is difficult to get good information on these loans. In addition, credit cards are increasingly providing capital to students for tuition expenses. For these reasons, the numbers reported in this research likely underestimate the true amount of debt families incur to pay for college.
20. The cumulative debt figures, which come from NPSAS data, are based on the year of the student. Thus, 4th year students are not necessarily seniors nor are they necessarily college graduates.
21. Lawrence Gladieux and Laura Perna, *Borrowers Who Drop Out: A Neglected Aspect of the College Student Loan Trend*, San Jose, CA: The National Center for Public Policy and Higher Education, National Center Report #05-2, 2005.
22. For the state and community colleges, the Massachusetts Board of Higher Education worked with individual campuses and the National Center for Higher Education Management Systems (NCHEMS) to identify appropriate peer institutions. The Board of Higher Education approved the final lists of peers. See the University of Massachusetts' *2005 Report on Annual Indicators* for more information about the peer institutions of the UMass campuses.
23. University of Massachusetts, *2005 Report on Annual Indicators*.
24. This is based a three-year average of the students entering college 1996-1998. See Board of Higher Education, *2005 Performance Measurement Report*.
25. The other two colleges—Mass. College of Art and Mass Maritime Academy—have special missions and do not have specific peer institutions.
26. MassINC is participating on this task force and also participated on an earlier task force on graduation rates.
27. Private liberal arts colleges are routinely offering merit aid to students, discounting the price they pay. It helps colleges recruit high-achieving students, and for some colleges, it helps them fill their freshmen classes. See Alan Finder, "Aid Lets Smaller Colleges Ask, Why Pay for Ivy League Retail?" *The New York Times*, January 1, 2006.

I. INTRODUCTION

Higher education plays a vital role in Massachusetts. For families, it holds the promise of a high standard of living. According to the U.S. Census Bureau, in 2004, individuals with a college degree made 75 percent more than those with only a high school degree.¹ Higher education is also essential to the health of business and the economy in Massachusetts. It is the lynchpin to having a skilled labor force. Unfortunately, there are troubling signs that the state does not have enough skilled workers. This is in part because one in three, or more than 1.1 million workers in Massachusetts, lack sufficient language, literacy, or other educational skills to succeed in the region's economy (Comings, Sum, and Uvin, 2000). Therefore, it is essential for the state to address issues concerning college access and success in order to ensure the economic health of Massachusetts today and in the future.

One reason individuals often cite to explain why they do not attend or persist in college is cost. A number of research studies, along with anecdotal evidence, document the importance of price and affordability in determining who does and does not attend college. To address this concern, the federal government invests billions of dollars nationally each year in college financial aid programs, subsidies, and tax breaks. In addition, the Massachusetts state government offers a wide array of aid totaling approximately \$102.1 million during the 2003-2004 academic year.² In addition to the grants and loans that go directly to students, Massachusetts supports public colleges and universities with state appropriations that act as operational subsidies. Still, the

sticker price of college has increased with great alarm, and understanding the true price of a college education has become more complicated with the introduction of new forms of aid with varying criteria. Moreover, investments in financial aid and institutional support often fail to keep pace with inflation and increasing numbers of students in need and so result in higher costs for families.

Not surprisingly, many Americans are greatly concerned about the price of higher education. Immerwahr (2002) found that 69 percent of the parents of high school students are worried

THE STICKER PRICE OF COLLEGE HAS INCREASED WITH GREAT ALARM

about being able to afford their children's college education. Additionally, he finds that 70 percent think higher education is priced beyond the income of the average family. Along similar lines, a 2003 MassINC survey on the quality of life in Massachusetts found that 48 percent of the state's citizens feel higher education affordability needs major improvement. Eighty-seven percent of Massachusetts parents echoed that higher education affordability needs improvement, with 57 percent of them explicitly citing the need to be major.

Given the importance of higher education and these growing concerns about affordability, the purpose of this project is to provide a comprehensive examination of higher education in Massachusetts. This study provides an in-depth

1. U.S. Census Bureau, Current Population Survey, March 2005. Calculated by author using median income by education level. Available at: http://pubdb3.census.gov/macro/032005/perinc/new03_010.htm.

2. National Association of State Student Grant and Aid Programs (2005) 35th Annual Survey Report on State-sponsored Student Financial aid (2003-04 Academic Year). This includes grants, tuition waivers, and loans.

analysis of college enrollment, institutions, returns, and costs. In particular, the paper will detail the financing of postsecondary education by Massachusetts families with a focus on the issues of access and affordability. The goal is to provide policy makers, leaders, practitioners, and citizens with information on a host of key questions concerning higher education in Massachusetts.

While higher education has become an important part of society, it is also an increasingly complex landscape that is difficult for many families to decipher. The industry is made up of a variety of colleges and universities with varying missions and students with a diverse set of needs and talents. The 119 degree-granting colleges and universities in Massachusetts exhibit a wide array of purposes and structures from large, national, research universities to small, localized community colleges. Each year these colleges and universities serve nearly 300,000 undergraduate students including everyone from traditional, dependent, recent high school graduates to working adults with children who attend part-time. With such a diverse set of actors, this report attempts to provide a clear and comprehensive description of the many facets of higher education in Massachusetts.

Recent Trends in Higher Education

The last decade has brought forth a great deal of change in higher education. First, there have been substantial increases in the financial aid targeted to the middle class, including the Stafford Unsubsidized Loan Program, Higher Education Tax Credits, and 529 Plans. In addition, many of the state aid programs introduced in recent years have focused on merit awards rather than financial need and, thus, have disproportionately benefited upper-income groups. A second major

trend has been declining support for postsecondary institutions. From 2000-01 to 2003-04, state appropriations to colleges and universities in Massachusetts fell 27 percent after accounting for inflation from \$9,570 to \$7,021 per full-time equivalent student (SHEEO, 2005). Although the most recent recession exacerbated this trend, state appropriations to colleges have fallen in real terms for the last several decades. This has translated into higher tuition prices at Massachusetts public colleges and universities. According to the Massachusetts Board of Higher Education, during this same four-year period, the tuition and fees at the University of Massachusetts system grew, in real terms (i.e. after accounting for inflation), by \$3,294, a 64 percent increase.

Another important trend that will continue for years to come is the changing demographics of students. In 2008, the United States will have the largest cohort of high school graduates ever. More important to Massachusetts, though, are changes in the racial and ethnic make-up of the potential college student population. The proportion of students of color is expected to increase to 24 percent by 2014. This demographic growth will dramatically increase the number of students on America's campuses, a disproportionate number of who will be low- and moderate-income and therefore likely to be eligible for financial aid. The resulting increase in this pool of needy students will be further strained if college costs continue to rise faster than inflation. Additionally, the age composition of undergraduates has changed. Only 27 percent of students match the traditional profile of an 18-22 year old who attends full-time and is dependent on their parents (Choy, 2002). Nontraditional students face different challenges, which may lead them to persist and succeed at lower rates than traditional students. For example, they must often

balance time-consuming work and family responsibilities.

Finally, there are reasons to believe that capacity will be a growing issue in higher education. With the introduction of educational reforms such as the Massachusetts Comprehensive Assessment System (MCAS) and Federal No Child Left Behind (NCLB), there may be increasing numbers of high school graduates who are prepared for college, and as a result, the number who attempt to attend college may grow. Capacity is particularly a concern at the four-year colleges, which are less able to expand the number of students they serve without major capital investments. (In comparison, most students at the community colleges do not reside on campus, are part-time, and are willing to take classes during nontraditional hours such as evenings and weekends.) However, as the competition for spots at the four-year state colleges grows, without serious increases in capacity, only the brightest students will be able to attend these institutions. The resulting overflow of students to community colleges could strain that system. In summary, current growing demands on the higher education system could have serious implications for not only who can attend college but also where they can attend.

With all of this change, higher education is at a critical point, trying to balance uncertain resources with growing demands. This research attempts to describe the facts and trends related to these larger issues to give a complete appraisal of higher education in Massachusetts. However, beyond the interactions between students and colleges, it is also important to note that higher education is an important industry in Massachusetts. In 2004, Massachusetts colleges and

universities employed approximately 107,000 professionals and staff.³ Moreover, the institutions within Massachusetts provide important products and services to our communities. This reiterates the importance of supporting higher education within the state.

Massachusetts in Comparison to the Nation

While this report focuses on higher education in Massachusetts, many sections also review national trends and conventions. This is to help give the reader a sense of the relative norms and performance of Massachusetts students and insti-

Table 1

Massachusetts in Comparison to the Nation

	STATE	NATION
Population 2003		
Age distribution: 14 to 17	5.1%	5.7%
Age distribution: 18 to 24	9.3%	9.8%
Age distribution: 25 to 44	30.7%	29.4%
Racial and ethnic distribution, 2002		
American Indian and Alaska Native	0.3%	1.0%
Asian	4.2%	4.0%
Black or African-American	6.7%	12.7%
Native Hawaiian and other Pacific Islander	0.1%	0.2%
White	87.5%	80.7%
More than one race	1.2%	1.4%
Hispanic or Latino (may be any race)	7.3%	13.4%
Proportion who speak a language other than English at home	18.7%	17.9%
Educational attainment of adults 25 years and over, 2000		
High-school diploma	27.3%	28.6%
Some college, no degree	17.1%	21.0%
Associate degree	7.2%	6.3%
Bachelor's degree	19.5%	15.5%
Graduate or professional degree	13.7%	8.9%
Per-capita personal income, 2003	\$39,815	\$31,632
Poverty rate, 2002 and 2003	9.5%	11.9%

Sources: Population figures and statistics on educational attainment and language use in the home are from the U.S. Census Bureau. Per-capita personal income information is from the U.S. Department of Commerce. The poverty rate was calculated using data from the March 2002 and March 2003 Current Population Survey conducted by the U.S. Census Bureau.

3. Massachusetts Department of Labor, Massachusetts Current Employment Statistics 2004 based on the MassStats database.

tutions in comparison to other states. However, it is important to note that Massachusetts differs from its neighbors in many ways. Table 1 compares the characteristics of Massachusetts residents to national averages. In terms of population, Massachusetts is the 13th largest state and has a slightly smaller proportion of individuals around the age of traditional college students (age 18 to 24). As of 2000 Massachusetts was the 12th oldest state, with 13.5 percent of its population older than 65 years of age. That number is expected to reach 18 percent by 2025 (MassINC, 2004).

The population of Massachusetts has a smaller proportion of Black or African-American, Native American, and Hispanic residents than that found nationwide. In 2003, nearly 88 percent

THE ROLE OF THE PUBLIC COLLEGES IS LIKELY TO BECOME EVEN MORE IMPORTANT

of Massachusetts' residents were white in comparison to nearly 81 percent nationwide. Although Massachusetts has a smaller percentage of minorities, it has a larger proportion of residents who speak a language other than English in their homes due to the large numbers of immigrants in the area. A state of immigrants since its inception, 14.3 percent of Massachusetts residents were foreign-born as of 2004 (Sum, Uvin, Khatiwada, Ansel, 2005). Thus, while the state trails in race-based diversity, it remains strong in terms of immigrant-based diversity.

In terms of educational outcomes, Massachusetts leads the nation in postsecondary educational attainment. In 2000, 57.5 percent of Massachusetts residents had attended at least some college in comparison to a national average of 51.7 percent. The difference is even larger when looking only at residents with at least a

Bachelor's degree (33.2 versus 24.4 percent, respectively). Given the substantial return to a college education, Massachusetts not surprisingly has a greater per-capita personal income than the nationwide average. In 2004, the median household income was \$52,354 in Massachusetts compared with a national median of \$44,473 (DeNavas-Walt, Proctor, and Lee, 2005). Massachusetts also had a lower poverty rate as measured by the proportion of residents who fall under the poverty line. The fact that these differences are attributed to the high educational attainment level in the state underscores the importance of Massachusetts maintaining and increasing access to quality education for all its citizens. Education is the key to financial stability.

Finally, it is important to note that many sections of this report focus on college participation and affordability at public colleges and universities in Massachusetts. While the report includes as much data as possible on private colleges, the availability of such data is more limited. It is also important to note that while private colleges and universities play an important role in Massachusetts, less than half of Massachusetts residents who attend college in-state choose one of these institutions, and many of the issues of cost and affordability at private colleges are beyond the realm of public policy. Moreover, one of the most important recent trends in Massachusetts higher education, as well as in many other states, has been the significant reduction in state appropriations that has precipitated major increases in tuition and other student fees at public colleges and universities. Due to many questions about how this has affected enrollment patterns and affordability, this report will pay special attention to the trends at public institutions. Lastly, given current demographic trends, the role of the public colleges is likely to become even more

important in the future. The growing population of students of color is likely to seek access at public institutions for postsecondary study, and so understanding current trends is vital for preparing for the future. With the largest cohort of high school graduates approaching, public institutions are likely to feel increased enrollment pressure, and how they react to this pressure will greatly impact Massachusetts for years to come.

Organization of the Report

The study is divided into several chapters. The next chapter examines college access and attendance by discussing the educational goals, academic preparation, and enrollment trends of students in Massachusetts and nationwide. Then, the third chapter discusses outcomes in higher education such as persistence and graduation rates. The fourth chapter focuses on college tuition and fees over time both nationally and in Massachusetts with a special emphasis on the role of state appropriations in determining prices at public colleges. Chapter five describes the availability of federal, state, and institutional financial aid, and chapter six examines issues of college affordability. The final chapter summarizes the major findings of this paper and concludes.

II. COLLEGE ACCESS: GOALS, PREPARATION, AND ENROLLMENT TRENDS

College attendance is the culmination of a series of steps taking place in high school. First, students must have the aspiration to attend college or derive it from their parents, teachers, and/or mentors. Additionally, students must prepare academically for college by taking the proper classes and getting a sufficiently high grade point average, particularly for selective schools. To gain entry into a four-year college, students must also register for a college admissions exam; the SAT is taken most often in Massachusetts. Finally, students must fulfill the requirements for high school graduation. This section reviews trends in the expectations, academic preparation, performance, and high school graduation rates for students nationally and in Massachusetts.

Educational Goals and the Academic Preparation of Students

In their study of students' perceptions about college, Avery and Kane (2004) reviewed the postsecondary expectations of a nationally-representative group who graduated from high school in 1992. Using the National Education Longitud-

inal Study (NELS), a survey conducted by the National Center for Education Statistics, the authors calculate that the vast majority of high school seniors report expectations of eventually getting some postsecondary training. As shown in Table 2, nearly one-third expect to eventually attend graduate school and another third expect to finish with the bachelor's degree. These expectations are further linked to college enrollment.

To document the expectations and perceptions of students around the Boston area, Avery and Kane also surveyed local students. In October 2000, they collected information from students in three Boston Public High Schools and two suburban high schools (Concord-Carlisle and Wellesley High Schools). The samples of students differed significantly in terms of parental education and race. For example, while three-quarters of the Boston Public School students were Black or Latino, only nine percent of the suburban students fell into either group. Additionally, while only 22 percent of the Boston Public School students had a parent who was a college graduate, 87 percent of the subur-

Table 2

Students' College Expectations and Eventual Enrollment within 20 months of Graduation

	PERCENT OF HIGH SCHOOL SENIORS	ENROLLMENT WITHIN 20 MONTHS OF HIGH SCHOOL			
		PUBLIC OR PRIVATE FOUR-YEAR	PUBLIC TWO-YEAR	OTHER TYPE OF COLLEGE	DID NOT ENROLL
H.S. Only	6.5	1.1	6.9	1.5	90.4
Vocational or Trade School	11.0	4.0	21.6	10.3	64.0
Some College	14.0	13.8	36.6	8.0	41.7
4 or 5-Year Degree	35.4	56.8	24.8	2.8	15.6
Graduate School	33.1	71.7	17.1	1.3	10.0
Total		46.2	22.4	3.8	27.6

Source: Based upon tabulations by Avery and Kane (2004) using the NELS88 2nd and 3rd Follow-up.

Notes: Raw percentages are shown. The survey asked: "As things stand now, how far in school do you think you will get?"

ban youth had a parent who was a college graduate; in fact, 60 percent of the suburban youth had a parent with a graduate degree.

Regardless of these differences in background, most of the students at the two types of high schools planned to attend a postsecondary institution the next year. As shown in Table 3, nearly all expected to get some postsecondary education although far more students at the suburban schools planned to attend four-year rather than two-year colleges immediately after high school. While students in each type of school had similar expectations in terms of planning to continue for at least some postsecondary education, Avery and Kane (2004) determined that the students differed considerably in their preparation for college attendance. Among those planning to attend a four-year college, 97.5 percent of the suburban students had taken the SAT or ACT while only 31.8 percent of those in the Boston Public Schools had done so by the fall of their senior year. Similar differences by type of high school were found when comparing the percentage who had visited a college, obtained a college application, or had met with their guidance counselor to discuss college plans. This suggests that while college aspirations are

Table 3

The Postsecondary Plans of Boston-Area High School Students (percentages)

	BOSTON PUBLIC SCHOOLS (BOSTON, DORCHESTER, CHARLESTOWN) 2001-02 SURVEY	BOSTON SUBURBS (WELLESLEY, CONCORD-CARLISLE) 2000-01 SURVEY
<i>Plans for Fall the following year</i>		
Vocational/Trade School	4.9	0.6
Two-Year College	21.6	2.3
Four-Year College	65.2	93.6
Total Some Postsecondary	91.7	96.5
Sample Size	264	171
<i>Plans for Eventual Attainment</i>		
Vocational Degree	7.9	2.9
Associate's Degree	12.2	2.3
Bachelor's Degree	40.2	24.0
Graduate Degree	30.1	57.1
Sample Size	229	156

Source: Avery and Kane (2004).

high for the vast majority of students regardless of background, important differences exist in actually completing the steps necessary for enrollment. To increase access, it is imperative that the state addresses these critical stepping-stones to college attendance.

While the Avery and Kane study uses a small sample of Boston area students, Table 4 summarizes the secondary school activities and achievements of all students in Massachusetts. Although

Table 4

The Academic Preparation of Students in Massachusetts

	MASSACHUSETTS	TOP STATES NATIONWIDE
9th to 12th graders taking at least one upper-level math course	59%	59%
9th to 12th graders taking at least one upper-level science course	38%	41%
8th grade students taking Algebra	35%	35%
12th graders taking at least one upper-level math course	66%	66%
Number of scores that are 3 or higher on an Advanced Placement subject test per 1,000 high school juniors and seniors	203	219
Number of scores in the top 20% nationally on SAT/ACT college entrance exam per 1,000 high school graduates	231	227

Source: National Center for Public Policy and Higher Education, *Measuring Up 2004*.

Notes: The Top States nationwide are Colorado, Connecticut, Maryland, New Jersey, New York and Utah. In 2004, Massachusetts was the top-performing state overall. Preparation included measures for high school completion, K-12 course taking (math and science course-taking, algebra in 8th grade, math course taking in 12th grade), K-12 student achievement (math, reading, science and writing proficiency, math proficiency among low-income, college entrance exams, AP exams) and teacher quality (students taught by qualified teachers).

there are important differences in academic preparation among students within Massachusetts, the state's average level of performance is one of the highest in the country. Nearly 60 percent of high school students take at least one upper-level math course, and 38 percent take at least one upper-level science course. Two-thirds

the average score was 1038 out of a possible 1600. More students in Massachusetts take the SAT than the national rate, and the state average is 12 points above the national average of 1026.

High School Graduates

The National Center for Public Policy in Higher Education (2004) calculated that 91 percent of 18 to 24 year olds in Massachusetts have a high school credential. While this proportion is high, many students do not complete their high school degree along the conventional timeline. Approximately four percent elected to get their GED instead of the regular degree. Focusing on graduation rates at only public high schools, Greene and Forster (2003) calculate that 73 percent of Massachusetts students graduated on time with a regular diploma (the national average was 70 percent). They use data from the U.S. Department of Education's Common Core of Data (CCD) and trace cohorts of students from 9th to 12th grade. As shown in Table 5, this methodology suggests that the rate of on-time completion differed by race. According to the authors' calculations, 78 percent of white students, 65 percent of African-American students, 76 percent of Asian students, and 49 percent of

THE STATE'S AVERAGE LEVEL OF ACADEMIC PREPARATION OF HIGH SCHOOL STUDENTS IS ONE OF THE HIGHEST

of seniors take an upper-level math course in their final year of high school. Significant numbers also score a three or higher on an Advanced Placement exam although fewer than in the top performing states. These accomplishments are all very important in improving the chance for college enrollment and success.

Students in Massachusetts also perform well on college admissions exams. Out of 1,000 high school graduates taking the SAT, 231 score in the top 20 percent nationally suggesting that Massachusetts residents are overrepresented among the top quintile of students. According to the College Board, 82 percent of Massachusetts high school seniors took the SAT in 2003, and

Table 5

On-Time High School Graduation Rates and College Preparedness, 2001

	PUBLIC HIGH SCHOOL GRADUATION RATE		GRADUATE WITH "COLLEGE READY" TRANSCRIPT	
	MASSACHUSETTS	NATIONAL MEAN	MASSACHUSETTS	NATIONAL MEAN
All Public High School Students	73	70	41	36
White Students	78	72	47	39
Black or African-American Students	65	51	35	25
Hispanic or Latino Students	49	52	21	22
Asian Students	76	79	38	46

Source: Greene and Forster (2003) *Public High School Graduation and College Readiness Rates in the United States*. The rates reflect the percentage of students who graduate high school on time.

4. The National Assessment of Educational Progress (NAEP), also known as "the Nation's Report Card," is a national assessment of what America's students know and can do in various subject areas. Since 1969, assessments have been conducted periodically in reading, mathematics, science, writing, U.S. history, civics, geography, and the arts.

Latino students graduated from high school on time. Non-public high school graduates accounted for nearly 15 percent of all Massachusetts high school graduates in 2001-02 (WICHE, 2003) and likely have higher graduation rates.

Greene and Forster (2003) also consider the proportion of graduating students who are prepared academically for college as defined by three criteria: (i) the student must have completed high school; (ii) the student must have taken four years of English, three years of math, and two years each of natural science, social science, and foreign language; and (iii) the student must have a NAEP reading score of at least 265, the official cutoff for what NAEP calls a “basic” level of achievement.⁴ The authors use data from the 1998 NAEP High School Transcript Study for the analysis. In Massachusetts, 41 percent of students were found to meet that curriculum, but, as before, the proportion again differed by race. This again highlights the fact that educational outcomes differ significantly within Massachusetts by background.

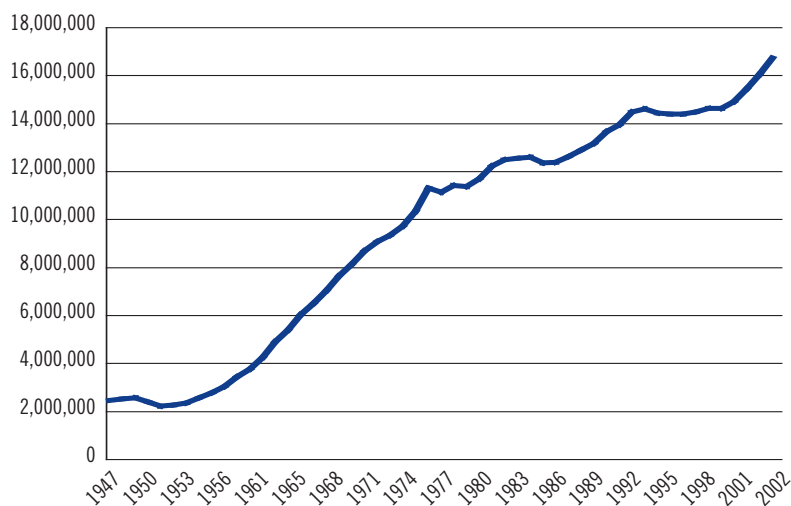
These racial gaps are likely to become even more important in Massachusetts in the future. While the number of high school graduates in Massachusetts is not expected to increase as substantially during the next decade as it will in other states, projections suggest that Massachusetts will experience a noticeable shift in the racial and ethnic composition of its public high school graduates over the next decade.⁵ Under-represented racial and ethnic groups comprised 21 percent of high school graduates in 2002, and that number is expected to increase to 24 percent by 2014. In particular, the percentage of students who are Hispanic or Asian is expected

to grow while the proportion who are Black or African-American is likely to remain stable (WICHE, 2003).

General Postsecondary Enrollment Trends

While higher education began as an endeavor for the elite, it has long been growing into an important investment for individuals from all backgrounds. As shown in Figure 1, college enrollment in the United States has grown from 2.3 million students in 1947 to 16.6 million in 2002. Much of the growth in attendance occurred during the 1960s and 1970s when the Baby Boomers became of college age. Enrollment trends differed by gender. In Figure 2, it is clear that the number of men in college outnumbered women until 1979. Around that time, the number of men

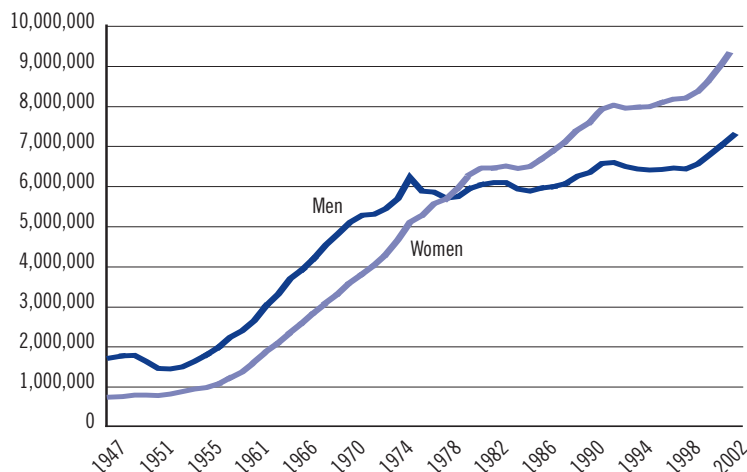
Figure 1
Total College Enrollment in the United States, 1947-2002



Source: U.S. Department of Education, National Center for Education Statistics, Biennial Survey of Education; Higher Education General Information Survey; and Integrated Postsecondary Education Data System.
Notes: Figures from 1947 to 1956 only include degree-credit enrollment. Figures from 1996 and after are only for degree-granting institutions that participated in Title IV federal financial aid programs. Prior to that time, the sample is limited to institutions that were accredited or recognized directly by the Secretary of Education.

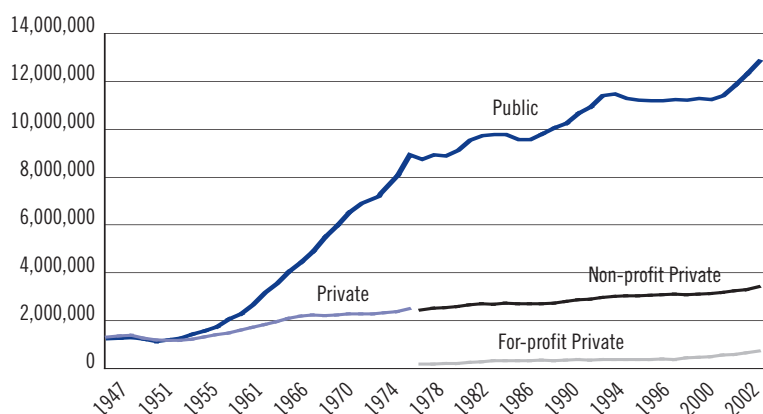
5. Nationwide, the graduating class of 2008-09 is projected to be the largest in history at 3.2 million students. Massachusetts will see a similar peak in 2007-08, but thereafter the size of the graduating class will decline more noticeably than the nation. The projected number of high school graduates in Massachusetts for 2017-18 is smaller than in 2001-02 (WICHE, 2003).

Figure 2
College Enrollment by Gender in the United States, 1947-2002



Source: U.S. Department of Education, National Center for Education Statistics, Biennial Survey of Education; Higher Education General Information Survey; and Integrated Postsecondary Education Data System.
 Notes: Figures from 1947 to 1956 only include degree-credit enrollment. Figures from 1996 and after are only for degree-granting institutions that participated in Title IV federal financial aid programs. Prior to that time, the sample is limited to institutions that were accredited or recognized directly by the Secretary of Education.

Figure 3
College Enrollment in the United States by Institutional Control, 1947-2002



Source: U.S. Department of Education, National Center for Education Statistics, Biennial Survey of Education; Higher Education General Information Survey; and Integrated Postsecondary Education Data System.
 Notes: Figures from 1947 to 1956 only include degree-credit enrollment. Figures from 1996 and after are only for degree-granting institutions that participated in Title IV federal financial aid programs. Prior to that time, the sample is limited to institutions that were accredited or recognized directly by the Secretary of Education.

attending postsecondary institutions appeared to stabilize while the number of women continued to increase.

Despite the long tradition in Massachusetts and the rest of the Northeast of private colleges, the vast majority of students in the United States enroll in public institutions. As shown in Figure 3, since the late 1950s, enrollment in public colleges and universities has increased substantially. In 2002, 12.8 million students attended public schools while 3.9 million enrolled in private colleges. Most of the students at private schools attended not-for-profit institutions. While they are a rapidly growing part of higher education, the for-profit private college sector enrolled only 594,000 students in 2002 (up from 364,000 only five years earlier in 1998).

Table 6 displays national enrollment figures for Fall 2001. At this time, of the over 16 million students in postsecondary institutions, the vast majority attended degree-granting schools. Approximately 60 percent attended four-year schools and over three-quarters enrolled in public institutions. Although most students attend full-time, 40 percent conduct their studies as part-time students. Most students are undergraduates, but over 2 million individuals pursued either a graduate or first-professional degree.

The differences by gender shown in Figure 2 are also evident in Table 6. Additionally, there are differences in attendance by race and ethnicity. Although they each comprise approximately 12 to 13 percent of the population, Black and Hispanic students were only 11 and 9 percent, respectively, of college students. These groups of students are more likely to enroll in non-degree granting institutions than white students. On the other hand, while Asian Americans comprise 4 percent of the population, they are nearly 6 percent of college students.

Table 6**Student Enrollment in the United States, Fall 2001**

	ALL INSTITUTIONS		DEGREE-GRANTING		NON-DEGREE GRANTING	
	TOTAL	PERCENT	TOTAL	PERCENT	TOTAL	PERCENT
Total students	16,334,134	100.0	15,927,987	100.0	406,147	100.0
Level of institution						
Four-year	9,678,426	59.3	9,677,408	60.8	1,018	0.3
Two-year	6,352,269	38.9	6,250,579	39.2	101,690	25.0
Less-than-Two-year	303,439	1.9	---	---	303,439	74.7
Control of institution						
Public	12,370,079	75.7	12,233,156	76.8	136,923	33.7
Private not-for-profit	3,198,354	19.6	3,167,330	19.9	31,024	7.6
Private for-profit	765,701	4.7	527,501	3.3	238,200	58.6
Attendance status						
Full time	9,745,598	59.7	9,447,502	59.3	298,096	73.4
Part time	6,588,536	40.3	6,480,485	40.7	108,051	26.6
Student level						
Undergraduate	14,120,740	86.4	14,120,740	86.4	---	---
Graduate	1,904,721	11.7	1,904,721	11.7	---	---
First-professional	308,673	1.9	308,673	1.9	---	---
Gender						
Men	7,104,212	43.5	6,960,815	43.7	143,397	35.3
Women	9,229,922	56.5	8,967,172	56.3	262,750	64.7
Race/ethnicity						
White, non-Hispanic	10,318,832	63.2	10,120,366	63.5	198,466	48.9
Black, non-Hispanic	1,837,837	11.3	1,756,684	11.0	81,153	20.0
Hispanic	1,534,051	9.4	1,460,088	9.2	73,963	18.2
Asian/Pacific Islander	955,322	5.8	937,953	5.9	17,369	4.3
Native American	153,826	0.9	149,764	0.9	4,062	1.0
Race unknown	965,690	5.9	938,523	5.9	27,167	6.7
Nonresident alien	568,576	3.5	564,609	3.5	3,967	1.0

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Spring 2002

Notes: Detail may not sum to totals because of rounding. A first-professional student is one who is enrolled in any of the following degree programs: chiropractic, dentistry, law, medicine, optometry, osteopathic medicine, pharmacy, podiatry, theology, or veterinary medicine.

Higher Education in Massachusetts

Before considering the enrollment trends of Massachusetts students, it is important to discuss the types of postsecondary opportunities available within the state. This section describes these options. It is important to note that many students outside of Massachusetts attend these colleges in addition to residents.

Massachusetts has a long tradition of strong

private colleges, which started nearly 400 years ago with the founding of Harvard College in 1636. Today, four of the five largest Massachusetts postsecondary institutions are private colleges. Table 7 displays a breakdown of the degree-granting colleges in Massachusetts. The shares of full-time equivalent students at each type of institution are also shown.

The institutions in Massachusetts differ not

Table 7

Number of Colleges and Universities and the Share Full-Time Equivalent (FTE) of Enrollment

	MASS	SHARE OF ENROLLMENT	NATION	SHARE OF ENROLLMENT
Public institutions				
Four-year institutions	15	24.5	631	37.2
Two-year institutions	16	19.3	1,081	31.8
Private, nonprofit institutions				
Four-year institutions	78	53.8	1,538	17.3
Two-year institutions	5	0.5	127	0.5
Private, for-profit institutions				
Four-year institutions	2	0.6	297	3.5
Two-year institutions	3	1.3	494	9.8
Total	119		4,168	

Source: Number of Institutions—U.S. Department of Education for the 2002-03 school year. Enrollment Shares—MassINC calculations using the National Center for Education Statistics Data Analysis System with the Integrated Postsecondary Data System (IPEDS), <http://nces.ed.gov/das>. Notes: Statistics include only degree-granting postsecondary institutions eligible to participate in federal financial-aid programs. Enrollment shares are shares of annual full-time equivalent enrollment for 2003-04.

only according to control (public or private) but also in terms of mission, size, and selectivity. Figure 4 displays colleges according to the groupings devised by Barron's in their annual guide, *Profiles of American Colleges*. Colleges were categorized according to the characteristics of their

ADMISSION STANDARDS AT THE STATE'S PUBLIC COLLEGES HAVE BEEN INCREASING

student bodies: median test scores, the percentage scoring over a certain level, and high school class rank. Schools that had not been ranked were then categorized according to these criteria. It is important to note that these groupings do not reflect college quality but instead categorize the postsecondary options for students at different performance levels. Moreover, schools at the upper end of the range tend to attract students nationally while less-competitive colleges focus more on in-state students.

Unlike many states, Massachusetts has a number of highly-selective private institutions. However, only a small percentage of students attend these types of colleges, and many of the very selective schools are relatively small. All of the public universities in Massachusetts fit into the "Competitive" category meaning that students have above average SAT scores on both the math and verbal exams. Several of the state colleges also fit into this category. Massachusetts also has public and private options for students with less competitive academic backgrounds as shown under the "Less Competitive" and "Non Competitive" groupings.

College Admissions in Massachusetts

While the previous section reviewed general enrollment trends, this section elaborates on the postsecondary options within Massachusetts. Admissions standards, criteria, and numbers are discussed along with enrollment numbers at particular Massachusetts' postsecondary institutions. Much of this section focuses on public colleges and universities due to the availability of good data from state and regional sources such as the Massachusetts Board of Higher Education. This is also appropriate given that the largest group of Massachusetts' residents attend public institutions.

In general, admissions standards at public colleges in Massachusetts have been increasing over time. As shown in Table 8, as recently as 1996, state colleges did not require a minimum high school GPA, and there were no limits on the number of students that could be accepted with exemption from the admissions standards. The next year, a minimum 2.6 GPA was imposed for acceptance to the state colleges except if the student had a SAT score of at least 890. Additionally, exemptions from the academic

standards could only be made for students able to demonstrate potential for collegiate academic success, and the proportion was limited to 15 percent of new undergraduates. Finally, in 2003, the Massachusetts state colleges introduced a minimum high school GPA of 3.0 with a sliding scale for students with at least a 920 on the SAT. The proportion of exemptions was also reduced to 10 percent of the new class.

As a result of the increase in admissions standards, the academic profile of undergraduate students at state colleges improved from 1997 to 2002. Table 9 shows the mean high school GPA and SAT score and the percentage of students accepted under special admissions criteria. While the average GPA was 2.73 in Fall 1997, it increased to 2.91 by Fall 2002. Likewise, the average SAT score increased 40 points. Meanwhile, the percentage of students accepted under exemption declined to 8 percent.

The admission criteria and student body characteristics for select public institutions are summarized in Table 10. Similar to results in Table 9, students at the state colleges had high school GPAs of at least 2.0 and SAT scores of at least 420 on both the verbal and math exam. The public universities in Massachusetts also require the SAT or ACT and often require an essay. As the more selective public institutions, the majority of students at most of the schools had GPAs of at least 3.0. The range of SAT scores was also higher.

Table 11 summarizes the number of applicants, percent accepted, and the yield rate at each type of public institution. As a system, nearly three-quarters of undergraduate applicants were accepted with the highest proportion being at the community colleges. Although the proportion appears high at the public universities (75.2 percent), this is likely due to student

Figure 4

Select Four-year Colleges and Universities in Massachusetts by Competitiveness Rating

PUBLIC INSTITUTIONS	PRIVATE INSTITUTIONS
MOST COMPETITIVE (SAT 625-800 or ACT 30-36)	
---	Harvard University Amherst College Massachusetts Institute of Technology Wellesley College Smith College Williams College
HIGHLY COMPETITIVE (SAT 575-625 or ACT 28-29)	
---	Boston College Worcester Polytechnic Institute Tufts University College of the Holy Cross Mount Holyoke College Boston University
VERY COMPETITIVE (SAT 525-575 or ACT 25-27)	
---	Brandeis University Wheaton College Babson College Bentley College <i>and six others</i>
COMPETITIVE (SAT 450-525 or ACT 22-24)	
University of Mass. - Amherst Framingham State College Worcester State College University of Mass. - Dartmouth University of Mass. - Lowell University of Mass. - Boston North Adams State College <i>and two others</i>	Gordon College Northeastern University Eastern Nazarene College Simmons College Endicott College Assumption College <i>and six others</i>
LESS COMPETITIVE (SAT below 450 or ACT below 21)	
Fitchburg State College Massachusetts Maritime Academy Salem State College	Springfield College Western New England College Hebrew College Atlantic Union College <i>and six others</i>
NON COMPETITIVE	
---	Lasell College Saint Hyacinth College Bay Path College

Source: Barron's Educational Guides, *Profiles of American Colleges*.

Table 8**State College Admissions Standards**

	1996	1997	2004
Required GPA	None. Eligibility determined by an index based on class rank and SAT combined score.	2.6 GPA based on grades earned in all college preparatory courses	3.0 GPA based on grades earned in all college preparatory courses
Minimum SAT Score	Sliding scale combined SAT of at least 500 if Class Rank in top 25	None with GPA of at least 2.6. Sliding scale combined SAT or at least 890 if GPA below 2.6	None with GPA of at least 3.0. Sliding scale combined SAT or at least 920 if GPA below 3.0
Minimum Acceptable GPA	None.	2.0 GPA with sliding scale combined SAT of 1050	2.0 GPA with sliding scale combined SAT of 1120
Course Distribution Requirement	16 courses, including two science and three electives	16 courses, including two science and three electives	16 courses, including two science and three electives
Exemptions from Standards	For students educationally disadvantaged due to low income, limited English proficiency, or discrimination	For students able to demonstrate potential for collegiate academic success	For students able to demonstrate potential for collegiate academic success
Limits on Exemptions	No limits	Limited to 15% of new undergraduates	Limited to 10% of new undergraduates

Source: Massachusetts Board of Higher Education (2005).

Notes: The Massachusetts State Colleges are: Bridgewater, Fitchburg, Framingham, Salem, Westfield, and Worcester State Colleges and Massachusetts College of Art, Massachusetts College of Liberal Arts, and Massachusetts Maritime Academy.

Table 9**State College Undergraduate Student Admissions Profile**

	FALL 1997	FALL 1998	FALL 1999	FALL 2000	FALL 2001	FALL 2002	FALL 2003
High School GPA	2.73	2.78	2.84	2.87	2.90	2.91	2.93
SAT	971	980	991	999	1007	1011	1011
Special Admission	11.1%	11.8%	9.0%	10.2%	10.0%	8.1%	8.1%

Source: Massachusetts Board of Higher Education (2005).

Notes: The Massachusetts State Colleges are: Bridgewater, Fitchburg, Framingham, Salem, Westfield, and Worcester State Colleges and Massachusetts College of Art, Massachusetts College of Liberal Arts, and Massachusetts Maritime Academy.

self selection. Stated another way, the students who applied to one of the University of Massachusetts schools were more likely to have high test scores and GPAs and were fairly confident that they were good matches for the school; weaker students would have opted to apply for one of the state colleges or public two-year schools.

Of the students accepted, approximately half decided to attend that public institution as reflected by the yield rate (51%). Nearly four out of ten undergraduates at the University of Massachu-

setts campuses elected to attend the school to which they were accepted. The proportions at the state college and community colleges were 40 and 65 percent, respectively. Some students applied to multiple public colleges, and so if they declined acceptance at one school, they may have decided to enroll at another. Graduate admissions were more selective than undergraduate admissions at the universities. The yields among graduate students were also higher.

In contrast to the Massachusetts public col-

Table 10**Admissions Criteria and Student Body Characteristics—Public Colleges, 2004**

	APPLICATION REQUIREMENTS	GPA OR CLASS RANK OF 1ST YEAR STUDENTS	SAT I SCORES	ACT SCORES
Univ. of Massachusetts Amherst	SAT I or ACT, Essay(s)	76-100% of students had H.S. GPA of 3.0 or higher	Verbal: 520-630 Math: 510-610	
Univ. of Massachusetts Boston	SAT I or ACT, Essay(s)	51-100% of students had H.S. GPA of 2.0-2.99	Verbal: 460-570 Math: 480-570	
Univ. of Massachusetts Dartmouth	SAT I or ACT, Essay(s)	50-75% of students had H.S. GPA of 3.0 or higher	Verbal: 480-570 Math: 490-580	
Univ. of Massachusetts Lowell	SAT I or ACT	50-75% of students had H.S. GPA of 3.0 or higher	Verbal: 490-580 Math: 510-600	19-24
Massachusetts College of Art	SAT I or ACT, Essay(s)	50-75% of students had H.S. GPA of 3.0 or higher	Verbal: 500-610 Math: 500-580	
Massachusetts College of Liberal Arts	SAT I or ACT, Essay(s)		Verbal: 480-600 Math: 450-560	
Bridgewater State College	SAT I or ACT	51-100% of students had H.S. GPA of 2.0-2.99	Verbal: 460-550 Math: 460-560	17-22
Fitchburg State College	SAT I or ACT, Essay(s)	51-100% of students had H.S. GPA of 2.0-2.99	Verbal: 460-560 Math: 460-550	
Framingham State College	SAT I or ACT	50-75% of students had H.S. GPA of 3.0 or higher	Verbal: 480-570 Math: 470-570	
Salem State College	SAT I or ACT	51-100% of students had H.S. GPA of 2.0-2.99	Verbal: 420-530 Math: 420-520	19-21
Worcester State College		51-100% of students had H.S. GPA of 2.0-2.99	Verbal: 450-540 Math: 450-540	17-23
Westfield State College	SAT I or ACT	51-100% of students had H.S. GPA of 2.0-2.99	Verbal: 470-550 Math: 470-550	

Source: College Board.com. College Search function. Retrieved from <http://apps.collegeboard.com/search/index.jsp>.

Table 11**Admissions at Massachusetts' Public Colleges, Fall 2003**

	LEVEL	APPLICANTS	PERCENT ACCEPTED	NEW STUDENTS	YIELD RATE
University of Massachusetts	Undergraduate	37,388	75.2	10,805	38.4%
	Graduate	15,866	37.2	2,779	47.1%
	Total	53,254	63.9	13,584	39.9%
State Colleges	Undergraduate	33,327	67.7	9,008	39.9%
	Graduate	2,657	74.8	1,398	70.4%
	Total	35,984	68.2	10,406	42.4%
Community Colleges	Undergraduate	56,573	78.9	28,791	64.5%
System Total	Undergraduate	127,288	74.9	48,604	51.0%
	Graduate	18,523	42.6	4,177	53.0%
	Total	145,811	70.8	52,781	51.2%

Source: Massachusetts Board of Higher Education (2004b).

Notes: Figures include residents as well as students from outside of Massachusetts. Enrollment numbers for Worcester/Medical are not included in the University Segmental total. Graduate enrollment figures for Worcester/Medical also include First Professional Degree students. See Appendix Table 1 for the complete breakdown by institution.

Table 12**Admissions Criteria and Student Body Characteristics – Select Private Colleges in Massachusetts, 2004**

	APPLICATION REQUIREMENTS	GPA OR CLASS RANK OF 1ST YEAR STUDENTS	SAT I SCORES	ACT SCORE	PERCENT ACCEPTED
Bentley College	SAT I or ACT, Essay(s)	37% in top 10th of graduating class; 72% in top quarter of graduating class	Verbal: 530-610 Math: 570-660	22-28	46
Boston College	SAT Reasoning and SAT Subject or ACT, Essay(s)		Verbal: 600-690 Math: 630-710		31
Boston University	SAT I or ACT, Essay(s)	76-100% of students had H.S. GPA of 3.0 or higher	Verbal: 600-690 Math: 620-690	26-30	52
Brandeis University	SAT Reasoning and SAT Subject or ACT, Essay(s)	76-100% of students had H.S. GPA of 3.0 or higher	Verbal: 620-720 Math: 630-720	28-33	44
Emerson College	SAT I or ACT, Essay(s)	76-100% of students had H.S. GPA of 3.0 or higher	Verbal: 570-660 Math: 540-640	24-28	48
Harvard College	SAT Subject, SAT I or ACT, Interview, Essay(s)		Verbal: 700-790 Math: 700-800	31-34	10
Mass. Institute of Technology	SAT I, SAT Subject or ACT, Essay(s)	76-100% of students had H.S. GPA of 3.0 or higher	Verbal: 680-760 Math: 730-800	30-34	16
Northeastern University	SAT I or ACT, Essay(s)	35% in top 10th of graduating class; 70% in top quarter of graduating class	Verbal: 550-640 Math: 570-660	23-28	47
Suffolk University	SAT I or ACT	51-100% of students had H.S. GPA of 2.0-2.99	Verbal: 470-550 Math: 470-540	18-23	82
Tufts University	SAT Reasoning and SAT Subject or ACT, Essay(s)	70% in top 10th of graduating class; 93% in top quarter of graduating class	Verbal: 610-700 Math: 640-720	27-31	26
Wentworth Institute of Technology	SAT I or ACT				70
Worcester Polytechnic Institute	SAT Reasoning and SAT Subject or ACT, Essay(s)	76-100% of students had H.S. GPA of 3.0 or higher	Verbal: 560-660 Math: 620-710	24-29	71

Source: College Board.com. College Search function. Retrieved from <http://apps.collegeboard.com/search/index.jsp>.

leges and universities, private schools within the state tend to have more admissions requirements. As shown in Table 12, essays and additional SAT tests such as the Reasoning exam and a subject test are often required by private schools. Some of the private colleges also require an interview.⁶ This reflects the selective nature of some of the private schools in Massachusetts. As summarized in Figure 4, several of the colleges accept students who predominantly have high school GPAs of at least 3.0. Several also

have SAT score ranges in the 600s and 700s. These schools are able to recruit such a talented pool of students because they are national in stature. In fact, schools such as Harvard University and the Massachusetts Institute of Technology (MIT) accept only 10 and 16 percent of applicants, respectively. However, it is important to remember that these schools draw the majority of their students from out-of-state.

6. The SAT reasoning exam is a three-hour test measuring critical reading, mathematical competencies, and writing skills, with each section scored on a 200-800 point scale. The SAT subject tests are one-hour, primarily multiple-choice question tests in such areas as chemistry, French, and biology; they are also scored on a 200-800 point scale.

The Choices of Massachusetts High School Graduates

As families and students prepare to start college, there are a number of choices they face about where to attend college. The next section focuses exclusively on the enrollment patterns of Massachusetts residents. Given the array of options available within their home state, the choices Massachusetts students make about where to attend college differ in many respects in comparison to students from other states. As shown in Table 13, compared with their national peers, Massachusetts high school graduates are more likely to attend a four-year college, more likely to attend a private college, and more likely to choose an out-of-state college. As we will see in a later chapter, this has important implications for the affordability of college.

In 2004, more than two-thirds of Massachusetts high school graduates who went on to higher education attended four-year colleges (67 percent). In comparison, 57 percent of freshmen students did so nationally. Over the last 10 years, the share of Massachusetts freshmen stu-

dents attending a four-year college has increased 13 percent, while nationally it increased only 8 percent.

Massachusetts freshman students are also significantly more likely than their peers nationally to attend private colleges. More than four out of every ten freshman from Massachusetts (43.4 percent) chose to attend a private college in 2004. Nationally, only 26.4 percent of freshman made the same choice. Nationally, there is an increasing trend toward attending private colleges.

FRESHMEN FROM MASSACHUSETTS ARE MUCH MORE LIKELY TO ATTEND A PRIVATE COLLEGE

Over the last ten years, the share of students attending a private school increased 21 percent while the share of Massachusetts students doing so has remained relatively flat.

Massachusetts freshmen students are nearly twice as likely as their national peers to choose an out-of-state college. In 2004, 29 percent of Massachusetts freshmen attended an out-of-

Table 13

Enrollment Patterns of First-time Freshman Students who are State Residents

	1994	1996	1998	2000	2002	2004	PERCENTAGE CHANGE FROM 1994 TO 2004
Percent of Freshmen Attending a Four-Year College							
Massachusetts	59.6	68.8	66.6	68.3	67.5	67.2	12.8%
United States	52.6	53.4	57.0	55.9	54.8	56.8	8.0%
Percent of Freshmen Attending Private Colleges							
Massachusetts	42.0	46.0	44.2	44.0	43.0	43.4	3.3%
United States	21.7	21.8	24.8	25.1	25.0	26.4	21.2%
Percent of Freshman Attending Out-of-State Colleges							
Massachusetts	23.2	26.1	26.9	27.6	28.4	28.5	22.8%
United States	14.8	14.8	15.5	15.3	15.1	15.8	6.7%

Source: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>).

Notes: The universe of schools differs slightly from year to year due to openings, closures, and incomplete reporting, particularly among private two-year colleges. However, this is such a small part of the sample and so is unlikely to affect the patterns shown above.

state college, compared with only 15.8 percent of students nationally. Since 1994, the share of Massachusetts students attending out-of-state colleges has increased much more rapidly than the share nationally (23 percent versus 7 percent). The vast majority of Massachusetts freshmen stay in the region, though. As discussed below, in 2004, 85 percent of the freshmen from Massachusetts attended college in New England.

The Top Destinations for College Freshmen who are Massachusetts Residents

Although private colleges are popular in Massachusetts, the most common choice for freshmen who are residents of Massachusetts are public institutions in the state. As shown in Table 14, in 2004, nearly half of all freshmen from Massachusetts (48.9 percent) went to an in-state public college. The share of students attending Massachusetts public colleges, however, has declined slightly from 51.7 percent to 48.9 percent over the last ten years. While these figures focus on freshmen students enrolling in college

for the first time (most times, shortly after high school graduation), additional thousands of older and continuing students choose public colleges in Massachusetts. This makes the proportion of Massachusetts residents choosing in-state public colleges even larger.

Public community colleges are the most common choice. Nearly one-third of all freshmen from Massachusetts (30.2 percent) attended a Massachusetts community college, while 18.7 percent attended a Massachusetts public four-year college. Of the top ten destinations for Massachusetts freshmen students, seven are community colleges (Table 15). UMass Amherst is the most common four-year college. In 2004, 3,216 freshmen from Massachusetts attended the state's flagship university.

Table 16 displays the top ten destinations for first-time college freshmen from Massachusetts. All of the top ten four-year colleges are in Massachusetts and six of them are public schools. Of the top ten private choices, nine destinations are in Massachusetts. Northeastern University is

Table 14

Destinations for First-time Freshmen Students who are Massachusetts Residents, 1994 and 2004

	1994		2004	
	NUMBER	SHARE	NUMBER	SHARE
Total Massachusetts Freshmen	55,954		61,870	
In-State	42,946	76.8%	44,207	71.5%
Public Four-year	10,525	18.8%	11,579	18.7%
Public Two-year	18,381	32.9%	18,686	30.2%
Private Four-year	10,777	19.3%	13,036	21.1%
Private Two-year	3,263	5.8%	906	1.5%
Out-of-State	13,008	23.2%	17,663	28.5%
Public Four-year	3,167	5.7%	4,307	7.0%
Public Two-year	404	0.7%	476	0.8%
Private Four-year	8,899	15.9%	12,652	20.4%
Private Two-year	538	1.0%	228	0.4%

Source: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>).

Table 15

Top Higher Education Destinations for Massachusetts First-time Freshmen Students, 2004

	STATE
UMass Amherst	MA
Middlesex Community College	MA
Massasoit Community College	MA
Bristol Community College	MA
Holyoke Community College	MA
North Shore Community College	MA
Bunker Hill Community College	MA
UMass Dartmouth	MA
Massachusetts Bay Community College	MA
Bridgewater State College	MA

Source: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>).

Table 16**Top Destinations for First-time Freshman Students who are Massachusetts Residents, Fall 2004**

TOP FOUR-YEAR COLLEGES	TOP PRIVATE COLLEGES	TOP OUT-OF-STATE COLLEGES
1 UMass Amherst	Northeastern University	Univ. of New Hampshire (NH)
2 UMass Dartmouth	Boston University	Johnson & Wales University (RI)
3 Bridgewater State College	Suffolk University	Providence College (RI)
4 Salem State College	Boston College	Roger Williams University (RI)
5 Northeastern University	Johnson & Wales Univ. (RI)	University of Vermont (VT)
6 UMass Lowell	Wentworth Inst. of Technology	University of Connecticut (CT)
7 Boston University	Assumption College	Bryant University (RI)
8 Westfield State College	Bentley College	University of Rhode Island (RI)
9 Suffolk University	Becker College	Syracuse University (NY)
10 Boston College	Curry College	Plymouth State University (NH)

Source: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>).

the most common private school choice. In 2004, Northeastern was followed by Boston University, Suffolk University, and Boston College. The University of New Hampshire was the most common destination for Massachusetts high school graduates traveling out of state, with nearly 600 Massachusetts freshmen attending the school in 2004. Of the top ten out-of-state colleges, half are private colleges. In fact, nearly three-quarters of Massachusetts freshmen students (73 percent) who leave the state for college go to private colleges.

College Access for Low-Income and Minority Students from Massachusetts

Access to higher education for individuals from all economic and racial backgrounds is becoming more important given the substantial return to higher education, the link between postsecondary training and the economy, and the changing demographics of the country. According to *Measuring Up 2004*, a state-by-state report card on higher education by the National Center for Public Policy and Higher Education, Massachu-

setts' students have a 52 percent chance of attending college by the age of 19 (This includes students who do and do not complete a high school degree). This is among the highest in the nation. Furthermore, 36 percent of students age 18 to 24 are enrolled in college. Nationally, students

UMASS AMHERST IS THE TOP DESTINATION FOR MASSACHUSETTS FRESHMEN STUDENTS

have a 39 percent chance of attending college by the age of 19, and 34 percent of students age 18 to 24 are enrolled in college. Among working adults age 25 to 49 in Massachusetts, 4.4 percent are enrolled part-time in some type of postsecondary education. On the national level, 3.6 percent of working adults age 24 to 49 are enrolled part-time in some type of postsecondary education.

Unfortunately, it is difficult to get a precise sense of the percentage of students from low-income backgrounds that attend college. Ludwick and Mortenson (2003) provide one estimate by

Table 17**Percentage of Enrollment Made Up of Minority Students in Massachusetts, Fall 2002**

	STUDENTS	PERCENTAGE OF COLLEGE STUDENTS	PERCENTAGE OF STUDENTS NATIONALLY	PERCENTAGE OF POPULATION AGE 18-24	% CHANGE IN ENROLLMENT 1992-2002
White	262,869	60.9	64.2	71	-23
Black	26,001	6.0	11.0	7	27
Hispanic or Latino	20,741	4.8	9.1	10	38
Asian	25,545	5.9	5.9	6	28
Native American	1,585	0.4	0.9	0.3	-0.7
Race Unknown	65,945	15.3	NA	NA	39

Source: New England Board of Higher Education (2004) analysis of U.S. Department of Education data.

Notes: Table does not include enrollment at military academies. African-American, Asian, Native American, and White totals reflect the non-Hispanic population. This does not include the category of non-resident alien.

comparing the number of low-income students found in grades 4 to 9 as measured by the proportion in free or reduced-price lunch to the number of recipients of the Pell Grant, a need-based federal aid program for low-income college

FRESHMEN FROM MASSACHUSETTS ARE MUCH MORE LIKELY TO ATTEND AN OUT-OF-STATE COLLEGE

students. While the result is only an approximation of the percentage of low-income students who attend college, it gives some sense of the degree to which poor students within the state have the opportunity to get postsecondary training. Ludwick and Mortenson found that the low-income college participation rate in Massachusetts is about 32 percent. Compared to other states, this ranks Massachusetts as having the ninth highest rate, but one out of three still leaves room for much improvement. As noted above, the general rate of attendance by age 19 is 52 percent in Massachusetts.

Table 17 displays enrollment trends by racial and ethnic groups. Similar to differences noted earlier in terms of population, minority students make up a smaller percentage of college students

in Massachusetts than found nationwide. Black and Latino students are also less likely to attend college than other groups as shown by comparing the percentage of each group in the population age 18 to 24 to their percentage among college students. Minority enrollment in Massachusetts has grown during the last ten years. While the proportion of white students fell 23 percent from 1992 to 2002, the percentage of Black, Latino, and Asian students increased by 27, 38, and 28 percent, respectively. However, these numbers become less certain as students increasingly elect not to reveal their race or ethnicity on their applications.

Enrollment in Massachusetts Institutions: Residents and Out-of-State Students

The rest of this chapter focuses on enrollment at Massachusetts colleges. Because information was not available with separate numbers for students who are and are not residents of Massachusetts, the figures include both in-state and out-of-state students. One should keep in mind that the public institutions are largely made up of students from the state while the proportion of in-state students at the private colleges varies a great deal.

Given the composition of the types of col-

Table 18**Undergraduate Enrollment in Massachusetts Institutions and Nationwide, Fall 2003**

	MASSACHUSETTS		UNITED STATES	
	NUMBER	PERCENT	NUMBER	PERCENT
Sector of Institution				
Public Four-Year	80,519	24.69%	5,162,656	36.21%
Public Two-Year	85,029	26.07%	6,270,199	43.98%
Private Four-Year	157,928	48.42%	2,565,223	17.99%
Private Two-Year	2,677	0.82%	258,999	1.82%
Attendance Status				
Full-Time	235,078	78.9%	9,031,335	69.9%
Part-Time	62,906	21.1%	3,889,588	30.1%
Demographics				
Female	171,299	57.5%	7,404,172	57.3%
Minority	58,614	19.7%	3,935,592	30.5%
International	10,740	3.6%	284,170	2.2%

Source: Enrollment by sector: Digest of Education Statistics (2004). Data are for four-year and two-year degree-granting institutions that participated in Title IV federal financial aid programs. Attendance Status and Demographic Patterns: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>). Enrollment by sector are for Fall 2003 and are not perfectly comparable to the IPEDS data, which are Fall 2004.

Table 19**Massachusetts Institutions with the Largest Undergraduate Enrollments, Fall 2003**

	FULL-TIME	PART-TIME	TOTAL
1 Northeastern University	14,144	4,850	18,994
2 University of Massachusetts – Amherst	17,160	899	18,059
3 Boston University	15,521	432	15,953
4 Boston College	9,164	526	9,690
5 University of Massachusetts – Boston	5,353	2,760	8,113
6 Harvard University	6,822	228	7,050
7 Bridgewater State College	5,829	1,073	6,902
8 Middlesex Community College	3,558	3,332	6,890
9 University of Massachusetts – Lowell	5,543	1,248	6,791
10 University of Massachusetts – Dartmouth	5,948	763	6,711

Source: New England Board of Higher Education (NEBHE) Annual Survey of New England Colleges and Universities (Summer 2003) used in NEBHE (2004).

leges in Massachusetts, it is not surprising that nearly half of students who attend within the state (residents and non-residents) enroll at a private four-year institution. As shown in Table 18, nearly one-quarter attend public four-year institutions. Graduate education is also very strong in Massachusetts; it accounts for approximately one-fifth of total enrollment overall. The

prominence of private colleges and universities is also demonstrated when examining the ten largest schools in Massachusetts in terms of enrollment as shown in Table 19. Four of the top ten schools in size are private institutions. While the private institutions tend to enroll students who attend full-time, the public institutions accommodate a greater proportion of part-

Table 20**Percentage of Students at In-State Institutions Who Come From Out-of-State**

	1994	1996	1998	2000	2002	2004
Massachusetts	34.5	36.7	38.1	38.3	37.1	36.8
United States	16.3	16.2	17.2	16.8	16.4	17.0

Source: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>).

Note: The universe of schools differs slightly from year to year due to openings, closures, and incomplete reporting, particularly among private two-year colleges. However, this is such a small part of the sample and so is unlikely to affect the patterns shown above.

time students.

Educational attainment in Massachusetts is tied in important ways to the health of its private colleges and universities, and so this sector cannot be ignored. However, the strong role of private institutions in Massachusetts may also divert attention from the significant contributions of public colleges and universities in the state. As noted above, the majority of Massachusetts residents attend public colleges with the state. In addition, the changing racial and ethnic composition of Massachusetts students suggests that the public colleges and universities will grow in importance in the coming years. Given the backgrounds of these new students, they are most likely to attempt to access higher education through the public system, and their

MASSACHUSETTS HAD A NET GAIN OF NEARLY 8,000 STUDENTS

success will dictate whether Massachusetts continues to be a leader in educational attainment. A later section of this report discusses the importance of state support in maintaining access and affordability among the public colleges and universities of Massachusetts.

The relatively large private sector in Massachusetts is also explained largely by the choices of students who are not from Massachusetts.

Among the 25,727 freshmen who are from out-of-state, 22,979 or approximately nine out of ten attended a private four-year college. In general, one of Massachusetts' roles in higher education is to serve students nationwide. As shown in Table 20, in 2004, 36.8 percent of freshmen at Massachusetts colleges came from out-of-state, meaning that only 63.2 percent of freshmen attending colleges within the state were Massachusetts residents. In comparison, 83 percent of freshmen nationally attended college within their home state. While Massachusetts does have proportionally more out-of-state students than the national norm, only 10 percent of non-residents attended a Massachusetts public college or university, suggesting that only a small fraction of state tax dollars go to serving out-of-state students. Recall also that students from Massachusetts are more likely than their peers to leave their home state to attend college and that those attending public schools in other states are benefiting from the taxpayers of the host state.

In terms of net enrollment, Massachusetts has long accepted more out-of-state students into its colleges than it loses in residents attending college out-of-state. According to the Department of Education's IPEDS Residence and Migration data, during the 2004-05 school year, Massachusetts had a net gain of nearly 8,000 students. As noted above, most of the out-of-state students are at private institutions.

Enrollment in Massachusetts by Institution

In Fall 2004, 43,700 undergraduate students were enrolled at one of the UMass campuses. Taking into account that some of these students are part-time, this figure translates into 37,600 full-time equivalent (FTE) students. Graduate enrollment at the institutions added another 8,500 FTE students. Since 1995, undergraduate

enrollment in the UMass system has increased by 4 percent while graduate enrollment has declined by 1 percent. Full-time equivalent enrollment patterns at all public four-year colleges in Massachusetts are shown in Table 21. The University of Massachusetts, Amherst is the largest of the UMass schools and is considered the flagship institution. Undergraduate enrollment at

Table 21

Full-Time Equivalent Enrollment at Massachusetts Public Four-year Colleges

INSTITUTION	LEVEL	FALL 1995	FALL 2004	GROWTH FROM 1995 TO 2004
University Total	Undergraduate	36,161	37,598	4.0%
	Graduate	8,619	8,494	-1.4%
UMass Amherst	Undergraduate	17,860	18,115	1.4%
	Graduate	4,626	4,295	-7.1%
UMass Boston	Undergraduate	6,645	6,479	-2.5%
	Graduate	1,791	1,981	10.6%
UMass Dartmouth	Undergraduate	4,865	6,395	31.4%
	Graduate	447	687	53.6%
UMass Lowell	Undergraduate	6,791	6,611	-2.7%
	Graduate	1,755	1,531	-12.8%
State College Total	Undergraduate	28,315	29,267	3.4%
	Graduate	2,602	4,325	66.2%
Bridgewater State College	Undergraduate	5,627	6,503	15.6%
	Graduate	580	896	54.4%
Fitchburg State College	Undergraduate	3,054	2,942	-3.7%
	Graduate	541	680	25.7%
Framingham State College	Undergraduate	3,172	3,356	5.8%
	Graduate	252	851	237.9%
Mass College of Art	Undergraduate	1,375	1,484	7.9%
	Graduate	97	108	11.6%
Mass College of Liberal Arts	Undergraduate	1,357	1,274	-6.1%
	Graduate	40	207	421.9%
Mass Maritime Academy	Undergraduate	909	964	6.0%
	Graduate	0	20	----
Salem State College	Undergraduate	6,097	5,406	-11.3%
	Graduate	624	1,016	62.9%
Westfield State College	Undergraduate	3,324	3,844	15.6%
	Graduate	267	247	-7.6%
Worcester State College	Undergraduate	3,400	3,494	2.8%
	Graduate	202	300	48.8%

Source: Calculations by the Massachusetts Board of Higher Education using the HEIRS Student File.

Table 22**Full-Time Equivalent Enrollment at Massachusetts' Public Two-year Colleges**

INSTITUTION	FALL 1995	FALL 2004	GROWTH FROM 1995 TO 2004
Community College Total	38,854	48,894	25.8%
Berkshire Community College	1,314	1,378	4.9%
Bristol Community College	2,767	4,094	48.0%
Bunker Hill Community College	2,421	4,341	79.3%
Cape Cod Community College	1,987	2,227	12.1%
Greenfield Community College	1,215	1,445	19.0%
Holyoke Community College	3,126	4,059	29.9%
Massachusetts Bay Community College	3,299	3,287	-0.4%
Massasoit Community College	3,421	4,143	21.1%
Middlesex Community College	3,521	4,796	36.2%
Mount Wachusett Community College	1,641	2,506	52.7%
North Shore Community College	2,975	4,049	36.1%
Northern Essex Community College	3,383	3,604	6.5%
Quinsigamond Community College	2,623	3,708	41.4%
Roxbury Community College	1,595	1,369	-14.1%
Springfield Technical Community College	3,567	3,888	9.0%

Source: Calculations by the Massachusetts Board of Higher Education using the HEIRS Student File.

UMass Amherst varied during period, but never strayed far from the Fall 1995 level of 17,900. By Fall 2004 it had increased 1 percent. Graduate enrollment during the period declined by 7 percent. Graduate enrollment dropped every year through 2001 but has since recovered slightly.

The state college system served another 29,300 FTE students in Fall 2004. There are

but dramatic growth in graduate enrollment (66 percent).

In total number, more students are served by the Massachusetts' public two-year system than either the university or state college system. As displayed in Table 22, nearly 49,000 FTE students attended a community college in Fall 2004. Many more students attend part-time at community colleges than the state colleges or universities. In Fall 2004, while there were fewer than 50,000 FTE students, 81,400 actual students were enrolled at one of the community colleges in Massachusetts. Several of the community colleges serve over 6,000 students including Bristol, Bunker Hill, Holyoke, Massasoit, Middlesex, North Shore, Northern Essex, Quinsigamond, and Springfield. Since Fall 1995, the community college system has experienced substantial growth. Enrollment for the system has increased by 26 percent. Bunker Hill and Mount Wachu-

IN TOTAL, MORE STUDENTS ARE SERVED BY THE STATE'S COMMUNITY COLLEGES

large variations in the sizes of the student bodies. Bridgewater and Salem State Colleges enroll the most students. However, while Bridgewater experienced 16 percent growth in FTE enrollment between Fall 1995 and Fall 2004, Salem State experienced an 11 percent drop in enrollment. Overall, the state college system experienced mild growth in undergraduate enrollment (3 percent)

Table 23**Enrollment by Student Characteristics at Massachusetts Public Colleges, Fall 2003**

INSTITUTION	LEVEL	PERCENT FEMALE	PERCENT MINORITY	PERCENT NON-RESIDENT ALIEN	TOTAL ENROLLMENT
University of Massachusetts	Undergraduate	50.5	20.6	2.1	44,733
	Graduate	53.7	16.5	19.8	11,961
	Total	51.1	15.1	5.9	56,694
State Colleges	Undergraduate	59.4	10.3	2.2	34,700
	Graduate	73.8	6.6	1.7	10,341
	Total	62.7	8.3	2.1	45,041
Community Colleges	Undergraduate	61.6	26.2	1.7	81,996
System Total	Undergraduate	58.1	21.3	1.9	161,429
	Graduate	63.0	11.6	25.4	22,302
	Total	58.7	17.4	4.8	183,731

Source: Massachusetts Board of Higher Education (2004b).

Table 24**Full-Time Equivalent Enrollment at Massachusetts Private Colleges**

INSTITUTION	FALL 1995	FALL 2004	GROWTH FROM 1995 TO 2004
Private College Total	138,488	149,937	8.3%
Four-Year Colleges	128,981	146,573	13.6%
Two-Year Colleges	9,507	3,364	-64.6%

Source: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>).

sett have both experienced growth in excess of 50 percent. Roxbury was the only college to experience substantial loss in enrollment during the period, down 14 percent to 1,369 FTE students.

The characteristics of students in the different segments of public institutions vary. Table 23 displays the percent of the student bodies that were female, minority, and non-resident alien in Fall 2003. While the gender balance was nearly equal at the University of Massachusetts schools, more women could be found at the state and community colleges at both the undergraduate and graduate levels. The proportion of students from minority groups was highest at the universities and community colleges. One out of five students at the University of Massachusetts schools and one out of four at the public two-year

colleges were from a minority group. Non-resident alien students were most likely to be found in a graduate program at one of the universities.

Table 24 focuses on private colleges in Massachusetts. In Fall 2004, 163,717 students attended private institutions. The overwhelming majority (86%) were full-time students. Adjusting for part-time students, FTE enrollment in private institutions in Fall 2004 was 149,900. Enrollment at private schools was up 8.3 percent since 1994, though the share at two-year institutions had declined.

Table 25 provides select characteristics of the students at the state's 30 largest private colleges. The majority of first-time freshman at private colleges in Massachusetts are from not from Massachusetts. In 2004, 62.2 percent of

Table 25**Selected Characteristics of the 30 Largest Private Institutions in Massachusetts, 2004**

	TOTAL UNDERGRADUATES	OUT-OF-STATE SHARE OF 1ST-TIME FRESHMEN	PERCENTAGE OF UNDERGRADUATES INTERNATIONAL	MINORITY	PART-TIME
Northeastern University	18,571	65.5%	5.0%	16.9%	21.3%
Boston University	15,953	80.0%	6.6%	21.3%	2.2%
Boston College	9,480	71.0%	1.9%	22.0%	2.2%
Harvard University	6,947	87.2%	8.6%	32.8%	3.2%
Tufts University	4,887	77.1%	6.4%	27.9%	0.8%
Bentley College	4,285	55.2%	8.2%	14.7%	7.9%
Suffolk University	4,244	30.0%	9.7%	15.0%	12.7%
MIT	4,132	91.6%	7.4%	46.9%	1.3%
Berklee College Of Music	3,882	86.8%	23.6%	13.9%	8.4%
Springfield College	3,621	71.0%	0.2%	30.8%	12.0%
Wentworth Inst. Of Technology	3,597	44.2%	3.0%	12.3%	15.3%
Brandeis University	3,158	76.9%	6.9%	13.1%	0.4%
Emerson College	3,076	78.9%	3.0%	12.0%	3.3%
Western New England College	3,020	58.3%	0.2%	8.7%	20.1%
WPI	2,805	54.7%	4.6%	12.0%	1.6%
College of the Holy Cross	2,718	60.9%	1.0%	12.9%	0.0%
Smith College	2,692	84.7%	6.7%	22.5%	1.4%
Curry College	2,464	29.9%	1.1%	11.3%	24.4%
Stonehill College	2,401	45.4%	0.6%	9.1%	7.5%
Assumption College	2,339	31.8%	0.3%	4.1%	8.0%
Merrimack College	2,330	31.9%	1.3%	4.5%	13.3%
Wellesley College	2,195	85.3%	8.0%	41.1%	1.2%
Mount Holyoke College	2,120	79.4%	15.2%	20.5%	2.0%
Clark University	2,090	64.1%	7.2%	9.9%	3.1%
Emmanuel College	1,947	42.1%	2.8%	16.0%	31.7%
Williams College	1,931	86.0%	5.6%	27.0%	0.0%
Endicott College	1,796	48.6%	4.6%	4.1%	8.6%
Simmons College	1,765	54.4%	1.8%	17.7%	10.4%
Babson College	1,697	73.2%	17.2%	16.4%	0.0%
Amherst College	1,640	89.2%	6.2%	29.3%	0.0%

Source: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>).

freshman at private schools were from another state or country. In terms of their national and international draw, there are significant differences between private schools. At schools such as Boston University, Harvard College, MIT, Smith College, Wellesley College and Williams College, over 80% of their students come from

outside of Massachusetts. At other schools such as Merrimack College and Suffolk University, less than one-third of students come from outside the state. Finally, while many of the schools offer on campus housing to significant proportions of their students, some tend to be less residential in nature.

III. OUTCOMES IN HIGHER EDUCATION AND THE RETURNS TO COLLEGE

A new focus within higher education is measuring how well students persist through college and whether they graduate with a degree. There are growing concerns nationwide that large numbers of students do not finish their college degrees. In addition, there has been recent focus on what students actually learn in college. This chapter reviews information on student outcomes nationally and at Massachusetts colleges and universities. Additionally, I note some of the returns associated with a college education. However, first the report discusses why measuring persistence and graduation rates can often be difficult.

The Difficulty in Measuring Student Outcomes

Persistence and graduation rates are very difficult to measure for several reasons. First, due to student mobility, it is nearly impossible for most schools to track students over time. Large numbers of students attend multiple institutions throughout their college experience. Often they transfer from one college to another, but they may also elect to take time off and then reemerge at a different institution. Because schools usually do not share data due to issues of privacy and capacity, colleges are not able to track a cohort across schools. Over the course of six years, the conventional time frame used to determine a school's graduation rate, a student could easily vanish. Therefore, even if the student completes a degree, the first school most likely does not have a way to witness that fact. As a result, the first school will not be able to count that student's completion.

The tracking of students across schools can vary between states, but generally if a student

leaves one state to attend college in another, the original state has no mechanism to ascertain what happened to the student, and students are in no way obligated to tell any college or university that they have attended what their future plans will be. In late 2004, Congress contemplated setting up a national clearinghouse of college students based on Social Security numbers in order to better track student persistence. Such a database immediately raises concerns over expense, maintenance, and privacy issues, however, and it remains to be seen if any type of national tracking will ever be implemented. How states deal with transfer students also varies considerably; some states will accept transfer credits while others will not, and some states, including California, have an elaborate system in place in order to better facilitate transfer from two-year to four-year institutions.

Students transfer between schools for a myriad of reasons, and many of these reasons may have nothing to do with the school itself. Individuals may decide to delay their education for family reasons or may change their course of study and elect to go to a different school with a particularly strong department in their new field of interest. Additionally, a student may have initially enrolled at their first postsecondary institution with the intent to transfer. For example, students sometimes will attend a less selective school to boost their GPA and then apply to transfer to a more competitive school once they feel confident about their educational record.

Deciphering student intent is another problem when determining persistence and graduation rates. It is unclear whether the intent of students who enter a college is to complete a degree.

This is especially true at community colleges. Many individuals intend to only pursue particular courses or a certificate, and so it is difficult to judge the schools according to longer-term outcomes such as degree completion. For this reason it is also hard to measure school success with a single indicator.

It is likewise important to note that persistence and graduation rates should only be compared across like institutions with similar student bodies. While an elite private university may have a graduation rate of 95 percent, meaning that 95 out of 100 students graduate within six years, that rate would likely differ significantly if the student body reflected that found at a community college. In addition, individual background

can get a sense of the quality of education provided by colleges and universities. For schools that are not performing well, the public must decide whether additional resources and/or incentives are needed to improve student outcomes.

National Trends in Persistence and Graduation

One helpful source on graduation rates is the National Collegiate Athletic Association (NCAA). Not all colleges are in the NCAA: membership is at 1,250 member colleges and universities, athletic conferences, and non-profit sports groups affiliated with amateur athletics, with 1,024 of those organizations currently active. The NCAA divides colleges into three divisions based on the size and breadth of their athletic programs. To qualify for Division I, member institutions have to sponsor at least seven sports for men and seven for women (or six for men and eight for women) with two team sports for each gender. Schools must also meet minimum financial aid awards for their athletics program, and there are maximum financial aid awards for each sport that a Division I school cannot exceed. In Division II, institutions have to sponsor at least four sports for men and four for women, with two team sports for each gender. There are maximum financial aid awards for each sport that a Division II school must not exceed. In Division III, institutions have to sponsor at least five sports for men and five for women, with two team sports for each gender. Student-athletes receive no financial aid related to their athletic ability.

Table 26 displays the six-year graduation rates for undergraduate students who entered in 1996 and were enrolled in a full-time program of study for a degree. The first three columns of numbers give the aggregate numbers for Division I schools. Overall, early six out of ten stu-

BY COMPARING SIMILAR INSTITUTIONS, ONE CAN GET A SENSE OF THE QUALITY OF EDUCATION PROVIDED

and preparation are important factors in determining the success of a student, and so one would expect that the well-prepared, highly resourced students at a selective private university would be more likely to graduate from college than less prepared students even if they attended the same college. The task of supporting first-generation, low-income students is much more difficult than helping high-income students whose parents have graduate degrees, and this difference should be taken into account.

While most researchers will agree that persistence and graduation rates do not give us a fully accurate measure of the effectiveness of colleges and universities, they can still be helpful indicators. Clearly, institutions have some control over the services they provide students, and the quality of these services affect student success. By comparing similar institutions, one

Table 26**NCAA Six-Year Graduation Rate (1996-97 cohort)**

	DIVISION I (N = 327)	DIVISION I PUBLIC (N = 214)	DIVISION I PRIVATE (N = 113)	DIVISION I-A (N = 117)	DIVISION I-AA (N = 123)	DIVISION I-AAA (N = 87)	DIVISION II (N = 281)	DIVISION III (N = 424)
Total	59	55	73	63	55	53	45	62
White	62	58	76	64	60	55	47	64
Black	41	39	56	48	38	36	33	46
Hispanic	50	46	67	54	49	44	41	48
Asian	66	63	79	68	68	62	56	67
Native American	43	40	61	45	40	40	29	46
Non-Resident Alien	61	56	71	62	64	56	47	64
Other	60	54	70	61	59	60	44	62

Source: 2003 NCAA Graduation-Rates Report based on data provided by the institution in compliance with NCAA Bylaw 30.1 and the Federal Student Right-to-Know and Campus Security Act. The rates reflect all undergraduate students who entered in 1996 and were enrolled in a full-time program of study for a degree.

dents graduated from these institutions within six years. However, there was a sharp difference between the public and private sector. Students were much more likely to graduate from a private college or university than a public one. Smaller schools, in Division II and III had graduation rates of 45 and 62 percent, respectively. Division II schools had the lowest graduation rate of the groups.

There were important differences in graduation rates among racial and ethnic groups. Asian students had the highest likelihood of graduation (66 percent). Graduation rates were lowest for Black or African-American students. Less than half completed a college degree within six years except at private, Division I colleges and universities. Similar racial differences also exist at Division II and III schools. In general, foreign students had higher graduation rates than racial minorities.

For many, these numbers appear shockingly low, and they help put state figures in perspective. In fact, they lend credence to the saying: “Look to your left. Look to your right. One of these people may not be here by graduation, and it could be you.” Clearly, persistence and

graduation are national concerns. All schools and states need to consider ways to boost student performance. This might include encouraging additional academic preparation in high school, providing financial aid, and enhancing student support services.

Persistence and Graduation at Massachusetts Institutions

In comparison to other states, Massachusetts colleges and universities do well in terms of retention and degree completion. As shown in Table 27, on average, 83.4 percent of freshman students in Massachusetts return for their sophomore year. The national average is only 74 percent. Likewise, the number of bachelor’s degrees awarded as a percentage of high school graduates six years earlier also exceeds the national average (74 compared to 51 percent). Finally, Massachusetts awards more two-year, Associate’s degrees than the national average when controlling for the number of high school graduates three years earlier. While these figures suggest that Massachusetts is comparatively doing a better job, it is important to remember that many students within the state are attending well-

Table 27**Student Persistence and Degree Completion, 2002**

	MASSACHUSETTS	NATIONAL AVERAGE
Percent of Freshmen Returning the Following Fall Semester	83.5	73.6
Bachelor's Degrees Awarded as a Percent of HS Graduates 6 Years Earlier	73.6	50.8
Associate's Degrees Awarded as a Percent of HS Graduates 3 Years Earlier	22.7	21.1

Source: The retention rate information is from the National Center for Public Policy and Higher Education from the ACT "Institutional Data Questionnaire." The degree and credential information is from the NCES, IPEDS Fall Enrollment and Completion Surveys.

Notes: For the Freshmen to Sophomore Retention Rates, the sample is limited to First-Time, Full-Time Freshman who entered a Title IV degree-granting institution the previous Fall. When determining the state mean, each institution's rate was weighted by the number of first-time, full-time entering students.

endowed private institutions. Moreover, significant proportions are out-of-state students who are among the best in the world due to selective college admissions.

According to the 2003 NCAA Graduation-Rates Report, the graduation rate at UMass Amherst is several points above that found for public universities in Division I. However, within the University of Massachusetts system, the rates differ significantly by campus. Information from other sources elaborate on these differences below.

Similar to the trends found nationally, graduation rates at the UMass schools were also found to differ by racial group in the NCAA

GRADUATION RATES DIFFER SIGNIFICANTLY BY CAMPUS

data. Black and Native American students have the lowest likelihood of graduation followed by Hispanic students. Considering the changing demographic make up of the state and the importance of educational attainment, these differences will only become more significant for Massachusetts in the future. Particular institutions seem to do a better job with graduation rates for underrepresented groups. For instance, UMass Dartmouth graduates Hispanic, Native

American, and Asian students all at fairly strong rates. Though UMass Lowell has a lower overall graduation rate, it had the highest graduation rate for Black students. As was previously shown in Table 21, the student body composition of each of the four universities also differs by campus, with variation in undergraduate versus graduate enrollment and full-time participation versus part-time participation. These differences partly influence differences in graduation rates.

Table 28 reports graduation numbers for the University of Massachusetts system from a 2005 system report. Similar to the NCAA numbers, there are large differences in the graduation rates at each institution. In particular, UMass Boston and Lowell do not graduate most of their students within six years. These differences are at least partly due to the fact that their student bodies differ in their levels of academic preparation. Because of these types of differences by institution, comparing graduation rates to the national average is not very informative. Therefore, the table also displays the graduations rates of similar institutions designated as peers. The rate of the peer institutions gives a much better sense of how well schools with similar characteristics and student bodies are doing. As shown, the UMass campuses are doing slightly worse than their peers in terms of graduation. Below, I discuss efforts to improve these outcomes.

Table 28**Six-Year Graduation Rate—University of Massachusetts Campuses**

	GROUP	1995 COHORT	1996 COHORT	1997 COHORT	1998 COHORT
UMass Amherst	Institution	59	61	64	62
	Peers	63	65	65	NA
UMass Boston	Institution	28	35	34	28
	Peers	37	37	38	38
UMass Dartmouth	Institution	51	53	50	50
	Peers	NA	NA	55	NA
UMass Lowell	Institution	37	44	42	46
	Peers	40	42	42	NA

Source: University of Massachusetts 2005 Report on Annual Indicators.

Notes: Peer data for UMass Boston and Lowell are from *U.S. News and World Report*, and they are four-year averages. Peer data for UMass Dartmouth is a three-year average from *U.S. News and World Report*. Except for UMass Amherst, all of the schools include aspirant peers in their peer group. "NA" indicates the information was not available.

Additional information is available for the Massachusetts State College System. Table 29 displays data from the Massachusetts Board of Higher Education on freshman to sophomore year retention rates at the state colleges (fall to fall). Among the full-time, first-time, degree-seeking students who began in fall 2002, 74.5 percent of returned to the same institution the next year. This rate has grown over time since 1998. This may partly be explained by the increase in admissions standards at these schools. As discussed earlier, students with stronger academic backgrounds are more likely to graduate from college, all else equal. Other data from the Massachusetts Board of Higher Education suggests that the retention rate was lower for part-time students. This is not surprising given that researchers and practitioners have identified part-time attendance as one of the behaviors associated with a lower probability of student success.

The six-year graduation rates for the state colleges in Massachusetts are shown in Table 30. The rates for three cohorts are shown: 1996, 1997, and 1998. The cohort year denotes the fall that the group of students began. The rates represent the percentage that graduated within six

years. Overall, of the students who began at the state colleges in 1998, only 48 percent had graduated by 2004; less than half of the first-time degree-seeking students entering in fall 1996 had graduated six years later. Of the state colleges, Westfield State had the highest graduation rate, which was 53 percent, while Salem State had a graduation rate of only 42 percent.

LESS THAN HALF OF THE STUDENTS AT THE STATE COLLEGES HAD GRADUATED SIX YEARS LATER

There are, however, differences among the student bodies at the state colleges. Thus, the Board of Higher Education has worked with individual campuses and the National Center for Higher Education Management Systems to create a list of peer institutions for each school. Table 27 compares the graduation rates of each state college with those of its peer institutions. Of the seven colleges without special mission status, two underperformed their peer groups and five outperformed their peers. Though there has been some improvement in recent years, it is clear that substantial work remains to be done. Mass

Table 29
State College Fall-to-Fall Retention of First-Time, Full-Time, Degree-Seeking Students
Percent Returning to Same Institution

	FALL 1998 COHORT	FALL 1999 COHORT	FALL 2000 COHORT	FALL 2001 COHORT	FALL 2002 COHORT
Bridgewater	74.3	69.5	73.6	73.6	77.3
Fitchburg	70.2	76.5	75.2	71.1	74.2
Framingham	69.8	68.5	72.5	68.2	72.4
Mass College of Liberal Arts	72.9	74.3	71.1	68.2	76.5
Salem	74.7	74.1	68.7	72.0	72.3
Westfield	73.3	73.7	75.5	77.2	75.4
Worcester	74.0	73.9	72.4	73.9	72.3
State Colleges	73.0	72.2	73.1	72.8	74.5

Source: Massachusetts Board of Higher Education (2005) Performance Report for 2004. HEIRS II Fall Term Credit Student Unit Record File.

Table 30
State College Graduation Rates (Six years)

	GROUP	1996 COHORT	1997 COHORT	1998 COHORT	AVERAGE
Bridgewater State College	Institution	47.0	45.8	51.4	48.1
	Peers	50.6	50.6	51.5	50.9
Fitchburg State College	Institution	44.0	47.7	47.1	46.3
	Peers	36.3	38.1	35.1	36.5
Framingham State College	Institution	38.7	42.0	44.4	41.7
	Peers	33.5	35.4	34.5	34.5
MA College of Liberal Arts	Institution	45.7	46.7	45.0	45.8
	Peers	52.8	50.1	53.2	52.0
Salem State College	Institution	34.1	37.0	42.4	37.8
	Peers	38.1	39.0	40.1	39.1
Westfield State College	Institution	56.4	55.7	53.1	55.1
	Peers	37.8	40.7	41.2	39.9
Worcester State College	Institution	35.6	40.5	43.2	39.8
	Peers	33.1	33.5	33.5	33.4
MA College of Art	Institution	50.7	65.3	65.7	60.6
MA Maritime Academy	Institution	64.5	56.7	61.9	61.0

Source: Massachusetts Board of Higher Education (2005) Performance Report for 2004.

Note: Mass Maritime and Mass Art have special mission status and, for purposes of six-year graduation rates, are not compared to peer institutions.

Art and Mass Maritime, both of which have special mission status due to their unique goals, had higher graduation rates of 66 and 62 percent, respectively. Due to their specialized instructional goals, they do not have peer institutions and they should not be directly compared to the other state colleges.

As emphasized earlier, graduation rates give limited information on institutional quality and effectiveness due to student mobility, differences in student body characteristics, and an inability to determine student intent. This is particularly true when interpreting the persistence and graduation rates at community colleges. Table 31

Table 31**Community College Fall-to-Fall Retention of First-Time, Full-Time, Degree-Seeking Students Percent Returning to Same Institution**

	FALL 1998 COHORT	FALL 1999 COHORT	FALL 2000 COHORT	FALL 2001 COHORT	FALL 2002 COHORT
Berkshire	51.7	57.9	56.2	57.6	63.6
Bristol	63.7	64.3	63.1	66.9	65.0
Bunker Hill	41.7	N/A	48.6	54.2	51.9
Cape Cod	52.1	44.9	51.8	51.4	54.5
Greenfield	54.2	52.6	59.5	53.8	58.0
Holyoke	55.7	58.5	58.4	56.1	60.1
Massachusetts Bay	49.6	53.8	52.3	47.2	52.3
Massasoit	54.7	55.5	58.2	58.0	59.3
Middlesex	59.6	57.9	54.4	53.5	54.2
Mount Wachusett	51.6	53.0	53.1	49.0	51.3
North Shore	54.5	55.3	56.7	57.6	61.1
Northern Essex	56.9	59.4	61.4	55.4	56.2
Quinsigamond	48.8	55.2	61.2	59.8	62.9
Roxbury	53.6	56.5	53.5	50.1	41.9
Springfield Technical	59.3	57.8	56.0	61.3	60.1
Community Colleges	54.5	56.5	56.5	55.8	57.0

Source: Massachusetts Board of Higher Education (2005) Performance Report for 2004. HEIRS II Fall Term Credit Student Unit Record File.

Notes: The segmental total for 1999 does not include Bunker Hill's data. Mount Wachusett's 2002 cohort count is overstated due to program extract logic errors for that year.

displays the percentage of first-time, full-time, degree-seeking students at Massachusetts community college who return to the same institution the next fall. In fall 2002, the system wide average was 57 percent. This varied substantially by campus. In general, the first year retention rate increased over time.

Degree completion is more difficult to measure and interpret for community colleges. Many students do not attend with the intention of getting a degree. For instance, some transfer to four-year institutions to complete a bachelor's degree. Analysis by the New England Board of Higher Education of U.S. Department of Education data suggests the three-year graduation rates (i.e. completion of an Associate's degree) of students at Massachusetts community colleges are quite low. For the cohort that began in 1999, only 17 percent of students completed a degree within

this time period. It is unknown what proportion of the cohort had actually intended to obtain this degree or the percentage that transferred to other schools, perhaps four-year institutions, to pursue further study. However, disturbing differences exist across racial groups with only 11 percent of Black students and less than one in ten Hispanic students completing the degree. The Board of Higher Education has recently convened a task force to look at strategies to increase completion rates at community colleges.

While society should not hold institutions accountable for the things they cannot control, colleges and universities should do everything in their power to ensure student success. An important question to ask is what we should expect in terms of graduation rates? While one would not expect 100 percent retention or graduation given the reasons explained above, institutions appear

Table 32**College Outcomes at Select Private Institutions in Massachusetts**

	% OF FRESHMEN WHO COMPLETE THE YEAR IN GOOD STANDING (2000-01)	% OF FRESHMEN WHO RETURN FOR SOPHOMORE YEAR (2004-05)
Assumption College	91	85
Bentley College	---	93
Boston College	98	94
Boston University	90	85
Brandeis University	96	94
College of the Holy Cross	---	98
Clark University	---	85
Emerson College	95	86
Harvard College	---	97
Massachusetts Institute of Technology	100	98
Newbury College	79	80
Northeastern University	---	88
Smith College	99	92
Stonehill College	93	89
Suffolk University	83	---
Tufts University	---	96
Wellesley College	---	95
Wentworth Institute	---	---
Western New England College	69	64
Williams College	99	98
Worcester Polytechnic	---	92

Source: College Board, 2000-01 and 2004-05 American Survey of Colleges datasets.

to have much room for improvement.

How can institutions improve their services to increase graduation rates? One constructive approach is to use the graduation rates to identify particularly successful institutions. This is the aim of the College Results Online project developed by The Education Trust (available at www2.edtrust.org/edtrust/collegeresults/). This interactive tool allows one to compare a college to its peers. The results control for possible influences on graduation rates including institutional mission, financial resources, degree programs, size, location, and the academic talent of students. However, even after accounting for such differences, an analysis by Carey (2004) finds that graduation rates vary widely from one insti-

tution to the next. Certain colleges and universities simply outperform their peer institutions, and by identifying their “best practices,” other schools may learn how to improve.

Because of the importance of persistence and graduation rates, the Massachusetts Board of Higher Education convened a task force of faculty, community leaders and higher education administrators to study and recommend ways to improve graduation rates at Massachusetts state colleges. The Task Force report, released in June 2005, declared unacceptable the differences in graduation rates based on gender, race and ethnicity and income. Weak student retention and persistence was found to be most prevalent among those with high unmet financial need,

Table 33**Six-Year Graduation Rate (1996-97 cohort) – Select Private Colleges in Massachusetts**

	BOSTON UNIVERSITY	BOSTON COLLEGE	NORTHEASTERN UNIVERSITY	HARVARD UNIVERSITY	WORCESTER POLYTECHNIC INSTITUTE	TUFTS UNIVERSITY	MIT
Total	75	86	56	98	74	88	91
White	76	88	60	97	73	90	94
Black	73	71	42	93	83	82	73
Hispanic	71	81	48	95	75	88	81
Asian	74	84	61	100	86	91	96
Native American	63	50	33	100	NA	83	71
Non-Resident Alien	72	48	48	98	68	80	93
Other	77	96	38	99	100	88	91

Source: 2003 NCAA Graduation-Rates Report based on data provided by the institution in compliance with NCAA Bylaw 30.1 and the Federal Student Right-to-Know and Campus Security Act. The rates reflect all undergraduate students who entered in 1996 and were enrolled in a full-time program of studies for a degree.

those working more than 20 hours per week, individuals with poor academic preparation, and students falling behind in credits as a freshman. The report called for state colleges to graduate more than 50 percent of first-time, full-time students within six years; to increase the share of first-time, full-time freshmen returning for their sophomore year to 80 percent over five years; to reduce gaps in graduation rates related to gender, race, and income; increase the graduation rates of transfer students; and rank within the top ten states nationally, without compromising academic standards. The Board of Higher Education was charged with working with the state colleges to coordinate system-wide programs to increase persistence and degree completion.

Not surprisingly, the generally more selective, private institutions within Massachusetts have higher rates of retention. As shown in Table 32, the vast majority of freshman students at most private schools finished their first year in good academic standing, and most returned for their sophomore year. Likewise, the six-year graduation rates at some of the major private colleges and universities in Massachusetts are high (see

Table 33). Using data submitted to the NCAA, all of the schools graduated at least three-fourths of their students in six years except for Northeastern University.

College Degrees Conferred

Table 34 summarizes the number and types of degrees awarded by Title IV degree-granting institutions during the 2001-02 school year. While

HOW CAN SCHOOLS INCREASE THEIR GRADUATION RATES?

most Associate's degrees are completed at public colleges, private institutions confer most of the Bachelor's, Master's, and doctoral degrees in Massachusetts. Similar to enrollment rates, this differs from trends nationally, in which public institutions are the major producers of four-year and graduate degrees. With the exception of doctoral degrees, more women receive each type of degree than men. The greatest gender difference was at the Associate's degree level.

In Massachusetts, the public colleges con-

Table 34**Degrees Conferred by Title IV Degree-granting Institutions, Academic year 2001–02**

	MASSACHUSETTS				UNITED STATES		
	TOTAL	MEN	WOMEN		TOTAL	MEN	WOMEN
ASSOCIATE'S DEGREES							
All Institutions	14,251	5,133	9,118		595,133	238,109	357,024
Public Colleges	81.4%	80.7%	81.8%		79.3%	74.6%	82.4%
Non-profit Privates	15.9%	13.6%	17.1%		7.7%	7.7%	7.7%
For-profit Privates	2.7%	5.7%	1.0%		13.1%	17.7%	10.0%
BACHELOR'S DEGREES							
All Institutions	43,097	18,215	24,882		1,291,900	549,816	742,084
Public Colleges	29.3%	29.2%	29.4%		65.1%	65.4%	64.9%
Non-profit Privates	70.7%	70.8%	70.6%		32.8%	32.1%	33.4%
For-profit Privates	0.0%	0.0%	0.0%		2.0%	2.6%	1.7%
MASTER'S DEGREES							
All Institutions	25,884	10,384	15,500		482,118	199,120	282,998
Public Colleges	15.7%	13.2%	17.4%		51.8%	50.8%	52.6%
Non-profit Privates	84.3%	86.8%	82.6%		45.2%	46.0%	44.7%
For-profit Privates	0.0%	0.0%	0.0%		3.0%	3.3%	2.7%
DOCTORAL DEGREES							
All Institutions	2,287	1,315	972		44,160	23,708	20,452
Public Colleges	16.3%	15.5%	17.3%		62.5%	63.6%	61.3%
Non-profit Privates	83.7%	84.5%	82.7%		36.0%	35.3%	36.7%
For-profit Privates	0.0%	0.0%	0.0%		1.5%	1.0%	2.0%

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2002. New England Board of Higher Education (2004).

Table 35**Total Degrees and Certificates Awarded at Massachusetts Public Institutions**

	1998	1999	2000	2001	2002	2003	5-YEAR
							% CHANGE
UMass System	10,363	9667	10,437	10,422	10,360	10,531	1.6%
State College System	7003	7135	7331	7083	7300	8136	16.2%
Community College System	8794	8604	8868	9122	8879	9134	3.9%
Total for Public Institutions	26,160	25,406	26,636	26,627	26,539	27,801	6.3%

Source: Massachusetts Board of Higher Education, Higher Education Information resource System (HEIRS).

ferred nearly 28,000 degrees in 2003.⁷ As shown in Table 35, this denotes a 6.3 percent increase from 1998. Most of the growth has occurred within the state college system (16.2 percent). Accord-

ing to the Massachusetts Board of Higher Education, during this year, 15.1 percent of the degrees granted were awarded to minority students, the highest percentage in ten years. Massachusetts'

7. Unfortunately, the number of degrees awarded at private colleges is not known for that year. However, public institutions awarded approximately 42 percent of the associates and bachelors degrees earned during 2001-02 (Source: Calculated using the data in Table 34).

residents received 80 percent of all degrees awarded suggesting that the Massachusetts public higher education system primarily serves Massachusetts residents. This is especially true among the community colleges and state colleges. Approximately 94 and 88 percent, respectively, of the awards granted by these institutions went to residents (Massachusetts BHE, 2004c).

The Returns to Higher Education

As discussed in the introduction, the returns to a college education are substantial. The College Board (2003a) concludes that median annual earnings for year-round, full-time workers with Bachelor's degrees are about 60 percent higher than earnings for those with only a high school diploma (or 77 percent more among all workers). Among adults in the United States who worked year-round as full-time employees in 2002, high school graduates made on average \$34,518, and those with a Bachelor's degree made \$63,413. This is an 83.7 percent difference. In terms of the median, this is a 70.2 percent difference. The gaps were even larger for individuals with a Master's, Professional, or Doctoral degree.⁸ Over a person's lifetime, the College Board estimates this translates into a million dollar difference in income.

Several researchers at the University of Massachusetts, Amherst examined data from the U.S. Census Bureau to get a better sense of the return of higher education in Massachusetts. Their results are shown in Table 36. The average annual earnings of a high school graduate were around \$32,000 from 1998 to 2000. In comparison, individuals with a Bachelor's degree made \$53,600, a 68 percent difference. The researchers also found that the return to a college education in Massachusetts has increased over time. While the incomes of high school

THE RETURN TO A COLLEGE EDUCATION IN MASSACHUSETTS HAS INCREASED

graduates declined one percent from the 1994 to 1996 period, college graduates experienced growth in their earnings. Those with an Associate's degree experienced the greatest amount of growth suggesting that their skills were in greater demand. The authors conclude that this is due to a relative restructuring of the Massachusetts labor force with increasing demand for technical-level staffing.

In addition to the monetary benefits of having a college degree, there are also a number of

Table 36
Earned Income for Full-time Full-year Workers in Massachusetts

	ANNUAL EARNINGS (MEAN OF 1998 TO 2000)	PERCENTAGE CHANGE (1994-96 TO 1998-2000)
No College Degree	\$32,003	-1.09%
Associate Degree	\$42,614	11.03%
Baccalaureate Degree	\$53,621	6.20%
Post-graduate Degree	\$78,687	8.62%

Source: Coelen, Berg, Forest, and Smith (2002). Current Population Surveys, Special tabulations for 1999, 2000, and 2001, Massachusetts Institute for Social and Economic Research (MISER)
Notes: Total earnings were calculated as the average of 1998-2000.

8. U.S. Census Bureau, Current Population Report P20-550 (2004).

non-monetary benefits. Greater levels of education are correlated with lower levels of unemployment and welfare dependency, better health outcomes, increased charitable giving, and higher voting rates. According to the National Center for Public Policy and Higher Education (2004), Massachusetts, with one of the most highly-educated populations, also has one of the highest proportions of citizens who give to charitable organizations (92 percent) and vote (53 percent).

While the returns to higher education are significant, the cost of college is a major concern for many families. Students must secure the funds to attend college before they can reap the rewards of a degree. Moreover, society certainly has much to gain if it can ensure access to college for its students. The next chapter discusses trends in college price to foreshadow concerns about affordability.

IV. COLLEGE COSTS AND EXPLANATIONS FOR RISING TUITION

The costs of higher education are spread over students, institutions, and state and federal government agencies. This chapter discusses these costs and the charges students face. During the past several decades, tuition prices have increased substantially, and the paper discusses several reasons for this trend including the role of government support, particularly state appropriations, in determining tuition prices. It also reviews trends in college expenditures.

Trends in College Costs Nationally

In their annual series, *Trends in College Pricing*, the College Board concluded that, in constant (2005) dollars, the average tuition and fees charged for in-state students at public four-year colleges and universities in 2005-06 was \$5,491. This was a 7.1 percent increase, or \$365, from 2004-05. Tuition and fees at public two-year colleges averaged \$2,191, reflecting an increase of \$112 dollars, or 5.4 percent, from the previous year. Average tuition and fees at private four-year colleges totaled \$21,235, up 5.9 percent or \$1,190 from 2004-05 (College Board, 2005a).

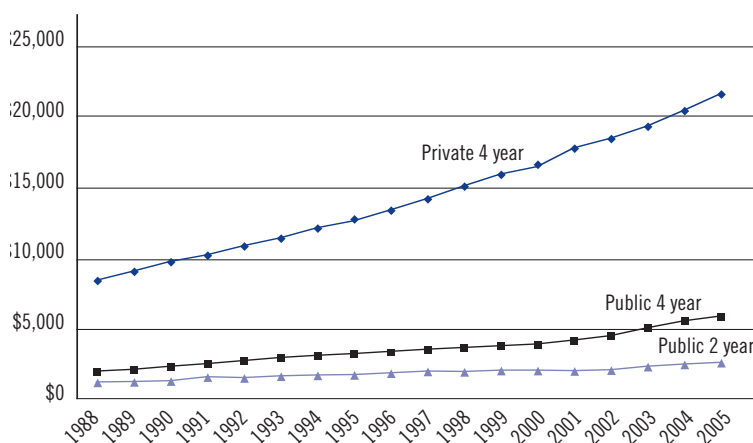
In the previous two years, tuition increases were even greater. Between the 2003-4 and 2004-05 academic years, tuition and fees at public four-year institutions increased 10.5 percent, or \$487 (College Board, 2004a). Between 2002-03 and 2003-04, students faced the largest increase in tuition and fees by public colleges in two decades, an increase of 14.1 percent, or \$579 (College Board 2003). In 2004-05, public two-year colleges increased their tuition and fees by \$167, an 8.7 percent increase. That same year, private colleges increased their tuition and fees by a smaller percentage than public institutions, with average four-year tuition and fees rising

6.0 percent. However, given the larger base tuition, this smaller percentage resulted in a larger change in dollar amount (\$1,132).

Figure 5 shows trends in nominal college prices nationwide, meaning that inflation has not been taken into account. As shown, the average cost of tuition and fees has increased rapidly during the last fifteen years. While tuition and fees at public four-year colleges amounted to \$1,908 in 1990-91, by 2000-01 this had risen to \$3,508 and \$5,491 by 2005-06. Public community colleges have experienced similar growth in tuition and fees, rising from \$906 in 1990-91 to \$2,191 in 2005-06. Private institutions have experienced slightly smaller increases. In 1990-91, private four-year tuition and fees cost \$9,340 on average, but this amount jumped to \$21,235 in 2005-06.

While the amounts in Figure 5 are reported in the nominal dollar amounts for each year,

Figure 5
Average Undergraduate Tuition and Fees, 1988-89 to 2005-06
(Nominal Dollars)



Source: College Board. (2005) *Trends in College Pricing*, College Pricing Tables and Charts. Data from *Annual Survey of Colleges*. The averages are weighted by FTE undergraduate enrollment.

Figure 6 shows tuition trends in constant 2005 dollars, which takes into account inflation, the natural increase in all price levels. After controlling for inflation, the growth in tuition prices is still large but not as striking. For instance, although Figure 5 shows that the mean tuition

THE ACTUAL AMOUNT A STUDENT PAYS IS USUALLY LOWER THAN THE LIST PRICE

at public four-year colleges increased by 57 percent between 2000-01 and 2005-06, once inflation is taken into account (Figure 6), the increase was only 40 percent. In a similar fashion, private four-year tuition and fees increased 32 percent in the last five years, but in constant dollars, the growth was only 18 percent. While accounting for inflation reduces the scale of the tuition increases in recent years, they nonetheless remain a substantial cause for concern.

Table 37 displays the dollar amounts associated with each year both in current, nominal

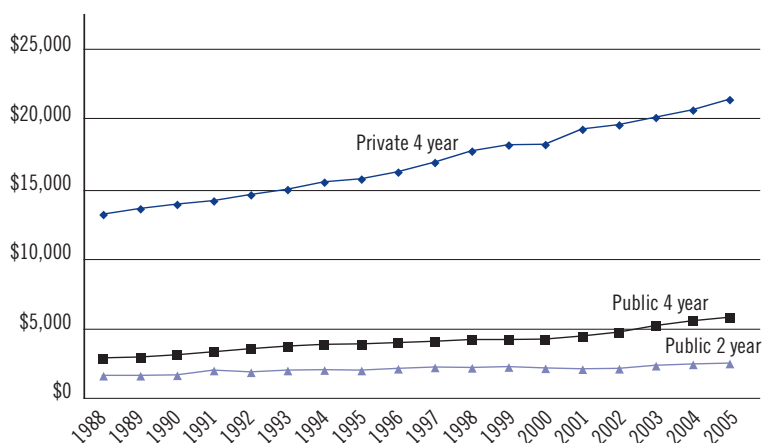
dollars (left side of the table) and after taking into account inflation (right side of the table). Tuition and required fees are only one part of the total cost of college. Room and board is also an expense faced by many students. The bottom part of Table 37 reviews trends in net price in a later chapter. Room and board at private four-year institutions added almost \$8,000 to the cost of college in 2005-06. The costs of room and board at public four-year colleges were a little less. When including these expenses, the total cost of college increased by almost \$12,000 at private four-year institutions and \$6,000 at public four-year institutions from 1995-96 to 2005-06, amounting increases of 67 and 80 percent, respectively. However, when taking inflation into account, the increase in total costs was approximately 32 percent at private four-year institutions and 42 percent at public four-year institutions.

While reflecting on college costs, it is also important to note that these figures reflect list price, or the price advertised in the college catalogue. This is not net price, the price after financial aid is applied. According to the College Board (2004a), nearly 60 percent of all undergraduate students and 75 percent of all full-time enrolled undergraduates receive grant aid from at least one source. Therefore the net price, or the actual amount that a student must pay to attend college, is usually lower than the published costs. I discuss trends in net price in a later chapter.

Tuition and Fees at New England and Massachusetts Colleges

Relative to the rest of the country, tuition levels in New England are high. Table 38 displays trends in inflation adjusted tuition and fees in New England over the most recent 10-year period. In 2005-06, the average private four-year tuition and fees in New England were far more than the

Figure 6
Average Undergraduate Tuition and Fees, 1988-89 to 2005-06
(Constant 2005 dollars)



Source: College Board. (2005) *Trends in College Pricing*, College Pricing Tables and Charts. Data from *Annual Survey of Colleges*. The averages are weighted by FTE undergraduate enrollment.

Table 37**Average College Costs, United States, 1995-96 to 2005-06 (Enrollment-Weighted)**

	NOMINAL DOLLARS			CONSTANT 2005 DOLLARS		
	PRIVATE FOUR-YEAR	PUBLIC FOUR-YEAR	PUBLIC TWO-YEAR	PRIVATE FOUR-YEAR	PUBLIC FOUR-YEAR	PUBLIC TWO-YEAR
TUITION AND REQUIRED FEES						
1995-96	\$12,216	\$2,811	\$1,330	\$15,489	\$3,564	\$1,686
1996-97	\$12,994	\$2,975	\$1,465	\$16,019	\$3,668	\$1,806
1997-98	\$13,785	\$3,111	\$1,567	\$16,696	\$3,768	\$1,898
1998-99	\$14,709	\$3,247	\$1,554	\$17,527	\$3,869	\$1,852
1999-00	\$15,518	\$3,362	\$1,649	\$17,976	\$3,894	\$1,910
2000-01	\$16,072	\$3,508	\$1,642	\$17,982	\$3,925	\$1,837
2001-02	\$17,377	\$3,766	\$1,608	\$19,104	\$4,140	\$1,768
2002-03	\$18,060	\$4,098	\$1,674	\$19,428	\$4,408	\$1,801
2003-04	\$18,950	\$4,645	\$1,909	\$19,949	\$4,890	\$2,010
2004-05	\$20,045	\$5,126	\$2,078	\$20,649	\$5,281	\$2,141
2005-06	\$21,235	\$5,491	\$2,191	\$21,235	\$5,491	\$2,191
TUITION, FEES, AND ROOM & BOARD						
1995-96	\$17,382	\$6,743		\$22,040	\$8,550	
1996-97	\$18,357	\$7,142		\$22,630	\$8,805	
1997-98	\$19,360	\$7,469		\$23,449	\$9,046	
1998-99	\$20,463	\$7,769		\$24,384	\$9,285	
1999-00	\$21,475	\$8,080		\$24,876	\$9,360	
2000-01	\$22,240	\$8,439		\$24,883	\$9,442	
2001-02	\$23,856	\$9,032		\$26,227	\$9,930	
2002-03	\$24,867	\$9,672		\$26,750	\$10,404	
2003-04	\$26,057	\$10,530		\$27,430	\$11,085	
2004-05	\$27,465	\$11,376		\$28,294	\$11,719	
2005-06	\$29,026	\$12,127		\$29,026	\$12,127	

Source: College Board (2005) *Trends in College Pricing*.

Notes: When calculating the means, the tuition amounts were weighted by full-time undergraduate enrollment.

national average, \$27,111 versus \$21,235, (College Board, 2005). Likewise, public colleges in New England are on average more expensive than the national mean. In 2005-06, public four-year institutions in New England cost 33 percent more than the national average (\$7,277 vs. \$5,491). However, the greatest difference in cost is between the public two-year schools. On average, New England community colleges cost 51 percent more than the national average (\$3,316 versus \$2,191).

Table 39 displays how tuition and fees at public colleges and universities in Massachusetts have grown during the same 10-year period. Like the earlier tables, these figures are weighted by the fall enrollment at each institution so that larger schools are given more weight. These numbers also include required student fees. By 2005-06, the average price in the University of Massachusetts System was \$8,697. The state colleges and community colleges in Massachusetts charged \$5,448 and \$3,477, respectively.

Table 38**Average Tuition and Fees in the New England Region and Nationally (Enrollment-Weighted)**

	NOMINAL DOLLARS			CONSTANT 2005 DOLLARS		
	PRIVATE FOUR-YEAR	PUBLIC FOUR-YEAR	PUBLIC TWO-YEAR	PRIVATE FOUR-YEAR	PUBLIC FOUR-YEAR	PUBLIC TWO-YEAR
NEW ENGLAND REGION						
1995–96	\$16,318	\$4,237	\$2,212	\$20,691	\$5,372	\$2,805
1996–97	\$17,219	\$4,315	\$2,299	\$21,227	\$5,319	\$2,834
1997–98	\$18,418	\$4,526	\$2,357	\$22,308	\$5,482	\$2,855
1998–99	\$19,211	\$4,635	\$2,302	\$22,892	\$5,523	\$2,743
1999–00	\$20,281	\$4,677	\$2,170	\$23,493	\$5,418	\$2,514
2000–01	\$21,215	\$4,748	\$2,150	\$23,736	\$5,312	\$2,406
2001–02	\$22,106	\$4,890	\$2,281	\$24,303	\$5,376	\$2,508
2002–03	\$23,663	\$5,353	\$2,620	\$25,455	\$5,758	\$2,818
2003–04	\$24,226	\$6,239	\$2,960	\$25,503	\$6,568	\$3,116
2004–05	\$25,614	\$6,876	\$3,137	\$26,176	\$7,027	\$3,206
2005–06	\$27,111	\$7,277	\$3,316	\$27,111	\$7,277	\$3,316
10-yr \$ change	\$10,793	\$3,040	\$1,104	\$7,238	\$2,124	\$611
10-yr % change	66.1%	71.7%	49.9%	35.0%	39.5%	21.8%
NATIONALLY						
1995–96	\$12,216	\$2,811	\$1,330	\$15,489	\$3,564	\$1,686
2005–06	\$21,235	\$5,491	\$2,191	\$21,235	\$5,491	\$2,191
10-yr \$ change	\$9,019	\$2,680	\$861	\$5,746	\$1,927	\$505
10-yr % change	73.8%	95.3%	64.7%	37.1%	54.1%	30.0%

Source: College Board. (2005) *Trends in College Pricing*, College Pricing Tables and Charts.
Notes: Amounts are weighted by full-time undergraduate enrollment.

Tuition and fees at the state colleges are comparable to the national average for all public four-year institutions, including major research universities. At UMass, tuition and fees exceed the

RELATIVE TO THE REST OF THE COUNTRY, TUITION LEVELS IN MASSACHUSETTS ARE HIGH

national average for public four-year institutions by more than \$3,000. Tuition and fees in the UMass system have increased slightly faster than those of the public four-year colleges in the nation over the past ten years (38.5 percent vs. 37.1 percent). But, the tuition and fees at the

Massachusetts state colleges and community colleges have increased more slowly.

The Massachusetts Board of Higher Education (BHE) is responsible for approving all tuition increases at public colleges and universities. These increases are based on the input and recommendations from the schools and an assessment of the needs of the institutions regarding instruction, support services, and physical plant operations (Massachusetts BHE, 2004d). In addition to mandatory tuition costs, however, each campus additionally has its own required student fees. The Board of Trustees at each individual college or university has the authority to set campus fees, and all income from these fees

Table 39

Average Tuition and Fees at Massachusetts Public Institutions, 1995-96 to 2005-06 (Enrollment-weighted)

	NOMINAL DOLLARS			CONSTANT 2005 DOLLARS		
	UMASS SYSTEM	STATE COLLEGES	COMMUNITY COLLEGES	UMASS SYSTEM	STATE COLLEGES	COMMUNITY COLLEGES
MASSACHUSETTS						
1995-96	4,954	3,334	2,520	\$6,281	\$4,227	\$3,195
1996-97	4,892	3,287	2,529	\$6,031	\$4,052	\$3,118
1997-98	4,828	3,192	2,427	\$5,848	\$3,866	\$2,940
1998-99	4,727	3,103	2,297	\$5,633	\$3,697	\$2,737
1999-00	4,706	2,984	2,182	\$5,451	\$3,457	\$2,528
2000-01	4,697	2,962	2,153	\$5,255	\$3,314	\$2,409
2001-02	4,693	2,954	2,273	\$5,159	\$3,248	\$2,499
2002-03	5,798	3,743	2,833	\$6,237	\$4,027	\$3,048
2003-04	6,801	4,590	3,265	\$7,160	\$4,832	\$3,437
2004-05	8,428	5,098	3,385	\$8,682	\$5,252	\$3,487
2005-06	8,697	5,448	3,477	\$8,697	\$5,448	\$3,477
10-yr \$ change	\$3,554	\$1,861	\$911	\$2,416	\$1,221	\$282
10-yr % change	72.9%	57.5%	36.8%	38.5%	28.9%	8.8%

Source: Massachusetts Board of Higher Education, *Tuition and Fees Trend Table* – 1996-2006.
(Obtained from http://www.mass.edu/p_p/home.asp?id=3&iid=3.11).

remains within individual institutions.¹ Therefore, though tuition list prices may be low, a campus may choose to raise its fees, and these extra fees can cause price disparities across institutions. For example, whereas the tuition and fees at UMass Amherst amounted to \$9,008 in 2004-05 for in-state students, in-state students only paid \$7,802 in tuition and fees at UMass Dartmouth.²

Meanwhile, the private institutions in Massachusetts are some of the most expensive in the country. As shown in Table 40, among the 30 schools with the largest undergraduate enrollments, seven charged over \$30,000 in 2004-05 (Amherst College, BU, Brandeis University,

Harvard College, MIT, Mount Holyoke College, and Tufts University). Another 10 charged between \$25,000 and \$30,000 that year.³

Even though tuition and fees are significant expenses, it is important to note that they do not fully fund the costs of a university or college. The total revenue generated from student tuition and fees usually falls considerably short of the income needed to meet total college expenditures. As such, most postsecondary institutions would have to close their doors if not for private donations, endowment dividends, and most importantly, substantial government contributions.

1. Lynette Robinson-Weening, Associate Vice-Chancellor of the Massachusetts Board of Higher Education (personal communication, January 28, 2005)

2. Sources: Retrieved January 25, 2005, from <http://www.umass.edu/bursar/fee1.html> and <http://www.umassd.edu/undergraduate/costs/allcosts.cfm>.

3. Room and board expenses are also quite high. Babson College, Berklee College, Emerson College, Northeastern University, Stonehill College, and Suffolk University all charged over \$10,000 for room and board.

Table 40**Tuition and Fees at the 30 Largest Private Institutions in Massachusetts, 2004-05**

TUITION AND FEES	
Northeastern University	\$26,750
Boston University	30,402
Boston College	28,940
Harvard University	30,620
Tufts University	30,969
Bentley College	27,244
Suffolk University	19,790
Massachusetts Institute of Technology (MIT)	30,600
Berklee College Of Music	20,450
Springfield College	20,360
Wentworth Inst. of Technology	15,700
Brandeis University	31,072
Emerson College	22,976
Western New England College	21,986
Worcester Polytechnic Institute (WPI)	29,730
College of the Holy Cross	29,686
Smith College	29,156
Curry College	21,530
Stonehill College	23,008
Assumption College	22,425
Merrimack College	22,100
Wellesley College	29,796
Mount Holyoke College	30,770
Clark University	28,265
Emmanuel College	20,100
Williams College	29,990
Endicott College	18,572
Simmons College	24,490
Babson College	28,832
Amherst College	30,780

Source: MassINC calculations using the National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Peer Analysis System (<http://nces.ed.gov/ipeds/pas>).]

Why has College become so Costly?

There are several reasons why college tuition has increased so substantially in recent years. These can be grouped into revenue versus expenditure explanation. First, prominent sources of revenue have declined for colleges. Most

notably, state government support has declined per pupil. Fluctuations in state appropriations play an important role in determining public college price levels as these funds have traditionally subsidized the costs for students at public institutions (i.e. allowing them to charge in-state students a discounted price). On the other side of the equation, however, is that fact that colleges have increased their expenditures. Colleges now spend more per student than they did in the past. Some of this is due to the rising costs of inputs that colleges have traditionally used. Additionally, colleges now offer new services and have new expenses. The next two sections elaborate on these major contributors to rising tuition costs. A third reason, which will be discussed in more depth in a later chapter, is the growing use of institutional financial aid. Colleges have begun to differentiate the price they charge individual students by giving financial aid to some but not others. For example, colleges have become adept at targeting financial aid towards students who are financially needy or meritorious in order to discount the price they are charged. However, to fund these aid awards, colleges have increased list tuition prices and are in effect redistributing funds between students.

Explanation #1: Changes in State Appropriations to Postsecondary Institutions

The rapid growth in prices at public colleges and universities is especially alarming given the role they have traditionally played in access. For many years, public institutions have provided a low-cost way to get postsecondary training. State appropriations have enabled colleges to do this. Each year, funds from the state help to cover college operational expenses thereby allowing the schools to charge in-state students a reduced price. However, during the last several decades,

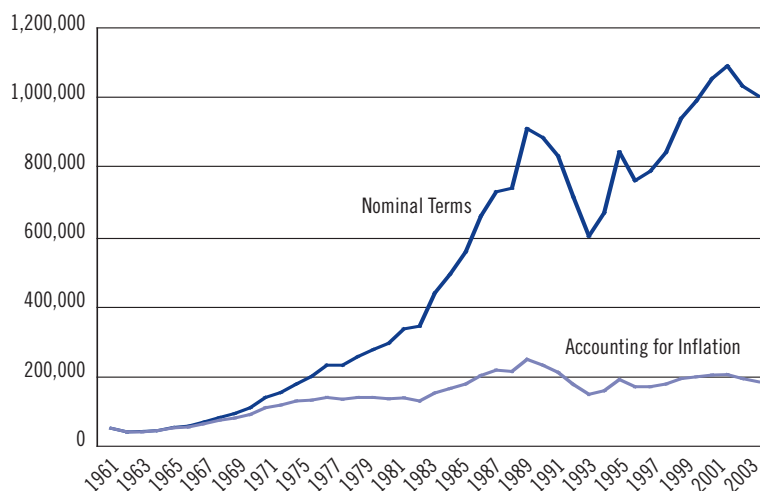
state and local tax fund appropriations have fallen in proportion to educational budgets. Figure 7 shows the trend in appropriations in Massachusetts from 1961 to 2003. Although the amount of appropriations has grown over time as shown by the solid line, it has not kept up with inflation, as shown by the dashed line. Moreover, after 1985 the level of appropriations has been erratic—rising by large amounts in some years and falling in others. For example, during the recession of the early 1990s, appropriations for higher education fell, and there has been a dip more recently in the wake of another economic downturn.

Table 41 gives a more detailed perspective on Massachusetts state appropriations for higher education operating expenses over time. From 1990-91 to 2003-04, total appropriations increased by 68 percent. However, when considering trends in state appropriations to higher education, it is useful to put the amounts in relation to the number of students served by the system. Three other adjustments are also made. First, the amounts are adjusted for inflation by putting them in 2004 constant dollars. Second, because Massachusetts is more expensive than other states, one needs to adjust for differences in the cost of living by geographical area in order to make them comparable. Finally, the last column takes into account differences in the types of students and institutions in each state (i.e. the enrollment mix). Once doing these adjustments, Massachusetts is ranked number 14 in the nation in 2004-05.

There are two important trends worth noting. The first is that the peak year of support for public higher education in Massachusetts was 2000-01, when support reached \$8,559 per full-time equivalent student, and the state ranked 7th in the nation. However, during the years

Figure 7

**Massachusetts State Tax Fund Appropriations for Higher Education
(in thousands)**



Source: Center for the Study of Education Policy, Illinois State University. *Annual Survey of Colleges*. The averages are weighted by FTE undergraduate enrollment.

since, appropriations had declined to only \$6,201 by 2003-04 and \$6,590 in 2004-05. While other states have also been hit hard by the most recent recession, several others have not made as significant cuts as shown by the fall in rank of

STATE APPROPRIATIONS FOR HIGHER EDUCATION HAVE BEEN VOLATILE

Massachusetts. According to similar data from the Center for the Study of Education Policy, Massachusetts' appropriations of state tax funds for higher education operating expenditures fell by 19.7 percent from FY1999 to FY2004. Meanwhile, the national average was an increase of 14.1 percent. These trends emphasize the fact that Massachusetts' public colleges have been facing declining appropriations at a faster rate than schools in other many other states.

Table 41

State and Local Support for Public Higher Education in Massachusetts

STATE AND LOCAL APPROPRIATIONS TO HIGHER EDUCATION PER FTE STUDENT											
YEAR	APPROPRIATIONS TO PUBLIC HIGHER EDUCATION (MILLIONS)	FTE PUBLIC ENROLLMENT	NOMINAL DOLLARS		ADJUSTING FOR INFLATION (2004 DOLLARS)			ADJUSTING FOR INFLATION AND COST OF LIVING		ADJUSTING FOR INFLATION AND COST OF LIVING, ENROLLMENT MIX	
			MASS	U.S. AVERAGE	MASS	U.S. AVERAGE	RANK	MASS	RANK	MASS	RANK
1990-1991	575.4	121,414	4,739	4,317	7,399	6,740	13	6,065	36	6,272	28
1991-1992	493.4	118,885	4,150	4,211	6,267	6,358	23	5,183	43	5,325	40
1992-1993	573.0	121,045	4,734	4,201	6,905	6,127	15	5,747	33	5,935	26
1993-1994	630.9	120,049	5,255	4,379	7,440	6,200	12	6,225	24	6,410	19
1994-1995	668.7	118,622	5,637	4,649	7,768	6,406	13	6,516	24	6,696	16
1995-1996	707.5	115,252	6,139	4,827	8,241	6,480	7	6,987	15	7,114	12
1996-1997	766.4	114,327	6,704	5,119	8,761	6,690	6	7,492	12	7,573	10
1997-1998	825.9	114,154	7,235	5,432	9,177	6,891	6	7,828	11	7,972	9
1998-1999	889.9	117,299	7,587	5,722	9,361	7,060	6	7,970	11	8,154	11
1999-2000	974.8	118,949	8,195	5,997	9,723	7,114	6	8,175	11	8,411	8
2000-2001	1,039.8	119,717	8,685	6,241	9,911	7,121	6	8,339	9	8,559	7
2001-2002	981.8	123,602	7,943	6,224	8,772	6,873	7	7,288	14	7,571	11
2002-2003	993.5	126,174	7,874	5,883	8,421	6,291	8	6,913	12	7,202	10
2003-2004	965.4	137,509	7,021	5,756	7,256	5,949	9	5,957	20	6,201	15
2004-2005	1,059.7	137,410	7,712	5,833	7,712	5,833	7	6,331	15	6,590	14

Source: State Higher Education Executive Offices (SHEEO), State Higher Education Finance (SHEF) data collection obtained via the NCHEMS Information Center, <http://www.higheredinfo.org/analyses>.

Notes: FTE Enrollments do not include medical students. Ranks presented are among the 50 states and exclude Washington, DC. Appropriations for public higher education include state tax appropriations for higher education and any other sources of general operating revenue such as lottery revenues to higher education; non-tax income (lease income, royalties, drilling or mineral rights fees); funds destined for higher education but administered by some third party; earnings on state funded endowments; portions of a prior multi-year appropriation available for expenditure in the current year; and any direct appropriations of state financial aid funds that may have bypassed the state's central financial aid agency. Appropriations exclude support for private/independent institutions; financial aid to students attending independent institutions; tuition remitted to the state; research, agricultural, and medical spending; and hospital spending. For details on the inflation, cost of living, and enrollment mix adjustments see SHEF Technical Papers A and B, available on the SHEEO website: <http://www.sheeo.org>

A second trend of note is the volatility of state appropriations over time. As also shown in Figure 7, the amount per student has fluctuated from an adjusted low of \$5,325 per FTE in 1991-92 to a high of \$8,559 per FTE in 2000-01. Such variance causes significant concerns for college budgets as there are many fixed costs in higher education, and nationwide trends reveal educational expenditures in higher education are increasing.

Another useful way to consider trends in state appropriations to higher education is to put the amounts in relation to income levels in

the state. While Massachusetts ranks third or fourth in the nation in terms of per capita personal income, it ranks near the bottom in terms of spending per dollar of personal income.⁴ Therefore, although Massachusetts is a fairly affluent state (as measured by personal income levels), the state government allocates less in appropriations to public colleges relative to others.

As a result of general declining state support in the early 1990s and more recently and volatile gaps in appropriations, particularly during recession years, public colleges and univer-

4. Sources: Appropriations information from the Center for the Study of Education Policy, Illinois State University (2004). Personal income data from the Bureau of Economic Analysis.

sities have been forced to pass on some of the costs of higher education to students in the form of tuition prices. To further emphasize the connection between state appropriations and college pricing, Table 42 compares the change in State Appropriations per FTE student to changes in tuition and fees. In general, when state appropriations fall or increase only marginally, tuition rates tend to increase. For example, during 1991-92, state appropriations fell 15.3 percent. At the same time, tuition rates increased 20, 22, and 21 percent in the UMass, State College, and Community College Systems, respectively. A similar pattern is evidence for 2003-04. During the most recent year, appropriations per FTE student increased, but so did the tuition prices of the UMass System. This is due to expenditures that were delayed during the downturn in appropriations the previous year.

To reflect on the most recent state appropriations made to public colleges in Massachusetts, see Table 43. It displays the amount of appropriations to individual institutions and offices during the 2004-05 and 2005-06 years. The UMass System receives the most money, but a significant total amount also goes to community colleges. The revised 2004-05 budget is only slightly smaller than the budget for 2005-06.

In general, states tend to follow one of two strategies concerning state appropriations to higher education. The first involves giving a great deal in state subsidies so to allow colleges to reduce the in-state tuition price to students. However, little is given in direct student aid. This is termed the “low-low” strategy (low price but low expenditures on direct aid). In contrast, states could give little in subsidies, which result in a higher tuition price at public colleges, but they could have generous direct aid programs. This is the “high-high” option. Massachusetts

Table 42

State Support and College Pricing in Massachusetts

YEAR	CHANGE IN REAL STATE APPROPRIATIONS PER FTE STUDENT	CHANGE IN REAL TUITION AND FEES		
		UMASS SYSTEM	STATE COLLEGES	COMMUNITY COLLEGES
1991-1992	-15.3%	20.4%	22.0%	21.4%
1992-1993	10.2%	0.5%	3.1%	0.4%
1993-1994	7.8%	3.4%	-0.3%	7.6%
1994-1995	4.4%	1.8%	-1.1%	10.8%
1995-1996	6.1%	-1.1%	0.3%	-0.8%
1996-1997	6.3%	-4.0%	-4.1%	-2.4%
1997-1998	4.7%	-3.0%	-4.6%	-5.7%
1998-1999	2.0%	-3.7%	-4.4%	-6.9%
1999-2000	3.9%	-3.2%	-6.5%	-7.7%
2000-2001	1.9%	-3.6%	-4.1%	-4.7%
2001-2002	-11.5%	-1.8%	-2.0%	3.7%
2002-2003	-4.0%	20.9%	24.0%	22.0%
2003-2004	-13.8%	14.8%	20.0%	12.8%
2004-2005	6.3%	20.3%	7.8%	0.6%

Source: Tables 39 and 41.

Notes: The percentage changes are relative to the previous year. Inflation adjustments are made using a producer price index for the real appropriations and the consumer price index for tuition and fees.

falls into the latter category, especially given the general trend towards giving less in appropriations. This strategy has its advantages in that families who can afford to pay for college are not highly subsidized while low-income students can be targeted with direct financial aid to reduce their costs. This is considered a more efficient

WHEN STATE APPROPRIATIONS FALL, TUITION RATES TEND TO INCREASE

pricing policy because the result is students are more closely charged according to their ability to pay. However, the “high-high” strategy also has several drawbacks. First, students tend to be very responsive to price, and higher tuition costs may deter some students from attending college. In states with higher tuition levels, stu-

Table 43
Massachusetts Appropriations of Tax-Funds for Higher Education
Operating Expenses (thousands)

	2004-05 INITIAL	2004-05 REVISED	NEW FISCAL YEAR 2005-06
University of Massachusetts	391,485	414,187	408,820
Commonwealth College	1,715	1,715	3,430
Toxics Use Reduction Institute	1,475	1,475	1,240
Endowment Incentive	0	0	0
Kerr Mill/College of Performing Arts		3,665	3,865
Subtotal, Univ. of Massachusetts	394,676	421,042	417,355
STATE COLLEGES			
Salem	31,667	32,362	33,403
Bridgewater	31,556	32,389	34,153
Fitchburg	23,466	24,079	24,214
Worcester	19,429	20,484	20,702
Westfield	19,411	19,880	20,185
Framingham	19,225	19,616	20,541
Mass Maritime	10,396	10,730	11,108
MA College of Liberal Arts	12,239	12,606	12,660
Mass College of Art	9,882	10,279	11,167
Subtotal, State Colleges	177,271	182,422	188,132
COMMUNITY COLLEGES			
Springfield	19,876	20,148	21,256
North Shore	17,253	17,520	17,638
Massasoit	16,406	16,637	17,407
Middlesex	15,815	16,012	17,980
Northern Essex	15,610	15,836	16,554
Bunker Hill	16,296	16,523	17,698
Holyoke	14,727	15,398	15,974
Bristol	12,925	13,226	13,687
Quinsigamond	12,417	12,660	12,975
Roxbury	10,320	10,557	10,742
Mt Wachusett	9,555	9,685	10,427
Cape Cod	9,516	9,660	9,954
Massachusetts Bay	11,598	11,676	12,287
Berkshire	7,910	8,003	8,226
Greenfield	7,757	7,884	8,063
Subtotal, Community Colleges	197,981	201,426	210,868

(continued on next page)

affordable, students often do not actually receive the aid until late in the process and so families will often not take into account the possible grants. Another drawback is that state need-based aid programs often do not keep pace with growing tuition costs so that students face more in tuition prices than they would under a "low-low" strategy (Mumper, 1996).

Explanation #2: Increases in College Expenditures

A second explanation for rising college costs is increases in institutional expenditures. A review of expenditure trends both nationally and within Massachusetts shows that college outlays are substantial and have grown in recent years, and this partly explains the growth in college costs. According to the 2003 *Digest of Education Statistics*, in 1980-81, public colleges and universities nationwide spent \$34.2 billion. By 2000-01, this number had grown to \$136.6 billion, a 74.7 percent increase after accounting for inflation. Likewise, public institutions in Massachusetts spent \$441.1 million 1980-81, but this grew to \$2.1 billion in 2000-01. After accounting for inflation, this constitutes a doubling of expenditures. A long trend of data is not available among private not-for-profit institutions, but during the 2000-01 school year, they spent \$85.6 million nationwide and \$8.2 million in Massachusetts.

There are many reasons why college expenditures have grown overtime. First, increases in the cost of instruction have greatly impacted the costs colleges face. One major cost is faculty members. As faculty members age and become more experienced, they earn higher salaries as in any business. Like many other industries, colleges are dealing with being "top heavy" with the aging of the Baby Boomers. The costs of benefits such as health care have also risen dramatically, and dealing with this expense has not been

dents are less likely to attend college, particularly those from low-income groups (Kane, 1995; Long, 2004a). Even if the net price after aid is

limited to the industry of higher education. Funding technological advancements and upgrades both in the classroom and for research have also been costly. Other reasons for the rise in expenditures include funding the increased use of financial aid, government mandates, and constructing or renovating facilities. Therefore, many of the reasons for increasing expenditures are justified for educational reasons or are due to changes in the economy, labor market, or policies.

Another reason for increases in the expenditures of colleges relates to the ever-growing demands of students. Students increasingly want more support services such as advising, career services offices, and student centers. At the extreme, some colleges have responded to students' demands for amenities such as state-of-the-art residences and gymnasiums, and these are much more controversial in terms of whether such expenditures are justified. However, it is important to keep in mind that the bulk of public institutions are not involved in the ramping up of such amenities and tend to focus on student support services that are aimed to improve student performance and persistence. As discussed earlier in the chapter, there is a great deal of diversity in terms of the finances of colleges, and the summary numbers quoted above make it difficult to properly discern whether each increase in expenditures is justified for educational reasons or questionable as an unnecessary expense.

While the price of higher education is known to be sizeable, institutions make great investments in their students. Unfortunately, the true cost of providing a college education is difficult to determine. College finances are made up of a complex mixture of costs, some which affect students and other which target the research and public service functions of colleges. Moreover,

Table 43 (continued)

**Massachusetts Appropriations of Tax-Funds for Higher Education
Operating Expenses (thousands)**

	2004-05 INITIAL	2004-05 REVISED	NEW FISCAL YEAR 2005-06
OTHER ORGANIZATIONS			
Massachusetts Board of Higher Ed	1,923	1,923	2,649
New England Board of Higher Educ.	367	367	417
Scholarship Reserve	82,373	82,373	84,673
Tomorrow's Teacher Scholarship Pgm.	0	0	0
Foster Care Financial Aid	850	850	1,200
McNair Program for Financial Aid	1,966	1,966	1,966
Compact for Education	62	62	62
Tufts Veterinary Medicine	3,304	3,304	4,054
Library Materials	0	0	0
Workforce Education	2,900	2,900	2,900
Colleges Health and Welfare	4,382	4,649	3,850
Endowment Matching Reserve	12,000	12,000	0
Allied Health/Nursing Initiative	500	500	0
Collective Bargaining		561	0
Subtotal	110,628	111,455	101,772
Total	880,555	916,345	918,127

Source: Center for the Study of Education Policy, Illinois State University (obtained from http://www.coe.ilstu.edu/grapevine/Massachusetts_06.htm).

the cost of a student's education at a particular school will vary depending on his or her major with more technical majors being more expensive. However, to provide a sense of the amount colleges spend, I will review trends in Educa-

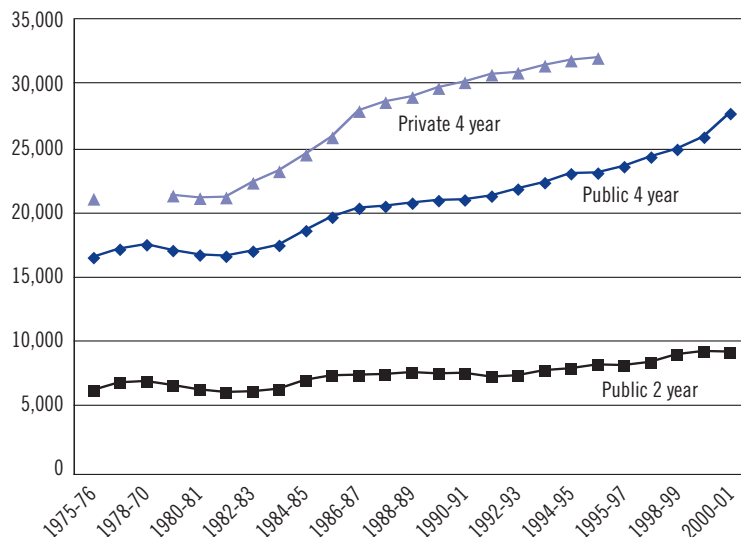
IT IS DIFFICULT TO DISCERN WHETHER THE INCREASES IN EXPENDITURES ARE JUSTIFIED

tional and General Expenditures. These figures include money spent by colleges on instruction, academic support, student services, financial aid, research, operations and maintenance, and public service. When the tables denote current-fund expenditures, the figures also include funds spent on auxiliary enterprises, hospital expendi-

Table 44**Total Educational and General Expenditures and Select Categories, 2000-01 (thousands)**

TYPE OF INSTITUTION	TOTAL EXPENDITURES	INSTRUCTION		ACADEMIC SUPPORT		STUDENT SERVICES	
		AMOUNT	PERCENT	AMOUNT	PERCENT	AMOUNT	PERCENT
Public 4yr Universities	50,655,088	17,241,756	34.0%	8,617,036	17.0%	1,892,995	3.7%
Public 4yr Colleges	58,008,263	21,684,091	37.4%	13,016,633	22.4%	3,487,111	6.0%
Public 2yr Colleges	27,949,388	12,898,562	46.1%	7,038,896	25.2%	2,996,920	10.7%
Private 4yr Colleges	85,048,123	27,413,897	32.2%	7,333,851	8.6%	6,036,478	7.1%
Private 2yr Colleges	576,893	193,428	33.5%	34,412	6.0%	80,717	14.0%

Source: Compiled from 2003 Digest of Education Statistics Tables 349, 350, 351, and 356 taken from U.S. Department of Education, National Center for Education Statistics, Higher Education General Information, Spring 2001 and Spring 2002 surveys; and U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index.

Figure 8**Current-fund Expenditures per Full-time-equivalent Student (constant 2000-01 dollars)**

Source: U.S. Department of Education, National Center for Education Statistics, Higher Education General Information Survey (HEGIS), "Financial Statistics of Institutions of Higher Education," 1975-76 through 1985-86, "Fall Enrollment in Colleges and Universities," 1975 through 1985; Integrated Postsecondary Education Data System (IPEDS), "Finance," 1986-87 through 1999-2000, and Spring 2002 survey, "Fall Enrollment," 1986 through 1999, and Spring 2001 survey; and Bureau of Labor Statistics, Consumer Price Index.

tures, or independent operations.

Table 44 breaks down some of the major spending categories of colleges nationally. While not all of the money goes directly to students, the majority of these expenditures are for instructional purposes. At public four-year colleges, 37.4 percent of expenditures go towards instruc-

tion while the proportion was 46.1 percent at community colleges. These expenses include faculty salaries and other classroom supports. Other categories of expenditures likely to directly affect students are academic support and student services. Public four-year and two-year colleges spend almost a quarter of their funds on academic support while two-year colleges spend ten to 14 percent on student services.

Another way to examine college expenditure trends is on a per student basis. According to the 2003 *Digest of Education Statistics*, nationwide public four-year colleges spent \$27,973 per full-time-equivalent (FTE) student during the 2000-01 school year (current-fund expenditures). It is important to note this is much higher than the tuition charged to students. Public two-year colleges spent less per FTE student (\$9,183 in 2000-01). Although figures are not available during the same year for private colleges, they are known to spend more than their public college counterparts. For instance, during the 1995-96 school year, private four-year institutions spent \$32,394 per FTE student (in 2000-01 dollars). Likewise, private two-year schools spent \$12,868 per FTE student (in 2000-01 dollars).

As Figure 8 shows, the amount spent per student nationwide has grown substantially over time even after taking into account inflation.

Table 45

National Comparisons of College Expenditures, FY03 to FY04

	PUBLIC TWO-YEAR MASSACHUSETTS		PUBLIC TWO-YEAR UNITED STATES		PUBLIC FOUR-YEAR MASSACHUSETTS		PUBLIC FOUR-YEAR UNITED STATES	
	FY2003	FY2004	FY2003	FY2004	FY2003	FY2004	FY2003	FY2004
EXPENSES (MILLIONS)								
Instruction	199.58	205.49	11,804.77	13,263.74	527.87	552.07	38,306.37	40,505.21
Research	0.05	0.08	15.09	15.56	274.42	283.21	18,450.20	20,010.56
Public Service	5.48	5.59	636.73	623.86	181.46	205.82	7,147.11	7,770.17
Academic Support	58.49	63.43	2,236.75	2,450.95	136.28	144.28	9,446.68	10,191.13
Student Services	70.35	72.61	2,718.49	3,064.05	115.53	117.84	5,303.82	5,784.71
Institutional Support	64.19	66.96	3,884.13	4,493.79	165.34	168.00	9,589.50	10,362.57
Op. & Maintenance of Plant	49.21	49.58	2,646.61	2,905.00	154.74	174.60	8,164.08	9,106.50
Scholarships	33.81	30.27	2,475.74	2,832.76	21.88	33.61	4,819.37	5,142.15
Depreciation	20.10	20.17	1,105.12	1,275.35	109.08	108.95	6,708.26	7,286.87
Auxiliary Enterprises	14.48	15.92	1,526.85	1,791.70	176.96	170.89	12,249.31	13,115.70
Hospitals	0.00	0.00	0.00	0.00	0.00	0.00	16,243.71	17,007.85
Independent Operations	3.11	2.87	52.24	25.61	30.61	28.04	496.18	698.12
Other	0.04	0.03	346.17	564.62	0.22	0.22	1,363.26	1,672.87
Total Operating Expenses	518.90	533.01	29,448.70	33,307.00	1,894.38	1,987.53	138,287.86	148,654.41
Interest	1.77	2.14	286.65	357.78	20.25	23.47	1,311.11	1,583.86
Other Non-Op	0.46	0.43	142.33	175.20	5.04	13.36	1,160.00	1,576.10
Total Non-Op	2.24	2.57	428.98	532.98	25.29	36.82	2,471.10	3,159.95
Total Expenses	521.13	535.58	29,877.68	33,839.98	1,919.67	2,024.35	140,758.96	151,814.37
Total ex. Hospitals	521.13	535.58	29,877.68	33,839.98	1,919.67	2,024.35	124,515.25	134,806.52
EXPENSES PER FTE STUDENT								
Instruction	3,716	3,750	3,408	3,504	6,254	6,550	7,086	7,175
Research	1	1	4	4	3,251	3,360	3,413	3,545
Public Service	102	102	184	165	2,150	2,442	1,322	1,376
Academic Support	1,089	1,158	646	647	1,614	1,712	1,747	1,805
Student Services	1,310	1,325	785	809	1,369	1,398	981	1,025
Institutional Support	1,195	1,222	1,121	1,187	1,959	1,993	1,774	1,836
Op. & Maintenance of Plant	916	905	764	767	1,833	2,072	1,510	1,613
Scholarships	630	552	715	748	259	399	891	911
Depreciation	374	368	319	337	1,292	1,293	1,241	1,291
Auxiliary Enterprises	270	291	441	473	2,096	2,028	2,266	2,323
Hospitals	0	0	0	0	0	0	3,005	3,013
Independent Operations	58	52	15	7	363	333	92	124
Other	1	0	100	149	3	3	252	296
Total Operating Expenses	9,662	9,728	8,501	8,798	22,442	23,583	25,580	26,333
Interest	33	39	83	95	240	278	243	281
Other Non-Op	9	8	41	46	60	158	215	279
Total Non-Op	42	47	124	141	300	437	457	560
TOTAL EXPENSES PER STUDENT								
Total Expenses	9,704	9,775	8,625	8,939	22,742	24,020	26,037	26,893
Total ex. Hospitals	9,704	9,775	8,625	8,939	22,742	24,020	23,032	23,880
No. of FTE Students	53,705	54,791	3,464,106	3,785,708	84,411	84,279	5,406,184	5,645,150

Source: MassINC calculations using the National Center for Education Statistics Data Analysis System with data from the Integrated Postsecondary Education Data System (IPEDS) 2003 and 2004, <http://nces.ed.gov/das>.

Note: The data in this table include only institutions using GASB 34/35 accounting standards.

While public four-year institutions across the country spent on average \$16,649 per FTE student in 1975-76 (in 2000-01 dollars), this amount grew 68 percent by 2000-01. In a similar fashion, public two-year colleges spent \$6,136 in 1975-76, and this grew 49.7 percent by 2000-01. In Massachusetts, current-fund expenditures per FTE student increased 84.8 percent overall at public institutions from 1980-01 to 2000-01, after accounting for inflation, suggesting that expenditures have increased more greatly within the state compared to elsewhere (NCES, 2003). Nationwide, private four-year colleges also experienced substantial growth in expenditures per student even after accounting for inflation. From 1975-76 to 1995-96, five years less than the sta-

dents. Public four-year colleges in Massachusetts spend a little less than the national average, but the overall difference disappears once taking out expenditures on hospitals. Massachusetts public four-year colleges spend slightly less on instruction but much more on public service, student services, and the operation and maintenance of the plant. Massachusetts public four-year colleges also spend less on scholarship and nothing on hospitals. Public two-year colleges spend only a small fraction of the amount spent by their four-year counterparts. Relative to the national average, Massachusetts public two-year spend approximately \$800 more per FTE student. The major differences are expenditures on instruction, academic support, and student services.

THE PUBLIC FOUR-YEAR COLLEGES IN MASSACHUSETTS ARE AMONG THE SMALLEST IN THE NATION

tistics quoted for public institutions, expenditures per FTE student grew 52.3 percent at private four-year colleges nationwide.

During a more recent ten-year span (1990-01 and 2000-01), current fund expenditures per FTE student at public institutions increased 28 percent nationwide and 29 percent in Massachusetts. Real expenditures in the U.S. increased by more than 80 percent while FTE enrollment increased by almost 10 percent. In the Bay State, real expenditures increased by 63 percent while FTE enrollment declined 3.5 percent. In 2000-01, current fund expenditures per FTE student totaled \$20,600 at public institutions nationwide and \$18,500 in Massachusetts (NCES, 2003).

Table 45 provides additional detail on the expenditures of public two-year and four-year colleges nationally and in Massachusetts. The totals are given along with amounts per FTE stu-

Table 46 focuses on Massachusetts State and Community Colleges using data from the Massachusetts Board of Higher Education. The Community College System serves more students and spends more in total. However, once standardizing the expenditures per FTE student, it becomes clear that students at the four-year state colleges receive more than students at the two-year colleges. Expenditures on instruction is the largest category for each type of school. Other large categories include academic support and student services, and this reiterates the fact that most the bulk of expenditures go to student educational and support needs. Institutional support and the Operation and Maintenance of the Plant are also large expenditure categories.

Other Considerations Regarding Price: Institutional Size and Economies of Scale

When considering the costs of higher education, another thing worth noting about Massachusetts is the size of our public four-year colleges. The public four-year colleges in Massachusetts are among the smallest in the nation. As shown

Table 46**Expenditures at Massachusetts Community Colleges and State Colleges, FY03 to FY05**

	COMMUNITY COLLEGES			STATE COLLEGES		
	FY2003	FY2004	FY2005	FY2003	FY2004	FY2005
EXPENSES (MILLIONS)						
Instruction	194.14	199.63	202.56	161.46	155.83	168.83
Research	0.05	0.08	0.09	0.01	0.14	0.17
Public Service	5.58	5.55	7.14	3.30	3.60	4.07
Academic Support	58.01	62.90	69.44	42.46	47.55	54.44
Student Services	68.18	70.02	75.08	45.02	46.93	54.65
Institutional Support	61.69	62.84	66.84	55.91	59.22	67.14
Op. & Maintenance of Plant	46.40	48.67	54.43	46.57	56.59	57.47
Scholarships	34.95	30.27	28.81	4.92	5.52	7.16
Auxiliary Enterprises	14.42	15.28	15.22	44.61	47.33	56.45
Independent Operations	3.11	2.87	2.93	0.00	0.00	0.28
Other	0.04	0.03	0.01	0.22	0.22	0.16
Total Operating Expenses	486.54	498.14	522.55	404.47	422.92	470.80
EXPENSES PER FTE STUDENT						
Instruction	3,795	3,890	3,989	4,501	4,132	4,415
Research	1	2	2	0	4	4
Public Service	109	108	141	92	95	106
Academic Support	1,134	1,226	1,367	1,184	1,261	1,424
Student Services	1,333	1,365	1,478	1,255	1,245	1,429
Institutional Support	1,206	1,225	1,316	1,559	1,570	1,756
Op. & Maintenance of Plant	907	949	1,072	1,298	1,501	1,503
Scholarships	683	590	567	137	146	187
Auxiliary Enterprises	282	298	300	1,244	1,255	1,476
Independent Operations	61	56	58	0	0	7
Other	1	0	0	6	6	4
Total Operating Expenses	9,511	9,708	10,289	11,276	11,215	12,311
No. of FTE Students	51,156	51,314	50,785	35,869	37,709	38,242

Source: MassINC calculations using data from the Massachusetts Board of Higher Education obtained via personal correspondence February 2006.

in Table 47, the average size of a Massachusetts public four-year college is 5,391 students, compared with a national average of 8,527. Massachusetts ranks 41st in the nation in terms of the size of our public institutions. Small public colleges are common in New England: Connecticut ranks 44th; New Hampshire ranks 46th; Maine ranks 48th; and Vermont ranks 49th. Rhode Island is the one exception; on average, Rhode

Island's public four-year colleges are larger than the national average.

There may be a number of advantages to having small colleges. They are dispersed throughout the state, which enables students the opportunity to not travel far to attend college. For non-traditional students, who are often working and balancing family demands in addition to attending school, the proximity of college can make a

Table 47

Average Institutional Size, Fall 2002

PUBLIC FOUR-YEARS				PUBLIC TWO-YEARS			PRIVATE FOUR-YEARS		
RANK	STATE	# INST.	AVG. FTE	STATE	# INST.	AVG. FTE	STATE	# INST.	AVG. FTE
1	Iowa	3	21,380	Rhode Island	1	8,888	Utah	8	4,581
2	Arizona	5	18,908	Florida	25	7,654	Rhode Island	10	3,495
3	Michigan	15	15,836	Nevada	3	7,543	Connecticut	19	2,664
4	California	34	15,519	California	110	7,247	Arizona	30	2,605
5	Florida	15	14,916	New York	35	5,191	Massachusetts	82	2,507
6	Illinois	12	14,217	Arizona	20	4,781	New Jersey	23	2,461
7	Kentucky	8	11,715	New Jersey	19	4,765	New York	175	2,258
8	Indiana	14	11,657	Texas	69	4,470	Idaho	6	2,188
9	Utah	7	11,559	Illinois	48	4,139	Louisiana	13	2,131
10	Tennessee	9	11,453	Maryland	16	4,045	Delaware	4	2,009
				Massachusetts					
				(rank 17)	16	3,247			
41	Massachusetts	15	5,391	Kansas	27	1,611	Mississippi	11	906
42	West Virginia	12	5,096	Wyoming	7	1,581	Oregon	29	865
43	Pennsylvania	44	5,081	Arkansas	22	1,200	Montana	4	855
44	Connecticut	10	5,048	South Dakota	5	938	South Dakota	11	696
45	Montana	6	4,890	Maine	7	902	Vermont	19	688
46	New Hampshire	5	4,529	North Dakota	8	859	Kansas	23	673
47	North Dakota	7	4,030	West Virginia	6	752	Nevada	6	656
48	Maine	8	3,260	Louisiana	46	705	New Mexico	13	586
49	Vermont	5	2,839	Montana	12	446	Alaska	3	294
50	South Dakota	9	2,819	Alaska	2	273	Wyoming	0	---
	U.S.	634	8,527	U.S.	1,086	3,366	U.S.	1,896	1,600

Source: *Digest of Education Statistics*

difference in their ability to attend. Smaller schools might also offer a more personalized environment for the student. In addition, public colleges serve an important role within their larger environment, often acting as an economic engine and anchor for the surrounding communities.

At the same time, there are also a number of additional costs associated with having relatively small colleges because of the fixed costs associated with running each campus. Several years ago, the UMass campuses started to act collectively on a number of issues, in order to

benefit from economies of scale and create cohesiveness throughout the system. However, each Massachusetts state college and community college is currently in charge of all of its functions—from registration to technology to purchasing to accounting and finance. This type of organization increases the fixed costs of running the Massachusetts state and community colleges.

While the campuses sometimes act collectively, there is likely the potential for additional savings by sharing more services across campuses. Maine has taken this approach. In order to help control costs, thirty years ago, Maine

began to implement systems of shared services. For instance, in Maine, information technology services, accounting and finance, and purchasing are handled jointly. The volume allows for steep discounts in purchase prices, and the shared systems are easier and cheaper to administer. By their estimates, Maine has an annual savings of \$25 million, and they are currently pursuing other opportunities for shared services (University of Maine System, 2005). Such an approach in Massachusetts could substantially reduce the costs while also maintaining the benefits of a system of many small public colleges.

V. FINANCIAL AID PROGRAMS

While the price of college is substantial, many financial aid programs exist to help students and families deal with the cost. This section reviews the myriad of financial aid programs available from the federal and state governments. It is also important to note that part of the reason college prices have increased is due to the increasing use of financial aid by institutions. By charging a higher price, colleges are able to raise more revenue and may use part of this money to selectively discount the price for low-income students or students that fit other needs of the school. Though this practice of tuition discounting has traditionally been mainly in the purview of private institutions, in recent years public colleges and universities have increasingly begun to give financial aid. However, often this aid is given to attract meritorious students rather than to lower the cost of higher education for needy students.

Some types of aid, such as grants, discount the actual price of college, while other forms, such as loans, help families afford the cost of tuition by allowing them to defer payments into the future but do not change the price of college. Unfortunately, many students and families are not aware of the programs or true cost of a college education, and the paper discusses research on this fact. Finally, this section reviews the many savings options available to families to help prepare for the cost of college.

Federal Financial Aid

In addition to the subsidies provided by the government to colleges, students receive significant direct support through financial aid programs. In 2004-05, the federal government spent more than \$90 billion on financial aid, a real increase of 5 percent over the previous year (College Board, 2005b). Loans account for 70 percent of that aid; grants make up 20 percent; and tax benefits constitute another 9 percent of federal aid. Both federal and state governments spend millions of dollars each year to help students pay for college expenses. The original objective of federal aid policy was to increase access for low-income students, but over time, as college expenses have risen, this goal has been expanded to include increasing the affordability of college for middle-income families.

To receive aid, individuals must submit the Free Application for Federal Student Aid (FAFSA). This form collects information on family income and assets, and then calculates the family's Expected Family Contribution (EFC), the responsibility of the student and his/her parents. An individual's need is determined by taking into account the cost of the college the student wants to attend after the EFC is applied.¹

Table 48 summarizes the major federal financial aid programs. The Pell Grant is the largest need-based program and serves as the foundation for other aid. This means that if students are eligible, the Pell Grant is awarded first. The

1. The Expected Family Contribution (EFC) is a federal determination of how much a family should be able to contribute to college costs. The three steps in calculating EFC can be summed as: 1. Parents' Income - Expenses & Allowances = Available Income; 2. Parents' Assets - Debts Against Those Assets - Asset Protection Allowances = Net Assets; 3. (Available Income x Assessment Rate) + (Net Assets x Assessment Rate). The EFC formula considers: family income; accumulated savings, amount of taxes paid; family size; the number of children simultaneously enrolled in college; the age of the older parent and how close they may be to retirement; and the student's own financial resources. In 1995-96, the typical EFC for families with an income range of \$40,000 to \$60,000 was between \$4,100 and \$7,650; families under \$20,000 paid between \$0 and \$800; families over \$100,000 paid between \$17,800 and \$33,800.

Table 48

Summary of the Federal Financial Aid Programs

PROGRAM	DESCRIPTION	ANNUAL/AGGREGATE AMOUNTS	ELIGIBILITY	REPAYMENT REQUIRED
Federal Pell Grant	Grant program	Annual minimum and maximum vary; minimum \$400; maximum at least \$4,050	Undergraduate students without first baccalaureate or professional degree; certain students enrolled in a post-baccalaureate teaching certification program; based on need, typically for students in the lowest income quartile	No
Federal Supplemental Educational Opportunity Grant	Campus-based grant program; funds awarded by institution	\$100 annual minimum; \$4,000 annual maximum (students on approved study abroad programs may receive up to \$4,400); no aggregate	Undergraduate students without baccalaureate or professional degree; first priority given to Federal Pell Grant recipients with exceptional financial need, typically those in the lowest income quartile	No
Federal Work-Study	Campus-based employment program; funds awarded by institution	No federal minimum or maximum; award amount is dictated by school policy	Undergraduate and graduate students; based on need for any student whose total costs minus grant aid and minus EFC is still positive	No
Federal Stafford Loan (subsidized and unsubsidized)	Federal Family Education Loan; funds from private capital; maximum of 8.25% interest	\$2,625 1st year undergraduates; \$3,500 2nd year undergraduates; \$5,500 each remaining year at undergraduate level; \$8,500/year for graduates. \$23,000 undergraduate aggregate; \$65,500 combined undergraduate/graduate aggregate	Undergraduate and graduate students; enrolled at least half-time; must have determination of eligibility/ineligibility for Federal Pell Grant; must determine eligibility for Federal Subsidized Stafford Loan before applying for Federal Unsubsidized Stafford Loan; subsidy based on need; unsubsidized funds may be used to replace EFC	Yes; Begins 6 months after cessation of at least half-time enrollment
Federal Perkins Loan	Campus-based loan program; funds awarded by institution; 5% interest	\$4,000/yr. undergraduates; \$6,000/yr. graduates; \$20,000 undergraduate aggregate; \$40,000 combined undergraduate/graduate aggregate	Undergraduate and graduate students; first priority given to students with exceptional financial need; must have determination of eligibility/ineligibility for Federal Pell Grant	Yes; Begins 9 months after cessation of at least half-time enrollment
Federal PLUS	Federal Family Education Loan; funds from private capital; maximum of 9% interest	No annual or aggregate amounts, except parents may not borrow more than the difference between cost of attendance and estimated financial assistance	Parents of eligible dependent undergraduates who are enrolled at least half-time; no adverse credit history; must not be in default on a federal loan; must be U.S. citizen or eligible non-citizen	Yes; Begins 60 days after final disbursement

Source: National Association of Student Financial Aid Administrators (2004).

Note: Programs administered by the U.S. Department of Education. Not all schools participate in all programs.

majority of Pell recipients come from families whose income falls in the lowest economic quartile. Dependent students with no income or assets whose families earn between \$30,000 and \$40,000 begin to be phased out of Pell eli-

gibility. In 1999-2000, 80 percent of Pell Grant recipients came from families with under \$10,000 in annual income, with the median income of Pell Grant recipients falling at \$15,098, compared with \$49,475 for all other undergrad-

uates (King, 2003). Though only about 25 percent of the undergraduate population, Pell Grant recipients receive the bulk of need-based aid from the federal government. The Federal Supplementary Educational Opportunity Grant is another need-based program but it is smaller and distributed by institutions rather than the federal government. Likewise, the Work-Study Program is a campus-based program that subsidizes the wages of student employees.

The federal government also has several major loan programs. The largest is the Federal Stafford Loan Program that offers subsidized and unsubsidized loans. The subsidized loans, which have their interest paid by the government while the student is in college, are available only to needy students as determined by the FAFSA. During their first year of undergraduate education, students may receive up to \$2,625; the limit increases in subsequent years and there are aggregate maximums. The Perkins Loan Program is a campus-based loan program that is awarded by financial need. Finally, the Federal

LOANS GREW MORE RAPIDLY THAN GRANTS OVER THE LAST DECADE

PLUS Loan Program is available to the parents of dependent college students. These loans have no annual or aggregate limits except that parents may not borrow more than needed to cover the cost of attendance net other financial aid. All of the loan programs require repayment after the student stops attending college with or without a degree.

In addition to the grant, loans, and work study programs, the federal government also offers aid through the tax code. The Hope and Lifetime Learning Tax Credits provide a benefit

to families who paid tuition expenses and had tax liability. Of all financial aid options, the higher education tax credits maintain the highest level of income eligibility, not phasing out for joint filers until an adjusted gross income of \$83,000 to \$103,000, or an adjusted gross income of \$41,000 to \$51,000 for single filers (Long, 2004b). Additionally, there are a number of tax benefits for college savings including favorable treatment of 529 Plans, which do not tax investment gains if they are used to pay for tuition.

Although list tuition prices are high and increasing, the federal government gives a substantial and rapidly growing amount of financial aid. In fact, according to the College Board (2005), total aid per full-time equivalent student has grown faster than tuition and fees over the last decade. However, it is important to remember that total aid includes loans, which must eventually be repaid by the student, and that loans grew more rapidly than grants during this period.

Federal Aid for Massachusetts Students

In 2001-02, nearly 64,000 students from Massachusetts received the Pell Grant. The average grant was \$2,166, which is slightly below the national average of \$2,298 (NEBHE, 2004). Table 49 provides further information on recipients of Pell Grant over time. There are separate figures on recipients who attended Massachusetts colleges (the left side of the table) versus recipients who were Massachusetts residents attending both in-state and out-of-state colleges (the right side of the table). Between 1989-90 and 2003-04 the real value of the average Pell Grant received by a college student from Massachusetts increased from \$2,091 to \$2,349, a 12 percent increase. However, after accounting for larger increases in tuition, the proportion of price that the Pell Grant covers has declined over time. During the

2003-04 academic year, nearly 74,000 Massachusetts residents received a Pell Grant while almost 77,000 students at a Massachusetts college or university received one. The proportion of students with a Pell Grant at a Massachusetts college has fallen slightly during the last ten years. According to Mortenson and Brunt (2004), while 21.3 percent of students had a Pell Grant in 1992, the proportion was 20.3 percent in 2001.

The average Pell Grant differs by institutional sector. As shown in Table 50, during the 2002-03 school year, the average Pell Grant per FTE was \$768 at the public institutions and \$460 at the private schools. This difference is due to the fact that more low-income students are likely to attend public institutions and they have greater financial need. The mean awards in Massachusetts are lower than the national averages despite the fact that Massachusetts tuition levels are higher.

As noted above, the federal government also has extensive student loan programs. In terms of Federal loans, students in Massachusetts borrowed \$3,819 on average in 2000. This was above the national mean of \$3,333 and includes the Stafford subsidized, unsubsidized, and PLUS Loan programs (National Center for Public Policy in Higher Education, 2002). Debt burden is certainly a concern for many students, and research suggests that low-income students are especially likely to face significant debt after finishing college. According to the American Council on Education (2004a), in 2000, Bachelor's degree recipients from families earning less than \$25,000 borrowed a median amount of \$15,000. This is compared to a median of \$16,165 for undergraduates from families earning \$80,000 or more each year. Approximately 17 percent of students who graduated in 2000 and had outstanding loans one year later were spending 13 percent of their income or more to cover monthly pay-

Table 49

Average Pell Grants and Number of Recipients, 1989-90 to 2003-04

YEAR	RECIPIENTS AT MASSACHUSETTS COLLEGES AND UNIVERSITIES		RECIPIENTS WHO ARE LEGAL RESIDENTS OF MASSACHUSETTS	
	NUMBER	AVERAGE PELL GRANT (REAL DOLLARS)	NUMBER	AVERAGE PELL GRANT (REAL DOLLARS)
1989-90	49,374	\$2,109	44,194	\$2,091
1990-91	53,622	\$2,046	48,652	\$2,033
1991-92	66,383	\$2,091	60,904	\$2,084
1992-93	76,648	\$2,069	71,531	\$2,059
1993-94	76,167	\$1,881	71,121	\$1,866
1994-95	75,249	\$1,820	70,713	\$1,804
1995-96	72,933	\$1,789	68,699	\$1,766
1996-97	72,422	\$1,794	67,843	\$1,767
1997-98	70,692	\$1,880	65,924	\$1,851
1998-99	70,808	\$2,041	65,792	\$2,010
1999-00	65,781	\$2,018	60,731	\$1,990
2000-01	64,424	\$2,088	60,058	\$2,054
2001-02	68,313	\$2,301	63,883	\$2,262
2002-03	73,104	\$2,381	69,038	\$2,349
2003-04	76,887	\$2,388	73,686	\$2,349
Growth	55.7%	13.2%	174.4%	12.3%

Source: Pell grant end-of-year report (multiple editions), obtained from OPE Program Data website, <http://www.ed.gov/finaid/prof/resources/data/ope.html>. The figures are from Table 46 in a draft updated with data from Department of Education

Table 50

Pell Grant, By State and Control: 2002-03

		FTE	PELL EXPENDITURES	MEAN PELL PER FTE
Public Institutions	Massachusetts	119,433	\$91,666,330	\$768
	United States	8,089,285	\$7,721,038,731	\$954
Private Institutions	Massachusetts	141,401	\$64,989,830	\$460
	United States	2,241,687	\$1,654,383,011	\$738

Source: National Center for Public Policy and Higher Education (2004).

Table 51

Federal Student Aid Programs

	COLLEGE WORK STUDY		PERKINS LOANS	
	2003-04 ALLOCATIONS	2002 TOTAL RECIPIENTS	2003-04 ALLOCATIONS	2002 TOTAL RECIPIENTS
Attending Mass. Colleges	45,752,788	38,154	4,912,937	34,309
United States	100,026,0438	740,602	99,297,889	660,899

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

ments. Student aid professionals generally consider payments at or below 8 percent of income to be manageable. These students had a greater likelihood of being from families at the lower-income quartiles or of being a graduate of a private institution.

Table 51 displays information for other Federal programs. The data reflect students at Massachusetts colleges rather than residents of the Commonwealth. Over 38,000 students received

DEBT BURDEN IS CERTAINLY A CONCERN

money from the federal Work-Study Program. Through Federal Work-Study funds, each participating campus receives an allotment to subsidize up to 70 percent of the wages of students with financial need who work on campus. Finally, 34,000 students in Massachusetts took out a Perkins Loan in 2002.

Massachusetts State Financial Aid Programs

In addition to federal financial aid, the Commonwealth also gives out money to support students. For the 2003-04 academic year, Massachusetts provided \$102.1 million in aid (NASS-GAP, 2005). Massachusetts awarded \$80 million of need-based grant aid and \$22 million of non-grant aid. Non-grant aid comes in a variety of forms, including loans, tuition waivers, work-study, loan-assumption programs, and conditional grants. State loans must be paid back, but work-study funds and tuition waivers do not. Students may qualify for loan-assumption programs, in which the state assumes educational costs, for example in the case of students who go into public service fields. Similarly, conditional

grants are awarded based on state stipulations that students must adhere to, such as working a certain number of years in state after graduation. In 2003-04, Massachusetts had no significant aid programs based solely on merit. However, in future years the John and Abigail Adams Scholarship program will change this balance, shifting resources to merit aid.

Massachusetts has three major financial aid programs.² The first is the MASSGrant. It is the foundation for all other state aid meaning students receive it first. Funded by appropriations from the Massachusetts Legislature, the MASSGrant provides need-based aid to undergraduate residents who attend a public or private in-state college full-time. Families must have a demonstrated financial need, as shown by the federal calculation of expected family contribution (EFC). In order to be low-income enough to qualify for MASSGrant aid, a family's EFC must be less than \$3,850 in 2005 as determined by the federal needs analysis system. Qualifying families receive anywhere from \$300 up to \$2,300 per academic year in aid. Massachusetts had 22,486 MASSGrant recipients in 2003-04, who received an average grant of \$1,014, at a total cost of \$22,800,828 to the state (McCurdy, 2004).

The second major program is the Need Based Tuition Waiver Program. This program offsets increases in tuition to help maintain access to the state's public colleges and universities. Students qualifying for a Tuition Waiver may be granted partial or full waivers depending upon the institution's financial aid packaging policies. An individual student Tuition Waiver for an award period may not exceed the actual campus tuition charge for the award period, nor may Tuition Waiver awards, in combination with other

2. Appendix Table 3 gives details on all Massachusetts aid programs.

resources in the student's financial aid package, exceed the student's demonstrated financial need. To be eligible for the waiver, students must be resident of Massachusetts, have evidence of documented financial need by the federal needs analysis system, and enroll in at least three undergraduate credits per semester in a state-supported undergraduate degree or certificate program. Often, the Need Based Tuition Waivers are used as supplemental scholarships in campus-based aid packaging.

The Massachusetts Cash Grant Program is a third major program in the Commonwealth. It is designed to assist needy students meet charges such as mandatory fees at public institutions. It is a complementary program to the Need Based Tuition Waiver Program. As with the programs described above, students must be Massachusetts residents and demonstrate financial need.

Table 52 displays the amount given by the state during FY2004. The largest programs in terms of recipients and dollars were the MASS-Grant, Cash Grant, Gilbert Grant, and tuition waivers. In 2003-04, Massachusetts spent \$102.1 million dollars on state aid. This accounts for just over 10 percent of total state appropriations to higher education in 2004. State aid expenditures have also been growing nationwide. Of the aid given by Massachusetts, most was awarded on the basis of need. The mean need-based award per FTE student was \$403, slightly below the national average (NCPPE, 2004). Massachusetts also gave out far less merit-based aid than other states. However, this may change in the future with the introduction of the John and Abigail Adams Scholarship.

In June 2004, the Massachusetts Regents approved a merit aid program proposed by Gov. Mitt Romney called the John and Abigail Adams

Scholarship. The scholarship will provide free tuition at public colleges to students scoring "advanced" on either the English/Language Arts or Mathematics sections of the Massachusetts Comprehensive Assessment System (MCAS) test and at least "proficient" on the other if their total score is in the top 25 percent of students in their district. However, many have expressed concern over the scholarship, including lawmakers who initially rejected the idea in part because the aid is based on merit rather than need. Some believe that using test scores will discriminate against students in poorer school districts, who often score lower on standardized tests. A study based on 2002 MCAS data by Donald Heller (2004) found that 28.0 percent of white students and 35.7 percent of Asian students statewide would qualify, compared with only 11.3 percent of Black students and 11.2 percent of Hispanic students. Among students from households with incomes below \$45,309, 22.6 percent would qualify statewide, compared with 26.3 percent of students from homes with incomes above \$82,676. Additionally, some lawmakers believed the program would be too costly. The Governor's office

THE JOHN AND ABIGAIL ADAMS SCHOLARSHIP PROGRAM WILL SHIFT RESOURCES TO MERIT AID

estimates that the program will cost \$8.3 million in its first year, rising to \$34 million in the fall of 2008. (Vaishnav, 2004). Furthermore, tuition is only associated with approximately 25 of the costs for attending Massachusetts public institutions, which therefore still leaves students with 75 percent of expenses to account for. The regents agreed that they will review the scholarship after a year.

The John and Abigail Adams Scholarship is

Table 52**Massachusetts State Grant Aid Awarded, Fiscal Year 2004**

		TOTAL	PUBLIC UNIVERSITY	STATE COLLEGE	COMMUNITY COLLEGE	PRIVATE	PROPRIETARY OR OTHER
MASSGrant	Recipients	22,486	3,077	4,188	5,244	9,107	870
	Dollars	22,800,828	5,079,631	2,765,496	2,595,326	11,715,250	645,125
	Mean Award	1,014	1,651	660	495	1,286	742
Cash Grant	Recipients	29,830	7,167	6,922	15,741		
	Dollars	32,089,565	8,697,352	9,896,550	13,495,663		
	Mean Award	1,076	1,214	1,430	857		
Foster Child	Recipients	137	28	20	59	21	9
	Dollars	668,075	102,940	92,050	301,883	124,922	46,280
	Mean Award	4,876	3,676	4,603	5,117	5,949	5,142
Gilbert Grant	Recipients	9,564				9,532	32
	Dollars	18,647,708				18,632,708	15,000
	Mean Award	1,950				1,955	469
Herter Memorial	Recipients	60	8	7	4	41	
	Dollars	596,308	47,696	37,460	18,362	492,790	
	Mean Award	9,938	5,962	5,351	4,591	12,019	
No Interest Loan	Recipients	2,889	159	722	27	1,848	133
	Dollars	5,337,433	416,544	986,298	60,000	3,577,291	297,300
	Mean Award	1,848	2,620	1,366	2,222	1,936	2,235
Para-professional Teacher Prep. Grant	Recipients	247	25	69	153		
	Dollars	974,499	161,875	359,124	453,500		
	Mean Award	3,945	6,475	5,205	2,964		
Part Time Grant	Recipients	8,749	782	686	5,975	912	394
	Dollars	3,300,700	445,000	279,000	1,658,500	746,450	171,750
	Mean Award	377	569	407	278	818	436
Public Service Grant	Recipients	23	11	3	4	5	
	Dollars	23,401	10,625	3,335	1,728	7,713	
	Mean Award	1,017	966	1,112	432	1,543	
Tuition Waiver	Recipients	28,060	7,116	6,147	14,797		
	Dollars	18,095,494	8,077,713	4,265,236	5,752,545		
	Mean Award	645	1,135	694	389		

Source: Massachusetts Board of Higher Education, Office of Student Financial Assistance (2004).

part of a much larger national trend of states offering merit-based aid. With the Arkansas Academic Challenge Scholarship and the Georgia HOPE Scholarship, each introduced in the early 1990s, states began to target state funds to students who did well in high school. While only \$244.5 million was spent on merit aid by states in 1993-94, that figure was \$1.2 billion by 2002-

03, a three-fold increase after accounting for inflation. The Georgia HOPE Scholarship has served as the model for many other state programs and awards full tuition to a Georgia public college or a comparable grant to an in-state private college for students who had at least a B average in a set of core academic classes in high school. However, state merit aid programs have

raised a lot of concerns about what the mission of state policies should be. Research has found that they largely benefit students who would have attended college anyway and who tend to be more from affluent backgrounds. The debate between the advantages of need-based versus merit-based aid continues in many states as resources become even more limited.

Institutional Financial Aid

In addition to government resources, many of the colleges and universities in the United States give institutional financial aid. During the last ten years, this practice has become much more common both in terms of frequency and amount. According to Horn and Peter (2003), the percentage of undergraduates in public colleges in the United States who received institutional aid grew from 17 percent in 1992-93 to 23 percent in 1999-2000, from an average award of \$2,200 to \$2,700. At private colleges and universities, 47 percent of students received institutional aid in 1992-93, and this increased to 58 percent in 1999-2000, with the average award rising from \$5,900 to \$7,000. As the authors note, there was a notable increase in the amount of aid given to undergraduates in the upper-income groups with schools often using merit-based criteria rather than need analysis.

In Massachusetts, many colleges and universities award institutional aid to students. Using data from the College Board's Annual Survey of Colleges, Table 53 displays the availability of institutional aid at select colleges and universities in Massachusetts. In general, the public institutions give aid to students based on academics and do not require that students also have financial need. However, they are selective in the way they award other institutional aid. Only two give athletic scholarships, and few have

Table 53

The Availability of Institutional Financial Aid in Massachusetts

	BASED ON ACADEMICS		BASED ON ATHLETICS		BASED ON RESIDENCY	
	NEED	NON-NEED	NEED	NON-NEED	NEED	NON-NEED
PUBLIC INSTITUTIONS						
Bridgewater State College	no	✓	no	no	✓	no
Fitchburg State College	✓	✓	no	no	✓	✓
Framingham State College	✓	✓	no	no	✓	✓
Salem State College	✓	✓	no	no	no	✓
UMass Amherst	no	✓	no	✓	no	✓
UMass Boston	no	✓	no	no	no	no
UMass Dartmouth	no	✓	no	no	no	✓
UMass Lowell	✓	✓	no	✓	✓	no
Westfield State College	no	✓	no	no	no	no
Worcester State College	✓	✓	no	no	✓	no
SELECT PRIVATE INSTITUTIONS						
Assumption College	✓	✓	no	✓	no	no
Bentley College	✓	✓	✓	✓	✓	no
Berklee College of Music	no	✓	no	no	no	no
Boston College	✓	✓	no	✓	no	no
Boston University	✓	✓	no	✓	no	✓
Brandeis University	✓	✓	no	no	no	no
College of the Holy Cross	✓	✓	✓	✓	no	no
Clark University	no	✓	no	no	✓	no
Emerson College	✓	✓	no	no	no	no
Harvard College	no	no	no	no	no	no
MIT	no	no	no	no	no	no
Merrimack College	✓	no	no	✓	no	no
Newbury College	✓	✓	no	no	✓	no
Northeastern University	✓	✓	no	✓	✓	no
Smith College	no	✓	no	no	no	✓
Stonehill College	✓	✓	✓	✓	no	no
Suffolk University	✓	✓	no	no	no	no
Tufts University	✓	✓	no	no	no	no
Wellesley College	no	no	no	no	no	no
Wentworth Institute	no	✓	no	no	✓	no
Western New England College	✓	✓	no	no	no	no
Williams College	no	no	no	no	no	no
Worcester Polytechnic	✓	✓	no	no	no	no

Source: College Board, 2004-05 American Survey of Colleges dataset.

Table 54**Mean Institutional Financial Aid, 2001-02**

	PUBLIC FOUR-YEAR	PRIVATE FOUR-YEAR	PUBLIC TWO-YEAR
Massachusetts	\$1,845	\$11,721	\$237
United States	\$2,629	\$6,961	\$908

Source: National Center for Public Policy and Higher Education (2004). Compiled from the IPEDS First-Time Full-Time Student Financial Aid Survey.

scholarships based on residency. In contrast, many of the private institutions give aid based exclusively on need. Others give additional aid based on academic criteria, but few colleges award institutional financial aid on the basis of athletics or residency.

Compared to the rest of the country, public colleges in Massachusetts give out less in institutional aid while the amount awarded by private institutions exceeds the national mean. As shown in Table 54, in 2001-02, the average award

LACK OF AWARENESS OF FINANCIAL AID IS A MAJOR PROBLEM

to a Massachusetts student who received institutional aid at a public four-year college was \$1,845, approximately 30 percent less than the national average. In contrast, private four-year colleges in Massachusetts gave an average award of \$11,721, 68 percent more than elsewhere. This is partly due to the higher list prices and larger endowments of private institutions in Massachusetts.

Summary of the Aid Available: Potential Aid Packages for Massachusetts Students

While the previous sections gave an overview of federal, state, and institutional aid programs, this section provides a detailed view of the potential aid packages at public institutions in Massachusetts. The typical aid packages available to families at different income levels are described in

Table 55. Estimates are based on a family of four, with only one family member attending college, and no other income, savings, or assets owned by the family. The sample packages are only estimates, and actual aid calculations take into account a number of individual factors including the number of dependents, the number of dependents in college, amount of any student income, how close income-earners are to retirement, and total assets.

As shown in the table, low-income families can often cover the cost of public colleges in Massachusetts with a combination of federal and state aid. While most of the aid does not need to be repaid, loans are important in helping to cover the costs of the four-year institutions. On the other hand, middle- and upper-income families often have some proportion of the costs that they must cover with income or savings. For example, a student from a family that makes \$50,000 who attends a UMass campus would need to raise on average \$7,793 to cover the cost of tuition, required fees, and room and board. Upper-income families (those making over \$75,000) would need even more as they are only eligible for loans. Students who are financially independent from their parents tend to be eligible for more aid than dependent students.

It is also important to note that there are additional types of financial aid beyond those available from the government or colleges. Students may be eligible for outside grant from private organizations. In terms of loans, many students are turning to the private market. In 2004-05, the rate of growth for private student loans was greater than any of type of student aid. While non-federal loans comprised only 6 percent of loan dollars in 1996-97, this amount climbed to 18 percent in 2004-05 (College Board, 2005b). Some parents also have the abil-

Table 55

Sample Aid Packages for Full-Time Students by Public Institution Type and Income

ANNUAL INCOME	UMASS INSTITUTION TUITION/FEES/R&B \$15,568	MASS. STATE COLLEGE TUITION/FEES/R&B \$11,425	MASS. COMMUNITY COLLEGE TUITION/FEES \$3,000 (NO ROOM/BOARD)
DEPENDENT STUDENT FROM A FAMILY OF FOUR			
\$25,000	Federal Pell Grant \$4,050 Federal SEOG \$405 Federal work-study \$4,500 State MASSGrant \$1,500 Institutional grant \$2,608 TOTAL GRANTS \$13,063 Federal Stafford loan \$2,505	Federal Pell Grant \$4,050 Federal SEOG \$900 Federal work-study \$1,800 State MASSGrant \$1,200 Mass. Cash Grant \$780 State Tuition Waiver \$970 TOTAL GRANTS \$9,700 Federal Subsidized loan \$1,725	Federal Pell Grant \$3,000 TOTAL GRANTS \$3,000
\$50,000	Federal work-study \$1,800 MASSGrant \$750 Institutional grant \$2,600 TOTAL GRANTS \$5,150 Federal Stafford loan \$2,625 UNMET COSTS \$7,775	Federal work-study \$1,000 State Tuition Waiver \$970 Mass. Cash Grant \$3,500 TOTALGRANTS \$5,470 Federal Subsidized loan \$2,625 Perkins loan \$1,000 UNMET COSTS \$2,330	Federal Stafford loan \$2,625 UNMET COSTS \$375
\$75,000	Federal Stafford loan \$2,625 UNMET COSTS \$12,943	Subsidized loan \$2,625 UNMET COSTS \$8,800	Federal Stafford loan \$2,625 UNMET COSTS \$375
INDEPENDENT STUDENT FROM A FAMILY OF FOUR			
\$25,000	Federal Pell Grant \$4,050 Federal SEOG \$405 Federal work-study \$4,500 State MASSGrant \$1,500 Institutional grant \$2,608 TOTAL GRANTS \$13,063 Federal Stafford loan \$2,505	Federal Pell Grant \$4,050 Federal SEOG \$900 Federal work-study \$1,800 State MASSGrant \$1,200 Mass. Cash Grant \$780 State Tuition Waiver \$970 TOTAL GRANTS \$9,700 Federal Stafford loan \$1,725	Federal Pell Grant \$3,000
\$50,000	MASSGrant \$750 Institutional grant \$2,600 TOTALGRANTS \$3,350 Federal Stafford loan \$6,625 UNMET COSTS \$5,593	Federal work-study \$1,000 State Tuition Waiver \$970 Mass. Cash Grant \$1,500 TOTAL GRANTS \$3,470 Federal Stafford loan \$6,625 Perkins loan \$1,000 UNMET COSTS \$330	Federal Stafford loan \$3,000
\$75,000	Federal Stafford loan \$6,625 UNMET COSTS \$8,943	Federal Stafford loan \$6,625 UNMET COSTS \$4,800	Federal Stafford loan \$3,000

Source: Estimates for University of Massachusetts sample financial aid package from Richard Barrett, Directory of Financial Aid at the University of Massachusetts – Lowell (personal communication, January 28, 2005). Estimates for Massachusetts state college sample financial aid package from Alcira Zadroga, Financial Aid Counselor at Fitchburg State College (personal communication, January 28, 2005). Estimates for Massachusetts community college sample financial aid package from Craig Organek, Assistant Director of Financial Aid at Bunker Hill Community College (personal communication, January 28, 2005).

Notes: Estimates are based on a family of four, with only one family member attending college, and no other income, savings, or assets owned by the family. The sample packages above are only estimates, and actual aid calculation takes into account a number of individual factors including the number of dependents, the number of dependents in college, amount of any student income, how close income-earners are to retirement, and total assets. Independent undergraduates and dependent undergraduates whose parents cannot receive a PLUS loan are eligible to borrow up to \$6,625 from the Stafford Loan Program.

ity to get money for college by taking out home equity loans, a popular instrument during times of low interest rates. Finally, credit cards are emerging as an additional source of resources for students. According to Nellie Mae (2005), in 2004, almost 24 percent of students reported using a credit card for tuition expenses.

Awareness about Financial Aid and College Costs

While Table 55 describes what might be possible for students, often the actual receipt of aid is below the levels described above (the next chapter will review information on aid received). This is partly due to the fact that students may not qualify for all forms of aid due to family income level or attendance pattern (e.g. some forms of aid require students to be enrolled at least part-time). However, awareness of financial aid is also

LACK OF INFORMATION LIKELY AFFECTS ACCESS TO HIGHER EDUCATION

a major problem. Several studies have found a significant lack of information on financial aid among prospective college students and their parents. For instance, the American Council on Education (2004b) found that during the 1999-2000 academic year, half of all undergraduates, or 8 million students, who were enrolled for credit at eligible postsecondary institutions did not fill out federal paperwork to apply for financial aid (i.e. the FAFSA form). Though many of these students came from higher-income families who probably would not have qualified for need-based aid, large proportions of low-income students were also found to have not applied for aid; 850,000 would likely have been eligible for

a Pell Grant. Also recently, as many as 19,000 who had qualified for a Cal Grant, a need-based aid program in California, failed to even apply due to a lack of information about the policy (Sturrock, 2002). If eligible individuals do not know about aid or are unable to navigate the application process for securing the support, it will not help them. These are serious considerations states and colleges should take into account when designing financial aid and trying to increase access.

There is also little awareness of the true cost of higher education. Those who are able to give an estimate of costs often overestimate the true level, and individuals appear to have a lot of incorrect information about financial aid. For instance, when asked to estimate the average yearly tuition that in-state undergraduates were charged at public four-year colleges in 1998-99, students and their parents guessed approximately twice the actual amount (Horn, Chen, and Chapman, 2003). The misperception for public two-year colleges was even larger—students guessed a price that was over three times the actual mean tuition charge. Additionally, many studies find that there are differences by background in the information individuals have. This lack of information is also likely to impact access to higher education.

Savings Plans in Massachusetts

The growing cost of college emphasizes not only the significance of financial aid but also the importance of families saving for college. Financial aid awards often do not meet the complete need of students. Moreover, increasing pressure on the government aid system worries many that there will not be enough funds to support students. This is especially a concern given demographic changes in the make up of future col-

lege students and the approaching Baby Boom Echo, a large cohort of students who have already started to graduate high school and seek college opportunities. Therefore, families should be encouraged to plan ahead and save for college themselves.

In recent years, federal and state governments have created a number of tax-advantaged options for families to encourage such savings. Two such options are prepaid tuition plans and college savings plans. While prepaid tuition plans allow families to lock in future tuition rates at select colleges at current prices with a guarantee from the state, college savings plans such as 529s are more flexible but do not offer a guarantee. Though all states and Washington, D.C. offer a state section 529 plan, Massachusetts is one of 17 states that have both prepaid tuition plans and a college savings plan. Information about the plans can be found at the website for the Massachusetts Educational Financing Authority (<http://www.mefa.org/index.php>).

U.Plan is the Massachusetts prepaid tuition plan. It allows families to prepay up to 100 percent of a child's future college tuition at today's rate regardless of the age of the child. To save using U.Plan, families purchase a state bond, which is guaranteed by the Commonwealth of Massachusetts. The return on the bond increases at the rate of college tuition plus mandatory fees at every participating college. Therefore, monies invested cover the same proportion of college tuition at all times. For example, if a family purchases shares worth a year's tuition at a state college, the shares will always be worth a year's tuition.

Families do not have to select a specific college at the time of program enrollment. Instead, the percentage of tuition locked in at each participating college is calculated by dividing the

amount of the investment by the actual tuition plus mandatory fees charged at each school. For example, a \$1,000 Tuition Certificate may represent 7 percent of a year's tuition at college A, 15 percent at college B, and 25 percent at college C. The percentage of tuition covered at each college is guaranteed by U.Plan even as tuition costs

FEDERAL AND STATE GOVERNMENTS HAVE CREATED A NUMBER OF OPTIONS TO ENCOURAGE FAMILIES TO SAVE

increase. When the student chooses the college at which to use the monies, they are responsible for paying the remaining percentage of tuition cost not covered by U.Plan at the prevailing tuition rate of that time. Note, however, that students participating in the U.Plan are not given preferential college admissions treatment, and U.Plan funds may reduce financial aid awards.

One great advantage of U.Plan bonds is that they are not subject to Massachusetts state income tax, and the return is tax-free regardless of whether the bonds are used for college tuition at maturity. However, if the U.Plan bonds are not used for tuition at a participating college, the investment return is equal to the annually compounded increase in the Consumer Price Index (CPI), the indicator that determines inflation rates. In this way, an investment in U.Plan bonds is inflation-proof. Although the IRS has yet to make a tax ruling on U.Plan, it is likely that the interest earned on the monies and the benefits received will also be exempt from federal income taxes. The Massachusetts Educational Financing Authority administers the program on behalf of the Commonwealth of Massachusetts though the plan reflects a partnership bet-

ween the government and participating Massachusetts colleges and universities.

The 529 savings plan in Massachusetts is the U.Fund College Investing Plan. Established in 1999 by the Massachusetts Educational Financing Authority, U.Fund allows families to invest in professionally-managed mutual funds and reap the potential rewards from such investments for qualified educational expenses. The monies can be used at any federally accredited college in the country, and so students have much more flexibility in choosing a college than with the prepaid tuition plan. Qualified educational expenses include tuition, fees, room and board, books, supplies, and equipment.

A great benefit of the program is that withdrawals from U.Fund for qualified expenses are federal and state income tax free. Moreover, although contributions are considered gifts, distributions used for qualified expenses are not subject to gift tax. In addition, the donor retains control of the account until proceeds are distributed, and the designated beneficiary can be changed without penalty. Families who choose to contribute through automatic payments from their bank accounts or paychecks can open an account with as little as \$50. Otherwise, there is an initial minimum investment requirement of \$1,000. The current maximum amount that can be invested is \$250,000.

The Massachusetts Education Financing Authority administers the program with investments managed by Fidelity Investments. Investors have some choice about how their funds are invested based on their individual risk tolerance and investment style. Many choose age-based portfolios, which vary in the amount of money invested in stocks versus bonds and money market accounts. A more or less aggressive strategy is chosen based on the age of the

child. Another option is the Static Strategy, which allows families to invest in one of three portfolios with nearly constant asset allocations: all stocks; 70 percent equity and 30 percent fixed-income funds; or a conservative portfolio fixed at approximately 55 percent short-term or money market funds, and 45 percent bonds.

U.Fund has several fees associated with it. The first is an annual account fee of \$30. This is waived for investors using the automatic monthly investment program. Second, there is a daily charge against the assets of the portfolio, which is currently set at an annual rate of 0.30 percent. In addition, each portfolio bears its share of the fees and expenses of the underlying Fidelity funds in which it invests. The estimated average annual expense ratio is 0.70 percent, but this varies according to the age of the beneficiary.

VI. PAYING FOR HIGHER EDUCATION: IS COLLEGE AFFORDABLE?

As reviewed above, the cost of college is substantial and has increased considerably over the last 10 years. There are, however, many financial aid programs to help families pay for college. This chapter reviews information on the receipt of financial aid to give a sense of how affordable college is for families in Massachusetts after support from these many sources. First, I review the receipt of aid generally and of grants in particular. Then, the chapter considers how the cost of higher education net grant aid compares to the incomes of families to give a sense of affordability. Finally, the paper reflects on the use of loans to meet educational costs not covered by grant aid.

For information on the types and amount of aid students receive, the paper relies on the National Postsecondary Student Aid Survey (NPSAS) from the National Center for Education Statistics. This is the most comprehensive dataset available documenting the receipt of aid. Unfortunately, however, it does not allow for state-level analysis and so results are shown for the New England region instead.¹ While this group of students includes people who are not Massachusetts residents, residents of the Bay State account for roughly 37 percent of all first-time freshmen attending college in New England each year. Furthermore, each year the vast majority of freshmen from Massachusetts (86 percent) attend college in New England. Therefore, the data presented in this chapter capture how the vast majority of Massachusetts families pay for

college, and how they differ from their national counterparts.

The Percentage of Students who Received Financial Aid

The majority of undergraduate students receive financial aid. Aid packages vary widely and can include nearly any combination of grants, loans, and other forms of aid. In 2003-04, 63 percent of undergraduate students in the nation received some form of financial assistance (Table 56), and in New England, 69 percent of students received

THE MAJORITY OF UNDERGRADUATE STUDENTS RECEIVE FINANCIAL AID

financial aid (Table 57). Since 1992-93, the share of students receiving financial aid has increased considerably—41 percent in the nation and 51 percent in New England. Given that aid is generally related to the cost of tuition and fees, it is not surprising that students at private four-year colleges and those attending more expensive colleges are the most likely to receive some form of financial aid.² Similarly, full-time students are more likely than part-time students to receive financial aid (76 percent vs. 61 percent). Ironically, part-time students may choose to attend part-time due to financial constraints, but they are less likely to receive financial aid.

1. According to NCES, the weights available in the Data Analysis System (DAS) are appropriate for determining summary statistics that are representative by geographical region. In cases in which there are not enough observations for reliable estimates, no result is shown. Cells that also have large standard errors are also denoted. Source: Personal communication by email with Tracy Hunt-White, July 29, 2005.

2. In the analysis of NPSAS data, private colleges include only private nonprofit colleges. While a growing number of students attend private for-profit colleges, in the 2003-04 academic year they accounted for only 4 percent of full-time equivalent undergraduate enrollment at private institutions in New England and 2 percent of FTE enrollment at all institutions.

Table 56**Share of Students Receiving Aid in the United States, 1989-90 to 2003-04**

	1992-93	1995-96	1999-00	2003-04	CHANGE 1992-93 TO 2003-04
United States Average	44.83	49.69	55.32	63.24	41%
INSTITUTION SECTOR					
Public Two-Year	31.32	32.81	37.73	46.83	50%
Public Four-Year	48.01	55.23	62.08	68.61	43%
Private Four-Year	64.45	70.65	76.07	83.32	29%
ATTENDANCE STATUS					
Full-time/Full year	58.67	68.40	72.45	76.15	30%
Part-time/Full year	36.89	45.41	48.53	60.52	64%
TUITION AND FEES					
\$1-\$1,999	35.26	35.36	39.79	46.35	31%
\$2,000-\$4,999	61.75	65.28	68.80	72.28	17%
\$5,000-\$9,999	68.96	75.85	80.34	80.75	17%
\$10,000-\$15,000	66.18	80.92	81.87	86.24	30%
\$15,000 and Up	57.45	66.97	77.51	84.40	47%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: The tuition and fee categories in the first column are not adjusted for inflation.

Table 57**Share of Students Receiving Aid in New England, 1989-90 to 2003-04**

	1992-93	1995-96	1999-00	2003-04	CHANGE 1992-93 TO 2003-04
New England Average	45.77	54.91	53.86	69.30	51%
INSTITUTION SECTOR					
Public Two-Year	34.98	32.15	35.06	57.17	63%
Public Four-Year	41.73	53.21	62.02	64.56	55%
Private Four-Year	50.31	62.93	63.43	76.74	53%
ATTENDANCE STATUS					
Full-time/Full year	50.67	68.84	71.62	75.91	50%
Part-time/Full year	46.75	52.26	46.61	67.63	45%
TUITION AND FEES					
\$1-\$1,999	35.99	29.22	35.16	47.73	33%
\$2,000-\$4,999	50.13	57.32	63.23	70.44	41%
\$5,000-\$9,999	59.05	76.07	74.18	78.22	32%
\$10,000-\$15,000	56.67	82.75	70.54	74.51	31%
\$15,000 and Up	46.79	62.70	69.10	78.72	68%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: The tuition and fee categories in the first column are not adjusted for inflation.

Table 58**Average Amount of Financial Aid by Type of Aid, 2003-04**

	TOTAL AID	GRANTS	STUDENT LOANS	PLUS LOANS	WORK-STUDY	OTHER
United States Average	\$7,352	43.80%	43.79%	6.46%	3.18%	2.77%
New England Average	\$10,379	46.82%	38.89%	9.26%	4.04%	0.99%
UNITED STATES						
Public Two-Year	\$3,176	57.84%	29.56%	0.88%	4.83%	6.89%
Public Four-Year	\$7,619	39.43%	47.60%	7.28%	3.30%	2.40%
Private Four-Year	\$13,147	51.52%	35.67%	8.11%	3.51%	1.18%
NEW ENGLAND						
Public Two-Year	\$3,110	80.24%	10.52%	2.85%	5.05%	1.34%
Public Four-Year	\$7,958	39.09%	47.72%	8.35%	3.47%	1.37%
Private Four-Year	\$15,928	50.25%	34.56%	10.15%	4.57%	0.47%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS)

Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: "Other" includes institutional graduate TA and RA stipends, state vocational rehabilitation and job training grants, and VA/DOD benefits.

Table 59**Average Amount of Financial Aid by Type of Aid, 1992-93**

	TOTAL AID		GRANTS	STUDENT LOANS	PLUS LOANS	WORK STUDY	OTHER
	NOMINAL DOLLARS	2003-04 DOLLARS					
United States Average	\$3,973	\$5,188	51.35%	36.85%	4.24%	3.67%	3.89%
New England Average	\$6,118	\$7,988	55.44%	33.04%	3.37%	4.55%	3.60%
UNITED STATES							
Public Two-Year	\$1,824	\$2,382	60.61%	27.83%	1.38%	4.21%	5.96%
Public Four-Year	\$3,932	\$5,134	45.41%	41.52%	5.10%	4.12%	3.86%
Private Four-Year	\$7,143	\$9,326	59.35%	29.73%	3.24%	4.35%	3.33%
NEW ENGLAND							
Public Two-Year	\$1,733	\$2,263	76.14%	15.49%	0.00%	5.92%	2.45%
Public Four-Year	\$4,573	\$5,971	43.19%	40.73%	6.06%	6.31%	3.71%
Private Four-Year	\$8,928	\$11,656	62.95%	29.01%	2.53%	4.54%	0.97%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS)

Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: "Other" includes institutional graduate TA and RA stipends, state vocational rehabilitation and job training grants, and VA/DOD benefits.

Information on the Types and Amount of Financial Aid Received

In 2003-04, among students who received financial aid, the average amount of total financial aid in the United States was \$7,352. As shown in Table 58, 44 percent of that amount were grants, 44 percent were student loans, and 6 percent were PLUS loans, which are the responsibility of

parents rather than students. In New England, the average amount of financial aid was over 41 percent greater (\$10,379). The financial aid package in New England includes a slightly higher fraction of grants than the national package: 47 percent were grants. Meanwhile, 39 percent were student loans, and 9 percent were parental loans.

Table 58 also displays differences in finan-

cial aid by institutional type. The total amount of aid increased with the average price of college. The total aid amounts are four to five times larger at private four-year colleges in comparison with public two-year schools. However, grants at private colleges make up a smaller percentage of the total financial aid received, compared with public two-year schools. Grants are a particularly

large part of the packages received by students at public two-year colleges in New England. Student loans are the primary form of financial aid at public four-year colleges both nationally and in New England.

Table 59 displays the same summary statistics for the 1992-93 school year. During that period, the average amount of financial aid nation-

Table 60

Source of Financial Aid in the United States and New England, 2003-04

	TOTAL AID	FEDERAL	STATE	INSTITUTIONAL	OTHER
United States Average	\$7,352	60.71%	6.99%	17.24%	15.07%
New England Average	\$10,379	48.65%	3.61%	31.17%	16.57%
UNITED STATES					
Public Two-Year	\$3,176	65.41%	9.15%	7.24%	18.20%
Public Four-Year	\$7,619	65.31%	8.92%	12.92%	12.86%
Private Four-Year	\$13,147	44.87%	5.95%	33.66%	15.52%
NEW ENGLAND					
Public Two-Year	\$3,110	65.76%	18.03%	7.82%	8.39%
Public Four-Year	\$7,958	61.12%	6.52%	16.54%	15.82%
Private Four-Year	\$15,928	39.22%	1.67%	41.45%	17.66%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.
Notes: "Other" includes institutional graduate TA and RA stipends, state vocational rehabilitation and job training grants, and VA/DOD benefits.

Table 61

Source of Financial Aid in the United States and New England, 1992-93

	TOTAL AID		FEDERAL	STATE	INSTITUTIONAL	OTHER
	NOMINAL DOLLARS	2003-04 DOLLARS				
United States Average	\$3,973	\$5,188	63.32%	8.01%	19.29%	9.37%
New England Average	\$6,118	\$7,988	49.41%	5.99%	35.19%	9.41%
UNITED STATES						
Public Two-Year	\$1,824	\$2,382	71.10%	8.64%	6.03%	14.23%
Public Four-Year	\$3,932	\$5,134	70.09%	9.75%	12.59%	7.57%
Private Four-Year	\$7,143	\$9,326	45.27%	8.04%	37.30%	9.39%
NEW ENGLAND						
Public Two-Year	\$1,733	\$2,263	77.21%	9.56%	4.00%	9.23%
Public Four-Year	\$4,573	\$5,971	66.87%	7.41%	16.46%	9.26%
Private Four-Year	\$8,928	\$11,656	38.03%	4.60%	48.73%	8.65%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.
Notes: Federal aid excludes VA/DOD benefits. Other aid includes aid from private organizations, employers, institutional graduate TA and RA stipends, state vocational rehabilitation and job training grants, and VA/DOD benefits.

ally, in real dollars, was \$5,188. Of that aid, 51 percent were grants, 37 percent were student loans, and 4 percent were parental loans. The trends in New England are similar. In 1992-93, the average amount of financial aid, in real terms, in New England was \$7,988. Of that aid, 55 percent were grants, 33 percent were student loans, and 3 percent were parental loans. Therefore, during the last decade and a half, the share of aid that is from grants has declined while the share of student loans has increased both nationally and in New England.

The shift to loans is happening more rapidly in New England, compared with the nation. In New England, the fraction of aid that is loans has increased from 33 percent in 1992-93 to 39 percent in 2003-04. PLUS loans also increased substantially during this period from 3 to 9 percent in New England. At the same time, the share of aid that is from grants has decreased from 55 to 47 percent in New England. The one sector in New England where grants increased as a share of the financial aid package is at public community colleges (from 76 to 80 percent). This is in contrast to the national trend where the share of grants at public community colleges declined from 61 percent to 58 percent.

Table 60 breaks down the source of financial aid. The majority of financial aid, including both grants and loans, comes from the federal government. Nationally, in 2003-04, 61 percent of financial aid came from the federal government, and in New England, 49 percent of the aid did. A much larger share of aid in New England comes from the institutions (31 percent vs. 17 percent). This is not surprising, given the high share of private colleges in the region, which tend to give more in institutional financial aid. Nationally, state aid accounts for approximately 7 percent of all financial aid. In New England,

state aid accounts for only 4 percent of all financial aid. At community colleges, state aid accounted for 18 percent of aid in New England in 2003-04; nationally, the figure is only 9 percent. At public four-year colleges, state aid accounts for only 7 percent in New England, while nationally it accounts for 9 percent.

Table 61 provides a comparison of the same statistics from 1992-93. Federal and state sources provided proportionally more aid in 1992-93 than 2003-04. The largest difference during that time has been the growth of other sources of financial aid from 9 percent to 15 percent nationally (similar trends are found in New England). Much of this growth has happened for students at the public and private four-year institutions, and so it may signify private sources of loans.

Grants Received by Students

While the above sections review the proportion of students who receive aid and the types they receive, the chapter will now focus on grants, a form of financial aid that does not need to be repaid. Measuring the grants received by stu-

THE SHARE OF AID THAT IS GRANTS HAS DECLINED

dents is helpful for understanding whether higher education is affordable for families. After examining price after the receipt of grants (i.e. net price), a later section will consider students' use of loans to meet the remaining costs.

In 2003-04, half of all undergraduates nationally (51 percent) received grant aid, discounting the cost of college for them. Since 1992-93, the share of students in the U.S. receiving grants increased considerably from 38 percent to 51 percent. An even greater share of students in New England received grants (57

Table 62**Share of Students Receiving Grants in the United States and New England**

	1992-93	1995-96	1999-00	2003-04	CHANGE 1992-93 TO 2003-04
United States Average	38.05	39.00	44.37	50.67	33%
New England Average	39.61	41.95	41.77	56.68	43%
UNITED STATES					
Public Two-Year	28.39	27.63	32.63	39.83	40%
Public Four-Year	38.47	40.28	46.29	51.71	34%
Private Four-Year	57.88	60.81	66.38	73.48	27%
NEW ENGLAND					
Public Two-Year	33.77	28.52	27.50	53.51	58%
Public Four-Year	33.71	38.44	45.61	49.92	48%
Private Four-Year	45.52	52.00	52.70	67.04	47%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Table 63**Average Grant Awards in the United States and New England (Constant 2003-04 Dollars)**

	1992-93	1995-96	1999-00	2003-04	CHANGE 1992-93 TO 2003-04
United States Average	\$3,139	\$3,272	\$3,821	\$4,019	28%
New England Average	\$5,117	\$4,709	\$6,043	\$5,942	16%
UNITED STATES					
Public Two-Year	\$1,592	\$1,511	\$1,727	\$2,160	36%
Public Four-Year	\$2,909	\$3,116	\$3,521	\$3,986	37%
Private Four-Year	\$6,163	\$6,555	\$7,704	\$7,681	25%
NEW ENGLAND					
Public Two-Year	\$1,785	\$1,402	\$1,819	\$2,666	49%
Public Four-Year	\$3,193	\$3,188	\$3,730	\$4,023	26%
Private Four-Year	\$8,110	\$7,666	\$10,681	\$9,161	13%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

percent), and the share receiving grants in New England increased at a faster rate. As shown in Table 62, it increased from 40 percent to 57 percent during the same period, representing a 43 percent increase.

Nationally, students at private four-year colleges are the most likely to receive a grant, with 73 percent receiving one. The trends are similar in New England. Sixty-seven percent of students

at private colleges in New England received a grant. The largest increase in students receiving grants, however, occurred at public community colleges. In 1992-93, 28 percent received a grant. Today, 40 percent receive a grant, an increase of 40 percent. The growth at public two-year colleges was even greater in New England (a 58 percent increase from 1992-93 to 2003-04).

The mean grant amounts are shown in

Table 63. In 2003-04, of all the undergraduates in New England who received a grant, the average grant amount was \$5,942, substantially more than the national average of \$4,019. In 1992-93, the average grant in New England, in real dollars, was \$5,117, and so this suggests grant amounts have increased even after accounting for inflation. However, they have not kept pace with growing tuition prices. Similar trends are found nationally. In New England, the amount of grant aid has increased the most at community colleges, increasing from \$1,785 to \$2,666.

Grant amounts at public four-year colleges remain about half the average amount received at private four-year schools.

Comparing Costs to Family Income: Affordability after the Receipt of Grants

In an earlier chapter, the paper analyzed how tuition and fees have increased, in real dollars, both in the United States and in New England during the last decade. Looking at tuition and fees alone, however, can be misleading, because as we have shown in this chapter most under-

Table 64

Growth in Total College Costs Compared to Growth in Family Income, 1992-93 to 2003-04 (Nominal Dollars)

	TOTAL COST OF EDUCATION (STUDENT BUDGET)			NET COST OF EDUCATION (STUDENT BUDGET MINUS GRANTS)			GROWTH IN MEDIAN INCOME OF FAMILIES WITH COLLEGE STUDENTS
	1992-93	2003-04	CHANGE	1992-93	2003-04	CHANGE	
PUBLIC TWO-YEAR							
United States	\$3,378	\$5,634	67%	\$3,000	\$4,527	51%	19%
Full-time/Full year	\$6,286	\$9,191	46%	\$5,811	\$8,400	45%	17%
Other Students	\$2,950	\$4,835	64%	\$2,627	\$4,015	53%	15%
New England	\$4,001	\$5,504	38%	\$3,646	\$4,288	18%	12%
Full-time/Full year	--	\$10,039	--	--	\$9,150	--	--
Other Students	--	\$5,031	--	--	\$3,944	--	--
PUBLIC FOUR-YEAR							
United States	\$8,021	\$12,581	57%	\$6,958	\$10,013	44%	37%
Full-time/Full year	\$8,951	\$14,450	61%	\$8,264	\$12,475	51%	29%
Other Students	\$6,771	\$8,973	33%	\$5,762	\$7,500	30%	31%
New England	\$8,609	\$13,258	54%	\$6,871	\$11,857	73%	47%
Full-time/Full year	\$10,790	\$15,472	43%	\$10,544	\$13,652	29%	35%
Other Students	--	\$8,016	--	--	\$6,680	--	--
PRIVATE FOUR-YEAR							
United States	\$13,399	\$22,359	67%	\$9,428	\$14,992	59%	33%
Full-time/Full year	\$18,281	\$29,052	59%	\$14,010	\$19,976	43%	25%
Other Students	\$8,344	\$13,622	63%	\$6,279	\$10,550	68%	28%
New England	\$18,040	\$32,233	79%	\$12,890	\$22,446	74%	32%
Full-time/Full year	\$22,710	\$34,136	50%	\$18,710	\$25,806	38%	28%
Other Students	--	\$16,851	--	--	\$13,180	--	--

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates. See the appendix for the standard errors to these calculations. Notes: The total cost of education includes tuition, required fees, room and board, book allowance, and other living expenses related to college. Net cost is total student budget less grant aid from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year. The median family income amounts used in the last column reflect that fact that there are significant differences in the populations in each sector in terms of income.

graduates receive some grant aid, which discounts the actual price they pay for college. For instance, if the amount of grants increased enough to offset the increases in tuition and fees, then the cost of college would not increase for the average student. Next, we examine the affordability of college in the United States and in New England, and how affordability has changed from 1992-93 to 2003-04.

Table 64 shows the total cost of education, including tuition, room and board, and a living allowance, for students in 1992-93 and 2003-04. Nationally, between 1992-93 and 2003-04

THE GROWTH IN FAMILY INCOME DID NOT KEEP UP WITH THE GROWTH IN THE NET COST OF COLLEGE

the total cost of education rose 67 percent (from \$3,378 to \$5,634) for students at community colleges, 57 percent (from \$8,021 to \$12,581) at public four-years, and 67 percent at private four-years (from \$13,399 to \$22,359). In New England, increases at community colleges were smaller than the national average, with students in the region facing a 38 percent increase in cost rather than 67 percent. Students attending public four-years in the region experienced an increase in the cost of education similar to the nation (54% vs. 57%). However, students at private four-years in the New England region faced an increase in cost of 79 percent compared to 67 percent nationally, as costs climbed from \$18,040 to \$32,233.

To account for grants, the next set of columns in Table 64 show the net cost of education to give a sense of the costs actually faced by students after applying grant aid to the total. When grants are taken into consideration, increases in the net cost of education from 1992-

93 to 2003-04 appear smaller. Nationally, the net cost of education rose 51 percent at community colleges and 44 percent at public four-years, compared to the growth in student budgets of 67 percent and 57 percent, respectively. Students at private four-year institutions experienced an increase of 59 percent in net costs. In the New England region, grants impacted changes in net costs similarly, with the exception of public-four year colleges. Net costs rose for community college students 18 percent over this period compared to a 38 percent increase in total costs. Likewise, students at private four-year institutions experienced a 74 percent increase in net costs from 1992-93 to 2003-04, versus a 79 percent increase in total costs. However, students enrolled in public-four year institutions in the New England region faced a 73-percent increase in net costs (compared to a 54-percent increase in total costs before taking into account aid). These students were the only ones to experience a greater increase in net costs than in total costs.

The final set of columns in Table 64 give some perspective about what happened to family incomes during this time. If family incomes increased at the same rate as tuition prices, then one might not be as concerned about college affordability. Nationally, median family income rose 19 percent for community college students, 37 percent for public-four year students and 33 percent for private four-year students. Growth in the median family income of those with children in college was unable to keep up with growth in the net costs of education, let alone the growth in total costs, for any group of students. The New England region reflects the same picture, despite the fact that median incomes were higher. Net costs rose 18 percent at community colleges, compared to a 12 percent increase in median family income.

Table 65 displays similar calculations for tuition and required fees (not including room and board and a living allowance). Tuition and required fees rose considerably from 1992-1993 to 2003-04 across the country. Average tuition and fees and public two-year colleges grew nationally from \$295 to \$743, a change of 152 percent. However, when grants are included in the picture, net tuition and fees grew only 88 percent from \$161 to \$302. Public four-year institutions raised tuition and fees 98 percent from \$1,784 to \$3,524, while private four year tuition and

fees rose 82 percent from \$7,300 to \$13,302. Net tuition and fees, however, only increased 73 percent and 75 percent. Despite smaller changes over the period when net tuition and fees are considered, the increases in net tuition and fees far outpace the growth in median family income.

Increases in tuition and fees in New England are generally smaller than the national increases. The greatest increase in tuition and fees occurred at public four-years. From 1992-93 to 2003-04, tuition and fees rose 86 percent from \$2,505 to \$4,663. While this increase was lower

Table 65

Growth in Tuition and Fees Compared to Growth in Family Income, 1992-93 to 2003-04 (Nominal Dollars)

	TUITION AND REQUIRED FEES			NET TUITION AND FEES (TUITION AND FEES MINUS GRANTS)			GROWTH IN MEDIAN INCOME OF FAMILIES WITH COLLEGE STUDENTS
	1992-93	2003-04	CHANGE	1992-93	2003-04	CHANGE	
PUBLIC TWO-YEAR							
United States	\$295	\$743	152%	\$161	\$302	88%	19%
Full-time/Full year	\$994	\$1,823	83%	\$608	\$1,036	70%	17%
Other Students	\$262	\$650	148%	\$145	\$265	83%	15%
New England	\$778	\$1,365	75%	\$314	\$384	22%	12%
Full-time/Full year	--	\$2,712	--	--	\$977	--	--
Other Students	--	\$1,260	--	--	\$378	--	--
PUBLIC FOUR-YEAR							
United States	\$1,784	\$3,524	98%	\$1,151	\$1,991	73%	37%
Full-time/Full year	\$2,384	\$4,760	100%	\$1,981	\$3,202	62%	29%
Other Students	\$1,300	\$2,471	90%	\$711	\$1,331	87%	31%
New England	\$2,505	\$4,663	86%	\$1,430	\$3,156	121%	47%
Full-time/Full year	\$4,920	\$6,314	28%	\$3,329	\$4,784	44%	35%
Other Students	--	\$2,254	--	--	\$1,573	--	--
PRIVATE FOUR-YEAR							
United States	\$7,300	\$13,302	82%	\$3,500	\$6,125	75%	33%
Full-time/Full year	\$12,064	\$19,405	61%	\$7,750	\$10,262	32%	25%
Other Students	\$3,290	\$6,432	96%	\$1,551	\$3,671	137%	28%
New England	\$11,900	\$21,481	81%	\$7,300	\$13,166	80%	32%
Full-time/Full year	\$16,200	\$22,540	39%	\$12,704	\$15,641	23%	28%
Other Students	--	\$10,200	--	--	\$6,226	--	--

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates. See the appendix for the standard errors to these calculations. Notes: Net price is tuition and required fees less grant aid received from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year. The median family income amounts used in the last column reflect that fact that there are significant differences in the populations in each sector in terms of income.

than the increase witnessed at four-year colleges nationally, tuition and fees nationally were only \$3,524. Grants had a large impact on community college students, with net tuition and fees rising only 22 percent, due in part to grants increasing as a share of the financial aid package. However, students at public four-years experienced the opposite, with net costs rising 121 percent. Similar to national trends, family incomes in New England did not keep pace with the growth in net tuition and fees.

Another way to consider college affordability is to express the share of income required to cover the costs of higher education. Table 66 displays these calculations. Using the median family income for each type of student at each type of school, the percentages reflect how much of annual income would be needed to cover the cost of college, after taking into account grants. The left side of the table uses the net total cost of education, including room and board. While a family needed to spend 10 percent of their

Table 66

Summary of Affordability of Higher Education—Share of Income Required to Cover College Costs, 1992-93 to 2003-04

	NET TOTAL COST OF EDUCATION			NET TUITION AND REQUIRED FEES		
	1992-93	2003-04	CHANGE	1992-93	2003-04	CHANGE
PUBLIC TWO-YEAR						
United States	10.0%	12.7%	27%	0.5%	0.8%	58%
Full-time/Full year	12.9%	16.0%	23%	1.4%	2.0%	45%
Other Students	9.1%	12.1%	33%	0.5%	0.8%	59%
New England	15.9%	16.6%	5%	1.4%	1.5%	9%
Full-time/Full year	--	25.1%	--	--	2.7%	--
Other Students	--	16.1%	--	--	1.5%	--
PUBLIC FOUR-YEAR						
United States	19.9%	20.9%	5%	3.3%	4.2%	26%
Full-time/Full year	16.5%	19.3%	17%	4.0%	4.9%	25%
Other Students	23.1%	22.9%	-1%	2.8%	4.1%	43%
New England	18.1%	21.4%	18%	3.8%	5.7%	51%
Full-time/Full year	20.3%	19.5%	-4%	6.4%	6.8%	6%
Other Students	--	20.0%	--	--	4.7%	--
PRIVATE FOUR-YEAR						
United States	25.0%	29.9%	20%	9.3%	12.2%	32%
Full-time/Full year	25.5%	28.9%	14%	14.1%	14.9%	6%
Other Students	23.2%	30.4%	31%	5.7%	10.6%	85%
New England	25.3%	33.4%	32%	14.3%	19.6%	37%
Full-time/Full year	30.3%	32.8%	8%	20.6%	19.9%	-4%
Other Students	--	25.7%	--	--	12.1%	--

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates. See the appendix for the standard errors to these calculations.

Notes: The total cost of education includes tuition, required fees, room and board, book allowance, and other living expenses related to college. Net cost is total student budget less grant aid from any source. Net Price is tuition and required fees less grant aid received from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year. The median family income amounts used in the last column reflect that fact that there are significant differences in the populations in each sector in terms of income.

annual income in 1992-93 to attend the average public two-year college nationally, this grew to almost 13 percent of their income by 2003-04, a 27-percent increase in the share of income needed. In 2003-04, a greater proportion of income was needed to cover the costs of public and private four-year colleges (21 and 30 percent, respectively), but the growth from 1992-93 was not as large in percentage terms (5 and 20 percent, respectively). However, just focusing only on net tuition and required fees tells a little different story. Tuition prices have grown at a faster rate and so families had to spend much more of their annual incomes in 2003-04 than 1992-93. For example, families with children at private four-year colleges had to spend a 32 percent greater share of their incomes.

Share of income for families with college students required to cover the total cost of higher education was similar in most sectors for the New England region, with the exception of two-year public colleges. Community colleges required 17 percent of a student's family income in New England versus 13 percent nationally in 2003-04. Additionally, changes in the share of income families in the New England region faced were similar to changes nationally, with increases in the share of income required to cover total net costs at community colleges rising 5 percent (16 to 17 percent) and public four-years 18 percent (18 to 21 percent). However, the increase in the share of income needed to cover total net costs at private four-years was more pronounced, rising 32 percent (25 to 33 percent of family income).

College Affordability by Income Quartile

This section focuses on changes in college affordability by income quartile at each type of postsecondary institution. Unfortunately, the

Table 67

Affordability of a College Education at Public Four-Year Institutions Families with Students in College 2003-04 (Nominal Dollars)

	NET COST OF EDUCATION (STUDENT BUDGET MINUS GRANTS)			SHARE OF ANNUAL MEDIAN FAMILY INCOME 2003-04
	1992-93	2003-04	CHANGE	
All Quartiles	\$6,958	\$10,013	44%	21%
Full-time/Full year	\$8,264	\$12,475	51%	19%
Other Students	\$5,762	\$7,500	30%	23%
1st Quartile	\$5,987	\$7,519	26%	77%
Full-time/Full year	\$6,394	\$8,200	28%	42%
Other Students	\$5,793	\$7,087	22%	109%
2nd Quartile	\$6,884	\$9,781	42%	26%
Full-time/Full year	\$7,914	\$11,886	50%	27%
Other Students	\$6,163	\$7,777	26%	36%
3rd Quartile	\$7,069	\$11,177	58%	17%
Full-time/Full year	\$8,463	\$13,114	55%	18%
Other Students	\$5,520	\$7,806	41%	19%
4th Quartile	\$7,811	\$11,663	49%	11%
Full-time/Full year	\$8,984	\$14,114	57%	12%
Other Students	\$5,173	\$7,362	42%	8%

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates. Median income for families with public four-year college students is from NPSAS.
Notes: The total cost of education includes tuition, required fees, room and board, book allowance, and other living expenses related to college. Net cost is total student budget less grant aid from any source. Net tuition and required fees is less grant aid received from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year.

data sample for New England is not large enough to produce reliable estimates. Therefore, the next three tables focus on national trends. The first focuses on public four-year colleges. In 2003-04, the net cost of this type of institution was \$10,013. This had increased 44 percent from \$6,958 in 1992-93. However, given different enrollment patterns by income level, the growth in total net cost differed by income quartile. Lower-income students tend to attend less expensive institutions, and the total net costs of those schools increased by 26 percent from 1992-93 to 2003-04. High income students in the top income quartile attended more expensive colleges, and

Table 68

**Affordability of a College Education at Public Two-Year Institutions
Families with Students in College 2003-04 (Nominal Dollars)**

	NET COST OF EDUCATION (STUDENT BUDGET MINUS GRANTS)			SHARE OF ANNUAL MEDIAN FAMILY INCOME 2003-04
	1992-93	2003-04	CHANGE	
All Quartiles	\$3,000	\$4,527	51%	13%
Full-time/Full year	\$5,811	\$8,400	45%	16%
Other Students	\$2,627	\$4,015	53%	12%
1st Quartile	\$3,661	\$4,089	12%	53%
Full-time/Full year	\$4,805	\$6,650	38%	37%
Other Students	\$3,543	\$3,821	8%	57%
2nd Quartile	\$3,236	\$4,814	49%	21%
Full-time/Full year	\$5,484	\$8,508	55%	19%
Other Students	\$2,913	\$4,228	45%	20%
3rd Quartile	\$2,671	\$4,845	81%	11%
Full-time/Full year	\$6,749	\$9,018	34%	13%
Other Students	\$2,077	\$4,213	103%	11%
4th Quartile	\$804	\$4,230	426%	5%
Full-time/Full year	\$6,311	\$9,149	45%	8%
Other Students	\$690	\$3,821	454%	5%

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates. Median income for families with public two-year college students is from NPSAS.

Notes: The total cost of education includes tuition, required fees, room and board, book allowance, and other living expenses related to college. Net cost is total student budget less grant aid from any source. Net tuition and required fees is less grant aid received from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year.

these schools experienced larger growth in net prices (49 percent).

Affordability by income quartile at public two-year colleges is shown in Table 68. Public community colleges are less expensive than their four-year counterparts. Overall, attendance at these schools tends to be concentrated among students in the lowest income quartile. However, when students in the upper quartiles attend public two-year colleges, they are more likely to do so full-time. This is reflected in the means displayed in Table 68. Overall, the net cost faced by students in the first quartile is higher, but once comparing the net cost faced by full-time,

full-year students only, the price is greater for those in the upper quartiles. Overtime, the net total cost of education has increased for all students. Focusing on full-time, full-year students to standardize the enrollment pattern, the net total cost has increased by 38, 55, 34, and 45 percent, respectively, for each quartile from 1992-93 to 2003-04. In 2003-04, 37 percent of annual income would be required to cover these costs for those in the lowest income quartile.

Table 69 summarizes affordability by quartile at the private colleges. Similar to public colleges, individuals in the upper income quartiles tend to face greater net educational costs. For full-time, full-year students in the lowest income quartile, the average net total cost of a private four-year college was \$8,375 in 1992-93 and \$13,901 in 2003-04. This constitutes a 66 percent increase in net price. At the highest income quartile, among full-time, full-year students, net cost increased from \$18,328 to \$25,138, a 37 percent increase. However, the amount of money in absolute terms was greater for upper income students in comparison to those with less income. It took 71 percent of annual family income to cover this cost for the students in the first quartile. In contrast, it took only 21 percent of income for those in the fourth quartile.

Meeting the Cost of College beyond Grants: Student Loan Burden

While grants help families cover some of the costs of higher education, students are still financially responsible for a large amount. Beyond family savings, most of this is met by loans. In the U.S., more than a third of students (35 percent) took out a loan in 2003-04. An even greater share of students in New England took out a loan (44 percent versus 35 percent). The share of undergraduates taking out loans in New England

and the nation is increasing at roughly the same rate. In New England, since 1992-93, the share of students taking out loans at the region's public four-year colleges nearly doubled from 25 percent to 48 percent. While the change is dramatic, the share of New England students taking out loans is only slightly more than the national average of 45 percent. The community colleges are one sector where New England particularly stands out relative to the nation. Only a small share of students at community colleges in New England (7 percent) took out a loan in 2003-04, which is considerably smaller share than the national average of 12 percent.

As shown in Table 71, in New England, of all the students who received a loan in 2003-04, the average loan amount is \$7,842, \$1,200 more than the national average of \$6,628. Since 1992-93, the average loan amount in New England has increased at a slightly faster rate than in nation (50 percent versus 41 percent). This difference is largely driven by the large loans students are taking out to pay for private colleges. The loan amount for students at private colleges in New England increased 79 percent, from \$5,474 to \$9,794. At public four-year colleges, the average loan that New England students take out is actually slightly less than the national average (\$6,025 versus \$6,392), and the average loan amount at public four-year colleges nationally increased more than it has in New England since 1992-93. Similarly, at community colleges, students in New England take out a slightly smaller loan, on average, than do community college students nationally (\$3,478 versus \$3,727).

Rather than focusing on annual loan amounts, Table 72 displays the cumulative

Table 69

**Affordability of a College Education at Private Four-Year Institutions
Families with Students in College 2003-04 (Nominal Dollars)**

	NET COST OF EDUCATION (STUDENT BUDGET MINUS GRANTS)			SHARE OF ANNUAL MEDIAN FAMILY INCOME 2003-04
	1992-93	2003-04	CHANGE	
All Quartiles	\$9,428	\$14,992	59%	30%
Full-time/Full year	\$14,010	\$19,976	43%	29%
Other Students	\$6,279	\$10,550	68%	30%
1st Quartile	\$7,246	\$12,180	68%	121%
Full-time/Full year	\$8,375	\$13,901	66%	71%
Other Students	\$6,578	\$10,545	60%	167%
2nd Quartile	\$8,843	\$13,618	54%	38%
Full-time/Full year	\$11,023	\$17,810	62%	40%
Other Students	\$6,689	\$10,500	57%	49%
3rd Quartile	\$8,643	\$15,530	80%	24%
Full-time/Full year	\$12,740	\$20,146	58%	27%
Other Students	\$5,780	\$10,500	82%	28%
4th Quartile	\$12,770	\$18,843	48%	18%
Full-time/Full year	\$18,328	\$25,138	37%	21%
Other Students	\$5,618	\$10,666	90%	12%

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates. Median income for families with private four-year college students is from NPSAS.

Notes: The total cost of education includes tuition, required fees, room and board, book allowance, and other living expenses related to college. Net cost is total student budget less grant aid from any source. Net tuition and required fees is less grant aid received from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year.

amounts for students at various stages of their college careers. It is important to note that the Stafford Unsubsidized Loan program, the largest of its type, did not begin until 1992, and so the amounts for some students in 1992-93 do not reflect multiple years of debt.³ However, later years show significant amounts of debt. Particularly at private four-year colleges nationwide, average debt levels have reached over \$20,000 for 4th year undergraduates since 1999-2000. The means are reflected in the tables and so clearly many families are facing

3. Before the introduction of the Stafford Unsubsidized Loan Program, the Federal government awarded subsidized loans on the basis of need. Several changes in the 1992 Higher Education Reauthorization opened loans to students regardless of need.

Table 70**Share of Students Receiving Loans in the United States and New England**

	1992-93	1995-96	1999-00	2003-04	CHANGE 1992-93 TO 2003-04
United States Average	20.59	25.81	29.01	35.25	71%
New England Average	26.16	36.60	32.55	44.16	69%
UNITED STATES					
Public Two-Year	6.53	6.33	7.45	12.15	86%
Public Four-Year	26.68	35.99	39.82	44.87	68%
Private Four-Year	36.87	45.12	50.12	56.78	54%
NEW ENGLAND					
Public Two-Year	3.15	3.76	4.59	6.84	117%
Public Four-Year	24.81	34.96	43.87	47.80	93%
Private Four-Year	34.41	49.09	48.30	55.79	62%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: The total amount of loans includes: all federal loans to students (Perkins, Stafford, and federal loans through the Public Health Service), state loans, institutional loans (from funds provided by the educational institution), and private/alternative loans (the amount of alternative commercial or private loans received by students including personal loans secured through financial institutions or lenders like TERI or Sallie Mae; does not include loans from family or friends). Also includes PLUS loans (both the Federal Family Education Loan and Direct loan programs).

Table 71**Average Annual Loan Aid in the United States and New England (Constant 2003-04 Dollars)**

	1992-93	1995-96	1999-00	2003-04	CHANGE 1992-93 TO 2003-04
United States Average	4,708	5,529	6,378	6,628	41%
New England Average	5,211	6,775	7,212	7,842	50%
UNITED STATES					
Public Two-Year	3,366	3,335	3,732	3,727	11%
Public Four-Year	4,384	5,530	5,882	6,392	46%
Private Four-Year	5,494	6,669	8,160	8,446	54%
NEW ENGLAND					
Public Two-Year	--	--	--	3,478	--
Public Four-Year	4,738	5,910	6,229	6,025	27%
Private Four-Year	5,475	7,893	8,619	9,794	79%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: The total amount of loans includes: all federal loans to students (Perkins, Stafford, and federal loans through the Public Health Service), state loans, institutional loans (from funds provided by the educational institution), and private/alternative loans (the amount of alternative commercial or private loans received by students including personal loans secured through financial institutions or lenders like TERI or Sallie Mae; does not include loans from family or friends). Also includes PLUS loans (both the Federal Family Education Loan and Direct loan programs).

debt amounts greater than what is shown. The heavy debt burden at private colleges has serious implications for students in Massachusetts. As discussed in earlier sections, many Massachusetts students attend private institutions. Cumulative debt amounts at private four-year

colleges in New England are about \$1,500 more than the national average.

The cumulative amount of debt at public colleges has also grown substantially. Second year undergraduates at public two-year colleges had nearly \$8,300 in debt nationally in 2003-

Table 72

Cumulative Amount Borrowed by Full Year Undergraduates, 1992-93 to 2003-04 (Nominal Dollars)

	1992-93	1995-96	1999-00	2003-04	CHANGE 1992-93 TO 2003-04	
					NOMINAL DOLLARS	2003-04 DOLLARS
UNITED STATES						
PUBLIC TWO-YEAR						
1st year undergraduates	\$2,784	\$3,553	\$5,139	\$5,717	105%	57%
2nd year undergraduates	\$3,087	\$4,535	\$6,874	\$8,296	169%	106%
PUBLIC FOUR-YEAR						
1st year undergraduates	\$3,780	\$3,813	\$6,111	\$6,158	63%	25%
2nd year undergraduates	\$5,378	\$5,958	\$9,929	\$9,505	77%	35%
3rd year undergraduates	\$6,591	\$8,506	\$13,880	\$14,083	114%	64%
4th year undergraduates	\$7,604	\$11,146	\$16,794	\$17,507	130%	76%
PRIVATE FOUR-YEAR						
1st year undergraduates	\$4,965	\$4,828	\$8,083	\$8,262	66%	27%
2nd year undergraduates	\$7,199	\$7,759	\$13,078	\$12,672	76%	35%
3rd year undergraduates	\$9,289	\$11,026	\$19,730	\$18,385	98%	52%
4th year undergraduates	\$10,676	\$14,157	\$22,568	\$21,946	106%	57%
NEW ENGLAND						
PUBLIC TWO-YEAR						
1st year undergraduates	--	--	--	\$4,735	--	--
2nd year undergraduates	--	--	--	--	--	--
PUBLIC FOUR-YEAR						
1st year undergraduates	\$6,270	\$4,180	\$6,404	\$5,802	-7%	-29%
2nd year undergraduates	\$5,794	\$5,203	\$11,456	\$10,807	87%	43%
3rd year undergraduates	\$7,058	\$9,104	\$14,577	\$12,890	83%	40%
4th year undergraduates	\$8,465	\$10,447	\$20,634	\$15,399	82%	39%
PRIVATE FOUR-YEAR						
1st year undergraduates	\$6,545	\$6,549	\$7,577	\$9,012	38%	5%
2nd year undergraduates	\$8,392	\$9,397	\$15,876	\$13,583	62%	24%
3rd year undergraduates	\$9,651	\$12,831	\$19,176	\$17,920	86%	42%
4th year undergraduates	\$12,041	\$16,735	\$24,427	\$23,491	95%	49%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: Includes all loans ever borrowed for undergraduate education. Does not include parent PLUS loans. Data were collected from the National Student Loan Data System (NSLDS), a repository of federal loan information. However, because student may also borrow from other sources, self-reported and institutional information were also used.

04. At public four-year colleges in 2003-04, seniors had accumulated on average \$17,507 in debt. The number is slightly lower in New England. In comparison to 1992-93, these numbers reflect a 106 and 76 percent increase, respectively, in the amount of debt students

have after accounting for inflation. The growth in the debt burden of New England students at public four-year colleges was less at 39 percent. This is still a significant amount of growth in the amount borrowed by students.

PLUS Loans are another source of capital

Table 73**Cumulative Amount Borrowed through PLUS Loans for Full-Year Undergraduates, United States, 1992-93 to 2003-04 (Nominal Dollars)**

	1992-93	1995-96	1999-00	2003-04	CHANGE 1992-93 TO 2003-04	
					NOMINAL DOLLARS	2003-04 DOLLARS
UNITED STATES						
PUBLIC FOUR-YEAR						
1st year undergraduates	\$6,303	\$5,853	\$7,704	\$9,260	47%	13%
2nd year undergraduates	\$6,848	\$7,279	\$8,323	\$11,166	63%	25%
3rd year undergraduates	\$6,482	\$7,712	\$11,074	\$13,518	109%	60%
4th year undergraduates	\$5,924	\$6,892	\$10,587	\$12,659	114%	64%
PRIVATE FOUR-YEAR						
1st year undergraduates	\$10,084	\$7,853	\$9,987	\$12,887	28%	-2%
2nd year undergraduates	\$9,361	\$10,754	\$14,034	\$16,780	79%	37%
3rd year undergraduates	\$7,664	\$12,503	\$15,117	\$18,985	148%	90%
4th year undergraduates	\$7,005	\$10,367	\$19,263	\$19,468	178%	113%

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

for higher education expenses. Rather than being tied to the student, they are the responsibility of parents. Table 73 displays the growing amount borrowed under this federal program. Small sample sizes preclude us from showing the numbers for New England. The debt parents are taking on to pay for college is also substantial. In 2003-04, the average cumulative amount in PLUS Loans for the 4th year undergraduates was \$12,659 at public four-year colleges and \$19,468 at private four-year colleges. This amount had increased by 64 and 113 percent, respectively, from 1992-93 in real terms.

While the NPSAS data likely covers major government and institutional loans, students may also have access to additional debt resources. First, many students take out private educational loans. In 1996-97, non-federal loans comprised only 6 percent of loan dollars. Today, this amount has increased to 18 percent (College Board, 2005b). The number of private loan products increased from 79 in March 1997

to 272 in March 2003, growing 244 percent (Wegman Cunningham, and Merisotis, 2003). Unfortunately, it is more difficult to get good information on private loans, and so these estimates may not reflect how many students are actually taking out such debt. Parents may also take out home equity loans to pay for college expenses, but because these are not linked directly to higher education, the true magnitude of such debt is unknown. Finally, credit cards are increasingly providing capital to students. In 2004, almost 24 percent of students reported using a credit card for tuition expenses (Nellie Mae 2005). For these reasons, the numbers reflected in the above tables probably underestimate the true amount of debt families incur to pay for higher education expenditures.

Because many students must borrow in order to finance their educations, persistence takes on an added importance as the costs of college increases. Students who drop out are often saddled with substantial debt but lack the

benefits of a degree. Among students beginning postsecondary education in 1995, the median debt burden of borrowers who dropped out was \$7,000. More importantly, 22 percent of borrowers who dropped out defaulted on at least one loan in the six years following the date of initial enrollment while only 2 percent of graduates did so (Gladieux and Perna, 2005). Therefore, the issue of debt is very much tied to the outcomes of students. In order to be able to afford to repay what they borrow, students need to be able to fully reap the benefits of higher education by completing their degrees. Unfortunately, researchers suggest that persistence is related to the amount of unmet financial need—students are less likely to persist if they are unable to meet the costs of higher education. This can create a “catch-22” for students who already have significant debt but not enough resources to continue to complete their degrees.

DATA APPENDIX

Appendix Table 1

Undergraduate Admissions at Massachusetts' Public Colleges, Fall 2003

INSTITUTION	APPLICANTS	ACCEPTANCES	% ACCEPTED	NEW STUDENTS	YIELD RATE
UNIVERSITY OF MASSACHUSETTS					
Amherst	19,286	15,375	79.7	5,230	34.0%
Boston	5,613	3,921	69.9	1,949	49.7%
Dartmouth	6,913	5,001	72.3	1,839	36.8%
Lowell	5,576	3,814	68.4	1,787	46.9%
Segment Total	37,388	28,111	75.2	10,805	38.4%
State Colleges					
Bridgewater	6,678	5,054	75.7	1,997	39.5%
Fitchburg	3,861	2,498	64.7	988	39.6%
Framingham	5,099	2,842	55.7	940	33.1%
Mass. College of Art	1,609	882	54.8	411	46.6%
Mass. College of Liberal Arts	1,504	1,037	68.9	393	37.9%
Mass. Maritime Academy	891	542	60.8	311	57.4%
Salem	5,266	4,456	84.6	1,755	39.4%
Westfield	4,418	2,963	67.1	1,189	40.1%
Worcester	4,001	2,275	56.9	1,024	45.0%
Segment Total	33,327	22,549	67.7	9,008	39.9%
COMMUNITY COLLEGES					
Berkshire	1,169	1,164	99.6	847	72.8%
Bristol	4,172	3,280	78.6	2,005	61.1%
Bunker Hill	5,165	3,571	69.1	1,745	48.9%
Cape Cod	1,985	1,787	90.0	1,138	63.7%
Greenfield	1,463	1,462	99.9	925	63.3%
Holyoke	4,076	3,364	82.5	2,236	66.5%
Massachusetts Bay	4,538	4,409	97.2	2,795	63.4%
Massasoit	4,287	2,799	65.3	1,819	65.0%
Middlesex	7,604	5,844	76.9	4,107	70.3%
Mount Wachusett	3,494	2,828	80.9	2,269	80.2%
North Shore	4,595	3,792	82.5	2,318	61.1%
Northern Essex	3,116	2,957	94.9	1,997	67.5%
Quinsigamond	3,816	3,111	81.5	1,690	54.3%
Roxbury	1,321	1,103	83.5	741	67.2%
Springfield Technical	5,772	3,147	54.5	2,159	68.6%
Segment Total	56,573	44,618	78.9	28,791	64.5%

Source: Massachusetts Board of Higher Education (2004b).

Notes: Enrollment numbers for Worcester/Medical are not included in the University Segmental total. Graduate enrollment figures for Worcester/Medical also include First Professional Degree students.

Appendix Table 2

Graduate Admissions at Massachusetts Public Colleges, Fall 2003

INSTITUTION	APPLICANTS	ACCEPTANCES	% ACCEPTED	NEW STUDENTS	YIELD RATE
UNIVERSITY OF MASSACHUSETTS					
Amherst	11,246	2,830	25.2	1,418	50.1
Boston	2,121	1,269	59.8	648	51.1
Dartmouth	795	576	72.5	252	43.8
Lowell	1,704	1,222	71.7	461	37.7
Segment Total	15,866	5,897	37.2	2,779	47.1
STATE COLLEGES					
Worcester/Medical	1,195	398	33.3	208	52.26
Bridgewater	495	439	88.7	312	71.1
Fitchburg	414	372	89.9	209	56.2
Framingham	455	432	94.9	318	73.6
Mass. College of Art	401	72	18.0	46	63.9
Mass. College of Liberal Arts	49	49	100.0	49	100.0
Mass. Maritime Academy	26	24	92.3	22	91.7
Salem	468	404	86.3	309	76.5
Westfield	24	23	95.8	19	82.6
Worcester	325	172	52.9	114	66.3
Segment Total	2,657	1,987	74.8	1,398	70.4

Source: Massachusetts Board of Higher Education (2004b).

Notes: Enrollment numbers for Worcester/Medical are not included in the University Segmental total. Graduate enrollment figures for Worcester/Medical also include First Professional Degree students.

Appendix Table 3

Summary of Massachusetts State Financial Aid Programs

Christian A. Herter Memorial Scholarship Program

DESCRIPTION Scholarship providing educational opportunities to Commonwealth students who demonstrate academic promise and desire to attend post-secondary institutions.

AWARD AMOUNTS Awards are up to \$15,000. For full-time study based on education costs, including tuition, room, board, required fees, books and transportation.

ELIGIBILITY Students must be enrolled in a public or private secondary school in the Commonwealth of Massachusetts and legal residents of the State; have a cumulative grade point average of 2.5 on a 4.0 scale; Exhibit high financial need, and strong academic promise to continue education beyond the secondary level.

RE-PAYMENT? No

Paul Tsongas Scholarship Program

DESCRIPTION Scholarship to recognize achievement of Massachusetts high school students who have graduated in three years.

AWARD AMOUNTS Eligible students receive a waiver of tuition and mandatory fees at one of the nine Massachusetts state colleges.

ELIGIBILITY Grade point average (GPA) of 3.75 and an SAT score of at least 1200 (or the American College Testing [ACT] equivalent); one year residency requirement for tuition classification at the State Colleges; a GPA of 3.3 must be maintained in order to keep the scholarship all for years.

RE-PAYMENT? No

MASSGrant Program

DESCRIPTION Grant assistance program funded by appropriations from the Massachusetts Legislature .

AWARD AMOUNTS Awards range between \$300 and \$2300 per academic year, depending on type of institution (private, public or for profit) and Expected Family Contribution (EFC); awards for the academic year may not exceed a student's demonstrated financial need.

ELIGIBILITY Need-based financial assistance to undergraduate students who reside in Massachusetts and who are enrolled in and pursuing a program of higher education in any approved public or independent college, university, school of nursing or any other approved institution furnishing a program of higher education.

RE-PAYMENT? No

Massachusetts Gilbert Matching Student Grant Program

DESCRIPTION Grant to participating Massachusetts' institutions of higher education and schools of nursing; 100% of such funds must be used for direct financial assistance to needy Massachusetts's undergraduates.

AWARD AMOUNTS Awards range from \$200 to \$2500 per academic year.

ELIGIBILITY Be a dependent student who is a permanent legal resident of Massachusetts and whose source of support is a parent who has been a permanent resident of the Commonwealth of Massachusetts for the twelve months prior to the opening of the academic year; or an independent student who has been a permanent resident of the Commonwealth for the twelve months immediately preceding the opening of the academic year; not have earned a bachelor's or professional degree or their equivalent; demonstrate financial need.

RE-PAYMENT? No

Massachusetts Cash Grant Program

DESCRIPTION Grant designed to assist needy students in meeting institutionally held charges such as mandatory fees and non-state-supported tuition; complements the Need-Based Tuition Waiver Program for to provide financial sup-

port to those who would be denied the opportunity for higher education, without such assistance.

AWARD AMOUNTS An award for an academic period may not exceed the combined institutional tuition and fees charged for the award period.

ELIGIBILITY Permanent legal resident of Massachusetts for one year prior to the start of the academic year for which the grant is awarded; be a United States citizen or eligible non citizen; be in compliance with applicable laws regarding Selective Service Registration; evidence financial aid need as measured by a federally approved system of needs analysis; be enrolled in at least three undergraduate credits per semester in an eligible program; not be in default of any federal or state student loan or owe a refund on any previously received financial aid; maintain satisfactory academic progress in accordance with the institution's academic standards policy; not have earned a baccalaureate or professional degree or their equivalent.

RE-PAYMENT? No

Massachusetts Part-Time Grant Program

DESCRIPTION Grant to help those segments of the Massachusetts population who pursue higher education through part-time enrollment.

AWARD AMOUNTS Awards range from \$200 to a maximum that depends on the type of institution that the student attends.

ELIGIBILITY Be a permanent legal resident of Massachusetts for at least one year prior to the start of the academic year for which the grant is awarded; be a United States citizen or an eligible non citizen; be enrolled for at least six (or the equivalent) but fewer than twelve undergraduate credits per academic term in an eligible undergraduate degree program or eligible certificate program; not have earned a baccalaureate or professional degree.

RE-PAYMENT? No

Massachusetts Public Service Grant Program

DESCRIPTION Grant to recognize hardship that a family experiences upon the loss of a parent and or spouse who is killed or missing in the line of public service duty in

Massachusetts.

AWARD AMOUNTS For a student attending a Massachusetts public college or university, the award shall be equal to the cost of the institution's full time annual tuition charges; for a student attending a Massachusetts Independent College or University, the award shall be equal to the full time annual tuition charge at the University of Massachusetts, Amherst not to exceed \$2,500 per academic year.

ELIGIBILITY Child or widowed spouse of a Massachusetts Police Officer, Firefighter or Corrections Officer who was killed or died from injuries received while performing his or her duties; child of a Prisoner of War Military Service Person Missing in Action in Southeast Asia whose war time service was credited to the Commonwealth and whose service was between February 1, 1955 and the termination of the Vietnam campaign; child of a Veteran whose service was credited to the Commonwealth and who was killed in action or died as a result of such service.

RE-PAYMENT? No

Para-professional Teacher Preparation Grant Program

DESCRIPTION Grant to provide financial assistance to Massachusetts residents who are currently employed paraprofessionals in Massachusetts public schools, but wish to become certified as full time teachers; this is an attempt to help address the Commonwealth's current teacher shortage.

AWARD AMOUNTS Awards are distributed at a public university as \$625 per credit, maximum of \$7,500 per academic year; at a state college as \$450 per credit, maximum of \$6,000 per academic year; at a community college as \$250 per credit, maximum of \$4,000 per academic year.

ELIGIBILITY Be eligible under Title IV Regulations and not in default of a state or federal education loan or grant; enroll in an undergraduate degree program (full-time or part-time) leading to teacher certification in a Massachusetts Public College; be employed, for a minimum of two years, as a paraprofessional in a Massachusetts public school; if employed less than two years as a paraprofessional, a student may qualify for the grant only if the undergraduate course of study will lead to teacher certification in high need disciplines:

Math, Science, Special Education, Foreign Languages, or Bilingual Education; has not earned a bachelor's degree.

RE-PAYMENT? No

Performance Bonus Grant Program

DESCRIPTION Grant to reward the success of the Commonwealth's neediest students towards graduation; funded by appropriations from the Massachusetts State Legislature.

AWARD AMOUNTS Award amount varies according to the type of institution the student attends; \$500 per academic year awarded if enrolled in a degree program at a 4 year school; \$350 per academic year awarded if enrolled in a degree program at a 2 year school.

ELIGIBILITY Be enrolled full-time in an associate or bachelor's degree program at a state-approved public or private post-secondary school in Massachusetts; be a MASSGrant recipient; not have received a bachelor's degree or its equivalent; be a permanent Massachusetts resident for at least one year; be a United States Citizen or eligible noncitizen; have an Expected Family Contribution (EFC) of zero; have completed at least 24 college credits beyond high school; have a cumulative Grade Point Average of 3.0 or higher; be eligible for Title IV funds and not in default of any Federal or State loan, or owe a refund on any previously received financial aid.

RE-PAYMENT? No

Career Advancement Program Tuition Waiver

DESCRIPTION Tuition Waiver to reward Massachusetts's public school teachers in their first three years of teaching; it is believed to help increase the retention of new teachers during the first three years when attrition is highest.

AWARD AMOUNTS The value of the tuition waivers is approximately \$300 per course; recipients are eligible for tuition for up to three state-supported graduate courses (in education or areas related to the teacher's subject matter), one for each of their first three years of teaching.

ELIGIBILITY Have passed all three components of the Massachusetts Teachers Test; be a public school teacher in the year he/she using the award; be a permanent legal resident of

Massachusetts; be a United States citizen or eligible non-citizen; not be in default of a Federal or state loan or owe a refund on any previously received financial aid.

RE-PAYMENT? No

Categorical Tuition Waiver Program

DESCRIPTION Tuition waiver that is a component of the Single Tuition Waiver Program and have the same purpose of maintaining access to the Commonwealth's public colleges and universities; provides financial support to individuals who might not have the opportunity to achieve higher education, without such assistance.

AWARD AMOUNTS Students qualifying for a Categorical Tuition Waiver may be granted full tuition waivers consistent with the institution's policies (campus fees are not included in the waivers, institutions may, but are not required to, waive specific fees for participants in various categorical waivers).

ELIGIBILITY Must be a member of an eligible category as defined below: *Veteran*: As provided in M.G.L. Chapter 4, Section 7(43) including: Spanish War, World War I, World War II, Korean, Vietnam, Lebanese peace keeping force, Grenada rescue mission, the Panamanian intervention force, or the Persian Gulf; *Native American*: As certified by the Bureau of Indian Affairs; *Senior Citizen*: Persons over the age of 60; *Armed Forces*: An active member of the Armed Forces (Army, Navy, Marine, Air Force or Coast Guard) stationed and residing in Massachusetts; Clients of the Massachusetts Rehabilitation Commission or Commission for the Blind: As certified by the respective commission.

RE-PAYMENT? No

Collaborative Teachers Tuition Waiver Program

DESCRIPTION Tuition waiver to encourage Massachusetts' public school teachers to become mentors to full-time student teachers from State colleges and universities.

AWARD AMOUNTS Collaborative Teachers shall be eligible for a tuition waiver for up to one state-supported graduate-level course for each student teacher mentored with a maximum of one student teacher mentored per semester; col-

laborative Teachers can request waivers for up to two years after the completion of the mentoring relationship for which eligibility is based; individual student awards shall be no more than the resident graduate tuition rate at the participating institution.

ELIGIBILITY Agree to mentor a student teacher from a State college or university in their classroom; be a public school teacher in the year he/she is using the award; be a permanent legal resident of Massachusetts; be a United States citizen or eligible non-citizen; not be in default of a Federal or State loan or owe a refund on any previously received financial aid.

RE-PAYMENT? No

Department of Social Services (DSS) Tuition Waiver for Foster Care Children Program

DESCRIPTION Tuition waiver to provide financial support for higher education to foster children in state custody who were neither adopted nor returned home; provides resources and will help them reduce educational loan debt.

AWARD AMOUNTS Entitled to a tuition waiver equal to 100% of the resident tuition rate for eligible state-supported courses offered at the participating public higher education institution.

ELIGIBILITY Be a current or former foster child who was placed in the custody of the state through a Care and Protection Petition; be twenty-four years of age or under; have been in the custody of the Commonwealth for at least twelve consecutive months; not have been adopted nor returned home; maintain full-time enrollment; be in compliance with applicable laws regarding Selective Service Registration.

RE-PAYMENT? No

DSS Adopted Children Tuition Waiver Program

DESCRIPTION Tuition waiver to lessen the financial burden on adopting parents in the Commonwealth.

AWARD AMOUNTS Students eligible for the DSS Children Adopted by State Employees or Residents of Massachusetts Tuition Waiver program will be entitled to a tuition waiver

equal to 100% of the resident rate for eligible state-supported courses offered at the participating public higher education institutions, excluding graduate courses and courses in the MD program at the University of Massachusetts Medical Center.

ELIGIBILITY Be twenty-four years of age or under; be in the custody of the Department of Social Services and adopted by an eligible Massachusetts state employee through the Department of Social Services, or be in the custody of the Department of Social Services and adopted by an eligible Massachusetts resident through the Department of Social Services.

RE-PAYMENT? No

Graduate Tuition Waiver Program

DESCRIPTION Tuition waiver, a component of the Single Tuition Waiver Program that provides incentives to individuals to enroll in graduate programs at Massachusetts public colleges and universities.

AWARD AMOUNTS Determined by institution.

ELIGIBILITY Be enrolled in an eligible program and meeting the criteria established by the institution; be a United States citizen or eligible noncitizen; not be in default of any federal or state loan or owe a refund on any previously received financial aid.

RE-PAYMENT? No

High Technology Scholar/Intern Tuition Waiver Program

DESCRIPTION Tuition Waiver incentive to business and industry to support the computer information technology/science and engineering students through scholarships and internships.

AWARD AMOUNTS Individual student awards shall match industry scholarships up to the resident undergraduate tuition rate at the participating institution.

ELIGIBILITY Enroll in an eligible program as determined by the Board of Higher Education; be deemed eligible by the participating company or corporation; be a permanent legal resident of Massachusetts; be a United States citizen or eligible non-citizen; not be in default of any Federal or state

loan or owe a refund on any previously received financial aid; not have received a prior bachelor's degree or its equivalent.

RE-PAYMENT? No

Incentive Program for Aspiring Teachers Tuition Waiver

DESCRIPTION Tuition Waiver to complement the Tomorrow's Teachers Scholarship Program which seeks to attract qualified high school students to the teaching by providing four-year tuition and fees scholarships.

AWARD AMOUNTS Entitled to a tuition waiver equal to the resident tuition rate at the State College or participating University campus at which they are enrolled for two years; the tuition waiver for the second year of eligibility (senior year) is contingent upon the student earning a 3.0 grade point average in the third year.

ELIGIBILITY Be in his/her third and/or fourth year of college and enrolled in state approved teacher education program field with teacher shortages; have a cumulative 3.0 grade point average in general education courses; commit to teaching for two (2) years in a state public school in the upon completion of a four-year degree and the appropriate certification pursuant to section 38G of Chapter 71 M.G.L..

RE-PAYMENT? No

Joint Admissions Tuition Advantage Program Waiver

DESCRIPTION Tuition Waiver to reward participants in the Joint Admissions Program who completed an approved academic program at a community college before attending a state four-year institution.

AWARD AMOUNTS Students eligible for the Tuition Advantage Program will be entitled to a tuition waiver equal to 33% of the Massachusetts resident tuition rate at a State College or University campus for two (2) years of undergraduate enrollment.

ELIGIBILITY A student enrolled in an undergraduate program at a state college or University of Massachusetts campus who: graduated from a Massachusetts public community college with a minimum 3.0 cumulative grade point average; participated in the Joint Admissions Program and completed an approved academic program at a community college' enrolled at the State College or University of Massa-

Massachusetts campus selected through the Joint Admissions Program within one calendar year of graduation from the Community College; enrolled in a state-supported baccalaureate program; did not matriculate at an institution other than the degree-granting Community College before enrolling at the campus selected through the Joint Admissions Program; has documentation of Tuition Advantage Program eligibility on file at the receiving institution.

RE-PAYMENT? No

Massachusetts Educational Financing Authority-Prepaid Tuition Program Waiver

DESCRIPTION Prepaid Tuition Waiver allows a participating public institution of higher education to waive the amount of tuition that would otherwise be due from the eligible student if the tuition charged by the participating public institution exceeds the amount received as a tuition credit pursuant to the Prepaid Tuition Program for the year the tuition credit is redeemed, in direct proportion to the eligible student's participation in the Prepaid Tuition Program.

AWARD AMOUNTS The portion of tuition that would otherwise be due if the tuition charged by the institution exceeds the amount received as tuition credit in direct proportion to the student's participation in the Prepaid Tuition Program.

ELIGIBILITY Any student admitted to a particular public institution of higher education that is an owner or a qualifying beneficiary of a MEFA Prepaid Tuition Program.

RE-PAYMENT? No

Massachusetts Tuition Waiver Program

DESCRIPTION Tuition waiver to offset increases in tuition and maintain access to the state's public colleges and universities; belief that future public sector tuition increases be matched with a concomitant increase in the maximum award for the financially neediest students.

AWARD AMOUNTS An individual student Tuition Waiver for an award period may not exceed the actual campus tuition charge for the award period; tuition Waiver awards, in combination with other resources in the student's financial aid package, may not exceed the student's demon-

strated financial need; students qualifying for a Tuition Waiver may be granted partial or full waivers depending upon the institution's financial aid packaging policies.

ELIGIBILITY Be a permanent legal resident of Massachusetts for at least one year prior to the opening of the academic year; be a United States citizen or eligible noncitizen; not be in default of any federal or state loan or owe a refund on any previously received financial aid; evidence documented financial need as measured by a federally approved system of needs analysis; enroll in at least three undergraduate credits per semester in state-supported undergraduate degree or certificate program; maintain satisfactory academic progress in accordance with federal and institutional standards; not have earned a prior bachelors degree or its equivalent.

RE-PAYMENT? No

Stanley Z. Koplik Certificate of Mastery Tuition Waiver Program

DESCRIPTION Tuition Waiver awards are non-need-based state-supported undergraduate tuition waivers to students who are awarded Stanley Z. Koplik Certificate of Mastery Awards by the Department of Education to: recognize high academic achievement on MCAS; recognize high academic achievement as identified by outside forums.

AWARD AMOUNTS Awards shall be no more than the resident undergraduate tuition rate at the participating institution; students are also required to maintain a G.P.A. of 3.3 for continued eligibility.

ELIGIBILITY Must have graduated from a Massachusetts high school; score at least a three on any AP exams; where there are SAT II and AP exams in the same subject area, students must receive a score on the SAT II exam determined by the Department of Education to be comparable to a score of three on an AP exam; in subject areas where there are no corresponding AP exams, a student must achieve a score designated by the Department of Education; must be a permanent Massachusetts resident; must be a United States citizen or eligible noncitizen.

RE-PAYMENT? No

Commonwealth September 11, 2001, Tragedy Tuition Waiver Program

DESCRIPTION Tuition Waiver to recognize the challenge that children or spouses of victims of the national tragedy may face in their attempt to pay for a college education.

AWARD AMOUNTS Entitled to a tuition waiver equal to 100 percent of the resident tuition rate for eligible state-supported courses offered at the participating public higher education institution.

ELIGIBILITY Be the spouse or child of a resident of Massachusetts who was the victim of the tragic events that occurred on September 11, 2001, and who died or is missing and officially presumed dead as a direct result of the acts of terrorism that occurred in the United States on September 11, 2001; must submit birth certificate and proof that the death is connected to the terrorism that occurred on September 11, 2001.

RE-PAYMENT? No

University of Massachusetts Exchange Program Tuition Waiver

DESCRIPTION Tuition Waiver encourages direct reciprocal and regional cross-registration agreements where the University enters into cooperative learning contracts with other institutions allowing students to receive comparable waivers for cross-institution registration; enables University of Massachusetts students to attend exchange institutions without tuition charge and exchange students attend the University without tuition charge.

AWARD AMOUNTS To be determined by the University of Massachusetts.

ELIGIBILITY Be enrolled in a degree program at the University of Massachusetts; meet eligibility criteria established by the University of Massachusetts; be a United States citizen or eligible noncitizen; not have received a prior bachelors degree or its equivalent; not be in default of any Federal or State loan or owe a refund on any previously received financial aid; be maintaining satisfactory academic progress in accordance with institutional standards.

RE-PAYMENT? No

Valedictorian Program Tuition Waiver

DESCRIPTION Tuition Waiver to attract and enroll Massachusetts's high school students who have been designated as valedictorians at any public higher education institution in Massachusetts.

AWARD AMOUNTS Entitled to a tuition waiver equal to 100% to attend any public higher education institution.

ELIGIBILITY Be designated by a public or private high school in the state as a valedictorian; enroll in a degree program at a public higher education institution in the Commonwealth and meet the eligibility criteria as established by institution, for this program; be a permanent legal resident of Massachusetts for at least one year prior to the opening of the academic year; be in compliance with applicable law regarding Selective Service Registration; not be in default of any Federal or State Student Loans or owe a refund for any previous financial aid received.

RE-PAYMENT? No

Washington Center for Internships and Academic Seminar Program

DESCRIPTION Tuition waiver provides experiential education opportunities to students of the Massachusetts public college and university system.

AWARD AMOUNTS A waiver of tuition by the Board of Higher Education, a waiver of regular mandatory fees by the eligible institution, and a housing scholarship of \$2,000 provided by the Washington Center.

ELIGIBILITY Enroll in an eligible degree program as determined by the institution; have obtained a minimum 3.0 cumulative grade point average; meet other eligibility criteria as established by the institution and the Washington Center; be a permanent legal resident of Massachusetts and a United States citizen; maintain satisfactory academic progress.

RE-PAYMENT? No

Massachusetts No Interest Loan (NIL)

DESCRIPTION Loan program to provide eligible, needy Massachusetts residents attending post-secondary educational institutions in Massachusetts with a state-funded

loan; the NIL program offers zero interest loans to assist students in meeting educational costs; students have a period of ten (10) years to repay their NIL loans.

AWARD AMOUNTS The minimum initial NIL award a student can receive is \$1,000, with a maximum award amount of \$4,000 per academic year; NIL award amounts are determined according to financial need; a NIL eligible student has a lifetime borrowing limit of \$20,000.

ELIGIBILITY Be a permanent legal resident of Massachusetts for one year prior to the start of the academic year for which the loan is awarded; be a United States citizen or eligible non citizen; be enrolled full time (at least 12 credits or

its equivalent); be enrolled in a certificate, associate or bachelors degree program; not have received a prior bachelors degree or its equivalent; be in compliance with Selective Service Registration Requirements; not be in default of any federal or state loans or owe a refund for any previous financial aid received; demonstrate financial aid need as determined by the Federal Methodology need analysis criteria; maintain satisfactory academic progress in accordance with institutional and federal standards.

RE-PAYMENT? Yes

Source: Massachusetts Board of Higher Education Office of Student Financial Assistance (2005).

Appendix Table 4

Standard Errors—Growth in Total College Costs Compared to Growth in Family Income (Table 64)

	TOTAL COST OF EDUCATION (STUDENT BUDGET)		NET COST OF EDUCATION (STUDENT BUDGET MINUS GRANTS)	
	1992-93	2003-04	1992-93	2003-04
PUBLIC TWO-YEAR				
United States	\$103	\$93	\$89	\$87
Full-time/Full year	\$216	\$112	\$223	\$131
Other Students	\$117	\$92	\$92	\$60
New England	\$1,232	\$988	\$687	\$769
Full-time/Full year	--	\$714	--	\$813
Other Students	--	\$784	--	\$665
PUBLIC FOUR-YEAR				
United States	\$81	\$142	\$91	\$108
Full-time/Full year	\$88	\$133	\$85	\$156
Other Students	\$72	\$112	\$73	\$79
New England	\$660	\$1,391	\$682	\$1,246
Full-time/Full year	\$251	\$690	\$1,091	\$1,093
Other Students	--	\$1,190	--	\$746
PRIVATE FOUR-YEAR				
United States	\$447	\$684	\$355	\$413
Full-time/Full year	\$666	\$606	\$312	\$383
Other Students	\$394	\$385	\$333	\$272
New England	\$1,200	\$2,535	\$774	\$1,447
Full-time/Full year	\$1,280	\$2,563	\$1,657	\$1,932
Other Students	--	\$3,665	--	\$2,846

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: The total cost of education includes tuition, required fees, room and board, book allowance, and other living expenses related to college. Net cost is total student budget less grant aid from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year.

Appendix Table 5

Standard errors—Growth in Tuition Costs Compared to Growth in Family Incomes (Table 65)

	TUITION AND REQUIRED FEES		NET PRICE OF EDUCATION (TUITION AND FEES MINUS GRANTS)	
	1992-93	2003-04	1992-93	2003-04
PUBLIC TWO-YEAR				
United States	\$14	\$30	\$10	\$15
Full-time/Full year	\$70	\$85	\$55	\$97
Other Students	\$16	\$24	\$11	\$10
New England	\$167	\$156	\$164	\$37
Full-time/Full year	--	\$293	--	\$121
Other Students	--	\$178	--	\$58
PUBLIC FOUR-YEAR				
United States	\$24	\$78	\$23	\$42
Full-time/Full year	\$48	\$150	\$59	\$82
Other Students	\$18	\$50	\$18	\$26
New England	\$372	\$922	\$184	\$781
Full-time/Full year	\$2,437	\$621	\$341	\$777
Other Students	--	\$779	--	\$302
PRIVATE FOUR-YEAR				
United States	\$516	\$677	\$268	\$323
Full-time/Full year	\$348	\$514	\$304	\$351
Other Students	\$336	\$410	\$147	\$223
New England	\$998	\$1,772	\$1,112	\$829
Full-time/Full year	\$984	\$2,703	\$1,545	\$1,548
Other Students	--	\$2,934	--	\$1,921

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: Net Price is tuition and required fees less grant aid received from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year.

Appendix Table 6

Standard errors—Affordability of a College Education (Tables 67-69) Net Cost of Education (Student Budget minus Grants)

	PUBLIC FOUR-YEAR INSTITUTIONS		PUBLIC TWO-YEAR INSTITUTIONS		PRIVATE FOUR-YEAR INSTITUTIONS	
	1992-93	2003-04	1992-93	2003-04	1992-93	2003-04
All Quartiles	\$91	\$108	\$89	\$87	\$355	\$413
Full-time/Full year	\$85	\$156	\$223	\$131	\$312	\$383
Other Students	\$73	\$79	\$92	\$60	\$333	\$272
1st Quartile	\$73	\$104	\$86	\$90	\$443	\$748
Full-time/Full year	\$122	\$212	\$469	\$333	\$428	\$759
Other Students	\$77	\$138	\$102	\$88	\$359	\$729
2nd Quartile	\$97	\$114	\$66	\$120	\$244	\$516
Full-time/Full year	\$141	\$198	\$434	\$191	\$264	\$562
Other Students	\$91	\$142	\$50	\$99	\$452	\$324
3rd Quartile	\$128	\$147	\$249	\$124	\$477	\$445
Full-time/Full year	\$127	\$197	\$444	\$264	\$439	\$406
Other Students	\$118	\$186	\$215	\$96	\$309	\$400
4th Quartile	\$118	\$208	\$83	\$169	\$518	\$581
Full-time/Full year	\$100	\$175	\$705	\$222	\$841	\$554
Other Students	\$170	\$200	\$52	\$91	\$224	\$355

Sources: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates. Median income for families with college students is from NPSAS.

Notes: The total cost of education includes tuition, required fees, room and board, book allowance, and other living expenses related to college. Net cost is total student budget less grant aid from any source. Net tuition and required fees is less grant aid received from any source. The full-time/full-year group is limited to dependent students (i.e. college students under the age of 24 who are still financially dependent on their parents). The group of "other students" includes independent students and students who attend less than full-time or less than the full school year.

Appendix Table 7

Standard errors—Average Annual Loan Aid (Table 71)

	1992-93	1995-96	1999-00	2003-04
United States Average	\$50	\$63	\$40	\$72
New England Average	\$157	\$354	\$330	\$385
United States				
Public Two-Year	\$74	\$150	\$86	\$91
Public Four-Year	\$35	\$81	\$61	\$70
Private Four-Year	\$75	\$145	\$67	\$194
United States				
Public Two-Year	--	--	--	\$1784
Public Four-Year	\$371	0	\$277	\$397
Private Four-Year	\$134	\$104	\$533	\$497

-- indicates the number of cases is too small to report.

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: The total amount of loans includes: all federal loans to students (Perkins, Stafford, and federal loans through the Public Health Service), state loans, institutional loans (from funds provided by the educational institution), and private/alternative loans (the amount of alternative commercial or private loans received by students including personal loans secured through financial institutions or lenders like TERI or Sallie Mae; does not include loans from family or friends). Also includes PLUS loans (both the Federal Family Education Loan and Direct loan programs).

Appendix Table 8

Standard errors—Cumulative Amount Borrowed by Full Year Undergraduates (Table 72)

	1992-93	1995-96	1999-00	2003-04
UNITED STATES				
PUBLIC TWO-YEAR				
1st year undergraduates	\$181	\$199	\$166	\$182
2nd year undergraduates	\$249	\$390	\$581	\$312
PUBLIC FOUR-YEAR				
1st year undergraduates	\$155	\$126	\$208	\$116
2nd year undergraduates	\$186	\$190	\$246	\$195
3rd year undergraduates	\$168	\$260	\$321	\$225
4th year undergraduates	\$157	\$263	\$298	\$294
PRIVATE FOUR-YEAR				
1st year undergraduates	\$252	\$148	\$282	\$301
2nd year undergraduates	\$314	\$321	\$384	\$445
3rd year undergraduates	\$369	\$340	\$373	\$357
4th year undergraduates	\$277	\$476	\$493	\$581
NEW ENGLAND				
PUBLIC TWO-YEAR				
1st year undergraduates	low n	low n	low n	\$1,451
2nd year undergraduates	low n	low n	low n	low n
PUBLIC FOUR-YEAR				
1st year undergraduates	\$960	0	\$492	\$541
2nd year undergraduates	\$700	0	\$1,529	\$1,179
3rd year undergraduates	\$924	0	\$1,567	\$1,492
4th year undergraduates	\$439	0	\$2,392	\$916
PRIVATE FOUR-YEAR				
1st year undergraduates	\$845	\$332	\$1,260	\$963
2nd year undergraduates	\$1,012	\$238	\$918	\$1,172
3rd year undergraduates	\$1,099	\$329	\$1,270	\$1,297
4th year undergraduates	\$1,121	\$1,140	\$1,304	\$2,135

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: Includes all loans ever borrowed for undergraduate education. Does not include parent PLUS loans. Data were collected from the National Student Loan Data System (NSLDS), a repository of federal loan information. However, because student may also borrow from other sources, self-reported and institutional information were also used.

Appendix Table 9

Standard errors—Cumulative Amount Borrowed through PLUS Loans for Full-Year Undergraduates (Table 73)

	1992-93	1995-96	1999-00	2003-04
UNITED STATES				
PUBLIC TWO-YEAR				
1st year undergraduates	\$493	\$199	\$343	\$319
2nd year undergraduates	\$407	\$478	\$472	\$496
3rd year undergraduates	\$333	\$499	\$426	\$643
4th year undergraduates	\$203	\$573	\$891	\$656
PRIVATE FOUR-YEAR				
1st year undergraduates	\$1,143	\$455	\$837	\$545
2nd year undergraduates	\$979	\$897	\$684	\$811
3rd year undergraduates	\$483	\$903	\$1,948	\$1,095
4th year undergraduates	\$364	\$773	\$2,026	\$1,089

Source: MassINC calculations using the National Center for Education Statistics, National Postsecondary Student Aid Survey (NPSAS) Peer Analysis System (<http://nces.ed.gov/das>). Sample weights were used to reflect the total population of undergraduates.

Notes: Indicates the cumulative amount of PLUS loans ever borrowed by parents for the student. It is based primarily on NSLDS loan history data.

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