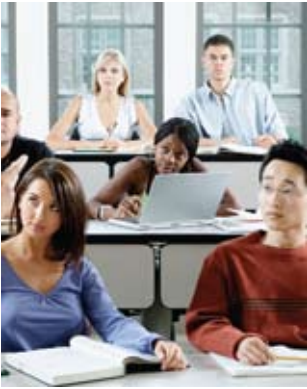


# Research Report



## The Future of the Skilled Labor Force in New England: The Supply of Recent College Graduates

by Alicia Sasser



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## Letter from the Director

The New England Public Policy Center at the Federal Reserve Bank of Boston is proud to release *The Future of the Skilled Labor Force in New England: The Supply of Recent College Graduates*, prepared by Alicia Sasser, Senior Economist. The Center was created by the Federal Reserve Bank of Boston to provide the public policy community with objective analysis that can support informed decisions about issues that affect the New England economy. This research report investigates an issue critical to the region's economy: our ability to attract and retain college graduates to meet current and future labor force needs.

Since 2000, the population of recent college graduates in New England has been growing more slowly in New England than in other parts of the United States. This slower growth is better than the 11 percent drop in the number of recent college graduates that the region faced in the previous decade. Still, the increase since 2000 has not offset those earlier losses, making New England the only region to have seen a decline in this population since 1990.

Policymakers and business leaders alike are concerned that an inadequate supply of skilled workers will impede economic growth by hampering companies looking to locate or expand within the region. Indeed, some firms report having difficulty finding skilled workers. Policymakers have taken only preliminary steps to address this problem due to a lack of information on its extent, its root causes, and how best to address it. This research explores the factors affecting New England's stock of recent college graduates, changes in these factors over time, and their relative importance in explaining the recent slowdown.

The report examines three main factors: the supply of young adults to be educated, the rate of post-secondary educational attainment, and the migration of students upon graduation. Of these three factors, the supply of young adults native to New England—falling by more than 25 percent between 1980 and 1990—accounts for the majority of the sharp drop and subsequently slower growth in the region's recent college graduate population. This loss was partially offset by the fact that a larger percentage of native young adults chose to obtain a bachelor's degree over the same period.

Changes in the migration decisions of individuals after graduation have not been very large and have had limited impact on the region's stock of recent college graduates. Contrary to the usual litany of reasons offered to explain why individuals leave New England—cold winters, high cost of living—our research shows that recent college graduates report leaving the region primarily for employment reasons.

Among the three factors examined, retaining more recent college graduates educated in New England may offer the most promising and immediate channel to expand the region's stock of such graduates. Better matching of recent graduates from New England institutions with jobs and employers around the region could be a promising strategy. Stronger partnerships between universities and industry groups, as well as statewide or regional job clearinghouses may provide an opportunity to reach this new generation of workers.

In a global economy where workers and jobs are mobile, New England will face increasing competition for the college graduates its institutions produce. We are fortunate that the region maintains a high rate of educational attainment among its young adult population and has one of the highest shares of college graduates in the nation. We hope that this report will help New England policymakers and business leaders consider how best to respond proactively to the slowdown in the supply of recent college graduates by developing strategies to encourage those educated here to stay and contribute to the New England economy.

Sincerely,



Robert Tannenwald, Director and Vice President  
New England Public Policy Center, Federal Reserve Bank of Boston

## Executive Summary

# The Future of the Skilled Labor Force in New England: The Supply of Recent College Graduates

### Main Findings

- Since 2000, the number of individuals aged 22–27 years with a bachelor’s degree or higher has grown only 8.7 percent in New England—roughly half the increase experienced nationally. Between 1990 and 2000, the stock of recent college graduates fell by 11.3 percent in the region.
- The majority of the sharp drop and then slower growth in the population of recent college graduates in New England since 1990 stems from the region’s slower growth in the number of native young adults. During the 1970s and 1980s, birth rates were much lower in New England than in the rest of the United States, leaving fewer young adults of college-going age some 20 years later.
- Fortunately, despite the sharp drop in the number of young adults in New England, the decline in the stock of recent college graduates was not as steep, because of a rising share of native young adults obtaining bachelor’s degrees.
- Yet New England retains a lower share of recent college graduates than other regions—primarily because it attracts a higher fraction of students from elsewhere, and these students have a higher propensity to leave the region upon graduation.
- Contrary to the usual litany of reasons offered to explain why individuals leave New England—cold winters, high costs of living—recent college graduates do so primarily for job-related reasons, or to attend or leave college, with very few citing housing as the motivation for their move.
- On the whole, when the earlier in-migration of students into New England to attend school is taken into account, the region actually increases its stock of recent college graduates for a given class. This is because the region is a net importer of college students so that on net the positive inflows among those migrating into the region to attend school more than offset the number of college graduates leaving the region upon graduation.

One of New England’s greatest assets is its skilled labor force, historically an engine of economic growth in the region. Yet the population of recent college graduates—the skilled labor force of the future—has been growing more slowly in New England than elsewhere in the country.

Since 2000, the number of individuals aged 22–27 years with a bachelor’s degree or higher has grown only 8.7 percent in New England—roughly half the increase experienced nationally. That is better than the 11 percent drop in the number of recent college graduates that the region faced in the previous decade. However, the increase since 2000 has not offset those earlier losses, making New England the only region to see a decline in this population since 1990 (see Table ES1).

The need to attract and retain recent college graduates has become a salient issue in every New England state. Policymakers and business leaders alike are concerned that an inadequate supply of skilled workers will hamper economic growth by creating barriers for companies looking to locate or expand within the region. Indeed, some firms are reporting having difficulty finding skilled workers.

However, policymakers have taken only preliminary steps to tackle this challenge because they lack information on the extent of the problem, its root causes, and how best to address it. To help close that gap, this report explores several key questions, including which factors affect New England’s stock of recent college graduates, how those factors have changed over time, and their relative importance in explaining the recent slowdown. The ensuing analysis leads to several conclusions that run contrary to conventional wisdom.

## What are the root causes of the region's slowdown in recent college graduates?

Each year New England's stock of recent college graduates changes as each successive cohort of young adults flows through the education pipeline: entering college, completing their degrees, and then choosing where to locate. Thus three main factors affect the stock of recent college graduates: the supply of young adults to be educated, the rate of postsecondary educational attainment, and the migration of students upon graduation (see Figure ES1).

The supply of young adults to be educated at New England institutions—whether native to the region, from other parts of the United States, or from abroad—is the primary source of growth for the region's population of recent college graduates. That is because students who attend college in New England account for more than three-quarters of the region's recent college graduates.

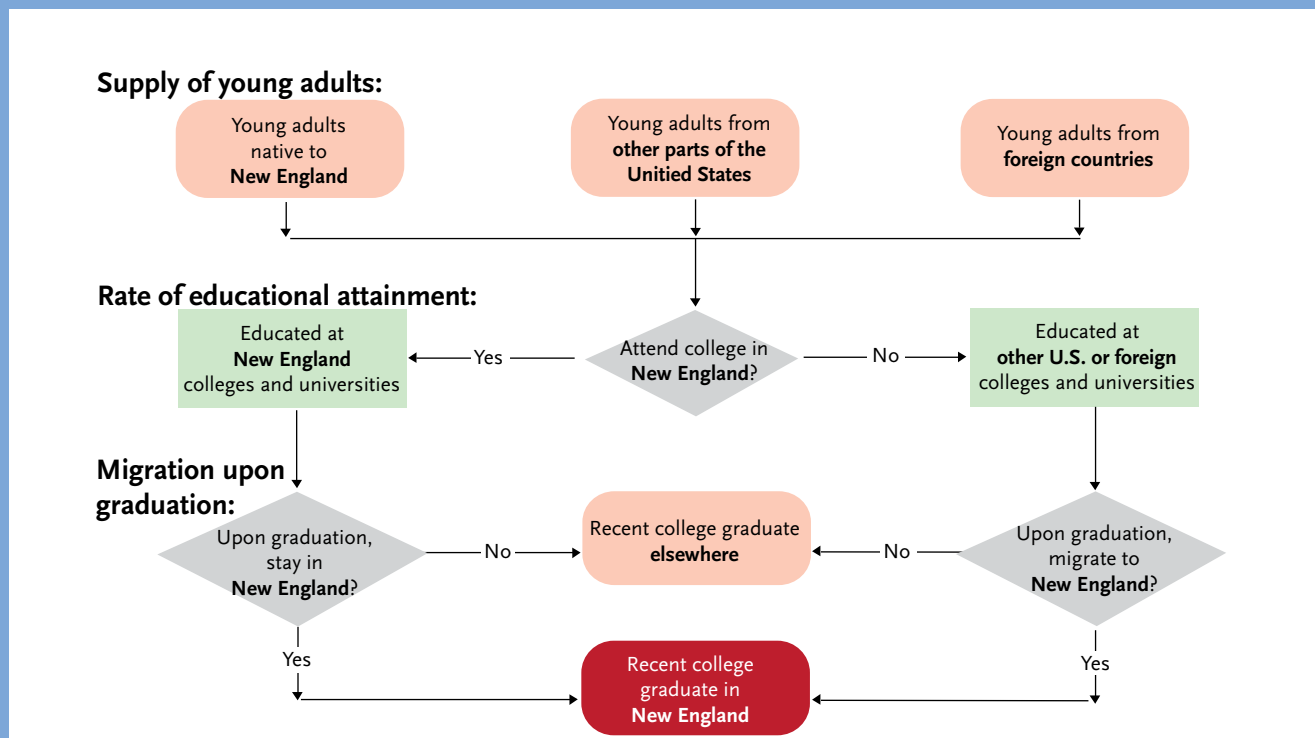
The rate of educational attainment among

the native population—particularly the rate of college attendance—is also a key factor affecting the number of recent college graduates in the region. That is because native New Englanders account for roughly 70 percent of college enrollments within the region.

The migration decisions of individuals also influence the number of recent college graduates. Regions may increase the size of this population by either retaining those educated within the region or by attracting those who have received their degrees elsewhere. Retention is especially important in New England because the region imports a relatively high share—about 30 percent—of its college students from other parts of the country.

How have each of these factors changed over time? Over the past several decades, the supply of native young adults, *regardless of education level*, has grown more slowly in New England than in the rest of the United States. This trend reflects a period of low birth rates after the baby boom. During the 1970s, birth

**Figure ES1. The flow of recent college graduates to New England depends on the supply of young adults, the rate of educational attainment, and migration.**





**Table ES1. Changes in the stock of recent college graduates, 1990–2006**

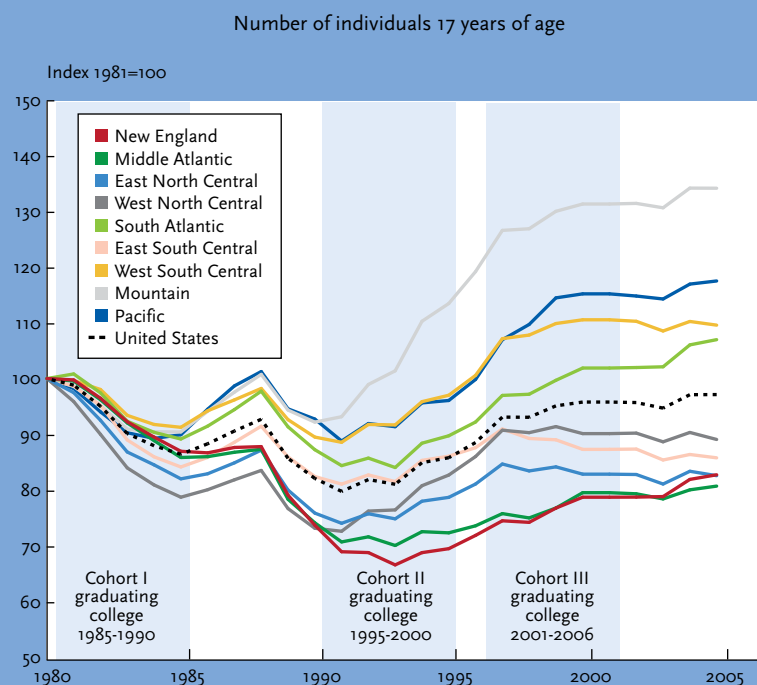
	Percent change		
	1990-2000	2000-2006	1990-2006
New England	-11.3%	8.7%	-3.6%
Middle Atlantic	-1.1%	15.8%	14.5%
East North Central	2.8%	13.3%	16.5%
West North Central	6.9%	19.7%	28.0%
South Atlantic	11.1%	19.0%	32.3%
East South Central	14.8%	13.2%	29.9%
West South Central	13.0%	14.6%	29.5%
Mountain	45.0%	34.8%	95.4%
Pacific	9.5%	16.2%	27.2%
United States	6.9%	16.7%	24.8%

Sources: 1990 and 2000 Decennial Census and 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional groups quarters (e.g., correctional facilities, nursing and in-patient hospital facilities, mental hospitals, juvenile group homes, and juvenile residential treatment facilities).

Recent college graduates are individuals aged 22–27 years who have completed a bachelor’s degree or higher (e.g. includes master’s, Ph.D., or professional degrees). More detailed breakdowns by area and/or state can be found in Appendix Table 1.

**Figure ES2. The supply of young adults native to New England fell more sharply than in the United States through the mid-1990s, and grew slowly thereafter.**



Source: Census Population Estimates, 1980-2005, U.S. Bureau of the Census. Note: More detailed breakdowns by area and/or state can be found in Appendix Figure 4.

rates dropped across the country—but more so in New England. This meant that some 20 years later, the region had roughly 25 percent fewer native young adults of college-going age in the 1990s compared to the previous decade

Birth rates in New England began rising at the start of the 1980s. However, the gap in birth rates between this region and the rest of the country did not narrow until the end of that decade. The result is that the number of young adults of college-going age has continued to grow more slowly in New England than in other regions of the country (see Figure ES2).

Fortunately, rising educational attainment has helped New England swim against the tide of slower population growth, as the share of high school graduates attending college rose more sharply in New England than in the rest of the nation. Between 1986 and 1996, the rate of college attendance among high school graduates in the region rose from roughly one-third to just over one-half.

As a result, the educational attainment of native young adults increased more rapidly in New England during the 1990s than in the nation as a whole. As of 2006, nearly one in every three native young adults in New England had earned a bachelor’s degree—compared with slightly more than one in five young adults in the United States as a whole (see Figure ES3). Thus, despite the sharp drop in the number of young adults in New England (25 percent), the decline in the number of recent college graduates was only half as steep (11 percent), because of the rising share of young adults receiving a college education.

In contrast, migration patterns among recent college graduates have not served to offset New England’s slower natural population growth, despite the region’s ability to attract large numbers of college students. However, the situation is more complicated than it might first appear. This is because typical migration rates reflect only moves made upon graduation from region of institution to region of adult residence, failing to capture the earlier in-migration of college students into New England to attend school. Thus, when analyzing the migration patterns of recent college graduates, it is important to take into account their region

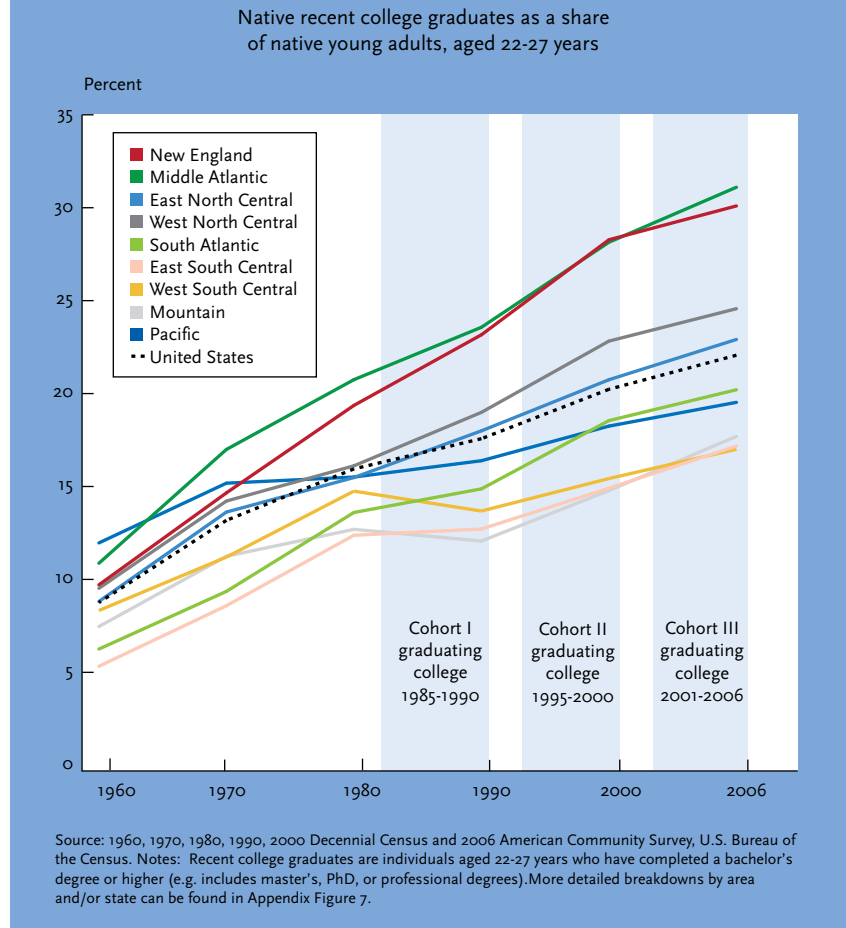
of origin, where they received their degree, and their location decisions upon graduation. Taking this broader view of migration, we explore separately the retention of students educated within the region as well as the attraction of graduates educated outside the region.

While New England's higher education institutions attract a relatively high share of students from outside the region, this makes it all the more difficult to retain these individuals when they graduate. Indeed, New England retains a lower share of students upon graduation compared with other regions. For example, only 70 percent of the graduating class of 2000 was still living in New England one year after graduation (see Table ES2). In comparison, retention rates in other parts of the United States ranged from 72 percent in the East North Central division to 88 percent in the Pacific division. A similar trend held for the graduating class of 1993.

The region's lower retention rate partly reflects the high share of non-native students who come to New England to attend school. Having already migrated once to attend college, these students are more likely to move again upon graduation. For example, only about 20 percent of non-native students remained in the region after graduation compared with 90 percent of native graduates. In addition, graduates of New England's private and elite institutions are less likely to remain in the region upon graduation, able to reap the benefits of their high-quality education by moving to any number of locations.

Contrary to conventional wisdom, recent college graduates are leaving New England primarily for job-related reasons—not housing costs. Of those who left the region during the past decade, about half cited employment-related reasons—primarily to take a new job or transfer jobs (see Table ES3). Just under one-third of recent college graduates left for “other” reasons—primarily to attend or leave college. In contrast, less than two percent of out-migrants cited housing as the motivation for their move. Indeed, the Middle Atlantic and Pacific regions—both with relatively high housing costs—were two of the three top destinations for recent college graduates leaving the region.

**Figure ES3. During the 1990s, educational attainment among native young adults increased more rapidly in New England than in most other parts of the United States.**



New England's ability to attract college graduates educated elsewhere in the nation is comparable to that of other census divisions, once the region's smaller size is taken into account. The number of new graduates migrating into New England from other parts of the country represented 2.5 percent of the region's population of recent college graduates—roughly equivalent to that of most other regions (see Table ES4). More than half of those migrating into New England were natives who had received their degrees elsewhere and chose to return upon graduation. Recent college graduates migrating into the region were more likely to do so to attend graduate school than to find or start a new job.

On the whole, when we account for the earlier in-migration of students into New England to attend school, the region actually increases its stock of recent college graduates for a given class.

**Table ES2. Retention of native versus non-native recent college graduates (class of 2000)**

Share of recent college graduates living in same division as B.A. institution one year after graduation (percent)

Institution division	All graduates	Natives	Non-natives	Difference: natives vs. non-natives (percentage points)
New England	70.5	91.0	22.7	68.3
Class of 1993	67.0	88.0	19.8	68.2
Middle Atlantic	79.9	88.7	28.6	60.1
East North Central	79.7	87.8	18.0	69.8
West North Central	74.9	86.9	21.5	65.4
South Atlantic	79.1	89.1	29.2	59.9
East South Central	72.2	82.8	15.3	67.5
West South Central	85.1	91.4	24.2	67.2
Mountain	76.4	84.8	26.2	58.6
Pacific	87.5	91.0	32.3	58.7

Source: 2000/01 and 1993/03 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Note: More detailed breakdowns by area and/or state can be found in Appendix Table 6.

**Table ES3. Primary reason for moving for recent college graduates migrating out of census divisions, 1998–2006**

	Family	Employment	Housing	Other
New England	17.0%	49.5%	1.9%	31.7%
Middle Atlantic	5.8%*	58.4%	1.7%	34.0%
East North Central	7.0%	58.4%	1.8%	32.9%
West North Central	11.8%	52.3%	2.3%	33.7%
South Atlantic	10.6%	62.2%	2.3%	25.0%
East South Central	4.5%	67.1%	0.0%	28.4%
West South Central	6.4%	66.4%	0.3%*	26.9%
Mountain	14.8%	45.9%	1.1%	38.1%
Pacific	12.2%	47.8%	6.7%	33.2%
United States	9.8%	56.3%	2.1%	31.9%

Source: March Current Population Survey (Annual Demographic File), 1999-2007, U.S. Bureau of the Census

Notes: Data are pooled across years, and responses are weighted using the person weights for that year.

Division to division moves are any moves across census division lines. U.S. movers do not include individuals who moved to the United States from abroad.

Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Individuals with imputed reasons (e.g., assigned from another family member or from a matrix of characteristics) were excluded from the analysis.

\* Indicates statistically significant difference from the U.S. at the 5 percent level.

A detailed breakdown for Massachusetts can be found in Appendix Table 10.

This is because the region is a net importer of college students. For example, among the class of 2006, we find that on net the positive inflows from those who migrated into the region to attend school more than offset the number of college graduates who left the region upon graduation. Thus, the region increased the number of recent college graduates by slightly more than it would have if it had educated only its native population. In contrast, typical migration rates that capture only moves made upon graduation generally show net out-migration with more students leaving than entering New England when they complete college.

### What is the relative importance of the three main factors in explaining the slowdown in the number of recent college graduates?

Knowing the relative importance of each factor should provide some insight for policymakers concerned about the region's future supply of skilled workers. This is determined by comparing the magnitude of the changes over time for each factor and its contribution to changes in the stock of recent college graduates.

The majority of the sharp drop and subsequently slower growth in the population of recent college graduates in New England since 1990 stems from the region's slower growth in the number of native young adults. The supply of native young adults has experienced the largest change among the three factors over time—falling by more than 25 percent—more than twice the decline for the nation. Moreover, native young adults are the primary source of growth for the region's population of recent college graduates, comprising nearly 70 percent of enrollments in New England and the majority of the region's college graduate population. If instead the supply of young adults had remained unchanged over time, the number of recent college graduates would have increased by roughly 20 percent—a considerable improvement (see Figure ES4, green dotted line).

In contrast, rising educational attainment helped ameliorate the slower growth in the number of native young adults. College attendance rose by 14 percentage points between



1986 and 1996—nearly twice the rate for the United States—dipping slightly since then. As a result, the decline in the number of recent college graduates was less than half that of the young adult population, because of the rising share of young adults receiving a college education. If instead the lower rate of educational attainment had prevailed over time, the number of recent college graduates would have decreased by approximately 22 percent—indicating that rising educational attainment has been vital in offsetting the region’s slower natural population growth (see Figure ES4).

Finally, changes in the migration decisions of individuals upon graduation have not been very large—at least for most groups. The fraction of individuals educated in New England that were retained increased slightly. Although the rate at which native New Englanders migrated back into the region upon receiving their degree elsewhere fell, this affected a relatively small share of graduates. Holding migration patterns steady over time does not change the path of growth by much (see Figure ES4).

**Given these findings, what, if anything, can policymakers and business leaders do to shore up the supply of recent college graduates?**

Among the three factors this report examines, expanding the supply of young adults to be educated would have the greatest impact. Yet, in the short run, policymakers pursuing this strategy would have to attract more students from elsewhere to attend college in New England. And the region would retain only about 20 percent of those students upon graduation.

Rising educational attainment has certainly been a boon to the region, and policymakers could consider trying to boost rates of college attendance and graduation even further. However, they may not be able to raise attendance rates much beyond current levels, given that they have leveled off in recent years.

Yet, as college attendance rates have risen, college completion rates have moved in the opposite direction. Educators at both secondary and higher levels may therefore want to focus

**Table ES4. Attraction of recent college graduates educated outside the region (class of 2000)**

Graduates educated elsewhere in the United States living in the region one year after graduation

Division	Number	Share of total graduates	As a share of the recent college graduate population living in the region
New England	7,761	1.6%	2.5%
Natives	5,125	—	—
Non-natives	3,762	—	—
Middle Atlantic	18,053	4.1%	2.2%
East North Central	11,228	2.6%	1.4%
West North Central	7,320	1.5%	2.1%
South Atlantic	22,293	5.0%	2.5%
East South Central	5,572	1.1%	2.4%
West South Central	8,857	1.8%	2.0%
Mountain	11,648	2.3%	4.2%
Pacific	15,246	3.2%	2.1%

Source: Author’s calculations.  
 Notes: Share of graduates educated elsewhere in the U.S. living in the region one year after graduation calculated from 2000/2001 Baccalaureate and Beyond Longitudinal Survey, National Center for Education Statistics (NCES), U.S. Department of Education.  
 Estimated number of graduates educated elsewhere in graduation = number enrolled elsewhere \* college completion rate \* share living in region one year after graduation.  
 Recent college graduate population is the number of individuals aged 22–27 years with a bachelor’s degree or higher in 2000, as calculated from the 2000 Census.  
 More detailed breakdowns by area and/or state can be found in Appendix Table 11.

on ensuring that high school students are well-prepared for college—to get the most “bang for the buck” for each young adult who enrolls.

Although migration has played a relatively small role over time, boosting retention rates among those educated in New England may offer the most promising and immediate channel for policymakers to expand the stock of recent college graduates. One way to achieve this would be convince more recent college graduates to stay in New England upon graduation. Given the reasons for leaving the region, this group appears to be moving primarily to seek the best job opportunities.

Some New England states are trying to reverse this trend by strengthening ties between universities and firms, and by providing financial incentives to entice graduates to stay for some period after graduation. The long-term effectiveness of financial initiatives is unclear. However, matching recent college graduates

with jobs and employers around the region would appear to be a promising strategy, as employers report having difficulty finding the skilled workers they need. Policymakers taking this path could not only forge partnerships between universities and industry groups but also create statewide or regional job clearinghouses, and find other innovative ways to reach this new generation of workers.

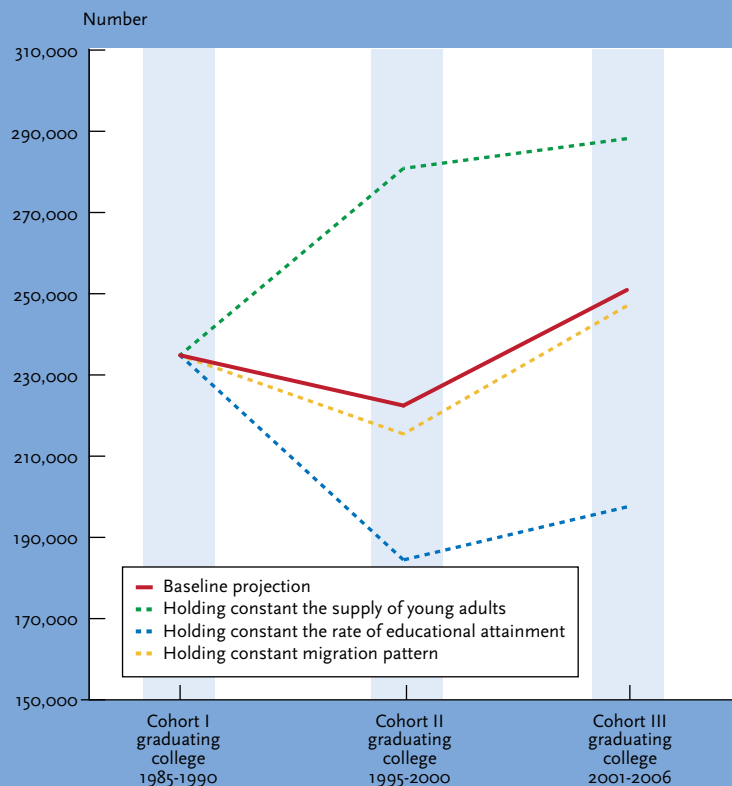
Another way to boost retention would be to increase the number of students with characteristics that make them likely to remain in New England. For example, policymakers may want to encourage more native students going on to college to enroll in a New England college or university, given that roughly 90 percent of graduates who are native to the region stay upon graduation. Alternatively, public officials

could also invest in their state's public higher-education institutions, as those graduates tend to remain in the region.

New England is likely to face even greater competition for college graduates in the future—particularly in a global economy where workers and jobs are more mobile. Fortunately, the region maintains a high rate of educational attainment among its young adult population with one of the highest shares of college graduates in the nation. The larger question of whether the region has a shortage of skilled workers or a mismatch between the skills firms need and the supply of workers who hold them is beyond the scope of this report. Hopefully these findings will help New England policymakers and business leaders confront that challenge and consider how best to tackle the slowdown in the supply of recent college graduates.

**Figure ES4. If the number of native young adults in New England were maintained across cohorts, the region's recent college graduate population would have increased sharply.**

Projected number of recent college graduates under alternative scenarios



Source: Author's calculations based on holding steady each factor as described in Table 17 to its Cohort I value.

# The Future of the Skilled Labor Force in New England: The Supply of Recent College Graduates

## Introduction: The supply of recent college graduates

Since 2000, the number of recent college graduates has been growing more slowly in New England than in other parts of the United States. According to the U.S. Census Bureau, the number of individuals aged 22–27 years who have completed a bachelor’s degree or higher rose 8.7 percent in New England between 2000 and 2006 (see Table 1). But the number of recent college graduates grew more rapidly elsewhere in the country, ranging from 13.2 percent in the East South Central census division to 34.8 percent in the Mountain division. (For a map of the U.S. census divisions, see Appendix Figure 8.)

Should we be concerned that the number of recent college graduates has been growing more slowly in New England? This recent

trend represents a significant improvement over the previous decade (1990 to 2000), when the number of recent college graduates shrank by 11.3 percent in New England while growing in most of the country’s other eight census divisions (see Table 1). Yet the increase since 2000 has not offset the losses of the previous decade, making New England the only census division to see a decline in this population since 1990. Indeed, the rest of the United States has seen double-digit growth among this demographic group—particularly the Mountain region, where the stock of recent college graduates has nearly doubled since 1990.

The population of recent college graduates in New England represents the skilled labor force of the future. As such, the previous decline and then slower growth of this group may have adverse impacts, as an adequate supply of skilled workers to meet the demand of

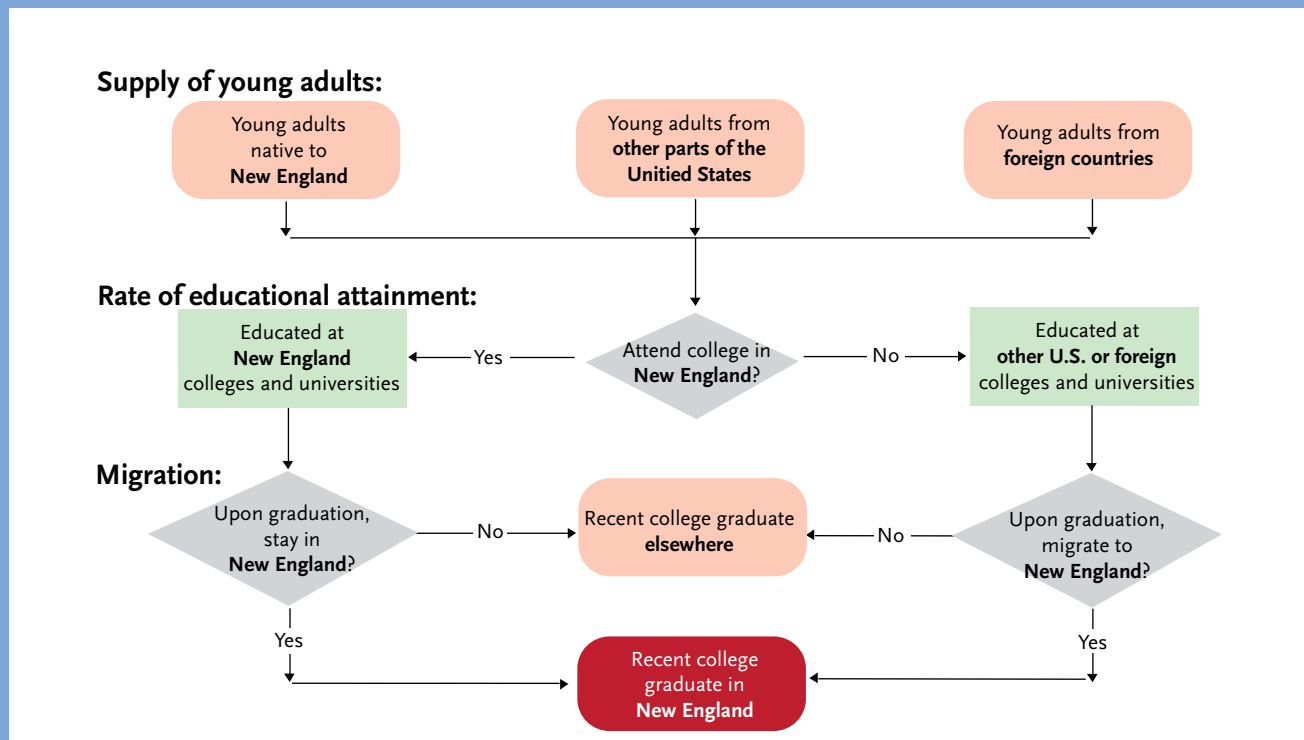
**Table 1. Changes in the stock of recent college graduates, 1990–2006**

	Stock (number)			Percent change		
	1990	2000	2006	1990-2000	2000-2006	1990-2006
New England	356,875	316,423	344,025	-11.3%	8.7%	-3.6%
Middle Atlantic	848,081	838,595	970,797	-1.1%	15.8%	14.5%
East North Central	754,878	776,234	879,636	2.8%	13.3%	16.5%
West North Central	324,615	347,164	415,432	6.9%	19.7%	28.0%
South Atlantic	789,666	877,538	1,044,386	11.1%	19.0%	32.3%
East South Central	204,540	234,859	265,756	14.8%	13.2%	29.9%
West South Central	401,670	453,815	520,260	13.0%	14.6%	29.5%
Mountain	190,106	275,634	371,511	45.0%	34.8%	95.4%
Pacific	677,999	742,247	862,634	9.5%	16.2%	27.2%
United States	4,548,430	4,862,509	5,674,437	6.9%	16.7%	24.8%

Sources: 1990 and 2000 Decennial Census and 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional groups quarters (e.g., correctional facilities, nursing and in-patient hospital facilities, mental hospitals, juvenile group homes, and juvenile residential treatment facilities). Recent college graduates are individuals aged 22–27 years who have completed a bachelor’s degree or higher (e.g. includes master’s, Ph.D., or professional degrees). More detailed breakdowns by area and/or state can be found in Appendix Table 1.

**Figure 1. The flow of recent college graduates to New England depends on the supply of young adults, the rate of educational attainment, and migration.**



firms is a key factor in the region’s economic growth. This means having not only a sufficient *number* of skilled workers, but also a workforce with the *right mix of skills* to meet the diverse needs of the region’s economy.

The need to attract and retain recent college graduates has become a salient issue in every New England state. However, policymakers and business leaders have taken only preliminary steps to address this challenge, because they lack information on the extent of the problem, its root causes, and how best to address it. To help close that gap, this report explores several key questions:

- **What factors affect the number of recent college graduates in New England, as each successive cohort of young adults flows through the education pipeline?** How does the stock of recent college graduates depend on the supply of young adults to be educated, the rate of educational attainment among the native population, and the migration decisions of recent graduates?

- **How has the supply of young adults entering the education pipeline changed?** How has the slowdown in the number of births after the baby boom affected the number of college-age young adults some 20 years later? To what degree do the region’s higher-education institutions rely on native New Englanders to expand college enrollments? What fraction of the student body do these institutions attract from other parts of the United States and abroad?
- **How have changes in the rate of educational attainment affected the number of college graduates that New England produces?** To what degree has the rising rate of college attendance among the region’s high school graduates offset the decline in the number of young adults? How have changes in the college completion rate affected the number of recent college graduates in the region?

- **How does New England rank in its ability to retain and attract recent college graduates upon graduation?** As a net importer of college students, what fraction does New England retain immediately upon graduation? What factors affect the region’s ability to retain recent college graduates? What are the characteristics of recent college graduates who leave New England, and their primary reasons for leaving? Alternatively, what fraction of recent college graduates who receive their degrees elsewhere migrate into New England upon graduation? Where do they come from? What are their primary reasons for coming to the region?
- **To what extent does each of the three main factors explain the region’s slower growth in the number of recent college graduates?** To what degree does the supply of young adults, their rate of educational attainment, and the ability of the region to attract and retain recent college graduates play a role?

New England will likely face even greater competition for college graduates in the future, particularly in a global economy where workers and jobs are more mobile. Given the region’s shift away from manufacturing and toward more knowledge-based industries, the supply of college graduates may not keep pace with demand, and firms may face difficulty in finding workers with the skills they need. This report addresses one side of the demand-supply equation by providing a framework to help policymakers and business leaders consider how best to address the slowdown in the supply of recent college graduates.

## What factors affect the number of recent college graduates in New England?

Although measuring the change in the number of recent college graduates in a given region is relatively straightforward, determining the underlying causes of that change is more complex. That is because each year the

total number or stock of recent college graduates changes as each successive cohort of young adults flows through the education pipeline: entering college, completing their degrees, and then choosing where to locate upon graduation. As a result, three main factors affect a region’s stock of recent college graduates: the supply of young adults to be educated, the rate of postsecondary educational attainment, and the migration of college graduates to and from the region upon graduation (see Figure 1).

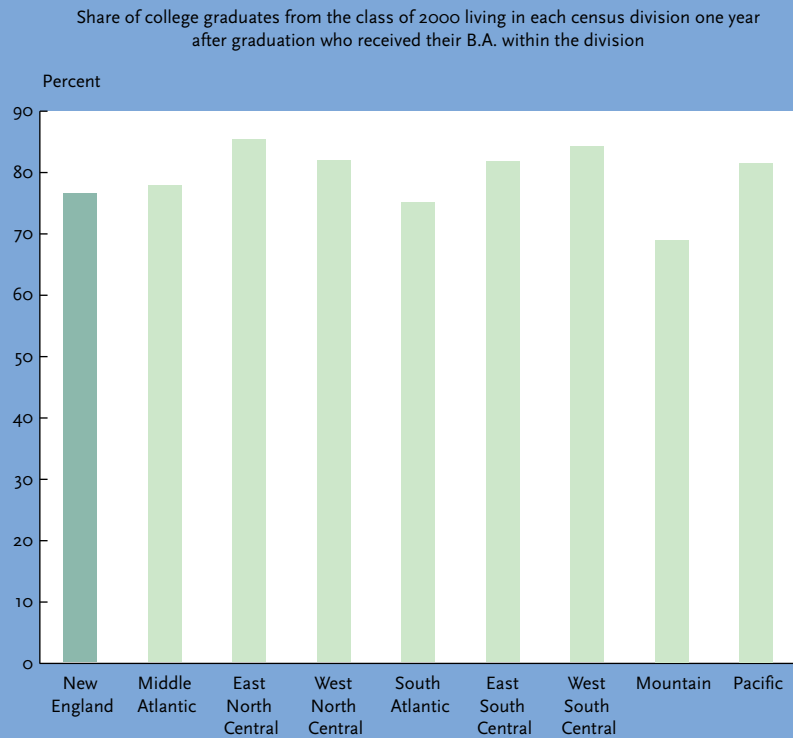
The supply of young adults to be educated at New England institutions—whether native to the region, from other parts of the United States, or from abroad—is the primary source of growth in the region’s population of recent college graduates. That is because, as in other census divisions, students who attend college in New England account for the majority of the region’s recent college graduates. For example, roughly 77 percent of the college graduates from the class of 2000 living in New England one year after graduation had received their degree from a higher-education institution within the region (see Figure 2).<sup>1</sup>

The rate of educational attainment among the native population—particularly the rate of college attendance—is also a key factor in determining the number of recent college graduates, because most students do not migrate across census divisions to attend college. Indeed, native New Englanders account for roughly 70 percent of enrollments at the region’s higher-education institutions (see Figure 3).

Finally, the migration decisions of individuals also affect the region’s population of recent college graduates. Regions may increase the number of recent college graduates by either retaining those educated within the region or attracting those who received their degrees elsewhere in the United States or abroad. Retention is an especially salient topic in New England because a relatively high share (roughly 30 percent) of the student body originates from outside the region. Students who come from elsewhere to attend college are likely to exhibit “repeat migration”: those who have moved in the past tend to move again, particularly to return to a previous loca-

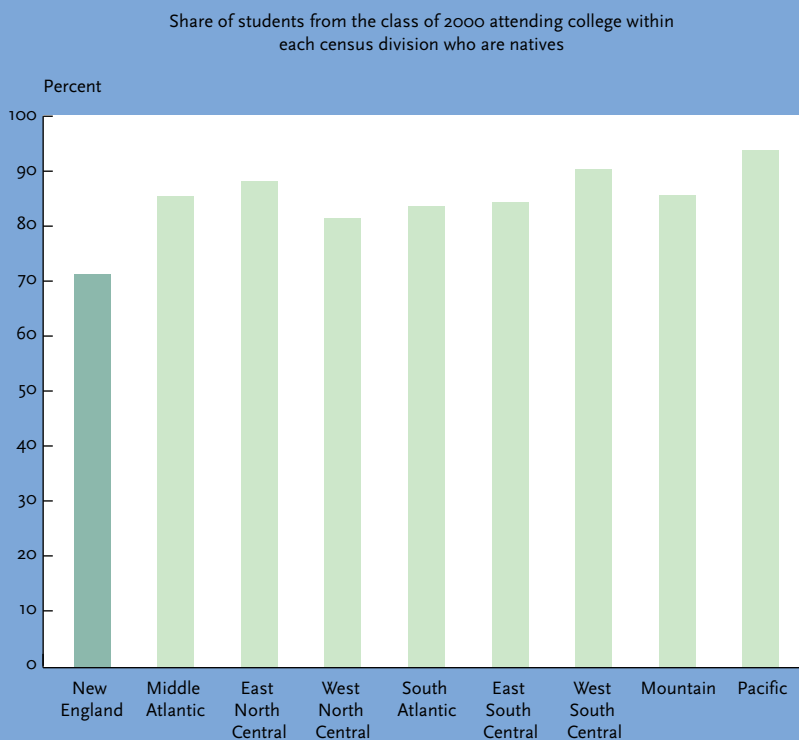


**Figure 2. As in other parts of the United States, students who attend college in New England are the primary source of growth for the region’s population of recent college graduates.**



Source: 2000/2001 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education. Note: More detailed breakdowns by area and/or state can be found in Appendix Figure 1.

**Figure 3. Students who are native to New England make up the majority of enrollments at the region’s higher-education institutions, although less so than in other regions.**



Source: 2000/2001 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education. Note: More detailed breakdowns by area and/or state can be found in Appendix Figure 2.

tion.<sup>2</sup> New England may therefore experience higher rates of out-migration among recent college graduates than other regions simply because a higher fraction of students migrated into the region to attend college.

Understanding the role these three factors play in determining the stock of recent college graduates can provide some direction for public policy. For example, if slower natural population growth is limiting the supply of young adults, higher-education leaders may need to develop strategies to attract more students from other parts of the nation—even as the competition for high school graduates intensifies.<sup>3</sup> On the other hand, if college attendance and completion rates among young adults have fallen, then educators at both the secondary and higher levels may want to boost students’ readiness to attend and graduate from college, through efforts such as the New England Board of Higher Education’s College Ready New England initiative.<sup>4</sup>

If New England is losing more recent college graduates through out-migration than it is attracting through in-migration, policymakers will likely want to explore a range of options to prevent a “brain drain.” The focus of these initiatives will depend on which factors have the greatest impact on the region’s ability to attract or retain students upon graduation. For example, if recent college graduates are leaving the region to seek job opportunities, then efforts to retain them might include expanding internship opportunities and finding better matches with employers—the aim of the Central Massachusetts Talent Retention Project.<sup>5</sup> Or if graduates are concerned about the high cost of living and its impact on their ability to repay students loans, states may want to target financial incentives, such as Opportunity Maine, to recent graduates who live and work in the state.<sup>6</sup> Recognizing that a large number of students come from outside the region, simply educating recent college graduates about the benefits of living in New England may also boost retention, as is the goal of New Hampshire’s “55-Percent Initiative.”<sup>7</sup>

Alternatively, policymakers could launch initiatives to attract recent college graduates from elsewhere in the United States or

abroad. For example, states could develop marketing campaigns such as PursueVT, a website that aims to convince young people to “work, live, learn, play, and connect” in Vermont.<sup>8</sup> Similarly, if graduates from abroad are seeking jobs in the United States, New England states could help match immigrants with local employers able to sponsor H-1B visas for those with the particular skills the firms need—in addition to lobbying the federal government to raise the cap on the number of visas.<sup>9</sup>

The effectiveness of these policy initiatives will depend on whether they address the reasons driving the slowdown in the region’s supply of recent college graduates. To shed light on those reasons, the next sections explore how the supply of young adults, the rate of postsecondary educational attainment, and the migration of recent college graduates—both into and out of the region—have changed for three cohorts (see Table 2). Spanning 1985 to 2006, this analysis examines each group as it flows through the education pipeline. These changes over time are then used to analyze the

degree to which each factor has contributed to the decline and subsequently slower growth in the number of recent college graduates in New England. The concluding section summarizes the findings and suggests directions for public policy.

## Changes in the supply of young adults in New England’s education pipeline

Because the majority of recent college graduates stay in New England upon graduation, changes in the supply of young adults to be educated can have a large impact on the number of recent college graduates. This section explores the relative importance of three sources of young adults—those native to New England, those from elsewhere in the United States, and those from abroad—as well as changes over time in the supply of students from each source.

**Table 2. Cohort descriptions and milestones**

	<b>Cohort I graduating college 1985–1990</b>	<b>Cohort II graduating college 1995–2000</b>	<b>Cohort III graduating college 2001–2006</b>
Census/ACS survey year	1990	2000	2006
Age during survey year	22–27 years	22–27 years	22–27 years
Age in 2006	38–43 years	28–33 years	22–27 years
Year graduated college	1985–1990	1995–2000	2001–2006
Year graduated high school/ entered college	1981–1986	1991–1996	1997–2002
Year entered high school	1977–1982	1987–1992	1993–1998
Year born	1963–1968	1973–1978	1979–1984
Generation description	Start of baby bust or Gen X cohort	End of baby bust or Gen X cohort	Start of the Millennial cohort
President in office when entering high school	Jimmy Carter	Ronald Reagan	Bill Clinton
Top-selling album/CD when graduating high school	Michael Jackson: <i>Thriller</i>	Nirvana: <i>Nevermind</i>	Backstreet Boys: <i>Backstreet Boys</i>
Defining event during college	Gorbachev becomes Soviet leader	O.J. Simpson found not guilty	9/11

Note: ACS = American Community Survey of the U.S. Bureau of the Census.

**Table 3. Migration of first-time freshmen attending college in the United States, 2002**

First-time degree/certificate-seeking undergraduate students who graduated from high school in the past 12 months and enrolled in four-year, degree-granting institutions

Region of origin	Total freshmen from region	Destination region																	
		New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
New England	72,235	55,121	8,356	1,427	250	4,985	252	383	803	656									
Middle Atlantic	193,669	13,867	153,167	5,055	521	17,765	664	664	1,088	873									
East North Central	211,636	1,823	3,922	182,423	9,428	5,211	4,161	1,349	2,204	1,114									
West North Central	90,967	765	704	6,279	76,907	1,238	675	1,606	1,877	916									
South Atlantic	187,953	3,154	7,521	3,267	885	163,491	5,760	1,618	1,376	881									
East South Central	58,746	280	368	1,522	359	2,869	51,690	1,177	302	179									
West South Central	120,559	811	1,103	1,282	1,802	2,426	2,066	108,081	1,929	1,058									
Mountain	66,652	718	895	1,025	2,075	961	221	1,223	55,782	3,752									
Pacific	132,814	2,492	2,770	1,986	1,075	2,242	526	1,204	7,184	113,329									
Foreign	34,606	2,533	5,934	5,259	2,488	5,540	1,074	3,938	1,885	5,955									
Total enrollment	1,169,837	81,564	184,740	209,525	95,790	206,728	67,089	121,243	74,430	128,713									
Total entering the region for college	—	26,443	31,573	27,102	18,883	43,237	15,399	13,162	18,648	15,384									
Total leaving the region for college	—	17,114	40,502	29,213	14,060	24,462	7,056	12,478	10,870	19,485									
Net migration to attend college	—	9,329	-8,929	-2,111	4,823	18,775	8,343	684	7,778	-4,101									
As a share of each region's total enrollment																			
Region of origin	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
New England	67.6%	4.5%	0.7%	0.3%	2.4%	0.4%	0.3%	1.1%	0.5%										
Middle Atlantic	17.0%	82.9%	2.4%	0.5%	8.6%	1.0%	0.5%	1.5%	0.7%										
East North Central	2.2%	2.1%	87.1%	9.8%	2.5%	6.2%	1.1%	3.0%	0.9%										
West North Central	0.9%	0.4%	3.0%	80.3%	0.6%	1.0%	1.3%	2.5%	0.7%										
South Atlantic	3.9%	4.1%	1.6%	0.9%	79.1%	8.6%	1.3%	1.8%	0.7%										
East South Central	0.3%	0.2%	0.7%	0.4%	1.4%	77.0%	1.0%	0.4%	0.1%										
West South Central	1.0%	0.6%	0.6%	1.9%	1.2%	3.1%	89.1%	2.6%	0.8%										
Mountain	0.9%	0.5%	0.5%	2.2%	0.5%	0.3%	1.0%	74.9%	2.9%										
Pacific	3.1%	1.5%	0.9%	1.1%	1.1%	0.8%	1.0%	9.7%	88.0%										
Foreign	3.1%	3.2%	2.5%	2.6%	2.7%	1.6%	3.2%	2.5%	4.6%										
Total enrollment	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%										

Sources: Domestic enrollments from the Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics (NCES), U.S. Department of Education. Foreign enrollments from the National Center for Education Statistics (NCES), U.S. Department of Education, and from the IIE Network Open Doors Online, Institute of International Education. Note: More detailed breakdowns by area and/or state can be found in Appendix Table 2.

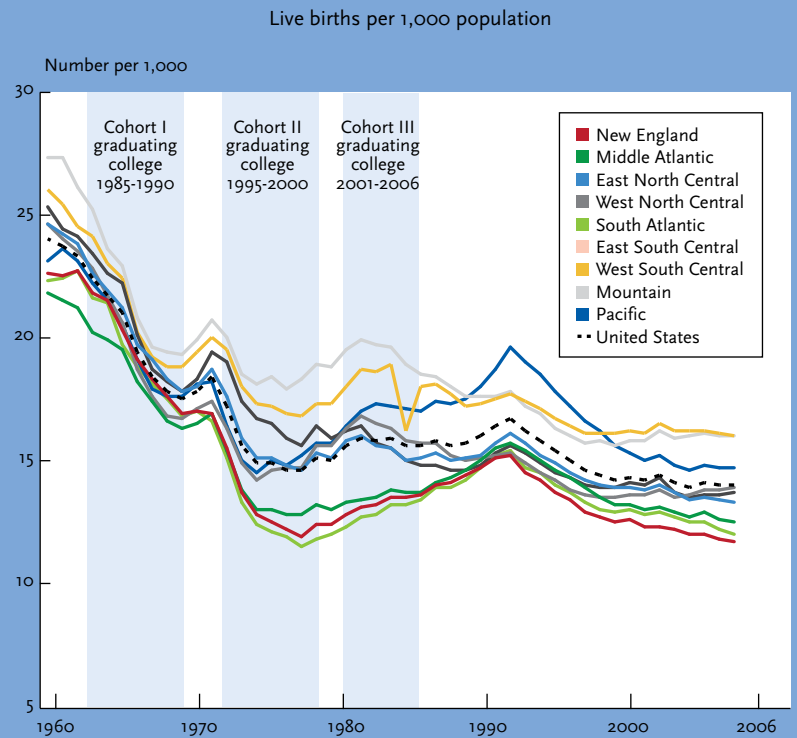
Young adults who are native to New England are the most critical input to its higher-education pipeline, even though the region attracts a disproportionate share of its student body from elsewhere in the United States and abroad. For example, in 2002, native New Englanders accounted for roughly 55,000—or nearly 70 percent—of freshmen enrollments in the region’s higher-education institutions (see Table 3). Only about 17,000 native students left the region to attend college elsewhere.

New England colleges also attracted some 26,000 first-year students from elsewhere in the United States and abroad in 2002. Domestically, about 24,000 students entered the region for college, primarily from the nearby Middle Atlantic region. Another 2,500 immigrated from abroad. These students expanded New England’s pool of college students by about 13 percent, making the region the second-largest importer of college students among the nine census divisions.

Over time, the supply of *native* young adults, *regardless of education level*, has grown more slowly in New England than in the rest of the United States, stemming from a period of low birth rates after the baby boom. Birth rates dropped across the country during the 1970s, but more so in New England—leaving fewer native college-age adults in Cohort II (those who graduated from 1995 to 2000) some twenty years later (see Figure 4). Although birth rates began rising at the start of the 1980s, the gap between New England and other parts of the country did not narrow until the end of the decade. Thus the number of individuals born into Cohort III (those who graduated from 2001 to 2006) in New England remained below that of other census regions.

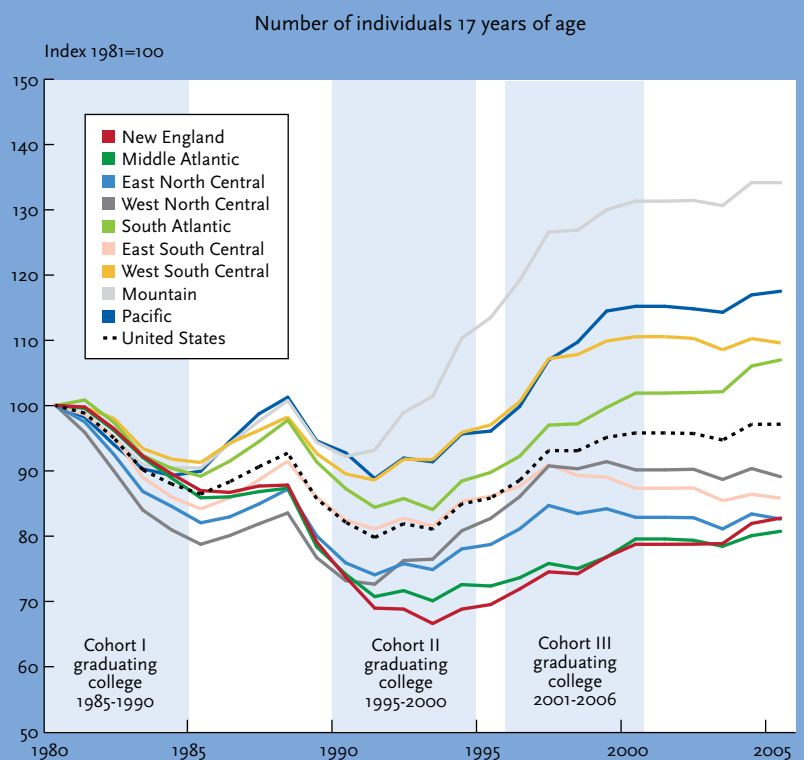
As a result, the supply of young adults who were eligible to become college graduates fell more sharply in New England than in the rest of the United States through the mid-1990s—and grew more slowly thereafter. From Cohort I to Cohort II, the number of native 17-year-olds in New England fell by roughly 342,000 individuals, or 26.3 percent, compared with a decline of only 11.2 percent nationwide (see Figure 5). During the ensuing period of slow growth, the number of college-

**Figure 4. After the baby boom, birth rates fell across the country, but more so in New England than elsewhere.**



Source: National Center for Health Statistics, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services: 1959-1963: *Vital Statistics of the United States*, 1963, Volume I, *Nativity*, 1964; 1964-1974: *Vital Statistics of the United States*, 1974, Volume I, *Nativity*, 1978; 1975-1984: *Vital Statistics of the United States*, 1984, Volume I, *Nativity*, 1988; 1985-1989: *Vital Statistics of the United States*, 1993, Volume I, *Nativity*, 1999; 1990-2005: National Vital Statistics System, <http://www.cdc.gov/nchs/data/wh/vitalstats/vitalstatsbirths.htm>. Note: More detailed breakdowns by area and/or state can be found in Appendix Figure 3.

**Figure 5. As a result, the supply of native young adults of college-going age fell more sharply in New England through the mid-1990s, and grew slowly thereafter.**



Source: Census Population Estimates, 1980-2005, U.S. Bureau of the Census. Note: More detailed breakdowns by area and/or state can be found in Appendix Figure 4.

age individuals in New England rose by about 89,000 individuals, or 9.2 percent, compared with a growth rate of 13.3 percent in the United States as a whole.

The number of students coming to New England from other parts of the United States and abroad somewhat offset the slower growth in the supply of native young adults. From 1986 to 1996, as the number of native young adults fell, the number of first-year students coming to New England grew by roughly 9,000 students, or 50 percent, while the number of freshmen from abroad increased by 250 students, or 13 percent (see Figure 6). From 1996 to 2000, as the native young adult population began to grow, the number of freshmen enrolling from other parts of the United States declined, while the number of freshmen from abroad continued to rise.

Yet the impact of these students entering the region to attend college was a drop in the bucket compared with the sharp declines in the number of native young adults. With

no way to immediately reverse the effects of a decade of sharply lower birth rates, New England had to rely on two other factors affecting the number of recent college graduates: the rate of educational attainment among young adults, and the migration of college graduates upon graduation.

## Changes in the rate of educational attainment in New England

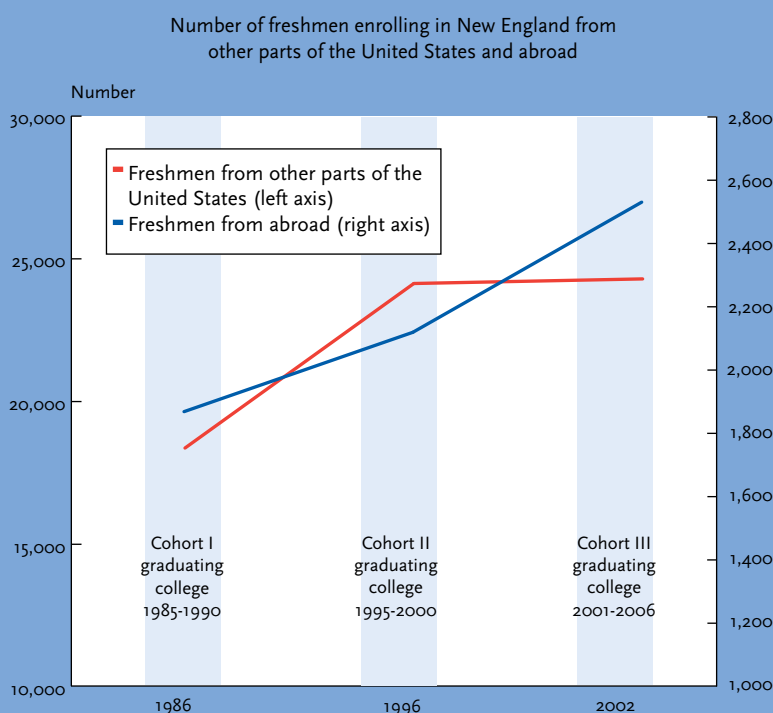
Indeed, high and rising rates of educational attainment among young adults have helped New England swim against the tide of slower natural population growth. For example, the region has consistently graduated roughly 75 percent of its high school students—a higher share than most other regions (see Figure 7). Thus, although New England has fewer native young adults, a greater fraction of those attending high school are potentially eligible to attend college.

More importantly, the share of high school graduates attending college rose sharply across the United States, but even more so in New England. From 1986 to 1996, the rate of college attendance among high school graduates in the region rose from roughly one-third to just over one-half—one of the steepest increases in the nation (see Figure 8).

Rising college attendance rates helped New England maintain the number of native high school graduates going on to college. Between Cohort I and Cohort II, the number of native 17-year-olds in New England fell, so the pool of high school graduates shrank by roughly 25 percent. Yet the sharp increase in the fraction going on to college completely offset this drop; the number of native students enrolling in college did not decline (see Figure 9). Between Cohorts II and III, the number of native students enrolling in college grew by 10 percent.

As a result, the educational attainment of native young adults increased more rapidly in New England than in most other parts of the nation during the 1990s, although it has leveled off since then. Along with the Middle Atlantic region, New England has consistently had one of the highest levels of edu-

**Figure 6. Part of the decline in the supply of young adults native to New England was offset by greater numbers of freshmen from other parts of the United States and abroad.**



Source: Number of students from other parts of the United States from the 1986, 1996, and 2002 Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics (NCES), U.S. Department of Education. Number of foreign students from the IIE Network Open Doors Online, Institute of International Education.



cational attainment among its native young adult population (see Figure 10). Moreover, between Cohorts I and II, the share of native young adults in New England with a bachelor's degree rose from 23.1 percent in 1990 to 28.2 percent in 2000—a faster rise than in any other census division. In 2006, nearly one in three native young adults aged 22–27 years in New England had a bachelor's or an advanced degree. In the United States as a whole, slightly more than one in five young adults was a college graduate.

Thus, despite a sharp drop in the number of young adults in New England, the decline in the region's stock of recent college graduates was not as steep because of a rising share of native young adults with a bachelor's degree. While the number of young adults fell by more than 25 percent in New England between Cohort I and Cohort II, the number of recent college graduates fell by less than half that percentage—by slightly more than 10 percent (see Figure 11). Since then, college attendance rates have dipped in New England so the number of recent college graduates has grown slightly more slowly than the number of young adults between Cohorts II and III.

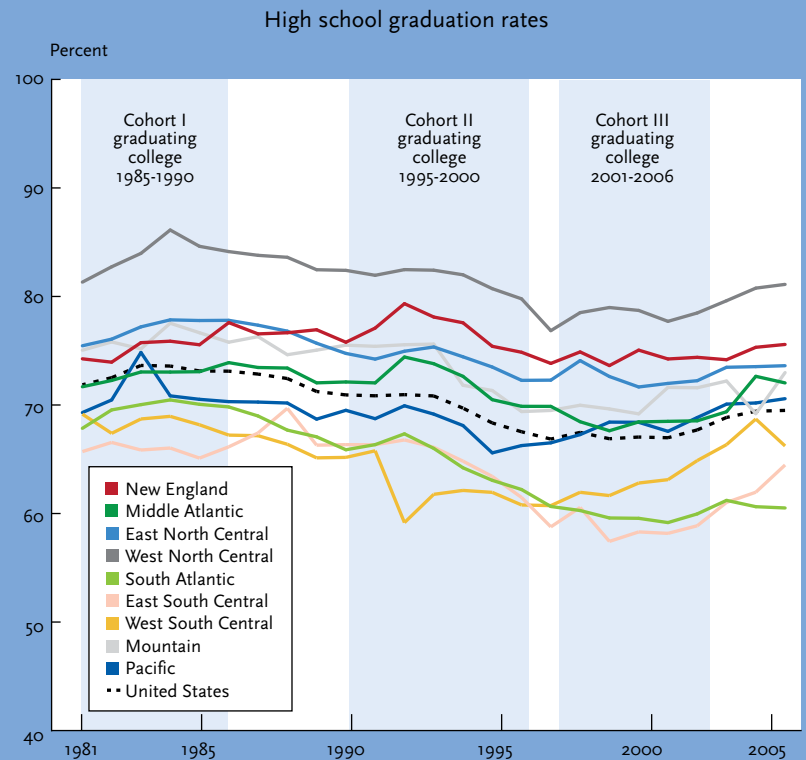
Still, despite these high levels of educational attainment, the region may be retaining fewer college graduates than in the past. The next section examines that question.

## Migration of recent college graduates to and from New England

Examining the migration of recent college graduates into and out of New England is one way of measuring the region's ability to attract and retain workers. These individuals are voting with their feet—they have decided to relocate based on a variety of factors. Economic theory suggests that people choose to migrate based on both economic factors, such as the availability of jobs, compensation levels, and the cost of living, and non-economic factors, such as nearness of family, opportunities to attend college or graduate school, and local amenities (e.g. weather, culture, recreation).

Migration rates for New England typically

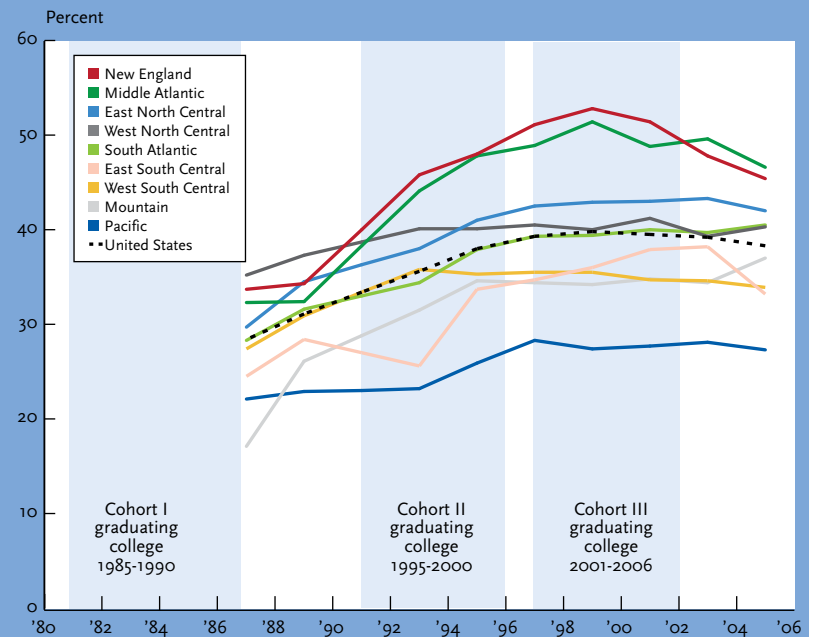
**Figure 7. New England has consistently graduated a higher share of its high school students compared to most regions.**



Source: National Center for Education Statistics (NCES), U.S. Department of Education. Note: More detailed breakdowns by area and/or state can be found in Appendix Figure 5.

**Figure 8. Rising rates of educational attainment among young adults helped New England swim against the tide of slower natural population growth.**

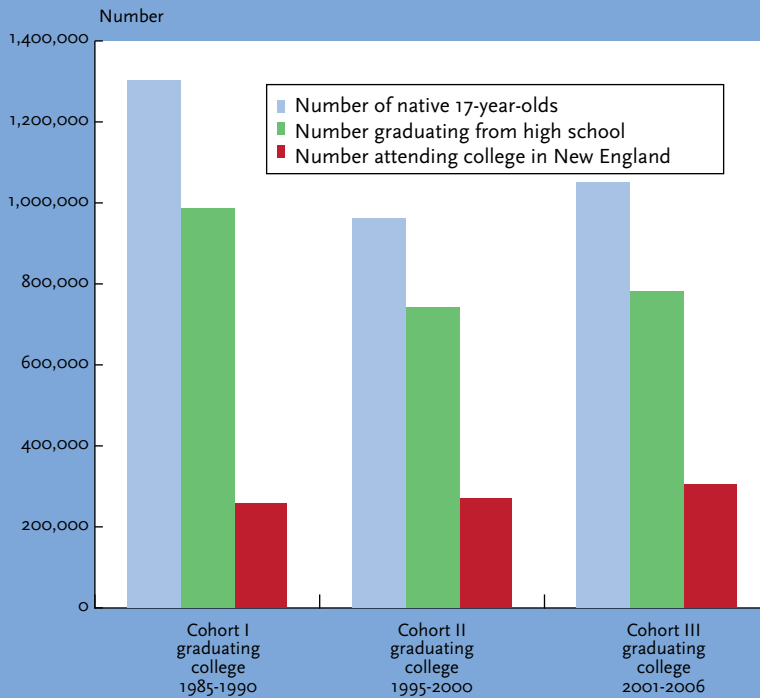
Share of native young adults within the region enrolling in 4-year degree-granting institutions who graduated from high school in the previous 12 months



Source: The Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics (NCES), U.S. Department of Education. Note: More detailed breakdowns by area and/or state can be found in Appendix Figure 6.

**Figure 9. Rising college attendance rates allowed New England to maintain the number of native high school graduates going on to college, despite having fewer young adults overall.**

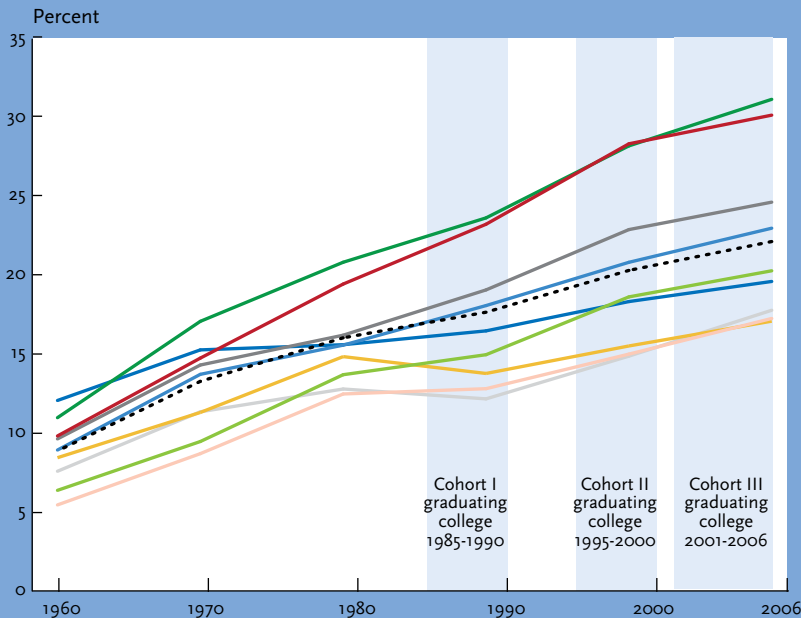
Number of 17-year-olds graduating from high school and attending college in New England



Source: Number of 17-year-olds from the U.S. Bureau of the Census; number graduating from high school and college attendance rates from the National Center for Education Statistics (NCES), U.S. Department of Education.

**Figure 10. During the 1990s, educational attainment among native young adults increased more rapidly in New England than in most other parts of the United States.**

Native recent college graduates as a share of native young adults, aged 22-27 years



Source: 1960, 1970, 1980, 1990, 2000 Decennial Census and 2006 American Community Survey, U.S. Bureau of the Census. Notes: Recent college graduates are individuals aged 22-27 years who have completed a bachelor's degree or higher (e.g. includes master's, PhD, or professional degrees). More detailed breakdowns by area and/or state can be found in Appendix Figure 7.

show net out-migration among recent college graduates, with more individuals leaving than entering the region. For example, net migration rates by cohort suggest that New England has been a net loser of recent college graduates over the past two decades. After an economic boom in the 1980s, the severe regional economic downturn of the early 1990s and initial slow recovery resulted in a sharp net outflow of recent college graduates—unique among the nine census regions (see Figure 12). Although conditions improved in the latter part of the 1990s, the 2001 recession and ensuing slow job growth have done little to stem the tide.

However, simple net migration rates fail to capture the high degree of “churn” among recent college graduates; that is, the fact that individuals both enter and leave New England at a high rate (see Table 4). For example, although in 2006 the region lost 23.9 per 1,000 recent college graduates on net to other parts of the country, this was the result of both high in-migration (89.5 per 1,000) as well as high out-migration (113.4 per 1,000). Although New England attracted a high share of recent college graduates from abroad (Table 4), international immigration is unlikely to entirely offset the region’s net domestic out-migration of college graduates.<sup>10</sup> This greater out-migration likely reflects in part the fact that New England educates a high share of non-native students, who have a greater propensity to leave the region upon graduation.

Indeed, not counting the earlier in-migration of students to attend college in New England can lead to misleading conclusions regarding the region’s ability to attract and retain college graduates. As a net importer of college students, these positive inflows are sizeable and more than offset the negative outflows of non-native students who leave New England upon graduation. Thus any analysis of the migration patterns of recent college graduates must take into account their region of origin, where they received their degree, and their location decisions upon graduation.

The analysis that follows takes this broader view of migration. Regions may increase the number of recent college graduates by retaining those educated within the region, or

by attracting those who received their degrees elsewhere—in the United States or abroad. Moreover, the degree to which a region is able to retain or attract recent college graduates varies considerably by origin, with native graduates much more likely to stay within or return to the region upon graduation. Graduates therefore fall into one of four groups:

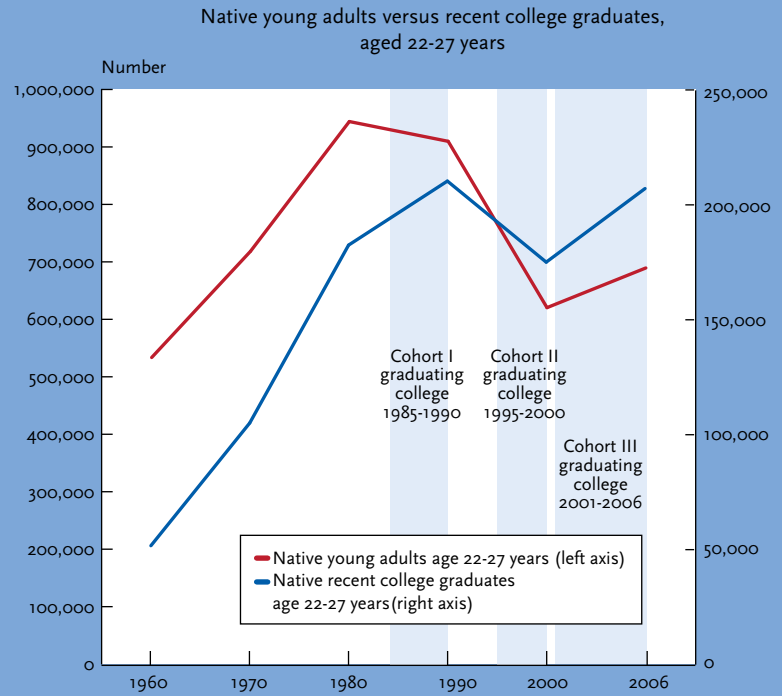
- Native students educated within the region
- Non-native students educated within the region
- Native students educated outside the region
- Non-native students educated outside the the region

In the sections that follow, we explore separately the retention of graduates educated within the region as well as the attraction of those educated outside the region. Given that roughly three-quarters of recent college graduates living in New England one year after graduation received their degree from an institution in the region, the question of retention is important. Yet attracting students who were educated outside New England—especially native students, who have a higher propensity to return to the region—is also a key factor affecting the stock of recent college graduates. The combination of the two forces produces the net change in the number of recent college graduates for a given class, revealing whether the region is a net gainer or loser of college graduates for that cohort.

### Retaining recent college graduates educated in New England

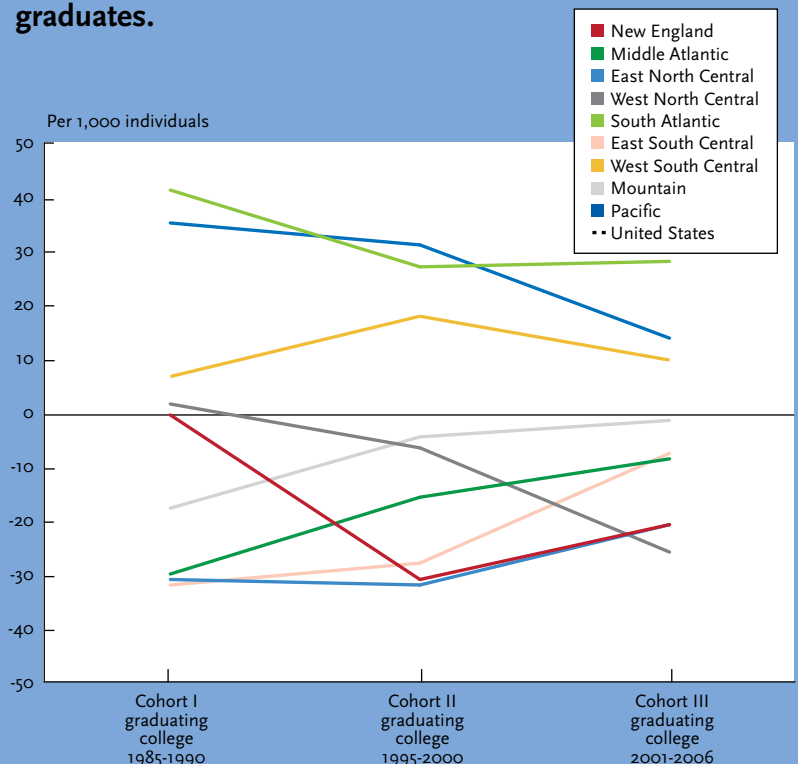
The issue of retention is especially salient in New England because a relatively high share of its students (roughly 30 percent) migrates into the region to attend college. New England is in the enviable position of having more than its share of selective institutions, which attract a relatively high share of the student body from outside the region—educating some of the country’s best and brightest. Yet these same students are also more mobile: Having already migrated once to attend college, they are likely to reap the benefits of

**Figure 11. The decline in the stock of recent college graduates was not as steep because of a high and rising share of native young adults with bachelor’s degrees.**



Source: 1960, 1970, 1980, 1990, 2000 Decennial Census and 2006 American Community Survey, U.S. Bureau of the Census. Notes: Recent college graduates are individuals aged 22-27 years who have completed a bachelor’s degree or higher (e.g. includes master’s, PhD, or professional degree).

**Figure 12. Simple net migration rates for New England typically show net out-migration among recent college graduates.**



Source: 1986-2007 Current Population Surveys, U.S. Bureau of the Census. Notes: The number of net migrants is defined as the number of in-migrants, less the number of out-migrants. Net migration rates are defined as the number of net migrants per 1,000 persons of the same population. Recent college graduates are individuals aged 22-27 years with a bachelor’s degree or higher. Cohort I includes graduates who were age 22-27 in the 1986-1991 CPS. Cohort II includes graduates who were age 22-27 in the 1996-2001 CPS. Cohort III includes graduates who were age 22-27 in the 2002-2007 CPS.

**Table 4. Migration of recent college graduates, 2006**

	Domestic migration						International migration	
	In-migration		Out-migration		Net migration		In-migration	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
New England	30,768	89.5	38,991	113.4	-8,223	-23.9	9,682	28.2
Middle Atlantic	55,117	56.8	65,363	67.4	-10,246	-10.6	21,117	21.8
East North Central	50,817	57.8	69,594	79.1	-18,777	-21.4	16,641	18.9
West North Central	25,798	62.1	30,227	72.8	-4,429	-10.7	6,635	16.0
South Atlantic	91,431	87.6	66,869	64.1	24,562	23.5	21,285	20.4
East South Central	19,826	74.6	25,052	94.3	-5,226	-19.7	3,662	13.8
West South Central	35,352	68.0	35,911	69.1	-559	-1.1	12,970	25.0
Mountain	38,780	104.5	35,496	95.7	3,284	8.9	8,077	21.8
Pacific	65,126	75.5	45,512	52.8	19,614	22.7	24,286	28.2

Source: 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional group quarters (e.g., correctional facilities, nursing and in-patient hospice facilities, mental hospitals, juvenile group homes, and juvenile residential treatment centers).

Recent college graduates are individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Migration rates for the census divisions are for division-to-division movers.

Migration rates are defined as the number of migrants per 1,000 persons.

More detailed breakdowns by area and/or state can be found in Appendix Table 3.

their high-quality education in any number of locations. Thus the success of the region's higher-education industry in producing highly skilled college graduates may make it all the more difficult to retain those students upon graduation.

Indeed, New England does retain the lowest share of students upon graduation among the nine census divisions. For the graduating class of 2000, 70.5 percent of college graduates were still living in New England one year after graduation (see Table 5). In comparison, retention rates in other parts of the nation ranged from 72.2 percent in the East South Central region to 87.5 percent in the Pacific region. A similar trend held for the graduating class of 1993.

Over time, the share of recent college graduates continuing to live in New England declines for a given cohort. However, this drop is less than that of most other divisions. For the 1993 graduating cohort, the share of college graduates retained in the region declined by roughly 7 percentage points during the decade after graduation (see Table 6). The retention rate in the Plains fell by 10.7 percent, although that in the Far West fell by

only 4.6 percentage points.

For most fields of study, New England ranks near the bottom in terms of retaining graduates compared with other regions—except for health. Retention rates in the region were higher among college graduates who studied health (91.2 percent), education (76.5 percent), business management (72.9 percent), and humanities (71.6 percent), likely reflecting the strength of the region's health care, financial activities, and professional services sectors (see Table 7). New England retained lower shares of graduates majoring in the social/behavioral sciences (65.1 percent) and in science, technology, engineering, and mathematics (64.3 percent).

What accounts for New England's lower retention rate among recent college graduates? The remainder of this section examines three potential factors: the share of students migrating into the region to attend college, the share of students attending private institutions, and the share of students attending elite colleges and universities. For any given region, retention is generally lower among non-natives or those graduating from a private or elite institution. Thus New England's lower retention

rate may be due to the fact that the region has a greater share of students that fall into these three categories.

Indeed, the frequency at which students migrate into New England to attend college helps account for the region's lower retention rate. Most regions, including New England, retain a much lower share of non-native than of native graduates (see Table 8). For example, for the graduating class of 2000, only 22.7 percent of those migrating into New England to attend college were still living in the region one year after graduation, compared with 91.0 percent of graduates who were native New Englanders. Thus the region has a lower overall retention rate because it imports a higher fraction of students from elsewhere in the country, who are generally less likely to stay upon graduation.

Yet among non-native graduates, New England has one of the lowest retention rates among the nine census divisions. Thus, besides importing a greater share of its students than most other regions, New England is also less likely to retain those students when they graduate compared to other regions.

New England's lower overall retention rate also reflects its high share of students graduating from private institutions. More than half of all recent college graduates educated in New England received their degrees from a private institution—a higher percentage than in any other region (see Table 9). As is the case nationally, New England retains a lower share of graduates educated at private institutions than those educated at public institutions. For example, for the class of 2000, only 59.2 percent of students graduating from private institutions were still living in the region one year after graduation, compared with 85.5 percent of public institution graduates. Thus New England has a lower overall retention rate because a higher fraction of its students graduate from private institutions, and these graduates are generally less likely to stay upon graduation.

Yet among private graduates, New England has the lowest retention rate in the nation. Each of the nine census divisions retains at least two-thirds of its private insti-

tution graduates, while New England retains just under 60 percent (see Table 9). Thus, in addition to educating a greater share of its students at private institutions, New England is also less likely to retain those students upon

**Table 5. Retention of recent college graduates educated within the region**

Share of recent college graduates living in same division as B.A. institution one year after graduation

Rank	Class of 2000		Class of 1993	
	Division	%	Division	%
1	Pacific	87.5	Far West	88.3
2	West South Central	85.1	Southeast	85.1
3	Middle Atlantic	79.9	Southwest	85.1
4	East North Central	79.7	Mid East	83.5
5	South Atlantic	79.1	Plains	82.9
6	Mountain	76.4	Great Lakes	80.9
7	West North Central	74.9	Rocky Mountains	76.3
8	East South Central	72.2	<b>New England</b>	<b>67.0</b>
9	<b>New England</b>	<b>70.5</b>		

Source: 2000/01 and 1993/03 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.  
Note: More detailed breakdowns by area and/or state can be found in Appendix Table 4.

**Table 6. Retention of recent college graduates educated within the region over time (class of 1993)**

Share of recent college graduates living in same division as B.A. institution

Institution division	1 year after graduation (percent)	4 years after graduation (percent)	10 years after graduation (percent)	Decrease over 10 years (percentage points)
<b>New England</b>	<b>67.0</b>	<b>62.5</b>	<b>60.4</b>	<b>-6.6</b>
Mid East	83.5	79.7	73.8	-9.7
Great Lakes	80.9	76.8	72.2	-8.7
Plains	82.9	76.4	72.5	-10.4
Southeast	85.1	82.0	77.8	-7.3
Southwest	85.1	79.8	77.8	-7.3
Rocky Mountains	76.3	68.9	67.2	-9.1
Far West	88.3	83.2	83.7	-4.6

Source: 1993/94 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.  
Note: More detailed breakdowns by area and/or state can be found in Appendix Table 5.



**Table 7. Retention of recent college graduates by field of study (class of 2000)**

Share of recent college graduates living in same division as B.A. institution one year after graduation

**All disciplines**

Rank	Division	Percent
1	Pacific	87.5
2	West South Central	85.1
3	Middle Atlantic	79.9
4	East North Central	79.7
5	South Atlantic	79.1
6	Mountain	76.4
7	West North Central	74.9
8	East South Central	72.2
9	<b>New England</b>	<b>70.5</b>

**Health**

Rank	Division	Percent
1	Pacific	93.2
2	<b>New England</b>	<b>91.2</b>
3	Middle Atlantic	86.9
4	South Atlantic	83.6
5	West South Central	82.7
6	East North Central	82.0
7	West North Central	79.8
8	Mountain	79.2
9	East South Central	77.7

**Social/behavioral sciences**

Rank	Division	Percent
1	Pacific	88.2
2	West South Central	87.2
3	East North Central	82.2
4	Mountain	82.0
5	Middle Atlantic	80.0
6	South Atlantic	75.8
7	East South Central	70.6
8	West North Central	69.7
9	<b>New England</b>	<b>65.1</b>

**Education**

Rank	Division	Percent
1	South Atlantic	89.4
2	Pacific	89.1
3	West South Central	88.0
4	Mountain	86.2
5	Middle Atlantic	85.4
6	East North Central	83.9
7	East South Central	78.3
8	<b>New England</b>	<b>76.5</b>
9	West North Central	71.4

**Vocational or other**

Rank	Division	Percent
1	Pacific	89.3
2	West South Central	85.3
3	Middle Atlantic	83.2
4	East North Central	82.4
5	South Atlantic	78.6
6	East South Central	75.0
7	West North Central	72.5
8	<b>New England</b>	<b>69.0</b>
9	Mountain	64.9

**Business/management**

Rank	Division	Percent
1	Pacific	89.6
2	Middle Atlantic	85.9
3	Mountain	81.5
4	South Atlantic	81.4
5	West South Central	81.4
6	West North Central	80.3
7	East North Central	78.8
8	East South Central	77.3
9	<b>New England</b>	<b>72.9</b>

**Science, technology, engineering, and mathematics (STEM)**

Rank	Division	Percent
1	Pacific	84.6
2	West South Central	84.5
3	South Atlantic	78.8
4	East North Central	78.8
5	West North Central	75.5
6	Middle Atlantic	71.8
7	Mountain	70.1
8	East South Central	67.8
9	<b>New England</b>	<b>64.3</b>

**Humanities**

Rank	Division	Percent
1	West South Central	89.7
2	Pacific	85.9
3	West North Central	73.9
4	Middle Atlantic	73.8
5	East North Central	73.8
6	South Atlantic	72.4
7	<b>New England</b>	<b>71.6</b>
8	Mountain	69.8
9	East South Central	58.5

Source: 2000/01 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

**Table 8. Retention of native versus non-native recent college graduates (class of 2000)**

Division	Share of recent college graduates educated within the division who are: (percent)		Share of recent college graduates living in same division as B.A. institution one year after graduation (percent)			Difference: natives vs. non-natives (percentage points)
	Natives	Non-natives	All graduates	Natives	Non-natives	
New England	71.5	28.5	70.5	91.0	22.7	68.3
Class of 1993	70.4	29.6	67.0	88.0	19.8	68.2
Middle Atlantic	85.7	14.3	79.9	88.7	28.6	60.1
East North Central	88.4	11.6	79.7	87.8	18.0	69.8
West North Central	81.6	18.4	74.9	86.9	21.5	65.4
South Atlantic	83.8	16.2	79.1	89.1	29.2	59.9
East South Central	84.5	15.5	72.2	82.8	15.3	67.5
West South Central	90.6	9.4	85.1	91.4	24.2	67.2
Mountain	85.8	14.2	76.4	84.8	26.2	58.6
Pacific	94.0	6.0	87.5	91.0	32.3	58.7

Source: 2000/01 and 1993/03 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.  
Note: More detailed breakdowns by area and/or state can be found in Appendix Table 6.

**Table 9. Retention of recent college graduates from public versus private institutions (class of 2000)**

Division	Share of recent college graduates educated within the division who received their B.A. from: (percent)		Share of recent college graduates living in same division as B.A. institution one year after graduation (percent)			Difference: public vs. private (percentage points)
	Public institutions	Private institutions	All graduates	Public institutions	Private institutions	
New England	43.7	56.3	70.5	85.5	59.2	26.3
Class of 1993	37.0	63.0	67.0	82.5	57.9	24.6
Middle Atlantic	49.9	50.1	79.9	86.6	73.4	13.2
East North Central	64.8	35.2	79.7	82.7	74.3	8.4
West North Central	59.2	40.8	74.9	77.0	71.9	5.1
South Atlantic	74.0	26.0	79.1	81.8	71.6	10.2
East South Central	74.4	25.6	72.2	73.7	67.8	5.9
West South Central	76.9	23.1	85.1	89.0	72.5	16.5
Mountain	79.5	20.5	76.4	76.1	77.3	-1.2
Pacific	70.3	29.7	87.5	89.9	82.0	7.9

Source: 2000/01 and 1993/03 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.  
Note: More detailed breakdowns by area and/or state can be found in Appendix Table 7.

graduation compared to other regions.

Finally, the high share of students graduating from elite institutions in New England also lowers the region's retention rates.<sup>11</sup> More than half of all New England graduates received

their degree from an elite institution—second only to the Middle Atlantic region (see Table 10). Like other parts of the country, New England has a much lower retention rate for graduates educated at elite institutions than for

**Table 10. Retention of recent college graduates from non-elite versus elite institutions (class of 2000)**

Division	Share of recent college graduates educated within the division who received their B.A. from: (percent)		Share of recent college graduates living in same division as B.A. institution one year after graduation (percent)			Difference: non-elite vs. elite (percentage points)
	Non-elite institutions	Elite institutions	All graduates	Non-elite institutions	Elite institutions	
New England	47.6	52.4	70.5	86.2	55.5	30.7
Class of 1993	46.9	53.1	67.0	80.4	54.9	25.5
Middle Atlantic	44.4	55.6	79.9	85.1	75.1	10.0
East North Central	86.4	13.6	79.7	80.9	70.1	10.8
West North Central	88.8	11.2	74.9	75.3	70.2	5.1
South Atlantic	49.1	50.9	79.1	84.1	74.4	9.7
East South Central	96.1	3.9	72.2	71.5	47.4	24.1
West South Central	81.7	18.3	85.1	86.5	82.7	3.8
Mountain	89.5	10.5	76.4	76.6	64.8	11.8
Pacific	68.3	31.7	87.5	91.2	81.8	9.4

Source: 2000/01 and 1993/03 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.  
 Notes: The Baccalaureate and Beyond Longitudinal Study defines the selectivity of 4-year institutions based on a combination of variables from the 2002 IPEDS Institutional Characteristics Survey. Selectivity has four categories: very selective, moderately selective, non selective, and open admission. For the purposes of this table, we define very selective institutions as elite and institutions in the remaining three categories as non-elite.  
 More detailed breakdowns by area and/or state can be found in Appendix Table 8.

those educated at non-elite institutions: Only 55.5 percent of the former stayed in the region after graduation, compared with 86.2 percent of the latter. Yet New England also retains a lower share of graduates of elite institutions than most other regions. Therefore, on top of graduating a greater share of students from elite institutions, these students are also less likely to stay in New England upon graduation compared to other regions.

Do recent college graduates who leave New England differ from those who stay? Those who left New England in 2006 were very similar to those who stayed in terms of age, gender, race, and ethnicity (see Table 11). Yet out-migrants were significantly less likely to be married or to own a home than those who stayed, and were more likely to have earned a master's or professional degree or to be enrolled in graduate school. And out-migrants employed as full-time, full-year workers earned higher incomes than those who stayed in the region. The top three destinations for recent college graduates were the Middle Atlantic (35.5 percent), South Atlantic (26.3

percent), and Pacific (15.7 percent) regions.

Why do recent college graduates leave New England? According to the U.S. Census Bureau's Current Population Survey, they do so primarily for job-related reasons—very few cited housing as the motivation for their move. About half of those leaving the region during the past decade cited employment-related reasons, primarily a new job or a job transfer—slightly less than the proportion of out-migrants from most other regions (see Table 12). Just under one-third left New England for other reasons—primarily to attend or leave college—while 17.0 percent left for family-related reasons. Housing-related reasons accounted for less than 2 percent of moves from New England among recent college graduates. In contrast, housing played a larger role in the migration decisions of recent college graduates leaving the Pacific region (6.7 percent).

All told, while New England's higher-education industry attracts a selective student body, it is more difficult for the region to hold onto these highly skilled individuals when they

graduate. That said, once graduates decide to stay in New England immediately after graduation, most of them tend to stay—at least for the decade following graduation. The region’s lower overall retention rate is due in part to having greater shares of both students who are not native to the region and students who are educated at private or elite institutions—groups that are generally less likely to stay in any given region upon graduation. Yet, in addition to having a greater share of these students, New England also retains a lower share of graduates within each of these three categories compared to other regions. In contrast, the region ranks favorably in terms of retaining native students and those graduating from public and non-elite institutions. Moreover, New England retains a high share of graduates in fields such as health, although not in others, such as the social/behavioral sciences, and science, technology, engineering, and mathematics.

The fact that recent college graduates who left New England did so primarily for employment-related reasons reflects the ability and willingness of the region’s graduates to pursue job opportunities across the country. In contrast, very few migrants cited housing as the motivation for their move. This is perhaps not all that surprising, given that recent college graduates are more likely to be seeking rental rather than owner-occupied housing, with the former being relatively affordable in New England.<sup>12</sup> Indeed, the Middle Atlantic and Pacific regions—both with a high cost of living—were two of their three top destinations.

## Attracting recent college graduates educated outside New England

Although New England primarily adds to its stock of recent college graduates by retaining those educated in the region, it also attracts a sizable share from among those educated elsewhere in the United States. For the class of 2000, roughly 30 percent of college graduates living in New England one year after graduation received their degree from institutions outside the region. This group includes both native New Englanders who left the region to attend college elsewhere and then returned

**Table 11. Characteristics of recent college graduates leaving New England versus those remaining in the region, 2006**

	Out-migrants	Non-migrants
<b>Basic demographics</b>		
Average age	24.2 *	24.7
<b>Gender</b>		
Percent male	39.1	42.3
Percent female	60.9	57.7
<b>Race</b>		
Percent black	5.5	4.0
Percent Hispanic	3.6	3.8
Percent Asian	8.9	7.8
<b>Household formation</b>		
Percent married	10.1	19.0
Percent owning a home	30.9	50.9
<b>Labor market characteristics</b>		
Highest degree completed		
Bachelor's degree	80.8 *	86.3
Master's degree	14.2	11.5
Professional school degree	3.9 *	1.7
Doctoral degree	1.0	0.6
Employment status		
Employed	78.2 *	83.6
Unemployed	6.5	4.4
Currently enrolled in grad school	23.6	20.1
Annual income (for individuals working full time, full year)		
Average	\$44,065	\$40,008
Median	\$40,000 *	\$36,500
<b>Region of destination</b>		
Middle Atlantic	35.5%	—
South Atlantic	26.3%	—
Pacific	15.7%	—
Mountain	8.5%	—
East North Central	6.1%	—
West North Central	3.5%	—
East South Central	2.3%	—
West South Central	2.3%	—
Number of individuals	38,991	303,488

Source: 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional group quarters (e.g., correctional facilities, nursing and in-patient hospice facilities, mental hospitals, juvenile group homes, and juvenile residential treatment centers).

Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Non-migrants are recent college graduates who did not leave New England but may have moved within the region.

Individuals are considered full-time, full-year workers if they work 35 or more hours per week and 52 weeks per year.

\* Indicates statistically significant difference from non-migrants at the 10 percent level.

More detailed breakdowns by area and/or state can be found in Appendix Table 9.

**Table 12. Primary reason for moving for recent college graduates migrating out of census divisions, 1998–2006**

	New England	East North Central		West North Central		South Atlantic		East South Central		West South Central		Mountain	Pacific	United States
		Middle Atlantic	South Atlantic	West North Central	West South Central	South Atlantic	East South Central	West South Central						
<b>Family-related reason</b>	<b>17.0%</b>	<b>5.8%*</b>	<b>7.0%</b>	<b>11.8%</b>	<b>10.6%</b>	<b>4.5%</b>	<b>6.4%</b>	<b>14.8%</b>	<b>12.2%</b>	<b>9.8%</b>				
Change in marital status	0.3%*	0.6%	1.8%	1.5%	0.5%	0.9%	1.1%	4.4%	0.4%	0.9%				
To establish own household	10.8%	2.4%	1.6%	2.2%	3.5%	3.2%	0.8%*	0.0%	4.2%	3.4%				
Other family reason	6.0%	2.9%*	3.6%	8.0%	6.6%	0.4%*	4.5%	10.4%	7.6%	5.5%				
<b>Employment-related reason</b>	<b>49.5%</b>	<b>58.4%</b>	<b>58.4%</b>	<b>52.3%</b>	<b>62.2%</b>	<b>67.1%</b>	<b>66.4%</b>	<b>45.9%</b>	<b>47.8%</b>	<b>56.3%</b>				
New job or job transfer	36.1%	52.2%	48.8%	35.5%	44.4%	63.9%*	53.9%	39.6%	35.9%	45.3%				
To look for work or lost job	6.6%	3.4%	7.6%	8.4%	6.7%	0.4%	7.6%	1.6%*	6.5%	5.7%				
To be closer to work/easier commute	3.7%	0.6%*	0.7%	2.3%	1.9%	0.0%	0.0%	1.8%	0.0%	1.2%				
Retired	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.2%				
Other job-related reason	3.0%	2.3%	1.3%*	6.1%	7.9%	2.8%	5.0%	3.0%	5.4%	3.9%				
<b>Housing-related reason</b>	<b>1.9%</b>	<b>1.7%</b>	<b>1.8%</b>	<b>2.3%</b>	<b>2.3%</b>	<b>0.0%</b>	<b>0.3%*</b>	<b>1.1%</b>	<b>6.7%</b>	<b>2.1%</b>				
To own home, not rent	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	1.0%	0.1%				
New or better house/apartment	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%				
Better neighborhood	0.0%	0.3%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%				
Cheaper housing	0.0%	0.2%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.5%	0.3%				
Other housing reason	1.9%	0.2%*	1.8%	1.3%	1.0%	0.0%	0.0%	1.1%	5.1%	1.4%				
<b>Other reason</b>	<b>31.7%</b>	<b>34.0%</b>	<b>32.9%</b>	<b>33.7%</b>	<b>25.0%</b>	<b>28.4%</b>	<b>26.9%</b>	<b>38.1%</b>	<b>33.2%</b>	<b>31.9%</b>				
To attend or leave college	27.6%	27.6%	25.9%	31.7%	20.2%	26.0%	22.1%	29.5%	25.4%	26.2%				
Change of climate	4.1%	2.4%	1.2%	0.0%	2.3%	0.0%	3.2%	0.6%*	3.2%	1.9%				
Health reasons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	0.0%	0.4%				
Natural disaster	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.1%				
Other reason	0.0%	4.1%	5.8%	2.0%*	2.5%	2.4%	0.8%*	4.6%	4.6%	3.4%				
<b>Weighted number of observations</b>	<b>154,733</b>	<b>278,446</b>	<b>334,290</b>	<b>196,508</b>	<b>235,483</b>	<b>110,534</b>	<b>141,603</b>	<b>191,929</b>	<b>175,666</b>	<b>1,819,192</b>				

Source: March Current Population Survey (Annual Demographic File), 1999-2007, U.S. Bureau of the Census.

Notes: Data are pooled across years, and responses are weighted using the person weights for that year.

Division to division moves are any moves across census division lines. U.S. movers do not include individuals who moved to the United States from abroad.

Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Individuals with imputed reasons (e.g., assigned from another family member or from a matrix of characteristics) were excluded from the analysis.

\* Indicates statistically significant difference from the U.S. at the 5 percent level.

A detailed breakdown for Massachusetts can be found in Appendix Table 10.



home, and non-natives who migrated to New England after receiving their degrees.

New England’s ability to attract college graduates educated elsewhere in the nation is comparable to that of other census divisions, once the region’s smaller size is taken into account. For the class of 2000, 1.6 percent of all graduates educated elsewhere in the nation were living in New England one year after graduation. More heavily populated regions, such as the Middle Atlantic, South Atlantic and Pacific, attracted higher shares, around 3–5 percent (Table 13). However, the number of new graduates migrating into New England from other parts of the country represented 2.5 percent of the region’s population of recent college graduates—roughly equivalent to that of most other regions. More than half of those migrating into New England were natives who had received their degrees elsewhere and chose to return upon graduation.

Do recent college graduates who migrate into New England differ from those who already live in the region? Recent college graduates migrating to New England in 2006 were fairly similar to the native population in terms of basic demographics. A significantly lower fraction owned a home, likely due to their migratory status (see Table 14). In-migrants were less likely to be employed than recent graduates who already lived in the region. Yet, for those working full-time, full-year, recent college graduates coming to the region earned significantly higher incomes than non-migrants. Interestingly, those migrating into New England came largely from the same areas that were destinations for those leaving the region—the Middle Atlantic, South Atlantic, and Pacific regions.

The Current Population Survey shows that recent college graduates are more likely to move to New England to attend graduate school than to find or start a new job. Roughly 44 percent cite reasons associated with attending or leaving college as the motivation for their move—far higher than in most other regions (see Table 15). Only 32 percent of those migrating into the region did so to start or transfer a job—significantly lower than in most other parts of the nation, likely reflect-

**Table 13. Attraction of recent college graduates educated outside the region (class of 2000)**

Graduates educated elsewhere in the United States who live in the region one year after graduation

Division	Number	Share of total graduates	As a share of the recent college graduate population living in the region
New England	7,761	1.6%	2.5%
Natives	5,125	–	–
Non-natives	3,762	–	–
Middle Atlantic	18,053	4.1%	2.2%
East North Central	11,228	2.6%	1.4%
West North Central	7,320	1.5%	2.1%
South Atlantic	22,293	5.0%	2.5%
East South Central	5,572	1.1%	2.4%
West South Central	8,857	1.8%	2.0%
Mountain	11,648	2.3%	4.2%
Pacific	15,246	3.2%	2.1%

Source: Author’s calculations.

Notes: Share of graduates educated elsewhere in the U.S. living in the region one year after graduation calculated from 2000/2001 Baccalaureate and Beyond Longitudinal Survey, National Center for Education Statistics (NCES), U.S. Department of Education.

Estimated number of graduates educated elsewhere in the U.S. living in the region one year after graduation = number enrolled elsewhere \* college completion rate \* share living in region one year after graduation.

Recent college graduate population is the number of individuals aged 22–27 years with a bachelor’s degree or higher in 2000, as calculated from the 2000 Census.

More detailed breakdowns by area and/or state can be found in Appendix Table 11.

ing the region’s sluggish job growth since the 2001 recession. Family and housing account for a little more than 7 percent of moves among recent college graduates migrating into New England.

### How migration affects the stock of recent college graduates in New England

Does New England lose more recent college graduates than it attracts? The previous two sections explored the retention of students educated in New England and the attraction of graduates educated outside the region. This section combines retention and attraction for the graduating class of 2006—yielding the net change in that year’s stock of recent college graduates. This differs from the usual net migration rate, in that it captures the initial

**Table 14. Characteristics of recent college graduates entering New England versus those remaining in the region, 2006**

	In-migrants	Non-migrants
<b>Basic demographics</b>		
Average age	24.3 *	24.7
<b>Gender</b>		
Percent male	43.1	42.3
Percent female	57.0	57.7
<b>Race</b>		
Percent black	3.4	4.0
Percent Hispanic	1.5 *	3.8
Percent Asian	10.9	7.8
<b>Household formation</b>		
Percent married	17.3	19.0
Percent owning a home	27.8 *	50.9
<b>Labor market characteristics</b>		
Highest degree completed		
Bachelor's degree	86.3	86.3
Master's degree	9.9	11.5
Professional school degree	2.8	1.7
Doctoral degree	1.0	0.6
Employment status		
Employed	76.0 *	83.6
Unemployed	6.0	4.4
Currently enrolled in grad school	23.3	20.1
Annual income (for individuals working full time, full year)		
Average	\$54,362 *	\$40,008
Median	\$45,000 *	\$36,500
<b>Region of origin</b>		
Middle Atlantic	40.0%	—
South Atlantic	22.2%	—
Pacific	13.9%	—
East North Central	10.2%	—
West North Central	5.9%	—
West South Central	5.0%	—
East South Central	2.0%	—
Mountain	0.8%	—
Number of individuals	30,768	303,488

Source: 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional group quarters (e.g., correctional facilities, nursing and in-patient hospice facilities, mental hospitals, juvenile group homes, and juvenile residential treatment centers).

Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Non-migrants are recent college graduates who did not leave New England but may have moved within the region.

Individuals are considered full-time, full-year workers if they work 35 or more hours per week and 52 weeks per year.

\* Indicates statistically significant difference from non-migrants at the 10 percent level. More detailed breakdowns by area and/or state can be found in Appendix Table 12.

migration of students to attend college. That allows us to measure whether the region is ultimately a net gainer or loser of college graduates on a cohort by cohort basis.

As noted earlier, using typical net migration rates to determine whether a region is gaining or losing recent college graduates can be misleading, particularly for regions like New England that are net importers of college students. That is because—unlike other demographic groups—recent college graduates are more likely to be repeat migrants, having already migrated once to attend college. Yet typical migration rates reflect only moves from region of institution to region of adult residence, and fail to capture the earlier migration of college students into New England.

The experiences of the graduating class of 2006 as it flows through the education pipeline—entering college, completing degrees, and then choosing where to locate—can shed light on this situation. We can divide these students into two groups: those educated in New England, and those educated elsewhere in the nation.<sup>13</sup> Among students enrolling in New England in 2002, most were native to the region (55,121), while the remainder migrated into the region from elsewhere in the nation (24,285) or abroad (2,533) (see Table 16, column A). Given that roughly 65 percent of students enrolling in New England complete college, a total of 53,260 students are estimated to have graduated (column B).<sup>14</sup> Of those, roughly 10 percent of native New Englanders are expected to leave the region, compared with 80 percent of students from other parts of the United States and 50 percent of those from abroad, for a total of 17,103 out-migrants (column C).<sup>15</sup> The remaining 36,157 graduates are expected to remain in the region one year after graduation (column D).

Yet New England also attracts a sizeable share of recent college graduates who were educated in other parts of the United States—especially those that are native to the region. Among students enrolling in institutions in other parts of the country, a tiny fraction (17,103) came from New England, while the remainder were from elsewhere in the nation (1,042, 142) and abroad (32,073) (see

**Table 15. Primary reason for moving for recent college graduates migrating into census divisions, 1998–2006**

	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	United States
<b>Family-related reason</b>	<b>5.8%</b>	<b>11.9%</b>	<b>16.2%</b>	<b>8.6%</b>	<b>6.9%</b>	<b>5.3%</b>	<b>20.5%</b>	<b>8.4%</b>	<b>5.6%</b>	<b>9.8%</b>
Change in marital status	2.5%	0.0%	0.6%	0.4%	0.8%	0.0%	2.3%	1.5%	0.5%	0.9%
To establish own household	1.4%*	1.2%	11.2%*	2.7%	2.6%	0.0%	5.1%	3.4%	1.1%*	3.4%
Other family reason	1.9%*	10.7%	4.4%	5.5%	3.5%	5.3%	13.1%	3.5%	4.1%	5.5%
<b>Employment-related reason</b>	<b>40.8%*</b>	<b>59.9%</b>	<b>46.2%</b>	<b>43.1%</b>	<b>63.9%</b>	<b>59.1%</b>	<b>60.1%</b>	<b>59.6%</b>	<b>57.3%</b>	<b>56.3%</b>
New job or job transfer	32.2%*	46.1%	31.3%*	38.8%	55.3%*	49.0%	49.6%	41.6%	47.9%	45.3%
To look for work or lost job	0.4%*	8.4%	6.1%	3.1%	5.0%	3.6%	5.6%	11.0%	4.9%	5.7%
To be closer to work/easier commute	0.3%*	3.3%	0.0%	0.0%	0.3%*	6.5%	1.4%	0.0%	1.8%	1.2%
Retired	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Other job-related reason	8.0%	0.7%*	8.8%	1.1%*	3.3%	0.0%	3.4%	7.0%	2.7%	3.9%
<b>Housing-related reason</b>	<b>1.4%</b>	<b>3.7%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>2.2%</b>	<b>4.8%</b>	<b>0.0%</b>	<b>4.9%</b>	<b>2.0%</b>	<b>2.1%</b>
To own home, not rent	0.4%	0.0%	0.0%	0.0%	0.7%	1.7%	0.0%	0.0%	0.0%	0.1%
New or better house/apartment	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Better neighborhood	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.2%
Cheaper housing	0.0%	0.0%	0.0%	0.0%	0.1%	3.1%	0.0%	0.4%	0.0%	0.3%
Other housing reason	0.0%	3.7%	0.0%	0.0%	1.4%	0.0%	0.0%	3.5%	2.0%	1.4%
<b>Other reason</b>	<b>51.9%*</b>	<b>24.4%</b>	<b>37.7%</b>	<b>48.3%</b>	<b>27.1%</b>	<b>30.8%</b>	<b>19.5%*</b>	<b>27.2%</b>	<b>35.1%</b>	<b>31.9%</b>
To attend or leave college	44.1%*	20.0%	35.0%	46.5%*	21.7%	26.9%	13.5%*	18.7%*	26.0%	26.2%
Change of climate	1.1%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	6.7%	5.1%	1.9%
Health reasons	0.0%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
Natural disaster	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Other reason	6.8%	1.3%	2.7%	1.1%*	3.8%	3.9%	6.0%	1.8%	4.0%	3.4%
<b>Weighted number of observations</b>	<b>112,945</b>	<b>204,755</b>	<b>218,248</b>	<b>142,535</b>	<b>435,491</b>	<b>103,289</b>	<b>164,510</b>	<b>190,449</b>	<b>246,971</b>	<b>1,819,192</b>

Source: March Current Population Survey (Annual Demographic File), 1999-2007, U.S. Bureau of the Census.

Notes: Data are pooled across years, and responses are weighted using the person weights for that year.

Division to division moves are any moves across census division lines. U.S. movers do not include individuals who moved to the United States from abroad.

Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Individuals with imputed reasons (e.g., assigned from another family member or from a matrix of characteristics) were excluded from the analysis.

\* Indicates significantly significant difference from the U.S. at the 5 percent level.

A detailed breakdown for Massachusetts can be found in Appendix Table 13.

**Table 16. Migration versus change in stock of college graduates for the class of 2006**

	A	B	C	D	E
	Total students enrolling, 2002	Estimated students completing degree, 2006	Estimated number leaving New England	Estimated number coming to New England	Estimated number retained in/ attracted to New England
College graduates educated in New England					
Native to New England	55,121	35,829	3,762	—	32,067
From other parts of the U.S.	24,285	15,785	12,518	—	3,268
From abroad	2,533	1,646	823	—	823
Total	81,939	53,260	<b>17,103</b>	—	<b>36,157</b>
College graduates educated in other parts of the U.S.					
Native to New England	17,114	9,652	—	5,927	5,927
From other parts of the U.S.	1,042,142	587,768	—	4,408	4,408
From abroad	32,073	18,089	—	1,049	1,049
Total	1,091,329	615,510	—	<b>11,384</b>	<b>11,384</b>
Traditional migration calculation					
Number of in-migrants				11,384	
Number of out-migrants				17,103	
Net number of migrants				<b>-5,719</b>	
Change-in-stock calculation					
Total graduates living in New England (educated in New England or elsewhere in the U.S.)					47,541
Total native New Englanders completing their degrees (in New England or elsewhere in the U.S.)					45,481
Net number of graduates relative to the total number of native New Englanders completing their degrees					<b>2,060</b>
As a percent of the total number of native New Englanders completing their degrees					<b>4.5%</b>

Source: Author's calculations.

Notes: Enrollment numbers from the Integrated Postsecondary Education Data System (IPEDS) are for first-time freshmen enrolling in 4-year degree-granting institutions. Number of students completing degree estimated by applying completion rates from the Integrated Postsecondary Education Data System (IPEDS) Graduation Rate Survey, National Center for Education Statistics (NCES), U.S. Department of Education. Number of graduates staying/coming/leaving New England estimated by applying migration rates derived from the 2000/2001 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Table 16, column A). Given a nationwide college completion rate of 57 percent, a total of 615,510 students outside of New England are expected to have obtained their bachelor's degrees (column B). Of those, roughly 60 percent of native New Englanders are expected to migrate back to the region. In addition, just under 1 percent of recent graduates from other parts of the United States and 6 percent of recent graduates from abroad are expected to migrate into New England upon graduation. Combining all three groups yields a total of 11,384 in-migrants (column D).

Simply comparing the number of graduates migrating out of New England upon graduation to the number migrating into the

region yields a net loss for the class of 2006. Given the calculations above, the region is estimated to have lost 17,103 college graduates and gained only 11,384 from other parts of the country, for a net loss of 5,719 individuals (column D).

Yet, when we consider the earlier in-migration of students, we find that New England actually increased its stock of recent college graduates by slightly more than it would have in the absence of migration. The region increased its stock of recent college graduates by a total of 47,541, including those who were educated in New England and stayed (36,157) and those who were educated elsewhere and came to the region

(11,384) (column E). If there had been no migration—that is, if each region had been required to educate only its native population, and those graduates had been required to stay in the region—then New England would have increased its stock by 45,481—the number of native college students who completed their degrees. Thus the region increased its stock of recent college graduates by 2,060 individuals, or 4.5 percent, over the number it would have seen if it had educated only its native population (column E).

In sum, migration patterns among recent college graduates have not offset the sharp drop and subsequently slower growth in the number of young adults in New England. While New England's higher-education industry attracts a selective student body, this makes it all the more difficult to hold onto these highly skilled individuals when they graduate. Despite a relatively high retention rate among native graduates, the region's retention of non-natives is lower than that of most other census divisions. In addition, graduates of New England's private and elite institutions are less likely to remain in the region upon graduation compared to those who receive their degrees elsewhere in the nation. Of those who do leave the region, most do so for employment-related reasons.

Yet, on the whole, New England appears to attract slightly more college graduates than it loses for a given cohort. Although typical migration rates show net out-migration, the region actually increases its stock of recent college graduates for a given class, once the earlier migration of students is accounted for. And New England's ability to attract college graduates educated elsewhere in the country is comparable to that of other census divisions, once the region's smaller size is taken into account. Those college graduates who do migrate into the region are more likely to do so to attend graduate school than to find or start a new job.

## Why is the number of recent college graduates growing more slowly in New England?

To what extent does each of the three main

factors—the supply of young adults, the rate of educational attainment, and the extent of migration upon graduation—explain the region's slower growth in the number of recent college graduates? Knowing the relative importance of each factor should provide some insight for policymakers concerned about the region's future supply of skilled workers.

Drawing on the evidence presented earlier in the paper, this section compares the magnitude of the changes over time for each factor. These changes are then used to estimate a baseline number of recent college graduates for each cohort to see how each factor has contributed to the total stock over time. The baseline projection is then compared to the number of recent college graduates under three alternative scenarios: (1) holding the number of young adults constant; (2) holding the rate of educational attainment constant; and (3) holding migration patterns constant.

Among the three factors, the largest change over time has been the supply of young adults native to New England. The number of native young adults who could potentially become college graduates fell by more than 25 percent between Cohorts I and II—more than twice the decline for the United States—and has grown more slowly than in the rest of the nation since then (see Table 17). Native young adults are the primary source of growth for the region's population of recent college graduates, comprising nearly 70 percent of enrollments in New England and the majority of the region's graduate population.

In contrast, rising educational attainment helped ameliorate the slower growth in the number of native young adults. The college attendance rate grew by 14 percentage points between Cohorts I and II—nearly twice the rate for the United States—and has continued to rise, albeit more slowly (Table 17). Moreover, college completion rates are higher in New England than in other parts of the United States, although they fell between Cohorts I and II.<sup>16</sup> Altogether, the likelihood that a native New Englander would become a college graduate rose by four percentage points, while the average likelihood for the nation as a whole remained virtually unchanged. As a



consequence, the decline in the stock of recent college graduates in New England was not as steep because of a rising share of native young adults attending college.

Changes over time in the migration decisions of individuals upon graduation have not been very large—at least for most groups. Between Cohorts I and II, the percentage of individuals retained in New England upon graduation rose by 3 percentage points for natives, and just under 2 percentage points for non-natives (Table 17). Although the rate at which native New Englanders migrate

back into the region upon receiving their degree elsewhere fell by 7.9 percentage points between Cohorts I and II, this affected a relatively small number of individuals. The fraction of non-native graduates attracted from other parts of the United States was roughly steady over time.

To what degree have changes in each of these factors contributed to the initial drop and then slower growth in the number of recent college graduates? One way to measure the impact of each factor is to show how each contributes to the total number of recent col-

**Table 17. Changes over time in the factors affecting the number of recent college graduates**

	Cohort I graduating college 1985-1990	Cohort II graduating college 1995-2000	Cohort III graduating college 2001-2006	Change from Cohort I to II	Change from Cohort II to III
<b>Supply of young adults</b>					
(percent)					
Number of 17-year-olds					
Native to New England	1,301,905	959,471	1,048,157	-26.3%	9.2%
From other parts of the U.S.	22,282,469	19,971,703	22,663,611	-10.4%	13.5%
<b>Rate of educational attainment</b>					
(percentage points)					
High school graduation rate					
New England	75.7%	77.3%	74.6%	1.6	-2.7
U.S. average	73.2%	70.0%	67.4%	-3.2	-2.5
College attendance rate					
New England	33.7%	47.8%	50.9%	14.1	3.1
U.S. average	28.4%	37.4%	39.5%	8.9	2.2
College completion rate					
New England	71.4%	63.0%	64.2%	-8.4	1.1
U.S. average	66.5%	52.2%	54.9%	-14.3	2.6
Likelihood of becoming a college graduate					
New England	18.2%	23.3%	24.4%	5.0	1.1
U.S. average	13.8%	13.7%	14.6%	-0.2	1.0
<b>Migration upon graduation</b>					
Retention of those educated in New England					
Native to New England	88.0%	91.0%	89.5%	3.0	-1.5
From other parts of the U.S.	19.8%	22.7%	21.3%	2.9	-1.5
Attraction of those educated outside New England					
Native to New England	65.3%	57.4%	61.4%	-7.9	4.0
From other parts of the U.S.	0.7%	0.8%	0.8%	0.1	-0.1

Sources: Number of 17-year-olds from Census population estimates.

High school graduation rates and college attendance rates from the National Center for Education Statistics (NCES), U.S. Department of Education.

College completion rates for Cohorts II and III from the Integrated Postsecondary Education Data System (IPEDS) Graduation Rate Survey, National Center for Education Statistics (NCES), U.S. Department of Education. Completion rate for Cohort I derived from Adelman (2004).

Likelihood of becoming a college graduate = high school graduation rate \* college attendance rate \* college completion rate.

Migration rates calculated from the 2000/2001 and 1993/2003 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Projected change in the number of recent college graduates in New England calculated by applying high school graduation rates, college completion rates, and migration rates to the number of 17-year-olds.

lege graduates in New England for each cohort as they flow through the education pipeline. A baseline number of graduates is calculated for both native graduates (educated within the region or elsewhere in the United States) and non-native graduates (educated within the region or elsewhere in the United States.). For example, to estimate a baseline number of recent college graduates who are native to New England and received their degree within the region, we take the number of native young adults and apply the rate of educational attainment and migration patterns that prevailed in each period for that group (see Table 18).

Among college graduates native to New

England, this method shows that slower natural population growth accounts for the majority of the decline and subsequently slower growth—although migration patterns among natives educated outside the region also play a role. Despite the large drop in the number of native young adults between Cohorts I and II, rising educational attainment meant that the number of natives completing college within the region fell by only 8.1 percent (Table 18, top panel). Retention rates also improved slightly so that the number of native recent college graduates educated in New England fell even less. Among native students who obtained their degrees elsewhere in the

**Table 18. Contribution of each factor to the change in the number of recent college graduates in New England**

	Cohort I graduating college 1985-1990	Cohort II graduating college 1995-2000	Cohort III graduating college 2001-2006	Percent change from Cohort I to II	Percent change from Cohort II to III
<b>Native New England college graduates</b>					
Number of native 17-year-olds	1,301,905	959,471	1,048,157	-26.3%	9.2%
Number completing college in New England	184,907	170,019	194,840	-8.1%	14.6%
Number staying in New England	162,718	154,718	174,381	-4.9%	12.7%
Number completing college outside New England	48,819	44,061	51,732	-9.7%	17.4%
Number returning to New England	31,879	25,291	31,738	-20.7%	25.5%
Total native recent college graduates	194,597	180,009	206,119	-7.5%	14.5%
<b>Non-native college graduates</b>					
Number of native 17-year-olds	22,282,469	19,971,703	22,663,611	-10.4%	13.5%
Number completing college in New England	92,036	89,784	92,368	-2.4%	2.9%
Number staying in New England	18,223	20,381	19,628	11.8%	-3.7%
Number completing college outside New England	3,178,397	2,782,710	3,390,000	-12.4%	21.8%
Number coming to New England	22,249	22,262	25,425	0.1%	14.2%
Total non-native recent college graduates	40,472	42,643	45,053	5.4%	5.7%
<b>Total number of graduates (baseline)</b>	<b>235,069</b>	<b>222,652</b>	<b>251,172</b>	<b>-5.3%</b>	<b>12.8%</b>
Percentage due to natives educated within the region	69.2%	69.5%	69.4%	-64.4%	68.9%
Percentage due to natives educated outside the region	13.6%	11.4%	12.6%	-53.1%	22.6%
Percentage due to non-natives educated within the region	7.8%	9.2%	7.8%	17.4%	-2.6%
Percentage due to non-natives educated outside the region	9.5%	10.0%	10.1%	0.1%	11.1%

Source: Author's calculations.

Notes: Number of 17-year-olds from Census population estimates.

High school graduation rates and college attendance rates from the National Center for Education Statistics (NCES), U.S. Department of Education.

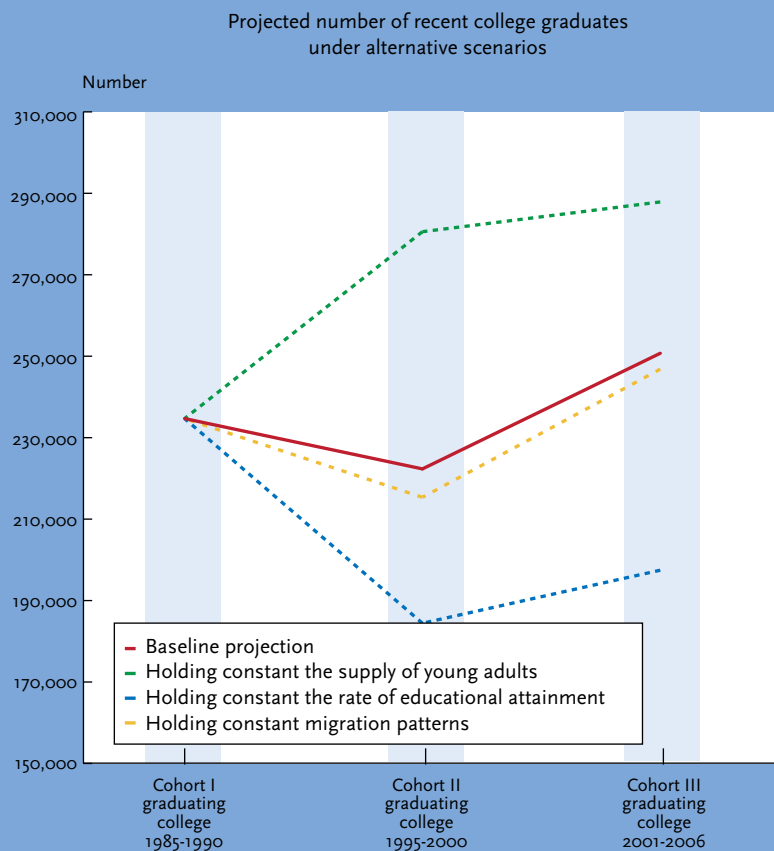
College completion rates for Cohorts II and III from the Integrated Postsecondary Education Data System (IPEDS) Graduation Rate Survey, National Center for Education Statistics (NCES), U.S. Department of Education. Completion rate for Cohort I derived from Adelman (2004).

Likelihood of becoming a college graduate = high school graduation rate \* college attendance rate \* college completion rate.

Migration rates calculated from the 2000/2001 and 1993/2003 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Projected change in the number of recent college graduates in New England calculated by applying high school graduation rates, college completion rates, and migration rates to the number of 17-year-olds.

**Figure 13. If the number of native young adults in New England were maintained across cohorts, the region's recent college graduate population would have increased sharply.**



Source: Author's calculations based on holding steady each factor as described in Table 17 to its Cohort I value.

United States, rising educational attainment again served to offset the drop in the number of young adults. Yet lower in-migration rates meant that fewer native New Englanders returned home upon graduation between Cohorts I and II. Overall, the total number of native recent college graduates fell by 7.5 percent, primarily due to fewer native young adults completing college within the region.

Among non-native college graduates—whether educated within New England or outside it—rising educational attainment and migration patterns served to offset the slower natural population growth experienced across the United States after the baby boom. Between Cohorts I and II, the number of non-native students completing college in New England declined slightly—by only 2.4 per-

cent (Table 18, middle panel). Rising retention rates served to actually boost the number of non-native recent college graduates staying in New England. A similar trend held for non-native students educated outside New England so that the total number of non-native recent college graduates rose by 5.4 percent.

Overall, the majority of the drop and subsequently slower growth in the number of recent college graduates is due to changes in the supply of native young adults in each Cohort. Across both native and non-native graduates, the total baseline number of recent college graduates fell by 5.3 percent between cohorts I and II (Table 18, bottom panel). Of this, the drop in the number of natives educated within the region accounted for most of the decline, followed by the decrease in the number of natives educated elsewhere in the country. Similarly, between Cohorts II and III, the rising number of natives educated within the region accounts for the majority of the recent growth in college graduates, albeit this growth is still slower than that of other regions.

The relative importance of each factor can be seen more clearly by comparing the baseline projection of the number of recent college graduates to that computed under the three alternative scenarios noted earlier. For example, if we hold the supply of young adults constant at the levels observed in Cohort I, we find that the number of recent college graduates would have increased by roughly 19.5 percent between Cohorts I and II (green dotted line, Figure 13)—a considerable improvement over the baseline scenario. Similarly, if we hold the rate of educational attainment steady at the levels observed in Cohort I, we find that the number of recent college graduates would have fallen by approximately 22 percent (blue dotted line, Figure 13)—indicating that rising educational attainment has been vital in helping New England swim against the tide of slower population growth. Finally, if we hold the rate of migration constant across cohorts, we find little deviation from the baseline projection of the number of recent college graduates (yellow dotted line, Figure 13).

## Conclusion: The future of the skilled labor force in New England

Should we be worried about the future of the skilled labor force in New England? Since 1990, the region has experienced a sharp drop and subsequently slower growth in its recent college graduate population compared to other parts of the nation. Yet the majority of this trend can be attributed to the region's slower growth in the number of native young adults stemming from lower birth rates. Fortunately, rising educational attainment among native New Englanders has helped the region to swim against the tide of slower natural population growth.

Yet a recent article in *The Boston Globe* warned that college students often treat coming to New England to get a degree like “spinning through a revolving door”—acquiring a high-quality education and then using it to take advantage of job opportunities elsewhere.<sup>17</sup> The ability of the region's institutions to attract a relatively high share of the student body from outside the region—educating some of the country's best and brightest—means these same students are also more mobile upon graduation. Indeed, New England retains a lower share of recent college graduates educated within the region compared to other places in part because a high fraction of its student body is not native to the region and is educated at private or elite institutions—groups that are generally less likely to stay in any given region upon graduation. Thus, despite the success of New England's higher education industry, employers within the region may still face challenges in hiring recent college graduates.

The ultimate question for policymakers concerned about future economic growth is whether the region can retain and attract enough recent college graduates with the skills that firms are demanding. Indeed, employers around the region report having difficulty finding skilled workers to fill their needs. However, contrary to the usual litany of reasons offered to explain why individuals leave New England—cold winters, high cost of living—recent college graduates report leaving

the region primarily for employment-related reasons or to attend or leave college. Few cite housing as the motivation for their move. Thus the sluggish job growth in some parts of New England after the 2001 recession is likely to have had an impact on the migration decisions of recent college graduates looking for their first job out of college.

What, if anything, can be done about it? Among the three factors examined here, increasing the supply of young adults to be educated would have the greatest impact. Short of a baby boom, higher-education leaders may need to develop strategies to attract more students from other parts of the United States even as competition for high school graduates intensifies.

Rising educational attainment has certainly been a boon to the region, but it is not clear that college attendance rates can grow much beyond their current levels, given that they have already leveled off. That said, as college attendance rates have risen, college completion rates have moved in the opposite direction. Thus educators at both secondary and higher levels may also want to improve students' preparation for college—to get the most bang for the buck for each young adult who enrolls.

Boosting the retention of those educated in New England may offer the most promising and immediate channel for policymakers to expand the stock of recent college graduates, despite playing a relatively small role over the past two decades. One way to achieve this would be convince more recent college graduates to stay in New England upon graduation. Although the region does a fairly good job at retaining some groups, there is an opportunity to boost retention among non-native graduates and those from private and elite institutions. Given the reasons for leaving the region, this group appears to be moving primarily to seek the best job opportunities. As Bentley College economic professor Patricia Flynn has observed, “Being offered a really good job will override housing costs, snow, and a lot of other issues.”<sup>18</sup>

Yet it's unclear whether New England lacks enough “really good” entry-level positions, or whether college graduates simply have trouble finding those jobs. Policymakers

may want to strengthen ties between businesses and higher education institutions within the region with regards to curriculum, research, or recruitment opportunities. Alternatively, firms may want to begin the recruitment process earlier by offering internship opportunities that can lead to permanent positions.

Another way to boost retention would be to increase the number of students with characteristics that make them likely to remain in New England. For example, policymakers may want to encourage more native students going on to college to enroll in a New England college or university, given that roughly 90 percent of graduates who are native to the region stay upon graduation. Alternatively, expanding public higher education within the region might lead to greater retention, given that over 80 percent of graduates of these institutions

choose to stay in New England.

New England is likely to face growing competition for the college graduates its institutions produce, particularly in a global economy where workers and jobs are more mobile. Fortunately, the region maintains a high rate of educational attainment among its young adult population with one of the highest shares of college graduates in the nation. The larger question of whether the region has a shortage of skilled workers or a mismatch between the skills firms need and the supply of workers who hold them is beyond the scope of this report. However, these findings should help New England policymakers and business leaders consider how best to address the slowdown in the supply of recent college graduates.



## Endnotes

- <sup>1</sup> For a detailed breakdown by area and/or state within New England, see the data appendix at the end of this report. Where possible, the appendix replicates the tables and figures referenced in the text using data by areas (northern and southern New England) or states within New England. Data on “competitor states,” identified as those states with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors, are also included where appropriate.
- <sup>2</sup> Julie DaVanzo. “Repeat Migration in the United States: Who Moves Back and Who Moves On?” *Review of Economics and Statistics* 65, 4, 1983.
- <sup>3</sup> Ty J. Handy. “Differentiate or Die: Colleges Need a Clear Niche to Thrive in the Coming Demographic Crisis.” *New England Journal of Higher Education*, Winter 2008.
- <sup>4</sup> College Ready New England—an alliance of leaders from K-12 education, higher-education, business, and government—focuses on increasing the region’s economic competitiveness and well-being by expanding college participation and success. CRNE’s mission is twofold: (1) to ensure that all students leave high school well-prepared for postsecondary success; and (2) to improve college attendance and completion rates, particularly among low-income and minority students and first-generation college-goers.
- <sup>5</sup> The Central Massachusetts Talent Retention Project is part of a broader initiative to create more jobs and expand economic opportunities statewide. In 2005, the group conducted a survey to determine how to increase retention among college graduates. Based on the survey results, the group recommended building stronger connections between college students and employers in the region and has created a website featuring internship opportunities for college students in central Massachusetts and Connecticut.
- <sup>6</sup> Opportunity Maine allows college graduates who work and pay taxes in the state to claim tax credits for payments on school loans. Businesses are also eligible for the tax credit if they agree to pay students’ loans. Graduates remain eligible for the deduction if they leave Maine for graduate school or enroll in programs such as the Peace Corps. See <http://opportunity-maine.org/>.
- <sup>7</sup> The 55-Percent Initiative calls for increasing the percentage of college graduates that remain in New Hampshire after graduation from 50 percent to 55 percent through a “tourism-like” marketing campaign. See [www.usnh.edu](http://www.usnh.edu) for more information.
- <sup>8</sup> The goal of the campaign, which touts the state’s quality of life and business growth in the wake of a decreasing workforce, is to entice workers with an affinity for Vermont—those who have lived or gone to school there—to return. See <http://www.pursuevt.org/> for more information.
- <sup>9</sup> The H-1B program allows employers to hire foreign guest workers for occupations that require specialized knowledge and at least a bachelor’s degree or the equivalent. The program grants nonimmigrant visas to participants.
- <sup>10</sup> Calculating the migration rate among recent college graduates who leave New England for international destinations is not possible, given that no data source tracks such information.
- For international immigration to fully offset the region’s net domestic out-migration, New England would have to retain 85 percent of graduates who come from abroad to study in the region. That is unlikely, given that many recent college graduates come to the United States for graduate school and then leave, often returning to their homeland. Historically, roughly half of all graduate students in science and engineering who were on temporary visas stayed in the United States immediately after earning their degree. (National Science Board. *Science and Engineering Indicators* 2004).
- <sup>11</sup> The U.S. Department of Education’s *Baccalaureate and Beyond Longitudinal Study* defines a four-year institution as *elite* based on a combination of variables from the 2002 IPEDS Institutional Characteristics Survey. Specifically, an index was created from two variables: 1) the centile distribution of the percentage of students who were admitted to each institution (of those who applied); and 2) the centile distribution of the midpoint between the 25th and 75th percentile SAT/ACT combined scores reported by each institution. For more information, see “Details for Selectivity” for *Baccalaureate and Beyond* under the Data Analysis System at <http://nces.ed.gov>.
- <sup>12</sup> For an in-depth analysis of the relative affordability of New England’s rental and owner-occupied housing markets, see: Alicia Sasser. “The New England Rental Market.” New England Public Policy Center, Federal Reserve Bank of Boston, Policy Brief No. 07-1. January 2007.
- <sup>13</sup> Students may also go abroad for college, but lack of data prevents us from measuring these inflows and outflows.
- <sup>14</sup> This completion rate represents the fraction of students enrolled in New England who completed their degrees within six years, reported by the Integrated Postsecondary Education Data System (IPEDS) Graduation Rate Survey, National Center for Education Statistics (NCES), U.S. Department of Education.)
- <sup>15</sup> Migration rates for native New Englanders and domestic students from other U.S. regions are calculated from the 2000/2001 *Baccalaureate and Beyond Longitudinal Study*. The migration rate for foreign students is based on a report by the National Science Board, stating that historically roughly half of all graduate students in science and engineering who were on temporary visas stayed in the United States immediately after earning their degree. (National Science Board. *Science and Engineering Indicators* 2004).
- <sup>16</sup> College completion rates for Cohort I were derived from Table 2.2 of Clifford Adelman, *Principal Indicators of Student Academic Histories in Postsecondary Education, 1972-2000*, U.S. Department of Education, 2004. The U.S. completion rate is based on an 8.5 year completion rate from the National Education Longitudinal Study of 1998 for students who graduated in 1992. The New England completion rate is calculated by applying one-half of the historical differential between the U.S. and New England to this rate.
- <sup>17</sup> Scott Kirsner. “Youth Movement.” *The Boston Globe*. February 17, 2008.
- <sup>18</sup> *Ibid.*

# Appendix

**Appendix Table 1. Changes in the stock of recent college graduates, 1990–2006**

	Stock (number)			Percent change		
	1990	2000	2006	1990-2000	2000-2006	1990-2006
Connecticut	84,719	65,556	78,841	–22.6%	20.3%	–6.9%
Maine	16,355	15,505	17,645	–5.2%	13.8%	7.9%
Massachusetts	202,850	184,904	185,261	–8.8%	0.2%	–8.7%
New Hampshire	22,194	19,762	28,219	–11.0%	42.8%	27.1%
Rhode Island	22,412	20,785	21,267	–7.3%	2.3%	–5.1%
Vermont	8,345	9,911	12,792	18.8%	29.1%	53.3%
New England	356,875	316,423	344,025	–11.3%	8.7%	–3.6%
United States	4,548,430	4,862,509	5,674,437	6.9%	16.7%	24.8%

Source: 1990 and 2000 Decennial Census and 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional groups quarters (e.g., correctional facilities, nursing and in-patient hospital facilities, mental hospitals, juvenile group homes, and juvenile residential treatment facilities).

Recent college graduates are individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

## Appendix Table 2. Migration of first-time freshman attending college in the United States, 2002

First-time degree/certificate-seeking undergraduate students who graduated from high school in the past 12 months and enrolled in four-year, degree-granting institutions

State of origin	All freshmen from state	Destination state							U.S. (excl. New England)
		Connecticut	Maine	Massachusetts	Hampshire	Rhode Island	Vermont	New England	
Connecticut	19,335	8,759	245	2,568	699	934	402	5,728	
Maine	6,186	170	3,095	811	435	152	227	1,296	
Massachusetts	32,496	1,575	584	19,329	1,916	1,633	891	6,568	
New Hampshire	6,690	261	230	1,131	3,000	235	327	1,506	
Rhode Island	3,881	224	48	719	213	1,665	84	928	
Vermont	3,647	108	127	382	244	87	1,611	1,088	
United States (excl. New England)	1,066,427	5,506	802	12,296	703	3,297	1,681	1,042,142	
Foreign	34,606	425	81	1,709	101	163	53	32,073	
Total enrollment	1,173,268	17,028	5,212	38,945	7,311	8,166	5,276		
Total entering region for college		5,506	802	12,296	703	3,297	1,681		
Total leaving region for college		5,728	1,296	6,568	1,506	928	1,088		
Net migration to attend college		-222	-494	5,728	-803	2,369	593		
As percentage of freshmen from region		-1.1%	-8.0%	17.6%	-12.0%	61.0%	16.3%		
Total entering state for college	—	8,269	2,117	19,616	4,311	6,501	3,665		
Total leaving state for college	—	10,576	3,091	13,167	3,690	2,216	2,036		
Net migration to attend college	—	-2,307	-974	6,449	621	4,285	1,629		
As percentage of freshmen from state	—	-11.9%	-15.7%	19.8%	9.3%	110.4%	44.7%		
<b>As a share of each state's total enrollment</b>									
State of origin	Connecticut	Maine	Massachusetts	Hampshire	Rhode Island	Vermont			
Connecticut	51.4%	4.7%	6.6%	9.6%	11.4%	7.6%			
Maine	1.0%	59.4%	2.1%	5.9%	1.9%	4.3%			
Massachusetts	9.2%	11.2%	49.6%	26.2%	20.0%	16.9%			
New Hampshire	1.5%	4.4%	2.9%	41.0%	2.9%	6.2%			
Rhode Island	1.3%	0.9%	1.8%	2.9%	20.4%	1.6%			
Vermont	0.6%	2.4%	1.0%	3.3%	1.1%	30.5%			
United States (excl. New England)	32.3%	15.4%	31.6%	9.6%	40.4%	31.9%			
Foreign	2.5%	1.6%	4.4%	1.4%	2.0%	1.0%			
Total enrollment	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			

Sources: Domestic enrollments from the Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics (NCES), U.S. Department of Education. Foreign enrollments from the National Center for Education Statistics (NCES), U.S. Department of Education, and from the IIE Network Open Doors Online, Institute of International Education.

**Appendix Table 3. Migration of recent college graduates, 2006**

	Domestic migration			International migration				
	Number of in-migrants	In-migration rate (per 1,000)	Out-migration rate (per 1,000)	Number of net migrants	Net migration rate (per 1,000)	Number of international immigrants	International immigration rate (per 1,000)	Number of recent college grads
New England	30,768	89.5	113.4	-8,223	-23.9	9,682	28.2	343,938
Northern New England	8,220	140.1	171.0	-1,813	-30.9	801	13.7	58,656
Southern New England	27,922	97.9	120.3	-6,410	-22.5	8,881	31.1	285,282
Massachusetts	22,718	122.6	141.8	-3,545	-19.1	5,238	28.3	185,261

Source: 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional group quarters (e.g., correctional facilities, nursing and in-patient hospice facilities, mental hospitals, juvenile group homes, and juvenile residential treatment centers).

Recent college graduates are individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Migration rates for New England are for individuals who moved into or out of the division.

Migration rates for Northern and Southern New England are for individuals who moved into or out of each of these regions.

Migration rates for Massachusetts are for state-to-state movers.

## Appendix Table 4. Retention of recent college graduates educated within the area

Share of recent college graduates living in same area as B.A. institution one year after graduation			
Class of 2000		Class of 1993	
State	Percent	State	Percent
New England	70.5	New England	67.0
Northern New England	57.1	Northern New England	—
Southern New England	66.1	Southern New England	—
Massachusetts	60.0	Massachusetts	57.9
<b>Competitor states:</b>		<b>Competitor states:</b>	
California	84.4	California	86.9
Illinois	77.1	Illinois	81.7
New York	70.7	New York	71.2
North Carolina	69.7	North Carolina	69.5
Pennsylvania	63.4	Pennsylvania	67.0
Texas	86.7	Texas	87.3
Washington	71.1	Washington	73.3

Source: 2000/01 and 1993/03 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Note: Competitor states are those with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors.

## Appendix Table 5. Retention of recent college graduates over time (class of 1993)

State	Share of recent college graduates living in same area as B.A. Institution			
	1 year after graduation (percent)	4 years after graduation (percent)	10 years after graduation (percent)	Decrease over 10 years (percentage points)
New England	67.0	62.5	60.4	-6.6
Massachusetts	57.9	52.6	50.4	-7.5
<b>Competitor states:</b>				
California	86.9	80.9	80.6	-6.3
Illinois	81.7	74.3	68.8	-12.9
New York	71.2	65.0	58.8	-12.4
North Carolina	69.5	65.3	57.2	-12.3
Pennsylvania	67.0	58.2	54.1	-12.9
Texas	87.3	82.8	80.4	-6.9
Washington	73.3	70.4	66.2	-7.1

Source: 1993/03 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Note: Competitor states are those with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors.



**Appendix Table 6. Retention of native versus non-native recent college graduates (class of 2000)**

State	Share of recent college graduates educated within the area who are: (percent)		Share of recent college graduates living in same area as B.A. institution one year after graduation (percent)			Difference: natives vs. non-natives (percentage points)
	Natives	Non-natives	All graduates	Natives	Non-natives	
New England	71.5	28.5	70.5	91.0	22.7	68.3
Northern New England	63.2	36.8	57.1	85.4	10.1	75.3
Southern New England	67.6	32.4	66.1	87.8	25.2	62.6
Massachusetts	57.3	42.7	60.0	82.9	29.2	53.7
<b>Competitor states:</b>						
California	92.6	7.4	84.4	87.4	46.5	40.9
Illinois	88.1	11.9	77.1	85.4	15.6	69.8
New York	76.6	23.4	70.7	84.5	25.9	58.6
North Carolina	78.2	21.8	69.7	81.5	25.4	56.1
Pennsylvania	70.3	29.7	63.4	82.1	18.8	63.3
Texas	92.1	7.9	86.7	91.7	28.4	63.3
Washington	90.5	9.5	71.1	77.3	low n	—

Source: 2000/01 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Note: Competitor states are those with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors.

**Appendix Table 7. Retention of recent college graduates from public versus private institutions (class of 2000)**

State	Share of recent college graduates educated within the area who received their BA from: (percent)		Share of recent college graduates living in same area as B.A. institution one year after graduation (percent)			Difference: public vs. private (percentage points)
	Public institutions	Private institutions	All graduates	Public institutions	Private institutions	
New England	43.7	56.3	70.5	85.5	59.2	26.3
Northern New England	51.4	48.6	57.1	72.8	40.6	32.2
Southern New England	41.0	59.0	66.1	80.1	56.7	23.4
Massachusetts	32.3	67.7	60.0	71.3	54.6	16.7
<b>Competitor states:</b>						
California	72.8	27.2	84.4	87.0	77.2	9.8
Illinois	53.6	46.4	77.1	76.5	77.8	-1.3
New York	46.8	53.2	70.7	83.4	59.5	23.9
North Carolina	73.8	26.2	69.7	76.6	50.5	26.1
Pennsylvania	47.8	52.2	63.4	70.8	56.6	14.2
Texas	73.1	26.9	86.7	91.3	74.2	17.1
Washington	74.8	25.2	71.1	76.4	55.6	20.8

Source: 2000/01 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Note: Competitor states are those with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors.

**Appendix Table 8. Retention of recent college graduates from non-elite versus elite institutions (class of 2000)**

State	Share of recent college graduates educated within the area who received their B.A. from: (percent)		Share of recent college graduates living in same area as B.A. institution one year after graduation (percent)			Difference: Non-elite vs. elite (percentage points)
	Non-elite institutions	Elite institutions	All graduates	Non-elite institutions	Elite institutions	
New England	47.6	52.4	70.5	86.2	55.5	30.7
Northern New England	70.7	29.3	57.1	63.4	26.8	36.6
Southern New England	40.2	59.8	66.1	81.7	56.3	25.4
Massachusetts	34.4	65.6	60.0	84.0	49.1	34.9
<b>Competitor states:</b>						
California	62.1	37.9	84.4	88.7	81.5	7.2
Illinois	80.0	20.0	77.1	80.1	70.1	10.0
New York	29.4	70.6	70.7	85.1	65.5	19.6
North Carolina	61.3	38.7	69.7	74.9	61.6	13.3
Pennsylvania	58.4	41.6	63.4	68.0	53.4	14.6
Texas	73.5	26.5	86.7	88.1	84.1	4.0
Washington	65.5	34.5	71.1	78.7	57.1	21.6

Source: 2000/01 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.

Notes: The Baccalaureate and Beyond Longitudinal Study defines the selectivity of 4-year institutions based on a combination of variables from the 2002 IPEDS Institutional Characteristics Survey. Selectivity has four categories: very selective, moderately selective, non selective, and open admission. For the purposes of this table, we define very selective institutions as elite and institutions in the remaining three categories as non-elite.

Competitor states are those with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors.

**Appendix Table 9. Characteristics of recent college graduates leaving each area versus those remaining in the area, 2006**

	Northern New England		Southern New England		Massachusetts	
	Out-migrants	Non-migrants	Out-migrants	Non-migrants	Out-migrants	Non-migrants
<b>Basic demographics</b>						
Average age	24.1*	24.8	24.2*	24.7	24.3*	24.7
<b>Gender</b>						
Percent male	37.5	41.1	40.8	42.5	42.3	42.6
Percent female	62.5	58.9	59.2	57.5	57.2	57.4
<b>Race</b>						
Percent black	1.9	1.3	5.7	4.6	3.8	4.2
Percent Hispanic	1.4	2.0	3.7	4.3	2.6	3.8
Percent Asian	3.7	1.6	9.5	9.1	11.6	9.5
<b>Household formation</b>						
Percent married	9.0*	27.9	10.7*	17.3	10.1*	15.4
Percent owning a home	28.3*	52.5	33.1*	50.8	30.2*	45.7
<b>Labor market characteristics</b>						
Highest degree completed						
Bachelor's degree	89.9	91.8	79.7*	85.1	76.7*	85.0
Master's degree	10.1	7.2	14.4	12.4	16.7	12.3
Professional school degree	low n	0.4	4.5	1.9	4.9*	2.0
Doctoral degree	low n	0.6	1.5	0.6	1.7	0.7
Employment status						
Employed	84.9	85.9	74.9*	83.5	75.2*	83.1
Unemployed	6.7	3.8	6.7	4.5	7.5	4.6
Currently enrolled in grad school	17.6	15.3	23.8	21.1	22.4	20.6
Annual income (for individuals working full time, full year)						
Average	\$48,787	\$34,177	\$40,885	\$41,242	\$43,930	\$41,169
Median	\$35,000*	\$30,000	\$40,000*	\$38,000	\$47,700*	\$38,000
<b>Region of destination</b>						
Rest of New England	31.3%	—	6.5%	—	17.7%	—
Middle Atlantic	17.3%	—	35.2%	—	27.0%	—
South Atlantic	14.2%	—	25.7%	—	23.5%	—
Pacific	19.7%	—	12.1%	—	10.3%	—
Mountain	5.6%	—	8.0%	—	8.6%	—
East North Central	4.2%	—	5.6%	—	6.2%	—
West North Central	1.5%	—	3.5%	—	4.6%	—
West South Central	0.4%	—	2.4%	—	1.2%	—
East South Central	5.7%	—	0.9%	—	0.9%	—
Number of individuals	10,033	49,635	34,332	248,479	26,263	157,305

Source: 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional group quarters (e.g., correctional facilities, nursing and in-patient hospice facilities, mental hospitals, juvenile group homes, and juvenile residential treatment centers).

Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Non-migrants are recent college graduates who did not leave the state/region but may have moved within it.

Individuals are considered full-time, full-year workers if they work 35 or more hours per week and 52 weeks per year.

\* Indicates statistically significant difference from non-migrants at the 10 percent level.

**Appendix Table 10. Primary reason for moving for recent college graduates migrating out of state, 1998–2006**

	Recent college graduates (age 22-27)	
	United States	Massachusetts
<b>Family-related reason</b>	<b>10.5</b>	<b>11.9</b>
Change in marital status	1.4	0.6
To establish own household	3.7	7.0
Other family reason	5.4	4.3
<b>Employment-related reason</b>	<b>56.1</b>	<b>40.2 *</b>
New job or job transfer	46.4	28.3 *
To look for work or lost job	4.9	6.5
To be closer to work/easier commute	1.4	0.2 *
Retired	0.2	0.0
Other job related reason	3.2	5.2
<b>Housing-related reason</b>	<b>3.8</b>	<b>1.4 *</b>
To own home, not rent	0.3	0.4
New or better house/apartment	1.1	0.0
Better neighborhood	0.2	0.4
Cheaper housing	0.6	0.0
Other housing reason	1.6	0.6
<b>Other reason</b>	<b>29.6</b>	<b>46.5 *</b>
To attend or leave college	24.8	46.1 *
Change of climate	1.6	0.0
Health reasons	0.3	0.0
Natural disaster	0.0	0.0
Other reason	3.0	0.4 *
<b>Total Number</b>	<b>2,523,105</b>	<b>89,098</b>

Source: March Current Population Survey (Annual Demographic File), 1999-2007, U.S. Bureau of the Census.

Notes: Data are pooled across years and responses are weighted using the person weights for that year.

State to state moves are any moves across state lines and do not include individuals who moved within the state.

U.S. movers do not include individuals who moved to the United States from abroad.

Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Individuals with imputed reasons (e.g., assigned from another family member or from a matrix of characteristics) were excluded from the analysis.

\* Indicates statistically significant difference from the U.S. at the 5 percent level.

**Appendix Table 11. Attraction of recent college graduates educated outside the region (class of 2000)**

State	Graduates educated elsewhere in the United States who live in the state one year after graduation		
	Number	Share of total graduates	As a share of the recent college graduate population living in the state
Northern New England	1,570	0.3%	3.5%
Southern New England	8,923	1.8%	3.3%
Massachusetts	7,634	1.5%	4.1%
<b>Competitor states:</b>			
California	12,785	2.6%	2.3%
Illinois	9,225	1.8%	3.4%
New York	12,761	2.6%	2.9%
North Carolina	4,124	0.8%	2.9%
Pennsylvania	5,446	1.1%	2.5%
Texas	9,136	1.8%	2.9%
Washington	4,204	0.8%	4.3%

Source: Author's calculations.

Notes: Share of graduates educated elsewhere in the U.S. living in the region one year after graduation calculated from 2000/2001 Baccalaureate and Beyond Longitudinal Survey, National Center for Education Statistics (NCES), U.S. Department of Education.

Estimated number of graduates educated elsewhere in the U.S. living in the region one year after graduation = number enrolled elsewhere \* college completion rate \* share living in region one year after graduation.

Recent college graduate population is the number of individuals aged 22–27 years with a B.A. or higher in 2000, as calculated from the 2000 Census.

Competitor states are those with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors.



**Appendix Table 12. Characteristics of recent college graduates entering each area versus those remaining in the area, 2006**

	Northern New England		Southern New England		Massachusetts	
	In-migrants	Non-migrants	In-migrants	Non-migrants	In-migrants	Non-migrants
<b>Basic demographics</b>						
Average age	24.7	24.8	24.2*	24.7	24.2*	24.7
<b>Gender</b>						
Percent male	37.4	41.1	45.5	42.5	47.9	42.6
Percent female	62.7	58.9	54.5	57.5	52.1	57.4
<b>Race</b>						
Percent black	0.9	1.3	3.5	4.6	2.7	4.2
Percent Hispanic	low n	2.0	1.6*	4.3	1.9*	3.8
Percent Asian	1.1	1.6	12.3	9.1	10.5	9.5
<b>Household formation</b>						
Percent married	9.8*	27.9	18.5	17.3	13.7	15.4
Percent owning a home	33.4*	52.5	28.4*	50.8	29.5*	45.7
<b>Labor market characteristics</b>						
Highest degree completed						
Bachelor's degree	87.2	91.8	86.8	85.1	87.5	85.0
Master's degree	6.8	7.2	10.4	12.4	10.5	12.3
Professional school degree	4.5	0.4	1.8	1.9	0.7*	2.0
Doctoral degree	1.4	0.6	1.1	0.6	1.3	0.7
Employment status						
Employed	73.7*	85.9	75.3*	83.5	79.0	83.1
Unemployed	9.0	3.8	5.6	4.5	7.0*	4.6
Currently enrolled in grad school	7.8*	15.3	26.0	21.1	25.2	20.6
Annual income (for individuals working full time, full year)						
Average	\$33,338	\$34,177	\$56,624	\$41,242	\$52,131*	\$41,169
Median	\$35,000*	\$30,000	\$45,000*	\$38,000	\$45,000*	\$38,000
<b>Region of origin</b>						
Rest of New England	27.1%	—	11.3%	—	24.7%	—
Middle Atlantic	15.6%	—	39.5%	—	30.0%	—
South Atlantic	23.1%	—	17.6%	—	16.8%	—
Pacific	8.4%	—	12.9%	—	12.3%	—
East North Central	3.9%	—	10.1%	—	10.2%	—
West North Central	12.5%	—	2.9%	—	2.2%	—
East South Central	1.7%	—	1.7%	—	2.1%	—
West South Central	6.0%	—	3.7%	—	1.3%	—
Mountain	1.7%	—	0.4%	—	0.5%	—
Number of individuals	8,220	49,635	27,922	248,479	22,718	157,305

Source: 2006 American Community Survey, U.S. Bureau of the Census.

Notes: Sample includes population residing in non-institutional group quarters (e.g., college dormitories) but excludes those in institutional group quarters (e.g., correctional facilities, nursing and in-patient hospice facilities, mental hospitals, juvenile group homes, and juvenile residential treatment centers). Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Non-migrants are recent college graduates who did not leave the state/region but may have moved within it.

Individuals are considered full-time, full-year workers if they work 35 or more hours per week and 52 weeks per year.

\* Indicates statistically significant difference from non-migrants at the 10 percent level.

**Appendix Table 13. Primary reason for moving for recent college graduates migrating into the state, 1998–2006**

	Recent college graduates (age 22-27)	
	United States	Massachusetts
<b>Family-related reason</b>	<b>10.5</b>	<b>3.9</b>
Change in marital status	1.4	3.9
To establish own household	3.7	0.0
Other family reason	5.4	0.0
<b>Employment-related reason</b>	<b>56.1</b>	<b>54.0</b>
New job or job transfer	46.4	39.3
To look for work or lost job	4.9	0.0
To be closer to work/easier commute	1.4	3.8
Retired	0.2	0.0
Other job related reason	3.2	11.0
<b>Housing-related reason</b>	<b>3.8</b>	<b>4.9</b>
To own home, not rent	0.3	0.0
New or better house/apartment	1.1	0.0
Better neighborhood	0.2	0.0
Cheaper housing	0.6	0.0
Other housing reason	1.6	4.9
<b>Other reason</b>	<b>29.6</b>	<b>37.2</b>
To attend or leave college	24.8	33.7
Change of climate	1.6	0.0
Health reasons	0.3	0.0
Natural disaster	0.0	0.0
Other reason	3.0	3.5
<b>Total Number</b>	<b>2,523,105</b>	<b>72,155</b>

Source: March Current Population Survey (Annual Demographic File), 1999-2007, U.S. Bureau of the Census.

Notes: Data are pooled across years and responses are weighted using the person weights for that year.

State to state moves are any moves across state lines and do not include individuals who moved within the state.

U.S. movers do not include individuals who moved to the United States from abroad.

Recent college graduates are defined as individuals aged 22–27 years who have completed a bachelor's degree or higher (e.g. includes master's, Ph.D., or professional degrees).

Individuals with imputed reasons (e.g., assigned from another family member or from a matrix of characteristics) were excluded from the analysis.

**Appendix Figure 1. Share of college graduates living in each state one year after graduation who received their B.A. within the state from the class of 2000.**

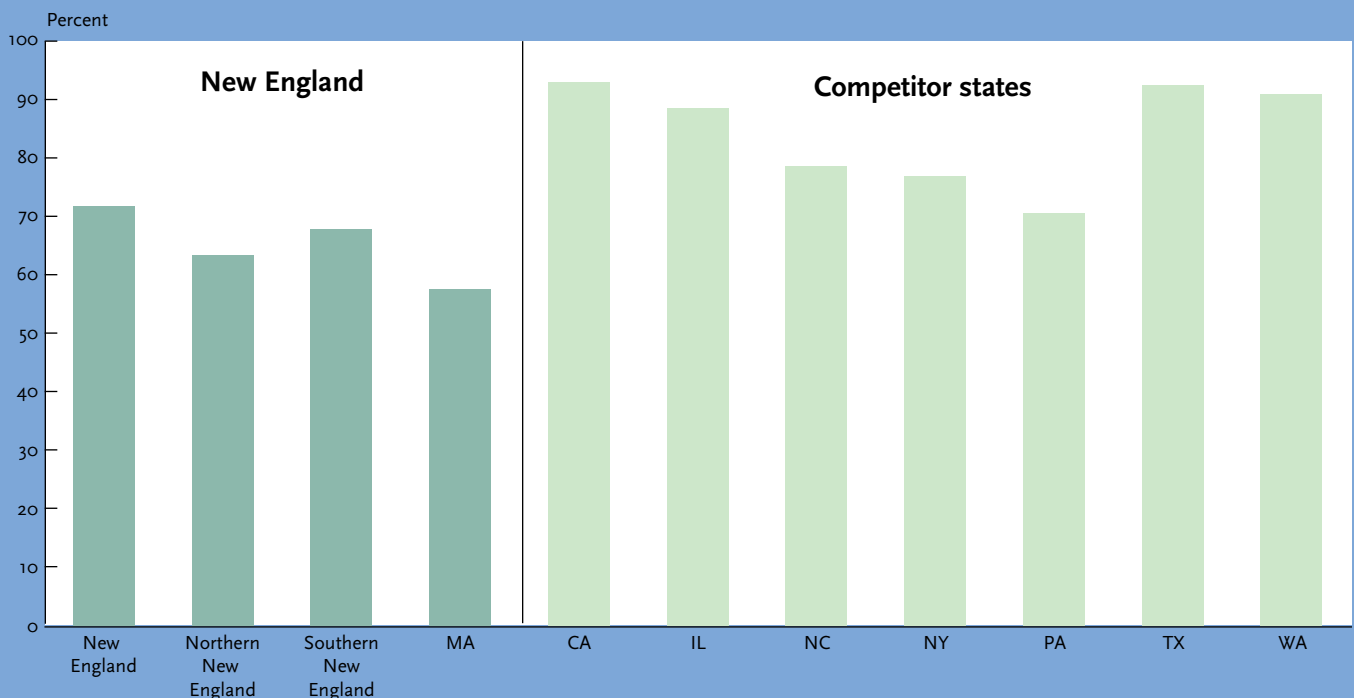
(for New England and selected competitor states)



Source: 2000/2001 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education  
 Note: Competitor states are those with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors.

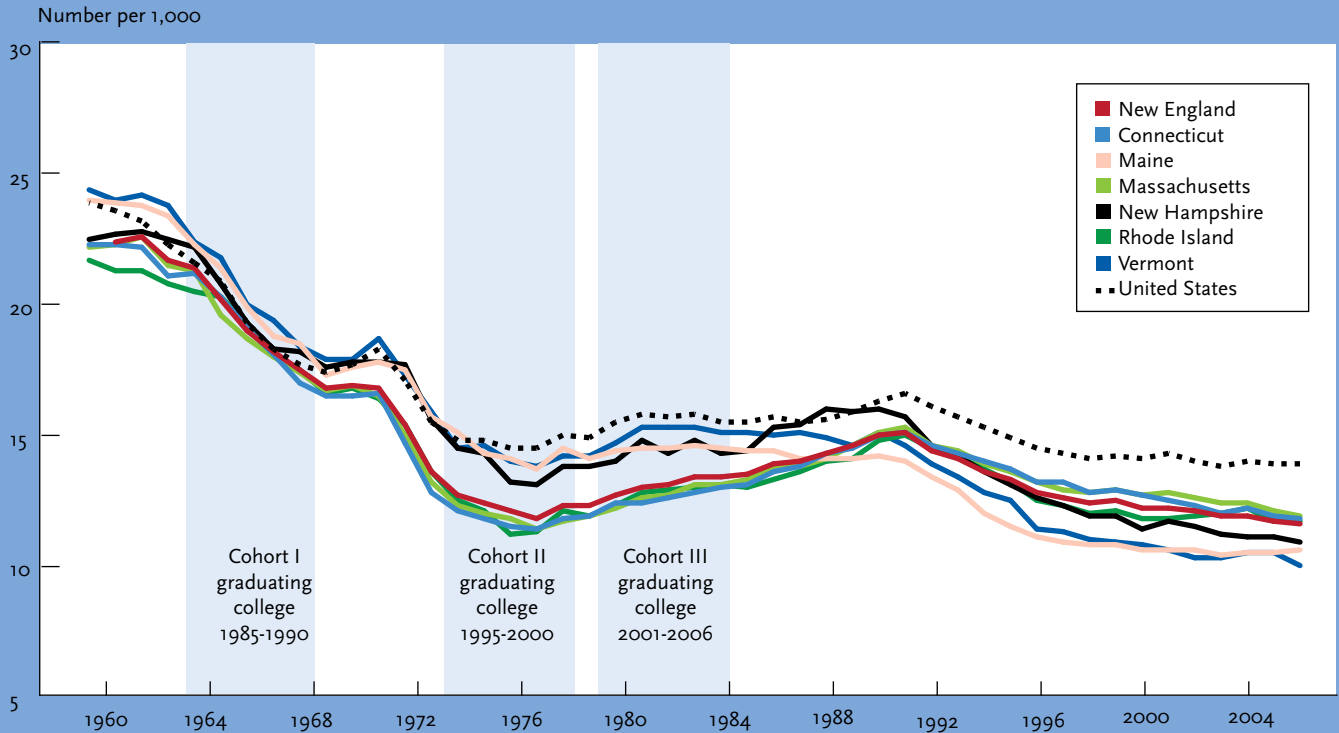
**Appendix Figure 2. Share of students from the class of 2000 attending college within each state who are natives.**

(for New England and selected competitor states)



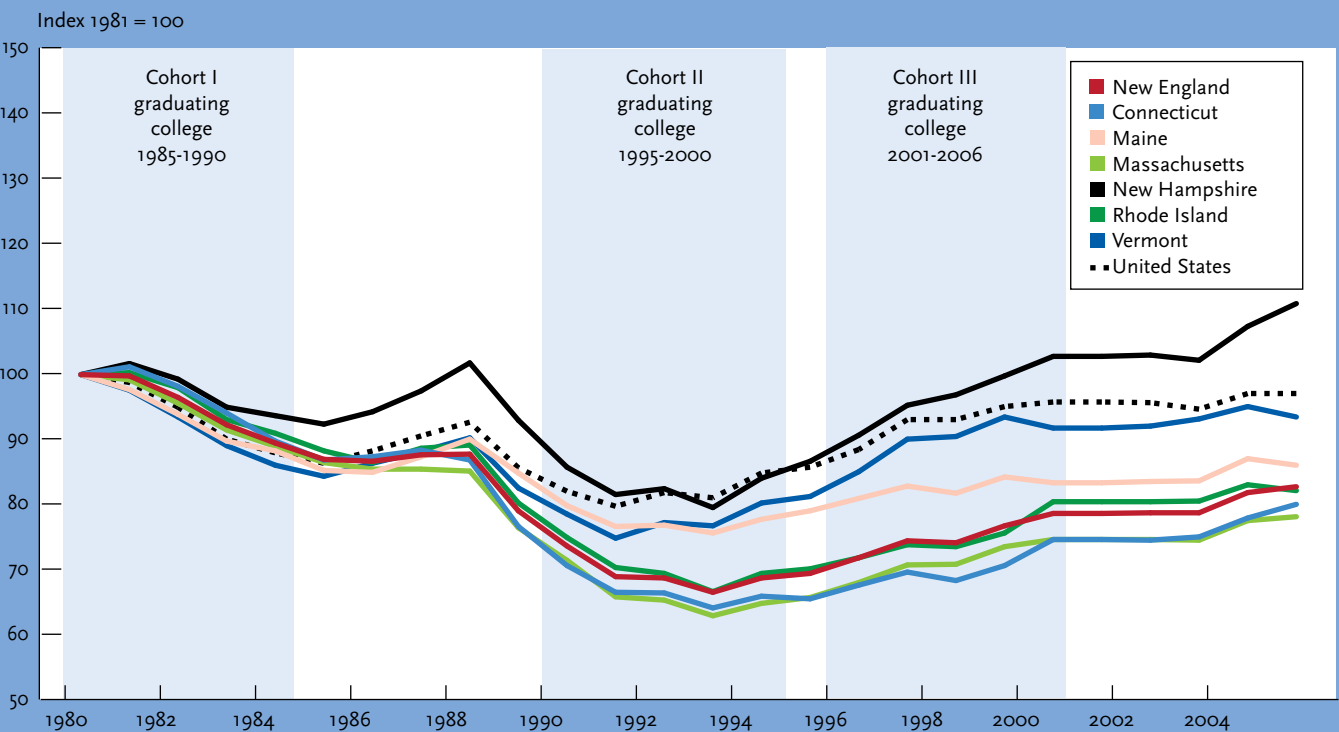
Source: 2000/2001 Baccalaureate and Beyond Longitudinal Study, National Center for Education Statistics (NCES), U.S. Department of Education.  
 Note: Competitor states are those with similar advantages in terms of an educated workforce, large knowledge-based and high-tech based industries, and established financial sectors.

**Appendix Figure 3. Live births per 1,000 population.**



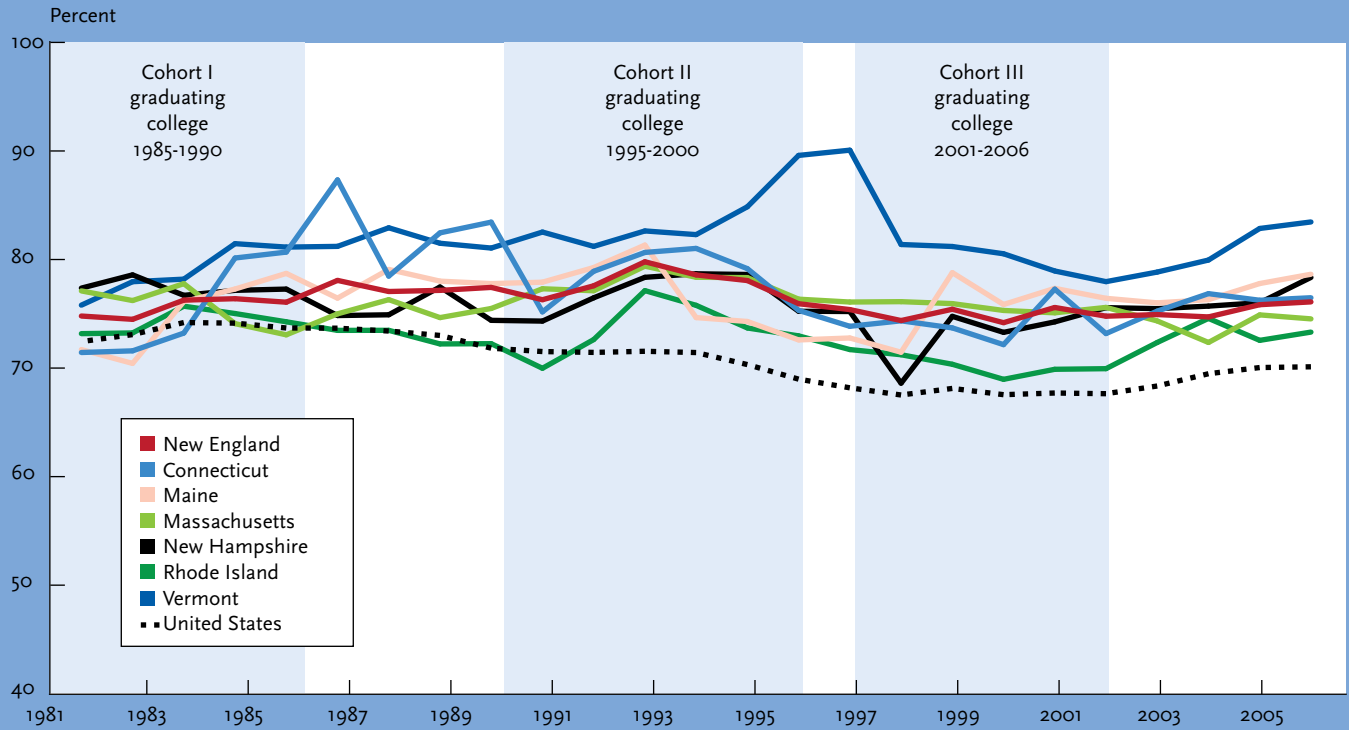
Source: National Center for Health Statistics, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services: 1959-1963: *Vital Statistics of the United States*, 1963. Volume I, *Natality*. 1964; 1964-1974: *Vital Statistics of the United States*, 1974. Volume I, *Natality*. 1978; 1975-1984: *Vital Statistics of the United States*, 1984. Volume I, *Natality*. 1988; 1985-1989: *Vital Statistics of the United States*, 1993. Volume I, *Natality*. 1999; 1990-2005: National Vital Statistics System, <http://www.cdc.gov/nchs/datawh/vitalstats/VitalStatsbirths.htm>.

**Appendix Figure 4. Number of individuals 17 years of age.**



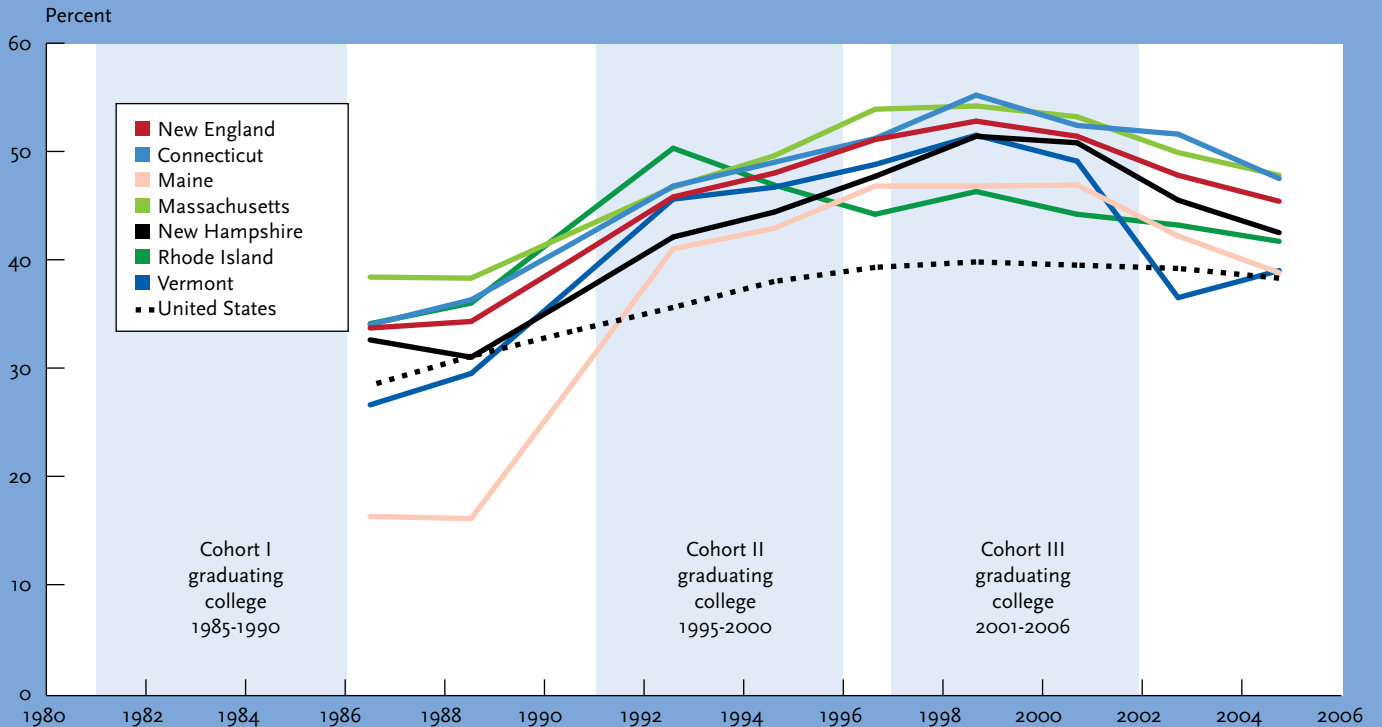
Source: Census Population Estimates, 1980-2005, U.S. Bureau of the Census.

**Appendix Figure 5. High school graduation rates.**



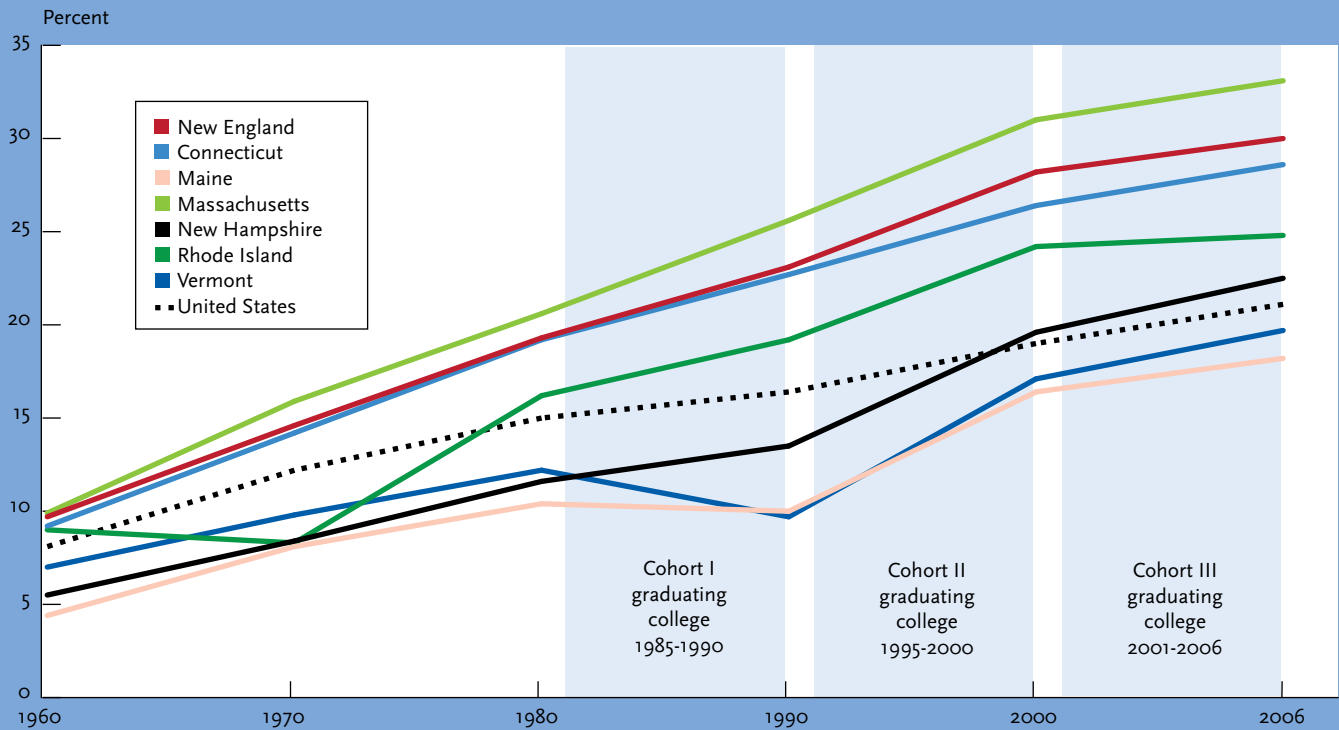
Source: National Center for Education Statistics (NCES), U.S. Department of Education.

**Appendix Figure 6. Share of native young adults within the region enrolling in 4-year degree-granting institutions who graduated from high school in the previous 12 months.**



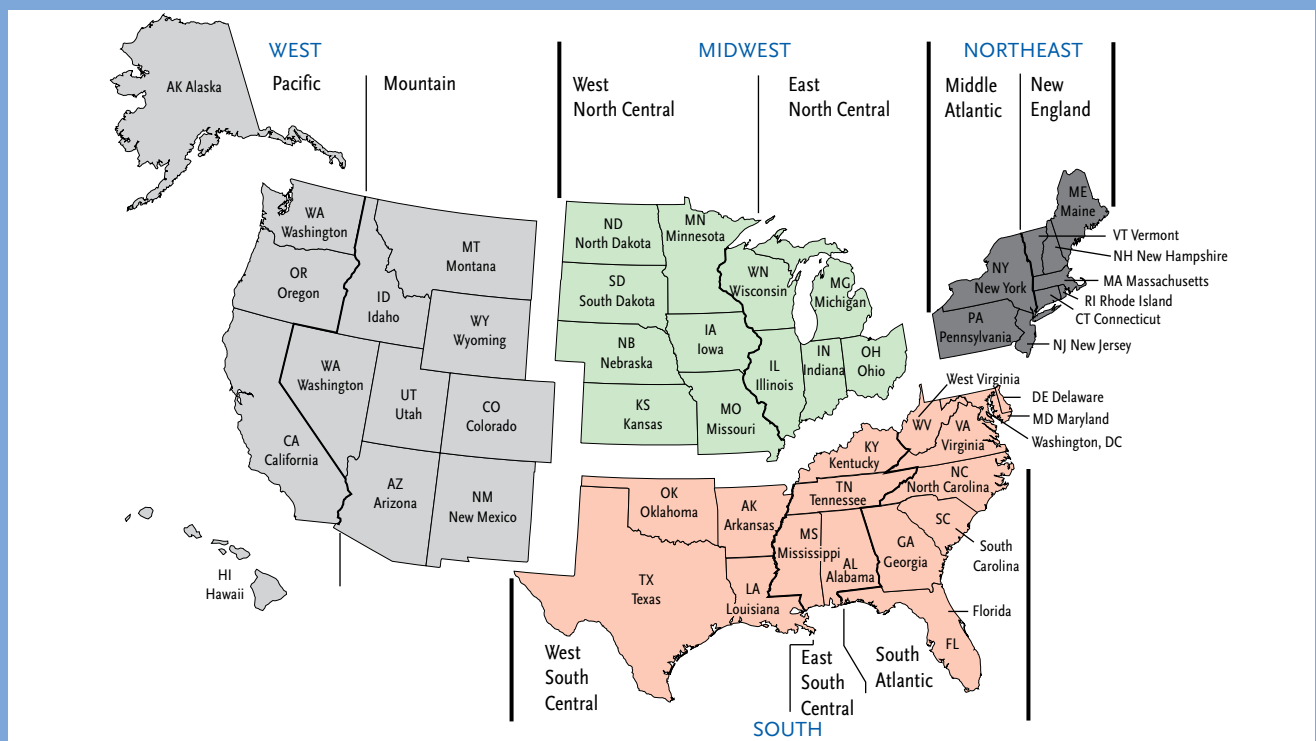
Source: The Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics (NCES), U.S. Department of Education.

**Appendix Figure 7. Native recent college graduates as a share of native young adults, aged 22–27 years.**



Source: 1960, 1970, 1980, 1990, 2000 Decennial Census and 2006 American Community Survey, U.S. Bureau of the Census.  
 Notes: Recent college graduates are individuals aged 22-27 years who have completed a bachelor's degree or higher (e.g. includes master's, PhD, or professional degrees).

**Appendix Figure 8. Census divisions and regions.**



Source: U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau; Prepared by the Geography Division.







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