New England's Educational Advantage: Past Successes and Future Prospects

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Any enumeration of New England's competitive strengths is likely to include the high education levels of its work force. The growing availability of highly educated workers in the region has permitted the development of industries that make use of advanced skills and raised the average standard of living during the past several decades. This article investigates the sources of New England's educational advantage historically, examines recent trends in key determinants, and discusses prospects for the future.

The first section presents the basic facts on educational attainment. New England has the highest percentage of residents with a bachelor's degree or more of any region of the country. The region's ranking among the nine Census divisions went from third in 1970 to second in 1980 to first in 1990. Although New England continues to rank first in the nation, its advantage over other regions narrowed over the course of the 1990s.

The article then investigates the sources of New England's educational advantage. A 20-year longitudinal survey is used to classify college graduates by region according to where they attended high school and college. This analysis shows that New England's high educational ranking is the result of sending a high share of its own schoolchildren to college and drawing college students from other locations. These sources account for a large proportion of the region's college-educated adults. New England is closer to average in its share of college-educated adults without previous educational ties to the region.

The study extensively investigates what might have caused the gap between college completion in New England and other regions to narrow in the 1990s. Throughout much of the nation, young adults currently are more highly educated than middle-aged adults. Yet, for New England residents, bachelor's degree attainment among young adults is only marginally higher than among the next older group. Analyzing these discrepancies entails piecing together different types of information, some focusing on regional differences at given points in time

Table 1
Percent of Persons 25 Years and Over with a Bachelor's or Higher Degree, by Census Division and for the New England States, Selected Years, 1970 to 1998
Division and State Rankings in Parentheses

	1970	1980	1990	1998	Memo: Associate Degree or Higher 1990	Memo: Graduate or Professional Degree 1990
Census Division						
New England	12.1 (3)	19.2 (2)	25.6 (1)	29.7 (1)	32.7 (1)	9.8 (1)
Middle Atlantic	10.9 (4)	16.6 (4)	21.8 (3)	26.0 (3)	27.6 (4)	8.6 (2)
East North Central	9.5 (8)	14.5 (8)	18.1 (8)	22.5 (7)	24.0 (7)	6.5 (6)
West North Central	9.8 (7)	15.3 (7)	19.2 (6)	24.9 (5)	25.9 (5)	6.0 (8)
South Atlantic	10.5 (5)	15.7 (5)	20.0 (5)	24.3 (6)	25.9 (6)	7.1 (5)
East South Central	7.7 (9)	12.1 (9)	15.1 (9)	19.0 (9)	19.6 (9)	5.4 (9)
West South Central	10.0 (6)	15.5 (6)	18.7 (7)	21.9 (8)	23.5 (8)	6.1 (7)
Mountain	12.9 (2)	18.8 (3)	21.5 (4)	25.4 (4)	28.1 (3)	7.2 (4)
Pacific	13.2 (1)	19.4 (1)	23.1 (2)	26.9 (2)	30.9 (2)	7.8 (3)
United States	10.7	16.2	20.3	24.5	26.5	7.2
New England States						
Connecticut	13.6 (6)	20.7 (3)	27.2 (1)	31.6 (4)	33.8 (3)	11.0 (1)
Maine	8.4 (43)	14.4 (33)	18.8 (28)	20.7 (39)	25.7 (24)	6.1 (29)
Massachusetts	12.5 (12)	20.0 (6)	27.2 (1)	31.8 (3)	34.4 (1)	10.6 (3)
New Hampshire	10.8 (24)	18.2 (13)	24.4 (7)	26.9 (12)	32.4 (4)	7.9 (12)
Rhode Island	9.4 (31)	15.4 (27)	21.3 (17)	26.8 (13)	27.6 (18)	7.8 (13)
Vermont	11.6 (18)	19.0 (10)	24.3 (8)	26.4 (15)	31.5 (6)	8.9 (7)

Note: Census Divisions are defined as follows. New England: CT, ME, MA, NH, RI, VT. Middle Atlantic: NJ, NY, PA. East North Central: IL, IN, MI, OH, WI. West North Central: IA, KS, MN, MO, NE, ND, SD. South Atlantic: DE, DC, FL, GA, MD, NC, SC, VA, WV. East South Central: AL, KY, MS, TN. West South Central: AR, LA, OK, TX. Mountain: AZ, CO, ID, MT, NV, NM, UT, WY. Pacific: AK, CA, HI, OR, WA. State rankings exclude DC.

Source: U.S. Bureau of the Census. Data for 1970, 1980, and 1990 are from the Decennial Census. Estimates for 1998 are averages from the Current Population Surveys for 1997, 1998, and 1999.

and others focusing more directly on regional trends over time. Specifically, the study examines clues from regional data on college attendance, bachelor's degrees, and migration by the college-educated.

To the extent New England has faced growing challenges in maintaining its educational advantage during the past decade, this is due to shrinkage in the number of bachelor's-level graduates at the region's colleges and universities, and to diminished success in drawing college-educated adults from outside the region. Although enrollments at New England colleges and adult population flows into the region have begun to show more favorable trends, the numbers continue to indicate slippages from prior peaks.

I. Educational Attainment: Basic Statistics

New England has the highest percentage of college-educated persons of any region of the country.[1] As of 1998, 29.7 percent of New England residents aged 25 years and over had a bachelor's degree or more, compared to the U.S. average of 24.5 percent (Table 1). The next-highest Census divisions were the Pacific (26.9 percent) and the Middle Atlantic (26.0 percent).

Despite the long-standing prominence of its universities, New England did not rank first in previous decades. In 1970, college degrees were much rarer than they are today; only 10.7 percent of the nation's adults had a four-year college degree. The rate in New England was 12.1 percent, third highest among the nine Census divisions. The Pacific area had the highest rate, 13.2 percent, followed by the Mountain states, 12.9 percent. By the 1980 Census, New England

[1] Throughout this article, the term "region" refers to the nine geographic divisions defined by the U.S. Census Bureau (as enumerated in the footnote to Table 1), not the four regions of the country (Northeast, Midwest, South, West) defined by that agency.

moved into second place, surpassing the Mountain division. The 1990 Census indicated that New England had become the most highly educated region.

Between 1970 and 1990, each of the New England states advanced in educational attainment relative to the other 49 states. In 1970, for example, only one New England state—Connecticut—ranked among the top 10 states in college completion. By 1990, three additional New England states—Massachusetts, New Hampshire, and Vermont—were among the top 10 and only Maine was not above the median. Connecticut and Massachusetts, in fact, were tied for the number 1 ranking among all 50 states.

Since the 1990 Census, New England's educational advantage has narrowed slightly. For example, as of the late 1990s, Colorado and Maryland rank more highly than Connecticut and Massachusetts in the share of the adult population with a bachelor's degree, and no other New England state is among the top 10.

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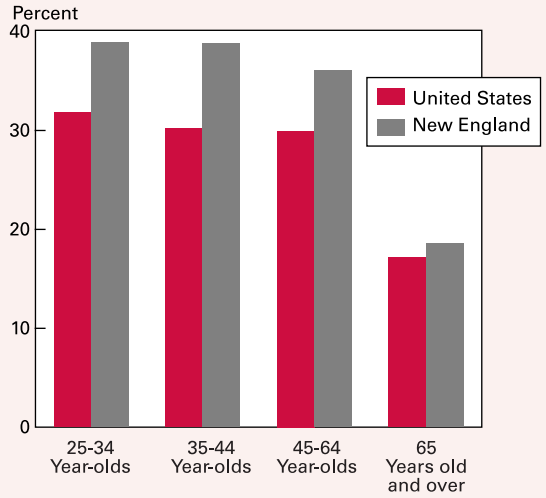
A similar conclusion of slight deterioration emerges in examinations of college completion by cohort (Figure 1 and Table 2). Overall, the most striking age-related pattern is the relatively low percentage of older persons with a college degree. Among U.S. residents aged 65 years and over, only 15.0 percent had a bachelor's or higher degree. Younger cohorts had much higher rates of college completion; nationally, for the 25- to 34-year-old group, the rate was 27.7 percent. For New England, the youngest age category had a higher percentage with a bachelor's degree than in any other region of the country—34.0 percent. However, this was virtually the same as the rate of college completion for 35- to 44-year-olds in the region. For the nation as a whole, and for six of the remaining eight Census divisions, 25- to 34-year-olds were more highly educated than 35- to 44-year-olds. The most notable exception is the Pacific region, where the college completion rate for 25- to 34-year-olds trailed that of 35- to 44-year-olds.

The remainder of this article turns to an analysis of regional strengths and weaknesses, as measured in

Figure 1

Percent of Persons 25 Years and Over with a Bachelor's Degree, by Age Group, 1998



Source: Averages of data from U.S. Bureau of the Census, Current Population Surveys for 1997, 1998, and 1999.

Table 2

Percent of Persons 25 Years and Over with a Bachelor's or Higher Degree, by Age Group and Census Division, 1998[a]

	Age Group (Years)			
Census Division	25 to 34	35 to 44	45 to 64	65 and over
New England	34.0	33.9	31.5	16.2
Middle Atlantic	31.2	29.3	27.1	14.3
East North Central	28.2	24.0	24.1	10.9
West North Central	30.6	27.4	26.4	13.0
South Atlantic	28.0	26.3	25.0	16.6
East South Central	22.5	21.5	18.5	12.4
West South Central	23.4	23.3	23.7	14.2
Mountain	26.8	25.0	28.2	19.0
Pacific	26.3	27.6	31.1	18.8
United States	27.7	26.3	26.1	15.0

[a]Average for 1997, 1998, and 1999.
Source: U.S. Bureau of the Census, Current Population Survey.

terms of the fraction of the adult population with a bachelor's degree or more.[2] However, regional and state rankings look fairly similar if two-year college degrees are considered in addition to bachelor's and more advanced degrees (second to last column of Table 1). In 1990, 32.7 percent of New Englanders had at least an associate degree, ahead of the rate for any other Census division, and the same four New England states ranked in the top 10. One slight difference is that, with the addition of two-year degrees, Maine moves up in the rankings to just above the median. New England also takes the number one spot in terms of the share of the population with advanced degrees, with Connecticut and Massachusetts ranked first and third among the 50 states (last column of Table 1).

II. Sources of College Graduates

The proportion of college graduates in any given region reflects a variety of factors: the quality and accessibility of educational institutions, the availability of jobs that make use of advanced skills, the cost of living, and a range of amenities and disamenities. Moreover, the educational profile of a region's residents reflects cumulative influences over a great number of years. For example, in any given region, some current college graduates are there because of location decisions on the part of their parents (and because they themselves subsequently developed ties to the area). Their choice of location is determined in part by education and work opportunities and the quality of life in the region in years past, in addition to its current attributes. Other college-educated residents may have relocated in response to a recent job offer. Their choice of location is based on current conditions in the region, not its past attributes.

In analyzing differences in educational attainment across regions, it is useful to distinguish where college graduates were educated and when they migrated. This requires using data that track people over the course of many years. The source used in this section is the National Longitudinal Survey of Youth (NLSY), a project of the U.S. Bureau of Labor Statistics. The NLSY is based on a nationally representative sample of about 6,000 persons who were 14 to 24 years old in 1979. These youths were re-interviewed once a year until 1994 and once every other year thereafter. The latest available data refer to 1996, when the interviewees were 31 to 41 years old.

Aside from the richness of detail for the NLSY sample, another advantage of these data is that, by the latest survey, most of the interviewees were likely to have settled down in their permanent locations. People's tendency to move long distances is highest when they are in their late twenties. It drops somewhat in their early thirties and substantially after they reach their mid thirties.[3] Thus, going forward, it is likely that the geographic profile for the NLSY cohort will remain reasonably stable. A disadvantage is that the NLSY refers only to a single cohort. Location decisions for younger generations, in particular, may be quite different and are of obvious interest in trying to gauge future changes in the availability of educated workers by region. This concern will be addressed in subsequent sections through use of other, less comprehensive, data.

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The NLSY was used to group college graduates into four categories.[4] The first category, called "non-migrants," are people who graduated from both high school and college in the Census division where they resided in 1996.[5] "College in-migrants" refers to per-

[2] The term "four-year degree" will be used synonymously with "bachelor's degree," even though some bachelor's degrees are completed over a different duration.

[3] Long (1988) examined the percentage of the population moving between states during the past five years according to the Censuses of 1940, 1960, 1970, and 1980. Although the fractions of movers changed over time, the age profile remained similar. Between 1975 and 1980, for example, the proportion of interstate movers was 16.0 percent for 20- to 24-year-olds, 17.6 percent for 25- to 29-year-olds, 14.2 percent for 30- to 34-year-olds, 9.8 percent for 35- to 44-year-olds, 5.6 percent for 45- to 54-year-olds and still lower for older age groups.

[4] For further details, see the Appendix.

[5] Non-migrants in fact may have moved in the intervening

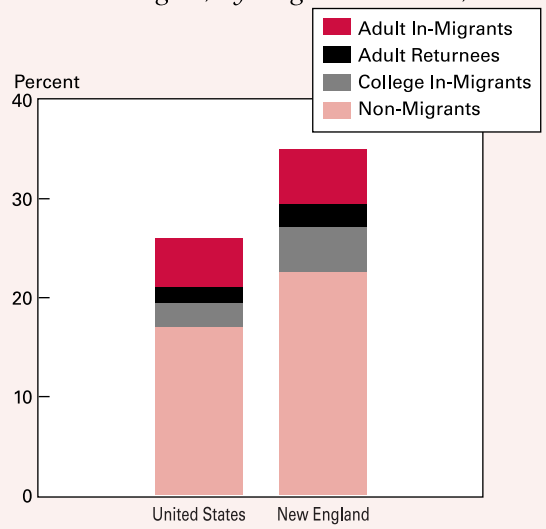
sons who graduated from college in the same Census division but graduated from high school elsewhere. "Adult returnees" graduated from high school in the same Census division, went elsewhere for college, then returned to the division where they went to high school. Finally, "adult in-migrants" graduated from both high school and college outside the Census division where they were living as 31- to 41-year-olds.

Turning first to the national data, 25.7 percent of all 31- to 41-year-olds were college graduates, and 17.0 percent of 31- to 41-year-olds resided in the Census division where they attended both high school and college (Figure 2 and Table 3).[6]. Thus, about two-thirds of all college graduates were "non-migrants." The remaining one-third either migrated to their Census division as college students or adults or went to college elsewhere but returned as adults.

In 1996, the college completion patterns of 31- to 41-year-olds varied by region in a manner fairly similar to the patterns for all adults (Table 3). New England had the highest college completion rate, 34.8 percent, followed by the Middle Atlantic, the West North Central, and Pacific. New Englanders' high educational attainment was due to several factors. The region had the highest share of college-educated non-migrants—22.4 percent of its 31- to 41-year-old population, compared to a U.S. average of 17.0 percent. The Middle Atlantic area was a close second. New England had the second highest share of college in-migrants—4.6 percent versus 2.4 nationally. In this category, the Mountain states ranked first at 4.9 percent. New England also had the second highest share of adult returnees, just behind the East North Central.

Figure 2

Percent of 31- to 41-Year-Olds with Bachelor's Degree, by Migration Status, 1996



Source: Author's calculations using Current Population Survey and National Longitudinal Survey of Youth.

However, at 2.3 percent, this was a relatively minor source of college graduates for New England, as it was for all other regions.

By contrast, New England was closer to average in attracting college-educated adults who did not have previous educational ties to the region. Of the 31- to 41-year-olds living in New England in 1996, an estimated 5.5 percent had migrated to the region as adults with bachelor's degrees, compared to 4.8 percent nationally.[7] Adult migration has played a considerably greater role in raising educational attainment in the western and southern parts of the country. For example, 8.1 percent of 31- to 41-year-olds in the Mountain states in 1996 were college-educated adult in-migrants; this was the only area of the country in which the number of college-educated adult in-migrants approached the number of college-educated "non-migrants" (9.3 percent of the 31- to 41-year-old population).

years. If so, they moved back to the same Census division by the time they graduated from college or by 1996.

[6] Because of year-to-year variation due to sampling, the average of 1995, 1996, and 1997 CPS data was used to construct the 1996 estimate for the overall college completion rate. The overall 1996 college completion rate in the NLSY is 23.3 percent. The largest discrepancy in college completion rates is for the Middle Atlantic (25.5 percent in the NLSY, 29.5 percent in the CPS). New England's rate is 38.0 percent in the NLSY and 34.8 percent in the CPS. Four of the Census divisions have identical rankings in the NLSY and the CPS; the rankings for the remaining divisions are all within one position of each other in the two surveys. One reason for these differences is sampling error (the NLSY contained 4,875 usable observations in 1996, the CPS sampled 23,540 31- to 41-year-olds). In addition, the results differ because the NLSY is not a nationally representative sample for 1996. Some original participants dropped out of the sample between 1979 and 1996, possibly causing some distortions in regional data. Furthermore, the NLSY is limited to persons who resided in the United States in 1979 while the 1996 CPS sampled foreign immigrants regardless of when they arrived in this country.

[7] The NLSY sample size is too small to permit meaningful disaggregation according to whether or not adults migrated to a region to attend graduate school. Nationally, the sample includes only 213 adult in-migrants, of whom about half did not attend graduate school.

Table 3
Percent of 31- to 41-Year-Olds with Bachelor's Degree, by Migration Status and Census Division, 1996

Census Division	Non-migrants	College In-migrants	Adult Returnees	Adult In-migrants	Total
New England	22.4	4.6	2.3	5.5	34.8
Middle Atlantic	21.6	2.3	1.9	3.8	29.5
East North Central	18.4	1.0	2.4	1.9	23.7
West North Central	19.5	1.3	1.5	3.9	26.2
South Atlantic	15.4	2.5	1.3	6.6	25.8
East South Central	12.3	3.3	.7	4.5	20.8
West South Central	14.2	2.4	1.8	3.9	22.3
Mountain	9.3	4.9	1.2	8.1	23.5
Pacific	15.6	2.8	.2	7.5	26.1
United States	17.0	2.4	1.6	4.8	25.7

Source: Author's calculations using National Longitudinal Survey of Youth and Current Population Survey.

Adult in-migration has been less important in raising educational attainment in New England than in the Mountain, Pacific, and South Atlantic regions because overall adult migration is lower—not because adults moving to New England are less educated. The first three columns of Table 4 show the fractions of each region's 31- to 41-year-old residents in 1996 that were non-migrants, college in-migrants, and other in-migrants. This last category includes the college-educated "adult returnees" shown separately in Table 3, as well as people who did not have a four-year degree and migrated to their 1996 residence after attending high school elsewhere.[8] For New England, in-migrants other than college in-migrants accounted for only 13.5 percent of the population of 31- to 41-year-olds. This was below the shares for all other areas except the Middle Atlantic and East North Central, and less than one-half the share for the Mountain region.

In fact, the educational attainment of New England's "other" in-migrants was very high: over half had a bachelor's degree. Of the other regions of the country, only the Middle Atlantic had a higher share of four-year college degrees among "other" in-migrants; for the Mountain states, the share was below one-third. (By definition, 100 percent of all regions' college in-migrants had a bachelor's degree.) The table also indicates that, on average, migrants were more highly educated than non-migrants in all parts of the country, but that a higher share of New England's non-migrants had completed college than in any other region.

All in all, the evidence presented on the 31- to 41-year-old cohort suggests that New England's top rank in educational attainment is attributable in large part to its educational institutions. The region does well in preparing indigenous high school students for college. It also benefits from the existence of a sizable college and university sector, which provides opportunities for New England high school students to attend college within the region and draws college-bound students from outside the region. The availability of an educated adult population from these sources has more than offset the region's more average ranking as a destination for college-educated adults. Although a very high share of migrants to New England have a college degree (or earn a college degree while attending a New England institution), the overall contribution of migration is not as large as it is in the southern and western portions of the nation.

The following sections focus on comparing younger cohorts to those sampled by the NLSY. These assessments cast light on why New England's educational advantage diminished slightly in the 1990s. They also are useful in gauging the availability of an educated work force in the future. In the absence of a comprehensive source of longitudinal data spanning different cohorts, the research relies on a variety of data concerning three indicators: college attendance, college degrees granted, and migration of college graduates.

III. College Attendance

The previous section indicated that despite migration on the part of college students and adults, most college-educated adults continue to live in the region of the country where they attended high school. Therefore, a key determinant of the supply of educated workers in a region is the extent to which its schoolchildren pursue postsecondary education. For

[8] More precisely, the category includes high-school dropouts who moved to the region after age 14 and high-school graduates without a four-year college degree who moved to the region after high-school graduation.

Table 4
Contribution of Migration to Bachelor's Degree Attainment, by Census Division, NLSY Sample, 1996
Percent

Census Division	Share of 31- to 41-Year-Old Residents[a]			Attained Bachelor's Degree or More[b]	
	Non-migrants	College In-migrants	Other In-migrants	Non-migrants	Other In-migrants
New England	81.5	4.6	13.5	27.5	57.6
Middle Atlantic	88.6	2.3	9.4	24.4	59.8
East North Central	89.3	1.0	9.7	20.7	43.7
West North Central	80.1	1.3	18.5	24.4	29.1
South Atlantic	75.0	2.5	22.9	20.5	34.9
East South Central	78.2	3.3	18.6	15.7	28.0
West South Central	75.3	2.4	22.5	18.8	25.6
Mountain	63.5	4.9	31.6	14.7	29.5
Pacific	77.1	2.8	20.2	20.2	38.1
United States	80.4	2.4	17.4	21.1	36.6

[a]Non-migrants include the following persons who resided in the Census division as of 1996: high-school dropouts who were living in the same Census division at age 14; high-school graduates who completed high school in the same Census division and did not receive a bachelor's degree; and bachelor's degree recipients who completed both high school and college in the same Census division. Note that for persons with a bachelor's degree or more, the definition is identical to that used in Table 3. Also as in Table 3, college in-migrants are defined as 1996 residents who completed high school in another Census Division but received their bachelor's degree in the same Census division. Other in-migrants are all other persons in the sample. For those with a bachelor's degree, this definition includes two categories used in Table 3, adult returnees and adult in-migrants.

[b]By definition, 100 percent of college in-migrants have a bachelor's degree or more.

Source: Author's calculations using the National Longitudinal Survey of Youth and the Current Population Survey.

the NLSY cohort, representing the high school classes of 1972 to 1983, New England high school students had very high rates of college attendance and graduation compared to students in other parts of the country. Changing survey techniques prevent precise comparisons over time. However, the available evidence indicates that New England high school graduates in the 1980s and 1990s continued to have the highest rates of college attendance in the nation. Because of data quality issues, some ambiguity exists as to whether the differential in college attendance rates between New England and other regions remained as large in the 1990s as in previous decades.

College Attendance in the 1970s

For the cohort encompassed by the NLSY, New England high school students had considerably higher rates of college attendance and completion than their peers in other parts of the country (Table 5). Survey participants were 14 to 24 years old in the initial year, 1979. Therefore most of them would have been in the high school classes of 1973 to 1983.

The top panel classifies students according to their location as 14-year-olds. According to the NLSY, 53.1 percent of 14-year-olds from New England completed at least one year of schooling beyond high school. The next highest figure was for the West North Central, 51.4 percent, and the national average was 46.2 percent. The differential for New England was even higher for college completion. The percentage of New England 14-year-olds eventually obtaining a bachelor's degree or more was 35.5 percent—2.6 percentage points higher than in the West North Central and over 11 points above the national average. By contrast, students in the Pacific region were above average in their tendency to pursue postsecondary education, but below average in completing four-year degrees.

The bottom panel of the table excludes high school dropouts and classifies the sample according to location at the time of high school graduation. As in the case of the 14-year-olds, high school graduates in New England were considerably more likely to attend a postsecondary school than their counterparts elsewhere; 43.8 percent of them attained a bachelor's degree or more, far higher than the 27.0 average for the nation or even the next highest ranking Census division (West North Central, 35 percent).

College Attendance in the 1980s

New England high school students in the early 1980s continued to excel in college completion, according to the High School and Beyond (HS&B) Survey conducted by the U.S. Department of Education. The survey covered a nationally representative sample of almost 15,000 high school sophomores in 1980—that is, the high school graduating class of 1982. Thus, HS&B covers a cohort corresponding to the younger end of the NLSY. The sample members were followed up at two-year intervals through 1986 and again in 1992.

Nationally, 42.7 percent of the sample earned a certificate or a college degree beyond the high school

Table 5
Educational Attainment for NLSY Sample, by Census Division Location at Age 14 and at High School Graduation
Percent

Census Division	High School or Less	More than High School	Some College	Bachelor's Degree	More than Bachelor's Degree
	Location at Age 14				
New England	46.9	53.1	17.6	18.4	17.1
Middle Atlantic	50.4	49.6	20.9	16.5	12.2
East North Central	55.4	44.6	21.2	13.4	9.9
West North Central	48.6	51.4	18.6	21.4	11.5
South Atlantic	58.1	41.9	21.1	13.1	7.7
East South Central	60.4	39.6	20.3	12.3	7.0
West South Central	53.1	46.9	24.8	11.6	10.6
Mountain	54.0	46.0	27.2	10.4	8.4
Pacific	51.2	48.8	29.9	10.8	8.1
Total[a]	53.8	46.2	22.2	14.0	10.1
	Location at High School Graduation[b]				
New England	37.9	62.1	18.3	21.9	21.9
Middle Atlantic	48.0	52.0	23.7	16.9	11.4
East North Central	51.1	48.9	23.1	15.4	10.4
West North Central	44.5	55.5	20.4	22.4	12.6
South Atlantic	49.0	51.0	25.1	16.1	9.8
East South Central	49.4	50.6	26.3	16.2	8.1
West South Central	44.2	55.8	29.9	12.8	13.1
Mountain	52.0	48.0	27.1	11.3	9.5
Pacific	45.0	55.0	33.3	12.1	9.6
Total[a]	48.0	52.0	25.0	15.9	11.1

[a]Includes sample members who resided outside the United States at the time indicated.
[b]Excludes sample members who did not complete high school.
Source: Author's calculations using National Longitudinal Survey of Youth. Sample members were 14 to 24 years of age in 1979.

diploma (Table 6). (This is a more stringent definition of college attendance than in the previous section.)[9] For New England, the share was 55.0 percent, more than 12 points above the national average and higher than in any other Census division. The educational attainment of New England high school students is equally impressive in terms of completion of a bachelor's degree. For the nation, 23.8 percent of 1980 high school sophomores had completed at least a bachelor's degree by 1992. For New Englanders, the rate was 35.7 percent.[10]

College Attendance in the 1990s

Information on subsequent cohorts is limited to college *attendance*. The available evidence—for the high school graduating classes of 1992 and 1996—indicates that higher fractions of high school students in each part of the country went on to college in later years than in the 1970s and 1980s and that the rate for New England high school students remained higher than in any other region. The two sources differ, however, in whether or not the gap between New England and the rest of the country remained as large as in the earlier years.

The National Educational Longitudinal Survey (NELS) started with a large national sample of eighth-graders in 1988 and tracked them at two-year intervals until 1994.[11] By that time, most of the approximately 25,000 sample members had completed high school, and almost 63 percent had gone on to pursue further education (Table 7). In New England, close to 75 percent of the sample had attended at least one postsecondary institution. Although ultimate educational attainment is impossible to determine given the relatively short period over which students were tracked, the nature of the postsecondary schools attended by New England students suggests that a relatively high share were intending to obtain a bach-

[9] In the findings using the NLSY, "college attendance" and "more than high school" are used to mean completing a thirteenth year of school, whereas the HS&B numbers indicate completion of a course of study after high school. The findings reported for the HS&B (and also for the National Educational Longitudinal Survey, described below) are based on new regional decompositions of previously published national data (U.S. Department of Education 1995 and 1996). These calculations were performed by staff associated with the National Center for Education Statistics, upon the request of the author. In principle, it would be possible to obtain a somewhat more consistent time series on college attendance rates by accessing the latter two surveys directly and constructing (to the extent permitted by the different survey structures) common definitions between them and the NLSY.

[10] Because the HS&B measures educational attainment only about 10 years after high school, it is likely that ultimate college and advanced degree completion rates are understated, relative to the findings using the NLSY.

[11] The next follow-up is anticipated in 2000.

Table 6
Highest Degree Earned by 1980 High School Sophomores as of 1992, by Census Division Location of High School
Percent

Census Division	High School or Less	More than High School	Certificate or Associate's Degree[a]	Bachelor's Degree	Master's, Professional or Doctoral Degree
New England	45.1	55.0	19.3	31.4	4.3
Middle Atlantic	50.9	49.1	19.3	23.0	6.8
East North Central	59.0	41.0	16.9	20.1	4.0
West North Central	48.9	51.1	25.9	21.4	3.8
South Atlantic	62.7	37.3	16.7	17.2	3.4
East South Central	63.2	36.8	19.2	15.7	1.9
West South Central	63.5	36.3	18.5	15.4	2.4
Mountain	65.5	34.5	15.0	18.1	1.4
Pacific	55.3	44.7	22.0	19.9	2.8
Total	57.3	42.7	18.9	20.0	3.8

[a]Includes non-academic certification programs.
Sources: National Center for Education Statistics, High School & Beyond: Sophomores, 1980–1992, special tabulations by the National Education Data Resource Center, December 1999.

elor's degree. About 80 percent of the students from New England who enrolled in a postsecondary school had chosen a four-year college; nationally, the rate was 57 percent.[12]

In fall 1996, the U.S. Department of Education added questions to its Integrated Postsecondary Education Data System (IPEDS) survey of colleges and universities in order to gain further information on first-time freshmen who had graduated from high school in the prior twelve months.[13] The focus of the special supplement was to compare these students' state of residence with their state of college attendance. The numbers produced via the survey can be compared with separate estimates of the number of high school graduates by state to derive percentages of graduates attending college the following fall (Table 8). Although the concentration on immediate college enrollment eliminates some college-goers, evidence from the HS&B indicates that those who delayed college attendance were much less likely to obtain a four-year degree (at least for those graduating in the early 1980s).[14]

According to the 1996 calculations, an estimated 59 percent of high school graduates nationally went on to attend college by the fall of that year. High school graduates from New England had the highest rate of college attendance, 65.3 percent, followed closely by students from the Middle Atlantic and Pacific regions (65.1 and 63.3 percent, respectively). As in the NELS, New England high school graduates had a very high rate of attendance at four-year colleges, although graduates from the Middle Atlantic were not far

[12] A much higher fraction of students who enroll initially in four-year colleges go on to complete a four-year degree than is the case for students who enroll initially in two-year colleges. In the HS&B survey, of students nationwide who enrolled full-time in a four-year institution by fall 1982, 71 percent went on to earn a bachelor's degree or more by 1992. The comparable figure for those enrolling full-time in a public two-year college by fall 1982 is only 27 percent. Enrollees in two-year institutions were more likely to earn only a certificate or associate degree (36 percent, versus 8 percent for the enrollees in four-year institutions). However, they were also more likely not to earn any certificate or degree beyond the high school diploma (37 percent, versus 21 percent for the four-year enrollees). See U.S. Department of Education (1995).

[13] Specifically, the survey polled two- and four-year degree-granting institutions that were eligible to participate in Title IV federal financial aid programs.

[14] In the HS&B, approximately 35 percent of the sample never enrolled in a postsecondary institution, 44 enrolled by October 1982, and 21 percent enrolled after October 1982. Of the "immediate" entrants (that is, those enrolling by October 1982), 48 percent earned a bachelor's degree or more by 1992, 12 percent earned an associate degree (but not a bachelor's degree), 10 percent earned only a certificate, and 30 percent earned no postsecondary certificate or degree. The comparable statistics for the "delayed" entrants were as follows: bachelor's, 10 percent; associate's 12 percent; certificate, 24 percent; only high school, 54 percent. Further analysis indicates that limiting follow-up observations to ten years following high school does not appear to explain the lower levels of educational attainment among those who delayed their postsecondary enrollment. See U.S. Department of Education (1995). So far, no evidence exists for later periods on the correlation between college enrollment delays and attainment of college degrees.

Table 7
College Attendance of 1988 Eighth-Graders by 1994, by Census Division of Residence in 1992
Percent

Census Division	Attended at Least One Postsecondary Institution	Type of First Institution Attended[a]				Of Those Attending 4-Year Institution: In Home State
		Public 4-Year	Private Nonprofit 4-Year	Public 2-Year	Other	
New England	74.8	33.2	46.6	13.7	6.5	55.0
Middle Atlantic	73.2	36.9	31.7	23.1	8.3	72.2
East North Central	65.7	44.7	17.6	31.4	6.3	82.7
West North Central	67.2	45.5	22.0	26.7	5.8	79.2
South Atlantic	61.5	43.2	14.1	37.7	5.0	83.7
East South Central	62.0	39.1	16.8	38.2	5.9	87.4
West South Central	60.8	45.8	9.4	36.8	8.0	85.5
Mountain	56.1	46.8	11.0	36.2	6.0	76.1
Pacific	71.3	25.0	14.8	54.7	5.5	87.1
Total	62.7	38.0	19.2	35.6	7.2	72.0

[a]Percentages in the four columns add to 100 percent.
Source: National Center for Education Statistics, National Educational and Longitudinal Study, special tabulations by Pinkerton Computer Consultants, Inc. for the National Education Data Resource Center, January 2000.

behind. Consistent with other data cited, relatively few students from the Pacific region went on immediately to four-year colleges.

Thus, according to the NELS, New England high school students' college attendance rates in the 1990s remained much higher than elsewhere in the nation. According to the Department of Education survey of colleges, on the other hand, the differential in college attendance rates was somewhat smaller than it had been in the 1970s and 1980s. Unfortunately, both surveys provide somewhat imperfect measures of college attendance rates. Although the NELS represents a random sample of secondary school students nationally, this may not be the case for each Census division. Indeed, college attendance rates for some of the New England states were implausibly high.[15] The estimates for 1996 are inherently problematic, since they rely on separate sources for numbers of college students and numbers of high school graduates. Nationally, the result appears to be an underestimate of college attendance rates.[16] In addition, the fact that

Table 8
Fall 1996 College Attendance Rates of Recent High School Graduates, by Census Division
Percent

Census Division	Any College		Four-Year College	
	Total	In-State	Total	In-State
New England	65.3	39.3	52.5	27.5
Middle Atlantic	65.1	48.5	49.0	33.0
East North Central	58.2	49.1	42.0	33.4
West North Central	57.0	45.9	40.6	30.4
South Atlantic	54.4	43.8	39.0	28.9
East South Central	57.5	50.3	35.1	28.5
West South Central	53.2	47.3	35.6	30.3
Mountain	50.4	39.7	34.6	25.4
Pacific	63.3	56.4	28.1	21.7
Total	59.0	47.8	39.4	29.2

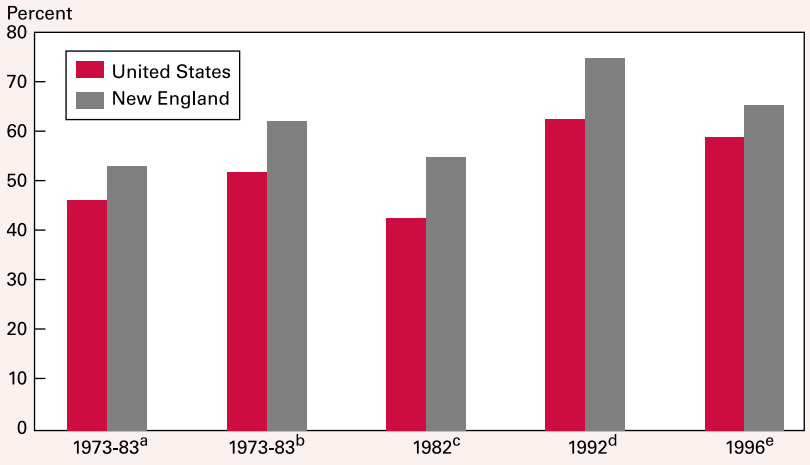
Source: Number of college freshmen who graduated from high school during the past twelve months from U.S. Department of Education survey as tabulated in *Digest of Education Statistics* 1998, tables 204 and 205. Number of public and private high school graduates by Census division calculated by the author from National Center for Education Statistics data.

[15] The NELS appears to include an unusual mix of high schools in Connecticut and Rhode Island. In these states, 88 and 94 percent of the sample, respectively, attended at least one postsecondary school, resulting in an upward bias for the New England numbers unless the selection of students in the other states had an offsetting effect.

[16] The U.S. estimate, 59.0 percent, is lower than the U.S. Department of Education reported rate of 65.0 percent college enrollment among individuals age 16 to 24 who graduated from high school during the preceding 12 months (*Digest of Education Statistics* 1998). By contrast, the NELS-based estimate, 62.7 percent, is close to the U.S. Department of Education figure for 1992, 61.7 percent. One source of inaccuracy in the 1996 estimates is that, because of data limitations, the private high school graduation data

Figure 3

College Attendance Rates of High School Students, Estimates for Various Graduating Classes from Various Surveys



[a] Percent of 14-year-olds who completed 13th year of school by 1996 (NLSY).
[b] Percent of high school graduates who completed 13th year of school by 1996 (NLSY).
[c] Percent of high school sophomores who earned a postsecondary certificate or degree by 1992 (HS&B).
[d] Percent of eighth-graders who attended a postsecondary institution by 1994 (NELS).
[e] Percent of high school graduates who enrolled in Title IV-eligible two- or four-year degree-granting institution by fall 1996 (DOE).

Source: National Longitudinal Survey of Youth, High School and Beyond, National Education Longitudinal Study, Department of Education Survey.

colleges and universities were asked to provide counts of in-state versus out-of-state students is likely to result in some inaccuracies in the estimates by region, although the direction of error is unclear.[17]

Regional Implications of Changes in College Attendance Rates

On the whole, the information for high school classes in the 1990s indicates that higher fractions attended college than was the case for the classes of the 1970s and 1980s (see Figure 3 for a summary of U.S. and New England data). Thus, taken in isolation, college attendance trends suggest that younger adults in *all* parts of the country should have somewhat higher college completion rates than middle-aged adults.[18]

A key issue for New England is the location where degrees were earned. High fractions of New England high school students attend college far from home. According to the NLSY, college-bound students from New England were more likely to go out-of-region than students from any other region of the country but one.[19] According to the surveys from the 1990s (summarized in Tables 7 and 8), only about one-half of New England students attending a four-year college remain in-state, versus about three-quarters nationally. Furthermore, New England students were less likely to attend in-state colleges and universities in the 1990s than was the case in earlier decades. For example, in the NLSY, 64 percent of the graduates of New England high schools who completed a bachelor's degree received their degree in-state. (The national average in that sample was 73 percent). It is possible that this outward migration of New England high school students to attend college has contributed to a decrease in the relative availability of college-educated adults in the region. On the other hand, inward flows of college students and college-educated adults from outside New England potentially could have made up for such outflows. The remaining sections explore trends

used in the denominator of the 1996 calculations refer to 1994–95. However, using 1995–96 graduation figures for private schools probably would not change the estimates appreciably.

[17] In the NELS, the students' initial locations were based on the 1988 survey, conducted while they were in eighth grade. The same students later identified their postsecondary school, typically in the 1994 follow-up survey.

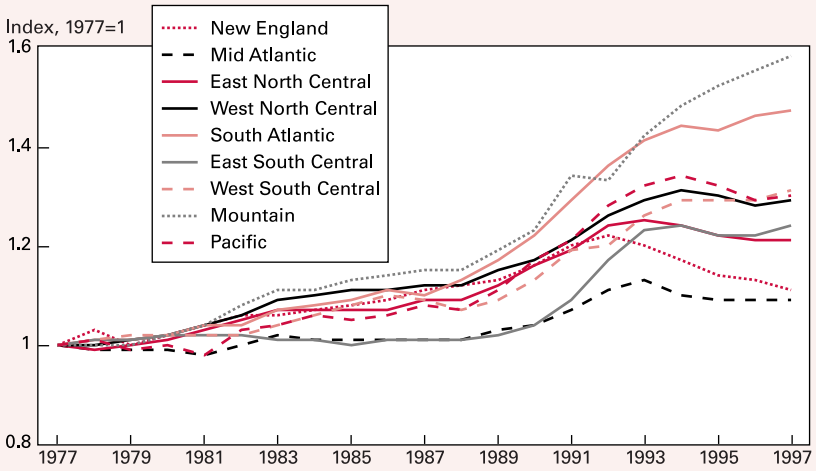
[18] 1992 high school graduates would not be included until 1999 in the commonly used CPS estimates of educational attainment, which refer only to persons 25 years and over. Therefore, as a technical matter, the college attendance rates cited for the high school class of 1992 have only minimal bearing on the college completion figures cited and the rates of the high school class of 1996 have no effect thus far.

[19] Of the NLSY students graduating from high school in New England and attaining a bachelor's degree, 73.8 percent received their college degree in New England. The lowest figure was for the Mountain division, 71.4 percent, and the national average was 80.4 percent.

in college degrees by region and trends in adult migration.

Figure 4

Bachelor's Degrees Conferred, by Census Division



Source: Integrated Postsecondary Education Data System.

IV. College Degrees

Nationally, the number of bachelor's degrees granted has grown over the past several decades. In 1997, U.S. institutions awarded almost 1.2 million bachelor's degrees, compared with fewer than 900,000 twenty-five years earlier. As evidenced in the surveys cited above, increasing proportions of the U.S. population have pursued a postsecondary education. The growing rate of college attendance has more than offset adverse demographic trends—the shrinking high-school-age cohort—between the late 1970s and the mid 1990s.[20]

The geographic distribution of degrees has changed noticeably over this period—to the disadvantage of New England (Figure 4). Colleges and universities located in the Mountain and South Atlantic regions have seen by far the highest rates of expansion in the numbers of bachelor's degrees granted—on the order of 50 percent between 1977 and 1997. The smallest increases have been in the Middle Atlantic and New England regions—only about 10 percent.[21] Growth in the number of degrees at New England institutions was about average through the 1980s. The small size of the "baby bust" generation caused a decline or slower growth in the number of new college graduates throughout much of the nation in the 1990s, but New England's graduation figures decreased noticeably more than those in any other part of the nation.[22]

To a large extent, the shifts in the location of degrees are the consequence of broader trends—the changing locations of the U.S. population and economic activity. However, the decline in the number of degrees granted by New England colleges and universities during the 1990s stands out, even after adjusting for population shifts. Figure 5 shows bachelor's degrees relative to the size of the population age 25 and over for the United States and New England.[23] According to the most recently available figures, U.S. colleges and universities granted 4.4 bachelor's degrees per thousand adult population in 1997. New England was the most education-intensive area of the country, with 5.9 bachelor's degrees per thousand. However, while high, this production rate for New England institutions represented a 20-year low and almost a 12 percent decline from the peak rate of 6.6 bachelor's degrees per thousand in 1992. In contrast, the overall degree-granting rate for the United States remained within historical bounds. In other parts of the country that have experienced visible declines from early 1990s peaks (the North Central and the Pacific), the decreases were only about half as large as in New England (Table 9).

[20] Growth in the number of foreign students also may have contributed to rising enrollments at U.S. colleges and universities. However, overall foreign enrollments remain minor at the undergraduate level. For example, at four-year colleges in fall 1996, foreign students comprised only 1.8 percent of entering freshmen who had recently completed high school (*Digest of Education Statistics 1998).*

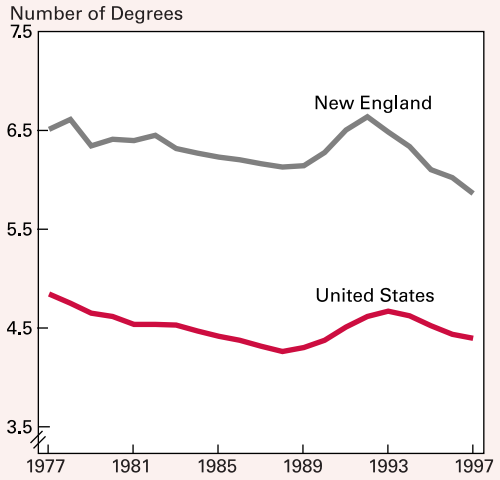
[21] See Kodrzycki (1999) for data for the top dozen degree-granting states.

[22] Kodrzycki (1999) points to adverse demographic patterns and high college costs as causes for New England's decline but predicts that demographic patterns will be more favorable in the next few years.

[23] Similar trends are observed if the denominator measures the labor force.

Figure 5

Bachelor's Degrees Conferred per Thousand Population 25 Years and Over, 1977 to 1997



Note: Current Population Survey used to revise population estimates before 1990.
Source: Integrated Postsecondary Education Data System, Current Population Survey, and U.S. Bureau of the Census.

Table 9

Bachelor's Degrees Conferred per Thousand Population 25 Years and Over, by Census Division: 1992 and 1997

Census Division	1992	1997
New England	6.6	5.9
Middle Atlantic	4.9	4.7
East North Central	5.0	4.6
West North Central	5.8	5.5
South Atlantic	4.1	4.0
East South Atlantic	4.6	4.5
West South Atlantic	4.0	4.0
Mountain	4.6	4.6
Pacific	3.8	3.6
United States	4.6	4.4

Source: Integrated Postsecondary Education Data Systems and Bureau of the Census.

V. Migration of College-Educated Adults

People with a college degree are quite mobile geographically, relative to the rest of the population. For example, in the NLSY sample, people with a four-year college degree were twice as likely to move across regions or states as people who had not attended or completed college. Moreover, the college-educated move in response to regional business cycles. As a result of changes in the relative strength of the New England economy, the region's attraction for college-educated adults was not as strong in the 1990s as it had been in the 1980s.[24]

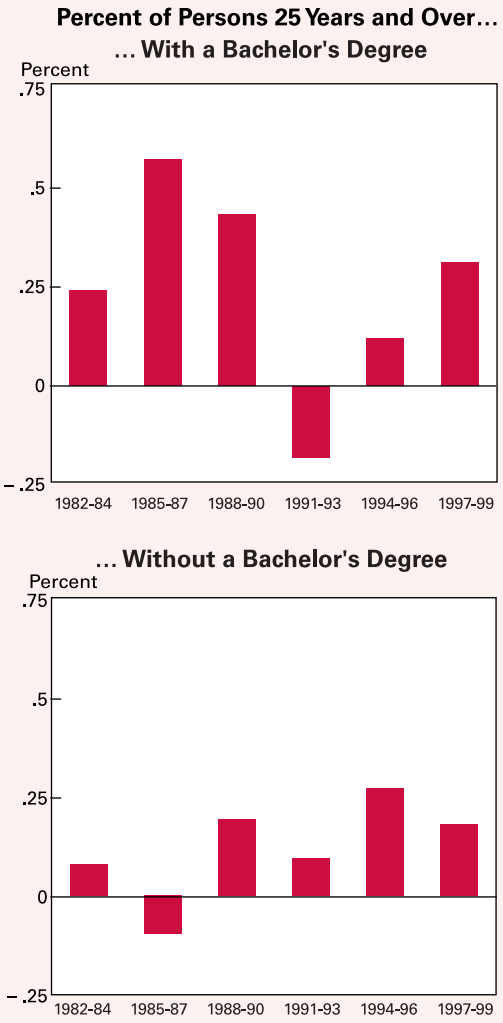
After an economic boom in the 1980s, the severe regional recession of the early 1990s and the relatively slow initial recovery resulted in a sharp net outflow of college-educated people from New England (Figure 6 and Table 10).[25] Between 1991 and 1993, annual net outmigration of college-educated persons averaged about 0.2 percent of the total population aged 25 and over in the region. Losses to other parts of the country

[24] The data presented in this section refer to persons age 25 and over. Evidence on retention versus migration rates for recent college graduates is sporadic. For example, a survey of engineering colleges and universities in Massachusetts found that on average just over half have stayed in the state after graduation (Massachusetts Technology Collaborative 1999). It is difficult to gain further insights on more general patterns or trends over time. For example, see Fogg and Sum (1998) for a discussion of the problems of using the CPS to infer migration patterns for college students. In the NLSY, 66 percent of persons who graduated from college in New England were still residing in the region in 1996 (when they were between the ages of 31 to 41). This was virtually identical to the U.S. average. The retention rates varied from 59 percent for the West North Central to 74 percent for the Pacific.

[25] The Current Population survey is the only annual source of information on migration by educational attainment. The decennial Censuses include such information for the prior five-year period. The latest available data refer to moves between 1985 and 1990; the 2000 Census will show moves between 1995 and 2000. However, the U.S. Census Bureau issues "official" aggregate annual migration estimates that are produced independently of the CPS. The Census estimates of net total inmigration (including all ages) for New England have been substantially lower than the comparable CPS estimates in recent years. The Census and CPS estimates of net domestic inmigration were quite close between 1992 and 1996. However, the Census showed greater net domestic outmigration in 1991 (123,000 versus 85,000 in the average of the 1990, 1991, and 1992 CPS) and continuing net domestic outmigration in 1997 and 1998 (−22,000 in the Census for 1998, versus +27,000 in the CPS for 1997–99). The CPS has shown greater foreign in-migration to New England throughout this period. The difference was about 18,000 in the most recent year but as high as 99,000 in 1994. One reason is that the Census counts net foreign in-migration, while the CPS can capture only gross foreign in-migration (since only residents of the United States are interviewed). However, another reason may be that the Census undercounts the number of foreign immigrants who settle in New England after entering the country elsewhere (for example, New York). The Census bases its allocation of foreign immigrants to domestic locations on these immigrants' responses to Immigration and Naturalization Service questions regarding their intended destination. By contrast, the CPS uses their actual location. For further discussion of alternative sources of information on migration, see Fogg and Sum (1998).

Figure 6

Net Migration into New England, Annual Averages



Source: Current Population Survey.

Table 10

Net In-migrants with and without a Bachelor's Degree, by Census Division: Annual Averages for 1982–90, 1991–93, and 1994–99

Percent of Population Age 25 Years and Over

	1982–90	1991–93	1994–99
With Bachelor's Degree			
Domestic			
New England	.21	−.38	−.07
Middle Atlantic	−.27	−.20	−.15
East North Central	−.21	−.06	−.02
West North Central	−.12	.05	−.10
South Atlantic	.22	.03	.12
East South Central	−.02	.14	.02
West South Central	.21	.15	.02
Mountain	.04	.31	.05
Pacific	.12	.09	.04
International			
New England	.21	.20	.28
Middle Atlantic	.19	.16	.27
East North Central	.11	.11	.14
West North Central	.16	.12	.24
South Atlantic	.20	.17	.26
East South Central	.04	.04	.08
West South Central	.11	.17	.15
Mountain	.15	.16	.21
Pacific	.31	.19	.31
Total			
New England	.41	−.18	.21
Middle Atlantic	−.08	−.04	.12
East North Central	−.10	.04	.12
West North Central	.04	.17	.14
South Atlantic	.31	.19	.38
East South Central	.02	.19	.11
West South Central	.32	.32	.17
Mountain	.19	.47	.26
Pacific	.43	.28	.35
Without Bachelor's Degree: Total			
New England	.06	.10	.22
Middle Atlantic	−.20	−.36	.19
East North Central	−.19	.17	.12
West North Central	.12	.35	.44
South Atlantic	.89	.61	.83
East South Central	.36	.36	.22
West South Central	.58	.51	.43
Mountain	.79	1.49	1.02
Pacific	.85	.17	.43

Source: Current Population Survey.

(through domestic migration) were considerably greater than 0.2 percent, but were partially offset by international inflows. With the exception of a small decline for the Middle Atlantic states, all other parts of the country gained college graduates through migration during the early 1990s. The net annual gains were almost 0.5 percent of the adult population in the Mountain states.

Starting in the mid 1990s, economic conditions improved more noticeably in New England, and by the late 1990s, all regions of the country were enjoying a robust economy. Between 1994 and 1999, the strongest net inflows of college graduates (as a share of population age 25 and over) have been in the South

Atlantic and Pacific regions. The net rate of migration of college graduates into New England, 0.2 percent, has been only about three-fifths of the rate into these leading areas, but ahead of the rates for other areas such as the Middle Atlantic and the Midwest.

For New England, the migration patterns in the late 1990s contrasted sharply with those in the 1980s boom. From 1982 to 1990, the average annual net inflows of college graduates to New England equaled about 0.4 percent of the adult population, twice as high as from 1994 to 1999. New England's gains were comparable to those for the Pacific region and far ahead of the inflows for all other regions. New England was successful in attracting college graduates both from other parts of the nation and from abroad. In the 1990s, by contrast, domestic inflows were negative until the very end of the decade. To the extent New England experienced net in-migration, this was due primarily to national policies that permitted an increase in foreign immigration of college graduates.

Furthermore, the proportion of college-educated among migrants to New England was unusually high in the 1980s. The number of college graduates gained through (net) migration from 1982 to 1990 outpaced the number without a college degree by a ratio of almost 7 to 1. No other region of the country gained more people with a college degree than without (although the Middle Atlantic and the East North Central did *lose* fewer college graduates than non-graduates). New England's in-migrants in the 1994 to 1999 period continue to include a greater percentage with a bachelor's degree than in most other regions. However, the mix is now approximately half with a degree, half without.

VI. Summary and Conclusions

A greater share of the New England adult population has a college degree than in any other region of the country. This educational advantage is the result of exceptional college attendance rates among high school students in the region and the existence of a large higher education sector. During the past decade, however, New England has experienced some adverse trends in the supply of new college graduates and inflows of college-educated adults. As a result, the difference in educational attainment between New England and other regions for the youngest adults (aged 25 to 34 years) is not as great as for the next older cohort (35 to 44 years). In addition, most of the New England states slipped in the national educational attainment rankings in the 1990s.

New England colleges and universities experienced declines in the number of new graduates between 1992 and 1997. As a result, the number of new college graduates relative to the size of the adult population fell to a 20-year low in the region. If it continues, this trend poses a particular threat to New England, because local graduates far outnumber adult in-migrants as a source of college-educated adults. (Local college graduates include people who went to high school in New England and stayed on for college as well as people who came to New England in order to attend college.)

The evidence presented in this study indicates that New England high school students have continued to have very high rates of college attendance compared to high school students in other parts of the country. However, as shown in a previous study (Kodrzycki 1999), the size of the high-school age cohort fell very sharply in New England in the late 1980s and early 1990s.

Fortunately, some reversal in enrollments appears to be taking hold at New England colleges and universities. According to the U.S. Department of Education's Integrated Postsecondary Education Data System, the number of full-time-equivalent first-time freshmen at four-year institutions in New England rose 8 percent between 1994 and 1997. Thus, the number of college graduates may already have started to increase.

College-educated adult migration to New England also slipped in the 1990s. In the early part of the decade, New England was in deep recession followed by an initially sluggish economic recovery. Between 1991 and 1993, outflows exceeded inflows. Starting in 1994, net migration of persons with a college degree has been positive, boosted almost exclusively by foreign immigration. Nevertheless, as a percent of the total adult population, total net in-migration of people with a bachelor's degree continues to fall short of rates seen in New England during the second half of the 1980s as well as the current rates experienced in the southeastern and western parts of the country. The current lower migration rates into New England are not really surprising. The 1980s saw an unusually strong boom in New England relative to the rest of the country. Moreover, New England historically has lagged behind the South and West in attracting college graduates through migration.

The evidence presented in this study indicates that regional educational attainment rankings can

shift over time. Therefore even the slight slippage for New England during the 1990s should stimulate discussions concerning ways to maintain the region's educational advantage. This is particularly important in light of the length of time needed for policy changes to yield results.

Several options exist for increasing educational attainment. Although a very high share of schoolchildren from New England go on to attend and graduate from college, further increases may be possible. Opportunities may exist for improving school quality and for providing expanded educational opportunities for the region's adults. Another avenue would be to induce higher enrollments specifically at colleges and universities in New England by restructuring costs and other characteristics of the higher education system that influence attendance. Finally, attracting adult in-migrants historically has not been New England's greatest strength compared to other parts of the country. For this reason, the percentage of adults in the region who are college-educated adult migrants is not much higher than the national average. Nevertheless, regional policymakers may wish to reexamine whether they have viable options to reduce the cost of living or otherwise enhance the region's image to would-be movers and current New England college students. In addition, the region's employers may wish to develop new recruitment techniques based on New England's opportunities and attractiveness for college-educated workers.

Appendix: Location of High School and College Degrees in the National Longitudinal Survey of Youth

by Matthew P. LaPenta

The National Longitudinal Survey of Youth (NLSY) contains information on the state in which respondents were residing in each year of the survey. This appendix describes the procedures for determining where respondents received their high school diploma and bachelor's degree. These procedures were complicated for three reasons: The annual interviews took place at varying times of the year; information on respondents' location prior to the start of the NLSY in 1979 is incomplete; and the precise timing of college graduation is not reported.

High School Graduation

The NLSY included the month and the year of high school graduation. For those who graduated from high school in or after 1979, the reported state of residence determined the state of high school graduation. The procedure varied, depending on when the interview took place. If the respondent was interviewed prior to the month of graduation, or during the same month, the state of residence for that year was used for the state of graduation. If the respondent was interviewed after the month of graduation, the state of residence in the prior year was used.

Some respondents graduated from high school prior to 1979. The NLSY reports the state(s) of residence in 1978, but only one residence before 1978. These variables were used to determine the state of residence for most respondents who graduated before 1979. However, some respondents graduated from high school before they moved to the earliest state of residence listed in the NLSY. These observations were dropped from the sample.

College Graduation

The NLSY does not report either the month or the year of college graduation. It does provide years of school completed as of May 1 of the survey year. For respondents interviewed between January and April, the state of college graduation was taken from the state the respondent was living in the year he or she reported completing the sixteenth year of school. In cases where the survey was administered between May and December, the state of residence in the year prior to reported completion of sixteen years of school was used as the state of college graduation. For people who graduated in the winter rather than the spring, the procedure results in a greater chance of error. Respondents who had missing values for their educational attainment in 1994 and 1996 were dropped from the sample.

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