

MAINE STATE LEGISLATURE

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Workforce Development in Maine: Held Back by the Lack of Higher Education

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December 2002

This is the third of a four-part series on economic development in Maine. This work was funded by the U.S. Economic Development Administration. Helpful research assistance was provided by Ewa Kleczyk.

Executive Summary

Almost two-thirds of income in Maine is from labor earnings. Thus, workforce development is crucial for economic prosperity in the state. This study examines what we believe to be the crucial issue for workforce development in Maine, namely, higher education. The intent of this report is to provide some factual context that will be useful for policy analysis for the State. These are our main findings.

- As in the rest of the country, investment in education pays off in Maine. This is true for individuals on average, as well as for the state as a whole.
- Maine is well behind New England and the rest of country in college attainment. This is probably the primary reason why the state is behind New England and the rest of the country in terms of economic prosperity.
- If we as a state want to attract significantly more high-wage jobs, we must produce more high-skill workers.
- Maine does relatively well in various measures of primary and secondary education. We should be careful, however, in inferring from this that our K-12 public schools are much better than in the rest of the country. All of our better-than-average performance in K-12 education is evidently attributable to the lack of ethnic diversity in the state.
- In preparing our young people for college, Maine public high schools appear to be well below the national average.
- Lack of college aspirations does not appear to be the reason for Maine's low education attainment.

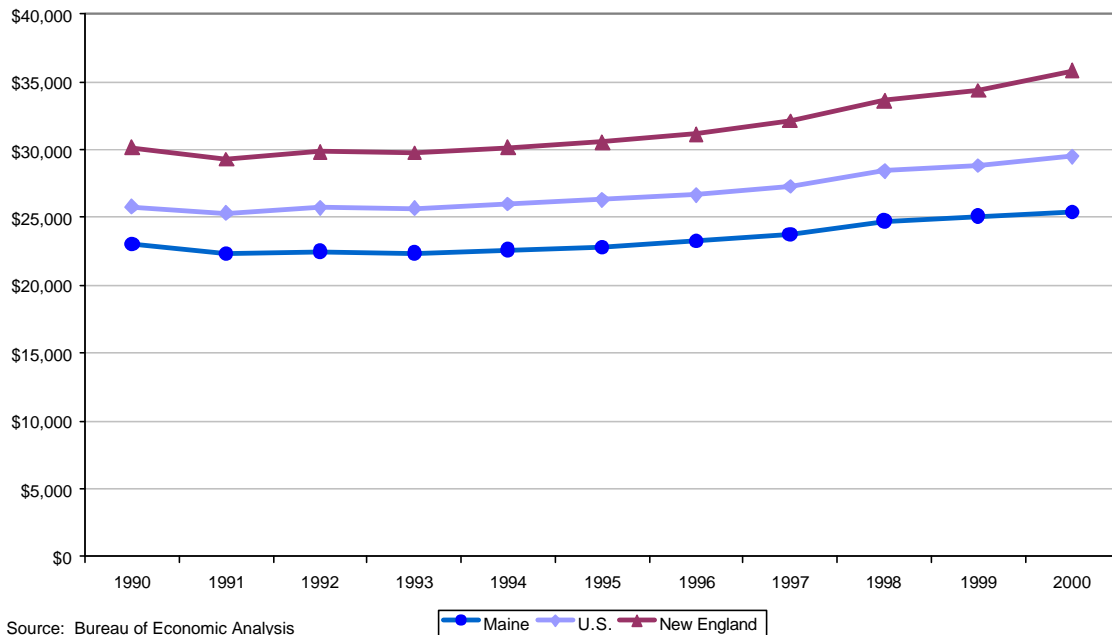
- Maine is losing an alarming number of our college-bound young people to other states. This is the primary reason for the relatively low attainment of college education in the state.
- Maine is behind in college attendance mainly because of its relatively low level of public support for higher education.
- The exodus of Maine's college-bound young tells us that higher education in Maine is not a good deal compared to higher education elsewhere. To reverse this trend, we must substantially lower our tuition from being the fourth highest in the country and/or substantially increase the quality of our higher education.
- Public-opinion surveys indicate some dissatisfaction with public K-12 education, but general satisfaction with public higher education. Evidently, public higher education in Maine is a good deal. Student migration data, however, suggest that it is not a good enough deal compared to other states to keep a high proportion of our college-bound young here.

Introduction

It is well known that Maine lags behind the rest of the country in terms of economic prosperity. In 2000 per capita income in Maine was 14 percent below the national average, and 29 percent below the New England average. Income per person in Maine was \$4,089 less than the U.S. average, and \$10,404 less than the average for New England. Out of the fifty states, Maine ranked 36th in terms of per capita income in 2000. Moreover, although economic prosperity has generally increased in Maine, it did not match that in the rest of the country and in the rest of New England. That is, although lagging prosperity is not a new problem for Maine (Maine's per capita income in 1990 ranked 31st, and was 11 and 24 percent below the national and New England averages), it is an increasing problem. The state fell a little further behind in the last decade. This is shown in Figure 1 below. Not surprisingly, we are concerned by the state's economic performance. Although monetary prosperity is obviously not everything, it clearly does help with many social problems. An additional \$4,089 or \$10,404 for every person in the state could buy a lot of useful services.

Naturally many factors are behind Maine's relative economic performance. There is one factor in particular, though, that really stands out. Maine lags behind the rest of the country in higher education. In fact, Maine's relative standing in per capita income almost exactly mirrors its relative standing in attainment of Bachelor's degrees. In 1998-2000 data from the Current Population Survey, Maine's proportion of working-age population with at least a Bachelor's degree was 18 percent below the national average, and 29 percent below the New England average. This placed Maine 40th among the fifty states. Moreover, although average educational attainment has increased in Maine, it too

Figure 1
Per Capita Income
(Adjusted for Inflation - in 2000 \$)



has not matched that in the rest of the country and in the rest of New England. That is, lagging educational attainment is also an old, and increasing, problem for Maine. In 1988-90 Maine ranked 29th in its proportion of working-age adults with at least a Bachelor's degree. Maine's proportion was 7 and 25 percent below the national and New England averages. In other words, as with per capita income, the state fell a little further behind in higher education in the last decade.

Given the remarkable similarity between Maine's numbers for per capita income and for higher education, and given that average income rises significantly with educational attainment (e.g., in 1998-2000, American workers with at least a Bachelor's degree had almost 74 percent higher weekly earnings than those without), it is tempting to conclude that the lack of higher education is *the* reason for lagging prosperity in the state. Although this single explanation by itself appears to be a little too easy, there is

little doubt that the relative lack of higher education in Maine is holding back its prosperity growth.

This notion is hardly new. Indeed, the Maine State Planning Office recently argued:

Percent of adults with at least a four-year college education is perhaps the most important variable in explaining the variation in per capita incomes among states. By itself, it accounts for 51 percent of the differences among the fifty states.¹

It is becoming increasingly clear to policy professionals that the development of a higher-skilled workforce - i.e., “workforce development” - is one of the most important issues, if not the most important issue, for prosperity growth in this state (and in every other state). Moreover, most Mainers also appear to be aware of this. As shown in Figures 2 and 3 below, over 40 percent of both households and businesses surveyed last year by the Maine Development Foundation listed “educated workforce” as the most important issue for long-run economic growth in the state.² Over three-fourths of household respondents and over two-thirds of business respondents listed “educated workforce” as either the first or second most important item.

Mainers’ awareness of the importance of education for economic prosperity, however, has not translated into a great deal of public support for higher education. Although there are various ways of measuring the state’s support for higher education, they all reveal that public support for higher education is low in Maine compared to other states. On the other hand, public support for primary and secondary education is high

¹ Maine State Planning Office, “30 and 1000: How to Build a Knowledge-based Economy in Maine and Raise Incomes to the National Average by 2010”, 2001, p. 16. Also see State of Maine Legislature, “Final Report of the Blue Ribbon Commission on Postsecondary Educational Attainment”, 2002 and Frances C. Lindemann, “Higher Education for All People”, Maine Center for Economic Policy, 2002.

² Maine Development Foundation 2001 Survey of Maine Citizens and Businesses. Survey results do not reflect the views of the Maine Development Foundation.

Figure 2
The Most Important Item to Long-Term Economic Growth in Maine
(Maine Citizens, 2001)

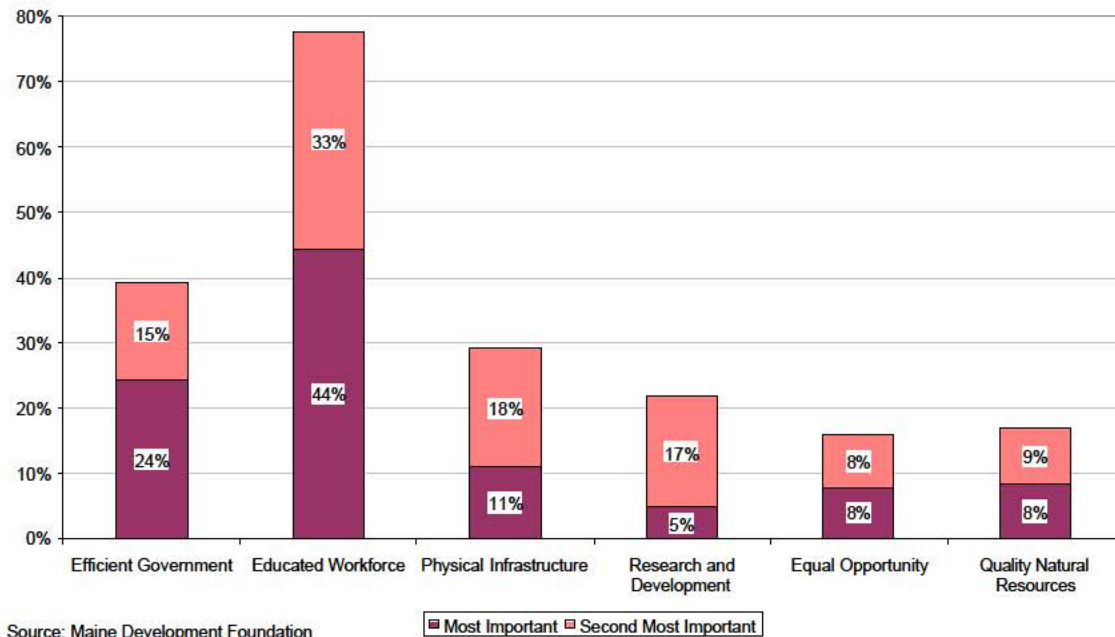
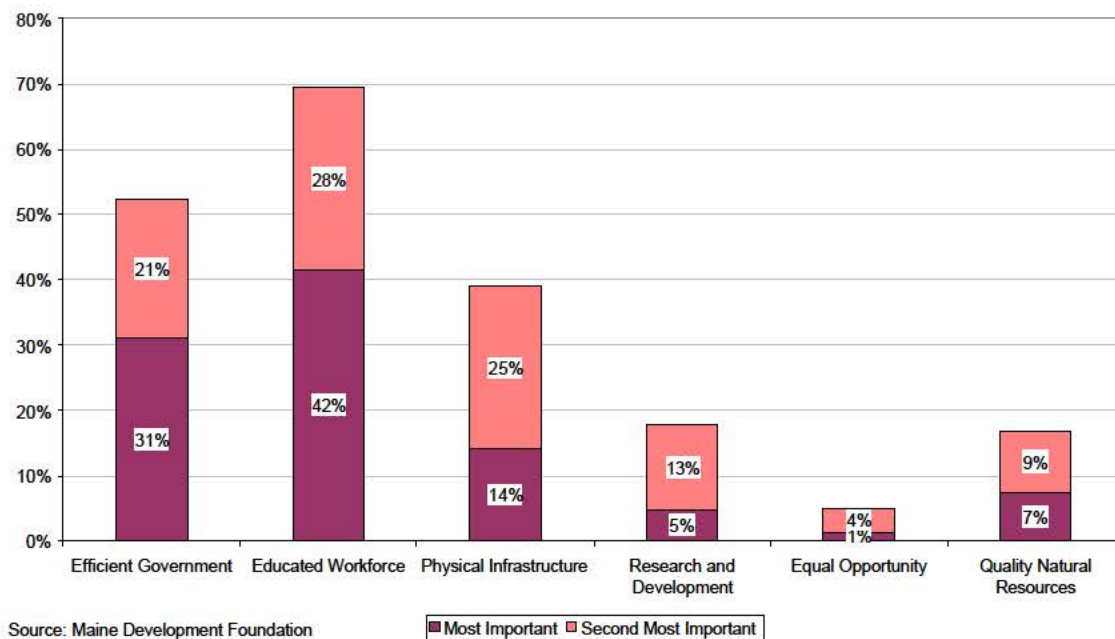


Figure 3
The Most Important Item to Long-Term Economic Growth in Maine
(Maine Businesses, 2001)



in Maine relative to other states. In per capita public spending on K-12 education, Maine has been in the second quintile of states (i.e., ranked in the teens). In per capita spending

on higher education, Maine has been in the bottom quintile of states (ranked in the forties). As a percentage of per capita income, Maine is in the top quintile for public spending on K-12, and (barely) in the fourth quintile for public support of postsecondary education. As a percentage of state and local public spending, Maine is usually in the second quintile for K-12, and in the bottom quintile for postsecondary education.

Taken together, these facts suggest that if we in Maine really want to move our state-wide level of economic prosperity closer to the rest of the country, then we need to choose to move our investment in higher education closer to the national average. For the most part, economic prosperity does not come from natural resources or other endowments. It comes from investment in its various forms (i.e., physical capital, human capital, research and development, infrastructure, and so forth). Recent economic growth “miracles” such as in East Asia are not miracles at all. Recent periods of remarkable rates of economic growth have been, and almost certainly will continue to be, the result of high levels of sustained broadly-defined investment.³ Moreover, investment in human capital appears to be the most important category of investment.⁴ The spectacular experience of Ireland over the last three decades offers particularly compelling evidence for these ideas.⁵

Investment in human capital is even more important if the goal, as has been often asserted, is to attract more high-paying jobs to the state rather than just any jobs.⁶ It is commonly supposed, though, that taxes, regulations, and so forth are the keys for

³ See Alwyn Young, “The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience”, *Quarterly Journal of Economics*, 110:3, 1995.

⁴ See Gregory Mankiw, “The Growth of Nations”, *Brookings Papers on Economic Activity*, 1, 1995.

⁵ See Paddy McDonagh, “The Irish Education System and the Economy”, *Maine Policy Review*, 9:1, 2000 and Amity Shlaes, “A Tiger Slumbers in Maine’s Northern Woods”, *Financial Times*, August 14, 2001.

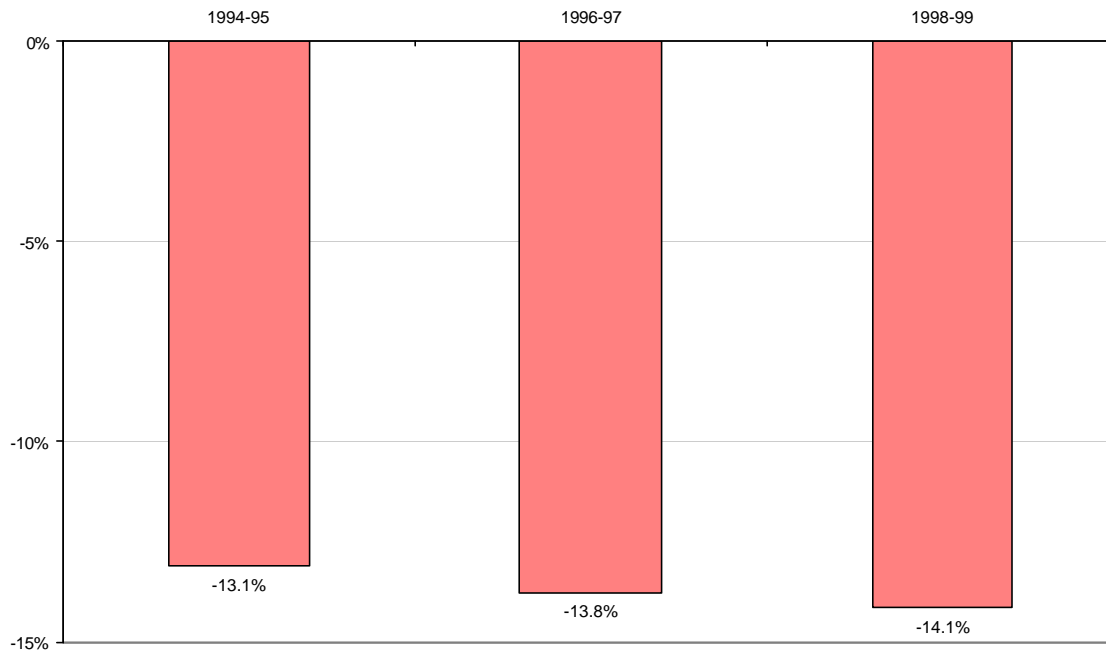
⁶ See, for example, “Gaining Good Jobs”, Maine Department of Labor and Maine Economic Growth Council, 1999.

attracting high-wage jobs. The most important key, though, is a highly-skilled workforce. That is, high-paying businesses tend to gravitate to where the high-skilled workers are being produced. Attracting highly-skilled workers from out of state is costly business. It is no coincidence that high-tech clusters are located near important universities. Although those with more education tend to migrate toward higher-paying regions, it is equally if not more true that high-wage jobs move toward regions with higher-skilled workers. In other words, if we build a highly-skilled workforce, high-wage jobs will come.

It is also commonly supposed that many students simply take their college education, at great cost to Maine's taxpayers, and find jobs outside the state. Although many state-supported college students do leave the state, the net impact of this is probably much smaller than is commonly believed. For the reason stated above, to a large extent the supply of college graduates tends to create its own demand. There is little evident correlation between the relative number of new college graduates produced in a state and the state's net migration of college graduates. That is, on average, states producing relatively high numbers of college graduates are not net losers of college graduates.

Moreover, most of Maine's loss of young people is occurring when, not after, they go to college. As shown in Figure 4 below, the net outflow of new college freshmen was a staggering 14 percent in the 1998-99 academic year (and rising). The percentage was even higher for recent high school graduates entering four-year colleges. Also, the U.S. as a whole had a net inflow of almost 2 percent (i.e., a net inflow of students from abroad). In net migration of college students, Maine ranks 47th out of the fifty states. Moreover, evidence suggests that most of these young people are not going to return to

Figure 4
Maine's Net Migration of College Freshmen



Source: Department of Education

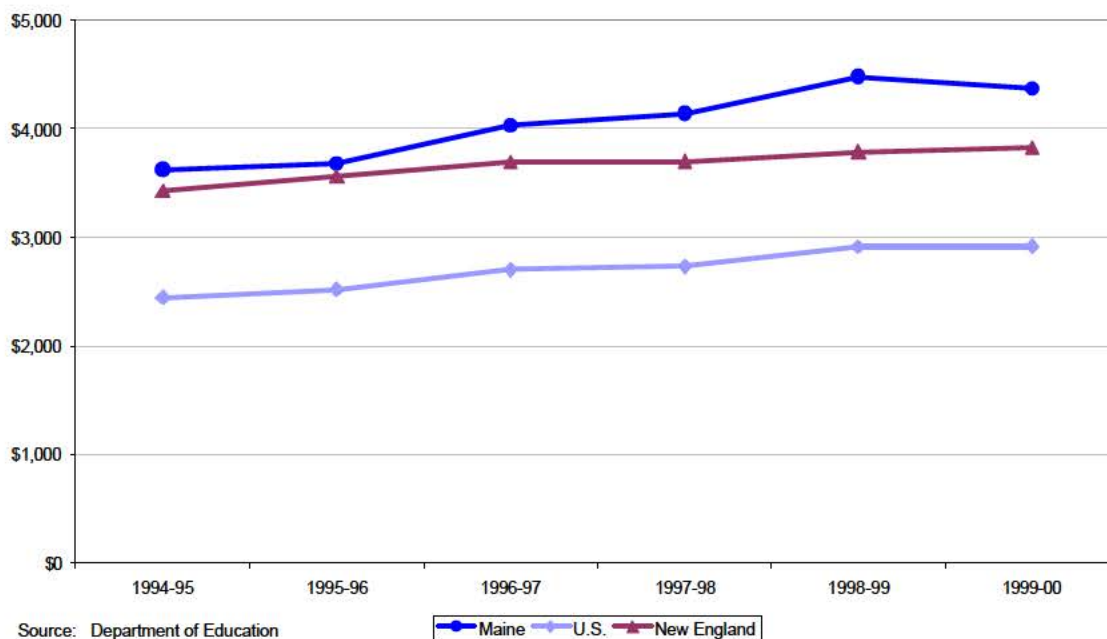
Maine upon finishing college.⁷ Thus, many of Maine's young people, and probably among our best and brightest, are leaving prior to obtaining a college education. Moreover, they are taking their state-paid primary and secondary education with them.

Relatively low public support and hence relatively high net tuition (i.e., tuition and fees less financial aid) is an important part of the reason why many students evidently feel that higher education in Maine is not a good deal. The National Center for Public Policy and Higher Education recently gave Maine an "F" for affordability of higher education (one of only three in the country).⁸ Figure 5 below shows why Maine gets such a bad mark. Over the six academic years from 1994 through 2000, in-state tuition and fees in Maine's public universities and colleges are an astounding 50 percent

⁷ See Louis Tornatzsky et al., "Who Will Stay and Who Will Leave?" Southern Growth Policies Board, 2001.

⁸ National Center for Public Policy and Higher Education, "Measuring Up 2000: The State-by-State Report Card of Higher Education", 2000.

Figure 5
Annual In-State Tuition and Fees per Full-time Undergraduate Student
(Adjusted for Inflation - in 2000 \$)



higher than the national average, and over 10 percent higher than the New England average. The differences are even larger when comparing to per capita income (72 percent and 30 percent). Over this period Maine had the fourth most expensive system of public higher education in the country. Maine also lags behind the rest of the country and the rest of New England in state financial aid per student. But high net tuition is not the only reason for the exodus of our college-bound young. Many students and their families are not deterred by the high cost of college education at private schools. As with the other things that people buy, what matters is the relative cost compared to the relative quality.⁹ The behavior of Maine's college-bound young indicates that higher education in Maine is not a good deal relative to higher education in other states.

⁹ Ohio serves as a good example. Over the period 1994-2000 its average tuition and fees were less than 2 percent below Maine's. It had the sixth most expensive public higher education system. Its per capita income was slightly below the national average. It also has about the same proportion of young people going to college as Maine. But Ohio also has one the best public university systems in the country. Thus, despite its relatively high cost, Ohio experienced a net inflow of college students.

The upshot of all this is that our current economic situation in Maine is largely the result of the choices that we have made. In particular, we have chosen a relatively low amount of investment in higher education, and as a result we are poor relative to the rest of the country and, especially, relative to the rest of New England. The problem is not a lack of aspirations or the “culture”. Despite the relatively high costs (and low income) facing Maine’s college-bound young and their families, the proportion of young Maine high school graduates continuing on to college is only slightly below the national average.¹⁰ Low college attainment in Maine is mainly due to low college attendance *within* the state, not low college attendance by young Mainers. The problem is that many of Maine’s young with high aspirations are driven out of the state by our lack of commitment to providing them with the skills needed to compete in a modern world. Moreover, the truly troubling part of this conclusion is that, at present, there is little sign that this trend is changing.

We offer only two short caveats to this assessment. First, we are not recommending simply devoting more public resources to higher education. We must demand significantly better performance from our colleges in return for greater resources. Second, we must be aware that the payoff to investment in education, like most other investments, is a long-term proposition. Unfortunately we cannot expect greater investment in education (or anything else) to cause an immediate turnaround in Maine’s relative economic performance.

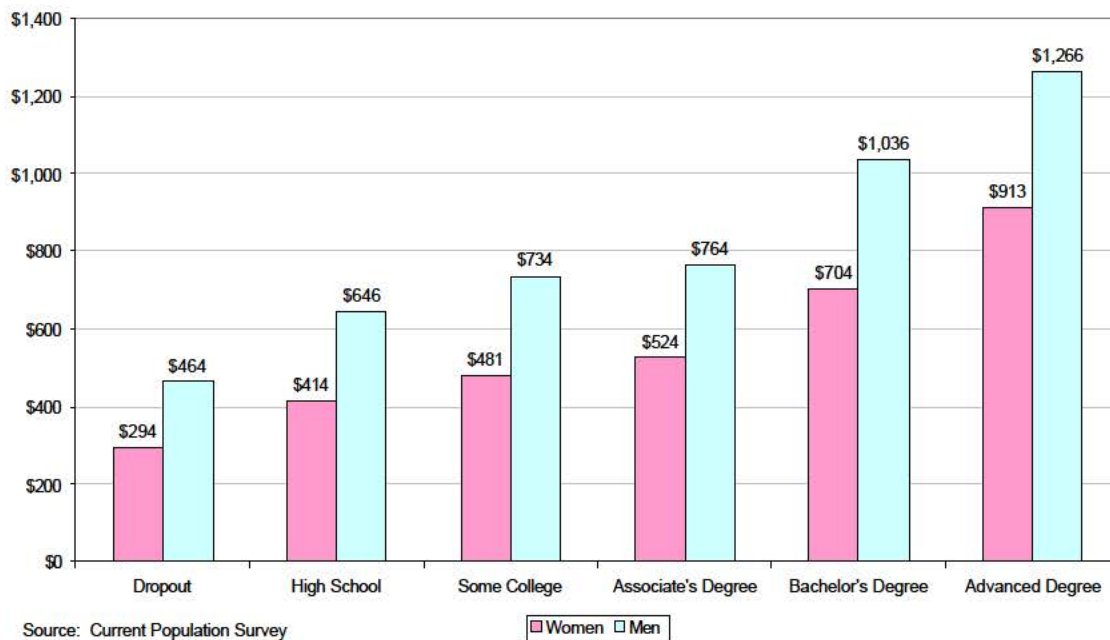
¹⁰ Exact numbers are not available because data on both freshmen enrollment and graduation from private high schools are only collected by the Department of Education biannually and in the same years. Interpolation, however, suggests that the national average from 1994 through 1998 was about 58 percent. Maine’s average was about 54 percent, which placed the state about 32nd in the country.

The rest of this report provides a more-detailed picture of the educational situation in Maine.

Education and Earnings

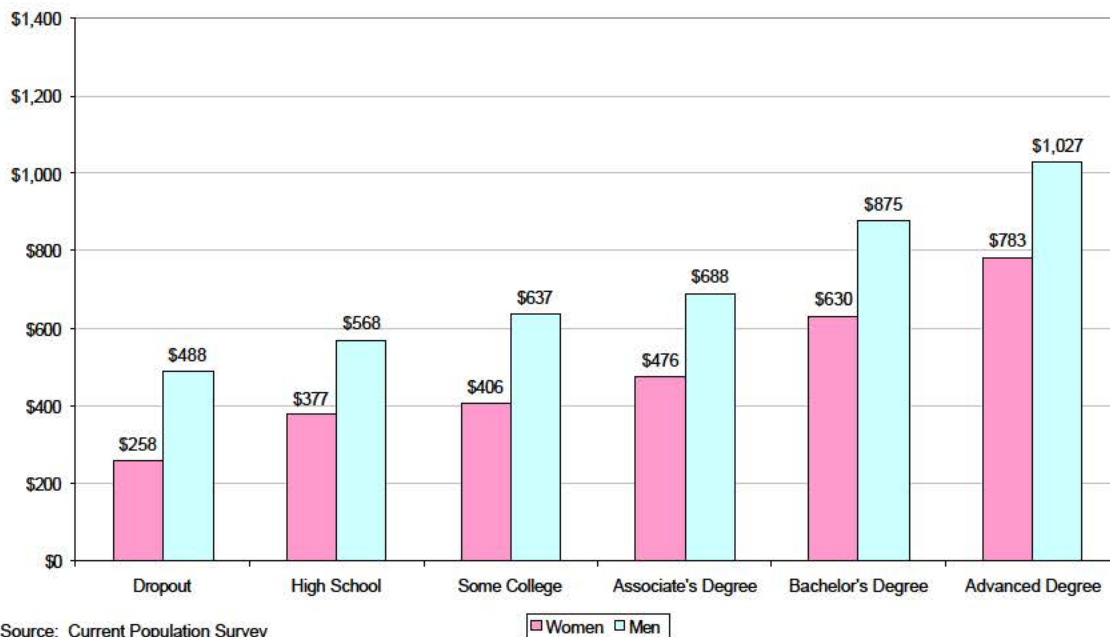
On average, earnings rise significantly with educational attainment. This is true in the country and in Maine (and in the rest of the world).¹¹ Using data from the 1998-2000 Current Population Survey, Figures 6 and 7 below plot for the country and for Maine the average weekly earnings of men and women aged 25 to 64 with different levels of educational attainment. American men and women with Associate's degrees earned 18 and 26 percent more than high school graduates. For Maine, the figures are 21 and 26 percent. In the country men and women with Bachelor's degrees made 27 and 34 percent more than those with Associate's degrees. In Maine, the corresponding numbers are 27

Figure 6
U.S. Average Weekly Earnings by Educational Attainment, 1998-2000
(Adjusted for Inflation - in 2000 \$)



¹¹ For international evidence see George Psacharopoulos, "Returns to Investment in Education: A Global Update.", *World Development*, 22, 1994 and Philip Trostel, Ian Walker, and Paul Woolley, "Estimates of the Economic Return to Schooling for 28 Countries", *Labour Economics*, 9, 2002.

Figure 7
Maine Average Weekly Earnings by Educational Attainment, 1998-2000
 (Adjusted for Inflation - in 2000 \$)



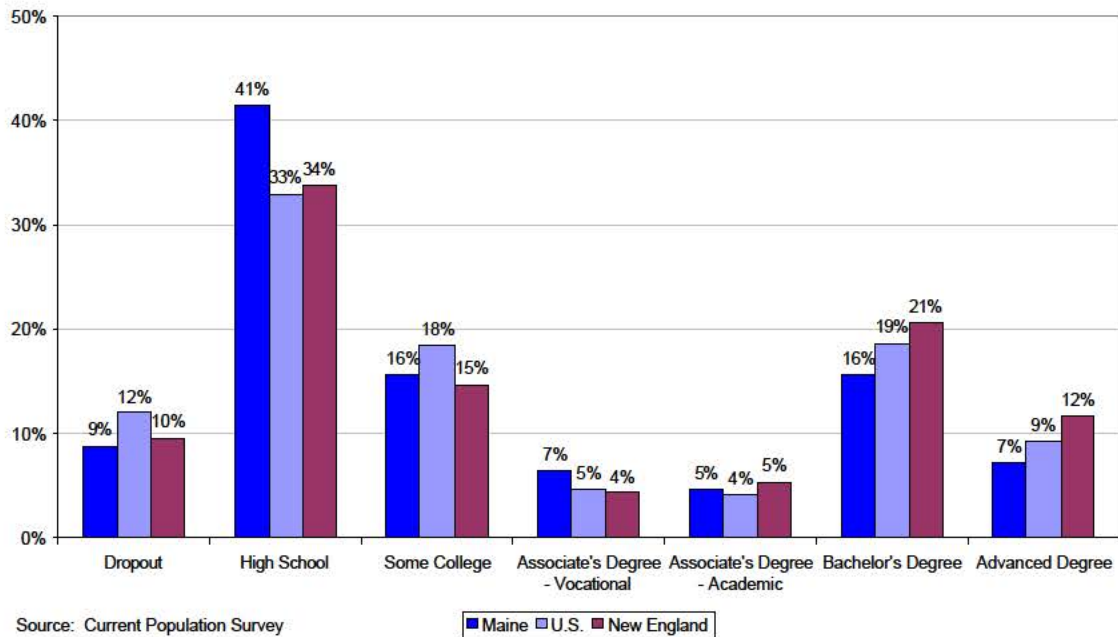
and 32 percent. Country-wide holders of advanced degrees earned 22 and 29 percent more than holders of Bachelor's degrees. Maine holders of advanced degrees earned 17 and 24 percent more than holders of Bachelor's degrees. Contrary to some popular opinion, investments in education pay healthy rates of return to students in Maine on average, just as in the rest of the country.

Educational Attainment

Figure 8 shows the distributional breakdown of highest education credentials for those between the ages of 25 and 64 in Maine, in the U.S., and in New England using 1998-2000 data from the Current Population Survey.¹² Relative to New England and the rest of the country, Maine had disproportionately more adults with only a high school diploma, and disproportionately less with at least some college. On the brighter side,

¹² Combining three years of data is the approach followed by the Census Bureau to increase the reliability of the averages for the individual states. Unlike the Census Bureau, though, we do not show the attainment of everyone over the age of 24. We feel it is more relevant to focus on the educational attainment of those of typical working age. Thus, our numbers do not correspond exactly to those published elsewhere.

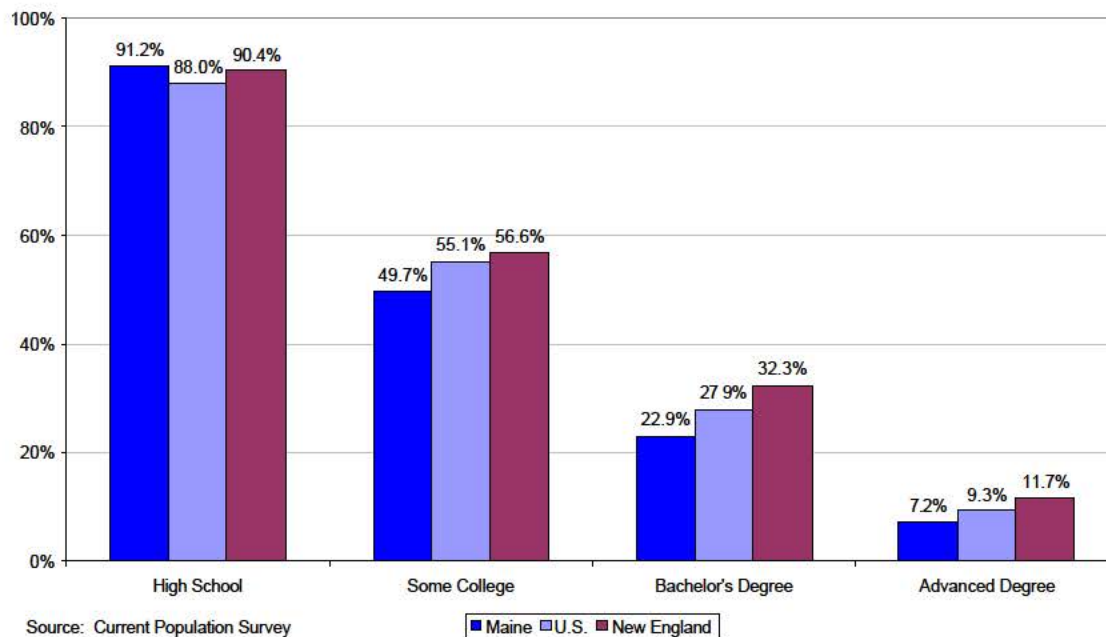
Figure 8
Highest Education Level
(1998-2000)



Maine had relatively fewer high school dropouts. Figure 9 shows the same data in a different way. It shows the percentages of those with at least certain education levels. Relative to the rest of the country in 1998-2000, Maine ranked 16th in the percentage of the 25-64 population with at least a high school diploma. In percentage with at least some college, Maine was only 43rd. Maine ranked 40th in both proportion with at least a Bachelor's degree and proportion with an advanced degree.

Educational attainment is typically shown by using charts like Figures 8 and 9. These figures, however, probably do not adequately reveal the massive extent that Maine lags behind in higher education. For example, as shown in Figure 9, Maine's proportion with at least a Bachelor's degree was 5 percentage points below the national average, but this was 18 percent below the national average [i.e., $(22.9-27.9)/27.9 = -17.9\%$]. Maine's proportion with an advanced degree was 4.5 percentage points below the New England average, which was a staggering 38 percent below the New England average. These

Figure 9
Educational Attainment
(1998-2000)



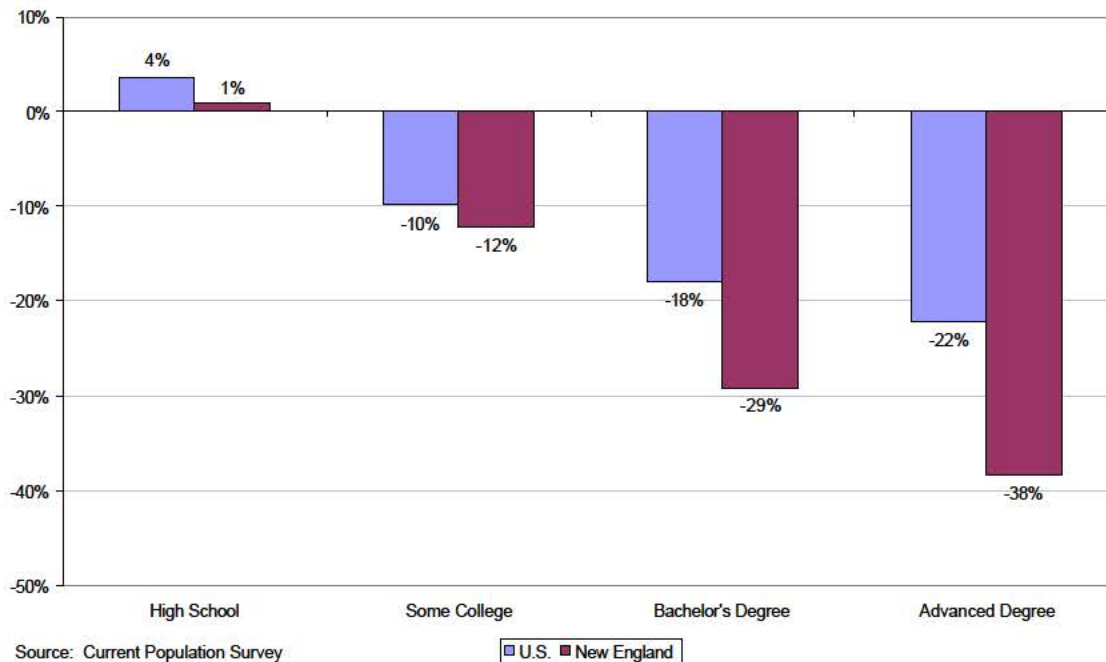
percentage differences, as opposed to percentage-point differences, are shown in Figure 10. It is well known that Maine lags behind in higher education attainment, but it is probably not well known that Maine lags further and further behind the higher the level of education. Figure 10 shows this clearly.

Figure 10 illustrates the problem dramatically. Maine does relatively well in ensuring high school completion, but relatively bad in ensuring continuation into college. In the latest data available from the U.S. Department of Education, Maine placed 3rd in the proportion of 18 to 24 year olds with a high school diploma (92.9 percent in 1997-1999, compared to the national average of 85.5 percent).¹³ Moreover, fourth and eighth graders in Maine consistently score near the top of states on standardized academic tests in reading, writing, mathematics, and science.¹⁴

¹³ According to the Maine Department of Education website, Maine ranks 1st in more recent data with a high school completion rate of 94.5 percent, compared to the national average of 86.5 percent.

¹⁴ See U.S. Department of Education, *The Nation's Report Card: State Profiles*, various subjects and years.

Figure 10
Maine's Percentage Difference in Educational Attainment



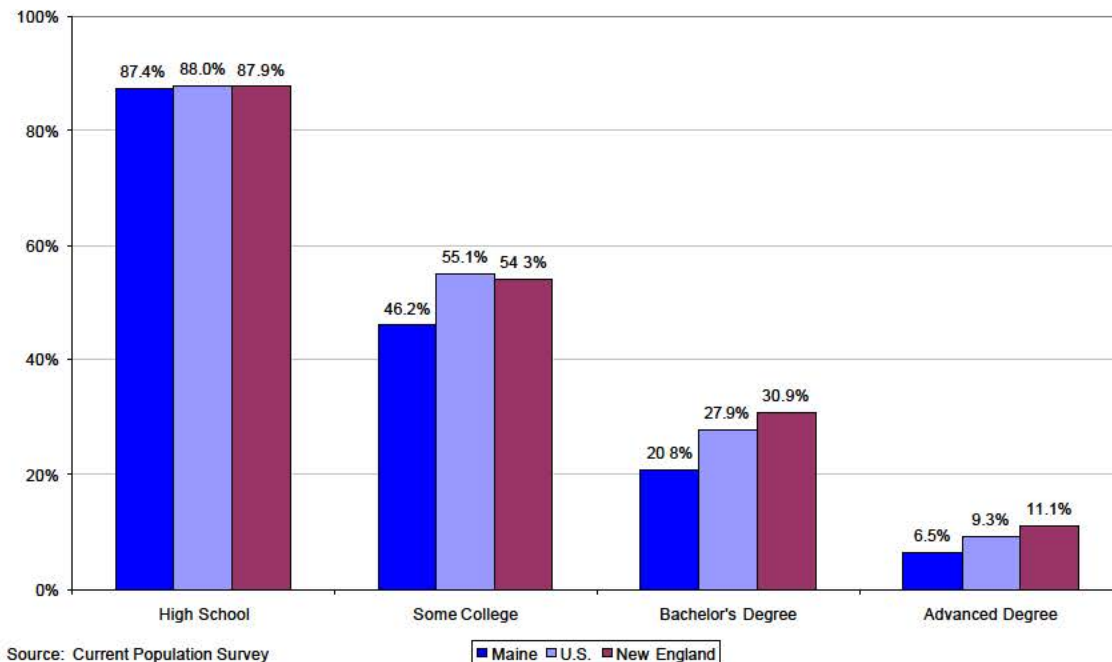
The Effects of Demographics and Race

Maine is not ethnically diverse. In fact, it is the least ethnically-diverse state in the country. 96.5 percent of the state population was considered white and not Hispanic, compared to 69.1 percent in the country and 83.9 percent in New England (in the 2000 U.S. Census). Moreover, non-white and Hispanic populations have significantly lower levels of average educational attainment. These minority groups also score significantly lower on standardized academic tests. Although we may find these facts morally offensive and indicative of a fundamental social problem, they are the current reality in this country. Thus, in terms of educational outcomes, Maine does not have this disadvantage. Given Maine's ethnic make-up alone, we should expect high graduation rates and tests scores. Hence, educational attainment in the state compared to the rest of the country is even worse than suggested in the previous discussion. In other words, the previous comparison was misleading because it compared Maine to states with many

more first- and second-generation (many with English as their second language) and historically-disadvantaged Americans.

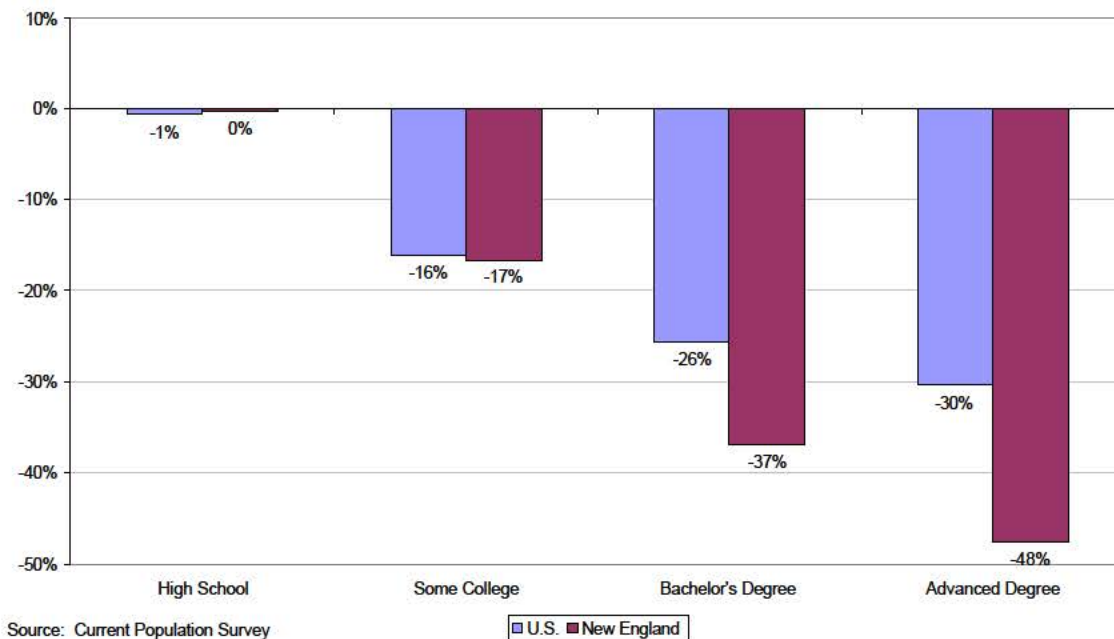
Figures 11 and 12 show Maine's relative educational attainment after controlling for differences in demographics and race.¹⁵ The default category is the ethnic (and demographic) composition for the country as a whole. Thus, Figures 11 and 12 show the probable educational attainment for Maine (and New England) if the state (region) had the same ethnic and demographic composition as the whole country (hence, the levels for the U.S. in Figure 11 are identical to those in Figure 9). In other words, they show the levels of educational attainment that would have occurred in Maine and New England if they had the same demographic and ethnic composition as the U.S. as a whole.

Figure 11
Educational Attainment after Controlling for Demographics and Race



¹⁵ To be more specific, these figures show the results from multivariate probit equations estimated using data on 25-64 year-olds in the 1998-2000 Current Population Survey. A probit equation is appropriate when the dependent variable is discrete (e.g., a person is either has a diploma, or does not). The independent variables in these equations are gender; a fourth-order age polynomial; dummy variables for black, Hispanic, or "other" ethnicity; and a dummy variable for either Maine or New England.

Figure 12
Maine's Percentage Difference in Educational Attainment
after Controlling for Demographics and Race



As revealed in Figures 11 and 12, Maine's relatively high proportion of high school graduates can be explained entirely by its ethnic make-up. Indeed, after accounting for its ethnic make-up, Maine's high school attainment was very slightly below that of the rest of the country. After controlling for demographics and race, Maine ranked only 36th in high school attainment among 25-64 year olds (compared to the raw rank of 16th). Moreover, this result is consistent with the performance of Maine students on standardized academic tests. Among white students only, Maine's fourth and eighth graders generally score near the national average.¹⁶ Contrary to the popular perception, Maine's K-12 education evidently is about average. In other words, academic performance in Maine is very good relative to the rest of the country, but credit should not be attributed to Maine's schools. The contribution of Maine's schools to academic performance in the state is only about the same as in the rest of the country.

¹⁶ See U.S. Department of Education, *The Nation's Report Card: State Profiles*, various subjects and years.

If only the same could be said for higher education in Maine. Racial minorities in this country are also less likely to obtain college degrees. Thus, after accounting for its ethnic make-up, Maine's relative attainment of higher education is particularly bad. After controlling for race and demographics, compared to the rest of the country Maine had 16 percent fewer working-age adults with at least some college, 26 percent fewer holders of Bachelor's degrees, and 30 percent fewer holders of advanced degrees. Out of the fifty states, Maine ranked 45th, 46th, and 43rd in these categories (compared to the raw ranks of 43rd, 40th, and 40th). Moreover, in comparison to the rest of New England, attainment of higher degrees in Maine is even worse.

Migration

There are three sources of Maine's relatively low attainment of higher education: a net emigration of holders of college degrees (presumably because of the state's relative lack of good jobs), relatively fewer Mainers going to college, and a net emigration of potential holders of college degrees. The evidence suggests that all three of these have happened in Maine to some extent. Although there are insufficient data to conduct an exact decomposition, it appears that the third source, net emigration of college-bound students, has been the most important.

Migration data in the Current Population Survey over the period 1992-2001 indicates that Maine suffered a net loss of workers with at least some college. The net loss of adults between the ages of 18 to 64, with at least some college, and in the labor force was roughly a little less than 575 per annum. On an annual basis, this has had a minimal impact on college attainment in the state (575 is less than 0.1 percent of the state's 18 to 64 workforce). Sustained over a decade, however, this makes a noticeable

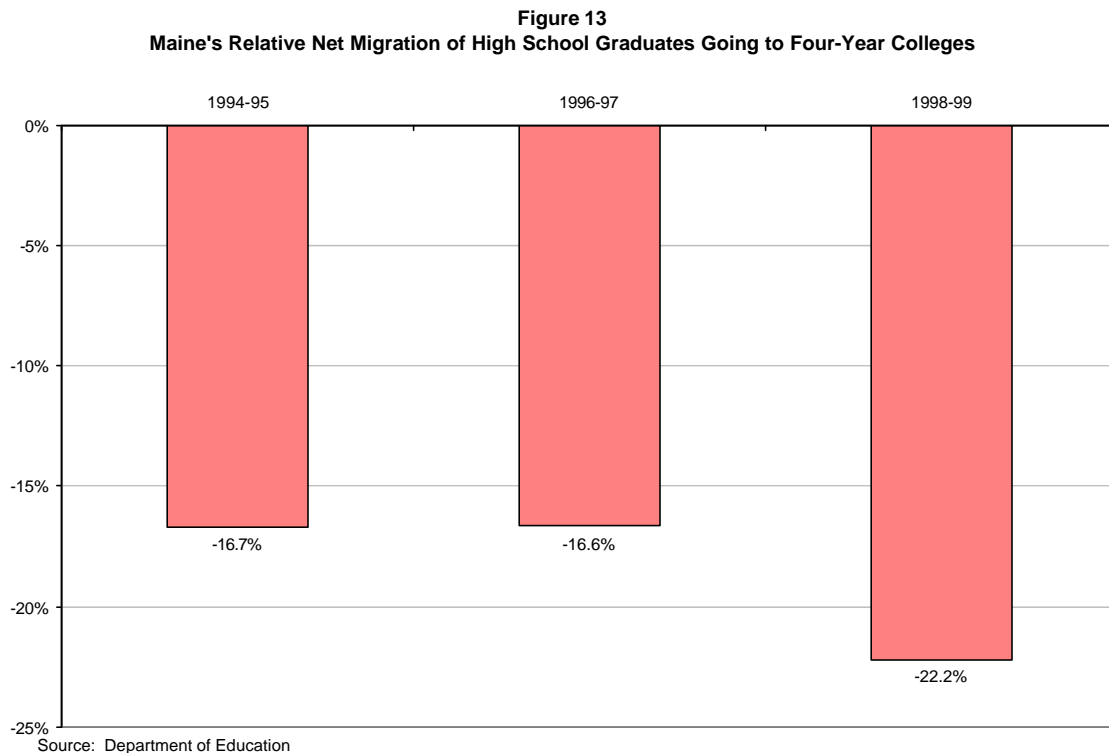
impact on average educational attainment in the state (5,750 is just under 1 percent of the state's working age population).

Maine's somewhat low rate of entry to college (in any state) has also been part of the reason for the state's low attainment of higher education. Students from Maine entering college as a percentage of the state's high school graduating class in the previous year is slightly less than the national average. If this ratio were equal to the national ratio of 58.4 percent instead of Maine's 53.9 percent, then about 600 more Mainers would have enrolled in college per year.¹⁷ Again, on an annual basis, this is a minimal impact on average higher education in the state, but is an important impact if sustained over a period of decades. If over a period of decades Maine ranks 32nd in entry into college (as it did over the 1994-98 period) and if there were no net migration, then the state would eventually rank 32nd in percentage of the population with at least some college (Maine currently ranks 43rd).

The majority of explanation for the low attainment of higher education in Maine is that college attendance in Maine has been very low compared to the rest of the country. That is, the college attendance within the state is much lower than the college attendance of Mainers. As shown earlier in Figure 4, there was practically an exodus of Maine's college-bound young people. The average of three academic years shown was 13.7 percent. Moreover, Figure 4 actually understates the true extent of the problem. It shows the net migration of all new freshman students. Interstate migration is substantially lower

¹⁷ These are approximate numbers calculated from 1994-98 data from the Department of Education. Data on freshmen enrollment and graduation from private high schools are only collected biannually and in the same years (while data on graduation from public high schools is available every year). Hence, exact numbers of graduates from private high schools in the year prior to entry into college are not available. Thus, these numbers are estimated by interpolating between the adjacent years. Given that over 89 percent of the total graduates are from public schools, these approximate numbers are probably pretty accurate.

for older and junior-college students than for traditional university students. Thus, the net migration of Maine's traditional students was larger than shown in Figure 4. Moreover, the country as a whole had a positive net migration of college students from overseas. Thus, relative to other states, Maine's net migration of students was again larger than shown in Figure 4. Figure 13 below shows the net migration of four-year-college-bound high school graduates relative to the rest of the country over the period 1994-1999. The average of three academic years was 18.5 percent. Using either measure Maine ranked 47th out of the fifty states in terms of net migration of college students.¹⁸



Another way to illustrate the problem is to compare the number of new freshmen from Maine to the number of new freshmen in Maine's colleges in universities. As a percentage of the state's high school graduating class in the previous year, the number of

¹⁸ Our very low rate of net migration of students is due to the high emigration of our high school seniors, as opposed to a low rate of immigration into Maine's colleges. Indeed, Maine's immigration of college students is somewhat higher than the national average. Maine's emigration of college students, however, far exceeds the national average.

new freshmen from Maine was 53.9 percent (32nd in the country), while the number of new freshmen in Maine was 45.6 percent (47th in the country).

Although there are no currently-available data on the numbers of Maine students returning to the state after college, it is extremely likely that Maine college graduates are similar to other American college graduates, and American college graduates tend to stay in the state where they went to college much more than the state where they went to high school.¹⁹ In fact, given that there has been an emigration of college graduates in Maine, if anything it is likely that Mainers are less likely than other Americans to return to their state. In any event, there are also some of Maine's out-of-state college graduates who remain here after college and some college graduates from other states who migrate here. If non-Mainers and Mainers are similar in these respects, then what matters for the state's average college attainment is the net inflow (outflow in Maine's case) of college students.

Indeed, if Mainers and other Americans are similar in their movements after college, then Maine's large net loss of college students is easily the most important part of the state's low-educational-attainment story. If Maine's net inflow of new college freshmen were equal to the national average of 1.7 percent (instead of -13.7 percent), then about 1,490 more students would have enrolled in college in Maine per year. This figure is 2.5 times as large as the figure due to the state's somewhat low rate of college attendance among young Mainers. It also greatly exceeds the figure due to emigration of college graduates.²⁰

¹⁹ See Louis Tornatzky et al., "Who Will Stay and Who Will Leave?" Southern Growth Policies Board, 2001. Also see Yolanda Kodrzycki, "Migration of Recent College Graduates: Evidence from the National Longitudinal Survey of Youth", *New England Economic Review*, 1, 2001.

²⁰ The figure for the state's emigration of college graduates is the only one of the three numbers discussed above that is particularly uncertain. Although the samples in the Current Population Survey are huge (more than 130,000 observations per year on average), only small percentages live in Maine and move in a particular year. Thus, the relevant sample size is relatively small and thus the estimate is not very precise.

Aspirations

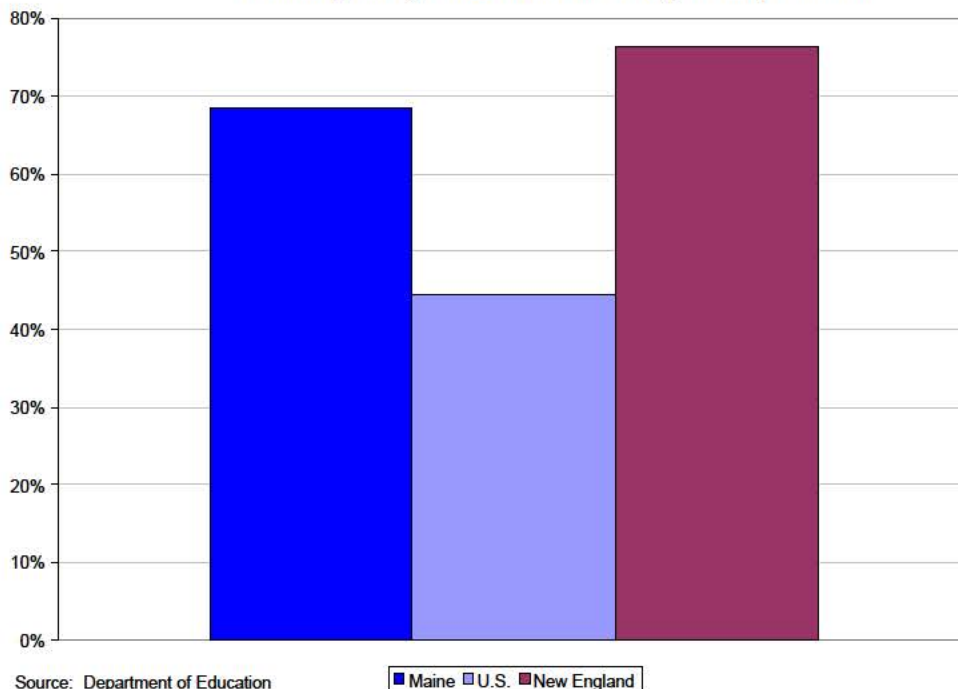
There is a popular notion that Maine's attainment of higher education is relatively low because of Maine's "culture" or a lack of college aspirations in Maine. That is, higher education is not valued as highly here as elsewhere in the country. The preceding evidence seems to dispel this myth. Large numbers of students enrolling in expensive out-of-state colleges (and expensive in-state colleges) certainly does not suggest a lack of aspirations. Despite the relatively high cost of higher education facing Maine's college-bound students, Maine's rate of college entry was not far below the national average.²¹ Given the racial composition in Maine, though, we should expect the state's rate of college entry to be high.

As further evidence that Maine's low postsecondary educational attainment is not due to a culture of low postsecondary aspirations, out of the fifty states Maine had the 9th highest percentage of its high school graduates taking the Scholastic Assessment Test (i.e., the SAT college entrance exam). According to data published by the Department of Education, in the 1999-2000 and 2000-2001 academic years, 68.5 percent of Maine's graduating seniors took the SAT, compared to only 44.5 percent nationally (and 76.5 percent for new England).²² This is shown in figure 14. Students are not going to spend their time, effort, and money to take this exam if they have no intention of going to college.

²¹ For more on this issue see Scott Brezovsky and David Silvernail, "Types of Barriers Maine High School Students May Face in Fulfilling Post-Secondary Educational Aspirations", Maine Education Policy Research Institute, 2000.

²² The comparison to the rest of the country is somewhat misleading, though. Only about half of state university systems require that applicants take the SAT. Nonetheless, the percentage for Maine is still relatively high (although this could be entirely attributable to the state's racial make-up).

Figure 14
Percentage of High School Graduates Taking the SAT, 1999-2001

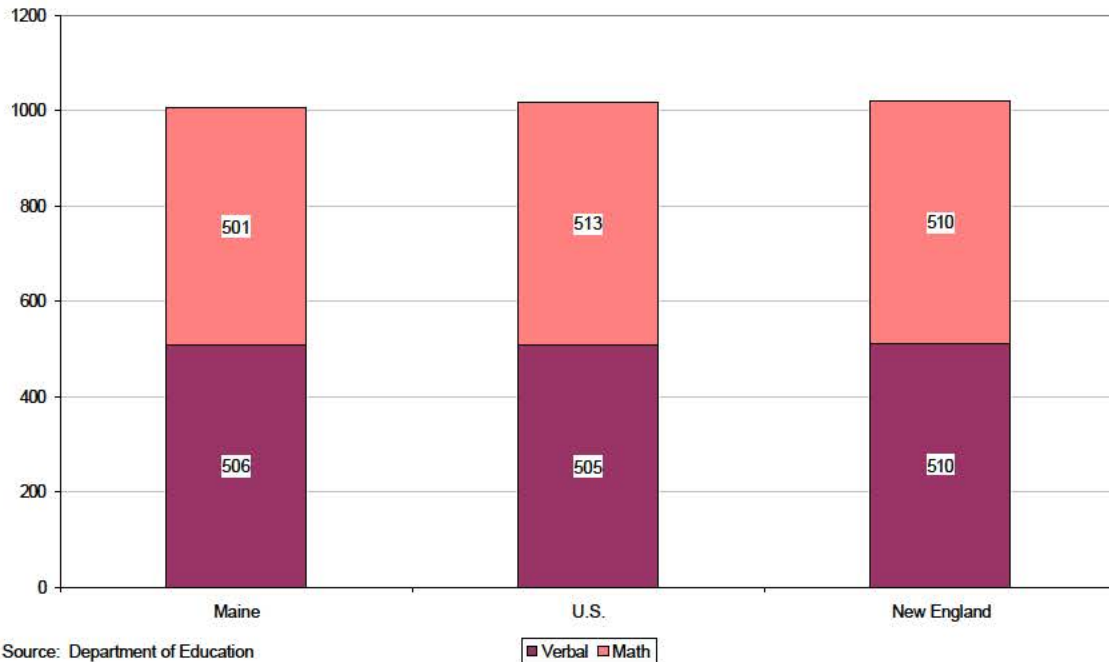


On the other hand, there is some evidence that on average Maine high school graduates are not as ready for higher education as those in the rest of the country and, especially, the rest of New England. As shown in Figure 15 below, in 1998-2001 the average SAT score for Maine seniors was below the national and New England averages (mostly in the Mathematics section). Maine ranked 39th among the fifty states in average SAT score.²³ Also, according to the National Center for Public Policy and Higher Education, “a very low proportion of (Maine’s) 11th and 12th graders perform well on Advanced Placement tests, and a small proportion do well on college entrance exams.”²⁴ They gave Maine a “D” for its performance on college entrance exams (43rd in the

²³ Again, the comparison to the rest of the country is somewhat misleading because many states’ university systems do not require the SAT. All the top states in average SAT score have very low percentages of test takers. Nonetheless, the performance of Maine seniors is still relatively low (particularly if racial composition is considered).

²⁴ National Center for Public Policy and Higher Education, “Measuring Up 2000: The State-by-State Report Card of Higher Education”, 2000.

Figure 15
Average SAT Scores, 1998-2001



country, which only exceeded states in the Deep South and West Virginia), and an “F” for its performance on advanced placement exams.

Thus, although the lack of aspirations does not appear to be the root of the state’s low attainment of higher education, there does appear to be considerable room for improvement in the state’s secondary schools in preparing our young for further education.

Public Support of Education

Maine offers mixed public support of education. Compared to other states, Maine’s public contribution for K-12 education is strong, while its public contribution for higher education is weak. This is shown below in several sets of pictures that illustrate public support of education measured in different ways using the latest-available data.

Figures 16 and 17 show state and local government spending on education per state resident. Over the three fiscal years 1996-99 Maine ranked 15th in per capita public

Figure 16
Per Capita Public Spending on Primary and Secondary Education
(Adjusted for Inflation - in 2000 \$)

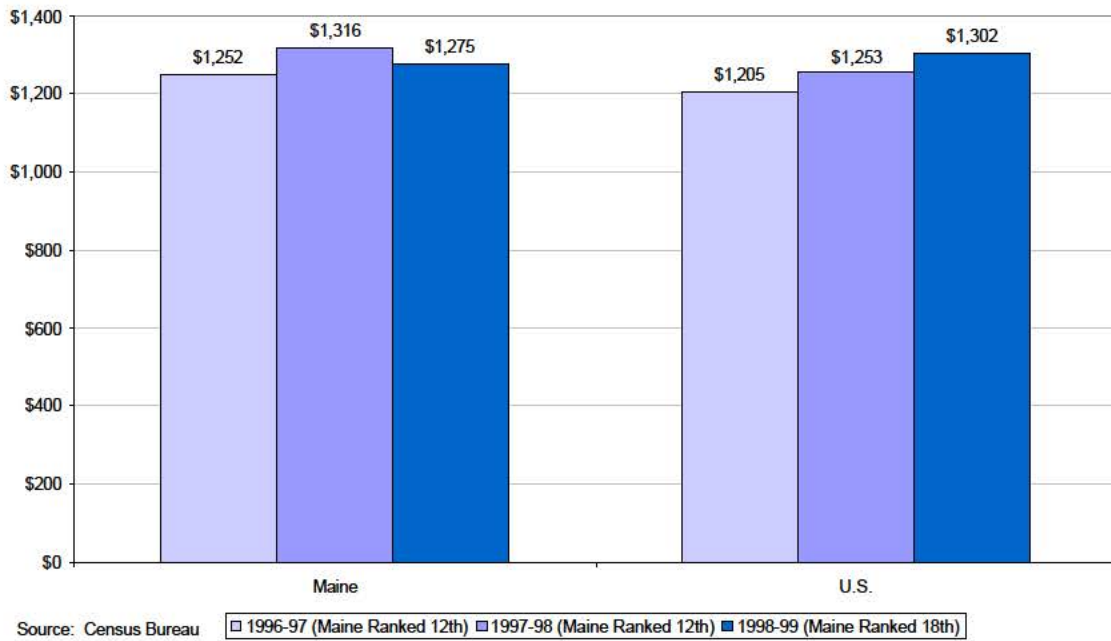
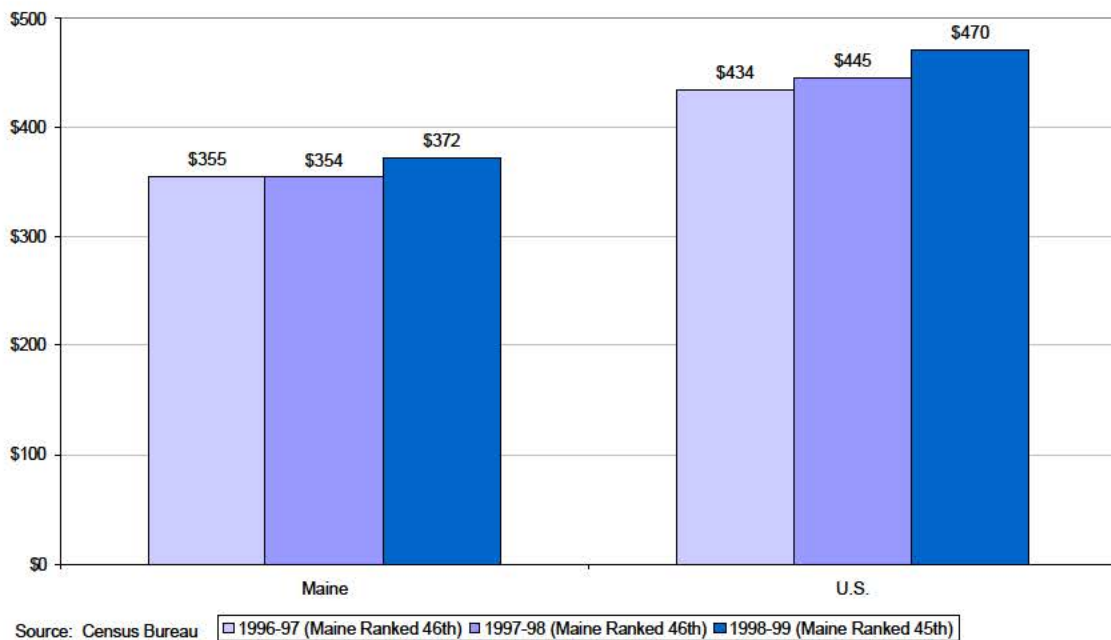


Figure 17
Per Capita Public Spending on Higher Education
(Adjusted for Inflation - in 2000 \$)



spending on primary and secondary education, and 46th in per capita public spending on higher education. Public spending per capita on K-12 was a little more than 2 percent

higher than the national average, while public spending on higher education was almost 20 percent below the national average.

Figures 18 and 19 show state and local government spending on education relative to state income. Per capita income in Maine was significantly lower than in the rest of the country, thus this measure better reflects the relative commitment of Mainers to public education. Using this measure, over the three fiscal years 1996-99 Maine ranked 9th in public spending on primary and secondary education, and 40th in per capita public spending on higher education. Public spending relative to income on primary and secondary education was a little less than 18 percent higher than the national average, while public spending on higher education was almost 8 percent below the national average.

Figures 20 and 21 show public spending on education as a percentage of all state and local government expenditures. These graphs are meant to illustrate the budget priorities in the state. The State's budget priorities are consistent with the earlier figures. Over the three-year period Maine ranked 13th in percentage of public spending devoted to primary and secondary education, and 42nd in percentage of public spending devoted to higher education. The percentage of public spending on K-12 education was over 9 percent higher than the national average, while the percentage of public spending on higher education was over 14 percent below the national average.

Figures 22 and 23 show public spending per student. Although spending and quality are obviously not the same thing, they are correlated. Greater spending can, although not necessarily will, buy higher-quality education. Moreover, as discussed earlier, Maine's enrollment in higher education is much lower than in the rest of the

Figure 18
Percentage of Income Spent on Public Primary and Secondary Education

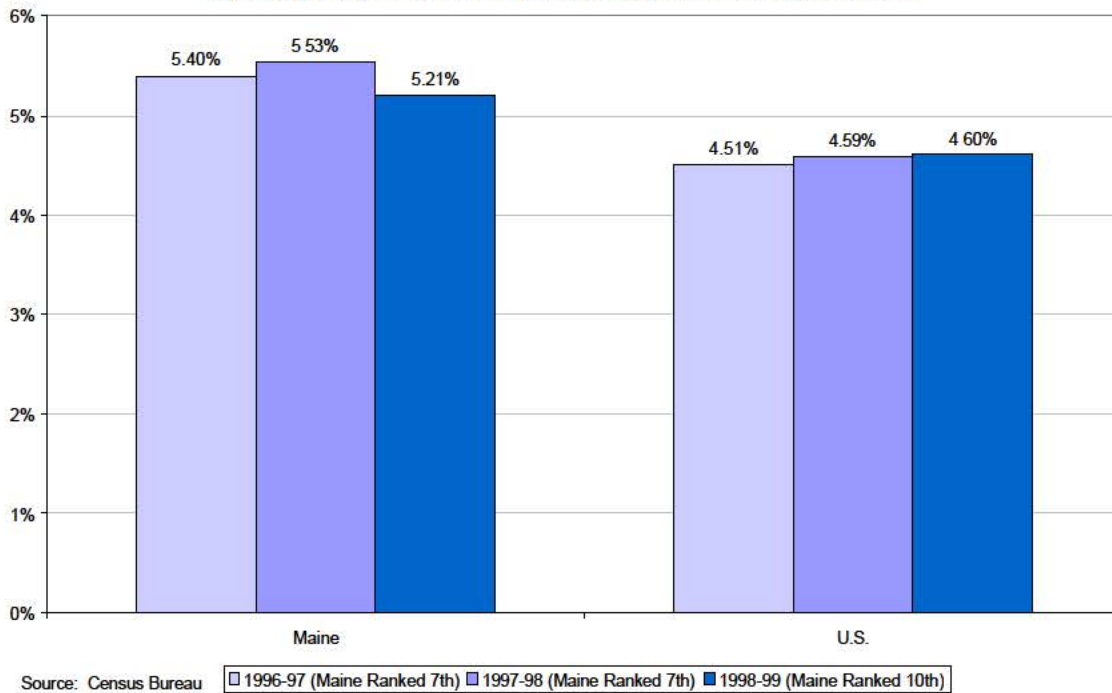
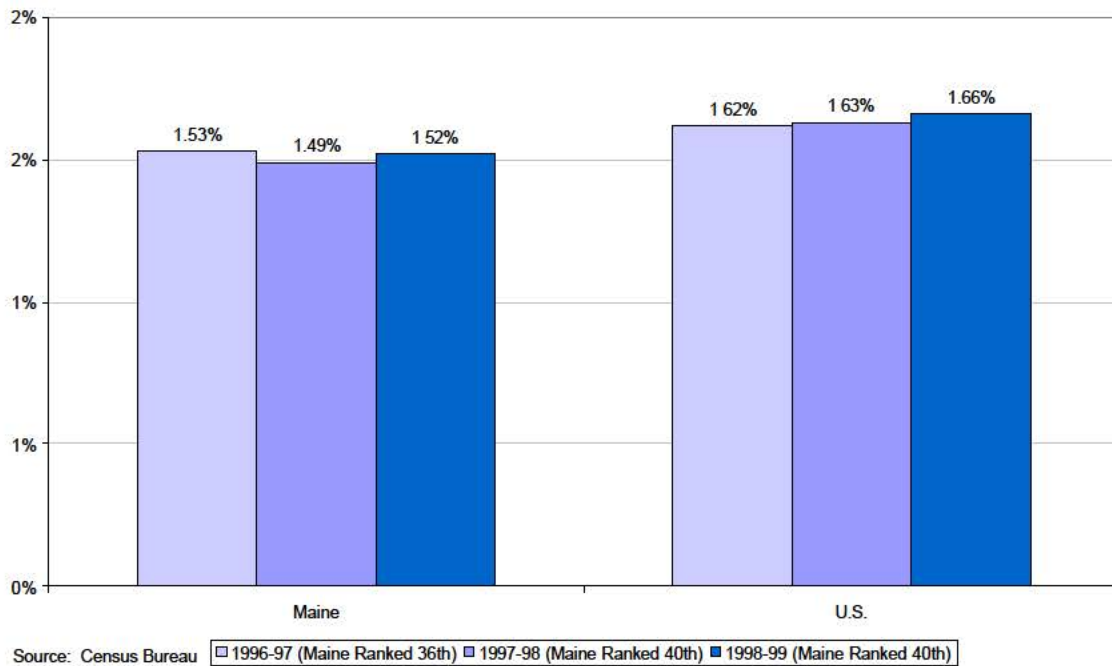


Figure 19
Percentage of Income Spent on Public Higher Education



country. Hence, we should expect the State spending on higher education to be low relative to the rest of the country. Indeed, this is borne out in Figure 23. The State's

Figure 20
Percentage of State and Local Government Expenditures on K-12 Education

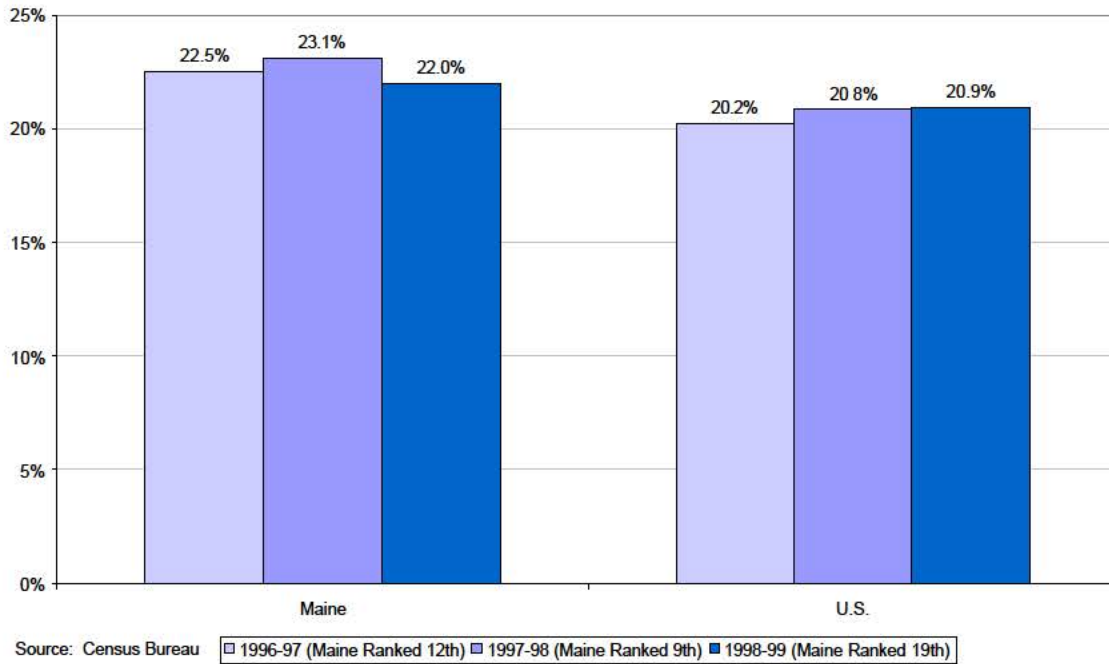
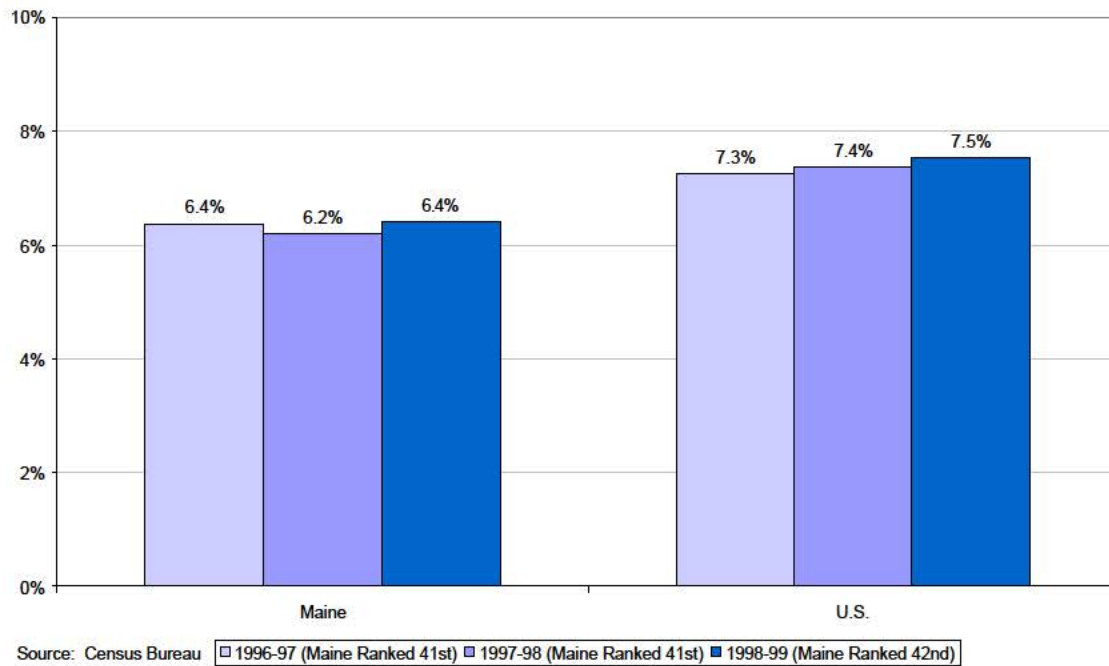


Figure 21
Percentage of State and Local Government Expenditures on Higher Education



public spending per college student exceeded the national average by almost 8 percent over the 1996-99 period, which placed Maine 22nd highest among the states. Consistent

Figure 22
Per Student Public Spending on Primary and Secondary Education
 (Adjusted for Inflation - in 2000 \$)

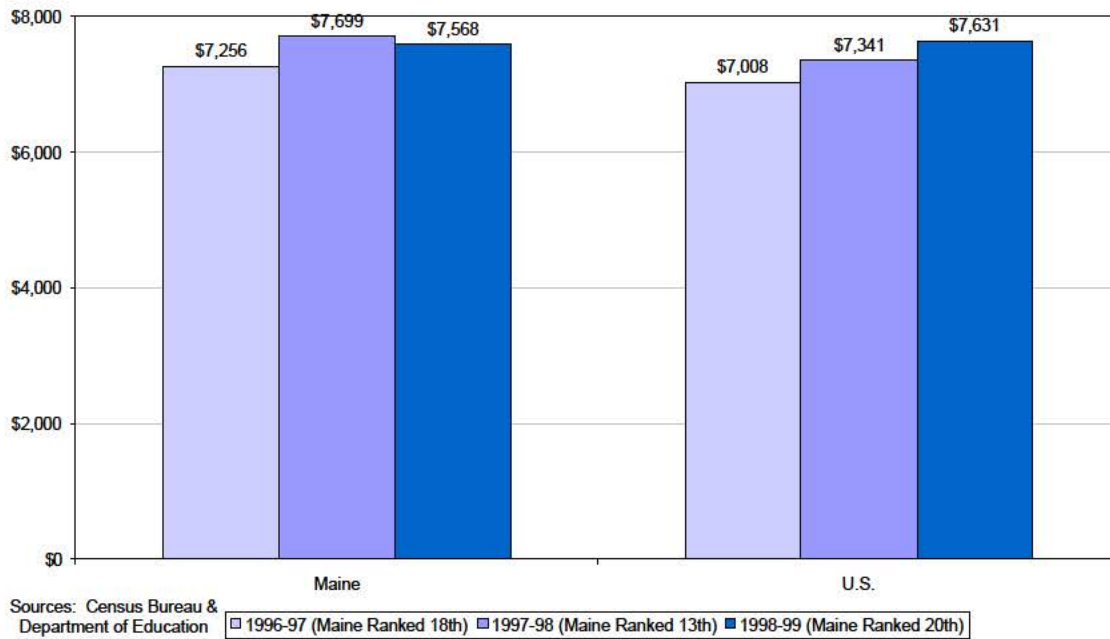
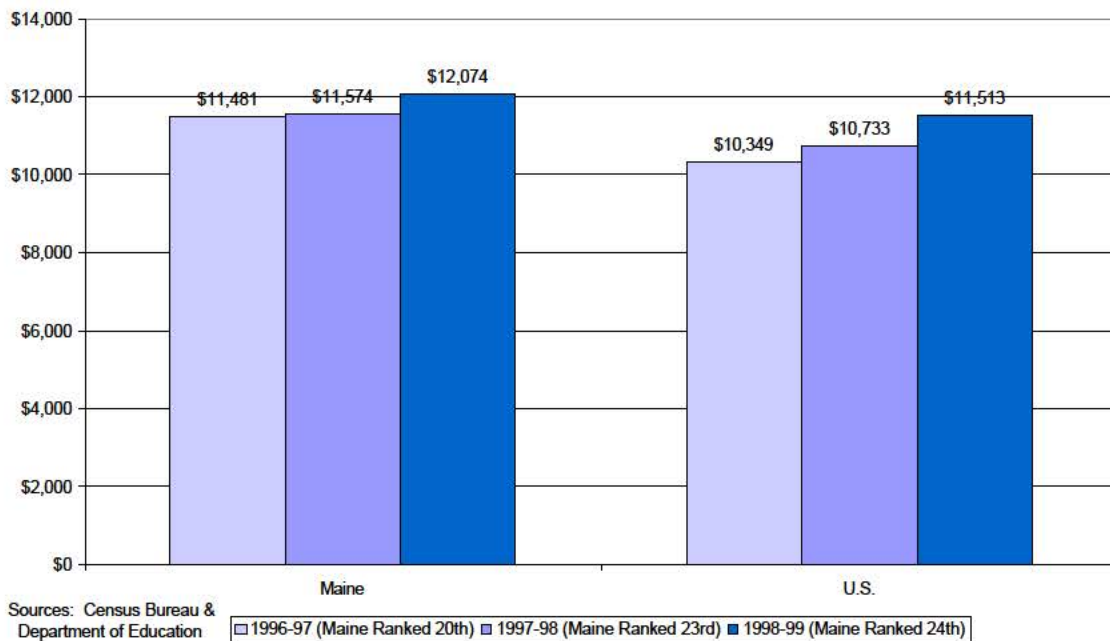


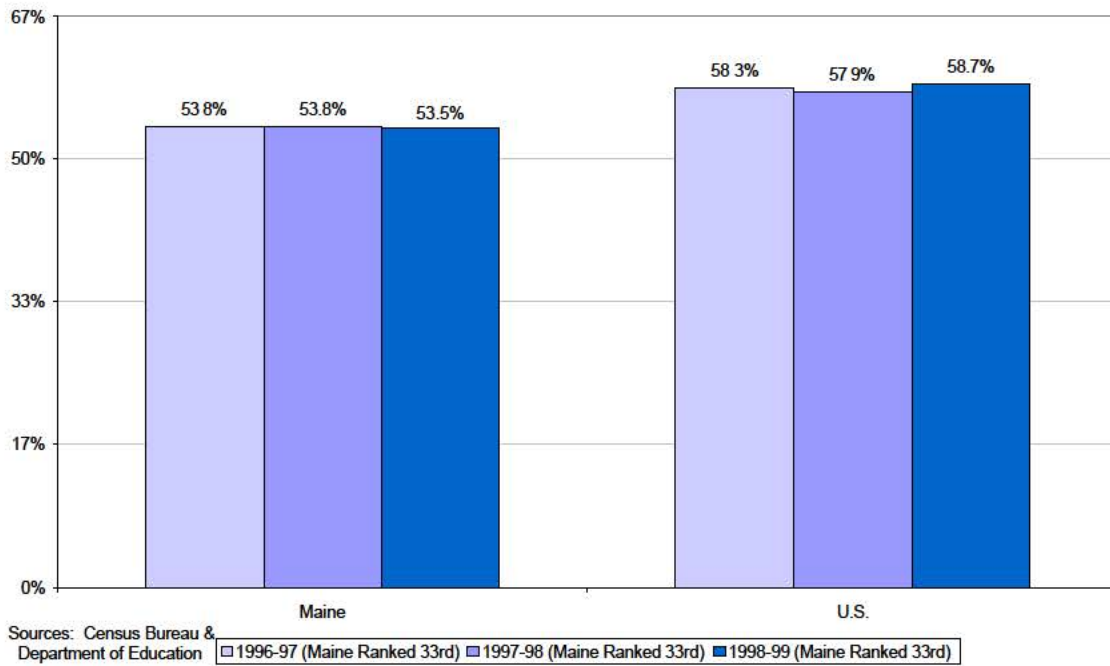
Figure 23
Per Student Public Spending on Higher Education
 (Adjusted for Inflation - in 2000 \$)



with the other figures, Maine's public spending per K-12 student exceeded the national average by 2.5 percent, which placed Maine 17th.

One might start to conclude from Figure 23 that Maine actually does have relatively high support for higher education, but this would be incorrect. Unlike public primary and secondary education, revenues from tuition and fees are generated in higher education. Thus, although Figure 23 shows public spending per college student, it does not show *net* public spending per college student. As shown in Figure 24, Maine's net public spending per college student was less than 54 percent of the total shown in Figure 23 (compared to over 58 percent nationally). Thus, the State's *net* public spending per college student averaged \$5,905 over the three fiscal years 1996-99, which was just under 1 percent below the national average (placing Maine 30th among the states). In terms of net public spending, Maine spent 83.7 percent as much on its postsecondary students as it does on its primary and secondary students. In contrast, in the U.S. as a whole the net subsidy to college students was 86.5 percent as much as that for K-12 students.

Figure 24
Percentage of Public Higher Education Expenditures from State Revenues



Moreover, given the large net emigration of Maine's college students, the State's net public spending per Maine college student, as opposed to per college student in Maine, was smaller still.

Tuition

Maine's relative lack of public support for higher education causes tuition and fees in its public universities and colleges to be relatively high. Perhaps some of the high tuition is due to some higher-than-necessary costs, but it is clear that low public support is the main reason. As shown earlier in Figure 5, over the 1994-2000 period average in-state tuition and fees in Maine were 50 percent higher than the national average, and 10.5 percent higher than the New England average. Average in-state tuition and fees in Maine were the fourth highest in the country. Moreover, because of Maine's relatively low per capita income, the tuition situation is even worse when comparing to average income. This is shown in Figure 25 below. As a proportion of average income, Maine's in-state college students have to pay 72 percent more than in-state college students in the country as a whole, and 30 percent more than in-state college students in New England.

In addition, student financial aid is relatively low in Maine. This is shown in Figure 26. Although Maine ranked 17th nationally in need-based scholarships and grants per student over the 1994-98 period, its average amount was 24 percent below the national average (because almost all the top states in the category have large numbers of students). Maine had the second lowest level in New England (above New Hampshire), and it was 36 percent below the overall New England average. Moreover, this situation is again even worse when comparing these numbers to average state income, and also to

Figure 25
Average Annual In-State Tuition and Fees as a Percentage of Per Capita Income

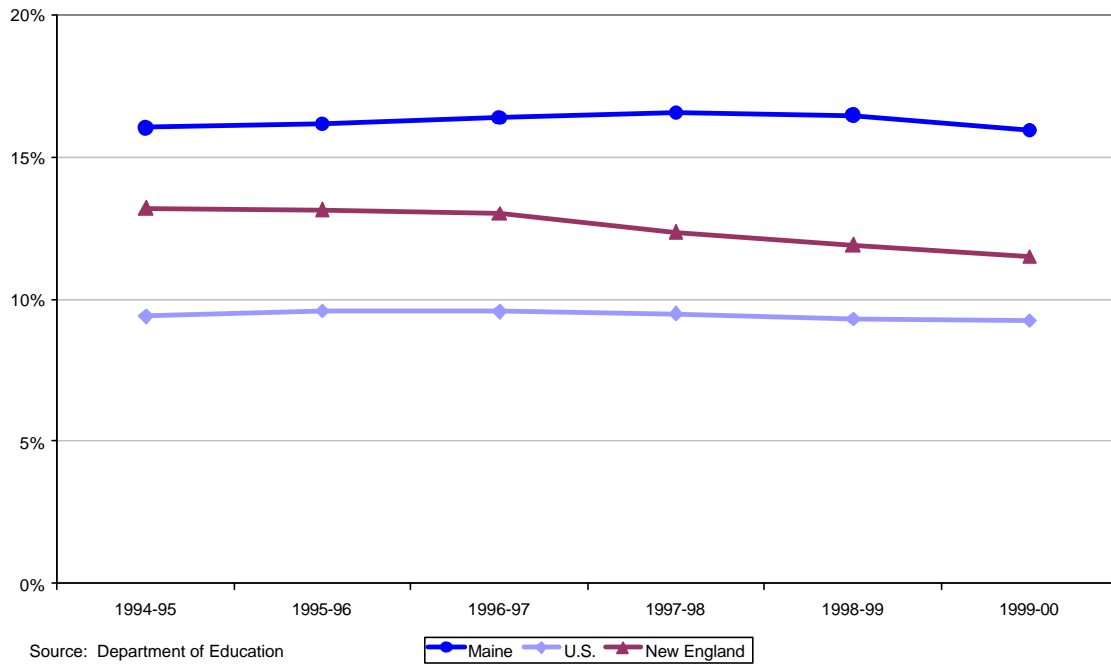
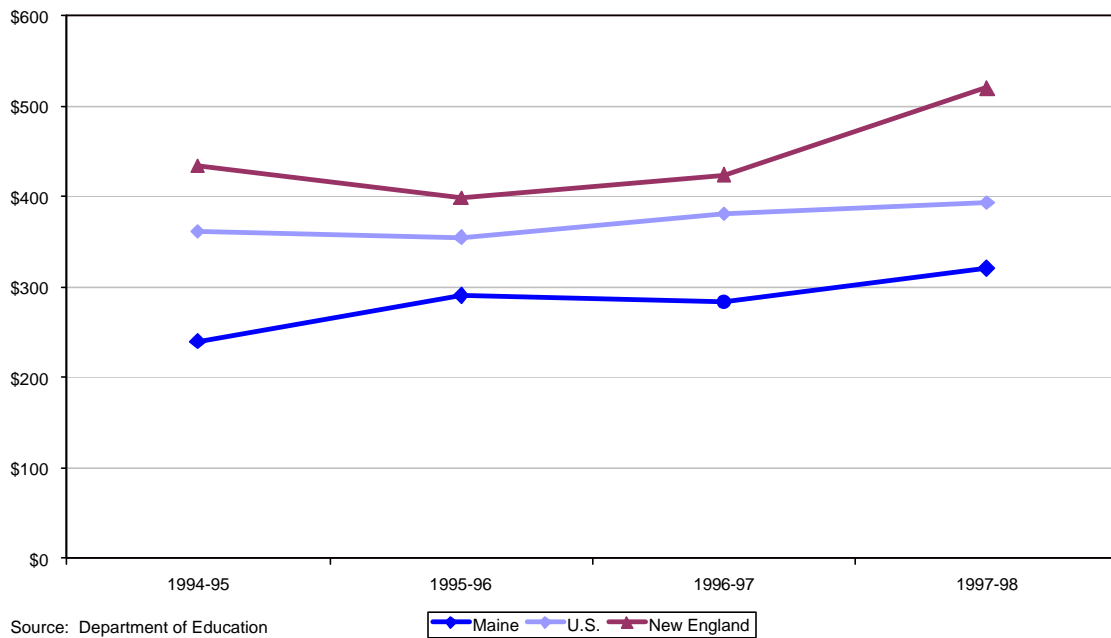


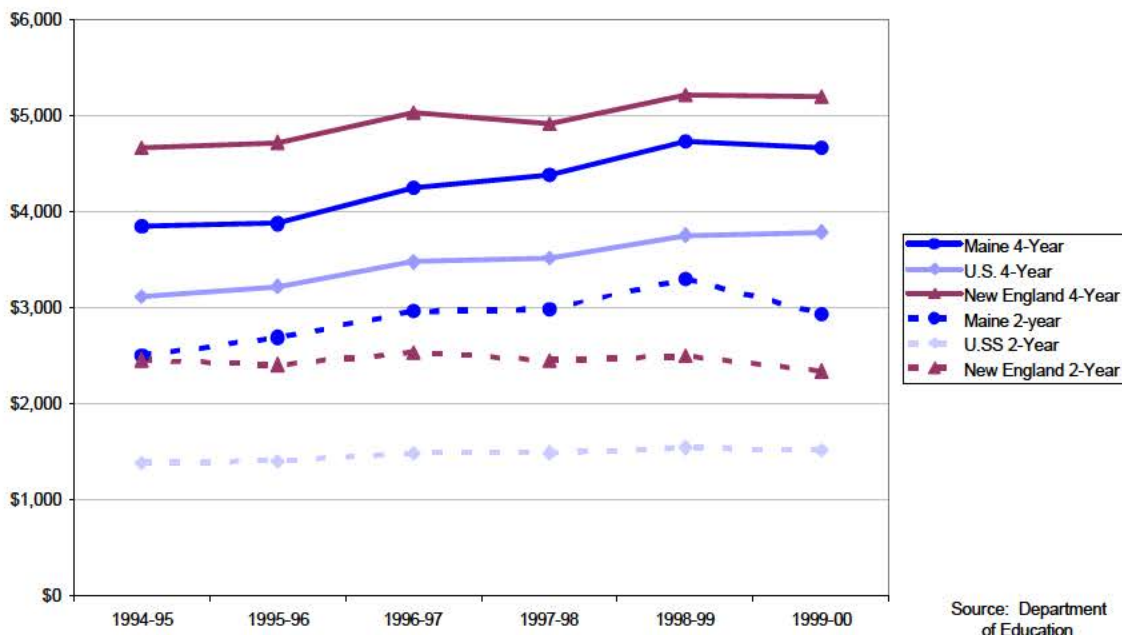
Figure 26
State Need-Based Scholarships and Grants per Student
(Adjusted for Inflation - in 2000 \$)



average tuition. Given the relatively high tuition and low incomes in Maine, clearly there is more of a need for financial aid in the state.

The figures on average tuition and fees in Maine may surprise some with a little familiarity with these statistics. Higher education in Maine does not appear quite so expensive using the usually-quoted statistics on tuition. For instance, in average tuition and fees in public *four*-year programs, Maine had only(!) the 14th highest cost over the 1994-2000 period, which was only(!) 23.3 percent higher than the U.S. average and 13.5 percent lower than the New England average. In terms of average tuition and fees in public *two*-year programs, however, Maine had the 4th highest cost, which was 97.1 percent higher than the U.S. average and 18.4 percent above the New England average. The average tuitions for two- and four-year programs are shown in Figure 27.

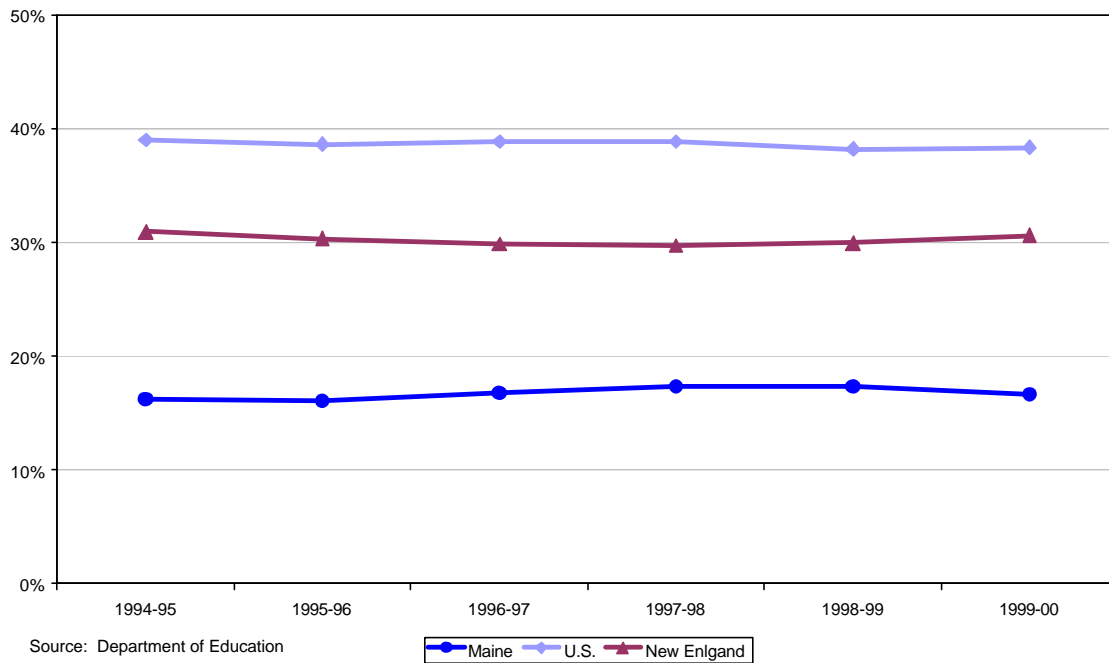
Figure 27
Average Annual In-State Tuition and Fees
(Adjusted for Inflation - in 2000 \$)



Moreover, Maine has a very low proportion of students in two-year programs, which is hardly surprising given the relatively high cost of its two-year programs. Two-year programs are considerably less expensive than four-year programs, thus having relatively more students in four-year programs makes Maine's average college tuition

relatively higher. Maine had the 9th lowest proportion of students in higher education enrolled in two-year programs. As illustrated in Figure 28, over the six-year period Maine had only 17 percent of its college students enrolled in two-year programs, compared to the national average of 38 percent and the New England average of 30 percent. It is the combination of high tuition in four-year programs, very high tuition in two-year programs, and a low proportion of two-year to four-year students that causes higher education to be so expensive on average in Maine.

Figure 28
Percentage of Public Undergraduate Students Enrolled in Two-Year Programs



Given these data it is easy to fall into the trap of overstating the effect of tuition on college enrollment. After all, despite the steady rise in tuition, enrollments in higher education have risen. Many families are willing to pay the very high costs of private colleges. Nonetheless, the correlation between Maine's low public support for higher education and Maine's low enrollment in higher education is undeniable. The relatively high tuition and fees in the state's public universities makes out-of-state and private

universities relatively more attractive to our best and brightest young people. In other words, the detrimental effect of high tuition is more in driving Maine seniors away the state for college, than in driving Maine seniors away from college altogether. Students are becoming more and more mobile in their higher education decisions, and thus are becoming more and more responsive to tuition differentials.²⁵ Without significant changes in public higher education in the state, then it is likely that the emigration of our college-bound students will only worsen. Moreover, the high tuition and fees in the state's two-year programs appears to be an important part of the reason for the state's somewhat low rate of entry into higher education. The data appear to justify the current push for a major expansion of two-year programs in the state.

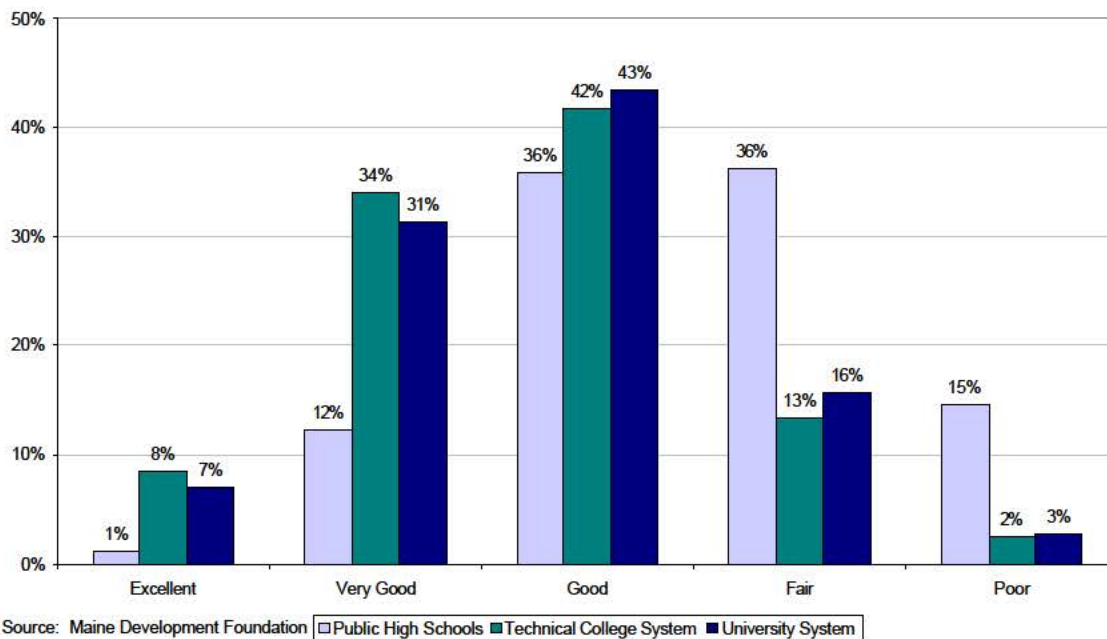
Public Opinion

Although high tuition is the most obvious culprit for the large net outflow of our college-bound young, it is not the only possible explanation. Expensive Ivy League schools have no shortage of applicants. Clearly many students and their families are willing to pay high tuition if the quality is high enough. As with just about everything that we buy, what really matters is the relative cost along with the relative quality. Hence, another possible explanation for the low enrollment in higher education in Maine is the quality of our institutions of higher education. If public opinion is an accurate guide, however, then low quality does not appear to be the problem. In general, Maine citizens and business managers are not displeased with the quality of higher education in the state.

In fact, as shown in Figure 29, Maine business managers indicated that they are much less satisfied with Maine's public high schools than with the state's institutions of

²⁵ For elaboration on this see Yolanda Kodrzycki, "Geographic Shifts in Higher Education", *New England Economic Review*, 4, 1999.

Figure 29
Rating of Maine's Educational Institutions in Preparing Students for Work
(Maine Businesses, 1996-2000)



higher education.²⁶ In the 1996-2000 Maine Development Foundation Surveys, 82 percent of Maine businesses ranked the University of Maine System good or better, 84 percent ranked the Maine Technical College System good or better, while only 49 percent ranked Maine's public high schools good or better (the question is worded to indicate preparation for jobs corresponding to the educational qualification). Maine business managers are evidently satisfied with the quality of public postsecondary education in the state.²⁷ They evidently are not very satisfied with the quality of public secondary

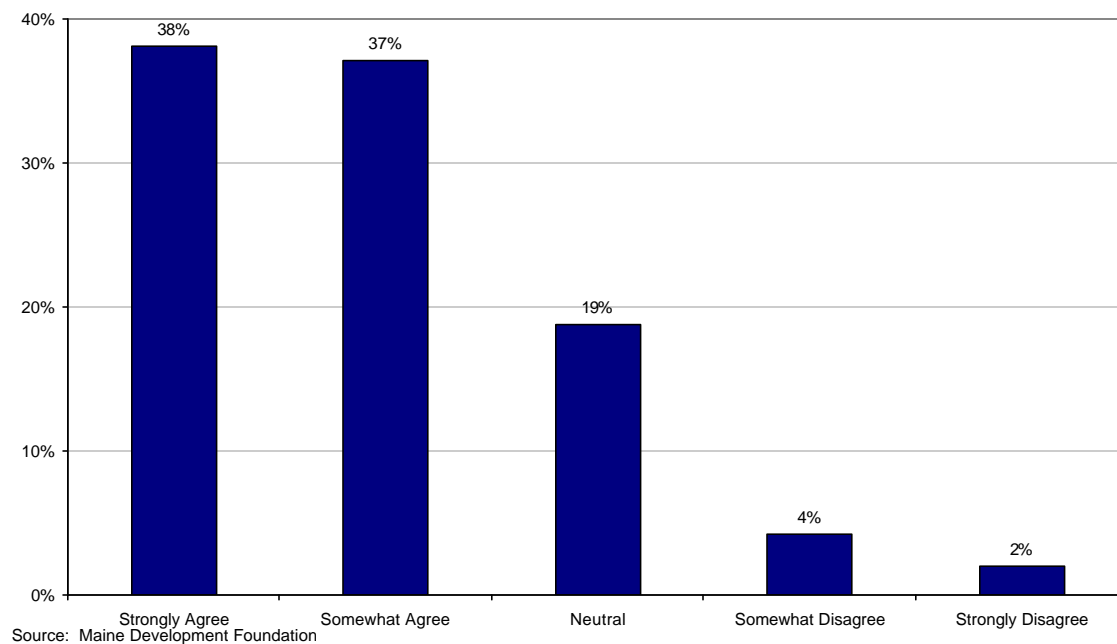
²⁶ The data are from the Maine Development Foundation Surveys of Maine Businesses. Survey results do not reflect the views of the Maine Development Foundation. Five years of data are combined to increase the sample size and hence increase the reliability of the answers. There was little systematic difference in the responses over time (actually, all three institutions generally received slightly higher marks over the time period). Data from 2001 are not used because they are still preliminary and hence not comparable to the 1996-2000 data.

²⁷ It should be noted, however, that these responses in the Maine Development Foundation Surveys are at odds with the responses reported in "Measuring Up 2000: The State-by-State Report Card of Higher Education" by the National Center for Public Policy and Higher Education. It reports that in 1997 only 39 percent of Maine employers were satisfied with how colleges and universities in the state were preparing students for work (compared to the national average of 46 percent).

education, though. Apparently there is considerable room for improvement in the state's secondary schools in preparing our young for work as well as for further education.

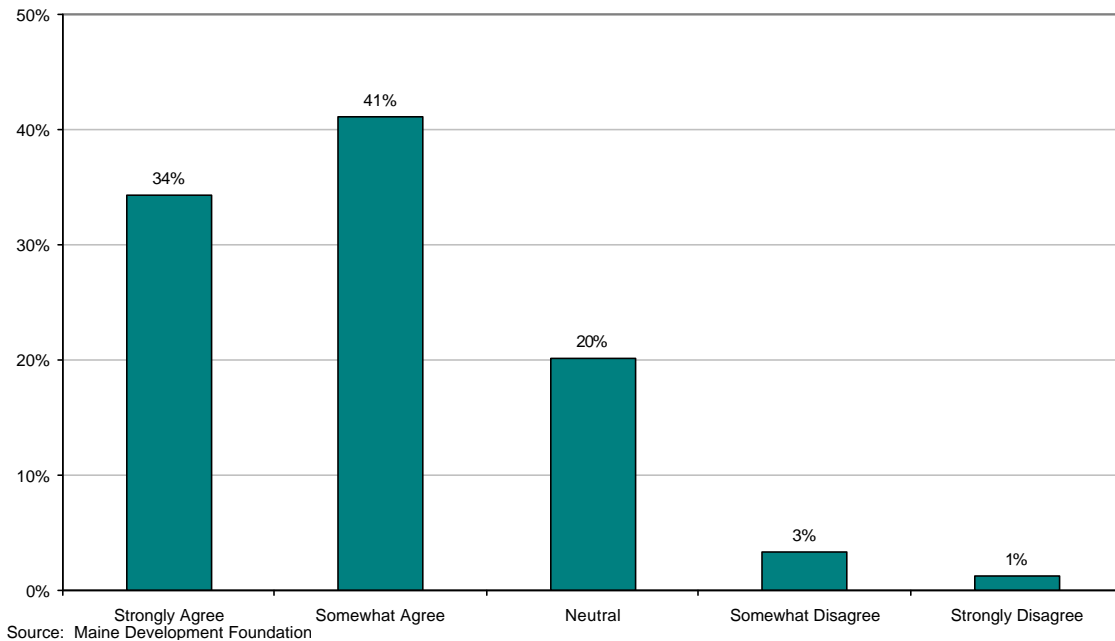
Maine citizens expressed similar views. Figure 30 shows that 75 percent of citizens in the 1996-2001 Maine Development Foundation Surveys agreed that University of Maine System offers a quality education.²⁸ Figure 31 shows that 75 percent of citizens in the 1995-97 Surveys also agreed that the Maine Technical College System offers a quality education (this question was only asked in 1995-97). Although these questions are clearly leading, they suggest that quality is not the main reason for Maine's large net loss of college students. Mainers' views on public primary and secondary education are also similar to those of Maine businesses. That is, there is less satisfaction with Maine's K-12 education. This is shown in Figure 32. Only 41 percent agreed that the state's public

Figure 30
The University of Maine System Offers a Quality Education
(Maine Citizens, 1996-2001)



²⁸ Data from the 2001 Citizen Survey are comparable to the 1996-2000 data and are thus included.

Figure 31
Maine's Technical Colleges Offer a Quality Education
(Maine Citizens, 1995-1997)



schools are doing a good job of preparing students for the future. Given the leading nature of this question, this is a lukewarm response.²⁹

Figure 33 shows further evidence that Mainers believe that the quality of higher education in the state is good. 56 percent of respondents felt that young Mainers did not need to leave the state to obtain an excellent education in their chosen field. Given the large out-migration of Maine's college-bound high school graduates, this seems surprising. A survey of college-bound students and their families, however, might yield considerably different results.

Another somewhat surprising public opinion is shown in Figures 34 and 35. These figures indicate that many Mainers believe that, despite having the 4th highest average public tuition and fees in the county, the cost of public higher education is

²⁹ These responses are also somewhat at odds with the responses reported in "Measuring Up 2000". It reports that in 2000 50 percent of Maine citizens thought that the state's public high schools were doing a good job preparing students for college (compared to the national average of 43 percent).

Figure 32
Maine's Public Schools Are Doing a Good Job Preparing Students for the Future
(Maine Citizens, 1996-2001)

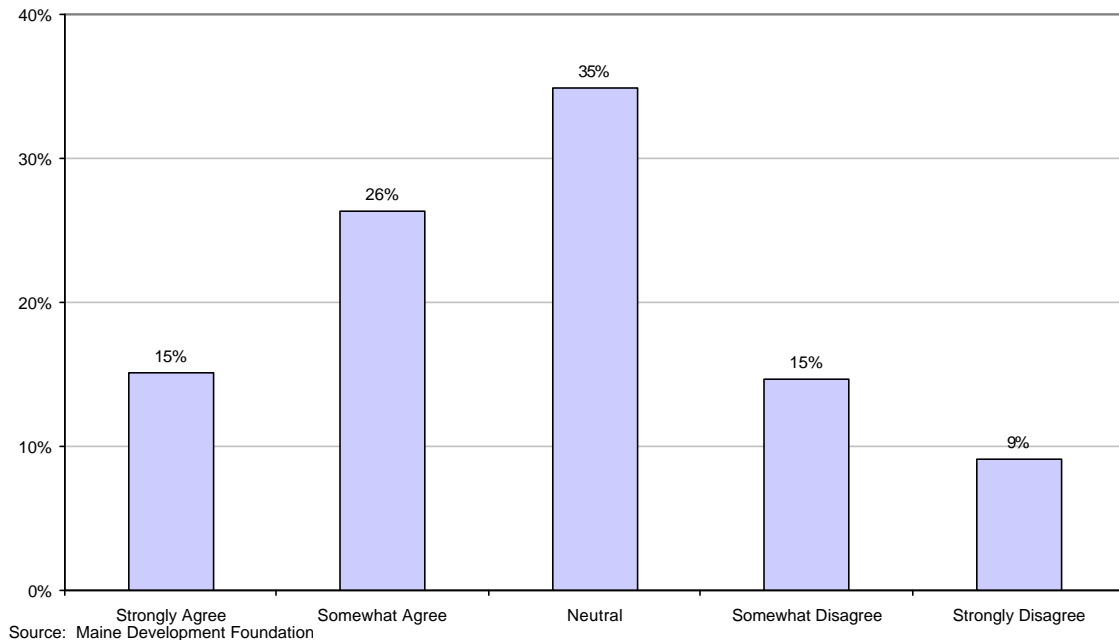
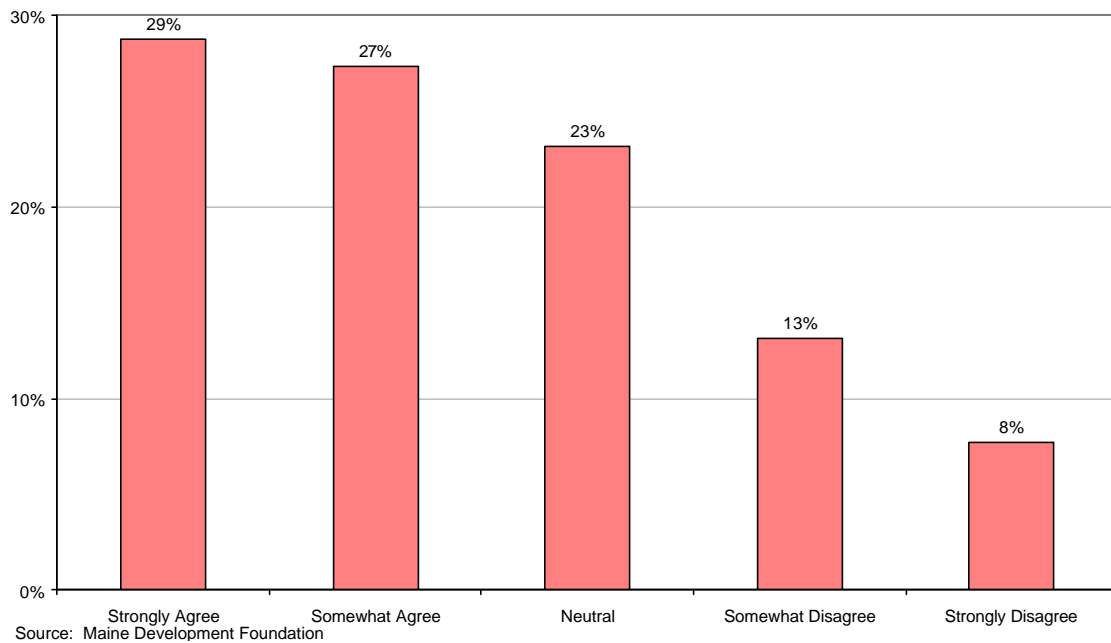


Figure 33
Sudents Do Not Need to Leave the Maine to Obtain an Excellent Education
(Maine Citizens, 1996-2001)



affordable. Almost 40 percent of households agreed that universities in the University of Maine system are affordable, and almost 46 percent agreed that colleges in the Maine

Figure 34
The University of Maine System is Affordable
(Maine Citizens, 1996-2001)

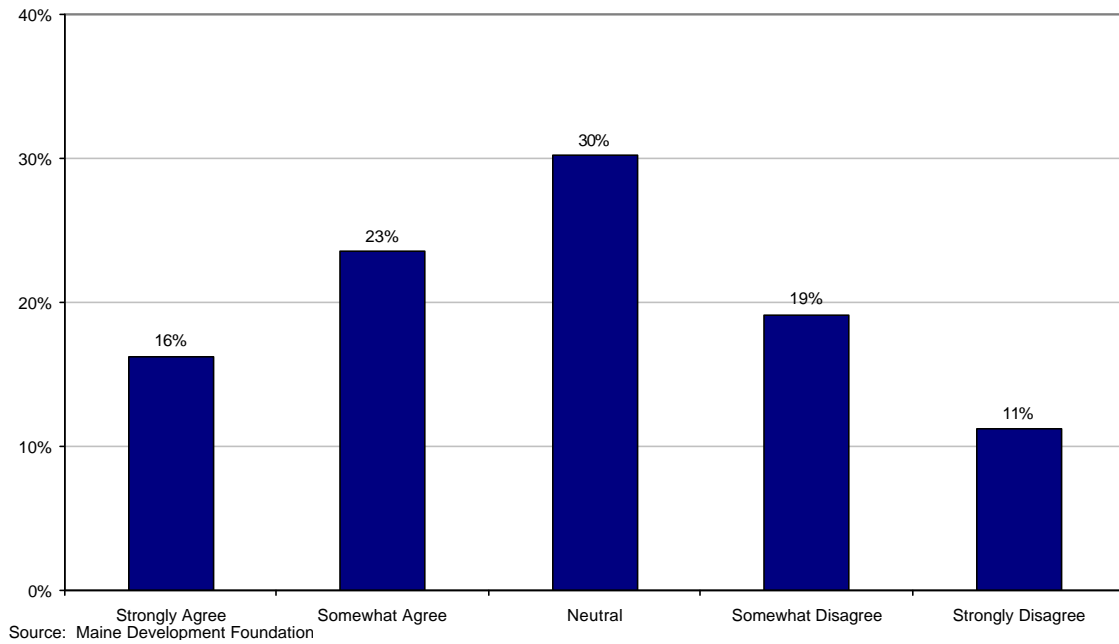
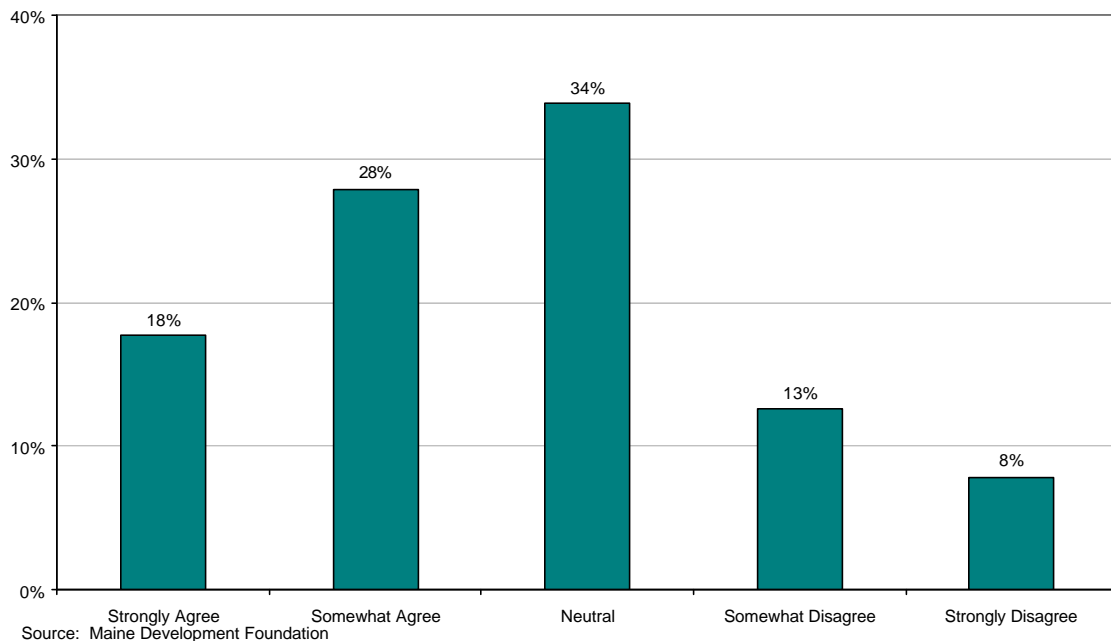


Figure 35
Maine's Technical Colleges are Affordable
(Maine Citizens, 1995-1997)



Technical College System are affordable. On the other hand, though, these questions are also leading, and over 30 percent of the respondents disagreed with the question for the

universities, and over 20 percent disagreed with the question for the technical colleges.³⁰

Also, not surprisingly, the disagreement is stronger for the respondents reporting low levels of income.

It should be kept in mind, though, that the crucial issue for higher education in the state is not just affordability (and not just quality). The key issue is the cost and quality of our public higher education compared to the alternatives. The public-opinion data suggest that public higher education in Maine is a good deal. The migration data, however, suggest that it is not a good enough deal compared to other states to keep a high proportion of our college-bound young here.

³⁰ These responses are roughly similar to the responses reported in “Measuring Up 2000”. It reports that in 2000 19 percent of Maine citizens thought that the price of college was out of reach in the state (which, surprisingly, is lower than the national average of 24 percent).