maine innovation index 2007

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MAINE OFFICE OF INNOVATION

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INTRODUCTION & SUMMARY

Maine's economy has expanded from its traditional bases of forestry, fishing, agriculture, tourism and manufacturing to include an increasing influence from business, financial and health services; information technologies, biomedical technologies, advanced materials, aquaculture, and advanced manufacturing. Furthermore, Maine's economy like the global economy is becoming increasingly driven by entities and individuals that operate at innovative crossroads of these sectors. Maine's future success in growing its economic base and increasing the standard of living of its people lies in the ability of its companies, workers, and citizens to foster this innovation

The Council of Competitiveness through its National Innovation Initiative describes innovation as the "intersection of invention and insight, leading to the creation of social and economic value"[1]. The importance of innovation in driving Maine' future economic growth can not be overstated. According to the Council of Competitiveness innovation is "the single most important factor in determining America's success through the 21st Century. It will drive productivity, standard of living, and leadership in the global economy"[2].

The Office of Innovation (OOI) was established within the Department of Economic and Community Development to advance Maine's economic well–being and expand employment opportunities by encouraging and coordinating the State's R&D activities and fostering collaboration among its higher educational and nonprofit research institutions and the business community. It is the responsibility of OOI to regularly plan for and report on progress made by the State in these regards.

Maine's Innovation Index 2007 is a compilation of 24 indicators measuring Maine's economic capacity and progress toward competing in an innovation-driven economy. The indicators are organized into five categories representing key components of an innovation-based economy:

- **Research and Development Capacity**
- **Innovation Capacity**
- **Employment & Output Capacity**
- **Education Capacity**
- **Connectivity Capacity**

Research and Development Capacity – Research forms the basis for the successful development of new products, processes and services. The section on research and development (R&D) capacity provides measures of the dollar amount of R&D performance in the state as a percent of gross state product. The measures capture performance (as measured by spending) by the various types of entities engaged in R&D, including industry, academic institutions, and not-for-profit laboratories. Additionally, R&D contributions by the federal government and the state are considered within the R&D capacity section.

Innovation Capacity – Innovation is the continuous process of generating and applying new ideas that lead to commercialization of new products, processes and services. It is this commercialization process that leads to the creation of new jobs and ultimately increased wealth throughout the state. The innovation capacity section of this report assesses Maine's potential for generating innovation by measuring grants obtained through the Federal Small Business Innovation Research program, venture capital attracted, and patents issued.

Employment & Output Capacity – The depth and breadth of Maine's highly skilled workforce is perhaps the most important indicator of our ability to grow and sustain an innovation-driven economy. For Maine to remain competitive in today's marketplace we need to assure that technology and research-intensive businesses and institutions have a thick labor market of skilled and highly educated workers. With a skilled and knowledge driven labor market Maine can improve its ultimate economic outcomes: gross state product and per capita income. This section includes the measures of high technology employment and business establishments, science and engineering occupations and PhD's in the workforce, gross state product, and per capita income.

Education Capacity – Maine's economic future will depend heavily on the quality of today's education systems. Since knowledge is the raw material of innovation, our education systems must produce students capable of organizing and analyzing information, communicating effectively, and operating in both collaborative and independent settings. As a state, our success relies on our ability to increase access to a quality, life-long education system for all Maine residents. Over the long-term, it is our education capacity that will serve as the foundation for our employment capacity. Furthermore, technology and innovation based businesses rely on workers with solid foundations in math and science as well as advanced knowledge in science and engineering fields. The education capacity section includes the indicators of science and math skills of 8th grade students, the chance for college by age 19, science and engineering graduate enrollments and degrees awarded, and the percent of population 25 and older with bachelor's degree or more.

Connectivity Capacity – The development and deployment of information technology (IT) has profoundly impacted the way we access and use information, and is defining the way we learn, work, and communicate. The section on connectivity capacity measures Maine's ability to provide IT infrastructure to enable businesses, educators, students and citizens to easily access information. Connectivity capacity indicators include high-speed Internet access, household Internet connectivity, and K-12 students per Internet connected classroom computer.

Within each capacity area there are two types of indicators. The first measures the relative strength of the "raw materials" essential to the growth of Maine's innovation economy. Examples include: R&D spending, education attainment, venture capital investments, and Internet connectivity – all necessary inputs that serve as the foundation for innovation-based economic growth. The second type of indicator assesses the performance of Maine's innovation-driven economic growth by measuring key outputs and products. Examples include: patents issued, technology-business establishments, and technology employment. These indicators tell us how Maine's innovation economy is performing and the degree to which inputs are leading to desired outputs and outcomes. In addition to the 24 key indicators, related sub-indicators further describe Maine's performance in growing and sustaining the innovation economy.

In order to assess Maine's performance on the indicators relative to other states and regions, the data for Maine is compared with data for relevant comparison, or reference groups. The reference groups are the U.S. as a whole, the New England states, and the states that are included in the Experimental Program to Stimulate Competitive Research (EPSCoR).[3] The comparison with the U.S. provides the benchmark most commonly used by similar studies that measure a state's performance. The comparison with the New England states allows for an assessment of how well Maine is doing relative to the state's geographic neighbors with whom Maine competes for innovation resources and industry. The comparison with EPSCoR states provides the most analytically sound benchmark because it compares Maine to states that are similar in terms of their historical performance on R&D indicators. Most of the EPSCoR states are rural and lack a high concentration of industry and related innovation resources.

Table 1 presents a summary of Maine's performance for the 24 primary innovation indicators. It is important to note that for some of the indicators, data for the reference group comparisons and five-year trends is not available. The indictors presented are not meant to be the sole-source, definitive assessment of whether Maine is succeeding in building and sustaining an innovation economy. Like all states, Maine has areas that represent strengths or assets that will serve as the building blocks for the future economy. It also has areas requiring improvement in order for the state to foster innovation, leading to commercialization and economic growth. In many of these areas Maine has made significant progress in the last five years. However, it is clear from several of the indicators that more needs to be done.

Existing areas of strength for Maine in building and sustaining an innovation driven economy – The following are indicators for which Maine's performance ranks it within the top 20 states in the latest year for which data is available:

- Not-for-Profit Laboratory R&D Performance
- SBIR/STTR Funding
- Math Skills of 8th Grade Students
- Science Skills of 8th Grade Students
- Household Connectivity
- Classroom Connectivity

Areas in which Maine showed improvement during the last five years in building and sustaining an innovation driven economy – The following are indicators for which Maine experienced a trend of improvement during the last five years:

- Total R&D Performance
- Academic R&D Performance
- Not-for-Profit Laboratory R&D Performance
- SBIR/STTR Funding
- High Technology Business Establishments – % Change
- Gross State Product – % Change
- Per Capita Income
- Science and Engineering Graduate Enrollments
- Science and Engineering Degrees Awarded
- Education Attainment – % of Population 25 and Older with Bachelor's Degree or More
- Household Connectivity
- High Speed Internet Access
- Classroom Connectivity

Areas in which Maine outperforms its EPSCoR peers - Success in economic development does not occur overnight, and Maine, building from a position well behind other states, still has a way to go to successfully compete with the top tier states. However, in several indicators, Maine outperforms its peer states as defined by the EPSCoR program. The following are indicators for which Maine's performance exceeds the EPSCoR states as a whole in the latest year for which data is available:

- Not-for-Profit Laboratory R&D Performance
- SBIR/STTR Funding
- Ph.D. Scientists and Engineers in the Labor Force
- Per Capita Income
- Science Skills of 8th Grade Students

- Science and Engineering Degrees Awarded
- Education Attainment – % of Population 25 and Older with Bachelor's Degree or More
- Household Connectivity
- High Speed Internet Access
- Classroom Connectivity

Existing areas requiring improvement for Maine in building and sustaining an innovation driven economy - The following are indicators for which Maine's performance ranks it within the bottom 20 states in the latest year for which data is available:

- Total R&D Performance
- Industry R&D Performance
- Academic R&D Performance
- Federal R&D Obligations
- Venture Capital Investments
- Patents Issued
- High Technology Business Establishments – % Change
- S&E Occupations in the Workforce
- Gross State Product – % Change
- Per Capita Income
- Science and Engineering Graduate Enrollments
- Science and Engineering Degrees Awarded
- Education Attainment – % of Population 25 and Older with Bachelor's Degree or More

TABLE 1- MAINE INNOVATION INDEX 2007 – INDICATOR PERFORMANCE SUMMARY

INDICATOR	Maine 1-Year Trend	Maine 5-Year Trend	Maine Compared to EPSCoR Most Current Year	Maine Latest Year National Rank 1-51 with 1=best; (year)
RESEARCH AND DEVELOPMENT CAPACITY				
Total R&D Performance	↓	↑	↓	**45** (2003)
Industry R&D Performance	↓	↓	↓	**40** (2003)
Academic R&D Performance	↑	↑	↓	**48** (2004)
Not-for-Profit Laboratory R&D Performance	↓	↑	↑	**3** (2003)
Federal R&D Obligations	↓	↓	↓	**39** (2003)
State R&D Investments	↓	↓	N/A	N/A
INNOVATION CAPACITY				
SBIR/STTR Funding	↑	↑	↑	**15** (2004)
Venture Capital Investments	↓	↓	↓	**43** (2005)
Patents Issued	↑	↔	↓	**38** (2005)
EMPLOYMENT & OUTPUT CAPACITY				
High Technology Employment - % Change	↑	↓	↓	**26** (2005)
High Technology Business Establishments - % Change	↑	↑	↓	**44** (2005)
S&E Occupations in the Workforce	N/A	N/A	↓	**46** (2003)
Ph.D. Scientists and Engineers in the Labor Force	↑	↓	↑	**29** (2003)
Gross State Product - % Change	↑	↑	↓	**47** (2005)
Per Capita Income	↑	↑	↑	**38** (2005)

TABLE 1- MAINE INNOVATION INDEX 2007 – INDICATOR PERFORMANCE SUMMARY				
INDICATOR	**Maine 1-Year Trend**	**Maine 5-Year Trend**	**Maine Compared to EPSCoR Most Current Year**	**Maine Latest Year National Rank 1-51 with 1=best; (year)**
EDUCATION CAPACITY				
Math Skills of 8th Grade Students	N/A	↔	↔	**20** (2005)
Science Skills of 8th Grade Students	N/A	↔	↑	**8** (2005)
Higher Education Enrollment among Young People – Chance for College by Age 19	N/A	↓	↓	**29** (2004)
Science and Engineering Graduate Enrollments	↓	↑	↓	**51** (2004)
Science and Engineering Degrees Awarded	↑	↑	↑	**32** (2004)
Education Attainment - % of Population 25 and Older with Bachelor's Degree or More	↑	↑	↑	**38** (2005)
CONNECTIVITY CAPACITY				
Household Connectivity	↑	↑	↑	**15** (2003)
High Speed Internet Access	↑	↑	↑	**27** (2006)
Classroom Connectivity	↑	↑	↑	**2** (2005)

Ranking is among all states plus District of Columbia, 1-51 with 1=best. Latest year is in parentheses.

Key:
↑ = Improving Trend or Higher
↓ = Decreasing or Lower
↔ = No Change or Equal
N/A = Not Applicable or Data Not Available

Endnotes

[1]Innovate America, Council of Competitiveness, 2004

[2]see endnote 1

[3]EPSCoR focuses on those states that have historically received lesser amounts of federal R&D funding and have demonstrated a commitment to develop their research bases and to improve the quality of science and engineering research conducted at their universities and colleges. The program currently operates in 23 states: Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Vermont, West Virginia, and Wyoming, as well as the Commonwealth of Puerto Rico and the U.S. Virgin Islands. This description is from the EPSCoR Web site at: http://www.ehr.nsf.gov/epscor/start.cfm.

indicators:

- Total R&D Performance
- Industry R&D Performance
- Academic R&D Performance
- Not-for-Profit Laboratory R&D Performance
- Federal R&D Obligations
- State R&D Investments

RESEARCH & DEVELOPMENT CAPACITY OVERVIEW

Research and development (R&D) is a driving force in economic growth. It fuels innovation that leads to new products and services, new industries, new jobs and ultimately an improved quality of life. R&D activity also attracts and supports a highly educated and skilled workforce.

While Maine made progress on building R&D capacity and performance in the late 1990's and early 2000's, the State appears on the verge of losing ground. In 2003 Maine ranked 45th among all states in total R&D as a percent of gross state product (GSP). This was the same as its ranking in 1999. In terms of R&D performance by sector, while Maine ranks high in not-for-profit R&D nationally, it ranks low in terms of industry and academic R&D.

In the mid-1990's through 2003-04 annual state investments in R&D grew to $61 million. After 2003-04 Maine state investments in R&D receded to annual levels between $20 and $35 million. The data indicates that it may be time for Maine to once again "prime the pump" to foster R&D growth particularly in order to further stimulate industry based R&D and innovation.

Most of the R&D performance indicators in this section are expressed as a percentage of GSP. This provides a measure of both the intensity of R&D in the state (How much is occurring?) and the importance of R&D to the economy (What is its impact?). GSP is also the most accurate way of comparing R&D investments in Maine to other states and the nation. In order to assess Maine's performance relative to other geographic areas, the R&D indicators in this section are presented in comparison to three reference groups. They are the U.S. as a whole, New England, and states that are part of The Experimental Program to Stimulate Competitive Research (EPSCoR).

These indicators attempt to present the most complete picture of R&D funding in Maine, but they are limited by the availability of data. For example, nationwide data on state investments in R&D are not available; likewise, figures for R&D spending by not-for-profit laboratories reflect only their federal sources of funding.

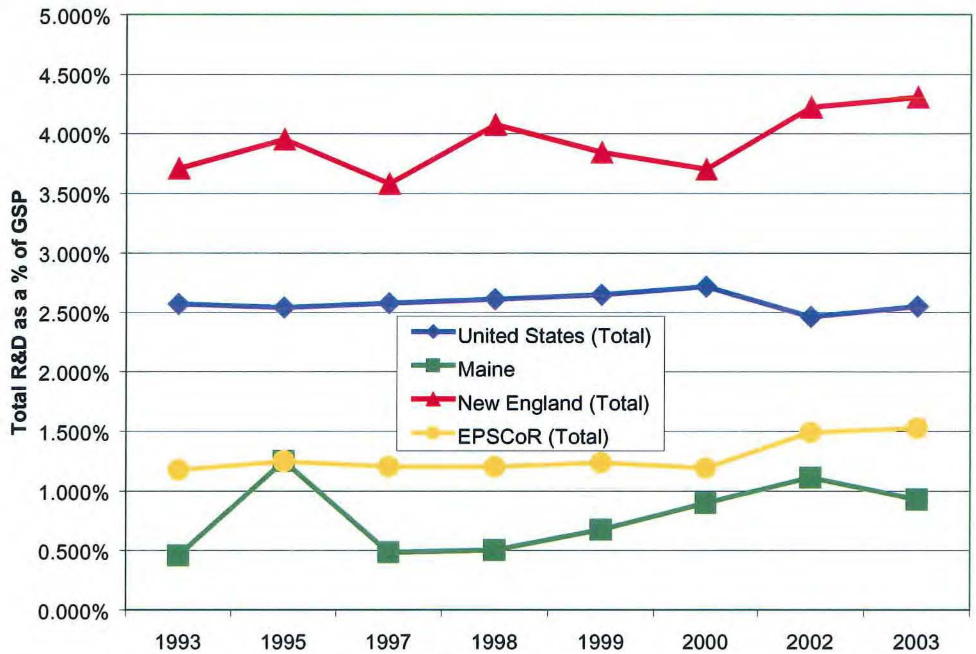
Total R&D Performance

— performance summary —	
Maine 1-Year Trend	↓
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↓
Maine's National Ranking	45

Summary

Between 1993 and 2002, Maine made progress in narrowing the gap in total R&D performance in relation to the U.S. and EPSCoR reference groups. In 1993 Maine's total R&D performance represented 0.46 percent of the State's gross state product (GSP) compared to 2.57 percent for the U.S., 3.71 percent for New England, and 1.18 percent for the EPSCoR states. In 2002, total R&D performance in Maine represented 1.11 percent of GSP compared to 2.46 percent for the U.S., 4.22 percent for New England, and 1.49 percent for the EPSCoR states. In 2003 Maine lost ground on total R&D performance and fell to a level of 0.93 percent of GSP compared to 2.55 percent for the U.S., 4.31 percent for New England, and 1.53 percent for the EPSCoR states.

Total R&D Spending as a Percent of Gross State Product – 1993-2003



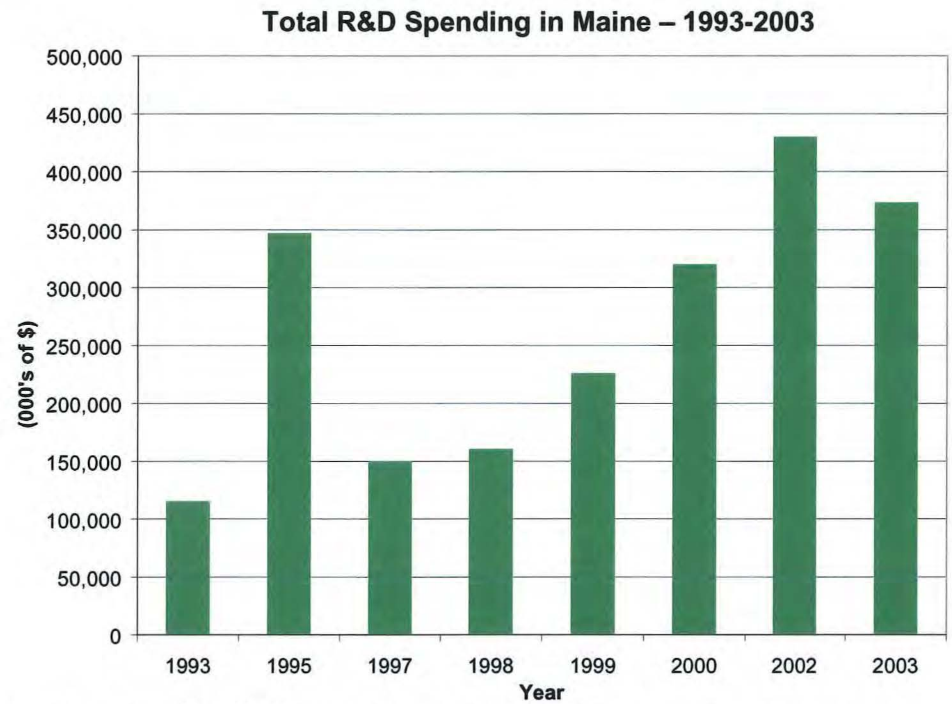
Note: From 1997-2000 & 2002-2003 chart portrays one-year increments; all other years are in two-year increments.

Why This Is Significant

An innovation economy requires investments in research and development by government, industry, not-for-profit laboratories and academia. This indicator is the most comprehensive measure of R&D capacity in Maine and captures all available sources of data. Expressing R&D expenditures as a percent of gross state product measures both the impact of R&D on the economy and the intensity of R&D that is occurring.

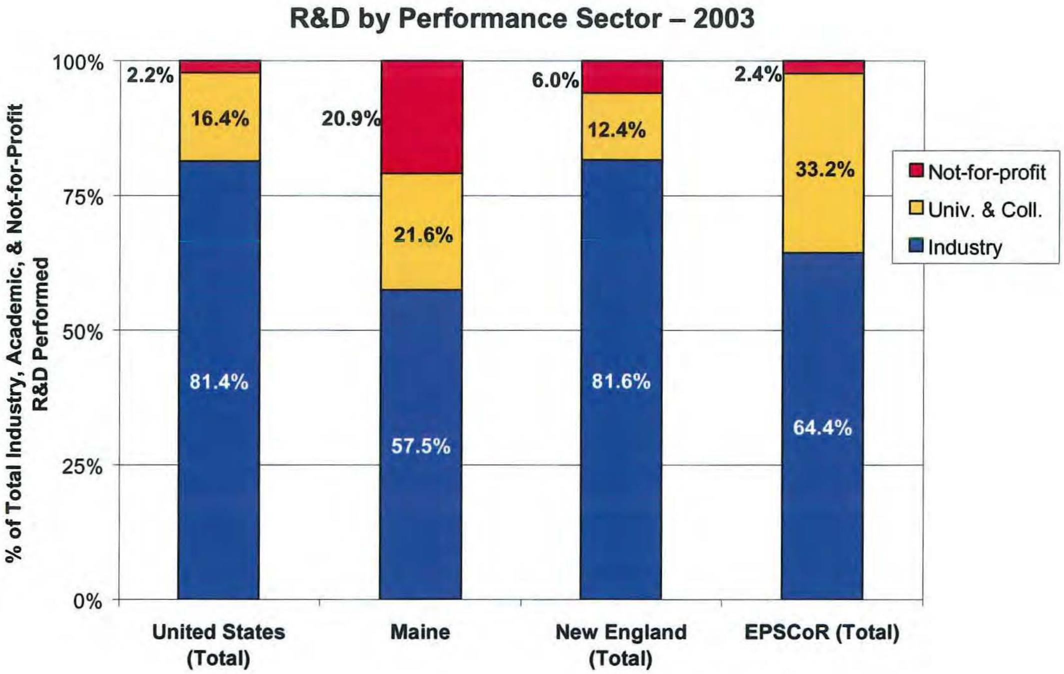
Related

In 2003, total R&D performed reached $372 million in Maine. This represented a decrease of 13 percent from the 2002 level of $429 million. However during the five-year period between 1999 and 2003, Maine outpaced total R&D growth of the reference groups. Between 1999 and 2003 total R&D performed in Maine increased 65.6 percent compared to 14.0 percent for the U.S. as a whole, 31.4 percent in New England, and 46.9 percent, among the EPSCoR states.



Note: From 1997-2000 & 2002-2003 chart portrays one-year increments; all other years are in two-year increments.

In terms of the sectors contributing to R&D performance, Maine has a higher percentage of R&D being performed by the not for profit sector than any of the reference groups. Out of R&D performed by the three major sectors (industry, academic, and not for profit) in 2003, 20.9 percent of R&D performed was by the not for profit sector in Maine. This compares to 2.2 percent in the U.S. as a whole, 6.0 percent among New England states, and 2.4 percent among EPSCoR states. In contrast however in 2003, Maine had a lower percentage of industry R&D being performed among the three major performance sectors with a level of 57.5 percent compared to 81.4 percent for the U.S., 82.0 percent for New England states, and 64.4 percent for the EPSCoR states as a whole.



Note: not for profit includes only that which is federally funded and therefore the contribution by this sector is understated

Sources

Total R&D spending[1] is from National Science Foundation/Division of Science Resources Statistics; National Patterns of R&D Resources 2002 & 2004 Data Updates, derived from four NSF surveys: Survey of Industrial R&D; Survey of R&D Expenditures at Universities and Colleges, Survey of Federal Funds for R&D, and Survey of R&D Funding and Performance by Nonprofit Organizations; http://www.nsf.gov/statistics. Gross State Product is from Bureau of Economic Analysis, U.S. Department of Commerce, 1980-1996 data; and Accelerated Estimates for 2005 and Revised Estimates for 1997-2004; http://www.bea.gov/bea/regional/gsp.htm; 1997-2005 is based on NAICS while 1980-1996 is based on SIC industry classification.

— **performance summary** —

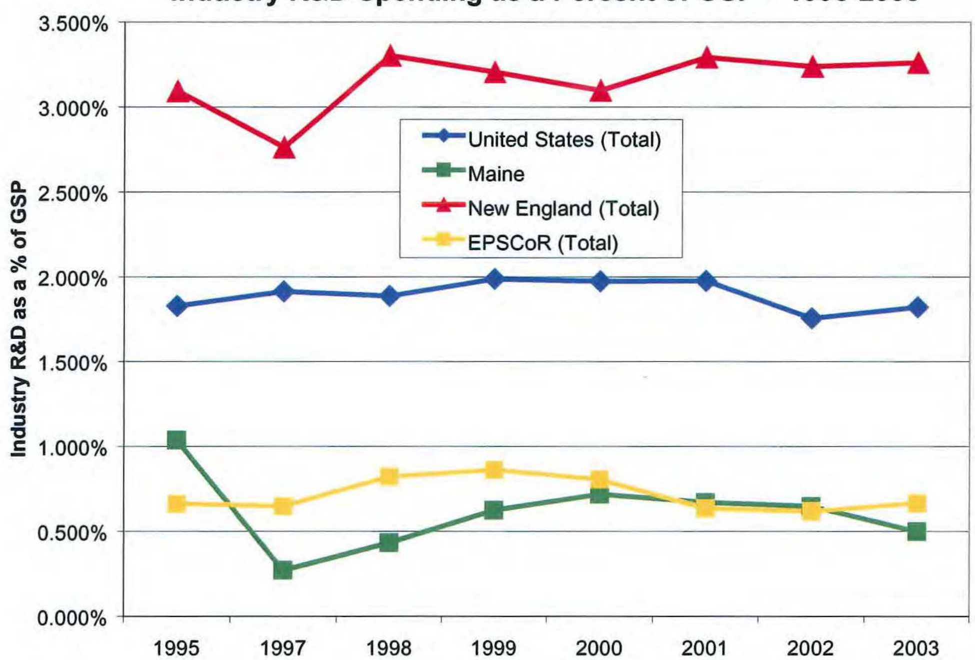
Maine 1-Year Trend	↓
Maine 5-Year Trend	↓
Maine Compared to EPSCoR	↓
Maine's National Ranking	40

Industry R&D Performance

Summary

In 2003, industry R&D in Maine represented 0.50 percent of gross state product (GSP). Between 1997 and 2000 Maine had experienced increases in this indicator relative to the other EPSCoR states; however, Maine has since fallen below the EPSCoR states average and still lags behind New England and the nation as a whole. In 2003, as a percent of GSP, industry performed R&D equaled 1.82 in the U.S., 3.26 percent in New England, and 0.67 percent among all EPSCoR states combined.

Industry R&D Spending as a Percent of GSP – 1995-2003

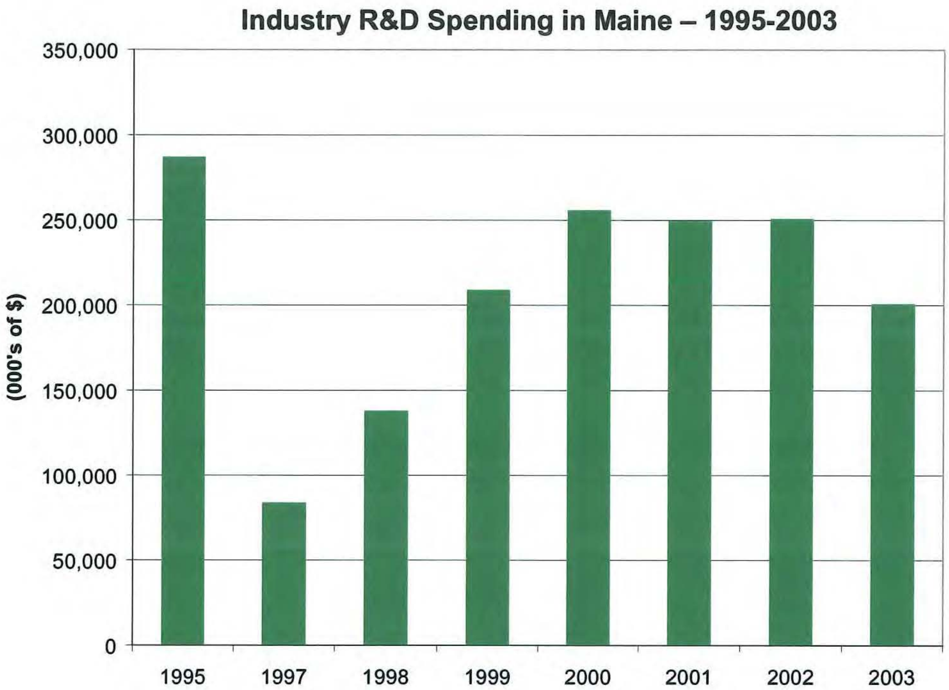


Note: From 1997 on chart portrays one-year increments; prior to 1997 data is in two-year increments.

Why This Is Significant

This indicator measures Maine's private sector investments in innovation. Since industry R&D comprises the vast majority of the nation's total R&D investments, R&D by this sector is integral to growing the state's R&D capacity. Industry R&D drives state economic growth by creating high paying jobs for the performance of R&D, increasing productivity, and generating commercialization of new products and services. Industry R&D is particularly important for transforming and growing Maine's economy which has been historically reliant on traditional, natural resource-based industries. R&D can both strengthen these industries as well as create opportunities for new industries in the state. In 2003 Maine industry R&D performed equaled $200 million, a decrease of 20% from the 2002 level of $250 million.

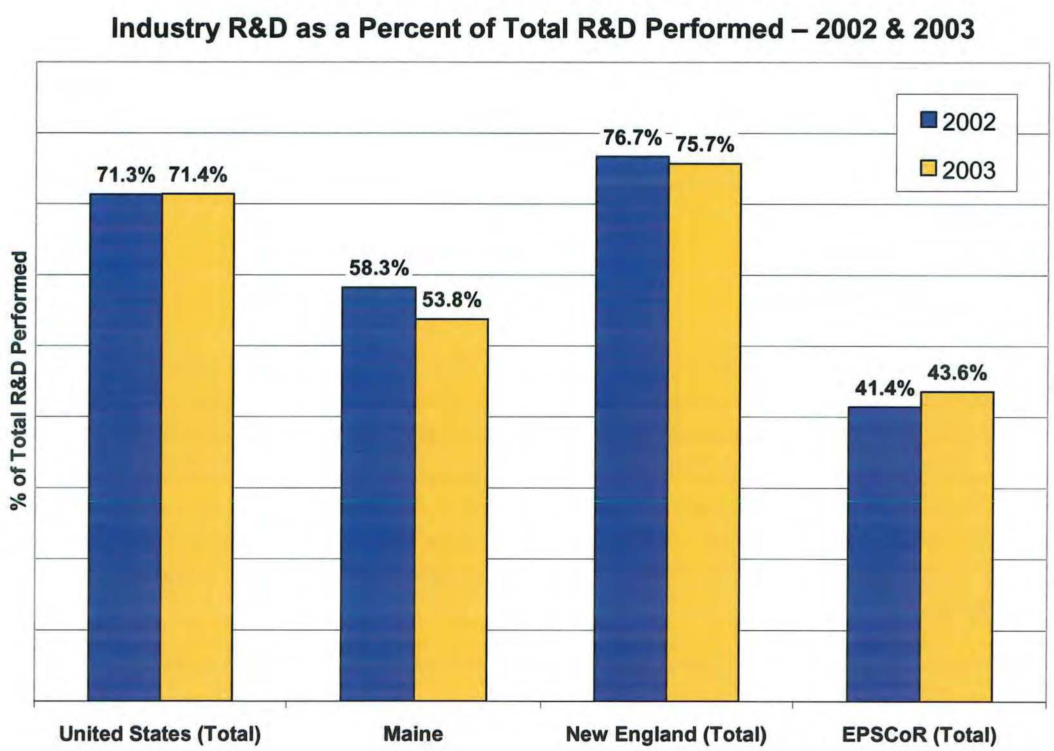
INDUSTRY R&D PERFORMANCE



Note: From 1997 on, chart portrays one-year increments; prior to 1997 data is in two-year increments.

Related

In 2003, industry R&D in Maine represented 53.8 percent of total R&D performed compared to 71.4 percent in the nation as a whole, 75.7 percent among New England states combined, and 43.6 percent among EPSCoR states.



Sources

Industry R&D performance is from National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001 and 2002, 2002-2003 forthcoming; http://www.nsf.gov/statistics. Gross State Product is from Bureau of Economic Analysis, U.S. Department of Commerce, 1980-1996 data; and Accelerated Estimates for 2005 and Revised Estimates for 1997-2004; http://www.bea.gov/bea/regional/gsp.htm; 1997-2005 is based on NAICS while 1980-1996 is based on SIC industry classification.

Academic R&D Performance

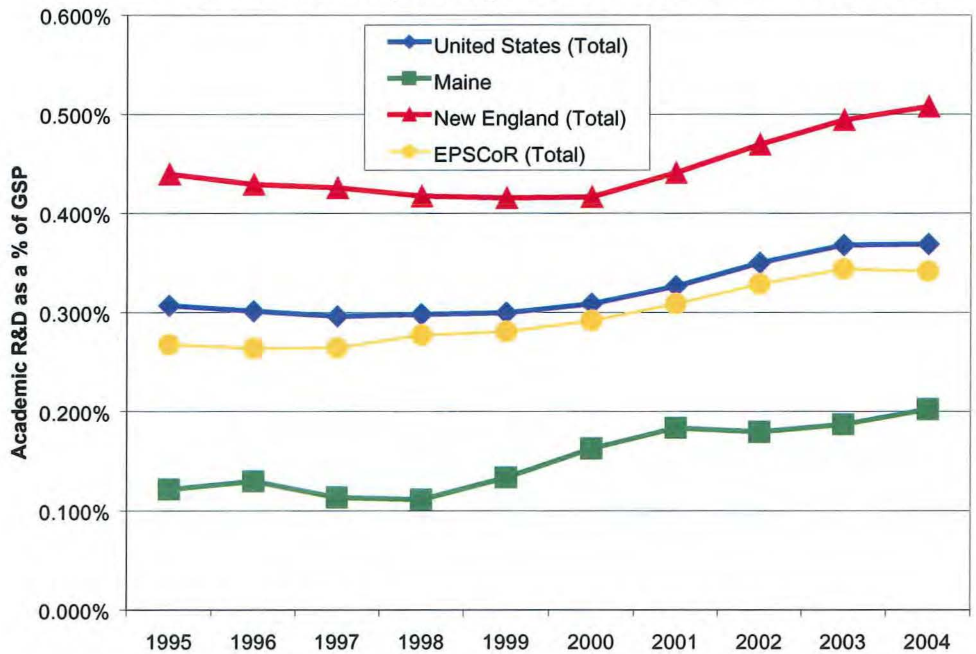
— performance summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↓
Maine's National Ranking	48

Summary

Between 1994 and 1998, R&D performed by Maine's academic institutions remained relatively constant, ranging between a low of 0.110 percent and a high of 0.129 percent of gross state product (GSP). Since 1998, Maine experienced increases in academic-performed R&D, reaching a level of 0.202 percent in 2004. In 2004, R&D performed at academic institutions represented 0.368 percent of GSP in the U.S. as a whole, 0.508 percent among New England states, and 0.341 percent for all EPSCoR states combined. Between 1995 and 2004 growth in academic R&D in Maine and among other EPSCoR states outpaced the growth experienced on average in the U.S. and New England. During this period academic R&D in Maine increased 167 percent and among EPSCoR states increased 96 percent compared to 94 percent in the U.S. and 82 percent in New England. Even with the recent growth, Maine continues to lag behind the reference groups on this indicator.

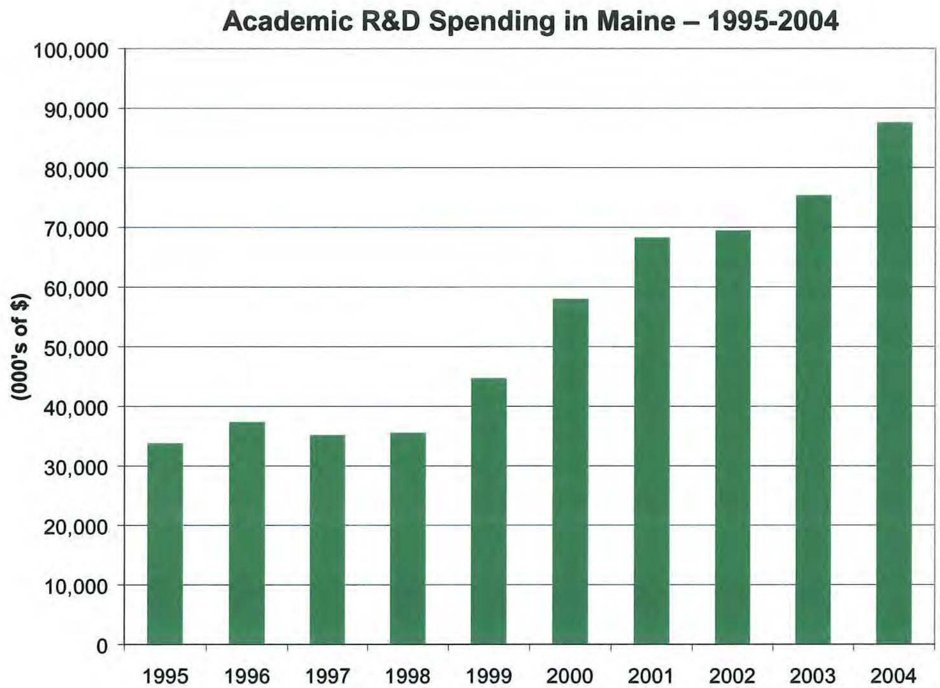
Academic R&D Spending as a Percent of GSP – 1995-2004



Why This Is Significant

Universities and colleges are a major source of knowledge and innovation. In this knowledge-based economy, businesses increasingly seek to develop partnerships with research-oriented universities and colleges to develop innovative products and identify solutions to business problems. A healthy economy also benefits from knowledge workers that begin their advanced learning and research experiences at universities and colleges. This requires investments in R&D at universities and colleges. This indicator reflects the capacity of Maine universities and colleges to conduct R&D, generate problem-solving innovations, and contribute to knowledge-based economic development.

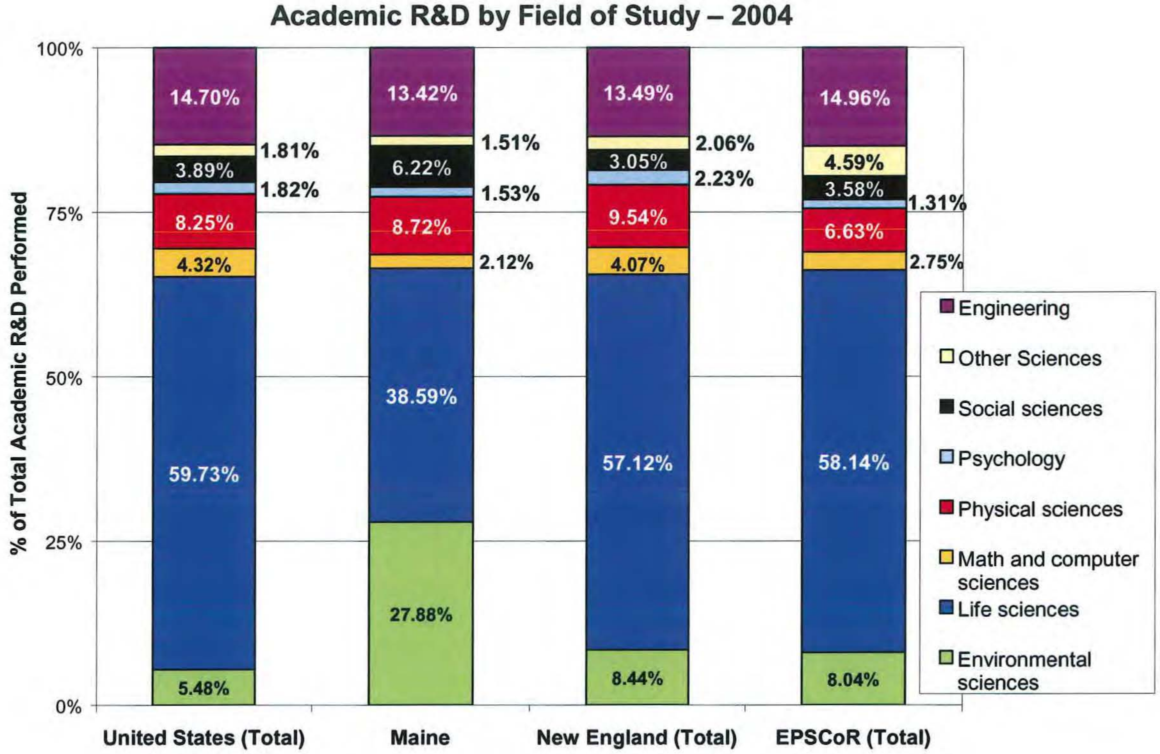
ACADEMIC R&D PERFORMANCE



Related

In 2004 Maine's academic R&D performance equaled $87 million, an increase of 16 percent from 2003. In 2004 38.6 percent of all R&D performed by academic institutions in Maine was within the life sciences field.[2] This was the largest field of study for academic-performed R&D in Maine. Environmental sciences followed at 27.9 percent. These two areas – life and environmental sciences – accounted for 67 percent of academic-performed R&D in Maine in 2004. Life sciences include the fields of agricultural, biological, and medical sciences; and environmental sciences include the fields of atmospheric sciences, earth sciences, and oceanography. Percentages for other fields of study for academic-performed R&D in Maine in 2004 included engineering at 13.4 percent, physical sciences at 8.8 percent, social sciences at 6.2 percent, and math and computer sciences at 2.1 percent.

In comparison to the reference group, in 2004 Maine had a greater concentration of academic performed R&D in the fields of environmental and social sciences and a lower concentration in the field of life sciences. Most notably, while 27.9 percent of Maine's academic-performed R&D in 2003 was in environmental sciences, among the U.S. as a whole, New England, and EPSCoR states, environmental sciences accounted for less than 10.0 percent of academic-performed R&D.



Sources

Academic R&D performance data[3] is from National Science Foundation/Division of Science Resources Statistics; Survey of R&D Expenditures at Universities and Colleges 2003 & 2004; http://www.nsf.gov/statistics. Gross state product is from the Bureau of Economic Analysis, U.S. Department of Commerce, 1980-1996 data; and Accelerated Estimates for 2005 and Revised Estimates for 1997-2004; http://www.bea.gov/bea/regional/gsp.htm; 1997-2005 is based on NAICS while 1980-1996 is based on SIC industry classification.

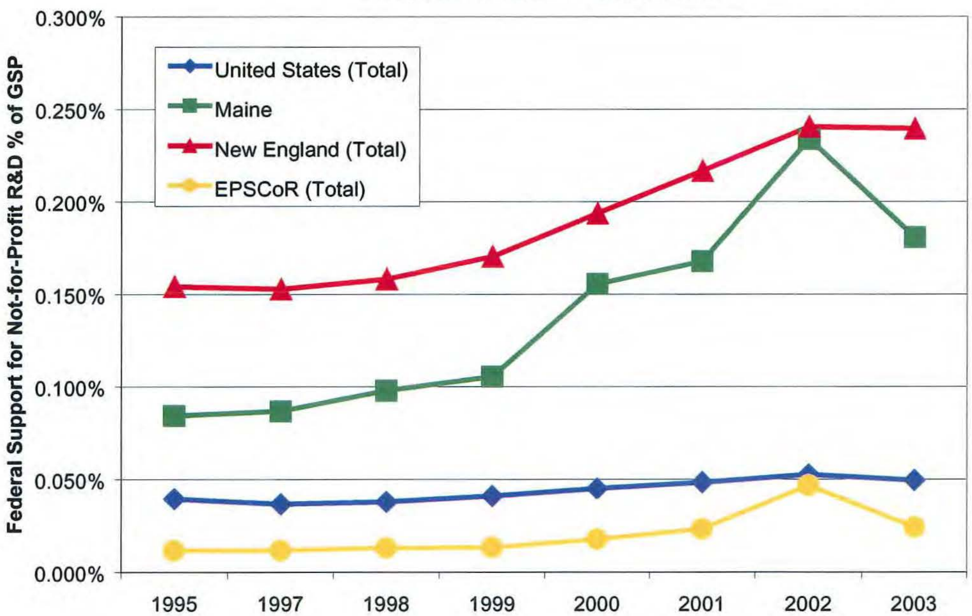
Not-for-Profit Laboratory R&D Performance[4]

— performance summary —	
Maine 1-Year Trend	↓
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↑
Maine's National Ranking	3

Summary

Maine continues to be a national leader in R&D performed by not-for-profit research laboratories. Since 1995, R&D performed at Maine's not-for-profit research labs from federal sources of funding grew dramatically, from 0.084 percent in 1995 reaching 0.231 percent of GSP in 2002. In 2003 Maine's level dropped to 0.181 percent but remained significantly above the level of the nation as a whole at 0.049 percent and the EPSCoR states combined at 0.024 percent of GSP. The New England level in 2003 was 0.230 percent, or above the Maine level.

Federal Support for Not-for-Profit R&D Spending
Percent of GSP – 1995-2003



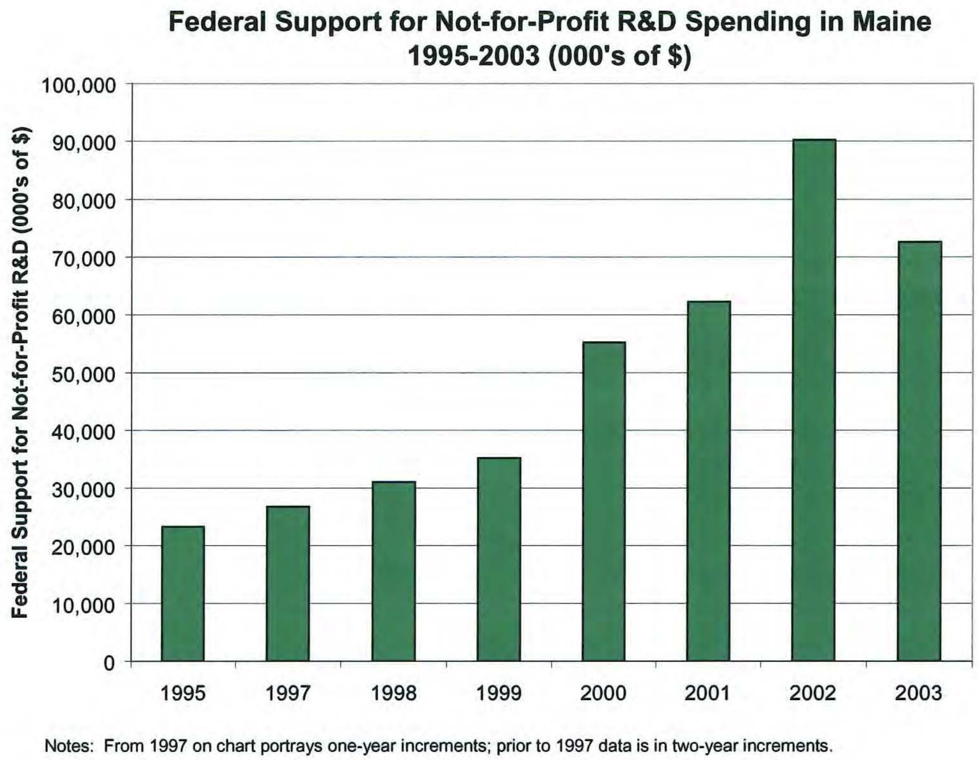
Notes: From 1997 on chart portrays one-year increments; prior to 1997 data is in two-year increments.

Why This Is Significant

Maine has a robust and economically important not-for-profit research sector. In Maine this sector includes the institutions of Bigelow Laboratory for Ocean Sciences, Foundation for Blood Research, Gulf of Maine Research Aquarium, Jackson Laboratory, Maine Medical Center Research Institute, Mount Desert Island Biological Laboratory, Maine Institute for Human Genetics and Health, and the Wells National Estuarine Research Reserve. This is significant because Maine has historically lacked private academic institutions, such as a medical school, that focus on R&D. The not-for-profit institutions are involved in various partnerships with the University of Maine which helps increase Maine's overall R&D capacity. Taken together, Maine's not for profit research labs and academic institutions contribute significantly to both R&D performance and the development of students and talent.

Related

In terms of absolute dollars, federal funding for not-for-profit R&D performance in Maine has increased from $23 million in 1993 to more than $73 million in 2003, an increase of over 210 percent.



Sources

1987-2001 not for profit R&D performed is from National Science Foundation/Division of Science Resources Statistics; National Patterns of R&D Resources 2002 Data Update, derived from Survey of R&D Funding and Performance by Nonprofit Organizations; 2002 & 2003 from National Science Foundation/Division of Science Resources Statistics, Survey of Federal Funds for Research and Development: Fiscal Years 2002, 2003, 2004, and 2005; http://www.nsf.gov/statistics. Gross state product is from Bureau of Economic Analysis, U.S. Department of Commerce, 1980-1996 data; and Accelerated Estimates for 2005 and Revised Estimates for 1997-2004; http://www.bea.gov/bea/regional/gsp.htm; 1997-2005 is based on NAICS while 1980-1996 is based on SIC industry classification.

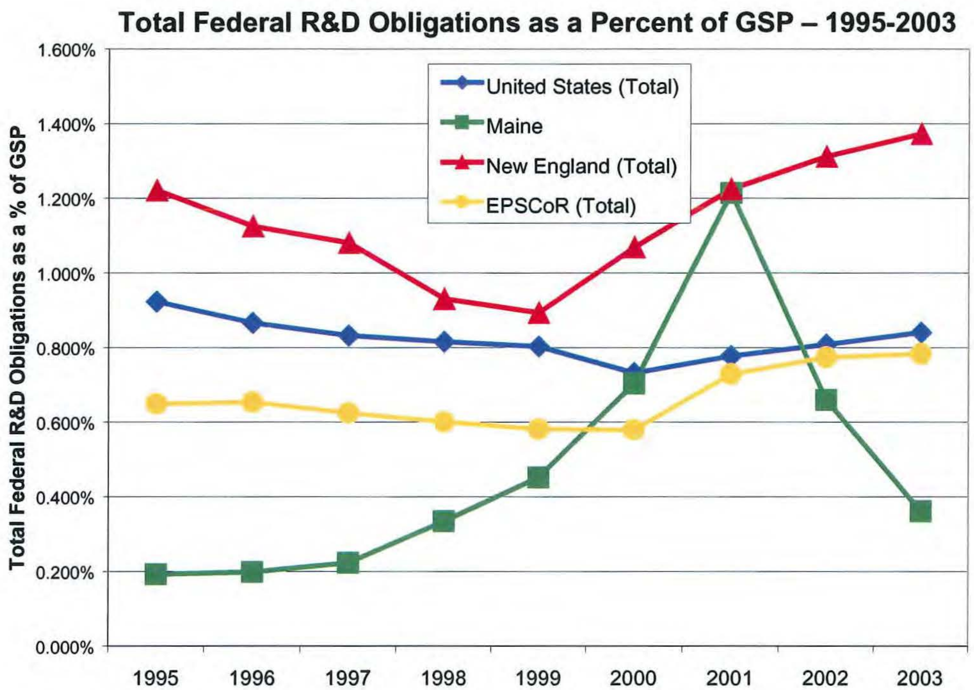
Federal R&D Obligations

— performance summary —

Maine 1-Year Trend	↓
Maine 5-Year Trend	↓
Maine Compared to EPSCoR	↓
Maine's National Ranking	39

Summary

Between 1995 and 2001, experienced significant increases in federal funding for R&D to a point where Maine caught up with the reference groups on this indicator.[5] During this period federal funding for R&D in Maine increased from 0.19 percent of gross state product (GSP) to 1.21 percent. Since 2002, Maine has experienced a drop on this indicator to a level of 0.36 percent of GSP. This drops Maine below the average of the U.S. as a whole (0.84 percent), the New England level (1.37 percent), and the EPSCoR level (0.78 percent).



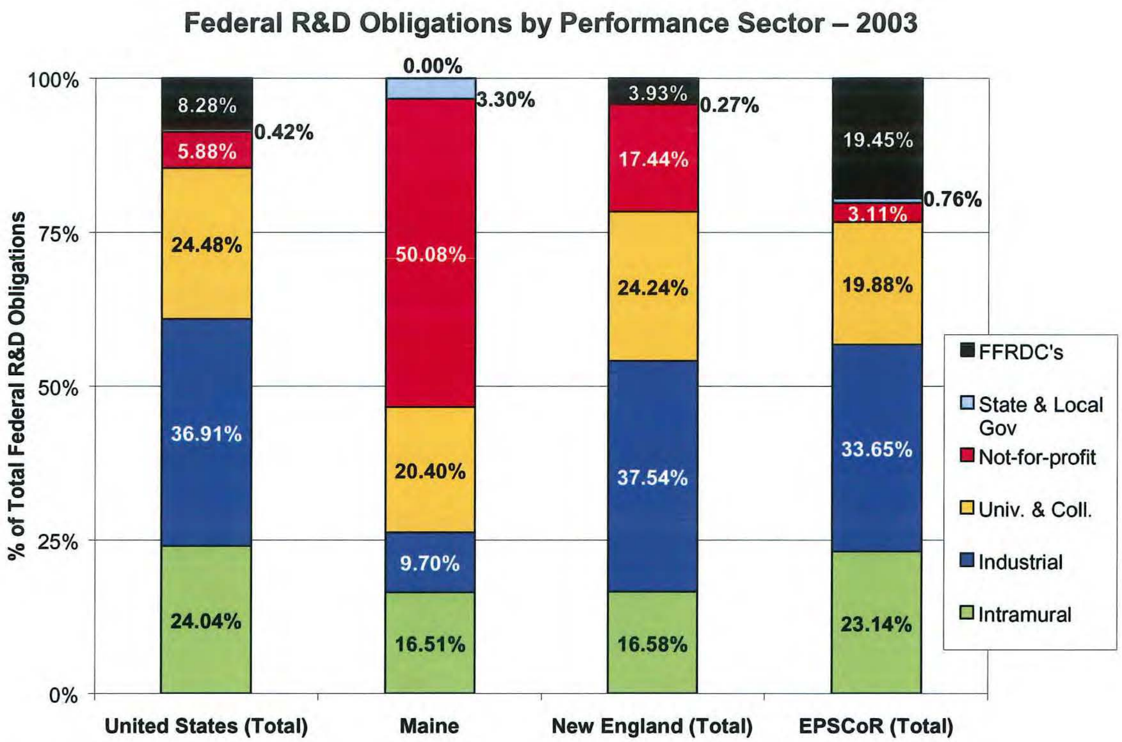
Why This Is Significant

Federal funding is an important source of financial support for R&D, contributing approximately 30 percent of total R&D funding in the U.S. This indicator measures Maine's capacity to access federal funds to support its R&D enterprise. State investments in R&D infrastructure build on the capacity of research entities to access federal R&D grants.

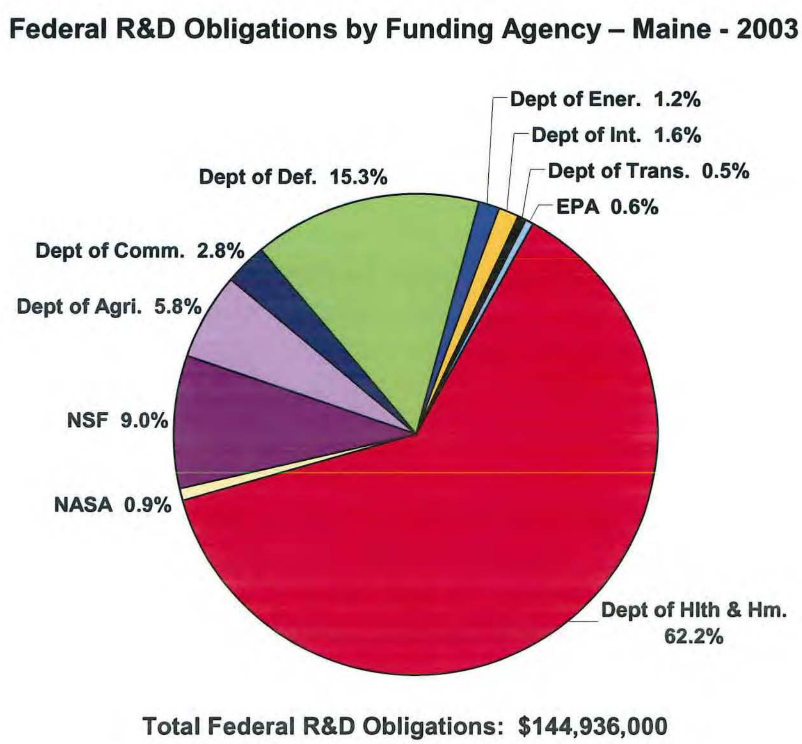
Related

In 2003, the not-for-profit research sector was the largest recipient of federally funded R&D in Maine, accounting for 50 percent of the state's federal R&D obligations. Not-for-profit research was followed by universities and colleges at 20 percent.[6] In comparison to the reference groups – the U.S. as a whole, New England, and EPSCoR states – Maine's federal obligations for R&D were more highly concentrated in the not-for-profit performance sectors and significantly less concentrated in the industry sector. In Maine the industry sector accounted for 10 percent of the state's federal R&D obligations compared to industry representing 37 percent nationwide.

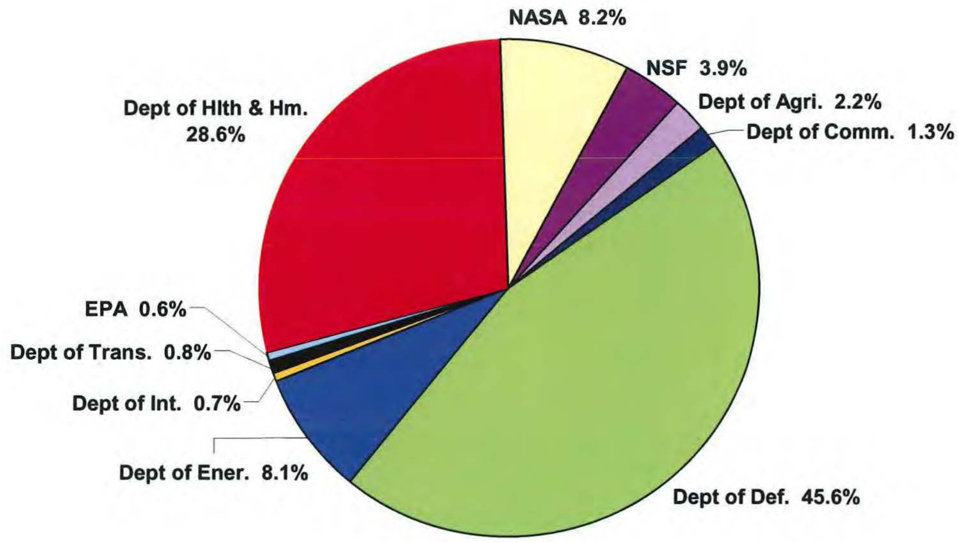
FEDERAL R&D OBLIGATIONS



In terms of which federal agencies the funding comes from, in 2003, 62 percent of Maine's federal obligations for R&D came from the Department of Health and Human Services, 15 percent from the Department of Defense and 9 percent from the national Science Foundation. All other federal agencies accounted for a total of 14 percent. In comparison to the U.S. as a whole in 2003, Maine is more dependent on the Department of Health and Human Services for federal R&D obligations.



Federal R&D Obligations by Funding Agency – U.S. - 2003



Total Federal R&D Obligations: $91,525,003,000

Source

Federal R&D obligations[7] are from National Science Foundation/Division of Science Resources Statistics; Survey of Federal Funds for Research and Development: Fiscal Years 2003, 2004, and 2005; http://www.nsf.gov/statistics. Gross state product is from Bureau of Economic Analysis, U.S. Department of Commerce, 1980-1996 data; and Accelerated Estimates for 2005 and Revised Estimates for 1997-2004; http://www.bea.gov/bea/regional/gsp.htm; 1997-2005 is based on NAICS while 1980-1996 is based on SIC industry classification.

State R&D Investments

— performance summary —

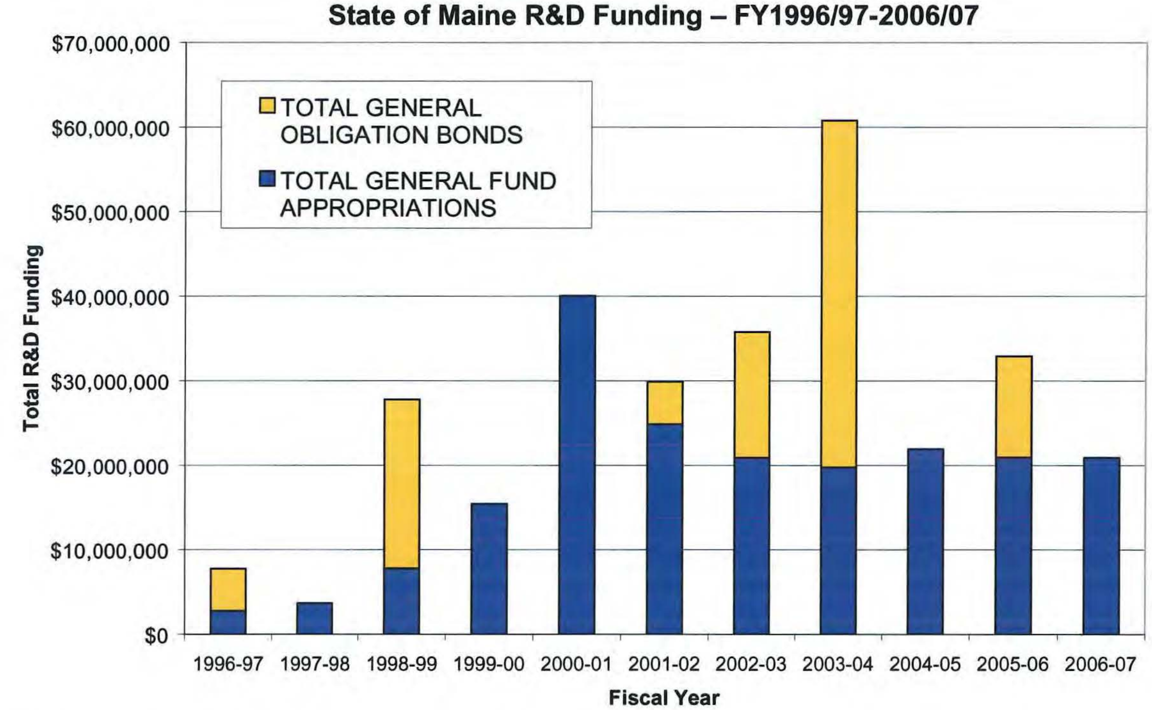
Maine 1-Year Trend ↓

Maine 5-Year Trend ↓

Summary

Over the last ten years Maine has dramatically increased state-sponsored investments in research and development. In FY 1997-98, Maine had an annual investment level in R&D of $3.6 million.[8] By 2003-04, Maine's annual investment exceeded $60.7 million. Since 2003-04 Maine has maintained an annual state investment level in excess of $20 million annually; however this is a decrease from the prior 3-year period.

State of Maine R&D Funding – FY1996/97-2006/07



Why This Is Significant

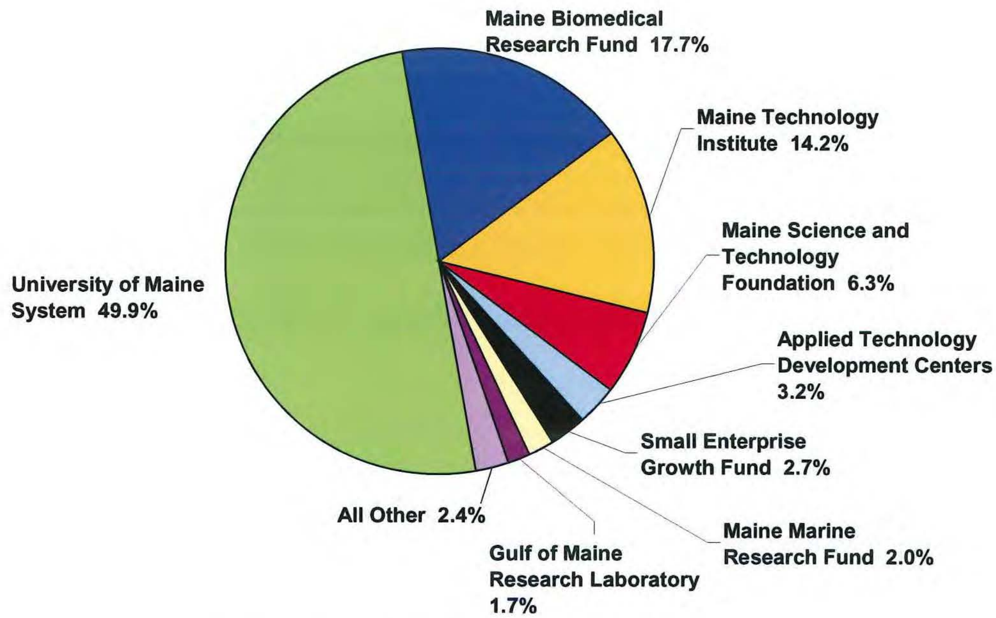
Maine's state-sponsored investments in research and development are used to build infrastructure and leverage federal and industry research funding. Federal R&D expenditures rarely fund research equipment and facilities. Thus, state investments are essential to build physical R&D capacity and to stimulate successful private/public research partnerships. Maine state funds, in particular those provided through the Maine Technology Institute, are also used to fund R&D in small and medium sized business. These businesses don't always have access in the near term to federal R&D funding.

Related

Over the course of the last eleven years Maine has invested a total of almost $300 million in state funds for R&D. Of this amount, 49 percent has supported programs and infrastructure of the University of Maine System[9], 18 percent has supported the Maine Biomedical Research Fund, and 14 percent has supported numerous businesses through the Maine Technology Institute.

STATE R&D INVESTMENTS

Maine State Funding for R&D by Program FY1996/97-FY2006/07



Total State Funding for R&D = $296,755,590

Source

State R&D investment was compiled by PolicyOne Research, Inc. from data provided by the Maine Legislature, Office of Fiscal & Program Review.[10]

Endnotes

[1]Total R&D includes R&D for all performance sectors including industry, universities and colleges, non-profit institutions, federal government, and federally funded research development centers from all sources of funding. Not-for-profit performed R&D as reported by NSF includes only that which is funded by the federal government. Therefore, this data understates the intensity of not-for-profit performed R&D.

[2]Academic Fields of Study are defined as: Engineering (aeronautical and astronautical, bioengineering and biomedical, chemical, civil, electrical, mechanical, metallurgical and materials); Physical Sciences (astronomy, chemistry, physics); Environmental Sciences (atmospheric, earth sciences, oceanography); Mathematical Sciences; Computer Sciences; Life Sciences (agricultural, biological, medical); Psychology; Social Sciences (economics, political science, sociology); unclassified.

[3]Academic R&D performance excludes federally funded research and development centers administered by academic institutions, of which Maine has none.

[4]Excludes nonprofit federally funded research and development centers administered by academic institutions for which there are none in Maine but that do exist nationally. Also, the not-for-profit data only includes research expenditures funded by the federal government because data from other funding sources is not available on a state basis.

[5]The federal R&D data in this section represent obligations as opposed to outlays. According to NSF, obligations represent the amounts for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated and when future payment of money is required.

[6]This includes federally funded research and development centers (FFRDC's). These are R&D-performing organizations that are exclusively or substantially financed by the Federal Government and are supported by the Federal Government either to meet a particular R&D objective or, in some instances, to provide major facilities at universities for research and associated training purposes. Each center is administered either by an industrial firm, a university, or another nonprofit institution. Maine has no FFRDC's. Intramural performers are the agencies of the Federal Government. Their work is carried on directly by federal agency personnel.

[7]Includes the obligations of the 10 or 11 major R&D supporting agencies that were requested to report this information; together they represent 96 percent or more of the total R&D obligations.

[8]Includes appropriations as well as bonds approved.

[9]Includes Maine Economic Improvement Fund, State Res. Lib. for Business, Science & Technology, Strategic Technology Initiative Program Funding, Debt Service for previous R&D Bonds, and Bonds for the Advanced Engineered Wood Composites Center, USM Bioscience Wing, and Maine Agricultural Research Farms. Includes all campuses within UMaine System.

[10]State R&D investments in Maine include portions of funding within the following program areas:

University of Maine System

Maine Technology Institute

Maine Marine Research Fund

Maine Biomedical Research Fund

Maine Applied Technology Development Center System

Centers for Innovation
MERITS
ScienceWorks
Governor's Marine Studies Fellowship
Small Enterprise Growth Fund
EPSCoR
Maine Science and Technology Foundation (now defunct)
Maine Patent Program
Gulf of Maine Research Laboratory
NASA Partnership
Downeast Institute for Applied Marine Research
Schoodic Education and Research Center

indicators:
- SBIR/STTR Funding
- Venture Capital Investments
- Patents Issued

INNOVATION CAPACITY OVERVIEW

Financial investment along with knowledge, skill, creativity and ingenuity form a package of ingredients that foster an innovative business environment. Maine's accomplishments in creating this economic growth package are both worthy of praise and in need of improvement.

Maine is becoming a leader in the area of SBIR/STTR research relative to the state's size. Maine's and New England's levels of SBIR/STTR funding as a percent of GSP exceeded the levels of the U.S. average and all EPSCoR states combined.

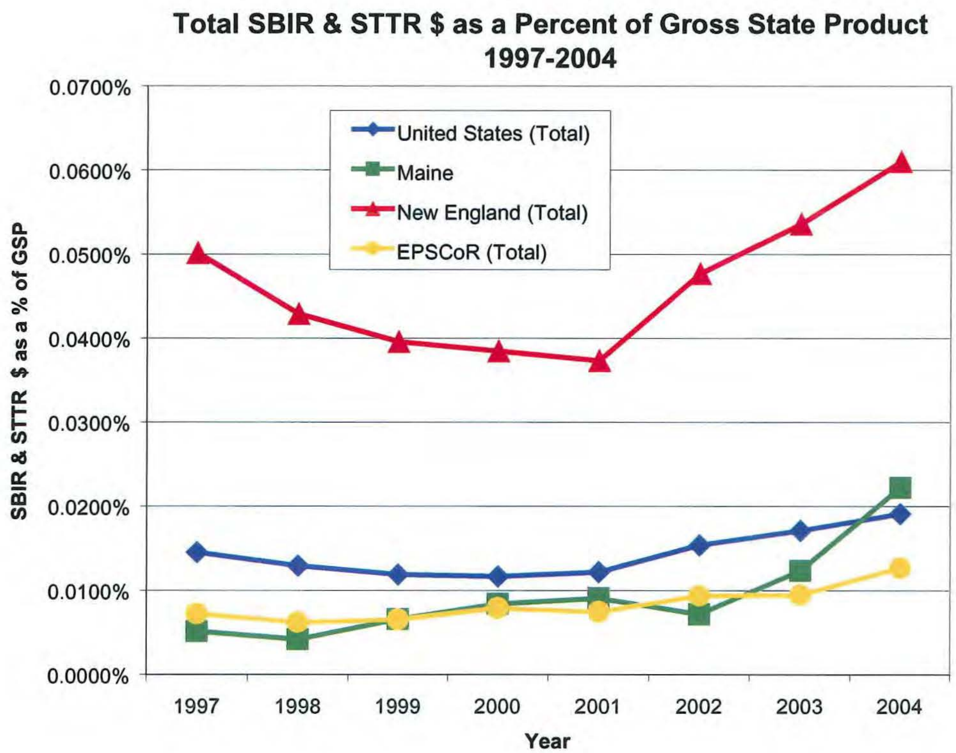
Maine needs to continue its work in the areas of attracting venture capital and producing patents. In the latest years for which data is available Maine lags New England, the U.S., and EPSCoR states as a whole in attracting venture capital and generating patents. The findings in this index are consistent with the findings in Maine's Comprehensive Evaluation of State Investments in R&D that Maine needs to continue to improve its ability to transfer knowledge and technology to commercial applications and ventures. Recent state investments in programs including the Maine Patent Program and the Small Enterprise Growth Fund combined with continued R&D support for entrepreneurs through the Maine Technology Institute and the Applied Technology Development Centers can help Maine address these areas of concern.

— performance summary —	
Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↑
Maine's National Ranking	15

SBIR/STTR Funding

Summary

Between 1997 and 2004 Maine experienced an increase in SBIR/STTR funding as a percent of gross state product (GSP). In 1997, SBIR/STTR funding in Maine represented 0.0051 percent of GSP; in 2004 it represented 0.0222 percent. This recent increase elevated Maine above the levels for the U.S. as a whole which was 0.0191 percent and the level for the EPSCoR states combined at 0.0127 percent. Maine remained below the level for the New England States as a whole in 2004 which were at 0.0610 percent.



Why This Is Significant

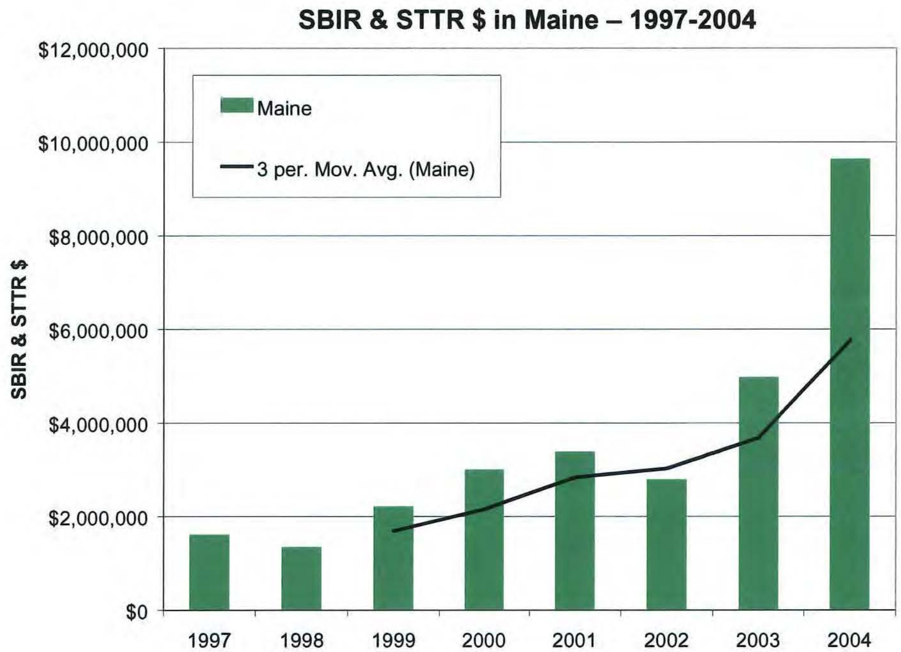
The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are important sources of early stage capital for technology-based entrepreneurs. The U.S. Congress established the SBIR program with the purpose of increasing opportunities for small businesses to participate in federal research and development and to stimulate technological innovation. The program funds high-risk R&D that may have commercial potential. It offers a way for small firms to obtain seed money to do the advanced R&D often necessary to enter into new projects. Similarly, Congress created the STTR program to encourage commercialization of university and federal laboratory R&D by small businesses and to foster the development of partnerships between universities and small firms.

These programs are valuable in that they help small businesses build scientific and technical leadership in their industries. In an increasingly competitive marketplace, such leadership is key to innovation and the subsequent sales that innovation brings to small firms. Success in winning SBIR awards also is often helpful in attracting outside capital investments.

SBIR/STTR FUNDING

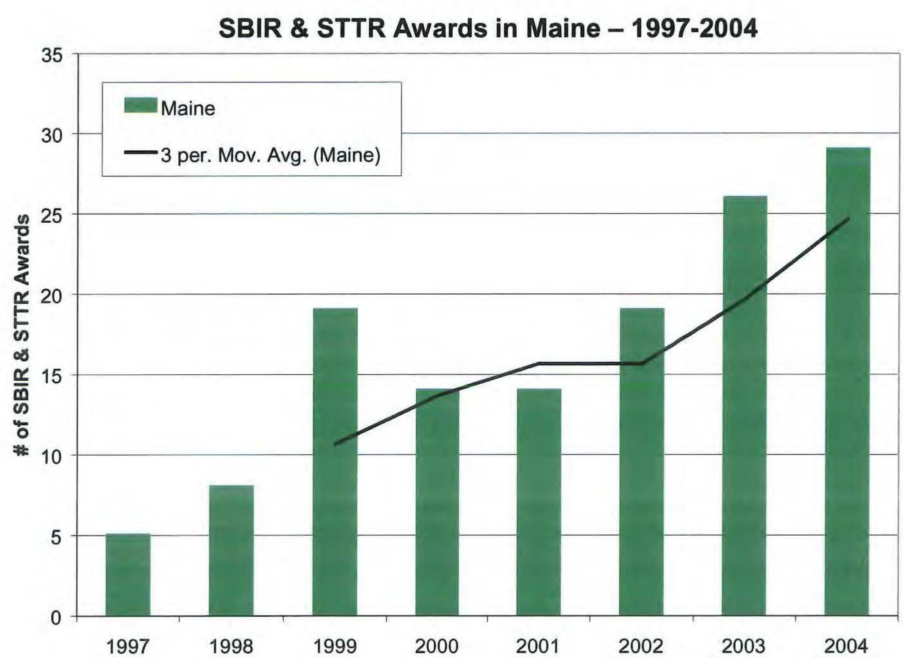
Related

In 2004 the SBIR/STTR programs provided more than $2 billion nationwide in federally sponsored, early stage capital for entrepreneurial technology-based businesses. In 2004, Maine companies received a total of $9.6 million in SBIR/STTR awards. This represented an increase of 224 percent since 2000. In terms of number of awards, in 2004, Maine received 29 awards, the highest award level since 1997.



Sources

SBIR/STTR data is from the U.S. Small Business Administration, www.sba.gov/SBIR. Gross State Product is from Bureau of Economic Analysis, U.S. Department of Commerce, Ac-celerated Estimates for 2005 and Revised Estimates for 1997-2004; http://www.bea.gov/bea/regional/gsp.htm.



— Performance Summary —

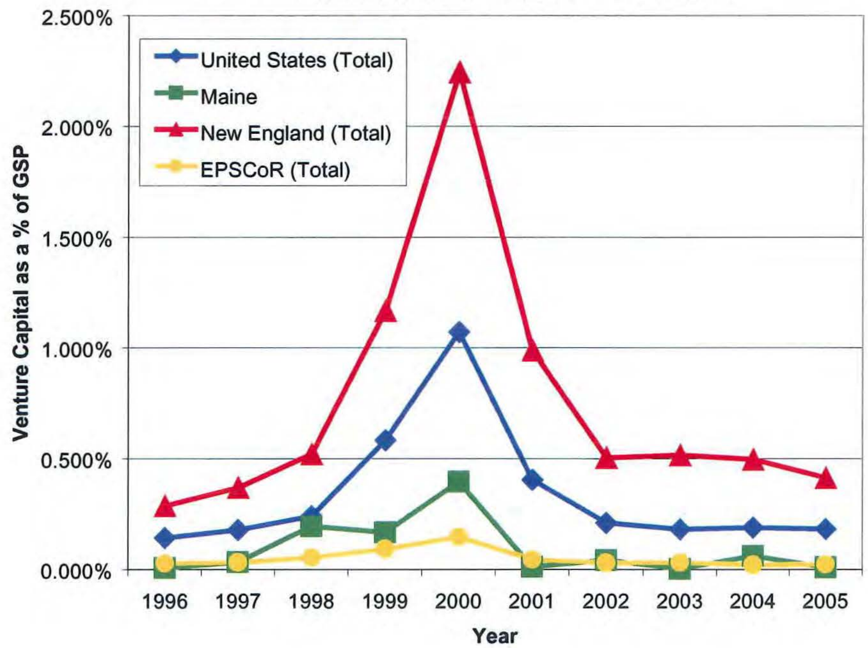
Maine 1-Year Trend	↓
Maine 5-Year Trend	↓
Maine Compared to EPSCoR	↓
Maine's National Ranking	43

Venture Capital Investments

Summary

In 2005, venture capital investments in Maine were 0.008 percent of gross state product (GSP). This was significantly lower than the New England level of 0.414 percent and the total U.S. level of 0.180 percent for the same year, and slightly below the 0.022 percent level of all EPSCoR states combined. Historically, Maine's venture capital investments as a percentage of GSP remained relatively low between 1995 and 1997. This was followed by a period of increases to a peak level of 0.394 percent in 2000 before falling to low levels again through 2005.

Venture Capital Invested as a Percent of Gross State Product – 1996-2005



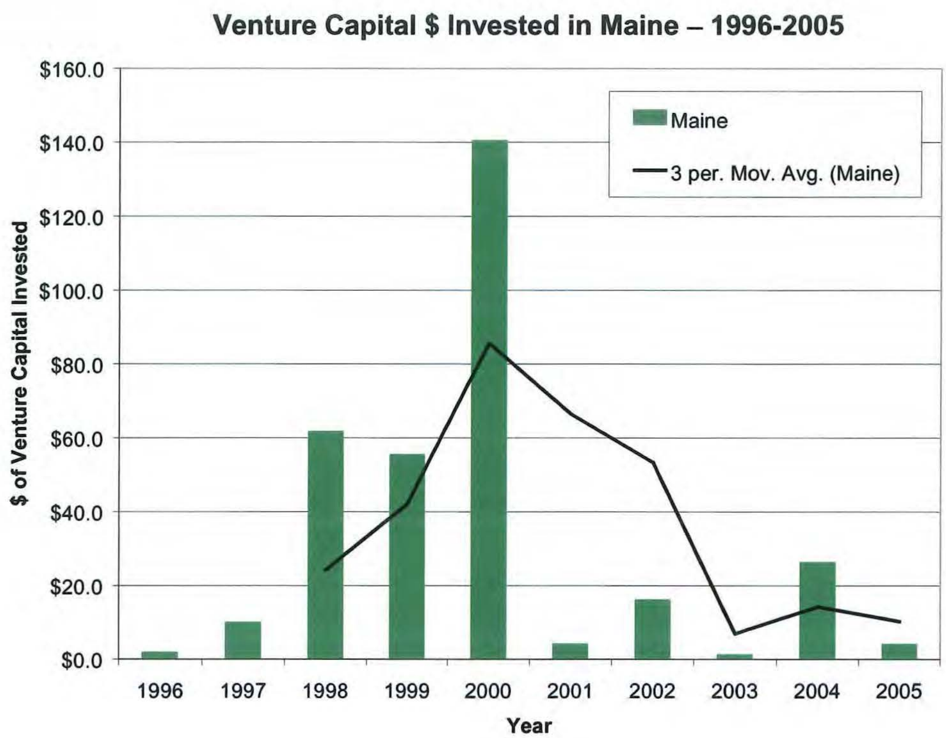
Why This Is Significant

Venture capital is a critical source of funding for technology-based startups and companies with high growth potential. Access to capital is one of the most important success factors for technology companies. States with access to venture capital are more likely to foster the creation of technology-based companies. According to the U.S. Federal Reserve, less than two percent of small business financing comes from venture capital. However, venture capital is significant for companies with the highest growth potential. This includes technology-based companies.

Related

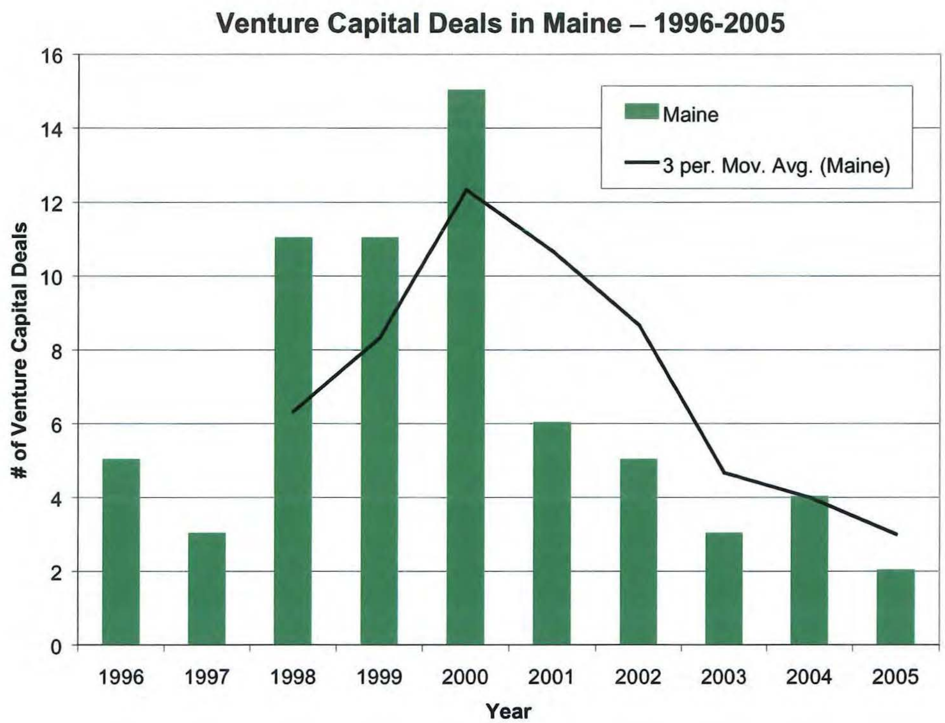
In 2005, Maine received $3.8 million in venture capital investments. This represented a decrease of 85 percent from Maine 2004 level of $26 million. Maine's $3.8 million in venture capital received in 2005 was part of two separate deals within the industry classes of biotechnology and industrial energy.

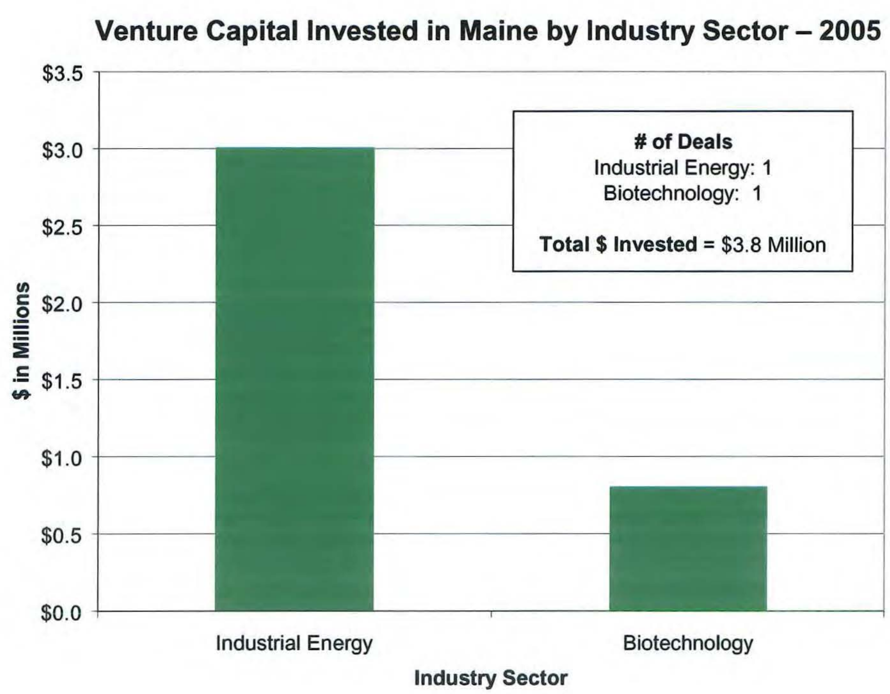
VENTURE CAPITAL INVESTMENTS



Sources

Venture capital investments data are from MoneyTree Venture Capital Profiles by State; based on PricewaterhouseCooper/Venture Economics/National Venture Capital Association Sur-veys; http://www.ventureeconomics.com/vec/stats/2006q1/0MAINMENU.html; Data Current as of April 2006. Gross State Product is from the Bureau of Economic Analysis, U.S. Department of Commerce, 1980-1996 data; and Accelerated Estimates for 2005 and Revised Estimates for 1997-2004; http://www.bea.gov/bea/regional/gsp.htm; 1997-2005 is based on NAICS while 1980-1996 is based on SIC industry classification.


Venture Capital Deals in Maine – 1996-2005
Maine
3 per. Mov. Avg. (Maine)
# of Venture Capital Deals
16
14
12
10
8
6
4
2
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Year


Venture Capital Invested in Maine by Industry Sector – 2005
# of Deals
Industrial Energy: 1
Biotechnology: 1
Total $ Invested = $3.8 Million
$ in Millions
$3.5
$3.0
$2.5
$2.0
$1.5
$1.0
$0.5
$0.0
Industrial Energy
Biotechnology
Industry Sector

Patents Issued

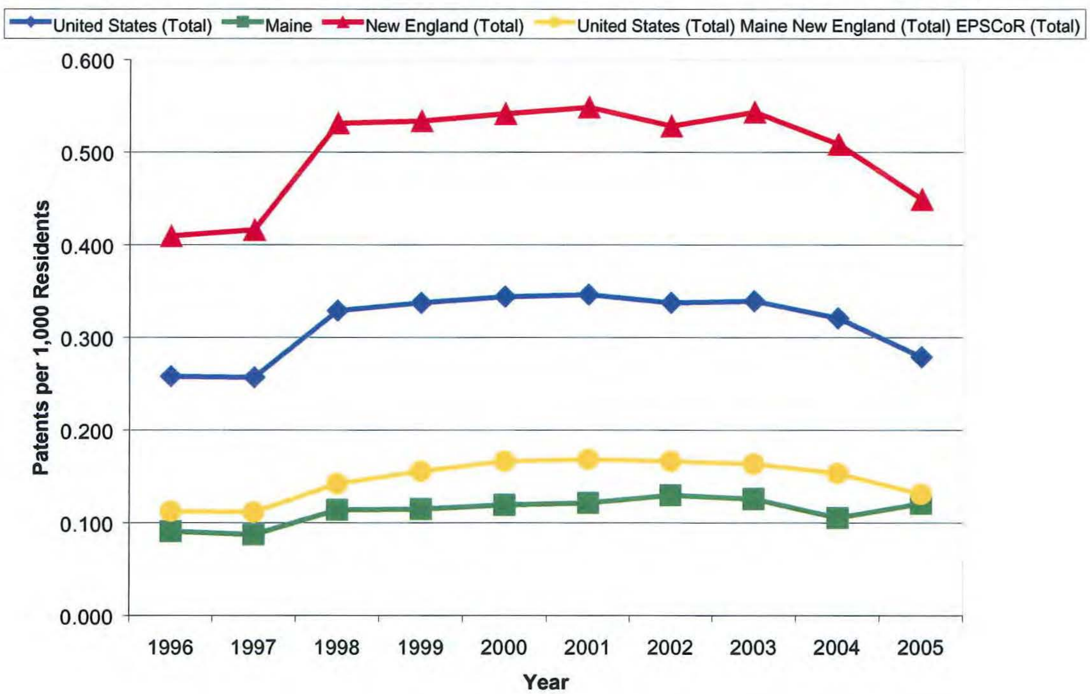
— Performance Summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↔
Maine Compared to EPSCoR	↓
Maine's National Ranking	38

Summary

The number of patents issued per 1,000 residents of Maine lagged behind the reference groups.[1] In 2005 there were 0.12 patents issued per 1,000 Maine residents in comparison to 0.28 for the U.S. as a whole, 0.45 in New England, and 0.13 among the EPSCoR states. This trend has remained relatively consistent from 1996 through 2004, however in 2005 Maine increased on this indictor relative to the reference groups.

Patents Issued (all types) per 1,000 Residents – 1996-2005



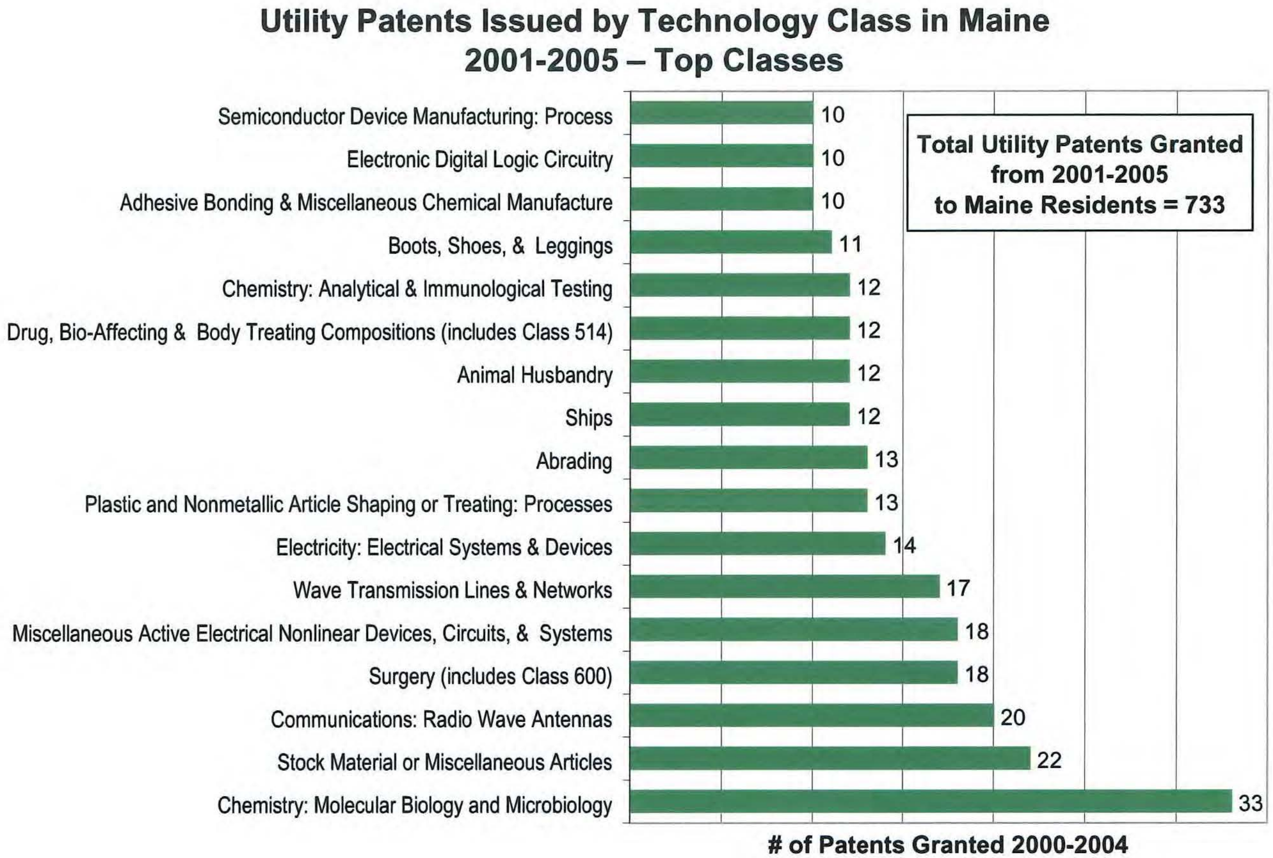
Why This Is Significant

Patent activity indicates the level of innovative thinking and research that eventually may lead to commercialization of new products and services. Individuals and companies seek patent protection in anticipation of the commercial value and marketability of their new ideas. In 2000, Maine created the Maine Patent Program to provide patent assistance to businesses and individu-als. This program has served over 500 business and individuals since its start.

Related

Between 2001 and 2005, there were a total of 733 utility patents[2] – that is, patents for inventions – issued to Maine residents. The largest percent of these fell within the classification entitled "chemistry: molecular biology and microbiology," which accounted for four percent. Other significant utility classes in Maine since 1999 included stock material or miscellaneous articles, surgery, miscellaneous active electrical nonlinear devices, wave transmission lines and networks, and radio wave antennas.

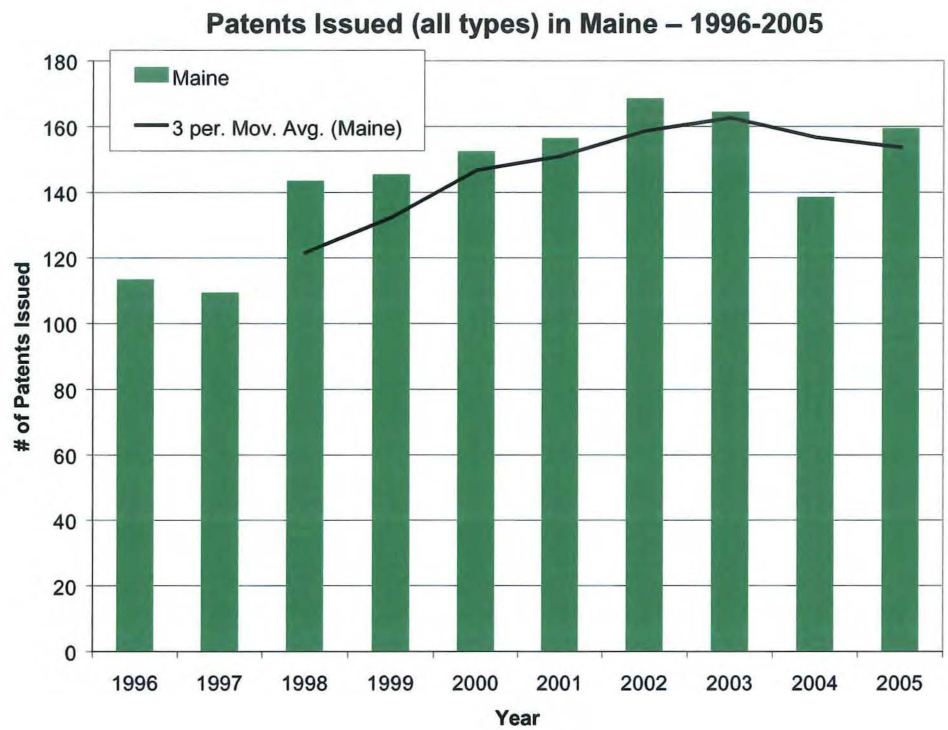
PATENTS ISSUED



Sources

Total patents issued was from "Patent Counts by Country/State and Year, All Patents, All Types", January 1, 1977-December 31, 2005; by Calendar Year; US Patent and Trade Mark Of-fice, August 2006; http://www.uspto.gov/. Utility patent data were from "Patenting by Geographic Region (State and Country), Breakout by Technology Class, 2000-2004 Utility Patent Grants by Calendar Year of Grant, U.S. Patent and Trademark Office; www.uspto.gov. Population is from 1990-1999 - Table CO-EST2001-12-00 - Time Series of Intercensal State Population Estimates: April 1, 1990 to April 1, 2000; Population Division, U.S. Census Bureau; Release Date: April 11, 2002; July 2000-July 2006 -Table 1: Annual Estimates of the Population for the United States and States, and for Puerto Rico: April 1, 2000 to July 1, 2006 (NST-EST2006-01), Population Division, U.S. Census Bureau, Release Date: December 22, 2006.

PATENTS ISSUED



Endnotes

[1]The residence of the first-named inventor determines the origin of a patent.

[2]The utility patent data excludes design patents, plant patents, reissues, defensive publications, and statutory inventions registrations.

indicators:

- High Technology Employment Growth
- High Technology Business Establishment Growth
- S&E Occupations in the Workforce
- Ph.D. Scientists and Engineers in the Labor Force
- Gross State Product Growth
- Per Capita Income

EMPLOYMENT & OUTPUT CAPACITY OVERVIEW

While technology industries span a wide range of economic activity and exhibit different patterns of growth and contraction, technology is playing an increasing role in all industries and hence businesses and occupations. Technology intensive economic activity tends to occur most where clusters of companies constellate around leading research universities, developing a deep pool of skilled workers and networks of investors and entrepreneurs who can turn innovative ideas into new or improved products and services.

Employment and business growth are primary economic outcome measures. In Maine, between 2004 and 2005 high technology employment grew 3.1 percent in Maine, a rate that was higher than that experienced in the U.S. and New England but lower than that for the EPSCoR states on average. During the same period high technology business establishment growth in Maine trailed that of all the reference groups. Encouraging though was that during this period Maine's technology related employment and business establishment growth outpaced growth in total employment and total businesses.

Workforce data signifies a need for the state to thicken its labor market in the areas of science and technology. In terms of occupations that are specifically related to science and engineering, in 2003, there were an estimated 15,020 science and engineering (S&E) occupations in Maine's workforce. On a per total worker basis, in was lower than that of the reference groups. Ph.D. recipients represent the underpinnings of an R&D based workforce. In 2003, there were an estimated 2,150 doctoral scientists and engineers in Maine's labor force. On a per total worker basis Maine equaled the level in the EPSCoR states for the same year but trailed New England and the nation as a whole

Gross state product and per capita income are the end outcome indicators for investing in research and development and supporting technology intensive industries. Between 2004 and 2005 Maine's gross state product growth was lower than all the reference groups. In 2005, Maine's per capita income exceeded the EPSCoR states level but was below that of the U.S. and New England. Taken together these two indicators point out that Maine has yet to reap the full potential of a technology-intensive economy.

— performance summary —

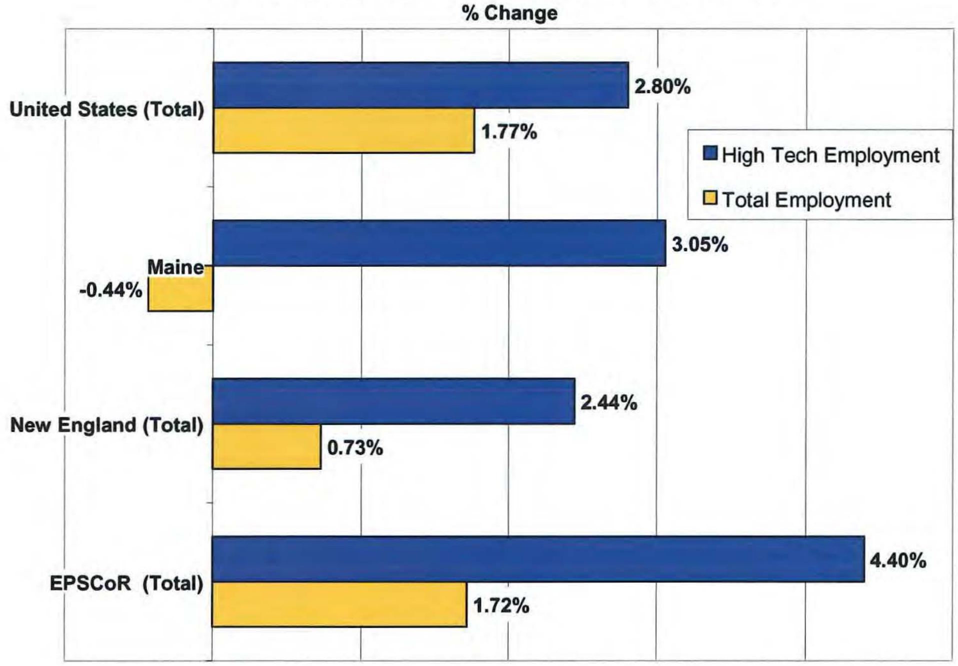
Maine 1-Year Trend	↑
Maine 5-Year Trend	↓
Maine Compared to EPSCoR	↓
Maine's National Ranking	26

High Technology Employment Growth

Summary

Between 2004 and 2005 high technology employment[1] grew 3.5 percent in Maine. This was a higher growth rate than that experienced in the U.S. as a whole (2.8 percent) and in New England (2.4 percent) but lagged that for the EPSCoR states (4.4 percent). Maine's technology related employment growth is outpacing its total employment growth. During the same period in Maine total employment in all industries decreased 0.4 percent.

Percent Change in Employment 2004-2005



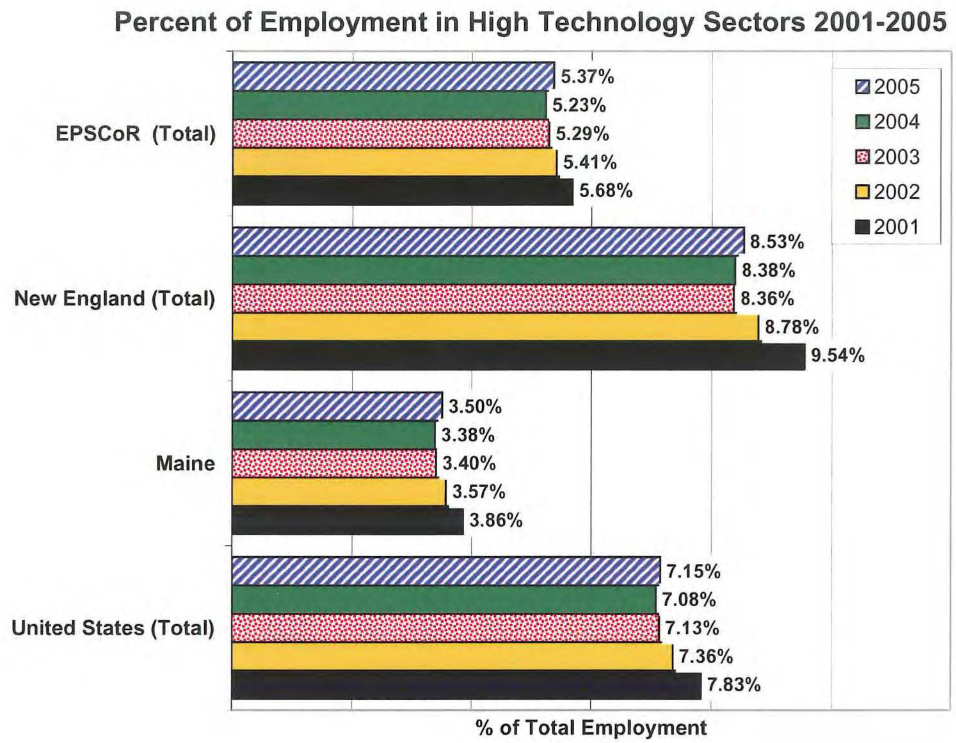
Why This Is Significant

High technology job growth is an outcome indicator of Maine's ability to build, recruit and retain an educated and technically skilled workforce. It measures the level of employment opportunity created by the Maine economy. High technology jobs typically pay higher wages than non-technology related jobs. Therefore, employment growth in technology-intensive businesses helps increase the standard of living among Maine residents.

Related

In 2005 Maine had a total employment level of 594,481 workers. Of that amount, 20,828 or 3.5 percent were in high technology businesses. Maine's concentration of employment in high technolgy industries is lower than the concentrations in the reference groups. In 2005, 7.2 percent of U.S. employment was in high technology industries; in New England the concentration level was 8.5 percent; and among EPSCOR states, 5.3 percent.

HIGH TECHNOLOGY EMPLOYMENT GROWTH



Sources

High technology and total employment were from special data tabulations of the County Business Patterns, U.S. Census Bureau, U.S. Department of Commerce and were provided by the Center for Business and Economic Research, University of Southern Maine.

High Technology Business Establishment Growth

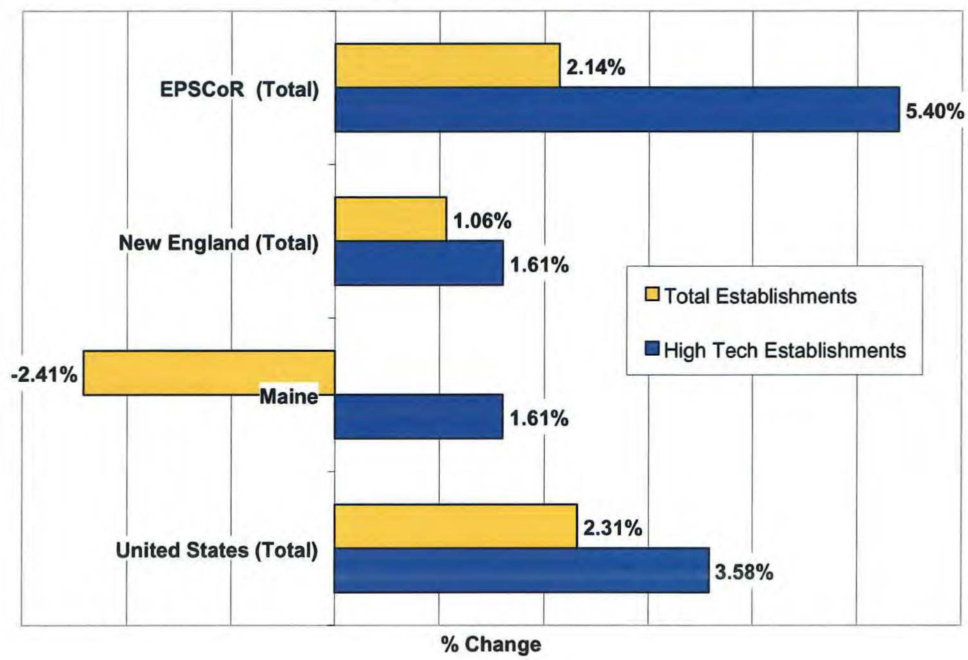
— performance summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↓
Maine's National Ranking	44

Summary

Between 2004 and 2005, high technology business establishments[2] in Maine increased 1.6 percent. During this period, high technology business establishment growth was lower in Maine and New England than in the other reference groups. In the U.S. as a whole the increase in high technology business establishments was 3.6 percent and among EPSCoR states, 5.4 percent. In New England the increase was identical to Maine at 1.6 percent. During this same period, Maine's growth in high technology establishments outpaced the growth of all business establishments in Maine, which experienced a decrease of 2.4 percent.

Percent Change in Establishments 2004-2005



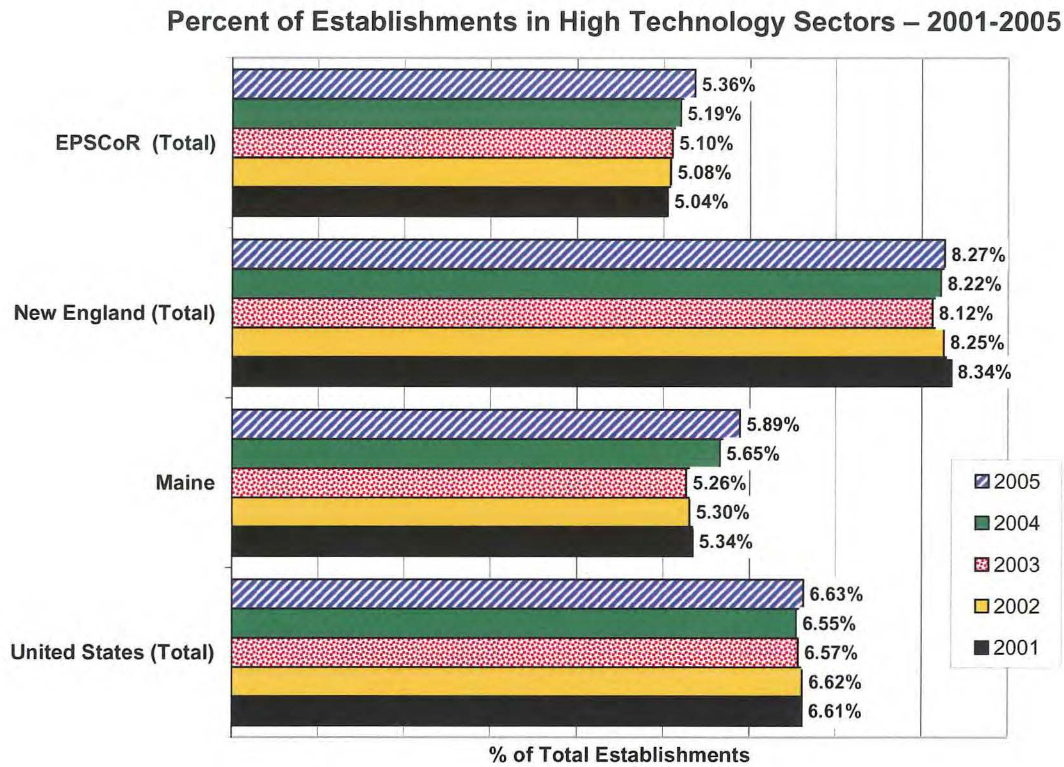
Why This Is Significant

This indicator is a measure of how successful a region is at growing new technology businesses; ultimately, it is a measure of the concentration of high-technology in a state. It is an indication of a state's economic conditions, business climate, and availability of support for growth.

Related

In 2005 high technology business establishments in Maine represented 5.9 percent of all business establishments. In 2005 in the U.S. as a whole, high technology business establishments represented 6.6 percent of all establishments; in New England, 8.3 percent; and among EPSCoR states, 5.4 percent.

HIGH TECHNOLOGY BUSINESS ESTABLISHMENT GROWTH



Sources

High technology and total establishments were from special data tabulations of the County Business Patterns, U.S. Census Bureau, U.S. Department of Commerce and were provided by the Center for Business and Economic Research, University of Southern Maine.

— performance summary —

Maine Compared to EPSCoR ↓

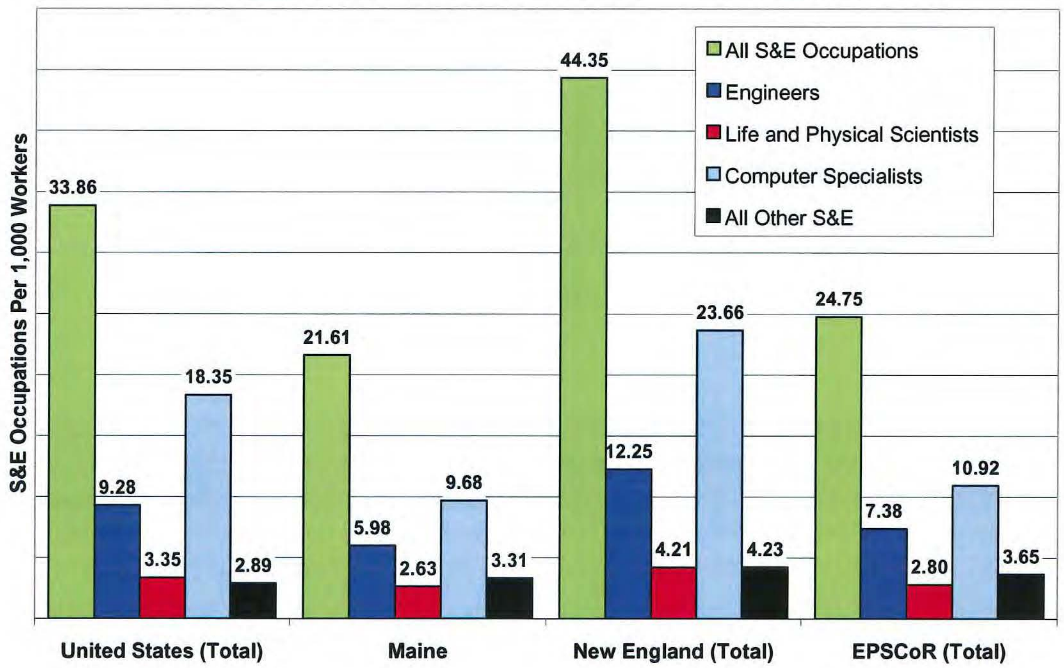
Maine's National Ranking 46

Scientists and Engineers in the Workforce

Summary

In 2003, there were an estimated 15,020 science and engineering (S&E) occupations in Maine's workforce[3]. This represented 21.61 S&E occupations for every 1,000 Maine workers and lagged behind the U.S. as a whole (33.86), New England (44.35), and the EPSCoR states (24.75).

S&E Occupations in the Workforce Per 1,000 Workers – 2003



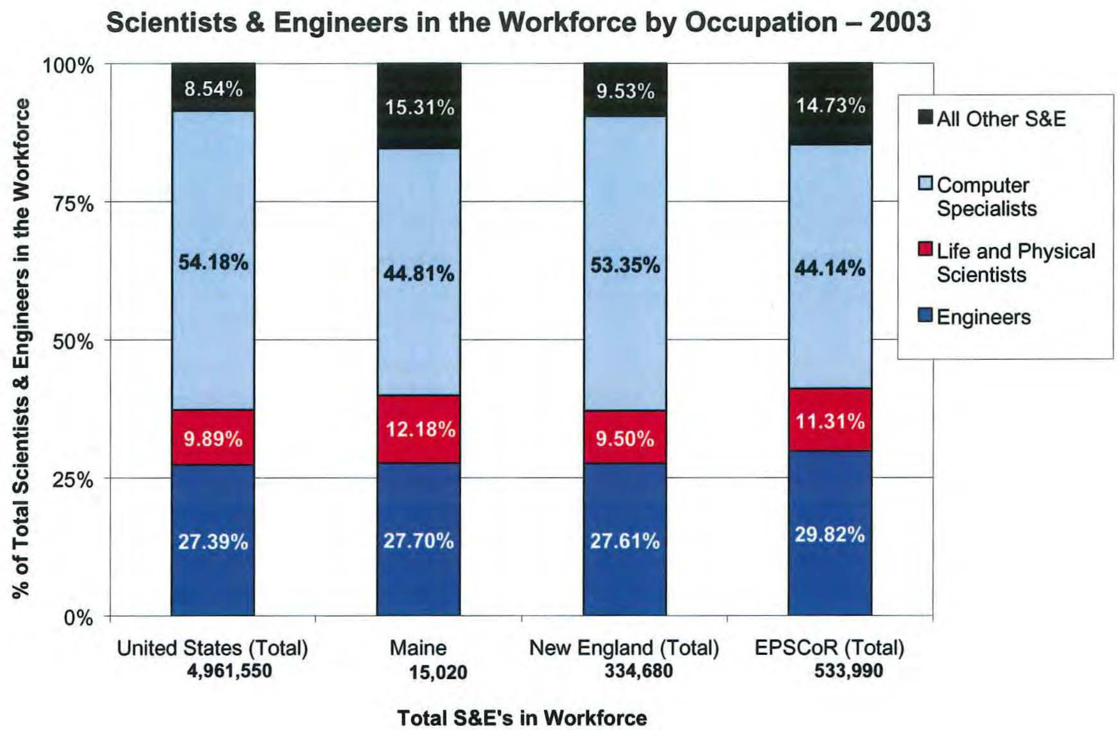
Why This Is Significant

A thick labor market of scientists and engineers is essential to creating a vibrant research, development and technology enterprise. This indicator is a measure of the state's ability to attract and retain highly skilled and highly educated workers who are critical to an innovation driven economy.

Related

In 2003 the largest percent (45 percent) of S&E occupations in the Maine workforce were computer specialist occupations this was followed by engineers at 28 percent, and life and physical scientists at 12 percent. All other S&E occupations accounted for 15 percent. In relation to the reference group, Maine had a higher concentration of occupations in life and physical sciences.

SCIENTISTS AND ENGINEERS IN THE WORKFORCE



Sources

Science and engineering occupations is from National Science Foundation, Division of Science Resources Statistics, Science & Engineering Indicators 2006, http://www.nsf.gov/statistics/seind06/; based on data from U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics. Workforce is based on civilian labor force and is from U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics - http://www.bls.gov/lau/home.htm; 1990-2000 reflects new modeling approach and reestimation as of March 2005; 2000-2005 reflects revised population controls and model reestimation through 2005.

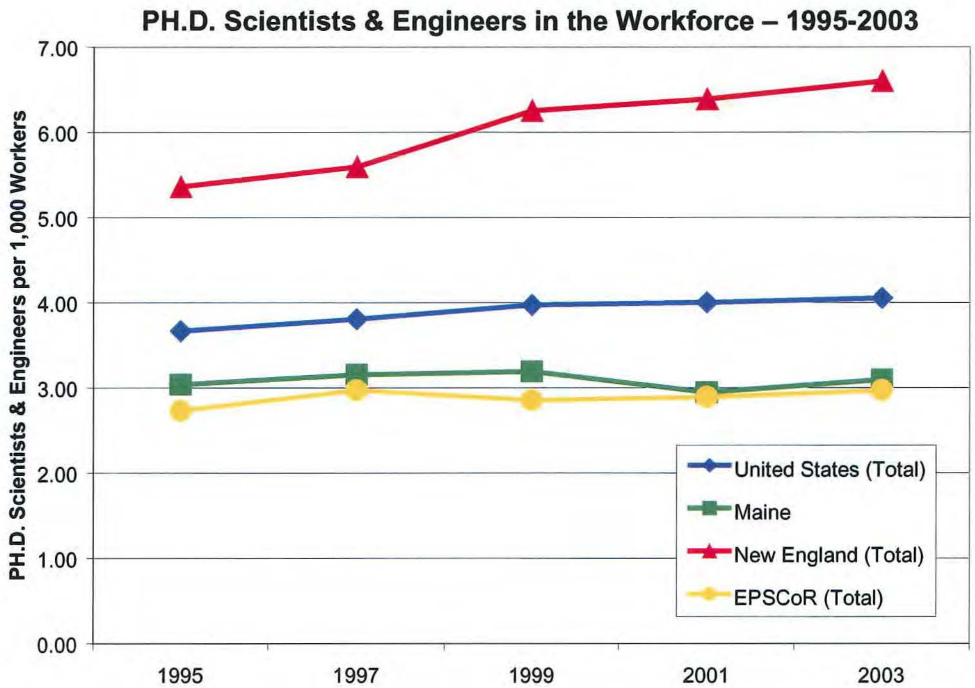
Ph.D. Scientists and Engineers in the Labor Force

— performance summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↓
Maine Compared to EPSCoR	↑
Maine's National Ranking	29

Summary

In 2003, there were an estimated 2,150 doctoral scientists and engineers in Maine's labor force. This represented 3.1 doctoral scientists and engineers for every 1,000 Maine workers and was slightly higher than the level in the EPSCoR states for the same year. However, Maine lagged behind New England and the nation as a whole. In 2003 New England had 6.6 employed doctoral scientists and engineers per 1,000 workers and the U.S. had employed 4.1.



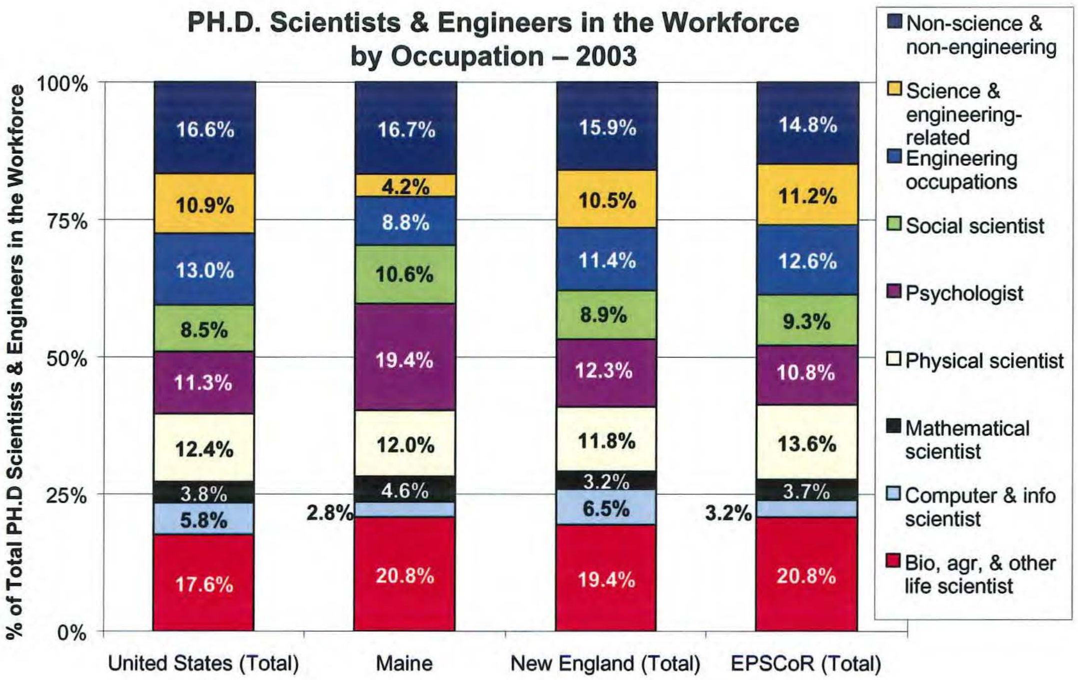
Why This Is Significant

Ph.D.'s drive research and development leading to new products and services. They also provide vital linkages between Maine business and institution with international R&D expertise. This indicator measures Maine's ability to attract and retain Ph.D. level workers.

Related

In 2003 the largest percent (21 percent) of employed Ph.D. scientists and engineers in the Maine workforce were employed in biology, agriculture, and other life science professions.[4] This was followed by psychologists at 19 percent, and non-science and engineering professions. In relation to the reference group, Maine had a higher concentration of employed Ph.D. scientists in psychology professions.

Ph.D. SCIENTISTS AND ENGINEERS IN THE LABOR FORCE



Sources

Ph.D. scientists and engineers is from National Science Foundation/Division of Science Resources Statistics, Survey of Doctorate Recipients 2003, http://www.nsf.gov/sbe/srs. Workforce is based on civilian labor force and is from U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics - http://www.bls.gov/lau/home.htm; 1990-2000 reflects new modeling approach and reestimation as of March 2005; 2000-2005 reflects revised population controls and model reestimation through 2005.

— performance summary —

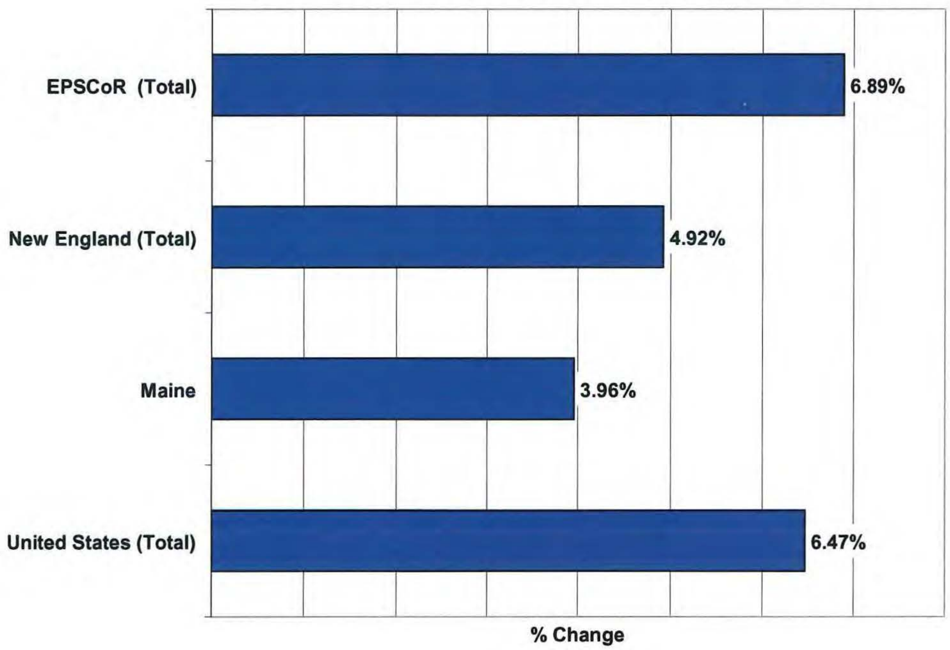
Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↓
Maine's National Ranking	47

Gross State Product Growth

Summary

Between 2004 and 2005 Maine's gross state product (GSP) grew 4.0 percent, a level that was lower than all the reference groups. During this same period, GSP grew 6.5 percent in the U.S. as a whole, 4.9 percent in New England, and 6.9 percent among the EPSCoR states combined.

Percent Change in Gross State Product 2004-2005



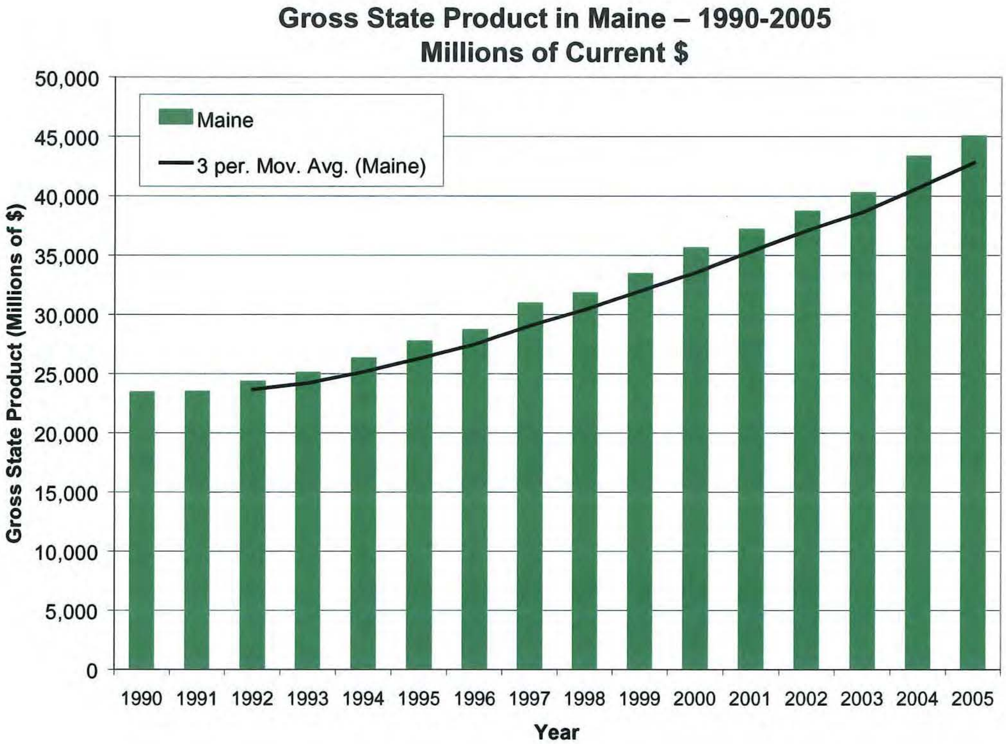
Why This Is Significant

Gross state product is a comprehensive indicator of statewide total economic output. Growth in GSP relative to other states indicates a strengthening of a state's overall economy.

Related

In 2005 Maine's GSP exceeded $44 billion. After a slow growth period in the early 1990's, GSP has since experienced steady growth in Maine.

GROSS STATE PRODUCT GROWTH



Sources

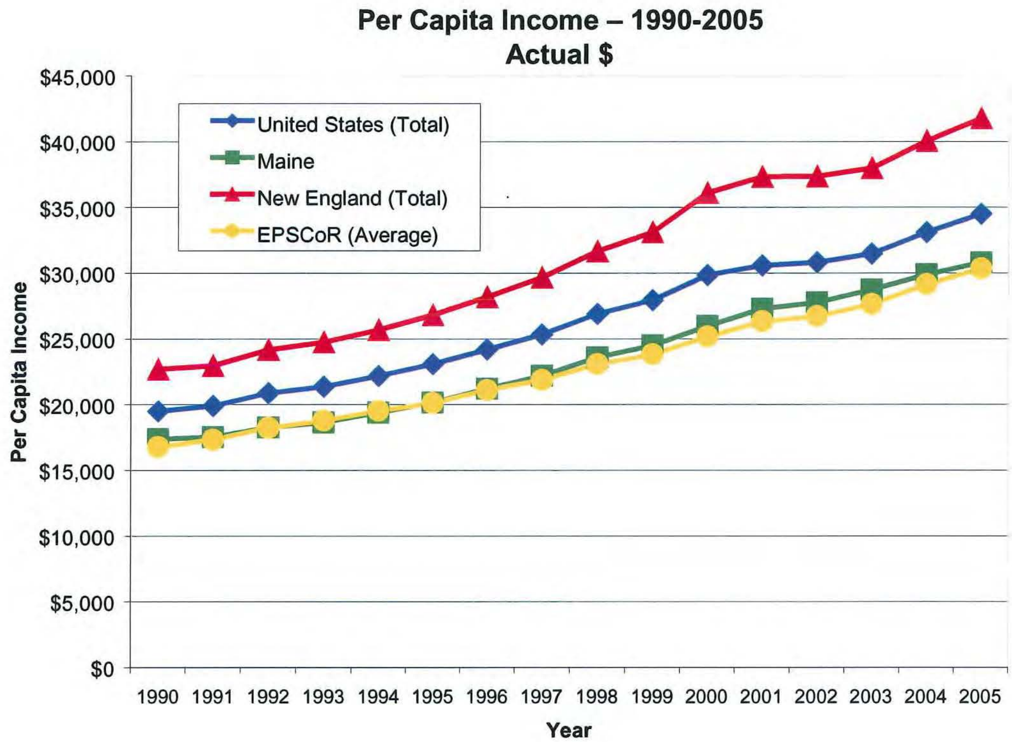
Gross state product is from Bureau of Economic Analysis, U.S. Department of Commerce, 1980-1996 data; and Accelerated Estimates for 2005 and Revised Estimates for 1997-2004; http://www.bea.gov/bea/regional/gsp.htm; 1997-2005 is based on NAICS while 1980-1996 is based on SIC industry classification.

— performance summary —	
Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↑
Maine's National Ranking	38

Per Capita Income

Summary

In 2005, Maine's per capita income was $30,808. This exceeded the EPSCoR states level of $30,351 but was below that of the U.S. as a whole ($34,495) and the New England level of ($41,785).



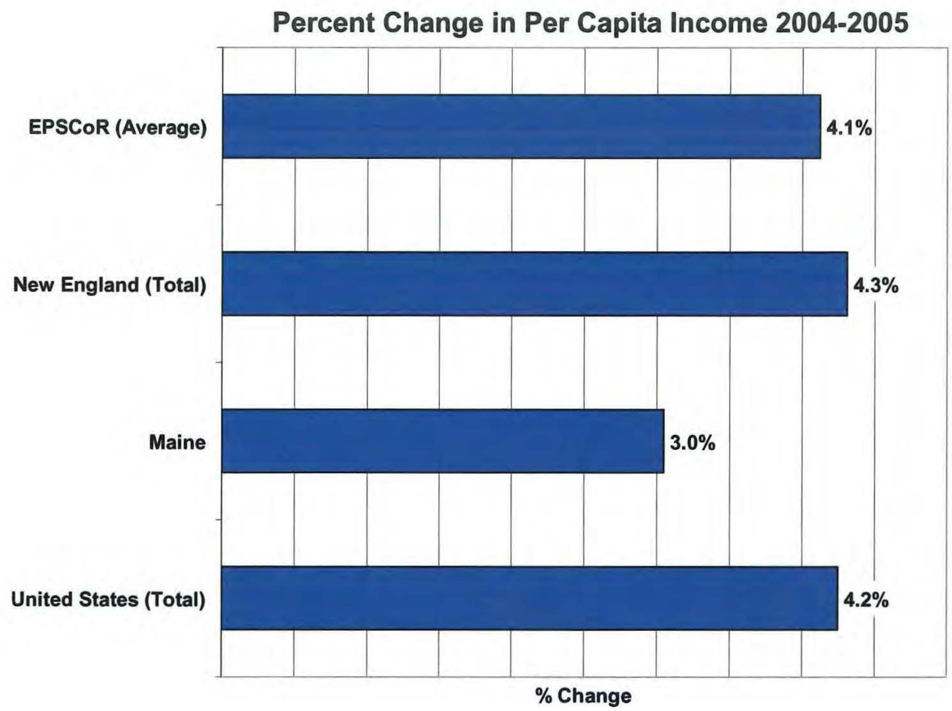
Why This Is Significant

While GSP measures comprehensive economic performance, income is an indicator of individual wealth. It is in this sense that income is the ultimate end outcome for investing in science and technology: increasing personal wealth and therefore quality of life.

Related

Between 2004 and 2005 Maine's per capita income grew 3.0 percent, a level that was lower than all the reference groups. During this same period, per capita income in the U.S. as a whole grew 4.2%, in New England grew 4.3% and among the EPSCoR states combined grew 4.1%.

PER CAPITA INCOME



Sources

Per capita income is from Bureau of Economic Analysis, U.S. Department of Commerce; http://www.bea.gov. All dollar estimates are in current dollars (not adjusted for inflation). 2000-2005 were revised and released September 2006.

Endnotes

[1]Definition of High Technology is from the U.S. Department of Commerce, based on 39 NAICS codes corresponding to high-technology industries. All employment data is based on annual average levels. The 39 industries are:

NAICS Code	Industry
32411	Petroleum Refineries
3251	Basic Chemical Manufacturing
3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibers and Filaments Manufacturing
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing
3254	Pharmaceutical and Medicine Manufacturing
3255	Paint, Coating, and Adhesive Manufacturing
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing
3259	Other Chemical Product and Preparation Manufacturing
332992	Ordnance & Accessories Manufacturing—Small Arms Ammunition Manufacturing
332993	Ordnance & Accessories Manufacturing—Ammunition (except Small Arms) Manufacturing
332994	Ordnance & Accessories Manufacturing—Small Arms Manufacturing
332995	Ordnance & Accessories Manufacturing—Other Ordnance and Accessories Manufacturing
3331	Agriculture, Construction, and Mining Machinery Manufacturing
3332	Industrial Machinery Manufacturing
3333	Commercial and Service Industry Machinery Manufacturing
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing
3339	Other General Purpose Machinery Manufacturing
3341	Computer and Peripheral Equipment Manufacturing
3342	Communications Equipment Manufacturing
3343	Audio and Video Equipment Manufacturing
3344	Semiconductor and Other Electronic Component Manufacturing
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing
3346	Manufacturing and Reproducing Magnetic and Optical Media
3353	Electrical Equipment Manufacturing
33599	All Other Electrical Equipment and Component Manufacturing
3361	Motor Vehicle Manufacturing
3362	Motor Vehicle Body and Trailer Manufacturing
3363	Motor Vehicle Parts Manufacturing
3364	Aerospace Product and Parts Manufacturing
3391	Medical Equipment and Supplies Manufacturing
5112	Software Publishers
514191	On-Line Information Services
5142	Data Processing Services
5413	Architectural, Engineering, and Related Services
5415	Computer Systems Design and Related Services
5416	Management, Scientific, and Technical Consulting Services
5417	Scientific Research and Development Services
6117	Educational Support Services
811212	Computer and Office Machine Repair and Maintenance

[2]See note 1 for definition of high technology businesses.

[3]S&E occupations are defined by NSF as 77 standard occupational codes that encompass mathematical, computer, life, physical, and social scientists; engineers; and postsecondary teachers in any of these S&E fields. People with job titles such as manager are excluded.

[4]Occupation categories include: computer and information scientists; mathematical scientists; life and related scien-tists (biological and agricultural science, environmental sciences, health sciences); physical and related scientists (chemistry, earth, atmospheric, ocean, physics and astronomy); social and related scientists (economics, political science, sociology, and anthropology); psychology; and engineering (aerospace, aeronautical, chemical, civil, elec-trical, computer, materials, metallurgical, and mechanical).

indicators:

- Math and Science Skills of Students
- Higher Education Enrollment among Young People
- Science and Engineering Graduate Enrollments
- Science and Engineering Degrees Awarded
- Education Attainment

EDUCATION CAPACITY OVERVIEW

When asked about issues that have the greatest impact on business and economic development, the availability of a skilled and educated workforce is consistently among the top items cited by business owners, economic developers, and site locators. Moreover, technology and innovation based companies require workers with advanced skills and education in math and sciences.

Success in developing math and science skills begins at the K-12 level. Maine eighth grade students continue to perform well relative to other states in math and science, however, Maine's reputation as a national leader may be at risk. Maine's average math score in 2003 on the National Assessment of Educational Progress (NAEP) placed its eighth graders among the top fourteen states; the 2005 score dropped Maine students to 20th in the nation. In 2000, Maine eighth graders turned in the 6th highest science scores in the country on the 2000 (NAEP). In 2005 the same score for Maine dropped the state's eighth graders to 8th in the nation.

Today's science and technology intensive careers demand an education level beyond that of a high school level. In terms of advancing twelfth graders onto higher education, in 2004 Maine performed at the national average but below the New England states and the EPSCoR states in terms of chance for college enrollment among 19 year-olds. Data suggests that affordability of higher education for the typical Maine family is impeding Maine's progress in improving education capacity.

Supporting a vibrant technology and innovation economy requires a regular supply of workers with college and advanced degrees in science and engineering related fields. With regard to science and engineering enrollments and science and engineering degrees awarded Maine lags the nation and New England.

Finally, with regard to the adult population, Maine has not kept pace with the nation and New England with regard to higher educational attainment. In 2005, Maine and the other EPSCoR states trailed the U.S and New England in terms of percent of population twenty five years and older that held four-year college degrees or more.

math performance summary

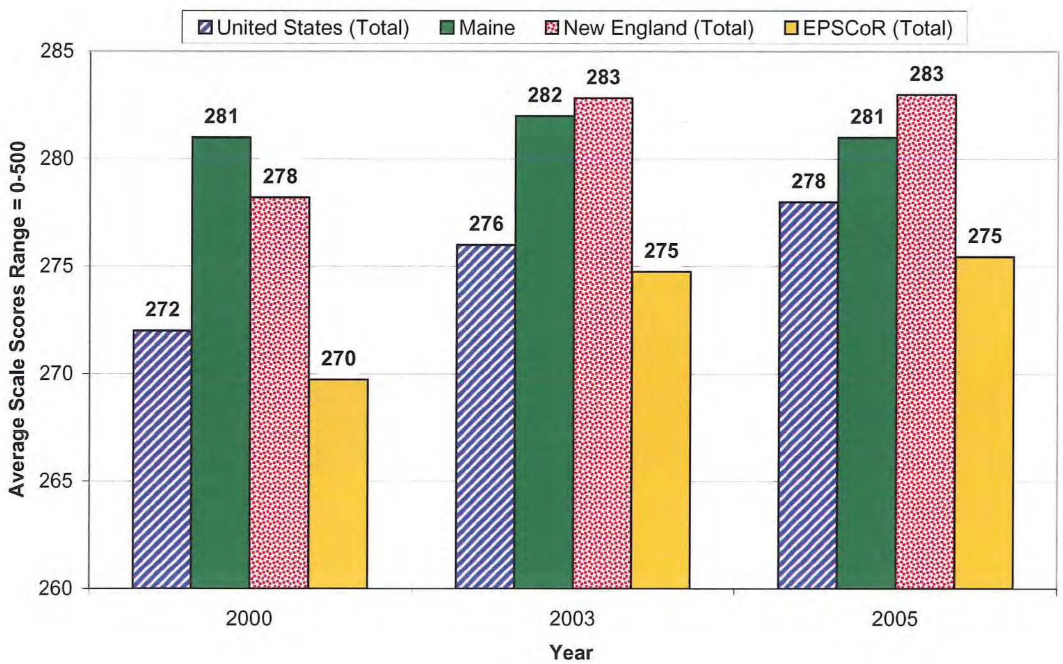
Maine 5-Year Trend	↔
Maine Compared to EPSCoR	↔
Maine's National Ranking	20

Math and Science Skills of Students

Summary

The National Assessment of Educational Progress, (NAEP) provides data to allow a comparison of education achievement across states. On the 2005 NAEP mathematics test, Maine eighth graders scored 281 . This was similar to the 2003 (282) and 2000 (281).[1] Maine's score in 2003 placed its eighth graders among the top fourteen states; the 2005 score (281)[2] dropped Maine students to 20th in the nation. In 2005 Maine eighth graders nearly matched the scaled score of the other New England states (283), and scored higher than the US average scaled score (278) and that of the EPSCoR states (275).

National Assessment of Educational Progress – Math Scores (Average Scale Scores) for 8th Graders – 2000, 2003, 2005



science performance summary

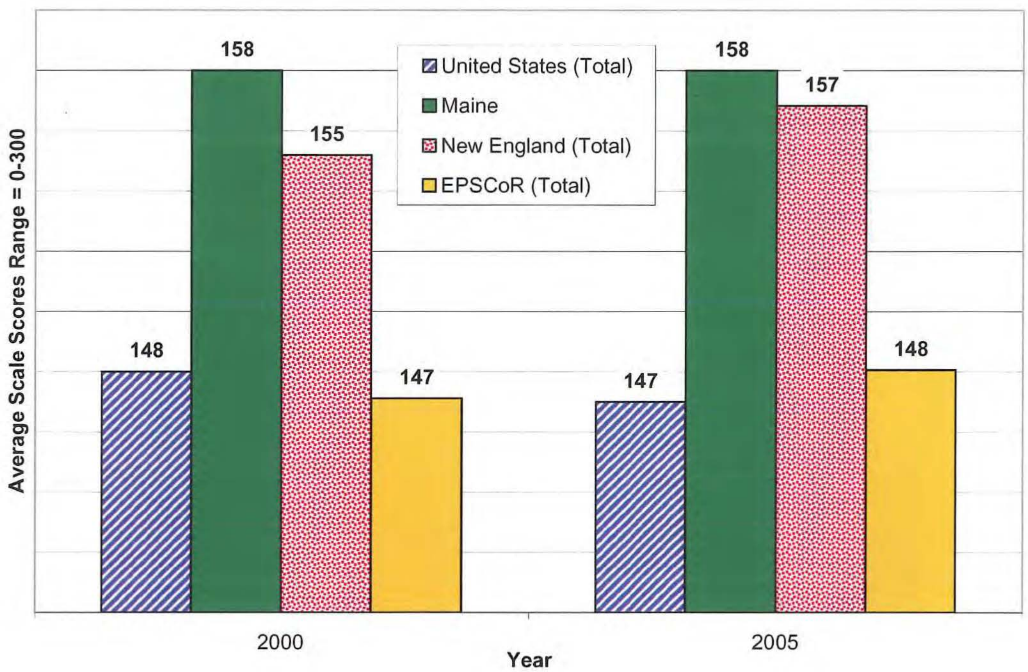
Maine 5-Year Trend ⇔

Maine Compared to EPSCoR ↑

Maine's National Ranking **8**

On the 2005 NAEP, Maine eighth graders turned in the eighth highest science scores in the country. Maine's average score was 158 compared to 147 for the US, 157 for New England, and 148 for the EPSCoR states.[3]

National Assessment of Educational Progress – Science Scores (Average Scale Scores) for 8th Graders – 2000 & 2005



Why This Is Significant

Proficiency in both math and science is a fundamental requirement for technology-related jobs. The NEAP helps to measure performance in math and science among eighth graders in Maine and because it is conducted nationally allows comparisons among states

Sources

U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2000 & 2005 Science Assessments and 2000, 2003, and 2005 Mathematics Assessments; http://nces.ed.gov/nationsreportcard/

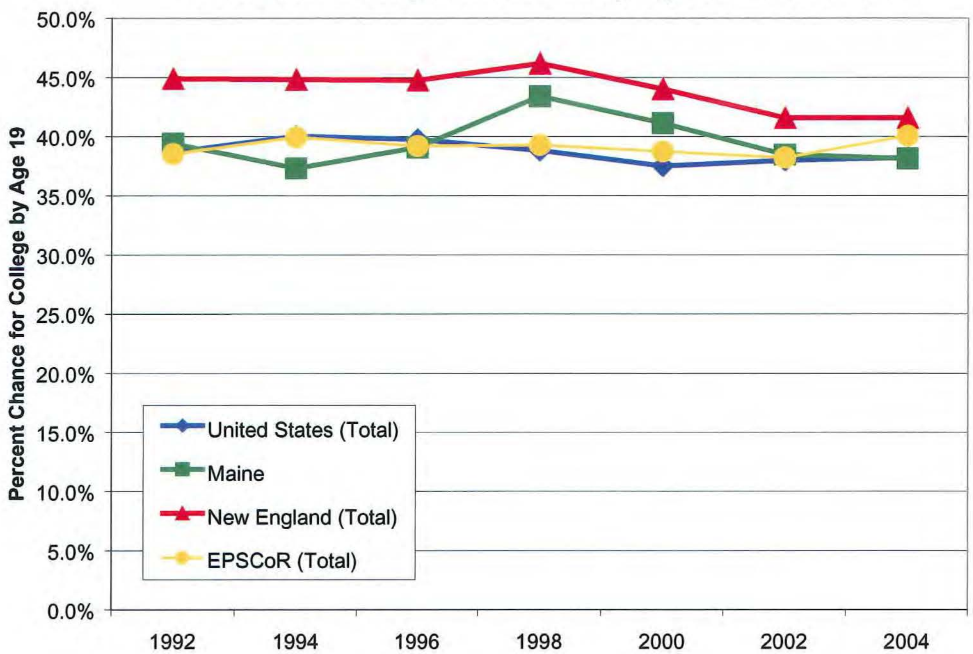
Higher Education Enrollment among Young People

— performance summary —	
Maine 5-Year Trend	↓
Maine Compared to EPSCoR	↓
Maine's National Ranking	**29**

Summary

In 2004, Maine 19 year-olds had a 38.1 percent chance[4] of being enrolled in post-secondary education. This represents little change from the state's 2002 level of 38.5 percent. On this indictor in 2004 Maine performed at the national average but below the New England states (41.6 percent) and the EPSCoR states (40.1 percent).

Chance for College Enrollment by Age 19 – 1992-2004



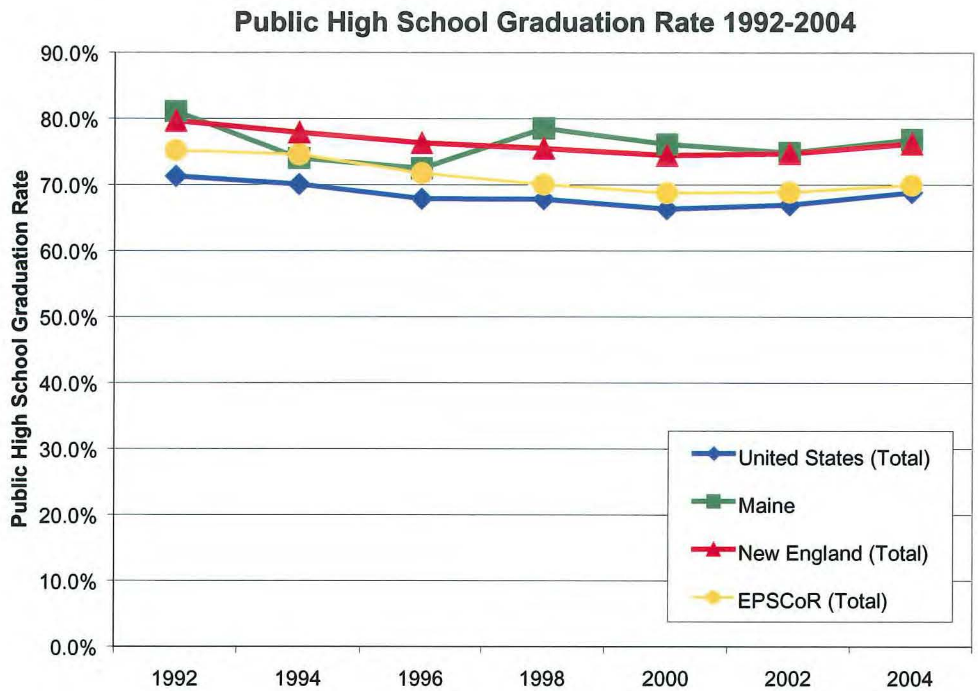
Why This Is Significant

Higher education attainment among the population is increasingly important if Maine is to develop a technology-intensive economy and one that promotes personal economic well-being. The extent to which young adults complete high school and continue to higher education is an indicator of aspirations among young adults, and accessibility of higher education, and future potential education attainment.

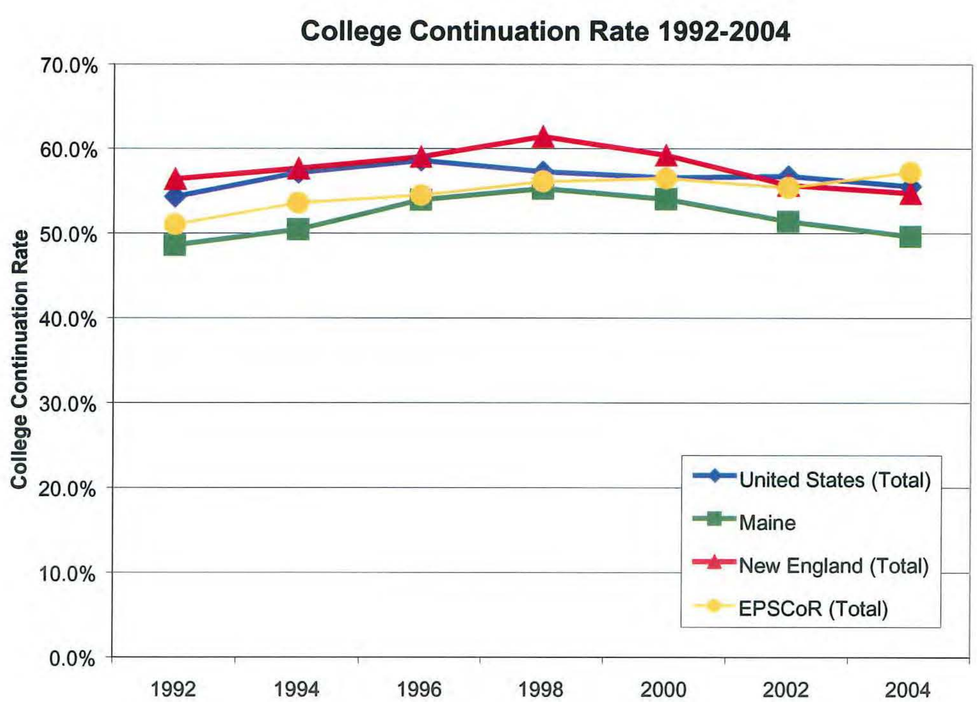
Related

Chance for college at the end of high school is a factor of both high school graduation rand college continuation rates. In 2004 Maine's public high school graduation rate was 76.8 percent. This was similar to the New England average of 76.2 percent and higher than that for the U.S. as a whole (68.8 percent) and the EPSCoR states (69.9 percent).

HIGHER EDUCATION ENROLLMENT AMONG YOUNG PEOPLE

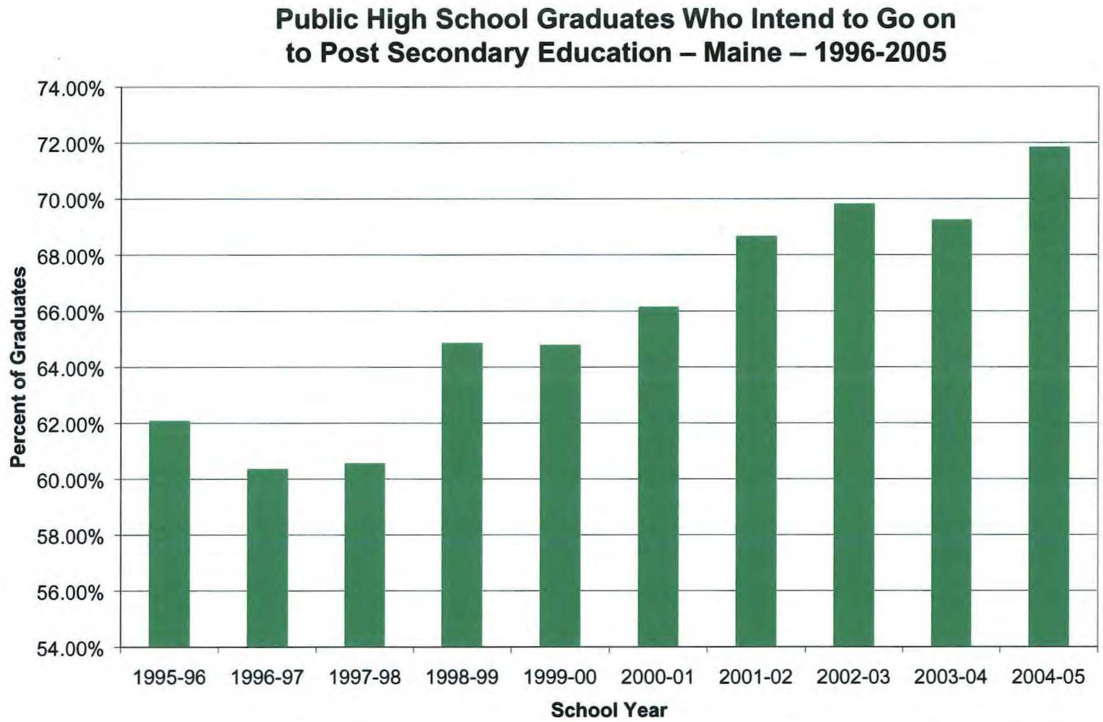


In 2004 Maine's college continuation rate was 49.6 percent. This is lower than all the reference groups with the U.S. at 55.5 percent, New England at 54.8 percent, and EPSCoR at 57.2 percent.

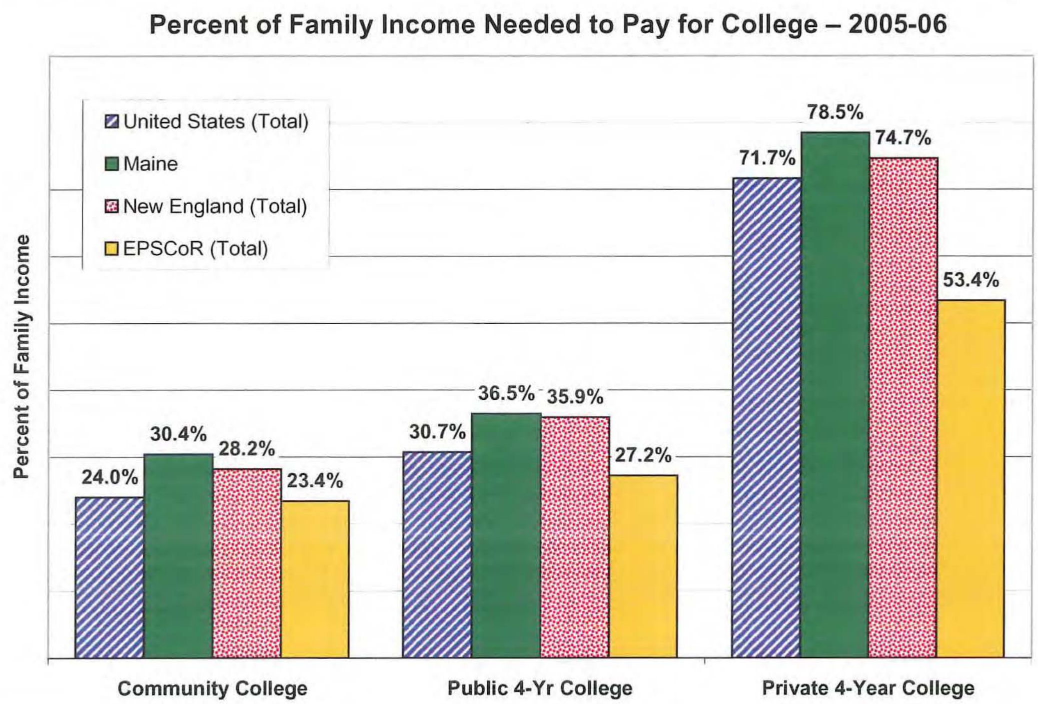


Taken together, the high school graduation rate and college continuation rate for Maine students indicate that while Maine is graduating its high school students at higher than average rates, it is not leading to higher than average college enrollments of young people.

Further investigation reveals that this may more related to affordability rather than aspirations. Another measure of the aspirations of Maine high school students is their intention to attend college[5]. In 2004-2005, the state's annual survey of high school seniors found that 71.8 percent of high school seniors indicated an intention to go on to postsecondary education. This was higher than the 2003-2004 level of 69.2 percent.



While several factors may explain the difference between Maine's intentions of Maine's high school seniors to go onto college and their experiencing in doing so; affordability is likely a factor. In 2005-06, a higher percentage of the typical Maine family's income was needed to pay for college than all the other reference groups.



Sources

Data on chance for college is "Chance for College by Age 19 - 1986-2004", Thomas Mortenson, Postsecondary Education Opportunity; 9/25/2006; http://www.postsecondary.org and is based on data from data from Public Elementary and Secondary Education Statistics and the biannual Integrated Postsecondary Education Data System of the National Center for Education Statistics, www.nces.ed.gov. Data on Maine high school graduate intentions is from Maine Department of Education, "Graduates on to Post Secondary Schools, by County and Unit, Public Schools", based on survey of high school seniors in the spring of each school year in which seniors are asked to indicate if they intend to go on to postsecondary education, www.state.me.us/education/enroll/grads/gradspost.htm. Data on affordability is from National Center for Public Policy and Higher Education; "Measuring Up 2006: The State-By-State Report Card for Higher Education"; http://measuringup.highereducation.org.

Science and Engineering Graduate Enrollments

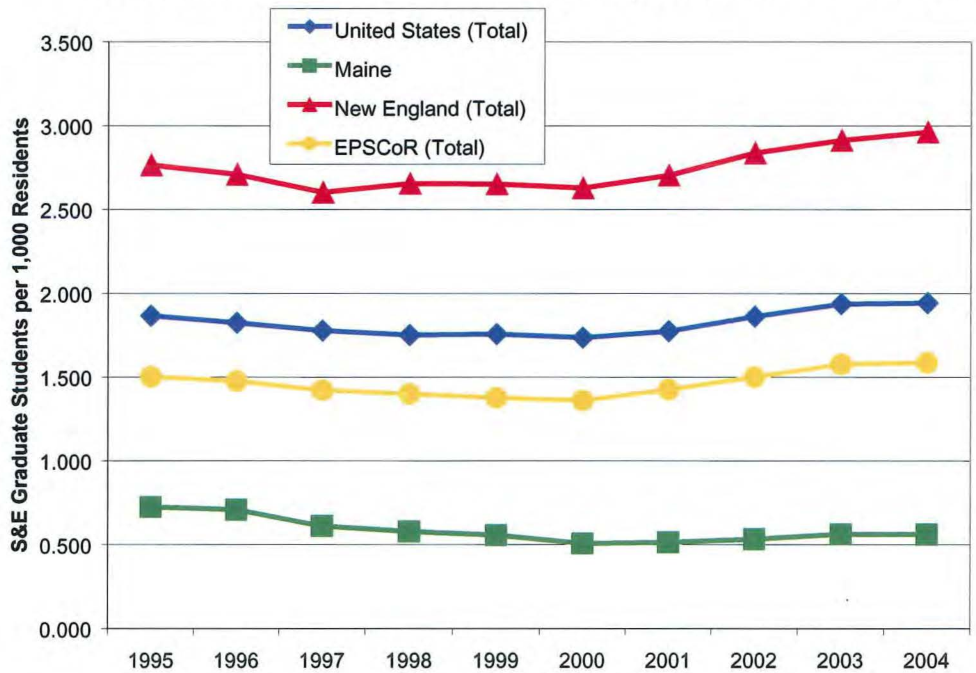
— performance summary —

Maine 1-Year Trend	↓
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↓
Maine's National Ranking	**51**

Summary

In 2004 Maine had 736 graduate students enrolled in science and engineering programs. This represented 0.56 enrolled graduate students per 1,000 residents. On this indicator in 2004 Maine lagged the indices of the US (1.94), New England (2.96), and EPSCoR (1.59).

S&E Graduate Student Enrollments per 1,000 Residents – 1995-2004



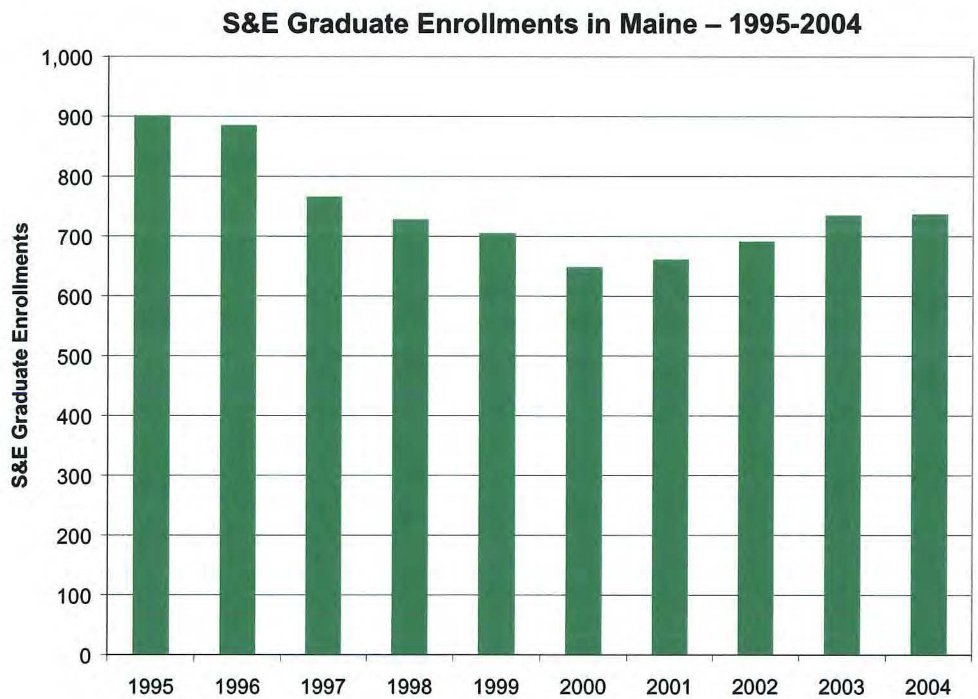
Why This Is Significant

The extent to which Maine colleges and universities are awarding science and engineering degrees is an indicator of both the science and technical capacity of the state's postsecondary schools and the potential for workers with science and technical abilities among Maine's workforce. Both of these are fundamental requirements for developing a solid foundation for research and long-term, technology-driven innovation. The National Science Foundation, the National Institutes of Health, and the Council of Graduate Schools also emphasize the importance of graduate level studies in these disciplines: "The goal that national science workforce policy seeks or needs to maximize is to produce high quality researchers as quickly and cheaply as possible. [It] emphasized that graduates enrolled in science and engineering fields more than those enrolled in other disciplines would likely remain connected to their chosen field: Most master's recipients [in science and engineering disciplines] were continuing in science and engineering-related employment or education...and those recipients with the highest GPAs were much more likely than other master's recipients to stay in science and engineering fields."[6]

SCIENCE AND ENGINEERING GRADUATE ENROLLMENTS

Related

Maine colleges and universities were host to 736 students who were pursuing graduate degrees in science and engineering disciplines in 2004. Although this was a increase since 2000, it demonstrated a significant decrease in such students since 1995 when 900 students studied graduate level degrees in science and engineering disciplines. Enrollment since 1995 show that all three other comparative units (US, New England, and EPSCoR) succeeded in increasing the enrollment of students in science and engineering graduate degrees while Maine's enrollment decreased by 18.1 percent.



Sources

S&E Graduate Students were extracted from NSF WebCASPAR Database System based on "Survey of Graduate Students and Post-doctorates in Science and Engineering", National Science Foundation and National Institutes of Health. Population for 1995 through 1999 is from April 1, 1990 to April 1, 2000; Population Division, U.S. Census Bureau; Release Date: April 11, 2002; July 2000-July 2006 -Table 1: Annual Estimates of the Population for the United States and States, and for Puerto Rico: and 2000-2005 is from April 1, 2000 to July 1, 2006 (NST-EST2006-01), Population Division, U.S. Census Bureau, Release Date: December 22, 2006.

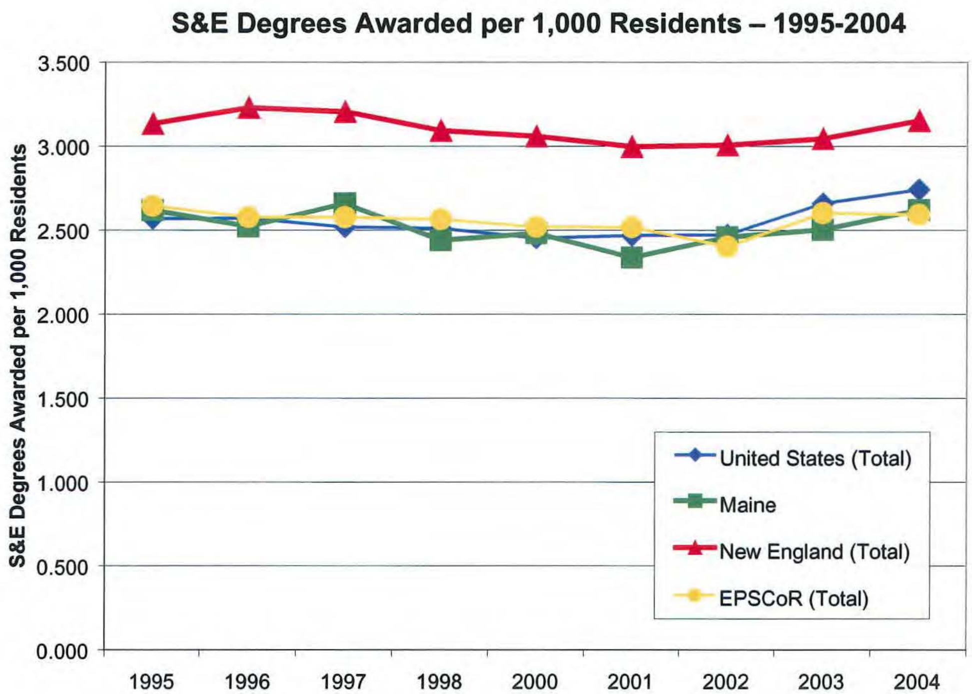
Science and Engineering Degrees Awarded

— performance summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↑
Maine's National Ranking	32

Summary

In 2004 Maine colleges and universities awarded 3,441 degrees[7] in science and engineering disciplines. This represented 2.62 science and engineering degrees per 1,000 Maine residents. In 2004 Maine's level on this indicator was lower than the national level of 2.74 the New England level of 3.15 but higher than the EPSCoR level of 2.59.



Note: 1999 data is unavailable

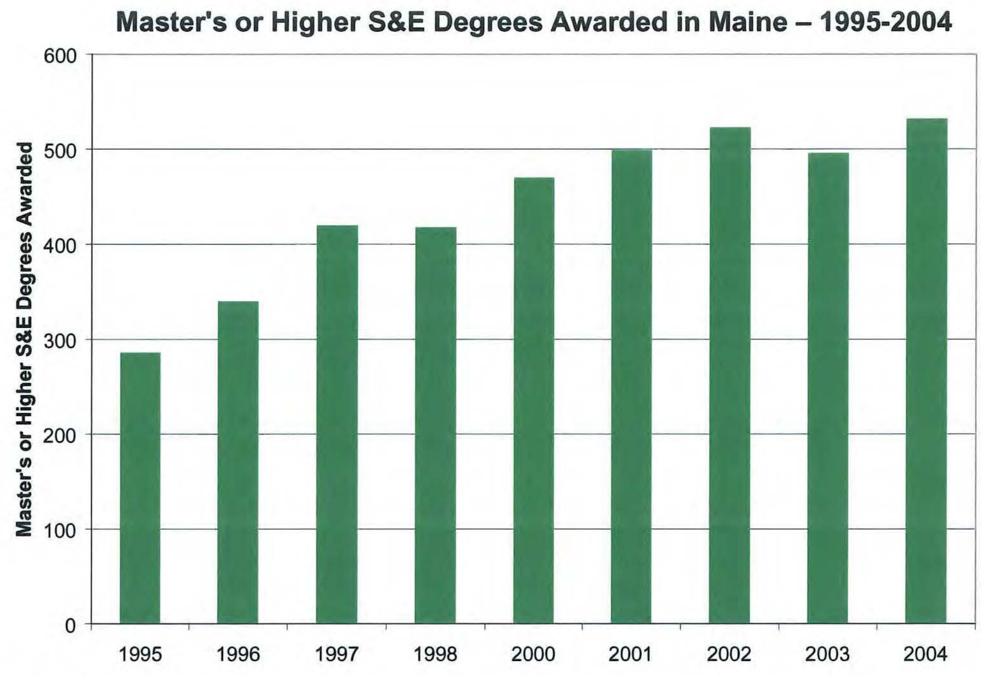
Why This Is Significant

The extent to which Maine colleges and universities are awarding science and engineering degrees is an indicator of both the science and technical capacity of the state's postsecondary schools and the potential for workers with science and technical abilities among Maine's workforce. Both of these are fundamental requirements for developing a solid foundation for research and long-term, technology-driven innovation.

Related

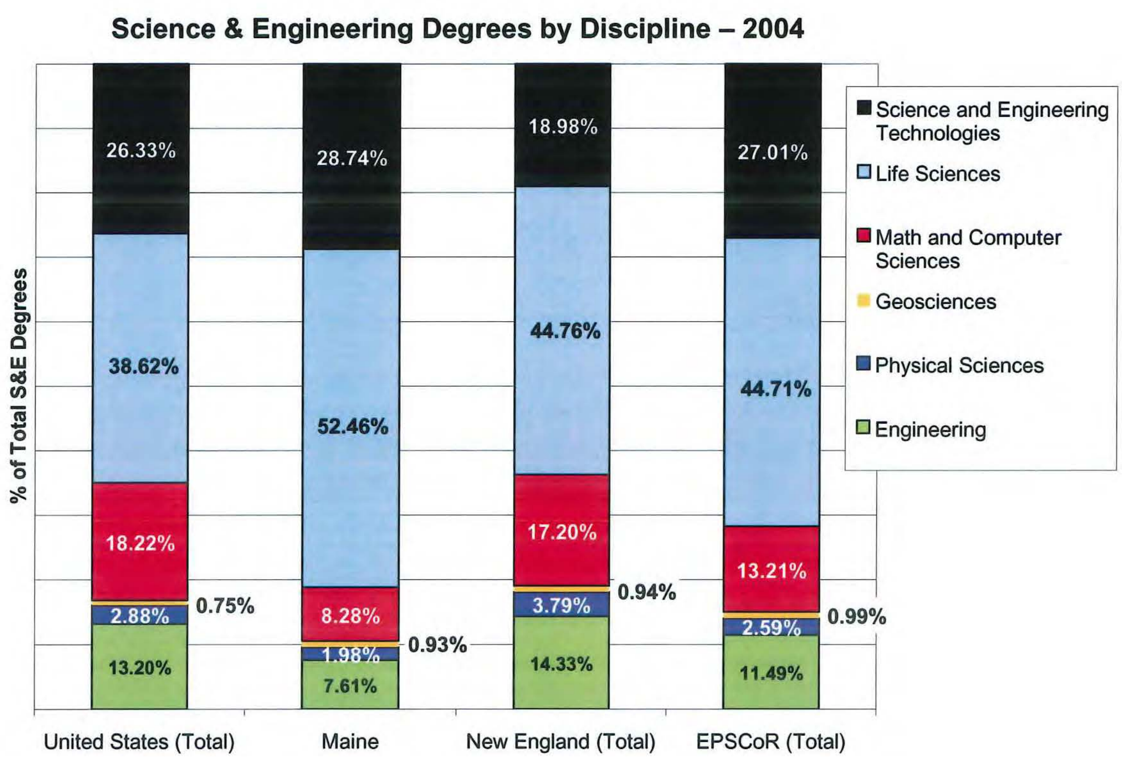
Of the 3,441 science and engineering degrees awarded in Maine in 2004, 531, or 15.4 percent, were masters degrees or higher. The growing importance of advanced degrees was reflected in the award trend data: the number of graduate degrees (masters or higher) awarded in science and technology has increased steadily from a level of 8.76 percent in 1995.

SCIENCE AND ENGINEERING DEGREES AWARDED



Note: 1999 data is unavailable

In terms of the academic disciplines in which degrees were awarded by Maine and the U.S. in 2004, compared to the U.S. Maine had a higher concentration in life sciences and lower concentrations in engineering, math and computer sciences.



Sources

S&E degrees awarded were extracted from NSF WebCASPAR Database System, http://webcaspar.nsf.gov, based on the Higher Education General Information Survey and Integrated Post-Secondary Education Data System, National Center for Education Statistics, U.S. Department of Education, www.nces.ed.gov. (Data for 1999 was unavailable.). Population for 1995 through 1999 is from April 1, 1990 to April 1, 2000; Population Division, U.S. Census Bureau; Release Date: April 11, 2002; July 2000-July 2006 -Table 1: Annual Estimates of the Population for the United States and States, and for Puerto Rico: and 2000-2005 is from April 1, 2000 to July 1, 2006 (NST-EST2006-01), Population Division, U.S. Census Bureau, Release Date: December 22, 2006.

Education Attainment

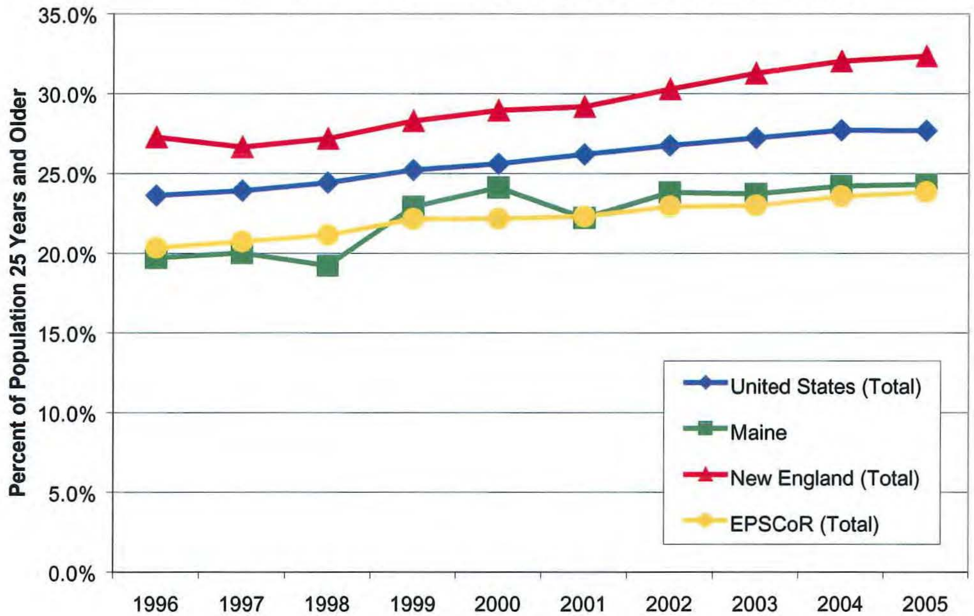
— performance summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↑
Maine's National Ranking	38

Summary

Maine has not been able to catch up with the nation and New England with regard to higher educational attainment. In 2005, 27.7 percent of the national population twenty five years and older held four-year college degrees or more in 2004; in New England, the figure was 32.4 percent. In Maine in 2005, 24.3 percent of the population twenty five years and older held four-year college degrees and among EPSCoR states 23.8percent.

Percent of Population 25 Years and Older Who Have a Bachelors Degree or More 1996-2005



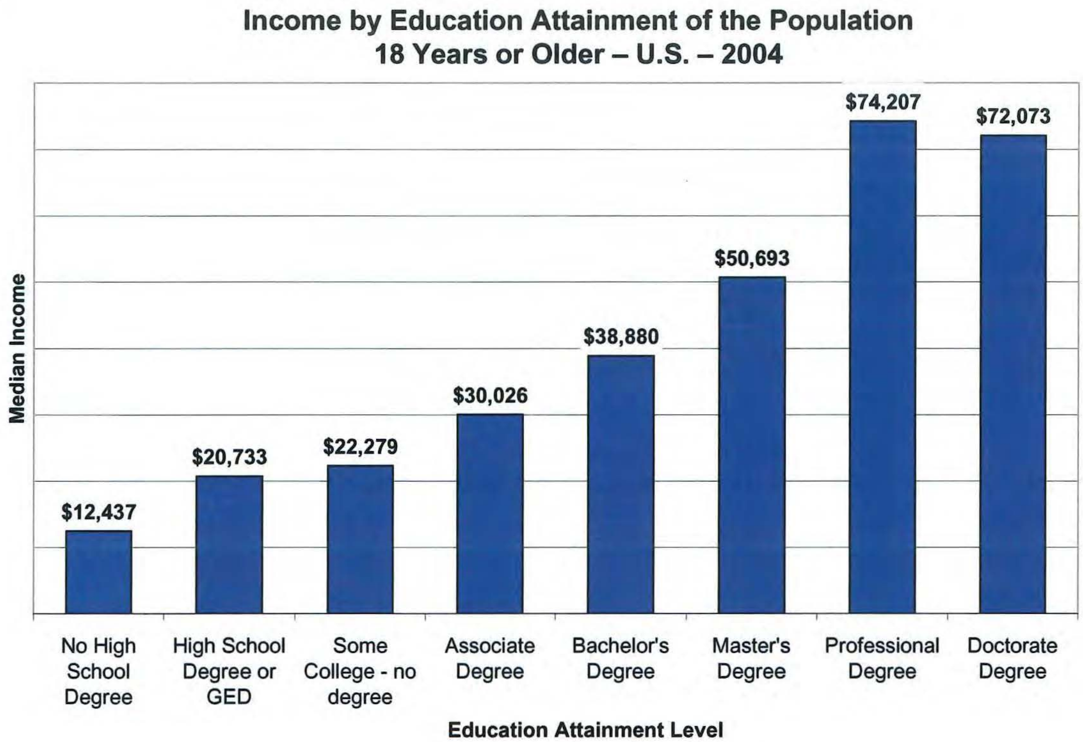
Why This Is Significant

Analysis conducted by the Maine State Planning Office as part of 30/1000 Initiative reveals that the economic well-being of a state is strongly tied to two factors: (1) the percent of the population with a bachelor's degree or higher, and (2) the level of expenditures for research and development. This analysis is supported by national research.[8] Wages are typically higher in technology-intensive industries; these are the same industries that increasingly require workers with higher education degrees. In terms of income of the average person, income levels are considerably higher for persons with college and advanced degrees.

Related

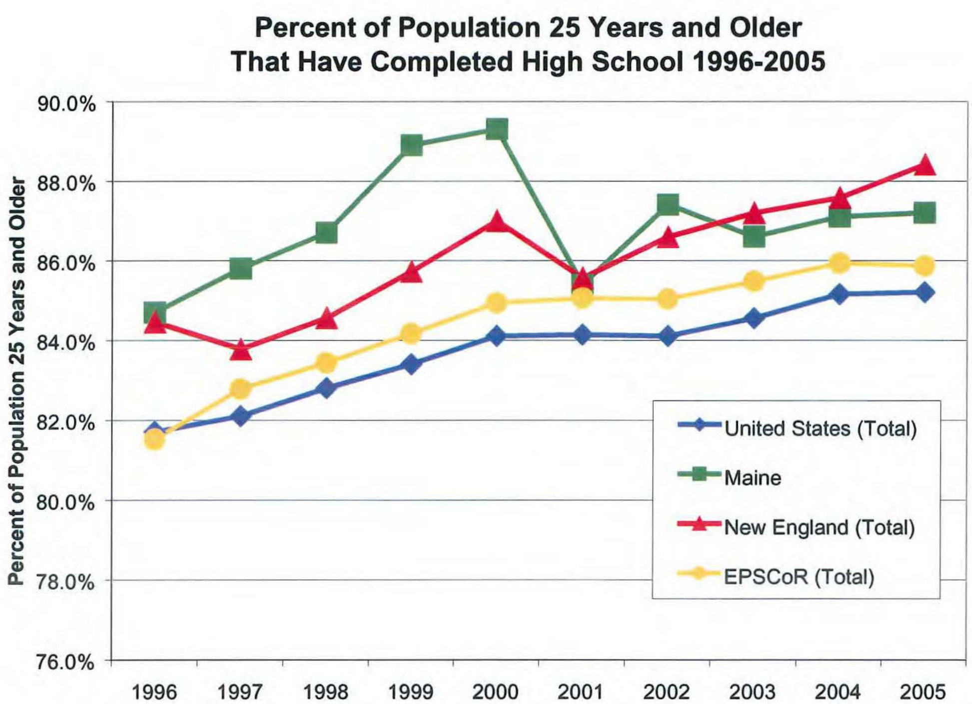
In terms of the percentage of the population 25 years and older who have graduated from high school, in 2005 Maine ranks 22nd among all states. Maine's percentage of 87.1 percent placed Maine higher than the nation as a whole (85.2 percent), higher than the EPSCoR states (85.9 percent), but slightly lower than the New England states (88.4 percent).

EDUCATION ATTAINMENT



Sources

Education Attainment data is from U.S. Census Bureau, Current Population Survey U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement; http://www.census.gov/population/www/socdemo/educ-attn.html.



Endnotes

[1]Math scale scores range from 0-500.

[2]Accommodations are permitted in 2000 and beyond. Accommodations are related to assessing students with disabilities and/or students for whom English is not their first language. For 1996 and prior, no accommodations were permitted.

[3]Science scale scores range from 0-300.

[4]Chance for college by age 19 is calculated by the Mortenson Research Seminar on Public Policy Analysis of Opportunity for Postsecondary Education and equals the product of the public high school graduation rate and the college continuation rate. Public high school graduation rate equals high school graduates divided by the number of 9th grade enrollments 4 years prior, data is based on "Public Elementary and Secondary Education Statistics", National Center for Education Statistics, www.nces.ed.gov. College continuation rate equals the number of fall freshman enrolled anywhere in the U.S. who were high school graduates the previous spring. The data is from the biannual Integrated Postsecondary Education Data System, National Center for Education Statistics, www.nces.ed.gov.

[5]Graduates include: regular diploma recipients–these are graduates who received a regular diploma during the previous school year and subsequent summer school, other diploma recipients-these are individuals who received a diploma from other than the regular school program during the previous school year and subsequent summer school, other high school completers– these are individuals who have received a certificate of attendance or other certificate of completion in lieu of a diploma, during the previous school year and subsequent summer school. Graduates who intend to enroll in post-secondary include: post secondary high school course–students taking additional courses at a high school or prep school after graduation, junior college-a program of study at a two-year college, college or university–a program of study at a four-year college or university, vocational/technical–a program at a vocational center or technical school, other continuing education-education and training programs that do not fit into one of the other categories. Includes high school data from schools that are totally publicly funded only.

[6]National Science Board, HER Task Force on National Workforce Policies for Science and Engineering, NSB/HER/NWP 00-4, December 13, 2000. /documents/2000/nwp004/nwp004.htm

[7]Degrees and awards earned but not yet conferred by branch institutions located in foreign countries, and of an honorary nature are not included; Includes the science fields of engineering, physical sciences, geosciences, math and computer sciences, life sciences, medical sciences, and science and engineering technologies; Excludes psychology, social sciences, and interdisciplinary sciences; Includes associate's, bachelor's, master's, first professional, and doctorate level degrees and certificates

[8]The Mortenson Research Seminar on Public Policy Analysis of Opportunity for Postsecondary Education, www.postsecondary.org for further analysis on this subject.

indicators:
- Household Connectivity
- High Speed Internet Access
- Classroom Connectivity

CONNECTIVITY CAPACITY OVERVIEW

The Internet has transformed every segment of society, from families to schools to businesses, from communities to states and nations. The ability to use the Internet represents the ability to connect, communicate and participate directly in innovation.

Maine's experience with connectivity varies. Relative to the U.S. as a whole and the EPSCoR states, Maine households have higher access to the Internet. However in terms of high speed access, Maine has fewer high speed Internet lines per 1,000 residents than its U.S. and New England counterparts.

In terms of classroom connectivity, fueled by the laptop initiative and local and state investments in technology, Maine continues to be a leader with more Internet computers per students and greater use of computers and the Internet by teachers compared to the reference groups.

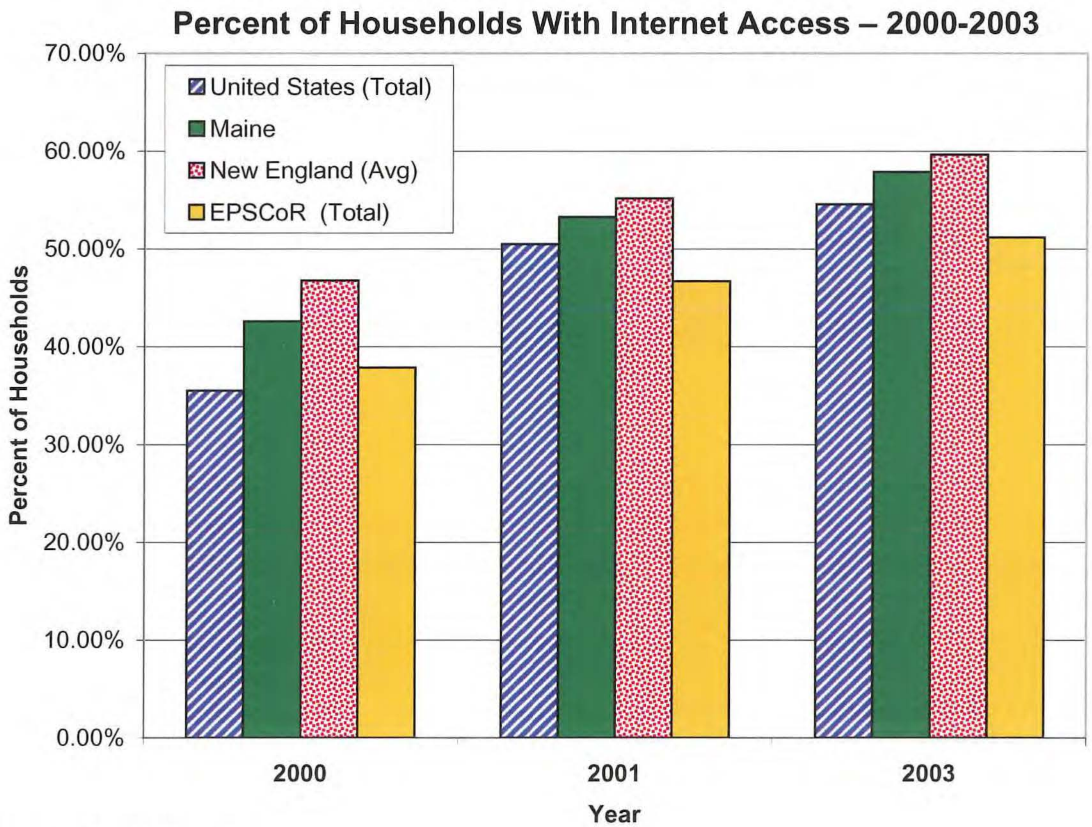
Household Connectivity

— Performance Summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↑
Maine's National Ranking	15

Summary

In 2003, 57.9% of Maine households had access to the Internet. Maine and New England (59.7 percent) lead the U.S. as a whole (54.6 percent) and the EPSCoR states (51.1 percent). Maine's 2003 level is a considerable increase since the 2000 level of 42.6 percent.



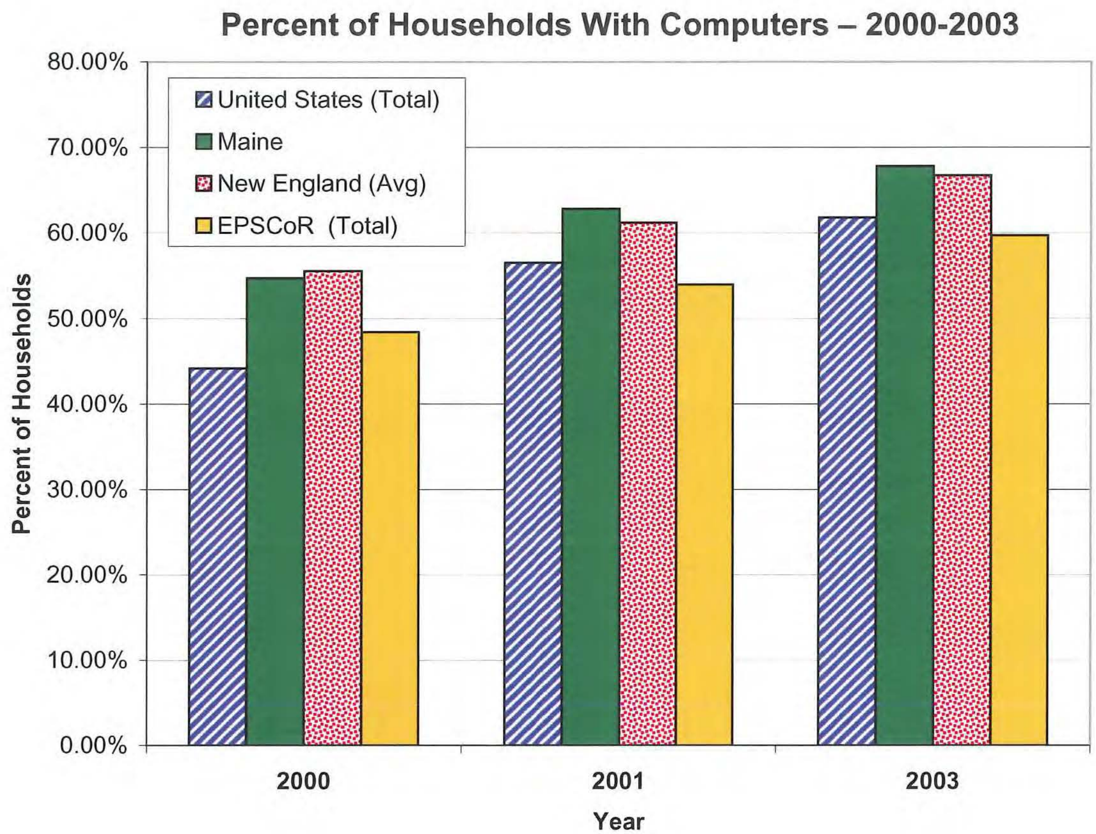
Why This Is Significant

Household Internet access provides citizens with the opportunity to utilize the Internet for business, education and personal uses 24 hours a day. The Internet is gaining increasing significance as a means of information exchange, communications, business transactions and research. This indicator measures the ease with which Maine citizens can access this information tool compared to the rest of the nation.

Related

Maine citizens were better equipped for computer use than the nation as a whole. In 2003, it was estimated that 67.8 percent of Maine households (up from the 2000 level of 54.7 percent) had computer access at home, compared to 61.8 percent nationwide. In 2003, Maine also had higher computer access than the average for New England households, 66.7 percent, and the average for households in EPSCoR states, 59.7 percent.

HOUSEHOLD CONNECTIVITY



Sources

2000 from Falling Through The Net: Toward Digital Inclusion; 2001 from A Nation Online: How Americans are Expanding Their Use of the Internet, February 2001; 2003 from A Nation Online: Entering the Broadband Age, September 2004; all from the National Telecommunications and Information Administration, Economic and Statistics Administration, U.S. Department of Commerce, http://www.ntia.doc.gov/ and all based on U.S. Bureau of the Census, Current Population Survey supplements.

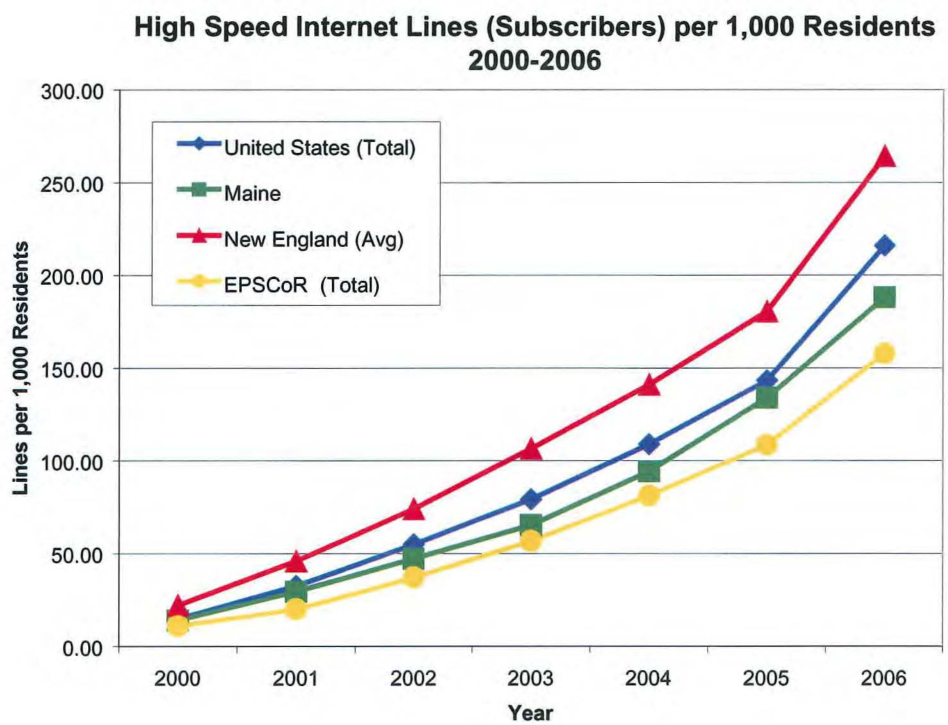
High Speed Internet Access

— Performance Summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↑
Maine's National Ranking	27

Summary

Maine has seen a significant increase in broadband[1] Internet subscribers,[2] from 17,864 in 2000 to 248,440 in 2006. This represented an increase of 307 percent. Relative to the U.S. and New England, Maine had fewer subscribers per 1,000 residents. In 2006, there were 188 Internet lines per 1,000 residents in Maine compared to 216 in the U.S. as a whole and 264 in New England. During the same year Maine was higher than the EPSCoR level of 156 lines per 1,000 residents.

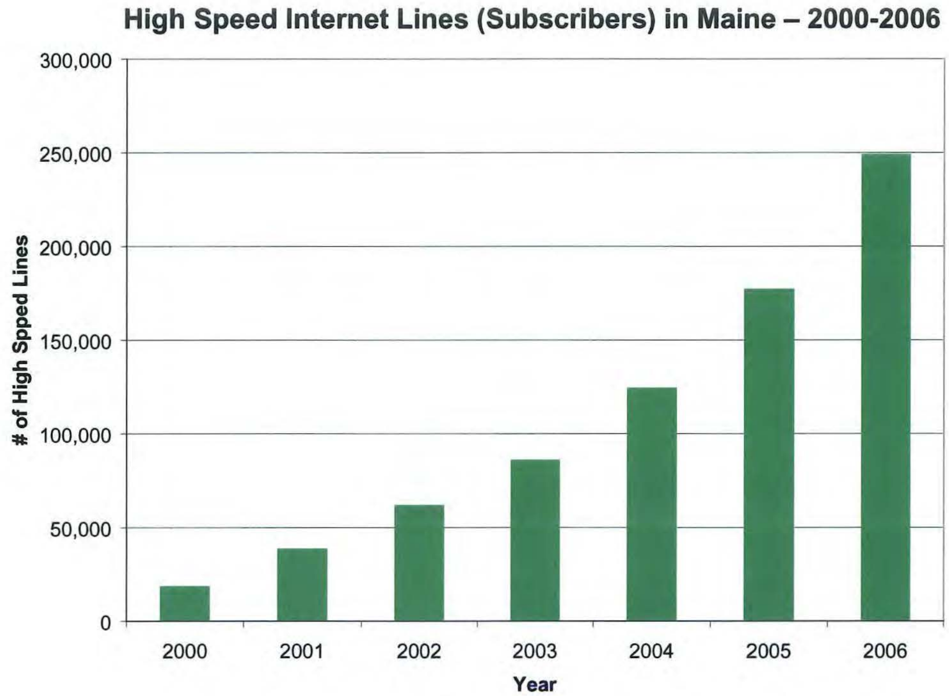


Why This Is Significant

The degree to which broadband technology is available and used in Maine determines, to a significant extent, the degree to which Maine is technologically competitive. For instance, companies that rely on e-commerce for sales transactions, as an example, require broadband technology. Likewise, entities engaged in research and development require high capacity communications technology.

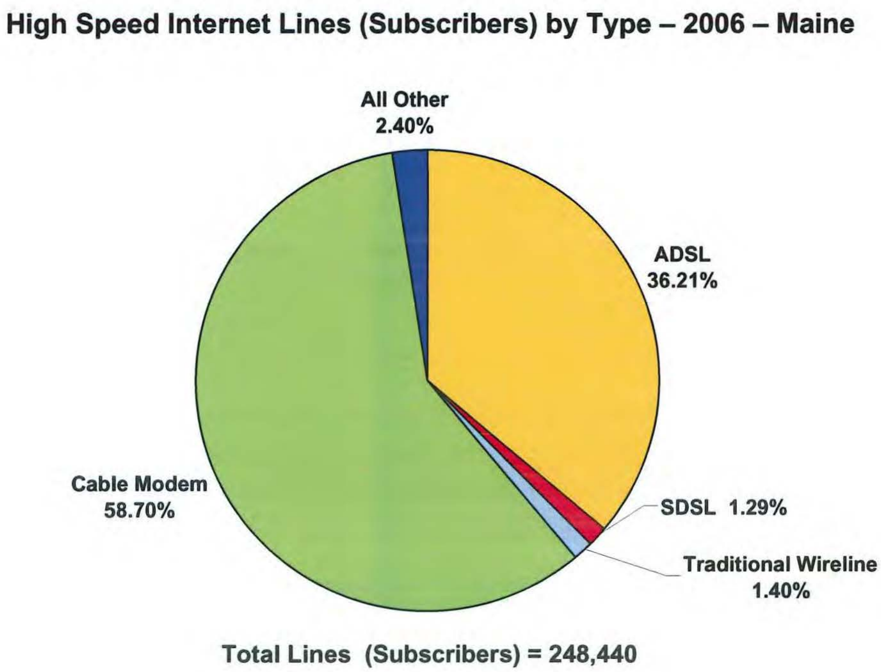
According to the American Electronics Association, an organization of more than 3,000 companies engaged in aspects of high technology, "Widespread broadband deployment will have a positive effect on many areas of everyday life, ranging from communications, entertainment, and healthcare to education and job training."

HIGH SPEED INTERNET ACCESS



Related

In terms of the method of high speed Internet access used in Maine, in 2006 cable is dominant with 58.7 percent of high speed lines compared to 37.5 percent for digital subscriber lines (DSL)[3].



Source

Internet line data is from "High-Speed Services for Internet Access: Status as of June 30, 2006", December 2006, Federal Communications Commission; http://www.fcc.gov/wcb/iatd/comp.html; all data is based on annual June reports.

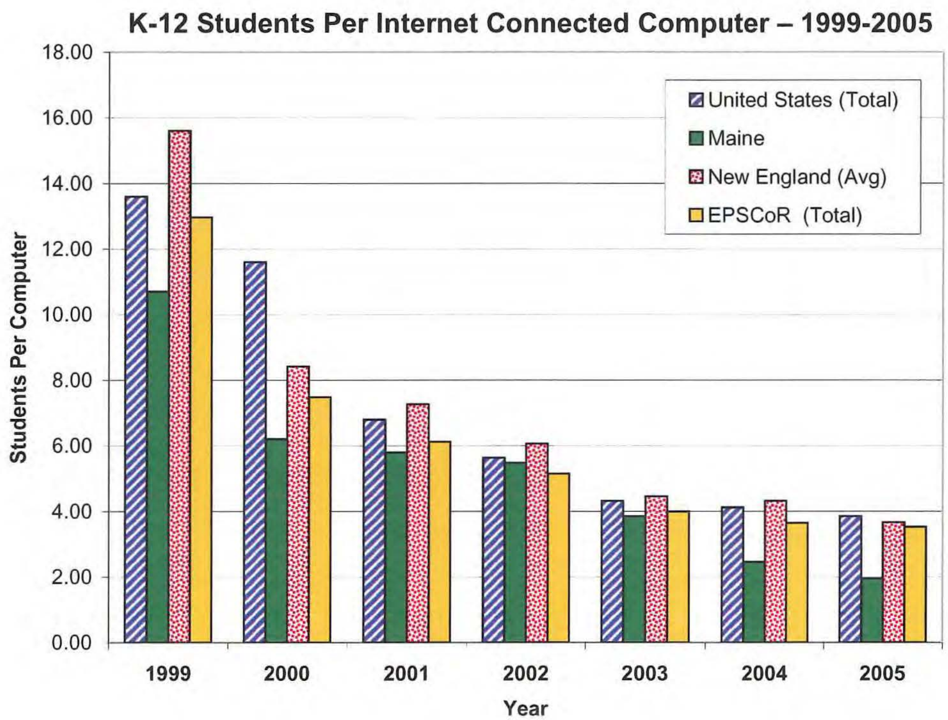
Classroom Connectivity

— Performance Summary —

Maine 1-Year Trend	↑
Maine 5-Year Trend	↑
Maine Compared to EPSCoR	↑
Maine's National Ranking	2

Summary

Maine continues to be a leader with regard to access to computers and the Internet in the classroom. In 2005, there were 1.95 students per Internet connected computer in Maine compared to 3.85 in the U.S. as a whole, 3.66 in New England, and 3.52 among EPSCoR states[4]. Maine's program to provide a laptop to every 7th grade student made it one of a few states in the nation that have classroom laptop programs.



Why This Is Significant

The Internet provides access to research and information that can enhance classroom curriculum at every grade level. Easy access to Internet-connected computers is needed for teachers to effectively incorporate information technologies into the learning environment.

Computer literacy is increasingly becoming a minimum requirement of employers. In 2000, 64 percent of Maine businesses surveyed indicated that computer literacy of high school graduates was critically important.[5]

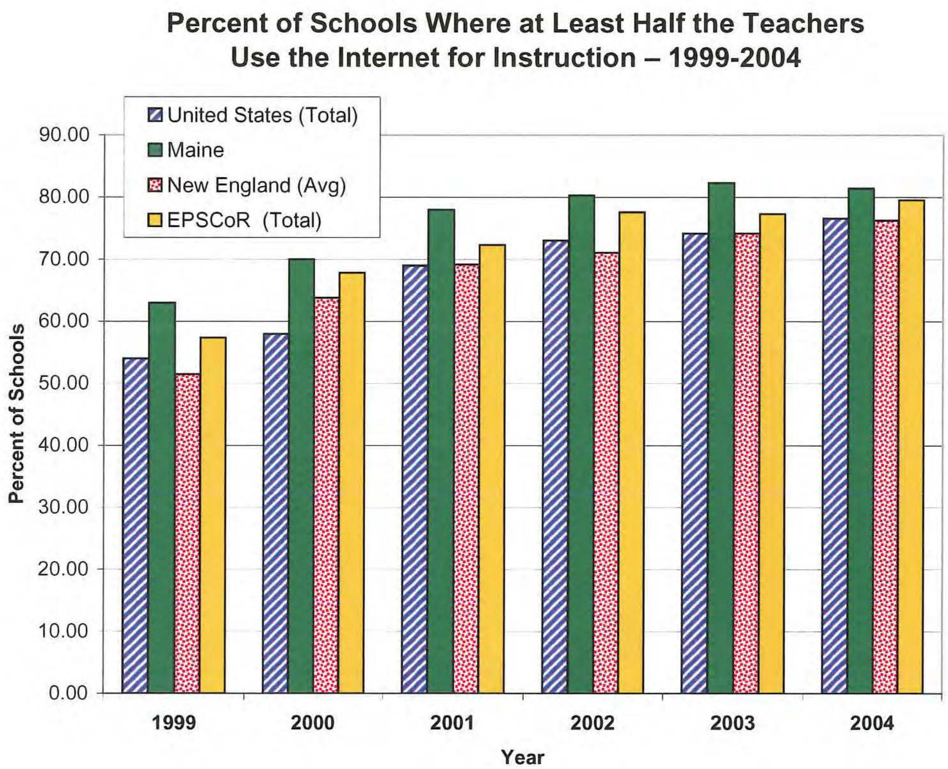
Related

Maine teachers are making more use of computers than their counterparts. In 2004, there were 81 percent of Maine schools where at least half the teachers used the Internet for instruction. This compared to 77 percent in the U.S., 76 percent in New England, and 80 percent among EPSCoR states.

CLASSROOM CONNECTIVITY

Sources

Student to computer ratios, teacher use of computers, and distance learning data are from Technology Counts 2000-2006, Education Week; http://edweek.org



Endnotes

[1]"Broadband" is defined as high-speed data lines that provide the subscriber with data transmissions at speeds in excess of 200 kilobits per second (kbps) in at least one direction.

[2]"Subscriber" is equivalent to a line in service. An active line may have one or more users.

[3]The mutually exclusive types of technology are, respectively: Asymmetric digital subscriber line (ADSL) technologies, which provide speeds in one direction greater than speeds in the other direction; symmetric digital subscriber line (SDSL) technologies; traditional wireline technologies "other" than ADSL and SDSL, including traditional telephone company high-speed services that provide equivalent functionality; cable modem, including the typical hybrid fiber-coax (HFC) architecture of upgraded cable TV systems; optical fiber to the subscriber's premises (e.g., Fiber-to-the-Home, or FTTH); satellite and fixed and mobile terrestrial wireless systems, which use radio spectrum to communicate with a radio transmitter; and electric power line.

[4]In 2005, indicator was changed from "internet" connected computer to "high-speed internet" connected computer

[5]Maine Development Foundation 2000 Survey of Maine Businesses, www.mdf.org/survey

About PolicyOne Research

Since 2003 PolicyOne has annually produced Maine's Innovation Index and managed Maine's Evaluation of State Investments in Research and Development. PolicyOne Research of Portland, Maine is owned by Jim Damicis. PolicyOne leverages the principals' broad experience in core research and analysis techniques to provide clients with a full range of services within the areas of economic and community development, science and technology based economic development, program and service evaluation, state and local government fiscal analysis, and survey design and analysis (including PolicyOne's own online survey system). Since 2003 PolicyOne has annually produced Maine's Innovation Index and managed Maine's Evaluation of State Investments in Research and Development.

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