# THE DYNAMICS OF TECHNOLOGY-BASED ECONOMIC DEVELOPMENT

## *State Science and Technology Indicators*

*Office of Technology Policy*

*Technology Administration*

*U.S. Department of Commerce*

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# Foreword

With technology at the center stage in the American economy, state government leaders are paying close attention to the success of high-tech clusters that have emerged across the country. These include well-established centers of high-tech excellence, such as Silicon Valley, the Research Triangle in North Carolina, and Boston's Route 128, as well as new rising stars such as San Diego, Austin, Salt Lake City, and Boise. These high tech clusters are generating economic growth, high-wage jobs, and domestic and foreign business investment in the regions in which they reside.

Certain enabling conditions are associated with high-tech business growth and development. This supporting infrastructure includes a strong R&D base, capital availability, a rich pool of technical talent and, often, state government science and technology initiatives designed to foster technology-based economic development. Yet, not all states enjoy equally well-developed science and technology infrastructures. There is wide variety in research funding, facilities, capital availability, and human resource strategies among the states.

State and local government policy makers have expressed the need for information that identifies the critical elements commonly found in state and regional technology infrastructure, and information on the presence of these elements in each of the states. In response to this need, the Technology Administration's Office of Technology Policy (OTP) has developed a tool which offers a set of metrics that will provide policy makers and program practitioners with a clearer picture of the conditions needed for technology-based economic growth.

In developing the State Science and Technology Indicators, it is not OTP's intent to present a report card of the states, a benchmarking device, or an interpretation of the data. Policy makers, analysts, and program practitioners at the state-level are the most familiar with technology infrastructure in their state, and, thus, better positioned to determine the meaning of this data.

Our goal is to provide a handy reference guide for analysts, policy makers, program practitioners, and others concerned with the dynamics of technology-based economic growth. This compendium of metrics and data can help them better understand how factors such as R&D investment, research facilities, math and science education, venture capital, and the presence of high-tech businesses can influence economic outcomes in a state.

We plan to update, refine, and expand this set of metrics to make them even more useful. It is our hope that users will regard this information as a new, useful tool in developing their technology-based economic development strategies.

***Kelly H. Carnes***
Assistant Secretary for Technology Policy

# Preface

The Technology Administration's Office of Technology Policy (OTP) is charged with developing and promoting policies that will improve the nation's technological competitiveness. OTP also administers the Experimental Program to Stimulate Competitive Technology (EPSCoT), which was established by Congress in 1998 for the purpose of improving the technological competitiveness of the states that have historically received less Federal R&D funding than a majority of the states. The premise of OTP's work is that technological development and adoption are fundamental to sustainable, value-added economic growth. In those states that have not traditionally enjoyed a large Federal investment in research and development, EPSCoT seeks to support state and local efforts to promote technology-based economic growth.

The primary purpose of this report is to assemble a consistent set of state-level data that approximates the "technology infrastructure" of the states. OTP undertook this project largely in response to the sentiment of our federal, state, and local counterparts that the challenge of defining technology infrastructure would be greatly aided by the availability of a reference guide which would present an array of data for all states in a consistent manner. This data provides for policymakers and others in the public and private sectors the current status of several factors that influence the high-tech sectors of the economy, such as human resource development, research and development funding, capital investment, and business assistance.

The document is organized in two halves; the first half provides data on a metric by metric basis for all states, while the second half provides state profiles. The data presented here are normalized to a common reference point, such as population, number of establishments, or the size of the state economy.

This report makes no attempt to provide a report card or any form of aggregated benchmark for the technology infrastructure of each state. A state's science and technology strategy or overall economic development goals are derived from local expertise and are rooted in local resources. In pursuit of these goals, different states will identify different targets for any given metric.

One cautionary note: the data is not manipulated beyond the normalization described above. Readers should note that small differences in absolute can lead to significant-and misleading-differences in rankings. For this reason, both the rankings and the absolute numbers are provided on the metrics pages. In future editions of this report, OTP is considering including for each state the distance from the national average value as well. Comments on this note in particular are most welcome.

Additionally, the report does not attempt to interpret the implications of the data sets for each state. The appropriate state-level interpretation of the data in this report is the responsibility of those who are most familiar with the technology infrastructure of their state.

This report is intended as a first step; much work remains to be done. Among the existing data, much of it is not collected with an eye to state-level disaggregation. Furthermore, existing data are not sufficient to describe the supporting infrastructure for high-tech companies. Future research might consider what other data could be collected to provide a clearer representation of this infrastructure – in terms of physical assets, services and institutional capacity. Finally, this project highlighted the difficulty of defining the high-tech sectors of the economy in any systematic way. Many competing definitions exist, each assembled for a different purpose. Our hope is that this document can further the ongoing dialogue among public and private economists on how best to characterize these industries.

OTP intends this document to serve as a handy reference guide for those in the public and private sectors who are concerned with the dynamics of technology-based economic development. We welcome any comments on how it could be improved in the future – what additional data could be included, or how better to present the existing information.

# Acknowledgements

The contributions of the many individuals who helped to shape this project must be recognized and acknowledged.

First, the project would not have been possible without the support and guidance of the Project Technical Officer, Anita Balachandra. Anita was always there to help guide the project team through the difficulties of data acquisition and presentation. She was a great source of support and has been designated as the contact point for any questions related to this report.

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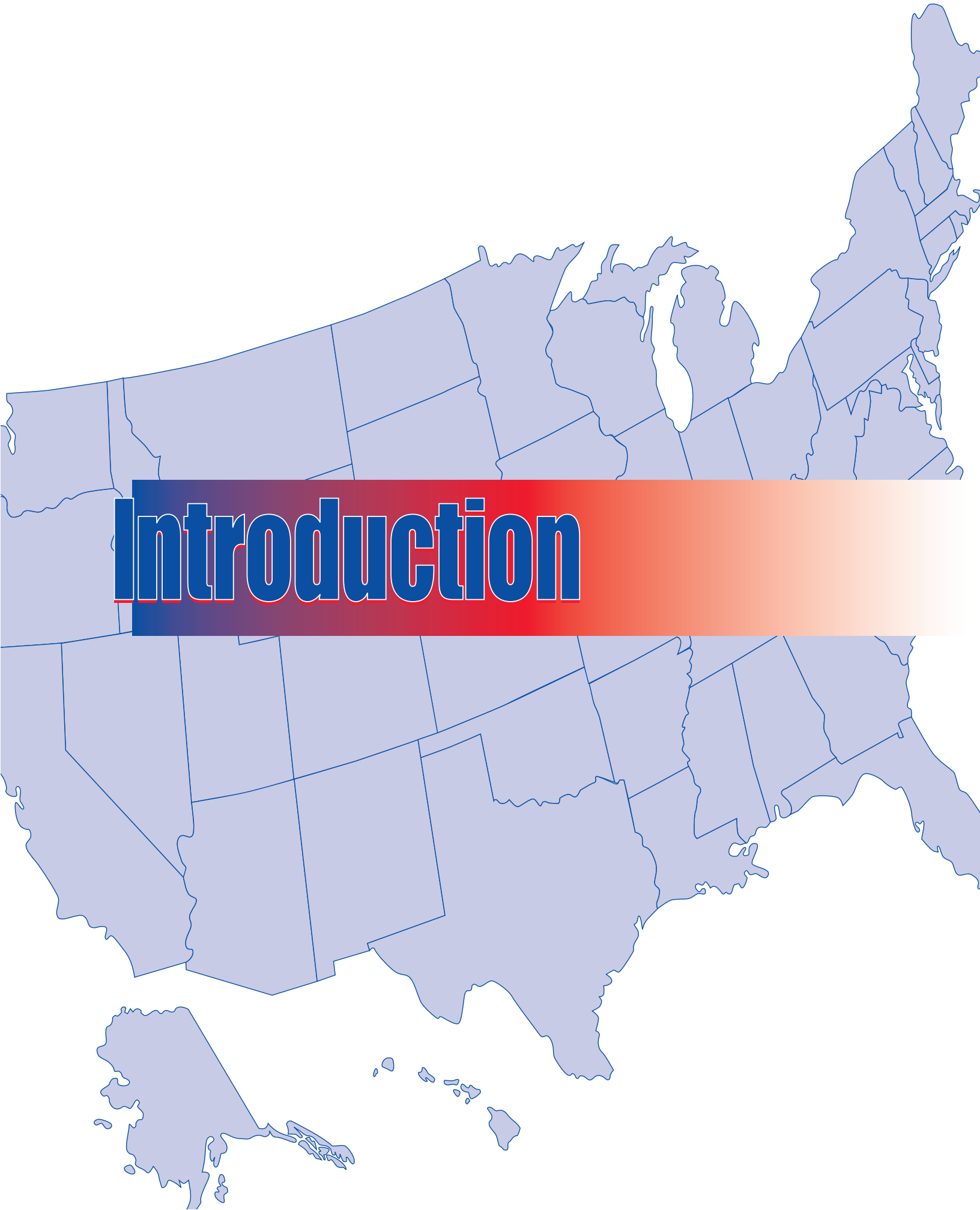


# Introduction

## 1.1 Background

Science and Technology policies and programs have become an integral part of the economic development plans of most states. As businesses seek sustainable competitive advantages, science and technology resources have proven to be powerful assets. All forms of economic development benefit from well-conceived and executed programs to strengthen and expand the science and technology resources of a state. New business formation and creation flow directly from research, development and commercialization of new technologies. Attraction of industrial clusters is advanced by creating unique competitive advantages rooted in the science and technology institutions of a state. Business expansion will accelerate as companies adopt and adapt new technologies to improve the competitiveness of their products and processes. And finally business retention is increased as companies are able to solve competitiveness problems through the technology and expertise of their state's science and technology community.

Perhaps more important, science and technology can build sustainable competitive advantage. Application of advanced technologies can provide a company with fundamental methods of improving its quality, its product and service functionality, and its cost competitiveness. Science and technology programs impact the very heart of a company—its products and production processes—not just adjust its bottom line through artificial cost savings.

Science and technology also build for the future. Investments made in strengthening the research base in a state will attract further R&D investments by both the private and public sector. This growing research capability can result in new knowledge creation, intellectual property development, human resource development and retention, and expert advisors to assist companies and entrepreneurs. The importance of science and technology has been recognized for several decades as a potent tool for public policy. Pennsylvania's Ben Franklin Program and Ohio's Thomas Edison Program are now approaching 20 years of operation, and are still viewed as keystone programs in their respective states. Both of these programs helped bring their states out of the "rust belt" syndrome of the early 1970s. Most other states have followed suit with programs that support state economic development through creation of specialized centers of science and technology excellence.

The successful impact on economic development and the sustainable power of science and technology is evident in various places in the United States. In addition to the obvious locations such as Boston, Silicon Valley, Raleigh-Durham, and Austin, we now find pockets of science and technology-based economic development exploding in Minneapolis, Seattle, Boulder, and Salt Lake City. Interestingly, all these areas have strong concentrations of science and technology resources including research universities and private sector research centers. Federal facilities, such as the National Institute of Health in Bethesda, Maryland, have also served as catalysts for business growth. These communities demonstrate that science and technology-based businesses exhibit the tendency to cluster in areas that have strong technology assets and infrastructure.

It is evident that not all states and communities have equally well-developed science and technology infrastructures. There is wide disparity in research funding, facilities, and expertise among the states. The relationship between measures of economic prosperity and science and technology capacity is intuitive. Such relationships have led to public policies to support economic development through science and technology investments.

## 1.2 Project Objectives

The goal of this project is to present a selection of indicators related to the technology-based economic development conditions in all 50 states. The metrics in the exercise are selected so as to be timely, credible, and capable of being updated through publicly available data sources. More specifically, the project objectives are:

- To select a series of metrics that describe the status of science and technology assets in states
- To select a series of metrics that describe “high-tech” economic development outcomes
- To develop consistent data sets of publicly available data that quantify the metrics for each state
- To describe each metric, characterize its relevancy to science and technology-based economic development, and report the data and rankings for all states
- To present the results for each state.

This project is intended to present up-to-date information about the status of an individual state's science and technology infrastructure in an easy-to-use format. By providing each state with comparable data for other states, areas of weakness can be identified and appropriate responses formulated by individual states in a manner that seems most appropriate to them.

It is not the intent of this project to take a report card approach and to grade individual states by an arbitrary standard. Since states choose to pursue different economic development goals and attempt to reach those goals by different routes, it is not appropriate to apply weighting factors or devise a formula for calculating overall effectiveness. Certain data and metrics in this report may be more relevant to some states than to others. The state rankings for certain metrics may be impacted by special factors, unique to only a few states, that have nothing to do with science and technology infrastructure. Appropriate interpretation and application of the data in this report must be the responsibility of the citizens, elected officials, and state employees who are familiar with the special circumstances affecting their state.

## 1.3 Major Metric Groups

### *1.3.1 Funding In-flows*

This first set of input metrics is designed to measure the amount of science, technology, and research resources flowing into the state from governmental and private sources. These financial resources measure the opportunities to generate knowledge, intellectual property, and specialized human resources. The specific metrics included in this category are:

1. Expenditures for Total Performed R&D per $1,000 of GSP: 1997
2. Expenditures for Industry-Performed R&D per $1,000 of GSP: 1997
3. Expenditures for Federally-Performed R&D per $1,000 of GSP: 1997
4. Expenditures for University-Performed R&D per $1,000 of GSP: 1997
5. Federal Obligations for R&D per $1,000 of GSP: 1997
6. Funding of Federal Laboratory Campuses per $1,000 of GSP: 1995
7. Average Annual Number of SBIR Awards per 10,000 Business Establishments: 1996-8
8. Average Annual SBIR Award Dollars per $1,000 of GSP: 1996-8
9. Average Annual Number of STTR Awards per 10,000 Business Establishments: 1996-8
10. Average Annual STTR Award Dollars per $1,000 of GSP: 1996-8

The raw data for the numerators of these metrics are usually expressed in terms of dollars. To eliminate scale sensitivity, a normalization or scaling factor was used for each measure. In some cases, gross state product (GSP) was selected to reflect the impact of the dollar investment on the state's economy. In the case of the number of SBIR and STTR awards, the number of businesses in the state was used since these awards are made to businesses.

### *1.3.2 Human Resources*

The second set of input metrics measures the ability of the labor market to support the science and engineering needs of technology-based businesses. It includes measures of the flow and stock of workers with advanced degrees, undergraduate degrees, and technical associates degrees. The specific metrics included in this category are:

11. National Assessment of Educational Progress (NAEP) in Science Average State Test Scores: 1996
12. Percent of the Population that has Completed High School: 1998
13. Associate's Degrees Granted as a Percent of the 18-24 Year Old Population: 1996-7
14. Total Bachelor's Degrees Granted as a Percent of the 18-24 Year Old Population: 1996-7
15. Percent of Bachelor's Degrees Granted in Science and Engineering: 1996-7
16. Science and Engineering Graduate Students as a Percent of the 18-24 Year Old Population: 1997
17. Percent of the Civilian Work Force with a Recent Bachelor's Degree in Science or Engineering: 1997
18. Percent of the Civilian Work Force with a Recent Master's Degree in Science or Engineering: 1997
19. Percent of the Civilian Work Force with a Recent Ph.D. Degree in Science or Engineering: 1997

The NAEP scores represent the average statewide test results in science at the eighth grade level. Other metrics were expressed in terms of percentages, so state size or population was not an issue. For the number of degrees awarded, however, it was necessary to normalize the data to account for population differences. The 18-24 year age range was selected since this is the Census Bureau-defined age group that is most likely to be pursuing higher education. This segment of the population most closely approximates the target market for higher education. This is not to imply that all people receiving degrees are in this age sector, but state higher educational capacity and output should show a relationship to the size of this population segment.

### *1.3.3 Capital Investment and Business Assistance*

The third set of input metrics measures the amount of financial and business support being provided to state businesses. Capital is one of the most critical needs for new business formation and growth. Capital is very fluid, yet there clearly are tendencies for companies in certain areas to receive disproportionate funding. In fact, the ability to attract capital often is the basis for entrepreneurs deciding where to establish their businesses. Capital takes many forms, including early stage seed and venture, loans and grants, and public offerings. In addition to capital, other forms of assistance can help to facilitate business growth and development. The metrics in this section indicate the capacity and support structure for encouraging new business formation. The specific metrics included in this category are:

20. Amount of Venture Capital Funds Invested per $1,000 of GSP: 1998
21. Average Annual Amount of SBIC Funds Disbursed per $1,000 of GSP: 1996-8
22. Average Annual Amount of IPO Funds Raised per $1,000 of GSP: 1997-8
23. Number of Business Incubators per 10,000 Business Establishments: 1998
24. Number of Patent Attorneys per 10,000 Business Establishments: 1999

Again, it was necessary to normalize or scale the data to account for the large differences in size of the state economies. Data that were obtained in the form of dollars were normalized to the GSP of the state. Support services were normalized to the number of state businesses.

### *1.3.4 Technology Intensity of the Business Base*

The first set of output metrics measures the extent to which a state is growing the types of businesses that are likely to be technology intensive. As noted in the explanation of the project methodology, designation of technology intensive industries is based on the definition from the Bureau of Labor Statistics (See the listing of 28 SIC codes on page A-3.) The companies in these industries are most likely to benefit from strong state science and technology programs.

As might be expected, companies in these industries were found to be attractive on a national basis. Although only 5% of U.S. business establishments are classified in these 28 SIC codes, they employ 8% of the U.S. work force and account for 13% of the U.S. payroll. The following metrics were used to characterize the technology intensity of a state's business base:

25. Percent of Establishments in Technology Intensive SIC Codes: 1996
26. Percent of Employment in Technology Intensive SIC Codes: 1996
27. Percent of Payroll in Technology Intensive SIC Codes: 1996
28. Percent of Establishment Births in Technology Intensive SIC Codes: 1996
29. Net Formations of Technology Intensive Establishments per 10,000 Business Establishments: 1996

The first four metrics in this set are reported as percentages, so no scaling factor is required. Each of these metrics indicates the extent to which the state's business base is concentrated in the 28 technology intensive industries (See page A-3.) The final metric, net formations of technology intensive establishments, was normalized to the total number of business establishments in the state to minimize the effect of state size factors.

### *1.3.5 Outcome Measures*

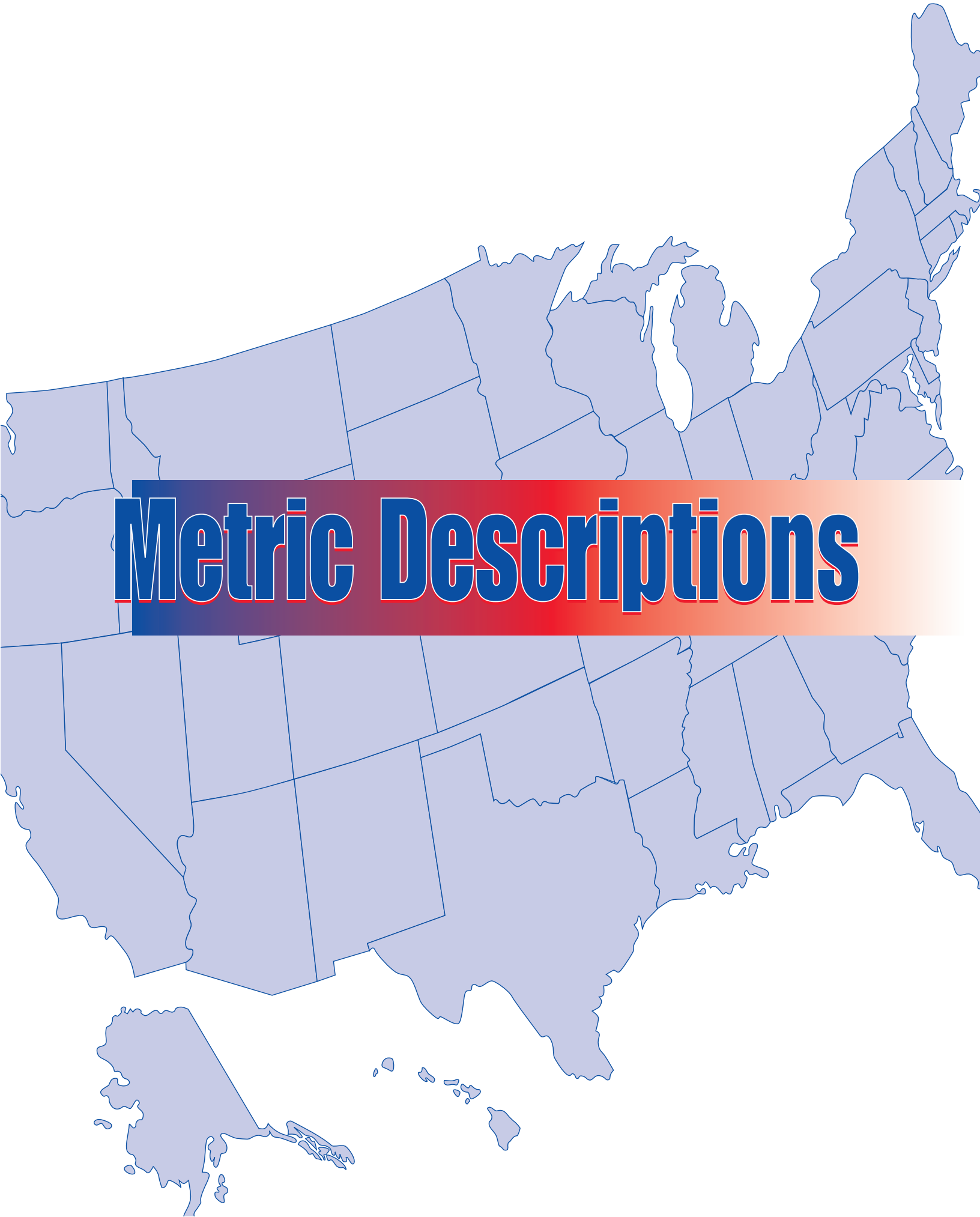
The second set of outcome metrics measures the economic development characteristics of the area. Essentially, these metrics are the variables that the science and technology programs attempt to improve. The correlation between science and technology assets, how effectively they are used by the states, and how much of an impact they exert on economic development is exceedingly complex and dependent upon many external factors.

The specific measures included in this category are:

30. Average Annual U.S. Patents Issued per 10,000 Business Establishments: 1996-8
31. Number of Inc. 500 Companies per 10,000 Business Establishments: 1999
32. Number of Technology Fast 500 Companies per 10,000 Business Establishments: 1999
33. Average Annual Earnings per Job: 1997
34. Percent of the Population Living Above the Federal Poverty Threshold: 1998
35. Per Capita Personal Income: 1998
36. Labor Force Participation Rate: 1998
37. Percent of the Civilian Work Force that was Employed: 1998

The first three metrics in this set are based on the number of patents issued and the number of fast-growing companies. Obviously, they can be expected to increase as the size of a state's business base increases, making it difficult to compare states of widely differing sizes. For this reason, these measures were normalized to the number of businesses in the state. The remaining metrics are expressed in terms that are independent of the size of the state, so no normalization was required.

It should be pointed out that the percent of the population living above the federal poverty threshold was used in place of the more common poverty rate or percent of the population living at or below the federal poverty threshold. This manner of expressing the metric was selected because it represents a positive outcome.



# Metric Descriptions

# 2. Contents

This section contains a 2-page description of each of the thirty-seven metrics developed to describe the science and technology infrastructure of individual states. Twenty-four of these metrics are measures of inputs, and thirteen are measures of outputs.

Each metric description contains a definition of the metric, a summary of its relevance including the national performance on that metric, data considerations and limitations, and the data source references. The actual data used to calculate the metric value for each state and for the District of Columbia and Puerto Rico are shown in chart format. Numerical rankings for each state are provided on the same chart, and quintile rankings appear on the national map that accompanies each metric.

# Total Performed R&D Expenditures

## Definition

Total performed research & development (R&D) expenditures per $1,000 of gross state product (GSP) is calculated by dividing the total amount spent on R&D performance in each state by that state's gross state product. R&D expenditures are the total of the basic research, applied research, and development performed by private industry, federal government, academic, and non-profit organizations located in the state. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

This metric describes the importance of R&D activities to a state's economy. It is directly related to the number of workers and capital employed in the conduct of research and development. The total performed R&D expenditures for the 50 states was $196.3 billion or $24.39 per $1,000 of U.S. gross domestic product. The median total performed R&D expenditure for the 50 states was $17.35 per $1,000 of gross state product.

Long-run economic growth is universally deemed to be highly dependent on the R&D activities of scientists and engineers. However, the precise relationship between R&D and improvements in quality and productivity is difficult to measure. Further, that relationship is thought to vary greatly by the types of products and services being developed. In the short-run, expenditures on R&D tell little about the ultimate value of what is received for the money being spent. Significant scientific breakthroughs can result from small expenditures, or large expenditures can yield few commercial opportunities. R&D expenditures also provide insight into the perceived importance of research and, hence, how supportive the business climate is to research.

## Data Considerations and Limitations

R&D expenditure estimates are based on surveys of R&D performers who are asked to indicate how much they spend, the character of the research, and where the funds originated. The use of performer reporting reduces the possibility of double-counting. The surveys are conducted by the Division of Science Resources Studies of the National Science Foundation.

There are several exceptions to the use of performer surveys. Non-profit performers have not been surveyed since 1973 although a new survey is now being finalized. R&D expenditures by non-profits are based on informal surveys,

**Expenditures for Total Performed per $1,000 of GSP: 1997**

| State | Total R&D (millions) | GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $1,637 | $103,109 | $15.87 | 26 |
| Alaska | $136 | $24,494 | $5.54 | 44 |
| Arizona | $2,410 | $121,239 | $19.88 | 21 |
| Arkansas | $272 | $58,479 | $4.65 | 48 |
| California | $41,670 | $1,033,016 | $40.34 | 8 |
| Colorado | $3,205 | $126,084 | $25.42 | 12 |
| Connecticut | $3,454 | $134,565 | $25.67 | 11 |
| Delaware | $1,089 | $31,585 | $34.47 | 10 |
| Florida | $4,784 | $380,607 | $12.57 | 30 |
| Georgia | $2,272 | $229,473 | $9.90 | 37 |
| Hawaii | $275 | $38,024 | $7.22 | 41 |
| Idaho | $1,270 | $29,149 | $43.56 | 6 |
| Illinois | $8,034 | $393,532 | $20.41 | 20 |
| Indiana | $3,149 | $161,701 | $19.48 | 23 |
| Iowa | $980 | $80,479 | $12.17 | 31 |
| Kansas | $1,351 | $71,737 | $18.83 | 25 |
| Kentucky | $526 | $100,076 | $5.25 | 45 |
| Louisiana | $554 | $124,350 | $4.46 | 49 |
| Maine | $149 | $30,156 | $4.93 | 47 |
| Maryland | $7,395 | $153,797 | $48.09 | 4 |
| Massac husetts | $11,097 | $221,009 | $50.21 | 3 |
| Michigan | $13,991 | $272,607 | $51.32 | 2 |
| Minnesota | $3,605 | $149,394 | $24.13 | 15 |
| Mississippi | $370 | $58,314 | $6.34 | 42 |
| Missouri | $1,826 | $152,100 | $12.01 | 32 |
| Montana | $199 | $19,160 | $10.40 | 36 |
| Nebraska | $275 | $48,812 | $5.64 | 43 |
| Nevada | $517 | $57,407 | $9.00 | 38 |
| New Hampshire | $799 | $38,106 | $20.96 | 18 |
| New Jersey | $12,067 | $294,055 | $41.04 | 7 |
| New Mexico | $3,028 | $45,242 | $66.92 | 1 |
| New York | $12,307 | $651,652 | $18.89 | 24 |
| North Carolina | $4,667 | $218,888 | $21.32 | 17 |
| North Dakota | $116 | $15,786 | $7.34 | 40 |
| Ohio | $7,145 | $320,506 | $22.29 | 16 |
| Oklahoma | $644 | $76,642 | $8.40 | 39 |
| Oregon | $1,520 | $98,367 | $15.45 | 28 |
| Pennsylvania | $8,209 | $339,940 | $24.15 | 14 |
| Rhode Island | $1,040 | $27,806 | $37.41 | 9 |
| South Carolina | $1,040 | $93,259 | $11.15 | 34 |
| South Dakota | $71 | $20,186 | $3.54 | 50 |
| Tennessee | $1,566 | $146,999 | $10.65 | 35 |
| Texas | $9,487 | $601,643 | $15.77 | 27 |
| Utah | $1,381 | $55,417 | $24.92 | 13 |
| Vermont | $314 | $15,214 | $20.63 | 19 |
| Virginia | $4,136 | $211,331 | $19.57 | 22 |
| Washington | $7,543 | $172,253 | $43.79 | 5 |
| West Virginia | $427 | $38,228 | $11.18 | 33 |
| Wisconsin | $2,256 | $147,325 | $15.31 | 29 |
| Wyoming | $87 | $17,561 | $4.95 | 46 |
| District of Columbia | $2,768 | $52,372 | $52.85 | |
| Puerto Rico | N/A | N/A | N/A | |

federal funding of non-profits, and R&D trends in other sectors. State funded intramural R&D (R&D financed and performed by state agencies) is not included.

The federal R&D performance expenditure data reported by universities and industry will differ from the Federal agency reported R&D funding totals because expenditures may occur in a different year than when the funds were originally authorized, obligated, or outlayed. During the last several years the differential between federal R&D expenditures and funding has increased considerably. Performers and funders of R&D may differ in what they report as R&D. Another difficulty in tracking R&D expenditures is that funds are further subcontracted to other performers.

## Source of Data

### *Expenditures for Total R&D Performed:*

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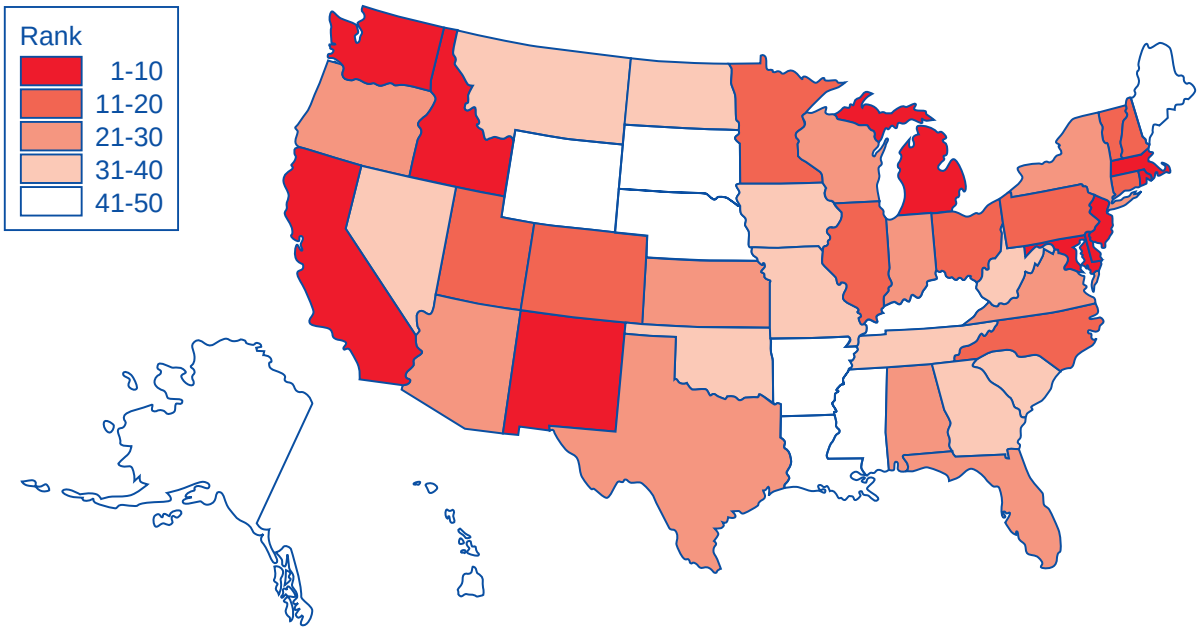
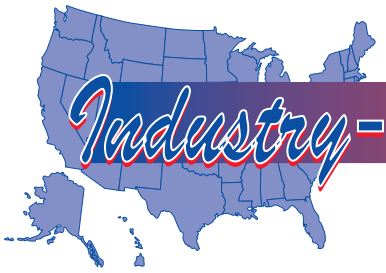
U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].





# Industry-Performed R&D Expenditures

## Definition

This metric measures the amount of research & development (R&D) expenditures that are actually performed by all non-farm industries in a state divided by the gross state product (GSP) of that state. R&D expenditures are the total of basic research, applied research, and development performed by the industrial sector, including industry-administered, federally funded research and development centers. The sources for that funding can be from government, academia, non-profits, or industry. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

This metric describes the importance of R&D activities to the industry sector of a state's economy. The total industrial-performed R&D expenditures for the 50 states was $149.7 billion or $18.59 per $1,000 of U.S. gross domestic product. The median expenditure for industrial-performed R&D for the 50 states was $11.39 per $1,000 of gross state product.

Industry funds and performs more R&D than all other sectors of the economy combined. Industrial sources provide 65.1 percent of all R&D funding and perform 75.1 percent of all R&D. Eighty-five percent of all industrial R&D performed is funded by industry. The federal share of industrial R&D funding has fallen steadily from its all time high of 32 percent in 1987 to the 15 percent estimated for 1998.

The value of industry performed R&D is often hidden in the ultimate value of the innovation and product improvements of industrial goods and services. Further, this value from the R&D may became evident years after the R&D actually takes place. However, without the continuous flow of industrial R&D, companies will lose competitiveness. The level and intensity of industrial R&D in the states indicate where industry decides to locate its scientists. These location decisions are influenced by availability of a talented workforce, outstanding supporting research services, and overall quality of life in the states.

## Data Considerations and Limitations

R&D performance estimates are based on surveys of R&D performers conducted by the Division of Science Resources Studies of the National Science Foundation. Performers are asked to report how much they spend on R&D, the nature of the R&D, and where the funds originated. Even though response is not mandatory, over 87 percent of the national estimate came from large, R&D performing companies and is

**Expenditures for Industry-Performed R&D per $1,000 of GSP: 1997**

| State | Industry R&D (1,000's) | GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $589,000 | $103,109 | $5.71 | 36 |
| Alaska | $24,000 | $24,494 | $0.98 | 50 |
| Arizona | $1,854,000 | $121,239 | $15.29 | 22 |
| Arkansas | $118,000 | $58,479 | $2.02 | 44 |
| California | $34,011,000 | $1,033,016 | $32.92 | 6 |
| Colorado | $2,248,000 | $126,084 | $17.83 | 14 |
| Connecticut | $3,014,000 | $134,565 | $22.40 | 10 |
| Delaware | $1,009,000 | $31,585 | $31.95 | 7 |
| Florida | $3,442,000 | $380,607 | $9.04 | 28 |
| Georgia | $1,273,000 | $229,473 | $5.55 | 38 |
| Hawaii | $87,000 | $38,024 | $2.29 | 42 |
| Idaho | $1,181,000 | $29,149 | $40.52 | 2 |
| Illinois | $6,248,000 | $393,532 | $15.88 | 20 |
| Indiana | $2,677,000 | $161,701 | $16.56 | 17 |
| Iowa | $578,000 | $80,479 | $7.18 | 33 |
| Kansas | $1,136,000 | $71,737 | $15.84 | 21 |
| Kentucky | $359,000 | $100,076 | $3.59 | 40 |
| Louisiana | $172,000 | $124,350 | $1.38 | 47 |
| Maine | $83,000 | $30,156 | $2.75 | 41 |
| Maryland | $1,425,000 | $153,797 | $9.27 | 27 |
| Massachusetts | $8,300,000 | $221,009 | $37.56 | 5 |
| Michigan | $13,009,000 | $272,607 | $47.72 | 1 |
| Minnesota | $3,116,000 | $149,394 | $20.86 | 11 |
| Mississippi | $73,000 | $58,314 | $1.25 | 49 |
| Missouri | $1,290,000 | $152,100 | $8.48 | 29 |
| Montana | $92,000 | $19,160 | $4.80 | 39 |
| Nebraska | $71,000 | $48,812 | $1.45 | 46 |
| Nevada | $380,000 | $57,407 | $6.62 | 34 |
| New Hampshire | $652,000 | $38,106 | $17.11 | 16 |
| New Jersey | $11,069,000 | $294,055 | $37.64 | 4 |
| New Mexico | $1,310,000 | $45,242 | $28.96 | 8 |
| New York | $9,939,000 | $651,652 | $15.25 | 23 |
| North Carolina | $3,590,000 | $218,888 | $16.40 | 18 |
| North Dakota | $33,000 | $15,786 | $2.09 | 43 |
| Ohio | $5,608,000 | $320,506 | $17.50 | 15 |
| Oklahoma | $428,000 | $76,642 | $5.58 | 37 |
| Oregon | $1,102,000 | $98,367 | $11.20 | 26 |
| Pennsylvania | $6,609,000 | $339,940 | $19.44 | 12 |
| Rhode Island | $704,000 | $27,806 | $25.32 | 9 |
| South Carolina | $783,000 | $93,259 | $8.40 | 30 |
| South Dakota | $26,000 | $20,186 | $1.29 | 48 |
| Tennessee | $1,089,000 | $146,999 | $7.41 | 32 |
| Texas | $7,265,000 | $601,643 | $12.08 | 24 |
| Utah | $1,027,000 | $55,417 | $18.53 | 13 |
| Vermont | $246,000 | $15,214 | $16.17 | 19 |
| Virginia | $1,767,000 | $211,331 | $8.36 | 31 |
| Washington | $6,610,000 | $172,253 | $38.37 | 3 |
| West Virginia | $233,000 | $38,228 | $6.10 | 35 |
| Wisconsin | $1,707,000 | $147,325 | $11.59 | 25 |
| Wyoming | $28,000 | $17,561 | $1.59 | 45 |
| District of Columbia | $645,000 | $52,372 | $12.32 | |
| Puerto Rico | N/A | N/A | N/A | |

not subject to sampling variability. If the information is not reported, an estimate is made based on a probability sample. Therefore, in states dominated be small companies, the R&D performance estimates could be subject to significantly higher sampling variability.

The industry R&D performance expenditure data will differ from the Federal agency reported R&D funding totals because expenditures may occur in a different year than when the funds were originally authorized, obligated, or outlayed. Performers and funders of R&D may differ in what they report as R&D. Finally, funds may be further subcontracted to other performers in other states.

## Source of Data

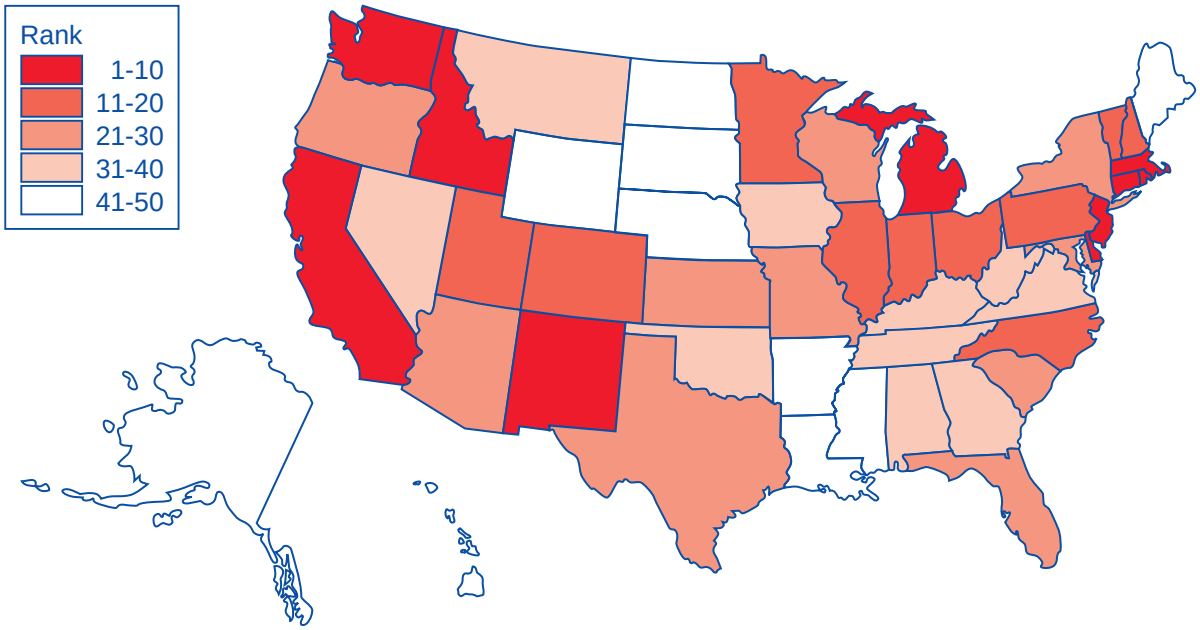
### *Expenditures for Industry-Performed R&D:*

National Science Foundation, Division of Science Resources Studies, *Research and Development in Industry: 1997,* NSF 99-358, Project Officer and Principal Author, Raymond M. Wolfe (Arlington, VA 1999).

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].



# Federally Performed R&D Expenditures

## Definition

Federally performed research & development (R&D) per $1,000 of gross state product (GSP) is computed by dividing the amount of federally performed R&D in each state by the state's gross state product. Federally performed R&D is the sum of all basic research, applied research, and development performed by federal agencies located in a state. Federally funded research and development centers that are administered by private industry are excluded from this category. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

This metric describes the importance of federal R&D performance to the economies of the states. In 1997, the federal government performed $16.8 billion in R&D and estimated 1998 performance was expected to be almost identical at $16.9 billion. Federal agencies perform about 7.7 percent of the total national R&D. Federal agency R&D performance has steadily declined since the mid-1970s.

The total federally performed R&D expenditures for the 50 states was $14.4 billion or $1.79 per $1,000 of U.S. gross domestic product. The median expenditure for federally performed R&D in the 50 states was $0.92 per $1,000 of gross state product. Of the federal R&D performed, about 17 percent is categorized as basic research. Further, basic research performed by federal agencies is expected to grow by about four percent annually in the future. This trend indicates a shift toward basic research and away from developmental research.

Federal performance of R&D is indicative of where the federal government has research and development facilities. These facilities were often located for strategic, national security, and political reasons. However, they also reflect on the labor force and research support of the state and local area in which they are located.

## Data Considerations and Limitations

R&D expenditure estimates are based on surveys of Federal R&D agencies.

The federal R&D performance expenditure data reported by universities and industry will differ from the Federal agency reported R&D funding totals because expenditures may occur in a different year than when the funds were originally authorized, obligated, or outlayed. During the last several

**Expenditures for Federally Performed R&D per $1,000 of GSP: 1997**

| State | Federal R&D (1,000's) | GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $660,047 | $103,109 | $6.40 | 5 |
| Alaska | $38,381 | $24,494 | $1.57 | 14 |
| Arizon a | $143,601 | $121,239 | $1.18 | 19 |
| Arkansas | $49,469 | $58,479 | $0.85 | 27 |
| California | $1,454,133 | $1,033,016 | $1.41 | 18 |
| Colorado | $195,364 | $126,084 | $1.55 | 16 |
| Connecticut | $32,731 | $134,565 | $0.24 | 44 |
| Delaware | $10,207 | $31,585 | $0.32 | 42 |
| Florida | $649,376 | $380,607 | $1.71 | 11 |
| Georgia | $225,150 | $229,473 | $0.98 | 21 |
| Hawaii | $54,318 | $38,024 | $1.43 | 17 |
| Idaho | $24,092 | $29,149 | $0.83 | 28 |
| Illinois | $77,224 | $393,532 | $0.20 | 48 |
| Indiana | $68,272 | $161,701 | $0.42 | 36 |
| Iowa | $29,043 | $80,479 | $0.36 | 40 |
| Kansas | $15,622 | $71,737 | $0.22 | 46 |
| Kentucky | $7,289 | $100,076 | $0.07 | 50 |
| Louisiana | $47,910 | $124,350 | $0.39 | 38 |
| Maine | $5,685 | $30,156 | $0.19 | 49 |
| Maryland | $4,569,181 | $153,797 | $29.71 | 1 |
| Massachusetts | $361,118 | $221,009 | $1.63 | 13 |
| Michigan | $107,749 | $272,607 | $0.40 | 37 |
| Minnesota | $34,573 | $149,394 | $0.23 | 45 |
| Mississippi | $165,297 | $58,314 | $2.83 | 6 |
| Missouri | $50,526 | $152,100 | $0.33 | 41 |
| Montana | $33,199 | $19,160 | $1.73 | 10 |
| Nebraska | $23,741 | $48,812 | $0.49 | 34 |
| Nevada | $46,025 | $57,407 | $0.80 | 29 |
| New Hampshire | $36,861 | $38,106 | $0.97 | 23 |
| New Jersey | $459,286 | $294,055 | $1.56 | 15 |
| New Mexico | $366,253 | $45,242 | $8.10 | 2 |
| New York | $136,215 | $651,652 | $0.21 | 47 |
| North Carolina | $229,610 | $218,888 | $1.05 | 20 |
| North Dakota | $26,401 | $15,786 | $1.67 | 12 |
| Ohio | $681,170 | $320,506 | $2.13 | 8 |
| Oklahoma | $44,238 | $76,642 | $0.58 | 30 |
| Oregon | $90,017 | $98,367 | $0.92 | 26 |
| Pennsylvania | $151,216 | $339,940 | $0.44 | 35 |
| Rhode Island | $202,192 | $27,806 | $7.27 | 4 |
| South Carolina | $34,019 | $93,259 | $0.36 | 39 |
| South Dakota | $19,307 | $20,186 | $0.96 | 24 |
| Tennessee | $77,836 | $146,999 | $0.53 | 31 |
| Texas | $559,634 | $601,643 | $0.93 | 25 |
| Utah | $117,231 | $55,417 | $2.12 | 9 |
| Vermont | $7,400 | $15,214 | $0.49 | 33 |
| Virginia | $1,654,696 | $211,331 | $7.83 | 3 |
| Washington | $167,356 | $172,253 | $0.97 | 22 |
| West Virginia | $86,663 | $38,228 | $2.27 | 7 |
| Wisconsin | $42,606 | $147,325 | $0.29 | 43 |
| Wyoming | $8,720 | $17,561 | $0.50 | 32 |
| District of Columbia | $1,732,539 | $52,372 | $33.08 | |
| Puerto Rico | N/A | N/A | N/A | |

years, the differential between federal R&D expenditures and funding has increased considerably. Performers and funders of R&D may differ in what they report as R&D. Another difficulty in tracking R&D expenditures is that funds are further subcontracted to other performers.

## Source of Data

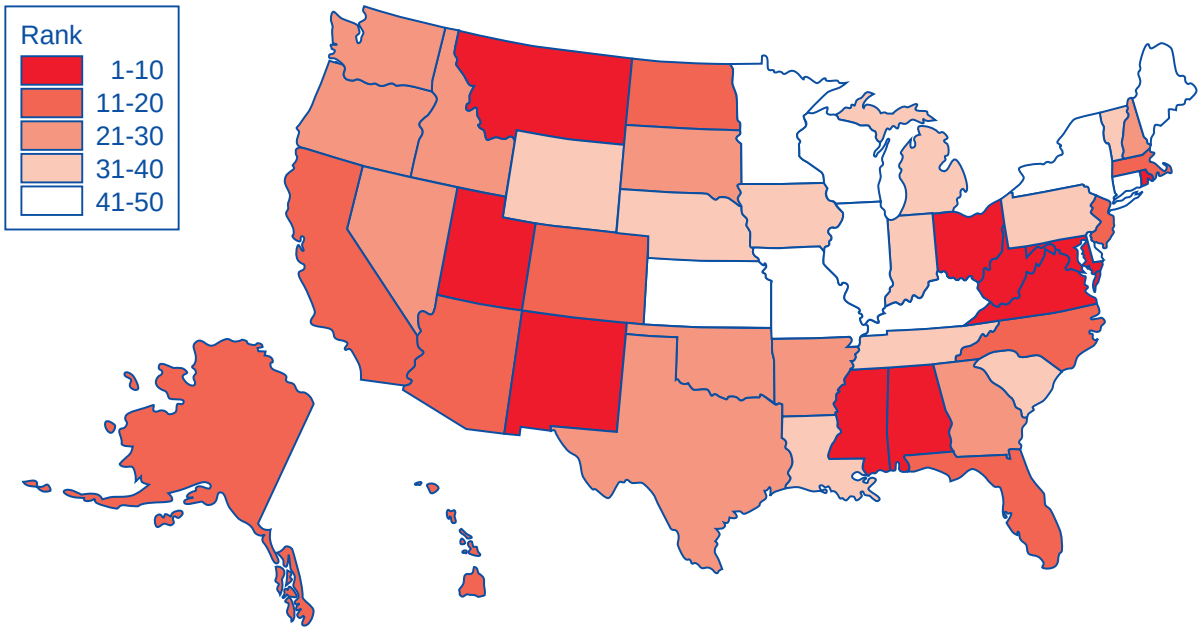
### *Expenditures for Federally Performed R&D:*

National Science Foundation, Division of Science Resources Studies, *Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999,* NSF 99-333, Project Officer, Ronald L. Meeks (Arlington, VA 1999).

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].



# University-Performed R&D Expenditures

## Definition

Expenditures for university-performed research & development (R&D) per $1,000 of gross state product (GSP) is calculated by dividing the amount of research performed by universities and colleges in a state by that state's gross state product. R&D performance includes the total of basic research, applied research, and development. The research performed by universities may be funded by the federal government, non-federal governments, industry, non-profits, or the universities themselves. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

This metric describes the importance of university research to a state's economy. Universities tend to be oriented toward basic research that focuses on long-term, fundamental knowledge and discoveries of new underlying principles. In 1997, universities performed $24.9 billion in total research. Basic research has averaged somewhere between 62 percent and 67 percent of total university research. In 1998, the basic research performed at universities was expected to set a record of $17.6 billion. The total university-performed R&D expenditures for the 50 states was $23.4 billion or $2.91 per $1,000 of U.S. gross domestic product. The median expenditure for university-performed R&D in the 50 states was $2.85 per $1,000 of gross state product.

Because universities specialize in basic research, the economic impact of their R&D accrues over many years. Further, universities have historically advocated publishing their research findings and thus disseminated their research findings well beyond their state boundaries. Nonetheless, universities' faculty, facilities, and knowledge contribute substantially to the resource base that attracts new businesses to a state. World class research institutions are frequently cited as reasons for new businesses to locate in an area. In recent times, universities have become more likely to conduct applied research and development for the benefit of particular sponsors. This type of research impacts the competitiveness of local businesses more directly and in a shorter time frame than does basic research. Finally, some research universities have begun to support the process of new business formation based on intellectual property developed at the university by its faculty, staff, and students.

### Expenditures for University-Performed R&D per $1,000 of GSP: 1997

| State | University R&D (1,000's) | GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $368,602 | $103,109 | $3.57 | 12 |
| Alaska | $70,943 | $24,494 | $2.90 | 24 |
| Arizona | $376,818 | $121,239 | $3.11 | 18 |
| Arkansas | $102,204 | $58,479 | $1.75 | 44 |
| California | $2,978,575 | $1,033,016 | $2.88 | 25 |
| Colorado | $427,435 | $126,084 | $3.39 | 14 |
| Connecticut | $392,668 | $134,565 | $2.92 | 23 |
| Delaware | $65,095 | $31,585 | $2.06 | 42 |
| Florida | $681,508 | $380,607 | $1.79 | 43 |
| Georgia | $766,346 | $229,473 | $3.34 | 16 |
| Hawaii | $120,107 | $38,024 | $3.16 | 17 |
| Idaho | $64,278 | $29,149 | $2.21 | 38 |
| Illinois | $929,639 | $393,532 | $2.36 | 35 |
| Indiana | $400,399 | $161,701 | $2.48 | 32 |
| Iowa | $341,772 | $80,479 | $4.25 | 4 |
| Kansas | $197,586 | $71,737 | $2.75 | 27 |
| Kentucky | $158,238 | $100,076 | $1.58 | 46 |
| Louisiana | $330,131 | $124,350 | $2.65 | 30 |
| Maine | $33,144 | $30,156 | $1.10 | 50 |
| Maryland | $1,242,151 | $153,797 | $8.08 | 1 |
| Massachusetts | $1,268,356 | $221,009 | $5.74 | 2 |
| Michigan | $842,303 | $272,607 | $3.09 | 19 |
| Minnesota | $363,095 | $149,394 | $2.43 | 33 |
| Mississippi | $124,601 | $58,314 | $2.14 | 40 |
| Missouri | $464,809 | $152,100 | $3.06 | 20 |
| Montana | $70,591 | $19,160 | $3.68 | 8 |
| Nebraska | $175,592 | $48,812 | $3.60 | 10 |
| Nevada | $88,331 | $57,407 | $1.54 | 48 |
| New Hampshire | $107,505 | $38,106 | $2.82 | 26 |
| New Jersey | $462,052 | $294,055 | $1.57 | 47 |
| New Mexico | $219,150 | $45,242 | $4.84 | 3 |
| New York | $1,783,810 | $651,652 | $2.74 | 28 |
| North Carolina | $785,980 | $218,888 | $3.59 | 11 |
| North Dakota | $56,096 | $15,786 | $3.55 | 13 |
| Ohio | $763,827 | $320,506 | $2.38 | 34 |
| Oklahoma | $162,871 | $76,642 | $2.13 | 41 |
| Oregon | $290,603 | $98,367 | $2.95 | 21 |
| Pennsylvania | $1,241,180 | $339,940 | $3.65 | 9 |
| Rhode Island | $111,977 | $27,806 | $4.03 | 6 |
| South Carolina | $219,000 | $93,259 | $2.35 | 36 |
| South Dakota | $24,558 | $20,186 | $1.22 | 49 |
| Tennessee | $329,710 | $146,999 | $2.24 | 37 |
| Texas | $1,581,200 | $601,643 | $2.63 | 31 |
| Utah | $234,151 | $55,417 | $4.23 | 5 |
| Vermont | $59,526 | $15,214 | $3.91 | 7 |
| Virginia | $454,525 | $211,331 | $2.15 | 39 |
| Washington | $507,659 | $172,253 | $2.95 | 22 |
| West Virginia | $63,638 | $38,228 | $1.66 | 45 |
| Wisconsin | $497,289 | $147,325 | $3.38 | 15 |
| Wyoming | $47,753 | $17,561 | $2.72 | 29 |
| District of Columbia | $214,019 | $52,372 | $4.09 | |
| Puerto Rico | N/A | N/A | N/A | |

## Data Considerations and Limitations

The federal R&D performance expenditure data reported by universities and industry will differ from the Federal agency reported R&D funding totals because expenditures may occur in a different year than when the funds were originally authorized, obligated, or outlayed. During the last several years, the differential between federal R&D expenditures and funding has increased considerably. Performers and funders of R&D may differ in what they report as R&D. Another difficulty in tracking R&D expenditures is that funds are further subcontracted to other performers.

## Source of Data

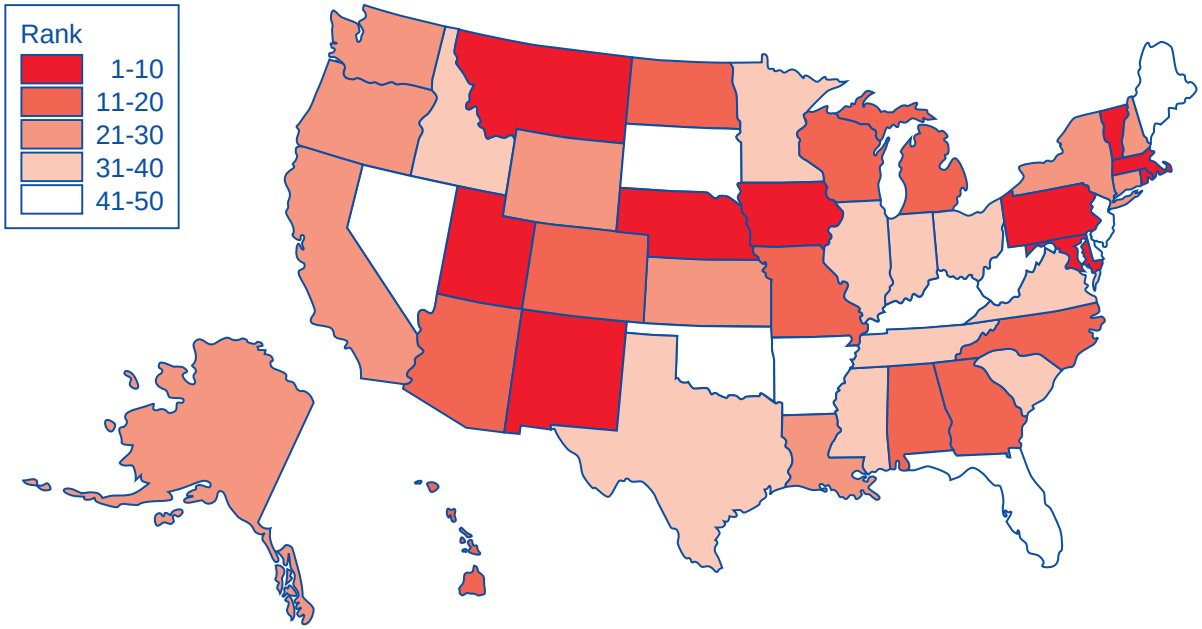
### *Expenditures for University-Performed R&D:*

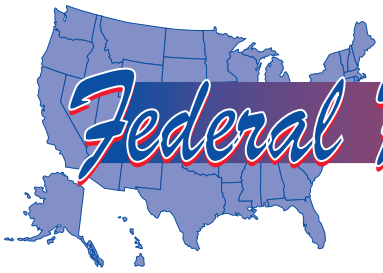
National Science Foundation, Division of Science Resources Studies, *Academic Research and Development Expenditures: Fiscal Year 1997,* NSF 99-336, Project Officer, M. Marge Machen (Arlington, VA 1999).

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].





# Federal R&D Obligations

## Definition

Federal obligations for research & development (R&D) per $1,000 of gross state product (GSP) are calculated by dividing federal R&D obligations committed to a state by that state's gross state product. Federal obligations are the amounts of money for orders placed, contracts awarded, services received, and similar transactions directed to a state during a given period of time regardless of when the funds were appropriated and when future payment of money is required. The R&D obligations include the costs of specific R&D projects as well as the applicable overhead costs such as planning, laboratory overhead, pay of military personnel, and departmental administration. R&D obligations may be given to federal agencies, industrial firms, universities and colleges, non-profits, state and local governments, and federally funded research and development centers. Gross state product is the output of goods and services produced by the labor and property located in the state.

The geographic distribution of Department of Defense development funding to industry reflects only the location of prime contractors, not the numerous subcontractors who perform most of the research and development.

## Relevance

This metric measures the magnitude of federal R&D dollars flowing into a state. These dollars will be used by R&D performers within the state to execute research, development, and demonstration projects. States benefit in two ways from federal R&D obligations. First, the obligations go to support employees, facilities, administrators, and purchases of materials within the state, thus, contributing to the state's overall level of economic activity. Second, the obligations go to support research that may lead to wealth creation from new technology, new products, and new businesses in the state. The total federal R&D obligations for the 50 states was $66.1 billion or $8.21 per $1,000 of U.S. gross domestic product. The median federal R&D obligation for the 50 states was $4.13 per $1,000 of gross state product.

Federal R&D obligations also reflect on the capabilities and capacities of the research institutions within a state. Many of the federal obligations are awarded on a competitive basis so the level of R&D funding is one indicator of the state's research competitiveness.

### Federal Obligations for R&D per $1,000 of GSP: 1997

| State | Federal Obligations for R&D (1,000s) | GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $2,213,683 | $103,109 | $21.47 | 4 |
| Alaska | $99,928 | $24,494 | $4.08 | 27 |
| Arizona | $732,065 | $121,239 | $6.04 | 17 |
| Arkansas | $95,709 | $58,479 | $1.64 | 47 |
| California | $13,731,238 | $1,033,016 | $13.29 | 8 |
| Colorado | $1,340,231 | $126,084 | $10.63 | 9 |
| Connecticut | $846,458 | $134,565 | $6.29 | 15 |
| Delaware | $48,964 | $31,585 | $1.55 | 49 |
| Florida | $3,326,418 | $380,607 | $8.74 | 10 |
| Georgia | $3,919,868 | $229,473 | $17.08 | 5 |
| Hawaii | $150,722 | $38,024 | $3.96 | 29 |
| Idaho | $205,660 | $29,149 | $7.06 | 14 |
| Illinois | $1,140,163 | $393,532 | $2.90 | 36 |
| Indiana | $410,646 | $161,701 | $2.54 | 39 |
| Iowa | $228,180 | $80,479 | $2.84 | 37 |
| Kansas | $255,490 | $71,737 | $3.56 | 32 |
| Kentucky | $91,291 | $100,076 | $0.91 | 50 |
| Louisiana | $211,036 | $124,350 | $1.70 | 46 |
| Maine | $68,683 | $30,156 | $2.28 | 40 |
| Maryland | $7,328,937 | $153,797 | $47.65 | 1 |
| Massachusetts | $3,437,962 | $221,009 | $15.56 | 6 |
| Michigan | $735,221 | $272,607 | $2.70 | 38 |
| Minnesota | $609,395 | $149,394 | $4.08 | 28 |
| Mississippi | $289,791 | $58,314 | $4.97 | 23 |
| Missouri | $1,130,148 | $152,100 | $7.43 | 11 |
| Montana | $79,347 | $19,160 | $4.14 | 25 |
| Nebraska | $82,981 | $48,812 | $1.70 | 45 |
| Nevada | $295,042 | $57,407 | $5.14 | 21 |
| New Hampshire | $278,697 | $38,106 | $7.31 | 12 |
| New Jersey | $1,318,793 | $294,055 | $4.48 | 24 |
| New Mexico | $1,933,123 | $45,242 | $42.73 | 2 |
| New York | $2,471,213 | $651,652 | $3.79 | 31 |
| North Carolina | $900,947 | $218,888 | $4.12 | 26 |
| North Dakota | $53,015 | $15,786 | $3.36 | 33 |
| Ohio | $1,879,784 | $320,506 | $5.87 | 18 |
| Oklahoma | $160,356 | $76,642 | $2.09 | 42 |
| Oregon | $319,587 | $98,367 | $3.25 | 35 |
| Pennsylvania | $1,893,867 | $339,940 | $5.57 | 20 |
| Rhode Island | $403,844 | $27,806 | $14.52 | 7 |
| South Carolina | $166,607 | $93,259 | $1.79 | 44 |
| South Dakota | $41,955 | $20,186 | $2.08 | 43 |
| Tennessee | $566,242 | $146,999 | $3.85 | 30 |
| Texas | $3,640,162 | $601,643 | $6.05 | 16 |
| Utah | $319,826 | $55,417 | $5.77 | 19 |
| Vermont | $49,885 | $15,214 | $3.28 | 34 |
| Virginia | $4,849,753 | $211,331 | $22.95 | 3 |
| Washington | $1,226,154 | $172,253 | $7.12 | 13 |
| West Virginia | $193,061 | $38,228 | $5.05 | 22 |
| Wisconsin | $332,214 | $147,325 | $2.25 | 41 |
| Wyoming | $28,368 | $17,561 | $1.62 | 48 |
| District of Columbia | $2,232,284 | $52,372 | $42.62 | |
| Puerto Rico | $58,943 | $32,096 | $1.84 | |

## Data Considerations and Limitations

Data for this metric were derived from the Survey of Federal Funds for Research and Development conducted by the National Science Foundation. The accuracy of the data depends in part of the judgment of the survey respondents. Since many agency R&D programs are not identified as budget-line items, agency officials must identify R&D activities within their broader programs. Over the years, personnel of participating agencies have developed increasing skill and consistency in meeting the survey requirements which has considerably increased the reliability of the data.

## Source of Data

The data for this metric can be obtained from the National Science Foundation's report entitled *Federal Funds for Research and Development, Fiscal Year 1996, 1997, and 1998* which is available electronically at <http://www.nsf.gov/sbe/srs/nsf98332/start.htm>.

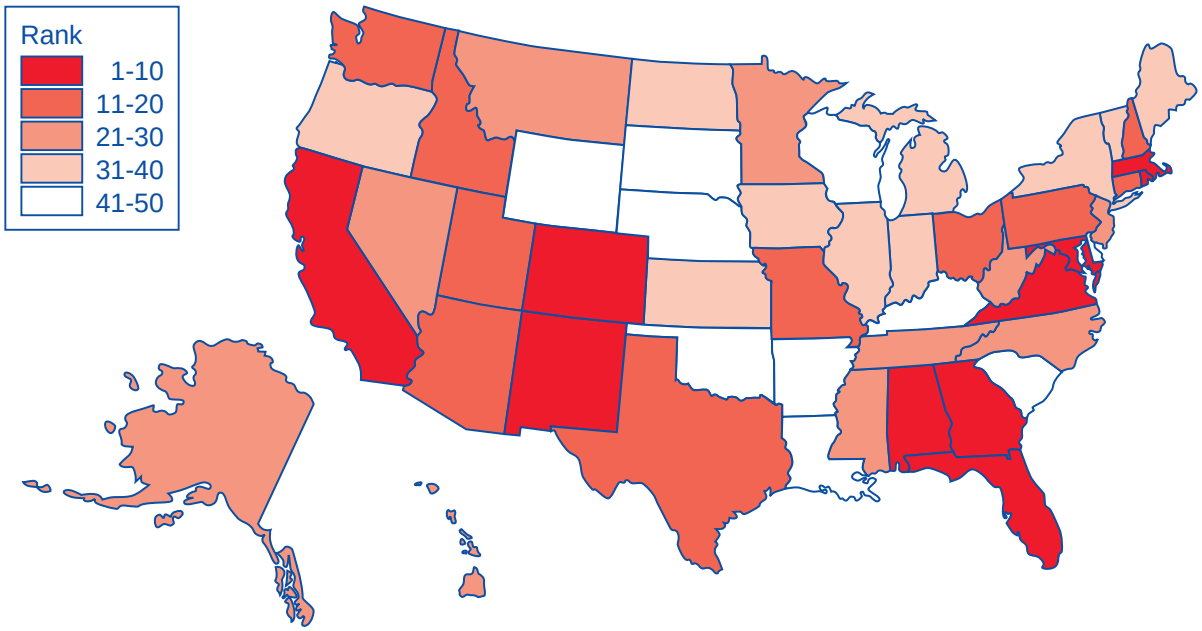
### *Federal Obligations for R&D:*

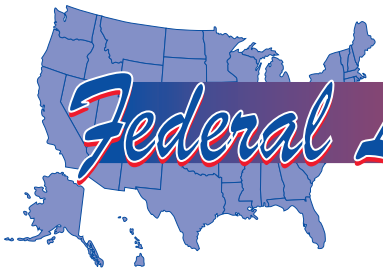
National Science Foundation, Division of Science Resources Studies, *Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999,* NSF 99-333, Project Officer, Ronald L. Meeks (Arlington, VA 1999).

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].





# Federal Laboratory Campus Funding

## Definition

Federal laboratory campus funding per $1,000 of gross state product (GSP) is calculated by dividing the total operating budgets at federal government laboratories in each state by that state's gross state product. Government laboratory campuses are facilities that perform R&D and are operated by federal agencies or their contractors. Laboratories range from the 10 very large national laboratories of the Department of Energy to the 185 small Department of Agriculture labs. Laboratories devoted to testing or analyzing samples for chemical, physical, or biological properties are not considered R&D laboratories. R&D obligations are the amounts of orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when funds were appropriated or payment required. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

This metric measures the importance of federal R&D facilities to the economies of states. Nationally, in 1995, there were 515 federal laboratory campuses and another 212 satellite facilities. The 497 federal campuses in the 50 states contributed a total of $26.1 billion or $3.63 per $1,000 of U.S. gross domestic product. The median federal laboratory campus funding for the 50 states was $1.22 per $1,000 of gross state product.

Federal laboratory campuses benefit the states in which they are located in several ways. First, the payroll and purchases of local goods and services contribute directly to the economy. Second, the laboratories are specialized research resources that can create competitive advantage for the areas where they are located. Third, the labs may stimulate local business formation and other economic spin-offs as a result of intellectual property development.

## Data Considerations and Limitations

Because the federal laboratory campuses are operated by different federal agencies, there are some variations in data reporting. The 1995 data for Department of Defense and National Aeronautics and Space Administration were taken from their FY 94 operating budgets while the Department of Education data came from its FY 1996 operating budget. There is a several year lag before the detailed laboratory

**Funding of Federal R&D Laboratory Campuses per $1,000 of GSP: 1995**

| State | Federal R&D Lab Campuses | Funding (millions) | GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|---|
| Alabama | 11 | $992.3 | $94,948 | $10.45 | 6 |
| Alaska | 10 | $33.8 | $23,207 | $1.46 | 23 |
| Arizona | 8 | $125.2 | $103,638 | $1.21 | 26 |
| Arkansas | 7 | $32.1 | $53,144 | $0.60 | 33 |
| California | 46 | $4,119.7 | $918,928 | $4.48 | 12 |
| Colorado | 13 | $575.3 | $108,259 | $5.31 | 9 |
| Connecticut | 5 | $18.6 | $118,615 | $0.16 | 44 |
| Delaware | 1 | $1.0 | $27,813 | $0.04 | 48 |
| Florida | 21 | $848.6 | $338,651 | $2.51 | 14 |
| Georgia | 14 | $132.8 | $200,152 | $0.66 | 32 |
| Hawaii | 6 | $21.2 | $36,681 | $0.58 | 35 |
| Idaho | 8 | $816.9 | $26,861 | $30.41 | 2 |
| Illinois | 15 | $727.7 | $353,639 | $2.06 | 18 |
| Indiana | 3 | $11.3 | $147,383 | $0.08 | 47 |
| Iowa | 4 | $64.8 | $70,929 | $0.91 | 31 |
| Kansas | 3 | $6.8 | $63,466 | $0.11 | 46 |
| Kentucky | 2 | $2.6 | $90,073 | $0.03 | 49 |
| Louisiana | 8 | $39.8 | $112,497 | $0.35 | 39 |
| Maine | 1 | $0.4 | $27,751 | $0.01 | 50 |
| Maryland | 25 | $2,921.2 | $138,127 | $21.15 | 3 |
| Massachusetts | 15 | $1,005.3 | $195,664 | $5.14 | 11 |
| Michigan | 8 | $101.8 | $247,725 | $0.41 | 38 |
| Minnesota | 7 | $33.9 | $131,072 | $0.26 | 43 |
| Mississippi | 13 | $285.1 | $53,748 | $5.30 | 10 |
| Missouri | 8 | $71.4 | $137,701 | $0.52 | 36 |
| Montana | 6 | $21.0 | $17,567 | $1.20 | 27 |
| Nebraska | 4 | $19.9 | $43,637 | $0.46 | 37 |
| Nevada | 3 | $28.4 | $48,448 | $0.59 | 34 |
| New Hampshire | 3 | $31.4 | $32,242 | $0.97 | 30 |
| New Jersey | 8 | $592.1 | $266,702 | $2.22 | 16 |
| New Mexico | 9 | $2,692.5 | $41,004 | $65.66 | 1 |
| New York | 19 | $680.1 | $589,506 | $1.15 | 28 |
| North Carolina | 13 | $240.4 | $193,635 | $1.24 | 25 |
| North Dakota | 5 | $24.6 | $14,248 | $1.73 | 21 |
| Ohio | 12 | $705.2 | $292,076 | $2.41 | 15 |
| Oklahoma | 10 | $142.3 | $68,335 | $2.08 | 17 |
| Oregon | 14 | $83.3 | $80,713 | $1.03 | 29 |
| Pennsylvania | 14 | $578.7 | $312,252 | $1.85 | 19 |
| Rhode Island | 5 | $416.3 | $25,147 | $16.55 | 5 |
| South Carolina | 10 | $122.2 | $85,137 | $1.44 | 24 |
| South Dakota | 2 | $2.2 | $18,481 | $0.12 | 45 |
| Tennessee | 8 | $844.9 | $134,489 | $6.28 | 8 |
| Texas | 22 | $910.6 | $515,866 | $1.77 | 20 |
| Utah | 7 | $75.2 | $46,023 | $1.63 | 22 |
| Vermont | 2 | $3.8 | $13,867 | $0.27 | 42 |
| Virginia | 19 | $3,964.4 | $188,002 | $21.09 | 4 |
| Washington | 19 | $617.9 | $150,455 | $4.11 | 13 |
| West Virginia | 9 | $228.0 | $35,942 | $6.34 | 7 |
| Wisconsin | 9 | $42.0 | $132,246 | $0.32 | 40 |
| Wyoming | 3 | $4.7 | $15,608 | $0.30 | 41 |
| District of Columbia | 9 | $487.3 | $49,512 | $9.84 | |
| Puerto Rico | 4 | $15.8 | $28,452 | $0.56 | |

campus information becomes available. Another consideration is that the obligations ascribed to a particular campus may actually be subcontracted and performed by other organizations located in different states.

## Source of Data

The data for federal laboratory campus funding can be accessed electronically from the National Science Foundation report, Science and Engineering Indicators - 1998, at http://www.nsf.gov/sbe/srs/seind98/start.htm. Federal laboratory campus funding is found in appendix table 4-32 of the report.

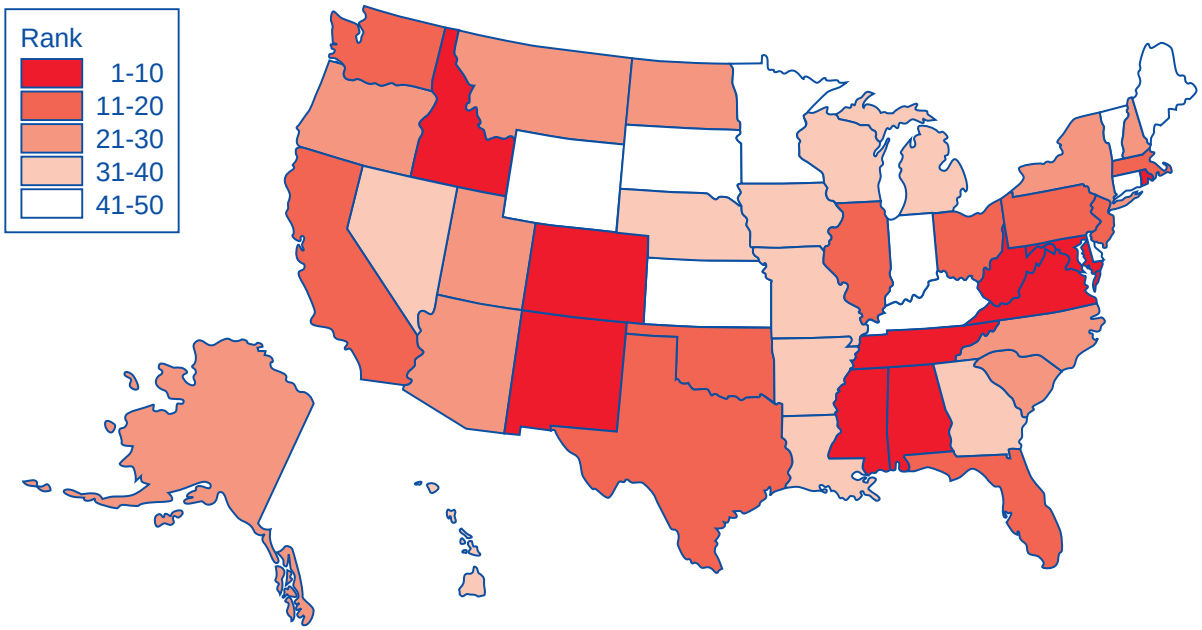
### *Federal Laboratory Campus Funding:*

U.S. General Accounting Office, *Federal R&D Laboratories,* GAO/RCED/NSIAD-96-78R (Washington, DC: 1996).

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1995 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1995 data were used in calculations].



## Definition

The number of Small Business Innovation Research Program (SBIR) awards per 10,000 business establishments was calculated by averaging the number of SBIR awards made to businesses in each state for the years 1996, 1997, and 1998 and dividing this by the number of business establishments in each state in 1997. Phase 1 and Phase 2 awards were combined for this metric. Total business establishments are the total number of discrete businesses located at discrete addresses as reported in the 1997 County Business Patterns. SBIR awards go also to small businesses in the District of Columbia and Puerto Rico.

## Relevance

This metric indicates the degree to which small companies in each state are participating in federally funded research and development and adding to the United States' base for technical achievement. The SBIR program was started in 1982 and was reauthorized in 1992. The program is widely recognized as a way to encourage technological innovation within small businesses. The SBIR program funds research to evaluate the feasibility and scientific merit of new technology and to develop the technology so it can be commercialized.

The total average annual number of SBIR awards granted from 1996-8 for all 50 states was 4,337 or 6.3 SBIR awards granted per 10,000 business establishments. The median number of SBIR awards granted in the 50 states was 3.0 per 10,000 business establishments. The potential benefits from the SBIR awards are many. First, small businesses are provided capital with which to invest in new technology that can improve their market position. Second, the technology developed and commercialized as a result of the SBIR awards may lead to the formation of new businesses. Third, the federal government may find new suppliers for technologically advanced products thus stimulating the growth of small businesses.

## Data Considerations and Limitations

The total SBIR budget dictates how many awards will be given in any year. The SBIR budget fluctuates depending on the agency budgets, making year-to-year comparisons of state award receipt more difficult. Also, because of the relatively small number of awards each year, the actual number of awards going to any one state can vary widely on a yearly basis. Using a three-year average helps to smooth out the yearly fluctuations.

### Average Annual Number of SBIR Awards per 10,000 Business Establishments: 1996-8

| State | Ave. Annual SBIR Awards | 1997 Estab. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 79 | 100,281 | 7.8 | 11 |
| Alaska | 3 | 18,138 | 1.8 | 36 |
| Arizona | 94 | 108,669 | 8.6 | 10 |
| Arkansas | 3 | 62,326 | 0.4 | 50 |
| California | 926 | 766,009 | 12.1 | 7 |
| Colorado | 186 | 127,419 | 14.6 | 5 |
| Connecticut | 108 | 92,702 | 11.7 | 8 |
| Delaware | 16 | 22,249 | 7.3 | 12 |
| Florida | 94 | 417,522 | 2.2 | 32 |
| Georgia | 39 | 191,279 | 2.0 | 34 |
| Hawaii | 16 | 29,991 | 5.2 | 18 |
| Idaho | 5 | 35,563 | 1.4 | 40 |
| Illinois | 61 | 302,579 | 2.0 | 35 |
| Indiana | 24 | 146,241 | 1.6 | 38 |
| Iowa | 5 | 80,608 | 0.7 | 49 |
| Kansas | 10 | 73,924 | 1.4 | 41 |
| Kentucky | 8 | 89,029 | 0.9 | 46 |
| Louisiana | 9 | 100,770 | 0.9 | 47 |
| Maine | 6 | 37,964 | 1.7 | 37 |
| Maryland | 201 | 126,001 | 15.9 | 3 |
| Massachusetts | 655 | 166,986 | 39.2 | 1 |
| Michigan | 97 | 235,308 | 4.1 | 21 |
| Minnesota | 69 | 133,002 | 5.2 | 20 |
| Mississippi | 5 | 59,347 | 0.8 | 48 |
| Missouri | 18 | 143,418 | 1.2 | 43 |
| Montana | 9 | 30,757 | 2.9 | 27 |
| Nebraska | 6 | 48,588 | 1.3 | 42 |
| Nevada | 9 | 42,343 | 2.1 | 33 |
| New Hampshire | 51 | 36,692 | 13.9 | 6 |
| New Jersey | 130 | 229,349 | 5.7 | 17 |
| New Mexico | 79 | 42,477 | 18.5 | 2 |
| New York | 180 | 478,480 | 3.8 | 22 |
| North Carolina | 50 | 197,488 | 2.5 | 30 |
| North Dakota | 5 | 20,439 | 2.3 | 31 |
| Ohio | 156 | 270,540 | 5.8 | 16 |
| Oklahoma | 13 | 84,645 | 1.5 | 39 |
| Oregon | 61 | 98,564 | 6.2 | 15 |
| Pennsylvania | 152 | 292,118 | 5.2 | 19 |
| Rhode Island | 8 | 28,164 | 2.7 | 29 |
| South Carolina | 10 | 93,926 | 1.0 | 44 |
| South Dakota | 7 | 23,486 | 3.0 | 25 |
| Tennessee | 39 | 130,952 | 3.0 | 26 |
| Texas | 165 | 459,024 | 3.6 | 23 |
| Utah | 44 | 50,653 | 8.8 | 9 |
| Vermont | 15 | 21,235 | 6.9 | 13 |
| Virginia | 256 | 170,654 | 15.0 | 4 |
| Washington | 107 | 159,684 | 6.7 | 14 |
| West Virginia | 4 | 41,625 | 1.0 | 45 |
| Wisconsin | 39 | 138,427 | 2.8 | 28 |
| Wyoming | 6 | 17,680 | 3.6 | 24 |
| District of Columbia | 11 | 19,554 | 5.5 | |
| Puerto Rico | 1 | 42,463 | 0.2 | |

## Source of Data

The 1996 data for this metric can be obtained from the Small Business Administration in a report entitled *Small Business Innovation Research Program Annual Report.* The information for 1997 and 1998 is also available electronically at <http://www.sba.gov/SBIR/library.html>.

### *SBIR Awards Granted:*

U.S. Small Business Administration, Office of Technology. *1998 SBIR State Rank.* <http://www.sbaonline.sba.gov/SBIR/98sbirrank.html> (1999, November 22);

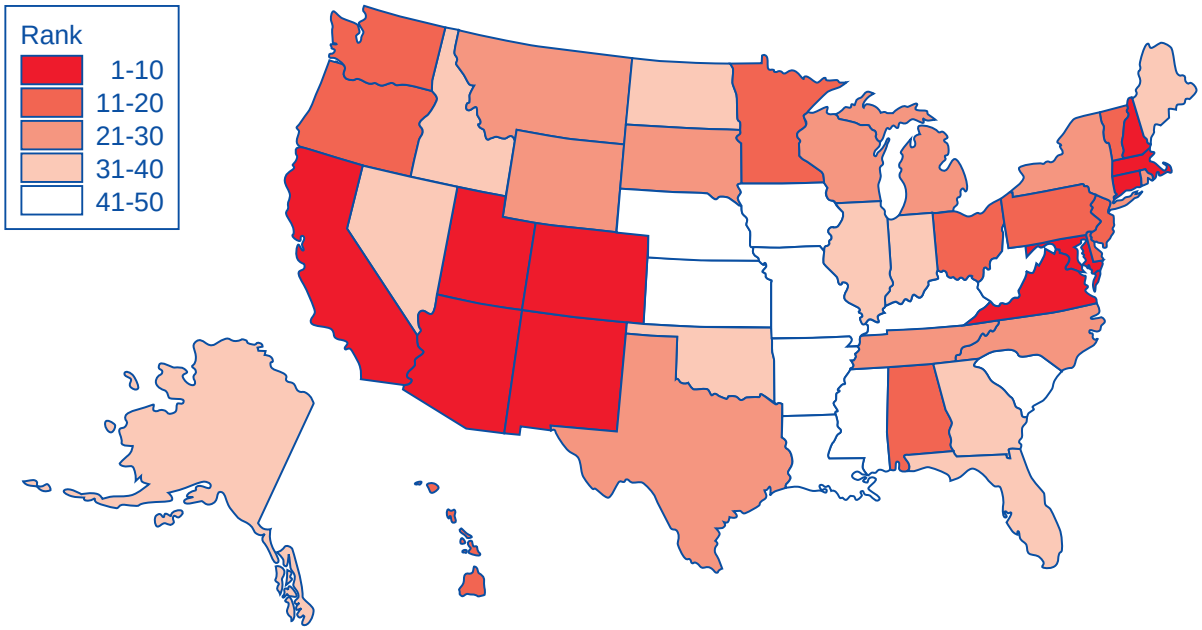
U.S. Small Business Administration, Office of Technology. *1997 SBIR State Rank.* <http://www.sba.gov/SBIR/section03f03.html> (1999, September 20);

U.S. Small Business Administration, Office of Technology. (1996). *Small Business Innovation Research Program (SBIR) Annual Report - FY 1996*. Administrator, Aida Alvarez, Washington, DC.

### *Establishments:*

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997.* (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997* - Puerto Rico. (CBP/97-53). Washington, DC: U.S. Government Printing Office.



# SBIR Award Dollars

## Definition

The average annual dollar award of Small Business Innovation Research Program (SBIR) grants per $1,000 of gross state product (GSP) was calculated by averaging the dollar awards given to companies in each state for the years 1996, 1997 and 1998 and dividing this average by the state's gross state product in 1997. Phase 1 and Phase 2 awards dollars were combined to compute this metric. SBIR awards go also to small businesses in the District of Columbia and Puerto Rico. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

This metric is useful in understanding the magnitude of the federal government's investment in innovative small businesses in each state made by. The SBIR program was started in 1982 and was reauthorized in 1992. The program is widely recognized as a way to encourage technological innovation within small businesses. The SBIR program funds research to evaluate the feasibility and scientific merit of new technology and to develop the technology to a point where it can be commercialized.

The total average annual SBIR award dollars granted from 1996-8 for all 50 states was $1.03 billion or $0.13 per $1,000 of U.S. gross domestic product. The median SBIR award dollars granted in the 50 states was $0.06 per $1,000 of gross state product. While the absolute dollars are a small part of GDP, the potential long-term benefits to small businesses and their local economy are much greater. First, small businesses are provided capital which is leveraged with their own investment dollars to develop new technology and products that can improve their market position. Second, the technology developed and commercialized as a result of the SBIR awards may lead to the formation of new businesses or the accelerated growth of existing small businesses. Third, the federal government may find new suppliers for technologically advanced products thus stimulating the growth of small businesses.

## Data Considerations and Limitations

The total SBIR budget depends on the extramural R&D budgets of federal agencies. The SBIR budget fluctuates depending on the agency budgets making year-to-year comparisons of state award receipt more difficult. Also, because of the relatively small number of awards each year,

**Average Annual SBIR Award Dollars per $1,000 of GSP: 1996-8**

| State | Ave. Annual SBIR Dollars (1,000s) | 1997 GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $21,970 | $103,109 | $0.21 | 8 |
| Alaska | $402 | $24,494 | $0.02 | 45 |
| Arizona | $18,120 | $121,239 | $0.15 | 13 |
| Arkansas | $423 | $58,479 | $0.01 | 50 |
| California | $230,235 | $1,033,016 | $0.22 | 7 |
| Colorado | $42,638 | $126,084 | $0.34 | 4 |
| Connecticut | $28,291 | $134,565 | $0.21 | 9 |
| Delaware | $3,741 | $31,585 | $0.12 | 16 |
| Florida | $20,997 | $380,607 | $0.06 | 30 |
| Georgia | $8,846 | $229,473 | $0.04 | 33 |
| Hawaii | $3,010 | $38,024 | $0.08 | 22 |
| Idaho | $666 | $29,149 | $0.02 | 42 |
| Illinois | $13,504 | $393,532 | $0.03 | 37 |
| Indiana | $4,881 | $161,701 | $0.03 | 39 |
| Iowa | $813 | $80,479 | $0.01 | 49 |
| Kansas | $2,590 | $71,737 | $0.04 | 35 |
| Kentucky | $2,790 | $100,076 | $0.03 | 40 |
| Louisiana | $1,657 | $124,350 | $0.01 | 48 |
| Maine | $1,515 | $30,156 | $0.05 | 31 |
| Maryland | $46,540 | $153,797 | $0.30 | 5 |
| Massachusetts | $158,223 | $221,009 | $0.72 | 1 |
| Michigan | $24,573 | $272,607 | $0.09 | 20 |
| Minnesota | $15,923 | $149,394 | $0.11 | 17 |
| Mississippi | $778 | $58,314 | $0.01 | 47 |
| Missouri | $3,607 | $152,100 | $0.02 | 41 |
| Montana | $1,594 | $19,160 | $0.08 | 21 |
| Nebraska | $899 | $48,812 | $0.02 | 43 |
| Nevada | $2,060 | $57,407 | $0.04 | 36 |
| New Hampshire | $14,009 | $38,106 | $0.37 | 3 |
| New Jersey | $29,766 | $294,055 | $0.10 | 19 |
| New Mexico | $17,631 | $45,242 | $0.39 | 2 |
| New York | $42,991 | $651,652 | $0.07 | 24 |
| North Carolina | $12,613 | $218,888 | $0.06 | 28 |
| North Dakota | $600 | $15,786 | $0.04 | 34 |
| Ohio | $38,040 | $320,506 | $0.12 | 15 |
| Oklahoma | $2,447 | $76,642 | $0.03 | 38 |
| Oregon | $15,685 | $98,367 | $0.16 | 12 |
| Pennsylvania | $36,210 | $339,940 | $0.11 | 18 |
| Rhode Island | $2,059 | $27,806 | $0.07 | 23 |
| South Carolina | $1,357 | $93,259 | $0.01 | 46 |
| South Dakota | $858 | $20,186 | $0.04 | 32 |
| Tennessee | $9,256 | $146,999 | $0.06 | 25 |
| Texas | $36,429 | $601,643 | $0.06 | 27 |
| Utah | $9,265 | $55,417 | $0.17 | 11 |
| Vermont | $2,889 | $15,214 | $0.19 | 10 |
| Virginia | $61,916 | $211,331 | $0.29 | 6 |
| Washington | $24,717 | $172,253 | $0.14 | 14 |
| West Virginia | $661 | $38,228 | $0.02 | 44 |
| Wisconsin | $8,151 | $147,325 | $0.06 | 29 |
| Wyoming | $1,088 | $17,561 | $0.06 | 26 |
| District of Columbia | $2,212 | $52,372 | $0.04 | |
| Puerto Rico | $52 | $32,096 | $0.00 | |

the dollar value of SBIR awards going to any one state can vary widely on a yearly basis. Using a three-year average helps to smooth out the yearly fluctuations.

## Source of Data

The data for this metric can be obtained from the Small Business Administration in a report entitled *Small Business Innovation Research Program Annual Report.* The information for 1997 and 1998 is also available electronically at <http://www.sba.gov/SBIR/library.html>.

### *SBIR Award Dollars Granted:*

U.S. Small Business Administration, Office of Technology. *1998 SBIR State Rank.* <http://www.sbaonline.sba.gov/SBIR/98sbirrank.html> (1999, November 22);

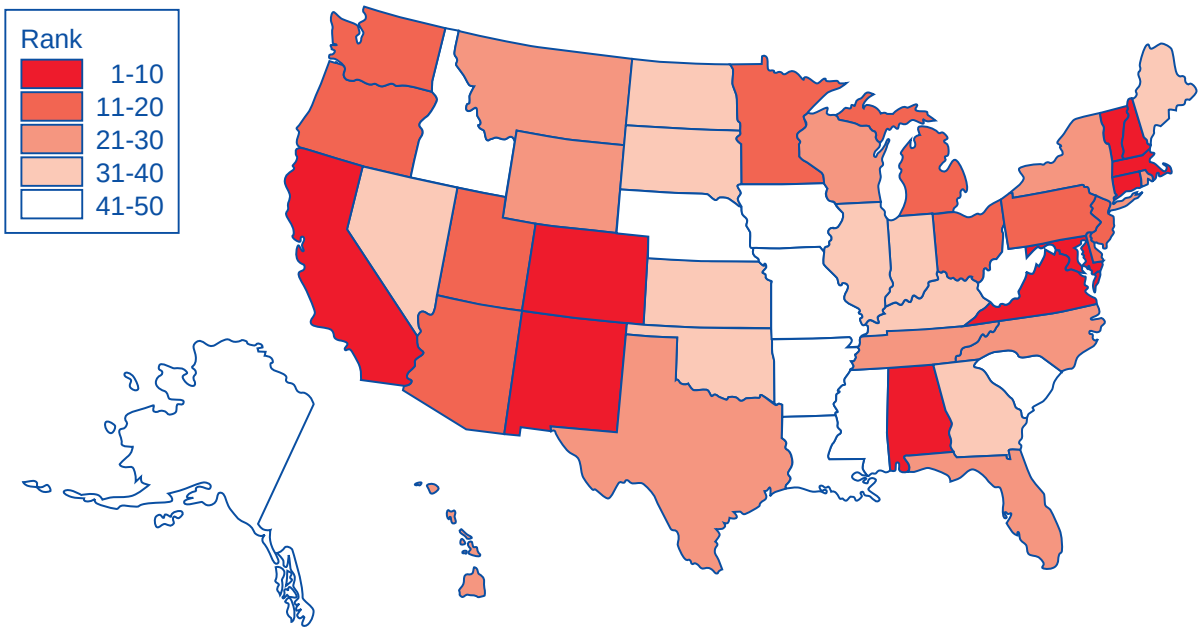
U.S. Small Business Administration, Office of Technology. 1997 *SBIR State Rank.* <http://www.sba.gov/SBIR/section03f03.html> (1999, September 20);

U.S. Small Business Administration, Office of Technology. (1996). *Small Business Innovation Research Program (SBIR) Annual Report - FY 1996.* Administrator, Aida Alvarez, Washington, DC.

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].



## Definition

The number of Small Business Technology Transfer Program (STTR) awards per 10,000 business establishments was calculated by averaging the number of STTR awards in each state for the years 1996, 1997, and 1998 and dividing this by the number of business establishments in each state in 1997. STTR awards are given to partnerships of small businesses and non-profit research institutions. Phase 1 and Phase 2 award dollars were combined to compute this metric. STTR awards go also to small businesses in the District of Columbia. Total business establishments are the total numbers of businesses as reported in the 1997 County Business Patterns.

## Relevance

This metric indicates the degree to which partnerships of small companies and non-profit research institutions in each state are participating in federally funded research and development and adding to the United States' base for creating technical innovation. The STTR program was started in 1992. The program is widely recognized as a way to encourage technological innovation within small businesses and for building strategic linkages between businesses and research institutions. The STTR program funds research to evaluate the feasibility and scientific merit of new technology and to develop the technology to a point where it can be commercialized. It shares the philosophy of the SBIR program but differs because it requires a partnership between small business and selected federal and non-profit research institutions.

The total average annual number of STTR awards granted from 1996-8 for all 50 states was 329 or 0.48 STTR awards granted per 10,000 business establishments. The median number of STTR awards granted in the 50 states was about 0.23 per 10,000 business establishments. The potential benefits from the STTR awards are many. First, the STTR program helps form strong technical relationships between small businesses and research institutions that can last beyond the performance of the specific grant. Second, small businesses receive capital to invest in new technology that can improve their market position. Third,

the federal government may find new suppliers for technologically advanced products thus stimulating the growth of small businesses.

### Average Annual Number of STTR Awards per 10,000 Business Establishments: 1996-8

| State | Ave. Annual STTR Awards | 1997 Estab. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 8.7 | 100,281 | 0.9 | 8 |
| Alaska | 0.0 | 18,138 | 0.0 | 49 |
| Arizona | 3.0 | 108,669 | 0.3 | 23 |
| Arkansas | 0.7 | 62,326 | 0.1 | 40 |
| California | 67.3 | 766,009 | 0.9 | 6 |
| Colorado | 10.3 | 127,419 | 0.8 | 9 |
| Connecticut | 6.7 | 92,702 | 0.7 | 11 |
| Delaware | 1.0 | 22,249 | 0.4 | 20 |
| Florida | 7.7 | 417,522 | 0.2 | 30 |
| Georgia | 5.0 | 191,279 | 0.3 | 24 |
| Hawaii | 0.3 | 29,991 | 0.1 | 39 |
| Idaho | 0.3 | 35,563 | 0.1 | 41 |
| Illinois | 5.0 | 302,579 | 0.2 | 31 |
| Indiana | 1.7 | 146,241 | 0.1 | 37 |
| Iowa | 1.0 | 80,608 | 0.1 | 36 |
| Kansas | 1.7 | 73,924 | 0.2 | 27 |
| Kentucky | 0.7 | 89,029 | 0.1 | 46 |
| Louisiana | 0.3 | 100,770 | 0.0 | 48 |
| Maine | 0.3 | 37,964 | 0.1 | 42 |
| Maryland | 13.7 | 126,001 | 1.1 | 5 |
| Massachusetts | 51.0 | 166,986 | 3.1 | 1 |
| Michigan | 7.3 | 235,308 | 0.3 | 21 |
| Minnesota | 2.0 | 133,002 | 0.2 | 34 |
| Mississippi | 0.7 | 59,347 | 0.1 | 38 |
| Missouri | 2.3 | 143,418 | 0.2 | 32 |
| Montana | 2.7 | 30,757 | 0.9 | 7 |
| Nebraska | 3.7 | 48,588 | 0.8 | 10 |
| Nevada | 0.3 | 42,343 | 0.1 | 45 |
| New Hampshire | 2.0 | 36,692 | 0.5 | 15 |
| New Jersey | 11.3 | 229,349 | 0.5 | 17 |
| New Mexico | 6.7 | 42,477 | 1.6 | 2 |
| New York | 10.3 | 478,480 | 0.2 | 29 |
| North Carolina | 5.7 | 197,488 | 0.3 | 22 |
| North Dakota | 0.0 | 20,439 | 0.0 | 49 |
| Ohio | 16.0 | 270,540 | 0.6 | 12 |
| Oklahoma | 0.7 | 84,645 | 0.1 | 44 |
| Oregon | 4.7 | 98,564 | 0.5 | 18 |
| Pennsylvania | 6.7 | 292,118 | 0.2 | 26 |
| Rhode Island | 1.3 | 28,164 | 0.5 | 19 |
| South Carolina | 0.3 | 93,926 | 0.0 | 47 |
| South Dakota | 0.3 | 23,486 | 0.1 | 35 |
| Tennessee | 6.7 | 130,952 | 0.5 | 16 |
| Texas | 10.3 | 459,024 | 0.2 | 28 |
| Utah | 6.7 | 50,653 | 1.3 | 3 |
| Vermont | 0.3 | 21,235 | 0.2 | 33 |
| Virginia | 19.7 | 170,654 | 1.2 | 4 |
| Washington | 9.3 | 159,684 | 0.6 | 13 |
| West Virginia | 0.3 | 41,625 | 0.1 | 43 |
| Wisconsin | 3.3 | 138,427 | 0.2 | 25 |
| Wyoming | 1.0 | 17,680 | 0.6 | 14 |
| District of Columbia | 1.0 | 19,554 | 0.5 | |
| Puerto Rico | 0.0 | 42,463 | 0.0 | |

## Data Considerations and Limitations

The total STTR budget dictates how many awards will be given in any year. The STTR budget fluctuates depending on the level of the R&D budgets of participating federal agencies thus making year-to-year comparisons of state awards more difficult. Also, because of the relatively small number of awards each year, the actual number of awards going to any one state can vary widely on an annual basis. Using a three-year average helps to smooth out the yearly fluctuations.

## Source of Data

The 1996 data for this metric can be obtained from the Small Business Administration in a report entitles *Small Business Technology Transfer Program (STTR) Annual Report – FY 1996.* The information for 1997 and 1998 is available electronically at <http://www.sba.gov/SBIR/library.html>.

### *STTR Awards Granted:*

U.S. Small Business Administration, Office of Technology. *1998 STTR State Rank.* <http://www.sbaonline.sba.gov/SBIR/section03f14.html> (1999, September 29);

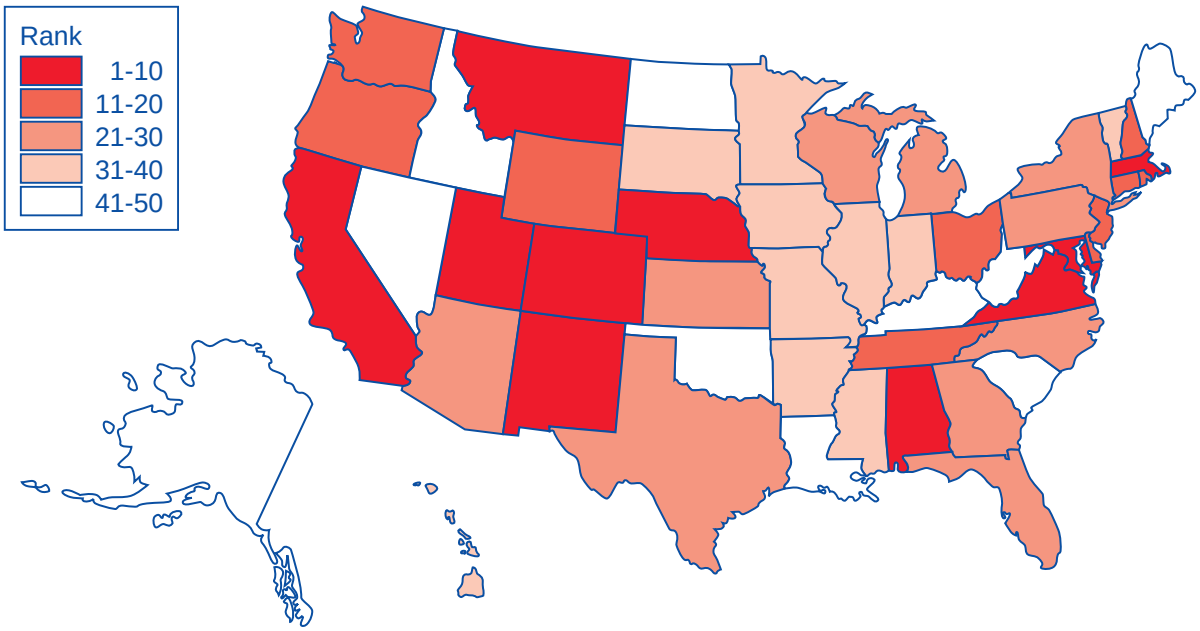
U.S. Small Business Administration, Office of Technology. *1997 STTR State Rank.* <http://www.sbaonline.sba.gov/SBIR/section03f05.html> (1999, September 29);

U.S. Small Business Administration, Office of Technology. (1997, August 25). *Small Business Technology Transfer Program (STTR) Annual Report – FY 1996.* Administrator, Aida Alvarez, Washington, DC.

### *Establishments:*

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997.* (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico.* (CBP/97-53). Washington, DC: U.S. Government Printing Office.



# STTR Award Dollars

## Definition

The average annual dollar award of Small Business Technology Transfer Program (STTR) grants per $1,000 of gross state product (GSP) was calculated by averaging the dollar awards over a three-year period and dividing this average by the state's gross state product in 1997. STTR awards are given to partnerships of small businesses and non-profit research institutions. Phase 1 and Phase 2 awards dollars were combined to compute this metric. STTR awards go also to small businesses in the District of Columbia. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

This metric is useful in understanding the magnitude of federal investment in research partnerships between small businesses and non-profit research institutions. The STTR program was authorized in 1992. The program is widely recognized as a way to encourage technological innovation within small businesses and to build strategic linkages between businesses and research institutions. The STTR program funds research to evaluate the feasibility and scientific merit of new technology and to develop the technology to a point where it can be commercialized. It shares the philosophy of the SBIR program but differs because it requires a partnership between small business and selected federal and non-profit research institutions.

The total average annual STTR award dollars granted from 1996-8 for all 50 states was $64.2 million or $0.008 per $1,000 of U.S. gross domestic product. The median STTR award dollars granted in the 50 states was $0.005 per $1,000 of gross state product. While the absolute dollars are a small part of GDP, the potential long-term benefits to small businesses and their local economy are much greater. First, small businesses are required to develop a strategic partnership with a federal research facility or non-profit research center. Second, small businesses are provided capital which is leveraged with their own investment dollars to develop new technology and products that can improve their market position. Third, the technology developed and commercialized as a result of the SBIR awards may lead to the formation of new businesses or the accelerated growth of existing small businesses. Fourth, the federal government may find new suppliers for technologically advanced products thus stimulating the growth of small businesses.

**Average Annual STTR Award Dollars per $1,000 of GSP: 1996-8**

| State | Ave. Annual STTR Dollars (1,000s) | 1997 GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $2,067 | $103,109 | $0.020 | 5 |
| Alaska | $0 | $24,494 | $0.000 | 49 |
| Arizona | $680 | $121,239 | $0.006 | 21 |
| Arkansas | $200 | $58,479 | $0.003 | 29 |
| California | $13,189 | $1,033,016 | $0.013 | 10 |
| Colorado | $1,641 | $126,084 | $0.013 | 9 |
| Connecticut | $2,015 | $134,565 | $0.015 | 8 |
| Delaware | $233 | $31,585 | $0.007 | 16 |
| Florida | $1,758 | $380,607 | $0.005 | 26 |
| Georgia | $1,066 | $229,473 | $0.005 | 25 |
| Hawaii | $33 | $38,024 | $0.001 | 44 |
| Idaho | $90 | $29,149 | $0.003 | 32 |
| Illinois | $804 | $393,532 | $0.002 | 39 |
| Indiana | $416 | $161,701 | $0.003 | 35 |
| Iowa | $232 | $80,479 | $0.003 | 33 |
| Kansas | $166 | $71,737 | $0.002 | 36 |
| Kentucky | $65 | $100,076 | $0.001 | 45 |
| Louisiana | $33 | $124,350 | $0.000 | 47 |
| Maine | $33 | $30,156 | $0.001 | 42 |
| Maryland | $2,720 | $153,797 | $0.018 | 7 |
| Massachusetts | $10,153 | $221,009 | $0.046 | 1 |
| Michigan | $1,399 | $272,607 | $0.005 | 23 |
| Minnesota | $157 | $149,394 | $0.001 | 43 |
| Mississippi | $67 | $58,314 | $0.001 | 41 |
| Missouri | $534 | $152,100 | $0.004 | 28 |
| Mont ana | $387 | $19,160 | $0.020 | 4 |
| Nebraska | $442 | $48,812 | $0.009 | 14 |
| Nevada | $33 | $57,407 | $0.001 | 46 |
| New Hampshire | $418 | $38,106 | $0.011 | 11 |
| New Jersey | $2,084 | $294,055 | $0.007 | 18 |
| New Mexico | $1,735 | $45,242 | $0.038 | 2 |
| New York | $2,112 | $651,652 | $0.003 | 30 |
| North Carolina | $1,300 | $218,888 | $0.006 | 20 |
| North Dakota | $0 | $15,786 | $0.000 | 49 |
| Ohio | $2,694 | $320,506 | $0.008 | 15 |
| Oklahoma | $275 | $76,642 | $0.004 | 27 |
| Oregon | $702 | $98,367 | $0.007 | 17 |
| Pennsylvania | $1,061 | $339,940 | $0.003 | 31 |
| Rhode Island | $257 | $27,806 | $0.009 | 13 |
| South Carolina | $20 | $93,259 | $0.000 | 48 |
| South Dakota | $33 | $20,186 | $0.002 | 40 |
| Tennessee | $957 | $146,999 | $0.007 | 19 |
| Texas | $1,629 | $601,643 | $0.003 | 34 |
| Utah | $1,543 | $55,417 | $0.028 | 3 |
| Vermont | $33 | $15,214 | $0.002 | 37 |
| Virginia | $4,186 | $211,331 | $0.020 | 6 |
| Washington | $1,617 | $172,253 | $0.009 | 12 |
| West Virginia | $78 | $38,228 | $0.002 | 38 |
| Wisconsin | $729 | $147,325 | $0.005 | 24 |
| Wyoming | $92 | $17,561 | $0.005 | 22 |
| District of Columbia | $375 | $52,372 | $0.007 | |
| Puerto Rico | $0 | $32,096 | $0.000 | |

## Data Considerations and Limitations

The total STTR budget depends on the extramural R&D budgets of selected federal agencies. The STTR budget fluctuates depending on the agency budgets making year-to-year comparisons of state award receipt more difficult. Also, because of the relatively small number of awards each year, the dollar value of STTR awards going to any one state can vary widely on an annual basis. Using a three-year average helps to smooth out the yearly fluctuations.

## Source of Data

The 1996 data for this metric can be obtained from the Small Business Administration in a report entitles *Small Business Technology Transfer Program (STTR) Annual Report – FY 1996.* The information for 1997 and 1998 is available electronically at <http://www.sba.gov/SBIR/library.html>.

### *STTR Award Dollars Granted:*

U.S. Small Business Administration, Office of Technology. *1998 STTR State Rank.* <http://www.sbaonline.sba.gov/SBIR/section03f14.html> (1999, September 29);

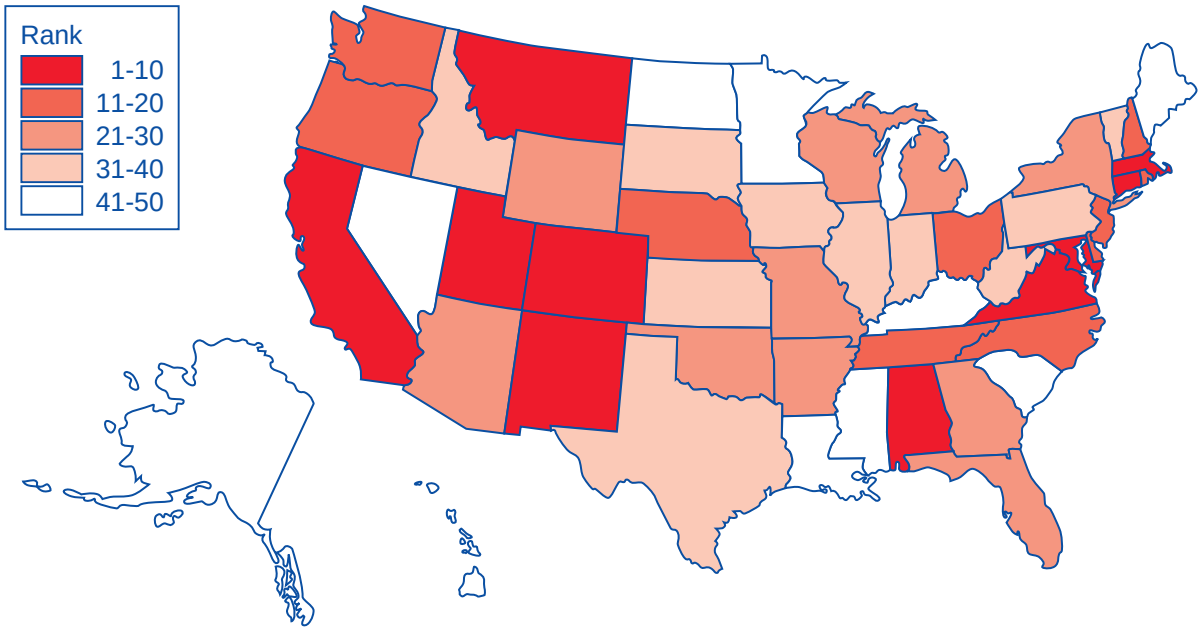
U.S. Small Business Administration, Office of Technology. *1997 STTR State Rank.* <http://www.sbaonline.sba.gov/SBIR/section03f05.html> (1999, September 29);

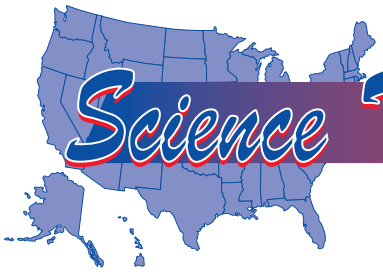
U.S. Small Business Administration, Office of Technology. (1997, August 25). *Small Business Technology Transfer Program (STTR) Annual Report – FY 1996.* Administrator, Aida Alvarez, Washington, DC.

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].





# Science Test Scores

## Definition

The National Assessment of Educational Progress (NAEP) is the only nationally representative and continuing assessment of what students know in the areas of reading, mathematics, science, writing, history/geography, and other fields. The assessment represents the consensus of groups of curriculum experts, educators, and the general public on what should be covered in such a test. The scores reported in this metric refer to the results from eighth grade students in public schools in the area of science.

## Relevance

NAEP is a congressionally mandated project of the National Center for Education Statistics, the U.S. Department of Education. This metric reports the average overall scale score for the field of science by eighth grade students by state from the 1996 NAEP assessment. It is an indicator of how effectively students in a particular state are learning science at the elementary and middle school levels.

The average national score on this test was 148. The median test score for the participating states was 149. However, since participation in this assessment program was voluntary, only 40 states chose to participate. Thus, the aggregated data across states does not necessarily provide representative national results.

## Data Considerations and Limitations

The results of the 1996 state assessment program are based upon state-level samples of eighth-grade public school students. The samples were selected based on a two-stage sample design selection of schools within participating states and selection of students within schools. Nevada, New Hampshire, and New Jersey did not obtain participation from 70 percent of their schools and thus failed to meet the minimum participation requirement. Their scores are not reported. Ten additional states met the 70 percent requirement but did not satisfy one or more of the guidelines for public school participation rates. The states of Alaska, Arkansas, Iowa, Maryland, Michigan, Montana, New York, South Carolina, Vermont, and Wisconsin fall into this category.

**National Assessment of Educational Progress (NAEP) in Science Average State Test Scores: 1996**

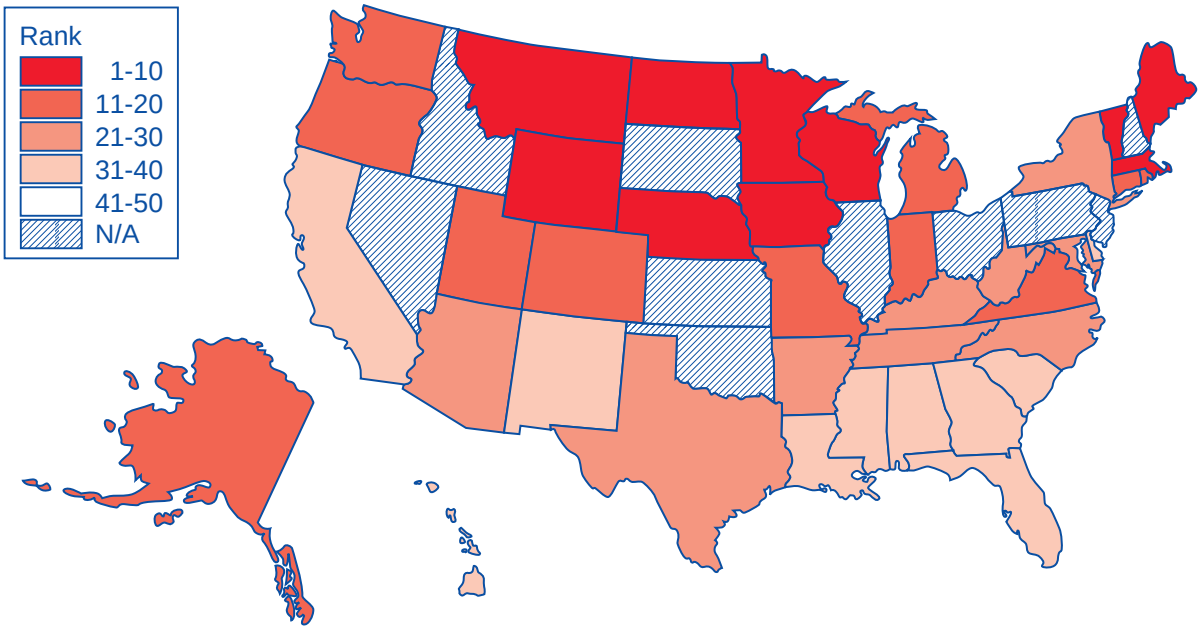
| State | Metric Value | RANK |
|---|---|---|
| Alabama | 139 | 35 |
| Alaska | 153 | 15 |
| Arizona | 145 | 26 |
| Arkansas | 144 | 29 |
| California | 138 | 37 |
| Colorado | 155 | 12 |
| Connecticut | 155 | 12 |
| Delaware | 142 | 31 |
| Florida | 142 | 31 |
| Georgia | 142 | 31 |
| Hawaii | 135 | 38 |
| Idaho | N/A | |
| Illinois | N/A | |
| Indiana | 153 | 15 |
| Iowa | 158 | 6 |
| Kansas | N/A | |
| Kentucky | 147 | 22 |
| Louisiana | 132 | 40 |
| Maine | 163 | 1 |
| Maryland | 145 | 26 |
| Massachusetts | 157 | 8 |
| Michigan | 153 | 15 |
| Minnesota | 159 | 5 |
| Mississippi | 133 | 39 |
| Missouri | 151 | 18 |
| Montana | 162 | 2 |
| Nebraska | 157 | 8 |
| Nevada | N/A | |
| New Hampshire | N/A | |
| New Jersey | N/A | |
| New Mexico | 141 | 34 |
| New York | 146 | 25 |
| North Carolina | 147 | 22 |
| North Dakota | 162 | 2 |
| Ohio | N/A | |
| Oklahoma | N/A | |
| Oregon | 155 | 12 |
| Pennsylvania | N/A | |
| Rhode Island | 149 | 20 |
| South Carolina | 139 | 35 |
| South Dakota | N/A | |
| Tennessee | 143 | 30 |
| Texas | 145 | 26 |
| Utah | 156 | 11 |
| Vermont | 157 | 8 |
| Virginia | 149 | 20 |
| Washington | 150 | 19 |
| West Virginia | 147 | 22 |
| Wisconsin | 160 | 4 |
| Wyoming | 158 | 6 |
| District of Columbia | 113 | |
| Puerto Rico | N/A | |

## Source of Data

The findings from the National Assessment of Educational Progress in science are found in the National Center for Education Statistics report titled *NAEP 1996 science cross-state data compendium for the grade 8 assessment.* It is available electronically on the World Wide Web at <http://nces.ed.gov/naep>.

### *NAEP Science Test Scores:*

Keiser, K.K., Nelson, J.E., Norris, N.A., Szyszkiewicz, S., *NAEP 1996 science cross-state data compendium for the grade 8 assessment.* Washington, DC: National Center for Education Statistics, (1998).



# High School Completion

## Definition

This metric represents an estimate of the percentage of a state's noninstitutional population aged 25 and older that has completed high school. The estimate was based on the March supplement to the 1998 Current Population Survey (CPS). The CPS is a monthly interview-based survey conducted by the U.S. Bureau of the Census, and the supplement contains additional questions asked annually in March about money income received in the previous calendar year, educational attainment, household and family characteristics, marital status, and geographical mobility.

## Relevance

High school completion, either through graduation or by successfully passing the general equivalency examination, is the first major educational milestone that is not mandated by law. Attaining this milestone represents a choice made by the student that affects both his own destiny and that of the wider community. The amount of education an individual has directly correlates with his earnings potential. A better-educated work force impacts the state's ability to grow established businesses and to attract new ones.

High school completion rates represent the first level of outcomes through which state educational systems can be compared. Graduation rates depend not only on teachers, classrooms, and buildings, but also on the emphasis that parents and the community place on education and on their willingness to provide alternative routes to meet the goal of high school completion.

Nationwide, 82.8% of all adults ages 25 and over have completed high school, but state high school completion rates vary from a low of 76.4% in West Virginia to a high of 92.0% in Washington. The median high school completion rate for the 50 states was 84.3%.

## Data Considerations and Limitations

The data used for this metric represent estimates based on a sample survey and are subject to sample variability since they are not based on a complete enumeration of the population. The survey uses an estimation procedure that adjusts weighted sample results to agree with independent estimates of the civilian noninstitutional population of the U.S. by age, sex, race, Hispanic/non-Hispanic origin, and state of residence. The nonresponse rate for the CPS was 7.8%, and for the supplement it totaled 14.4%.

**Percent of the Population that Has Completed High School: 1998**

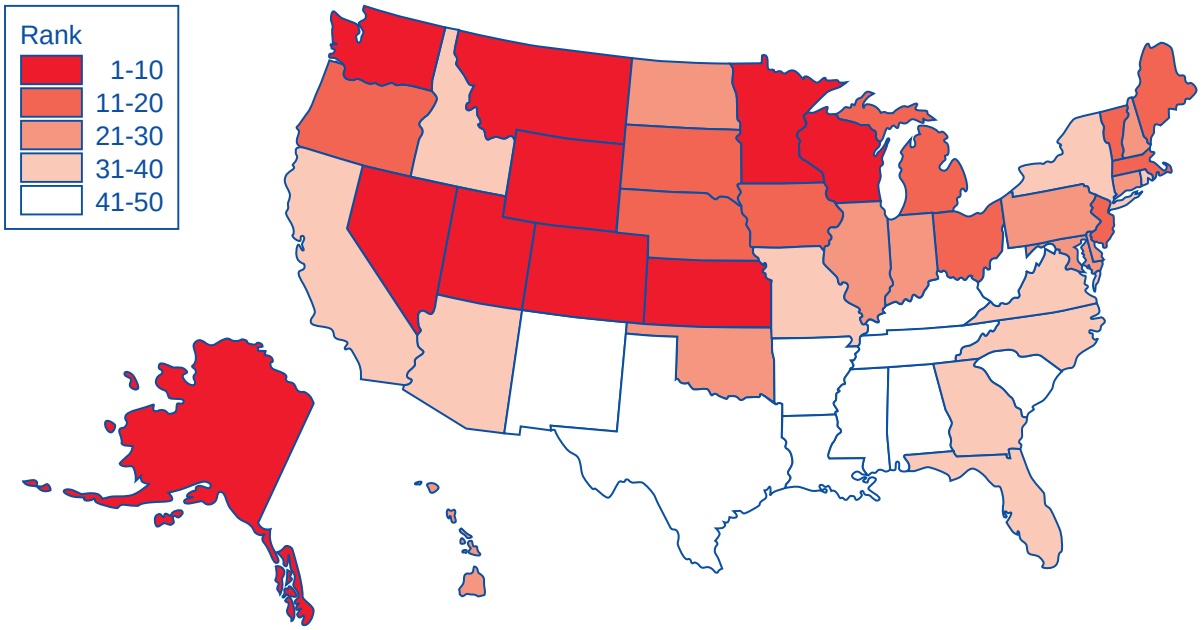
| State | Metric Value | RANK |
|---|---|---|
| Alabama | 78.8% | 42 |
| Alaska | 90.6% | 2 |
| Arizona | 81.9% | 34 |
| Arkansas | 76.8% | 49 |
| California | 80.1% | 39 |
| Colorado | 89.6% | 4 |
| Connecticut | 83.7% | 29 |
| Delaware | 85.2% | 21 |
| Florida | 81.9% | 34 |
| Georgia | 80.0% | 40 |
| Hawaii | 84.6% | 23 |
| Idaho | 82.7% | 32 |
| Illinois | 84.2% | 26 |
| Indiana | 83.5% | 30 |
| Iowa | 87.7% | 11 |
| Kansas | 89.2% | 7 |
| Kentucky | 77.9% | 46 |
| Louisiana | 78.6% | 43 |
| Maine | 86.7% | 13 |
| Maryland | 84.7% | 22 |
| Massachusetts | 85.6% | 18 |
| Michigan | 85.4% | 20 |
| Minnesota | 89.4% | 5 |
| Mississippi | 77.3% | 47 |
| Missouri | 82.9% | 31 |
| Montana | 89.1% | 8 |
| Nebraska | 87.7% | 11 |
| Nevada | 89.1% | 8 |
| New Hampshire | 84.0% | 28 |
| New Jersey | 86.5% | 15 |
| New Mexico | 79.6% | 41 |
| New York | 81.5% | 36 |
| North Carolina | 81.4% | 37 |
| North Dakota | 84.3% | 25 |
| Ohio | 86.2% | 17 |
| Oklahoma | 84.6% | 23 |
| Oregon | 85.5% | 19 |
| Pennsylvania | 84.1% | 27 |
| Rhode Island | 80.7% | 38 |
| South Carolina | 78.6% | 43 |
| South Dakota | 86.3% | 16 |
| Tennessee | 76.9% | 48 |
| Texas | 78.3% | 45 |
| Utah | 89.3% | 6 |
| Vermont | 86.7% | 13 |
| Virginia | 82.6% | 33 |
| Washington | 92.0% | 1 |
| West Virginia | 76.4% | 50 |
| Wisconsin | 88.0% | 10 |
| Wyoming | 90.0% | 3 |
| District of Columbia | 83.8% | |
| Puerto Rico | N/A | |

## Source of Data

This data can be accessed electronically at the U.S. Bureau of the Census' web site at <http://www.census.gov/population/www/socdemo/educ-attn.html>.

### *High School Completion:*

U.S. Census Bureau. (1998, October 29). "Table 13. Educational Attainment of Persons 25 Years Old and Over, for States: March 1998." *Educational Attainment in the United States: March 1998 (Update)*. (P20-513). <http://www.census.gov/prod/3/98pubs/p20-513u.pdf> (September 20, 1999).



# Associate's Degree Granted

## Definition

The number of associate's degrees conferred by Title IV eligible, degree-granting institutions in the 1996-7 academic year was segmented by state and normalized to the population of 18-24 year olds in each state. The 18-24 year old segment of the population was selected because it was the age division used by the U.S. Department of the Census that corresponded most closely to the population of individuals who were the most likely candidates for an associate's degree. In this way, the number of associate's degrees granted by individual states could be compared. In addition to correcting the number of degrees awarded for size of the potential student population, this method of normalization also removed any differences in the age distribution of the population in different states. This was particularly important for those states having a high percentage of retirees.

## Relevance

Obtaining an associate's degree is the next step in the educational ladder beyond the high school diploma. Some students who are awarded an associate's degree will continue with their education to the bachelor's level, but many will not. Since approximately twice as many bachelor's degrees are awarded each year as are associate's degrees, many bachelor's degree holders do not receive an associate's degree.

The total number of associate's degrees granted during 1996-7 in the 50 states was 570,857 which was equivalent to 2.29% of the 18-24 year old population. The median equivalent percentage of associate's degrees granted in the 50 states was 2.13% of the 18-24 year old population.

## Data Considerations and Limitations

Data on the number of associate's degrees awarded were provided by state coordinators for the Integrated Postsecondary Education Data System (IPEDS) or by officials at individual institutions. Over 4,000 Completions surveys were mailed to accredited institutions of higher education in the fifty states, District of Columbia, and the outlying areas. A response rate of over 96% was obtained. For institutions that failed to respond, data from the prior year or from fall enrollment surveys were used to develop imputed data.

The number of degrees awarded represents only the overall number of degrees awarded by institutions within a state. Degree recipients may include residents, out-of-state students, and foreign students. Data related to the degrees awarded by foreign institutions are not available by U.S. state of residence.

**Associate's Degrees Granted as a Percent of the 18-24 Year Old Population: 1996-7**

| State | Associate's Degrees Granted | 1997 Pop. 18-24 Years | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 20,030 | 433,882 | 4.62% | 1 |
| Alaska | 959 | 66,790 | 1.44% | 44 |
| Arizona | 9,208 | 430,461 | 2.14% | 25 |
| Arkansas | 3,339 | 248,734 | 1.34% | 47 |
| California | 71,273 | 3,040,952 | 2.34% | 19 |
| Colorado | 8,056 | 362,821 | 2.22% | 22 |
| Connecticut | 4,703 | 258,241 | 1.82% | 37 |
| Delaware | 1,025 | 65,128 | 1.57% | 43 |
| Florida | 45,055 | 1,183,492 | 3.81% | 4 |
| Georgia | 9,176 | 737,515 | 1.24% | 49 |
| Hawaii | 3,072 | 117,962 | 2.60% | 13 |
| Idaho | 4,288 | 134,542 | 3.19% | 9 |
| Illinois | 26,436 | 1,105,482 | 2.39% | 17 |
| Indiana | 10,039 | 566,323 | 1.77% | 39 |
| Iowa | 8,777 | 270,413 | 3.25% | 8 |
| Kansas | 7,024 | 252,047 | 2.79% | 11 |
| Kentucky | 6,765 | 395,491 | 1.71% | 40 |
| Louisiana | 5,650 | 463,881 | 1.22% | 50 |
| Maine | 2,372 | 109,794 | 2.16% | 23 |
| Maryland | 8,068 | 427,523 | 1.89% | 36 |
| Massachusetts | 11,929 | 500,767 | 2.38% | 18 |
| Michigan | 21,934 | 916,448 | 2.39% | 16 |
| Minnesota | 10,644 | 426,221 | 2.50% | 14 |
| Mississippi | 5,762 | 296,920 | 1.94% | 33 |
| Missouri | 9,664 | 498,974 | 1.94% | 34 |
| Montana | 1,397 | 87,013 | 1.61% | 42 |
| Nebraska | 3,429 | 163,426 | 2.10% | 27 |
| Nevada | 1,766 | 141,093 | 1.25% | 48 |
| New Hampshire | 3,253 | 94,039 | 3.46% | 6 |
| New Jersey | 12,980 | 668,203 | 1.94% | 31 |
| New Mexico | 3,643 | 171,914 | 2.12% | 26 |
| New York | 54,291 | 1,585,913 | 3.42% | 7 |
| North Carolina | 15,667 | 695,207 | 2.25% | 21 |
| North Dakota | 1,932 | 66,847 | 2.89% | 10 |
| Ohio | 21,542 | 1,043,821 | 2.06% | 28 |
| Oklaho ma | 6,560 | 331,611 | 1.98% | 30 |
| Oregon | 5,658 | 295,182 | 1.92% | 35 |
| Pennsylvania | 23,068 | 1,020,914 | 2.26% | 20 |
| Rhode Island | 3,767 | 82,196 | 4.58% | 2 |
| South Carolina | 6,434 | 379,800 | 1.69% | 41 |
| South Dakota | 1,622 | 75,584 | 2.15% | 24 |
| Tennessee | 7,270 | 508,616 | 1.43% | 45 |
| Texas | 26,884 | 1,984,066 | 1.35% | 46 |
| Utah | 6,652 | 277,355 | 2.40% | 15 |
| Vermont | 1,375 | 51,168 | 2.69% | 12 |
| Virginia | 11,644 | 648,930 | 1.79% | 38 |
| Washington | 19,565 | 522,489 | 3.74% | 5 |
| West Virginia | 3,752 | 183,679 | 2.04% | 29 |
| Wisconsin | 9,468 | 487,583 | 1.94% | 32 |
| Wyoming | 1,990 | 51,993 | 3.83% | 3 |
| Distri ct of Columbia | 369 | 43,147 | 0.86% | |
| Puerto Rico | N/A | N/A | N/A | |

## Source of Data

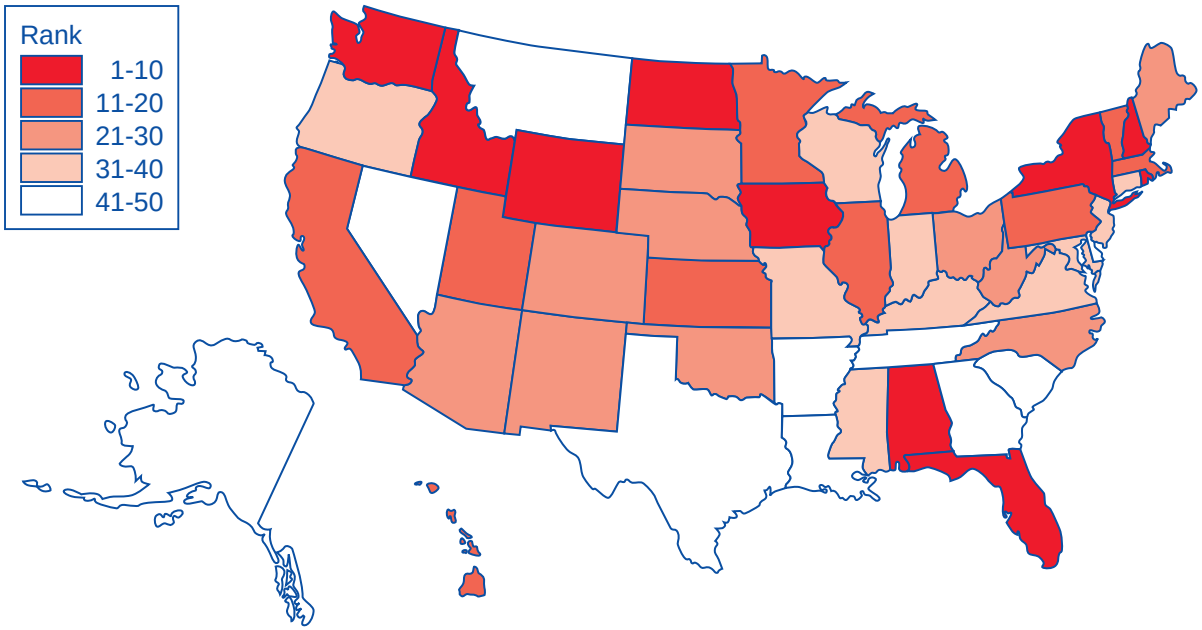
Data on the number of associate's degrees granted was obtained from the U.S. Department of Education, National Center for Education Statistics publications, *Degrees and Other Awards Conferred by Title IV Eligible, Degree-Granting Institutions: 1996-7.* Copies of the report can be obtained from the Education Publications Center at (877) 433-7827. It is also available electronically through the "Publication List" link at <http://nces.ed.gov/ipeds/>.

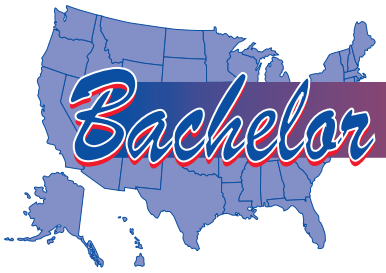
### *Associate's Degrees Granted:*

U.S. Department of Education, National Center for Education Statistics, [E.D. Tabs] *Degrees and Other Awards Conferred by Title IV Eligible, Degree-granting Institutions: 1996-97*, NCES 2000-174, by Frank B. Morgan, Washington, DC: 1999.

### *Population, 18-24 Years Old:*

U.S. Census Bureau, Population Division, Population Estimates Program. (1999, June 15). *Population Estimates for the U.S. and States by Single Year of Age and Sex: July 1, 1997.* <http://www.census.gov/population/estimates/state/stats/ag9798.txt> (1999, September 14).





# Bachelor's Degree Granted

## Definition

The number of bachelor's degrees conferred by Title IV eligible, degree-granting institutions in the 1996-7 academic year was segmented by state and normalized to the population of 18-24 year olds for each state. The 18-24 year old segment of the population was selected because it was the age division used by the U.S. Department of the Census that corresponded most closely to the population of individuals who were the most likely to be pursuing a bachelor's degree. In this way, the number of bachelor's degrees granted by individual states could be compared. In addition to correcting the number of degrees awarded for size of the potential student population, this method of normalization also removed any differences in the age distribution of the population in different states. This was particularly important for those states having a high percentage of retirees.

## Relevance

The bachelor's degree represents a four-year course of study beyond high school. Students receiving the bachelor's degree may or may not have received an associate's degree. States ranking high in the number of bachelor's degrees granted as a percentage of population of 18-24 year olds have invested in their higher education infrastructure and have a population of young adults who believe higher education is an important investment in their future.

The total number of bachelor's degrees granted during 1996-7 in the 50 states was 1,165,650 which was equivalent to 4.68% of the 18-24 year old population. The median equivalent percentage of bachelor's degrees granted in the 50 states was 4.76% of the 18-24 year old population.

## Data Considerations and Limitations

Data on the number of bachelor's degrees awarded were provided by state coordinators for the Integrated Postsecondary Education Data System (IPEDS) or by officials at individual institutions. Over 4,000 Completions surveys were mailed to accredited institutions of higher education in the fifty states, District of Columbia, and the outlying areas. A response rate of over 96% was obtained. For institutions that failed to respond, data from the prior year or from the fall enrollment survey were used to develop imputed data.

The number of degrees awarded represents only the overall number of degrees awarded by institutions within a state. Degree recipients may include residents, out-of-state students, and foreign students. Data related to the degrees awarded by foreign institutions are not available by U.S. state of residence.

### Total Bachelor's Degrees Granted as a Percent of the 18-24 Year Old Population: 1996-7

| State | Bachelor's Degrees Granted | 1997 Pop. 18-24 Years | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 20,647 | 433,882 | 4.76% | 25 |
| Alaska | 1,473 | 66,790 | 2.21% | 50 |
| Arizona | 17,831 | 430,461 | 4.14% | 34 |
| Arkansa s | 9,214 | 248,734 | 3.70% | 42 |
| California | 110,659 | 3,040,952 | 3.64% | 44 |
| Colorado | 20,680 | 362,821 | 5.70% | 12 |
| Connecticut | 13,684 | 258,241 | 5.30% | 20 |
| Delaware | 4,334 | 65,128 | 6.65% | 6 |
| Florida | 47,530 | 1,183,492 | 4.02% | 37 |
| Georgia | 27,519 | 737,515 | 3.73% | 39 |
| Hawaii | 4,755 | 117,962 | 4.03% | 35 |
| Idaho | 4,509 | 134,542 | 3.35% | 47 |
| Illinois | 51,868 | 1,105,482 | 4.69% | 28 |
| Indiana | 30,477 | 566,323 | 5.38% | 18 |
| Iowa | 17,923 | 270,413 | 6.63% | 7 |
| Kansas | 14,428 | 252,047 | 5.72% | 11 |
| Kentucky | 14,674 | 395,491 | 3.71% | 41 |
| Louisiana | 17,507 | 463,881 | 3.77% | 38 |
| Maine | 5,565 | 109,794 | 5.07% | 21 |
| Maryland | 21,391 | 427,523 | 5.00% | 22 |
| Massachusetts | 40,429 | 500,767 | 8.07% | 3 |
| Michigan | 44,225 | 916,448 | 4.83% | 24 |
| Minnesota | 22,618 | 426,221 | 5.31% | 19 |
| Mississippi | 10,252 | 296,920 | 3.45% | 46 |
| Missouri | 28,066 | 498,974 | 5.62% | 14 |
| Montana | 4,752 | 87,013 | 5.46% | 17 |
| Nebraska | 9,871 | 163,426 | 6.04% | 10 |
| Nevada | 3,705 | 141,093 | 2.63% | 49 |
| New Hampshire | 7,581 | 94,039 | 8.06% | 4 |
| New Jersey | 24,845 | 668,203 | 3.72% | 40 |
| New Mexico | 6,326 | 171,914 | 3.68% | 43 |
| New York | 96,392 | 1,585,913 | 6.08% | 9 |
| North Carolina | 34,202 | 695,207 | 4.92% | 23 |
| North Dak ota | 4,627 | 66,847 | 6.92% | 5 |
| Ohio | 49,016 | 1,043,821 | 4.70% | 27 |
| Oklahoma | 15,123 | 331,611 | 4.56% | 29 |
| Oregon | 13,290 | 295,182 | 4.50% | 30 |
| Pennsylvania | 62,443 | 1,020,914 | 6.12% | 8 |
| Rhode Island | 8,319 | 82,196 | 10.12% | 1 |
| South Carolina | 15,267 | 379,800 | 4.02% | 36 |
| South Dakota | 4,230 | 75,584 | 5.60% | 16 |
| Tennessee | 21,147 | 508,616 | 4.16% | 33 |
| Texas | 71,172 | 1,984,066 | 3.59% | 45 |
| Utah | 15,806 | 277,355 | 5.70% | 13 |
| Vermont | 4,309 | 51,168 | 8.42% | 2 |
| Virginia | 30,847 | 648,930 | 4.75% | 26 |
| Washington | 22,893 | 522,489 | 4.38% | 32 |
| West Virginia | 8,172 | 183,679 | 4.45% | 31 |
| Wisconsin | 27,405 | 487,583 | 5.62% | 15 |
| Wyoming | 1,652 | 51,993 | 3.18% | 48 |
| District of Columbia | 7,229 | 43,147 | 16.75% | |
| Puerto Rico | N/A | N/A | N/A | |

## Source of Data

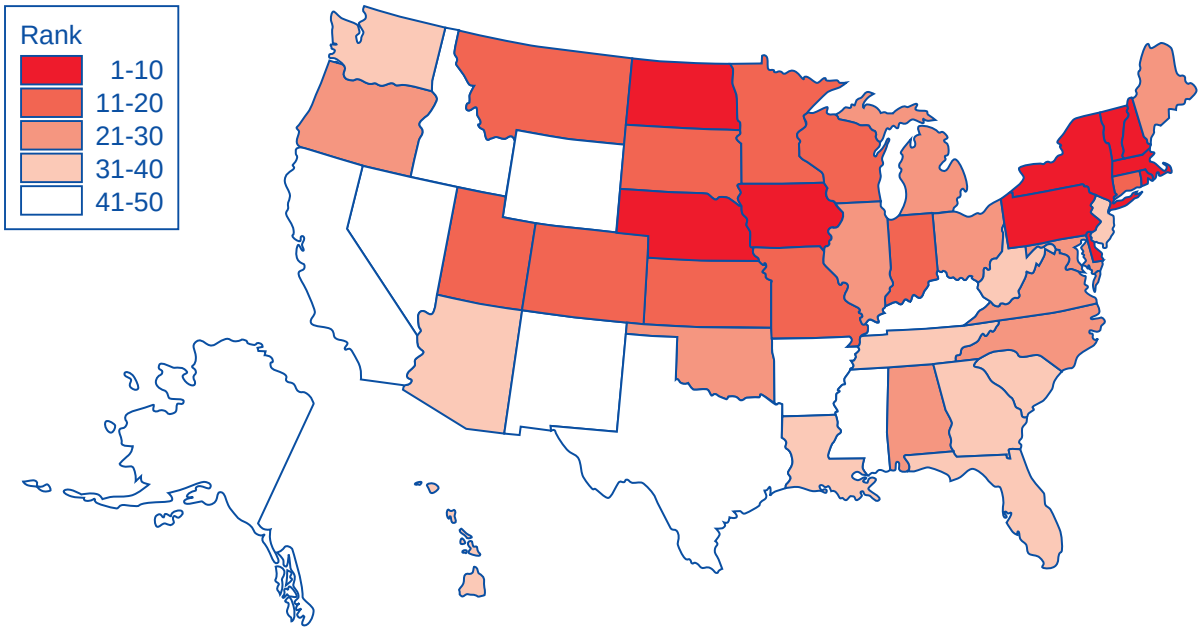
Data on the number of bachelor's degrees granted was obtained from the U.S. Department of Education, National Center for Education Statistics Publication, *Degrees and Other Awards Conferred by Title IV Eligible, Degree-Granting Institutions: 1996-7.* Copies of the report can be obtained from the Education Publications Center at (877) 433-7827. It is also available electronically through the "Publication List" link at <http://nces.ed.gov/ipeds/>.

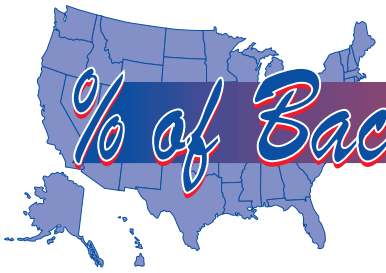
### *Total Bachelor's Degrees Granted:*

U.S. Department of Education, National Center for Education Statistics, [E.D. Tabs] *Degrees and Other Awards Conferred by Title IV Eligible, Degree-granting Institutions: 1996-97*, NCES 2000-174, by Frank B. Morgan, Washington, DC: 1999.

### *Population, 18-24 Years Old:*

U.S. Census Bureau, Population Division, Population Estimates Program. (1999, June 15). *Population Estimates for the U.S. and States by Single Year of Age and Sex: July 1, 1997.* <http://www.census.gov/population/estimates/state/stats/ag9798.txt> (1999, September 14).





# % of Bachelor's Degrees in S&E

## Definition

Science and engineering (S&E) bachelor's degrees are defined as bachelor's degrees with a major field of study in the area of natural sciences or computer sciences and engineering. Specific disciplines include: life sciences, physical sciences and technologies, mathematics, computer and information sciences, engineering, and engineering technologies. To calculate this metric, the number of bachelor's degrees awarded to students with one of these major fields of study was divided by the total number of bachelor's degrees awarded in the academic year 1996-7. The data were segmented by state.

## Relevance

Bachelor's degrees can be granted in many fields of study and represent the initial level of specialization. The students earning bachelor's degrees in science and engineering will be the technical workers of the future. The absolute number of bachelor's degrees in science and engineering gives an indication of the capacity of a state's higher education system to train technical workers. This number will vary widely and should be corrected to account for population differences before any comparison of technical training-capacity between states is made. (See data on population of 18-24 year olds in previous metric.)

The percent of bachelor's degrees granted in science and engineering provides an indication of the orientation of a state's higher education resources toward science and technology. If a state has relatively few institutions of higher learning and those institutions are heavily technology-oriented, the percentage of technical degrees will be high. Similarly, if students find departments in the areas of science and technology that are well-staffed, well-equipped, and doing interesting, cutting edge research they will tend to be attracted to those areas.

The total number of science and engineering bachelor's degrees granted during 1996-7 in the 50 states was 194,107 or 16.7% of all bachelor's degrees granted. For the 50 states, the median percentage of bachelor's degrees awarded in science and engineering was 16.4%.

## Data Considerations and Limitations

Data on the number of bachelor's degrees awarded by area of specialization were provided by state coordinators for the Integrated Postsecondary Education Data System (IPEDS) or by

**Percent of Bachelor's Degrees Granted in Science and Engineering: 1996-7**

| State | S&E Bachelor's Degrees Granted | Total Bachelor's Degrees Granted | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 3,293 | 20,647 | 15.9% | 28 |
| Alaska | 245 | 1,473 | 16.6% | 23 |
| Arizona | 3,043 | 17,831 | 17.1% | 17 |
| Arkansas | 1,343 | 9,214 | 14.6% | 41 |
| California | 20,184 | 110,659 | 18.2% | 9 |
| Colorado | 3,980 | 20,680 | 19.2% | 4 |
| Connecticut | 1,899 | 13,684 | 13.9% | 43 |
| Delaware | 548 | 4,334 | 12.6% | 47 |
| Florida | 6,643 | 47,530 | 14.0% | 42 |
| Georgia | 4,955 | 27,519 | 18.0% | 10 |
| Hawaii | 580 | 4,755 | 12.2% | 48 |
| Idaho | 748 | 4,509 | 16.6% | 24 |
| Illinois | 8,882 | 51,868 | 17.1% | 16 |
| Indiana | 5,698 | 30,477 | 18.7% | 7 |
| Iowa | 2,739 | 17,923 | 15.3% | 36 |
| Kansas | 2,181 | 14,428 | 15.1% | 37 |
| Kentucky | 2,246 | 14,674 | 15.3% | 35 |
| Louisiana | 3,028 | 17,507 | 17.3% | 15 |
| Maine | 881 | 5,565 | 15.8% | 31 |
| Maryland | 3,640 | 21,391 | 17.0% | 18 |
| Massachusetts | 7,143 | 40,429 | 17.7% | 13 |
| Michigan | 8,478 | 44,225 | 19.2% | 5 |
| Minnesota | 3,590 | 22,618 | 15.9% | 29 |
| Mississippi | 1,658 | 10,252 | 16.2% | 26 |
| Missouri | 4,391 | 28,066 | 15.6% | 33 |
| Montana | 960 | 4,752 | 20.2% | 2 |
| Nebraska | 1,340 | 9,871 | 13.6% | 45 |
| Nevada | 431 | 3,705 | 11.6% | 50 |
| New Hampshire | 1,110 | 7,581 | 14.6% | 40 |
| New Jersey | 4,422 | 24,845 | 17.8% | 12 |
| New Mexico | 1,061 | 6,326 | 16.8% | 22 |
| New York | 14,505 | 96,392 | 15.0% | 38 |
| North Carolina | 6,441 | 34,202 | 18.8% | 6 |
| North Dakota | 787 | 4,627 | 17.0% | 19 |
| Ohio | 8,118 | 49,016 | 16.6% | 25 |
| Oklahoma | 2,565 | 15,123 | 17.0% | 21 |
| Oregon | 1,954 | 13,290 | 14.7% | 39 |
| Pennsylvania | 10,994 | 62,443 | 17.6% | 14 |
| Rhode Island | 1,094 | 8,319 | 13.2% | 46 |
| South Carolina | 2,739 | 15,267 | 17.9% | 11 |
| South Dakota | 819 | 4,230 | 19.4% | 3 |
| Tennessee | 3,292 | 21,147 | 15.6% | 34 |
| Texas | 11,141 | 71,172 | 15.7% | 32 |
| Utah | 2,681 | 15,806 | 17.0% | 20 |
| Vermont | 502 | 4,309 | 11.7% | 49 |
| Virginia | 5,637 | 30,847 | 18.3% | 8 |
| Washington | 3,658 | 22,893 | 16.0% | 27 |
| West Virginia | 1,127 | 8,172 | 13.8% | 44 |
| Wisconsin | 4,341 | 27,405 | 15.8% | 30 |
| Wyoming | 372 | 1,652 | 22.5% | 1 |
| District of Columbia | 935 | 7,229 | 12.9% | |
| Puerto Rico | N/A | N/A | N/A | |

officials at individual institutions. Over 4,000 Completions surveys were mailed to accredited institutions of higher education in the fifty states, District of Columbia, and the outlying areas. A response rate of over 96% was obtained. For institutions that failed to respond, data from the prior year or from the fall enrollment survey were used to develop imputed data.

## Source of Data

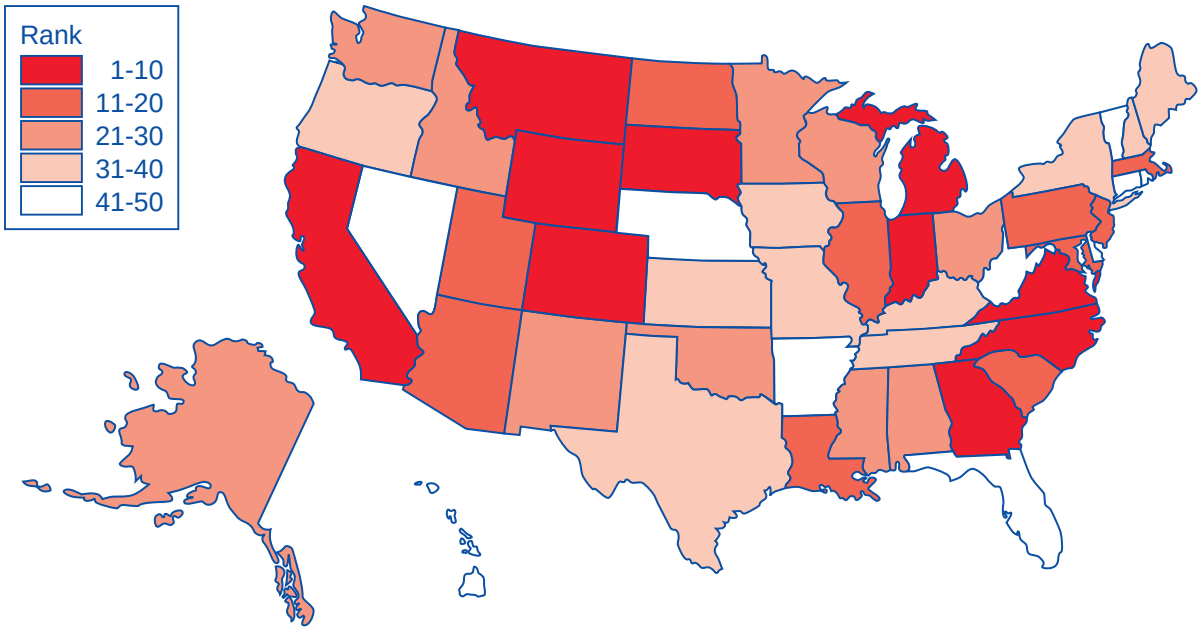
Data on the number and area of specialization of bachelor's degrees granted was obtained through a special request to Thomas Snyder at the National Center for Education Statistics. For additional information available through IPEDS contact Frank Morgan at (202) 219-1779.

### *Science and Engineering Bachelor's Degrees Granted:*

Arrangements for special tabulations were made by Thomas Snyder, Program Director, Annual Reports Program-ECICSD, National Center for Education Statistics at (202) 219-1689 on November 24, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

### *Total Bachelor's Degrees Granted:*

U.S. Department of Education, National Center for Education Statistics, [E.D. Tabs] *Degrees and Other Awards Conferred by Title IV Eligible, Degree-granting Institutions: 1996-97*, NCES 2000-174, by Frank B. Morgan, Washington, DC: 1999.



# S&E Graduate Students

## Definition

The total number of science and engineering (S&E) graduate students in each state was normalized to the 18-24 year old population in that state. This does not imply that all graduate students are 18-24 years old. Rather, it indicates the size of the population (according to age divisions used by the Bureau of the Census) from which the graduate students are most likely to be drawn. This approach corrects for differences in population of the various states and also minimizes any differences in age distribution of the general population between states. For instance, a disproportionate percentage of retirees in one state's population will not affect this metric for that state.

## Relevance

This metric indicates where the next generation of scientists and engineers with advanced degrees are being trained for entry into the economic pipeline. States with the highest percentages of S&E graduate students have invested most heavily in creating the infrastructure to train students for advanced S&E degrees. Nationally, science and engineering graduate students equate to 1.66% of the 18-24 year old population. The total number of science and engineering graduate students during 1997 in the 50 states was 415,071 which was equivalent to 1.66% of the 18-24 year old population. For the 50 states, the median number of science and engineering graduate students was equivalent to 1.38% of the 18-24 year old population.

## Data Considerations and Limitations

The data pertaining to the number of science and engineering graduate students came from the fall 1997 National Science Foundation/National Institutes of Health Survey of Graduate Students and Postdoctorates in Science and Engineering. The data represent estimates of total enrollment in science and engineering programs in approximately 11,597 graduate departments at 601 institutions.

The number of degrees awarded represents only the overall number of degrees awarded by institutions within a state. Degree recipients may include residents, out-of-state students, and foreign students. Data related to the degrees awarded by foreign institutions are not available by U.S. state of residence.

### Science and Engineering Graduate Students as a Percent of the 18-24 Year Old Population: 1997

| State | S&E Graduate Students | Pop. 18-24 Years | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 5,288 | 433,882 | 1.22% | 32 |
| Alaska | 749 | 66,790 | 1.12% | 40 |
| Arizona | 6,468 | 430,461 | 1.50% | 21 |
| Arkansas | 1,853 | 248,734 | 0.74% | 49 |
| California | 51,007 | 3,040,952 | 1.68% | 14 |
| Colorado | 8,311 | 362,821 | 2.29% | 5 |
| Connecticut | 5,579 | 258,241 | 2.16% | 7 |
| Delaware | 1,413 | 65,128 | 2.17% | 6 |
| Florida | 13,978 | 1,183,492 | 1.18% | 34 |
| Georgia | 8,509 | 737,515 | 1.15% | 37 |
| Hawaii | 1,598 | 117,962 | 1.35% | 26 |
| Idaho | 1,426 | 134,542 | 1.06% | 44 |
| Illinois | 21,930 | 1,105,482 | 1.98% | 9 |
| Indiana | 8,343 | 566,323 | 1.47% | 22 |
| Iowa | 22,210 | 270,413 | 8.21% | 1 |
| Kansas | 5,796 | 252,047 | 2.30% | 4 |
| Kentucky | 3,507 | 395,491 | 0.89% | 48 |
| Louisiana | 5,362 | 463,881 | 1.16% | 35 |
| Maine | 584 | 109,794 | 0.53% | 50 |
| Maryland | 9,201 | 427,523 | 2.15% | 8 |
| Massachusetts | 19,259 | 500,767 | 3.85% | 2 |
| Michigan | 14,564 | 916,448 | 1.59% | 17 |
| Minnesota | 6,435 | 426,221 | 1.51% | 20 |
| Mississippi | 2,686 | 296,920 | 0.90% | 47 |
| Missouri | 5,760 | 498,974 | 1.15% | 36 |
| Montana | 1,168 | 87,013 | 1.34% | 28 |
| Nebraska | 2,368 | 163,426 | 1.45% | 23 |
| Nevada | 1,466 | 141,093 | 1.04% | 45 |
| New Hampshire | 1,192 | 94,039 | 1.27% | 31 |
| New Jersey | 10,550 | 668,203 | 1.58% | 18 |
| New Mexico | 3,070 | 171,914 | 1.79% | 12 |
| New York | 38,488 | 1,585,913 | 2.43% | 3 |
| North Carolina | 9,873 | 695,207 | 1.42% | 24 |
| North Dakota | 860 | 66,847 | 1.29% | 30 |
| Ohio | 16,921 | 1,043,821 | 1.62% | 16 |
| Oklahoma | 3,763 | 331,611 | 1.13% | 38 |
| Oregon | 3,805 | 295,182 | 1.29% | 29 |
| Pennsylvania | 18,637 | 1,020,914 | 1.83% | 11 |
| Rhode Island | 1,554 | 82,196 | 1.89% | 10 |
| South Carolina | 3,562 | 379,800 | 0.94% | 46 |
| South Dakota | 851 | 75,584 | 1.13% | 39 |
| Tennessee | 6,191 | 508,616 | 1.22% | 33 |
| Texas | 26,779 | 1,984,066 | 1.35% | 27 |
| Utah | 3,908 | 277,355 | 1.41% | 25 |
| Vermont | 569 | 51,168 | 1.11% | 42 |
| Virginia | 11,380 | 648,930 | 1.75% | 13 |
| Washington | 5,841 | 522,489 | 1.12% | 41 |
| West Virginia | 1,974 | 183,679 | 1.07% | 43 |
| Wisconsin | 7,639 | 487,583 | 1.57% | 19 |
| Wyoming | 846 | 51,993 | 1.63% | 15 |
| District of Columbia | 7,843 | 43,147 | 18.18% | |
| Puerto Rico | 2,256 | N/A | N/A | |

## Source of Data

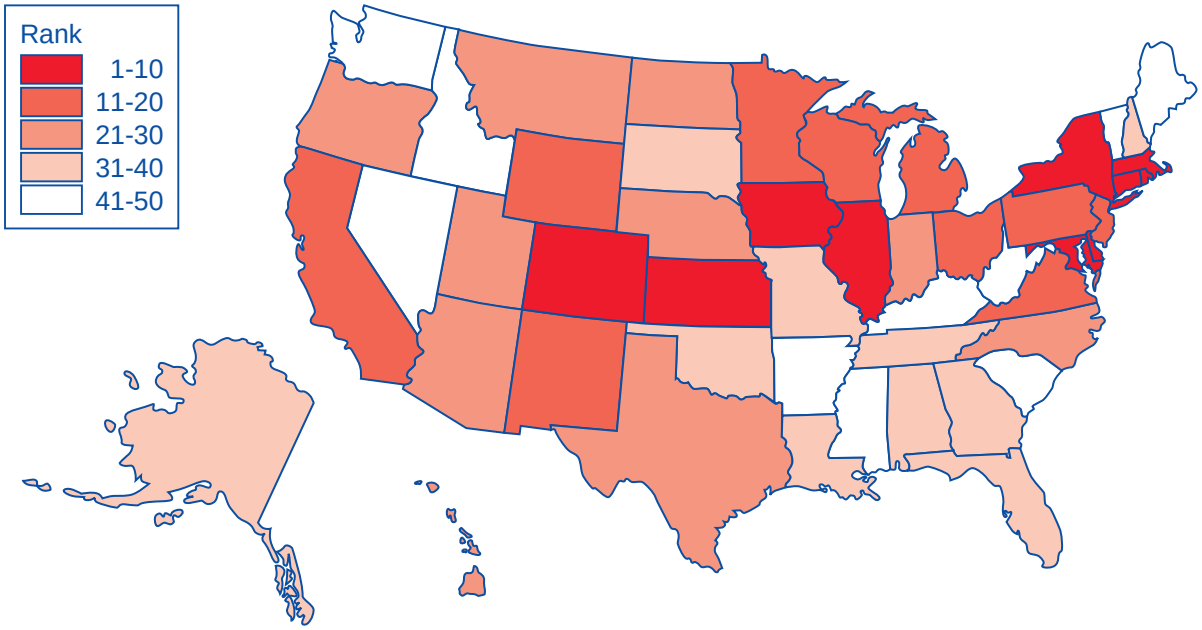
Data on the number of graduate students were obtained from National Science Foundation, Division of Science Resources Studies Publication, *Graduate Students and Postdoctorates in Science and Engineering: Fall 1997.* This information can be accessed electronically at <http://www.nsf.gov/sbe/srs/stats.htm> or by calling (301) 947-2722 to obtain the report.

### *Science and Engineering Graduate Students:*

National Science Foundation, Division of Science Resources Studies, *Graduate Students and Postdoctorates in Science and Engineering: Fall 1997*, NSF 99-325, Project Officer, Joan Burrelli (Arlington, VA 1999).

### *Population, 18-24 Years Old:*

U.S. Census Bureau, Population Division, Population Estimates Program. (1999, June 15). *Population Estimates for the U.S. and States by Single Year of Age and Sex: July 1, 1997*.
<http://www.census.gov/population/estimates/state/stats/ag9798.txt> (1999, September 14).



# Recent S&E Bachelor's in the Work Force

## Definition

The number of individuals who had earned a bachelor's degree in the fields of science and engineering (S&E) as their highest degree during the academic years of 1990-1996 was identified from the National Science Foundation's SESTAT database. This group was segmented by employer location reported for the week of April 15,1997. Excluded from the group were degree holders who were unemployed or not in the labor force at that time, as well as those who had earned recent science and engineering degrees from foreign institutions.

The percent of the civilian work force with a recent degree in science or engineering was calculated by dividing the number of bachelor's degree holders described above by the size of the 1997 civilian work force in that state. No attempt was made to identify or separate science and engineering bachelor's degree holders who were employed in a non-science and engineering field.

SESTAT is a database of the employment, education, and demographic characteristics of the nation's scientists and engineers. The National Science Foundation developed 1997 estimates based upon survey results from

- The National Survey of College Graduates,
- The National Survey of Recent College Graduates, and
- The Survey of Doctorate Recipients.

Data on the size of the civilian work force in each state came from the Bureau of Labor Statistics.

## Relevance

This metric indicates where recent graduates with bachelor's degrees in science and engineering are choosing to work. It reflects a number of individualistic location criteria related to quality of life, economic opportunities, family responsibilities, and continuing educational opportunities. Regardless of their reasons for selecting a particular location, the presence of large numbers of recent science and engineering graduates enriches a state's work force and catalyzes the transfer of current technical knowledge into the local economy.

In the 50 states, the total number of persons with recent science and engineering bachelor's degrees employed in the workforce during 1997 was 1,592,400 or 1.17% of the total workforce. For the 50 states, the median percentage of persons with recent science and engineering bachelor's degrees in the work force was 1.06%.

**Percent of the Civilian Work Force with a Recent Bachelor's Degree in Science or Engineering: 1997**

| State | Recent S&E Bachelor's Degrees Employed | Civilian Labor Force (1,000s) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 16,000 | 2,168 | 0.74% | 44 |
| Alaska | 2,900 | 315 | 0.92% | 35 |
| Arizona | 24,400 | 2,185 | 1.12% | 22 |
| Arkansas | 2,900 | 1,214 | 0.24% | 50 |
| California | 193,500 | 15,941 | 1.21% | 18 |
| Colorado | 42,600 | 2,152 | 1.98% | 2 |
| Connecticut | 26,000 | 1,723 | 1.51% | 9 |
| Delaware | 5,500 | 382 | 1.44% | 12 |
| Florida | 55,900 | 7,119 | 0.79% | 41 |
| Georgia | 44,900 | 3,907 | 1.15% | 21 |
| Hawaii | 5,300 | 597 | 0.89% | 39 |
| Idaho | 4,800 | 633 | 0.76% | 43 |
| Illinois | 66,800 | 6,196 | 1.08% | 24 |
| Indiana | 32,900 | 3,086 | 1.07% | 25 |
| Iowa | 15,900 | 1,579 | 1.01% | 30 |
| Kansas | 24,300 | 1,368 | 1.78% | 5 |
| Kentucky | 12,700 | 1,917 | 0.66% | 45 |
| Louisiana | 13,300 | 2,014 | 0.66% | 46 |
| Maine | 9,900 | 659 | 1.50% | 10 |
| Maryland | 36,600 | 2,784 | 1.31% | 15 |
| Massachusetts | 82,900 | 3,260 | 2.54% | 1 |
| Michigan | 60,600 | 4,962 | 1.22% | 17 |
| Minnesota | 40,100 | 2,625 | 1.53% | 8 |
| Mississippi | 11,000 | 1,262 | 0.87% | 40 |
| Missouri | 26,200 | 2,893 | 0.91% | 36 |
| Montana | 4,800 | 455 | 1.05% | 27 |
| Nebraska | 14,100 | 906 | 1.56% | 6 |
| Nevada | 4,500 | 883 | 0.51% | 48 |
| New Hampshire | 6,400 | 646 | 0.99% | 31 |
| New Jersey | 43,100 | 4,198 | 1.03% | 29 |
| New Mexico | 7,300 | 815 | 0.90% | 38 |
| New York | 130,500 | 8,835 | 1.48% | 11 |
| North Carolina | 71,500 | 3,844 | 1.86% | 3 |
| North Dakota | 2,700 | 348 | 0.78% | 42 |
| Ohio | 56,100 | 5,707 | 0.98% | 32 |
| Oklahoma | 20,300 | 1,601 | 1.27% | 16 |
| Oregon | 23,600 | 1,728 | 1.37% | 13 |
| Pennsylvania | 53,900 | 5,979 | 0.90% | 37 |
| Rhode Island | 4,800 | 502 | 0.96% | 33 |
| South Carolina | 20,300 | 1,931 | 1.05% | 28 |
| South Dakota | 7,200 | 390 | 1.85% | 4 |
| Tennessee | 25,200 | 2,708 | 0.93% | 34 |
| Texas | 104,000 | 9,850 | 1.06% | 26 |
| Utah | 12,300 | 1,040 | 1.18% | 19 |
| Vermont | 3,600 | 327 | 1.10% | 23 |
| Virginia | 46,600 | 3,413 | 1.37% | 14 |
| Washington | 46,100 | 2,989 | 1.54% | 7 |
| West Virginia | 3,300 | 803 | 0.41% | 49 |
| Wisconsin | 19,400 | 2,949 | 0.66% | 47 |
| Wyoming | 2,900 | 251 | 1.16% | 20 |
| District of Columbia | 22,900 | 258 | 8.88% | |
| Puerto Rico | 7,300 | 1,308 | 0.56% | |

## Data Considerations and Limitations

The National Science Foundation provided estimates of the number of recent science and engineering bachelor's degree holders by state from a special tabulation of the SESTAT database. A special tabulation was needed because the data on recent graduates are not usually published at the state level.

Because the survey sample design for the SESTAT database does not include geography as part of the sampling strata, the reliability of the estimates in states with small populations is lower than in more highly populated states. The number of degree holders in each state was rounded to the nearest hundred to reflect the precision justified by the statistical analysis.

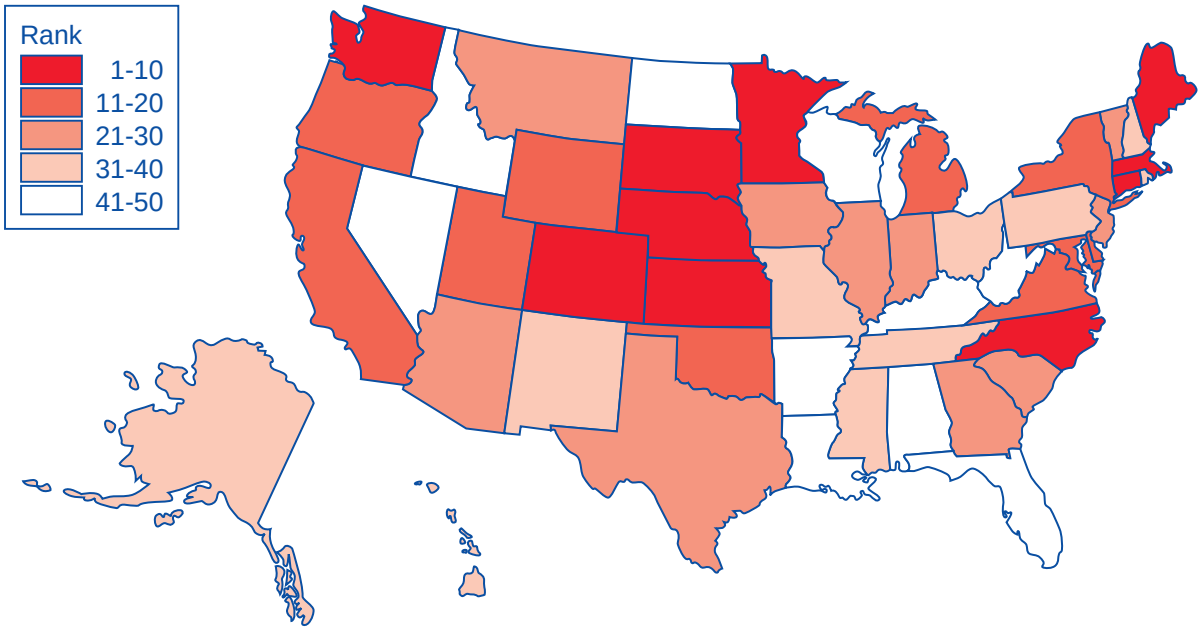
## Source of Data

### *Recent Science and Engineering Bachelor's Degrees:*

Arrangements for special tabulations of the SESTAT database were made by Kelly H. Kang, Senior Analyst, Science Resources Studies Division, National Science Foundation at kkang@nsf.gov on January 28, 2000 per a special request from Taratec Corporation, Columbus, Ohio.

### *Civilian Labor Force:*

U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages.* [1997 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).



# Recent S&E Master's in the Work Force

## Definition

The number of individuals who had earned a master's degree in the fields of science and engineering (S&E) as their highest degree during the academic years of 1990-1996 was identified from the National Science Foundation's SESTAT database. This group was segmented by employer location reported for the week of April 15,1997. Excluded from the group were degree holders who were unemployed or not in the labor force at that time, as well as those who had earned recent science and engineering degrees from foreign institutions.

The percent of the civilian work force with a recent degree in science or engineering was calculated by dividing number of master's degree holders described above by the size of the 1997 civilian work force in that state. No attempt was made to identify or separate science and engineering master's degree holders who were employed in a non-science and engineering field.

SESTAT is a database of the employment, education, and demographic characteristics of the nation's scientists and engineers. The National Science Foundation developed 1997 estimates based upon survey results from

- The National Survey of College Graduates,
- The National Survey of Recent College Graduates, and
- The Survey of Doctorate Recipients.

Data on the size of the civilian work force in each state came from the Bureau of Labor Statistics.

## Relevance

This metric indicates where recent graduates with master's degrees in science and engineering are choosing to work. It reflects a number of individualistic location criteria related to quality of life, economic opportunities, family responsibilities, and continuing educational opportunities. Regardless of their reasons for selecting a particular location, the presence of large numbers of recent science and engineering graduates enriches a state's work force and catalyzes the transfer of current technical knowledge into the local economy.

In the 50 states, the total number of persons with recent science and engineering master's degrees employed in the workforce during 1997 was 371,500 or 0.27% of the total workforce. For the 50 states, the median percentage of persons with recent science and engineering master's degrees in the work force was 0.24%.

**Percent of the Civilian Work Force with a Recent Master's Degree in Science or Engineering: 1997**

| State | Recent S&E Master's Degrees Employed | Civilian Labor Force (1,000s) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 4,600 | 2,168 | 0.21% | 33 |
| Alaska | 700 | 315 | 0.22% | 30 |
| Arizona | 6,600 | 2,185 | 0.30% | 14 |
| Arkansas | 500 | 1,214 | 0.04% | 50 |
| California | 54,300 | 15,941 | 0.34% | 9 |
| Colorado | 9,200 | 2,152 | 0.43% | 3 |
| Connecticut | 4,000 | 1,723 | 0.23% | 28 |
| Delaware | 600 | 382 | 0.16% | 41 |
| Florida | 14,600 | 7,119 | 0.21% | 35 |
| Georgia | 10,700 | 3,907 | 0.27% | 18 |
| Hawaii | 500 | 597 | 0.08% | 48 |
| Idaho | 1,000 | 633 | 0.16% | 40 |
| Illinois | 19,800 | 6,196 | 0.32% | 12 |
| Indiana | 6,800 | 3,086 | 0.22% | 31 |
| Iowa | 2,700 | 1,579 | 0.17% | 38 |
| Kansas | 4,100 | 1,368 | 0.30% | 15 |
| Kentucky | 3,900 | 1,917 | 0.20% | 36 |
| Louisiana | 2,600 | 2,014 | 0.13% | 45 |
| Maine | 1,000 | 659 | 0.15% | 43 |
| Maryland | 12,900 | 2,784 | 0.46% | 2 |
| Massachusetts | 15,700 | 3,260 | 0.48% | 1 |
| Michigan | 12,900 | 4,962 | 0.26% | 19 |
| Minnesota | 6,300 | 2,625 | 0.24% | 26 |
| Mississippi | 2,500 | 1,262 | 0.20% | 37 |
| Missouri | 9,400 | 2,893 | 0.32% | 11 |
| Montana | 1,100 | 455 | 0.24% | 24 |
| Nebraska | 3,100 | 906 | 0.34% | 8 |
| Nevada | 900 | 883 | 0.10% | 47 |
| New Hampshire | 1,500 | 646 | 0.23% | 27 |
| New Jersey | 14,600 | 4,198 | 0.35% | 7 |
| New Mexico | 3,000 | 815 | 0.37% | 5 |
| New York | 27,700 | 8,835 | 0.31% | 13 |
| North Carolina | 8,600 | 3,844 | 0.22% | 29 |
| North Dakota | 200 | 348 | 0.06% | 49 |
| Ohio | 14,100 | 5,707 | 0.25% | 23 |
| Oklahoma | 4,500 | 1,601 | 0.28% | 17 |
| Oregon | 3,700 | 1,728 | 0.21% | 32 |
| Pennsylvania | 12,400 | 5,979 | 0.21% | 34 |
| Rhode Island | 1,300 | 502 | 0.26% | 20 |
| South Carolina | 2,500 | 1,931 | 0.13% | 44 |
| South Dakota | 1,000 | 390 | 0.26% | 21 |
| Tennessee | 4,600 | 2,708 | 0.17% | 39 |
| Texas | 24,400 | 9,850 | 0.25% | 22 |
| Utah | 2,500 | 1,040 | 0.24% | 25 |
| Vermont | 1,200 | 327 | 0.37% | 6 |
| Virginia | 13,600 | 3,413 | 0.40% | 4 |
| Washington | 9,800 | 2,989 | 0.33% | 10 |
| West Virginia | 2,400 | 803 | 0.30% | 16 |
| Wisconsin | 4,600 | 2,949 | 0.16% | 42 |
| Wyoming | 300 | 251 | 0.12% | 46 |
| District of Columbia | 7,900 | 258 | 3.06% | |
| Puerto Rico | 1,000 | 1,308 | 0.08% | |

## Data Considerations and Limitations

The National Science Foundation provided estimates of the number of recent science and engineering master's degree holders by state from a special tabulation of the SESTAT database. A special tabulation was needed because the data on recent graduates are not usually published at the state level.

Because the survey sample design for the SESTAT database does not include geography as part of the sampling strata, the reliability of the estimates in states with small populations is lower than in more highly populated states. The number of degree holders in each state was rounded to the nearest hundred to reflect the precision justified by the statistical analysis.

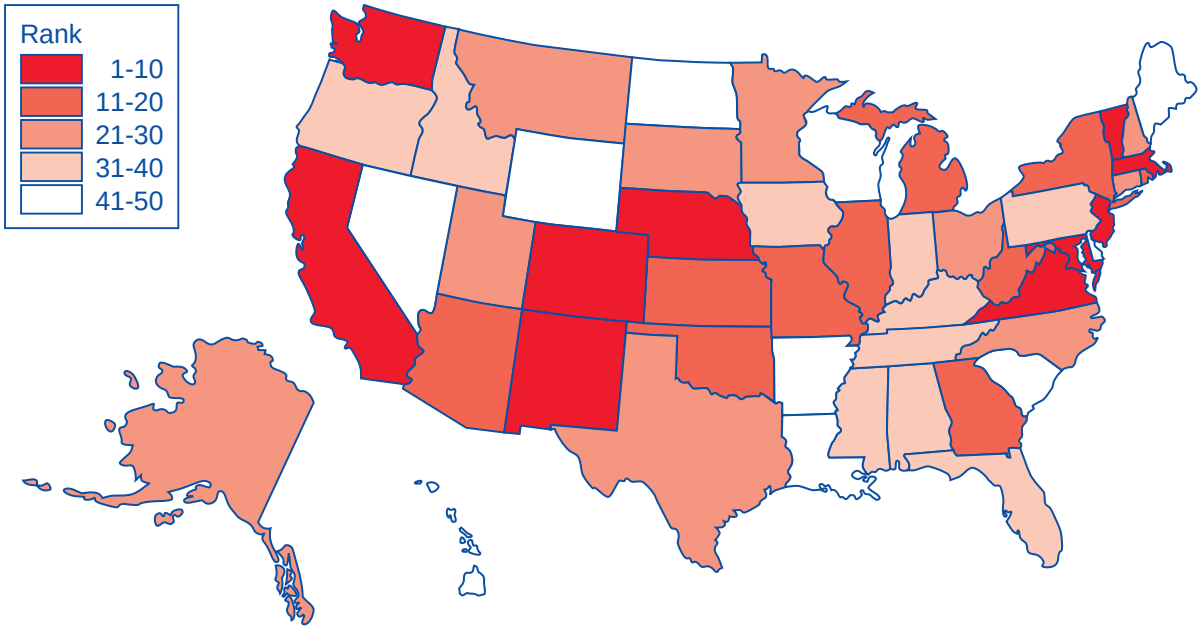
## Source of Data

### *Recent Science and Engineering Master's Degrees:*

Arrangements for special tabulations of the SESTAT database were made by Kelly H. Kang, Senior Analyst, Science Resources Studies Division, National Science Foundation at kkang@nsf.gov on January 28, 2000 per a special request from Taratec Corporation, Columbus, Ohio.

### *Civilian Labor Force:*

U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages.* [1997 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).



# Recent S&E PhD's in the Work Force

## Definition

The number of individuals who had earned a Ph.D. degree in the fields of science and engineering (S&E) as their highest degree during the academic years of 1990-1996 was identified from the National Science Foundation's SESTAT database. This group was segmented by employer location reported for the week of April 15,1997. Excluded from the group were degree holders who were unemployed or not in the labor force at that time, as well as those who had earned recent science and engineering degrees from foreign institutions. Holders of doctoral level professional degrees such as those awarded in medicine, law, or education are not included.

The percent of the civilian work force with a recent degree in science or engineering was calculated by dividing the number of Ph.D. degree holders described above by the size of the 1997 civilian work force in that state. No attempt was made to identify or separate science and engineering Ph.D. degree holders who were employed in a non-science and engineering field.

SESTAT is a database of the employment, education, and demographic characteristics of the nation's scientists and engineers. The National Science Foundation developed 1997 estimates based upon survey results from

- The National Survey of College Graduates,
- The National Survey of Recent College Graduates, and
- The Survey of Doctorate Recipients

Data on the size of the civilian work force in each state came from the Bureau of Labor Statistics.

## Relevance

This metric indicates where recent graduates with doctorate degrees in science and engineering are choosing to work. It reflects a number of individualistic location criteria related to quality of life, economic opportunities, family responsibilities, and continuing educational opportunities. Regardless of their reasons for selecting a particular location, the presence of large numbers of recent science and engineering graduates enriches a state's work force and catalyzes the transfer of current technical knowledge into the local economy.

In the 50 states, the total number of persons with recent science and engineering doctorate degrees employed in the workforce during 1997 was 152,200 or 0.11% of the total workforce. For the 50 states, the median percentage of persons with recent science and engineering doctorate degrees in the work force was 0.10%.

**Percent of the Civilian Work Force with a Recent Ph.D. Degree in Science or Engineering: 1997**

| State | Recent S&E Doctorate Degrees Employed | Civilian Labor Force (1,000s) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 1,900 | 2,168 | 0.09% | 32 |
| Alaska | 200 | 315 | 0.06% | 46 |
| Arizona | 1,900 | 2,185 | 0.09% | 33 |
| Arkansas | 900 | 1,214 | 0.07% | 42 |
| California | 21,900 | 15,941 | 0.14% | 9 |
| Colorado | 3,500 | 2,152 | 0.16% | 8 |
| Connecticut | 2,300 | 1,723 | 0.13% | 10 |
| Delaware | 800 | 382 | 0.21% | 4 |
| Florida | 3,400 | 7,119 | 0.05% | 49 |
| Georgia | 3,600 | 3,907 | 0.09% | 30 |
| Hawaii | 700 | 597 | 0.12% | 16 |
| Idaho | 700 | 633 | 0.11% | 21 |
| Illinois | 7,000 | 6,196 | 0.11% | 20 |
| Indiana | 2,900 | 3,086 | 0.09% | 29 |
| Iowa | 1,300 | 1,579 | 0.08% | 37 |
| Kansas | 1,400 | 1,368 | 0.10% | 25 |
| Kentucky | 1,100 | 1,917 | 0.06% | 47 |
| Louisiana | 1,700 | 2,014 | 0.08% | 36 |
| Maine | 500 | 659 | 0.08% | 40 |
| Maryland | 6,400 | 2,784 | 0.23% | 3 |
| Massachusetts | 8,200 | 3,260 | 0.25% | 1 |
| Michigan | 5,200 | 4,962 | 0.10% | 23 |
| Minnesota | 3,300 | 2,625 | 0.13% | 14 |
| Mississippi | 900 | 1,262 | 0.07% | 44 |
| Missouri | 2,800 | 2,893 | 0.10% | 26 |
| Montana | 400 | 455 | 0.09% | 31 |
| Nebraska | 1,100 | 906 | 0.12% | 15 |
| Nevada | 400 | 883 | 0.05% | 50 |
| New Hampshire | 700 | 646 | 0.11% | 22 |
| New Jersey | 5,600 | 4,198 | 0.13% | 11 |
| New Mexico | 2,000 | 815 | 0.25% | 2 |
| New York | 11,400 | 8,835 | 0.13% | 13 |
| North Carolina | 4,000 | 3,844 | 0.10% | 24 |
| North Dakota | 400 | 348 | 0.11% | 18 |
| Ohio | 5,400 | 5,707 | 0.09% | 28 |
| Oklahoma | 1,300 | 1,601 | 0.08% | 38 |
| Oregon | 2,000 | 1,728 | 0.12% | 17 |
| Pennsylvania | 6,800 | 5,979 | 0.11% | 19 |
| Rhode Island | 1,000 | 502 | 0.20% | 6 |
| South Carolina | 1,300 | 1,931 | 0.07% | 45 |
| South Dakota | 200 | 390 | 0.05% | 48 |
| Tennessee | 2,000 | 2,708 | 0.07% | 43 |
| Texas | 8,500 | 9,850 | 0.09% | 34 |
| Utah | 2,100 | 1,040 | 0.20% | 5 |
| Vermont | 600 | 327 | 0.18% | 7 |
| Virginia | 3,300 | 3,413 | 0.10% | 27 |
| Washington | 3,900 | 2,989 | 0.13% | 12 |
| West Virginia | 600 | 803 | 0.07% | 41 |
| Wisconsin | 2,500 | 2,949 | 0.08% | 35 |
| Wyoming | 200 | 251 | 0.08% | 39 |
| District of Columbia | 2,500 | 258 | 0.97% | |
| Puerto Rico | 200 | 1,308 | 0.02% | |

## Data Considerations and Limitations

The National Science Foundation provided estimates of the number of recent science and engineering doctorate degree holders by state from a special tabulation of the SESTAT database. A special tabulation was needed because the data on recent graduates are not usually published at the state level.

Because the survey sample design for the SESTAT database does not include geography as part of the sampling strata, the reliability of the estimates in states with small populations is lower than in more highly populated states. The number of degree holders in each state was rounded to the nearest hundred to reflect the precision justified by the statistical analysis.

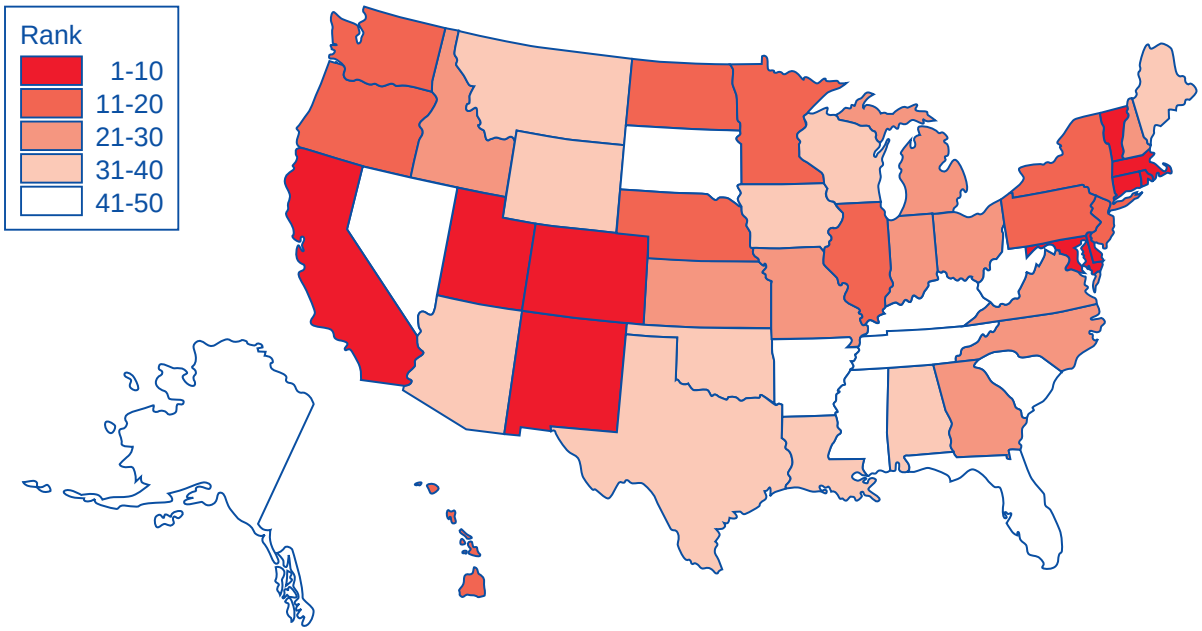
## Source of Data

### *Recent Science and Engineering Ph.D. Degrees:*

Arrangements for special tabulations of the SESTAT database were made by Kelly H. Kang, Senior Analyst, Science Resources Studies Division, National Science Foundation at kkang@nsf.gov on January 28, 2000 per a special request from Taratec Corporation, Columbus, Ohio.

### *Civilian Labor Force:*

U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages.* [1997 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).



## Definition

Venture capital funds represent equity investments made in private companies by the venture capital community. The amount of venture capital funds raised in 1998 per $1,000 of gross state product (GSP) is calculated by dividing the total amount of venture capital invested in a state in 1998 by the gross state product of the state. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

As a method of raising funds for growth and expansion, companies typically seek venture capital investments at an early stage in their growth prior to establishing a predictable sales history that would qualify them for other types of financing. Because of the risks involved with this type of investment, venture capitalists require higher rates of return and a greater degree of control in the company in exchange for their investment. This metric provides an indication of the role that venture capital financing plays in each state.

Venture capital investments serve as a barometer of regional and national economic health as demonstrated through proactive entrepreneurial developments (PricewaterhouseCoopers, <http://www.pwcmoneytree.com/factsheet.asp>). The industries and individual companies that venture capitalists choose to invest in reflect their opinions as to the sources of future wealth creation. Companies that attract venture capital investment are perceived to be working at the cutting edge of technology in their respective industries.

In 1998, venture capital companies invested a total of $14.2 billion in U.S. companies located in the 50 states. This represents an investment equivalent to $1.76 per $1,000 of U.S. gross domestic product. The median amount of venture capital invested per $1,000 of gross state product in the 50 states was $0.54.

## Data Considerations and Limitations

This data came from the PricewaterhouseCoopers Money Tree™ Survey conducted by the PricewaterhouseCoopers Survey Research Center under the sponsorship of the Global Technology Industry Group. The survey measures investment in all types of industries. Follow-up notices are sent via fax and telephone.

**Amount of Venture Capital Funds Invested per $1,000 of GSP: 1998**

| State | Venture Capital Invested (millions) | 1997 GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $76.7 | $103,109 | $0.74 | 22 |
| Alaska | N/A | $24,494 | N/A | |
| Arizona | $141.4 | $121,239 | $1.17 | 14 |
| Arkansas | $7.2 | $58,479 | $0.12 | 38 |
| California | $5,779.2 | $1,033,016 | $5.59 | 2 |
| Colorado | $489.7 | $126,084 | $3.88 | 3 |
| Connecticut | $245.7 | $134,565 | $1.83 | 8 |
| Delaware | $10.0 | $31,585 | $0.32 | 33 |
| Florida | $301.4 | $380,607 | $0.79 | 21 |
| Georgia | $303.2 | $229,473 | $1.32 | 13 |
| Hawaii | $0.6 | $38,024 | $0.02 | 46 |
| Idaho | $41.2 | $29,149 | $1.41 | 10 |
| Illinois | $396.4 | $393,532 | $1.01 | 16 |
| Indiana | $25.6 | $161,701 | $0.16 | 37 |
| Iowa | $24.2 | $80,479 | $0.30 | 34 |
| Kansas | $18.1 | $71,737 | $0.25 | 36 |
| Kentucky | $36.6 | $100,076 | $0.37 | 31 |
| Louisiana | $47.9 | $124,350 | $0.39 | 30 |
| Maine | $8.5 | $30,156 | $0.28 | 35 |
| Maryland | $297.7 | $153,797 | $1.94 | 7 |
| Massachusetts | $1,697.3 | $221,009 | $7.68 | 1 |
| Michigan | $114.5 | $272,607 | $0.42 | 27 |
| Minnesota | $229.7 | $149,394 | $1.54 | 9 |
| Mississippi | $5.0 | $58,314 | $0.09 | 42 |
| Missouri | $130.4 | $152,100 | $0.86 | 20 |
| Montana | $0.0 | $19,160 | $0.00 | 47 |
| Nebraska | $4.5 | $48,812 | $0.09 | 39 |
| Nevada | $4.2 | $57,407 | $0.07 | 43 |
| New Hampshire | $137.3 | $38,106 | $3.60 | 4 |
| New Jersey | $266.0 | $294,055 | $0.90 | 18 |
| New Mexico | $4.0 | $45,242 | $0.09 | 41 |
| New York | $562.2 | $651,652 | $0.86 | 19 |
| North Carolina | $300.4 | $218,888 | $1.37 | 11 |
| North Dakota | $0.5 | $15,786 | $0.03 | 44 |
| Ohio | $173.6 | $320,506 | $0.54 | 24 |
| Oklahoma | $31.5 | $76,642 | $0.41 | 29 |
| Oregon | $35.1 | $98,367 | $0.36 | 32 |
| Pennsylvania | $335.8 | $339,940 | $0.99 | 17 |
| Rhode Island | $13.7 | $27,806 | $0.49 | 25 |
| South Carolina | $66.1 | $93,259 | $0.71 | 23 |
| South Dakota | N/A | $20,186 | N/A | |
| Tennessee | $67.5 | $146,999 | $0.46 | 26 |
| Texas | $816.4 | $601,643 | $1.36 | 12 |
| Utah | $56.9 | $55,417 | $1.03 | 15 |
| Vermont | $1.4 | $15,214 | $0.09 | 40 |
| Virginia | $430.7 | $211,331 | $2.04 | 6 |
| Washington | $401.2 | $172,253 | $2.33 | 5 |
| West Virginia | $1.1 | $38,228 | $0.03 | 45 |
| Wisconsin | $61.0 | $147,325 | $0.41 | 28 |
| Wyoming | N/A | $17,561 | N/A | |
| District of Columbia | $66.8 | $52,372 | $1.28 | |
| Puerto Rico | $0.0 | $32,096 | $0.00 | |

The survey is designed to monitor investments in entrepreneurial companies and it focuses on the total amount actually received by the company in a particular round of financing in return for equity, usually in the form of preferred stock. The survey does not include buyouts (LBOs or MBOs), recapitalizations, secondary purchases, IPOs, investments in public companies or other forms of private equity involving leveraged or subordinated debt, leasing, or stock. Also, excluded are investments for which the proceeds are primarily intended for acquisition, such as roll-ups, and investments in spin-outs of operating divisions of established companies.

## Source of Data

Data on venture capital investments was obtained from Money Tree ™ a product of PricewaterhouseCoopers LLP. A national Money Tree ™ Survey report summarizing the U.S. findings for the most recent quarter is available by calling 1-888-609-7117. The report can be accessed electronically at http://www.pwcmoneytree.com.

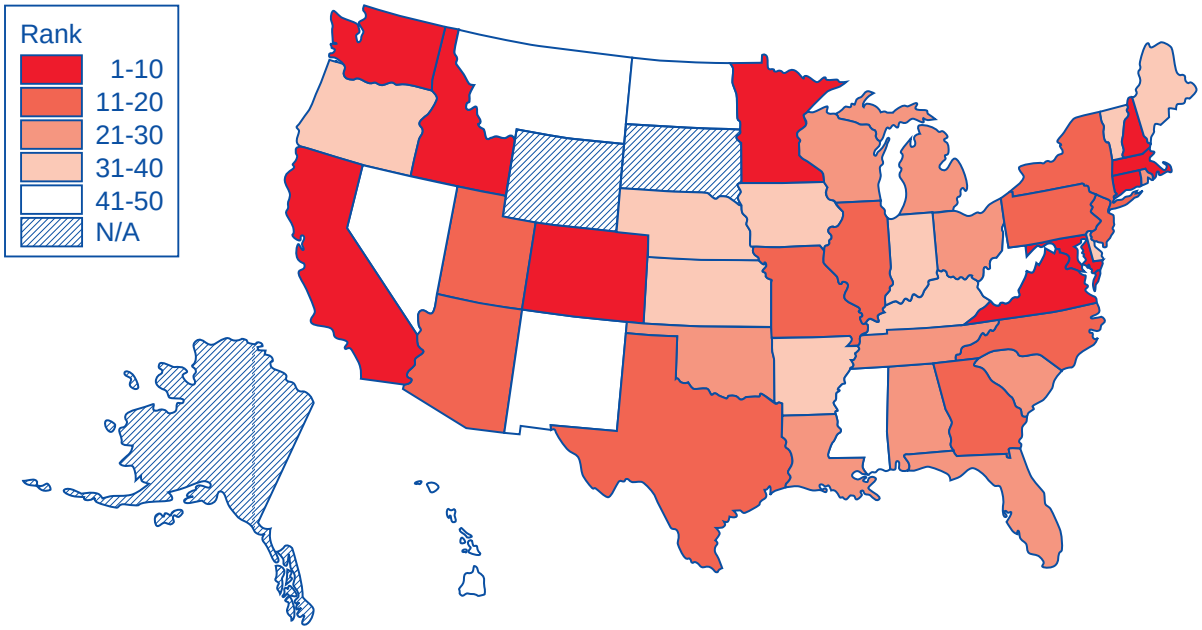
### *Venture Capital:*

PricewaterhouseCoopers L.L.P. *Money Tree™*.

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data*. [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].



## Definition

Congress created the Small Business Investment Company (SBIC) Program in 1958 to fill the gap between available venture capital and the financial needs of small business in start-up and growth situations. The average annual amount of SBIC funds disbursed per $1,000 of gross state product was calculated by averaging the amount of SBIC funds invested in small business in a particular state for the three-year period from 1996-8 and dividing by that state's gross state product. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

SBICs are profit-motivated businesses that provide equity capital, long-term loans, debt-equity investments, and management assistance to small businesses. They are licensed by the Small Business Administration (SBA) and leverage their own capital with funds borrowed at favorable rates with an SBA guarantee. This metric provides an indication of the role that SBIC financing plays in each state.

SBICs make funding available to all types of manufacturing and service industries, but many focus on companies with new products or services because of the strong growth potential of such firms. SBICs are prohibited from investing in other SBICs, finance and investment companies or finance-type leasing companies, unimproved real estate, companies with less than one-half of their assets and operations in the U.S., passive or casual businesses, or companies which will use the proceeds to acquire farm land. SBIC investment can take many forms including seed financing, start-up capital, early stage capital, expansion financing, later state financing, or MBO/LBO/Acquisition financing.

In the 50 states, SBICs disbursed $7.2 billion to small U.S. companies over the 1996-8 period for an average of $2.4 billion annually. This represented an investment equivalent to $0.30 per $1,000 of U.S. gross domestic product. The median amount of SBIC funds disbursed per $1,000 of gross state product in the 50 states was $0.24.

### Average Annual Amount of SBIC Funds Disbursed per $1,000 of GSP: 1996-8

| State | Ave. SBIC Funding Disburse - ments | Ave. Annual SBIC Funds Disbursed | 1997 GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|---|
| Alabama | 27.3 | $15,554,559 | $103,109 | $0.15 | 35 |
| Alaska | 1.3 | $508,361 | $24,494 | $0.02 | 49 |
| Arizona | 24.0 | $26,667,932 | $121,239 | $0.22 | 27 |
| Arkansas | 2.0 | $845,667 | $58,479 | $0.01 | 50 |
| California | 356.3 | $393,853,015 | $1,033,016 | $0.38 | 10 |
| Colorado | 36.3 | $60,917,161 | $126,084 | $0.48 | 4 |
| Connecticut | 51.0 | $56,944,000 | $134,565 | $0.42 | 6 |
| Delaware | 8.3 | $12,144,954 | $31,585 | $0.38 | 8 |
| Florida | 75.3 | $61,506,577 | $380,607 | $0.16 | 33 |
| Georgia | 59.7 | $82,278,981 | $229,473 | $0.36 | 13 |
| Hawaii | 6.0 | $2,848,282 | $38,024 | $0.07 | 41 |
| Idaho | 2.0 | $1,479,262 | $29,149 | $0.05 | 45 |
| Illinois | 292.3 | $99,361,617 | $393,532 | $0.25 | 24 |
| Indiana | 11.0 | $23,573,613 | $161,701 | $0.15 | 36 |
| Iowa | 5.3 | $5,520,013 | $80,479 | $0.07 | 42 |
| Kansas | 51.3 | $52,847,956 | $71,737 | $0.74 | 2 |
| Kentucky | 27.7 | $27,311,492 | $100,076 | $0.27 | 20 |
| Louisiana | 20.7 | $53,927,009 | $124,350 | $0.43 | 5 |
| Maine | 4.7 | $24,766,440 | $30,156 | $0.82 | 1 |
| Maryland | 30.0 | $17,209,974 | $153,797 | $0.11 | 38 |
| Massachusetts | 146.3 | $139,043,384 | $221,009 | $0.63 | 3 |
| Michigan | 24.3 | $108,100,304 | $272,607 | $0.40 | 7 |
| Minnesota | 41.7 | $54,731,307 | $149,394 | $0.37 | 12 |
| Mississippi | 7.0 | $5,952,329 | $58,314 | $0.10 | 39 |
| Missouri | 32.0 | $50,526,588 | $152,100 | $0.33 | 14 |
| Montana | 1.3 | $2,305,556 | $19,160 | $0.12 | 37 |
| Nebraska | 5.7 | $3,300,278 | $48,812 | $0.07 | 43 |
| Nevada | 1.0 | $1,216,667 | $57,407 | $0.02 | 48 |
| New Hampshire | 17.3 | $5,989,843 | $38,106 | $0.16 | 34 |
| New Jersey | 121.3 | $71,382,265 | $294,055 | $0.24 | 25 |
| New Mexico | 2.0 | $8,481,333 | $45,242 | $0.19 | 30 |
| New York | 719.0 | $243,244,867 | $651,652 | $0.37 | 11 |
| North Carolina | 41.3 | $60,644,155 | $218,888 | $0.28 | 19 |
| North Dakota | 2.7 | $1,258,680 | $15,786 | $0.08 | 40 |
| Ohio | 47.0 | $82,241,490 | $320,506 | $0.26 | 23 |
| Oklahoma | 13.0 | $16,586,332 | $76,642 | $0.22 | 28 |
| Oregon | 15.0 | $30,854,055 | $98,367 | $0.31 | 16 |
| Pennsylvania | 59.7 | $94,604,777 | $339,940 | $0.28 | 18 |
| Rhode Island | 9.3 | $10,675,919 | $27,806 | $0.38 | 9 |
| South Carolina | 15.0 | $24,710,734 | $93,259 | $0.26 | 21 |
| South Dakota | 0.3 | $1,050,000 | $20,186 | $0.05 | 44 |
| Tennessee | 31.3 | $46,898,596 | $146,999 | $0.32 | 15 |
| Texas | 184.0 | $181,129,505 | $601,643 | $0.30 | 17 |
| Utah | 20.7 | $9,513,281 | $55,417 | $0.17 | 32 |
| Vermont | 4.3 | $2,647,056 | $15,214 | $0.17 | 31 |
| Virginia | 32.3 | $44,397,101 | $211,331 | $0.21 | 29 |
| Washington | 23.7 | $40,180,204 | $172,253 | $0.23 | 26 |
| West Virginia | 5.7 | $1,280,000 | $38,228 | $0.03 | 46 |
| Wisconsin | 33.0 | $38,837,027 | $147,325 | $0.26 | 22 |
| Wyoming | 1.3 | $536,889 | $17,561 | $0.03 | 47 |
| District of Columbia | 5.0 | $4,037,645 | $52,372 | $0.08 | |
| Puerto Rico | 6.0 | $1,574,431 | $32,096 | $0.05 | |

## Data Considerations and Limitations

A three-year average of SBIC disbursements was used to minimize year-to-year variability. Gross State Product data from 1997, the middle year of the 3-year period, was used to normalize the disbursement data to account for differences in the sizes of states' business base.

## Source of Data

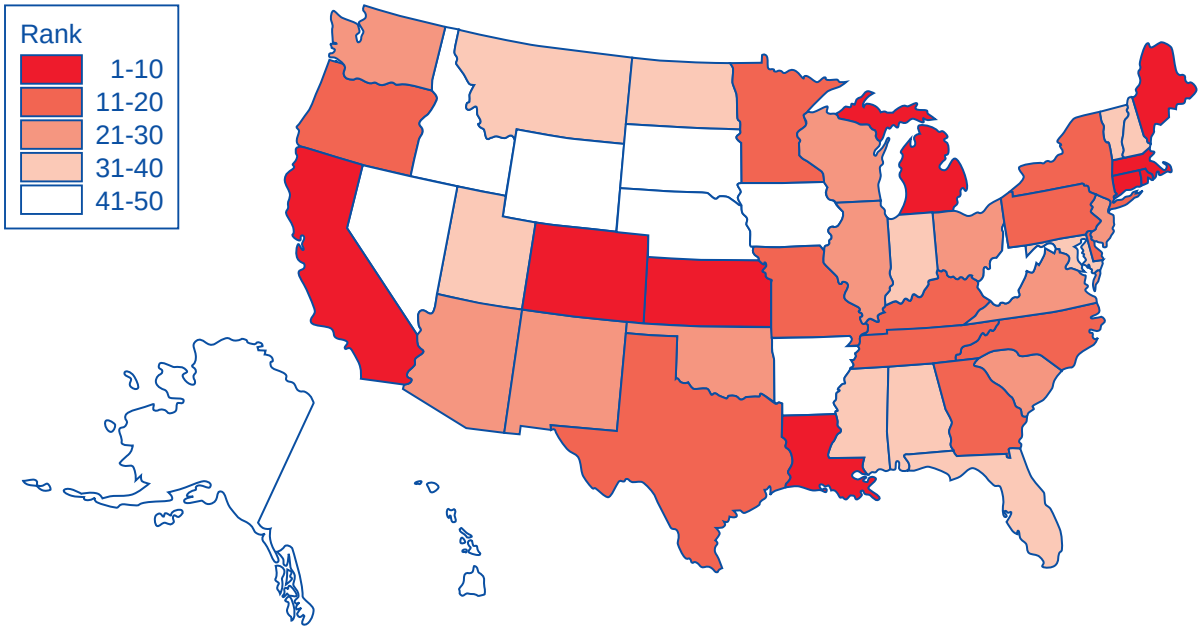
### *SBIC Funds Disbursed:*

U.S. Small Business Administration, Investment Division. (1999, January 22). "Table 8: ALL SBIC Program Licensees Financing to Small Businesses by State." *SBIC Program Financing to Small Business.* <http://www.sba.gov/inv/tables/1998/pdf/table8.pdf> (October 13, 1999).

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].



# IPO Funds

## Definition

Initial public offerings (IPOs) are another method by which companies raise capital for growth and expansion. The average annual amount of IPO funds raised per $1,000 of gross state product was calculated by taking the average annual amount of IPO funds raised by companies in the state for the period of 1997-8 and dividing by the gross state product for that state. Gross state product is the output of goods and services produced by the labor and property located in the state.

## Relevance

IPOs occur when a privately owned company wishes to offer shares of its common stock to the public. This process is under the control of Securities and Exchange Commission. Companies are required to file appropriate documentation prior to being allowed to start trading. An IPO is one method available to a company for raising funds for expansion, product development, or acquisition. It is typically used by companies that have grown to the stage of having a predictable sales history. This metric provides an indication of the role that IPO financing plays in each state.

In the 50 states, U.S. companies raised $123.5 billion from 1997-9 through initial public offerings for an average of $41.2 billion annually. This represented an investment equivalent to $5.12 per $1,000 of U.S. gross domestic product. The median amount of IPO funds raised per $1,000 of gross state product in the 50 states was $2.19.

## Data Considerations and Limitations

For this metric, the average annual amount of IPO funds raised was calculated over a two-year period to reduce the year-to-year variability in the data.

The data includes all U.S.-based IPOs regardless of the stock type. Excluded are real estate investment trusts (REITs), bank conversions, closed-end funds, and over-the-counter offerings.

### Average Annual Amount of IPO Funds Raised per $1,000 of GSP: 1997-9

| State | Ave. Annual IPO Funds Raised (millions) | 1997 GSP (millions) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $18 | $103,109 | $0.17 | 47 |
| Alaska | $55 | $24,494 | $2.25 | 25 |
| Arizona | $233 | $121,239 | $1.93 | 28 |
| Arkansas | $26 | $58,479 | $0.44 | 45 |
| California | $8,499 | $1,033,016 | $8.23 | 3 |
| Colorado | $824 | $126,084 | $6.53 | 8 |
| Connecti cut | $732 | $134,565 | $5.44 | 11 |
| Delaware | $153 | $31,585 | $4.83 | 14 |
| Florida | $1,968 | $380,607 | $5.17 | 12 |
| Georgia | $2,294 | $229,473 | $10.00 | 2 |
| Hawaii | $20 | $38,024 | $0.53 | 44 |
| Idaho | $21 | $29,149 | $0.71 | 39 |
| Illinois | $1,404 | $393,532 | $3.57 | 18 |
| Indiana | $110 | $161,701 | $0.68 | 41 |
| Iowa | $97 | $80,479 | $1.21 | 35 |
| Kansas | $268 | $71,737 | $3.74 | 17 |
| Kentucky | $213 | $100,076 | $2.13 | 26 |
| Louisiana | $76 | $124,350 | $0.61 | 43 |
| Maine | $222 | $30,156 | $7.37 | 6 |
| Maryland | $964 | $153,797 | $6.27 | 9 |
| Massachusetts | $1,307 | $221,009 | $5.92 | 10 |
| Michigan | $907 | $272,607 | $3.33 | 20 |
| Minn esota | $285 | $149,394 | $1.90 | 29 |
| Mississippi | $87 | $58,314 | $1.50 | 32 |
| Missouri | $1,177 | $152,100 | $7.74 | 5 |
| Montana | $13 | $19,160 | $0.70 | 40 |
| Nebraska | $30 | $48,812 | $0.61 | 42 |
| Nevada | $68 | $57,407 | $1.18 | 37 |
| New Hampshire | $60 | $38,106 | $1.57 | 30 |
| New Jersey | $978 | $294,055 | $3.33 | 21 |
| New Mexico | $214 | $45,242 | $4.73 | 15 |
| New York | $7,839 | $651,652 | $12.03 | 1 |
| North Carolina | $260 | $218,888 | $1.19 | 36 |
| North Dakota | $38 | $15,786 | $2.39 | 24 |
| Ohio | $501 | $320,506 | $1.56 | 31 |
| Oklahoma | $529 | $76,642 | $6.90 | 7 |
| Oregon | $280 | $98,367 | $2.84 | 23 |
| Pennsylvania | $1,188 | $339,940 | $3.49 | 19 |
| Rhode Island | $7 | $27,806 | $0.26 | 46 |
| South Carolina | $87 | $93,259 | $0.93 | 38 |
| South Dakota | $2 | $20,186 | $0.11 | 50 |
| Tennessee | $207 | $146,999 | $1.41 | 33 |
| Texas | $4,762 | $601,643 | $7.92 | 4 |
| Utah | $111 | $55,417 | $2.00 | 27 |
| Vermont | $44 | $15,214 | $2.89 | 22 |
| Virginia | $1,073 | $211,331 | $5.08 | 13 |
| Washington | $717 | $172,253 | $4.16 | 16 |
| West Virginia | $5 | $38,228 | $0.14 | 49 |
| Wisconsin | $205 | $147,325 | $1.39 | 34 |
| Wyoming | $3 | $17,561 | $0.16 | 48 |
| District of Columbia | $349 | $52,372 | $6.66 | |
| Puerto Rico | N/A | $32,096 | N/A | |

## Source of Data

The IPO data was compiled by Hale and Dorr LLP using the following sources: IPO Central, IPO Data Systems, Securities Data Company and the Washington Service Bureau. Questions regarding the IPO data should be directed to Tim Gallagher at timothy.gallagher@haleanddorr.com.

### *IPO Funds Raised:*

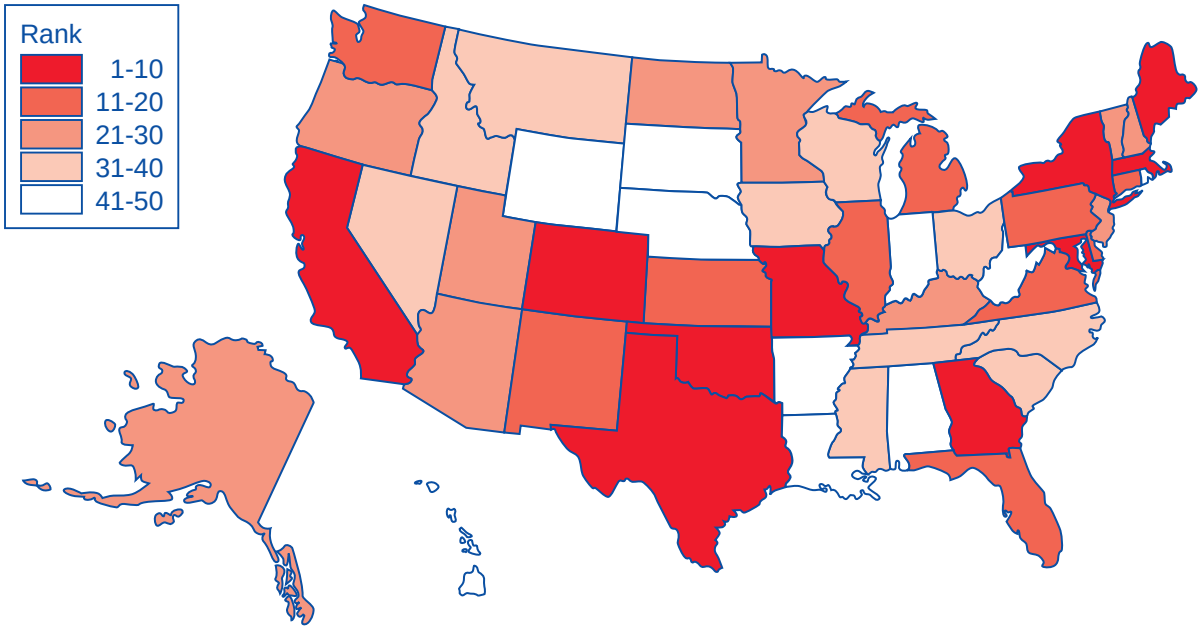
Hale and Dorr LLP. (1999, April 30). *1998 New England IPO Report.* <http://www.haledorr.com/publications/ipo/ipo98/NEIPO_1998.pdf> (1999, October 19);

Hale and Dorr LLP. (2000, February 17). *1999 The IPO Report*. <http://www.haleanddorr.com/publications/ipo/ipo99_98/99report.pdf> (2000, February 25).

### *Gross State Product:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data*. [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].



## Definition

The number of business incubators available to serve 10,000 businesses in a particular state was calculated by dividing the total number of business incubators in that state in 1998 by the total number of businesses in the state and multiplying the result by 10,000. In this case, the data were normalized to the number of businesses since businesses represent the clients that the incubator is designed to serve.

## Relevance

In addition to accessible capital, other resources can facilitate the growth and development of entrepreneurial companies. Business incubators offering specialized physical facilities at reduced rates, flexible lease terms, shared support services, business assistance services, and management coaching enable start-up companies to stretch their resources farther and to develop the internal capacity to grow their companies. The entire bundle of facilities and value added support services make the incubation program attractive to start-up companies. The success rate of businesses that have graduated from business incubators is significantly higher than that of start-up companies without this support. Although it is not clear whether this success is due to the initial screening process that many incubators employ. Many states support business incubators as a means of stimulating economic development.

Over half of all North American business incubators are sponsored by government and non-profit organizations. Incubators facilitate job creation, economic diversification, and/or expansion of the tax base. Another quarter of the business incubators are affiliated with academic institutions, and, in addition, these incubators provide opportunities to commercialize technology developed at the institution and investment opportunities for alumni, faculty, and associated groups.

In 1998, there were 586 incubators in the 50 states, which amounted to 0.85 incubators per 10,000 business establishments. The median number of business incubators per 10,000 business establishments in the 50 states was 0.81.

## Data Considerations and Limitations

Data on the number and location of incubators came from the database of the National Business Incubation Association (NBIA), a not-for-profit 501(c)(3) membership organization headquartered in Athens, Ohio. NBIA identifies incubators from inquiries to their web site, referrals from other incubators,

**Number of Business Incubators per 10,000 Business Establishments: 1998**

| State | Business Incubators | 1997 Estab. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 13 | 100,281 | 1.30 | 9 |
| Alaska | 2 | 18,138 | 1.10 | 11 |
| Arizona | 3 | 108,669 | 0.28 | 49 |
| Arkansas | 4 | 62,326 | 0.64 | 35 |
| California | 52 | 766,009 | 0.68 | 33 |
| Colorado | 10 | 127,419 | 0.78 | 27 |
| Connecticut | 6 | 92,702 | 0.65 | 34 |
| Delaware | 1 | 22,249 | 0.45 | 45 |
| Florida | 23 | 417,522 | 0.55 | 43 |
| Georgia | 13 | 191,279 | 0.68 | 32 |
| Hawaii | 3 | 29,991 | 1.00 | 14 |
| Idaho | 9 | 35,563 | 2.53 | 2 |
| Illinois | 23 | 302,579 | 0.76 | 29 |
| Indiana | 12 | 146,241 | 0.82 | 24 |
| Iowa | 5 | 80,608 | 0.62 | 38 |
| Kansas | 8 | 73,924 | 1.08 | 12 |
| Kentucky | 5 | 89,029 | 0.56 | 42 |
| Louisiana | 16 | 100,770 | 1.59 | 7 |
| Maine | 4 | 37,964 | 1.05 | 13 |
| Maryland | 11 | 126,001 | 0.87 | 21 |
| Massachusetts | 14 | 166,986 | 0.84 | 23 |
| Michigan | 16 | 235,308 | 0.68 | 31 |
| Minnesota | 12 | 133,002 | 0.90 | 19 |
| Mississippi | 11 | 59,347 | 1.85 | 4 |
| Missouri | 9 | 143,418 | 0.63 | 36 |
| Montana | 1 | 30,757 | 0.33 | 48 |
| Nebraska | 7 | 48,588 | 1.44 | 8 |
| Nevada | 4 | 42,343 | 0.94 | 17 |
| New Hampshire | 3 | 36,692 | 0.82 | 25 |
| New Jersey | 9 | 229,349 | 0.39 | 47 |
| New Mexico | 8 | 42,477 | 1.88 | 3 |
| New York | 41 | 478,480 | 0.86 | 22 |
| North Carolina | 25 | 197,488 | 1.27 | 10 |
| North Dakota | 2 | 20,439 | 0.98 | 15 |
| Ohio | 24 | 270,540 | 0.89 | 20 |
| Oklahoma | 14 | 84,645 | 1.65 | 6 |
| Oregon | 8 | 98,564 | 0.81 | 26 |
| Pennsylvania | 51 | 292,118 | 1.75 | 5 |
| Rhode Island | 2 | 28,164 | 0.71 | 30 |
| South Carolina | 1 | 93,926 | 0.11 | 50 |
| South Dakota | 1 | 23,486 | 0.43 | 46 |
| Tennessee | 10 | 130,952 | 0.76 | 28 |
| Texas | 26 | 459,024 | 0.57 | 40 |
| Utah | 3 | 50,653 | 0.59 | 39 |
| Vermont | 2 | 21,235 | 0.94 | 18 |
| Virginia | 8 | 170,654 | 0.47 | 44 |
| Washington | 10 | 159,684 | 0.63 | 37 |
| West Virginia | 4 | 41,625 | 0.96 | 16 |
| Wisconsin | 36 | 138,427 | 2.60 | 1 |
| Wyoming | 1 | 17,680 | 0.57 | 41 |
| District of Columbia | 2 | 19,554 | 1.02 | |
| Puerto Rico | N/A | 42,463 | N/A | |

incubators who purchase materials through their bookstore, etc. Their database of business incubators appears to be the most complete nationwide listing available, and NBIA estimates that it covers more than 50% of the total U.S. incubators. However, there is no reliable method of determining exactly what fraction of the total number of incubators is included in the NBIA database.

## Source of Data

Data on the number of incubators by state was furnished by NBIA, 20 East Circle Drive, Suite 190, Athens, OH 45701 in a fax transmission dated September 14, 1999. This data is published in NBIA's *Business Incubators in North America – 1998.* Information regarding the purchase of this document is located at <http://www.nbia.org/bookstore/index.php3>.

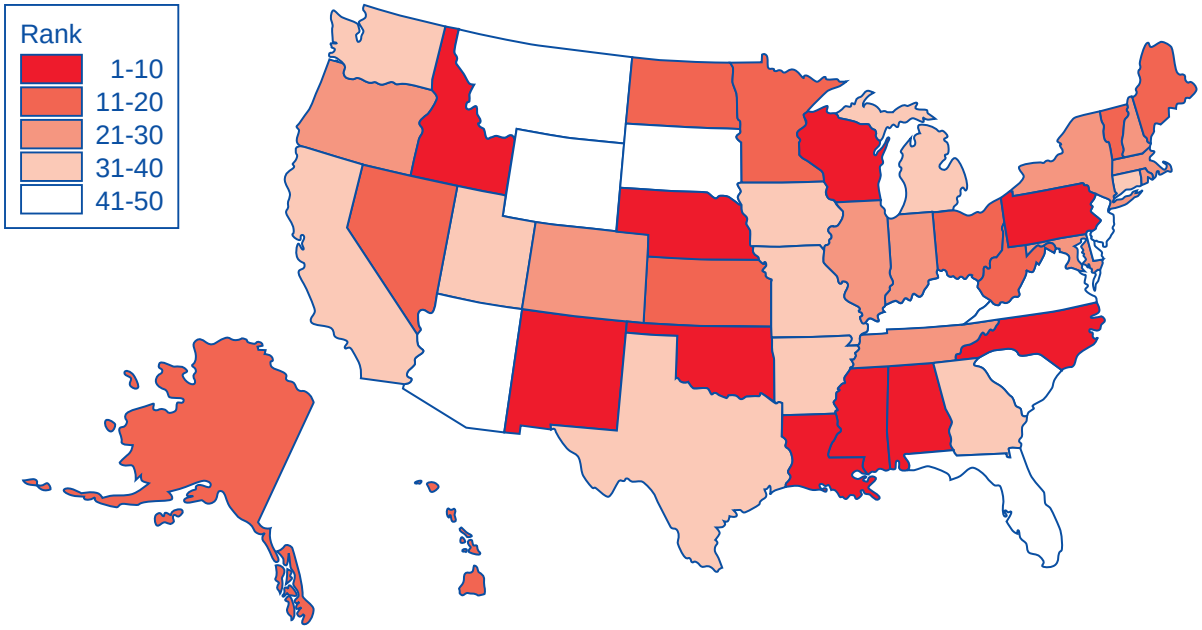
### *Business Incubators:*

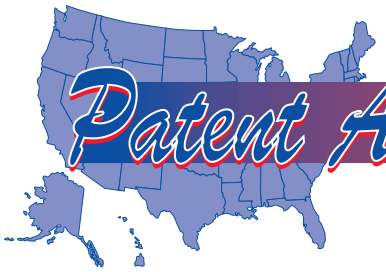
McKinnon, S., National Business Incubation Association . *Business Incubators of North America – 1998.* Athens, OH.

### *Establishments:*

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997.* (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997* - Puerto Rico. (CBP/97-53). Washington, DC: U.S. Government Printing Office.





# Patent Attorneys & Agents

## Definition

Only individuals registered with the U.S. Patent and Trademark Office as attorneys or agents are eligible to represent applicants before the Office in the preparation and prosecution of applications for patent. The number of registered patent attorneys and agents per 10,000 business establishments provides a measure of the availability of these individuals, who are a key component of the patenting process, to the businesses within a state.

## Relevance

A patent can be used to protect intellectual property from competitors for a defined period of time. It represents an asset that can be bought or sold, and it has legal standing. Alternatively, intellectual property can be protected as a trade secret, but protection of the intellectual property is more problematic if this approach is selected.

Since ownership of intellectual property, rather than of natural resources, is increasing in importance in today's economy, companies require an infrastructure that provides access to the people that can help them to navigate the process of creating intellectual property.

There were 20,294 attorneys or agents in the 50 states licensed to practice before the Patent and Trademark Office according to the records downloaded on September 2, 1999. This equates to 29.5 patent attorneys or agents per 10,000 business establishments. The median number of attorneys or agents available per 10,000 business establishments in the 50 states was 15.4.

## Data Considerations and Limitations

Although the number of patent attorneys or agents registered with the Patent and Trademark Office is current, the number of business establishments in the states or the U.S. was taken from County Business Patterns 1997. The County Business Patterns series provides the most comprehensive coverage of the businesses throughout the U.S., but there is a publication delay. The 1997 version is the latest available.

**Number of Patent Attorneys and Agents per 10,000 Business Establishments: 1999**

| State | Patent Attorneys | 1997 Estab. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 63 | 100,281 | 6.3 | 39 |
| Alaska | 6 | 18,138 | 3.3 | 48 |
| Arizona | 259 | 108,669 | 23.8 | 18 |
| Arkansas | 27 | 62,326 | 4.3 | 45 |
| California | 3,349 | 766,009 | 43.7 | 8 |
| Colorado | 340 | 127,419 | 26.7 | 16 |
| Connecticut | 505 | 92,702 | 54.5 | 3 |
| Delaware | 249 | 22,249 | 111.9 | 1 |
| Florida | 496 | 417,522 | 11.9 | 29 |
| Georgia | 292 | 191,279 | 15.3 | 26 |
| Hawaii | 15 | 29,991 | 5.0 | 41 |
| Idaho | 39 | 35,563 | 11.0 | 31 |
| Illinois | 1,493 | 302,579 | 49.3 | 5 |
| Indiana | 275 | 146,241 | 18.8 | 23 |
| Iowa | 65 | 80,608 | 8.1 | 36 |
| Kansas | 32 | 73,924 | 4.3 | 46 |
| Kentucky | 59 | 89,029 | 6.6 | 37 |
| Louisiana | 83 | 100,770 | 8.2 | 35 |
| Maine | 21 | 37,964 | 5.5 | 40 |
| Maryland | 475 | 126,001 | 37.7 | 10 |
| Massachusetts | 882 | 166,986 | 52.8 | 4 |
| Michigan | 685 | 235,308 | 29.1 | 15 |
| Minnesota | 603 | 133,002 | 45.3 | 7 |
| Mississippi | 11 | 59,347 | 1.9 | 50 |
| Missouri | 289 | 143,418 | 20.2 | 21 |
| Montana | 15 | 30,757 | 4.9 | 43 |
| Nebraska | 31 | 48,588 | 6.4 | 38 |
| Nevada | 41 | 42,343 | 9.7 | 33 |
| New Hampshire | 89 | 36,692 | 24.3 | 17 |
| New Jersey | 991 | 229,349 | 43.2 | 9 |
| New Mexico | 66 | 42,477 | 15.5 | 25 |
| New York | 2,263 | 478,480 | 47.3 | 6 |
| North Carolina | 339 | 197,488 | 17.2 | 24 |
| North Dakota | 10 | 20,439 | 4.9 | 42 |
| Ohio | 868 | 270,540 | 32.1 | 12 |
| Oklahoma | 123 | 84,645 | 14.5 | 28 |
| Oregon | 186 | 98,564 | 18.9 | 22 |
| Pennsylvania | 987 | 292,118 | 33.8 | 11 |
| Rhode Island | 32 | 28,164 | 11.4 | 30 |
| South Carolina | 96 | 93,926 | 10.2 | 32 |
| South Dakota | 11 | 23,486 | 4.7 | 44 |
| Tennessee | 123 | 130,952 | 9.4 | 34 |
| Texas | 1,401 | 459,024 | 30.5 | 13 |
| Utah | 148 | 50,653 | 29.2 | 14 |
| Vermont | 32 | 21,235 | 15.1 | 27 |
| Virginia | 1,176 | 170,654 | 68.9 | 2 |
| Washington | 343 | 159,684 | 21.5 | 19 |
| West Virginia | 12 | 41,625 | 2.9 | 49 |
| Wisconsin | 292 | 138,427 | 21.1 | 20 |
| Wyoming | 6 | 17,680 | 3.4 | 47 |
| Distr ict of Columbia | 1,357 | 19,554 | 694.0 | |
| Puerto Rico | 1 | 42,463 | 0.2 | |

## Source of Data

Data for the number of patent attorneys or agents registered to practice before the Patent and Trademark Office was obtained in electronic format from the U.S. Patent and Trademark Office. The data can be downloaded at <http://www.uspto.gov/web/offices/dcom/olia/oed/roster/index.html>.

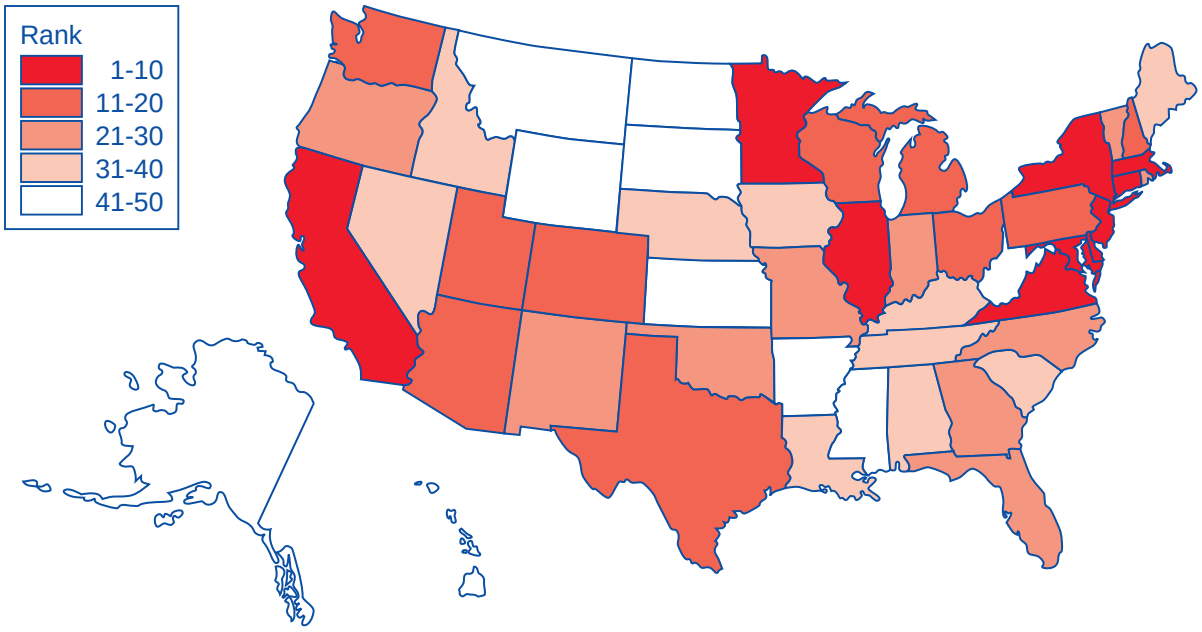
### *Patent Attorneys and Agents:*

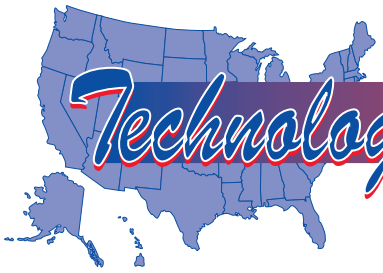
U.S. Patent and Trademark Office. (1999, September 2). *Patent Attorneys and Agents Registered to Practice Before the PTO.* <ftp://ftp.uspto.gov/pub/attorney/attorney.zip> (1999, September 2),

### *Establishments:*

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997.* (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico.* (CBP/97-53). Washington, DC: U.S. Government Printing Office.





# Technology Intensive Establishments

## Definition

This metric refers to the percentage of the total number of establishments within a state that fall into one of the 28 3-digit SIC codes included in the Bureau of Labor Statistics' definition of high-technology industries. (See page A-3 for a listing of SIC codes.) These SIC codes represent the industries with the highest percentages of workers engaged in some form of R&D activity. The percent of establishments in technology intensive SIC codes was calculated by dividing the number of establishments in the state that were classified into one of the 28 three-digit technology intensive SIC codes by the total number of establishments in that state.

## Relevance

The percentage of a state's business base that is classified as high-technology or technology intensive provides a measure of the extent to which the state's business base is poised to capitalize on new technology. Technology intensive industries include both manufacturing and service industries where technology is rapidly evolving. Raw materials and materials processing industries are not included in the technology intensive group of SIC codes. As the national economy shifts toward value-added products and away from natural resources, the states with the highest percentage of technology intensive business establishments will be best poised to take advantage of this shift.

In 1996, there were 336,795 establishments in the 50 states that were classified by the 28 technology intensive SIC codes. This represents 5.0% of the 6,719,087 total establishments in all 50 states in 1996. The median percentage of technology intensive establishments out of all establishments in the 50 states was 4.4%.

## Data Considerations and Limitations

Not all establishments that are identified by a single SIC code will employ technology to the same degree. Some may be very technically sophisticated while others may not have changed their mode of operation for many years. The data do not currently exist to perform this analysis on an establishment by establishment basis. Therefore, although SIC code classifications represent only a crude approximation of technical sophistication, they are the best data available at this time. Certainly, there are establishments in other SIC codes that are technology intensive, and there are also some establishments in these 28 SIC codes that are not technology intensive. However, these 28 SIC codes are thought to contain the highest percentage of companies that are technology intensive.

**Percent of Establishments in Technology Intensive SIC Codes: 1996**

| State | Estab. in Tech. Inten. SICs | Estab. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 3,429 | 98,172 | 3.5% | 39 |
| Alaska | 695 | 17,645 | 3.9% | 31 |
| Arizona | 5,778 | 104,186 | 5.5% | 13 |
| Arkansas | 1,763 | 61,335 | 2.9% | 46 |
| California | 46,529 | 750,478 | 6.2% | 8 |
| Colorado | 8,722 | 122,454 | 7.1% | 2 |
| Connecticut | 5,700 | 91,925 | 6.2% | 7 |
| Delaware | 1,001 | 21,578 | 4.6% | 22 |
| Florid a | 19,903 | 407,357 | 4.9% | 18 |
| Georgia | 9,536 | 184,380 | 5.2% | 15 |
| Hawaii | 1,131 | 29,967 | 3.8% | 35 |
| Idaho | 1,133 | 34,335 | 3.3% | 42 |
| Illinois | 16,899 | 297,386 | 5.7% | 11 |
| Indiana | 5,446 | 143,507 | 3.8% | 34 |
| Iowa | 2,047 | 79,348 | 2.6% | 48 |
| Kansas | 3,025 | 72,017 | 4.2% | 28 |
| Kentucky | 2,824 | 86,884 | 3.3% | 43 |
| Louisiana | 3,921 | 98,227 | 4.0% | 30 |
| Maine | 1,300 | 36,931 | 3.5% | 38 |
| Maryland | 7,998 | 123,913 | 6.5% | 5 |
| Massachusetts | 11,668 | 163,305 | 7.1% | 1 |
| Michigan | 10,339 | 231,748 | 4.5% | 25 |
| Minnesota | 7,350 | 129,018 | 5.7% | 9 |
| Mississippi | 1,578 | 58,106 | 2.7% | 47 |
| Missouri | 5,435 | 142,078 | 3.8% | 33 |
| Montana | 1,028 | 30,046 | 3.4% | 41 |
| Nebraska | 1,450 | 47,607 | 3.0% | 45 |
| Nevada | 2,115 | 39,466 | 5.4% | 14 |
| New Hampshire | 2,340 | 35,561 | 6.6% | 4 |
| New Jersey | 15,221 | 225,102 | 6.8% | 3 |
| New Mexico | 1,991 | 41,573 | 4.8% | 19 |
| New York | 22,139 | 471,535 | 4.7% | 21 |
| North Carolina | 7,656 | 187,941 | 4.1% | 29 |
| North Dakota | 484 | 20,439 | 2.4% | 50 |
| Ohio | 12,016 | 266,927 | 4.5% | 24 |
| Oklahoma | 4,159 | 82,827 | 5.0% | 16 |
| Oregon | 4,504 | 95,870 | 4.7% | 20 |
| Pennsylvania | 12,636 | 287,013 | 4.4% | 26 |
| Rhode Island | 1,263 | 27,995 | 4.5% | 23 |
| South Carolina | 3,113 | 90,322 | 3.4% | 40 |
| South Dakota | 573 | 23,105 | 2.5% | 49 |
| Tennessee | 4,667 | 127,607 | 3.7% | 37 |
| Texas | 25,383 | 447,534 | 5.7% | 12 |
| Utah | 2,738 | 48,093 | 5.7% | 10 |
| Vermont | 910 | 20,910 | 4.4% | 27 |
| Virginia | 10,650 | 165,545 | 6.4% | 6 |
| Washington | 7,650 | 155,526 | 4.9% | 17 |
| West Virginia | 1,274 | 41,079 | 3.1% | 44 |
| Wisconsi n | 5,007 | 135,623 | 3.7% | 36 |
| Wyoming | 678 | 17,561 | 3.9% | 32 |
| District of Columbia | 2,186 | 19,454 | 11.2% | |
| Puerto Rico | 1,388 | 40,514 | 3.4% | |

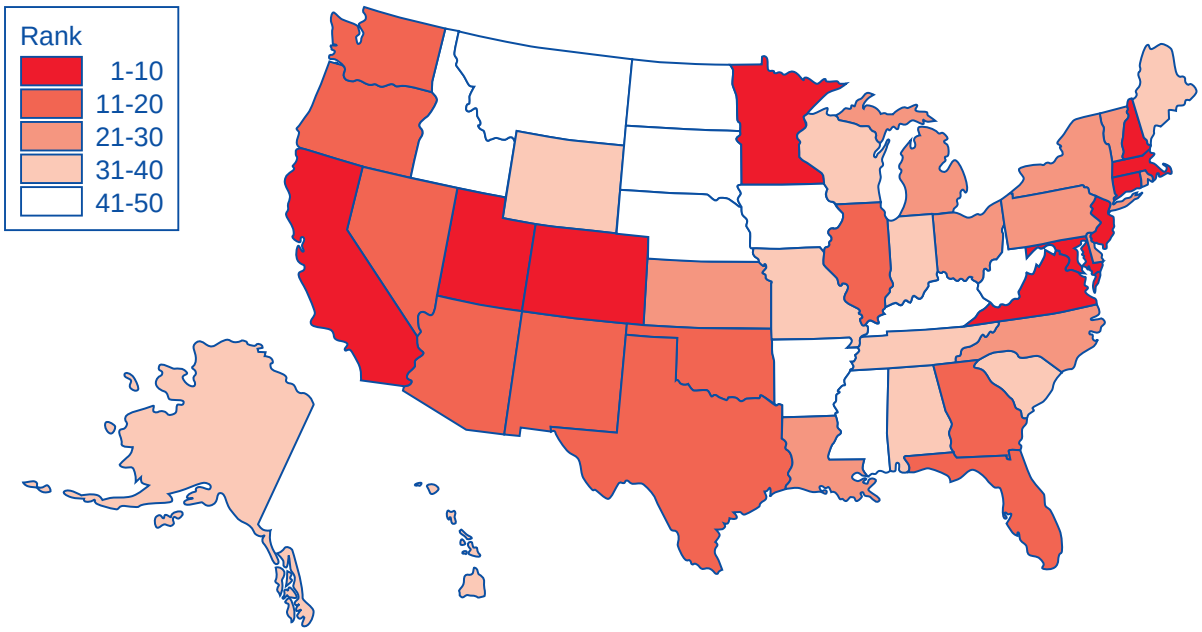
## Source of Data

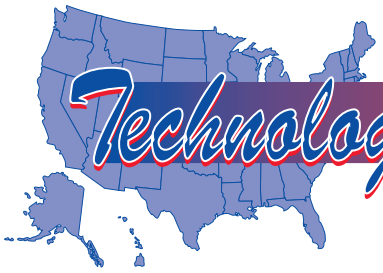
Data on the total number of establishments and the number of establishments in the 28 3-digit SICs were obtained from *County Business Patterns, 1995 and 1996* on CD-ROM. Data for Puerto Rico were obtained from the U.S. Census Bureau, *County Business Patterns, 1996 - Puerto Rico*, published by the U.S. Government Printing Office.

***Establishments (in all SIC Codes and in Technology Intensive SIC Codes):***

U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996* [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.





# Technology Intensive Employment

## Definition

The percent of a state's employment in technology intensive industries is found by dividing the employment in establishments classified by the 28 SIC codes identified by the Bureau of Labor Statistics (BLS) as high-technology by the total employment within the state. (See page A-3 for a listing of SIC codes.)

## Relevance

Like other metrics in this section, the percent of employment in technology intensive establishments helps to assess the technical orientation of the business base in the state. Also, the percentage of technology employment in an industrial sector can be compared to the percentage of establishments in that sector that are defined as being in advanced technology. This comparison indicates if advanced technology establishments employ more people than the average establishment. Economic development organizations can use this measure to generate information regarding the relative importance of technology to the mix of businesses in their state.

In 1996, there were 8,238,385 employees in the 50 states that were working in establishments classified by the 28 technology intensive SIC codes. This represents 8.1% of the 101,811,841 total employees in all 50 states in 1996. The median percentage of total employment in technology intensive establishments in the 50 states was 7.2%.

## Data Considerations and Limitations

The U.S. Census Bureau provided this data from a special tabulation of employment counts by state for the aggregate of the SIC codes corresponding to technology intensive industries. It was necessary to run a special tabulation because the data pertaining to some SIC codes were suppressed for confidentiality reasons in County Business Patterns, 1996.

Data are suppressed when it will reveal establishment specific employment or payroll data, thereby violating the non-disclosure agreement between the establishment and the U.S. Census Bureau. This situation occurs

when there are only a few businesses in a particular industry within the state or when the industry is dominated by a few large companies.

**Percent of Employment in Technology Intensive SIC Codes: 1996**

| State | Emp. in Tech.Inten. SICs | Emp. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 101,350 | 1,568,825 | 6.5% | 29 |
| Alaska | 9,399 | 183,484 | 5.1% | 38 |
| Arizona | 144,685 | 1,599,496 | 9.0% | 10 |
| Arkansas | 49,931 | 911,902 | 5.5% | 36 |
| California | 1,131,918 | 11,133,181 | 10.2% | 7 |
| Colorado | 155,860 | 1,602,064 | 9.7% | 8 |
| Connecticut | 151,688 | 1,433,673 | 10.6% | 3 |
| Delaware | 24,537 | 333,037 | 7.4% | 21 |
| Florida | 312,574 | 5,357,978 | 5.8% | 34 |
| Georgia | 195,922 | 3,037,062 | 6.5% | 30 |
| Hawaii | 11,200 | 424,116 | 2.6% | 45 |
| Idaho | 34,247 | 393,699 | 8.7% | 15 |
| Illinois | | 4,978,371 | | |
| Indiana | 213,795 | 2,433,340 | 8.8% | 13 |
| Iowa | 58,716 | 1,163,559 | 5.0% | 39 |
| Kansas | 87,309 | 1,011,678 | 8.6% | 16 |
| Kentucky | 96,307 | 1,370,658 | 7.0% | 24 |
| Louisiana | 93,485 | 1,498,129 | 6.2% | 32 |
| Maine | 19,209 | 437,539 | 4.4% | 40 |
| Maryland | 170,692 | 1,831,503 | 9.3% | 9 |
| Massachusetts | 329,980 | 2,779,128 | 11.9% | 1 |
| Michigan | 384,998 | 3,758,060 | 10.2% | 5 |
| Minnesota | 158,821 | 2,135,427 | 7.4% | 20 |
| Mississippi | 45,644 | 883,297 | 5.2% | 37 |
| Missouri | 160,076 | 2,210,682 | 7.2% | 23 |
| Montana | 8,164 | 265,552 | 3.1% | 44 |
| Nebraska | 43,618 | 693,603 | 6.3% | 31 |
| Nevada | 24,876 | 718,708 | 3.5% | 43 |
| New Hampshire | 49,235 | 482,173 | 10.2% | 6 |
| New Jersey | 279,991 | 3,208,801 | 8.7% | 14 |
| New Mexico | 45,676 | 519,801 | 8.8% | 12 |
| New York | 470,297 | 6,791,036 | 6.9% | 25 |
| North Carolina | 234,154 | 3,059,041 | 7.7% | 19 |
| North Dakota | 8,206 | 235,125 | 3.5% | 42 |
| Ohio | | 4,640,371 | | |
| Oklahoma | 73,846 | 1,084,717 | 6.8% | 27 |
| Oregon | 91,005 | 1,237,615 | 7.4% | 22 |
| Pennsylvania | | 4,729,704 | | |
| Rhode Island | 26,089 | 381,463 | 6.8% | 26 |
| South Carolina | 120,892 | 1,433,051 | 8.4% | 17 |
| South Dakota | 17,968 | 272,216 | 6.6% | 28 |
| Tennessee | | 2,193,276 | | |
| Texas | | 6,952,962 | | |
| Utah | 70,491 | 782,154 | 9.0% | 11 |
| Vermont | 17,936 | 225,169 | 8.0% | 18 |
| Virginia | 269,922 | 2,523,741 | 10.7% | 2 |
| Washington | 211,211 | 2,003,760 | 10.5% | 4 |
| West Virginia | 31,204 | 529,250 | 5.9% | 33 |
| Wisconsin | 128,153 | 2,220,990 | 5.8% | 35 |
| Wyoming | 6,399 | 157,674 | 4.1% | 41 |
| District of Columbia | 38,030 | 387,023 | 9.8% | |
| Puerto Rico | N/A | 650,241 | N/A | |

## Source of Data

The U.S. Census Bureau furnished the data for this metric from a special tabulation based upon the 6.7 million employer-establishments contained in the Standard Statistical Establishment List. This is the same database that was used to generate *County Business Patterns, 1996.* Arrangements for special tabulations can be made by contacting Trey Cole at the U.S. Census Bureau, Company Statistics Division in Washington, D.C. at (301) 457-3320.

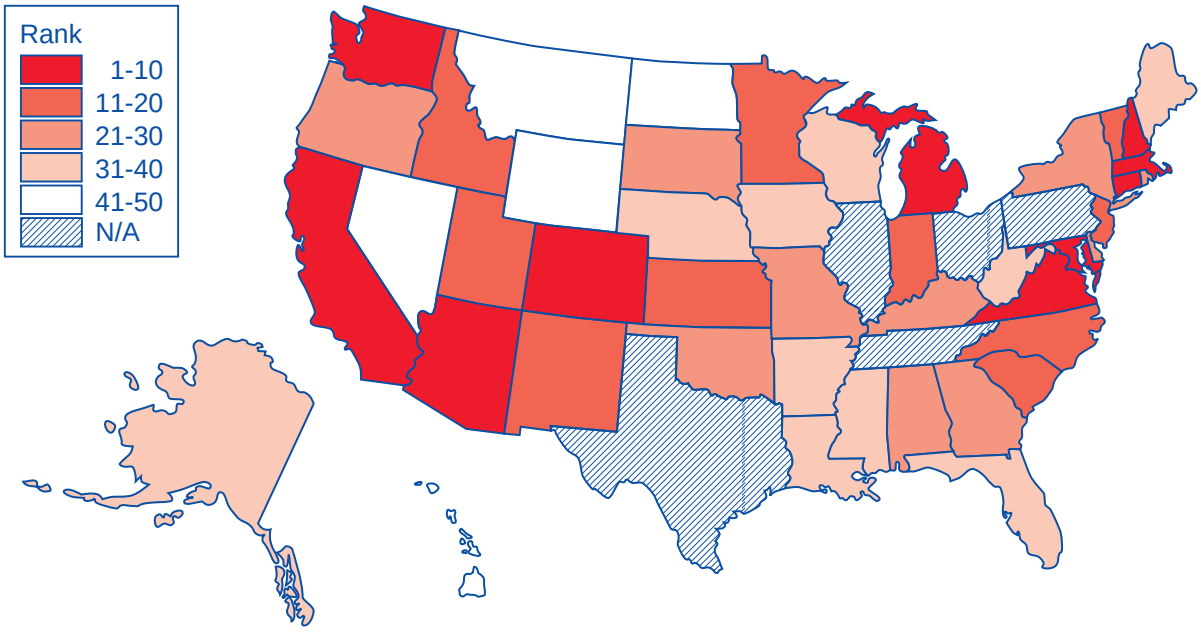
### *Employment in Technology Intensive SIC Codes:*

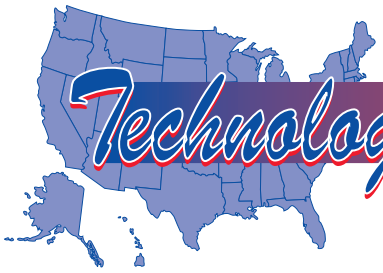
Arrangements for special tabulations of the Standard Statistical Establishment List were made by Trey Cole, Company Statistics Division, U.S. Census Bureau at (301) 457-3320 on November 23, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

### *Employment:*

U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996*. [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.





# Technology Intensive Payroll

## Definition

The percent of technology intensive payroll within a state is calculated by dividing the payroll for the 28 SIC codes identified as high-technology or technology intensive by the Bureau of Labor Statistics by the total payroll for all industries within the state. (See page A-3 for a listing of SIC codes.)

## Relevance

This metric is useful in assessing the relative compensation levels of jobs in advanced technology industries. It is helpful to view this metric in conjunction with the previous metric, the percent of employment in technology intensive industries. If advanced technology industries are creating a high percentage of well-paying jobs, the percent of a state's payroll from those industries will be higher than the percent of employment in those industries. If a state is attracting or growing companies in advanced technology industries without significantly growing the payroll, it is likely that higher paying jobs are not being created, at which point the state might wish to reassess its economic development strategy.

In 1996, there was $370 million in payroll in the 50 states in establishments classified by the 28 technology intensive SIC codes. This represents 13.0% of the $2.83 billion in total payroll for all 50 states in 1996. The median percentage of total payroll in technology intensive establishments in the 50 states was 11.3%.

## Data Considerations and Limitations

The U.S. Census Bureau provided this data from a special tabulation of payroll counts by state for the aggregate of the SIC codes corresponding to technology intensive industries. It was necessary to run a special tabulation because the data pertaining to some SIC codes were suppressed for confidentiality reasons in County Business Patterns, 1996.

Data are suppressed when it will reveal establishment specific employment or payroll data, thereby violating the non-disclosure agreement between the establishment and the U.S. Census Bureau. This situation occurs when there are only a few businesses in a particular industry within the state or when the industry is dominated by a few large companies.

### Percent of Payroll in Technology Intensive SIC Codes: 1996

| State | Payroll in Tech. Inten. SICs (1,000s) | Payroll (1,000s) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | $3,890,677 | $36,708,111 | 10.6% | 28 |
| Alaska | $644,063 | $6,093,911 | 10.6% | 29 |
| Arizona | $6,090,289 | $40,613,608 | 15.0% | 12 |
| Arkansas | $1,476,304 | $19,295,966 | 7.7% | 38 |
| California | $59,897,667 | $345,025,553 | 17.4% | 4 |
| Colorado | $7,114,870 | $43,756,797 | 16.3% | 7 |
| Connecticut | $7,549,849 | $49,428,999 | 15.3% | 10 |
| Delaware | $1,204,814 | $10,262,278 | 11.7% | 20 |
| Florida | $11,676,407 | $127,961,034 | 9.1% | 34 |
| Georgia | $8,412,799 | $80,380,428 | 10.5% | 30 |
| Hawaii | $431,030 | $10,954,149 | 3.9% | 45 |
| Idaho | $1,524,325 | $9,231,186 | 16.5% | 5 |
| Illinois | | $151,949,094 | | |
| Indiana | $8,481,537 | $62,695,062 | 13.5% | 16 |
| Iowa | $2,026,685 | $26,469,307 | 7.7% | 37 |
| Kansas | $3,725,116 | $24,613,884 | 15.1% | 11 |
| Kentucky | $3,631,540 | $32,118,385 | 11.3% | 23 |
| Louisiana | $4,427,105 | $35,602,741 | 12.4% | 19 |
| Maine | $635,094 | $10,282,379 | 6.2% | 41 |
| Maryland | $7,700,570 | $52,257,459 | 14.7% | 13 |
| Massachusetts | $16,646,383 | $89,250,468 | 18.7% | 1 |
| Michigan | $18,673,933 | $113,346,060 | 16.5% | 6 |
| Minnesota | $6,494,757 | $59,625,058 | 10.9% | 27 |
| Mississippi | $1,333,637 | $18,407,432 | 7.2% | 39 |
| Missouri | $6,359,809 | $56,838,981 | 11.2% | 24 |
| Montana | $263,248 | $5,276,886 | 5.0% | 44 |
| Nebraska | $1,444,860 | $15,610,029 | 9.3% | 33 |
| Nevada | $1,027,814 | $18,426,847 | 5.6% | 42 |
| New Hampshire | $2,051,708 | $12,733,577 | 16.1% | 8 |
| New Jersey | $14,096,335 | $109,497,905 | 12.9% | 18 |
| New Mexico | $1,791,503 | $11,647,427 | 15.4% | 9 |
| New York | $21,077,658 | $239,785,130 | 8.8% | 35 |
| North Carolina | $8,310,374 | $75,058,275 | 11.1% | 25 |
| North Dakota | $260,381 | $4,768,269 | 5.5% | 43 |
| Ohio | | $124,151,870 | | |
| Oklahoma | $2,873,635 | $24,817,408 | 11.6% | 22 |
| Oregon | $3,792,179 | $32,540,889 | 11.7% | 21 |
| Pennsylvania | | $129,588,023 | | |
| Rhode Island | $977,818 | $9,807,526 | 10.0% | 32 |
| South Carolina | $4,608,833 | $33,414,252 | 13.8% | 15 |
| South Dakota | $605,592 | $5,478,377 | 11.1% | 26 |
| Tennessee | | $55,040,557 | | |
| Texas | | $189,278,001 | | |
| Utah | $2,638,154 | $18,694,819 | 14.1% | 14 |
| Vermont | $686,971 | $5,162,935 | 13.3% | 17 |
| Virginia | $12,635,725 | $67,894,416 | 18.6% | 2 |
| Washington | $10,786,082 | $59,442,898 | 18.1% | 3 |
| West Virginia | $1,263,054 | $12,321,334 | 10.3% | 31 |
| Wisconsin | $4,812,907 | $56,784,133 | 8.5% | 36 |
| Wyoming | $254,649 | $3,567,296 | 7.1% | 40 |
| District of Columbia | $1,948,869 | $14,997,969 | 13.0% | |
| Puerto Ric o | N/A | $10,464,786 | N/A | |

## Source of Data

The U.S. Census Bureau furnished the data for this metric from a special tabulation based upon the 6.7 million employer-establishments contained in the Standard Statistical Establishment List. This is the same database that was used to generate *County Business Patterns, 1996.* Arrangements for special tabulations can be made by contacting Trey Cole at the U.S. Census Bureau, Company Statistics Division in Washington, D.C. at (301) 457-3320.

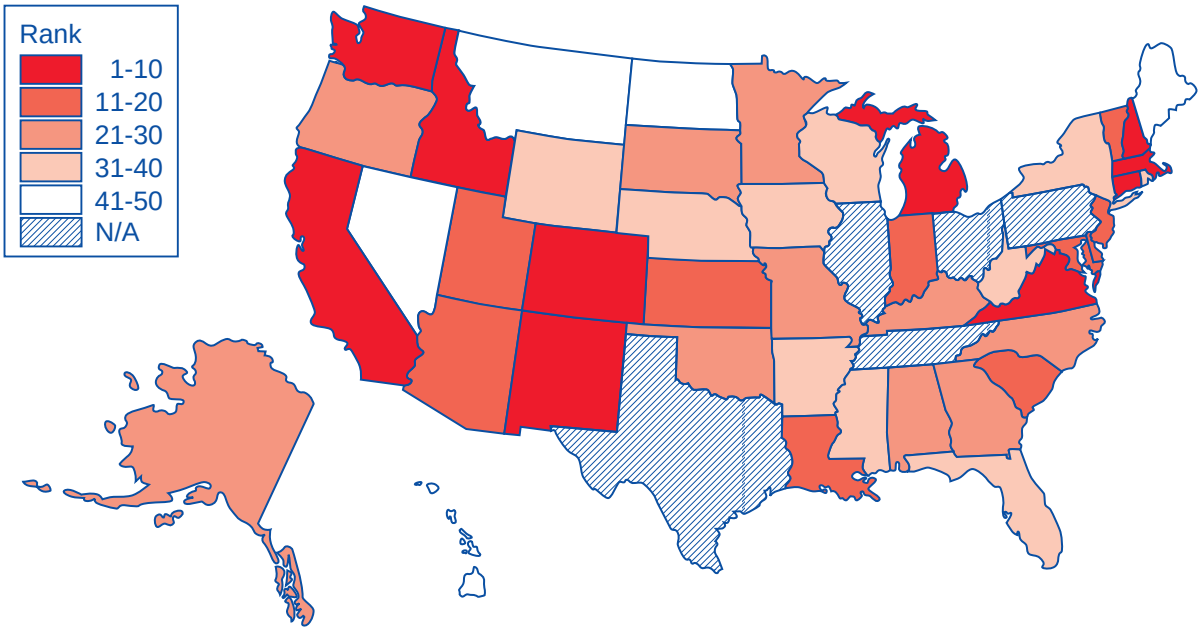
### *Payroll in Technology Intensive SIC Codes:*

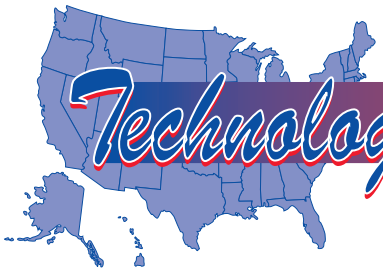
Arrangements for special tabulations of the Standard Statistical Establishment List were made by Trey Cole, Company Statistics Division, U.S. Census Bureau at (301) 457-3320 on November 23, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

### *Payroll:*

U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996.* [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.





# Technology Establishment Births

## Definition

Establishment births are identified as employer-establishments that did not exist according to the records of the Standard Statistical Establishment List housed at the U.S. Census Bureau during 1995 and came into existence at one geographic location and were placed on record at some point in time during 1996. The percent of establishment births in advanced technology industries was determined by dividing the total number of establishment births matching the Bureau of Labor Statistics (BLS) technology intensive SIC codes by the total number of establishment births in all industries within the state. (See page A-3 for a listing of SIC codes.)

## Relevance

This metric provides an indication of the degree to which establishment births are concentrated in technology intensive SIC codes. States with high percentages of advanced technology establishment births are making progress in shifting their business base toward the high-technology sector.

The number of advanced technology establishment births and the number of total establishment births also provide useful information when they are normalized to the number of establishments within a state. The number of establishment births per 10,000 business establishments indicates how supportive the state's business climate is to the formation of new businesses and how strong the sense of entrepreneurship is in that state. Likewise, the number of advanced technology establishment births per 10,000 business establishments indicates how supportive the state's business climate is to the formation of new technology intensive businesses.

For the 50 states, there were 46,919 establishment births in the 28 technology intensive SIC codes out of 695,563 total births or 6.7%. The median percentage of establishment births in technology intensive SIC codes for the 50 states was 5.7%.

## Data Considerations and Limitations

The U.S. Census Bureau defines an establishment as a single physical location at which business is conducted. An establishment is not necessarily identical to a company, because a company can consist of one or more establishments. For an establishment to be counted as a

### Percent of Establishment Births in Technology Intensive SIC Codes: 1996

| State | Estab. Births in Tech. Inten. SICs | Estab. Births | Estab. | Metric Value | RANK |
|---|---|---|---|---|---|
| Alabama | 505 | 10,465 | 98,172 | 4.8% | 38 |
| Alaska | 93 | 1,815 | 17,645 | 5.1% | 31 |
| Arizona | 919 | 12,947 | 104,186 | 7.1% | 11 |
| Arkansas | 201 | 6,446 | 61,335 | 3.1% | 49 |
| California | 6,575 | 83,044 | 750,478 | 7.9% | 10 |
| Colorado | 1,342 | 14,547 | 122,454 | 9.2% | 6 |
| Connecticut | 691 | 7,941 | 91,925 | 8.7% | 8 |
| Delaware | 145 | 2,257 | 21,578 | 6.4% | 17 |
| Florida | 3,143 | 49,392 | 407,357 | 6.4% | 20 |
| Georgia | 1,470 | 22,207 | 184,380 | 6.6% | 15 |
| Hawaii | 138 | 2,812 | 29,967 | 4.9% | 35 |
| Idaho | 178 | 3,973 | 34,335 | 4.5% | 42 |
| Illinois | 2,468 | 28,403 | 297,386 | 8.7% | 9 |
| Indiana | 666 | 13,451 | 143,507 | 5.0% | 33 |
| Iowa | 281 | 6,628 | 79,348 | 4.2% | 45 |
| Kansas | 381 | 6,897 | 72,017 | 5.5% | 27 |
| Kentucky | 382 | 8,556 | 86,884 | 4.5% | 43 |
| Louisiana | 461 | 9,718 | 98,227 | 4.7% | 40 |
| Maine | 184 | 3,724 | 36,931 | 4.9% | 34 |
| Maryland | 1,087 | 12,235 | 123,913 | 8.9% | 7 |
| Massachusetts | 1,527 | 15,118 | 163,305 | 10.1% | 1 |
| Michigan | 1,328 | 21,843 | 231,748 | 6.1% | 24 |
| Minnesota | 1,122 | 11,939 | 129,018 | 9.4% | 3 |
| Mississippi | 214 | 6,115 | 58,106 | 3.5% | 47 |
| Missouri | 713 | 14,191 | 142,078 | 5.0% | 32 |
| Montana | 149 | 3,092 | 30,046 | 4.8% | 39 |
| Nebraska | 178 | 4,129 | 47,607 | 4.3% | 44 |
| Nevada | 379 | 5,414 | 39,466 | 7.0% | 13 |
| New Hampshire | 344 | 3,705 | 35,561 | 9.3% | 4 |
| New Jersey | 2,157 | 22,743 | 225,102 | 9.5% | 2 |
| New Mexico | 253 | 4,703 | 41,573 | 5.4% | 30 |
| New York | 3,021 | 47,244 | 471,535 | 6.4% | 18 |
| North Carolina | 1,074 | 19,674 | 187,941 | 5.5% | 28 |
| North Dakota | 48 | 1,619 | 20,439 | 3.0% | 50 |
| Ohio | 1,483 | 23,301 | 266,927 | 6.4% | 19 |
| Oklahoma | 486 | 8,614 | 82,827 | 5.6% | 26 |
| Oregon | 611 | 10,666 | 95,870 | 5.7% | 25 |
| Pennsylvania | 1,529 | 24,265 | 287,013 | 6.3% | 21 |
| Rhode Island | 168 | 2,611 | 27,995 | 6.4% | 16 |
| South Carolina | 398 | 9,909 | 90,322 | 4.0% | 46 |
| South Dakota | 94 | 2,083 | 23,105 | 4.5% | 41 |
| Tennessee | 665 | 13,600 | 127,607 | 4.9% | 37 |
| Texas | 3,617 | 51,361 | 447,534 | 7.0% | 12 |
| Utah | 423 | 6,126 | 48,093 | 6.9% | 14 |
| Vermont | 116 | 1,880 | 20,910 | 6.2% | 22 |
| Virginia | 1,553 | 16,830 | 165,545 | 9.2% | 5 |
| Washington | 1,116 | 18,115 | 155,526 | 6.2% | 23 |
| West Virginia | 127 | 3,782 | 41,079 | 3.4% | 48 |
| Wisconsin | 626 | 11,597 | 135,623 | 5.4% | 29 |
| Wyoming | 90 | 1,836 | 17,561 | 4.9% | 36 |
| District of Columbia | 264 | 1,894 | 19,454 | 13.9% | |
| Puerto Rico | N/A | N/A | 40,514 | N/A | |

birth during 1996 it must be a new operation at a new physical location, employing one or more full or part-time paid employees at that location. It must have also had an Employer Identification Number (EIN) assigned by the IRS. Only when an establishment, as defined above, did not exist in 1995 and did exist in 1996 is it counted as a birth.

## Source of Data

The U.S. Census Bureau furnished the data for this metric from a special tabulation based upon the 6.7 million employer-establishments contained in the Standard Statistical Establishment List. This is the same database that was used to generate *County Business Patterns, 1996*. Arrangements for special tabulations can be made by contacting Trey Cole at the U.S. Census Bureau, Company Statistics Division in Washington, D.C. at (301) 457-3320.

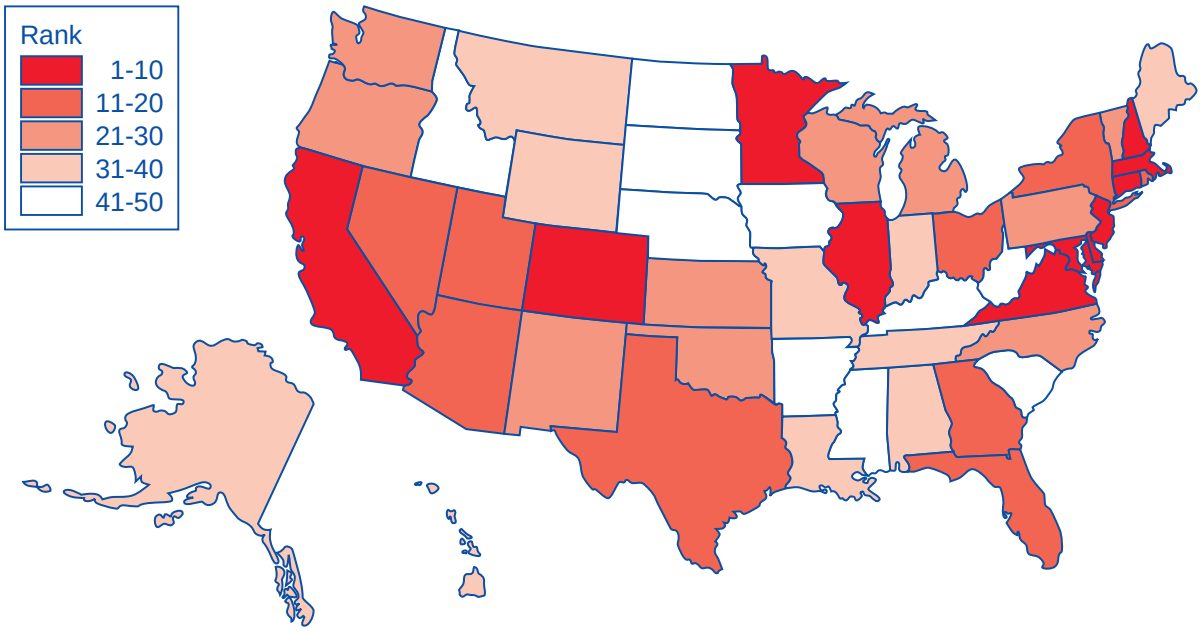
### *Establishment Births (in all SIC Codes and in Technology Intensive SIC Codes):*

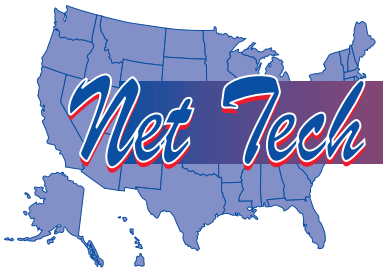
Arrangements for special tabulations of the Standard Statistical Establishment List were made by Trey Cole, Company Statistics Division, U.S. Census Bureau at (301) 457-3320 on November 23, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

### *Establishments:*

U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996* [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.





# Net Tech Intensive Business Formations

## Definition

In this metric, net technology intensive establishment formations are equal to the number of establishments, classified in one of the 28 SIC codes from the Bureau of Labor Statistics (BLS) list, that began operations in 1996 minus the number of establishments in the same set of SIC codes that ceased operations during the same year. (See page A-3 for a listing of SIC codes.) The net technology intensive establishment formations were normalized to the total number of business establishments in the state to eliminate the scale sensitivity.

## Relevance

This metric provides a measure of the state's ability to create and sustain formation of new technology intensive businesses. Net formation of technology intensive establishments was positive for all fifty states indicating that, in 1996, technology intensive establishments were being formed faster than they were dying across the nation. The ratio of net establishment formations in technology intensive SICs to the number of establishments in the state provides a measure of the progress that a state is making in adding to its technology intensive sector.

For the 50 states, there were 46,919 establishment births and 31,112 establishment deaths in the 28 technology intensive SIC codes for a net of 15,807. This equates to a net formation of 23.5 technology intensive establishments per 10,000 business establishments. The median net number of technology intensive establishment formations per 10,000 business establishments in the 50 states was 21.9.

### Net Formations of Technology Intensive Establishments per 10,000 Business Establishments: 1996

| State | Estab. Births in Tech. Inten. SICs | Estab. Deaths in Tech. Inten. SICs | Net Formations | Estab. | Metric Value | RANK |
|---|---|---|---|---|---|---|
| Alabama | 505 | 273 | 232 | 98,172 | 23.6 | 21 |
| Alaska | 93 | 68 | 25 | 17,645 | 14.2 | 39 |
| Arizona | 919 | 555 | 364 | 104,186 | 34.9 | 5 |
| Arkansas | 201 | 146 | 55 | 61,335 | 9.0 | 48 |
| California | 6,575 | 4,728 | 1,847 | 750,478 | 24.6 | 15 |
| Colorado | 1,342 | 874 | 468 | 122,454 | 38.2 | 3 |
| Connecticut | 691 | 547 | 144 | 91,925 | 15.7 | 37 |
| Delaware | 145 | 108 | 37 | 21,578 | 17.1 | 31 |
| Florida | 3,143 | 2,144 | 999 | 407,357 | 24.5 | 16 |
| Georgia | 1,470 | 881 | 589 | 184,380 | 31.9 | 9 |
| Hawaii | 138 | 111 | 27 | 29,967 | 9.0 | 47 |
| Idaho | 178 | 96 | 82 | 34,335 | 23.9 | 20 |
| Illinois | 2,468 | 1,409 | 1,059 | 297,386 | 35.6 | 4 |
| Indiana | 666 | 465 | 201 | 143,507 | 14.0 | 40 |
| Iowa | 281 | 189 | 92 | 79,348 | 11.6 | 45 |
| Kansas | 381 | 255 | 126 | 72,017 | 17.5 | 30 |
| Kentucky | 382 | 216 | 166 | 86,884 | 19.1 | 28 |
| Louisiana | 461 | 334 | 127 | 98,227 | 12.9 | 42 |
| Maine | 184 | 98 | 86 | 36,931 | 23.3 | 23 |
| Maryland | 1,087 | 758 | 329 | 123,913 | 26.6 | 13 |
| Massachusetts | 1,527 | 984 | 543 | 163,305 | 33.3 | 7 |
| Michigan | 1,328 | 789 | 539 | 231,748 | 23.3 | 24 |
| Minnesota | 1,122 | 561 | 561 | 129,018 | 43.5 | 1 |
| Mississippi | 214 | 144 | 70 | 58,106 | 12.0 | 44 |
| Missouri | 713 | 475 | 238 | 142,078 | 16.8 | 34 |
| Montana | 149 | 79 | 70 | 30,046 | 23.3 | 22 |
| Nebraska | 178 | 131 | 47 | 47,607 | 9.9 | 46 |
| Nevada | 379 | 244 | 135 | 39,466 | 34.2 | 6 |
| New Hampshire | 344 | 199 | 145 | 35,561 | 40.8 | 2 |
| New Jersey | 2,157 | 1,431 | 726 | 225,102 | 32.3 | 8 |
| New Mexico | 253 | 189 | 64 | 41,573 | 15.4 | 38 |
| New York | 3,021 | 2,099 | 922 | 471,535 | 19.6 | 27 |
| North Carolina | 1,074 | 615 | 459 | 187,941 | 24.4 | 18 |
| North Dakota | 48 | 42 | 6 | 20,439 | 2.9 | 50 |
| Ohio | 1,483 | 981 | 502 | 266,927 | 18.8 | 29 |
| Oklahoma | 486 | 377 | 109 | 82,827 | 13.2 | 41 |
| Oregon | 611 | 399 | 212 | 95,870 | 22.1 | 25 |
| Pennsylvania | 1,529 | 1,040 | 489 | 287,013 | 17.0 | 32 |
| Rhode Island | 168 | 90 | 78 | 27,995 | 27.9 | 12 |
| South Carolina | 398 | 285 | 113 | 90,322 | 12.5 | 43 |
| South Dakota | 94 | 44 | 50 | 23,105 | 21.6 | 26 |
| Tennessee | 665 | 456 | 209 | 127,607 | 16.4 | 35 |
| Texas | 3,617 | 2,526 | 1,091 | 447,534 | 24.4 | 19 |
| Utah | 423 | 280 | 143 | 48,093 | 29.7 | 11 |
| Vermont | 116 | 82 | 34 | 20,910 | 16.3 | 36 |
| Virginia | 1,553 | 1,029 | 524 | 165,545 | 31.7 | 10 |
| Washington | 1,116 | 736 | 380 | 155,526 | 24.4 | 17 |
| West Virginia | 127 | 108 | 19 | 41,079 | 4.6 | 49 |
| Wisconsin | 626 | 398 | 228 | 135,623 | 16.8 | 33 |
| Wyoming | 90 | 44 | 46 | 17,561 | 26.2 | 14 |
| District of Columbia | 264 | 179 | 85 | 19,454 | 43.7 | |
| Puerto Rico | N/A | N/A | N/A | N/A | N/A | |

## Data Considerations and Limitations

The U.S. Census Bureau defines an establishment as a single physical location at which business is conducted. An establishment is not necessarily identical to a company because a company can consist of one or more establishments. For an establishment formation to be counted during 1996, a company must have begun conducting operations in 1996 at an entirely new physical location (not a relocation). Changes in company name, ownership, or address that occur during the year are not counted as formations because the new and old Employer Identification Numbers (EINs) are linked in the U.S. Census Bureau records. Similarly, for a death to be counted during 1996, the company must have been conducting operations at its location in 1995 with one or more full or part-time paid employees and ceased all operations at its location and not resumed any operations at any new physical location during 1996. It must have also had an EIN assigned by the IRS during 1995. Only when an establishment, as defined above, did exist in 1995 and did not exist in 1996 is it counted as a death.

Caution must be exercised in interpreting this metric. The data represent only the events from a single year and are subject to year-to-year variability. In states with only a small business base, small fluctuations can cause a dramatic shift in this metric's value.

## Source of Data

The U.S. Census Bureau furnished the data for this metric from a special tabulation based upon the 6.7 million employer-establishments contained in the Standard Statistical Establishment List. This is the same database that was used to generate *County Business Patterns, 1996*. Arrangements for special tabulations can be made by contacting Trey Cole at the U.S. Census Bureau, Company Statistics Division in Washington, D.C. at (301) 457-3320.

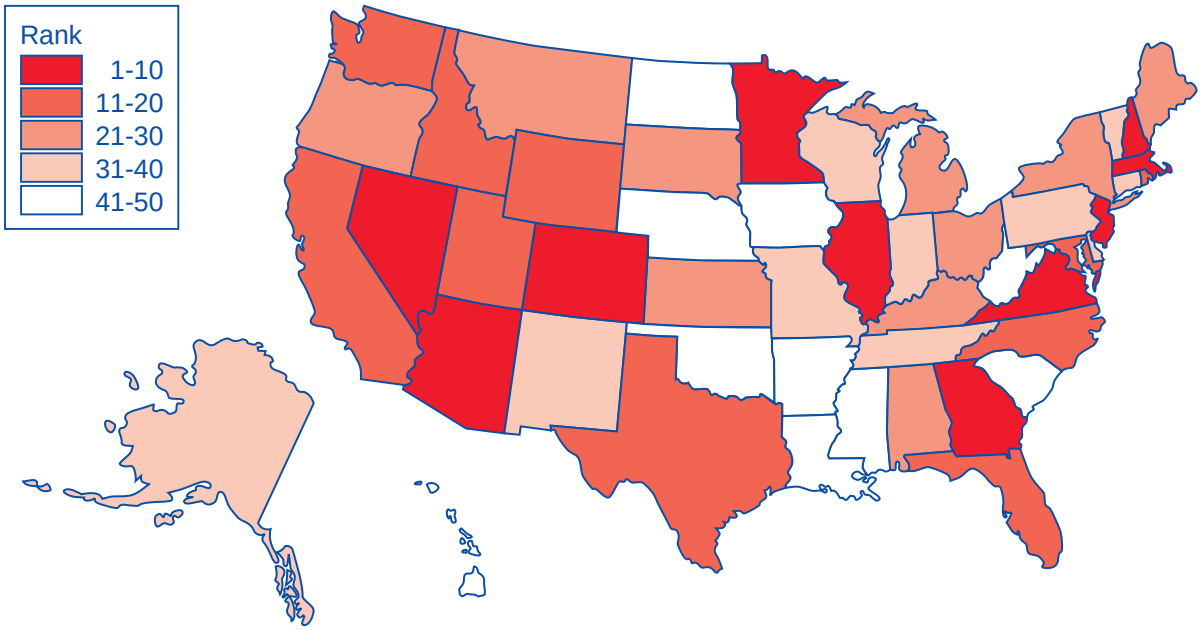
### *Births and Deaths of Technology Intensive Establishments:*

Arrangements for special tabulations of the Standard Statistical Establishment List were made by Trey Cole, Company Statistics Division, U.S. Census Bureau at (301) 457-3320 on November 23, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

### *Establishments:*

U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996* [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.



# US Patents

## Definition

This metric is based upon a count of the average number of U.S. patents of U.S. origin issued during the three-year period of 1996-8. The average number of U.S. patents was used to minimize year-to-year variability. Patents were classified according to the state of residence of the first-named inventor. The data were normalized to the number of businesses located within each state to facilitate state-to-state comparisons of the intensity of patent activity.

## Relevance

The level of patent activity is one measure of the amount of intellectual property being created within a state. Other types of intellectual property include trade secrets and know-how, but these sources are more difficult to measure.

For the 50 states, there were on average 76,591 patents issued per year from 1996 to 1998. This results in a national average of 111 patents per 10,000 business establishments. In the 50 states, the median number of patents issued per 10,000 business establishments was 75.

## Data Considerations and Limitations

These data are likely to contain a bias toward states that host the central R&D activities of large corporations with multiple operational sites or major government research centers. If an organization patents prolifically, the vast majority of its patents may be credited to the state where the majority of its researchers reside while the competitive advantage of the intellectual property created by those patents may be practiced and may create value elsewhere.

States with a high concentration of research universities may generate patents that are not reduced to commercial practice if the university does not have an active licensing program.

### Average Annual Number of U.S. Patents Issued per 10,000 Business Establishments: 1996-8

| State | Ave. Annual Patents | 1997 Estab. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 368 | 100,281 | 37 | 42 |
| Alaska | 62 | 18,138 | 34 | 43 |
| Arizona | 1,331 | 108,669 | 122 | 16 |
| Arkansas | 166 | 62,326 | 27 | 49 |
| California | 14,235 | 766,009 | 186 | 3 |
| Colorado | 1,527 | 127,419 | 120 | 17 |
| Connecticut | 1,800 | 92,702 | 194 | 1 |
| Delaware | 422 | 22,249 | 190 | 2 |
| Florida | 2,726 | 417,522 | 65 | 28 |
| Georgia | 1,248 | 191,279 | 65 | 29 |
| Hawaii | 97 | 29,991 | 32 | 44 |
| Idaho | 629 | 35,563 | 177 | 5 |
| Illinois | 3,860 | 302,579 | 128 | 14 |
| Indiana | 1,436 | 146,241 | 98 | 24 |
| Iowa | 551 | 80,608 | 68 | 27 |
| Kansas | 358 | 73,924 | 48 | 36 |
| Kentucky | 384 | 89,029 | 43 | 38 |
| Louisiana | 465 | 100,770 | 46 | 37 |
| Maine | 122 | 37,964 | 32 | 45 |
| Maryland | 1,348 | 126,001 | 107 | 22 |
| Massachusetts | 3,093 | 166,986 | 185 | 4 |
| Michigan | 3,454 | 235,308 | 147 | 9 |
| Minnesota | 2,279 | 133,002 | 171 | 6 |
| Mississippi | 183 | 59,347 | 31 | 47 |
| Missouri | 894 | 143,418 | 62 | 30 |
| Montana | 132 | 30,757 | 43 | 39 |
| Nebraska | 202 | 48,588 | 42 | 40 |
| Nevada | 264 | 42,343 | 62 | 31 |
| New Hampshire | 540 | 36,692 | 147 | 8 |
| New Jersey | 3,684 | 229,349 | 161 | 7 |
| New Mexico | 295 | 42,477 | 70 | 26 |
| New York | 6,117 | 478,480 | 128 | 12 |
| North Carolina | 1,599 | 197,488 | 81 | 25 |
| North Dakota | 64 | 20,439 | 31 | 46 |
| Ohio | 3,455 | 270,540 | 128 | 13 |
| Oklahoma | 512 | 84,645 | 61 | 32 |
| Oregon | 1,209 | 98,564 | 123 | 15 |
| Pennsylvania | 3,307 | 292,118 | 113 | 19 |
| Rhode Island | 317 | 28,164 | 113 | 20 |
| South Carolina | 566 | 93,926 | 60 | 34 |
| South Dakota | 53 | 23,486 | 23 | 50 |
| Tennessee | 792 | 130,952 | 60 | 33 |
| Texas | 4,980 | 459,024 | 108 | 21 |
| Utah | 667 | 50,653 | 132 | 11 |
| Vermont | 305 | 21,235 | 143 | 10 |
| Virginia | 1,016 | 170,654 | 60 | 35 |
| Washington | 1,613 | 159,684 | 101 | 23 |
| West Virginia | 172 | 41,625 | 41 | 41 |
| Wisconsin | 1,643 | 138,427 | 119 | 18 |
| Wyoming | 51 | 17,680 | 29 | 48 |
| District of Columbia | 62 | 19,554 | 32 | |
| Puerto Rico | 20 | 42,463 | 5 | |

## Source of Data

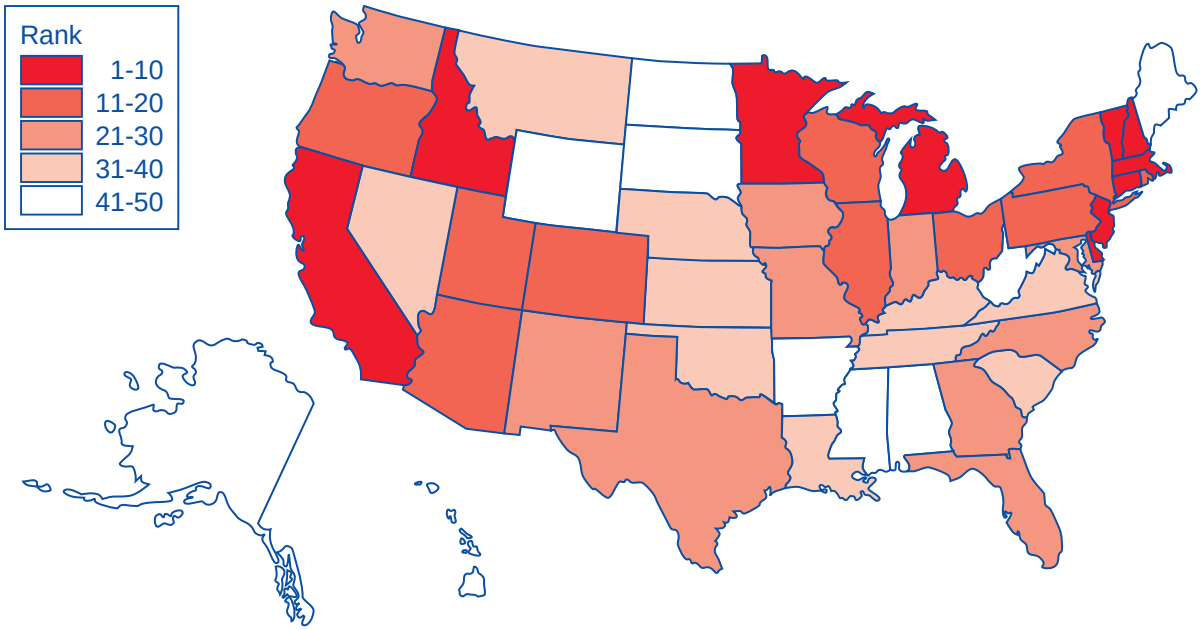
### *U.S. Patents Issued:*

U.S. Patent and Trademark Office, Office for Patent and Trademark Information/ TAF Program. (1999, March). *Patent Counts by Country/State and Year, All Patents, All Types, January 1, 1977 -- December 31,1998.* [1996-8 data were used in calculations]. <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_all.pdf> (1999, September 20).

### *Establishments:*

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997*. (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico*. (CBP/97-53). Washington, DC: U.S. Government Printing Office.



## Definition

Inc. publishes an annual list of 500 privately held companies that are ranked on their revenue growth over the last five years. To be included in this list, a company must apply to Inc. and must provide tax forms or financial statements prepared by an independent accountant showing its annual revenues during fiscal years 1994-8. Minimum sales in fiscal 1994 must be at least $200,000. Ranking is determined solely by net sales growth, and profitability is not a factor. Nonprofits are eligible to apply, but public companies are not.

From the Inc. list of 500 companies, the number of companies in each state was identified. This number was normalized by the number of business establishments in each state to correct for differences in the size of the business base of each state. The resulting metric, the number of Inc. 500 companies in 1999 per 10,000 business establishments, allowed comparisons between the states.

## Relevance

The Inc. 500 list provides a picture of where the fastest growing, privately held companies are being created. Normalizing the count by state to the size of the state's business base provides insight as to where the highest concentrations of fast-growing businesses are located.

In 1999, there was an average of 0.7 Inc. 500 Companies per 10,000 business establishments. The 50-state median number of Inc. 500 Companies per 10,000 business establishments was 0.5. Nearly half of them (46%) are in computer-related industries. Over three-quarters (76%) consider themselves as part of the service sector. The average amount of money borrowed personally by the founder to start up one of these companies was $86,748.

## Data Considerations and Limitations

Companies on the Inc. 500 list had to apply for the ranking, making this process subject to self-selection rather than being an objective independent assessment. There are a number of factors that may have influenced a company's decision to participate. Companies on the list may have been more aware of and more interested in the ranking than those who were equally qualified but failed to apply. Regional differences in the perceived importance of the list may also exist. Companies in different industries may place different degrees of emphasis on the value of participating. Finally, some private companies may not wish to publicly release their annual sales data while others consider the process a useful step toward an eventual IPO.

### Number of Inc. 500 Companies per 10,000 Business Establishments: 1999

| State | 1999 Inc. 500 Companies | 1997 Estab. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 5 | 100,281 | 0.5 | 28 |
| Alaska | 0 | 18,138 | 0.0 | 44 |
| Arizona | 5 | 108,669 | 0.5 | 32 |
| Arkansas | 1 | 62,326 | 0.2 | 43 |
| California | 75 | 766,009 | 1.0 | 8 |
| Colorado | 12 | 127,419 | 0.9 | 10 |
| Connecticut | 8 | 92,702 | 0.9 | 11 |
| Delaware | 5 | 22,249 | 2.2 | 1 |
| Florida | 18 | 417,522 | 0.4 | 33 |
| Georgia | 24 | 191,279 | 1.3 | 6 |
| Hawaii | 0 | 29,991 | 0.0 | 44 |
| Idaho | 1 | 35,563 | 0.3 | 35 |
| Illinois | 23 | 302,579 | 0.8 | 16 |
| Indiana | 4 | 146,241 | 0.3 | 36 |
| Iowa | 2 | 80,608 | 0.2 | 37 |
| Kansas | 6 | 73,924 | 0.8 | 15 |
| Kentucky | 5 | 89,029 | 0.6 | 22 |
| Louisiana | 5 | 100,770 | 0.5 | 29 |
| Maine | 4 | 37,964 | 1.1 | 7 |
| Maryland | 20 | 126,001 | 1.6 | 3 |
| Massachusetts | 27 | 166,986 | 1.6 | 2 |
| Michigan | 17 | 235,308 | 0.7 | 18 |
| Minnesota | 13 | 133,002 | 1.0 | 9 |
| Mississippi | 1 | 59,347 | 0.2 | 42 |
| Missouri | 8 | 143,418 | 0.6 | 23 |
| Montana | 0 | 30,757 | 0.0 | 44 |
| Nebraska | 1 | 48,588 | 0.2 | 41 |
| Nevada | 1 | 42,343 | 0.2 | 39 |
| New Hampshire | 3 | 36,692 | 0.8 | 14 |
| New Jersey | 19 | 229,349 | 0.8 | 12 |
| New Mexico | 2 | 42,477 | 0.5 | 31 |
| New York | 24 | 478,480 | 0.5 | 27 |
| North Carolina | 14 | 197,488 | 0.7 | 20 |
| North Dakota | 0 | 20,439 | 0.0 | 44 |
| Ohio | 13 | 270,540 | 0.5 | 30 |
| Oklahoma | 3 | 84,645 | 0.4 | 34 |
| Oregon | 5 | 98,564 | 0.5 | 25 |
| Pennsylvania | 22 | 292,118 | 0.8 | 17 |
| Rhode Island | 2 | 28,164 | 0.7 | 19 |
| South Carolina | 2 | 93,926 | 0.2 | 40 |
| South Dakota | 0 | 23,486 | 0.0 | 44 |
| Tennessee | 7 | 130,952 | 0.5 | 24 |
| Texas | 38 | 459,024 | 0.8 | 13 |
| Utah | 7 | 50,653 | 1.4 | 5 |
| Vermont | 0 | 21,235 | 0.0 | 44 |
| Virginia | 27 | 170,654 | 1.6 | 4 |
| Washington | 10 | 159,684 | 0.6 | 21 |
| West Virginia | 1 | 41,625 | 0.2 | 38 |
| Wisconsin | 7 | 138,427 | 0.5 | 26 |
| Wyoming | 0 | 17,680 | 0.0 | 44 |
| District of Columbia | 2 | 19,554 | 1.0 | |
| Puerto Rico | 1 | 42,463 | N/A | |

It should be noted that corporate registration requirements may affect where a company is registered. The state of registration may not reflect the state(s) where the majority of its business activities take place.

## Source of Data

The 1999 listing of Inc. 500 companies can be found in textural form in the October, 1999 issue of *Inc. Magazine*. It is available electronically at <http://www.inc.com/500>.

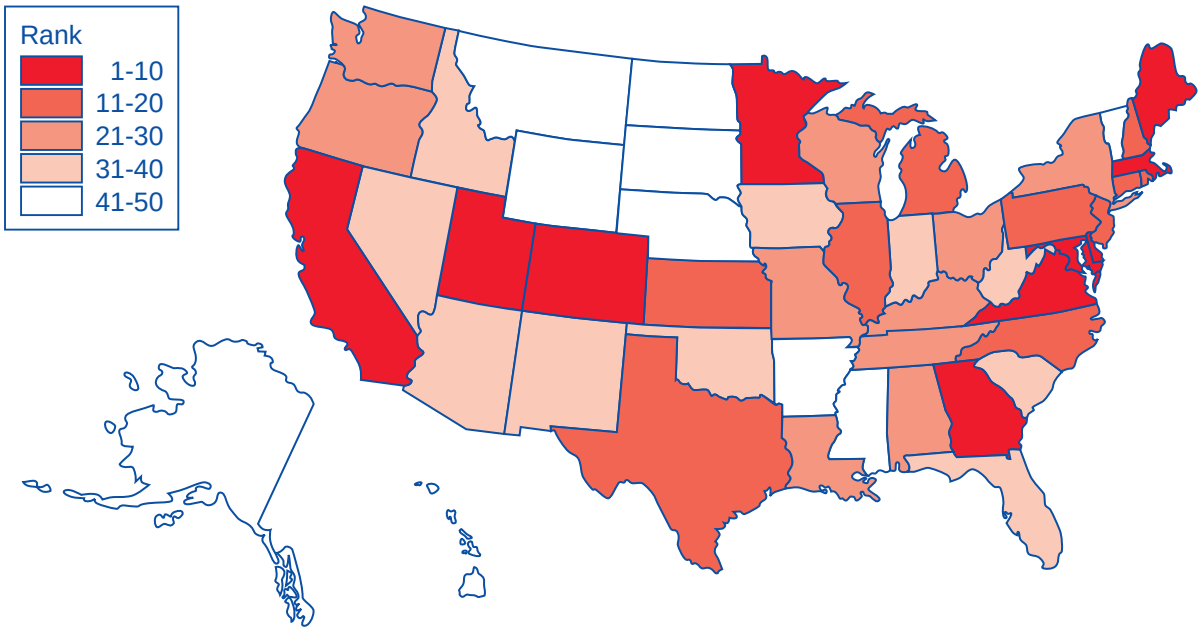
### *1999 Inc. 500 Companies:*

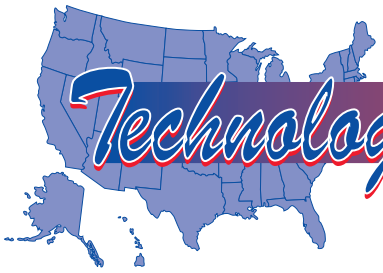
Inc. Magazine. *The 1999 Inc. 500.* <http://www.inc.com/500> (1999, November 4).

### *Establishments:*

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997*. (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico*. (CBP/97-53). Washington, DC: U.S. Government Printing Office.





# Technology Fast 500 Companies

## Definition

The 1999 Deloitte & Touche Technology Fast 500 ranks the fastest growing U.S. technology companies over a five-year period. Companies qualify as technology companies if they produce technology, manufacture a technology-related product, are technology intensive, or devote a high percentage of effort to R&D.

Companies can be nominated for consideration by winning one of the 19 regional U.S. Fast 50 programs, by submitting a nomination directly, or by public company database research. To be eligible, a company must have annual 1994 revenues of at least $50,000 and must be headquartered in the U.S. It must also have been in business during the entire period extending from 1994-8. For this reason, many Internet companies have not yet qualified for consideration.

From the Technology Fast 500 list of companies, the number of companies headquartered in each state was counted and normalized to the number of business establishments in that state. Comparisons were then possible between states.

## Relevance

Technology has become a key ingredient of economic development and the Fast 500 program was created to recognize fast-growing technology companies. This list provides a picture of where the fastest growing technology companies are being created and where the highest concentrations of them exist.

In 1999, there was an average of 0.7 Technology Fast 500 Companies per 10,000 business establishments. The 50-state median number of Technology Fast 500 Companies per 10,000 business establishments was 0.1. Fifty percent of the companies on the 1998 list were from the software industry. Other industries with significant numbers of fast-growing technology companies included communications (10%), Biotechnology (9%), and internet (9%).

## Data Considerations and Limitations

Both public and private companies are included on the list, although only the private companies, or another entity working on their behalf, are required to initiate their own nominations. This could produce a bias toward public technology companies in the final list.

**Number of Technology Fast 500 Companies per 10,000 Business Establishments: 1999**

| State | 1999 Fast 500 Companies | 1997 Estab. | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 1 | 100,281 | 0.1 | 29 |
| Alaska | 0 | 18,138 | 0.0 | 33 |
| Arizona | 5 | 108,669 | 0.5 | 18 |
| Arkansas | 0 | 62,326 | 0.0 | 33 |
| California | 104 | 766,009 | 1.4 | 8 |
| Colorado | 15 | 127,419 | 1.2 | 11 |
| Connecticut | 17 | 92,702 | 1.8 | 4 |
| Delaware | 0 | 22,249 | 0.0 | 33 |
| Florida | 17 | 417,522 | 0.4 | 19 |
| Georgia | 14 | 191,279 | 0.7 | 16 |
| Hawaii | 0 | 29,991 | 0.0 | 33 |
| Idaho | 0 | 35,563 | 0.0 | 33 |
| Illinois | 4 | 302,579 | 0.1 | 26 |
| Indiana | 0 | 146,241 | 0.0 | 33 |
| Iowa | 1 | 80,608 | 0.1 | 27 |
| Kansas | 6 | 73,924 | 0.8 | 14 |
| Kentucky | 0 | 89,029 | 0.0 | 33 |
| Louisiana | 1 | 100,770 | 0.1 | 30 |
| Maine | 0 | 37,964 | 0.0 | 33 |
| Maryland | 35 | 126,001 | 2.8 | 2 |
| Massachusetts | 53 | 166,986 | 3.2 | 1 |
| Michigan | 1 | 235,308 | 0.0 | 32 |
| Minnesota | 13 | 133,002 | 1.0 | 13 |
| Mississippi | 1 | 59,347 | 0.2 | 24 |
| Missouri | 17 | 143,418 | 1.2 | 10 |
| Montana | 0 | 30,757 | 0.0 | 33 |
| Nebraska | 0 | 48,588 | 0.0 | 33 |
| Nevada | 1 | 42,343 | 0.2 | 21 |
| New Hamps hire | 5 | 36,692 | 1.4 | 7 |
| New Jersey | 30 | 229,349 | 1.3 | 9 |
| New Mexico | 1 | 42,477 | 0.2 | 22 |
| New York | 31 | 478,480 | 0.6 | 17 |
| North Carolina | 15 | 197,488 | 0.8 | 15 |
| North Dakota | 0 | 20,439 | 0.0 | 33 |
| Ohio | 6 | 270,540 | 0.2 | 23 |
| Oklahoma | 0 | 84,645 | 0.0 | 33 |
| Oregon | 16 | 98,564 | 1.6 | 5 |
| Pennsylvania | 11 | 292,118 | 0.4 | 20 |
| Rhode Island | 0 | 28,164 | 0.0 | 33 |
| South Carolina | 1 | 93,926 | 0.1 | 28 |
| South Dakota | 0 | 23,486 | 0.0 | 33 |
| Tennessee | 0 | 130,952 | 0.0 | 33 |
| Texas | 7 | 459,024 | 0.2 | 25 |
| Utah | 5 | 50,653 | 1.0 | 12 |
| Vermont | 0 | 21,235 | 0.0 | 33 |
| Virginia | 41 | 170,654 | 2.4 | 3 |
| Washington | 23 | 159,684 | 1.4 | 6 |
| West Virginia | 0 | 41,625 | 0.0 | 33 |
| Wisconsin | 1 | 138,427 | 0.1 | 31 |
| Wyoming | 0 | 17,680 | 0.0 | 33 |
| District of Columbia | 1 | 19,554 | N/A | |
| Puerto Rico | N/A | 42,463 | N/A | |

## Source of Data

The 1999 Delloite & Touche list of Technology Fast 500 companies can be found on the web at <http://www.dttus.com/fast500/500list/500list.asp>.

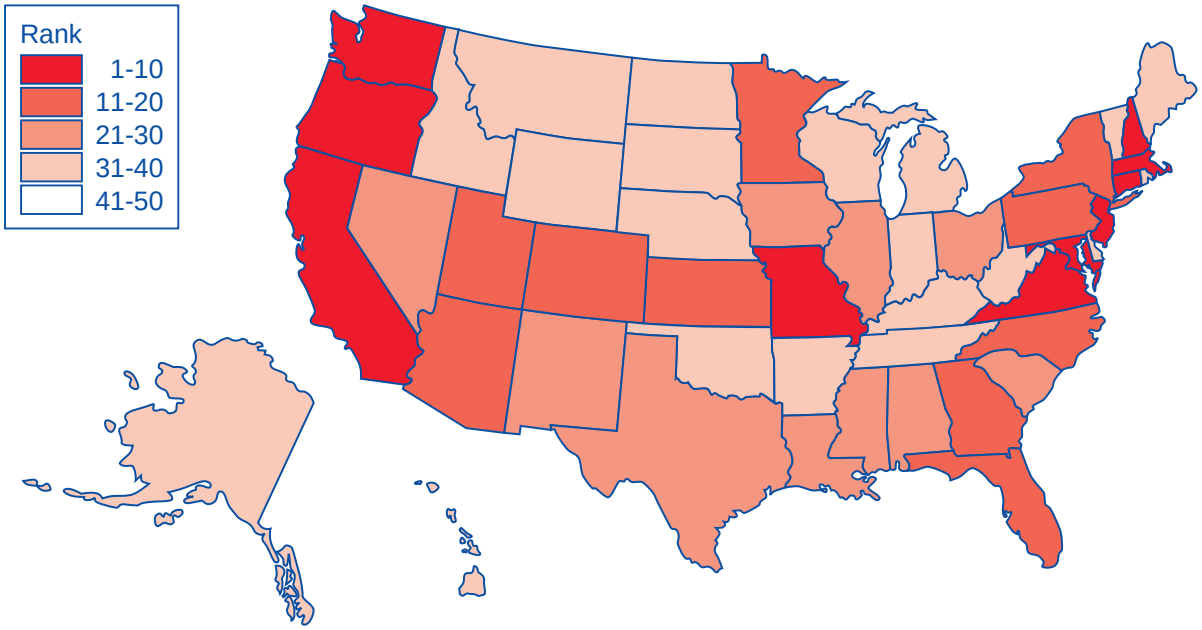
### *Technology Fast 500 Companies:*

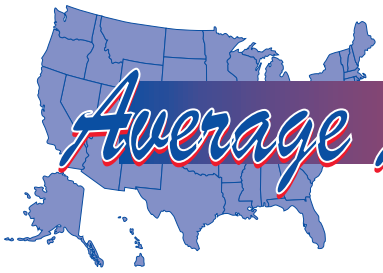
Deloitte & Touche. *Deloitte & Touche 1999 Technology Fast 500*. <http://www.dttus.com/fast500/> (1999, November 22).

### *Establishments:*

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997*. (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico*. (CBP/97-53). Washington, DC: U.S. Government Printing Office.





# Average Annual Earnings

## Definition

The average annual pay for a state is computed by dividing the total annual pay of covered employees in that state by the average monthly number of workers. All workers covered by Unemployment Insurance (EI) and Unemployment Compensation for Federal Employees (UCFE) programs are included. Workers in the following categories are not included: agricultural workers on small farms, members of the Armed Forces, elected officials in most states, most employees of railroads, some domestic workers, most student workers at schools, and employees of certain small nonprofit organizations. Annual pay includes bonuses, the cash value of meals, lodging when supplied, tips and other gratuities, and, in some states, employer contributions to 401(k) plans and stock options. Special situations, such as the ratio of part-time to full- time employment or the ratio of high-paying to low-paying jobs, will affect the average annual pay for a state.

## Relevance

This metric reflects how well paid people are for the work they do. It is directly tied to the availability of high-paying jobs. The national average earnings per job in 1997 was $30,336. The 50-state median for average earnings per job was $27,644.

In the private sector, the mining industry had the highest average annual pay level at $49,995 followed by finance, insurance, and real estate at $44,860. The retail sector recorded the lowest pay at $15,877 due in part to the high percentage of part-time employment. In the public sector, the average annual pay was $31,864.

## Data Considerations and Limitations

Salary data reflect state of employment rather than state of residence, potentially distorting their meaning for smaller states where a high percentage of the population may live in one state and work in another. The 1997 data are preliminary and subject to revision. Employment and wage total data were generated using new systems in both the states and the Bureau of Labor Statistics. This may result in larger differences between preliminary and final 1997 results.

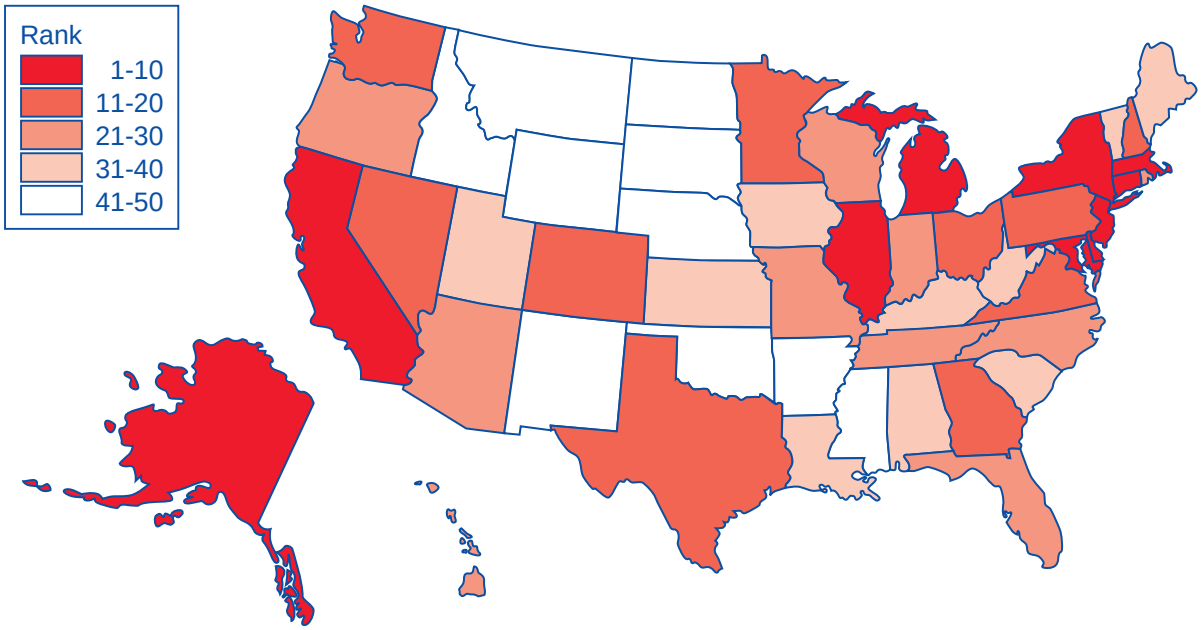
**Average Annual Earnings per Job: 1997**

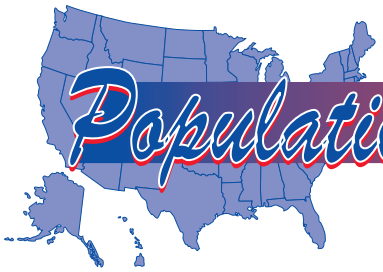
| State | Metric Value | RANK |
|---|---|---|
| Alabama | $26,138 | 31 |
| Alaska | $33,157 | 6 |
| Arizona | $27,654 | 25 |
| Arkansas | $23,268 | 46 |
| California | $33,485 | 5 |
| Colorado | $30,067 | 14 |
| Connecticut | $38,895 | 1 |
| Delaware | $32,185 | 9 |
| Florida | $26,569 | 30 |
| Georgia | $29,020 | 19 |
| Hawaii | $28,358 | 23 |
| Idaho | $24,053 | 44 |
| Illinois | $33,018 | 7 |
| Indiana | $27,633 | 26 |
| Iowa | $24,811 | 39 |
| Kansas | $25,693 | 33 |
| Kentucky | $25,574 | 35 |
| Louisian a | $25,754 | 32 |
| Maine | $24,899 | 38 |
| Maryland | $31,765 | 10 |
| Massachusetts | $35,710 | 4 |
| Michigan | $32,761 | 8 |
| Minnesota | $30,254 | 12 |
| Mississippi | $22,772 | 47 |
| Missouri | $27,782 | 24 |
| Montana | $21,947 | 49 |
| Nebraska | $24,566 | 42 |
| Nevada | $28,677 | 20 |
| New Hampshire | $29,296 | 17 |
| New Jersey | $37,513 | 3 |
| New Mexico | $24,684 | 41 |
| New York | $38,497 | 2 |
| North Carolina | $26,672 | 29 |
| North Dakota | $22,047 | 48 |
| Ohio | $29,088 | 18 |
| Oklahoma | $24,243 | 43 |
| Oregon | $28,420 | 22 |
| Pennsylvania | $30,161 | 13 |
| Rhode Island | $28,664 | 21 |
| South Carolina | $25,004 | 37 |
| South Dak ota | $21,645 | 50 |
| Tennessee | $27,235 | 28 |
| Texas | $29,690 | 15 |
| Utah | $25,689 | 34 |
| Vermont | $25,496 | 36 |
| Virginia | $29,548 | 16 |
| Washington | $30,768 | 11 |
| West Virginia | $24,716 | 40 |
| Wisconsin | $27,327 | 27 |
| Wyoming | $23,864 | 45 |
| District of Columbia | $46,775 | |
| Puerto Rico | $16,963 | |

# Source of Data

***Average Annual Earnings per Job:***

U.S. Department of Labor, Bureau of Labor Statistics. (1999, June 23). "Table 1. State average annual pay for 1996 and 1997 and percent change in pay for all covered workers." *Covered Employment and Wages.* <http://stats.bls.gov/news.release/annpay.t01.htm> (1999, September 20).





# Population Above Poverty

## Definition

The percent of the population living above the federal poverty threshold is defined as 100 percent minus the percent of the population living below the poverty threshold. This metric was selected in place of the more common estimate of the percent of the population living in poverty because it demonstrates a direct, rather than an inverse, relationship with the goals of economic development.

The federal poverty threshold used in this metric is adjusted annually. The threshold varies by size of the family, age, and number of related children under 18 years of age. The percent of the total U.S. population living above poverty in 1998 was 87.3%. The median for the percent of each states population living above poverty in 1998 was 88.9%. A detailed matrix defining the poverty threshold can be obtained from the U.S. Bureau of the Census.

## Relevance

The percent of the population living above the federal poverty threshold provides some indication of how widely the basic needs of a state's population are being met.

The percent of the national population living above the federal poverty threshold increased to 87.3% in 1998. The percentage of children under the age of 18 living above the threshold increased to 81.1%, exceeding 80% for the first time since 1980. The percent of Whites (not of Hispanic origin) and Hispanics living above the poverty threshold increased to 91.8% and 74.4%, respectively. The percent of Blacks living above the poverty level remained unchanged from 1997 at 73.9%.

## Data Considerations and Limitations

Official poverty estimates are made by the U.S. Bureau of the Census from data collected during the Current Population Survey (CPS). The CPS is a sample survey of approximately 50,000 households nationwide. These data, taken from the March 1999 supplement to the CPS, reflect conditions during calendar year 1998.

Because of the limited size of the sample, standard errors for a particular state during a single year may be significant. Using the two- or three-year averages rather than data for only a single year will reduce the magnitude of the error.

**Percent of the Population Living Above the Federal Poverty Threshold: 1998**

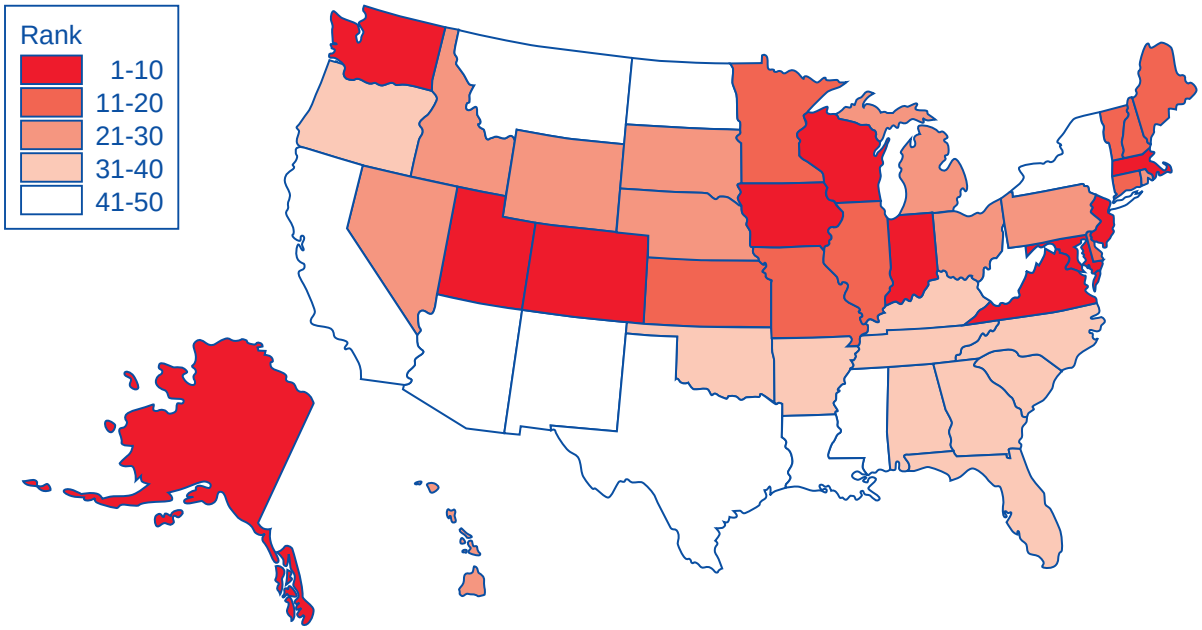
| State | % Pop. Living Below Poverty | Metric Value | RANK |
|---|---|---|---|
| Alabama | 14.5% | 85.5% | 38 |
| Alaska | 9.4% | 90.6% | 10 |
| Arizona | 16.6% | 83.4% | 44 |
| Arkansas | 14.7% | 85.3% | 39 |
| California | 15.4% | 84.6% | 43 |
| Colorado | 9.2% | 90.8% | 9 |
| Connecticut | 9.5% | 90.5% | 12 |
| Delaware | 10.3% | 89.7% | 18 |
| Florida | 13.1% | 86.9% | 31 |
| Georgia | 13.5% | 86.5% | 33 |
| Hawaii | 10.9% | 89.1% | 24 |
| Idaho | 13.0% | 87.0% | 30 |
| Illinois | 10.1% | 89.9% | 17 |
| Indiana | 9.4% | 90.6% | 10 |
| Iowa | 9.1% | 90.9% | 8 |
| Kansas | 9.6% | 90.4% | 13 |
| Kentucky | 13.5% | 86.5% | 33 |
| Louisiana | 19.1% | 80.9% | 49 |
| Maine | 10.4% | 89.6% | 20 |
| Maryland | 7.2% | 92.8% | 1 |
| Massachusetts | 8.7% | 91.3% | 3 |
| Michigan | 11.0% | 89.0% | 25 |
| Minnesota | 10.3% | 89.7% | 18 |
| Mississippi | 17.6% | 82.4% | 47 |
| Missouri | 9.8% | 90.2% | 14 |
| Montana | 16.6% | 83.4% | 44 |
| Nebraska | 12.3% | 87.7% | 29 |
| Nevada | 10.6% | 89.4% | 21 |
| New Hampshire | 9.8% | 90.2% | 14 |
| New Jersey | 8.6% | 91.4% | 2 |
| New Mexico | 20.4% | 79.6% | 50 |
| New York | 16.7% | 83.3% | 46 |
| North Carolina | 14.0% | 86.0% | 36 |
| North Dakota | 15.1% | 84.9% | 41 |
| Ohio | 11.2% | 88.8% | 26 |
| Oklahoma | 14.1% | 85.9% | 37 |
| Oregon | 15.0% | 85.0% | 40 |
| Pennsylvania | 11.3% | 88.7% | 27 |
| Rhode Isl and | 11.6% | 88.4% | 28 |
| South Carolina | 13.7% | 86.3% | 35 |
| South Dakota | 10.8% | 89.2% | 23 |
| Tennessee | 13.4% | 86.6% | 32 |
| Texas | 15.1% | 84.9% | 41 |
| Utah | 9.0% | 91.0% | 7 |
| Vermont | 9.9% | 90.1% | 16 |
| Virginia | 8.8% | 91.2% | 4 |
| Washington | 8.9% | 91.1% | 6 |
| West Virginia | 17.8% | 82.2% | 48 |
| Wisconsi n | 8.8% | 91.2% | 4 |
| Wyoming | 10.6% | 89.4% | 21 |
| District of Columbia | 22.3% | 77.7% | |
| Puerto Rico | N/A | N/A | |

## Source of Data

Data on the percent of a state's population living in poverty can be accessed electronically at <http://stats.bls.gov/news.release/annpay.t01.htm>. The source of this data is the U.S. Bureau of the Census, *Current Population Survey: Annual Demographic Survey, March Supplement*, Table 25.

### *Percent of the Population Above Poverty:*

U.S. Census Bureau. (1998, October 13). "Table 25. Poverty Status by State and Ten Large Metropolitan Areas in 1998." *Current Population Survey, Annual Demographic Survey, March Supplement*. <http://ferret.bls.census.gov/macro/031999/pov/new25_001.htm> (1999, November 3).



# Per Capita Income

## Definition

State per capita personal income is calculated as the personal income of the residents of the state divided by the population of the state as of July 1, 1998. Personal income is the sum of wage and salary disbursements, other labor income, proprietors' income with inventory valuation and capital consumption adjustments, rental income of persons with capital consumption adjustment, personal dividend income, personal interest income, and transfer payments to persons, less personal contributions for social insurance. It does not include the wages and salaries of foreign residents who work in the U.S. or of U.S. residents who are temporarily working abroad.

## Relevance

State per capita personal income is used by both the public and private sectors to track the income of people who live or work in a state and the value-added that the industries in the state produce. These estimates are used in econometric models and as the basis for allocating federal funds. For instance, in fiscal year 1996, the distribution of $122 billion in federal funds was affected by the estimates of state per capita personal income (http://www.bea.doc.gov/bea/regional/articles/spi2997/maintext.htm).

The national average per capita income in 1998 was $26,482. The median per capita income for the 50 states was $24,907. Earnings in high cost-of-living states tend to be higher than those in low cost-of-living states.

## Data Considerations and Limitations

The Bureau of Economic Analysis uses data from a variety of sources to compute state per capita personal income. Many of these sources reflect the state in which the income is earned rather than the state in which the individual resides. BEA uses a well-defined allocation methodology to assign this income to individual states and to keep the total of all states' personal income consistent with national estimates. This process is intended to minimize the effect of cross-border transfers that are particularly significant in small states.

**Per Capita Personal Income: 1998**

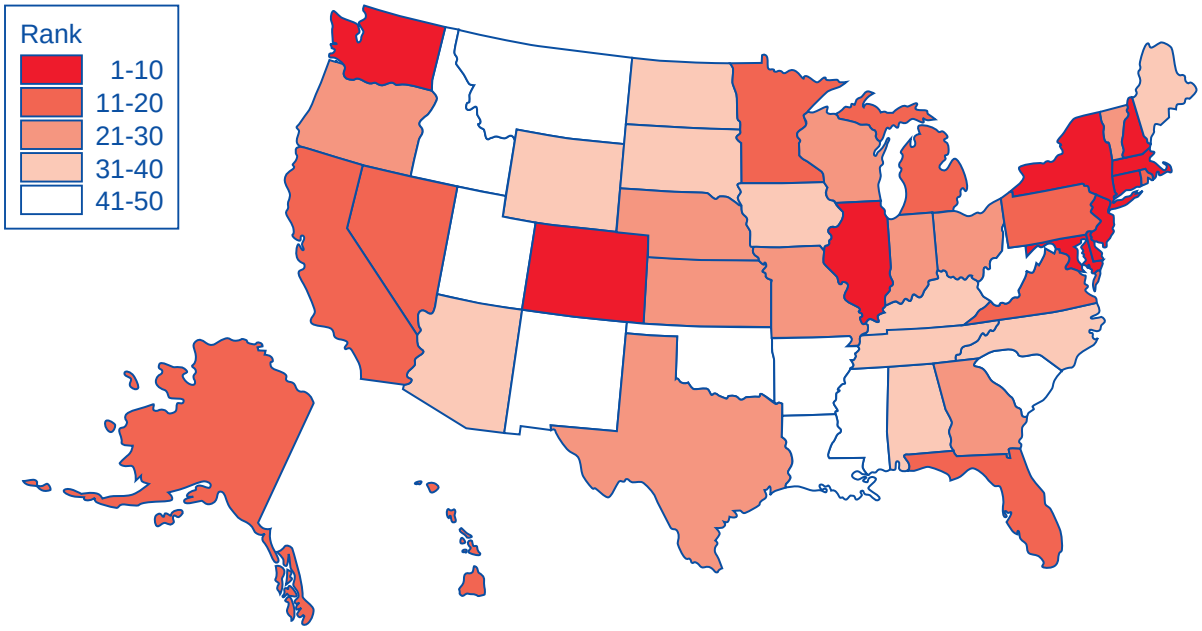
| State | Metric Value | RANK |
|---|---|---|
| Alabama | $21,500 | 40 |
| Alaska | $25,771 | 20 |
| Arizona | $23,152 | 35 |
| Arkansas | $20,393 | 46 |
| California | $27,579 | 12 |
| Colorado | $28,821 | 9 |
| Connecticut | $37,700 | 1 |
| Delaware | $29,932 | 6 |
| Florida | $25,922 | 19 |
| Georgia | $25,106 | 23 |
| Hawaii | $26,210 | 17 |
| Idaho | $21,080 | 44 |
| Illinois | $28,976 | 8 |
| Indiana | $24,302 | 29 |
| Iowa | $24,007 | 32 |
| Kansas | $25,049 | 24 |
| Kentucky | $21,551 | 39 |
| Louisiana | $21,385 | 42 |
| Maine | $23,002 | 36 |
| Maryland | $30,023 | 5 |
| Massachusetts | $32,902 | 3 |
| Michigan | $25,979 | 18 |
| Minnesota | $27,667 | 11 |
| Mississippi | $18,998 | 50 |
| Missouri | $24,447 | 28 |
| Montana | $20,247 | 47 |
| Nebraska | $24,786 | 26 |
| Nevada | $27,360 | 14 |
| New Hampsh ire | $29,219 | 7 |
| New Jersey | $33,953 | 2 |
| New Mexico | $20,008 | 48 |
| New York | $31,679 | 4 |
| North Carolina | $24,122 | 31 |
| North Dakota | $21,708 | 38 |
| Ohio | $25,239 | 21 |
| Oklahoma | $21,056 | 45 |
| Oregon | $24,775 | 27 |
| Pennsylvania | $26,889 | 16 |
| Rhode Island | $26,924 | 15 |
| South Carolina | $21,387 | 41 |
| South Dakota | $22,201 | 37 |
| Tennessee | $23,615 | 33 |
| Texas | $25,028 | 25 |
| Utah | $21,096 | 43 |
| Vermont | $24,217 | 30 |
| Virginia | $27,489 | 13 |
| Washington | $28,066 | 10 |
| West Virginia | $19,373 | 49 |
| Wisconsin | $25,184 | 22 |
| Wyoming | $23,225 | 34 |
| District of Columbia | $37,325 | |
| Puerto Rico | N/A | |

## Source of Data

These data were obtained electronically from the Bureau of Economic Analysis, U.S. Department of Commerce at <http://www.bea.doc.gov/bea/regional/spi/pcpi.htm>. They represent revised data rather than final data because the latter is not yet available. Per capita personal income was computed using state population estimates from the Bureau of the Census available as of March 1999.

### *Per Capita Income:*

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, July 27). "State Personal Income." *Regional Accounts Data*. [1998 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/spi/pcpi.htm> (1999, November 3).



# Labor Force Participation

## Definition

The participation rate represents the proportion of the population that is in the labor force. In this case, population means civilian noninstitutional population and is restricted to persons 16 years of age or older residing in the 50 states or the District of Columbia who are not inmates of institutions (e.g., penal and mental facilities, homes for the aged) and who are not on active duty in the Armed Forces.

From this population, the labor force is comprised of all persons classified as employed or unemployed. Employed persons are those who did any work at all (at least 1 hour) as paid employees, worked in their own business or profession or on their own farm, or worked 15 hours or more as unpaid workers in an enterprise operated by a member of the family or were not working but had jobs or businesses from which they were temporarily absent because of vacation, illness, bad weather, child-care problems, maternity or paternity leave, labor-management dispute, job training, or other family or personal reasons. Unemployed persons are all persons who had no employment, were available for work, except for temporary illness, and had made specific efforts to find employment.

## Relevance

The civilian non-institutional population of the U.S. age 16 and older was 205.0 million in 1998. The civilian labor force totaled 137.5 million making the overall U.S. labor force participation rate 67.1%. The median labor force participation rate for the 50 states was 68.4%.

The labor force participation rate can be affected by the number of individuals who are students or retirees or who are engaged in providing care for their own children or for an incapacitated relative. Typically, the labor force participation rate for males is higher than for females.

## Data Considerations and Limitations

Because these data are estimates based on a survey rather than on a complete census of the population, they are subject to sampling error. Error ranges for these estimates have been calculated in the form of 90-percent confidence levels. Most of the error ranges are in the range of 3-6%, although the error range may be larger for a few states.

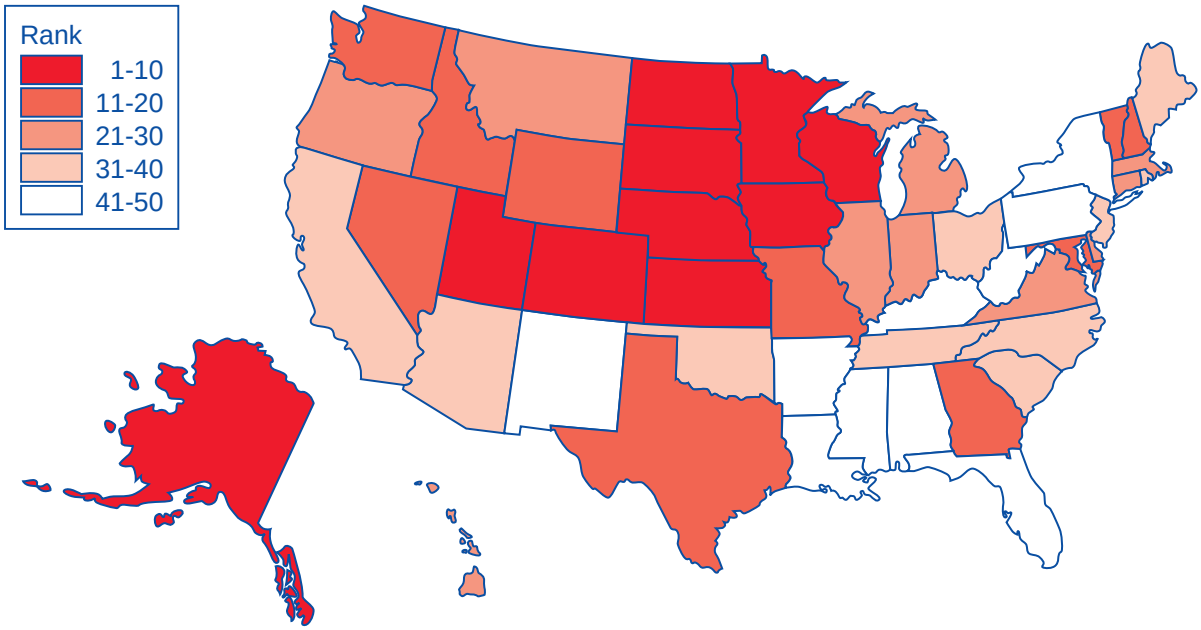
### Labor Force Participation Rate: 1998

| State | Non-Inst. Civilian Pop. 16+ Years (1,000s) | Civilian Labor Force (1,000s) | Metric Value | RANK |
|---|---|---|---|---|
| Alabama | 3,356 | 2,153 | 64.2% | 42 |
| Alaska | 427 | 317 | 74.2% | 4 |
| Arizona | 3,525 | 2,272 | 64.5% | 40 |
| Arkansas | 1,941 | 1,215 | 62.6% | 47 |
| California | 24,559 | 16,329 | 66.5% | 34 |
| Colorado | 3,016 | 2,246 | 74.5% | 2 |
| Connecti cut | 2,530 | 1,709 | 67.5% | 28 |
| Delaware | 574 | 392 | 68.3% | 26 |
| Florida | 11,610 | 7,228 | 62.3% | 48 |
| Georgia | 5,758 | 4,021 | 69.8% | 17 |
| Hawaii | 886 | 597 | 67.4% | 30 |
| Idaho | 917 | 653 | 71.2% | 13 |
| Illinois | 9,082 | 6,223 | 68.5% | 25 |
| Indiana | 4,481 | 3,088 | 68.9% | 22 |
| Iowa | 2,181 | 1,570 | 72.0% | 8 |
| Kansas | 1,962 | 1,411 | 71.9% | 10 |
| Kentucky | 3,020 | 1,924 | 63.7% | 44 |
| Louisiana | 3,274 | 2,063 | 63.0% | 46 |
| Maine | 980 | 651 | 66.4% | 35 |
| Maryland | 3,941 | 2,756 | 69.9% | 16 |
| Massachusetts | 4,750 | 3,273 | 68.9% | 23 |
| Michigan | 7,461 | 5,029 | 67.4% | 29 |
| Minnesota | 3,556 | 2,682 | 75.4% | 1 |
| Mississippi | 2,059 | 1,269 | 61.6% | 49 |
| Missouri | 4,109 | 2,857 | 69.5% | 19 |
| Montana | 682 | 468 | 68.6% | 24 |
| Nebraska | 1,241 | 916 | 73.8% | 5 |
| Nevada | 1,319 | 920 | 69.7% | 18 |
| New Hampshire | 910 | 652 | 71.6% | 11 |
| New Jersey | 6,248 | 4,155 | 66.5% | 33 |
| New Mexico | 1,295 | 831 | 64.2% | 41 |
| New York | 14,037 | 8,870 | 63.2% | 45 |
| North Carolina | 5,680 | 3,794 | 66.8% | 31 |
| North Dakota | 480 | 347 | 72.3% | 7 |
| Ohio | 8,561 | 5,678 | 66.3% | 36 |
| Oklahoma | 2,521 | 1,627 | 64.5% | 39 |
| Oregon | 2,550 | 1,762 | 69.1% | 21 |
| Pennsylvania | 9,274 | 5,936 | 64.0% | 43 |
| Rhode Island | 751 | 498 | 66.3% | 37 |
| South Carolina | 2,942 | 1,959 | 66.6% | 32 |
| South Dakota | 547 | 398 | 72.8% | 6 |
| Tennessee | 4,212 | 2,760 | 65.5% | 38 |
| Texas | 14,611 | 10,118 | 69.2% | 20 |
| Utah | 1,477 | 1,063 | 72.0% | 9 |
| Vermont | 461 | 330 | 71.6% | 12 |
| Virginia | 5,159 | 3,488 | 67.6% | 27 |
| Washington | 4,325 | 3,039 | 70.3% | 15 |
| West Virginia | 1,452 | 800 | 55.1% | 50 |
| Wisconsin | 3,968 | 2,952 | 74.4% | 3 |
| Wyoming | 367 | 258 | 70.3% | 14 |
| District of Columbia | 414 | 267 | 64.5% | |
| Puerto Rico | 2,760 | 1,311 | 47.5% | |

# Source of Data

***Labor Force Participation:***

U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages.* [1998 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).



# Work Force Employment

## Definition

The percent of the civilian work force that is employed is defined as 100 percent minus the percent of the work force that is unemployed. This metric was selected in place of the more common estimate of unemployment rate because it demonstrates a direct, rather than an inverse, relationship with the goals of economic development.

The civilian work force is defined as the number of individuals 16 years of age and older who are not institutionalized or serving in the military and who are employed or actively seeking work.

## Relevance

The percent of the civilian work force that is employed reflects the extent to which a state's economy is providing work for those who seek it.

The median work force employment level for the 50 states was 95.7%. The U.S. civilian work force totaled 137.7 million individuals, meaning that 131.5 million were employed and 6.2 million were not. At the regional level, the Midwest maintained the highest work force employment level in 1998 at 96.3%, leading the nation for the eighth year in a row.

## Data Considerations and Limitations

The unemployment rate used in this calculation is an estimate made by the Bureau of Labor Statistics based on models specific for each state. These models use the relationship between the state's monthly unemployment insurance claims data and the Current Population Survey (CPS), a computer-assisted survey covering 50,000 households conducted monthly for BLS by the Bureau of the Census. The state models used by the BLS also incorporate trend and seasonal components to make them consistent with other employment data. The estimates for Puerto Rico are based on a monthly household survey similar to the CPS conducted by the Puerto Rico Department of Labor and Human Resources.

At the 90% confidence level, the 1998 unemployment rate estimates have an average error range of 3-6%, although the error may be higher for a few states.

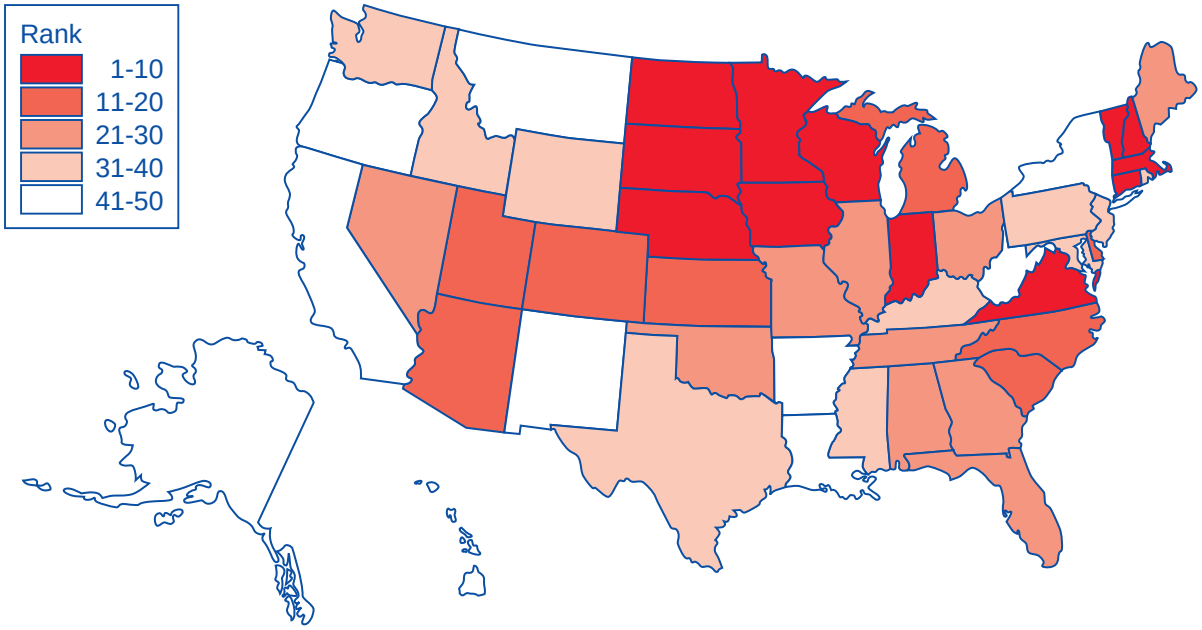
**Percent of the Civilian Work Force Employed: 1998**

| State | Unemp. Rate | Metric Value | RANK |
|---|---|---|---|
| Alabama | 4.2% | 95.8% | 21 |
| Alaska | 5.8% | 94.2% | 46 |
| Arizona | 4.1% | 95.9% | 20 |
| Arkansas | 5.5% | 94.5% | 41 |
| California | 5.9% | 94.1% | 47 |
| Colorado | 3.8% | 96.2% | 14 |
| Connecticut | 3.4% | 96.6% | 10 |
| Delaware | 3.8% | 96.2% | 14 |
| Florida | 4.3% | 95.7% | 25 |
| Georgia | 4.2% | 95.8% | 21 |
| Hawaii | 6.2% | 93.8% | 48 |
| Idaho | 5.0% | 95.0% | 39 |
| Illinois | 4.5% | 95.5% | 29 |
| Indiana | 3.1% | 96.9% | 7 |
| Iowa | 2.8% | 97.2% | 3 |
| Kansas | 3.8% | 96.2% | 14 |
| Kentucky | 4.6% | 95.4% | 31 |
| Louisiana | 5.7% | 94.3% | 45 |
| Maine | 4.4% | 95.6% | 28 |
| Maryland | 4.6% | 95.4% | 31 |
| Massachusetts | 3.3% | 96.7% | 9 |
| Michigan | 3.9% | 96.1% | 19 |
| Minnesota | 2.5% | 97.5% | 1 |
| Mississippi | 5.4% | 94.6% | 40 |
| Missouri | 4.2% | 95.8% | 21 |
| Montana | 5.6% | 94.4% | 42 |
| Nebraska | 2.7% | 97.3% | 2 |
| Nevada | 4.3% | 95.7% | 25 |
| New Hampshire | 2.9% | 97.1% | 4 |
| New Jersey | 4.6% | 95.4% | 31 |
| New Mexico | 6.2% | 93.8% | 48 |
| New York | 5.6% | 94.4% | 42 |
| North Carolina | 3.5% | 96.5% | 13 |
| North Dakota | 3.2% | 96.8% | 8 |
| Ohio | 4.3% | 95.7% | 25 |
| Oklahoma | 4.5% | 95.5% | 29 |
| Oregon | 5.6% | 94.4% | 42 |
| Pennsylvania | 4.6% | 95.4% | 31 |
| Rhode Island | 4.9% | 95.1% | 38 |
| South Carolina | 3.8% | 96.2% | 14 |
| South Dakota | 2.9% | 97.1% | 4 |
| Tennessee | 4.2% | 95.8% | 21 |
| Texas | 4.8% | 95.2% | 35 |
| Utah | 3.8% | 96.2% | 14 |
| Vermont | 3.4% | 96.6% | 10 |
| Virginia | 2.9% | 97.1% | 4 |
| Washington | 4.8% | 95.2% | 35 |
| West Virginia | 6.6% | 93.4% | 50 |
| Wisconsin | 3.4% | 96.6% | 10 |
| Wyoming | 4.8% | 95.2% | 35 |
| District of Columbia | 8.8% | 91.2% | |
| Puerto Rico | 13.3% | 86.7% | |

# Source of Data

## *Work Force Employment:*

U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages*. [1998 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).



# State Profiles

# 3. Contents

This section contains a 1-page descriptive profile of each state, the District of Columbia, and Puerto Rico. The states appear alphabetically, followed by the District of Columbia and Puerto Rico.

Each profile includes a contact for obtaining statistical information, a summary of the overall economic conditions, a description of some of the science and technology infrastructure, and electronic links with key technology organizations in the state. The state's performance on individual metrics is summarized on the bar graph that appears on the right side of each state profile page. The state's ranking by quintile is illustrated for each metric, with long bars denoting a high ranking (1st) and short bars a low ranking (50th). Exact numerical rankings can be obtained from the data table in the description for the particular metric that is contained in Section 2. For questions pertaining to the raw data, inquires should be directed first to the source of the data, provided in Section 2 as well as in the Appendix, and then to the State Information Contact.

Rankings have not been done for the District of Columbia and Puerto Rico because of the lack of data in some instances and the fact that their data may come from different sources than the other states.

# Alabama

## State Information Contact

***Alabama State Data Center***
Center for Business and Economic Research
The University of Alabama
P.O. Box 870221
Tuscaloosa, AL 35487-0221
(205) 348-6191
http://www.cba.ua.edu/~cber/

## Overall State Economic Conditions

Alabama ranks 23rd in population with over 4.3 million people in 1998, nearly 68% of whom live in metropolitan areas (30th in 1996). Its 1997 per capita income of $18,493 (in 1992 constant dollars) ranked 38th nationally. In 1996, 14% of its population lived at or below the poverty level. In 1997, Alabama's gross state product was $103.1 billion (25th) and it had 100,281 business establishments (24th). The state ranks 8th in percentage of non-farm employment in manufacturing (20.4% of its workforce in 1997).

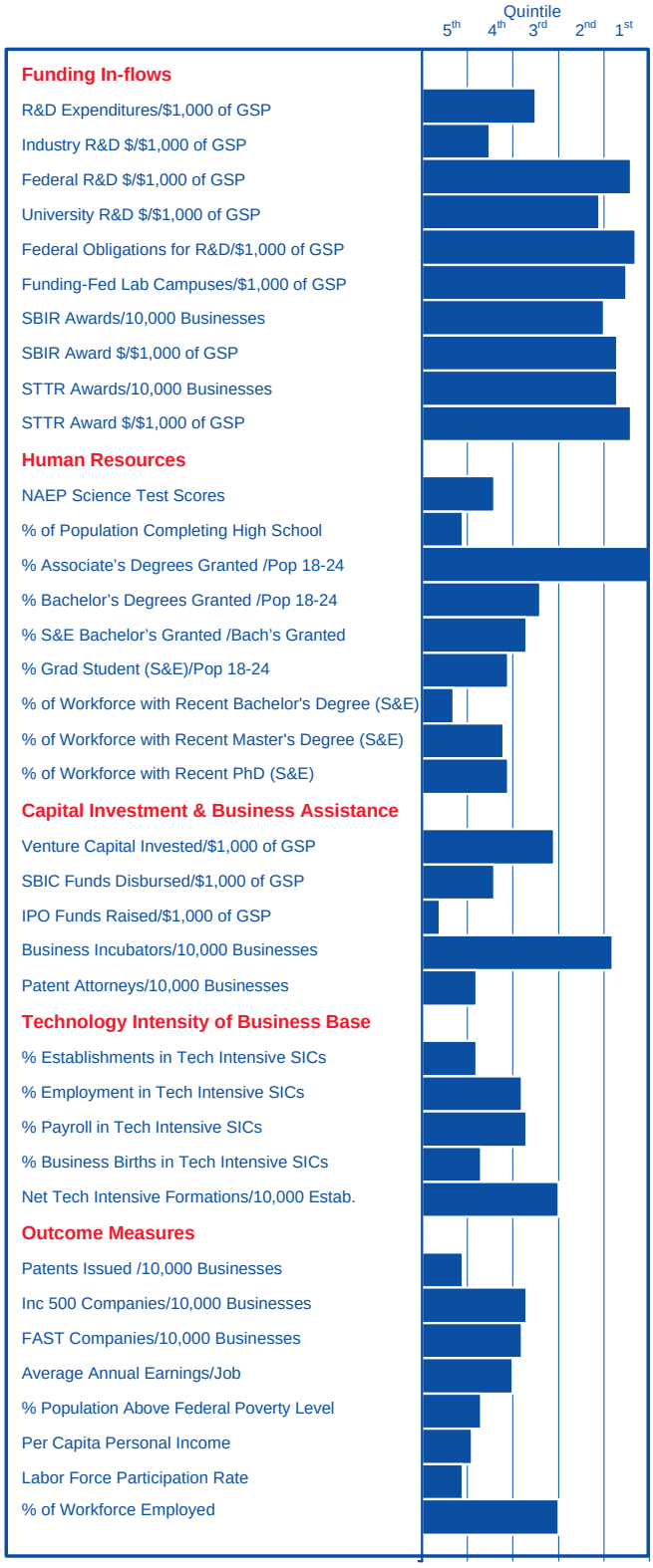
## Science & Technology Organizations

***http://www.adeca.state.al.us/***
The Science and Technology Section of the **Alabama Department of Economic and Community Affairs** administers several science and technology programs, including the Alabama Research Institute, the Technology Assistance Program, the Commission on Aerospace Science and Industry, the Advanced Telecommunications Demonstration Project, and the Alabama Experimental Program to Stimulate Competitive Technology (EPSCoT) Project.

***http://www.adeca.state.al.us/***
The **Alabama Research Institute** is an organization funding research projects by Alabama's research universities that foster economic development potential. Recently the following technology or industry clusters have been priorities: Advanced Manufacturing and Robotics, Aerospace, Automotive, Biomedical and Biotechnology, Environmental Sciences, Information Technology, Materials Science, and Emerging Technologies.

***http://www.adeca.state.al.us/***
The **Alabama Commission on Aerospace Science and Industry** consists of 21 aerospace industry representatives appointed by the Governor, with the mission of expanding Alabama's aerospace industry.

***http://backcharge.uah.edu/hightech/.\index2.html***
The **High Tech Directory** is an electronic database of 400 high-tech companies in Alabama.



# Alaska

## State Information Contact

***Department of Commerce and Economic Development***
Division of Trade & Development
P.O. Box 110804
Juneau, AK 99811-0804
(907) 465-2017.
http://www.commerce.state.ak.us/trade/

## Overall State Economic Conditions

With 614,000 people, Alaska ranks 48th in population. Slightly over 41% of its people live in metropolitan areas, making it one of the least urbanized states (43rd). Alaska ranked 19th in 1997 per capita income ($22,453) down from 9th place in 1990. The percentage of its population at poverty levels dropped from 11.4% in 1990 to 8.2% in 1996. In 1997, Alaska's gross state product was $24.5 billion (45th) and it had 18,138 business establishments (49th). Only 5.7% of its workforce was employed in manufacturing.

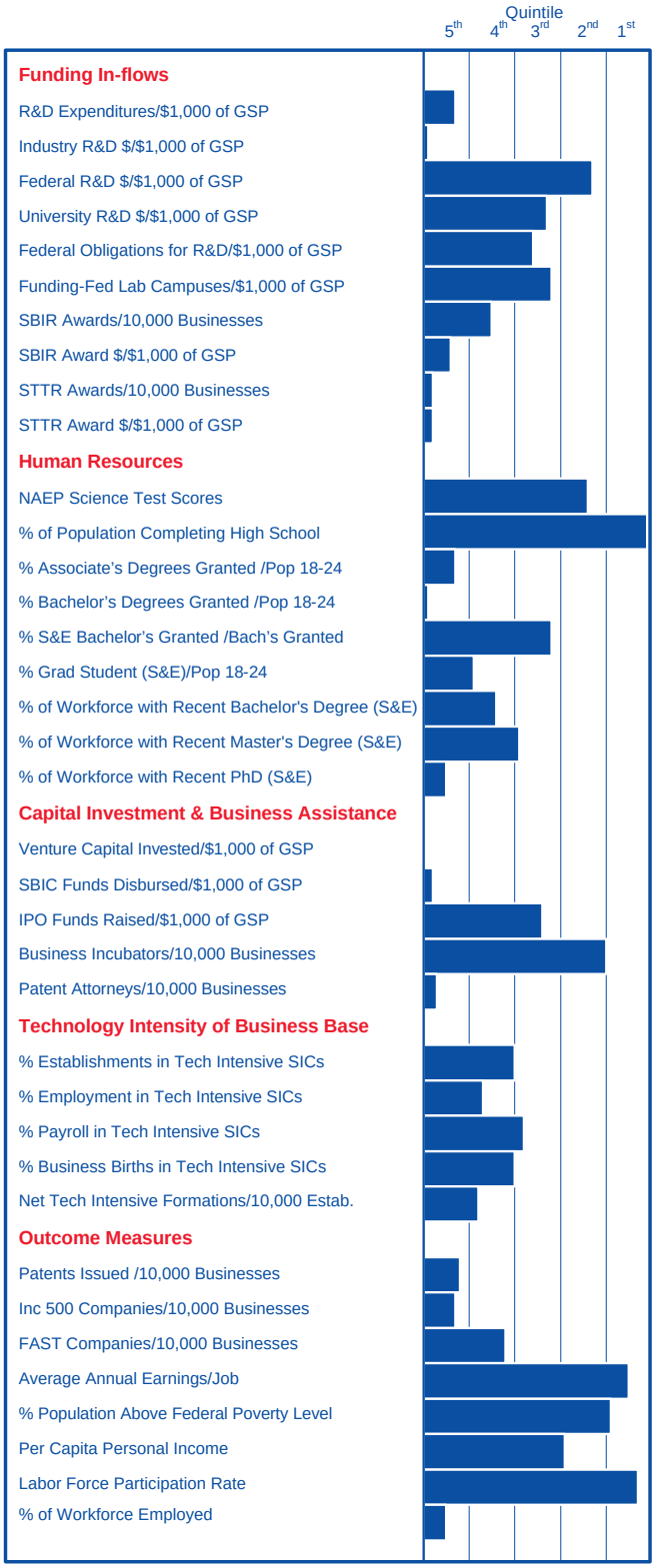
## Science & Technology Organizations

***http://www.astf.org/***
The Alaska Science and Technology Foundation (ASTF) is a state agency, part of the Department of Community and Economic Development. It invests in Alaska's economy and tries to increase the state's science and engineering capabilities. It offers grants for small and large business development and research projects.

***www.ak.aerospace.com***
The **Alaska Aerospace Development Corporation (AADC)** is a public corporation created in 1992 to develop aerospace-related economic and technical opportunities for the State of Alaska. AADC is working with private corporations, government agencies, and universities to develop a comprehensive low earth orbit launch complex and full service satellite ground station facilities.

AADC is administered by the Department of Commerce and Economic Development and is affiliated with the University of Alaska (UA).

***www.dced.state.ak.us***
The **Department of Commerce and Economic Development** is the main development agency for the state.



# Arizona

## State Information Contact


***University of Arizona***
Economic and Business Research
College of Business and Public Administration
McClelland Hall 204
Tuscon, AZ 85721-0001
(520) 621-2155
http://www/bpa.arizona.edu/newpage


## Overall State Economic Conditions

With 4,669,000 people, Arizona ranks 21st in population. Nearly 90% of its people live in metropolitan areas, making it one of the most urbanized states (9th). Arizona ranked 35th in 1997 per capita income ($19,884). The percentage of its population living at or below poverty levels rose from 13.7% in 1990 to 20.5% in 1996. In 1997, Arizona's gross state product was $121.2 billion (24th) and it had 108,669 business establishments (22nd). Arizona had 10.5% of its workforce employed in manufacturing.

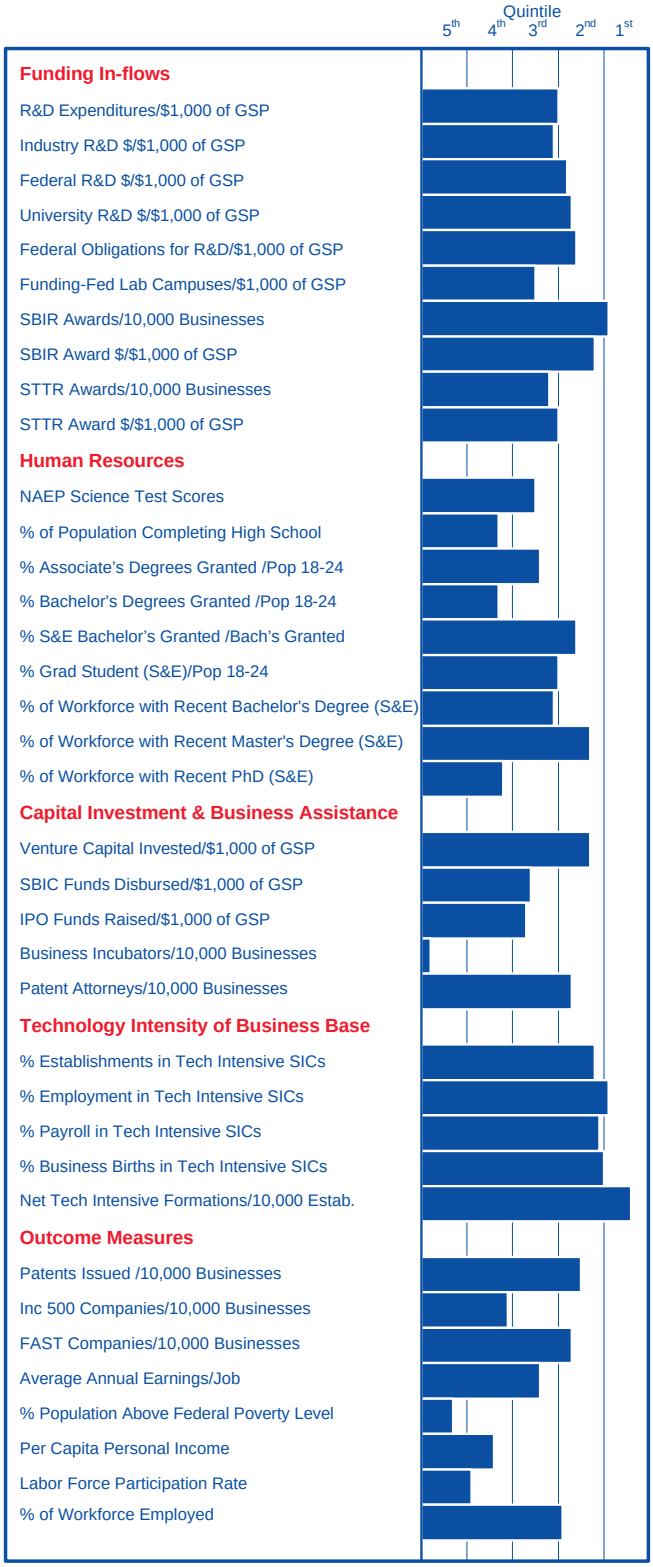
## Science & Technology Organizations

The **Governor's Science and High Technology Council** promotes high tech industry economic development in Arizona. The members come from private industry, universities, and state government. The contact is Jack Haenichen at [voice/fax] (602) 280-1330/1302 or email: jackh@ep.state.az.us.

**The Arizona Space Commission** promotes space-related industry in Arizona. The contact is Brad Tritle at the Arizona Department of Commerce at [voice/fax] (602) 280-1393/ 1338 or email: bradt@ep.state.az.us.

***http://www.azcommerce.com/ADOC/home.asp***
**The Arizona Department of Commerce** is the state's lead economic development agency. Its annual directory includes a list of local economic development contacts for the whole state and all economic development and business service programs.

***http://www.azcommerce.com/gsped***
The **Governor's Strategic Partnership for Economic Development** (C. Diane Bishop, Director) is a public/private partnership that enhances the competitiveness of the state's economy by focusing on export-driven industry clusters.



# Arkansas

## State Information Contact

***University of Arkansas at Little Rock***
Institute for Economic Advancement
2801 South University
Little Rock, AR 72204
(501) 569-8530
http://www.census.gov/sdc/www/arsdc.html

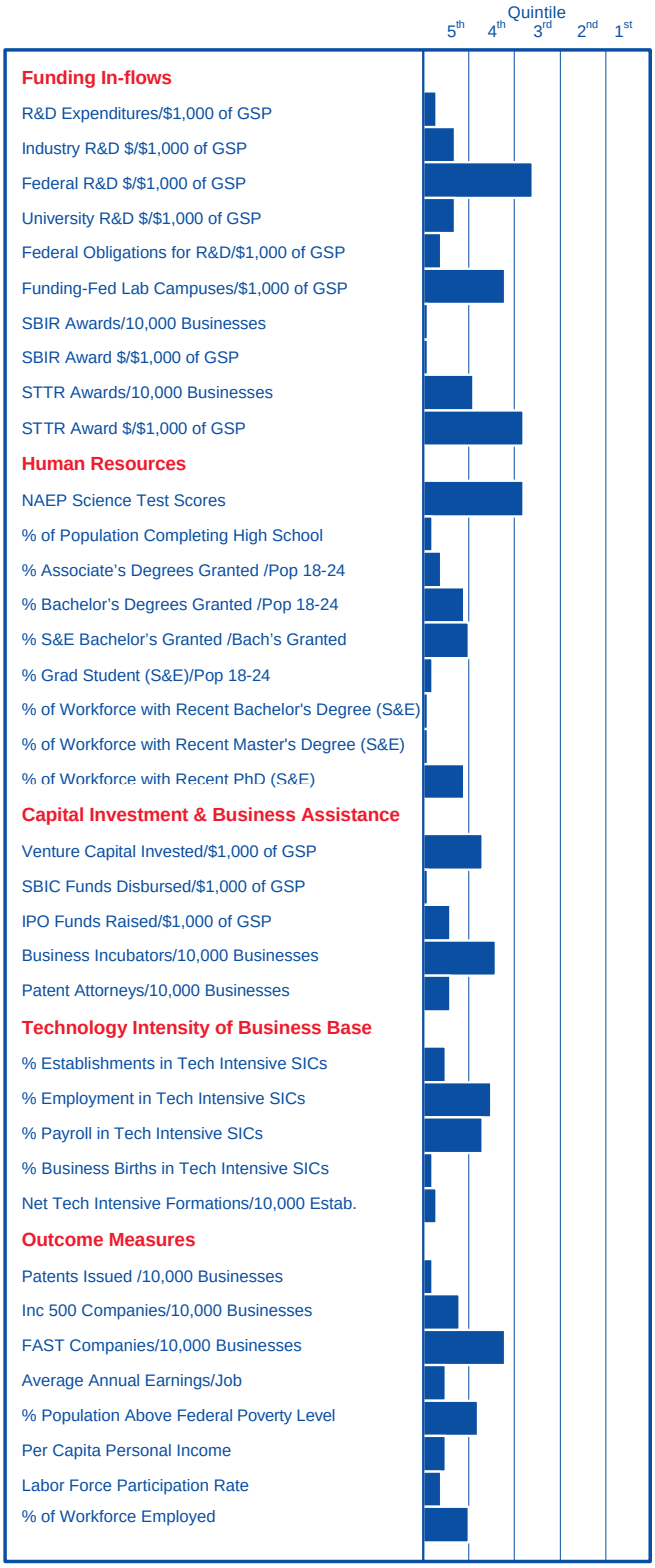
## Overall State Economic Conditions

With over 2.5 million people, Arkansas ranks 33rd in population. Slightly over 48% of its people live in metropolitan areas (38th among states). Arkansas ranked 48th in 1997 per capita income ($17,378). The percentage of its population below poverty level is 17.2. In 1997, Arkansas' gross state product was $58.5 billion (32nd) and it had 62,326 business establishments (32nd). Almost 23% of its non-farm workforce was employed in manufacturing (3rd highest percentage among states).

## Science & Technology Organizations

***http://www.state.ar.us/asta/tax_credit.html***
The **Arkansas Science & Technology Authority** promotes scientific research, technology development, business innovation, and math, science, and engineering education. Its Board includes scientists, engineers, and manufacturing experts. The Authority's EPSCoR effort provides state matching funds for federally-approved research projects to bring Arkansas' science and engineering research to international levels. The Authority also administers programs on applied and basic research, a Manufacturing Extension Network, a Seed Capital Investment fund, and programs for technology development and transfer.

***http://www.aedc.state.ar.us/***
The **Arkansas Economic Development Commission** (AEDC) is the state's lead agency for business development and attraction. AEDC's Established Industries Services include the Workforce Training Program; ScrapMatch, which electronically helps Arkansas manufacturers find markets for industrial scrap materials; the Industrial Waste Minimization Program and Resource Recovery Program; and Trade and Export Development.



# California

## State Information Contact

***State Census Data Center-Department of Finance***
915 L Street
Sacramento, CA 95814
(916) 322-4651
http://www.ccrdc.ucla.edu/

## Overall State Economic Conditions

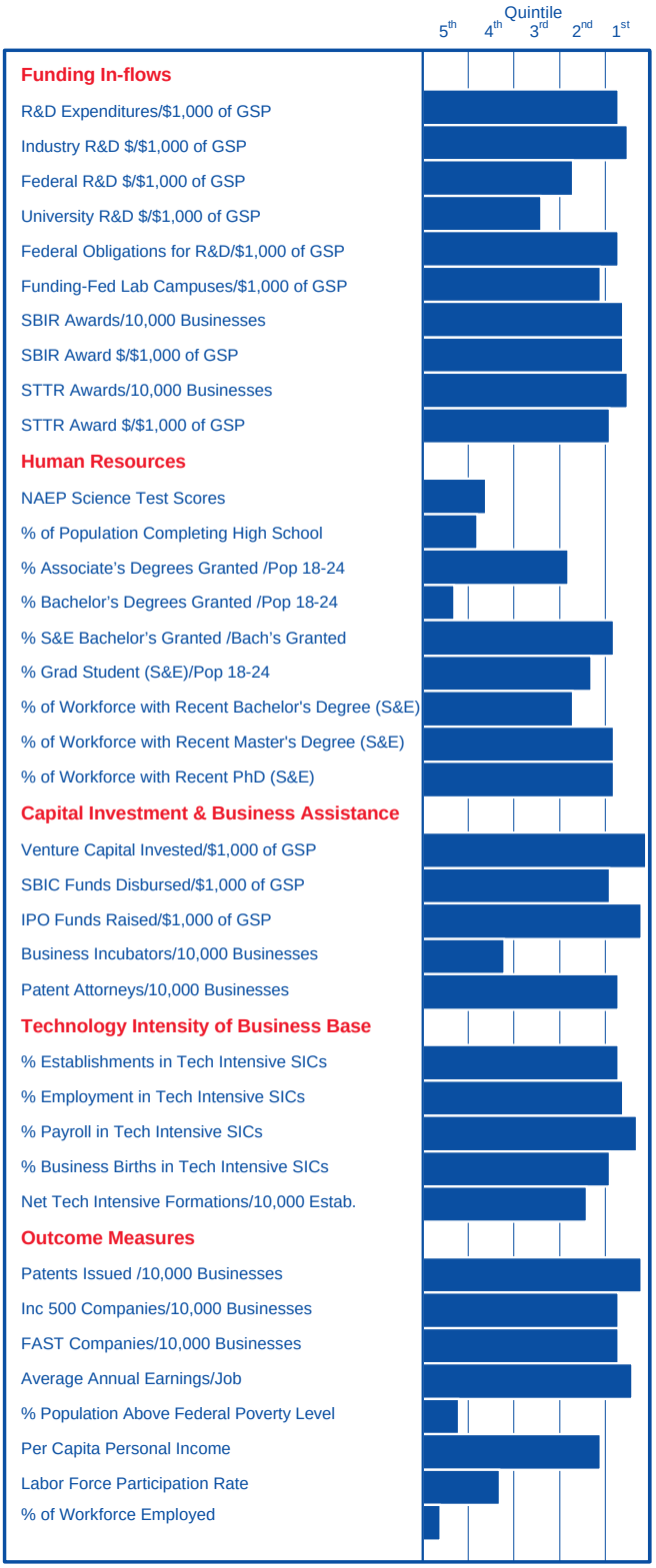
California ranks first in population with over 32.6 million people, nearly 97% of whom live in metropolitan areas. Its 1997 per capita income of $23,576 is 13th highest among states—down from 8th in 1990. The state has 16.9% of its population living at or below the poverty level which is an improvement since 1990. In 1997, California's gross state product was $1,033 billion (1st) and it had 766,009 business establishments (1st). The state ranks 28th in percentage of non-farm workforce employed in manufacturing (14.5%).

## Science & Technology Organizations

***http://commerce.ca.gov/agency/org-ost.html***
**The Goldstrike Partnership** is a program of the California Trade and Commerce Agency's **Office of Strategic Technology(OST)**. OST provides cash matches to leverage private and federal dollars for technology development and commercialization, especially defense industry conversion. Through the Goldstrike program, OST works with the state's Regional Technology Alliances. OST currently has two grant programs: the Manufacturing Technology Program and the California Technology Investment Partnership (CalTIP).

***http://www.goldstrike.net/***
The Goldstrike Partnership includes several Regional Technology Alliances (RTAs) and other organizations: the **Los Angeles Regional Technology Alliance** (LARTA); the **Bay Area Regional Technology Alliance** (BARTA) (including the Economic Development Advisory Board of Alameda County, the Bay Area Bioscience Center, and Joint Venture Silicon Valley); the **San Diego Regional Technology Alliance** (SDRTA); and the **California Space and Technology Alliance**.

***http://www.techcoast.com***
The **Tech Coast Alliance** provides a marketing and communication platform as well as opportunities for regional collaboration for business, education, government, and community leaders in Southern California (the Santa Barbara-San Diego Coastal plain).



# Colorado

## State Information Contact

***University of Colorado***
Business Research Division
Campus Box 420
Boulder, CO 80309
(303) 492-8227
http://colorado.edu/libraries/govpubs/online/htm

## Overall State Economic Conditions

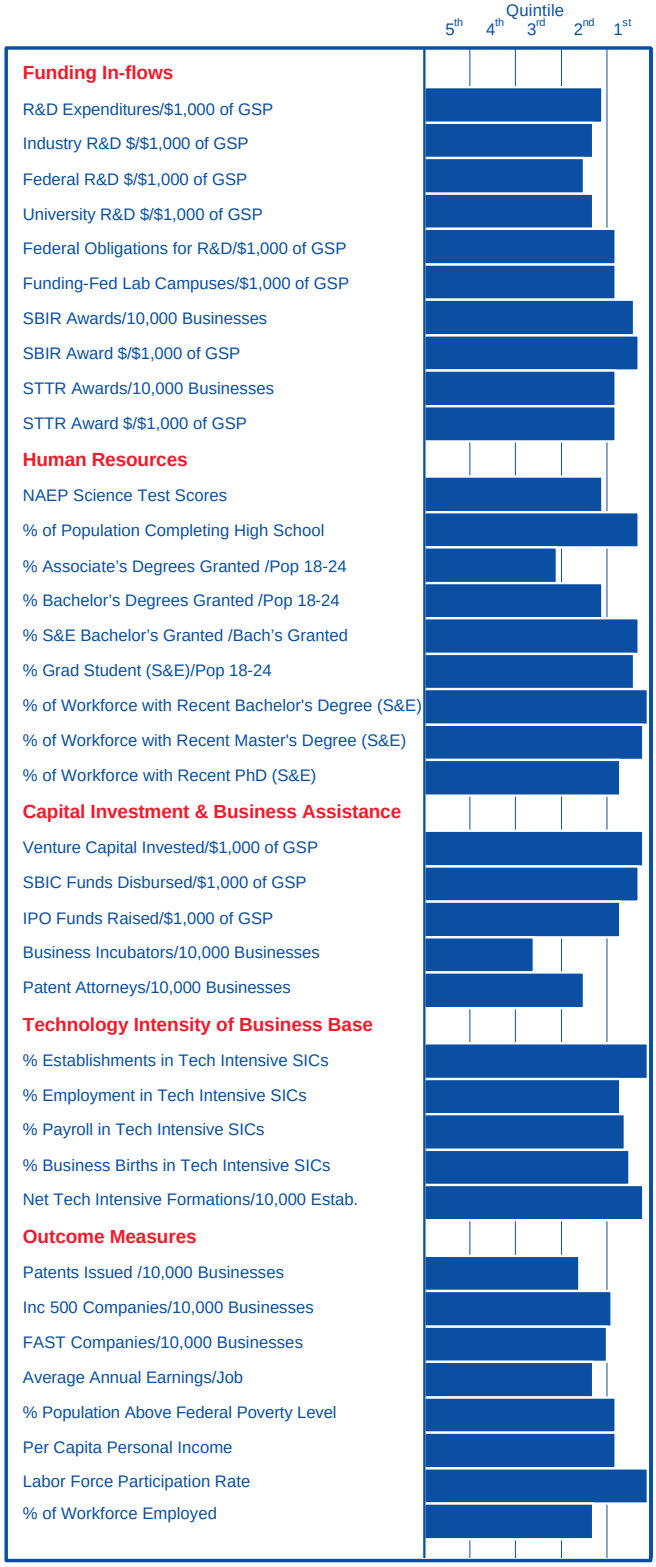
Colorado ranks 24th in population with almost four million people, nearly 84% of whom live in metropolitan areas (14th). Its 1997 per capita income of $24,003 gives it 9th place among states—up from 18th in 1990. The state has dramatically improved its ranking in the percentage of population living at or below the poverty level (10.6%). In 1997, Colorado's gross state product was $126.1 billion (22nd) and it had 127,419 business establishments (20th). The state ranks 40th in manufacturing employment (10.6% of its workforce). Colorado has 30.2% of its workforce employed in the service sector and 24.4% in wholesale and retail trade.

## Science & Technology Organizations

The **Office of Innovation and Technology** is the state's lead technology agency. (The Colorado Advanced Technology Institute which had been the State of Colorado's science and technology economic development agency was abolished in June 1999). The office, which is headed by a cabinet-level Secretary of Technology, is tasked with making Colorado a world leader in the development and implementation of 21st Century technologies and management efficiencies and can be reached by calling (303) 866-6331.

***http://www.state.co.us/gov_dir/oed/sdi/space.html***
The **Colorado Space Business Roundtable/Foundation**, in partnership with **Office of Economic Development**, provides networking and advocacy for the state's space-related activities, both military (U.S. Space Command, Air Force Space Command, NORAD, and Army Space Command) and civilian, telecommunications companies which rely on Colorado's geographic location for effective satellite control and data uplink.

***http://www.state.co.us/gov_dir/oed.html***
The **Office of Economic Development** (OED) works with companies starting, expanding, or relocating in Colorado.



# Connecticut

## State Information Contact


***Policy Development and Planning Division***
450 Capitol Avenue--MS#52ASP
Hartford, CT 06106-1308
(860) 418-6230
http://www.census.gov/sdc/www/ctsdc.html


## Overall State Economic Conditions

Connecticut ranks 29th in population with nearly 3.3 million people, 95.6% of whom live in metropolitan areas (4th). Its 1997 per capita income of $32,177 was the highest nationally. In 1996, it had 11.7 % of its population living at or below the poverty level compared to 6% in 1990. In 1997, Connecticut's gross state product was $134.6 billion (21st) and it had 92,702 business establishments (27th). The state ranks 17th in manufacturing employment (17.1% of its workforce), down from 12th place in 1990.

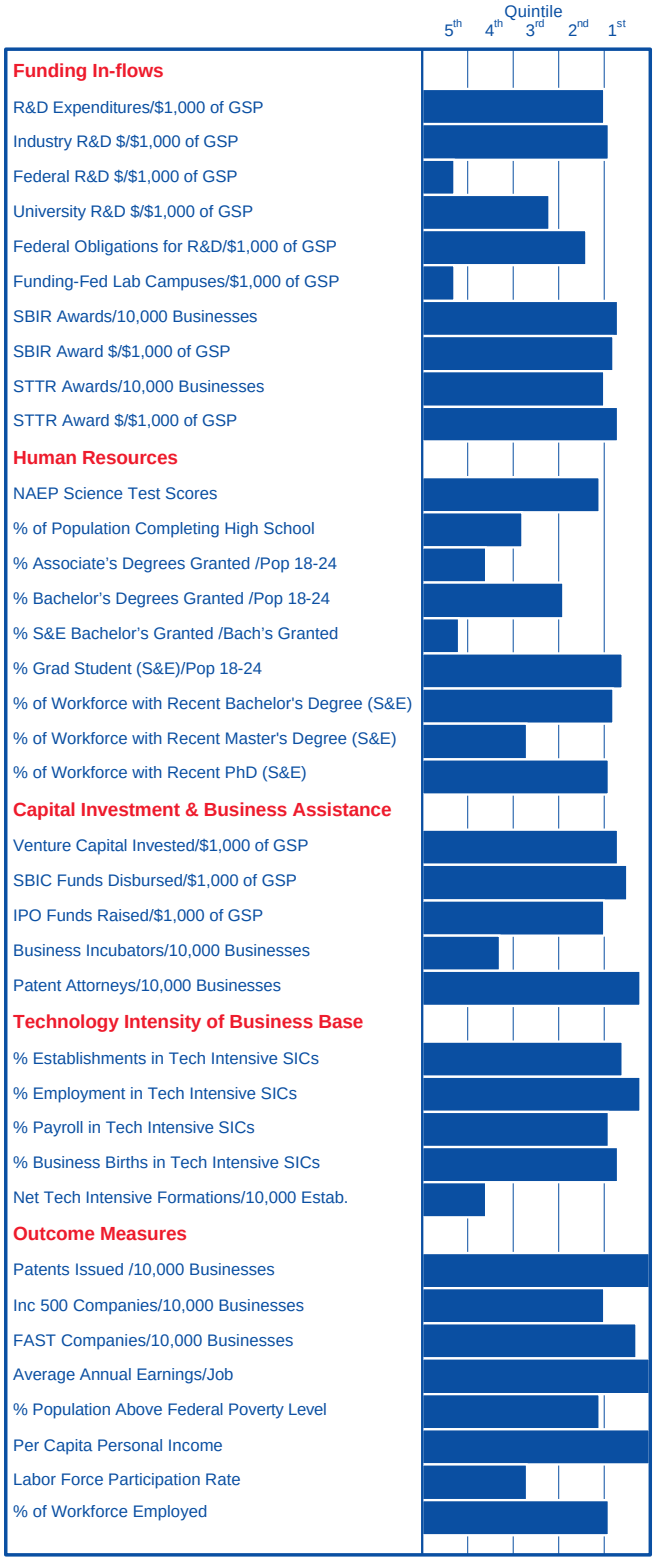
## Science & Technology Organizations

***http://www.ctinnovations.com/i-aboutus.htm***
**Connecticut Innovations** is the state's leading investor in high technology, making risk capital investments in high-tech companies throughout the state. Connecticut Innovations targets seven critical high technology areas: Advanced Marine Applications, Aerospace, Energy and Environmental Systems, Photonics, Advanced Materials, BioScience Technology, and Information Technology. Connecticut Innovations administers the Connecticut Technology Partnership Program, which invests matching funds in companies performing research and development under federal programs.

***http://www.state.ct.us/ecd/Clusters/default.htm***
The **Department of Economic and Community Development** focuses its economic development efforts on identifying and nurturing industry clusters in Connecticut.

***http://www.ct.org***
The **Connecticut Technology Council** is an advocacy partnership committed to growing and diversifying the state's technology base. It forms industry-working groups (including software, medical devices, web designers, biotechnology, telecommunications, manufacturing and photonics).

***http://www.cerc.com/cerc/cercweb.nsf/frmHome***
The **Connecticut Economic Resource Center**, Inc. is a private, non-profit corporation formed by a partnership between utility/telecommunications companies and state government to coordinate the state's business attraction and marketing efforts.



# Delaware

## State Information Contact


***Delaware Economic Development Office***
99 Kings Highway
P.O. Box 1401
Dover, DE 19903
(302) 739-4271
http://www.census.gov/sdc/www/desdc.html


## Overall State Economic Conditions

Delaware ranks 45th in population with nearly 750,000 people, 82% of whom live in metropolitan areas (17th). Its 1997 per capita income of $25,752 was the 5th highest nationally. In 1996, the state had 8.6% of its population living at or below the poverty level. In 1997, Delaware's gross state product was $31.6 billion (41st) and it had 22,249 business establishments (46th). The state ranks 25th in manufacturing employment (14.8% of its workforce), a large part of which (39%) is in chemical manufacturing. Trade (22%) and services (27.7%) are the largest employment categories.

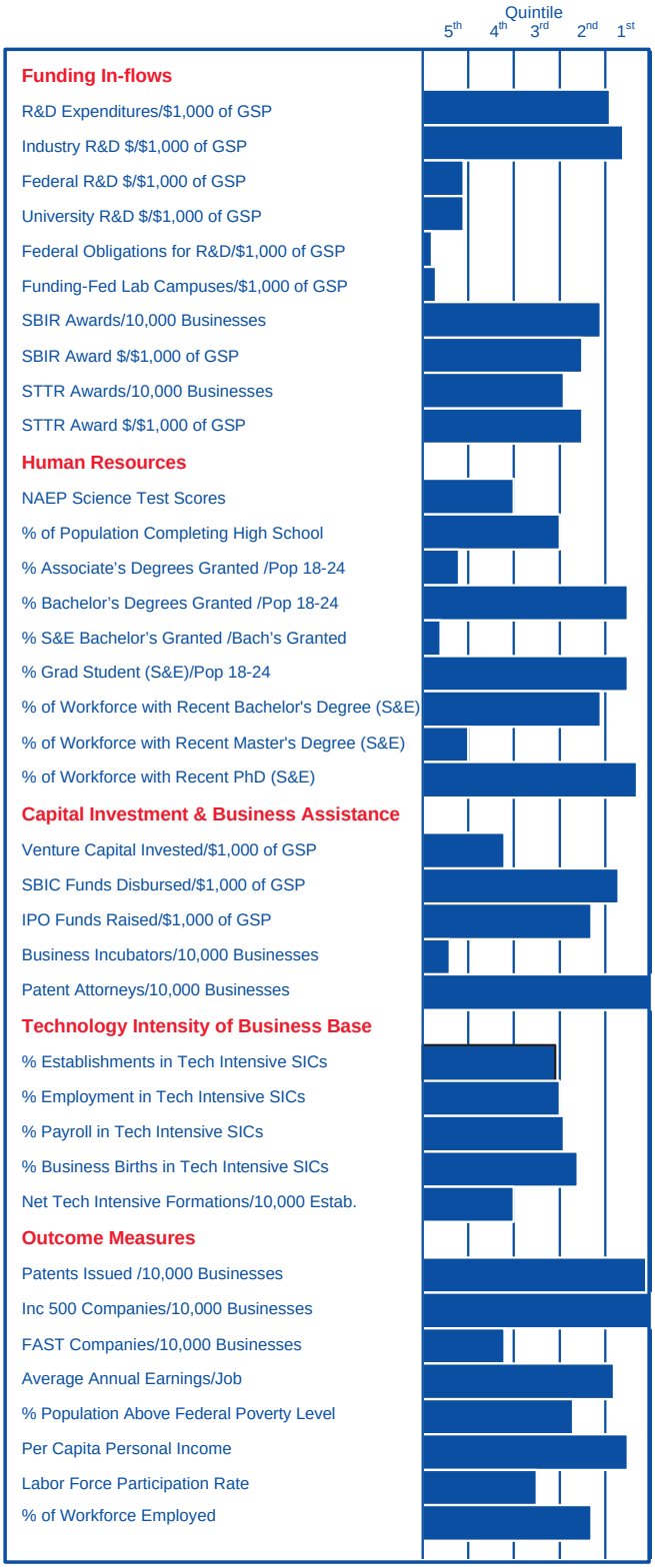
## Science & Technology Organizations

***http://www.state.de.us/dedo/initiatives/atcs/atc_home.htm***
The **Advanced Technology Center Program** was established by the Council on Science and Technology, and is administered by the Delaware Economic Development Office and funds the Advanced Technology Center for Medical Devices, Inc.; the Fraunhofer Resource Center - Delaware; the University of Delaware Center for Agricultural Biotechnology; the Applied Optics Center of Delaware, Inc; and the Center for Nanomachined Surfaces Advanced Technology. Delaware's **Twenty-First Century Fund Program** is the funding organization for the Centers.

The **Semiconductor Initiative** targets the semiconductor industry with all state departments directed to cooperate to promote and attract this vital industry.

***http://www.udel.edu/PR/DBI/about.html***
The **Biotechnology Institute**, with the Delaware Economic Development Office (DEDO), has initiated the Center for Agricultural Biotechnology and Environmental Science and the Center for Poultry Disease at the University of Delaware; and the Center for Applied Optics at Delaware State University.

***http://www.delawareinovationfund.com***
The **Delaware Innovation Fund** provides technical and financial assistance in the form of early-stage "investment" to Delaware's emerging companies.



# Florida

## State Information Contact


***University of Florida***
Bureau of Economic and Business Research
Box 117145
Gainesville, FL 32611-7145
(352) 392-0171
http://www.cba.ufl.edu/bebr/


## Overall State Economic Conditions

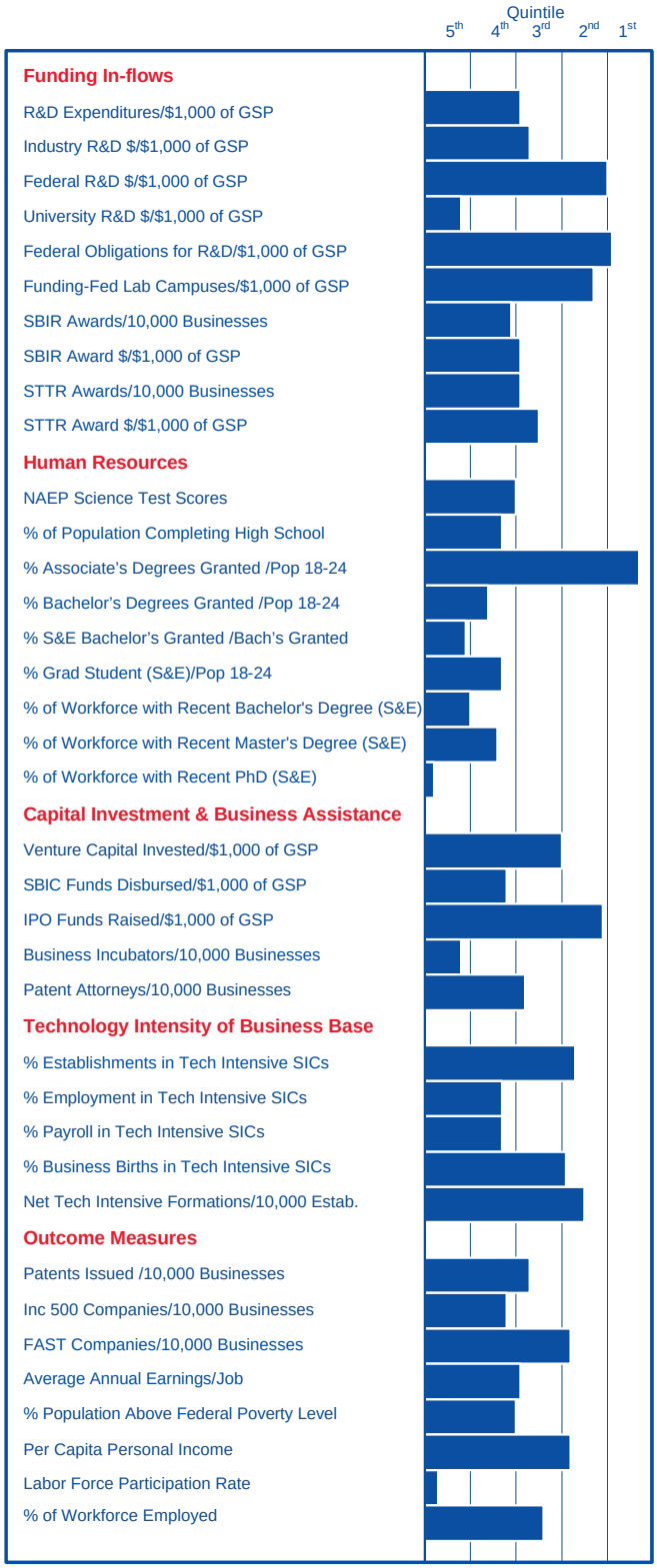
Florida ranks 4th in population with over 14.9 million people, 93% of whom live in metropolitan areas (6th). Its 1997 per capita income of $22,409 was the 20th highest nationally. In 1996, the state had 14.2 percent of its population living at or below the poverty level. In 1997, Florida's gross state product was $380.6 billion (5th) and it had 417,522 business establishments (4th). The state ranks 43rd in manufacturing employment (7.6% of its workforce).

## Science & Technology Organizations

***http://www.floridabusiness.com***
**Enterprise Florida**, Inc. is a partnership between Florida's government and business leaders and is the principal economic development organization for the State of Florida. Selected industry sectors have been targeted as "high impact", beginning with silicon technology.

**The Enterprise Florida Technology Development Corporation** sponsors these Innovation and Commercialization Centers (ICCs): the Northern Florida Technology Innovation Center; the Central Florida Innovation Corporation (Orlando); the Enterprise North Florida Corporation (Jacksonville); the Office for Corporate Development at the University of S. FL. (Tampa); and the Enterprise Development Corporation of South Florida (West Palm Beach).

***http://cfic.org/central_florida_technology.htm***
The new partnership includes **Enterprise Florida's Central Florida Innovation Corporation**, the **Florida High Technology Corridor Council**, the **Economic Development Commission of Mid-Florida**, and the **Orlando Regional Chamber of Commerce**. It promotes networking and growth for high tech companies in modeling/simulation, semiconductor manufacturing, information technology, defense and aerospace, lasers/optics, biotech/medical, and film/entertainment.



# Georgia

## State Information Contact


***University of Georgia***
Selig Center for Economic Growth
Terry College of Business
Athens, GA 30602-6269
(706) 542-4085
http://www.selig.ugs.edu/


## Overall State Economic Conditions

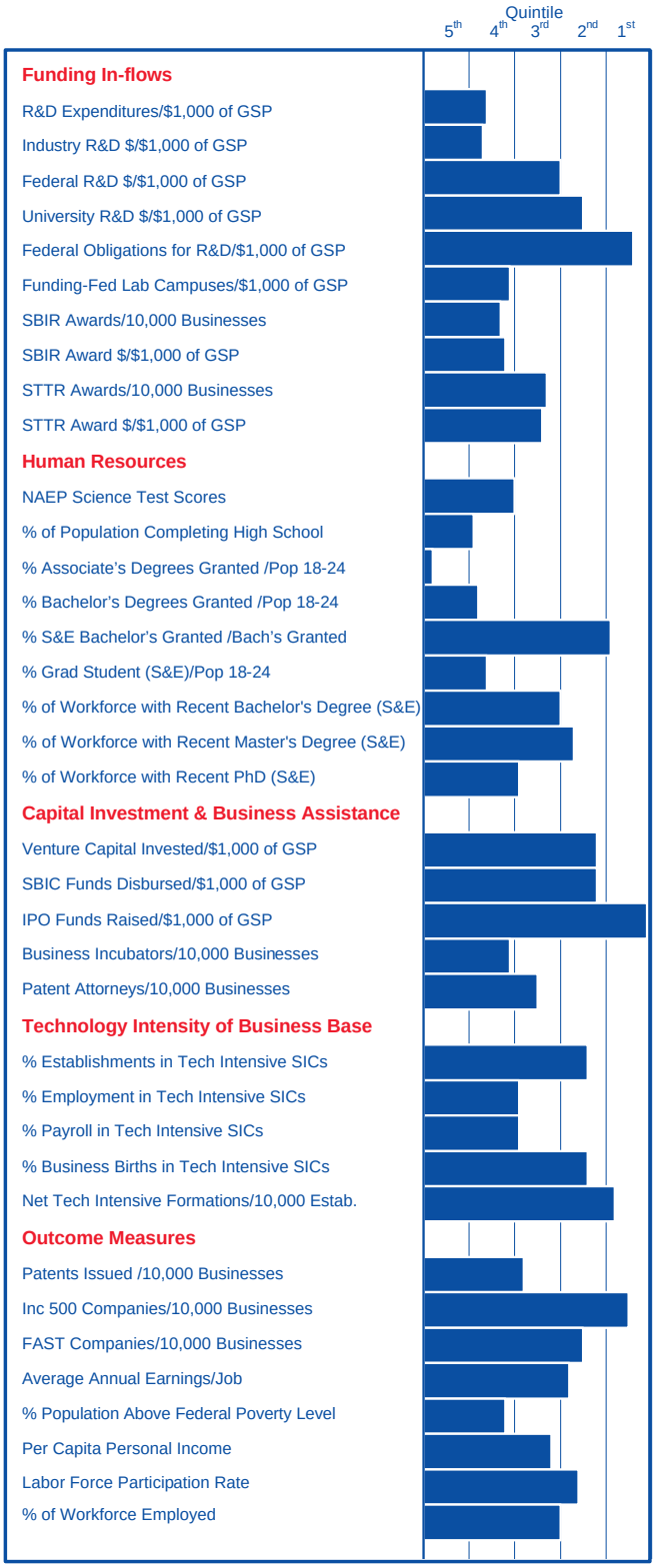
Georgia ranks 10th in population with over 7.6 million people, over 68% of whom live in metropolitan areas (27th). Its 1997 per capita income of $21,350 was the 25th highest nationally. In 1996, the state had 14.8% of its population living at or below the poverty level. In 1997, Georgia's gross state product was $229.5 billion (10th) and it had 191,279 business establishments (11th). The state ranks 20th in percentage of manufacturing employment (16.3% of its workforce).

## Science & Technology Organizations

***http://www.gra.org/***
The **Georgia Research Alliance** is a partnership of the state's research universities, business leaders, and state government to leverage research capabilities in support of scientific and technology-based business. Research programs are concentrated in advanced communications, biotechnology, and environmental technologies. Through fiscal year 1998, the State of Georgia invested $200 million through the Alliance in research and development programs at its six member universities.

***http://www.atdc.org/***
The **Advanced Technology Development Center** (ATDC) at Georgia Tech provides support services, including incubator space, for both emerging and established high technology firms. ATDC assists corporate R&D teams with access to faculty, researchers, and laboratories at Georgia Tech.

***http://www.gcatt.gatech.edu/***
The **Georgia Center for Advanced Telecommunications Technology**, a division of the **Georgia Research Alliance** based at Georgia Tech, promotes advanced research and commercialization partnerships with companies and collaborative research by Georgia universities.



# Hawaii

## State Information Contact

***Hawaii State Department of Business and Economic Development & Tourism***
Research and Economic Analysis Division
Statistics Branch
P.O. Box 2359
Honolulu, HI 96804
(808) 586-2481
http://www.hawaii.gov/bedt

## Overall State Economic Conditions

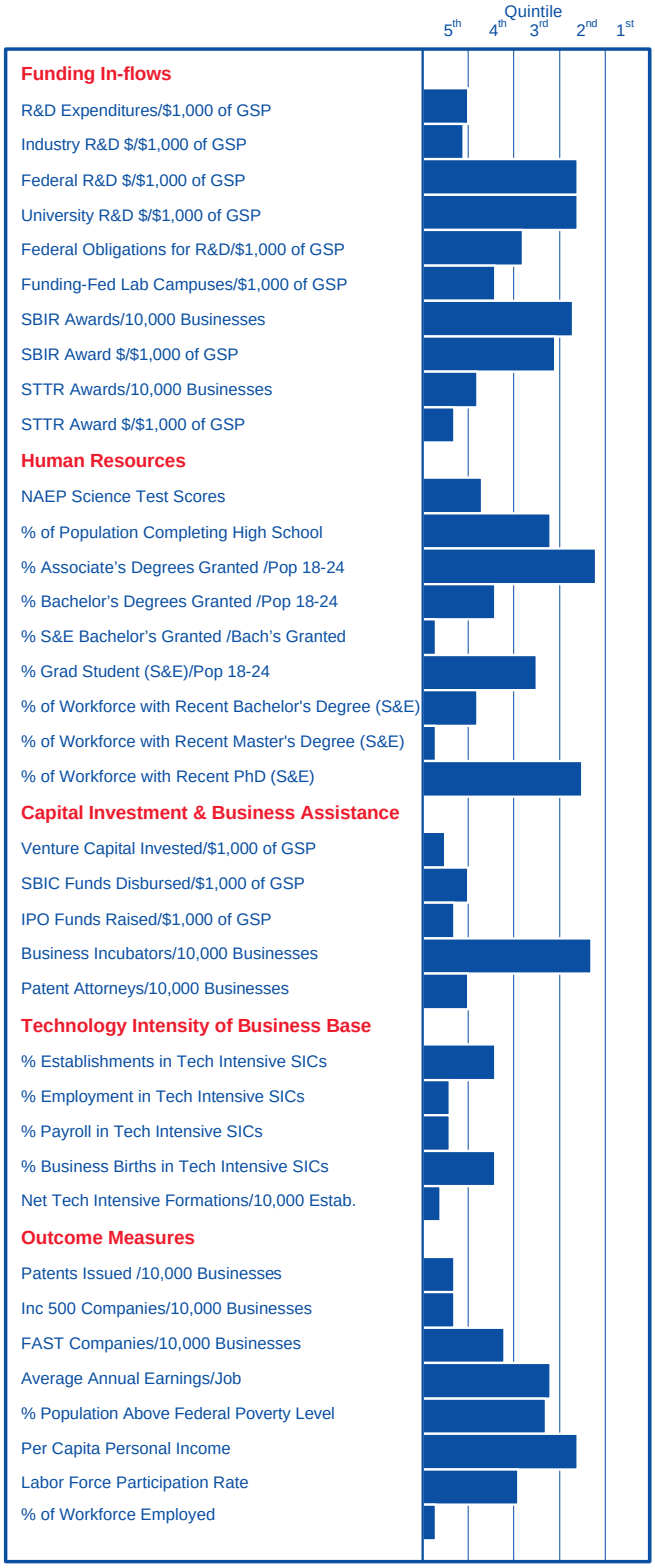
Hawaii ranks 41st in population with almost 1.2 million people, nearly 74% of whom live in metropolitan areas (22nd). Its 1997 per capita income of $23,100 was the 16th highest nationally, down from 7th in 1990. In 1996, the state had the 22nd highest poverty rate (32nd place in 1990), with 12.1% of its population living at or below the poverty level. In 1997, Hawaii's gross state product was $38 billion (40th) and it had 29,991 business establishments (43rd). The state ranks last in manufacturing employment (3.1% of its workforce).

## Science & Technology Organizations

***http://www.htac.org***
**The High Technology Development Corporation** (HTDC) is the state agency supporting development and growth of commercial high technology industry in Hawaii. HTDC actively markets and promotes Hawaii as a site for high-technology applications. HTDC is administratively attached to the Department of Business, Economic Development & Tourism (DBEDT).

Affiliated centers include the Manoa Innovation Center, the Laupahoehoe Teleservice/Telework Program, the Maui Research and Technology Center, and the Hawaii Electric Vehicle Demonstration Program.

***http://www.htdc.org/mic/venture.html***
**The Hawaii Venture Capital Association** (HVCA) assists in developing the infrastructure of service providers necessary to support Hawaii's entrepreneurs. HVCA tries to reduce Hawaii's dependence on tourism, military, and real estate ventures. Members include leading banks, chambers, state agencies, the HTDC, and the MIT Enterprise Forum.



# Idaho

## State Information Contact

***Idaho Department of Commerce***
700 West State Street
Boise, ID 83720
(208) 334-2470
http://www.idoc.state.id.us

## Overall State Economic Conditions

Idaho ranks 40th in population with slightly over 1.2 million people, less than 38% of whom live in metropolitan areas (44th). Its 1997 per capita income of $18,170 ranked 43rd nationally, down from 41st in 1990. In 1996, 11.9% of its population lived at or below the poverty level. Between 1987 and 1997, high technology employment increased 77%. In 1997, Idaho's gross state product was $29.1 billion (43rd) and it had 35,563 business establishments (41st). The state ranks 27th in manufacturing employment (14.6% of its workforce).

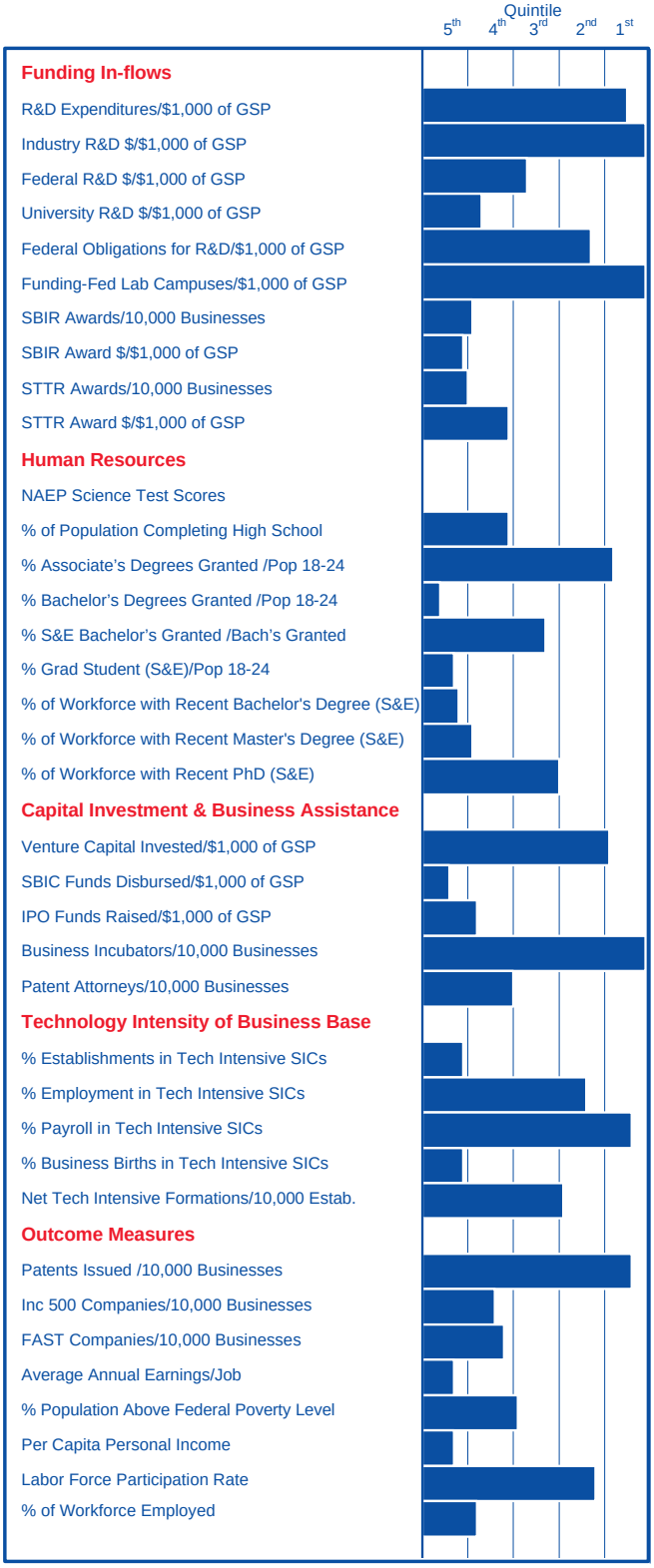
## Science & Technology Organizations

***http://www.id.doe.gov/doeid/inside/brief%20history.htm***
In eastern Idaho, the Idaho **National Engineering and Environmental Laboratory** (INEEL) specializes in research and environmental engineering technology. The laboratory houses one of the U.S. Department of Energy's technical research centers. The facility is responsible for addressing many technical problems, including energy development, waste management, and the safe application of nuclear energy.

INEEL provides companies in Idaho with many opportunities for technology development. A key mission of INEEL is to transfer technology to the private sector by entering into joint ventures to produce needed products and processes or by buying products or services directly from Idaho entrepreneurial companies.

Electronics and computer equipment manufacturers in the state produce about $4 billion in value added sales annually, employing 32,000 people. Global firms like Hewlett Packard, Micron Technology, Micron Electronics, American Microsystems, and Zilog have large research and production facilities in Idaho.

***http://www.idoc.state.id.us/***
The **Idaho Department of Commerce** is the state's lead economic development agency.



# Illinois

## State Information Contact


***Office of Research***
University of Illinois
428 Commerce West
1206 South 6th Street
Champaign, IL 61820
(217) 333-2332
http://www.iupui.edu/it/ibrc/


## Overall State Economic Conditions

Illinois ranks 5th in population with slightly more than 12 million people, over 84% of whom live in metropolitan areas (13th among states). Its 1997 per capita income of $25,024 ranked 7th nationally. In 1996, 12.1% of its population lived at or below the poverty level. In 1997, Illinois' gross state product was $393.5 billion (4th) and it had 302,579 business establishments (5th). The state ranks 18th in manufacturing employment (16.9% of its workforce).

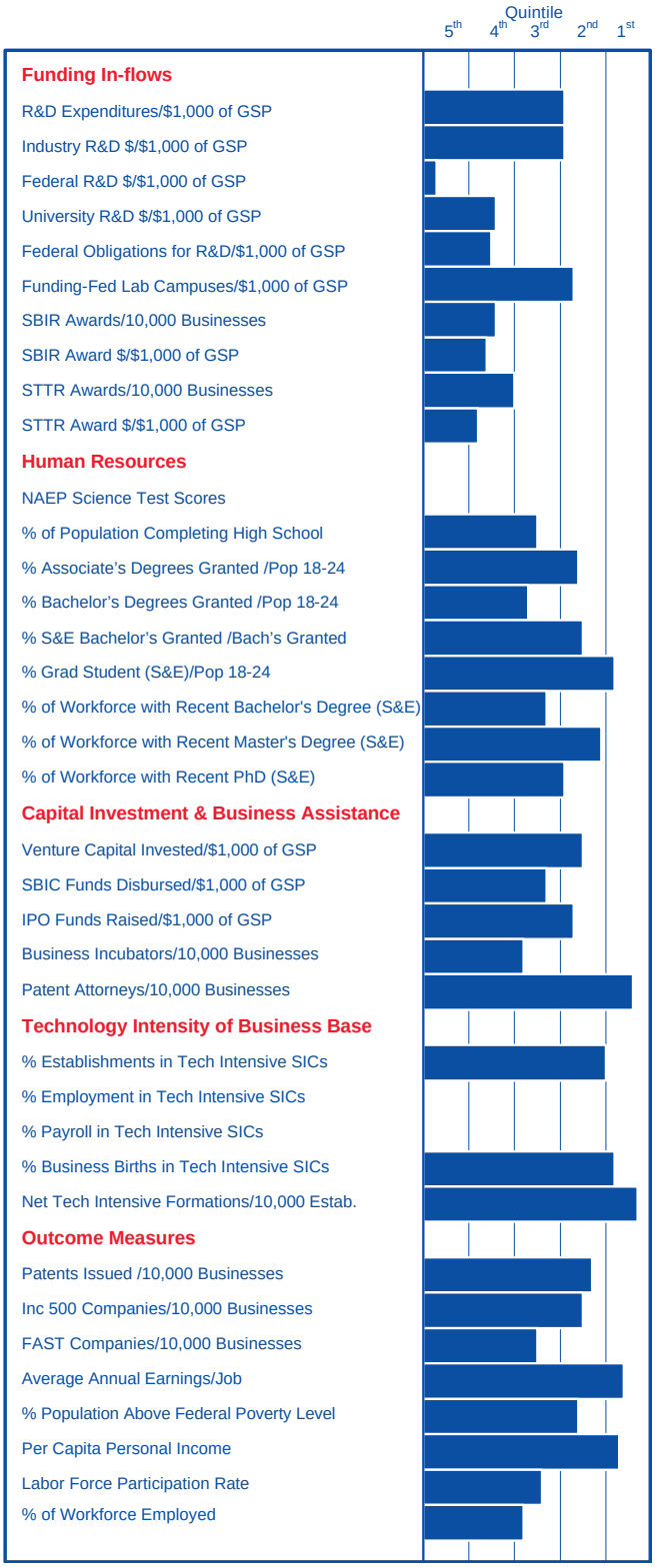
## Science & Technology Organizations

The Illinois Department of Commerce and Community Affairs' newly created **Bureau of Workforce Training and Development** administers technology training programs; the Technology Enterprise Development Program to assist high-tech entrepreneurs; and Technology Challenge Grants for technology commercialization. The bureau also administers the NIST Manufacturing Extension Partnership in Illinois.

The **Technology Venture Investment Program** collaborates with private investment companies to invest in businesses in fields such as health care and biomedical products, information and telecommunications, computing and electronic equipment, manufacturing technology, materials, transportation and aerospace, geoscience, financial and service industries, and agriculture and biotechnology.

***http://www.illinoiscoalition.org***

The **Illinois Coalition** brings together leaders from industry, academia, labor, and government to strengthen Illinois' research institutions and promote growth of technology firms. In partnership with the City of Chicago, the Coalition in early 1999 announced the Chicago Technology Growth Fund to provide seed-stage equity financing to high-tech startup firms; development of a "wired" building in Chicago's South Loop for computer software and information technology firms; and design of a digital infrastructure to provide high-speed telecommunications throughout Chicago.



# Indiana

## State Information Contact

***Indiana Business Research Center***
Indiana University School of Business
801 W. Michigan BS4015
Indianapolis, IN 46202-5151
http://www.iupui.edu/it/ibrc/

## Overall State Economic Conditions

Indiana ranks 14th in population with 5.9 million people, nearly 72% of whom live in metropolitan areas (23rd among states). Its 1997 per capita income of $20,944 ranked 29th nationally. In 1996, 7.5% of its population (compared with 13% in 1990) was living at or below the poverty level. In 1997, Indiana's gross state product was $161.7 billion (15th) and it had 146,241 business establishments (15th). The state ranks 1st in manufacturing employment (23.7% of its workforce). Slightly over 24% of its workforce was employed in services, and nearly 24% in retail and wholesale trade.

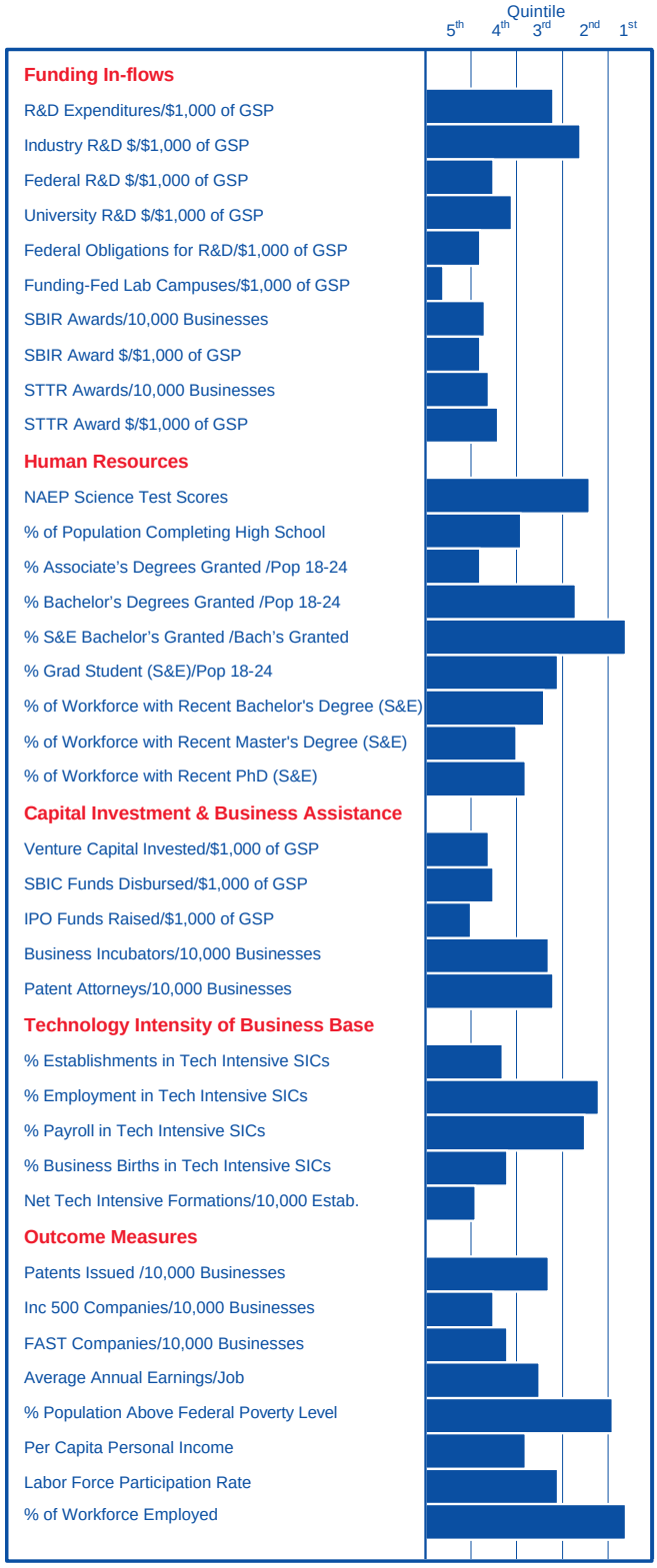
## Science & Technology Organizations

***http://arti.indiana.edu/21st/21st%20century%20facts.htm***
The newly created **Indiana 21st Century Research and Technology Fund** plans to invest $50 million by March 2001 to develop Indiana technology. The Fund's nine-member board represents research, finance, and business leadership in Indiana. The Fund contact is Kathy Davis, 21st Century Research and Technology Fund, One North Capitol Suite 925, Indianapolis, IN 46204.

***http://www.bmtadvantage.org***
The **Indiana Business Modernization & Technology Corp.** (BMT) provides small and medium-sized manufacturers with business, technology and manufacturing support and funding programs.

***http://www.state.in.us/doc/***
**Indiana Department of Commerce** is the lead state agency for economic development.

***http://www.hightechindy.com***
**High Tech Indy** is developing an economic development plan to establish the region as the Midwest's technology leader by leveraging existing strengths in industry sectors such as medical health, computer sciences and communication, and advanced manufacturing.



# Iowa

## State Information Contact

***Public Interest Institute***
600 North Jackson Street
Mount Pleasant, IA 52641
(319) 385-3462
http://limitedgovernment.org/

## Overall State Economic Conditions

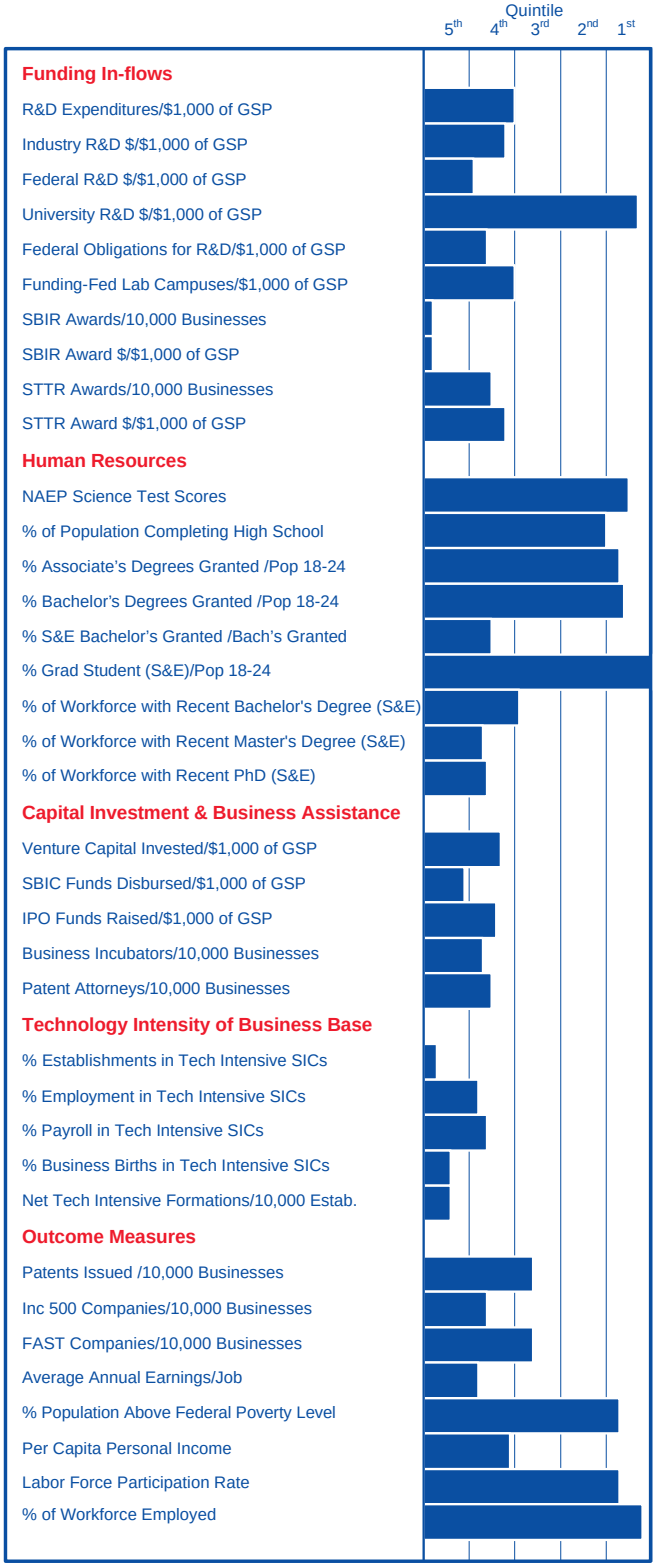
Iowa ranks 30th in population with nearly 2.9 million people, over 44% of whom live in metropolitan areas (40th among states). Its 1997 per capita income of $20,499 ranked 32nd nationally. In 1996, 9.6% of its population lived at or below the poverty. In 1997, Iowa's gross state product was $80.5 billion (29th) and it had 80,608 business establishments (30th). The state ranks 13th in manufacturing employment (18.1% of its workforce).

## Science & Technology Organizations

***http://www.state.ia.us/government/ided/***
The **Iowa Department of Economic Development** (IDED), through its **Entrepreneurial Ventures Assistance** (EVA) program, provides financial and technical assistance to start-up and early-stage companies. Information Technology (IT) focuses on industry sectors offering the greatest start-up and growth potential for the state, including, but not limited to, biotechnology, recyclable materials, software development and computer-related products, advanced materials, advanced manufacturing, and medical and surgical instruments.

***http://www.state.ia.us/ided/index.html***
IDED's **Iowa Capital Corporation** (ICC) is a for-profit venture capital corporation established with funds provided by the State of Iowa and equity investments from Iowa financial institutions, insurance companies, and electric utilities. The corporation provides its shareholders an attractive, risk-adjusted rate of return on investments that advance economic development in Iowa.

***http://iabiotech.ftechg.com***
The **Iowa Biotechnology Association** was formed to commercialize new biotechnologies in a timely manner and reduce the lead time for their deployment by helping Iowa companies share ideas on the transfer and development of technologies. (Doug Getter, Executive Director, (515) 242-4815).



# Kansas

## State Information Contact


***Institute for Public Policy and Business Research***
University of Kansas
607 Blake Hall
Lawrence, KS 66045-2960
(785) 864-3701
http://www.ukansedu/cwis/units/IPPBR/


## Overall State Economic Conditions

Kansas ranks 32nd in population with 2.6 million people, 55.4% of whom live in metropolitan areas (36th among states). Its 1997 per capita income of $21,632 ranked 24th nationally. In 1996, 11.2% of its population (compared with 10.3% in 1990) lived at or below the poverty level. In 1997, Kansas' gross state product was $71.7 billion (31st) and it had 73,924 business establishments (31st). The state ranks 21st in manufacturing employment (16.2% of its workforce).

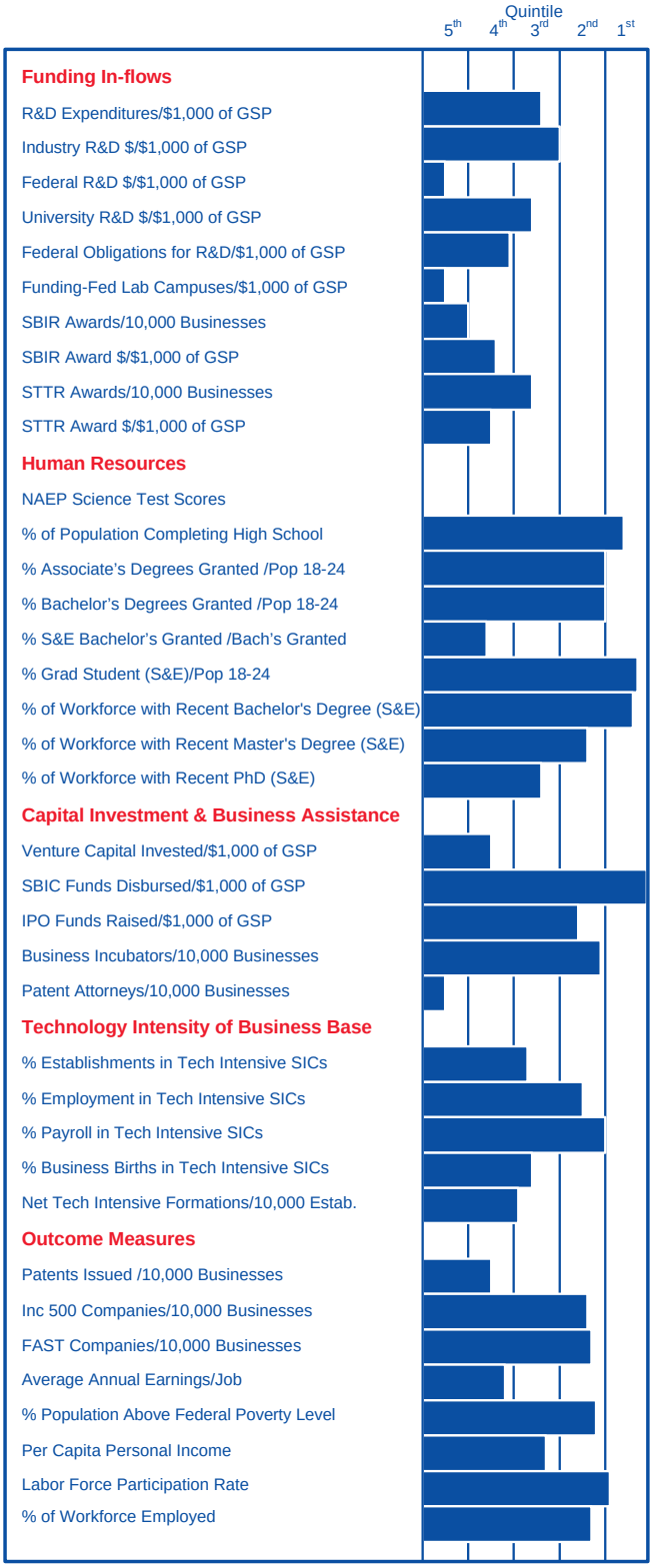
## Science & Technology Organizations

***http://www.ktec.com***
The **Kansas Technology Enterprise Corporation** (KTEC) is a quasi-public corporation to promote advanced technology-based economic development. KTEC has established Innovation and Commercialization Corporations (ICCs) to help entrepreneurs by offering business incubation services.

Kansas has established five Centers of Excellence, university-based research centers providing basic and applied research, product and process development, and technical consulting. They include: the Advanced Manufacturing Institute at Kansas State University, the Center for Design, Development and Production at Pittsburg State University, the Higuchi Biosciences Center and the Information and Telecommunication Technology Center at the University of Kansas, and the National Institute for Aviation Research at Wichita State University.

***http://www.smartkc.com***
The **Kansas City Development Council** is a private, non-profit organization attracting job-creating investment to the 15-county, bistate Kansas City Area.

***http://www.ink.org/public/ks-inc/***
**Kansas, Inc.** promotes new and existing industries by formulating statewide economic development strategy, recommending program and public policy initiatives, and conducting oversight and evaluation.



# Kentucky

## State Information Contact


***Kentucky Cabinet for Economic Development***
Division of Research
500 Mero Street
Capital Plaza Tower
Frankfort, KY 40601
(502) 564-4886
http://www.state.ky.us/edc/cabmain.htm


## Overall State Economic Conditions

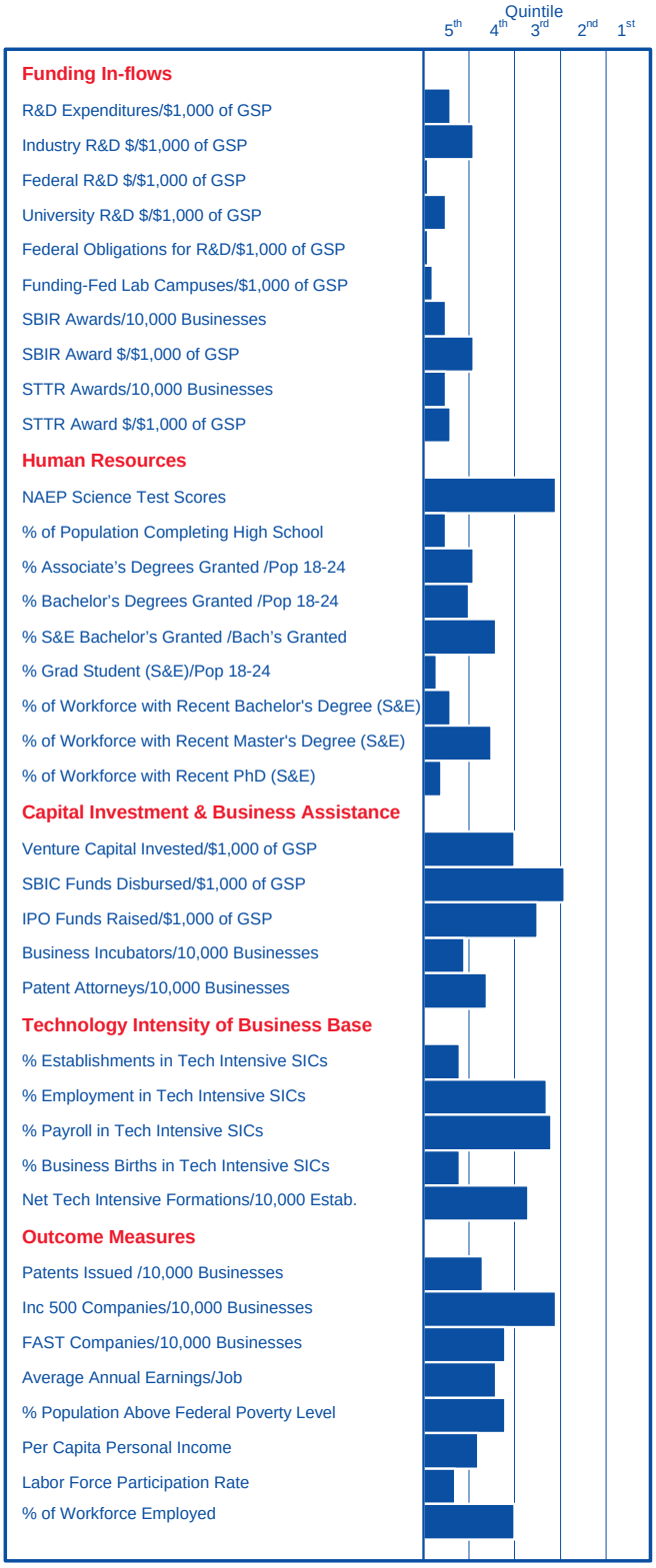
Kentucky ranks 25th in population with over 3.9 million people, 48% of whom live in metropolitan areas (39th among states). Its 1997 per capita income of $18,329 ranked 41st nationally. In 1996, 17% of its population lived at or below the poverty level. In 1997, Kentucky's gross state product was $100.1 billion (26th) and it had 89,029 business establishments (28th). The state ranks 12th in percentage of manufacturing employment (18.4% of the non-farm workforce).

## Science & Technology Organizations

***http://www.thinkkentucky.com/kyedc/biotech.html***
**The Business and Entrepreneurship Development Division** of the Kentucky Department of Economic Development links Kentucky companies to services and programs, including technology and research, that enhance competitiveness. The Division's **Kentucky Technology Service, Inc.** makes engineering and business expertise available to small and medium-sized manufacturing firms.

***http://www.kstc.org/index.cfm***
The **Kentucky Science and Technology Council** is a private, non-profit corporation for the advancement of science and technology in Kentucky. It coordinates the Experimental Program to Stimulate Competitive Research (EPSCoR), which has realized $40 million in federal R&D activity. It recently prepared the state's first science and technology plan.

***http://www.thinkkentucky.com/kyedc/kedpartner.html***
The **Kentucky Economic Development Partnership**, a 13-member private/public board, provides oversight to the Kentucky Cabinet for Economic Development and a common framework for state development policy, technology and research, technical assistance, and employment and training.



# Louisiana

## State Information Contact

***University of New Orleans***
Division of Business and Economic Research
New Orleans, LA 70148
(504) 280-6240
http://www.leap.nlu.edu/STAAB.htm

## Overall State Economic Conditions

Louisiana ranks 22nd in population with nearly 4.4 million people, over 75% of whom live in metropolitan areas (21st among states). Its 1997 per capita income of $18,350 placed the state 40th nationally. In 1996, 20.5% of its population lived at or below the poverty level. In 1997, Louisiana's gross state product was $124.4 billion (23rd) and it had 100,770 business establishments (23rd). The state also ranks 40th in manufacturing employment (10.3% of its workforce).

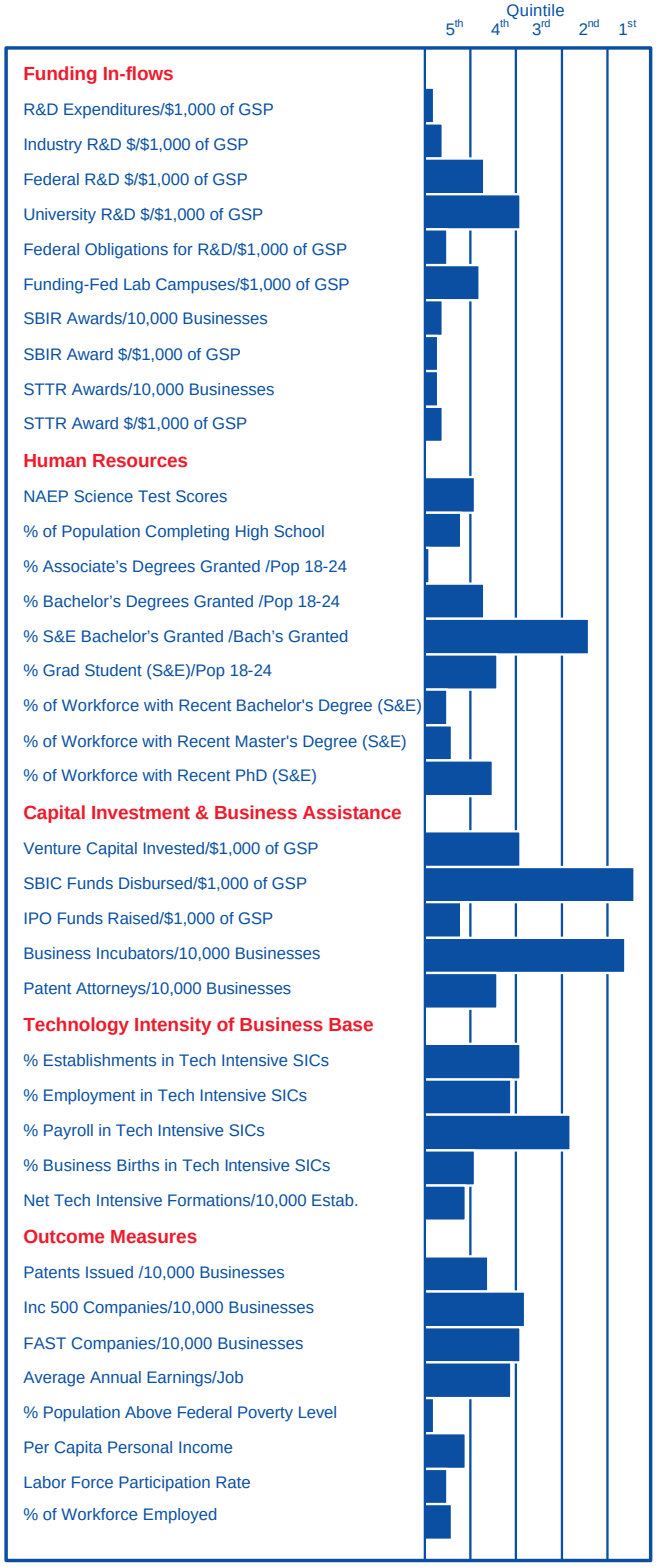
## Science & Technology Organizations

***http://www.lded.state.la.us/***
**The Technology, Modernization, and Innovation Office of the Louisiana Department of Economic Development** (LDED) fosters development of manufacturing networks and interfirm collaboration, maintains an electronic directory of university centers, and assists technology transfer from federal laboratories.

***http://www.louisianapartnership.com***
The **Louisiana Partnership for Technology and Innovation** (lapti@aol.com) is a non-profit corporation advancing Louisiana-based technologies and their application in the manufacturing and service sectors. It provides assistance to early stage, technology ventures, supports state agencies on technology policy issues, and helps universities market technologies and develop technology partnerships.

***http://www.usl.edu/***
The **Louisiana Productivity Center** at the University of Southwestern Louisiana has a grant from the NIST to operate a Manufacturing Extension Partnership.

***http://www.biomed.org/center.html***
The **Biomedical Research Foundation of Northwest Louisiana** works to enhance the scientific capacity and economic development of Northwest Louisiana.



# Maine

## State Information Contact

***Maine Department of Economic and Community Development***
State House
Station 59
Augusta, ME 04333
(207) 287-2656
http://www.econdevmaine.com/

## Overall State Economic Conditions

Maine ranks 39th in population with 1.24 million people, nearly 36% of whom live in metropolitan areas (45th among states). Its 1997 per capita income of $19,590 ranked 36th nationally. In 1996, 11.2% of its population lived at or below the poverty level. In 1997, Maine's gross state product was $30.2 billion (42nd) and it had 37,964 business establishments (39th). The state ranks 24th in manufacturing employment (15.8% of its workforce).

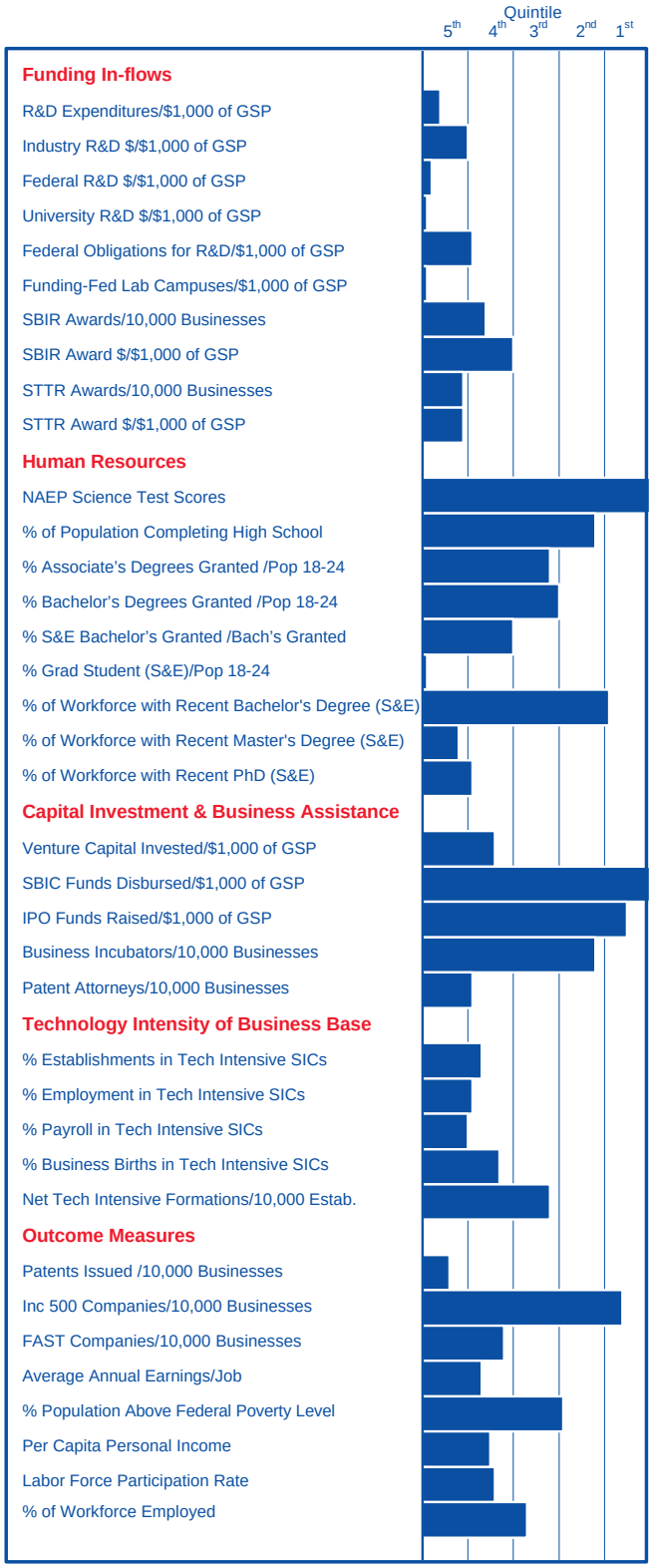
## Science & Technology Organizations

***http://www.mstf.org/***
The **Maine Science and Technology Foundation** promotes the practical application of science and technology in education, research, and business. Key programs are: EPSCoR, a federal-state-industry partnership to enhance Maine's science and engineering infrastructure, and the Maine SBIR Assistance Program.

The **Office of Business Development (OBD) in Maine's Department of Economic and Community Development** is the state's agency for providing assistance to existing businesses, attracting new business investment to the state, and finding resources for worker retraining and technology improvement.

***http://www.mdf.org***
The **Maine Development Foundation**, with a membership of 300 companies, educational institutions, municipalities, government agencies, and nonprofit organizations, promotes Maine's long-term economic growth by building the state's leadership capacity.

***http://www.mainetechnology.org***
Established by the Maine Legislature in 1999, the primary objective of the **Maine Technology Institute** is to provide seed investment grants to private companies and research laboratories that will increase the level and the pace of research and development and create new jobs for Maine in seven targeted technology sectors.



# Maryland

## State Information Contact

***Regional Economic Studies Institute***
Towson University
Towson, MD 21252-7097
(410) 830-7374
http://www.resiusa.org

## Overall State Economic Conditions

Maryland ranks 19th in population with just over five million people, nearly 93% of whom live in metropolitan areas (7th among states). Its 1997 per capita income of $25,705 ranked 6th nationally. In 1996, nearly 10.4% of its population lived at or below the poverty level. In 1997, Maryland's gross state product was $153.8 billion (16th) and it had 126,001 business establishments (21st). The state ranks 42nd in manufacturing employment (7.8% of its workforce).

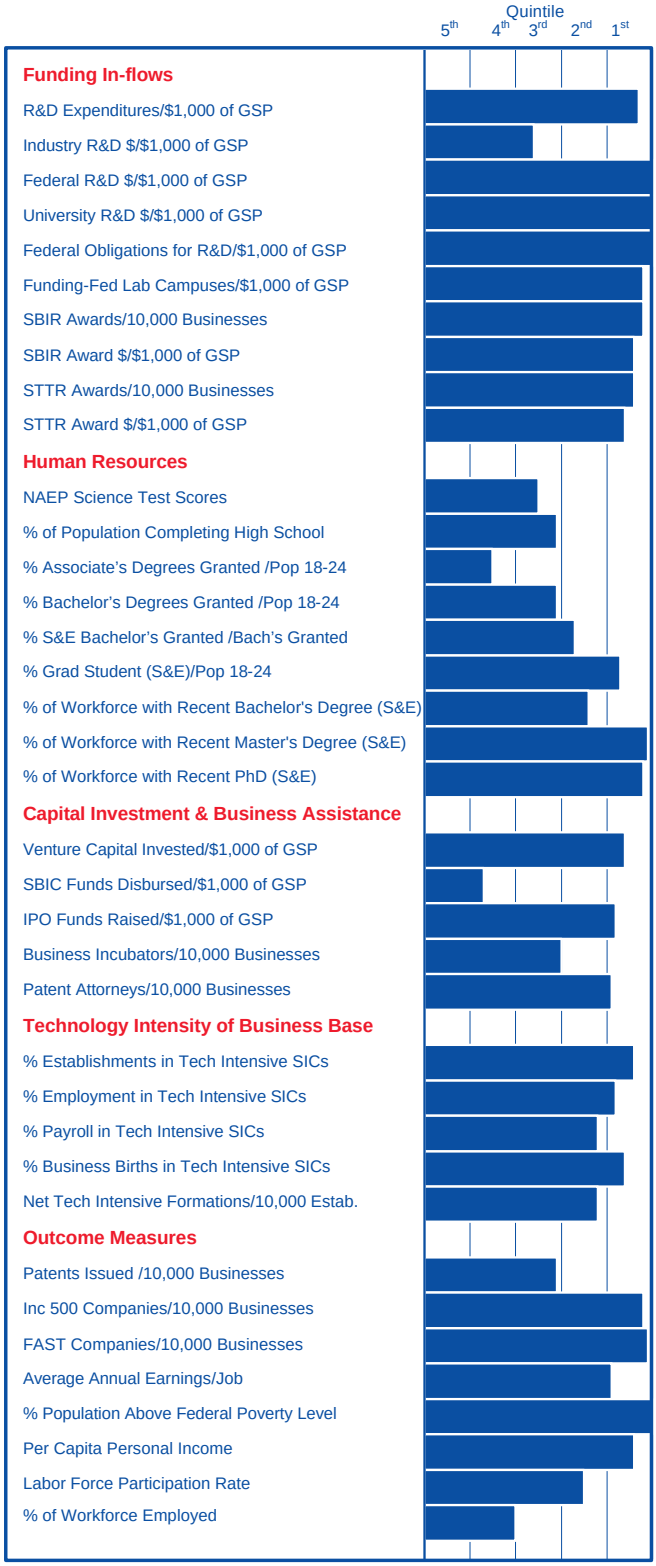
## Science & Technology Organizations

***http://www.mdbusiness.md.us***
The **Maryland Technology Alliance**, a private/public consortium consisting of federal labs, state agencies, Maryland universities, and technology councils, is responsible for maximizing the state's resources for technology-based development and business creation and expansion. Target technology areas are aerospace, bioscience and biotechnology, earth and environmental sciences, health care, information science and technology, materials science and engineering, telecommunications, and scientific computation.

***http://www.mdhitech.org/***
The **High Technology Council of Maryland**, a 600-plus member consortium in Maryland and the Greater Washington Region, operates the Maryland Technology Channel Internet site with on-demand video and live broadcasts and will provide members with virtual networking in late 1999.

***http://www.baltimoretech.org/***
The **Greater Baltimore Technology Organization** is a networking and advocacy organization for the area's technology companies and community.

***http://www.mdswic.org***
Associated with Maryland's Fraunhofer Center, the Maryland Software Industry Consortium offers members training and program development services.



# Massechusettes

## State Information Contact

***Massachusetts Institute for Social and Economic Research***
128 Thompson Hall
University of Massachusetts at Amherst
Amherst, MA 01003
(413) 545-3460
http://www.umass.edu/miser/dataop/datacenter.htm

## Overall State Economic Conditions

Massachusetts ranks 13th in population with just over six million people, slightly over 96% of whom live in metropolitan areas (3rd among states). Its 1997 per capita income of $27,972 ranked 3rd nationally. In 1996, 10.1% of its population lived at or below the poverty level. In 1997, Massachusetts' gross state product was $221 billion (11th) and it had 166,986 business establishments (13th). The state ranks 29th in manufacturing employment (14.4% of its workforce).

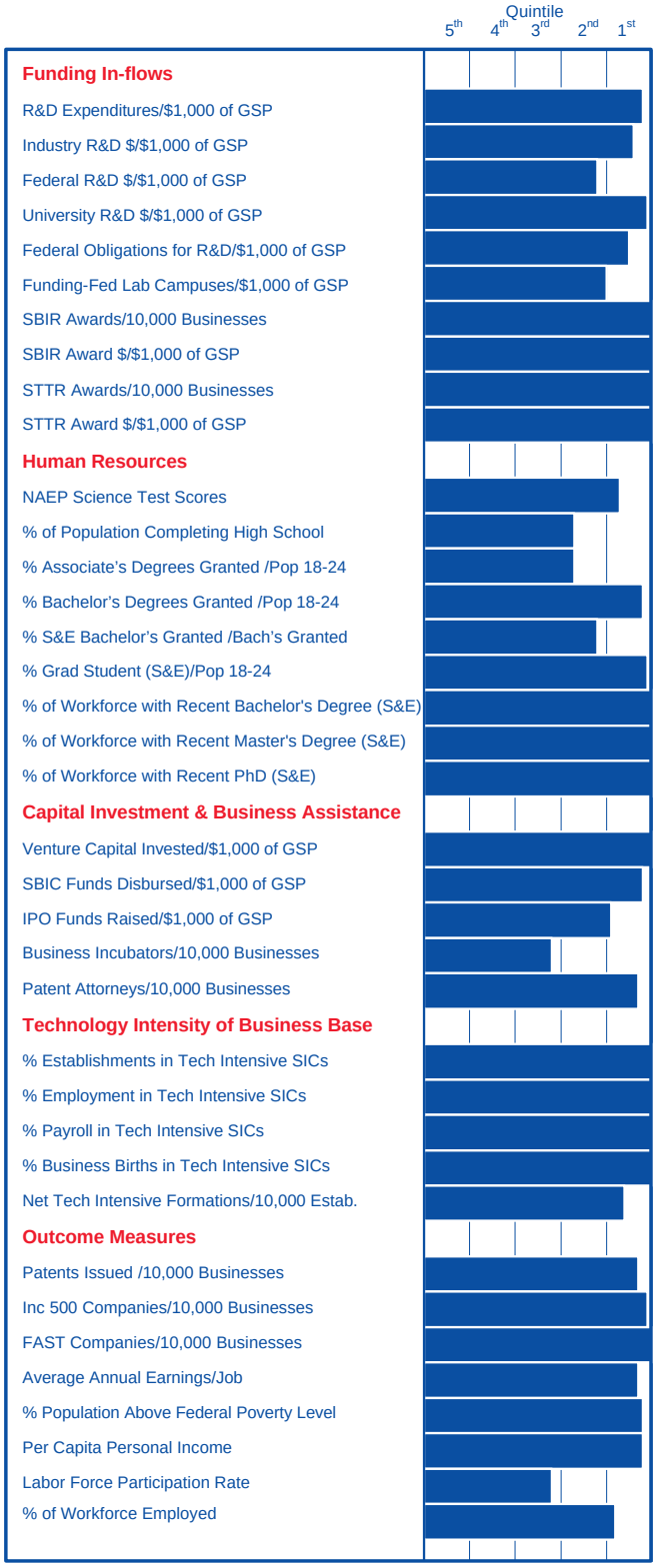
## Science & Technology Organizations

***http://www.mtpc.org/***
The **Massachusetts Technology Collaborative** (MTC) is a state-sponsored economic development organization fostering greater collaboration among the state's companies, higher education, capital, and technology communities. MTC is establishing a **Massachusetts Innovation Council** as a formal mechanism for tying together the interests of academia, hospitals, entrepreneurs, and technology market leaders. Priority industry sectors include photonics, medical devices, IT, and e-commerce.

***http://www.mtdc.com***
The **Massachusetts Technology Development Corporation** is a venture capital firm addressing the "capital gap" for start-up and expansion of early-stage technology companies.

***http://www.state.ma.us/econ/ded.htm***
The **Massachusetts Department of Economic Development** is the state's lead development agency and with the **Massachusetts Office of Business Development** is responsible for business creation, expansion, and relocation.

***http://www.state.ma.us/mdfa/emerg.htm***
**MassDevelopment's Emerging Technology Fund** (ETF) is a financing tool for technology based companies. Its purpose is to help companies to obtain debt financing and to preserve equity.



# Michigan

## State Information Contact

***Michigan Information Center***
Department of Management & Budget
Demographic Research and Statistics
P.O. Box 30026
Lansing, MI 48909
(517) 373-7910
http://www.state.michigan.us/dmb/mic

## Overall State Economic Conditions

Michigan ranks 8th in population with 9.8 million people, over 82% of whom live in metropolitan areas (16th among states). Its 1997 per capita income of $22,680 ranked 18th nationally. In 1996, 11.2% of its population lived at or below the poverty level. In 1997, Michigan's gross state product was $272.6 billion (9th) and it had 235,308 business establishments (8th). The state ranks 5th in manufacturing employment (21.8% of its workforce).

## Science & Technology Organizations

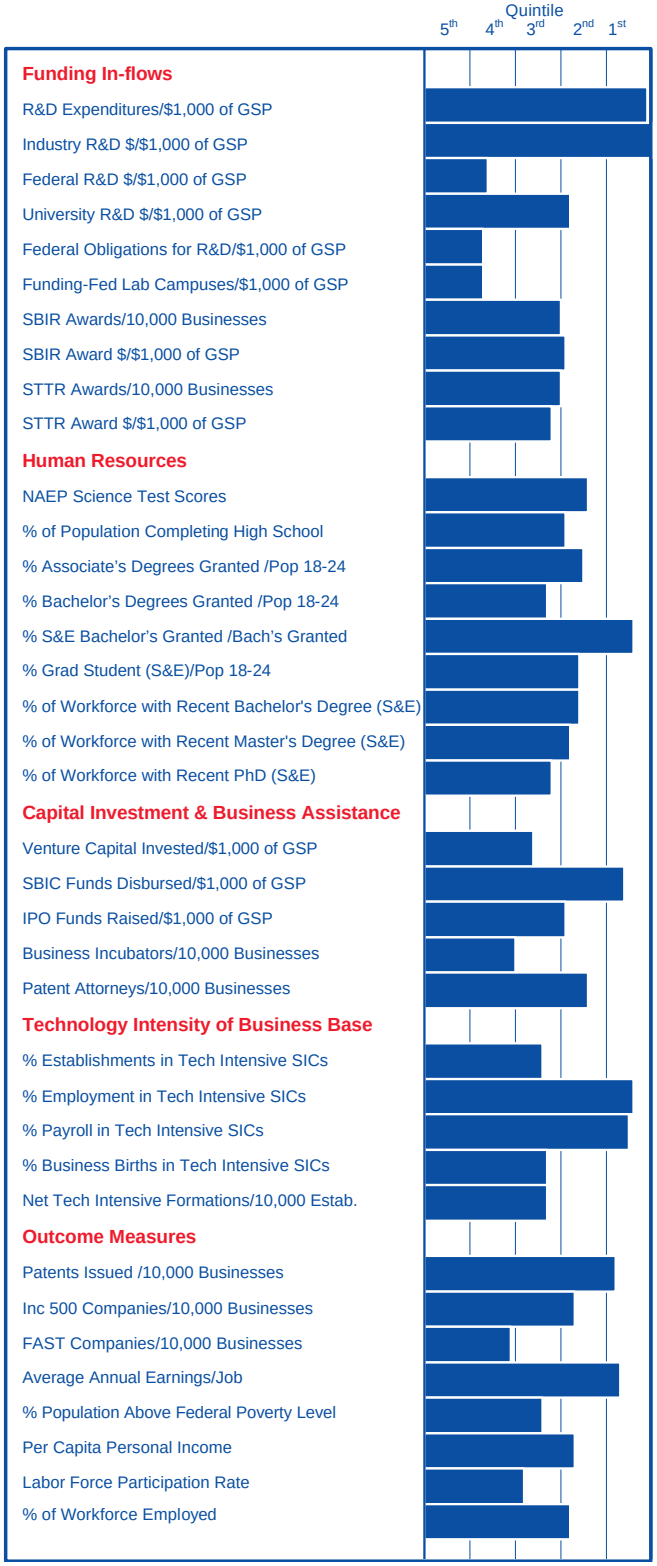
***http://www.medc.michigan.org***
The **Michigan Economic Development Corporation** (MEDC) is a newly-formed economic development corporation for business expansion, relocation, and other services, including technology services. MEDC is forming a commercialization assistance program to provide early stage seed financing and consulting support for technology start-ups.

***http://np-serv1.bizserve.com/MI/iforump.nsf/SBCAP2#MCAP***
The **Michigan Commercialization Assistance Program** (MCAP) provides analysis, evaluation, and possible arrangement of private placement financing for new high potential, technology-based applications in biotechnology, information technologies, advanced manufacturing, and medical/health-related ventures.

***http://www.michbio.org***
The **Michigan Biotechnology Association** promotes the growth of the biotechnology industry in Michigan.

***http://www.greattechnology.org/.***
This website, a production of the 1998 Governor's Innovation Forum, provides a comprehensive list of industry associations, government agencies, companies, and institutions supporting technology innovation in the state.

***http://www.itsmi.org***
The **Intelligent Transportation Society-Michigan** is an organization of leaders in the transportation industry.



# Minnesota

## State Information Contact

***State Demographer's Office***
Minnesota Planning
300 Centennial Office Building
658 Cedar Street
St. Paul, MN 55155
(651) 296-2557
http://www.mnplan.state.mn.us/demography/

## Overall State Economic Conditions

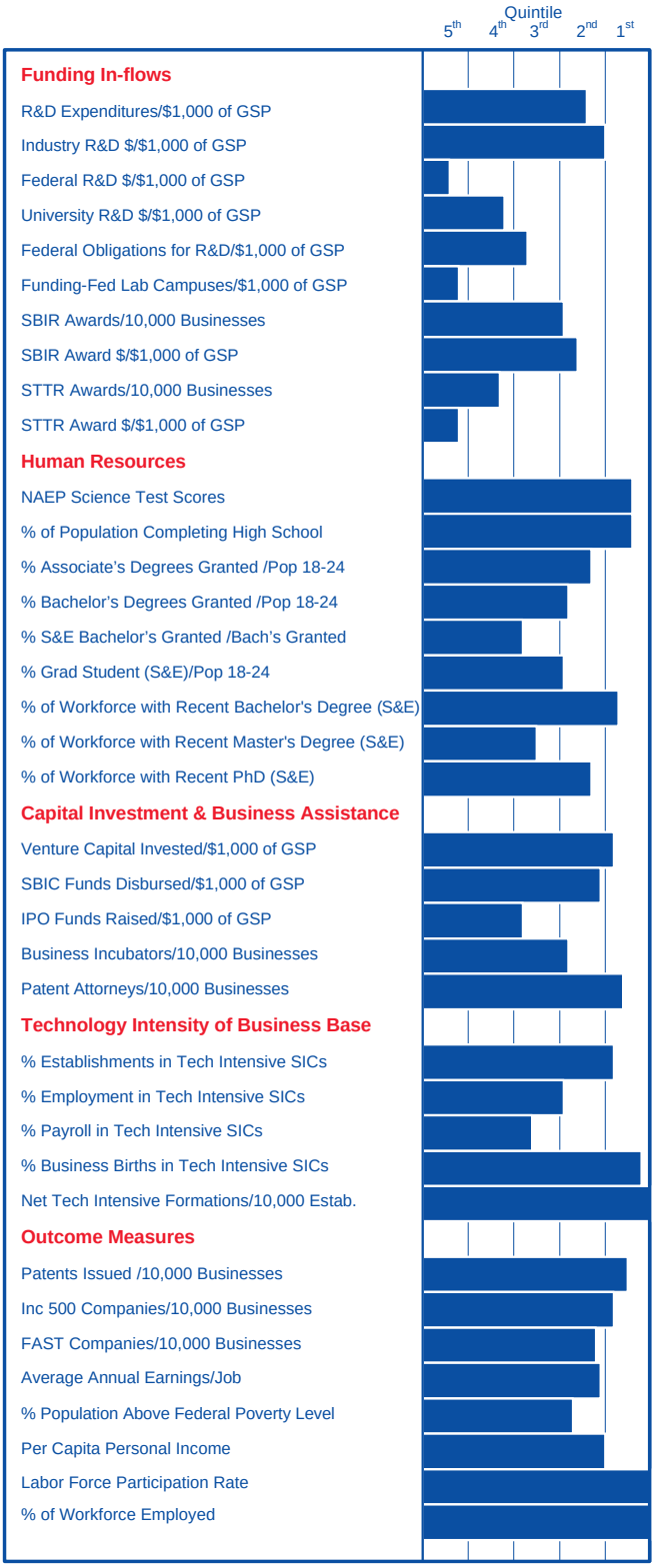
Minnesota ranks 20th in population with 4.7 million people, nearly 70% of whom live in metropolitan areas (25th among states). Its 1997 per capita income of $23,797 ranked 10th nationally. In 1996, 9.8% of its population lived at or below the poverty level. In 1997, Minnesota's gross state product was $149.4 billion (18th) and it had 133,002 business establishments (18th). The state ranks 15th in percentage of manufacturing employment (17.5% of its workforce).

## Science & Technology Organizations

***http://www.minnesotatechnology.org***
**Minnesota Technology** (MT), an affiliate of the NIST-MEP program, promotes technology-based economic development. It publishes an annual directory of 1,300 technology companies and provides Minnesota industry with electronic access to business and technical information. MT's Technology Development Office provides liaison for companies with the Institute of Technology (IT) at the **University of Minnesota**, where it is co-located. The IT provides access to more than 400 faculty experts. In addition, the Patents and Technology Marketing site at the University of Minnesota features licensable technologies in medical devices, drugs & diagnostics, agriculture & horticulture, chemical, mechanical & biological technologies, and computers & electrical engineering.

***http://mbbnet.umn.edu/***
**MBBNET** is an electronically-based University-industry collaborative network for the state's biomedical, engineering, biotechnology, and health care companies.

***http://www.dted.state.mn.us/01x00f.asp***
**Minnesota Department of Trade and Economic Development** is the state's lead economic development agency. Its Business and Community Development division assists business expansion of existing Minnesota businesses while providing financial, training and technical services to communities, businesses, and economic development professionals.



# Mississippi

## State Information Contact


***College of Business and Industry***
Division of Research
Mississippi State University
P.O. Box 5288
Mississippi State, MS 39762
(601) 325-3817
http://tiger.bpa.missouri.edu/bparc/


## Overall State Economic Conditions

Mississippi ranks 31st in population with 2.75 million people, over 35% of whom live in metropolitan areas (46th among states). Its 1997 per capita income of $16,213 ranked 50th nationally. In 1996, 20.6% of its population lived at or below the poverty level. In 1997, Mississippi's gross state product was $58.3 billion (33rd) and it had 59,347 business establishments (33rd). The state ranks 5th in the proportion of its workforce in manufacturing employment (nearly 22%).

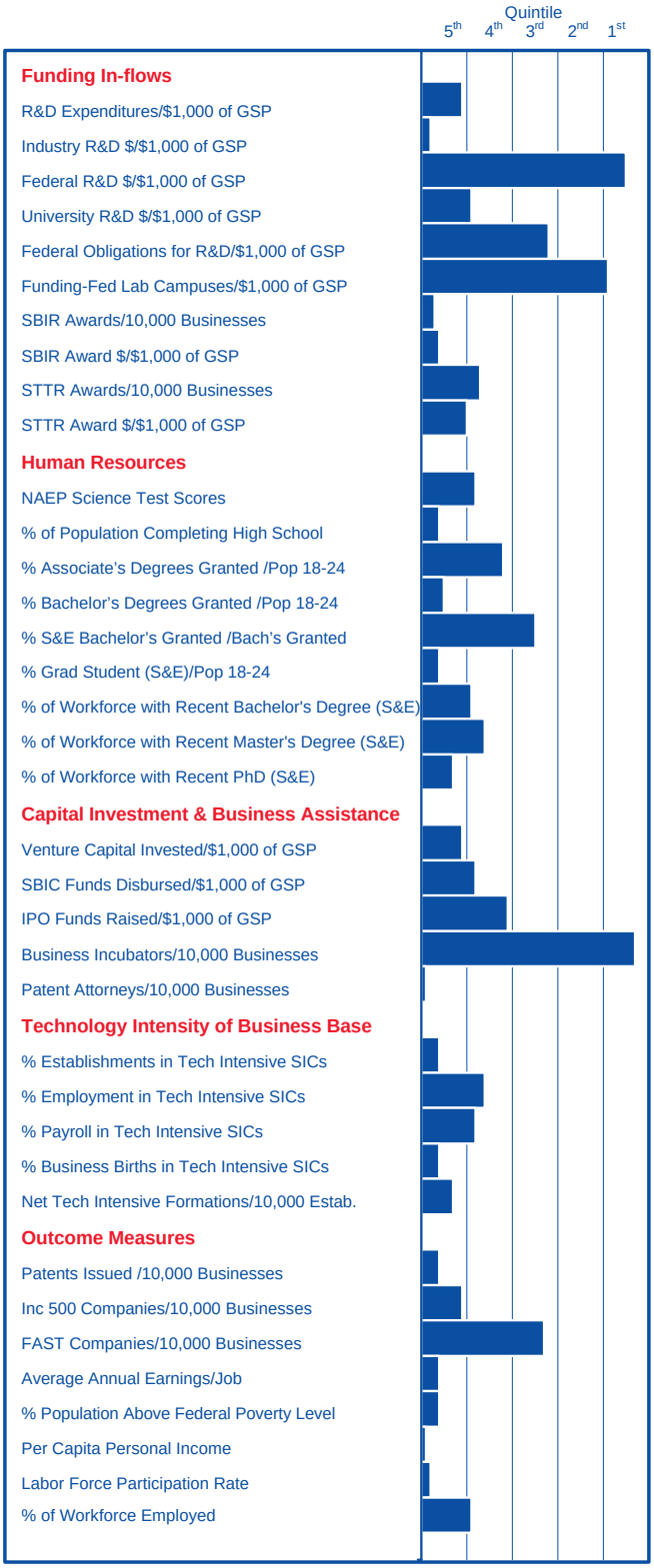
## Science & Technology Organizations

***http://www.decd.state.ms.us***
The **Mississippi Department of Economic and Community Development** is the state's lead development organization. It maintains a list of key technology organizations contributing to industry and economic development and can be accessed at http://www.decd.state.ms.us/ECD/Technology.

***http://www.psrc.usm.edu/MPI/***
The **University of Southern Mississippi's Polymer Institute** (MPI) serves the state's 200 polymer-related manufacturers with its rapid prototyping service.

***http://www.tecnet.org/mtep/***
The **Mississippi Technology Extension Partnership**, with offices at Stennis Space Center and other locations, helps Mississippi companies integrate technological and business advances.

***http://www.msstate.edu/dept/research/EPSCoR/mrc.html#advisor***
The **Mississippi Research Consortium**, consisting of the state's four biggest universities, has helped lead development of the state's Experimental Program to Stimulate Competitive Research (EPSCoR) program and the creation of the new **Mississippi Technology, Inc.**, which will help develop state technology strategy and policy with private sector participation.



# Missouri

## State Information Contact

***University of Missouri***
Business and Public
Administration Research Center
Columbia, MO 65211
(573) 882-4805

## Overall State Economic Conditions

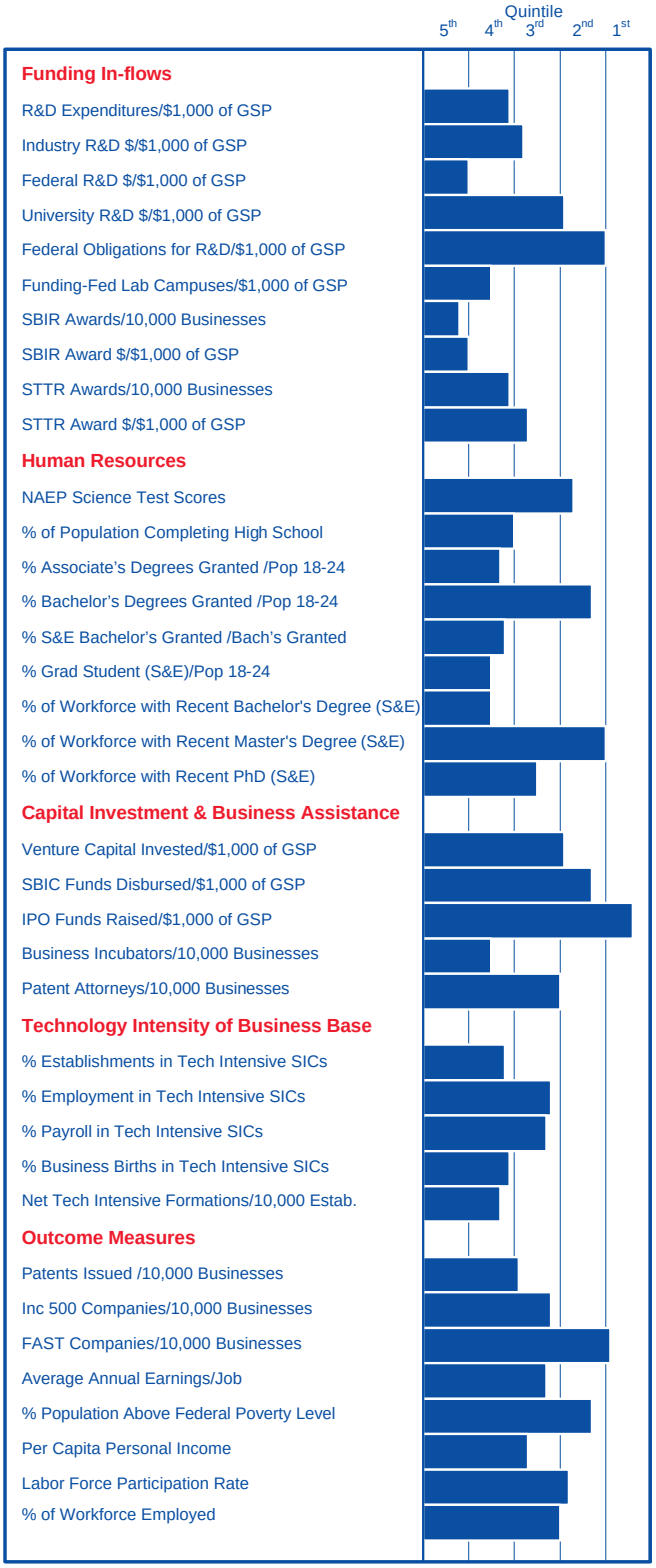
Missouri ranks 16th in population with over 5.4 million people, 68% of whom live in metropolitan areas (28th among states). Its 1997 per capita income of $21,296 ranked 26th nationally. In 1996, 9.5% of its population lived at or below the poverty level. In 1997, Missouri's gross state product was $152.1 billion (17th) and it had 143,418 business establishments (16th). The state ranks 23rd in percentage of total employment in manufacturing (nearly 16% of its workforce).

## Science & Technology Organizations

***http://eee.ecodev.state.mo.us/technology/innovation.html***
**Missouri's Centers for Advanced Technology (CAT)** program provides state funding for industry research contracted through a state university. The centers include the **Manufacturing Research and Training Center and the Electronic Materials Applied Research Center** (EMARC), both at the University of Missouri-Rolla.

Missouri sponsors four innovation centers providing management and technical assistance for early stage development of new technology-based business ventures. These include the **Center for Emerging Technologies** (St. Louis); the **Missouri Enterprise Business Assistance Center** (Rolla/Springfield); the **Missouri Innovation Center** (Columbia); and the **Center for Business Innovation** (Kansas City). The state also provides building sites specifically developed for technology-based business ventures in the Missouri Research Park, Chesterfield.

***http://www.missourienterprise.org/***
**Missouri Enterprise**, a non-profit organization serving the needs of small and medium-size businesses in Missouri, operates an Innovation Center and an environmental program, as well as hosts the Mid-America Manufacturing Technology Center, a NIST-MEP affiliate. Services at the Innovation Center include an incubator, financial support for research projects, and technology transfer assistance.



# Montana

## State Information Contact

***Census and Economic Information Center***
Montana Department of Commerce
P.O. Box 200501
1424 9th Avenue
Helena, MT 59620-0505
(406) 444-4393
http://www.commerce.state.mt.us/ceic/

## Overall State Economic Conditions

Montana ranks 44th in population with 880,000 people, under 24% of whom live in metropolitan areas (50th among states). Its 1997 per capita income of $17,787 ranked 46th nationally. In 1996, 17% of its population lived at or below the poverty level. In 1997, Montana's gross state product was $19.2 billion (47th) and it had 30,757 business establishments (42nd). The state ranks 45th in percentage of manufacturing employment (6.6% of its workforce).

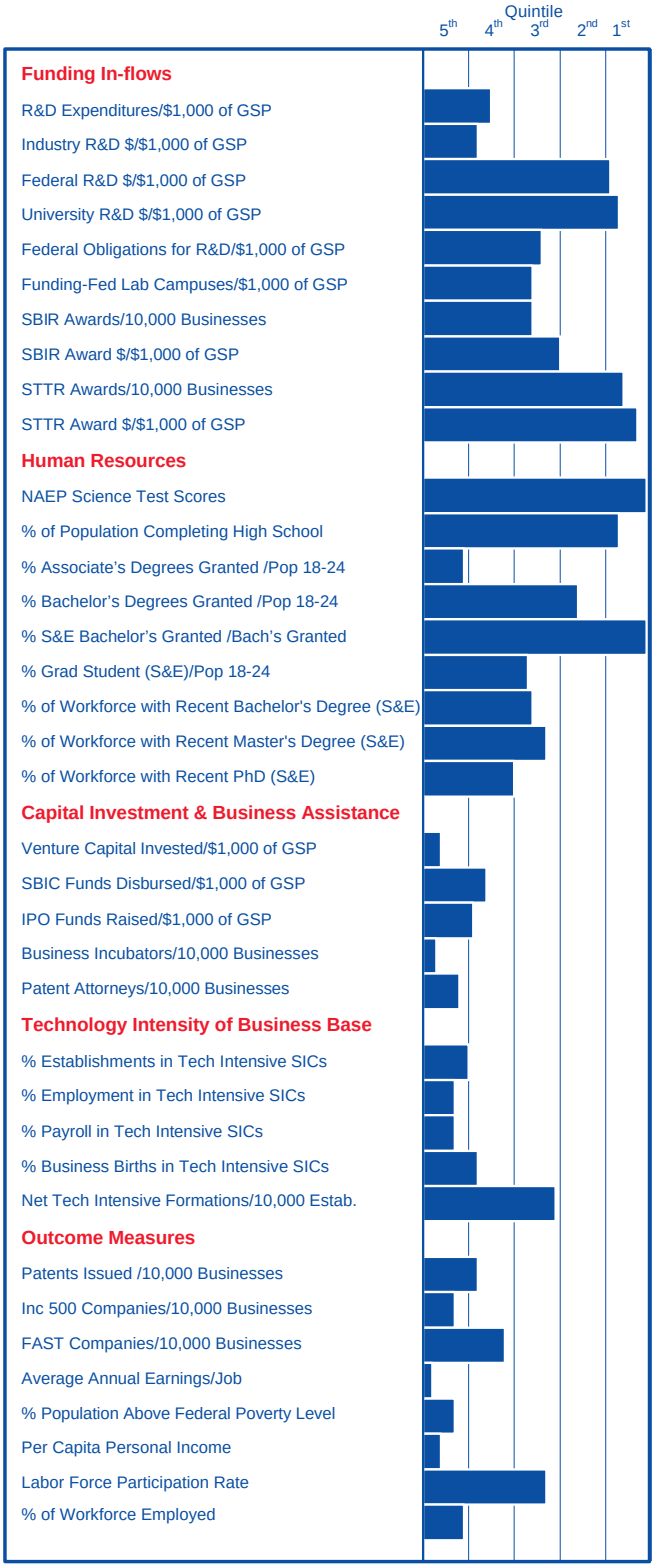
## Science & Technology Organizations

**Montana Research and Commercialization Technology Board** was appointed in August 1999 to improve the scientific infrastructure of the state and to help commercialize research. The Board will administer a research fund that will provide matching funds for federal grants.

The **Montana Department of Commerce Small Business Development Center/SBIR** Program is being created with a federal grant to provide technical assistance to help Montana's high-tech small businesses win SBIR/STTR grants.

***http://commerce.state.mt.us/EconDev***
The **Montana Department of Commerce's Regional Development Office** provides support and direct assistance to local and regional development efforts in five regions. Under development is a Montana manufacturing community database promoting the replacement of parts and supplies currently being furnished by non-Montana suppliers.

***http://commerce.state.mt.us/EconDev/Manuf.htm***
The **Montana Manufacturing Extension Center** (MMEC), affiliated with NIST-MEP, provides Montana manufacturers with engineering and managerial assistance. This state-wide program has its home office at Montana State University—Bozeman. The **University Technical Assistance Program** provides technical assistance to Montana manufacturers through engineering graduate students.



# Nebraska

## State Information Contact


***Department of Economic Development***
Division of Research
Box 94666
Lincoln, NE 68509
(402) 471-3784
http://www.ded.state.ne.us/


## Overall State Economic Conditions

Nebraska ranks 38th in population with over 1.6 million people, 51% of whom live in metropolitan areas (37th among states). Its 1997 per capita income of $21,121 ranked 27th nationally. In 1996, slightly over 10% of its population lived at or below the poverty level. In 1997, Nebraska's gross state product was $48.8 billion (36th) and it had 48,588 business establishments (35th). The state ranks 31st in percentage of its workforce employed in manufacturing (13.6%).

## Science & Technology Organizations

***http://www.unl.edu/research/NRI.htm***

**Nebraska Research Initiative Centers** /University of Nebraska-Lincoln Office of Research includes The Center for Biotechnology; Center for Communication and Information Science (NRI); Center for Infrastructure Research (NRI); Center for Laser-Analytical Studies of Trace Gas Dynamics (NRI); Center for Materials Research and Analysis (NRI); Center for Microelectronic and Optical Materials Research; Center for Nontraditional Manufacturing Research, Center for Water Sciences (NRI); and several Engineering Research Centers ((402) 472-3123).

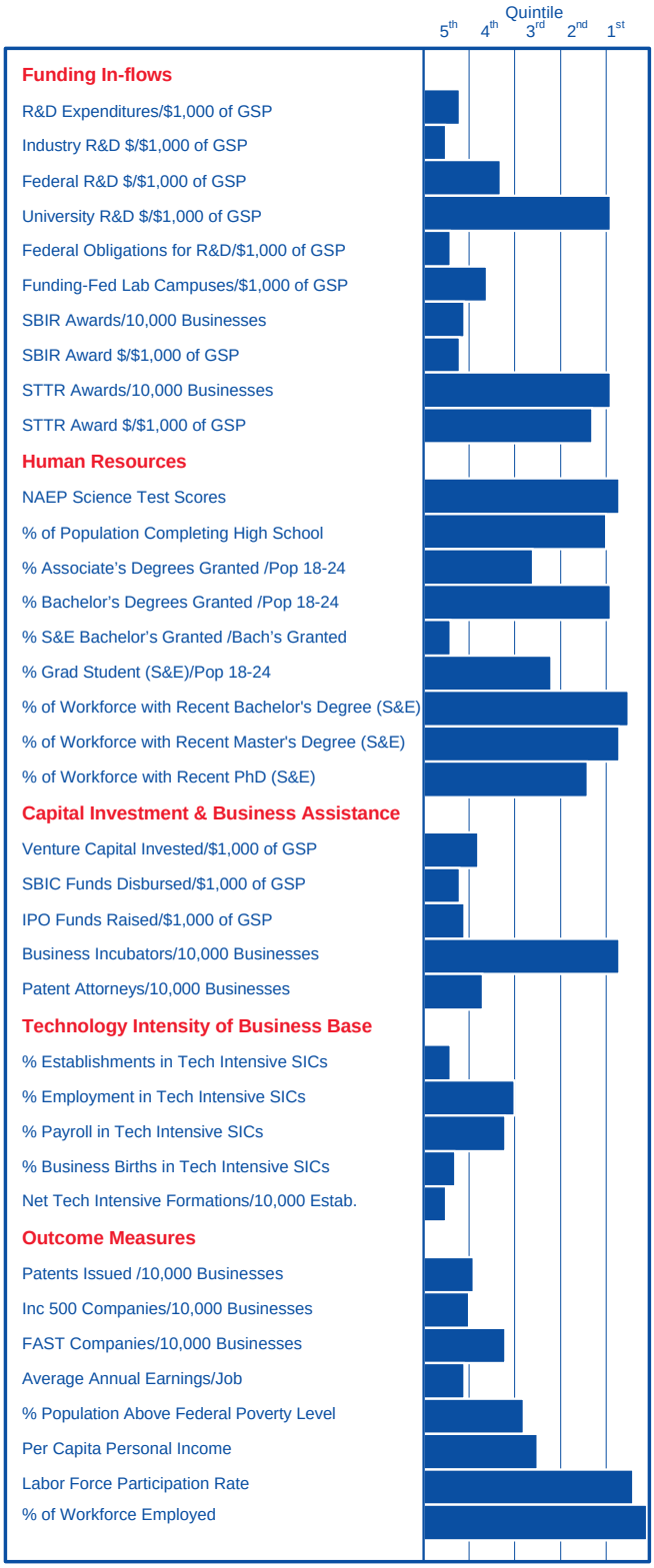
**Nebraska EPSCoR**, by the end of September 1999, will have received more than $26.7 million from the **National Science Foundation** and other federal agencies.

***http://stc.ded.state.ne.us/nicainfo.htm***

**Nebraska Industrial Competitiveness Alliance** (NICA) is a permanent board which presides over the manufacturing extension program and advises the governor on science and technology policy.

***http://www.nol.org/home/NDN/***

The **Nebraska Development Network** connects business and community leaders throughout the state with people within organizations, agencies, and the private sector who served as partners in community and economic growth. More than 475 organizational members represent 8,000 individuals within the Network.



# Nevada

## State Information Contact

***Department of Administration***
Budget and Planning Division
209 East Musser Street, Suite 200
Carson City, NV 89710
(775) 684-0222
http://www.state.nv.us

## Overall State Economic Conditions

Nevada ranks 36th in population with over 1.7 million people in 1998, nearly 86% of whom live in metropolitan areas (10th among states in 1996). Its 1997 per capita income of $27,788 ranked 17th nationally (in 1992 constant dollars). In 1996, 8.1% of its population was below the poverty level. In 1997, Nevada's gross state product was $57.4 billion (34th) and it had 42,343 business establishments (37th). The state ranks 49th in manufacturing employment (4.6% of its workforce in 1997).

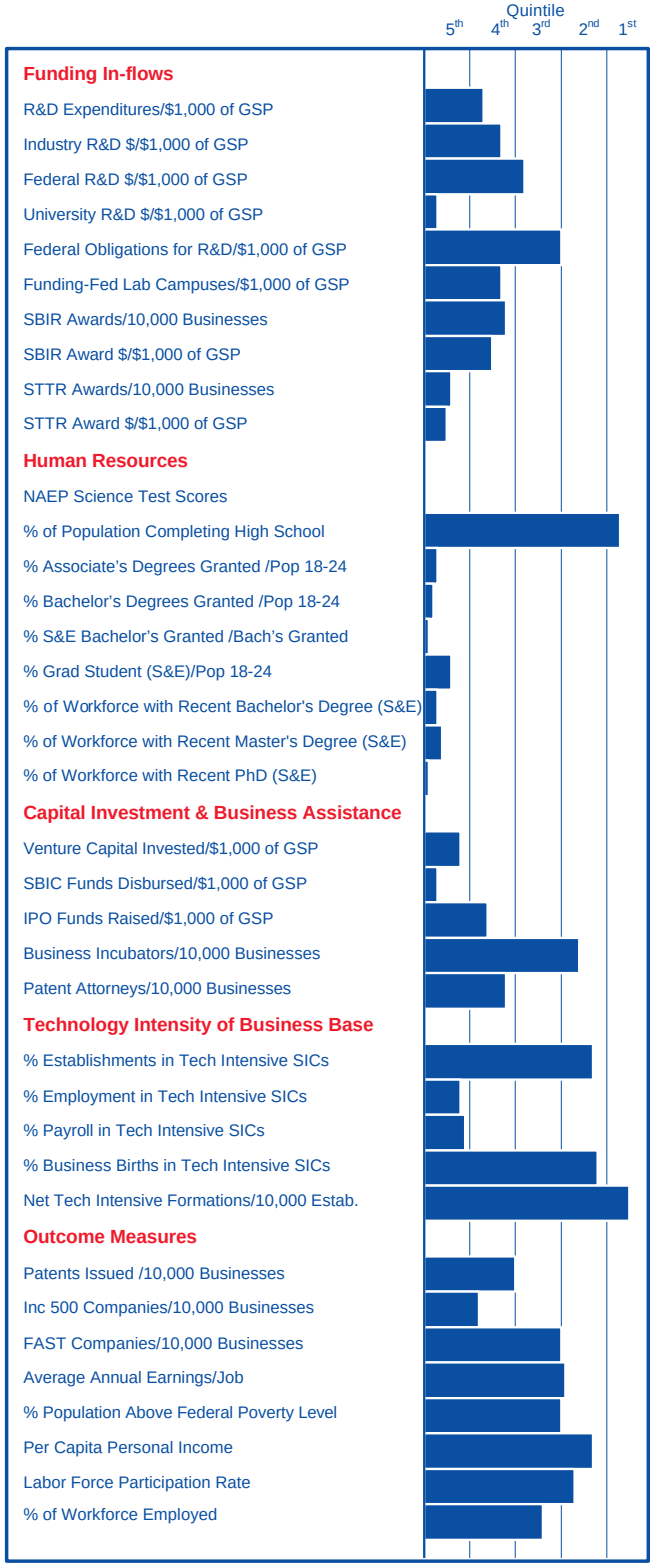
## Science & Technology Organizations

***http://www.state.nv.us/oset/***
The **Nevada Office of Science, Engineering, and Technology** in the Governor's Office catalyzes economic development and diversification activities in science and technology and coordinates Nevada's science and technology investments in education and research.

***http://www.state.nv.us/businessop/***
The **Nevada Commission on Economic Development** is the state's lead business attraction and economic development agency.

***http://www.nevadadevelopment.org/***
The **Nevada Development Authority** (NDA) promotes business development and attraction in Southern Nevada. Its Technology Committee identifies and catalogs technologies currently being developed in Southern Nevada, and develops marketing strategies that help NDA promote technology-based development.

***http://www.nevadanet.com/EDAWN/***
The **Economic Development Authority of Western Nevada** (EDAWN) provides industrial and corporate location assistance in the western part of the state.



# New Hampshire

## State Information Contact

***Office of State Planning***
2 1/2 Beacon Street
Concord, NH 03301-4497
(603) 271-2155
http://www.state.nh.us/osp/planning/sdc.html

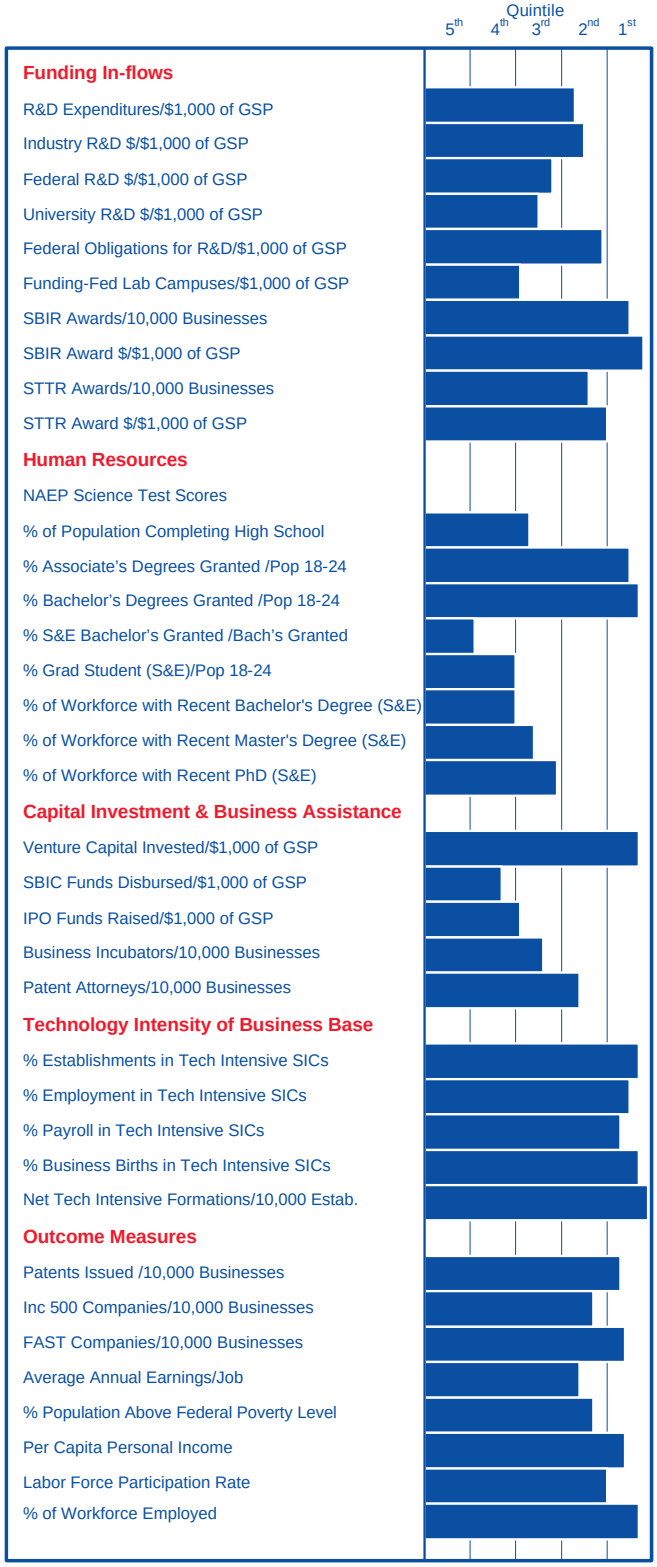
## Overall State Economic Conditions

New Hampshire ranks 42nd in population with nearly 1.2 million people in 1998, nearly 60% of whom live in metropolitan areas (34th among states in 1996). Its 1997 per capita income of $24,886 ranked 8th nationally (in 1992 constant dollars). In 1996, 6.4% of its population lived at or below the poverty level, the least among all the states. In 1997, New Hampshire's gross state product was $38.1 billion (39th) and it had 36,692 business establishments (40th). The state ranks 11th in percentage of non-farm employment in manufacturing (18.8% of its workforce in 1997).

## Science & Technology Organizations

***http://www.ded.state.nh.us/obid/resources/technology/index.html***
The **Office of Business and Industrial Development, in the Department of Resources and Economic Development**, coordinates a statewide Technology Resource Roundtable of organizations providing access to advanced technologies for New Hampshire businesses.

***http://www.nhirc.sr.unh.edu/background.html***
The **New Hampshire Industrial Research Center** at the University of New Hampshire in Durham provides assistance in basic and applied R&D and manufacturing improvement through a state funded **Technical Assistance Grant** (TAG) program. It also offers commercialization assistance to inventors.



# New Jersey

## State Information Contact

***New Jersey State Data Center***
Division of Labor Market and Demographic Research
New Jersey Department of Labor, CN 388
Trenton, NJ 08625-0388
(609) 984-2595
http://www.states.gov/sdc/www/njsdc.html

## Overall State Economic Conditions

New Jersey ranks 9th in population, with over 8.1 million people in 1998, 100% of whom live in metropolitan areas (1st among states in 1996). Its 1997 per capita income of $28,974 ranked 2nd nationally (in 1992 constant dollars). In 1996, 9.2% of its population lived at or below the poverty level. In 1997, New Jersey's gross state product was $294.1 billion (8th) and it had 229,349 business establishments (9th). The state ranks 34th in percentage of workforce employed in manufacturing (nearly 13% in 1997).

## Science & Technology Organizations

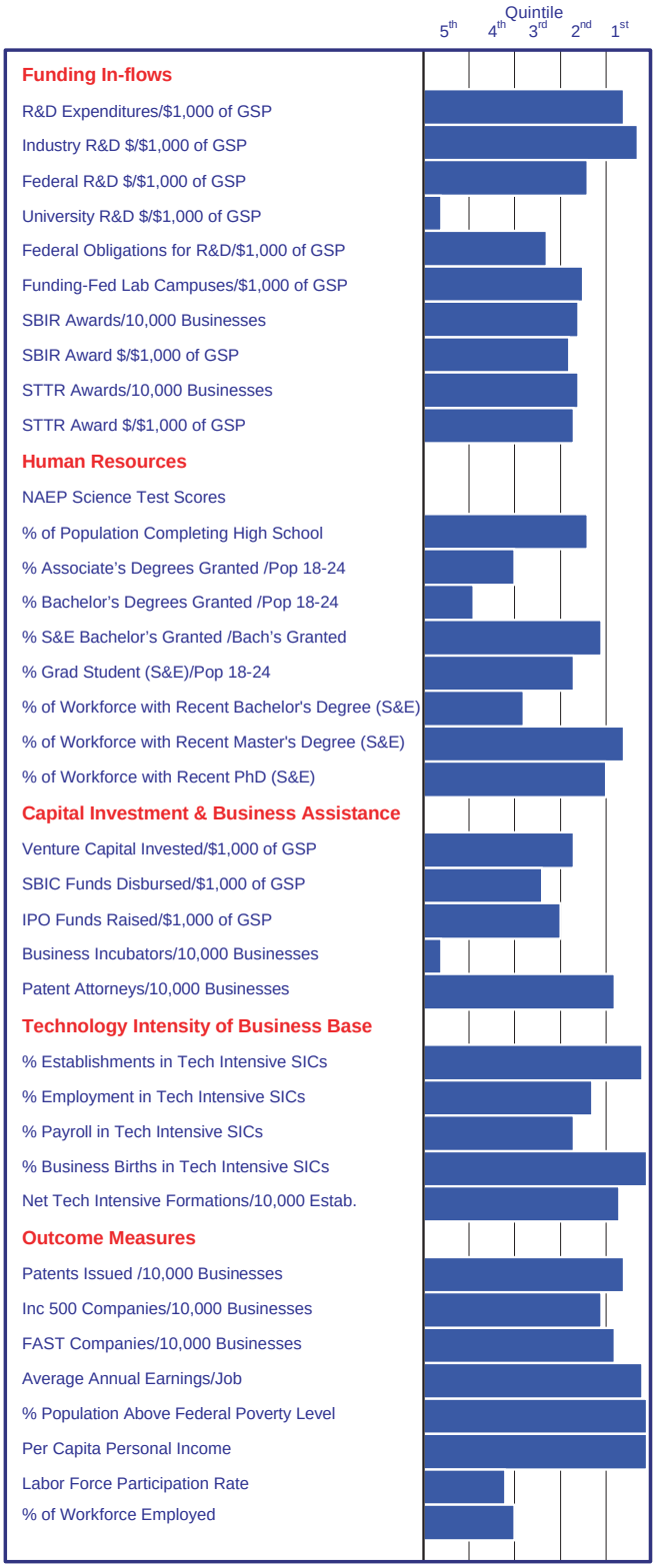
***http://www.state.nj.us/satech/index.html***
The **New Jersey Commission on Science and Technology** is the state's lead agency for technology-based economic development. It supports technical initiatives with many of the state's technology centers.

**The Technology Transfer & Commercialization Program (TTCP)** offers direct funding of $50,000 to $250,000 to small technology companies to conduct projects with near-term commercial outcome.

***http://www.state.nj.us/scitech/index.html***
The **New Jersey Technology Funding Program** offers expansion capital for growing second-stage, technology-based enterprises.

***http://www.state.nj.us/scitech/bap.html***
The **New Jersey Commerce & Economic Growth Commission** coordinates the state's economic development activities.

***http://www.njtc.org/***
The **New Jersey Technology Counci**l offers small businesses networking and collaboration opportunities and recruits new technology businesses to the state.



# New Mexico

## State Information Contact


***University of New Mexico***
Bureau of Business and Economic Research
1919 Lomas N.E.
Albuquerque, NM 87131-6021
(505) 277-6626
http://www.unm.edu/bber/


## Overall State Economic Conditions

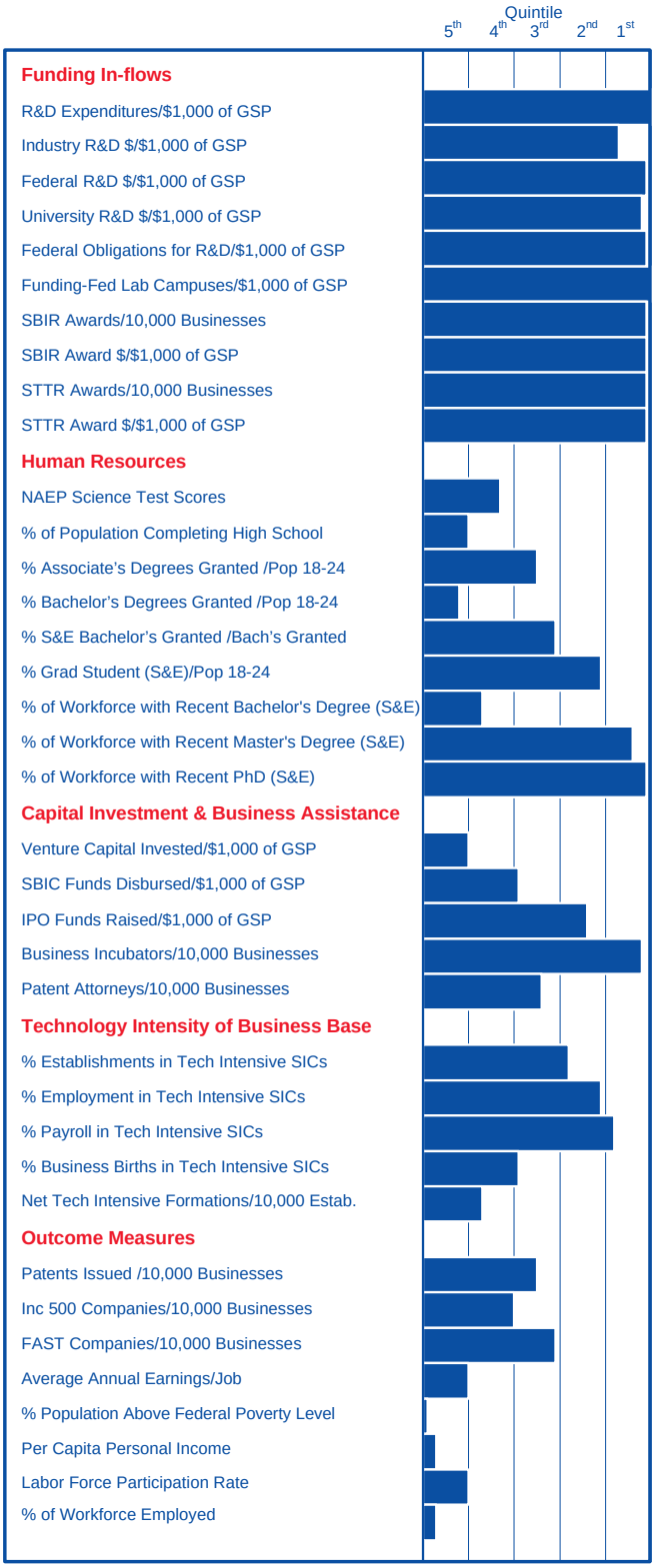
New Mexico ranks 37th in population with 1.7 million people in 1998, slightly under 57% of whom live in metropolitan areas (35th among states in 1996). Its 1997 per capita income of $17,380 ranked 47th nationally (in 1992 constant dollars). In 1996, 25.5% of its population was below the poverty level, the highest among all the states. In 1997, New Mexico's gross state product was $45.2 billion (37th) and it had 42,477 business establishments (36th). The state ranks 45th in percentage of manufacturing employment (6.6% of its workforce in 1997).

## Science & Technology Organizations

***http://www.edd.state.nm.us/TECHNO/index.html***
The **Office of Science & Technology** is the state's advocate for high technology-based business start-ups. It publishes the New Mexico Directory of Technology Organizations, a searchable directory of organizations and laboratories. Among other activities, its resource network assists with the development of business plans, conducts market and technology evaluations, and identifies financing sources.

***http://www.edd.state.nm.us/TECHNO/ACT.htm***
The **New Mexico Alliance for the Commercialization of Technology** is an all-volunteer coalition of business, university, and government participants offering mentoring to high-technology businesses and entrepreneurs.

***http://www.techventures.org/***
**Technology Ventures Corporation** is a nonprofit, tax-exempt New Mexico corporation established in 1993 to identify technologies with commercial potential, coordinate the development of business and management capabilities, and seek sources of risk investment capital. It supports commercialization of technologies developed at the Department of Energy's national laboratories and regional research universities, as well as formation of new and expansion of existing businesses.



# New York

## State Information Contact

***Nelson A. Rockefeller Institute of Government***
411 State Street
Albany, NY 12203-1003
(518) 443-5522
http://www.rockinst.org/

## Overall State Economic Conditions

New York ranks 3rd in population with almost 18.2 million people in 1998, nearly 92% of whom live in metropolitan areas (8th among states in 1996). Its 1997 per capita income of $27,287 ranked 4th nationally (in 1992 constant dollars). In 1996, 16.7% of its population lived at or below the poverty level. In 1997, New York's gross state product was $651.7 billion (2nd) and it had 478,480 business establishments (2nd). The state ranks 37th in percentage of workforce employed in manufacturing (11.5% in 1997).

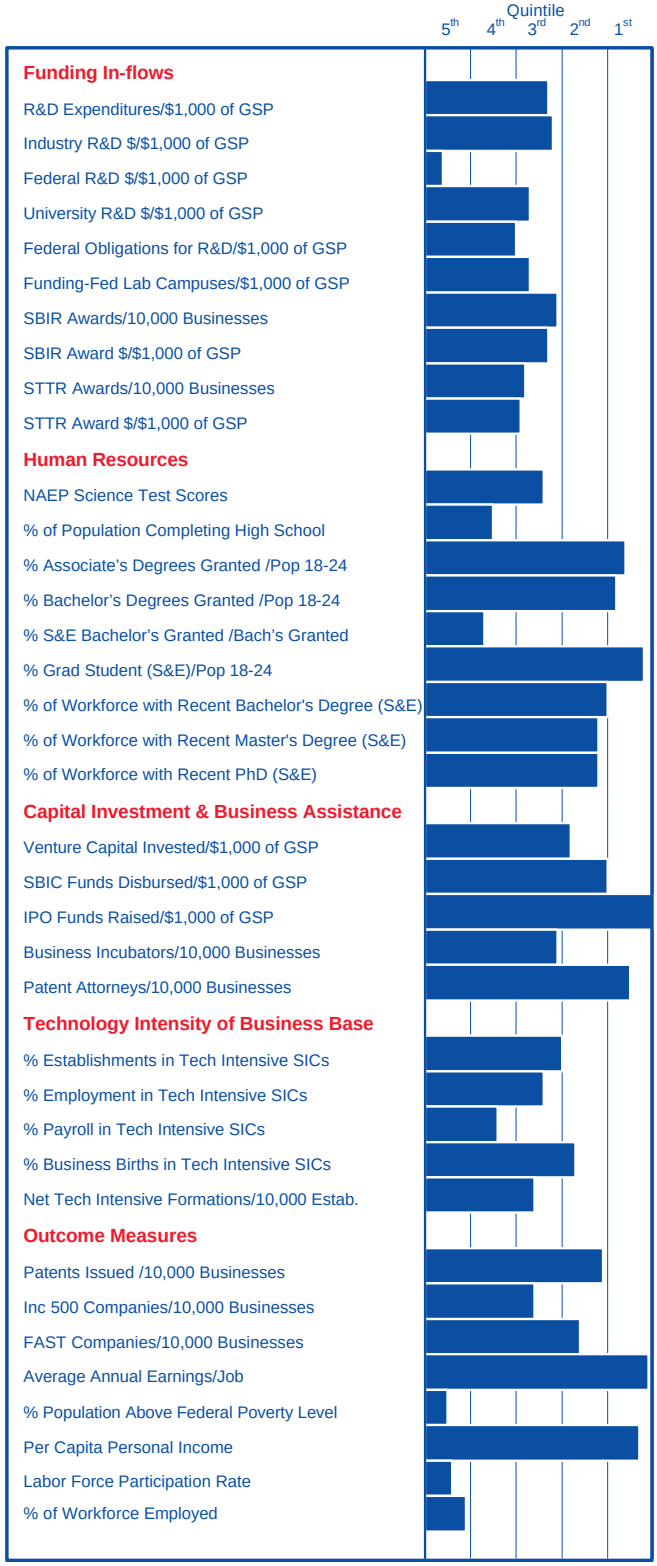
## Science & Technology Organizations

***http://www.empire.state.ny.us/***

**Empire State Development' s New York State Science and Technology Foundation** is the state-based public corporation charged with promoting technology-based economic development in New York, charged with scientific and technical education, industrial research and development, manufacturing modernization, and capitalizing high-tech companies. The Foundation's **Centers for Advanced Technology Program** includes the following: Advanced Ceramic Technology(Alfred University); Advanced Technology for Ultrafast Photonic Materials and Applications, CUNY; Advanced Materials Processing (Clarkson); Information Management and Medical Informatics (Columbia; Biotechnology (Cornell); Digital Multimedia Production, Publishing, and Education (NYU); Telecommunications (Polytechnic): Automation Technologies (RPI); Advanced Thin Film Technology (SUNY Albany); Integrated Electronics Engineering Center (SUNY Binghamton);Advanced Technology in Sensor Systems and Diagnostic Tools (SUNY Stony Brook); Advanced Technology in Medical Biotechnology (SUNY Stony Brook); Computer Applications & Software Engineering (Syracuse); Electronic Imaging Systems ( Rochester). The Foundation's ten **Technology Development Organizations**, part of the national NIST network, provide business planning, access to venture capital, product development, marketing, manufacturing and quality systems, engineering, and information technology.

***http://www.empire.state.ny.us/busserv/business_services.htm***

**Empire State Development** is the state's lead business development and attraction agency.



# North Carolina

## State Information Contact


***North Carolina Office of State Planning***
116 West Jones Street
Raleigh, NC 27603-8003
(919) 733-4131
http://www.ospl.state.nc.us/


## Overall State Economic Conditions

North Carolina ranks 11th in population with over 7.5 million people in 1998, nearly 67% of whom live in metropolitan areas (32nd among states in 1996). Its 1997 per capita income of $20,714 ranked 31st nationally (in 1992 constant dollars). In 1996, 12.2% of its population lived at or below the poverty level. In 1997, North Carolina's gross state product was $218.9 billion (12th) and it had 197,488 business establishments (10th). The state ranks 4th in percentage of workforce employed in manufacturing (nearly 23% in 1997).

## Science & Technology Organizations

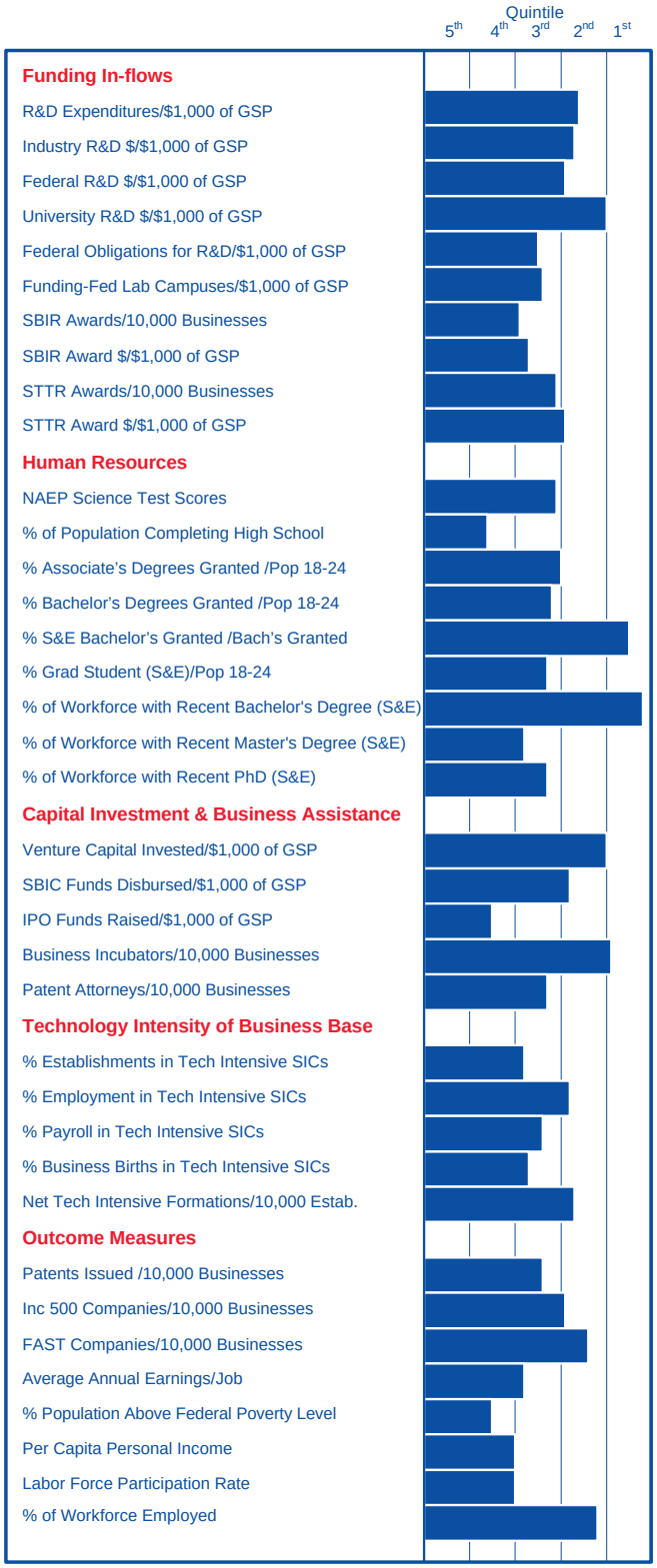
***http://www.commerce.state.nc.us/ncacts/***
The **North Carolina Alliance for Competitive Technologies** (NCACT) is the state's strategic planning organization on technology and manufacturing competitiveness. NCACT has completed a planning blueprint for the 36 state-assisted organizations that provide training and technical assistance to manufacturing and technology firms.

***http://www.governor.state.nc.us/govoffice/science/***
The **North Carolina Board of Science** investigates emerging science and technology areas and conducts studies on the competitiveness of state industry and research institutions in these fields.

***http://www.mcnc.org/who.html***
**MCNC**, formerly the Microelectronics Center of North Carolina, offers access to advanced electronic and information technologies, interoperability testing for new products, and processes and technologies for rapid product commercialization.

***http://www.ncbiotech.org/***
The **North Carolina Biotechnology Center** supports biotechnology research, business development, product commercialization, and education and workforce training.

***http://www.researchtriangle.org/indexns.html***
The **Research Triangle Research Partnership** stimulates economic development and business attraction by marketing Research Triangle assets.



# North Dakota

## State Information Contact


***North Dakota Department***
Economic Development & Finance
1833 East Bismark Expressway
Bismark, ND 58504-6708
(701) 231-7441


## Overall State Economic Conditions

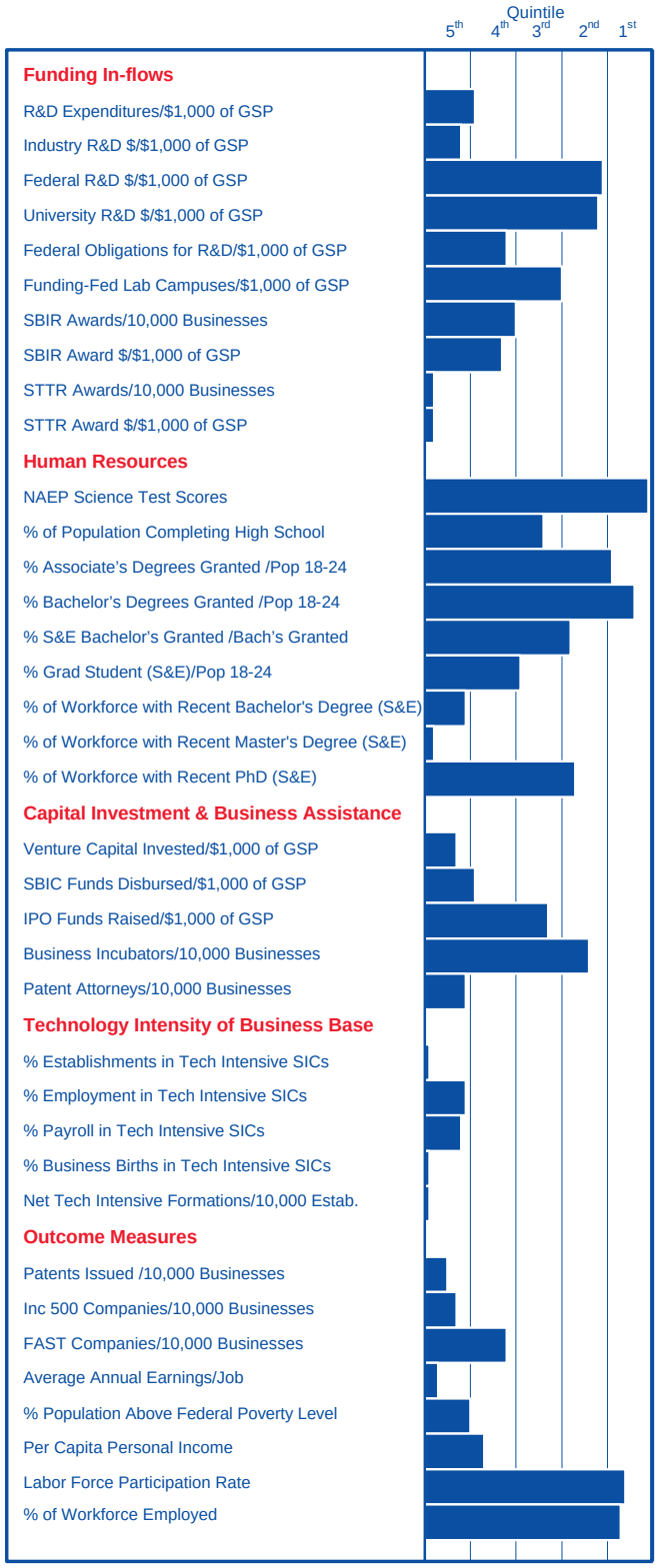
North Dakota ranks 47th in population with over 270,000 people in 1998, slightly under 43% of whom live in metropolitan areas (41st among states in 1996). Its 1997 per capita income of $17,987 ranked 45th nationally (in 1992 constant dollars). In 1996, 11% of its population lived at or below the poverty level. In 1997, North Dakota's gross state product was $15.8 billion (49th) and it had 20,439 business establishments (48th). The state ranks 44th in percentage of manufacturing employment (7.4% of its non-farm workforce in 1997).

## Science & Technology Organizations

***http://www.und.nodak.edu/dept/cibd/default.htm***
The **Center for Innovation** is located next to University of North Dakota campus. It provides entrepreneurs and manufacturers with strategic planning services and operational assistance for new ventures, commercializing new products, and licensing new technologies. Services include marketing services, business plans, SBIR applications, and patent & trademark searches. The Center also coordinates a technology park and incubator.

***http://www.health.state.nd.us/gov/***
**Governor's Office Technology Initiatives** include asking a private-sector advisory committee, the **North Dakota Information Technology Council Entrepreneur Committee**, to recommend tax, investment, and public policy ideas to encourage high-tech investment in North Dakota. Governor Schafer and the Legislature recently created TECH-Pace, a special pool at the Bank of North Dakota focused on financing high-tech initiatives.

***http://www.growingnd.com/research_prog.html***
The **North Dakota Economic Development and Finance Department** is the state's lead agency for business development and attraction.



# Ohio

## State Information Contact


***Ohio Department of Development***
Office of Strategic Research
P.O. Box 1001
Columbus, OH 43216-1001
(614) 466-2115
http://www.odod.ohio.gov


## Overall State Economic Conditions

Ohio ranks 7th nationally with a population of over 11 million. Over 80% of its residents reside within metropolitan areas. While its per capita income in 1997 was $21,882 (21st nationally), almost 13% of its population lived below the poverty level. In 1997, Ohio's gross state product was $320.5 billion (7th) and it had 270,540 business establishments (7th). Ohio businesses employ over one million people in manufacturing jobs. An additional 2.5 million workers are employed in retail trade or services jobs.

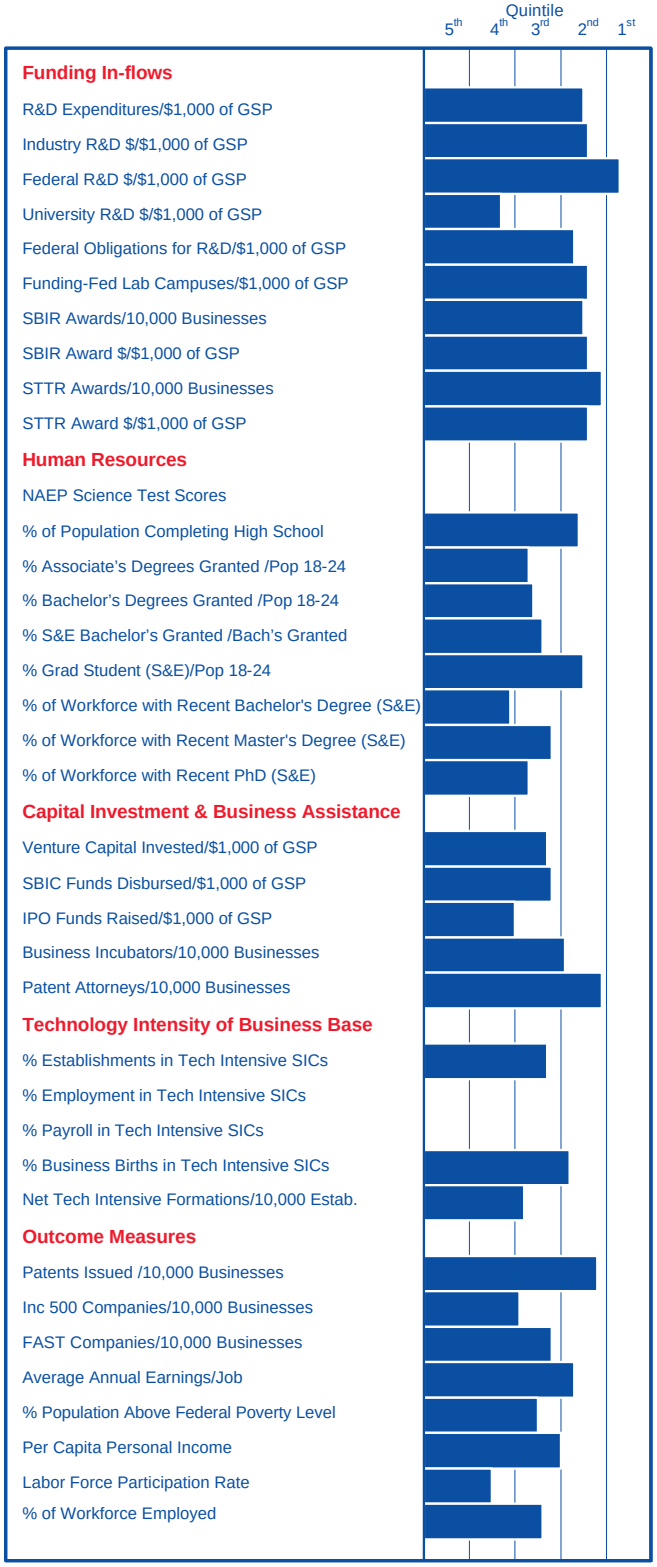
## Science & Technology Organizations

***http://eee.odod.ohio.gov/tech/edison/default.htm***
Ohio's **Thomas Edison Program** has achieved national and international recognition as a model for state-industry-university partnerships. The program includes technology centers, technology incubators, and technology transfer initiatives designed to bring together technology providers and users to create commercial opportunities.

***http://www.odod.ohio.gov***
The **Ohio Department of Development** serves as the contact point for economic development and technology development activities within Ohio.

***http://www.connectohio.com***
Site contains businesses and organizations located throughout Ohio. Searches can be run by name of the organization or business sector. The Science and Technology option provides linkages with each of the Edison Centers as well as with the **Great Lakes Industrial Technology Center and the Wright Technology Network**.

***http://www.resourceohio.com***
Site provides a complete guide to business support for Ohio companies in the areas of financial assistance, applied technology and research, technical assistance, and employment and training.



# Oklahoma

## State Information Contact

### *Oklahoma State Data Center*

Oklahoma Department of Commerce
P.O. Box 26980
Oklahoma City, OK 73126-0980
(405) 815-5184
http://www.census.gov/sdc/www/oksdc.html

## Overall State Economic Conditions

Oklahoma ranks 27th in population, with 3.3 million people in 1998, slightly over 60% of whom live in metropolitan areas (33rd among states in 1996). Its 1997 per capita income of $18,240 ranked 42nd nationally (in 1992 constant dollars). In 1996, 16.6% of its population lived at or below the poverty level. In 1997, Oklahoma's gross state product was $76.6 billion (30th) and it had 84,645 business establishments (29th). The state ranks 33rd in percentage of manufacturing employment (13% of its non-farm workforce in 1997).

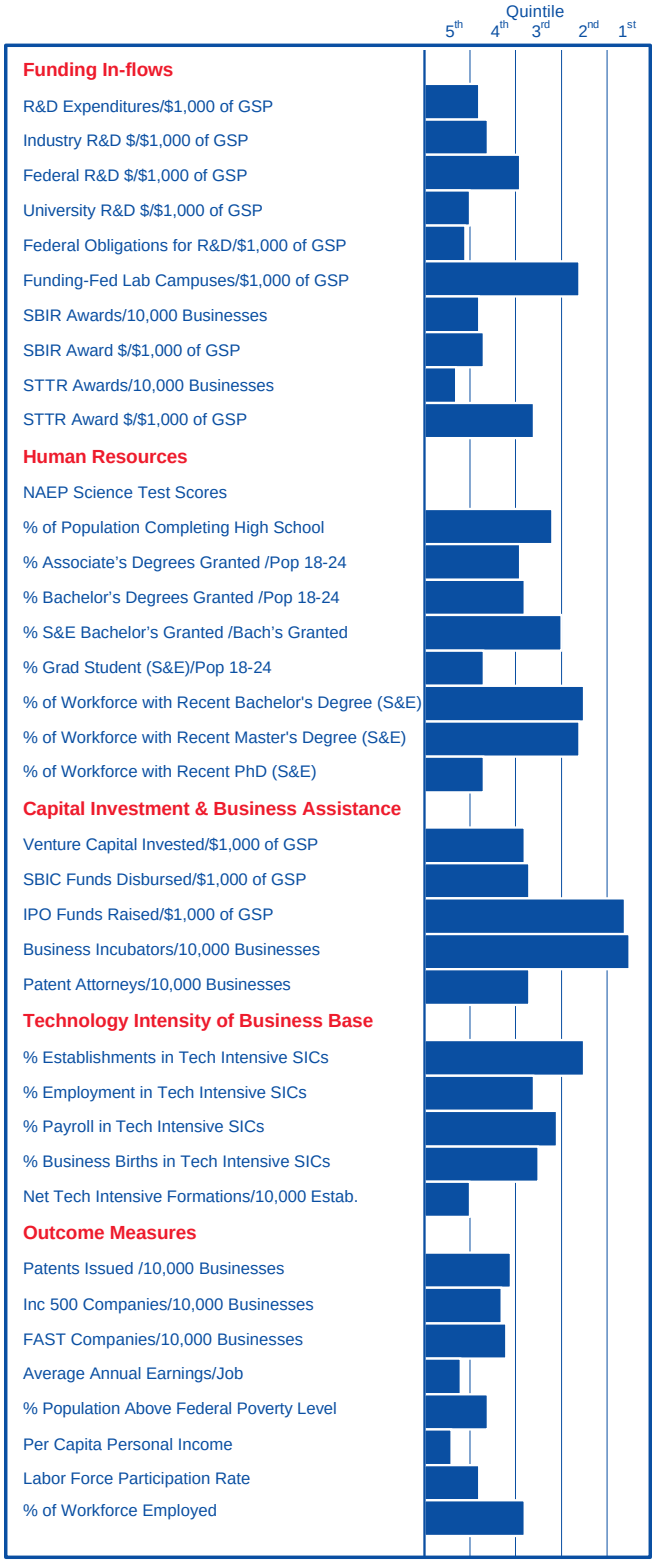
## Science & Technology Organizations

***http://www.ocast.state.ok.us/Ocastweb.htm***

The **Oklahoma Center for the Advancement of Science and Technology** is the lead agency for technology development, transfer, and commercialization. Current sponsored centers and programs include the Oklahoma Applied Research Support Program (OARS); the Technology Commercialization Center; the Oklahoma Alliance for Manufacturing Excellence; the Oklahoma Health Research Program; the Technology Business Finance Program; and the Oklahoma Inventors Assistance Program. OCAST assists firms with procuring federal assistance from SBIR and other programs.

***http://www.odoc.state.ok.us/index.html***

The **Office of Business Development** in the Oklahoma Department of Commerce assists both entrepreneurial and established businesses in Oklahoma. Regional directors housed across the state provide both on-site consulting, and connect companies with specific services offered by Department of Commerce specialists. The Regional Offices Team includes thirteen economic/business development professionals.



# Oregon

## State Information Contact

***Secretary of State***
Business Services Division
Publication Services Bldg.
2555 Capital Street, NE, Suite 180
Salem, OR 97310
(503) 986-2234
http://www.sos.state.or.us/bluebook/1997-98/toc.htm

## Overall State Economic Conditions

Oregon ranks 28th in population with nearly 3.3 million people in 1998, over 70% of whom live in metropolitan areas (24th among states in 1996). Its 1997 per capita income of $21,644 ranked 23rd nationally (in 1992 constant dollars). In 1996, 11.8% of its population was below the poverty level. In 1997, Oregon's gross state product was $98.4 billion (27th) and it had 98,564 business establishments (25th). The state ranks 22nd in percentage of manufacturing employment (16% of its workforce in 1997).

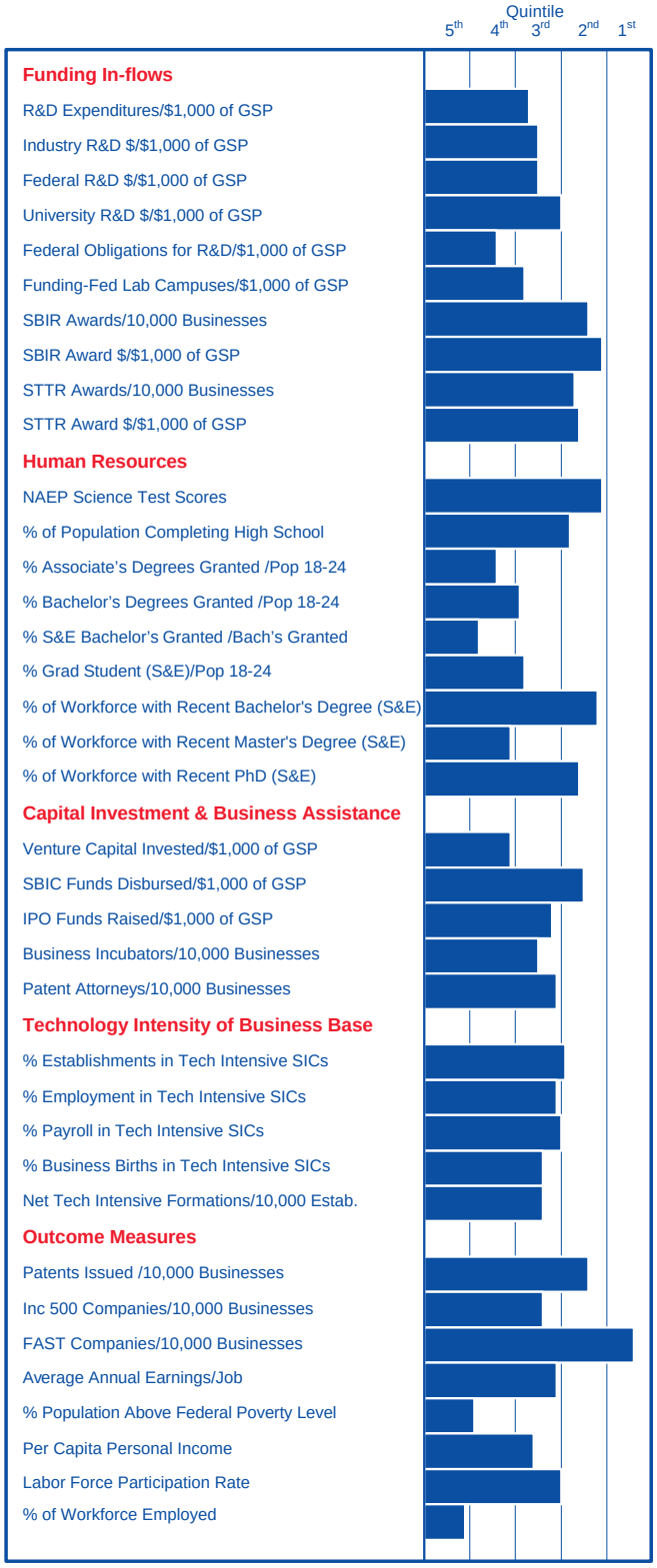
## Science & Technology Organizations

***http://www.ost.state.or.us/investment/oregongrowthaccount.htm***
The **Oregon Growth Account Investment Board** sets guidelines for providing equity-based capital to Oregon's emerging industries. By the year 2003, the fund is projected to receive a total of $30 million in lottery revenue.

***http://www.econ.state.or.us/brdcom.htm***
**The Oregon Economic and Community Development Commission** provides strategic direction to state economic development policy direction.

***http://www.oef.org/oefabout.html***
**The Oregon Enterprise Forum** is a non-profit corporation of entrepreneurs and business professionals in finance, law, marketing, and management who donate time and advice to assist entrepreneurs in new ventures or expansions.

***http://www.nibtec.com/about.htm***
**The Northwest Innovative Business and Technology Center** is a Portland-based non-profit corporation that helps technology-driven companies find appropriate technologies and R&D funding. It assists in technology concept and commercial evaluation, and coordinates R & D partnerships and joint ventures between universities, federal laboratories, large corporate R&D entities, and small technology-driven businesses.



# Pennsylvania

## State Information Contact

***Pennsylvania State Data Center***
Institute of State and Regional Affairs
Penn State Harrisburg
777 West Harrisburg Pike
Middletown, PA 17057-4898
(717) 948-6336
http://www.census.gov/sdc/www/iasdc.html

## Overall State Economic Conditions

Pennsylvania ranks 6th in population, with 12 million people in 1998, nearly 85% of whom live in metropolitan areas (11th among states in 1996). Its 1997 per capita income of $23,122 ranked 15th nationally (in 1992 constant dollars). In 1996, 11.6% of its population lived at or below the poverty level. In 1997, Pennsylvania's gross state product was $339.9 billion (6th) and it had 292,118 business establishments (6th). The state ranks 16th in manufacturing employment (17.3% of its workforce in 1997).

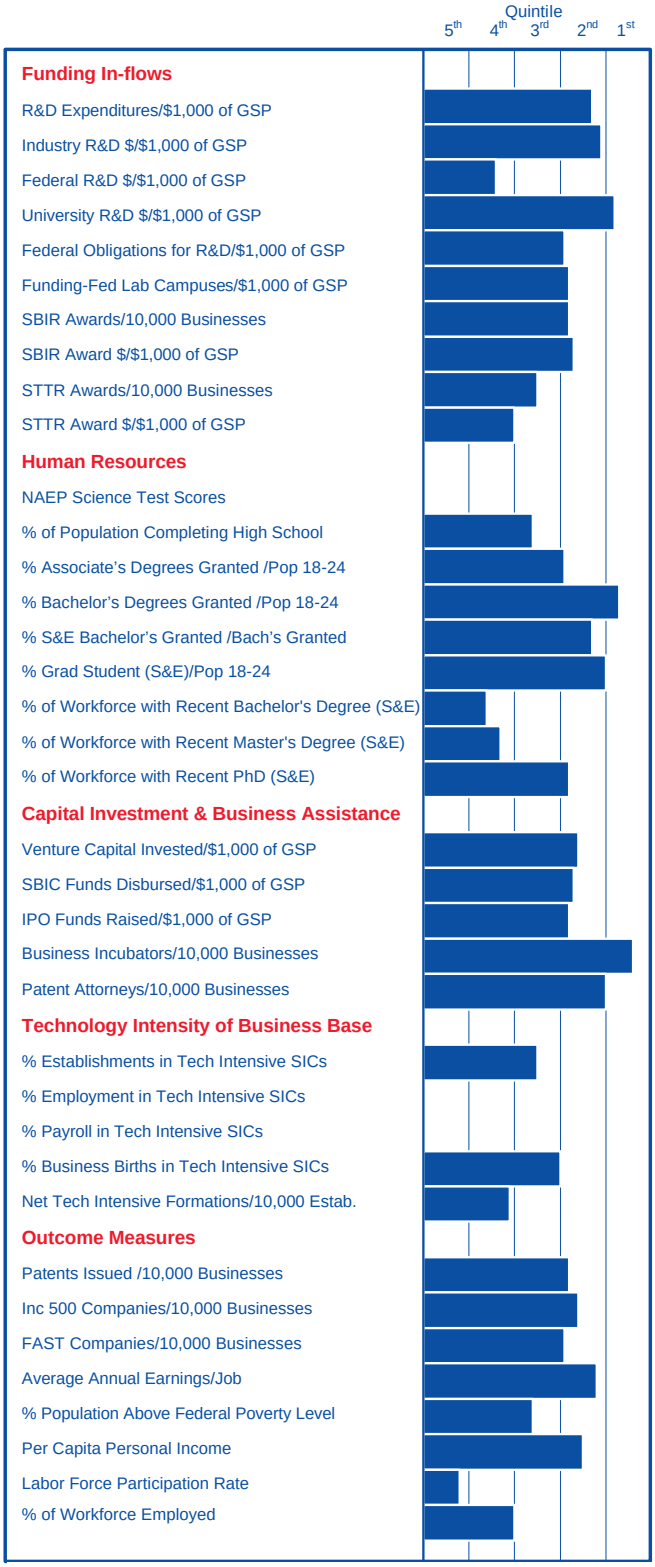
## Science & Technology Organizations

***http://www.benfranklin.org/***
**Ben Franklin Technology Partners** supports the development and application of new products and technologies by entrepreneurs and established companies. It operates four centers that provide grants, loans, venture capital, and technical assistance and transfer.

***http://www.dced.state.pa.us/PA_Exec/DCED/business/worktech.html***
The **Pennsylvania Industrial Network**, with seven centers, provides financial and technical assistance to small to mid-sized manufacturers to improve their manufacturing operations.

***http://www.state.pa.us/PA_Exec/DCED/tech21/index.htm***
**The Governor's Action TEAM**, the "one stop" business development service based in the Department of Community and Economic Development, recently coordinated development of the industry-led **Technology 21 Plan**, which produced strategic recommendations for advanced manufacturing, advanced materials, agribusiness, biotechnology, environmental technology, and IT.

***http:www.tc-p.com***
The **Pittsburgh Technology Council** includes nearly 1,700 technology, manufacturing, and service companies. The Council is a partner in the Digital Greenhouse, which aims to make Southwestern Pennsylvania a leader in the development of next-generation system-on-a-chip technology.



# Rhode Island

## State Information Contact

***Rhode Island Economic Development Corporation***
One West Exchange Street
Providence, RI 02903
(401) 222-2601
http://www.ridec.com/

## Overall State Economic Conditions

Rhode Island ranks 43rd in population with 988,000 people in 1998, 94% of whom live in metropolitan areas (5th among states in 1996). Its 1997 per capita income of $22,857 ranked 17th nationally (in 1992 constant dollars). In 1996, 11% of its population lived at or below the poverty level. In 1997, Rhode Island's gross state product was $27.8 billion (44th) and it had 28,164 business establishments (44th). The state ranks 14th in percentage of manufacturing employment (17.8% of its non-farm workforce in 1997).

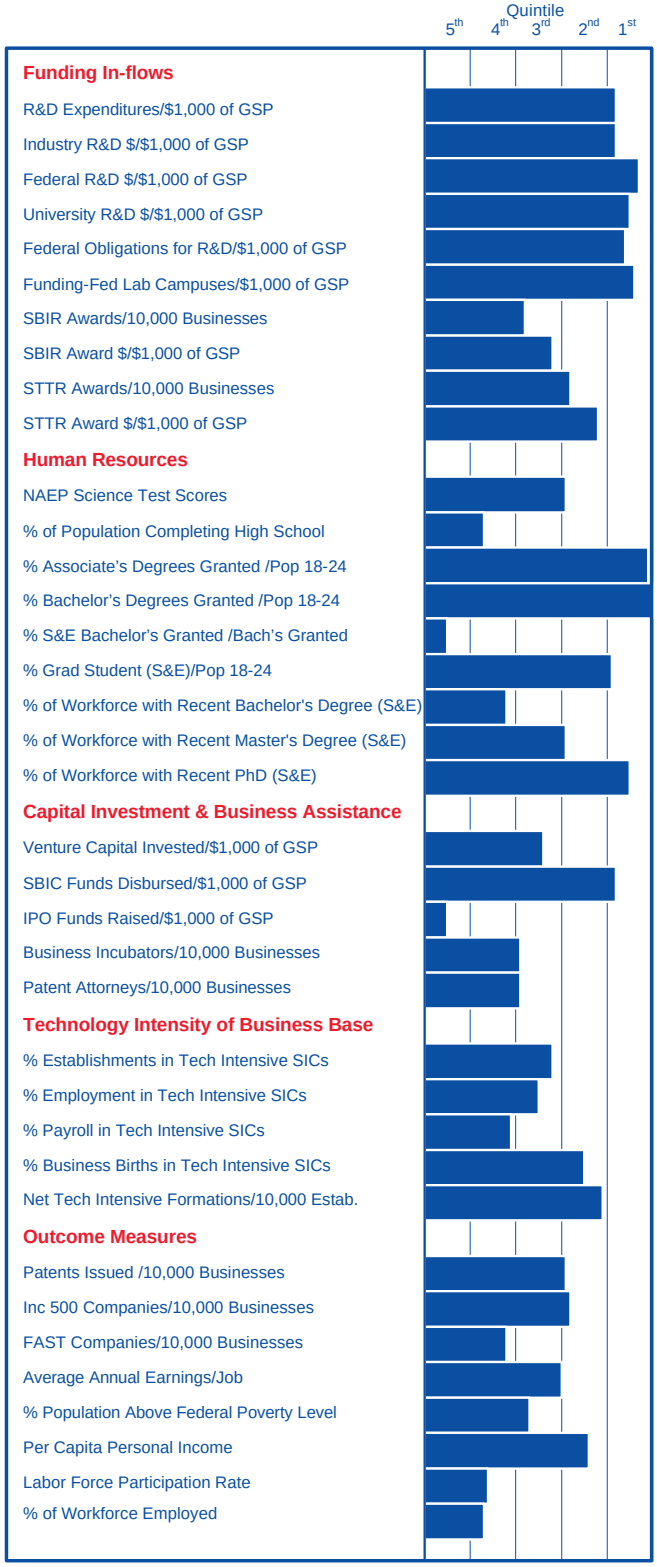
## Science & Technology Organizations

***http://www.riedc.com/growth/technology/tech.html***
The **Samuel Slater Innovation Partnership Program** of the Rhode Island Economic Development Corporation provides public-sector matching funds to private-sector initiated industry-higher education partnerships, multi-firm collaboration, and technology entrepreneur seed grants.

***http://www.rittc.com/***
The **Rhode Island Technology Transfer Center** helps companies access process and product developments from NASA, the Federal and university laboratories, and private research. RITTC is one of seven satellite offices of NASA's Center for Technology Commercialization (CTC).

***http://www.ritec.org/core.html***
**Rhode Island Technology Council** is a trade association promoting information technology development, education, and company networking.

***http://www.ribiotech.com/***
**Rhode Island Center for Cellular Medicine** serves the biotechnology cluster in Rhode Island, building on the research programs at the Brown University School of Medicine. The Center focuses on the development of companies working in cellular medicine and tissue engineering.



# South Carolina

## State Information Contact

***Office of Research and Statistical Services***
South Carolina Budget and Control Board
Rembert Dennis Bldg. Room 425
Columbia, SC 29201
(803) 734-3781
http://www.state.sc.us/drss/

## Overall State Economic Conditions

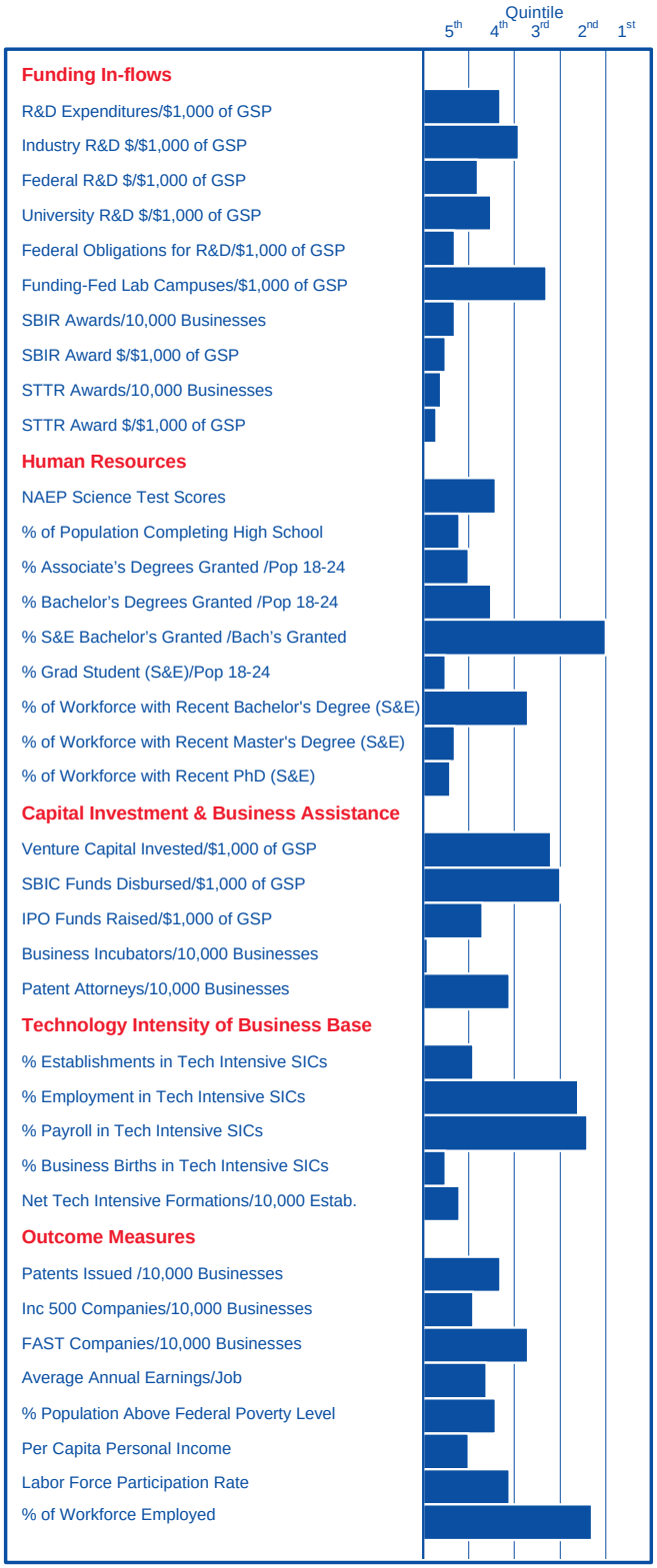
South Carolina ranks 26th in population with 3.8 million people in 1998 nearly 70% of whom live in metropolitan areas (26th among states in 1996). Its 1997 per capita income of $18,416 ranked 39th nationally (in 1992 constant dollars). In 1996, 13% of its population lived at or below the poverty level. In 1997, South Carolina's gross state product was $93.3 billion (28th) and it had 93,926 business establishments (26th). The state ranks 7th in percentage of non-farm employment in manufacturing (21% of its workforce in 1997).

## Science & Technology Organizations

***http://www.sctech.org/index.asp***
The **South Carolina Technology Alliance** mission is to prepare a technology-capable workforce; increase investment in rapidly growing companies and start-ups; invest in research programs linked to South Carolina industry; and create a business climate that supports technology-intensive companies. Priority technology areas are manufacturing and materials, information technology, living systems, and the environment. The SCTA is also developing a state technology strategy.

***http://www.scra.org/scra-parks***
The **South Carolina Research Authority** (SCRA) is a public nonprofit corporation managing the university-affiliated SCRA Research Parks System. It provides locations for technologically advanced companies needing equipment and facilities for specialized research programs, advanced computer and information services, and manufacturing, medical, and environmental-related technology. Included are the Clemson Research Park, the Carolina Research Park in Columbia, the Francis Marion University Research Park in Florence, and the Charleston Research Park.

***http://www.callsouthcarolina.com/DepartmentofCommerce.htm***
The **South Carolina Department of Commerce** is the state's lead agency for the growth and development of business and industry.



# South Dakota

## State Information Contact


***Business Research Bureau***
School of Business
University of South Dakota
414 East Clark
Vermillion, SD 57069
(605) 677-5287
http://www.usd.edu\brbinfo


## Overall State Economic Conditions

South Dakota ranks 46th in population with 738,000 people in 1998, 33% of whom live in metropolitan areas (47th among states in 1996). Its 1997 per capita income of $19,030 ranked 37th nationally (in 1992 constant dollars). In 1996, 11.8% of its population lived at or below the poverty level. In 1997, South Dakota's gross state product was $20.2 billion (46th) and it had 23,486 business establishments (45th). The state ranks 30th in percentage of non-farm employment in manufacturing (14% of its workforce in 1997).

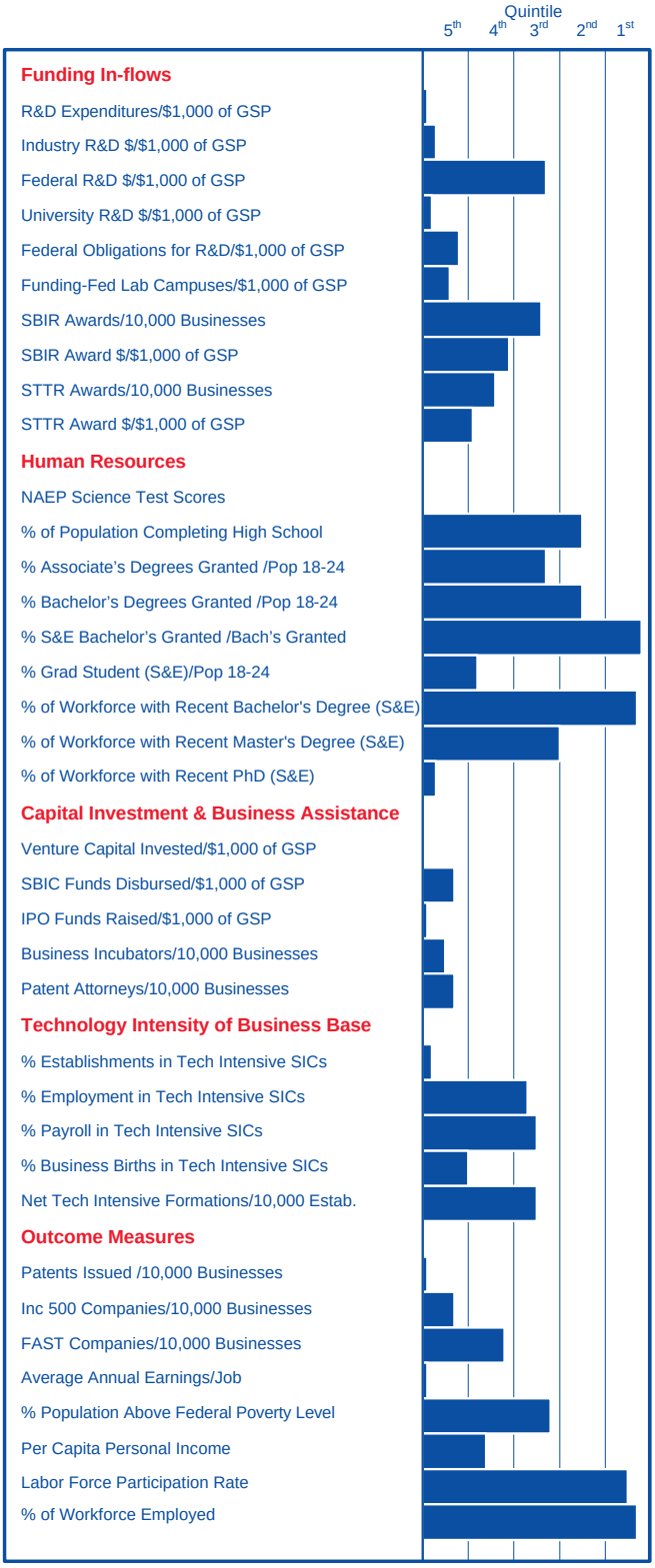
## Science & Technology Organizations

***http://epscor.sdstate.edu/***
The **South Dakota EPSCoR** works to build the state's science and technology capability, recently participating in two projects to bring high bandwidth computer networking to the state -- the Great Plains Network consortium and the NSF Connections program. The South Dakota Board of Regents recently created several Centers of Excellence in Biostress, Engineering Technology, Advanced Manufacturing and Production, and Ambulatory Care.

***http://www.state.sd.us/state/executive/deca/workforc/sdtechs.htm***
The four regional **South Dakota Technical Institutes** work to provide skills training for advanced technology industries.

***http://www.state.sd.us/oed/staff/contact.htm***
The **Governor's Office of Economic Development** is the state's lead agency for business attraction and development.

***http://www.state.sd.us/bit/tele/rdtn/rdtn.htm***
The **South Dakota Rural Development Telecommunications Network** is a statewide video communications network, operating 18 fully interactive fully equipped studios in eleven communities.



# Tennessee

## State Information Contact

***University of Tennessee-Knoxville***
Center for Business and Economic Research
100 Glocker Business Building
Knoxville, TN 37996-4170
(423) 974-6080
http://www.cber.bus.utk.edu

## Overall State Economic Conditions

Tennessee ranks 17th in population with 5.4 million people in 1998, 68% of whom live in metropolitan areas (28th among states in 1996). Its 1997 per capita income of $20,424 ranked 33rd nationally (in 1992 constant dollars). In 1996, 15.9% of its population lived at or below the poverty level. In 1997, Tennessee's gross state product was $147 billion (20th) and it had 130,952 business establishments (19th). The state ranks 10th in percentage of non-farm employment in manufacturing (20% of its workforce in 1997).

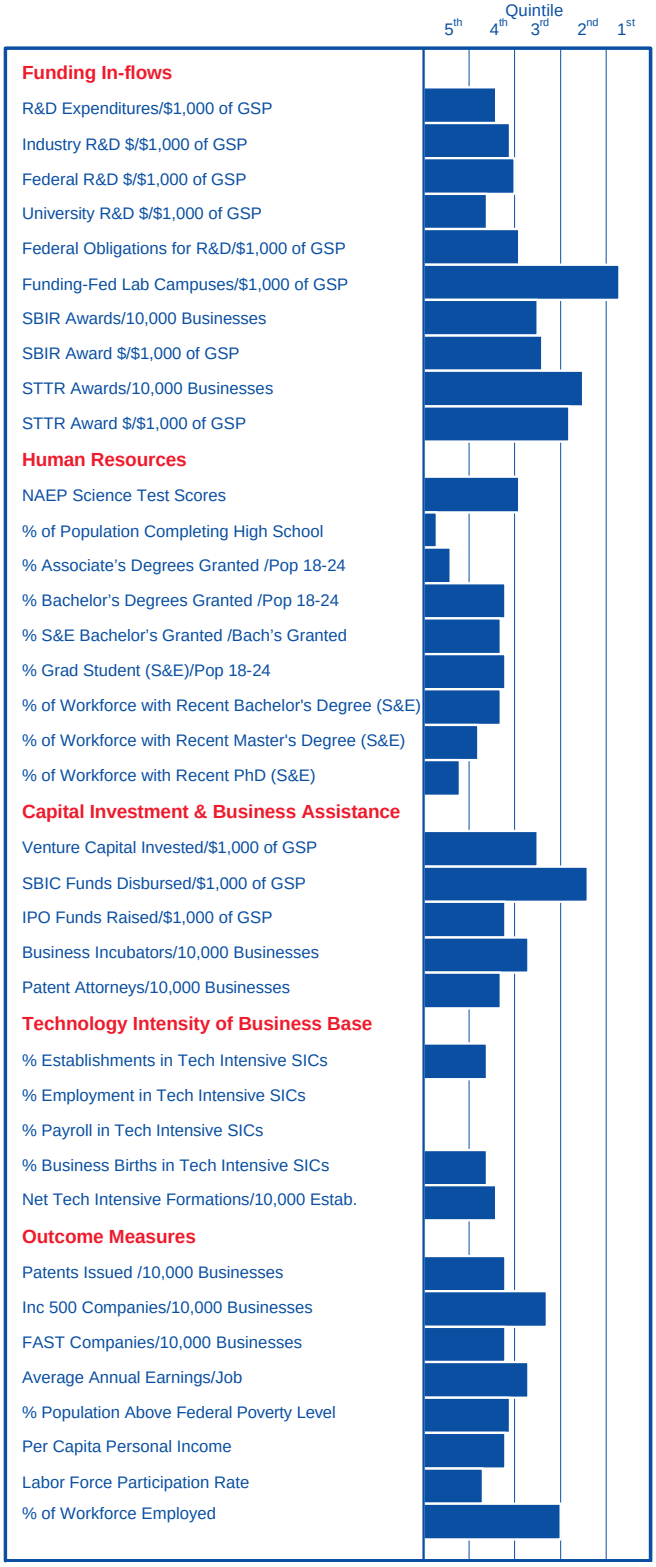
## Science & Technology Organizations

***http://www.state.tn.us/ecd/tech_council.htm***
The Tennessee Science and Technology Advisory Council advises state government on science and technology through the **Office of Science and Technology** of the Department of Economic and Community Development.

***http://www.korrnet.org/ttdc/***
The recently established **Tennessee Technology Development Corporation** supports development of science and technology in the state, and transfer of science, technology, and quality improvement methods to private and public enterprises.

***http://www.tech2020.org/***
**Technology 2020** is a public-private partnership designed to build an information industry cluster in East Tennessee, capitalizing on the presence of the Oak Ridge National Lab, the University of Tennessee-Knoxville, the TVA, and information technology companies.

***http://www.state.tn.us/ecd/tech_search.htm***
The **Tennessee Database of Technology and Knowledge-Intensive Firms**, operated by the state's Office of Science and Technology, is a searchable list of the state's 3,200 technology-driven manufacturing and service firms.



# Texas

## State Information Contact


***Texas State Data Center***
Texas Department of Commerce
P.O. Box 12728
Capitol Station
Austin, TX 78701
(512) 936-0223
http://www-txsdc.tamu.edu/index.html


## Overall State Economic Conditions

Texas ranks 2nd in population with 19.7 million people in 1998, over 84% of whom live in metropolitan areas (12th among states in 1996). Its 1997 per capita income of $20,990 ranked 28th nationally (in 1992 constant dollars). In 1996, 16.6% of its population lived at or below the poverty level. In 1997, Texas's gross state product was $601.6 billion (3rd) and it had 459,024 business establishments (3rd). The state ranks 35th in percentage of non-farm employment in manufacturing (12.6% of its workforce in 1997).

## Science & Technology Organizations

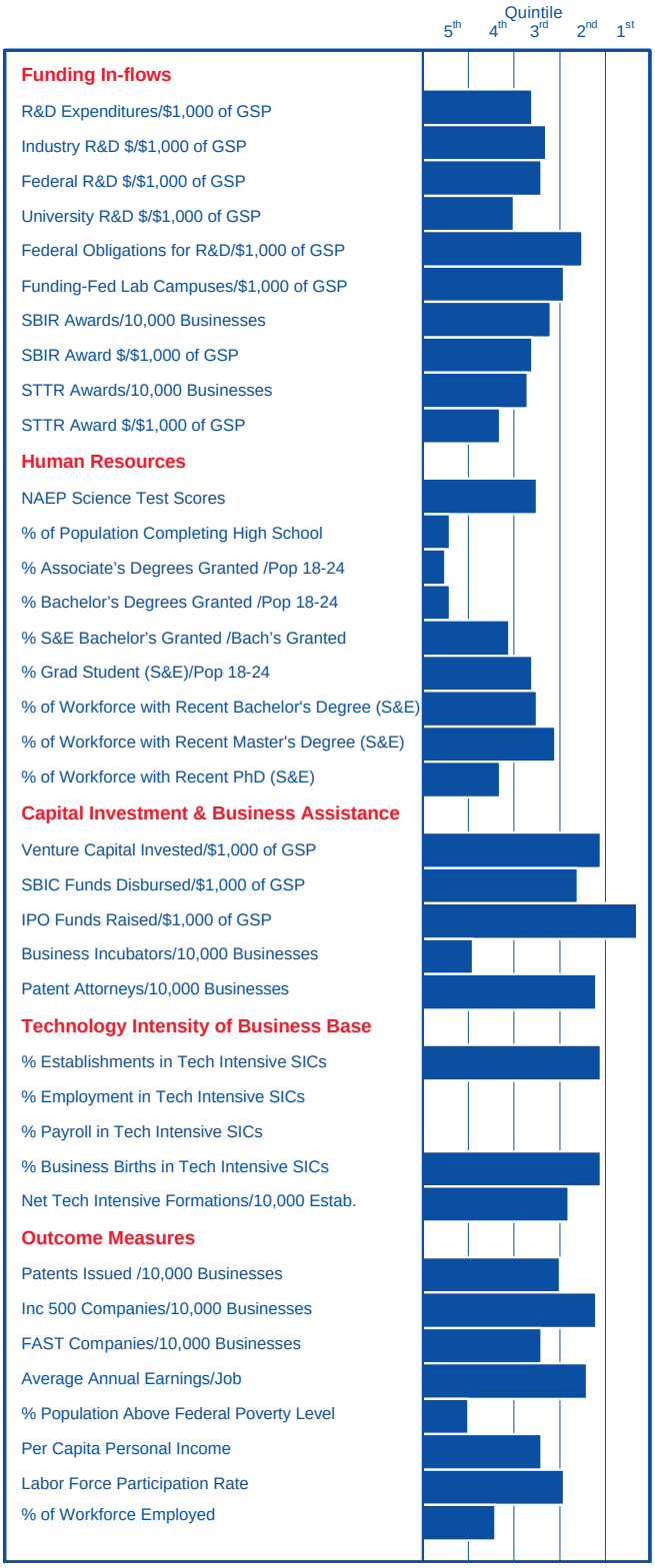
***http://www.state.tx.us/Technology/***
The **Texas Science and Technology Council**, created in 1996, developed a strategic technology plan that identified development of technologically advanced workforce skills as a key challenge. The Council is composed of 26 of the state's company, university, and government officials.

***http://www.tded.state.tx.us/admin/mission.htm***
The **Texas Department of Economic Development** is the state's lead development agency.

***http://www.harc.edu/index.html***
The **Houston Advanced Research Center** focuses on scientific research and applied technology development.

***http://www.mcc.com/mcc/about/aboutmcc.html***
**MCC** is a an Austin-based consortium of leading computer, semiconductor, and electronics manufacturers, and users and producers of information technology.

***http://www.sematech.org/public/corporate/index.htm***
**Sematech** is an Austin-based R&D consortium of semiconductor manufacturers. Member companies cooperate, pre-competitively, to accelerate development of advanced semiconductor science and technology.



# Utah

## State Information Contact

***Office of Planning & Budget***
State Capitol
Salt Lake City, UT 84114
(801) 537-9013
http://www.governor.state.ut.us/dea/default.html

## Overall State Economic Conditions

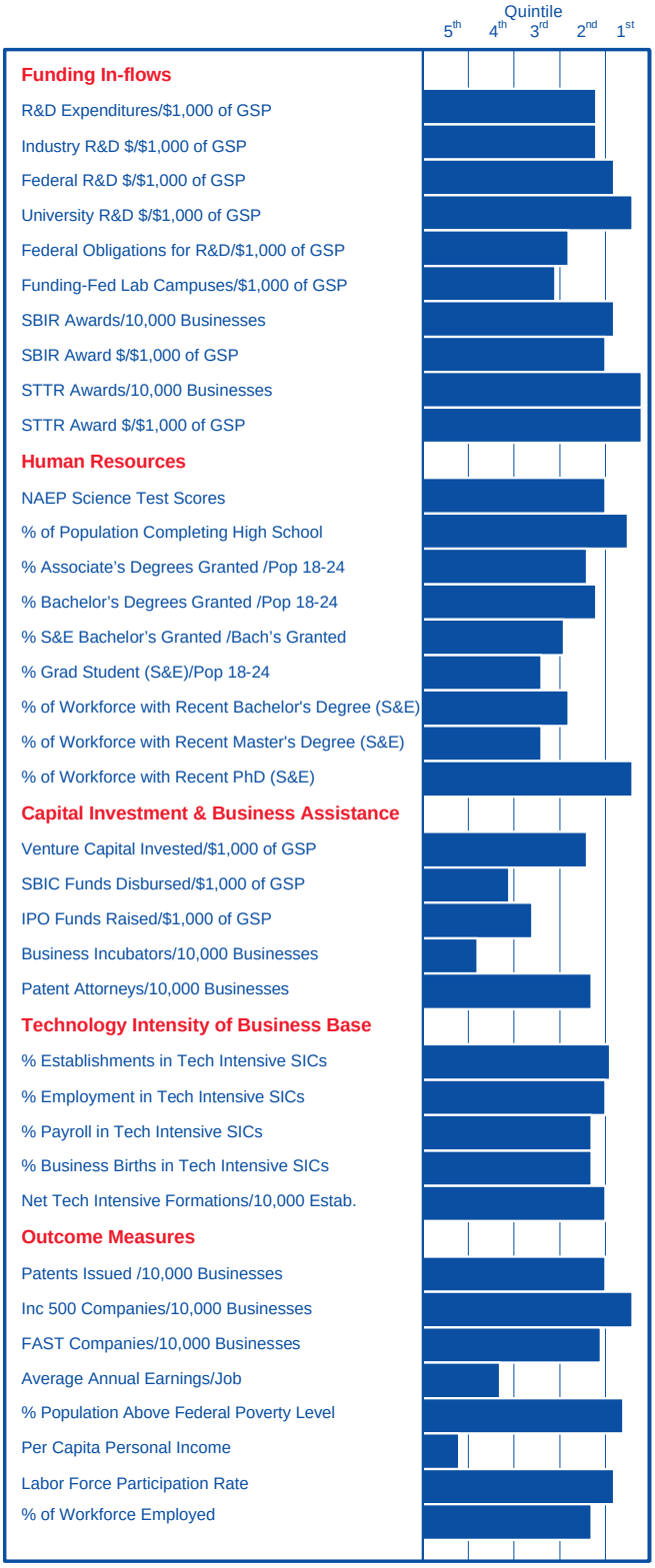
Utah ranks 34th in population with 2.1 million people in 1998, slightly over 77% of whom live in metropolitan areas (20th among states in 1996). Its 1997 per capita income of $18,130 ranked 44th nationally (in 1992 constant dollars). In 1996, 7.7% of its population lived at or below the poverty level. In 1997, Utah's gross state product was $55.4 billion (35th) and it had 50,653 business establishments (34th). The state ranks 32nd in percentage of non-farm employment in manufacturing (13.4% of its workforce in 1997).

## Science & Technology Organizations

***http://www.dced.state.ut.us/techdev/***
The **Office of Technology Development** in the Utah Department of Community and Economic Development administers the state's **Centers of Excellence Program**, which supports selected research programs at Utah's universities with potential commercial value. Centers for Advanced Structural Composites (Brigham Young University), Biomedical Optics (U.Utah), and Harsh Environment Electronics (U.Utah) are among the sixteen currently active.

***http://www.utfc.org/***
The **Utah Technology Finance Corporation**, an independent, non-profit corporation, provides debt investment in start-up and growing Utah businesses, including technology companies concentrated in the Wasatch Front .

***http://www.uita.org***
The **Utah Information Technology Association** provides advocacy, marketing, education, and other support services for the state's information technology sector.



# Vermont

## State Information Contact

***Labor Market Information***
Department of Employment and Training
Five Green Mountain Drive
P.O. Box 488
Montpelier, VT 05601-0488
(802) 828-4202
http://www.det.state.vt.us/

## Overall State Economic Conditions

Vermont ranks 49th in population with 591,000 people in 1998, nearly 28% of whom live in metropolitan areas (49th among states in 1996). Its 1997 per capita income of $20,764 ranked 30th nationally (in 1992 constant dollars). In 1996, 12.6% of its population lived at or below the poverty level. In 1997, Vermont's gross state product was $15.2 billion (50th) and it had 21,235 business establishments (47th). The state ranks 19th in percentage of non-farm employment in manufacturing (16.7% of its workforce in 1997).

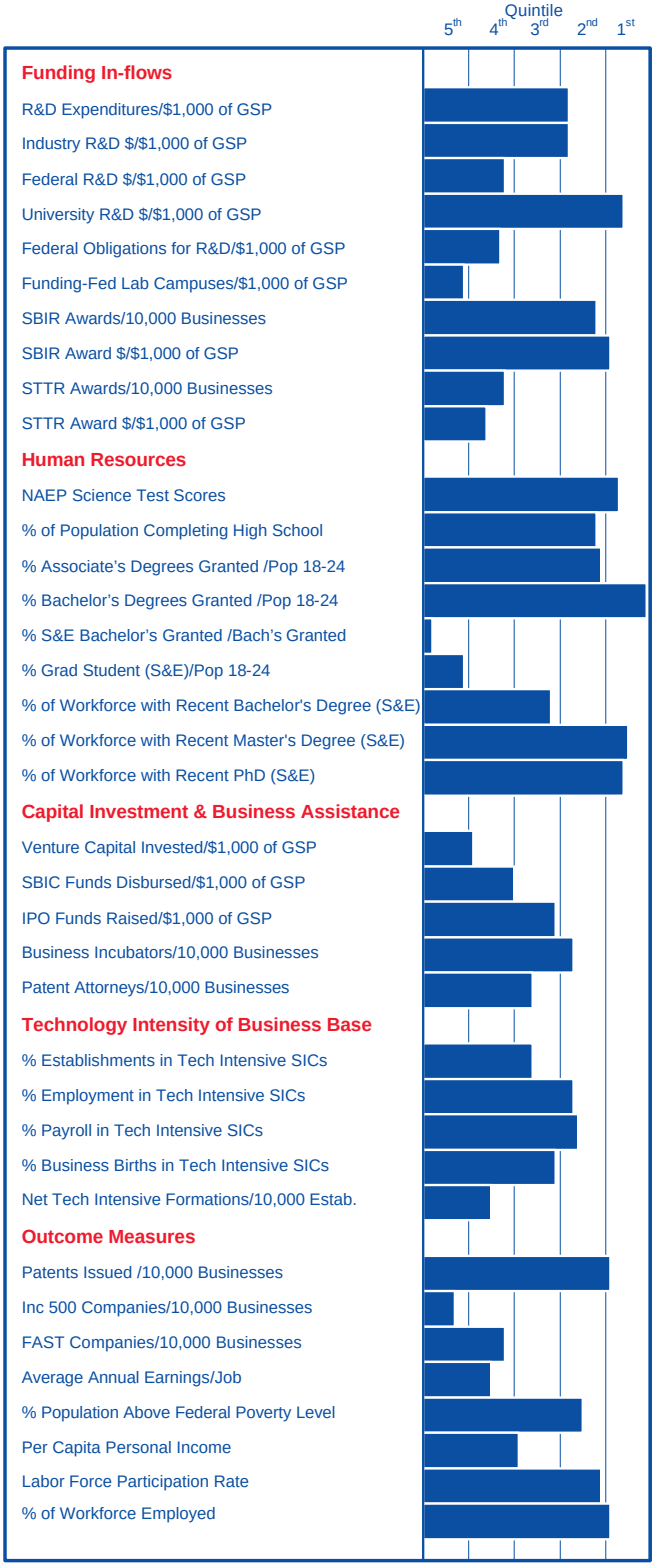
## Science & Technology Organizations

***http://epscor.uvm.edu/vtc.html***
The **Vermont Technology Council**, with leaders from business, academia, and state government, is responsible for increasing the impact of science and technology on Vermont's economy. They developed a state strategic science and technology plan and guide the Vermont EPSCoR program.

***http://www.vmec.org/***
The **Vermont Manufacturing Extension Center**, an MEP affiliate, assists small and medium-sized manufacturers in Vermont with one-on-one support and services.

***http://www.state.vt.us/veda/***
The **Vermont Economic Development Authority** (VEDA) operates state financing programs, including direct loans, industrial revenue bonds, and the issuance of mortgage loan insurance.

***http://www.thinkvermont.com/home.html***
The **Vermont Department of Economic Development** is the state's lead business development and attraction agency.



# Virginia

## State Information Contact


***University of Virginia***
Weldon Cooper Center for Public Service
918 Emmet Street
North Suite 300
Charlottesville, VA 22903-4832
(804) 982-5585
http://www.virginia.edu/cpserz


## Overall State Economic Conditions

Virginia ranks 12th in population with nearly 6.8 million people in 1998, nearly 78% of whom live in metropolitan areas (19th among states in 1996). Its 1997 per capita income of $23,549 ranked 14th nationally (in 1992 constant dollars). In 1996, 12.3% of its population lived at or below the poverty level. In 1997, Virginia's gross state product was $211.3 billion (13th) and it had 170,654 business establishments (12th). The state ranks 36th in percentage of non-farm employment in manufacturing (12.5% of its workforce in 1997).

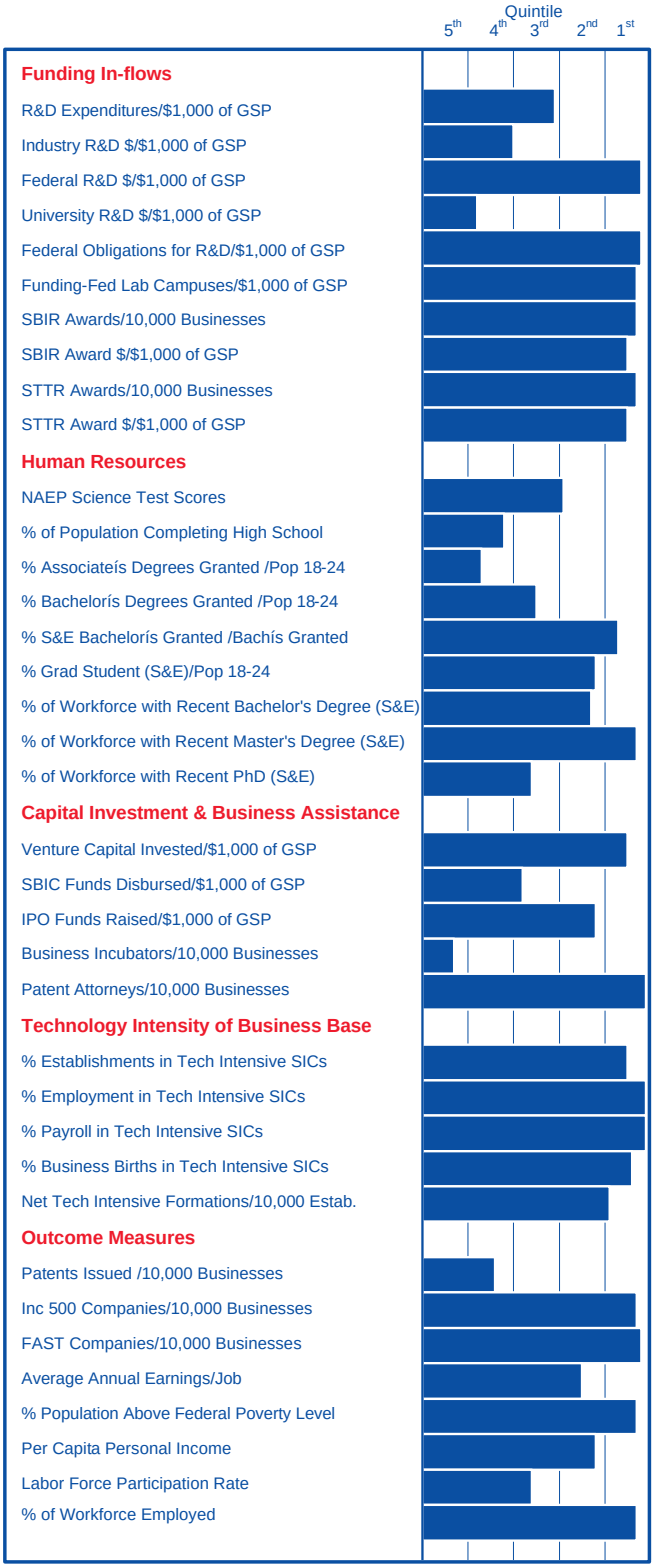
## Science & Technology Organizations

***http://www.sotech.state.va.us/techngov.html***
The **Secretary of Technology** is responsible for the state's overall technology policy. **The Department of Technology Planning** functions as the Secretary's staff in developing government technology standards, and programs for Virginia's high technology industry sectors.

***http://www.cit.org/index_ns3.html***
The **Center for Innovative Technology** (CIT) is a nonprofit corporation created by the Commonwealth to support technology commercialization. It provides companies access to Virginia university research (including eleven CIT-sponsored, university-based Technology Development Centers) and to the federal laboratory system.

***http://www.yesvirginia.org/wv/bd.html***
The **Virginia Economic Development Partnership** is the state's lead agency for business attraction and development, with a Global Information System (GIS) utilizing satellite and electronic technology.

***http://www.jmu.edu/vmic/***
The **Virginia Manufacturing Innovation Center**, co-sponsored by James Madison University and the Center of Innovative Technology (CIT), provides small and mid-sized firms services and training related to advanced manufacturing, with a focus on intelligent manufacturing bio-manufacturing, and micro-electronics. It is a close partner of the Virginia's Philpott Manufacturing Extension Partnership.



# Washington

## State Information Contact


***Forecasting Division***
Office of Financial Management
P.O. Box 43113
Olympia, WA 98504-3113
(360) 902-0599
http://www.wa.gov/ofm/


## Overall State Economic Conditions

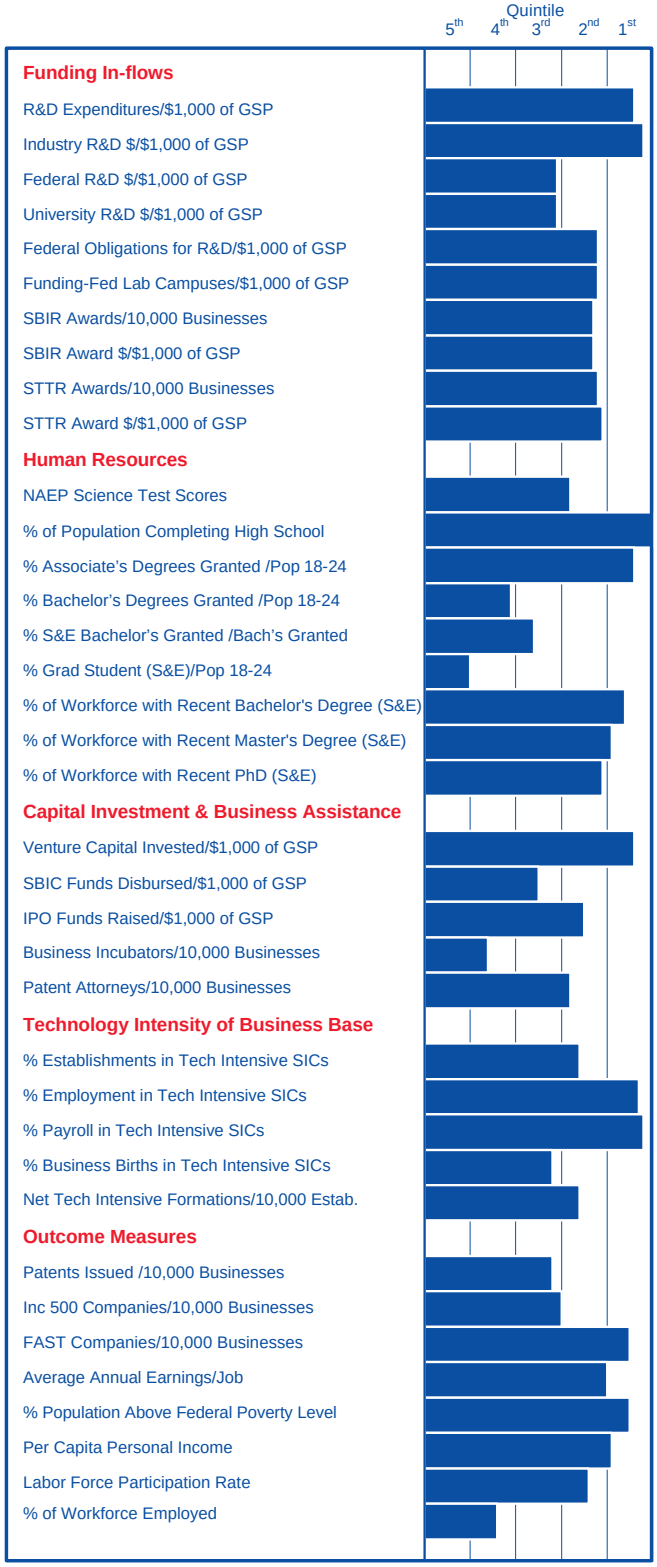
Washington ranks 15th in population, with nearly 5.7 million people in 1998, nearly 83% of whom live in metropolitan areas (15th among states in 1996). Its 1997 per capita income of $23,707 ranked 12th nationally (in 1992 constant dollars). In 1996, almost 12% of its population lived at or below the poverty level. In 1997, Washington's gross state product was $172.3 billion (14th) and it had 159,684 business establishments (14th). The state ranks 26th in percentage of non-farm employment in manufacturing (14.7% of its workforce in 1997).

## Science & Technology Organizations

***http://www.watechcenter.org/***
The **Washington Technology Center** (WTC) funds and facilitates market-driven, high technology focused, industry-university R&D partnerships and technology transfer. WTC's industry-university partnerships are focused on advanced materials and manufacturing, biotechnology and biomedical instrumentation, computer systems/human interface technology, and microelectronics.

***http://www.technology-alliance.com/***
The **Washington Technology Alliance** is a consortium of Washington State technology-based businesses, their trade associations, the state's leading research institutions, and other cooperating organizations. It organizes networking events and technology-sector research, while its Alliance of Angels promotes investment in new technology companies.

***http://www.sirti.org/***
The **Spokane Intercollegiate Research & Technology Institute** is a technology development and commercialization institute, with specialized laboratories and programs focusing on environmental technologies, digital technologies, software engineering, multimedia, intelligent manufacturing, microelectronics, and biomedical and agricultural technologies.



# West Virginia

## State Information Contact

***Bureau of Business and Economic Research***
West Virginia University
P.O. Box 6025
Morgantown, WV 26506-6025
(304) 293-7836
http://www.wvu.edu/colbe/research/bureau/home.htm

## Overall State Economic Conditions

West Virginia ranks 35th in population with 1.8 million people in 1998, nearly 42% of whom live in metropolitan areas (42nd among states in 1996). Its 1997 per capita income of $16,821 ranked 49th nationally (in 1992 constant dollars). In 1996, 18.5% of its population lived at or below the poverty level. In 1997, West Virginia's gross state product was $38.2 billion (38th) and it had 41,625 business establishments (38th). The state ranks 37th in percentage of non-farm employment in manufacturing (11.5% of its workforce in 1997).

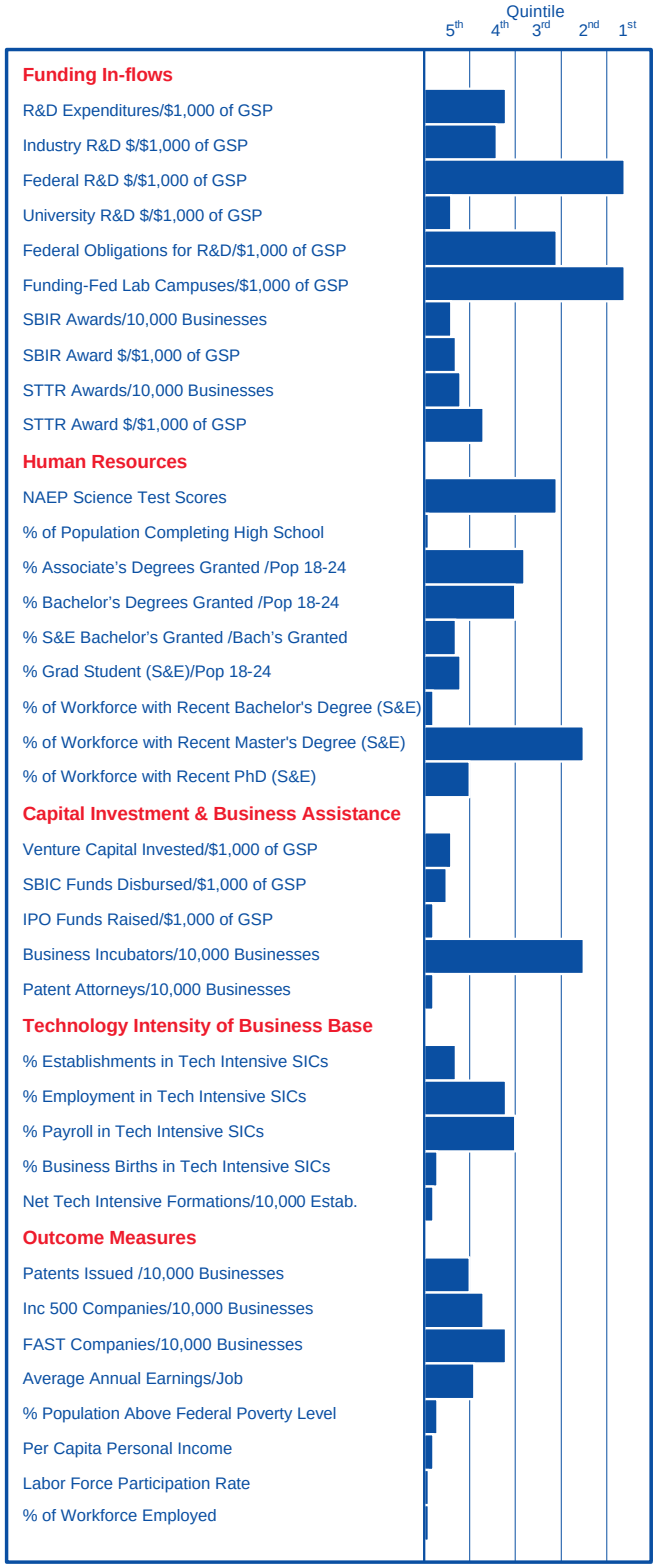
## Science & Technology Organizations

***http://www.state.wv.us/got/goals-missions/goals_and_mission_of_the_wv_gove.htm***
The **West Virginia Governor's Office of Technology** develops, transfers, and manages technology to benefit government agencies and private sector companies, undertaking cooperative relationships with entrepreneurs, the state university research system, federal laboratories, and state development and technology agencies.

***http://www.wvhtf.org/***
The **West Virginia High Technology Consortium Foundation** is a non-profit corporation supporting economic diversification. The Foundation's Virtual Company program established a hub of skilled program and contract managers, management systems, and other resources to train small businesses for success in complex markets.

***http://svis.org/***
**Software Valley** is a non-profit organization to promote high technology job growth in West Virginia and elsewhere, focusing its efforts on software development, software engineering, flexible computer integrated manufacturing, and education.

***http://www.rcbi.org/***
The **Robert C. Byrd Institute for Advanced Flexible Manufacturing** works to develop a just-in-time, quality supply base for the Department of Defense (DoD), by providing small and medium-sized manufacturers access to advanced technologies and technical training.



# Wisconsin

## State Information Contact

***Wisconsin Legislative Reference Bureau***
P.O. Box 2037
Madison, WI 53701-2037
(608) 266-7098
http://www.legis.state.we.us/lrb/index.html

## Overall State Economic Conditions

Wisconsin ranks 18th in population with 5.2 million people in 1998, nearly 68% of whom live in metropolitan areas (30th among states in 1996). Its 1997 per capita income of $21,717 ranked 22nd nationally (in 1992 constant dollars). In 1996, 8.8% of its population lived at or below the poverty level. In 1997, Wisconsin's gross state product was $147.3 billion (19th) and it had 138,427 business establishments (17th). The state ranks 2nd in percentage of non-farm employment in manufacturing (23% of its workforce in 1997).

## Science & Technology Organizations

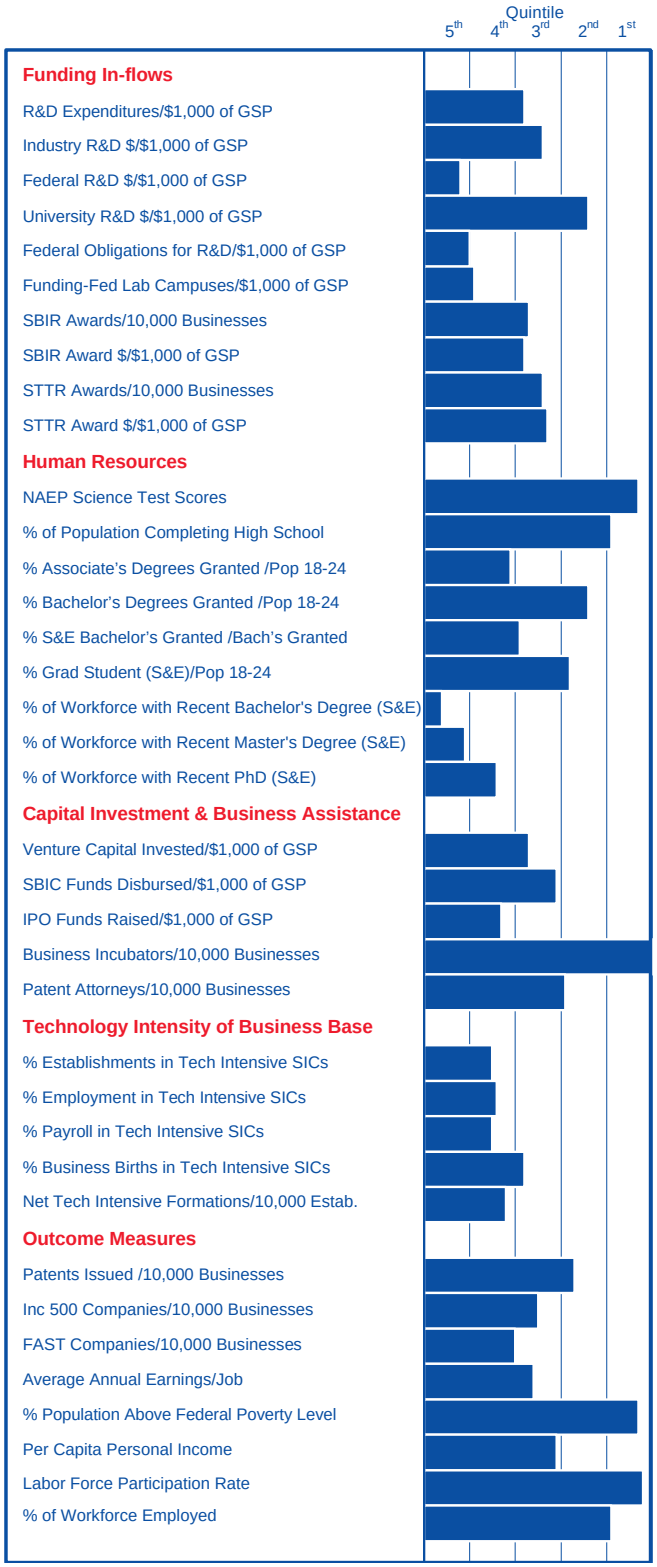
***http://www.commerce.state.wi.us/ED/ED-TDF.html***
The **Technology Development Fund** of the Wisconsin Department of Commerce assists Wisconsin businesses in technology development and commercialization projects.

***http://www.commerce.state.wi.us/ED/ED-TDL.html***
The **Technology Development Loan** (TDL) Program assists technology commercialization by businesses and university/business consortia providing funds for acquiring land, buildings, and equipment ; for working capital; or for new construction.

***http://www.commerce.state.wi.us/MT/MT-FAX-0902.html***
The **Manufacturing Assessment Center**, affiliated with the Wisconsin Manufacturing Extension Partnership, is Wisconsin's lead agency for providing assessments of small to medium manufacturing establishments. It provides protocols and training in manufacturing assessment to WMEP field engineers.

***http://www.wmep.org***
The **Wisconsin Manufacturing Extension Partnership**, part of the NIST/MEP network, provides manufacturing, technical, and management assistance to small and midsize manufacturers.

***http://www.forwardwi.com/about/overview.html***
**Forward Wisconsin**, Inc. is a public-private marketing organization for business attraction, chaired by the Governor.



# Wyoming

## State Information Contact


***Department of Administration and Information***
Economic Analysis Division
Emerson Building 327E
Cheyenne, WY 82002-0060
(307) 777-7504
http://eadiv.state.wy.us/ai/ai


## Overall State Economic Conditions

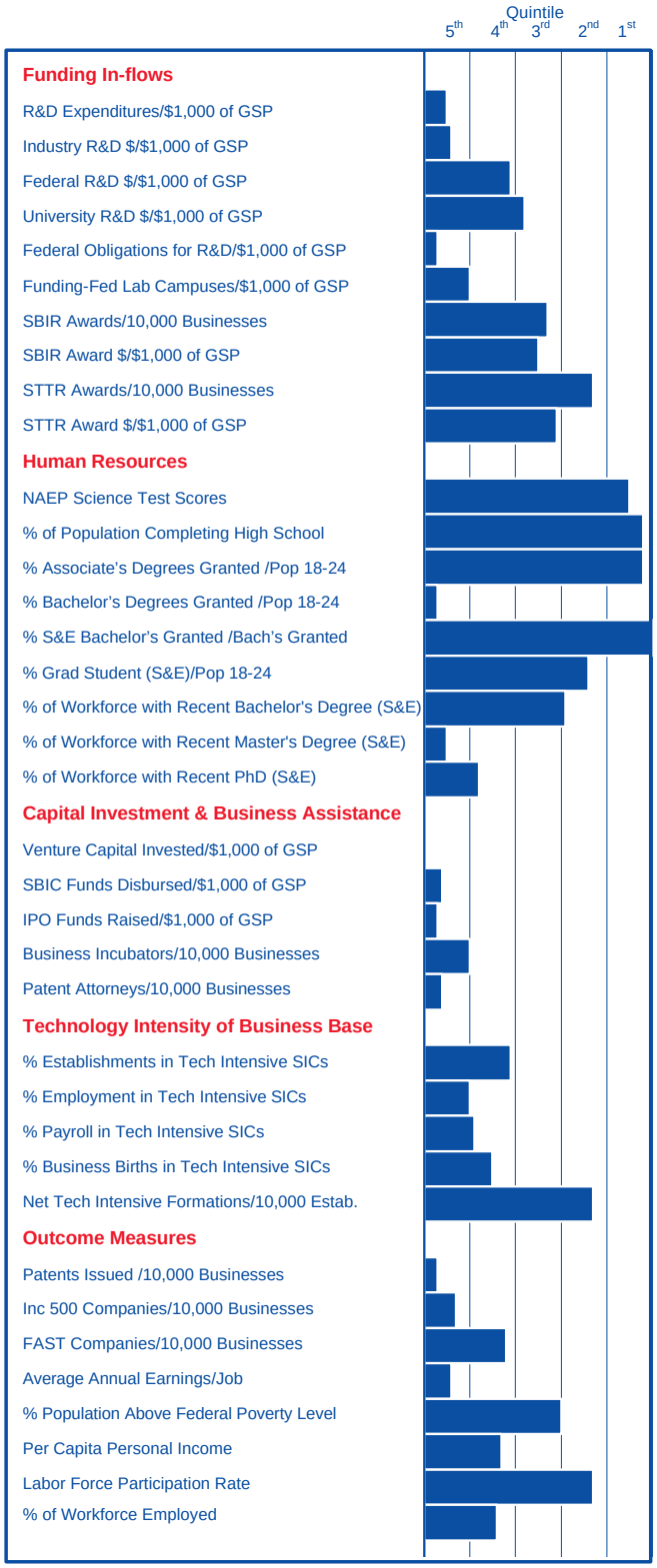
Wyoming ranks 50th in population with 481,000 people in 1998, just under 30% of whom live in metropolitan areas (48th among states in 1996). Its 1997 per capita income of $20,096 ranked 34th nationally (in 1992 constant dollars). In 1996, 11.9% of its population lived at or below the poverty level. In 1997, Wyoming's gross state product was $17.6 billion (48th) and it had 17,680 business establishments (50th). The state ranks 48th in percentage of non-farm employment in manufacturing (4.8% of its workforce in 1997).

## Science & Technology Organizations

***http://epscor-wise.uwyo.edu:80/wyoming/***
**Wyoming EPSCoR** is a partnership combining resources and management from the State of Wyoming and the University of Wyoming to build the state's science and technology capability.

***http://uwadmnweb.uwyo.edu/sbir/***
The **Wyoming Small Business Innovative Initiative** helps Wyoming technology-based businesses in Wyoming access federal SBIR/STTR funds for making technical innovations, developing new product concepts, and enhancing existing product lines. The National Science Foundation EPSCoR Program, the University of Wyoming Research Office, and the State of Wyoming have funded this initiative.

***http://www.wyomingbusiness.org/programs.htm***
The recently formed **Wyoming Business Council** has been designated the state's lead organization for business and economic development.



# District of Columbia

## Information Contact

***Office of Planning***
Data Management Division
Presidential Building, Suite 500
415 12th Street
N.W. Washington, DC 20004
(202) 727-6533
http://dclibrary.org/sdc/

## Overall Economic Conditions

The District's population was 523,000 in 1998. Its 1997 per capita income was $31,812 (in 1992 constant dollars) which would have placed the District as the second highest in a per capita income ranking of states. In 1996, slightly over 21% of its population lived at or below the poverty level. In 1997, the District of Columbia's gross product was $52.4 billion and it had 19,554 business establishments. The percentage of manufacturing employment in 1997 was only 2%.

## Science & Technology Organizations

***http://www.dcworks.gov***
The Office of Economic Development develops and implements programs and policies for the retention, expansion, and attraction of commerce and trade, including local, small, disadvantaged businesses. (202) 727-6365.

***http://netpreneur.org/***
The Netpreneur Program, run by the Morino Institute, has helped build a network of Internet information for communications entrepreneurs, business people, technology professionals, and academia in the Greater Washington region. It publishes Netpreneur News and Netpreneur Calendar, and provides primary information in the region for funding and starting new companies.

***http://www.potomacconference.org/potomac_conferencehistory_page.htm***
The Potomac Conference, sponsored by the Greater Washington Board of Trade, brings together leadership from the private and public sectors to set a regional economic competitiveness agenda.

***http://www.wdctech.net/***
The recently formed Washington DC Technology Council (DCTech) is a coalition of companies, city government, and the academic community focused on promoting the development, growth and recognition of the area's technology companies. Its mission includes developing linkages among technology industry, government, educational and research entities. It also promotes regional implementation of technology to enhance competitiveness.

# Puerto Rico

## Information Contact

***Junta de Planificacion***
Oficina del Censo
P.O. Box 41119
Centro Gubernamental Minillas
San Juan, PR 00940-1119
(787) 728-4430/(787) 723-6200, x 2502
asi@caribe.net

## Overall Economic Conditions

Puerto Rico's estimated population as of July 1999 was 3,860,091. (*Census statistics more recent than 1990 will not be available before December 1999*). In 1990, 79% of the population lived in metropolitan areas. In 1989, 55.3% of its population lived at or below the poverty level. In 1997, Puerto Rico's gross product was $32.1 billion and it had 42,463 business establishments. The island's 1990 per capita income was $4,177. In 1997, 12.3% of its labor force was employed in manufacturing. (According to the Puerto Rico Department of Economic Development and Commerce, manufacturing employment has remained stable during 1997-98 at well above 150,000 jobs.)

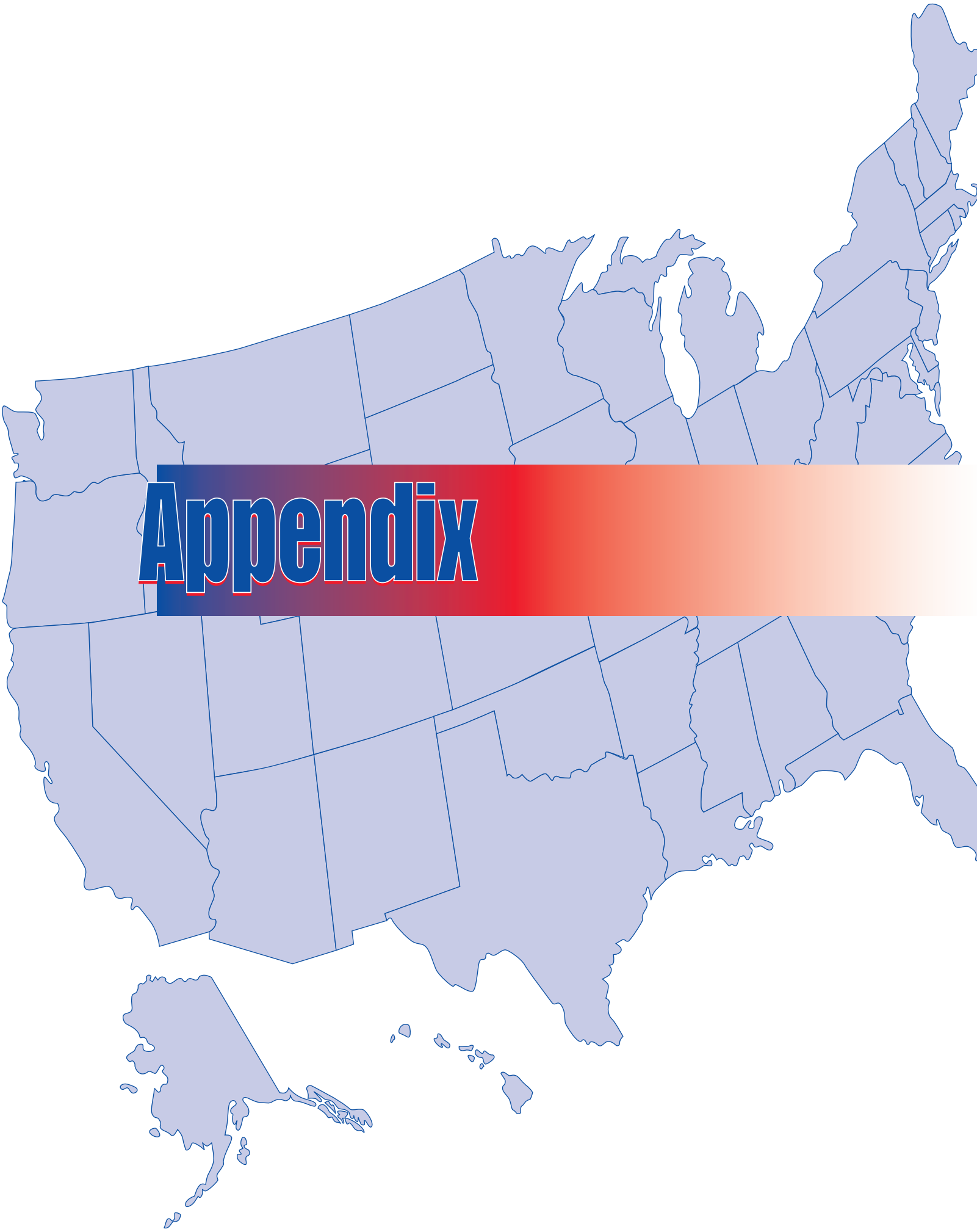
## Science & Technology Organizations

***http://www.puertorico4business.com/sci&tech.html***
The **Office of Science and Technology** in the Puerto Rico Department of Economic Development and Commerce is the state's principal technology agency.

***http://www.puertorico4business.com***
The **Department of Economic Development and Commerce** promotes the economic development of Puerto Rico and its transition to a knowledge-intensive economy. The department grew out of a reorganization plan designed to integrate all government activity related to the economic development of the island in sectors such as manufacturing, commerce, tourism, cooperatives, and services.

***http://www.pridco.com/english/index.htm***
The **Puerto Rico Industrial Development Company** serves as a liaison with other government agencies to assist manufacturing companies relocating or expanding in Puerto Rico.

***http://www.pupr.edu/***
The **Polytechnic University of Puerto Rico** participates in consortia with private enterprises to train company personnel. It receives donations of equipment such as the state-of-the-art Surface Mount Technology Laboratory.



# Appendix

# Methodology

## *A-1.1 Project Organization*

This project was carried out using a team approach. Members of the team included:

- The Project Manager, Ms. Anita Balachandra, from the Office of Technology Policy
- A Steering Committee consisting of members from various sectors of the U.S. Department of Commerce and the National Science Foundation
- The contractor, Taratec Corporation from Columbus, Ohio

## *A-1.2 Project Work Plan*

The initial project task was to identify appropriate data and data sources that could be used to characterize the science and technology infrastructure of individual states. Working collaboratively, the team generated lists of potential candidate measures for consideration. Each of the candidate measures was investigated by the contractor, who assessed the quality, consistency, and extent of coverage of the data. Based on these factors, the team selected a total of 37 measures-24 input measures and 13 output measures for further refinement.

The science and technology-stimulating input measures fell into three main categories:

- Funding In-Flows
- Human Resources
- Capital Investment and Business Assistance

The outcome data categories were focused on:

- Technology Intensity of the State's Business Base
- Other Outcome Measures (patents, fast-growing companies, earnings, and work force employment).

Each of the measures was converted to a metric by minimizing its scale sensitivity. The team recognized that scale differences in the data or measures between states could bias any ranking in favor of the larger states. For instance, the size of the civilian work force differs by more than 60-fold and the size of the total business establishment payroll by nearly 100-fold when the states are directly compared. To account for these differences in scale, the data from each of the measures was converted to a quotient that reflected the intensity of that measure on the state's business base or its impact on the state's economy. To the extent possible, scale sensitivity has been minimized in the final set of metrics and in the state rankings.

This attempt to reduce scale sensitivity meant that some compromises were necessary in selecting the year of the data used in the numerator and denominator. The most recent data available were always used in the numerator. Whenever possible, the year of data used in the denominator of each metric was selected to be as close as possible to the year of the data used in the numerator. In some cases, this meant using the middle year in the denominator when a 3-year average was used in the numerator. In other cases, it meant using the latest data available in the denominator, even though the year of that data was earlier than the year of the data used in the numerator.

A second area of metric definition deserving special note involves the definition of technology intensive industries. A search was conducted for a generally accepted, rigorous definition of "high technology" that was based on SIC codes. Several authors, including Amy Glasmeier, Christian Chabot, William Luker, and Donald Lyons proposed various approaches. In addition the team reviewed lists used by the Department of Commerce,

the Bureau of Labor Statistics, and the Milken Institute. Other lists of SIC codes tended to be industry-specific. For instance, the Department of Commerce developed a list of high tech SIC codes pertaining to the information technology industry, and the list developed by the American Electronics Association focused on electronics, computers, and telecommunications.

The project team decided to use the list from the Bureau of Labor Statistics (BLS) which is based on measures of employees engaged in R&D activities. In 1991 BLS used Occupational Employment Statistics surveys in which employers were asked to explicitly designate workers who were actually engaged in R&D activity. The researchers identified 30 "R&D intensive" industries in which the number of R&D workers was at least 50 percent higher than the average for all industries surveyed. Two of those 3-digit SIC codes were omitted because publishable data were not available. The remaining 28 3-digit SIC codes that comprised the technology intensive industries are listed on Table 1:

## Table 1. BLS R&D Intensive High-Technology Industries

| SIC Code | Industry |
|---|---|
| 131 | Crude petroleum and natural gas operations |
| 211 | Cigarettes |
| 281 | Industrial inorganic chemicals |
| 282 | Plastic materials and synthetics |
| 283 | Drugs |
| 284 | Soap, cleaners, and toilet goods |
| 285 | Paints and allied products |
| 286 | Industrial organic chemicals |
| 287 | Agricultural chemicals |
| 289 | Miscellaneous chemical products |
| 291 | Petroleum refining |
| 335 | Nonferrous rolling and drawing |
| 355 | Special-industry machinery |
| 357 | Computer and office equipment |
| 362 | Electrical industrial apparatus |
| 366 | Communications equipment |
| 367 | Electronic components and accessories |
| 371 | Motor vehicles and equipment |
| 373 | Aircraft and parts |
| 376 | Guided missiles, space vehicles, and parts |
| 381 | Search and navigation equipment |
| 382 | Measuring and controlling devices |
| 384 | Medical instruments and supplies |
| 386 | Photographic equipment and supplies |
| 737 | Computer and data processing services |
| 871 | Engineering and architectural services |
| 873 | Research and testing services |
| 874 | Management and public relations services |

*Note: SICs 299 (Miscellaneous petroleum and coal products) and 899 (Services, nec) are omitted because publishable data are not available.*

Source: Paul Hadlock, Daniel Hecker, and Joseph Gannon, "High Technology Employment: Another View," *Monthly Labor Review*, July 1991, pp. 26-30, available at <http://stats.bls.gov/opub/mlr/1991/07/contents.htm>.

Selection of the BLS list was not a decision reached without compromise. The project team recognized that the BLS list suffers from certain limitations. First, it is heavily focused on manufacturing, and manufacturing has declined as a percent of Gross Domestic Product in the U.S. since the time the list was initially created. Second, the BLS list may not fully reflect the growing importance of some of the newer high-tech sectors such as biotechnology, communications services, and information technology. In spite of these shortcomings, the team felt that there was value in selecting a list that resulted from a documented selection process, was broadly known and used, and originated from a government source. Adhering to these criteria provided assurances that the list of technology intensive SIC codes was not selected in a manner calculated to provide advantage to a particular state or region of the country, nor did it reflect the biases or the agenda of any particular group.

After the metric definition step was completed, the data were gathered electronically and transferred to appropriate spreadsheet software. Data gathering for this project was completed in November 1999, and the data given in this report represent the latest data available at that time to the best of our knowledge. During the time required for review, approval, and publication of this report, more recent data sets will likely become available for certain metrics. The rankings on individual metrics and the state profiles should be considered as snapshots taken at a particular time, with the understanding that the state indicators are not static but will evolve over time.

The values of individual metrics were calculated, and the states were ranked relative to each metric. The rankings were defined so that those states with highest numerical value were given the lowest numerical ranking. For instance, the state receiving the largest number of Small Business Innovation Research (SBIR) grants per 10,000 businesses located in that state received a ranking of one. Conversely, the state with the smallest number of SBIR grants per 10,000 businesses received a ranking of fifty. Rankings were done for each of the fifty states.

The data for the District of Columbia and Puerto Rico have been included at the bottom of each data chart in the individual Metric Descriptions in Section 2 for purposes of comparison. In many cases, specific pieces of data were not available for these areas. Occasionally, the data for these areas were not taken from the same source as the data for the fifty states, or they were not available for the same year. For these reasons, the District of Columbia and Puerto Rico were not included in the rankings, nor were they included in the calculation of the national average for each metric.

The source citations for the data used to calculate each metric were provided on the appropriate Metric Description pages in Section 2. The citations were also provided at the end of this Appendix where they have been assembled to facilitate reproduction.

Data pertaining to individual states were presented in Section 3 as a series of State Profiles. The State Information Contacts were obtained from the Statistical Abstract of the United States, "Appendix 1, Guide to Sources of Statistics, State Statistical Abstracts, and Foreign Statistical Abstracts", <http://www.census.gov/prod/3/98pubs/98statab/saappi.pdf>. Appendix 1 identifies the state sources for state statistical abstracts through 1998. These sources are usually designated as data repositories for the state. In a few cases, the source was a commercial entity, and the state census data center designated by the U.S. Bureau of the Census was selected instead. For questions pertaining to the raw data, inquiries should be directed first to the source of the data, provided in Section 2 as well as at the end of this Appendix, and then to the State Information Contact.

The State Profiles in Section 3 also provided a brief sketch of each state describing its population, gross state product, number of business establishments, per capita income, and percent of the population living in poverty. The first three of these measures are scale sensitive, and their rankings were intended to give the reader a picture of the state's comparative economic impact.

The third element of the State Profiles in Section 3, Science and Technology Organizations, identified significant organizations in a state's science and technology infrastructure. Included in this section were government agencies, public/private partnerships, and university partnerships. These organizations were identified through the National Governors' Association site and the National Association of State Information Resources site. Telephone contacts were made with the governor's office, the department of development, or other knowledgeable individuals

to identify additional science and technology organizations in a particular state. The organizations selected for inclusion were intended to represent a variety of entry portals into a state's science and technology infrastructure. Some are general in scope and others are technology-specific. Each of the organizations was briefly described, and an internet address was provided to facilitate access to it. Questions related to the content of a state's science and technology infrastructure should be directed to an appropriate organization where they will be answered or referred. Selection or omission of an organization was not meant to imply that an assessment regarding its effectiveness, importance, or relative ranking was done as part of this project.

The final section in each State Profile contained a bar chart depicting the state's performance on each of the 37 metrics. The chart was divided into quintiles, and the length of the bar represents the state's ranking on that metric. The definition of each metric can be found in Section 2, and the source of the data was given in both Section 2 and in the list at the end of this Appendix. Details related to the raw data and to the state's exact ranking on a particular metric can be found in the chart for that metric in Section 2.

# List of Data Sources

## 1. Expenditures for Total R&D Performed per $1,000 of GSP: 1997

***Expenditures for Total R&D Performed:***

National Science Foundation, Division of Science Resources Studies, *Research and Development in Industry: 1997,* NSF 99-358, Project Officer and Principal Author, Raymond M. Wolfe (Arlington, VA 1999);

National Science Foundation, Division of Science Resources Studies, *Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999,* NSF 99-333, Project Officer, Ronald L. Meeks (Arlington, VA 1999);

National Science Foundation, Division of Science Resources Studies, *Academic Research and Development Expenditures: Fiscal Year 1997,* NSF 99-336, Project Officer, M. Marge Machen (Arlington, VA 1999).

***Gross State Product:***

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1997 data were used in calculations].

## 2. Expenditures for Industry-Performed R&D per $1,000 of GSP: 1997

***Expenditures for Industry-Performed R&D:***

National Science Foundation, Division of Science Resources Studies, *Research and Development in Industry: 1997*, NSF 99-358, Project Officer and Principal Author, Raymond M. Wolfe (Arlington, VA 1999).

***Gross State Product:***

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1997 data were used in calculations].

## 3. Expenditures for Federally Performed R&D per $1,000 of GSP: 1997

***Expenditures for Federally Performed R&D:***

National Science Foundation, Division of Science Resources Studies, *Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999*, NSF 99-333, Project Officer, Ronald L. Meeks (Arlington, VA 1999).

***Gross State Product:***

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data*. [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1997 data were used in calculations].

## 4. Expenditures for University-Performed R&D per $1,000 of GSP: 1997

***Expenditures for University-Performed R&D:***

National Science Foundation, Division of Science Resources Studies, *Academic Research and Development Expenditures: Fiscal Year 1997*, NSF 99-336, Project Officer, M. Marge Machen (Arlington, VA 1999).

***Gross State Product:***

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].

## 5. Federal Obligations for R&D per $1,000 of GSP: 1997

***Federal Obligations for R&D:***

National Science Foundation, Division of Science Resources Studies, *Federal Funds for Research and Development: Fiscal Years 1997, 1998, and 1999*, NSF 99-333, Project Officer, Ronald L. Meeks (Arlington, VA 1999).

***Gross State Product:***

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1997 data were used in calculations].

## 6. Funding of Federal Laboratory Campuses per $1,000 of GSP: 1995

***Federal Laboratory Campus Funding:***

U.S. General Accounting Office, *Federal R&D Laboratories,* GAO/RCED/NSIAD-96-78R (Washington, DC: 1996).

***Gross State Product:***

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1995 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1995 data were used in calculations].

## 7. Average Annual Number of SBIR Awards per 10,000 Business Establishments: 1996-8

***SBIR Awards Granted:***

U.S. Small Business Administration, Office of Technology. *1998 SBIR State Rank.* <http://www.sbaonline.sba.gov/SBIR/98sbirrank.html> (1999, November 22);

U.S. Small Business Administration, Office of Technology. *1997 SBIR State Rank.* <http://www.sba.gov/SBIR/section03f03.html> (1999, September 20);

U.S. Small Business Administration, Office of Technology. (1996). *Small Business Innovation Research Program (SBIR) Annual Report - FY 1996.* Administrator, Aida Alvarez, Washington, DC.

***Establishments:***

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997*. (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico*. (CBP/97-53). Washington, DC: U.S. Government Printing Office.

## 8. Average Annual SBIR Award Dollars per $1,000 of GSP: 1996-8

***SBIR Award Dollars Granted:***

U.S. Small Business Administration, Office of Technology. *1998 SBIR State Rank*. <http://www.sbaonline.sba.gov/SBIR/98sbirrank.html> (1999, November 22);

U.S. Small Business Administration, Office of Technology. *1997 SBIR State Rank*. <http://www.sba.gov/SBIR/section03f03.html> (1999, September 20);

U.S. Small Business Administration, Office of Technology. (1996). *Small Business Innovation Research Program (SBIR) Annual Report - FY 1996*. Administrator, Aida Alvarez, Washington, DC.

***Gross State Product:***

U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1997 data were used in calculations].

## 9. Average Annual Number of STTR Awards per 10,000 Business Establishments: 1996-8

***STTR Awards Granted:***

U.S. Small Business Administration, Office of Technology. *1998 STTR State Rank.* <http://www.sbaonline.sba.gov/SBIR/section03f14.html> (1999, September 29);

U.S. Small Business Administration, Office of Technology. *1997 STTR State Rank*. <http://www.sbaonline.sba.gov/SBIR/section03f05.html> (1999, September 29);

U.S. Small Business Administration, Office of Technology. (1997, August 25). *Small Business Technology Transfer Program (STTR) Annual Report – FY 1996*. Administrator, Aida Alvarez, Washington, DC.

***Establishments:***

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997*. (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico*. (CBP/97-53). Washington, DC: U.S. Government Printing Office.

## 10. Average Annual STTR Award Dollars per $1,000 of GSP: 1996-8

***STTR Award Dollars Granted:***

U.S. Small Business Administration, Office of Technology. *1998 STTR State Rank*. <http://www.sbaonline.sba.gov/SBIR/section03f14.html> (1999, September 29);

U.S. Small Business Administration, Office of Technology. *1997 STTR State Rank*. <http://www.sbaonline.sba.gov/SBIR/section03f05.html> (1999, September 29);

U.S. Small Business Administration, Office of Technology. (1997, August 25). *Small Business Technology Transfer Program (STTR) Annual Report – FY 1996*. Administrator, Aida Alvarez, Washington, DC.

***Gross State Product:***
U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data*. [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998.* [1997 data were used in calculations].

## 11. National Assessment of Educational Progress (NAEP) in Science Average State Test Scores: 1996

***NAEP Science Test Scores:***
Keiser, K.K., Nelson, J.E., Norris, N.A., Szyszkiewicz, S., *NAEP 1996 science cross-state data compendium for the grade 8 assessment.* Washington, DC: National Center for Education Statistics, (1998).

## 12. Percent of the Population that has Completed High School: 1998

***High School Completion:***
U.S. Census Bureau. (1998, October 29). "Table 13. Educational Attainment of Persons 25 Years Old and Over, for States: March 1998." *Educational Attainment in the United States: March 1998 (Update)*. (P20-513). <http://www.census.gov/prod/3/98pubs/p20-513u.pdf> (September 20, 1999).

## 13. Associate's Degrees Granted as a Percent of the 18-24 Year Old Population: 1996-7

***Associate's Degrees Granted:***
U.S. Department of Education, National Center for Education Statistics, [E.D. Tabs] *Degrees and Other Awards Conferred by Title IV Eligible, Degree-granting Institutions: 1996-97*, NCES 2000-174, by Frank B. Morgan, Washington, DC: 1999.

***Population, 18-24 Years Old:***
U.S. Census Bureau, Population Division, Population Estimates Program. (1999, June 15). *Population Estimates for the U.S. and States by Single Year of Age and Sex: July 1, 1997*. <http://www.census.gov/population/estimates/state/stats/ag9798.txt> (1999, September 14).

## 14. Total Bachelor's Degrees Granted as a Percent of the 18-24 Year Old Population: 1996-7

***Total Bachelor's Degrees Granted:***
U.S. Department of Education, National Center for Education Statistics, [E.D. Tabs] *Degrees and Other Awards Conferred by Title IV Eligible, Degree-granting Institutions: 1996-97*, NCES 2000-174, by Frank B. Morgan, Washington, DC: 1999.

***Population, 18-24 Years Old:***
U.S. Census Bureau, Population Division, Population Estimates Program. (1999, June 15). *Population Estimates for the U.S. and States by Single Year of Age and Sex: July 1, 1997*. <http://www.census.gov/population/estimates/state/stats/ag9798.txt> (1999, September 14).

## 15. Percent of Bachelor's Degrees Granted in Science and Engineering: 1996-7

***Science and Engineering Bachelor's Degrees Granted:***
Arrangements for special tabulations were made by Thomas Snyder, Program Director, Annual Reports Program-ECICSD, National Center for Education Statistics at (202) 219-1689 on November 24, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

***Total Bachelor's Degrees Granted:***
U.S. Department of Education, National Center for Education Statistics, [E.D. Tabs] *Degrees and Other Awards Conferred by Title IV Eligible, Degree-granting Institutions: 1996-97*, NCES 2000-174, by Frank B. Morgan, Washington, DC: 1999.

## 16. Science and Engineering Graduate Students as a Percent of the 18-24 Year Old Population: 1997

***Science and Engineering Graduate Students:***
National Science Foundation, Division of Science Resources Studies, *Graduate Students and Postdoctorates in Science and Engineering: Fall 1997*, NSF 99-325, Project Officer, Joan Burrelli (Arlington, VA 1999).

***Population, 18-24 Years Old:***
U.S. Census Bureau, Population Division, Population Estimates Program. (1999, June 15). *Population Estimates for the U.S. and States by Single Year of Age and Sex: July 1, 1997*. <http://www.census.gov/population/estimates/state/stats/ag9798.txt> (1999, September 14).

## 17. Percent of the Civilian Work Force with a Recent Bachelor's Degree in Science or Engineering: 1997

***Recent Science and Engineering Bachelor's Degrees:***
Arrangements for special tabulations of the SESTAT database were made by Kelly H. Kang, Senior Analyst, Science Resources Studies Division, National Science Foundation at kkang@nsf.gov on January 28, 2000 per a special request from Taratec Corporation, Columbus, Ohio.

***Civilian Labor Force:***
U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages*. [1997 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).

## 18. Percent of the Civilian Work Force with a Recent Master's Degree in Science or Engineering: 1997

***Recent Science and Engineering Master's Degrees:***
Arrangements for special tabulations of the SESTAT database were made by Kelly H. Kang, Senior Analyst, Science Resources Studies Division, National Science Foundation at kkang@nsf.gov on January 28, 2000 per a special request from Taratec Corporation, Columbus, Ohio.

***Civilian Labor Force:***
U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages*. [1997 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).

## 19. Percent of the Civilian Work Force with a Recent Ph.D. Degree in Science or Engineering: 1997

***Recent Science and Engineering Ph.D. Degrees:***
Arrangements for special tabulations of the SESTAT database were made by Kelly H. Kang, Senior Analyst, Science Resources Studies Division, National Science Foundation at kkang@nsf.gov on January 28, 2000 per a special request from Taratec Corporation, Columbus, Ohio.

***Civilian Labor Force:***
U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages*. [1997 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).

## 20. Amount of Venture Capital Funds Invested per $1,000 of GSP: 1998

***Venture Capital:***
PricewaterhouseCoopers L.L.P. Money Tree™.

***Gross State Product:***
U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1997 data were used in calculations].

## 21. Average Annual Amount of SBIC Funds Disbursed per $1,000 of GSP: 1996-8

***SBIC Funds Disbursed:***
U.S. Small Business Administration, Investment Division. (1999, January 22). "Table 8: ALL SBIC Program Licensees Financing to Small Businesses by State." *SBIC Program Financing to Small Business*. <http://www.sba.gov/inv/tables/1998/pdf/table8.pdf> (October 13, 1999).

***Gross State Product:***
U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1997 data were used in calculations].

## 22. Average Annual Amount of IPO Funds Raised per $1,000 of GSP: 1997-9

***IPO Funds Raised:***
Hale and Dorr LLP. (1999, April 30). *1998 New England IPO Report*. <http://www.haledorr.com/publications/ipo/ipo98/NEIPO_1998.pdf> (1999, October 19);

Hale and Dorr LLP. (2000, February 17). *1999 The IPO Report*. <http://www.haleanddorr.com/publications/ipo/ipo99_98/99report.pdf> (2000, February 25).

***Gross State Product:***
U.S. Department of Commerce, Bureau of Economic Analysis. (1999, August 17). "Gross State Product, by Component and Industry, 1977-97." *Regional Accounts Data.* [1997 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/gsp/gspdata/gspall_c.exe> (1999, September 17);

Government of Puerto Rico, Office of the Governor. "Appendix Statistics: Table1 - Selected Series of Income and Product, Total and Per Capita." *Puerto Rico Planning Board Economic Report, 1998*. [1997 data were used in calculations].

## 23. Number of Business Incubators per 10,000 Business Establishments: 1998

***Business Incubators:***
McKinnon, S., National Business Incubation Association . *Business Incubators of North America – 1998*. Athens, OH.

***Establishments:***
U.S. Census Bureau. (1999, September). *County Business Patterns, 1997*. (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico*. (CBP/97-53). Washington, DC: U.S. Government Printing Office.

## 24. Number of Patent Attorneys and Agents per 10,000 Business Establishments: 1999

***Patent Attorneys and Agents:***
U.S. Patent and Trademark Office. (1999, September 2). *Patent Attorneys and Agents Registered to Practice Before the PTO*. <ftp://ftp.uspto.gov/pub/attorney/attorney.zip> (1999, September 2),

***Establishments:***
U.S. Census Bureau. (1999, September). *County Business Patterns, 1997*. (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico.* (CBP/97-53). Washington, DC: U.S. Government Printing Office.

## 25. Percent of Establishments in Technology Intensive SIC Codes: 1996

***Establishments (in all SIC Codes and in Technology Intensive SIC Codes):***
U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996* [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.

## 26. Percent of Employment in Technology Intensive SIC Codes: 1996

***Employment in Technology Intensive SIC Codes:***
Arrangements for special tabulations of the Standard Statistical Establishment List were made by Trey Cole, Company Statistics Division, U.S. Census Bureau at (301) 457-3320 on November 23, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

***Employment:***
U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996*. [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.

## 27. Percent of Payroll in Technology Intensive SIC Codes: 1996

***Payroll in Technology Intensive SIC Codes:***
Arrangements for special tabulations of the Standard Statistical Establishment List were made by Trey Cole, Company Statistics Division, U.S. Census Bureau at (301) 457-3320 on November 23, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

***Payroll:***
U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996*. [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico.* (CBP/96-53). Washington, DC: U.S. Government Printing Office.

## 28. Percent of Establishment Births in Technology Intensive SIC Codes: 1996

***Establishment Births (in all SIC Codes and in Technology Intensive SIC Codes):***
Arrangements for special tabulations of the Standard Statistical Establishment List were made by Trey Cole, Company Statistics Division, U.S. Census Bureau at (301) 457-3320 on November 23, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

***Establishments:***
U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996* [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.

## 29. Net Formations of Technology Intensive Establishments per 10,000 Business Establishments: 1996

***Births and Deaths of Technology Intensive Establishments:***
Arrangements for special tabulations of the Standard Statistical Establishment List were made by Trey Cole, Company Statistics Division, U.S. Census Bureau at (301) 457-3320 on November 23, 1999 per a special request from Taratec Corporation, Columbus, Ohio.

***Establishments:***
U.S. Census Bureau. (1999, January). *County Business Patterns, 1995 & 1996* [CD-ROM]. Washington, DC;

U.S. Census Bureau. (1998, November). *County Business Patterns, 1996 - Puerto Rico*. (CBP/96-53). Washington, DC: U.S. Government Printing Office.

## 30. Average Annual U.S. Patents Issued per 10,000 Business Establishments: 1996-8

***U.S. Patents Issued:***
U.S. Patent and Trademark Office, Office for Patent and Trademark Information/ TAF Program. (1999, March). *Patent Counts by Country/State and Year, All Patents, All Types, January 1, 1977 -- December 31,1998.* [1996-8 data were used in calculations]. <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_all.pdf> (1999, September 20).

***Establishments:***
U.S. Census Bureau. (1999, September). *County Business Patterns, 1997.* (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico*. (CBP/97-53). Washington, DC: U.S. Government Printing Office.

## 31. Number of Inc. 500 Companies per 10,000 Business Establishments: 1999

***1999 Inc. 500 Companies:***
Inc. Magazine. The 1999 Inc. 500. <http://www.inc.com/500> (1999, November 4).

***Establishments:***
U.S. Census Bureau. (1999, September). *County Business Patterns, 1997*. (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico.* (CBP/97-53). Washington, DC: U.S. Government Printing Office.

## 32. Number of Technology Fast 500 Companies per 10,000 Business Establishments: 1999

***Technology Fast 500 Companies:***
Deloitte & Touche. *Deloitte & Touche 1999 Technology Fast 500*. <http://www.dttus.com/fast500/> (1999, November 22).

***Establishments:***
U.S. Census Bureau. (1999, September). *County Business Patterns, 1997.* (CBP/97-1). Washington, DC: U.S. Government Printing Office;

U.S. Census Bureau. (1999, September). *County Business Patterns, 1997 - Puerto Rico*. (CBP/97-53). Washington, DC: U.S. Government Printing Office.

## 33. Average Annual Earnings per Job: 1997

***Average Annual Earnings per Job:***
U.S. Department of Labor, Bureau of Labor Statistics. (1999, June 23). "Table 1. State average annual pay for 1996 and 1997 and percent change in pay for all covered workers." *Covered Employment and Wages*. <http://stats.bls.gov/news.release/annpay.t01.htm> (1999, September 20).

## 34. Percent of the Population Living Above the Federal Poverty Threshold: 1998

***Percent of the Population Above Poverty:***
U.S. Census Bureau. (1998, October 13). "Table 25. Poverty Status by State and Ten Large Metropolitan Areas in 1998." *Current Population Survey, Annual Demographic Survey, March Supplement*. <http://ferret.bls.census.gov/macro/031999/pov/new25_001.htm> (1999, November 3).

## 35. Per Capita Personal Income: 1998

***Per Capita Income:***
U.S. Department of Commerce, Bureau of Economic Analysis. (1999, July 27). "State Personal Income." *Regional Accounts Data*. [1998 data were used in calculations]. <http://www.bea.doc.gov/bea/regional/spi/pcpi.htm> (1999, November 3).

## 36. Labor Force Participation Rate: 1998

***Labor Force Participation:***
U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages*. [1998 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).

## 37. Percent of the Civilian Work Force that was Employed: 1998

***Work Force Employment:***
U.S. Department of Labor, Bureau of Labor Statistics. (1999, February 26). *State and Regional Unemployment, 1998 Annual Averages.* [1998 data were used in calculations]. <ftp://146.142.4.23/pub/news.release/History/srgune.022699.news> (1999, November 4).