Texas Index 2005

Texas Workforce Investment Council

Texas Workforce Investment Council

System Partners

Economic Development and Tourism Office
Texas Association of Workforce Boards
Texas Department of Criminal Justice
Texas Education Agency
Texas Health and Human Services Commission
Texas Higher Education Coordinating Board
Texas Workforce Commission
Texas Youth Commission

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Community-Based Organization Representatives
Sharla E. Hotchkiss, Consultant and Trainer

The Mission of the Texas Workforce Investment Council

Assisting the Governor and the Legislature with strategic planning for and evaluation of the Texas workforce development system to promote the development of a well-educated, highly-skilled workforce for Texas.

Texas Index 2005

Texas Workforce Investment Council

September 2005

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Introduction

Texas Workforce Investment Council and Texas' Workforce System

The Texas Workforce Investment Council (Council) was created in 1993 by the 73rd Texas Legislature. The Council is charged with promoting the development of a highly-skilled and well-educated workforce for the State of Texas, and assisting the Governor and the Legislature with strategic planning for and evaluation of the Texas Workforce Development System (TWDS).

The TWDS is comprised of the workforce programs, services and initiatives administered by seven state agencies, 28 local workforce development boards, community and technical colleges and local adult education providers. System agency partners include:

Economic Development and Tourism Office
Texas Association of Workforce Boards
Texas Department of Criminal Justice
Texas Education Agency
Texas Health and Human Services Commission
Texas Higher Education Coordinating Board
Texas Workforce Commission
Texas Youth Commission

The workforce system strategic plan – *Destination 2010: FY2004-FY2009 Strategic Plan for the Texas Workforce Development System* – is posted on the Council's website at:

http://www.governor.state.tx.us/divisions/twic/mandate/view

Approved by the Governor on October 15, 2003, *Destination 2010* was devised on a six-year timeframe to align with the existing Texas Strategic Planning and Performance Budgeting System, as well as the reauthorization of federal workforce legislation. The plan is modified annually to indicate accomplishments and milestones achieved, as well as changes to Strategic Action Plans.

System Strategy Statement

The TWDS strategy is to provide its customers – employers, current workers and future workers of Texas – with access to relevant and comprehensive workforce services that span a continuum from career planning and preparation, to career development and enhancement.

Services include education, training and support services delivered through an integrated and cohesive network of state agencies, educational institutions and community-based organizations. Partner agencies and members of the delivery network are accountable for the successful execution and continuous improvement of the workforce development system.

As detailed in *Destination 2010*, system partners are charged with:

- Providing programs and services which are relevant and responsive to the evolving needs of employers, current workers and future workers.
- Meeting system- and agency-level performance objectives through coordinated planning and the execution of initiatives which produce accountable results.
- Implementing a coordinated and efficient statewide system.
- Collaborating to achieve integration of interagency systems, processes and sharing of information critical to the system's success.
- Developing and deploying outreach and communications programs which build awareness, support and participation for the TWDS.

Development of the Texas Index

The Texas Index (Index) was created to provide a series of indicators that, in the long term, may assist in demonstrating the linkage of programs and services to state-level economic success. In the short-term, it provides system stakeholders with an indication of the state's general workforce, education and economic health.

The ***Texas Index 2005*** is the first annual release, providing trend data for a series of 39 indicators across four domains:

- Participant Access and Contribution (4)
- Training and Education (10)
- Research and Development (11)
- Market Composition and Characteristics (14)

Establishing the Index

Indicator Selection	During the original research phase, 14 sets of economic indicators recognized by experts and with sound methodology were identified for consideration. To be included in the Index, indicators had to be directly linked to workforce and economic development, with publicly available data sets. These indexes and other recognized works, such as Dr. Michael Porter's model of cluster competitiveness and the Organization for Economic Co-operation and Development's (OECD) Science, Technology and Industry Scoreboard, demonstrate common themes relative to critical indicators of economic and competitive success.
Refinement	One hundred potential indicators were identified, with the list narrowed to 48 after in-depth analysis. The list was further narrowed to 39 after: • developing indicator definitions, • documenting methodology for indicator calculation, and • determining data availability, by source and date.
Report	This first version of the Index was compiled in an effort to provide an overview of the trends critical to the state's economic health.
Future Steps	In future years, additional trend data will be gathered and published. Enhancements may also include additional state, regional and/or national comparative data. The Index will be produced annually for distribution to the Council, policy makers and workforce system partners and stakeholders.

System Evaluation and Growth Challenges

Most evaluation is conducted at the program level, typically developed around a series of input and output measures. While providing valuable information about the relative success of various programs and their effectiveness for specific client populations, program-level evaluation does not provide a complete evaluative picture.

It is far more difficult to measure system-level economic impact. Development of the Index is a first step toward tracking system-level success. It is important to note that measures of success may evolve in concert with shifting business and political strategies, as well as legislative mandates.

Economic Dynamism

"… epitomized by fast-growing, entrepreneurial companies … ability of firms to innovate and get to market faster is becoming a more important determinant of competitive advantage. Likewise, the ability of state economies to rejuvenate themselves through the formation of new, innovative companies is a key in determining their economic vitality."

- Progressive Policy Institute, *The 2002 State New Economy Index*

The landscape of state-supported efforts for economic growth continues to change, partly in recognition of the critical need for continued growth and diversification. Job growth in high-tech and knowledge-based industries is more likely in regions with ready access to a qualified workforce. Other key factors that indicate economic growth potential include strong performance related to venture capital availability, patent production and higher levels of research and development.

In October 2004, Governor Perry announced a long-term, strategic job creation plan designed to focus state efforts in six industry clusters: advanced technologies and manufacturing, aerospace and defense, biotechnology and life sciences, information and computer technology, petroleum refining and chemical products, and energy. This effort gives credence to the importance of many of the included indicators related to education, research and development, and market composition.

High-Tech Growth

Figures released by the AeA[1] trade association in April 2005 indicated strong performance in Texas' high-tech industry:

- *Jobs* – Despite layoffs, Texas was ranked second nationally for tech-related employment. The state lost 32,900 (6.9%) of its high-tech jobs between 2002 and 2003, yet had the second highest number of tech jobs at 446, 000 – second only to California.
- *Wages* – Average wages for high-tech workers were $69,000 nationally and $68,100 in Texas. Texas ranked fourteenth nationally.
- *Exports* – Texas ranked second nationally as high tech exports for the state grew $13 billion from 1998 to 2004, hitting $34.7 million in 2004 and accounting for 30 percent of Texas' exports.
- *Venture capital* – Venture capital spending grew for the first time in years, with investments of $1.1 billion in 2004. Texas ranked third nationally.

- AeA, *Cyberstates 2005*™, (4/26/05)

Several key state legislative efforts were enacted in recent years to address this need to sustain and grow a dynamic economy. These efforts include:

- *Skills Development Fund* – Managed by the Texas Workforce Commission, the fund has been operating in partnership with public community and technical colleges since FY1996. Funds are used to assist private employers with the design, financing and implementation of customized job training programs for new or existing jobs. Twenty-six grants totaling over $12.1 million were awarded during FY2004.[2]
- *Economic Development Bank* - Established by the 78th Legislature in 2003, the bank provides incentives to businesses seeking to expand or relocate in Texas, as well as assisting local communities with the acquisition of capital for economic development.
- *Texas Enterprise Fund* – Also established by the 78th Legislature in 2003, the Enterprise Fund is used to attract new business or to assist with substantial expansion of an existing business. *Site Selection* magazine (March 2005), awarded the annual Governor's Cup to Texas for securing the most job creation announcements in the nation for 2004. *Site Selection* called the $295 million fund a tool that is "Central to Texas' ability to lure projects" whose role "cannot be overstated."
- *Emerging Technology Fund* - During the 79th legislative session in 2005, one of the Governor's economic development priorities was the creation and funding of an Emerging Technology Fund. The purpose of the new fund will be to expedite innovation and commercialization; attract, create, or expand private-sector entities that will promote a substantial increase in high-quality jobs; and increase higher education applied technology research capabilities.

[1] Formerly called the American Electronics Association.
[2] Texas Workforce Commission, Skills Development Fund Annual Report Fiscal Year 2004.

Indicator Report Card - 2005

The Indicator Report Card lists all 39 indicators, presented alphabetically within each of the four trend directions. It includes the value for the most recent reporting cycle and the applicable page number for each indicator. For the trend symbols, reference the Key on the following page.

Indicator Report Card - 2005			
Trend	Indicator	Value	Page
↑	Academic-Performed R&D Expenditure per $1000 of Gross State Product	$3.26	30
↑	Average Annual Pay per Worker	$37,475.00	41
↑	Average Annual Unemployment Rate	6.10%	39
↑	Bachelor's Degrees Granted as a Percent of the 18-24 Year Old Population	3.46%	20
↑	Employer Firm Births	127,231	42
↑	Export Orientation	$0.14	47
↑	Exports per Capita	$5,213.20	47
↑	Gross State Product per Capita	$37,697.31	46
↑	Industry R&D Expenditure per $1000 of Gross State Product	$13.83	30
↑	Labor Productivity	$41.88	40
↑	Number of Patents	6,378	27
↑	Per Capita Income	$30,464.00	11
↑	Percent of Bachelor's Degrees Granted in Science and Engineering	24.10%	22
↑	Percent of Graduate Degrees Granted in Science and Engineering	26.10%	22
↑	Percent of Households with Computers	67.70%	13
↑	Percent of Households with Internet Access	54.10%	13
↑	Percent of Population 25 Years and Older with High School Diploma	78.30%	18
↑	Percent of Population Enrolled in Degree-Granting Institutions	5.22%	19
↑	Texas Budget Surplus as a Percent of Gross State Product	0.16%	45
↑	Total R&D Expenditure per $1000 of Gross State Product	$18.30	30
⊃	National Assessment of Educational Progress Test Scores – Math	277	23
⊃	National Assessment of Educational Progress Test Scores – Science	144	23
⊃	Patents per Capita	0.03%	27
⊃	Workforce Educational Achievement	13.89	17
↓	Associate Degrees Granted as a Percent of the 18-24 Year Old Population	1.38%	20
↓	Average Annual Amount of Small Business Investment Companies Funds Dispersed per $1000 of Gross State Product	$0.16	34
↓	Employer Firm Terminations	14,723	42
↓	Incoming Foreign Direct Investment per Capita	$5,254.59	48
↓	Labor Force Participation Rate	67.34%	37
↓	National Institutes of Health Support to Texas Institutions per Capita	$51.04	32
↓	National Science Foundation Funding per Capita	$7.28	33
↓	Number of Technology Fast 500 Companies per 10,000 Business Establishments	0.44	49
↓	Percent of Population Living Above the Federal Poverty Threshold	83.00%	12
↓	State Tax Revenue as a Percent of Gross State Product	3.29%	44
↓	Venture Capital Invested as a Percent of Gross State Product	0.13%	28
↓	Venture Capital Invested per $1000 of Gross State Product	$1.29	28
↓	Venture Capital per Capita	$48.80	28
↓	Workers' Compensation Premiums Cost per Employee	$253.53	43
●	Science and Engineering Graduate Students	4,339	22

Indicators and Analysis

Structure and Key

By design, the report's narrative sections are intended to be succinct. Each domain includes an introductory section, providing summary information and an overview of issues to be considered when reviewing the data and accompanying narrative.

The summary includes general information about the number of indicators included in the domain, as well as the number and percentage for:

Key	
↑	Positive change in last reporting cycle
➲	No significant change in last reporting cycle
↓	Negative change in last reporting cycle
●	Comparative data unavailable
⚑	Watch alert

- *Trend* – Each indicator is assigned one of four symbols to denote directional change in the last available reporting cycle. The percentage value for each trend symbol category is calculated based on the total number of indicators in the domain; the total of all percentages in the four symbol categories equals 100 percent.

  It is important to note that the directional arrows are used to indicate positive, non-significant or negative change in the last reporting cycle, not an increase or decrease in the actual numeric value. This is necessary to ensure commonality of assessment as, by definition, a few of the indicators are counterintuitive in nature. For example, a *decrease* in the Percent of Population Living Above the Federal Poverty Threshold is a *negative* change, while a *decrease* in the Average Annual Unemployment Rate is a *positive* change.

- *Watch alert* – The ⚑ symbol is used to denote an indicator flagged to watch in the next reporting cycle. Reasons for flagging include: recurring negative change over multiple years; significant negative change in the most recent reporting cycle; legislative changes; or anticipated modifications to reporting requirements or processes. The percentage value for indicators flagged for 'watch alert' is calculated based on the total number of indicators in the domain.

In addition to the domain summary, brief narratives are provided for each indicator. In some cases, indicators are grouped to facilitate explanation or comparison across related indicators.

Data Notes

- *Included data* – Data is presented for the most recent five years for which data is available. In a few cases, five years – or five consecutive years – of data is not available for a variety of reasons. These reasons include: data was not collected for a particular year, testing did not occur, the methodology changed, or a primary data source fewer, more recent years of available data.

- *Data normalization* – For many of the indicators, data is normalized by common factors (e.g., per capita, per 1000, percent of Gross State Product) to assist in providing equivalent measurement of data year-to-year. In addition, normalization helps to facilitate cross-indicator review as well as global and national comparisons, where applicable.

- *Rounding convention* – The data points contained in the graphs in this report are based on actual data source numeric values. Data values referenced in the Index narrative have been

rounded to two decimal places based on the standard rounding convention: .001 to .004 has been rounded down to .00; .005 to .009 has been rounded up to the next highest hundredth.

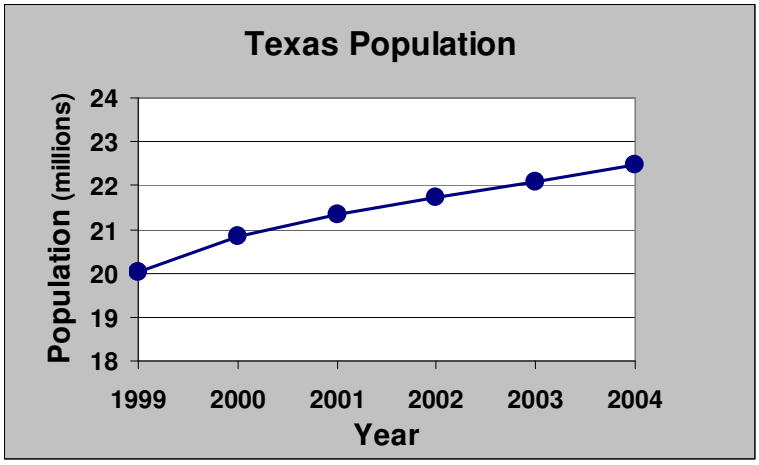
- *Point in time* – Many publicly available data sources continue to be updated for months and years after the initial data release. This is typically due to corrections or clarifications that result from contract reporting finalization or performance audits. Data is verified and updated, as applicable, during the Index's development stage. However, due to these changes, data in the Index may differ from corrections to the source data.

- *Anecdotal information* – In some cases, data for the most recent calendar or fiscal year was not available for use in indicator calculation. The narrative may include anecdotal information that is counter to the last trend point. For example, the most recent 'final' figures for research and development expenditures are for 2002. The 2002 figures reflect a positive change in comparison to the prior year; however, availability of certain types of federal and state funding has decreased in the interim.

Base level data for state population and Gross State Product (GSP) is provided below.

- *Population base level data* – The population count is increasing, rising from 20 million in 1999 to almost 22.5 million in 2004. June 2004 projections from the Texas State Data Center indicate that the state's population is expected to exceed 35 million people by 2040, a 71.5 percent increase from 2000.

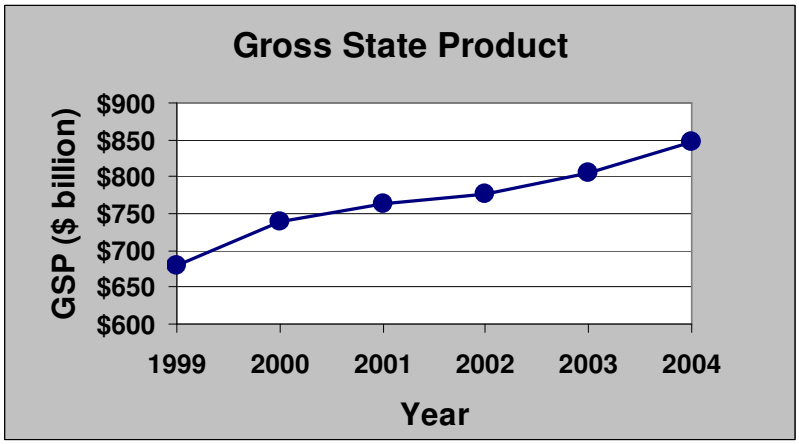
  Several key changes are expected in population composition: majority Hispanic; substantial aging; and variable growth rates for regional and metropolitan areas.



SOURCE: U.S. Census Bureau

- *GSP base level data* – GSP is considered the most comprehensive measure of state economic activity. It is the sum of all value added by industries within the state (i.e., employee compensation, taxes on production and imports, gross operating surplus).

  Based on Texas Comptroller data, Texas' GSP increased significantly in recent years, rising from $678.8 billion in 1999 to $847.8 billion in



SOURCE: Texas Comptroller

2004. Figures released by the U.S. Department of Commerce – Bureau of Economic Analysis in June 2005 rank Texas as third nationally, behind California and New York.

- *Source information* – Sources for the data sets in the tables and graphs included in this publication are noted. Detailed data tables, methodologies and accompanying documentation are retained at the Council's office.

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Domain 1 – Participant Access and Contribution

The Participant Access and Contribution domain is comprised of four indicators of citizens' economic status and self-sufficiency, including traditional income and poverty indicators. In addition, household access to computer technology is considered. Three of the four indicators (75%) had a positive change in the last available reporting cycle.

Domain 1 Summary			
Number of Indicators - 4			
		No.	%
	Positive change in last reporting cycle	3	75%
	No significant change in last reporting cycle	0	0%
	Negative change in last reporting cycle	1	25%
	Comparative data unavailable	0	0%
	Watch alert	0	0%

Indicator	Page	Alert	Trend
Per Capita Income	11	-	
Percent of Population Living Above the Federal Poverty Threshold	12	-	
Percent of Households with Computers	13	-	
Percent of Households with Internet Access	13	-	

Issues for Consideration

Per capita income is a valuable indicator of overall economic health. However, it does not adequately account for equity across household types or state sub-regions. In addition, the rising cost of individual and household expenses, as well as the type of expenses, cannot be factored in.

Poverty thresholds are used for calculating all official poverty population statistics, including the number of individuals considered to be living in poverty. These are derived from federal 'poverty guidelines', which are a simplified version of the federal poverty thresholds that are used for administrative purposes, such as determining eligibility for certain federal programs.

Household computer and Internet access rates provide basic information about computer usage, access and literacy. These indicators can also serve as a signal of willingness and ability to conduct business or obtain training through the use of computer technology, which may have a positive effect on production or education attainment levels, respectively.

In *The 2002 State New Economy Index*, the Progressive Policy Institute points to the increased use of digital electronic methods to conduct business and government transactions (e.g., tax payments, drivers' license renewal). This trend can be viewed as having a positive impact not only on household technology access but also on many key indicators including income levels, educational participation and attainment, and productivity.

In this 2002 report, Texas ranked third in the "Measure of the Utilization of Digital Technologies in State Governments", following Michigan and Washington. Using computer technology, services can be provided at a lower cost and be more readily accessible. For example, the Texas Business

Portal website (www.business.texasonline.com) was launched in March 2005, simplifying the process of fulfilling state reporting and licensing requirements and providing a guide to starting a business in Texas.

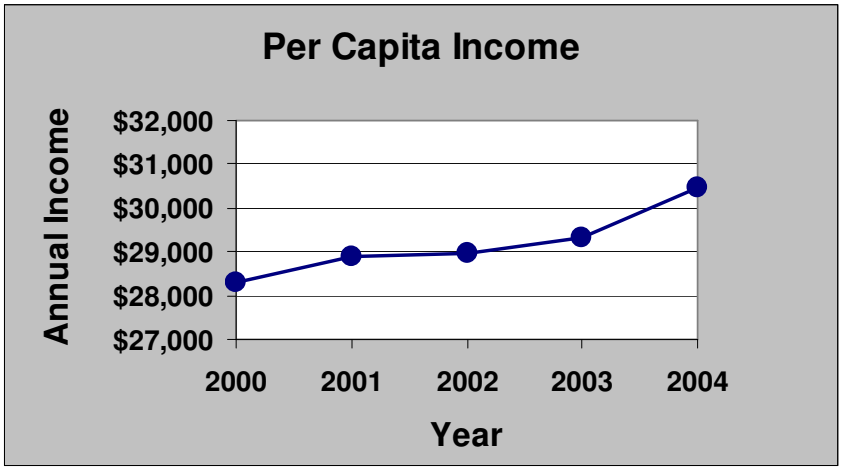
In 2005, the 79th Legislature enacted Senate Bill 96 which provides for the expansion of Internet services by requiring each state agency to make all forms available online. In addition, state occupational licensing agencies must develop streamlined, no-fee access to each occupational license listed on TexasOnline (www.state.tx.us), the official website for the State of Texas.

❶ Per Capita Income

Per capita income represents the annual, total personal income of Texas residents, divided by the Texas population. Data has been normalized for comparative purposes, representing all Texans rather than just those who work. Traditionally, personal income includes wage earnings, rental income, personal dividend and interest income, and personal current transfer receipts (e.g., unemployment insurance, Medicare/Medicaid).

The level for Texans increased annually over the five-year period, reaching a high of $30,464 in 2004.

Though increasing statewide, there is continued disparity in different regions across the state. Income levels are significantly higher in larger metropolitan areas such as Dallas and Houston that have a greater number of jobs in higher-paying occupations.



SOURCES: 2000, U.S. Department of Commerce - Bureau of Economic Analysis; 2001-2004, Texas Comptroller

While a commonly used indicator of personal income and economic well-being, there are many factors that per capita income does not account for, e.g.:

- *Income inequality* – the gap between higher and lower wage earners.
- *Cost of living increases* – when individual or household bills increase at rates exceeding net earnings and/or disposable income.
- *Quality of life* – high income may be due to longer work hours, accompanied by loss of time available for personal, family or community endeavors.

What is competitiveness?

" …a state or metropolitan area to be competitive if it has in place the policies and conditions that ensure and sustain a high level of per capita income and its continued growth … able both to attract and incubate new businesses, and to provide an environment that is conducive to the growth of existing firms."

- Beacon Hill Institute, Competitiveness Report 2004

Data released by the U.S. Department of Commerce – Bureau of Economic Analysis (BEA) in March 2005 indicated a 2004 per capita income national growth rate of 4.7 percent, more than double the 2.2 percent growth in the previous year.

Based on BEA figures, Texas experienced a growth rate of 3.9 percent and ranked thirty-second nationally in terms of per capita income. However, BEA noted that three atypical factors affected the rankings: a special Microsoft dividend of about $32 billion paid in December 2004, a 2003 payment by automakers to reduce unfunded pension liabilities and an unusually high coincidence of high crop production and high prices.

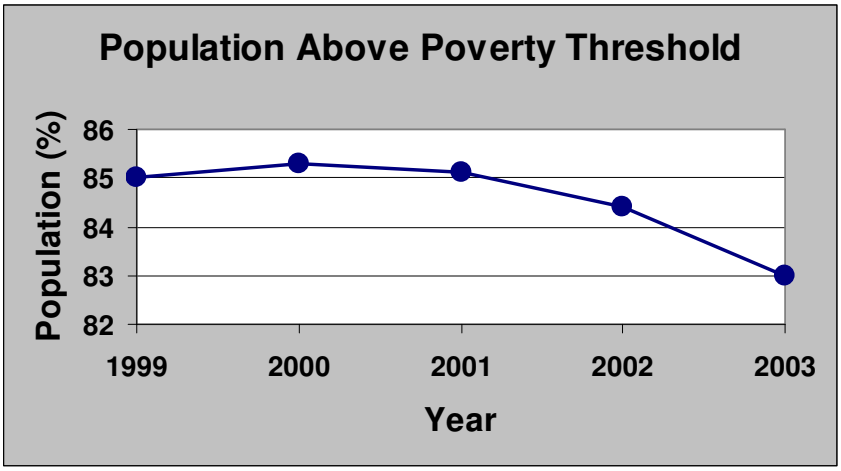
Percent of Population Living Above the Federal Poverty Threshold

A basic measure of economic self-sufficiency, this indicator is calculated by setting the total Texas population as 100 percent, then subtracting the percentage of population living below the federal poverty threshold.

State figures have been extrapolated from data obtained through the U.S. Census Bureau's Current Population Survey (CPS), a sample survey of approximately 100,000 households nationwide. Poverty is measured by comparing family income with one of the 48 poverty thresholds that vary by size of family and ages of the members. Sample thresholds for 2003, the most recent year for which data is available, include:

- $9,573 for one person under age 65
- $18,725 for a four person household with three related children under 18 years of age

In 2003, 87.5 percent of the U.S. population was above the 100 percent poverty threshold – a slight decline over the 2002 figure of 87.9 percent. In 2003, 35.9 million people lived in poverty nationwide, up 1.3 million from 2002.



SOURCE: U.S. Census Bureau

While better than the national figures, Texas' performance has declined in recent years, falling from a high of 85.3 percent in 2000 to the five-year low of 83.0 percent in 2003.

Notably, this period of declining performance coincided with a period of annual increases in per capita income as noted by the preceding indicator. As with per capita income, various cities or regions within a state have highly disparate levels. Given the relatively low threshold settings, many individuals and households that are above the poverty line are struggling economically.

However, a basic measure of poverty incidence may serve as an indicator of a state's economic health. Higher levels of poverty are typically highly correlated with a number of negative factors, including:

- Increased costs to and participation in the welfare system.
- Possible slowing of economic growth.
- Higher crime rates.
- Fewer health care benefits and service options.
- Lower educational participation and completion rates.

❶ Percent of Households with Computers
❶ Percent of Households with Internet Access

Access to computers and the Internet is dramatically changing the way individuals work and live in today's society:

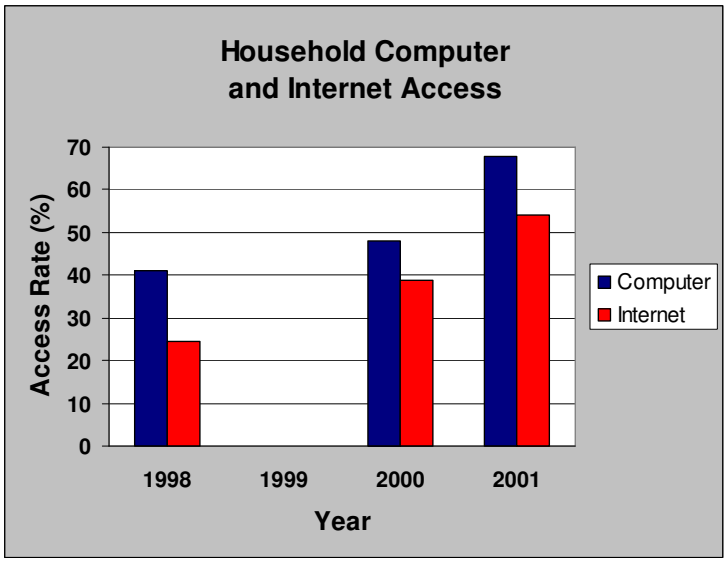
- *Conducting business* – telecommuting, online research and analysis, banking and personal financial management.
- *Learning* – educational research, distance learning.
- *Job search* – resume posting and job match services.

These factors have a potentially positive impact on the Texas economy, as they may contribute to increased sales, education and training attainment, and job search opportunities.

Computer technology options – hardware, software and online access – continue to advance at a rapid rate. As the technology improves, costs continue to decline, thereby making personal access to computers and the Internet more available to U.S. households and shrinking the 'digital divide'.

Higher access rates may indicate citizens' increased access and willingness to utilize online education and business options. In addition, job composition changes may occur within selected industry sectors. For example, the banking and finance industry may experience a growth in information technology jobs countered by a decrease in the demand for bank tellers and frontline staff. Entry-level job requirements and on-the-job training requirements shift as this change occurs.

> *Digital Divide – the divide between those with access to new technologies and those without … one of America's leading economic issues.*
>
> - U.S. Department of Commerce - NTIA



SOURCE: U.S. Department of Commerce – NTIA

The National Telecommunications and Information Administration's (NTIA) *A Nation Online* series, while not published annually, indicates steady growth in the percent of Texas households with computer and Internet access. Rates in Texas have increased each year, rising to highs in 2001 of:

- *Percent of Households with Computers* – 67.7 percent
- *Percent of Households with Internet Access* – 54.1 percent

It is important to note that these numbers reflect household rather than individual access rates. Further, many individuals obtain access at work locations, libraries, educational institutions and workforce centers across the state.

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Domain 2 – Training and Education

The Training and Education domain includes 10 indicators that provide data about the training and education levels of the Texas workforce. General educational attainment data is included, as well as detailed information pertaining to science, mathematics and engineering. Performance was mixed for the last available reporting cycle, but five of the 10 indicators (50%) experienced a positive change. One indicator related to high school diploma rates has been flagged with a 'watch alert'.

Domain 2 Summary			
Number of Indicators - 10			
		No.	%
↑	Positive change in last reporting cycle	5	50%
➲	No significant change in last reporting cycle	3	30%
↓	Negative change in last reporting cycle	1	10%
●	Comparative data unavailable	1	10%
⚑	Watch alert	1	10%

Indicator	Page	Alert	Trend
Workforce Educational Achievement	17	-	➲
Percent of Population 25 Years and Older with High School Diploma	18	⚑	↑
Percent of Population Enrolled in Degree-Granting Institutions	19	-	↑
Associate Degrees Granted as a Percent of the 18-24 Year Old Population	20	-	↓
Bachelor's Degrees Granted as a Percent of the 18-24 Year Old Population	20	-	↑
Percent of Bachelor's Degrees Granted in Science and Engineering	22	-	↑
Science and Engineering Graduate Students	22	-	●
Percent of Graduate Degrees Granted in Science and Engineering	22	-	↑
National Assessment of Educational Progress (NAEP) Test Scores – Math	23	-	➲
National Assessment of Educational Progress (NAEP) Test Scores -- Science	23	-	➲

Issues for Consideration

An adequate and well-trained labor supply must be available to support the needs of employers seeking to conduct, establish or expand businesses in Texas. Higher education levels, coupled with training in relevant fields, can positively affect the economy through increased productivity and wage levels.

With the increased focus on knowledge-based jobs and global competition, the fields of science, mathematics and engineering are critical subject areas.

National figures released by the U.S. Census Bureau in March 2005 reinforce the value of a college education: workers 18 and over with a bachelor's degree earn an average of $51,206 a year, while those with a high school diploma earn $27,915. Workers with an advanced degree make an average of $74,602 a year, and those without a high school diploma average $18,734.

While educational opportunities are increasing, the cost of higher education is also rising. This is important when considering other measures such as income and earning levels, as well as the rising cost of living and basic expenses.

> *"For the 2004-05 academic year, the average tuition and fees for in-state students at public four-year colleges and universities is $5,132 … an increase of 10.5 percent … Tuition and fees at public two-year colleges, averaging $2,076 in 2004-05, are only about 40 percent of those at public four-year institutions. This year's $167 increase represents a rise of 8.7 percent."*
>
> - The College Board, Trends in College Pricing 2004 (October 2004)

Although the indicators included in this domain provide an overall picture of workforce education levels, there are certain factors that should be considered but that are not readily quantifiable. These include:

- *Lifelong learning* – The focus on lifelong learning has increased in recent years, whether the primary goal is self-improvement or employment-driven.
- *Distance learning* – With increased computer access and the growth of the Internet, credit and non-credit options are more readily attainable. Distance learning opportunities continue to increase, and more courses are available with flexible schedules and in self-paced formats.
- *Company-sponsored training* – More and more, employers are providing financial support for training and education. Whether through tuition reimbursement programs or on-site learning centers, this investment in human capital not only supports ongoing learning by workers, but may have a positive impact on employee loyalty and morale.

➲ Workforce Educational Achievement

This indicator reflects the average level of education completed, in years, by the adult population 25 years and older. The calculation accounts for high school graduates (diploma or equivalency), completion of some college credit, and attainment of postsecondary degrees (e.g., associate, bachelor's, graduate). The level of educational attainment is often viewed as a credential for employment, and has been positively correlated to life-time earnings of individuals.

> *"An ever-increasing number of jobs require education beyond high school. And jobs that pay a living wage, even if they do not require a postsecondary degree or certificate, require skills similar to those needed for success in college."*
>
> - MDC, Inc., The State of the South 2004 (May 2004)

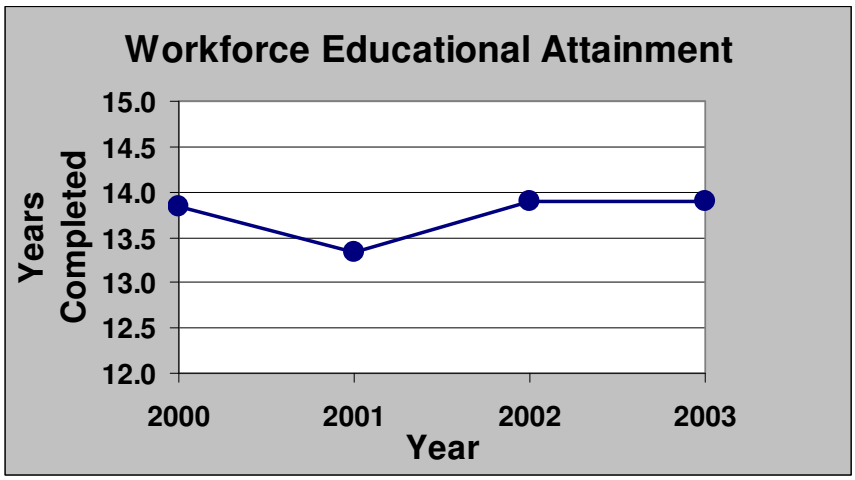
The importance of an educated workforce is noted throughout this domain. From the business side, the availability of a more educated workforce tends to correlate with higher productivity levels and increased innovation. Additionally, individuals with higher levels of education are more geographically mobile and, therefore, may be more willing to relocate for challenging job opportunities.

From the individual perspective, more educated workers not only have more and better employment options, but also higher rates of pay.

Data was obtained from a relatively new source, the American Community Survey (ACS). Conducted by the U.S. Census Bureau, the ACS is a new nationwide survey conducted annually in order to provide an up-to-date statistical picture of a community. The ongoing survey will replace the 'long form' census that is conducted every 10 years to gather demographic, housing, social and economic information.

In development since 1996, the ACS was expanded to all states in 2000, thus data is available only for 2000-2004. The average number of years of education varied little over the four-year period, and remained unchanged in 2004:

- 2000 – 13.83
- 2001 – 13.33
- 2002 – 13.89
- 2003 – 13.89

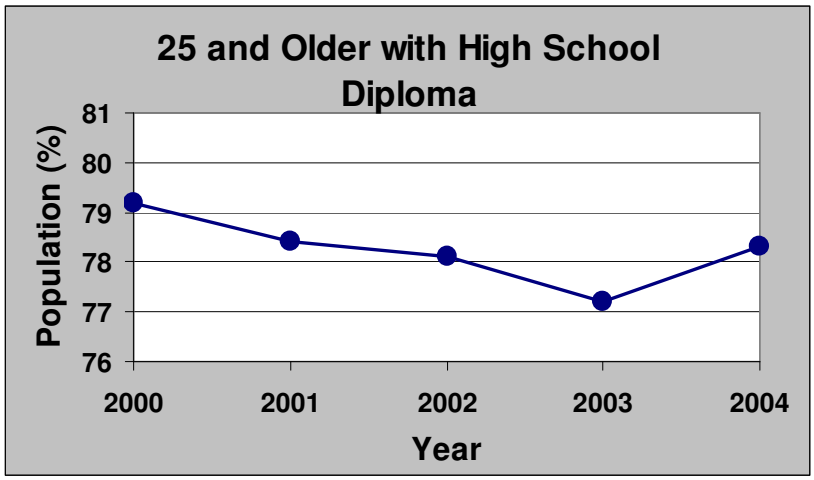


SOURCE: U.S. Census Bureau

Improvement for this indicator and others in training and education is critical to ensuring Texas' future economic growth. As the population ages, many employers are losing experienced workers who have a high degree of historical knowledge about their job, company and industry. Thus, it is even more critical that a large, well educated labor supply be cultivated.

Percent of Population 25 Years and Older with High School Diploma

An educated workforce is considered to be a more productive workforce, with many employers viewing attainment of a high school diploma, or equivalency, as a basic credential indicating work-readiness. Individuals with high school credentials tend to have higher employment rates.



SOURCE: U.S. Census Bureau

The state's population composition continues to shift in terms of age and ethnic composition. As older workers leave the labor force, the need for new, younger workers with strong educational backgrounds becomes more critical.

Texas' high school diploma rate remained below the 80 percent mark for each of the last five years, rebounding in 2004 to 78.3 percent after declining the previous three years. The high for the five-year period was 79.2 percent in 2000.

As the state strives to attract and retain employers, Texas' high school attainment rate should raise concern for several reasons. For the reasons indicated below, this indicator has been flagged with a '- watch alert' for the next reporting cycle.

- *Lowest level nationwide* – For the 25 and older population, Texas has had the lowest rate in the U.S. for each of the last three years. In 2004, the national rate was 85.2 percent compared to 78.3 percent for the state.

- *Hispanic achievement rate* – This segment of the population is experiencing rapid growth and will comprise an increasingly larger proportion of the workforce in future years. In 2004, the high school rate for individuals 25 and older was 52.4 percent, significantly lower than all other race/origin categories.

High School Attainment Rates 2004[3]	
18 to 24 years	74.0%
25 to 44 years	79.7%
45 to 64 years	81.9%
65 years and over	65.5%
White alone	76.9%
Black alone	85.7%
Asian alone	93.0%
Hispanic (of any race)	52.4%
Non-Hispanic White alone	91.7%

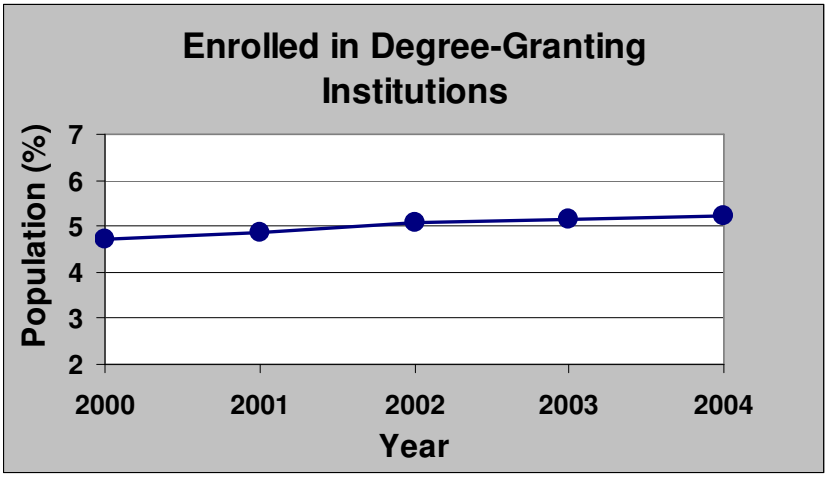
- *Rates for younger population segments* – Nationally, higher success rates are reported for the younger population segments. Texas' performance was counter to this trend in 2004, with the highest credential achievement rate (81.9%) reported for the 45-64 year old age group.

[3]Race/origin data is for individuals 25 and over.

❶ Percent of Population Enrolled in Degree-Granting Institutions

This indicator is calculated based on the total population enrolled in public and private degree-granting institutions, including public universities, independent senior colleges and universities, public community and state colleges, public technical colleges, independent junior colleges and both public and independent health-related institutions.

The lowest enrollment level for the five-year period 2000-2004 was established in 2000 with a rate of 4.72 percent. The rate increased annually thereafter to the current high of 5.22 percent in 2004.



SOURCES: U.S. Census Bureau and Texas Higher Education Coordinating Board [Includes non-residents]

One of four major goals contained in *Closing the Gaps* – The Texas Higher Education Plan addresses participation rates: By 2015, close the gaps in participation rates across Texas to add 500,000 more students. In *Closing the Gaps by 2015: 2004 Progress Report* (Rev. 10/18/04), mixed results were reported against the interim targets established for 2005. The third annual progress report reflected data for the period 2000-2003:

- *Interim targets* – 2005 targets have already been reached for the total enrollment, as well as African-American and Caucasian enrollment.
- *Hispanic enrollment* – Hispanic enrollment is not on track to attain the 2005 target, averaging increases of 18,188 per year, significantly below the average annual increase of 23,520 Hispanic students needed to reach the goal.
- *Post-high school enrollment* –The percentage of recent high school graduates who enter college is not increasing.

While the overall enrollment rate increased in recent years, significant progress still needs to be made for certain demographic segments of the population. Whether individuals are enrolled for personal enrichment, skills upgrade or to seek a degree, the availability of an educated, high quality workforce is essential to the state.

Associate Degrees Granted as a Percent of the 18-24 Year Old Population
Bachelor's Degrees Granted as a Percent of the 18-24 Year Old Population

Many jobs require the acquisition of a formal degree as a requirement for employment. As with all of the education indicators, degree attainment correlates to increased earning potential and employment options, as well as preparation for advanced education.

Approximately twice as many bachelor's degrees are awarded annually in comparison to associate degrees. However, the importance of associate degrees has grown in recent years. For some occupations, employers prefer to hire individuals who have successfully completed this level of formal education and then supplement their skill set with job- and company-specific training.

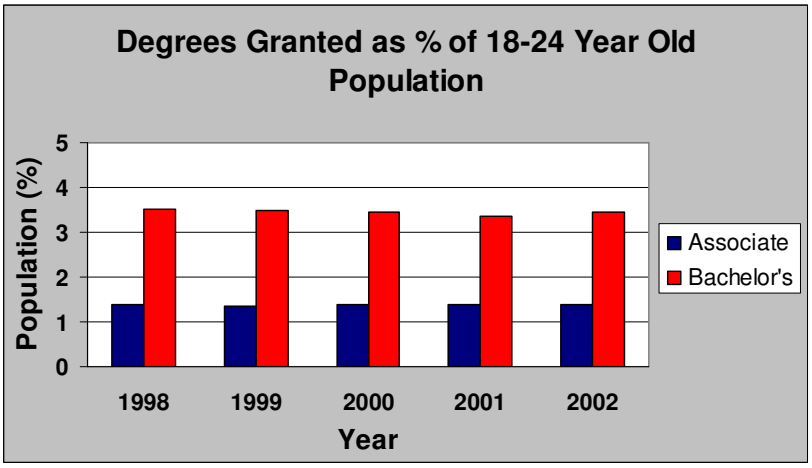
Obtaining an associate degree is often the first step taken beyond the high school diploma, with some individuals continuing to the bachelor's level. Other individuals seek the bachelor's degree as their first postsecondary credential. Bachelor's degree requirements may encompass most, if not all, of those required for a related associate degree. However, in many cases the lower level credential is not sought or awarded.

Degree granted information was obtained from the National Center for Education Statistics (NCES), the primary federal entity for collecting and analyzing data related to education in the U.S. and other nations. NCES has a Congressional mandate to collect, collate, analyze, and report complete statistics on the condition of American education; conduct and publish reports; and review and report on education activities internationally.

The Integrated Postsecondary Education Data System (IPEDS), established as the core postsecondary education data collection program for NCES, is a system of surveys designed to collect data from all primary providers of postsecondary education. The number of associate and bachelor's degrees represents the number conferred by public and private, Title IV-eligible, degree-granting institutions.[4]

Both indicators are calculated as a percentage of Texas' 18-24 year old population (including non-residents), the traditional age range for acquisition of an initial postsecondary degree.

- *Associate* – The percentage was essentially stable over the five-year period, decreasing slightly to 1.38 percent in 2002.
- *Bachelor's* – After hitting a five-year low of 3.36 percent in 2001, the percentage rose to 3.46 in 2002.



SOURCES: U.S. Census Bureau and National Center for Education Statistics [Includes non-residents]

[4] Title IV – Financial aid programs (e.g., Pell Grants, Federal Work Study Program) for postsecondary students, authorized under Title IV of the Higher Education Act of 1965, as amended.

Area	Type	2001	2002	% Change
Texas	Associate	31,560	31,831	+0.9
	Bachelor's	76,074	79,595	+4.6
U.S.	Associate	578,865	595,133	+2.8
	Bachelor's	1,244,171	1,291,900	+3.8

SOURCE: National Center for Education Statistics

Texas' base numbers for both degree types increased in 2002, rising 0.9 percent for associate degrees and 4.6 percent for bachelor's degrees. In comparison to national figures, Texas' rate for degrees granted was lower for associate degrees and higher for bachelor's degrees.

One of four major goals contained in *Closing the Gaps* – The Texas Higher Education Plan addresses success rates: By 2015, increase by 50 percent the number of degrees, certificates, and other identifiable student successes from high quality programs. In *Closing the Gaps by 2015: 2004 Progress Report* (Rev. 10/18/04), positive results were reported against the interim targets established for 2005. The third annual progress report reflected data for the period 2000-2003:

- *Credentials awarded* – The number of academic credentials (i.e., certificates, associate and bachelor's degrees) awarded is increasing, with bachelor's degrees accounting for 38.9 percent of the 2000-2003 increase.

- *Interim target* – The 2005 target of 28,000 for associate degrees has already been exceeded.[5]

[5] The plan's originally published success targets have been updated to include data from independent institutions.

Percent of Bachelor's Degrees Granted in Science and Engineering
Science and Engineering Graduate Students
Percent of Graduate Degrees Granted in Science and Engineering

The importance of science and engineering (S&E) education is increasing, primarily due to the need for a larger labor supply for the growing number of knowledge-based, technology-intensive jobs. In many cases the formal credential is required; however, some employers prefer to hire individuals with applicable coursework completed and then enhance their skill sets via on-the-job training. The availability of workers with S&E credentials is essential to support research and development activities in today's knowledge-based, global economy. Increased innovation is needed to generate and implement new products and technologies that are valued in competitive markets.

The bachelor's and graduate figures reflect degrees granted by Texas' public and private degree-granting institutions, including those granted to non-residents. Calculated as a percentage of the total number of degrees awarded, the indicators take into account the following areas of study:

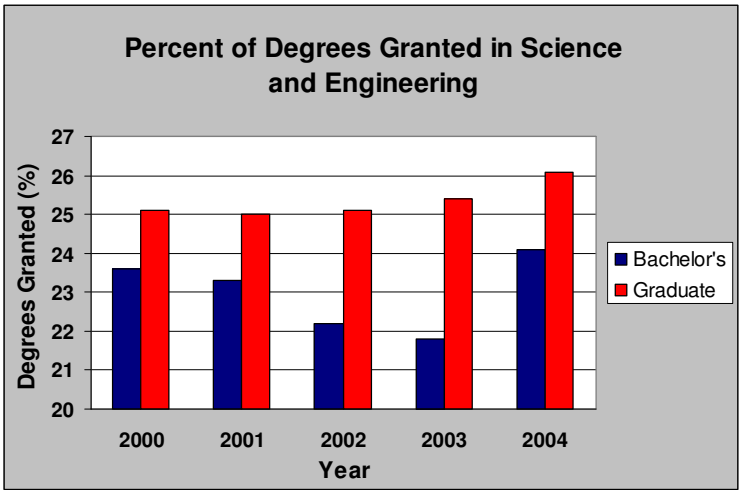
- Agricultural Sciences
- Biological Sciences / Life Sciences
- Conservation and Renewable Natural Resources
- Computer and Information Sciences
- Engineering
- Engineering-Related Technologies
- Health Professions/Related Sciences
- Mathematics
- Physical Sciences
- Science Technologies

Science and Engineering (S&E) on the Rise in U.S.

"At the end of the past decade, about one-third of the 10.5 million people with bachelor's or higher degrees in S&E were employed in S&E occupations, holding job titles such as engineer; mathematician; and physical, life, computer, or social scientist ... Since 1980, the number of S&E positions has risen at more than four times the rate of growth for all jobs, reflecting the transformation of the U.S. economy."

- National Science Foundation, Science and Engineering Indicators 2004 (May 2004)

The percentage of bachelor's degrees granted in S&E fields declined annually over the period 2000-2003 before increasing to a new five-year high of 24.1 percent in 2004. The percentage of graduate degrees changed little over the five-year period, experiencing a mid-period decline, then setting a new high of 26.1 percent in 2004.



SOURCE: Texas Higher Education Coordinating Board [Includes non-residents]

Data from the Texas Higher Education Coordinating Board for the number of Science and Engineering Graduate Students was only available for the 2003-2004 academic year.[6] For that time period, the unduplicated enrollment count for selected major areas of study was 4,339. In the future, data will be available for comparative analysis.

These indicators provide an indication of how extensive S&E training is in the state, but do not provide documentation of the percentage of students or graduates that remain in the state's workforce upon exit from the higher education arena.

[6] Data request pending with the Texas Higher Education Coordinating Board.

➲ National Assessment of Educational Progress (NAEP) Test Scores - Math
➲ National Assessment of Educational Progress (NAEP) Test Scores - Science

The National Assessment of Educational Progress (NAEP) tests are given in several subjects at grade levels 4, 8 and 12 in public and nonpublic schools. Also known as 'the Nation's Report Card', the NAEP is required by law with responsibility assigned to the National Center for Education Statistics (NCES) in the U.S. Department of Education. As with all standardized tests, possible biases should be taken into consideration; however, the NAEP tests are currently the only measure of student performance that is uniform across participating states.

Since 1969, periodic assessments have been conducted in reading, mathematics, science, writing, U.S. history, civics, geography and the arts. Beginning in 1990, assessments have been conducted to allow comparisons between participating states, with the content identical to assessments conducted nationally.

Under federal law, the NAEP is voluntary for every pupil, school, school district and state. However, the No Child Left Behind Act of 2001 includes strong incentives for participation. As of the 2002-2003 academic year, states that wish to receive Title I grants from the federal government must participate in the biennial fourth-/eighth-grade reading and math assessments.[7] The NAEP State Profile (April 2004) indicates that 60 percent of the state's over 4.2 million students are in Title I schools.

Although limited data is available due to the assessment schedule, the eighth-grade math and science scores have been included in the ***Texas Index 2005***. Math not only includes concepts used in everyday life, but also those essential to pursuing postsecondary education in science and engineering. The science assessment includes hands-on experiments for a proportion of students, as well as paper-based testing of science concepts. Both subject areas represent critical educational requirements for occupations and industries considered key to the state's future economic growth.

> *"Regrettably, the American K-12 system is failing to provide the math and science skills necessary for kids to compete in the 21st century workforce, and the U.S. higher education system cannot produce enough scientists and engineers to support the growth of the high-tech industry that is so crucial to economic prosperity."*
>
> - AeA, Losing the Competitive Advantage? (February 2005)

Comparative achievement is reported by a scale score. This score represents the numeric summary of what students know and can do in a particular subject (presented for groups and subgroups). Scales are developed independently for each subject and should not be compared across subjects. Scale scores provide an indicator of how effectively students in the state are learning math and science at the middle school level.

[7] Title I is a federally funded assistance program for economically and educationally disadvantaged students [A section of PL 107-110 – No Child Left Behind Act of 2001, and predecessor, PL 103-382.] The Title I status of each participating student is indicated on the NAEP Assessment Administration form. Currently, students classified as Title I include those in schools offering targeted assistance to low-income children and also schools with high rates of low-income children that use Title I funds to support schoolwide programs.

- *Math – Grade 8*. The figures in the table represent the average scale score for participating eighth grade students in Texas, compared to the national average. For the years in which Texas data is available, the state's performance did not vary significantly from the national average.

Year	Texas	U.S.
1996	270	271
2000	273	272
2003	277	276

SOURCE: National Center for Education Statistics

Of the states and other jurisdictions participating in the *2003* eighth grade math assessment, comparisons to the national performance levels were: 30 had averages above; seven – including Texas – were not significantly different; and 16 were below the national average.

- *Science – Grade 8*. Average scale scores for Texas and the U.S. are presented in the table at right. Data from the most recent assessment, conducted in 2005, is not yet available; thus, data is reported for 1996 and 2000. In those years, Texas' average score was not significantly different from the national average.

Year	Texas	U.S.
1996	145	148
2000	144	149

SOURCE: National Center for Education Statistics

Of the states and other jurisdictions participating in the *2000* eighth grade science assessment, comparisons to the national performance levels were: 18 had averages above; 10 were not significantly different; and 13 – including Texas – were below the national average.

Domain 3 – Research and Development

The Research and Development (R&D) domain includes 11 indicators that describe the state of the Texas economy in areas such as patents, venture capital investment and federal grant awards. Of the four domains, this one had the highest incidence of negative change in the last reporting cycle with six of 11 indicators (55%) declining. In addition, all three venture capital indicators are flagged with a 'watch alert', as each declined annually over the five-year period.

Domain 3 Summary			
Number of Indicators - 11			
		No.	%
↑	Positive change in last reporting cycle	4	36%
➲	No significant change in last reporting cycle	1	9%
↓	Negative change in last reporting cycle	6	55%
●	Comparative data unavailable	0	0%
⚑	Watch alert	3	27%

Indicator	Page	Alert	Trend
Number of Patents	27	-	↑
Patents per Capita	27	-	➲
Venture Capital per Capita	28	⚑	↓
Venture Capital Invested as a Percent of Gross State Product	28	⚑	↓
Venture Capital Invested per $1000 of Gross State Product	28	⚑	↓
Total R&D Expenditure per $1000 of Gross State Product	30	-	↑
Industry R&D Expenditure per $1000 of Gross State Product	30	-	↑
Academic-Performed R&D Expenditure per $1000 of Gross State Product	30	-	↑
National Institutes of Health (NIH) Support to Texas Institutions per Capita	32	-	↓
National Science Foundation (NSF) Funding per Capita	33	-	↓
Average Annual Amount of Small Business Investment Companies (SBIC) Funds Dispersed per $1000 of Gross State Product	34	-	↓

Issues for Consideration

Strong performance in this domain would indicate increased potential for innovation and economic growth. Cross-domain relationships should be considered. For example, the availability of a well-educated workforce increases the chance for strong R&D performance, which in turn tends to generate higher wages and productivity rates.

It is important to note that the most recent year for which data is available for the total, industry and academic R&D indicators was 2002. After experiencing a decline in the previous reporting cycle, all three reflected a positive change in 2002 when viewed per $1000 of Gross State Product (GSP).

The message is mixed at the federal and state levels. Federal appropriations to the National Institutes of Health continue to increase annually, while the National Science Foundation realized its first budget cut in years for FY2005. Such budget cuts may negatively affect R&D awards to Texas institutions for 2003 and beyond.

At the state level, the 79th Legislature in 2005 defunded the Advanced Technology Program that had been used to award competitive grants to Texas college and university researchers for projects expected to enhance economic development in the state, but approved a new $200 million Emerging Technology Fund.

Upon signing the enabling legislation into law, the Governor noted that the Emerging Technology Fund will include three major areas of investment:

- Increasing research collaboration between Texas' public and private sector entities to develop new Regional Centers of Innovation and Commercialization where the seeds of an idea can take root in a university lab and eventually grow into a new product marketed by a new firm.
- Matching research grants provided by both federal and private sponsors to help innovators acquire the capital to bring their ideas to life.
- Attracting more top-notch research teams from other universities around the nation that will help put Texas' universities on the cutting edge of technology research and development.

R&D support is critical in the industrial sectors targeted for growth at the state and national level. To remain competitive, resources must be leveraged to support innovative efforts in the high-tech and science fields. Ideally, collaborative ventures – in terms of funding sources and involved parties – will increase in the future.

For many of the indicators in this domain, data has been normalized by common factors (e.g., per capita, per $1000 of GSP, percent of GSP) to assist in providing equivalent measurement of data year-to-year, and to facilitate cross-indicator review.

A note on basic versus applied research:

As used throughout this section, **basic** research involves theoretical or experimental investigation to advance scientific knowledge, without immediate practical application as a direct objective. On the other hand, **applied** research uses knowledge gained through theoretical or experimental investigation to produce products or create situations that will serve a practical purpose and which generally may impact the economy.[8]

While data regarding both types of research are reported here, it is applied research, and the commercialization of ideas into products and services, through venture capital investments that is particularly relevant to the discussion in this report due to its impacts on the Texas economy. The Governor's new Emerging Technology fund, described above, is just one example of a key tenet of this State's economic and workforce development policy: the importance of applied research, and the dollars invested in activity, to the overall health of the Texas economy.

[8] "Evaluating Federal Research Programs: Research and the Government Program Results Act," Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, Institute of Medicine, 1999.

❶ Number of Patents
➲ Patents per Capita

Both indicators are calculated based on the number of patents[9] and statutory invention registrations[10] filed by Texas entities. The origin of a patent is determined by residence of the first-named inventor.

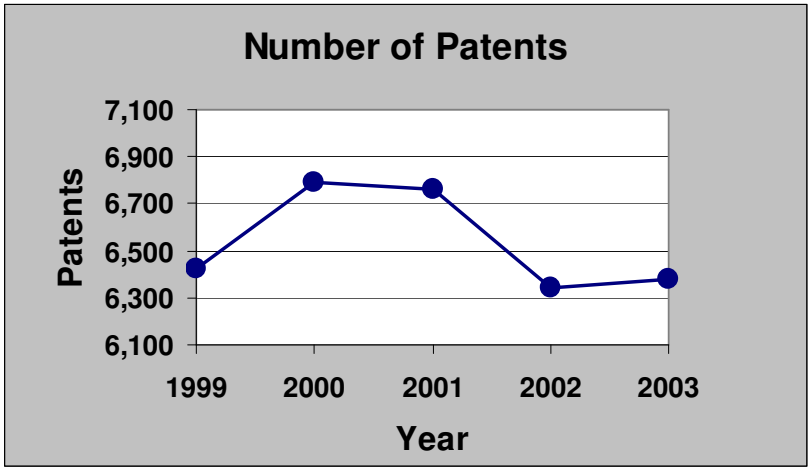
> *"The volume of patents issued for inventions provides a broad measure of technological change, and the number of U.S. patents has surged, increasing from about 80,000 in 1988 to 166,000 in 2001."*
>
> - National Science Foundation, Science and Engineering Indicators 2004 (May 2004)

Patent production is generally considered an indicator of a state's rate of innovation. Higher patent rates tend to indicate the presence of businesses that focus on R&D. Generation of ideas that are then commercialized into the development of new products and technologies potentially increases business output and, often, the ability to pay higher wages. Patent production demonstrates the ability of Texas' businesses to convert ideas developed through applied research into real gains for the state's economy.

In addition, many patents result from research conducted by academia, singularly or through collaborative ventures with industry. Given the recent decline in some types of R&D funding support, demonstration of innovation becomes even more critical to support the growth of knowledge-based enterprises and the target clusters of the Governor's Cluster Initiative, noted in the **Introduction**.

- *Number of Patents* – Texas' patent count hit a five-year high in 2000, with 6,789 patents issued. After a low mark of 6,342 in 2002, the number increased slightly in 2003 to 6,378.

- *Patents per Capita* – When viewed on a per capita basis (i.e., number of patents issued to Texas entities, divided by the total population), there has been no significant change in recent years. Based on data from the U.S. Census Bureau and the U.S. Patent and Trademark Office, the rate held steady at 0.03 percent per year during 1999-2003.



SOURCE: U.S. Patent and Trademark Office

[9] Patent – Property right granted by the U.S. government to an inventor 'to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States' for a limited time in exchange for public disclosure of the invention when the patent is granted. [U.S. Patent and Trademark Office]

[10] Statutory Invention Registration (SIR) – A published statutory invention registration contains the specification and drawings of a regularly filed nonprovisional application for a patent *without examination* if the applicant fulfills certain requirements. A SIR request may be filed at the time of filing a nonprovisional application for a patent, or may be filed later while the nonprovisional application is pending. [U.S. Patent and Trademark Office]

Venture Capital per Capita
Venture Capital Invested as a Percent of Gross State Product *and* per $1000 of Gross State Product

Venture capital firms often play a key role in both the start-up and expansion of growth industries. Higher levels of venture capital investment typically indicate the presence of investment opportunities, crucial for developing industries and entrepreneurial companies in a rapid-growth mode.

As noted in the **Introduction**, six industry clusters have been targeted for growth by the state: advanced technologies and manufacturing, aerospace and defense, biotechnology and life sciences, information and computer technology, petroleum refining and chemical products, and energy. To be successful, increased venture capital and R&D support must be leveraged.

> *"Venture capital addresses the funding needs of entrepreneurial companies that generally do not have the size, assets, and operating histories necessary to obtain capital from more traditional sources, such as public markets and banks."*
>
> - Global Insight, *Venture Impact 2004* (July 2004)

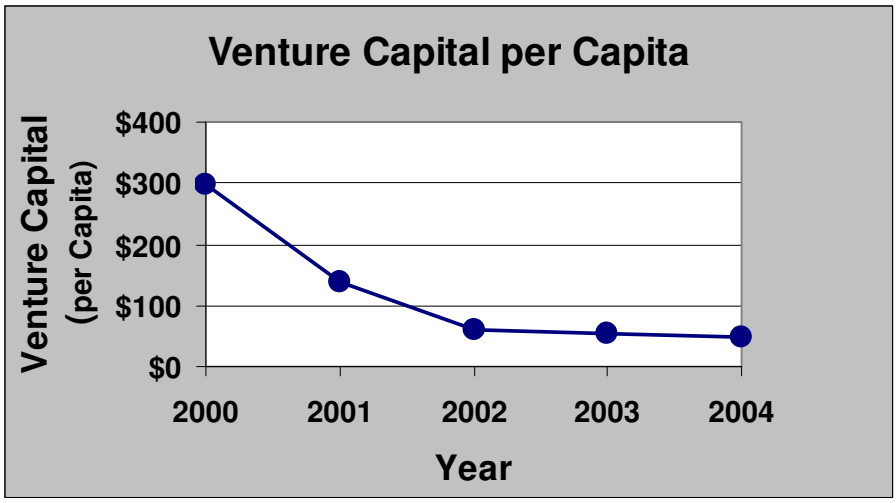
Data is presented in three ways, with the two GSP data sets merged, for the period 2000-2004 in an effort to facilitate cross-indicator review with indicators in this, and other domains:

- *Per Capita* – Venture capital invested in Texas, divided by the Texas population.
- *Percent of GSP* – Venture capital invested in Texas, divided by Texas GSP
- *Per $1000 of GSP* – Venture capital invested in Texas, divided by Texas GSP (divided by 1,000).

The venture capital indicators have been flagged for '⚑ - watch alert', as the rates for each declined annually in recent reporting periods. All indicator trend lines are based on data from PricewaterhouseCoopers. It should be noted that the year 2000 represented the highest investment level not only for Texas but for the U.S. The base amounts for Texas were (in millions):

- 2000 – $6,207.8
- 2001 – $2,959.2
- 2002 – $1,309.7
- 2003 – $1,164.6
- 2004 – $1,096.5

The five-year high for the per capita rate was set in 2000 with a rate of $297.70. Since that time, the rate declined annually to a low mark of $48.80 in 2004.

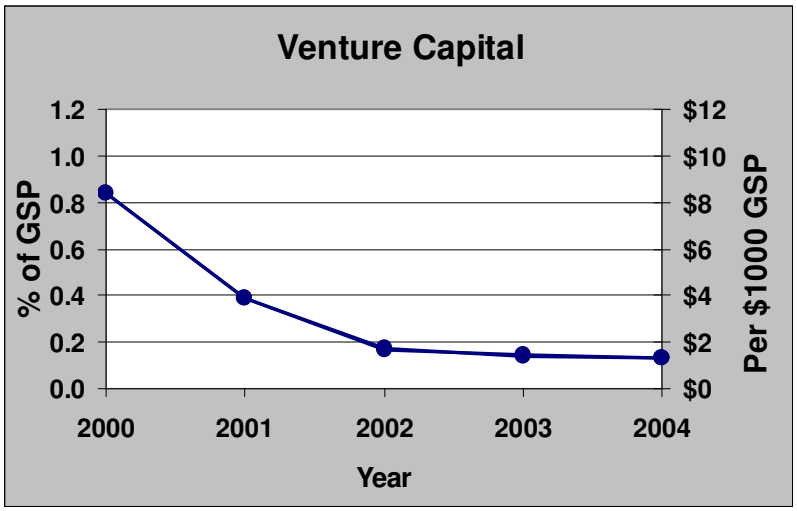


SOURCES: U.S. Census Bureau and PricewaterhouseCoopers

As noted previously, a chart is also included to illustrate venture capital investment as a percent of GSP *and* per $1000 of GSP – essentially two ways to display the same data for comparative purposes.

- *Percent of GSP* – When viewed as a percentage of GSP, the rate fell from a high of 0.84 percent in 2000 to the five-year low of 0.13 percent in 2004.

- *Per $1000 of GSP* – Similarly, the rate per $1000 of GSP declined from $8.41 in 2000 to $1.29 in 2004.



SOURCES: Texas Comptroller and PricewaterhouseCoopers

2004 year-end data released by PricewaterhouseCoopers showed a decrease not only in Texas' investment levels, but also in the number of deals made:

- *Number of deals* – 157 in 2004, down from 164 in 2003.
- *Investment level* - $1,096.5 million in 2004, down from $1,164.6 million in 2003.

While Texas experienced a slight decline in venture capital investments and deals for 2004, the national picture improved slightly. National annual investment levels fell every year beginning in 2001, culminating in a six-year low of $18.9 billion in 2003. As reported in PricewaterhouseCoopers' *MoneyTree Survey – Full-Year and Q4 2004 Results*, the three-year downward trend was reversed in 2004, as $20.9 billion was invested into 2,876 deals.

Despite the declining rates, a July 2004 Global Insight report contained some positive data. Over the period 2000-2003, venture capital-backed companies fared better in both job creation and revenue growth than their U.S. private company peers in 10 industries including: biotechnology; computer hardware and services; computer software; industrial/energy; and semiconductors and electronics. Across these industries, venture capital-backed companies fared 6.5 and 11.6 percent better in terms of job creation and revenue growth, respectively.

When looking at the results generated over a longer-term (1970-2003), Texas ranked second in both job and revenue production.

Rank	State	Jobs 2003	Revenues 2003	Venture Capital Investment 1970 - 2003
1	California	2,470,942	$437.8	$140.1
2	Texas	899,173	$188.1	$20.5
3	Massachusetts	712,329	$107.4	$35.5

SOURCE: Global Insight [Revenues and Investment in billions]

❶ Total R&D Expenditure per $1000 of Gross State Product
❶ Industry R&D Expenditure per $1000 of Gross State Product
❶ Academic-Performed R&D Expenditure per $1000 of Gross State Product

Research and development (R&D) expenditure rates provide an indication of government and private sector efforts to obtain, or increase, competitive advantage in science and technology. Ongoing development of new products, production techniques and technologies is important to sustaining a healthy, growing economy.

While industry R&D, with its applied research approach, is clearly product-oriented, academic R&D endeavors and funding generally tend towards basic research. The challenges for the Texas economy in this area are: (1) to maintain basic research funding at levels sufficient to make institutions of higher education in Texas powerhouses in innovation and in attracting faculty, and (2) to stimulate applied research in Texas' academic environment, as envisioned by the Governor's new Emerging Technology Fund.

The three R&D expenditure indicators are based on data reported to the National Science Foundation (NSF), with 2002 being the most recent year for which data is available. The NSF has a federal mandate to provide a central clearinghouse for the collection, interpretation and analysis of data on scientific and engineering resources. NSF data was not available for 2001 Total or 2000 Academic R&D expenditures.

> *"Research and development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications. R&D is a term covering three activities: basic research, applied research, and experimental development."*
>
> - OECD Factbook 2005

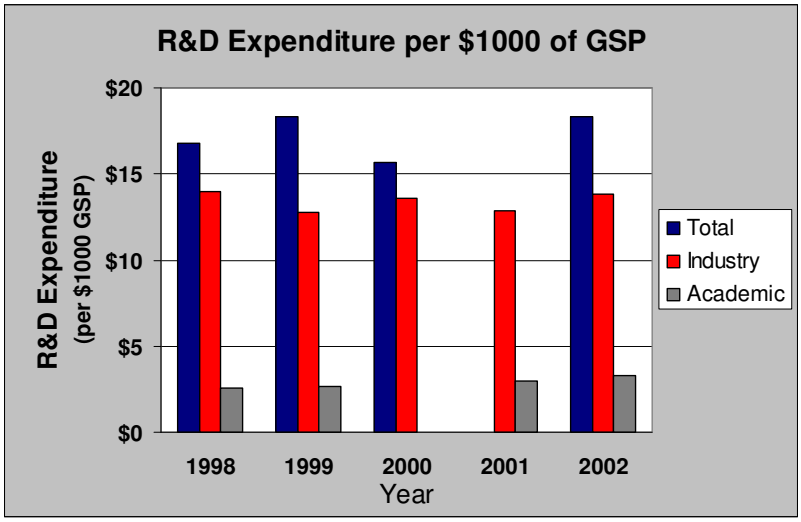
Data is presented for total (industry plus national), industry and public and private academic institutions expenditure rates, normalized per $1000 of GSP. As noted earlier, Texas' GSP has increased significantly in recent years, rising annually for each of the relevant reporting cycles included in the Index.

Each of the three indicators had a positive change in the last reporting cycle:

- *Total* – Rebounded to $18.30 in 2002 after declining to $15.65 in 2000, a 16.9 percent increase.
- *Industry* – Rose to $13.83 in 2002 after falling to $12.88 in 2001, a 7.4 percent increase.
- *Academic* – Increased each year to a high of $3.26 in 2002, a 10.9 percent increase over the 2001 level of $2.94.

Industrial R&D performed in the U.S. experienced the largest single year decline in 2002 (3.9%), decreasing to $190.8 billion from $198.5 billion in 2001. According to an NSF *InfoBrief* released in May 2004, contributions were down from federal, company and other sources.

Federal funds traditionally account for the majority of academic R&D expenditures. In 2002, U.S. academic institutions spent $33 billion on R&D, including $19 billion in federal dollars. Three agencies were responsible for about 86 percent of the federal obligations: National Institutes of Health (66%); National Science Foundation (12%); and Department of Defense (8%).[11]



SOURCES: National Science Foundation and Texas Comptroller

While a number of Texas institutions are successful in receiving large R&D grants from national institutes, no Texas institution has placed higher than twentieth in recent years when compared with other states' colleges and universities.[12]

One of the goals included in *Closing the Gaps* – The Texas Higher Education Plan is to increase the level of federal science and engineering research funding to Texas institutions by 50 percent to $1.3 billion by 2015. In FY2003, federal funds accounted for 56.1 percent of the research funds expended, an increase from 55.7 percent in FY2002.

As noted in the domain summary, the 79th Legislature in 2005 defunded the Advanced Technology Program that had been administered by the Texas Higher Education Coordinating Board to finance projects expected to enhance economic development in the state. The Advanced Technology Program had been funded at $19.5 million by the 78th Legislature in 2003.

> *"This $200 million … will boost Texas' reputation as a global leader in the technology economy, and allow us to remain competitive with other states that have made significant investments to attract high-tech researchers and employers that will provide the jobs in the marketplace of tomorrow."*
>
> - Governor Rick Perry (6/13/05)

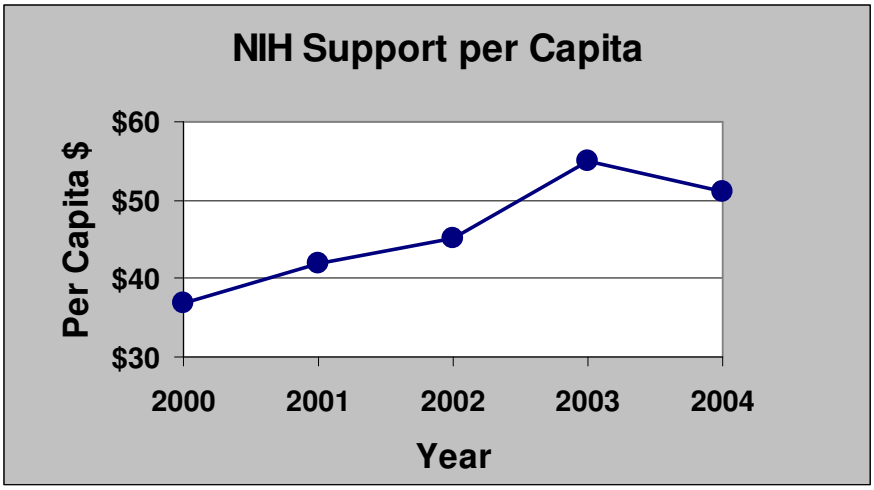
The new Emerging Technology Fund (House Bill 1765 – 79th Legislature), one of the Governor's economic development priorities, was established to expedite innovation and commercialization; increase higher education applied technology research capabilities; and attract, create, or expand private-sector entities that will promote a substantial increase in high-quality jobs. Key to the success of this last goal is the public funding of applied research, at the university level, which will ultimately bring the results of research to the market faster, thus commercializing ideas and creating new businesses along the way.

[11] National Science Foundation, Science and Engineering Indicators 2004.
[12] National Science Foundation *InfoBrief*, May 2004 and July 2005.

National Institutes of Health (NIH) Support to Texas Institutions per Capita

The National Institutes of Health (NIH), a part of the U.S. Department of Health and Human Services, is the primary federal agency for conducting and supporting medical research globally and nationally. NIH provides financial support to researchers – annually investing over $28 billion in medical research. Primarily through competitive grants, NIH supports research at hospitals, universities and medical schools.

A high level of NIH funding may indicate the existence of a strong research community, with corresponding innovations in health- and science-related treatments and technologies.



SOURCES: National Institutes of Health and U.S. Census Bureau

The chart reflects the per capita NIH support rate, i.e., total NIH funding to Texas, divided by the total population of Texas.

Over the five-year period, the state's population has increased annually, as has the NIH funding level before declining in 2004 to a per capita rate of $51.04.

Texas ranked sixth in terms of total NIH dollars awarded for fiscal years 2001-2004, with the top three being California, Massachusetts and New York. Although a negative change was evidenced in 2004 in terms of total and per capita dollars, the number of awards increased each year. The FY2004 figures are presented below:

As previously noted, one of the goals included in *Closing the Gaps* – The Texas Higher Education Plan is to increase the level of *federal* science and engineering research funding to Texas institutions by 50 percent to $1.3 billion by 2015. Notably, NIH funds accounted for 59 percent of federal research support for science and engineering to Texas higher education institutions in FY2003.

Rank	State	No. of Awards	Total Award Amount
1	California	7,363	$3,619,589,540
2	Massachusetts	5,199	$2,265,512,043
3	New York	4,983	$1,964,889,285
4	Maryland	2,527	$1,415,908,552
5	Pennsylvania	3,597	$1,394,474,505
6	Texas	2,836	$1,147,992,873

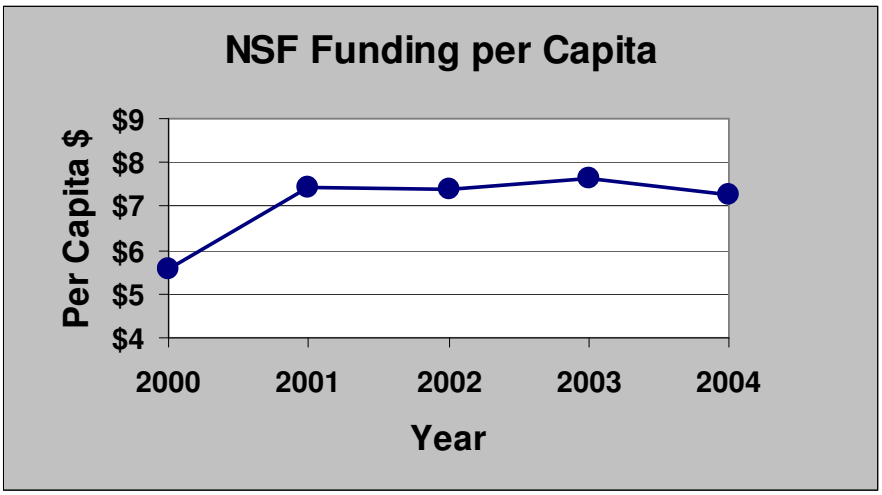
SOURCE: National Institutes of Health [Rank order by total dollars]

National Science Foundation (NSF) Funding per Capita

The National Science Foundation (NSF), established by Congress in 1950 as an independent federal agency, is the funding source for approximately 20 percent of all federally supported basic research conducted by U.S. colleges and universities. The NSF funds research and education in most fields of science and engineering as well as the social sciences. Grants and cooperative agreements are awarded to colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations nationwide.

High levels of NSF funding for research and development efforts can indicate the presence of a strong postsecondary educational system, as well as an environment conducive to supporting high-tech startups and expansion efforts.

The chart presents total NSF funding to Texas entities, divided by the total population of Texas. The high for the five-year period was in 2003, before declining from $7.64 per capita to $7.28 in 2004.



SOURCES: National Science Foundation and U.S. Census Bureau

While the decrease is partly attributable to the growth in population, Texas total funding decreased from $168.9 million in 2003 to $163.7 million in 2004. Texas was ranked ninth in terms of total NSF funding for both years. In addition, the number of awards also decreased – falling from 889 in 2003 to 849 in 2004. Texas was ranked sixth both years.

For FY2005, the NSF received its first budget cut in 16 years; NSF was funded at $5.47 billion, which was $105 million (-1.9%) below the FY2004 level and $232 million below the FY2005 request. The funding cuts will affect Texas' R&D expenditure rates negatively if Texas' rate of NSF awards and proportion of funding allocation remain consistent with previous years.

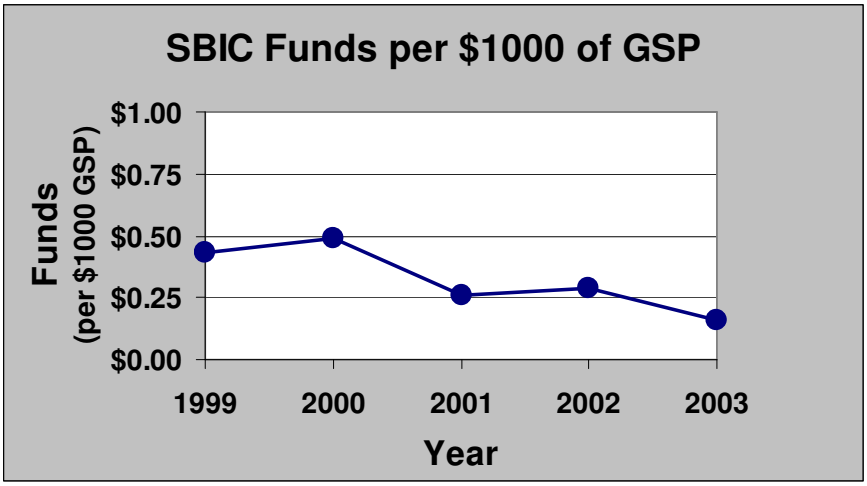
Average Annual Amount of Small Business Investment Companies (SBIC) Funds Dispersed per $1000 of Gross State Product

The Small Business Investment Company (SBIC) program is a part of the U.S. Small Business Administration (SBA). Created in 1958, the SBIC program is designed to help fill the gap between the availability of venture capital and the needs of small businesses for start-up or growth.

SBIC investing, as a subset for the overall venture capital industry, is responsible for the creation of millions of jobs and billions of dollars in corporate revenues, resulting in federal and state taxes paid, and countless improvements to health, safety and quality of life.

The program does not target specific industries. However, with a 10 year obligation timeline it is not necessarily a viable option for all business strategies (e.g., early-stage, pre-FDA approval biotechnology).

> *"…the federal government is the largest single investor in U.S. private equity funds. At the end of FY2003, SBA had close to $5.5 billion invested in 435 funds, plus another $3.7 billion in available commitments. Together with private capital topping $12 billion, the program totals over $21 billion in private equity capital dedicated to America's entrepreneurs."*
>
> - SBA, SBIC Frequently Asked Questions (FAQs)



SOURCES: U.S. Small Business Administration and Texas Comptroller

The chart represents the fiscal year annual amount of SBIC funds dispersed in Texas, normalized per $1000 of Texas' GSP.

The five-year high for the rate was realized in 2000 at $0.49, with the five-year low occurring in 2003 with a level of $0.16. For that year, the state ranked sixth nationally in terms of number of licensees and fifth in terms of funding level.

Year	No. of Licensees	Funding
1999	216	$291,603,250
2000	238	$364,990,595
2001	228	$201,758,054
2002	252	$222,844,305
2003	223	$130,923,164

SOURCE: U.S. Small Business Administration

While GSP rose, SBIC awards to Texas' small business entrepreneurs declined, indicating that venture capital resources to small business from this federal program were not contributing significantly to small business start-ups and expansion during the current economic upturn. According to the SBA, in 2003, 98.6 percent of employer firms in Texas were classified as small firms. Therefore, venture capital inflow, through vehicles like SBIC investing, is a key driver to increasing the contribution that small business, and its workforce, make to state GSP. If Texas were to receive SBIC allotments in proportion to its share of national GSP, nearly $50 million in additional funds would become available for the state's small businesses, an increase of 38 percent from the current 2003 funding level.

Domain 4 – Market Composition and Characteristics

The 14 indicators in this domain provide information about the state's workforce and employers. Data elements include employment-related indicators such as labor force participation, unemployment, gross state product, and exports information about the Texas economy. Based on the most recent data available, eight (57%) of the 14 indicators experienced a positive change.

Domain 4 Summary Number of Indicators - 14			
		No.	%
	Positive change in last reporting cycle	8	57%
	No significant change in last reporting cycle	0	0%
	Negative change in last reporting cycle	6	43%
	Comparative data unavailable	0	0%
	Watch alert	0	0%

Indicator	Page	Alert	Trend
Labor Force Participation Rate	37	-	
Average Annual Unemployment Rate	39	-	
Labor Productivity	40	-	
Average Annual Pay per Worker	41	-	
Employer Firm Births	42	-	
Employer Firm Terminations	42	-	
Workers' Compensation Premiums Cost per Employee	43	-	
State Tax Revenue as a Percent of Gross State Product	44	-	
Texas Budget Surplus as a Percent of Gross State Product	45	-	
Gross State Product per Capita	46	-	
Exports per Capita	47	-	
Export Orientation	47	-	
Incoming Foreign Direct Investment per Capita	48	-	
Number of Technology Fast 500 Companies per 10,000 Business Establishments	49	-	

Issues for Consideration

The availability of an adequate labor supply is important when promoting business growth and expansion opportunities. Other factors, including business costs such as taxes and workers' compensation premium rates may affect employer decisions related to business expansion and, therefore, job growth.

The determination of positive or negative change in the last reporting cycle is made based on a given indicator's impact of the state's overall economic health. For many of the indicators, the effects of growth or decline may vary for businesses and individuals. For example:

- *Labor productivity* – Increases in labor productivity point to economic growth and business revenue increases achieved through a lower cost of doing business.

- *Labor costs* – While higher rates of pay have a direct, positive impact on a state's citizens, high labor costs may discourage new firm start-ups, as well as relocation and expansion plans.

- *State taxes* – Tax revenues are a primary funding source for Texas' general-revenue appropriations. Business-related and personal taxes may negatively effect the decision of workers or employers respectively, when considering Texas-based locations.

As noted in the discussions on specific indicators, there are three related factors that cannot be readily quantified. These are:

- *Declining benefit coverage* – Due to the increasing cost of health insurance and other benefits, the percentage of today's workers with coverage continues to decline. This has a potentially negative effect in terms of worker health, and should also be considered when assessing pay rates, given the impact on disposable income.

- *GSP growth* – Gross State Product calculations do not take into account *what* is being produced and, therefore, do not measure the portion of growth accounted for by non-desirable expenditures such as environmental clean-up.

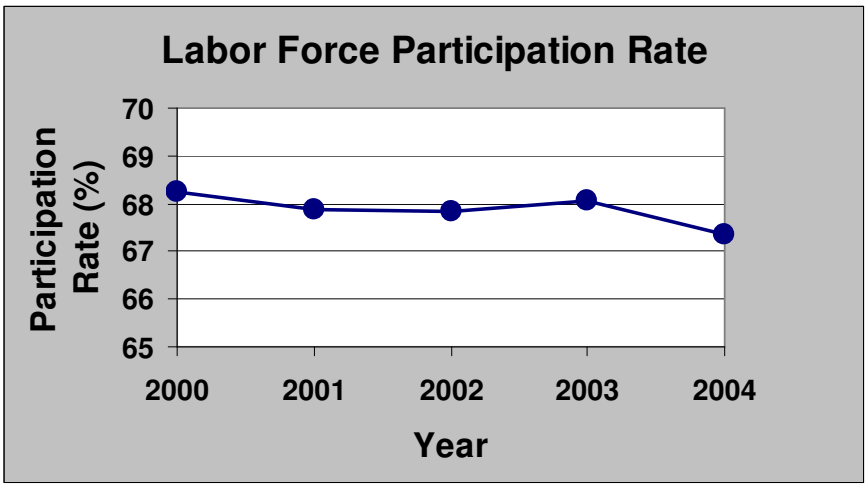
- *Workers' compensation reform* – Workers' compensation legislation enacted in 2005 is expected to bring about major changes in the system. The reforms may have a positive effect on job growth rates and other indicators in future years.

Labor Force Participation Rate

The labor force participation rate is determined by calculating the civilian labor force as a percent of the civilian noninstitutional[13] population. It is a basic indicator of the availability of workers.

However, an available worker is not necessarily the right match for a given employer or occupation. As noted in the **Training and Education** section, employer preferences related to applicant skill sets and education backgrounds should be considered, particularly as the state focuses on the growth of technology-based jobs.

After bouncing back to 68.05 percent in 2003, the labor force participation rate declined to 67.34 percent in 2004. For both years, Texas was above the national average of 66.24 percent (2003) and 65.99 percent (2004).



SOURCE: U.S. Department of Labor

National projections through the year 2012[14] indicate that rate changes will continue to mirror population changes:

- *Gender* – Higher growth rates for women in the workforce is expected to continue. The rate for men is expected to grow at a slower pace, while their aggregate share of the labor force is projected to decline to 52.5 percent in 2012.

- *Baby boomers* – In 2012, those born between 1946 and 1964 will be 48 to 66 years of age. At that time, youth are projected to comprise 15 percent of the labor force and those over the age of 55, about 19 percent. Prime age workers, considered to be between the ages of 25 and 54, will make up about 66 percent of the labor force.

> *"During this 20-year period (1970-1990), the participation rate … jumped from 60.4 percent to 66.4 percent. This increase coincided with the entry of the baby-boom generation into the labor force, and, most notably, a 14.2 percentage point increase in the aggregate labor force participation rate for women."*
>
> - U.S. Department of Labor, *Monthly Labor Review* (December 1999)

- *Hispanics* – This population segment is expected to comprise an increasingly larger share of the labor force due to the growth of the segment as a whole and the relatively lower ages of individuals in the labor force.

Intuitively, the labor force participation rate, either up or down should track correspondingly with economic expansion or contraction. However, the recent economic recovery has largely been a jobless one, as borne out by the declining labor force participation rate noted above.

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[13] Civilian noninstitutional population: Persons 16 years of age and older 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. [U.S. Department of Labor - Bureau of Labor Statistics]
[14] U.S. Department of Labor, *Monthly Labor Review* (December 1999 and February 2004).

Economic researchers at the Federal Reserve Bank of New York believe this jobless economic recovery, the second in little more than a decade, is a result of structural adjustments, rather than cyclical ones.[15] While cyclical adjustments are reversible responses to lulls in demand, structural changes essentially transform a firm or industry by relocating workers and capital. By their nature, job losses that stem from structural changes are permanent: as industries decline, jobs are eliminated, compelling workers to switch industries, sectors, locations, or skills in order to find a new job.[16]

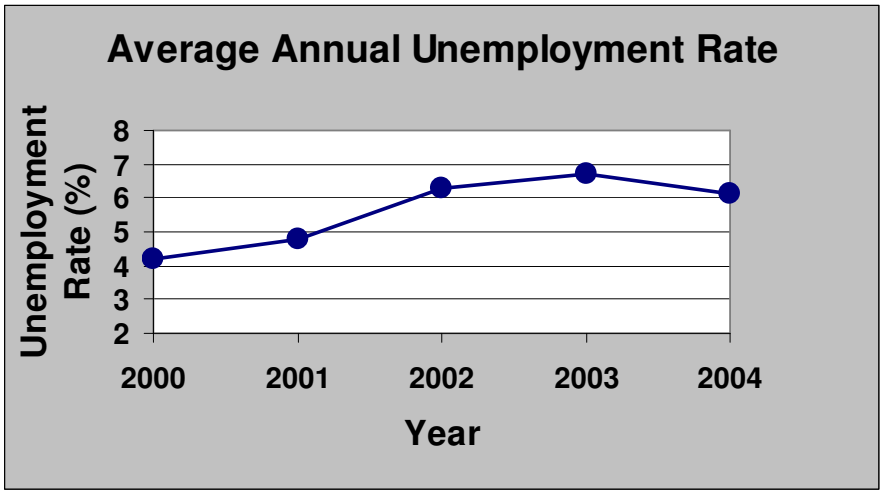
Evaluation of trends in temporary versus permanent layoffs and job relocations support the conclusion that permanent, structural changes to economy sectors have created the labor participation rate seen during the current economic recovery. Specifically, in the recession preceding the current "jobless recovery," and an analogous recession/recovery cycle from 1990 to 1991, temporary layoffs, a temporary suspension of the employee's job, contributed little to overall unemployment. Jobs lost during the recession were not returned during the recovery. Additionally, job relocation, the outflow/inflow process of jobs from one industry to another was a predominant feature of both the current recession/recovery and the 1990-91 period. During both recovery periods, jobs were relocated from some industries to others and not reclaimed by the same industries that had lost them earlier.[17]

Ultimately, structural changes to the economy during the current recession/recovery cycle explain why employment, as noted in the labor force participation rate, has remained static or fallen. If, as seems the case, job growth depends on the creation of new positions in different industries, a significant lag is anticipated before employment begins to rebound.[18] Employers incur risks in creating new jobs, and require additional time to establish and fill positions. Workers may be required to reorient their skills to new industries since jobs lost in other industries aren't being returned.

[15] "Current Issues in Economics and Finance: Has Structural Change Contributed to a Jobless Recovery?" Erica Groshen and Simon Potter, Federal Reserve Bank of New York, Volume 9, Number 8, August 2003.
[16] Ibid.
[17] Ibid.
[18] Ibid.

❶ Average Annual Unemployment Rate

This indicator represents the number of unemployed individuals as a percent of the Texas labor force. Individuals are classified as unemployed if they do not have a job, have actively looked for work in the prior four weeks and are currently available for work. Based on U.S. Department of Labor – Bureau of Labor Statistics' definitions, this includes individuals that were not working but were waiting to be recalled to a job following temporary layoff. The indicator does not account for individuals who were never in the labor force or who had stopped seeking work.



SOURCE: U.S. Department of Labor

After a five-year high of 6.7 percent in 2003, the average annual rate for Texas improved to 6.1 percent in 2004. This continued to exceed the national average, which was 6.0 percent in 2003 before dropping to 5.5 percent in 2004.

Performance did improve in the last reporting cycle, with a decline in the unemployment rate. Changes in the unemployment rate may impact the Texas economy and its citizens in either positive or negative ways, depending on the direction of the change. A low unemployment rate is desirable due to negative impacts of a higher rate, including:

- *Economic impact:* Rising unemployment has a direct impact on the economy: a higher rate is indicative of a loss of current jobs; decrease in job growth rates; and decreases in discretionary spending.
- *Community and social impact:* High rates may contribute to problems such as crime, domestic violence and substance abuse.
- *Personal impact, including:*
  - *Financial hardship* – Unemployment and underemployment correlate to financial problems for individuals and households, particularly if medical or other benefits are lost or decreased.
  - *Underemployment*[19] – In times of high unemployment, more individuals are likely to be underemployed (i.e., employed part-time when seeking full-time work; working in a low-paying job that requires less skill or training; or employed in a job that is not challenging or does not encourage growth).
  - *"Discouraged worker effect"* – Calculations do not account for individuals that have stopped actively seeking work, thus removing themselves from the measured labor force.[20]

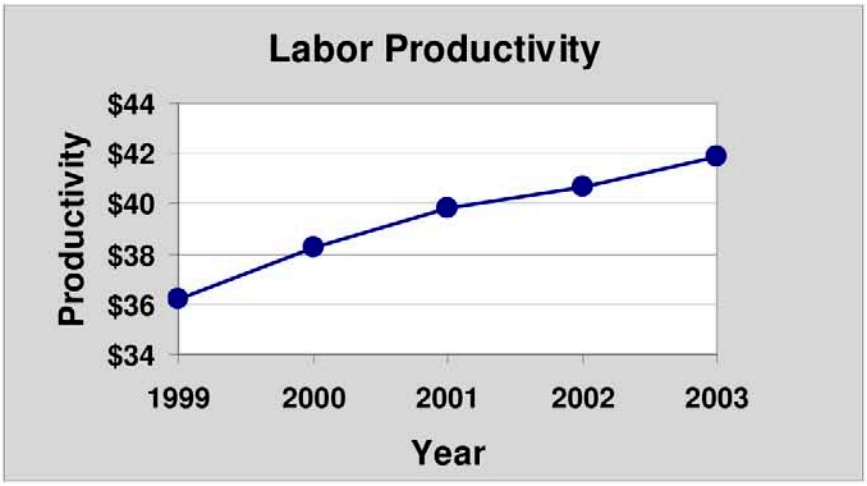
[19] No official government statistics are available on the total number of persons who might be viewed as underemployed. Difficulties include the development of an objective set of criteria and a means for quantifying associated economic loss. [U.S. Department of Labor - Bureau of Labor Statistics]
[20] FleetBoston Financial, *Fleet economist* (January 20, 2004).

Labor Productivity

Labor productivity measures the ratio of output per hour as determined by Gross State Product (GSP) divided by the total hours worked by the Texas workforce. From a business standpoint, increases in productivity indicate economic health driven by decreased costs, rising profits, development of innovative production methods and the ability to better compete in national and global markets. For the labor force, productivity growth may also indicate wage and salary increases.

The calculation does not measure the value added by various production factors (e.g., labor, capital). Thus, while rate increases are viewed as positive, other related factors may require consideration. These factors include:

- *Output type and impact* – The calculations do not take into account what is produced, just the quantity. Thus, environmental impact is not taken into consideration.
- *Possible job loss* – In some cases, productivity improvements may be realized due to new or improved automation techniques. While advantageous to employers, such changes may result in job consolidation or loss.



SOURCES: U.S. Department of Labor and Texas Comptroller

The Texas rate increased annually over the five-year period 1999-2003, rising to a high of $41.88 in 2003 – a three percent increase over the preceding year.

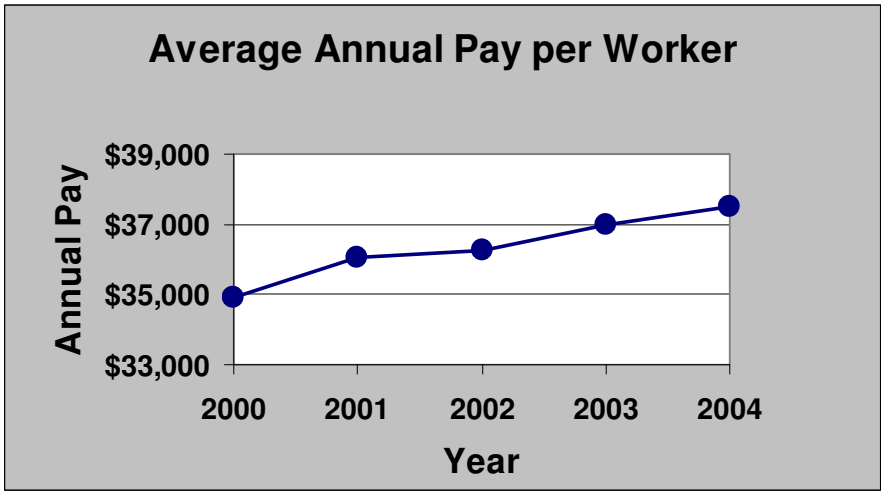
As noted above, increased productivity is generally noted as a positive indicator for employers and the state. The increased dollars feed directly into the "bottom line" of both. However, labor productivity continues to track upwardly with the current economic recovery, while overall labor force participation has declined. This trend is another indication of the current "jobless recovery", and underscores fundamental structural changes to both the state and national economies. In FY2004 there were 122,100 jobs added to the Texas economy[21].

[21] Texas Economic Update, Fall 2004, Texas Comptroller of Public Accounts. Although not explicitly characterized by the Comptroller, the Council assumes that the number reported here reflects net new jobs.

❶ Average Annual Pay per Worker

Higher wage levels are often correlated with higher job quality and standard of living. In addition, higher wages may increase employers' options when seeking to attract or retain qualified workers. This is increasingly important given Texas' goal of job and business growth in the high-tech and knowledge-based industry sectors.

The chart displays annualized average weekly wages rates for Texas employees. The rate rose annually over the five-year period, climbing to a high of $37,475 in 2004.



SOURCE: Texas Workforce Commission

While base wages are important, the availability of employee benefits should also be considered when accessing economic health. More and more, jobs are offered on a temporary or contract basis. Many employee benefits once considered standard may not be provided, or are only available after longer probationary periods, or have increasing co-payment rates.

Employee Benefit Coverage

"… workers rate health insurance the most important benefit they receive by a margin of more than 5 to 1 (60 percent to 17 percent over retirement savings plan) … employers that do not offer health insurance may have difficulty attracting and retaining skilled workers."

- Employee Benefit Research Institute, *Fast Facts* (June 2005)

ERBI studies indicate that younger workers are less likely to have a job with benefits:

Employment-based Health Insurance (2003)			
Age	Total	Worker	Dependent
21-24	45%	26%	19%
25-34	61%	47%	14%
35-44	70%	50%	20%

401(k) Ownership (2002)	
Age	Percent of Workers
21-24	9%
25-34	29%
35-44	34%

A recent study[22] by the Employee Benefit Research Institute (ERBI) reported that the percentage of the population under age 65 (i.e., Medicare-eligible) with health insurance coverage declined in 2003 to a post-1994 low of 82.3 percent. Further, declines in health insurance coverage have been recorded in all but two years since 1994. The declines were attributed to the continued weak economy and the rising cost of providing benefits.

In general, though, the greater disposable income afforded through increases in the average annual pay results in increased spending on goods and services across the economy, ultimately increasing GSP, economic growth, and job creation.

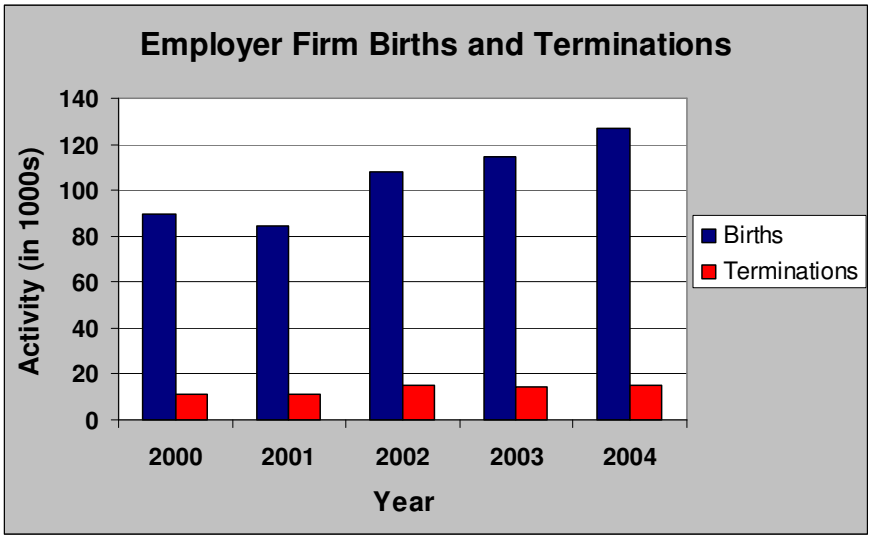
[22] EBRI Issue Brief #276, based primarily on data from the U.S. Census Bureau's March 2004 Current Population Survey (December 2004).

Employer Firm Births
Employer Firm Terminations

The data presented for employer firm births includes both domestic- and foreign-owned entities registered with the Texas Office of the Secretary of State. Similarly, the firm termination figures include domestic firms that were dissolved and foreign firms that were terminated or withdrawn during the relevant reporting periods.

Both indicators measure competitiveness. A higher rate of firm births indicates new business start-ups or relocations, which typically provide new jobs, as well as the opportunity for development of new products and production techniques. In addition, increases in this rate may indicate the availability of financing from both new and traditional sources.

Business terminations occur for many reasons such as owner retirement, inadequate marketing and poor choice of location. However, tax rates, lack of qualified workers, degree of regulation and reporting requirements may also be contributing factors.



SOURCE: Texas Office of the Secretary of State

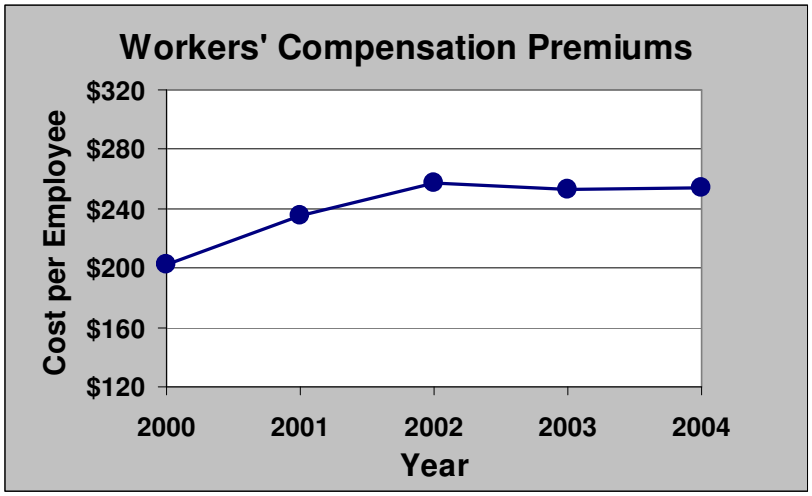
Following a decrease in 2001, firm births rose annually – reaching the five-year high of 127,231 in 2004.

The number of terminations hit a five-year high in 2002 at 14,791. After decreasing in 2003, the count rose again in 2004 to 14,723.

In order to make it easier to start a business, Texas has taken steps to simplify the process of fulfilling state reporting and licensing requirements by providing a guide to starting a business in Texas. The Texas Business Portal website (www.business.texasonline.com) was launched in March 2005. In addition, Senate Bill 96, 79th Legislature (2005), provides for the expansion of Internet services by requiring each state agency to make all forms available online. It is expected that these initiatives will greatly facilitate the business start-up and maintenance processes, hopefully increasing firm births and perhaps even decreasing terminations.

Workers' Compensation Premiums Cost per Employee

This indicator was calculated by dividing total workers' compensation premiums collected in Texas by the total employment count. It is important to note that, with the exception of public entities, workers' compensation coverage is optional for employers in Texas. This indicator is important in that higher premium costs directly correlate to higher business costs. When compared to other states, high premium rates may impact employers due to costs, thereby adversely affecting job and wage growth rates.



SOURCES: U.S. Department of Labor and Texas Department of Insurance

Over the five-year period 2000-2004, the cost per employee peaked at $257.42 in 2002. The rate declined in 2003 before increasing slightly to $253.53 in 2004. While the total premium amount increased annually with the exception of 2003, the total employment count rose each year. Attributable factors to premium increases in Texas include the rising cost of health care generally and, as noted in legislative hearings on the workers' compensation system in Texas, the states' burdensome workers' compensation system administration itself. As with any other genuine operating expense, increasing workers' compensation premiums simply raises the cost of doing business in this state, ultimately impacting state GSP negatively.

Workers' Compensation Reforms

"These reforms represent a major victory for everyone who has a stake in the worker's compensation system and will help create thousands of jobs for our families as employers continue to flock to Texas for our excellent business climate."

- Governor Rick Perry (6/1/05)

Major workers' compensation reform legislation was passed by the 79th Legislature in 2005. House Bill 7, which will take effect September 1, 2005, includes the following provisions:

- Abolish the Texas Workers' Compensation Commission and transfer the agency functions to a new division in the Texas Department of Insurance.
- Increase the weekly benefit cap for injured workers by as much as 15 percent beginning in 2006.
- Establish a new Office of Injured Employee Counsel.
- Provide employers with financial relief on insurance costs.
- Provide administrative and criminal penalties.

Major reforms for workers' compensation were enacted by the 79th legislature in 2005. When signing House Bill 7 into law, Governor Perry noted that under the current system: one in four Texans injured in the workplace will never fully return to work because of lack of care; doctors have been dropping out of the system because they cannot afford to participate; and employers are paying one of the highest rates in the nation.

Based on information in the fiscal note for the House Bill 7 conference report, a positive net impact in excess of $1.9 million was estimated for the FY2006-2007 biennium.

State Tax Revenue as a Percent of Gross State Product

This indicator is calculated by dividing total state tax revenue by total Gross State Product (GSP). An increase in the tax share is considered a negative change, considering the three components that comprise GSP: employee compensation, taxes on production and imports and gross operating surplus.

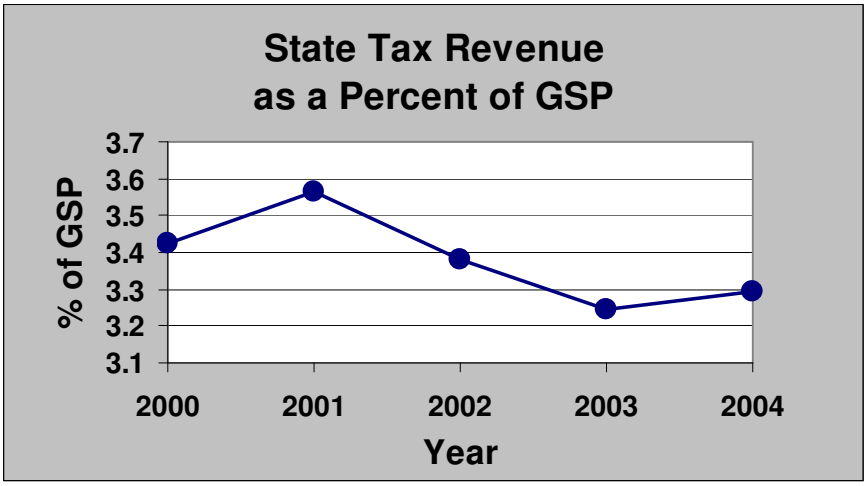
Higher state taxes make a state less attractive to both employers and workers, or for business location and expansion due to the inherently increased costs. However, tax collections are the main funding source for the state's general-revenue appropriations.[23]

State tax revenues include:

- Sales Tax
- Motor Vehicle Sales/Rental, Manufactured Housing Sales and Use Tax
- Motor Fuels Taxes
- Franchise Tax
- Insurance Occupation Taxes
- Natural Gas Production Tax
- Cigarette and Tobacco Taxes
- Alcoholic Beverages Taxes
- Oil Production Tax
- Inheritance Tax
- Utility Taxes
- Hotel and Motel Tax
- Other

> *"Taxes are expected to yield $54.6 billion during the upcoming biennium, contributing 86.3 percent of total net revenues. Compared with the $52.2 billion collected in 2004-05, total general revenue-related tax collections in 2006-07 are expected to register a 4.5 percent increase. As has been the case since 1988, state sales taxes will continue to account for more than half of all state general revenue-related tax collections."*
>
> - Texas Comptroller, Biennial Revenue Estimate 2006-2007 (January 2005)

In 2004, taxes accounted for 45 percent of state revenue, with Sales Tax contributing the largest share of 24.8%. This equated to a 6.8 percent increase from 2003.



SOURCE: Texas Comptroller

When calculated as a percent of GSP, the indicator set a high mark of 3.56 percent in 2001. After a two-year decline, the percentage value rose in 2004 to 3.29 percent.

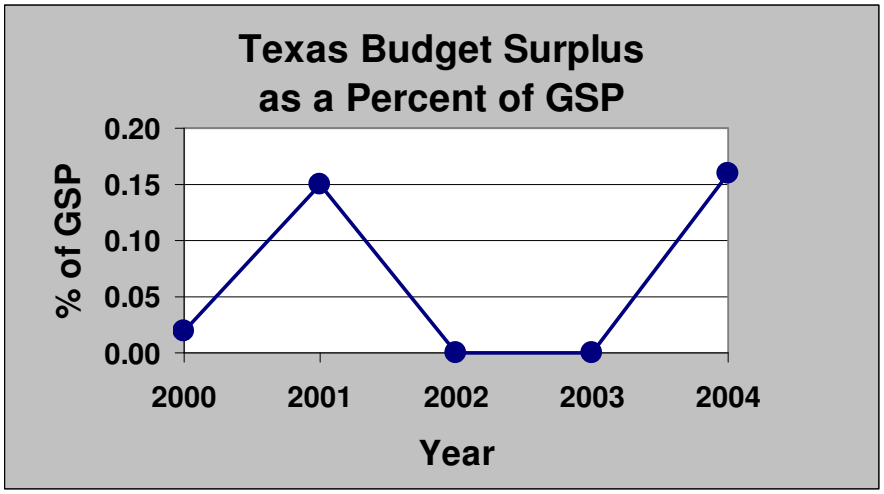
[23] Other general revenue funding sources include (1) non-tax receipts such as fees, lottery proceeds and interest and (2) the ending balance from the previous biennium. [Texas Comptroller]

Texas Budget Surplus as a Percent of Gross State Product

Budget surpluses are generally considered to be an indicator of fiscal responsibility in a healthy economy. As such, the need for business and personal tax increases may be lessened or even repealed. Surpluses, then, contribute to the state's competitive advantage as businesses may find the state a more desirable place to locate or expand.

Texas had a budget surplus in three of the last five years. The highest level was realized in 2004 (in millions):

- 2000 - $ 138.08
- 2001 - $1,154.33
- 2004 - $1,354.43



SOURCE: Texas Comptroller

For the years in which Texas had a state budget surplus, data has been normalized as a percentage of the Gross State Product (GSP). As noted in the **Indicators and Analysis** section, Texas' GSP base level increased annually over the five-year period. When viewed as a percent of GSP, the highest level occurred in 2004 at 0.16 percent.

'Rainy Day' Fund Facts

"… as of January 2005, the ESF contained $831 million, or 3 percent of the general appropriations. The Comptroller estimates the fiscal 2007 ending cash balance … at about $2 billion."

- Texas Comptroller (June 2005)

Texas' Economic Stabilization Fund (ESF) was created by the Legislature in 1987[24].

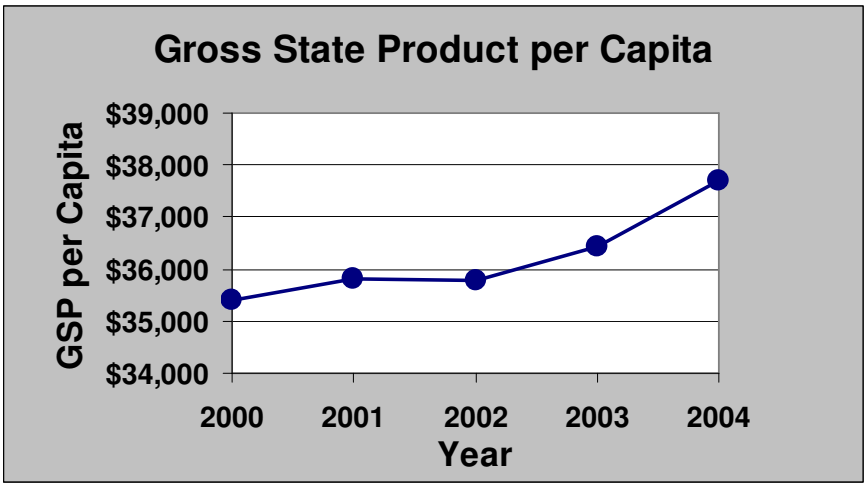
- The ESF is primarily funded with 75 percent of the amount by which oil and gas tax collections in any year exceed 1987 collections and half of any unencumbered general revenue surplus at the end of each biennium.
- It is capped at 10 percent of the general revenue income during the previous biennium.
- A three-fifths vote in both the House and the Senate is required to appropriate money in the fund.
- There is no required balance.

While many states, including Texas, create a stabilization or 'rainy day' fund in an effort to help offset fiscal instability in cases of an economic downturn, budget surpluses afford the legislature and the Governor the opportunity to fund critical pilot projects, economic development innovation projects, like the recently created Texas Entrepreneurship Network[25] and restore funding to vital programs and services cutback during economic hard times.

[24] Added to the Texas Constitution in 1988 as Article 3, Section 49-g. Action by the 70th Legislature in 1987 [HJR 2].
[25] House Bill 1747, enacted by the 79th Texas Legislature, Regular Session.

Gross State Product per Capita

Gross state product (GSP) is typically considered to be the most comprehensive measure of a state's overall economic activity. It is estimated as the sum of three components: employee compensation, taxes on production and imports[26], and gross operating surplus[27]. For this indicator, GSP is presented on a per capita basis. *GSP per capita* provides a measure of the resources available to a country or state relative to the size of its population.



SOURCES: U.S. Census Bureau and Texas Comptroller

As noted in the **Indicators and Analysis** section, Texas' GSP base level has increased annually in recent years, as has the population.

After a slight decline in 2002, the per capita rate increased annually – rising to a high of $37,697.31 in 2004.[28]

Rapid GSP growth indicates a strong economy, while slowed or declining growth rates would be indicative of economic downturn or recession. While increases indicate economic growth, other factors that are not as readily available should be taken into consideration, e.g.:

- *Type of production* – GSP accounts for production quantity, but not what is being produced. Increases may be due in part to less desirable expenditures, including major medical, security system installation, and pollution clean-up.

In 2004, the U.S. experienced strong economic growth, with GSP growing in all 50 states and the District of Columbia. 2004 figures released by the Bureau of Economic Analysis ranked Texas third in GSP, following California and New York. The state's growth rate of 4.5 percent ranked twenty-first.

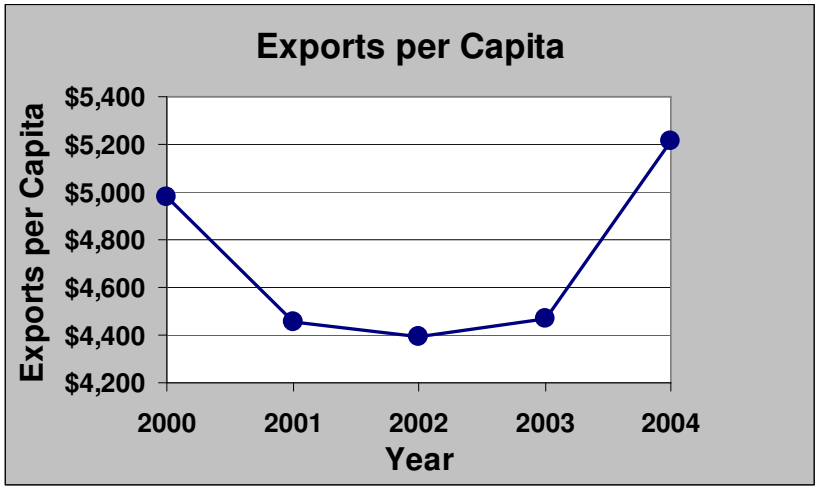
[26] Taxes on production and imports (TOPI) consists of tax liabilities, such as general sales and property taxes, that are chargeable to business expense in the calculation of profit-type incomes. Also included are special assessments. [U.S. Department of Commerce - Bureau of Economic Analysis]
[27] Gross operating surplus includes the losses of corporations, proprietors' losses, and government subsidies – subsidies are subtracted from gross operating surplus. Consequently, gross operating surplus for an industry may be negative. [U.S. Department of Commerce - Bureau of Economic Analysis]
[28] GSP figures are chain-weighted based on 1996 dollars. Chained index weighting is an alternative way of weighting together the subaggregates that form GDP (or GSP). The key difference to the fixed-weight aggregation is that prices are continuously updated; thus, 'substitution bias' is avoided and indicators are independent of the choice of base year. [Organisation for Economic Co-Operation and Development]

Exports per Capita
Export Orientation

A strong export[29] sector is generally viewed as a favorable indication of the ability to compete in both national and global markets. Economies that are more 'open' tend to be more productive and stronger exports are seen during robust economic times.

Export data is reported with two indicators; a per capita basis and through export orientation as a percentage of Texas GSP.

Per capita exports, represented here, indicate the total state exports (i.e., trade in goods and services exported to the rest of the world), divided by the Texas population. The per capita rate rose 16.6 percent in 2004, setting the five-year high of $5,213.



SOURCES: U.S. Census Bureau and Texas Business and Industry Data Center

Export Orientation can be defined in terms of a trade openness ratio expressed as a percentage of GSP (i.e., export value per dollars of GSP.). There has been no significant change in recent years, as both export valuation and GSP increased annually. Based on data from the Texas Business and Industry Data Center and the Texas Comptroller, the high ratio of 0.14 (also expressed as 14 percent) in the year 2000 was matched in 2004, after declining to a ratio of 0.12 (12 percent) in each of the intervening years. (These ratios may also be interpreted in terms of dollars per GSP; for example, $0.14 of each dollar of GSP is attributable to exports.)

Increasing export orientation, and its contribution to the state's GSP, is desirable; more goods exported by Texas businesses represent more capital investment, higher wages, and more new jobs.

Exports in technology-intensive industries are becoming increasingly more important in today's economy. Figures released by the AeA trade association in *Cyberstates 2005*™ indicated that Texas led the nation in high-tech export growth – experiencing a $13 billion growth surge between 1998 and 2004. In 2004, high-tech exports represented 30 percent of Texas' exports – totaling $34.7 billion (second in U.S.).

Rank	State	Exports – Total Dollar Value		
		2002	2003	2004
1	Texas	$95.40	$98.85	$117.24
2	California	$92.21	$93.99	$109.97
3	New York	$36.98	$39.18	$44.40

SOURCE: U.S. Census Bureau - Foreign Trade Division [in billions]

In 2004, for the third year in a row, Texas was ranked as the number one state by export revenues. Texas exports for 2004 totaled $117.2 billion … an 18.3 percent increase.[30]

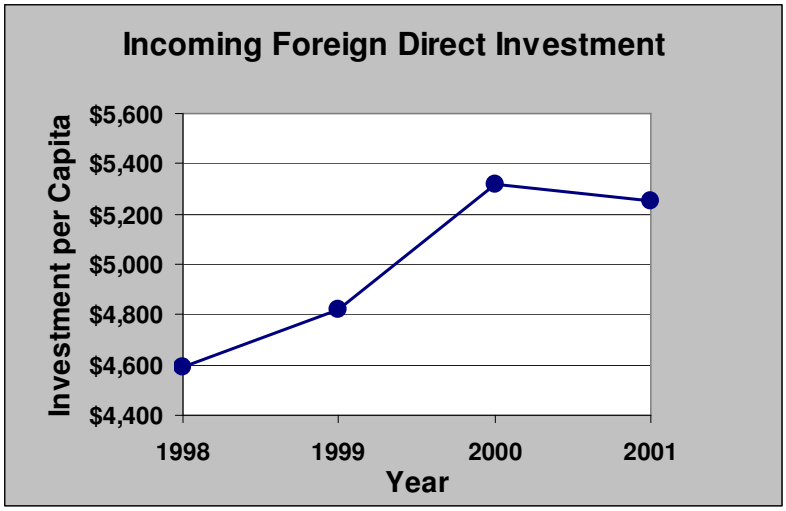
[29] Export – A domestic good or service that is sold to a foreign resident from a U.S. resident. Exports include government and nongovernment goods and services; however, they exclude goods and services sold to the U.S. military and diplomatic and consular institutions abroad. Exports do include goods and services that were previously imported. [U.S. Department of Labor - Bureau of Labor Statistics]
[30] Texas Business and Industry Data Center.

Incoming Foreign Direct Investment per Capita

Foreign direct investment (FDI)[31] is the inflow of direct foreign capital to the state. For comparative purposes, it has been calculated on a per capita basis.

According to the Organisation for Economic Co-Operation and Development (OECD), the investment is not required to establish controlling interest in a business to be included in the calculation.

As with other investment areas, increased foreign investment levels have a positive impact, particularly in today's globally competitive markets. The availability of this new capital leads to the technology development or transfer and also broadens company marketing strategies.



SOURCES: U.S. Census Bureau and Texas Business and Industry Data Center

> *"Outlays by foreign direct investors to acquire or to establish U.S. businesses rose for the second consecutive year to $79.8 billion in 2004, up 26 percent from a revised $63.6 billion in 2003 ... Despite the increases, outlays in 2004 were still less than in 1998-2001, when new investment outlays were historically high, ranging from $147.1 billion to $335.6 billion."*
>
> - U.S. Department of Commerce - Bureau of Economic Analysis (June 2005)

The most recent data available for this indicator is for 2001. After a 10.3 percent increase to $5,316.23 in 2000, the per capita rate decreased 1.1 percent in 2001 to $5,254.59.

It is anticipated that data from more recent years may show a further decline due to the combined effect of investment decreases following the boom of the late 1990s and increases in the Texas population count.

Increasing direct foreign investment in Texas has been a key priority of the Governor's office for several years. The direct benefits of such investments are clearly demonstrated by the decision of Toyota Motor Manufacturing to build a truck assembly plant in San Antonio. Toyota's decision to locate in Texas is having a positive effect on the state's economy. In addition to the truck plant, 18 new Toyota suppliers have announced they will locate in Texas bringing the total *capital* investment to nearly $1 billion and creating at least 3,500 new jobs in the South Texas region.[32]

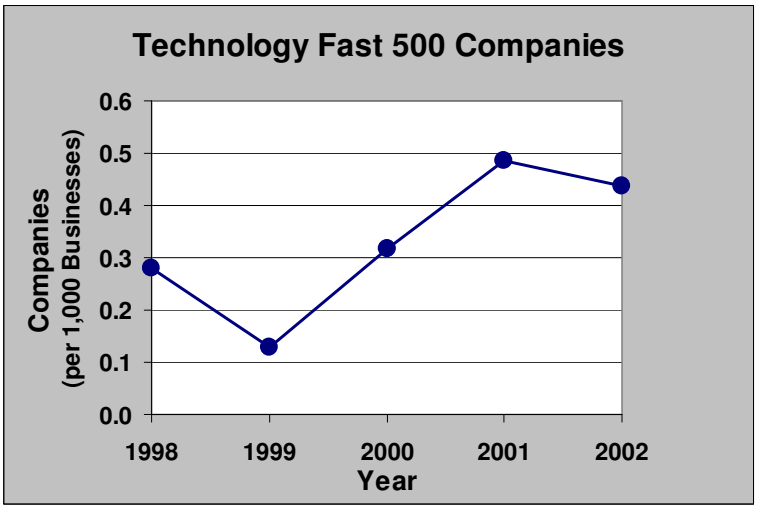
[31] FDI - Ownership or control, directly or indirectly, by one foreign person, or entity, of 10 percent or more of the voting securities of an incorporated enterprise or an equivalent interest in an unincorporated business enterprise. [U.S. Department of Commerce - Bureau of Economic Analysis]
[32] Texas Governor Rick Perry Press Release, August 2, 2005.

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

The Technology Fast 500 North America is one of three industry rankings, accompanied by Asia Pacific 500 and EMEA 500 (Europe, Middle East and Africa), created by Deloitte to recognize the 500 fastest growing technology companies in each region.

The Technology Fast 500 includes public and private companies in all areas of technology including the Internet, biotechnology, medical/scientific and computers/hardware. To be considered, a company must:

- own proprietary technology that contributes to a significant portion of the company's operating revenues, and
- devote a significant proportion of revenues to research and development of technology.



SOURCES: U.S. Census Bureau and Deloitte

Companies must be headquartered in North America, and have been in business a minimum of five years. Base operating revenues must be at least $50,000 USD[33], with current-year operating revenues of at least $1 million USD.

Data is presented per 10,000 Texas-established businesses. The high for the five-year period was set in 2001 at 0.49, before declining to 0.44 in 2002.

The rate could not be calculated for 2003 and beyond, as the number of businesses established, as reported by the U.S. Census Bureau, was not yet available. However, the actual count of Texas-based businesses in the ranking increased during that period. The state's high of 33 businesses in 2004, was second only to California.

[33] United States dollars.

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Summary

The ***Texas Index 2005*** was created to provide a series of indicators that may eventually assist in demonstrating the linkage of workforce development programs and services to state-level economic success. In the short-term, it provides system stakeholders with an indication of the state's general workforce, education and economic health.

Trend lines for the 39 indicators showed the following changes in the most recent reporting cycle:

- *Positive change* – 20 of 39 indicators (51%)
- *No significant change* – 4 of 39 indicators (10%)
- *Negative change* – 14 of 39 indicators (36%)
- *Comparative data unavailable* – 1 indicator (3%)

Texas is faring well in all four domains, with a majority of the indicators reflecting a positive change. However, with 36 percent of the indicators moving in a negative direction, it will be important to watch these critical trend lines in coming years.

Four indicators, flagged with a '⚑ - watch alert' for the next reporting cycle, will deserve close observation in the next data reporting period. These educational attainment and venture capital indicators are critical to a knowledge-based economy, innovation and the commercialization of ideas to the market. These indicators are:

1. Percent of Population 25 Years and Older with High School Diploma
2. Venture Capital per Capita
3. Venture Capital Invested as a Percent of Gross State Product
4. Venture Capital Invested per $1000 of Gross State Product

Another indicator, Workers' Compensation Premiums Cost per Employee, will be affected by reform legislation enacted in 2005 by the 79th Legislature.

Changes in the indicators in the four domains of this index are indicative of:

- Intellectual capital and the availability of a well-educated population to support innovation and commercialization.
- Human capital and the availability of a well-trained labor supply to support the business needs of employers, and increases in worker productivity.
- Financial capital and the availability of funds to support both basic and applied research, as well as product commercialization, firm birth and growth, continued innovation and increased competitiveness in the global marketplace.

Results noted in this index show that Texas is generally doing well in building its asset-base for the future. Of note:

- With the exception of the associate degree rate, all of the enrollment and credential indicators had a positive change.
- Both per capita income and average pay rates rose, and the labor productivity and unemployment rates also improved.
- Positive results were reported for firm births, exports, patents and Gross State Product (GSP) per capita.
- Academic, industry and total research and development expenditure rates all rose.

However, several related indicators reflected a negative change: venture capital, foreign direct investment and federal National Institutes of Health, National Science Foundation and Small Business Investment Companies funding. A negative trend in these areas may adversely impact the potential for innovation, entrepreneurship and economic growth. Future funding and support for research and development, additional venture capital investment and other financing for business start-up and expansion will reverse these trends.

The state's continued efforts to improve intellectual, human and financial capital are paramount to building Texas' assets for the future. As previously noted, several key state legislative efforts have been enacted in recent years to address the need to sustain and grow a dynamic economy. For example, the state's industry clusters initiative and the Emerging Technology Fund should positively impact a number of the indicators in the coming years.

All partners of the Texas Workforce Development System play a vital role through their mandated economic, educational and workforce development responsibilities. Each must continue to work individually and collaboratively, and with private entities, to develop a cohesive system that meets the needs of employers and participants today and in the future. Key efforts should include:

- Research and development support must be leveraged for growth within the state, as well as nationally.
- Workforce and education initiatives, particularly in the fields of science, math and engineering, must be designed to ensure that an adequate, well-trained labor supply is available for current jobs with new skill requirements, as well as new jobs.
- Business growth and expansion must be supported, including efforts aimed at retaining and commercializing intellectual property developed within the state.

The Texas Index will be produced annually for distribution to the Council, policy makers and workforce system partners and stakeholders. Work will continue to regularly validate data sources for currency, accuracy and reliability; review and evaluate secondary data sources; and collect additional comparative data for inclusion in future releases. Next year's report will include the rate of change from the previous reporting cycle to the most recent reporting cycle for all indicators.

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