Metrics 2002:

Measuring Indiana's Technology Progress

Fiscal Policy Report No. 21

May 2002

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The Indiana Fiscal Policy Institute (IFPI), formed in 1987, is a private non-profit governmental research organization. It is the only independent statewide source of continuing research into the impact of state taxing and spending policies in Indiana. The IFPI is privately supported by a variety of organizations, corporations, associations, and individuals in Indiana and surrounding states. Contributions to the IFPI are fully deductible under section 501 (c)(3) of the Internal Revenue Code.

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Executive Summary

The path toward diversification for the Indiana economy starts with the measurement of indices essential to the development of the technology sector. The state's economy is highly dependent upon slow growth industries like manufacturing. The eroding employment base is cause for concern as the most recent recession demonstrated, Indiana lost more jobs in total and percentage terms than any other state. Indiana is struggling to find a new economic identity as the economy transitions from old, mainstay industries to new, more technology-based businesses that have dominated the growth in the national economy in recent years.

As the new economy unfolds, it is important to measure the state's movement and identify possible deficiencies that could hamper its' development. One way to measure these changes is to identify key metrics and track them over time as updated information comes available. The selection of which metrics to follow becomes an important step in the process. The Indiana Technology Partnership in collaboration with the Indiana Fiscal Policy Institute conducted research and after reviewing data sources identified six key metrics for Indiana: Educational Attainment, Scientists and Engineers in the Workforce, Patents Per Worker, R & D Expenditures, Venture Capital, and High-Tech Workers.

The metrics play a key role in diversifying the state's economy as they provide an assessment gap of where Indiana is currently and where it needs to be. In addition to tracking each metric, ITP has set as its goal to move Indiana from its current ranking in each of the measures to the top quartile, twelfth or above by 2005. While achieving such a move is a challenging task, goals can help identify or focus on a desired outcome and set forth objectives on which progress can be measured. In much the same way the use of metrics can be used to help Indiana along the way to economic diversification.

Findings

1. Although educational attainment as measured by the percent of the population 25 and over with at least a Bachelor's Degree has increased four fold in the state since 1950, Indiana still lags behind the rest of the nation in the measure.

2. According to Decennial Census data, Indiana has ranked either 45th or 46th among the states in educational attainment since 1970.

3. Over the past 12 years, Indiana has consistently ranked either 48th, 49th, or 50th in educational attainment as measured by the Current Population Survey.

4. The percent of Doctoral Scientists and Engineers in the Indiana workforce has increased to .34% in 1999, moving Indiana up six ranking spots (from 46th to 38th) from the last biennial survey in 1997.

5. After maintaining a rank in the mid-teens throughout much of the 1980s, Indiana's utility patents per thousand workers rank fell and has been either 24th or 25th since 1994.

6. Indiana's total research and development expenditures [which includes Federal Government, Private Industry, Universities & Colleges, and Not-for-profits] as a percent of gross state product has declined since 1987 from a ranking of 20th to a ranking of 31st in 1999, the most recent survey.

7. Private industry research and development as a percent of gross state product has declined as well in comparison with other states, falling from 15th in 1987 to 25th in 2000.

8. Nationwide, venture capital dollars invested went from $17.6 billion in 1998 to $91.6 billion in 2000, increasing more than fivefold.

9. Among the fifty states, Indiana's venture capital financings grew the fastest, from $8.0 million in 1998 to 177.8 million in 2000.

10. In 2001, venture capital financings dropped 65% on the national level and 84% in Indiana. Taken as a percent of gross state product, Indiana ranked 38th in the nation in 2001.

11. Technology employment in 2000 dropped one spot to 32nd in the nation with Indiana having 4.1% of it's workforce employed in the tech sector.

Metrics 2002: Measuring Indiana's Technology Progress

Introduction

Perhaps it is the love of sports in American society, but everywhere you turn today in the public policy arena, there is a new scorecard. We rate restaurants, schools, investments, parks, sports teams, businesses, and political candidates. It should be no surprise that a number of scorecards exist for measuring the attractiveness of a place for new business investment and the progress of a place in bringing in new investment. Indiana is a state with an economy heavily weighted toward manufacturing. It is also a state, like many others, whose leaders have expressed a desire for more rapid growth in the technology sector. This report looks at ways to measure the state's progress on that diversification path.

The metrics presented in this report were assembled after reviewing a number of national sources, refined in some cases and then tracked historically in order to provide context to Indiana's current position. The selection process included collaboration between the Indiana Technology Partnership [ITP], whose membership provides economic development leadership in the technological sector to the state of Indiana, and the Indiana Fiscal Policy Institute. [The full report will be available at the IFPI Website, www.indianafiscal.org] ITP has set as its goal to move Indiana from its current ranking in each of these measures to the top quartile, twelfth or above by 2005. Although that is an aggressive goal by the organization's own admission, ITP is clear about its desire to have progress measured in an objective and independent manner.

Indiana's Technology Metrics		
Metric_ One	=	Educational Attainment
Metric_ Two	=	Scientists and Engineers in the Workforce
Metric_ Three	=	Patents Per Worker
Metric_ Four	=	R & D Expenditures as % of GSP
Metric_ Five	=	Venture Capital as % of GSP
Metric_ Six	=	High Tech Workers as % of Workforce

The six metrics discussed in this report are designed to gauge Indiana's movement toward the new economy and identify possible deficiencies that could hamper its' development. Indiana is a state that does not rank at the top in most comparisons of high-tech intensive regions**.** Many national rankings simply demonstrate the agglomeration of high technology businesses that has already occurred over the past 15 to 20 years in key regions throughout the US. These metrics were chosen to measure innovation capacity and growth. They are designed to help Indiana focus on those areas most critical to spur technology development.

Successful high technology economic development strategies are geared to innovation. Rather than simply low costs, small and developing technologically oriented firms find their competitive advantage in learning, creativity, and adaptation.[1] As a result, metrics geared toward progress in attracting high technology investment must reflect the importance of human capital and the innovative concepts developed as a result, as well as the more traditional financial capital.

While measurement is important – not just any measurement will do. The measures must

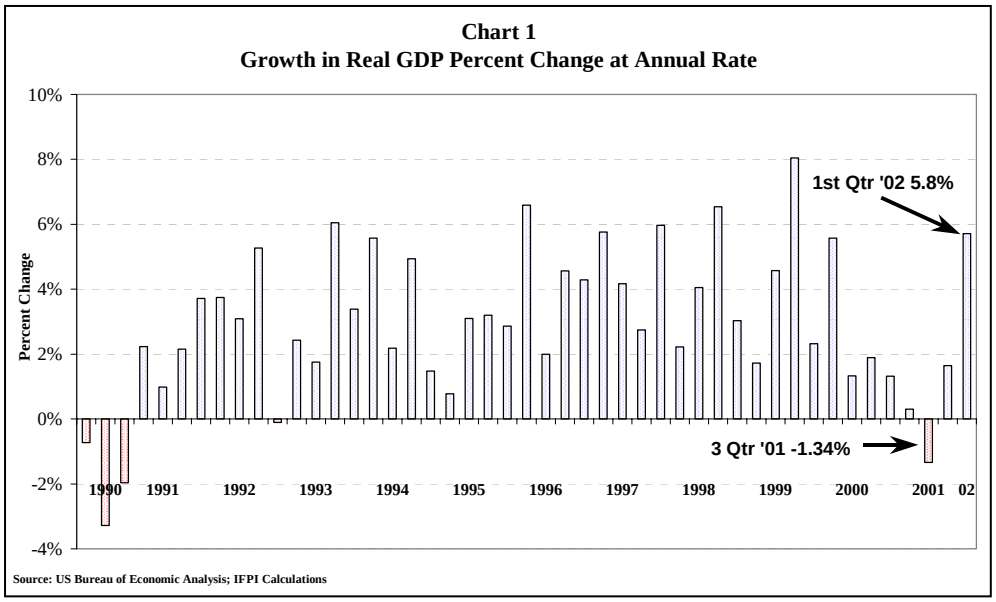
- embody or point to the appropriate goal,
- be outcome directed, whether the outcome is intermediate or final,

- have legitimacy with stakeholders throughout the community,[2] and
- the underlying data must be available for periodic and consistent measurement

Measurement tools must focus on parameters that accurately identify change over time. They must also measure the "right" change. The measurement of outcomes and outputs, are far superior to measurement of inputs. Like any scientifically accountable process, the metrics in this report are replicable by others. The sources for the data are nationally recognized and available to anyone. The Appendices to this report provide additional information on the data sources and computations.

The Current Economic Climate

Indiana, along with the rest of the nation, is in a recession that began in the spring of 2001.



The economy is showing signs of emerging from the current downturn, but Indiana's employment and governmental revenues continue to exhibit the stress due to a slowed economy. The state has lost 101,400 jobs, more than any other state in total as well as percentage terms during this recession, and it will take some time for the region's employment picture to grow back to pre-recession levels. The manufacturing sector is actually more distressed nationally than the early 1990's recession. Indiana has lost 76,900 manufacturing jobs, some of which if past recessions are any indication, will not return.

The impact of the recession and the tech bust will be demonstrated in the data in this report in some cases. With other measurements, the data sources are lagged sufficiently that the most recent data available does not yet show the recession's impact. In every case, the most recent data available nationally was used. The sobering news from the data is this; the gains necessary for Indiana to grow its way into the top quartile of states, are in every case except one, greater this year than when measured in April of 2001.

Indiana in Transition

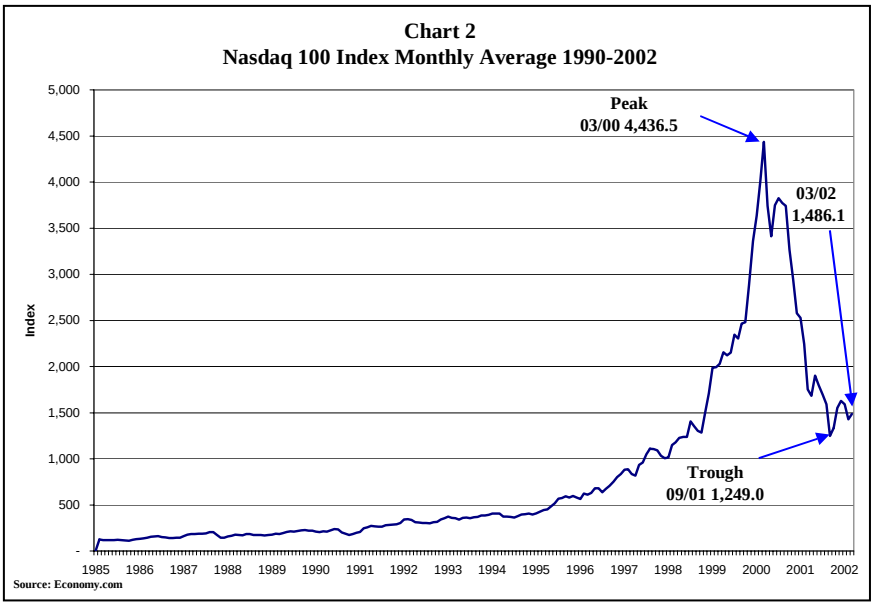
What does all of this mean for measuring progress toward economic diversity in Indiana? In many ways, it provides an excellent base from which to begin. Indiana is facing a crossroads at least three arenas. First, the property tax reassessment standard is changing and that change will have a significant impact on taxpayers across the state. Second, the state's corporate and business tax structure is outdated and is a very real hindrance to economic development. Third, the state faces the challenge created by both past budgeting decisions and the recession and the need to rebalance and reprioritize its fiscal policy. In other words, an opportunity of historic proportions is at hand.

It is time for Indiana to begin looking at its economic world differently. Employment in the manufacturing sector upon which we have always depended has fallen and those jobs are among the slowest growing nationally. Our per capita personal incomes have fallen relative to the rest of the nation and, most troublingly, in comparison with our Midwestern neighbors. Measurements such as employment and personal income provide the results of economic development strategies and endeavors. To move our economy to more diversity, we need to measure the state's progress toward diversification and the new economy. The inputs that policymakers choose to employ and which will create the climate necessary to grow these new and expanded sectors of our economy are important as well. Most importantly, we must monitor and report metrics that are much more specifically pointed at the results we wish to achieve.

What has happened in "High Tech?"

High tech jobs are among the fastest growing and, as an economic sector, technology related industries have powered the fastest growing, most economically diverse, states and regions. So, rather than continuing our dependence on old economy industries, we have an opportunity to embrace the high tech world that will lead our nation's economic growth in the 21st century.

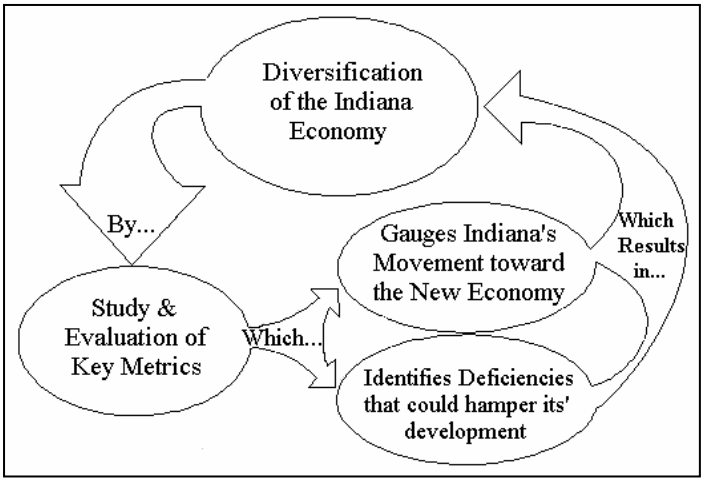
The recession, and the period leading up to it, has been particularly hard on the "tech sector," as it is called in the equity market vernacular. The rise and fall of the NASDAQ that chronicled the "high tech bubble" impacted many entrepreneurs, investors, and workers. Clearly, there has been a real shaking out of the high tech revolution and its "new economy." At the same time, the future of high tech is the future of our nation's, and the world's, economy. In spite of the recent rocky road, the



record long economic expansion of the 1990s both set the stage for and provided a glimpse of a new economic future.

Why is measurement so important and what are the "right" Metrics?

Goals help us identify or focus on a desired outcome and set forth attainable objectives on which progress can be measured. In much the same way the study and evaluation of Metrics can be utilized to guide public policy in the economic development arena. The state of Indiana is in a transition phase from a goods-producing economy to one more focused on knowledge. If the strategy of policymakers is to diversify the economy, then progress should be measured in areas conducive toward development.



The six metrics discussed in this report are designed to gauge Indiana's movement toward the new economy and identify possible deficiencies that could hamper its' development. According to DeVol, "a proper venue of public policy or development strategy that is intended to strengthen the development of high-tech industries is an important endeavor."[3] Once deficiencies are recognized, proper action can take place through thoughtful and informed leadership. Continued study of Metrics will allow policymakers and stakeholders to witness the progress the state is making toward its' goals.

The usefulness of Metrics should not be underestimated in steering or driving public policy goals. According to the Kentucky Long-term Policy Research Center's report "Challenges for the New Century," "by advancing a **new development mindset** statewide and quickly fashioning the tools needed to give life to the economy it envisions, we can begin to capture some of the incredible energy of the Digital Economy and reap more of its reward…"[4]

Technology and Economic Development

This analysis is focused on measuring Indiana's progress in developing centers of high technology throughout the state. In particular, this state has been identified as having business clusters in the life sciences, informatics, and advanced manufacturing. Each of these clusters has a unique technological focus that is important to the development of the state's economy. In order to achieve a more diversified economy and a higher concentration of these technologically intensive sectors, the state must make progress on those key areas important to technology rich businesses.

Although some economists and business theorists still dispute the importance of technology, for most regions in the US, the verdict is in – "high-tech" is a key part of their local development strategy. "Since the 1990-91 recession, growth in the high-tech sector has been four times as large as growth in the aggregate economy. During the 1980's, the high-tech sector grew approximately twice as fast as the economy."[5] No one wants to admit to an attempt to clone Silicon Valley, but in every locale where economic growth has lagged the US average, business and political leaders are intent on attracting more "high-tech" investment to spur growth.

Unfortunately, choosing to concentrate on high-tech is a step into muddy water. Defining which industries make up the high-technology sector is a difficult if not dangerous challenge. One recent study of the role of high technology in economic development used "a methodology that includes industries that spend an above average amount of revenue on research and development and that employ an above industry-average number of technology-using occupations – such as scientists, engineers, mathematicians, and programmers."[6] However each region may find that a different grouping of high-tech industries will prove advantageous for their unique economic development strategy. Indiana and Central Indiana have identified life sciences, informatics, and advanced manufacturing as critical clusters for this region's growth.[7]

Metric 1: Educational Attainment

The new economy will need "knowledge workers[8]." "[T]he great majority of the new jobs require qualifications the industrial worker does not possess and is poorly equipped to acquire. They require a good deal of formal education and the ability to acquire and to apply theoretical and analytical knowledge.[9]" While Peter Drucker made that statement about the importance of education in the current and future economies several years ago, it is even truer today.

$$M1_{is} = \frac{x_{is}}{p_{is}}$$

where: **x** = the total population 25 and over with at least a Bachelor's Degree in state s and year i.
p = the total population 25 and over in state s and year i.

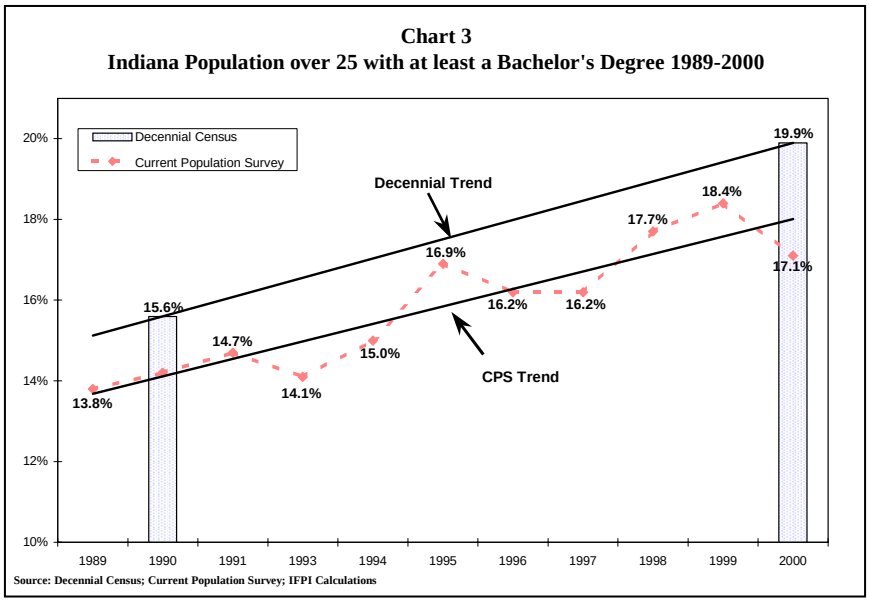
States successful in creating technology intensive, new economy business climates will have more jobs filled by knowledge workers. Those states will see increases in the number of workers with a bachelor's degree or more, as a percent of the total workforce, although that is an incomplete definition of a knowledge worker. If Indiana is making progress in diversifying toward a more technology-based economy, this metric will help to record it.

The measure of educational attainment used as Metric One is defined as the number of persons over age 25 with a bachelor's degree divided by the total population over 25. The Census Bureau reports the data on several of its population measurements.

1. **Decennial Census**. The broadest, most in-depth, and most accurate is the decennial census count for which the Census 2000 educational attainment comparisons are not yet available.

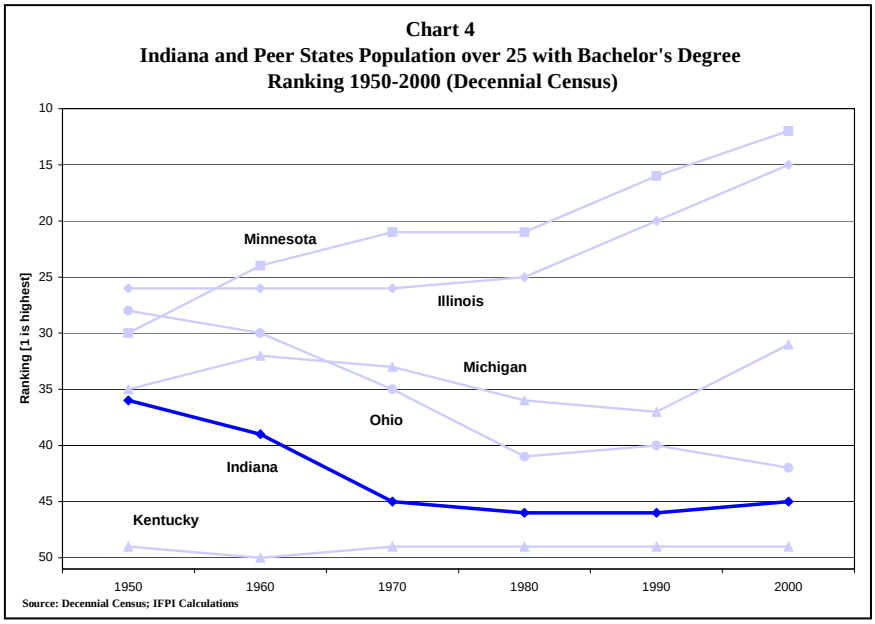
2. **Census 2000 Supplemental Survey**. The C2000ss is a large survey which was done for the first time in conjunction with the 2000 decennial count. The data from the C2000ss was released last year. The data, from approximately 700,000 households nationwide provides the most accurate picture yet, until the 2000 decennial census reports are available.

3. **Current Population Survey**. The CPS is a survey done monthly, with the primary objective of obtaining labor force and employment data. Each year, in March, a broader set of questions is asked, including educational attainment related items. The CPS surveys a sample of 47,000 housing units nationwide.



The measure chosen to track educational attainment progress in Indiana employs the CPS, because it is annually updated. Unfortunately, due to the work on the Decennial Census, the U.S. Census bureau reports that release of the CPS data for 2001 will be delayed until late 2002. This delay makes the tracking of Indiana's progress on educational attainment difficult, but not impossible. The one piece of additional information on educational attainment comparisons across states comes from the Census 2000 Supplemental Survey, [C2000ss]. Because the C2000ss is based on a very large sample, the estimated values for educational attainment by state are properly comparable to those from the Decennial Census of past years. In fact, it is not possible to make accurate comparisons between the CPS and either a Decennial Census or C2000ss ranking.

Measured by the Decennial Census figures, Indiana has ranked either 45th or 46th among the states in educational attainment since 1970. Over the past 12 years, our state has consistently ranked either 48th, 49th, or 50th in educational attainment as measured by the CPS. The picture presented by both of



these measures is that while we are improving in the percentage of bachelor's degreed graduates in our workforce aged population, we are only improving at about the same rate as the rest of the nation.

Like any set of comparisons, educational attainment statistics may be misused. In 2000, 10.4% of Indiana's population aged 18-24 had completed a Bachelor's Degree. That statistic ranked Indiana 5th among the 25 most populous states, ahead of Illinois, Michigan, Ohio, and Kentucky. However, most demographers agree that the percentage of college graduates in the 18-24 year old population simply indicates those young people who are in graduate school or in transition to a more permanent job. In fact, this high statistic is indicative of the difficulty that baccalaureate degree recipients in Indiana have in finding a job. The reason that Metric One measures educational attainment in the age 25 and up population is that this cohort represents the workforce age group.

Although Indiana's manufacturing base represents a handicap to be overcome in terms of its educational attainment ratio, some surrounding states are doing much better. Illinois ranked 26th among the 50 states and the District of Columbia in 1970 and is now 15th. Minnesota was 21st in 1970 according to Decennial Census data and is now at 12th.

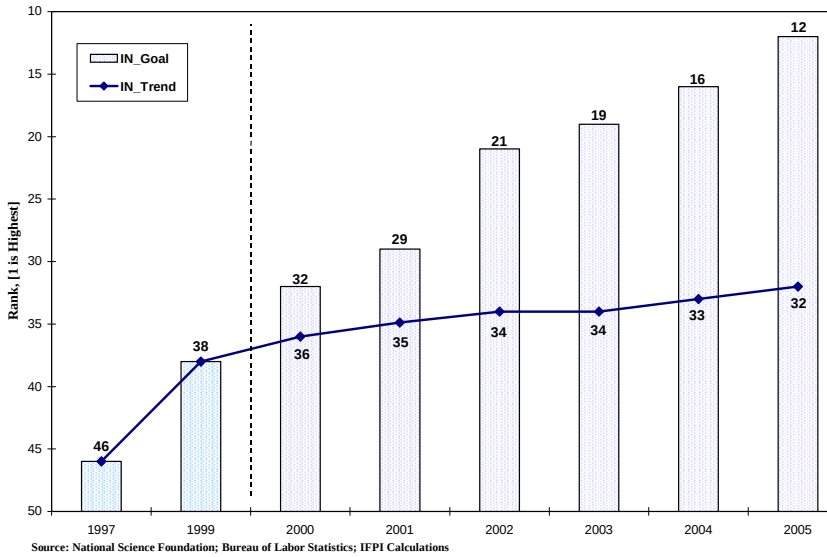
Metric 2: Scientists & Engineers as % of Workforce

$$M2_{is} = \frac{x_{is}}{e_{is}}$$

where: **x** = the total number of Civilian Doctoral Scientists and Engineers in state s and year i.
e = the total non-farm, non-seasonally adjusted employment in state s and year i.

Innovation, research, and technological change are all related to the portion of the workforce holding advanced degrees. Consequently, as a state or region becomes more successful in growing the physical, informational and biological portions of its high tech economy, the numbers of scientists and engineers employed will increase. To the extent that Indiana has success in these sectors, this metric will document those changes as the percent of scientists and engineers in Indiana's workforce increases relative to other states. This metric is calculated by dividing the number of doctoral scientists and engineers by the

Chart 5
Indiana Scientists and Engineers % of Workforce
Ranking from 1997-1999; 2000-2005 Estimated



Source: National Science Foundation; Bureau of Labor Statistics; IFPI Calculations

total number employed within the state. The numerator of the fraction is reported by the National Science Foundation (every two years) from its survey work. The denominator, total establishment employment is available from the Bureau of Labor Statistics (published monthly, quarterly, and annually).

According to the most recent data, Indiana has increased in its ranking for Metric Two, rising from 46th as reported on the 1997 NSF Survey results to 38th in 1999. Over the two year period, Indiana's growth rate in this measure was the highest in the nation.

Although the State has performed well in the most recent period on this measure, the longer term trend for scientists and engineers in the workforce is still far short of the stated objective. If current trends continue, Indiana will be only 32nd in ranking at the end of 2005, rather than the desired 12th.

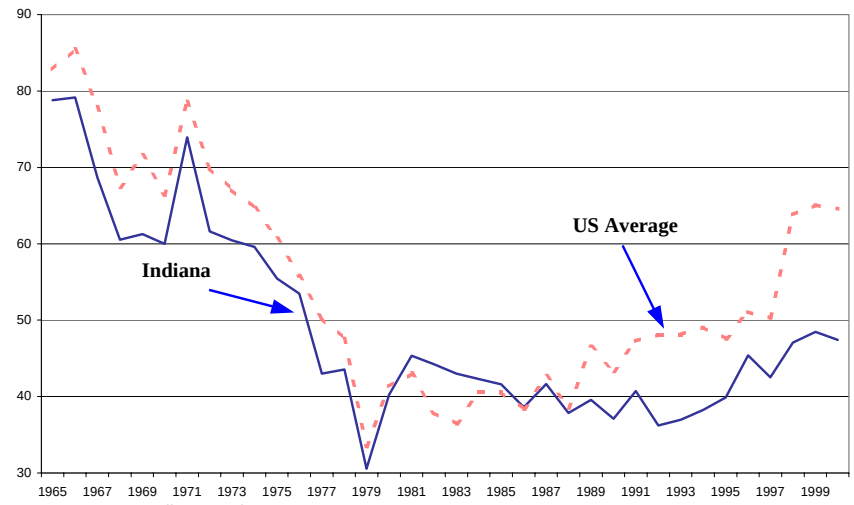
Metric 3: Patents per Worker

Patents are a direct measure of innovation and are also related to manufacturing. As the U.S. declined as a manufacturing power over the past 4 decades, patents per worked declined as well. There is evidence of a disturbing trend in this metric starting about 1989. Although declining, through 1988, the trend in patents per worker in Indiana was nearly identical to that shown by the national statistic. But through the 1990s, patents per worker in Indiana lagged farther behind. By 2000, Indiana was at 73% of the nation.

$$M3_{is} = \frac{x_{is}}{e_{is}}$$

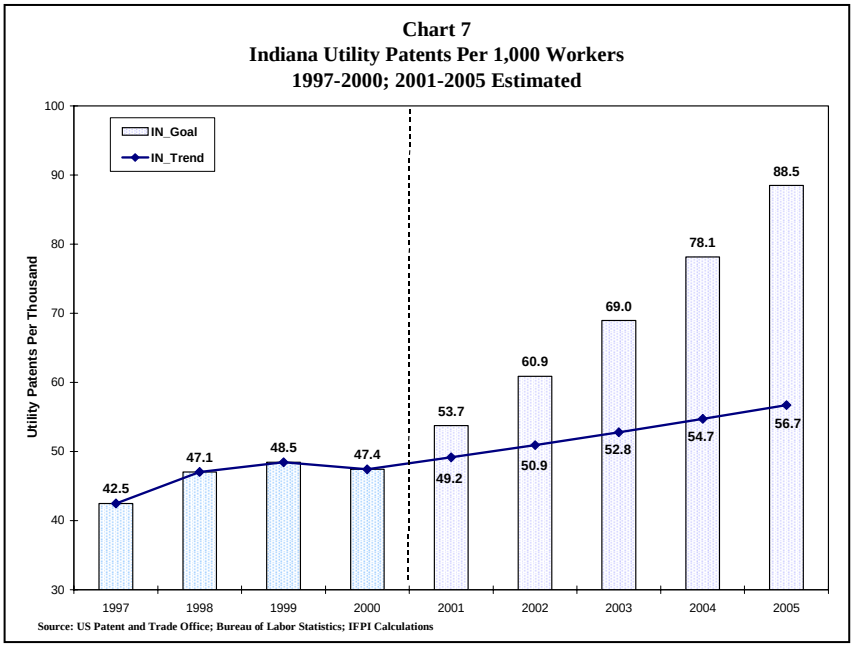
where: **x** = the total Utility Patents in state s and year i.
e = the total non-farm, non-seasonally adjusted employment in state s and year i.

Chart 6
Indiana and US Utility Patents Per Thousand Workers, 1965-2000



Source: US Patent and Trade Office; Bureau of Labor Statistics; IFPI Calculations

Metric Three is calculated by dividing the number of utility patents by total employment and then multiplying the quotient by one hundred. The U.S. Patent Office reports the patent data and the Bureau of Labor Statistics reports the data for employment. Since patent "production" is a proxy for innovative activity, similar trends between this metric and other economic trends are not surprising. A state like Idaho which has developed a technological center around Boise has gone from a ranking of 31st in 1980 to 1st in 2000. Michigan both a manufacturing state and one that has headquarters for



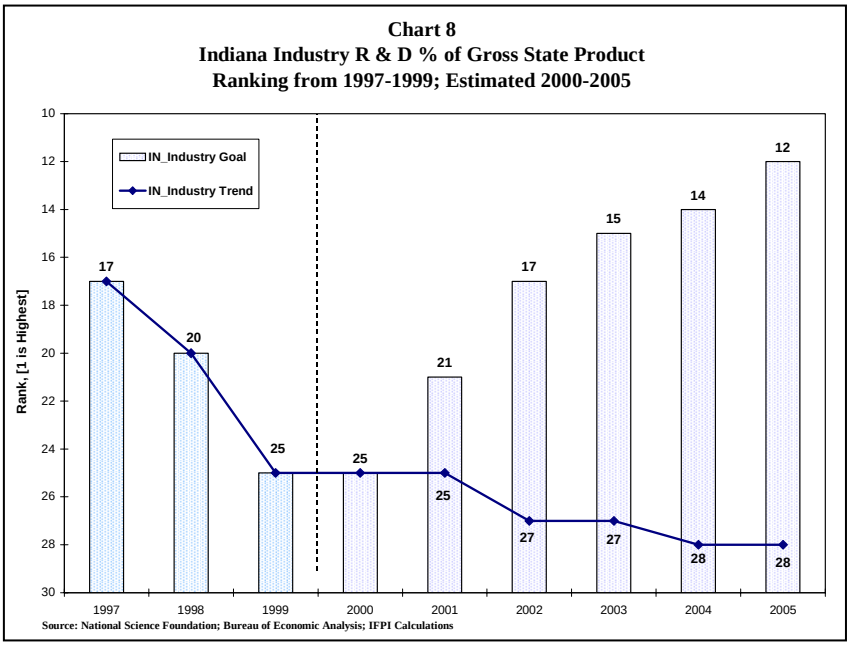
its industries has maintained a top 5 ranking for most of the past 20 years. Indiana was 16th in 1980 and ranks 24th on the 2000 data. The trend for our State is flat, maintaining a middle ranking among the states, unless significant adjustments are made.

$$M4_{is} = \frac{x_{is}}{g_{is}}$$

where: **x** = the total industry expenditure on Research and Development in state s and year i.
g = the gross state product in state s and year i.

Metric 4: Investment in R&D Index

Research and development (R&D) is at the heart of innovation. The investment is measured by the National Science Foundation and available at a point in time that is usually a couple of years old. At this time, the most recent data is for 1999. This metric uses a "destination" measure of R&D funding – the data are based on where the funding is spent. To make the data comparable across the



states, R&D funding is expressed as an index – R&D funding as a percent of gross state product times 100.

There are two versions of this metric. Some national comparisons in R&D funding use research and development expenditures within private industry. The NSF survey separates Industry, the Federal government, Universities, and the not-for-profit sector. Last year Indiana ranked 20th on the industry only measure and 26th on the Total R&D metric. Since 1987, Indiana has declined in comparison to other states, from 15th on the Industry metric to 25th in 2000. On the Total R&D metric, Indiana has declined from 20th in 1987 to 31st in the most recent year. The National Science Foundation reports the R&D expenditures statistic and the Bureau of Economic Analysis (U.S. Department of Commerce) reports gross state product.

Metric 5: Venture Capital Index

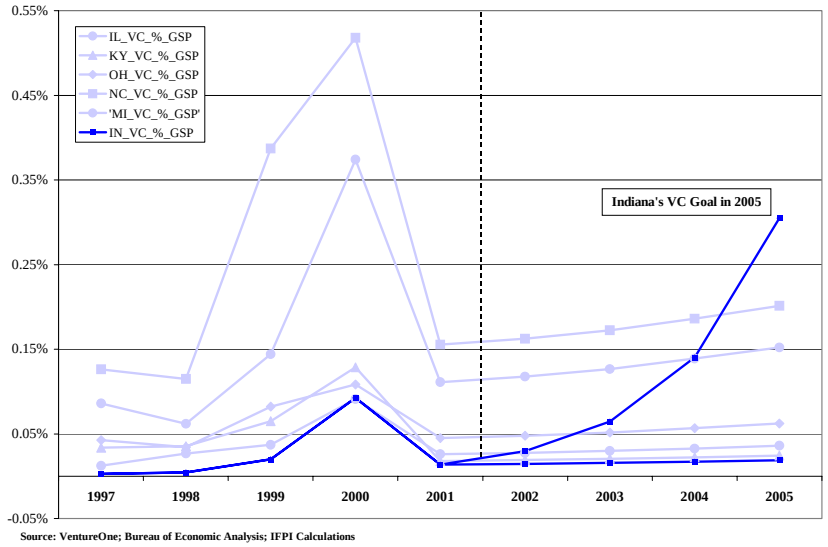
$$M5_{is} = \frac{x_{is}}{g_{is}}$$

where: **x** = the total Venture Capital Financings in state s and year i.
g = the gross state product in state s and year i.

Venture capital has been called the fuel that propelled the new economy during the 1990's. Metric Five compares states on venture capital as a percent of gross state product. VC data is supplied by VentureOne, and is defined as "equity financings including cash investments by professional venture capital firms, corporations, venture lessors, other private equity firms, and individuals into companies that have received at least one round of venture funding."

The decline in the equity values within the technology sector within the past two years is reflected in the level of venture capital financing throughout the nation. Nationwide, venture capital dollars invested went from $17.6 billion in 1998 to 91.6 billion in 2000, increasing more than fivefold. Among the fifty states, Indiana's venture capital financings grew the

Chart 9
Indiana and Peer States VC Financings as a Percentage of GSP
1997-2001; 2002-2005 Estimated



Source: VentureOne; Bureau of Economic Analysis; IFPI Calculations

fastest, from $8.0 million in 1998 to $177.8 million in 2000. However, as the bottom fell out and the nation declined by 65% from 2000 to 2001, Indiana fell by 84%. Indiana's rank is 38th in 2001. The kind of growth experienced in the state in the boom years of 1999 and 2000 would help propel the state into the top quartile.

Metric 6: High Tech Jobs as % of Employment

$$M6_{is} = \frac{x_{is}}{e_{is}}$$

where: **x** = the total Technology Employment in state s and year i.
e = the total non-farm, non-seasonally adjusted employment in state s and year i.

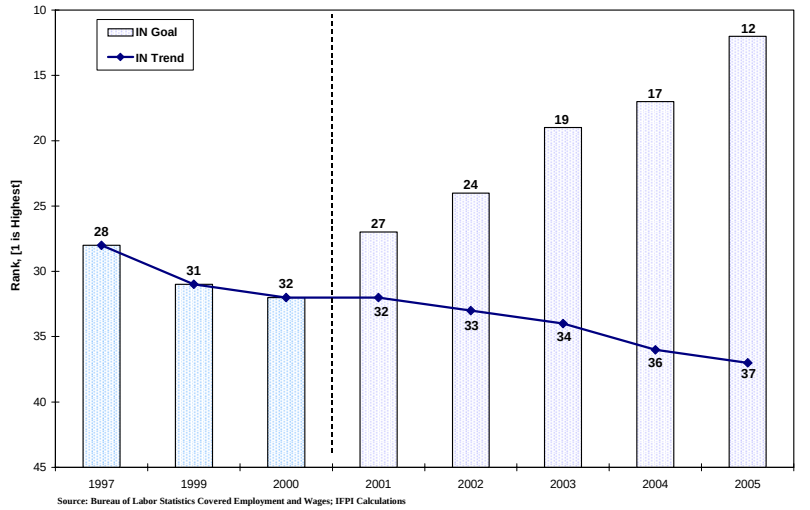
The definitions of what comprises the high technology sector vary widely. This metric used a definition of high tech jobs in 2001 that was focused on the electronics industry [defined by the American Electronics Association] and published in its Cyberstates report. The measure however is generally regarded as too narrow to reflect the breadth of high tech development across the U.S. Specifically, it excludes biotechnology and in doing so eliminates one of the most important areas of technological growth in the nation. This report utilizes a definition of high tech jobs drawn from the AEA standard industrial code classes combined with those cited by economist Ross DeVol in America's High Tech Economy: Growth, Development, and Risks for Metropolitan Areas, 1999. DeVol's definition adds in some aerospace, pharmaceutical, aircraft and general engineering job classes to AEA electronics weighting. The combined definition produces a measure that is less biased to one industry and more reflective of the innovative directions that high tech jobs are taking.

Metric 6: High-Tech Employment
Technology Sector Definition, by SIC

SIC Code	Description	AEA	DeVol
283	Drugs		*
357	Computer & Office Equipment	*	*
365	Communications Equipment	*	
366	Household Audio & Video Equipment	*	*
367	Electronic Components & Accessories	*	*
372	Aircraft & Parts		*
376	Guided Missiles, Space Vehicles, Parts		*
381	Search & Navigation Equipment	*	*
382	Measuring & Controlling Devices	*	*
384	Medical Instruments & Supply	*	*
386	Photographic Equipment & Lenses	*	
481	Telephone Communication	*	*
482	Telegraph & Other Message Communication	*	
484	Cable & Other Pay Television Services	*	
489	Other Communication Services	*	
737	Computer & Data Processing	*	*
781	Motion Picture Production & Services		*
871	Engineering & Architectual Services		*
873	Research & Testing Services		*

Indiana does rank higher in this combined metric [32nd] than it did on the AEA comparison alone [38th in 2000], but the difference while significant is not driving the change. The biomedical and pharmaceutical industries are pushing the technological frontiers and no measure of technological change will be sufficient which excludes these areas.

Chart 10
Indiana High-Tech Employment as a Percent of the Workforce
Ranking from 1997-2000; 2001-2005 Estimated



Metric Six is computed by totaling the employment within the state for the specified SIC's [specified at the three digit level] and dividing by total employment for the state.

Indiana's trend path for this metric is essentially the same whichever definition of high tech employment is used. The state is currently ranked in the low 30's but is trending toward 37th or 38th by 2005, the bottom of the third quartile. Changing the slope of this trend to take the state into the top quartile will not be easy. This metric, perhaps better than any of the others measures the actual work being done in the state – as to its technological focus. If this metric is not substantially improved, Indiana will not become the technological leader of the Midwest.

Analysis of the 6 metrics – Where does Indiana rank?

Indiana is a state with an economy in transition. Like most of its midwestern neighbors, Indiana has been since the 1950's, a manufacturing-based region. The growth in the technology sector that moved much of the nation did little to change the course of this state. In addition, the most recent national economic downturn has not been kind to Indiana and policymakers are looking for boosters to incentivize the new investment everyone so desires. Except for its neighbor to the south, Indiana ranks lower overall on these six metrics than any of its midwestern peers. If its future is to be brighter, than its current forecast, policy changes and visionary leadership are required. These metrics help to point the way that leadership should go.

Indiana and Peer States Metric Ranking Averages

State	M1: Educational Attainment	M2: Doctoral Sci/Eng	M3: Utility Patents	M4: Industry R & D	M5: Venture Capital	M6: High-Tech Jobs	Average Rank
Illinois	17	27	20	19	23	21	**21**
Indiana	50	38	24	25	38	32	**35**
Kentucky	43	47	41	35	36	46	**41**
Michigan	36	29	11	1	34	30	**24**
Minnesota	8	20	6	15	17	15	**14**
Ohio	24	26	22	17	28	31	**25**

[1] Economic Development Strategies for the New Economy, Progressive Policy Institute, www.neweconomyindex.org/states/strategies.html

[2] *Central Indiana Regional Technology Metrics: Measuring Progress toward Technology Goals*, Collaborative Economics, 1999, p. 4.

[3] Ross C. DeVol, *America's High-Tech Economy: Growth, Development, and Risks for Metropolitan Areas*, Milken Institute 1999, Santa Monica, CA p. 99.

[4] Smith-Mello, Michal, Childress, Michael T., Watts, Amy, Watkins, John F. *Challenges for the New Century*, Kentucky Long-Term Policy Institute 2000, Frankfort, Ky, p.100.

[5] DeVol, p.2.

[6] DeVol, p. 35.

[7] *An Economic Analysis of Life Sciences, Informatics, and Advanced Manufacturing in Central Indiana*, Technology Partnership Practice, Battelle Memorial Institute, 2000, p.3.

[8] Drucker, Peter. The Atlantic Monthly; *November, 1994; The Age of Social Transformation; Volume 274, No. 5; pages 53-80.* Drucker states that he first coined the phrase in 1959.

[9] Drucker, Peter. The Atlantic Monthly; *November, 1994; The Age of Social Transformation; Volume 274, No. 5; pages 53-80.*

Appendix A - Educational Attainment

Educational attainment by state is a Census Bureau population subset measure. The measure comes from three places, the annual [March] Current Population Survey, the Decennial Census, and the Census 2000 Supplemental Survey. The ratio of persons age 25 or over with at least a Bachelor's degree constitutes the measure for years 1993-2000. Prior to 1993, the measure is the population with at least 4 years of college or more (this includes decennial census data).

The three data sources all differ in the frequency, sample size, and comparability of the measure. The Decennial Census is the most accurate measure as it covers 19 million households and other institutional and non-institutional settings. The Census 2000 Supplemental Survey (C2SS) is a new measure done as a trial program for the American Community Service to assess the feasibility of collecting census data independent of the actual decennial census. The C2SS surveys 750,000 households. Finally, the Current Population Survey collects monthly data on 47,000 households and every March asks additional questions, including educational attainment, to supplement the CPS's basic labor force oriented questions.

Educational Attainment Statistical Sources Comparison

Measure	Frequency	Sample Size	Comparability	IN Current Status	
Decennial Census (DC)	10 Years	19 million	Prior Decennial Census Data	1990	46
Census 2000 Supplemental Survey (C2SS)	New	700,000	Obsolete when DC data avail.	2000	45
Current Population Survey (CPS)	Monthly	47,000	**Only** Prior Year CPS	2000	50

As a general rule, comparing one survey's data with another is not recommended. For example, comparing educational attainment gathered from the Current Population Survey in one year and comparing it with either Decennial Census or Supplemental Survey data from another or the same year, yields invalid conclusions. However, in the case of the Census 2000 Supplemental Survey, the data was meant to give a "first look" at the actual forthcoming Decennial Census data. Therefore, comparing the Supplement Survey data with prior Decennial Census data was accepted as long as the data was understood as preliminary and would be replaced when actual Decennial Census data was released.

Appendix B - Technology Employment

Technology employment is gathered by SIC code through the Bureau of Labor Statistics Covered Employment and Wages (CEW) as private establishment employment. Several definitions of what constitutes the technology sector exist depending on the judgment and the thought process of the creator. Most definitions seem to hinge upon whether or not high-tech encompasses the invention or research of technology or the use of technology in creating the good or service (i.e.).

High-Tech Employment
Technology Sector Definition, by SIC

SIC	Description	AEA	DeVol	Dig. Econ, 99	BLS, 99
281	Industrial Inorganic Chemicals				*
282	Plastics Materials and Synthetics				*
283	Drugs		*		*
284	Soaps, Cleaners, and Tiolet Goods				*
285	Paints & Allied Products				*
286	Industrial Organic Chemicals				*
287	Agriculture Chemicals				*
289	Misc. Chemical Products				*
291	Petroleum Refining				*
348	Ordnance and Accessories, nec				*
351	Engines and Turbines				*
353	Construction & Related Machinery				*
355	Special Industry Machinery				*
356	General Industrial Machinery				*
357	Computer & Office Equipment	*	*	*	*
361	Electric Distribution Equipment				*
362	Electrical Industrial Apparatus				*
365	Household Audio and Video	*		*	*
366	Communication Equipment	*	*	*	*
367	Electronic Components & Accessories	*	*	*	*
369	Misc. Electrical Equipment			*	
371	Motor Vehicles and Equipment				*
372	Aircraft and Parts		*		*
376	Guided Missiles, Space Vehicles		*		*
381	Search & Navigation Equipment	*	*		*
382	Measuring and Controlling Devices	*	*	*	*
384	Medical Instruments & Supplies	*	*		*
386	Photographic Equipment & Supplies	*			*
481	Telephone Communication	*	*	*	
482	Telegraph & Other Message Communication	*		*	
483	Radio & Television Broadcasting			*	
484	Cable & Other Pay TV Services	*		*	
489	Communications Services	*		*	
504	Wholesale Professional and Commercial Equip			*	
573	Radio , TV, and Computer Stores			*	
737	Electronic Components & Accessories	*	*	*	*
781	Motion Picture Production & Services		*		
871	Engineering & Architectural Services		*	*	*
873	Research & Testing Services		*		*
874	Management & Public Relations				*

For our analysis this distinction was very important as inclusion or exclusion of certain SIC codes can create misleading technology employment indicators. For example, the US Department of Commerce Office of Technology Policy published *The Dynamics of Technology-Based Economic Development State Science and Technology Indicators* in June of 2000. Using a Bureau of Labor Statistics definition of the Technology sector they found Indiana ranked 13th in the nation in percent of employment in technology intensive SIC codes for 1996.[i] However, the definition, because it was based on the idea that a high concentration of R & D investment was indicative of high-tech, included SIC 371, Motor Vehicles and Equipment. Therefore, Indiana's technology sector employment was overstated due to the high number of manufacturing plants associated with the motor vehicle industry. Adjusting the definition by simply removing SIC 371 from the analysis moves Indiana from its 13th ranking all the way down to 40th, a drop of 27 spots.

Based on our research, we wanted a definition that not only more completely defined the high-tech sector, but also, accurately portrayed the technology sector in Indiana. We found

Indiana High-Tech Employment Comparison 2000					
	AEA	**DeVol**	**Digital Economy**	**BLS**	**AEA & DeVol**
US Total Tech Emp	5,326,339	7,901,028	7,007,176	10,503,377	8,263,637
IN Total Tech Emp	67,910	114,027	102,758	274,420	124,625
IN Total Tech Emp Rank	23	21	20	13	21
US Tech Emp % of Total	4.0%	6.0%	5.3%	8.0%	6.3%
IN Tech Emp % of Total	2.3%	3.8%	3.4%	9.1%	4.1%
IN Tech Emp % of Total Rank	38	33	34	9	32

that combining the American Electronics Association definition and the Milken Institute's Ross DeVol definition, yielded a reasonable estimate of the technology sector. Although the definitions are similar, the major difference between the two is that DeVol includes the Biotech Sector in his analysis. Using the combined definition, we were able to better assess the trends in technology sector employment both in nation and in Indiana.

[i] Paul Hadlock, Daniel Hecker, and Joseph Gannon, "High Technology Employment: Another View," *Monthly Labor Review*, July 1991, pp. 26-30.

Appendix C - Metric Definitions

Metric 1: Educational Attainment – a measure of the educational attainment of the workforce.

Numerator: Prior to 1993, Persons 25 and over with 4 Years of College or more.
1993-Current, Persons 25 and over with Bachelor's Degree.
Annual Data is provided by the (March) Current Population Study.*
Data every ten years is provided by the Decennial Census.

*Note: The sample for the March CPS consists of the basic CPS sample and an additional sample of Hispanic households. The basic CPS sample is selected from multiple frames using multiple stages of selection. Each unit is selected with a known probability to represent similar units in the universe. The sample design is a state-based design with the sample in each state being independent of the others. The sample size is sufficient to produce a 1.9 percent coefficient of variation (CV) on the unemployment level for the nation, assuming a 6 percent unemployment rate. Within each state, the sample was designed to meet reliability requirements of 8 percent CVs or lower on the annual average unemployment level, given a 6 percent unemployment rate.

Denominator: Total State Population age 25 and over from Current Population Survey and Decennial Census.

Metric 2: Scientists and Engineers – Civilian scientists and engineers as a percentage of the workforce.

Numerator: Civilian Scientists and Engineers as per survey from National Science Foundation.*

Denominator: State Non-farm, Non-Seasonally Adjusted Employment from the US Bureau of Labor and Statistics.

*Note: Respondent location' is place of employment for those employed, and for those not employed, it is the place where they resided at the time of the interview. Please round the numbers to nearest ten when cited. Since the Survey of Doctorate Recipients sample design does not include geography, the reliability of estimates in some states may be poor due to small sample size.

Metric 3: Patents – The number of utility patents issued per thousand workers.

Numerator: State Utility Patents from the United States Patent and Trade Office.*

Denominator: State Non-farm, Non-Seasonally Adjusted Employment from the US Bureau of Labor and Statistics.

*Note: Utility patents are granted to inventions that embody a new and useful process, machine, article of manufacture, or composition of matter. The origin of a patent is determined by the residence of the first-named inventor at the time of grant.

Metric 4: Investment in R & D – Federal Government, Private Industry, Universities and College, and/or Other Nonprofit Industries as performing sector investment in research and development as a share of either Gross State Product or State Personal Income.

Numerator:* Total R & D – includes expenditure R & D from Federal Government, Industry, Universities and Colleges, and Other Nonprofit Institutions.

Industry R & D – includes expenditure R & D from Federal Government and Industry funding.

University/College R & D – includes expenditure R & D from Federal and Nonfederal government, Industry, Universities and Colleges, and Nonprofit funding.

Denominator: Gross State Product – GSP for a state is derived as the sum of the gross state product originating in all industries in a state as supplied by the US Bureau of Economic Analysis. For each industry, GSP is composed of three components:

- Compensation of employees – the sum of employee wages and salaries and supplements to wages and salaries
- Indirect business tax – is the sum of State and Local IBT, which mainly comprise nonpersonal property taxes, licenses, nontax liabilities, and sales and gross receipts taxes, and Federal IBT, which comprises nontax liabilities and excise taxes on goods and services.
- Nontax liability, and property-type income – comprises proprietors' income and other capital charges.

Personal Income - is the sum of wage and salary disbursements, other labor income, proprietors' income with inventory valuation and capital consumption adjustments, rental income of persons with capital consumption adjustment, personal dividends income, personal interest income, and transfer payments to persons, less personal contributions for social insurance as supplied by the US Bureau of Economic Analysis.

*Note: Industry R&D data by state are in reference to calendar years; other R&D data by state are in reference to fiscal years but may serve as approximations to calendar year data. For consistency with the aggregate national data, the values for the United States Total were rounded to the nearest million. The "other unknown" category was also rounded and taken as the difference between the national aggregates and the sum of the individual state data that are reported here. Therefore, part of the "other unknown" totals reflects the difference in state totals when reported on a fiscal year bases and the US Totals that have been adjusted to calendar year estimates. For

industry, the "other unknown" totals include the survey data that were not assigned to individual states plus the amounts that were reported for individual states but are suppressed here to protect confidentiality of surveyed companies (indicated by "NA"). To protect confidentiality, Total R&D for Alaska exclude Federal support to industry and Total R&D for Wyoming exclude industry support to industry. Therefore, Total R&D amounts are lower-bound estimates for these two states.

Metric 5: Venture Capital – Venture capital invested as a percentage of Gross State Product.

Numerator: State Venture Capital Investments*

Denominator: Gross State Product – defined above.

*Note: Equity financings include cash investments by professional venture capital firms, corporations, venture lessors, other private equity firms, and individuals into companies that have received at least one round of venture funding. No data available for Wyoming, Alaska, North and South Dakota.

Metric 6: High-Tech Jobs – Employment in life sciences, computer equipment, electronics manufacturing, medical supplies, and communications as a share of total employment.

Numerator: State Technology Employment includes technology sector employment by SIC code as defined by the American Electronics Association and by Ross DeVol, Milken Institute. State Employment figures are from the US Bureau of Labor and Statistics (ES-202) Covered Employment and Wages.

Denominator: State Non-farm, Non-Seasonally Adjusted Employment from US Bureau of Labor and Statistics.

Appendix D: State Metric Comparison Tables

Metric 1: Educational Attainment - Current Population Survey, March 1997-2000

Educational Attainment of the Over 25 Population

Percentage of Population with Bachelor's Degrees or Higher

State	1997 Bach. Degree or + %	Rank	1998 Bach. Degree or + %	Rank	1999 Bach. Degree or + %	Rank	2000 Bach. Degree or + %	Rank	2005 Trend Bach. Degree or + %	Rank	2005 Goal Bach. Degree or + %	Rank
Alabama	19.3%	44	20.6%	38	21.8%	36	20.4%	44	25.9%	34	25.9%	35
Alaska	27.5%	9	24.2%	20	25.5%	21	28.1%	13	32.3%	11	32.3%	11
Arizona	19.5%	42	21.9%	32	24.2%	25	24.6%	24	26.3%	32	26.3%	33
Arkansas	14.6%	51	16.2%	51	17.3%	51	18.4%	49	20.5%	48	20.5%	49
California	27.5%	9	26.4%	17	27.1%	13	27.5%	14	29.4%	21	29.4%	22
Colorado	28.9%	5	34.0%	2	38.7%	2	34.6%	2	38.1%	3	38.1%	3
Connecticut	30.0%	4	31.4%	4	33.5%	4	31.6%	7	34.1%	7	34.1%	7
Delaware	26.8%	13	25.1%	19	24.0%	26	24.0%	29	25.5%	35	25.5%	36
District of Columbia	33.7%	1	36.5%	1	42.1%	1	38.3%	1	38.8%	1	38.8%	1
Florida	21.7%	31	22.5%	26	21.6%	38	22.8%	37	25.2%	38	25.2%	39
Georgia	22.3%	29	20.7%	37	21.5%	39	23.1%	35	24.6%	40	24.6%	41
Hawaii	22.5%	26	24.0%	21	26.2%	18	26.3%	20	27.2%	29	27.2%	30
Idaho	19.4%	43	20.3%	41	20.8%	42	20.0%	45	20.7%	46	20.7%	47
Illinois	25.0%	19	25.8%	18	25.6%	19	27.1%	17	31.4%	17	31.4%	18
Indiana	16.2%	49	17.7%	48	18.4%	48	17.1%	50	19.6%	49	32.3%	12
Iowa	21.7%	31	20.3%	41	21.7%	37	25.5%	23	32.2%	12	32.2%	13
Kansas	27.5%	9	28.5%	9	26.5%	17	27.3%	15	29.8%	20	29.8%	21
Kentucky	17.6%	47	20.1%	43	19.8%	46	20.5%	43	23.2%	43	23.2%	44
Louisiana	18.1%	46	19.5%	45	20.7%	43	22.5%	39	28.1%	27	28.1%	28
Maine	20.0%	40	19.2%	47	22.9%	33	24.1%	28	27.1%	30	27.1%	31
Maryland	32.2%	3	31.8%	3	34.7%	3	32.3%	5	37.6%	4	37.6%	4
Massachusetts	33.5%	2	31.0%	5	31.0%	7	32.7%	4	34.8%	6	34.8%	6
Michigan	21.0%	35	22.1%	30	21.3%	40	23.0%	36	26.3%	33	26.3%	34
Minnesota	28.3%	7	31.0%	5	32.0%	5	31.2%	8	38.4%	2	38.4%	2
Mississippi	20.9%	36	19.5%	45	19.2%	47	18.7%	48	19.6%	50	19.6%	50
Missouri	22.9%	23	22.4%	28	23.0%	32	26.2%	21	31.4%	15	31.4%	16
Montana	25.2%	18	23.9%	22	24.0%	26	23.8%	31	25.3%	37	25.3%	38
Nebraska	21.3%	34	20.9%	36	20.4%	44	24.6%	24	30.5%	19	30.5%	20
Nevada	19.9%	41	20.6%	38	20.2%	45	19.3%	46	20.6%	47	20.6%	48
New Hampshire	27.0%	12	26.6%	16	27.2%	12	30.1%	9	33.1%	9	33.1%	9
New Jersey	28.5%	6	30.1%	8	30.5%	8	33.0%	3	31.8%	13	31.8%	14
New Mexico	23.6%	22	23.1%	25	24.5%	23	23.6%	33	24.7%	39	24.7%	40
New York	25.8%	16	26.8%	15	26.9%	14	28.7%	11	32.4%	10	32.4%	10
North Carolina	22.6%	25	23.3%	23	23.9%	28	23.2%	34	27.3%	28	27.3%	29
North Dakota	20.5%	37	22.5%	26	22.3%	34	22.6%	38	24.0%	42	24.0%	43
Ohio	21.5%	33	21.5%	34	25.5%	21	24.6%	24	29.0%	26	29.0%	27
Oklahoma	20.5%	37	20.5%	40	23.7%	30	22.5%	39	24.0%	41	24.0%	42
Oregon	24.3%	20	27.7%	12	26.8%	15	27.2%	16	30.8%	18	30.8%	19
Pennsylvania	22.9%	23	22.1%	30	23.9%	28	24.3%	27	29.3%	23	29.3%	24
Rhode Island	25.7%	17	27.8%	11	26.8%	15	26.4%	18	31.6%	14	31.6%	15
South Carolina	19.2%	45	21.3%	35	20.9%	41	19.0%	47	20.8%	45	20.8%	46
South Dakota	20.1%	39	21.8%	33	25.6%	19	25.7%	22	31.4%	16	31.4%	17
Tennessee	17.1%	48	16.9%	49	17.7%	50	22.0%	41	29.1%	25	29.1%	26
Texas	22.4%	27	23.3%	23	24.4%	24	23.9%	30	25.3%	36	25.3%	37
Utah	26.7%	14	27.6%	13	27.9%	11	26.4%	18	29.4%	22	29.4%	23
Vermont	23.7%	21	27.1%	14	28.3%	10	28.8%	10	33.7%	8	33.7%	8
Virginia	28.0%	8	30.3%	7	31.6%	6	31.9%	6	37.1%	5	37.1%	5
Washington	26.1%	15	28.1%	10	28.6%	9	28.6%	12	29.1%	24	29.1%	25
West Virginia	14.7%	50	16.3%	50	17.9%	49	15.3%	51	18.0%	51	18.0%	51
Wisconsin	22.4%	27	22.3%	29	23.6%	31	23.8%	31	26.9%	31	26.9%	32
Wyoming	22.2%	30	19.8%	44	22.3%	34	20.6%	42	22.3%	44	22.3%	45

Metric 1: Educational Attainment of the over 25 Population, Decennial Census and Census 2000 Supplemental Survey

Percentage with at least 4 years of College

State	1950 4 yrs of College or +	1950 Rank	1960 4 yrs of College or +	1960 Rank	1970 4 yrs of College or +	1970 Rank	1980 4 yrs of College or +	1980 Rank	1990 4 yrs of College or +	1990 Rank	2000* Bach. Degree or + %	2000 Rank
Alabama	3.7%	50	5.7%	43	7.8%	48	12.2%	48	15.7%	45	20.2%	44
Alaska	7.5%	5	9.5%	7	14.1%	3	21.3%	3	23.0%	12	26.0%	18
Arizona	7.4%	7	9.1%	11	12.6%	12	17.4%	20	20.3%	23	22.5%	37
Arkansas	3.1%	51	4.8%	51	6.6%	51	10.8%	50	13.3%	50	16.7%	50
California	8.4%	2	9.8%	5	13.4%	8	19.6%	9	23.4%	10	27.5%	13
Colorado	8.2%	3	10.7%	2	14.9%	2	23.0%	2	27.0%	4	33.2%	4
Connecticut	7.0%	13	9.5%	7	13.6%	7	20.7%	4	27.2%	2	33.3%	3
Delaware	7.4%	6	10.1%	4	13.2%	9	17.4%	19	21.4%	17	25.6%	19
District of Columbia	13.0%	1	14.3%	1	17.7%	1	27.3%	1	33.3%	1	41.1%	1
Florida	6.3%	18	7.8%	23	10.3%	27	14.9%	30	18.3%	30	23.2%	28
Georgia	4.4%	45	6.2%	41	9.2%	36	14.6%	33	19.3%	26	23.2%	28
Hawaii	6.1%	21	9.0%	12	14.0%	4	20.3%	6	22.9%	13	27.5%	13
Idaho	5.4%	31	7.2%	28	10.0%	29	15.8%	26	17.7%	35	21.5%	40
Illinois	5.9%	26	7.3%	26	10.3%	26	16.2%	25	21.0%	20	27.0%	15
Indiana	5.2%	36	6.3%	39	8.3%	45	12.5%	46	15.6%	46	19.9%	45
Iowa	5.1%	37	6.4%	37	9.6%	32	13.9%	38	16.9%	41	22.2%	38
Kansas	6.0%	24	8.2%	20	11.3%	20	17.0%	23	21.1%	19	26.6%	17
Kentucky	3.8%	49	4.9%	50	7.2%	49	11.1%	49	13.6%	49	17.2%	49
Louisiana	4.7%	43	6.7%	34	9.1%	37	13.9%	40	16.1%	43	19.4%	46
Maine	4.8%	42	5.5%	47	8.4%	44	14.4%	35	18.8%	28	22.8%	34
Maryland	7.0%	12	9.3%	9	13.9%	6	20.4%	5	26.5%	5	31.7%	5
Massachusetts	7.2%	11	8.8%	14	12.5%	13	20.0%	7	27.2%	2	35.0%	2
Michigan	5.3%	35	6.8%	32	9.4%	33	14.3%	36	17.4%	37	23.1%	31
Minnesota	5.6%	30	7.5%	24	11.1%	21	17.3%	21	21.8%	16	28.0%	12
Mississippi	3.8%	48	5.6%	45	8.1%	46	12.3%	47	14.7%	48	18.6%	47
Missouri	5.0%	41	6.2%	41	9.0%	39	13.9%	39	17.8%	33	22.8%	34
Montana	6.0%	25	7.5%	24	11.0%	22	17.5%	18	19.8%	25	25.6%	19
Nebraska	5.0%	39	6.8%	32	9.7%	31	15.6%	27	18.9%	27	25.1%	23
Nevada	7.2%	10	8.3%	19	10.9%	23	14.4%	34	15.3%	47	18.3%	48
New Hampshire	6.0%	23	7.1%	29	10.8%	25	18.3%	14	24.4%	8	29.9%	8
New Jersey	6.8%	15	8.4%	17	11.8%	18	18.3%	13	24.9%	6	31.1%	6
New Mexico	6.7%	16	9.8%	5	12.7%	11	17.5%	17	20.4%	22	24.5%	24
New York	7.4%	8	8.9%	13	11.9%	17	17.9%	15	23.1%	11	28.1%	11
North Carolina	5.0%	38	6.3%	39	8.5%	43	13.2%	44	17.4%	37	21.9%	39
North Dakota	4.6%	44	5.6%	45	8.5%	42	14.8%	32	18.1%	31	23.2%	28
Ohio	5.7%	28	7.0%	30	9.3%	35	13.7%	41	17.0%	40	20.6%	42
Oklahoma	6.2%	20	7.9%	22	10.0%	28	15.1%	29	17.8%	33	20.4%	43
Oregon	6.7%	17	8.5%	16	11.8%	19	17.8%	16	20.6%	21	25.6%	19
Pennsylvania	5.4%	32	6.4%	37	8.7%	40	13.5%	42	17.9%	32	22.9%	32
Rhode Island	5.8%	27	6.6%	36	9.4%	34	15.5%	28	21.3%	18	25.4%	22
South Carolina	5.4%	34	6.9%	31	9.0%	38	13.4%	43	16.6%	42	22.9%	32
South Dakota	5.0%	40	5.7%	43	8.6%	41	14.1%	37	17.2%	39	23.6%	26
Tennessee	4.1%	47	5.5%	47	7.9%	47	12.6%	45	16.0%	44	20.9%	41
Texas	6.0%	22	8.0%	21	10.9%	24	16.9%	24	20.3%	23	23.5%	27
Utah	7.6%	4	10.2%	3	14.0%	5	19.9%	8	22.3%	15	26.9%	16
Vermont	5.7%	29	7.3%	26	12.4%	14	19.0%	11	24.3%	9	28.3%	10
Virginia	6.3%	19	8.4%	17	12.3%	15	19.1%	10	24.5%	7	30.3%	7
Washington	7.2%	9	9.3%	9	12.7%	10	18.9%	12	22.9%	13	29.6%	9
West Virginia	4.3%	46	5.2%	49	6.8%	50	10.4%	51	12.3%	51	14.1%	51
Wisconsin	5.4%	33	6.7%	34	9.7%	30	14.8%	31	17.7%	35	22.7%	36
Wyoming	7.0%	14	8.7%	15	11.9%	16	17.3%	22	18.8%	28	24.0%	25

* Data is from the Census 2000 Supplementary Survey

Metric 2: Doctoral Scientists and Engineers - National Science Foundation, 1997 & 1999

Doctoral Scientists and Engineers: Percentage of Workforce

States	Sci_Eng/ Wrkfrc_% 1997	Rank	Sci_Eng/ Wrkfrc_% 1999	Rank	Sci_Eng/ Wrkfrc_% Trend 2005	Trend 2005 Rank	Sci_Eng/ Wrkfrc_% Goal 2005	Goal 2005 Rank
Alabama	0.40%	28	0.36%	33	0.38%	33	0.38%	33
Alaska	0.49%	21	0.48%	19	0.44%	25	0.44%	26
Arizona	0.38%	34	0.38%	32	0.33%	39	0.33%	39
Arkansas	0.24%	49	0.27%	48	0.37%	34	0.37%	34
California	0.60%	10	0.62%	10	0.69%	8	0.69%	8
Colorado	0.62%	6	0.64%	8	0.67%	10	0.67%	10
Connecticut	0.62%	7	0.65%	6	0.80%	6	0.80%	6
Delaware	1.13%	2	1.06%	2	1.06%	4	1.06%	4
Florida	0.25%	48	0.26%	49	0.27%	49	0.27%	49
Georgia	0.31%	44	0.32%	43	0.33%	40	0.33%	40
Hawaii	0.53%	16	0.50%	18	0.54%	17	0.54%	18
Idaho	0.47%	22	0.44%	24	0.45%	23	0.45%	24
Illinois	0.41%	27	0.41%	27	0.44%	26	0.44%	27
Indiana	0.29%	46	0.34%	38	0.39%	32	0.62%	12
Iowa	0.34%	39	0.34%	37	0.34%	37	0.34%	37
Kansas	0.34%	38	0.32%	42	0.29%	46	0.29%	46
Kentucky	0.27%	47	0.27%	47	0.30%	45	0.30%	45
Louisiana	0.33%	40	0.33%	41	0.33%	38	0.33%	38
Maine	0.49%	19	0.44%	23	0.40%	30	0.40%	31
Maryland	1.05%	3	1.05%	3	1.12%	2	1.12%	2
Massachusetts	0.81%	4	0.92%	4	1.10%	3	1.10%	3
Michigan	0.38%	32	0.40%	29	0.44%	27	0.44%	28
Minnesota	0.44%	24	0.48%	20	0.62%	13	0.62%	14
Mississippi	0.30%	45	0.30%	45	0.33%	41	0.33%	41
Missouri	0.39%	29	0.38%	31	0.41%	29	0.41%	30
Montana	0.58%	12	0.51%	16	0.46%	21	0.46%	22
Nebraska	0.38%	33	0.33%	40	0.30%	44	0.30%	44
Nevada	0.22%	50	0.22%	50	0.22%	50	0.22%	50
New Hampshire	0.45%	23	0.43%	25	0.45%	24	0.45%	25
New Jersey	0.60%	9	0.63%	9	0.69%	9	0.69%	9
New Mexico	1.21%	1	1.21%	1	1.42%	1	1.42%	1
New York	0.54%	13	0.56%	12	0.60%	14	0.60%	15
North Carolina	0.42%	26	0.46%	21	0.55%	16	0.55%	17
North Dakota	0.50%	17	0.44%	22	0.37%	35	0.37%	35
Ohio	0.39%	30	0.41%	26	0.47%	20	0.47%	21
Oklahoma	0.38%	31	0.34%	35	0.32%	43	0.32%	43
Oregon	0.50%	18	0.52%	15	0.62%	12	0.62%	13
Pennsylvania	0.49%	20	0.50%	17	0.53%	18	0.53%	19
Rhode Island	0.60%	11	0.64%	7	0.77%	7	0.77%	7
South Carolina	0.32%	43	0.29%	46	0.28%	47	0.28%	47
South Dakota	0.32%	42	0.31%	44	0.28%	48	0.28%	48
Tennessee	0.37%	35	0.34%	36	0.32%	42	0.32%	42
Texas	0.37%	36	0.39%	30	0.40%	31	0.40%	32
Utah	0.54%	14	0.52%	14	0.50%	19	0.50%	20
Vermont	0.70%	5	0.69%	5	0.80%	5	0.80%	5
Virginia	0.54%	15	0.56%	13	0.58%	15	0.58%	16
Washington	0.61%	8	0.59%	11	0.66%	11	0.66%	11
West Virginia	0.33%	41	0.34%	39	0.37%	36	0.37%	36
Wisconsin	0.35%	37	0.35%	34	0.43%	28	0.43%	29
Wyoming	0.43%	25	0.41%	28	0.46%	22	0.46%	23

Metric 3: Patents - US Patent and Trade Office, 1997-2000

Utility Patents per 1,000 Workers

State	Utility Pat/Wrker 1997	Rank	Utility Pat/Wrker 1998	Rank	Utility Pat/Wrker 1999	Rank	Utility Pat/Wrker 2000	Rank	Utility Pat/Wrker Trend '05	Rank	Utility Pat/Wrker Goal '05	Rank
Alabama	16.1	45	19.2	46	20.9	43	17.4	47	18.8	47	18.8	47
Alaska	17.1	42	23.3	41	19.1	46	15.5	49	13.6	49	13.6	49
Arizona	52.8	16	72.9	14	69.2	14	71.0	13	86.7	13	86.7	14
Arkansas	11.3	50	12.9	50	16.5	48	18.5	46	25.6	44	25.6	44
California	86.0	5	116.1	2	119.9	2	120.5	3	181.7	3	181.7	3
Colorado	61.6	12	85.1	10	84.9	10	83.5	10	113.3	7	113.3	7
Connecticut	87.0	4	109.3	4	107.6	5	107.8	4	113.1	8	113.1	8
Delaware	92.0	3	98.5	8	101.1	9	93.8	9	68.6	21	68.6	22
Florida	33.7	27	40.2	28	38.1	28	36.8	28	40.7	30	40.7	30
Georgia	26.7	31	34.5	30	34.0	30	32.9	30	42.9	28	42.9	28
Hawaii	14.5	46	15.8	47	15.5	50	14.0	50	13.4	50	13.4	50
Idaho	110.8	1	163.7	1	226.9	1	280.4	1	710.3	1	710.3	1
Illinois	52.1	17	63.2	17	62.7	20	63.6	20	72.0	19	72.0	20
Indiana	42.5	24	47.1	25	48.4	25	47.4	24	56.7	25	88.5	12
Iowa	28.3	29	44.7	26	50.9	24	39.8	27	50.6	26	50.6	26
Kansas	20.5	38	26.6	37	32.6	33	29.1	35	36.2	32	36.2	32
Kentucky	17.0	43	19.9	44	25.2	39	25.1	41	32.0	36	32.0	36
Louisiana	20.3	39	25.7	39	25.5	38	26.8	38	27.4	43	27.4	43
Maine	16.8	44	21.4	42	20.6	44	21.0	44	20.3	46	20.3	46
Maryland	51.7	19	62.1	19	63.3	19	55.3	23	61.8	23	61.8	24
Massachusetts	82.8	7	107.4	5	108.9	4	104.3	5	128.8	5	128.8	5
Michigan	63.8	10	77.8	11	80.6	11	79.6	11	85.7	14	85.7	15
Minnesota	73.4	9	96.8	9	101.5	8	101.8	6	134.3	4	134.3	4
Mississippi	14.1	47	15.4	48	15.9	49	15.7	48	21.3	45	21.3	45
Missouri	27.7	30	33.5	32	34.1	29	29.8	33	32.4	35	32.4	35
Montana	24.1	35	34.9	29	33.1	32	29.3	34	31.0	37	31.0	37
Nebraska	19.2	41	23.3	40	21.4	41	25.3	40	28.0	42	28.0	42
Nevada	20.3	40	29.2	36	30.0	37	30.9	32	41.0	29	41.0	29
New Hampshire	80.3	8	103.7	6	107.2	6	100.9	7	128.0	6	128.0	6
New Jersey	85.6	6	99.1	7	102.2	7	97.3	8	108.7	9	108.7	9
New Mexico	36.8	25	47.6	24	46.3	26	43.4	26	48.5	27	48.5	27
New York	59.7	13	76.7	12	72.2	12	70.5	14	78.6	16	78.6	17
North Carolina	34.5	26	42.8	27	44.8	27	46.8	25	67.5	22	67.5	23
North Dakota	13.4	48	20.3	43	21.0	42	26.0	39	29.8	39	29.8	39
Ohio	50.3	20	59.7	22	60.4	21	56.7	22	60.7	24	60.7	25
Oklahoma	29.9	28	33.9	31	33.9	31	36.5	29	30.1	38	30.1	38
Oregon	52.0	18	76.3	13	69.7	13	74.4	12	106.5	10	106.5	10
Pennsylvania	49.9	21	61.3	20	67.2	16	63.8	19	73.6	18	73.6	19
Rhode Island	55.3	14	61.1	21	56.1	23	67.3	15	82.1	15	82.1	16
South Carolina	25.0	33	32.0	33	30.7	35	28.3	37	29.3	40	29.3	40
South Dakota	13.0	49	13.8	49	17.7	47	22.7	43	40.6	31	40.6	31
Tennessee	24.9	34	29.7	35	31.9	34	28.5	36	32.5	34	32.5	34
Texas	48.1	23	62.4	18	66.0	17	67.0	17	88.5	12	88.5	13
Utah	61.7	11	65.1	16	64.7	18	65.6	18	77.7	17	77.7	18
Vermont	98.9	2	113.4	3	116.7	3	126.8	2	244.5	2	244.5	2
Virginia	25.3	32	31.7	34	30.6	36	32.6	31	34.6	33	34.6	33
Washington	53.7	15	68.4	15	69.0	15	67.0	16	97.3	11	97.3	11
West Virginia	20.8	37	26.3	38	20.5	45	19.6	45	15.8	48	15.8	48
Wisconsin	49.0	22	57.7	23	60.2	22	59.5	21	70.1	20	70.1	21
Wyoming	22.7	36	19.7	45	22.3	40	23.0	42	28.9	41	28.9	41
Distict of Columbia	8.4	51	12.1	51	8.8	51	8.5	51	11.0	51	11.0	51

Metric 4: Total R & D - National Science Foundation, 1997-1999
Total R & D as a Percent of Gross State Product

State	1997 R&D % of GSP	Rank	1998 R&D % of GSP	Rank	1999 R&D % of GSP	Rank	2005 Trend R&D % of GSP	Rank	2005 Goal R&D % of GSP	Rank
Alabama	1.57%	27	1.77%	25	1.53%	29	1.38%	30	0.96%	36
Alaska	0.51%	47	0.00%	51	0.58%	48	0.67%	44	0.68%	44
Arizona	1.97%	22	1.74%	27	3.54%	11	4.79%	5	4.79%	5
Arkansas	0.46%	49	0.46%	47	0.58%	47	0.57%	48	0.57%	48
California	3.99%	9	3.90%	9	3.90%	8	3.81%	11	3.81%	11
Colorado	2.47%	14	3.24%	13	2.74%	16	2.76%	16	2.76%	17
Connecticut	2.56%	12	2.49%	15	2.92%	13	2.87%	13	2.87%	14
Delaware	3.48%	11	7.54%	1	3.87%	9	2.81%	15	2.81%	16
Florida	1.23%	31	1.15%	32	0.96%	37	0.77%	42	0.77%	42
Georgia	0.96%	38	0.98%	37	1.07%	35	1.01%	35	1.01%	34
Hawaii	0.71%	42	0.61%	42	0.66%	44	0.65%	45	0.65%	45
Idaho	4.32%	6	3.61%	10	3.85%	10	3.86%	10	3.86%	10
Illinois	2.01%	21	2.08%	19	2.18%	21	2.12%	18	2.12%	19
Indiana	1.93%	24	1.75%	26	1.52%	30	1.21%	32	2.90%	12
Iowa	1.20%	32	1.27%	31	1.18%	33	1.17%	33	1.17%	32
Kansas	1.85%	26	1.98%	21	1.92%	24	1.56%	27	1.56%	28
Kentucky	0.52%	46	0.60%	44	0.85%	39	1.00%	36	1.00%	35
Louisiana	0.45%	50	0.43%	48	0.49%	49	0.53%	49	0.53%	49
Maine	0.49%	48	0.50%	46	0.66%	45	0.85%	40	0.85%	39
Maryland	4.78%	5	4.88%	6	4.63%	5	4.46%	7	4.46%	7
Massachusetts	4.96%	4	5.56%	3	4.64%	4	4.24%	8	4.24%	8
Michigan	5.01%	3	4.68%	7	6.10%	2	6.93%	1	6.93%	1
Minnesota	2.37%	15	2.35%	17	2.26%	19	1.95%	23	1.95%	24
Mississippi	0.63%	43	0.60%	45	0.74%	43	0.76%	43	0.76%	43
Missouri	1.17%	33	1.14%	33	1.18%	32	0.86%	39	0.83%	40
Montana	1.05%	36	0.96%	38	0.82%	40	1.08%	34	1.08%	33
Nebraska	0.56%	44	0.61%	43	0.78%	41	0.89%	38	0.89%	38
Nevada	0.87%	39	0.89%	39	0.66%	46	0.61%	47	0.61%	47
New Hampshire	2.13%	18	3.25%	12	2.84%	14	5.48%	3	5.48%	3
New Jersey	4.02%	8	3.59%	11	3.18%	12	2.90%	12	2.90%	13
New Mexico	6.33%	1	6.16%	2	6.43%	1	5.07%	4	5.07%	4
New York	1.86%	25	1.93%	22	1.87%	25	1.84%	24	1.84%	25
North Carolina	2.11%	19	1.93%	23	2.04%	23	2.09%	20	2.09%	21
North Dakota	0.73%	41	0.70%	40	0.99%	36	0.92%	37	0.92%	37
Ohio	2.19%	17	2.01%	20	2.23%	20	2.09%	21	2.09%	22
Oklahoma	0.81%	40	0.62%	41	0.77%	42	0.65%	46	0.65%	46
Oregon	1.56%	29	1.84%	24	1.80%	27	2.35%	17	2.35%	18
Pennsylvania	2.36%	16	2.40%	16	2.79%	15	2.83%	14	2.83%	15
Rhode Island	3.54%	10	5.50%	4	5.07%	3	6.49%	2	6.49%	2
South Carolina	1.09%	35	0.98%	36	0.92%	38	0.80%	41	0.80%	41
South Dakota	0.36%	51	0.29%	50	0.28%	51	0.33%	51	0.33%	51
Tennessee	1.03%	37	1.55%	30	1.35%	31	1.45%	28	1.45%	29
Texas	1.56%	28	1.67%	28	1.81%	26	1.82%	25	1.82%	26
Utah	2.51%	13	2.53%	14	2.35%	17	1.78%	26	1.78%	27
Vermont	2.02%	20	1.08%	34	2.26%	18	1.96%	22	1.96%	23
Virginia	1.95%	23	2.16%	18	2.11%	22	2.10%	19	2.10%	20
Washington	4.30%	7	4.41%	8	3.98%	7	3.95%	9	3.95%	9
West Virginia	1.12%	34	1.07%	35	1.08%	34	1.28%	31	1.28%	31
Wisconsin	1.52%	30	1.58%	29	1.54%	28	1.40%	29	1.40%	30
Wyoming	0.54%	45	0.40%	49	0.38%	50	0.43%	50	0.41%	50
District of Columbia	5.48%	2	4.99%	5	4.50%	6	4.51%	6	4.51%	6

Metric 4: Industry R & D - National Science Foundation, 1997-1999

Industry R & D as a Percent of Gross State Product

State	1997 R&D % of GSP	Rank	1998 R&D % of GSP	Rank	1999 R&D % of GSP	Rank	2005 Trend R&D % of GSP	Rank	2005 Goal R&D % of GSP	Rank
Alabama	0.57%	37	0.65%	36	0.48%	37	0.21%	45	0.21%	45
Alaska	0.09%	51	0.00%	51	0.00%	50	0.00%	50	0.00%	50
Arizona	1.52%	22	1.29%	24	3.09%	8	4.53%	4	4.53%	4
Arkansas	0.20%	45	0.19%	44	0.33%	42	0.30%	43	0.30%	43
California	3.25%	6	3.16%	8	3.18%	7	3.21%	8	3.21%	8
Colorado	1.73%	15	2.53%	10	2.04%	14	2.07%	13	2.07%	14
Connecticut	2.23%	10	2.17%	12	2.62%	11	2.58%	11	2.58%	11
Delaware	3.23%	7	7.30%	1	3.64%	3	2.62%	9	2.62%	9
Florida	0.88%	29	0.79%	31	0.61%	34	0.47%	39	0.47%	39
Georgia	0.54%	38	0.57%	38	0.66%	31	0.59%	35	0.59%	35
Hawaii	0.23%	43	0.04%	48	0.07%	48	0.03%	49	0.03%	49
Idaho	4.02%	2	3.29%	6	3.56%	4	3.57%	5	3.57%	5
Illinois	1.56%	20	1.62%	17	1.73%	19	1.68%	17	1.68%	18
Indiana	1.64%	17	1.49%	20	1.23%	25	0.94%	28	2.38%	12
Iowa	0.71%	34	0.76%	32	0.66%	32	0.61%	34	0.61%	34
Kansas	1.56%	21	1.67%	16	1.59%	20	1.22%	24	1.22%	25
Kentucky	0.35%	41	0.40%	40	0.60%	35	0.71%	30	0.71%	30
Louisiana	0.14%	48	0.08%	47	0.15%	47	0.13%	47	0.13%	47
Maine	0.27%	42	0.26%	42	0.41%	41	0.57%	36	0.57%	36
Maryland	0.92%	28	1.06%	28	0.97%	29	0.79%	29	0.79%	29
Massachusetts	3.71%	4	4.40%	2	3.55%	5	3.37%	7	3.37%	7
Michigan	4.65%	1	4.34%	3	5.75%	1	6.55%	2	6.55%	2
Minnesota	2.05%	11	2.04%	13	1.95%	15	1.67%	18	1.67%	19
Mississippi	0.12%	50	0.12%	46	0.18%	45	0.21%	46	0.21%	46
Missouri	0.83%	31	0.80%	30	0.81%	30	0.51%	37	0.51%	37
Montana	0.49%	40	0.41%	39	0.16%	46	0.26%	44	0.26%	44
Nebraska	0.14%	47	0.18%	45	0.33%	43	0.40%	40	0.40%	40
Nevada	0.64%	35	0.68%	35	0.48%	38	0.66%	32	0.66%	32
New Hampshire	1.74%	14	2.88%	9	2.48%	12	5.93%	3	5.93%	3
New Jersey	3.69%	5	3.29%	7	2.85%	9	2.58%	10	2.58%	10
New Mexico	2.74%	8	2.45%	11	2.63%	10	2.06%	14	2.06%	15
New York	1.50%	23	1.57%	18	1.51%	22	1.49%	21	1.49%	22
North Carolina	1.62%	18	1.42%	22	1.53%	21	1.53%	20	1.53%	21
North Dakota	0.21%	44	0.20%	43	0.44%	39	0.38%	41	0.38%	41
Ohio	1.72%	16	1.54%	19	1.80%	17	1.78%	16	1.78%	17
Oklahoma	0.54%	39	0.30%	41	0.42%	40	0.31%	42	0.31%	42
Oregon	1.13%	27	1.44%	21	1.40%	24	2.06%	15	2.06%	16
Pennsylvania	1.90%	12	1.94%	14	2.33%	13	2.38%	12	2.38%	13
Rhode Island	2.39%	9	4.33%	4	3.88%	2	6.69%	1	6.69%	1
South Carolina	0.82%	32	0.69%	34	0.62%	33	0.50%	38	0.50%	38
South Dakota	0.13%	49	0.02%	49	0.06%	49	0.08%	48	0.08%	48
Tennessee	0.72%	33	1.26%	25	1.04%	27	1.19%	25	1.19%	26
Texas	1.19%	25	1.30%	23	1.45%	23	1.47%	22	1.47%	23
Utah	1.86%	13	1.88%	15	1.79%	18	1.34%	23	1.34%	24
Vermont	1.59%	19	0.69%	33	1.85%	16	1.55%	19	1.55%	20
Virginia	0.83%	30	1.19%	27	1.03%	28	0.99%	27	0.99%	28
Washington	3.77%	3	3.90%	5	3.46%	6	3.42%	6	3.42%	6
West Virginia	0.61%	36	0.57%	37	0.53%	36	0.65%	33	0.65%	33
Wisconsin	1.15%	26	1.21%	26	1.17%	26	1.04%	26	1.04%	27
Wyoming	0.17%	46	0.01%	50	0.00%	50	0.00%	50	0.00%	50
District of Columbia	1.28%	24	0.96%	29	0.31%	44	0.69%	31	0.69%	31

Metric 5: Venture Capital - VentureOne Corporation, 1997-2001

Venture Capital Financings as a Percentage of GSP

	1997		1998		1999		2000		2001		2005		2005	
US State	**VC$/GSP**	**Rank**	**VC$/GSP**	**Rank**	**VC$/GSP**	**Rank**	**VC$/GSP**	**Rank**	**VC$/GSP**	**Rank**	**Trend VC$/GSP**	**Rank**	**Goal VC$/GSP**	**Rank**
Alabama	0.099%	15	0.040%	25	0.044%	30	0.150%	29	0.051%	26	0.070%	25	0.070%	26
Arizona	0.099%	16	0.102%	17	0.180%	20	0.277%	25	0.084%	24	0.102%	24	0.102%	25
Arkansas	0.010%	37	0.003%	42	0.024%	38	0.001%	46	0.000%	47	0.007%	45	0.007%	45
California	0.538%	2	0.658%	2	1.863%	1	3.064%	2	0.972%	2	1.304%	2	1.304%	2
Colorado	0.285%	3	0.453%	3	1.015%	3	2.641%	3	0.540%	3	0.666%	3	0.666%	3
Connecticut	0.120%	10	0.212%	7	0.388%	9	0.766%	8	0.232%	13	0.318%	11	0.318%	11
Delaware	0.000%	41	0.000%	43	0.048%	29	0.373%	22	0.255%	11	0.210%	18	0.210%	19
Florida	0.126%	7	0.100%	18	0.287%	17	0.381%	20	0.137%	21	0.184%	21	0.184%	22
Georgia	0.121%	9	0.146%	12	0.362%	13	0.656%	13	0.215%	14	0.269%	14	0.269%	15
Hawaii	0.011%	35	0.000%	43	0.031%	35	0.551%	16	0.008%	44	0.007%	44	0.007%	44
Idaho	0.000%	42	0.040%	26	0.000%	44	0.019%	42	0.011%	39	0.009%	42	0.009%	42
Illinois	0.086%	18	0.062%	22	0.144%	22	0.374%	21	0.111%	23	0.152%	23	0.152%	24
Indiana	0.003%	40	0.005%	41	0.020%	39	0.092%	33	0.014%	38	0.019%	38	0.305%	12
Iowa	0.009%	38	0.000%	43	0.016%	40	0.013%	43	0.010%	40	0.009%	40	0.009%	40
Kansas	0.017%	31	0.013%	37	0.026%	37	0.185%	27	0.047%	27	0.065%	26	0.065%	27
Kentucky	0.034%	29	0.035%	28	0.065%	26	0.129%	30	0.018%	36	0.024%	36	0.024%	37
Louisiana	0.006%	39	0.029%	30	0.014%	41	0.092%	34	0.010%	41	0.013%	39	0.013%	39
Maine	0.012%	34	0.022%	34	0.143%	23	0.357%	23	0.017%	37	0.024%	37	0.024%	38
Maryland	0.086%	17	0.173%	9	0.429%	5	0.995%	6	0.405%	5	0.561%	4	0.561%	4
Massachusetts	0.576%	1	0.723%	1	1.744%	2	3.340%	1	1.339%	1	1.760%	1	1.760%	1
Michigan	0.012%	33	0.027%	31	0.037%	33	0.091%	35	0.026%	34	0.036%	33	0.036%	34
Minnesota	0.123%	8	0.163%	10	0.335%	14	0.540%	18	0.182%	17	0.239%	16	0.239%	17
Mississippi	0.014%	32	0.006%	40	0.005%	42	0.046%	38	0.039%	30	0.034%	34	0.034%	35
Missouri	0.076%	21	0.094%	21	0.062%	28	0.313%	24	0.135%	22	0.183%	22	0.183%	23
Montana	0.069%	24	0.000%	43	0.078%	25	0.072%	37	0.009%	42	0.008%	43	0.008%	43
Nebraska	0.000%	42	0.097%	20	0.000%	44	0.004%	45	0.005%	45	0.004%	46	0.004%	46
Nevada	0.068%	25	0.026%	32	0.026%	36	0.026%	39	0.039%	31	0.046%	30	0.046%	31
New Hampshire	0.108%	12	0.243%	6	0.416%	7	1.387%	4	0.420%	4	0.526%	5	0.526%	5
New Jersey	0.106%	13	0.100%	19	0.202%	18	0.746%	11	0.280%	9	0.395%	9	0.395%	9
New Mexico	0.000%	42	0.008%	38	0.035%	34	0.020%	41	0.041%	29	0.057%	28	0.057%	29
New York	0.074%	22	0.154%	11	0.391%	8	0.715%	12	0.189%	16	0.263%	15	0.263%	16
North Carolina	0.126%	6	0.115%	14	0.387%	10	0.518%	19	0.156%	19	0.201%	20	0.201%	21
Ohio	0.043%	27	0.034%	29	0.082%	24	0.108%	31	0.045%	28	0.062%	27	0.062%	28
Oklahoma	0.011%	36	0.016%	36	0.001%	43	0.021%	40	0.023%	35	0.032%	35	0.032%	36
Oregon	0.081%	19	0.051%	23	0.382%	11	0.569%	15	0.176%	18	0.224%	17	0.224%	18
Pennsylvania	0.080%	20	0.174%	8	0.312%	15	0.548%	17	0.204%	15	0.289%	13	0.289%	14
Rhode Island	0.000%	42	0.021%	35	0.040%	31	0.205%	26	0.146%	20	0.203%	19	0.203%	20
South Carolina	0.070%	23	0.022%	33	0.065%	27	0.177%	28	0.008%	43	0.009%	41	0.009%	41
Tennessee	0.065%	26	0.046%	24	0.177%	21	0.096%	32	0.033%	32	0.044%	31	0.044%	32
Texas	0.120%	11	0.141%	13	0.303%	16	0.748%	10	0.319%	7	0.415%	8	0.415%	8
Utah	0.102%	14	0.103%	16	0.371%	12	0.754%	9	0.246%	12	0.305%	12	0.305%	13
Vermont	0.000%	42	0.008%	39	0.000%	44	0.000%	47	0.057%	25	0.050%	29	0.050%	30
Virginia	0.159%	5	0.317%	5	0.417%	6	0.887%	7	0.279%	10	0.380%	10	0.380%	10
Washington	0.217%	4	0.388%	4	0.879%	4	1.142%	5	0.344%	6	0.448%	7	0.448%	7
Washington, DC	0.024%	30	0.114%	15	0.188%	19	0.598%	14	0.303%	8	0.461%	6	0.461%	6
West Virginia	0.000%	42	0.000%	43	0.000%	44	0.007%	44	0.001%	46	0.001%	47	0.001%	47
Wisconsin	0.040%	28	0.037%	27	0.038%	32	0.076%	36	0.026%	33	0.036%	32	0.036%	33
North Dakota	0.000%	42	0.000%	43	0.000%	44	0.000%	47	0.000%	47	0.000%	48	0.000%	48
South Dakota	0.000%	42	0.000%	43	0.000%	44	0.000%	47	0.000%	47	0.000%	48	0.000%	48
Wyoming	0.000%	42	0.000%	43	0.000%	44	0.000%	47	0.000%	47	0.000%	48	0.000%	48
Alaska	0.000%	42	0.000%	43	0.000%	44	0.000%	47	0.000%	47	0.000%	48	0.000%	48

Metric 6: High-Tech Employment - American Electronics Association & Ross DeVol Combined Definition

AEA & DeVol High-Tech Jobs as a Share of Total Employment

State	Hi-Tech Jobs %_Wrkfrc 1997	Rank	Hi-Tech Jobs %_Wrkfrc 1999	Rank	Hi-Tech Jobs %_Wrkfrc 2000	Rank	Hi-Tech Jobs %_Wrkfrc Trend '05	Rank	Hi-Tech Jobs %_Wrkfrc Goal '05	Rank
Alabama	4.4%	25	4.6%	25	4.8%	25	5.2%	25	5.2%	26
Alaska	2.7%	42	3.1%	41	3.2%	39	4.2%	34	4.2%	35
Arizona	6.9%	9	6.9%	12	7.3%	12	7.3%	16	7.3%	17
Arkansas	2.4%	44	2.6%	46	2.8%	44	3.0%	44	3.0%	44
California	9.9%	1	10.2%	2	10.7%	2	12.1%	2	12.1%	2
Colorado	8.9%	3	10.2%	1	10.7%	1	12.8%	1	12.8%	1
Connecticut	8.8%	4	8.7%	4	8.9%	4	9.0%	8	9.0%	8
Delaware	3.7%	33	4.3%	29	4.3%	28	5.2%	24	5.2%	25
District of Columbia	5.8%	18	6.2%	17	6.4%	17	7.8%	14	7.8%	15
Florida	4.7%	24	4.9%	24	5.1%	24	5.5%	23	5.5%	24
Georgia	5.5%	19	5.7%	20	5.9%	20	6.8%	18	6.8%	19
Hawaii	2.1%	47	2.7%	45	2.8%	45	2.9%	46	2.9%	46
Idaho	6.8%	12	7.4%	9	7.7%	9	9.5%	6	9.5%	6
Illinois	5.4%	20	5.4%	21	5.5%	21	5.9%	22	5.9%	23
Indiana	4.1%	28	4.1%	31	4.1%	32	3.9%	37	8.2%	12
Iowa	2.4%	43	3.1%	40	3.1%	42	3.2%	42	3.2%	42
Kansas	7.0%	8	7.9%	6	8.1%	8	10.3%	5	10.3%	5
Kentucky	2.7%	41	3.0%	42	2.7%	46	2.8%	47	2.8%	47
Louisiana	2.1%	48	2.3%	49	2.5%	48	2.9%	45	2.9%	45
Maine	3.2%	35	3.5%	36	3.7%	35	4.5%	30	4.5%	31
Maryland	6.8%	11	7.2%	11	7.6%	11	8.4%	10	8.4%	10
Massachusetts	9.3%	2	9.5%	3	10.1%	3	10.6%	4	10.6%	4
Michigan	4.0%	30	4.3%	28	4.2%	30	4.6%	28	4.6%	29
Minnesota	6.5%	13	6.7%	14	6.7%	15	7.5%	15	7.5%	16
Mississippi	1.7%	50	1.8%	50	2.0%	50	1.9%	50	1.9%	50
Missouri	4.0%	31	4.1%	32	4.6%	27	4.4%	31	4.4%	32
Montana	2.1%	49	2.5%	48	2.7%	47	3.5%	39	3.5%	39
Nebraska	4.9%	23	5.3%	22	5.4%	23	5.9%	20	5.9%	21
Nevada	3.0%	37	3.3%	38	3.2%	40	3.1%	43	3.1%	43
New Hampshire	7.3%	6	7.4%	10	8.5%	6	9.1%	7	9.1%	7
New Jersey	8.1%	5	8.2%	5	8.4%	7	8.7%	9	8.7%	9
New Mexico	6.1%	16	6.3%	16	6.2%	19	6.1%	19	6.1%	20
New York	6.0%	17	6.1%	18	6.4%	18	7.0%	17	7.0%	18
North Carolina	4.2%	27	4.5%	26	4.7%	26	4.9%	27	4.9%	28
North Dakota	2.3%	45	2.9%	43	3.0%	43	4.4%	32	4.4%	33
Ohio	4.0%	29	4.2%	30	4.2%	31	4.6%	29	4.6%	30
Oklahoma	3.5%	34	3.6%	34	3.9%	34	4.2%	35	4.2%	36
Oregon	6.2%	15	6.4%	15	6.7%	14	8.4%	11	8.4%	11
Pennsylvania	5.0%	22	5.3%	23	5.4%	22	5.9%	21	5.9%	22
Rhode Island	3.8%	32	3.8%	33	4.0%	33	3.6%	38	3.6%	38
South Carolina	2.9%	38	2.9%	44	3.1%	41	3.4%	40	3.4%	40
South Dakota	4.3%	26	4.5%	27	4.3%	29	4.3%	33	4.3%	34
Tennessee	2.8%	40	3.2%	39	3.3%	38	3.4%	41	3.4%	41
Texas	6.3%	14	6.7%	13	7.0%	13	8.2%	12	8.2%	13
Utah	7.2%	7	7.7%	8	7.7%	10	8.2%	13	8.2%	14
Vermont	2.9%	39	3.4%	37	3.5%	37	2.3%	49	2.3%	49
Virginia	6.8%	10	7.9%	7	8.6%	5	11.5%	3	11.5%	3
Washington	5.2%	21	6.0%	19	6.7%	16	5.1%	26	5.1%	27
West Virginia	2.2%	46	2.5%	47	2.5%	49	2.6%	48	2.6%	48
Wisconsin	3.1%	36	3.5%	35	3.5%	36	4.0%	36	4.0%	37
Wyoming	1.4%	51	1.7%	51	1.7%	51	1.8%	51	1.8%	51