The Progressive Policy Institute's Technology and New Economy Project

The Project's mission is to educate federal, state, and local policymakers about what drives the New Economy and to promote policies that encourage technological advances, economic innovation, and entrepreneurship. Among the key principles guiding the Project's work are the following:

- Higher productivity and faster economic growth are prerequisites for expanding opportunity and raising living standards.
- The key factors driving economic growth are science and technology, world-class education and skills, organizational innovation, robust competition, and open global trade.
- Markets are the best drivers of growth and innovation, but public action can and should create conditions in which innovation can flourish. This requires updating public fiscal, investment, and regulatory policies at every level.
- Archaic regulatory barriers to competition and innovation should be replaced with "open architecture" principles that do not favor one technology, industry or profession over another.
- Government should be reinvented to be as fast, responsive, and flexible as the economy and society with which it interacts. The new model of governing is decentralized, non-bureaucratic, catalytic, and empowering.
- We should take active steps to extend the benefits of technology and innovation to all citizens, reversing past trends toward economic inequality.

The goals of the Technology and New Economy Project are a natural extension of the mission of the Progressive Policy Institute, which is to define and promote a new progressive politics for America in the 21st century. The Institute's core philosophy rises from the belief that America is ill-served by an obsolete left-right debate that is out of step with the powerful forces reshaping our society and economy. The Institute believes in adapting the progressive tradition in American politics to the realities of the Information Age by advocating a "Third Way" approach, beyond the liberal impulse to defend the bureaucratic status quo and the conservative bid to dismantle government.

The Progressive Policy Institute is a project of the Third Way Foundation. Will Marshall is President of the Institute. Al From is Chairman of the Third Way Foundation. For further information, to view this report online, or to order additional copies of this report including bulk orders, please call, write, or visit the PPI Web site:

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THE 2002 STATE NEW ECONOMY INDEX

Benchmarking Economic Transformation in the States

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It is not the strongest of the species that survive,
nor the most intelligent,
but the ones most responsive to change.

— Charles Darwin

As America emerges from what may be the shortest economic slump in memory, there is increasing evidence that New Economy factors — including high productivity rates, better inventory management, more flexible labor markets, and a greater share of jobs in the service sector — were in fact responsible for the brevity of the slowdown. As the remarkable U.S. expansion of the 1990s appears to be continuing, the New Economy seems to have passed the first real test of its resiliency. And the structural changes being driven by the New Economy have not receded or been impeded by the changes of the last year; rather, they are as strong as ever.

As these structural changes continue to sweep through our national economy, they are restructuring and reshaping the 50 state economies. In 1999, at the height of the New Economy euphoria, PPI released its first *State New Economy Index*, which included 17 indicators to measure the degree to which state economies were structured and operated according to the tenets of the New Economy. In 2002, after the New Economy has proved itself and is being viewed by most with a more careful and realistic eye, PPI's *2002 State Index* uses 21 economic indicators to measure these differences and assess states' progress as they adapt to the new economic order. With these indicators as a frame of reference, the report then outlines a state-level public policy framework aimed at boosting the incomes of all Americans.

THE NEW ECONOMY IS HERE TO STAY

While in 1999 many thought that the New Economy changed everything (including the need for companies to make a profit), in 2001 many scoffed at it as simply a flash in the pan or, worse, a myth spun by an over-imaginative media. Many questioned if after the superb economic performance of the 1990s we were doomed to return to the dismal days of the late 1970s and 1980s. The reality is that the New Economy was neither an epochal and dizzying transformation nor a slogan generated by some dot-com companies looking to inflate their IPO prices. Rather it was and is the kind of profound transformation of all industries that happens perhaps twice in a century. Such a change is equivalent in scope and depth to the rise of the manufacturing economy in the 1890s and the emergence of the mass-production, corporate economy in the 1940s and 1950s. As we pass through one of those groundswells that regularly but infrequently reshape the economy (and society) from top to bottom, there will be occasional bumps along the way — like the recent economic downturn — but these are the negative phases within what we can expect to be a much longer growth period.

While there was considerable bad news that gave doubters even more reason to doubt, the reality never was as bad as it was portrayed to be. The NASDAQ fell from its commanding heights of 5,000 in 2000 to roughly 1,850 in March 2002, but it was still 43 percent higher than when Alan Greenspan warned of "irrational exuberance" in 1996. In 2001, almost 110,000 jobs were lost at dot-coms, many due to failures, including such high-fliers as *pets.com* and *webvan.com*.[1] But even so, the total number of U.S. dot-com domains grew 54 percent from July 2000 to July 2001. And the recession so far has turned out to not really be a recession, since we have so far only experienced one negative quarter of GDP growth (3rd quarter, 2001), not the two consecutive ones required to constitute a recession. Moreover, unlike past slowdowns, productivity has actually grown, at an annual and stunning rate of 5.1 percent in the 4th quarter of 2001. And while unemployment was up, its peak of 5.8 percent (December 2001) was generally lower than average levels throughout the 1980s.

Moreover, even though the tech sector is not the high-flyer it was just a year ago, there's a fallacy in the leap from bad news in high-tech and even in the broader economy to the death of the New Economy. Those who think the New Economy was some late-90s flash-in-the-pan staked to the emergence of dot-coms are roughly equivalent to the great wits who shouted "Get a horse!" at early motorists broken down on the side of the road. In the early 1930s, people might have equated the bankruptcy of car companies with the end of the auto era. But obviously that was just the beginning.

In all regards, it looks like the worst is behind us and we are poised for a period of robust New Economy growth, perhaps less spectacular than the dizzying days of 2000, but strong all the same. It's clear that this was more than a one-time burst of energy that has dissipated. Rather, we've barely scratched the surface of New Economy digital transformation. To paraphrase Mark Twain, reports of the New Economy's demise have been greatly exaggerated. Broadband Internet connections continue to grow by more than 50 percent a year. Venture capitalists invested more in 2001 than in any year prior to 1999 and more than they did in the years 1990 to 1996 combined. Corporate R&D as a share of GDP reached an all-time high in 2000. E-commerce retail sales in the last year grew 2.5 times faster than total retail sales. Business investments in information technology fell relative to 2000 levels, but were 15 percent higher than 1999 levels. And a host of new technologies, including voice recognition, expert systems, smart cards, e-books, cheap storage devices, new display devices and video software, intelligent transportation systems, "third generation" wireless communication devices, and robots, are poised to be commercialized.

But even though the IT revolution is still only in its adolescence and exciting times are ahead, we need to remember that the New Economy was never just about the Internet and what investor Jim Clark and writer Michael Lewis dubbed the "next new thing."

Rather, the New Economy is about the transformation of all industries and the overall economy. As such, the New Economy represents a complex array of forces. These include the reorganization of firms, more efficient and dynamic capital markets, more economic "churning" and entrepreneurial dynamism, relentless globalization, continuing economic competition, and increasingly volatile labor markets. And there is every reason to believe that these forces that produced a turnaround in productivity and wage growth in the last half of the 1990s will continue to produce equally strong growth in the first decade of the 2000s. As a result, there are a number of new economic realities that states need to contend with.

First, new industries, especially traded services and E-businesses, are becoming a more important share of the economic base of regions. As manufacturers continue to dramatically boost productivity, factory jobs continue to decline as a share of total employment while jobs in services grow. For example, Navistar's Indianapolis engine plant spent $285 million in new investments between 1995 and 2000 with the result that while it took 900 people to produce 175 engines a day in 1994, the same 900 workers produce 1,400 today. As a result of efforts by Navistar and the nation's other 360,000 manufacturing firms, manufacturing jobs now account for just 13.4 percent of employment. Even in traditionally manufacturing-oriented states like Michigan and North Carolina, manufacturing employment is only 19.8 percent and 18.2 percent of all jobs, respectively. This is not to say that manufacturing is not important; it's usually the economic base sector that brings in money from outside the region that in turn supports local-serving businesses (e.g., dry cleaners). But it does mean that states that look to growing sectors, many of which will be outside of manufacturing, will be the ones that succeed.

Second, most industries and firms, even "traditional ones," are organizing work around technology. While the "high-tech" firms the media focuses on develop new technologies, to be successful all firms must be using advanced technology. For example, manufacturers who use more technologies (e.g., computer-aided design) in their production processes pay higher wages, export more, and are more productive than manufacturers who do not. States whose policies make it easy for firms and their employees to access and use technology will come out ahead.

Third, the old sources of competitive advantage — access to raw materials, transportation routes, or customer markets; low costs; and a large labor pool — are becoming less important. In an economy in which less than 20 percent of economic activity consists of creating, processing, or moving physical goods, access to raw materials, transportation, and markets means less. As an increasing share of economic inputs and outputs are in the form of electronic bits, the old locational factors diminish in importance. And when an increasing share of firms are gaining competitive advantage from innovation, quality, and productivity-driven cost reductions, the old advantages of low wages, low taxes, and low input costs are less important. States that provide an environment in which firms can become more productive and innovative will outperform those that can only offer low costs.

Fourth, states' economic success will increasingly be determined by how effectively they can spur home-grown technological innovation and entrepreneurship. While it's true that most states cannot hope to replicate Silicon Valley or Boston's Route 128, they can have economies that prosper as a result of locally based companies developing new product and service innovations. In the old economy, many states relied on industrial recruitment to attract branch plants and facilities from more innovative states. In the New Economy, tomorrow's jobs will come from fast-growing entrepeneurial firms and not from the small number of business relocations. As a result, states need to shift their focus from "hunting and gathering" (industrial recruitment) to gardening (promoting growth from within).

Finally, when the most valuable input for many firms is the skills and talent of their workforce, a pool of skilled workers is the most important locational factor. In the old economy workers often followed companies, so attracting companies made more sense. In the New Economy, it's not so simple. As knowledge workers become a more important factor in production, companies often locate where knowledge workers already live. This means that the old practice of economic development, which focused exclusively on providing help to firms, must give way to a broader approach that includes making a state more attractive to skilled workers by improving quality of life, workforce development systems, and government operations.

NEW STATE ECONOMIES, NEW ECONOMIC STRATEGIES

The old economic growth game was all about attracting industry, and to do this states stressed access to old economy factors of production including cheap land, willing workers, raw materials and transportation, and, of course, low costs and low taxes. Advertisements states placed in business magazines a half century ago exemplify this approach. For example, a 1955 issue of *Fortune* magazine featured an ad touting "Debt Free Indiana" stressing the state's natural resources: "Low-cost coal. Limestone, Natural gas. 'Clay Center of the World.' Petroleum. 'White Clay,' rich in

aluminum. Gypsum. Rock asphalt, Dolomite. Fluorspar. Water, sand, gravel, wood, corn, and soybeans." The ad bragged about its "enviable strike and lockout record" and its access to the Ohio River. Indiana wasn't alone; in a mass production, corporate economy, most states touted their access to natural resources and transportation routes and their low costs.

How things have changed! As more companies become knowledge-based, instead of resource-, labor-, or capital-based, the success factors have been transformed. Today business magazines feature ads like the one in a recent issue of *Fortune* that touts Tennessee's "superior quality of life....strong commitment to secondary and higher education and an expanding technology infrastructure.... Our location is our best recruiting tool — People love living and working in Tennessee."[2]

But the recognition of a New Economy goes far beyond magazine ads. Since PPI published the first *State New Economy Index*, an increasing number of states have begun to recognize the realities of the New Economy and many have reoriented their state economic strategies. Based in part on the recommendations in PPI's first *State New Economy Index*, Hawaii's legislative leaders crafted one of the nation's most far-reaching New Economy package. A number of states, including Arizona, Iowa, and New Hampshire, have developed statewide strategic plans informed by PPI's work and focused explicitly on success in the New Economy. At least 29 governors proposed new technology initiatives in their "State of the State" addresses in 2001. The 13-state Southern Growth Policies Board released *Invented Here: Transforming the Southern Economy*, a 10-year strategic plan to create an innovation-driven economy in the South. Numerous states have also begun to focus on fostering and retaining knowledge workers, not just knowledge companies. Economic development leaders in virtually all states now acknowledge the impact of the New Economy and the need for their states to adapt to its new realities.

Notwithstanding the progress made by many states, there's more work to be done. Some states, particularly those home to few high-tech companies, question whether the New Economy has relevance for them. But this overlooks the fact that the New Economy affects all regions. Other states ask how they can attract or grow "companies in New Economy industries." But the key is not necessarily attracting companies in New Economy industries, but rather ensuring that all the companies become New Economy companies — in other words, adopting the latest technology, training their workforce, exporting to global markets, etc.

Finally, many states continue to see industrial recruiting, or as some call it, "buffalo hunting," as the route to their economic salvation. And they don't mind providing large financial incentives to rope those buffalo, even though most incentives simply subsidize what companies would have done anyway. The most successful states, in fact, are the ones that do the best job of helping entrepreneurial companies grow. Moreover, the key to recruiting companies in an economy in which skills are the scarcest resource is attracting or "growing" knowledge workers. That's why states with few knowledge workers can provide all the free land, tax holidays, and other inducements they want, but will find it virtually impossible to attract innovative, knowledge-based companies unless they also make themselves attractive to knowledge workers. As a result, ensuring a clean environment, abundant amenities, and a superior quality of life is something economic developers can no longer dismiss as an irrelevant and expensive diversion from the real task of cutting deals to attract companies.

The last section of this report outlines a progressive, innovation-oriented public policy framework designed to foster success in the New Economy. There are eight key policy areas that states must address:

1. Focus on the quality, not just the quantity of jobs.
2. Know your state's function in the global economy.
3. Get smart about business incentives.
4. Co-invest in the skills of the workforce.
5. Co-invest in an infrastructure for innovation.
6. Support industry clusters.
7. Boost quality of life.
8. Help more regions succeed in the New Economy.

States that focus their policy efforts in these areas will be well positioned to experience strong growth, particularly in the incomes of residents across all socioeconomic strata. And that is the true objective. Developing a vibrant New Economy is not an end in itself; it is the means to advance larger progressive goals: higher incomes, new economic opportunities, more individual choice and freedom, greater dignity and autonomy for working Americans, and stronger communities.

The *2002 State New Economy Index* includes most of the indicators used in the [1999] *State Index*. However, in our continuing effort to better measure the New Economy, especially as it is affecting all sectors and not just "high-tech," the *2002 Index* includes several new indicators using newly available data. Several of these indicators assess the extent to which non-IT sectors have embraced IT. The report measures the percentage of information technology workers in "traditional" sectors that use IT, the extent to which farmers are using computers and the Internet, and the share of manufacturing plants with Internet access. To assess the degree to which a state's manufacturing sector is embracing high-performance, high-skill work practices, it measures the educational levels of a state's manufacturing workforce. Finally, it measures the states' high-speed broadband communications infrastructure.

In addition, for variables that measure company behavior (R&D, exports, patents), the report controls for a state's industry sector mix. Holding the industry mix constant is important for these variables since some industries by their nature export, patent, or spend more on R&D than others. For example, without controlling for industry mix, Washington state would score very high on manufacturing exports because the aviation sector (e.g., Boeing) is so large, and exports are a large share of the industry's output. To present a more accurate measure of the degree to which companies in a state, irrespective of the industry they are in, export, invest in R&D, or patent, these three indicators control for states' industry mix.[3] Because the 1999 and 2002 reports use different indicators and different methodologies, the total scores are not necessarily compatible. Therefore, movement of a state to a higher or lower rank from 1999 to 2002 should not necessarily be seen as reflecting relative changes in the structure of its economy.

The 21 indicators are divided into five categories that best capture what is new about the New Economy:

1) **Knowledge jobs.** Indicators measure employment of IT professionals; jobs held by managers, professionals, and technicians; the educational attainment of the entire workforce; and the education level of the manufacturing workforce.

2) **Globalization.** Indicators measure the export orientation of manufacturing and foreign direct investment.

3) **Economic dynamism and competition.** Indicators in this category measure the number of fast-growing "gazelle" companies (companies with growth of 20 percent or more for four straight years); the rate of economic "churn" (which is a product of new business start-ups and existing business failures); and the value of initial public stock offerings (IPOs) by companies.

4) **The transformation to a digital economy.** Indicators measure the percentage of population online; the number of ".com" domain name registrations; technology in schools; the degree to which state and local governments use information technologies to deliver services; Internet and computer use by farmers; Internet use by manufacturers; and access by residents and businesses to broadband telecommunications.

5) **Technological innovation capacity.** Indicators measure the number of jobs in technology-producing industries; the number of scientists and engineers in the workforce; the number of patents issued; industry investment in research and development; and venture capital activity.

In all cases, the report relies on the most recently published statistics available, but because of the delays in publishing federal statistics, the data in some cases may be several years old. In addition, in all cases, data are reported to control for the size of the state, using factors such as the number of workers or the gross state product as the denominator.

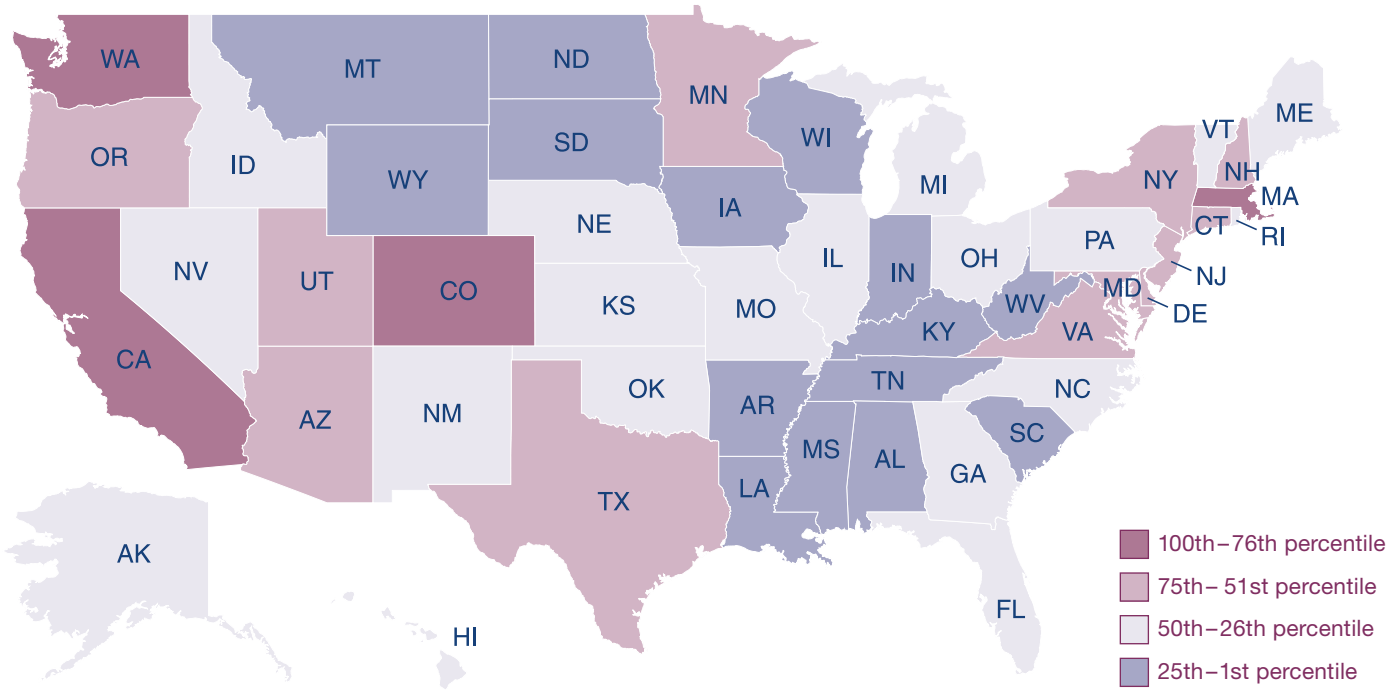
Scores in each indicator are calculated as follows: In order to measure the magnitude of the differences between the states instead of just their rank from one to 50, raw scores are based on standard deviations from the mean. Therefore, on most indicators, approximately half the states initially have negative scores (below the national mean) and approximately half have positive scores. The scores are equally adjusted (10 is added to each of the five indicator category totals) to ensure that all are positive.

In three of the five indicator categories, and in the calculation of the overall New Economy scores, the indicators are weighted so that closely correlated ones (for example, patents, R&D spending, and high-tech jobs) don't bias the results. (See Appendix A.)

The overall scores are calculated by adding the states' adjusted scores in each of the five indicator categories and then dividing that total by the sum of the highest score achieved by any state in each category. Thus, each state's final score is a percentage of the total score a state would have achieved if it had finished first in every category.

The maps were coded using the following methodology: The range between the highest and lowest scores was calculated and divided by four. That product was subtracted from the top score to calculate the range for the 100th to the 76th percentile, and likewise for the other three percentile ranges. In other words, the percentiles do not necessarily divide into an equal number of states, but rather indicate which state scores fall into a particular range.

OVERALL SCORES



Based on the scores below, the states break into percentiles as indicated on the map. See methodology for further explanation.

2002 Rank	2002 Score	State	1999 Rank	1999 Score	Rank* Change
1	90.0	Massachusetts	1	82.3	0
2	86.2	Washington	4	69.0	2
3	85.5	California	2	74.3	-1
4	84.3	Colorado	3	72.3	-1
5	75.6	Maryland	11	59.2	6
6	75.1	New Jersey	8	60.9	2
7	74.2	Connecticut	5	64.9	-2
8	72.1	Virginia	12	58.8	4
9	70.5	Delaware	9	59.9	0
10	69.3	New York	16	54.5	6
11	68.9	Oregon	15	56.1	4
12	68.7	Utah	6	64.0	-6
13	68.7	Minnesota	14	56.5	1
14	67.6	Texas	17	52.3	3
15	67.6	New Hampshire	7	62.5	-8
16	67.2	Arizona	10	59.2	-6
17	64.7	Illinois	22	48.4	5
18	62.7	Florida	20	50.8	2
19	62.3	Pennsylvania	24	46.7	5
20	61.6	Idaho	23	47.9	3
21	61.5	Rhode Island	29	45.3	8
22	60.1	Georgia	25	46.6	3
23	60.0	Michigan	34	44.6	11
24	58.9	Missouri	35	44.2	11
25	58.3	Maine	28	45.6	3
26	57.5	North Carolina	30	45.2	4
27	57.2	New Mexico	19	51.4	-8
28	56.9	Vermont	18	51.9	-10
29	56.7	Kansas	27	45.8	-2
30	56.5	Ohio	33	44.8	3
31	56.3	Alaska	13	57.7	-18
32	55.7	Nevada	21	49.0	-11
33	54.4	Nebraska	36	41.8	3
34	54.1	Oklahoma	40	38.6	6
35	53.7	Hawaii	26	46.1	-9
36	52.8	Indiana	37	41.0	1
37	52.8	Montana	46	29.0	9
38	52.2	Iowa	42	33.5	4
39	52.2	Tennessee	31	45.1	-8
40	52.0	Wisconsin	32	44.9	-8
41	51.1	South Carolina	38	39.7	-3
42	48.6	Kentucky	39	39.4	-3
43	47.4	South Dakota	43	32.3	0
44	46.1	North Dakota	45	29.0	1
45	45.9	Louisiana	47	28.2	2
46	45.7	Wyoming	41	34.5	-5
47	45.3	Alabama	44	32.3	-3
48	41.7	Arkansas	49	26.2	1
49	40.9	Mississippi	50	22.6	1
50	40.7	West Virginia	48	26.8	-2
	60.3	United States		48.1	

* Because of differences in methodology changes in ranks between 1999 and 2002 cannot all be attributed to changes in actual economic conditions in the state.

STATE NEW ECONOMY SCORES BY OVERALL RANK

	Overall		IT Professionals		Managerial/ Professional Jobs		Workforce Education		Manufacturing Workforce Education		Export Focus of Manufacturing		Foreign Direct Investment		"Gazelle" Jobs		Job Churning		IPOs		Online Population	
State	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Massachusetts	1	90.00	4	2.5%	2	31.4%	4	58.2	22	1.13	18	$38,209	7	6.0%	4	15.4%	41	17.4%	2	10.78	22	56.7%
Washington	2	86.21	2	2.8%	14	27.7%	11	53.1	6	1.53	3	$82,911	33	3.7%	1	16.5%	10	21.3%	1	11.78	7	61.3%
California	3	85.50	9	2.2%	5	28.8%	28	48.2	3	1.65	8	$65,021	21	4.6%	3	15.6%	8	21.3%	3	9.06	35	52.1%
Colorado	4	84.33	1	3.3%	8	28.3%	2	59.6	9	1.40	6	$66,182	23	4.3%	13	14.2%	6	22.1%	4	7.08	11	60.1%
Maryland	5	75.56	5	2.4%	3	31.4%	1	60.9	32	0.95	28	$29,243	26	4.1%	14	14.1%	22	19.8%	7	6.49	5	61.4%
New Jersey	6	75.10	14	1.9%	10	27.8%	15	52.0	21	1.15	5	$68,225	5	6.3%	36	12.4%	25	19.7%	14	5.81	12	60.0%
Connecticut	7	74.16	8	2.2%	6	28.5%	7	56.0	35	0.82	14	$46,347	6	6.2%	8	14.6%	37	17.8%	9	6.26	14	58.6%
Virginia	8	72.11	3	2.5%	9	28.0%	3	59.1	44	0.47	25	$31,182	15	5.0%	7	14.7%	23	19.8%	6	6.66	15	58.5%
Delaware	9	70.49	10	2.1%	17	27.2%	20	51.1	24	1.09	1	$122,362	3	6.9%	46	11.0%	14	20.5%	34	3.55	16	58.4%
New York	10	69.27	20	1.7%	11	27.8%	8	53.8	17	1.20	4	$71,676	16	4.9%	30	13.1%	29	19.2%	17	5.28	33	53.0%
Oregon	11	68.88	25	1.5%	1	31.4%	13	52.3	2	1.66	15	$44,549	31	3.7%	19	13.7%	13	20.7%	23	4.61	8	61.2%
Utah	12	68.69	7	2.2%	34	24.6%	12	52.8	8	1.40	37	$21,286	38	3.3%	11	14.2%	4	22.5%	21	4.82	5	61.4%
Minnesota	13	68.65	11	1.9%	13	27.8%	6	56.1	29	0.99	13	$47,600	36	3.5%	16	13.9%	44	16.9%	13	5.94	2	63.5%
Texas	14	67.61	12	1.9%	12	27.8%	43	43.5	14	1.25	7	$65,281	22	4.5%	5	15.2%	7	21.6%	16	5.41	39	51.2%
New Hampshire	15	67.56	24	1.5%	18	27.2%	5	58.0	4	1.56	35	$22,314	8	6.0%	9	14.5%	34	18.1%	27	4.42	2	63.5%
Arizona	16	67.22	13	1.9%	28	25.2%	42	44.0	34	0.88	16	$40,694	42	3.3%	2	15.7%	3	22.7%	18	5.21	32	53.1%
Illinois	17	64.67	17	1.7%	7	28.3%	21	50.8	28	1.01	19	$37,726	17	4.8%	26	13.4%	39	17.8%	5	6.85	38	51.3%
Florida	18	62.75	23	1.5%	30	24.9%	35	46.3	20	1.16	10	$56,588	24	4.2%	10	14.4%	2	23.7%	20	4.93	37	52.0%
Pennsylvania	19	62.31	26	1.4%	22	26.3%	19	51.2	33	0.95	22	$33,165	18	4.7%	25	13.4%	47	16.7%	12	6.10	29	55.0%
Idaho	20	61.63	27	1.4%	15	27.4%	38	45.4	18	1.19	17	$39,778	37	3.4%	38	12.0%	9	21.3%	34	3.55	26	55.8%
Rhode Island	21	61.50	22	1.6%	24	25.6%	9	53.8	16	1.20	44	$18,154	20	4.7%	20	13.7%	43	17.1%	34	3.55	22	56.7%
Georgia	22	60.07	15	1.8%	32	24.8%	40	44.8	25	1.04	29	$26,811	12	5.6%	22	13.5%	5	22.4%	15	5.78	41	50.3%
Michigan	23	59.96	30	1.3%	23	25.7%	23	50.5	7	1.52	11	$53,783	14	5.4%	35	12.6%	36	17.9%	32	3.96	25	56.4%
Missouri	24	58.85	18	1.7%	29	25.2%	24	50.4	40	0.67	38	$21,252	32	3.7%	17	13.9%	30	19.0%	10	6.23	20	57.3%
Maine	25	58.30	28	1.4%	4	30.4%	37	45.6	23	1.11	43	$19,657	10	5.6%	40	11.9%	33	18.5%	22	4.74	10	60.4%
North Carolina	26	57.54	16	1.7%	31	24.9%	29	47.7	42	0.63	33	$23,904	4	6.7%	24	13.5%	16	20.3%	26	4.51	45	47.2%
New Mexico	27	57.17	6	2.2%	16	27.3%	46	42.7	36	0.81	47	$12,980	48	2.2%	44	11.4%	11	21.2%	34	3.55	42	49.8%
Vermont	28	56.95	39	0.9%	40	23.4%	16	51.5	41	0.65	9	$56,925	27	4.1%	18	13.9%	35	18.0%	34	3.55	9	60.5%
Kansas	29	56.69	19	1.7%	21	26.6%	14	52.0	49	0.12	31	$24,100	25	4.2%	23	13.5%	32	18.7%	34	3.55	18	58.0%
Ohio	30	56.47	29	1.3%	26	25.3%	27	48.2	30	0.98	27	$29,524	19	4.7%	27	13.3%	46	16.9%	33	3.67	29	55.0%
Alaska	31	56.32	35	1.1%	19	27.1%	17	51.5	47	0.19	2	$115,098	30	3.8%	42	11.7%	18	20.3%	34	3.55	1	68.8%
Nevada	32	55.74	38	0.9%	50	18.6%	49	38.8	15	1.22	12	$53,540	40	3.3%	29	13.1%	1	25.0%	30	4.05	36	52.1%
Nebraska	33	54.35	21	1.6%	27	25.3%	34	46.6	5	1.56	23	$33,079	45	2.8%	32	12.8%	45	16.9%	28	4.31	28	55.4%
Oklahoma	34	54.07	36	1.1%	25	25.6%	30	47.5	39	0.69	41	$19,927	43	3.0%	12	14.2%	21	20.1%	8	6.43	43	49.7%
Hawaii	35	53.74	37	1.1%	44	23.0%	10	53.3	1	1.76	20	$34,699	1	8.3%	50	8.5%	28	19.2%	34	3.55	40	50.9%
Indiana	36	52.81	40	0.9%	47	22.1%	33	46.6	13	1.28	34	$22,406	11	5.6%	37	12.3%	40	17.8%	19	4.93	27	55.5%
Montana	37	52.75	44	0.9%	20	26.9%	18	51.2	26	1.04	21	$33,385	35	3.6%	47	10.8%	17	20.3%	34	3.55	19	57.6%
Iowa	38	52.23	33	1.2%	33	24.8%	32	47.5	12	1.30	45	$14,535	46	2.7%	43	11.7%	50	16.1%	11	6.11	17	58.3%
Tennessee	39	52.18	34	1.2%	42	23.1%	26	48.6	46	0.39	30	$26,083	9	5.7%	34	12.6%	19	20.2%	24	4.60	34	52.5%
Wisconsin	40	52.01	31	1.2%	43	23.0%	25	49.3	11	1.33	36	$21,403	34	3.6%	39	11.9%	48	16.3%	29	4.29	21	57.0%
South Carolina	41	51.13	43	0.9%	41	23.3%	39	45.0	45	0.39	32	$23,974	2	7.4%	28	13.2%	15	20.4%	34	3.55	44	47.7%
Kentucky	42	48.62	41	0.9%	45	22.8%	47	42.7	10	1.33	26	$31,120	13	5.4%	33	12.8%	31	18.8%	31	3.97	31	53.2%
South Dakota	43	47.44	32	1.2%	48	21.8%	31	47.5	19	1.17	50	$8,601	50	1.7%	15	14.0%	38	17.8%	34	3.55	13	58.8%
North Dakota	44	46.10	50	0.3%	39	23.6%	22	50.5	38	0.73	24	$31,317	47	2.4%	49	10.0%	49	16.3%	34	3.55	24	56.5%
Louisiana	45	45.87	46	0.8%	35	24.4%	48	39.3	37	0.74	40	$20,058	39	3.3%	31	13.0%	26	19.5%	25	4.54	49	43.4%
Wyoming	46	45.71	47	0.7%	36	24.4%	45	43.1	43	0.50	46	$14,074	44	2.9%	48	10.3%	27	19.4%	34	3.55	4	62.3%
Alabama	47	45.28	42	0.9%	37	24.2%	44	43.4	48	0.18	42	$19,717	28	4.1%	21	13.6%	20	20.1%	34	3.55	47	46.2%
Arkansas	48	41.68	49	0.5%	49	21.3%	41	44.6	50	0.01	48	$11,110	41	3.3%	41	11.8%	12	20.8%	34	3.55	48	44.3%
Mississippi	49	40.94	48	0.6%	46	22.3%	36	45.7	27	1.01	49	$9,650	49	2.2%	6	14.7%	24	19.7%	34	3.55	50	41.8%
West Virginia	50	40.71	45	0.8%	38	24.2%	50	38.7	31	0.98	39	$20,361	29	3.8%	45	11.2%	42	17.4%	34	3.55	46	46.7%
U.S. average		**60.32**		**1.7%**		**26.5%**		**49.2**		**1.00**		**$42,913**		**4.7%**		**13.8%**		**19.8%**		**5.00**		**53.9%**

THE RANKINGS

	Commercial Internet Domain Names		Technology In Schools		Digital Government		Online Agriculture		Online Manufacturers		Broadband		High-Tech Jobs		Scientists and Engineers		Patents		Industry R&D Investment		Venture Capital	
State	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
MA	4	1.34	40	1.06	27	3.06	12	3.8	15	87.5%	1	5.42	1	10.4%	4	0.92%	12	0.94	9	2.45%	1	3.58%
WA	15	0.97	27	1.95	2	4.38	10	3.9	19	87.0%	8	4.03	9	6.6%	11	0.59%	9	1.03	11	2.25%	5	1.34%
CA	1	1.86	50	0.02	10	3.68	18	3.7	32	84.5%	2	5.22	4	8.9%	10	0.62%	5	1.20	8	2.56%	2	3.39%
CO	13	1.04	21	2.31	35	2.79	4	3.9	21	86.6%	15	3.47	2	10.0%	8	0.63%	4	1.21	12	2.18%	3	3.00%
MD	6	1.25	42	0.87	14	3.57	30	2.8	39	81.7%	11	3.76	8	6.6%	3	1.05%	10	1.01	26	1.18%	6	1.31%
NJ	9	1.13	24	2.01	12	3.60	39	2.6	43	79.8%	3	4.74	6	7.1%	9	0.63%	3	1.29	4	3.21%	7	1.21%
CT	14	1.01	47	0.42	25	3.11	12	3.8	10	87.9%	6	4.43	10	6.6%	6	0.65%	6	1.13	13	2.16%	9	1.01%
VA	7	1.20	14	2.81	20	3.30	30	2.8	18	87.2%	25	3.04	5	7.5%	13	0.56%	29	0.51	27	1.15%	8	1.11%
DE	12	1.08	3	3.58	36	2.78	30	2.8	50	66.7%	36	2.38	32	3.4%	2	1.07%	2	1.49	3	3.63%	26	0.31%
NY	5	1.27	43	0.86	8	3.72	11	3.9	47	77.4%	5	4.44	18	5.3%	12	0.56%	7	1.06	15	1.87%	12	0.90%
OR	19	0.83	25	2.00	23	3.16	2	4.6	6	88.7%	18	3.35	12	6.3%	14	0.52%	16	0.81	23	1.33%	10	0.96%
UT	11	1.10	20	2.47	13	3.57	4	3.9	11	87.8%	17	3.42	11	6.4%	15	0.52%	13	0.85	20	1.54%	13	0.90%
MN	24	0.69	7	3.21	26	3.10	24	2.9	1	91.7%	24	3.06	7	6.9%	20	0.48%	8	1.05	14	2.10%	16	0.64%
TX	20	0.80	17	2.63	3	4.34	36	2.7	30	85.3%	13	3.58	17	5.7%	30	0.39%	15	0.83	21	1.51%	14	0.86%
NH	16	0.96	45	0.49	44	1.76	12	3.8	27	85.8%	20	3.23	3	9.6%	25	0.43%	31	0.49	18	1.70%	4	1.56%
AZ	3	1.34	32	1.65	38	2.69	4	3.9	26	86.0%	9	3.96	16	5.8%	32	0.38%	11	0.95	6	3.00%	24	0.39%
IL	18	0.88	23	2.06	15	3.55	20	3.6	29	85.5%	16	3.44	21	4.8%	27	0.41%	23	0.65	16	1.83%	18	0.54%
FL	10	1.11	39	1.16	7	3.83	28	2.8	40	81.4%	10	3.77	26	4.3%	49	0.26%	22	0.66	30	0.80%	19	0.50%
PA	22	0.74	34	1.42	6	3.85	39	2.6	23	86.4%	28	2.98	23	4.6%	17	0.50%	17	0.81	7	2.76%	17	0.54%
ID	34	0.49	13	2.87	39	2.60	1	5.0	35	84.2%	34	2.41	14	5.9%	24	0.44%	1	1.53	2	3.68%	41	0.04%
RI	21	0.77	35	1.39	45	1.64	12	3.8	44	79.4%	7	4.22	25	4.4%	7	0.64%	19	0.72	1	4.29%	22	0.41%
GA	17	0.91	33	1.60	31	2.95	48	1.1	33	84.5%	26	3.00	20	4.8%	43	0.32%	27	0.52	31	0.80%	11	0.93%
MI	29	0.59	36	1.35	1	4.49	26	2.9	14	87.7%	23	3.10	36	3.2%	29	0.40%	20	0.69	10	2.33%	34	0.17%
MO	33	0.52	9	2.94	28	3.06	27	2.9	24	86.0%	29	2.89	29	3.8%	31	0.38%	34	0.45	29	0.81%	25	0.34%
ME	31	0.57	15	2.79	9	3.70	12	3.8	3	89.5%	35	2.39	34	3.3%	23	0.44%	44	0.32	40	0.48%	20	0.49%
NC	27	0.63	44	0.84	16	3.45	41	2.0	36	84.1%	33	2.41	24	4.5%	21	0.46%	30	0.49	19	1.69%	15	0.69%
NM	23	0.71	38	1.32	48	1.39	4	3.9	38	82.1%	31	2.66	15	5.8%	1	1.21%	18	0.77	5	3.15%	44	0.02%
VT	25	0.63	28	1.84	50	0.93	12	3.8	41	81.2%	48	1.55	13	6.3%	5	0.70%	14	0.83	17	1.73%	29	0.27%
KS	36	0.48	16	2.74	11	3.60	37	2.6	28	85.6%	21	3.22	27	3.9%	42	0.32%	36	0.42	24	1.31%	23	0.40%
OH	28	0.62	4	3.47	5	3.85	29	2.8	16	87.5%	22	3.22	30	3.5%	26	0.41%	24	0.57	22	1.44%	31	0.18%
AK	26	0.63	6	3.35	33	2.83	34	2.7	49	72.4%	49	1.23	44	2.1%	19	0.48%	32	0.48	46	0.18%	46	0.01%
NV	2	1.71	49	0.35	29	3.03	4	3.9	45	78.3%	4	4.45	38	2.7%	50	0.22%	25	0.57	33	0.70%	40	0.04%
NE	42	0.41	1	3.82	22	3.18	22	3.1	31	84.6%	12	3.62	19	4.9%	40	0.33%	41	0.34	42	0.42%	35	0.16%
OK	40	0.46	29	1.81	49	1.25	43	1.9	9	88.0%	14	3.52	37	2.9%	36	0.34%	33	0.47	41	0.46%	39	0.05%
HI	8	1.16	26	1.95	40	2.54	34	2.7	48	72.7%	19	3.26	46	2.0%	18	0.50%	40	0.36	49	0.11%	21	0.48%
IN	35	0.49	22	2.07	4	4.29	38	2.6	4	89.0%	40	2.19	33	3.4%	38	0.34%	39	0.39	34	0.66%	36	0.16%
MT	45	0.36	31	1.65	30	2.97	3	4.5	17	87.3%	43	1.86	48	1.8%	16	0.51%	21	0.67	44	0.24%	33	0.17%
IA	49	0.30	5	3.37	34	2.83	21	3.5	20	86.9%	38	2.30	28	3.9%	37	0.34%	26	0.56	32	0.71%	42	0.03%
TN	30	0.58	37	1.33	43	2.07	47	1.3	22	86.5%	30	2.78	39	2.6%	35	0.34%	42	0.34	28	1.01%	37	0.13%
WI	38	0.47	19	2.59	19	3.33	23	3.0	13	87.7%	32	2.61	31	3.5%	34	0.35%	28	0.52	25	1.24%	32	0.17%
SC	39	0.46	10	2.94	37	2.73	46	1.6	8	88.4%	39	2.27	41	2.5%	46	0.29%	46	0.24	36	0.57%	27	0.29%
KY	41	0.43	18	2.59	32	2.89	50	0.1	12	87.8%	41	2.14	42	2.5%	47	0.27%	45	0.30	39	0.53%	30	0.21%
SD	50	0.29	2	3.64	17	3.43	25	2.9	34	84.3%	44	1.79	22	4.7%	44	0.31%	50	0.13	50	0.06%	48	0.01%
ND	44	0.37	11	2.94	18	3.38	19	3.6	2	90.3%	46	1.73	40	2.6%	22	0.44%	38	0.39	37	0.55%	49	0.00%
LA	37	0.48	48	0.39	21	3.20	45	1.9	5	88.9%	27	2.99	49	1.6%	41	0.33%	37	0.41	48	0.17%	38	0.08%
WY	46	0.35	8	3.05	46	1.57	4	3.9	7	88.6%	45	1.78	50	1.4%	28	0.41%	35	0.43	46	0.18%	49	0.00%
AL	32	0.52	46	0.42	47	1.54	44	1.9	42	79.8%	37	2.30	35	3.3%	33	0.36%	47	0.24	38	0.54%	28	0.27%
AR	47	0.32	30	1.66	24	3.14	42	1.9	25	86.0%	42	1.88	43	2.4%	48	0.27%	49	0.21	43	0.40%	45	0.01%
MS	48	0.32	41	1.05	42	2.11	49	0.8	37	83.4%	47	1.55	47	1.9%	45	0.30%	48	0.21	45	0.20%	43	0.03%
WV	43	0.37	12	2.90	41	2.16	30	2.8	46	77.4%	50	0.96	45	2.1%	39	0.34%	43	0.33	35	0.61%	47	0.01%
		0.95		**2.00**		**3.00**		**3.0**		**84.5%**		**3.00**		**5.3%**		**0.49%**		**0.80**		**1.91%**		**1.10%**

STATE NEW ECONOMY SCORES IN ALPHABETICAL ORDER

State	Overall		IT Professionals		Managerial/ Professional Jobs		Workforce Education		Manufacturing Workforce Education		Export Focus of Manufacturing		Foreign Direct Investment		"Gazelle" Jobs		Job Churning		IPOs		Online Population	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Alabama	47	45.28	42	0.9%	37	24.2%	44	43.4	48	0.18	42	$19,717	28	4.1%	21	13.6%	20	20.1%	34	3.55	47	46.2%
Alaska	31	56.32	35	1.1%	19	27.1%	17	51.5	47	0.19	2	$115,098	30	3.8%	42	11.7%	18	20.3%	34	3.55	1	68.8%
Arizona	16	67.22	13	1.9%	28	25.2%	42	44.0	34	0.88	16	$40,694	42	3.3%	2	15.7%	3	22.7%	18	5.21	32	53.1%
Arkansas	48	41.68	49	0.5%	49	21.3%	41	44.6	50	0.01	48	$11,110	41	3.3%	41	11.8%	12	20.8%	34	3.55	48	44.3%
California	3	85.50	9	2.2%	5	28.8%	28	48.2	3	1.65	8	$65,021	21	4.6%	3	15.6%	8	21.3%	3	9.06	35	52.1%
Colorado	4	84.33	1	3.3%	8	28.3%	2	59.6	9	1.40	6	$66,182	23	4.3%	13	14.2%	6	22.1%	4	7.08	11	60.1%
Connecticut	7	74.16	8	2.2%	6	28.5%	7	56.0	35	0.82	14	$46,347	6	6.2%	8	14.6%	37	17.8%	9	6.26	14	58.6%
Delaware	9	70.49	10	2.1%	17	27.2%	20	51.1	24	1.09	1	$122,362	3	6.9%	46	11.0%	14	20.5%	34	3.55	16	58.4%
Florida	18	62.75	23	1.5%	30	24.9%	35	46.3	20	1.16	10	$56,588	24	4.2%	10	14.4%	2	23.7%	20	4.93	37	52.0%
Georgia	22	60.07	15	1.8%	32	24.8%	40	44.8	25	1.04	29	$26,811	12	5.6%	22	13.5%	5	22.4%	15	5.78	41	50.3%
Hawaii	35	53.74	37	1.1%	44	23.0%	10	53.3	1	1.76	20	$34,699	1	8.3%	50	8.5%	28	19.2%	34	3.55	40	50.9%
Idaho	20	61.63	27	1.4%	15	27.4%	38	45.4	18	1.19	17	$39,778	37	3.4%	38	12.0%	9	21.3%	34	3.55	26	55.8%
Illinois	17	64.67	17	1.7%	7	28.3%	21	50.8	28	1.01	19	$37,726	17	4.8%	26	13.4%	39	17.8%	5	6.85	38	51.3%
Indiana	36	52.81	40	0.9%	47	22.1%	33	46.6	13	1.28	34	$22,406	11	5.6%	37	12.3%	40	17.8%	19	4.93	27	55.5%
Iowa	38	52.23	33	1.2%	33	24.8%	32	47.5	12	1.30	45	$14,535	46	2.7%	43	11.7%	50	16.1%	11	6.11	17	58.3%
Kansas	29	56.69	19	1.7%	21	26.6%	14	52.0	49	0.12	31	$24,100	25	4.2%	23	13.5%	32	18.7%	34	3.55	18	58.0%
Kentucky	42	48.62	41	0.9%	45	22.8%	47	42.7	10	1.33	26	$31,120	13	5.4%	33	12.8%	31	18.8%	31	3.97	31	53.2%
Louisiana	45	45.87	46	0.8%	35	24.4%	48	39.3	37	0.74	40	$20,058	39	3.3%	31	13.0%	26	19.5%	25	4.54	49	43.4%
Maine	25	58.30	28	1.4%	4	30.4%	37	45.6	23	1.11	43	$19,657	10	5.6%	40	11.9%	33	18.5%	22	4.74	10	60.4%
Maryland	5	75.56	5	2.4%	3	31.4%	1	60.9	32	0.95	28	$29,243	26	4.1%	14	14.1%	22	19.8%	7	6.49	5	61.4%
Massachusetts	1	90.00	4	2.5%	2	31.4%	4	58.2	22	1.13	18	$38,209	7	6.0%	4	15.4%	41	17.4%	2	10.78	22	56.7%
Michigan	23	59.96	30	1.3%	23	25.7%	23	50.5	7	1.52	11	$53,783	14	5.4%	35	12.6%	36	17.9%	32	3.96	25	56.4%
Minnesota	13	68.65	11	1.9%	13	27.8%	6	56.1	29	0.99	13	$47,600	36	3.5%	16	13.9%	44	16.9%	13	5.94	2	63.5%
Mississippi	49	40.94	48	0.6%	46	22.3%	36	45.7	27	1.01	49	$9,650	49	2.2%	6	14.7%	24	19.7%	34	3.55	50	41.8%
Missouri	24	58.85	18	1.7%	29	25.2%	24	50.4	40	0.67	38	$21,252	32	3.7%	17	13.9%	30	19.0%	10	6.23	20	57.3%
Montana	37	52.75	44	0.9%	20	26.9%	18	51.2	26	1.04	21	$33,385	35	3.6%	47	10.8%	17	20.3%	34	3.55	19	57.6%
Nebraska	33	54.35	21	1.6%	27	25.3%	34	46.6	5	1.56	23	$33,079	45	2.8%	32	12.8%	45	16.9%	28	4.31	28	55.4%
Nevada	32	55.74	38	0.9%	50	18.6%	49	38.8	15	1.22	12	$53,540	40	3.3%	29	13.1%	1	25.0%	30	4.05	36	52.1%
New Hampshire	15	67.56	24	1.5%	18	27.2%	5	58.0	4	1.56	35	$22,314	8	6.0%	9	14.5%	34	18.1%	27	4.42	2	63.5%
New Jersey	6	75.10	14	1.9%	10	27.8%	15	52.0	21	1.15	5	$68,225	5	6.3%	36	12.4%	25	19.7%	14	5.81	12	60.0%
New Mexico	27	57.17	6	2.2%	16	27.3%	46	42.7	36	0.81	47	$12,980	48	2.2%	44	11.4%	11	21.2%	34	3.55	42	49.8%
New York	10	69.27	20	1.7%	11	27.8%	8	53.8	17	1.20	4	$71,676	16	4.9%	30	13.1%	29	19.2%	17	5.28	33	53.0%
North Carolina	26	57.54	16	1.7%	31	24.9%	29	47.7	42	0.63	33	$23,904	4	6.7%	24	13.5%	16	20.3%	26	4.51	45	47.2%
North Dakota	44	46.10	50	0.3%	39	23.6%	22	50.5	38	0.73	24	$31,317	47	2.4%	49	10.0%	49	16.3%	34	3.55	24	56.5%
Ohio	30	56.47	29	1.3%	26	25.3%	27	48.2	30	0.98	27	$29,524	19	4.7%	27	13.3%	46	16.9%	33	3.67	29	55.0%
Oklahoma	34	54.07	36	1.1%	25	25.6%	30	47.5	39	0.69	41	$19,927	43	3.0%	12	14.2%	21	20.1%	8	6.43	43	49.7%
Oregon	11	68.88	25	1.5%	1	31.4%	13	52.3	2	1.66	15	$44,549	31	3.7%	19	13.7%	13	20.7%	23	4.61	8	61.2%
Pennsylvania	19	62.31	26	1.4%	22	26.3%	19	51.2	33	0.95	22	$33,165	18	4.7%	25	13.4%	47	16.7%	12	6.10	29	55.0%
Rhode Island	21	61.50	22	1.6%	24	25.6%	9	53.8	16	1.20	44	$18,154	20	4.7%	20	13.7%	43	17.1%	34	3.55	22	56.7%
South Carolina	41	51.13	43	0.9%	41	23.3%	39	45.0	45	0.39	32	$23,974	2	7.4%	28	13.2%	15	20.4%	34	3.55	44	47.7%
South Dakota	43	47.44	32	1.2%	48	21.8%	31	47.5	19	1.17	50	$8,601	50	1.7%	15	14.0%	38	17.8%	34	3.55	13	58.8%
Tennessee	39	52.18	34	1.2%	42	23.1%	26	48.6	46	0.39	30	$26,083	9	5.7%	34	12.6%	19	20.2%	24	4.60	34	52.5%
Texas	14	67.61	12	1.9%	12	27.8%	43	43.5	14	1.25	7	$65,281	22	4.5%	5	15.2%	7	21.6%	16	5.41	39	51.2%
Utah	12	68.69	7	2.2%	34	24.6%	12	52.8	8	1.40	37	$21,286	38	3.3%	11	14.2%	4	22.5%	21	4.82	5	61.4%
Vermont	28	56.95	39	0.9%	40	23.4%	16	51.5	41	0.65	9	$56,925	27	4.1%	18	13.9%	35	18.0%	34	3.55	9	60.5%
Virginia	8	72.11	3	2.5%	9	28.0%	3	59.1	44	0.47	25	$31,182	15	5.0%	7	14.7%	23	19.8%	6	6.66	15	58.5%
Washington	2	86.21	2	2.8%	14	27.7%	11	53.1	6	1.53	3	$82,911	33	3.7%	1	16.5%	10	21.3%	1	11.78	7	61.3%
West Virginia	50	40.71	45	0.8%	38	24.2%	50	38.7	31	0.98	39	$20,361	29	3.8%	45	11.2%	42	17.4%	34	3.55	46	46.7%
Wisconsin	40	52.01	31	1.2%	43	23.0%	25	49.3	11	1.33	36	$21,403	34	3.6%	39	11.9%	48	16.3%	29	4.29	21	57.0%
Wyoming	46	45.71	47	0.7%	36	24.4%	45	43.1	43	0.50	46	$14,074	44	2.9%	48	10.3%	27	19.4%	34	3.55	4	62.3%
U.S. average		**60.32**		**1.7%**		**26.5%**		**49.2**		**1.00**		**$42,913**		**4.7%**		**13.8%**		**19.8%**		**5.00**		**53.9%**

THE RANKINGS

State	Commercial Internet Domain Names		Technology In Schools		Digital Government		Online Agriculture		Online Manufacturers		Broadband		High-Tech Jobs		Scientists and Engineers		Patents		Industry R&D Investment		Venture Capital	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
AL	32	0.52	46	0.42	47	1.54	44	1.9	42	79.8%	37	2.30	35	3.3%	33	0.36%	47	0.24	38	0.54%	28	0.27%
AK	26	0.63	6	3.35	33	2.83	34	2.7	49	72.4%	49	1.23	44	2.1%	19	0.48%	32	0.48	46	0.18%	46	0.01%
AZ	3	1.34	32	1.65	38	2.69	4	3.9	26	86.0%	9	3.96	16	5.8%	32	0.38%	11	0.95	6	3.00%	24	0.39%
AR	47	0.32	30	1.66	24	3.14	42	1.9	25	86.0%	42	1.88	43	2.4%	48	0.27%	49	0.21	43	0.40%	45	0.01%
CA	1	1.86	50	0.02	10	3.68	18	3.7	32	84.5%	2	5.22	4	8.9%	10	0.62%	5	1.20	8	2.56%	2	3.39%
CO	13	1.04	21	2.31	35	2.79	4	3.9	21	86.6%	15	3.47	2	10.0%	8	0.63%	4	1.21	12	2.18%	3	3.00%
CT	14	1.01	47	0.42	25	3.11	12	3.8	10	87.9%	6	4.43	10	6.6%	6	0.65%	6	1.13	13	2.16%	9	1.01%
DE	12	1.08	3	3.58	36	2.78	30	2.8	50	66.7%	36	2.38	32	3.4%	2	1.07%	2	1.49	3	3.63%	26	0.31%
FL	10	1.11	39	1.16	7	3.83	28	2.8	40	81.4%	10	3.77	26	4.3%	49	0.26%	22	0.66	30	0.80%	19	0.50%
GA	17	0.91	33	1.60	31	2.95	48	1.1	33	84.5%	26	3.00	20	4.8%	43	0.32%	27	0.52	31	0.80%	11	0.93%
HI	8	1.16	26	1.95	40	2.54	34	2.7	48	72.7%	19	3.26	46	2.0%	18	0.50%	40	0.36	49	0.11%	21	0.48%
ID	34	0.49	13	2.87	39	2.60	1	5.0	35	84.2%	34	2.41	14	5.9%	24	0.44%	1	1.53	2	3.68%	41	0.04%
IL	18	0.88	23	2.06	15	3.55	20	3.6	29	85.5%	16	3.44	21	4.8%	27	0.41%	23	0.65	16	1.83%	18	0.54%
IN	35	0.49	22	2.07	4	4.29	38	2.6	4	89.0%	40	2.19	33	3.4%	38	0.34%	39	0.39	34	0.66%	36	0.16%
IA	49	0.30	5	3.37	34	2.83	21	3.5	20	86.9%	38	2.30	28	3.9%	37	0.34%	26	0.56	32	0.71%	42	0.03%
KS	36	0.48	16	2.74	11	3.60	37	2.6	28	85.6%	21	3.22	27	3.9%	42	0.32%	36	0.42	24	1.31%	23	0.40%
KY	41	0.43	18	2.59	32	2.89	50	0.1	12	87.8%	41	2.14	42	2.5%	47	0.27%	45	0.30	39	0.53%	30	0.21%
LA	37	0.48	48	0.39	21	3.20	45	1.9	5	88.9%	27	2.99	49	1.6%	41	0.33%	37	0.41	48	0.17%	38	0.08%
ME	31	0.57	15	2.79	9	3.70	12	3.8	3	89.5%	35	2.39	34	3.3%	23	0.44%	44	0.32	40	0.48%	20	0.49%
MD	6	1.25	42	0.87	14	3.57	30	2.8	39	81.7%	11	3.76	8	6.6%	3	1.05%	10	1.01	26	1.18%	6	1.31%
MA	4	1.34	40	1.06	27	3.06	12	3.8	15	87.5%	1	5.42	1	10.4%	4	0.92%	12	0.94	9	2.45%	1	3.58%
MI	29	0.59	36	1.35	1	4.49	26	2.9	14	87.7%	23	3.10	36	3.2%	29	0.40%	20	0.69	10	2.33%	34	0.17%
MN	24	0.69	7	3.21	26	3.10	24	2.9	1	91.7%	24	3.06	7	6.9%	20	0.48%	8	1.05	14	2.10%	16	0.64%
MS	48	0.32	41	1.05	42	2.11	49	0.8	37	83.4%	47	1.55	47	1.9%	45	0.30%	48	0.21	45	0.20%	43	0.03%
MO	33	0.52	9	2.94	28	3.06	27	2.9	24	86.0%	29	2.89	29	3.8%	31	0.38%	34	0.45	29	0.81%	25	0.34%
MT	45	0.36	31	1.65	30	2.97	3	4.5	17	87.3%	43	1.86	48	1.8%	16	0.51%	21	0.67	44	0.24%	33	0.17%
NE	42	0.41	1	3.82	22	3.18	22	3.1	31	84.6%	12	3.62	19	4.9%	40	0.33%	41	0.34	42	0.42%	35	0.16%
NV	2	1.71	49	0.35	29	3.03	4	3.9	45	78.3%	4	4.45	38	2.7%	50	0.22%	25	0.57	33	0.70%	40	0.04%
NH	16	0.96	45	0.49	44	1.76	12	3.8	27	85.8%	20	3.23	3	9.6%	25	0.43%	31	0.49	18	1.70%	4	1.56%
NJ	9	1.13	24	2.01	12	3.60	39	2.6	43	79.8%	3	4.74	6	7.1%	9	0.63%	3	1.29	4	3.21%	7	1.21%
NM	23	0.71	38	1.32	48	1.39	4	3.9	38	82.1%	31	2.66	15	5.8%	1	1.21%	18	0.77	5	3.15%	44	0.02%
NY	5	1.27	43	0.86	8	3.72	11	3.9	47	77.4%	5	4.44	18	5.3%	12	0.56%	7	1.06	15	1.87%	12	0.90%
NC	27	0.63	44	0.84	16	3.45	41	2.0	36	84.1%	33	2.41	24	4.5%	21	0.46%	30	0.49	19	1.69%	15	0.69%
ND	44	0.37	11	2.94	18	3.38	19	3.6	2	90.3%	46	1.73	40	2.6%	22	0.44%	38	0.39	37	0.55%	49	0.00%
OH	28	0.62	4	3.47	5	3.85	29	2.8	16	87.5%	22	3.22	30	3.5%	26	0.41%	24	0.57	22	1.44%	31	0.18%
OK	40	0.46	29	1.81	49	1.25	43	1.9	9	88.0%	14	3.52	37	2.9%	36	0.34%	33	0.47	41	0.46%	39	0.05%
OR	19	0.83	25	2.00	23	3.16	2	4.6	6	88.7%	18	3.35	12	6.3%	14	0.52%	16	0.81	23	1.33%	10	0.96%
PA	22	0.74	34	1.42	6	3.85	39	2.6	23	86.4%	28	2.98	23	4.6%	17	0.50%	17	0.81	7	2.76%	17	0.54%
RI	21	0.77	35	1.39	45	1.64	12	3.8	44	79.4%	7	4.22	25	4.4%	7	0.64%	19	0.72	1	4.29%	22	0.41%
SC	39	0.46	10	2.94	37	2.73	46	1.6	8	88.4%	39	2.27	41	2.5%	46	0.29%	46	0.24	36	0.57%	27	0.29%
SD	50	0.29	2	3.64	17	3.43	25	2.9	34	84.3%	44	1.79	22	4.7%	44	0.31%	50	0.13	50	0.06%	48	0.01%
TN	30	0.58	37	1.33	43	2.07	47	1.3	22	86.5%	30	2.78	39	2.6%	35	0.34%	42	0.34	28	1.01%	37	0.13%
TX	20	0.80	17	2.63	3	4.34	36	2.7	30	85.3%	13	3.58	17	5.7%	30	0.39%	15	0.83	21	1.51%	14	0.86%
UT	11	1.10	20	2.47	13	3.57	4	3.9	11	87.8%	17	3.42	11	6.4%	15	0.52%	13	0.85	20	1.54%	13	0.90%
VT	25	0.63	28	1.84	50	0.93	12	3.8	41	81.2%	48	1.55	13	6.3%	5	0.70%	14	0.83	17	1.73%	29	0.27%
VA	7	1.20	14	2.81	20	3.30	30	2.8	18	87.2%	25	3.04	5	7.5%	13	0.56%	29	0.51	27	1.15%	8	1.11%
WA	15	0.97	27	1.95	2	4.38	10	3.9	19	87.0%	8	4.03	9	6.6%	11	0.59%	9	1.03	11	2.25%	5	1.34%
WV	43	0.37	12	2.90	41	2.16	30	2.8	46	77.4%	50	0.96	45	2.1%	39	0.34%	43	0.33	35	0.61%	47	0.01%
WI	38	0.47	19	2.59	19	3.33	23	3.0	13	87.7%	32	2.61	31	3.5%	34	0.35%	28	0.52	25	1.24%	32	0.17%
WY	46	0.35	8	3.05	46	1.57	4	3.9	7	88.6%	45	1.78	50	1.4%	28	0.41%	35	0.43	46	0.18%	49	0.00%
		0.95		**2.00**		**3.00**		**3.0**		**84.5%**		**3.00**		**5.3%**		**0.49%**		**0.80**		**1.91%**		**1.10%**

The two states that are farthest along the path to the New Economy are Massachusetts and Washington. Also topping the list in 1999, Massachusetts boasts a concentration of software, hardware, and biotech firms supported by world-class universities such as MIT and Harvard in the Route 128 region around Boston. Washington is up from fourth, in part on its strength in software (in no small part due to Microsoft), but also because of the entrepreneurial hotbed of activity that has developed in the Puget Sound region and very strong use of digital technologies by all sectors. California is third, with Silicon Valley remaining the world's most dominant technology region. Colorado comes in at number four, with the highest score in the composite knowledge jobs indicator, and the third highest in innovation indicators. These and the other top 10 New Economy states (Maryland, New Jersey, Connecticut, Virginia, Delaware, and New York) have more in common than just high-tech firms. They tend to have a high concentration of managers, professionals, and college-educated residents working in "knowledge jobs" (jobs that require at least a two-year degree). With one or two exceptions, their manufacturers tend to be more geared toward global markets, both in terms of export orientation and the amount of foreign direct investment. Most are at the forefront of the IT and Internet revolutions, with a large share of their institutions and residents embracing the digital economy. Most have a solid "innovation infrastructure" that fosters and supports technological innovation. Many have high levels of domestic in-migration of highly mobile, highly skilled knowledge workers seeking good employment opportunities coupled with a good quality of life. Moreover, while they tend to be richer states (there is a positive correlation of 0.75 between their rankings and their per capita income), wealth is not a simple proxy for advancement toward the New Economy. Some states with higher incomes lag behind in their scores (for example, Illinois and Michigan), while other states with lower incomes do relatively well (such as Arizona and Utah).

Finally, the top-ranked economies don't score well simply because they have found ways to get the right mix of companies, individuals, and institutions. They also score well because they tend to adapt quickly. A high rate of "creative destruction" — the shedding of old practices while embracing the new — is the key to economic transformation in the private, public, and non-profit sectors. In fact, the degree to which businesses close in a state is positively correlated with total New Economy scores and income growth from 1990 to 1999 (0.44 and 0.63, respectively).

The two states that remain most firmly rooted in the old economy are West Virginia and Mississippi. Other states with low scores include Arkansas, Alabama, Wyoming, Louisiana, North Dakota, South Dakota, Kentucky, South Carolina, and Wisconsin. Historically, the economies of many of these and other Southern and Plains states depended on natural resources or on mass production manufacturing, and relied on low costs rather than innovative capacity, to gain advantage. But innovative capacity (derived through universities, R&D investments, scientists and engineers, and entrepreneurial drive) is increasingly what drives competitive success in the New Economy.

While lower-ranking states face challenges, they can also take advantage of new opportunities. The IT revolution gives companies and individuals more geographical freedom, making it easier for businesses to relocate, or start up and grow in less densely populated states farther away from existing agglomerations of industry and commerce. But as discussed below, a key policy challenge will be to extend advanced telecommunications infrastructure to these places, particularly for business to access.

Regionally, the New Economy has taken hold most strongly in the Northeast, the mid-Atlantic, the Mountain West, and the Pacific regions; 15 of the top 20 states are in these four regions. (The five exceptions are Florida, Illinois, Minnesota, Texas, and Virginia.) In contrast, 16 of the 20 lowest ranking states are in the Midwest, Great Plains, and the South.

Given some states' reputations as technology-based, New Economy states, their scores seem surprising at first. For example, Georgia and North Carolina rank 22nd and 26th respectively, in spite of the fact that the regions around Research Triangle Park and Atlanta boast top universities, a highly educated workforce, cutting-edge technology companies, and global connections. In both cases, however, many parts of the state outside these metropolitan regions are more rooted in the old economy — with more jobs in traditional manufacturing, agriculture, and lower-skilled services; a less-educated workforce; and a less-developed innovation infrastructure.[4] As these examples reveal, most state economies are in fact a composite of many regional economies that differ in the degree to which they have adapted to the New Economy.[5]

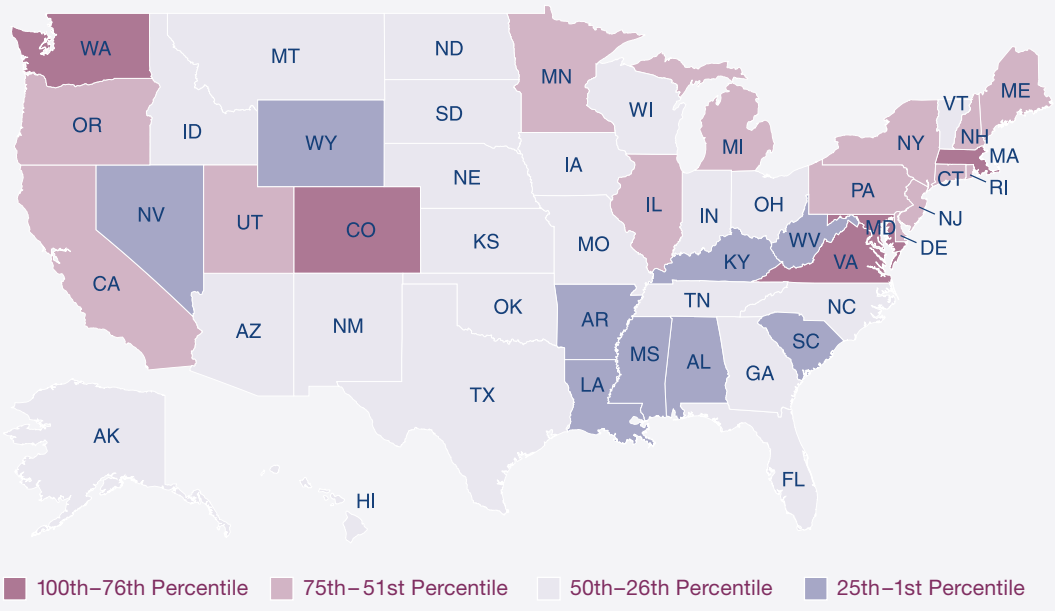
How closely do high scores correlate with economic growth? States that score higher appear to create jobs no faster than states that score lower. Between 1990 and 1999, there was in fact a slightly negative correlation (-0.08) between the rate of employment growth and the New Economy score. However, it's not clear that job growth is the true measure of a state's economic well being. Rapidly growing states are likely to experience rising home prices, traffic congestion, declining open space, and environmental pollution. As a result, growth in per-capita income is a more accurate measure of the economic well-being of the residents of a state. New Economy scores were in fact positively correlated with absolute growth in state per capita incomes between 1990 and 2000 (0.70). As the New Economy continues to take hold over the next decade, higher scoring states can be expected to experience greater per-capita income growth than lower scoring states.

KNOWLEDGE JOBS

In the old economy, states prospered by having workers who were skilled with their hands and could reliably work in repetitive and sometimes physically demanding jobs. In the New Economy, states will prosper if their workers are good with their minds, because knowledge-based jobs are driving the New Economy. Many of these jobs are held by workers dealing with information technology in managerial, professional, and technical positions, and by individuals with at least two years of college.

The "knowledge jobs" indicators in this section measure four things: 1) employment in IT occupations in non-IT sectors; 2) the share of the workforce employed in managerial, professional, and technical positions; 3) the education level of the entire workforce; and 4) the education level of workers employed in manufacturing.

Aggregated Knowledge Jobs Scores



Rank	State	Score
1	Colorado	15.15
2	Maryland	14.78
3	Massachusetts	14.59
4	Virginia	13.33
5	Washington	13.24
6	Connecticut	12.69
7	Oregon	12.63
8	New Hampshire	12.48
9	Minnesota	12.39
10	California	11.92
11	New York	11.80
12	New Jersey	11.65
13	Delaware	11.55
14	Utah	11.46
15	Illinois	11.28
16	Rhode Island	11.06
17	Maine	10.53
18	Pennsylvania	10.42
19	Michigan	10.39
20	Kansas	10.34
21	Texas	10.20
22	Hawaii	10.07
23	Missouri	10.04
24	Montana	9.96
25	New Mexico	9.96
26	Nebraska	9.91
27	Alaska	9.76
28	Idaho	9.76
29	Ohio	9.47
30	North Carolina	9.45
31	Florida	9.36
32	Georgia	9.35
33	Arizona	9.22
34	Iowa	9.22
35	Wisconsin	9.15
36	Oklahoma	8.91
37	Vermont	8.83
38	South Dakota	8.33
39	Tennessee	8.26
40	North Dakota	8.04
41	Indiana	8.02
42	Kentucky	7.45
43	South Carolina	7.30
44	Mississippi	7.29
45	Wyoming	7.13
46	Alabama	7.10
47	West Virginia	6.71
48	Louisiana	6.65
49	Arkansas	5.90
50	Nevada	5.53
	U.S. average	**10.00**

Source: Authors' calculations based on the states' scores in four indicators–IT jobs; managerial, professional, and technical jobs; workforce education; and education level of manufacturing workers.

INFORMATION TECHNOLOGY JOBS

Employment in IT occupations in non-IT industries as a share of total jobs.[6]

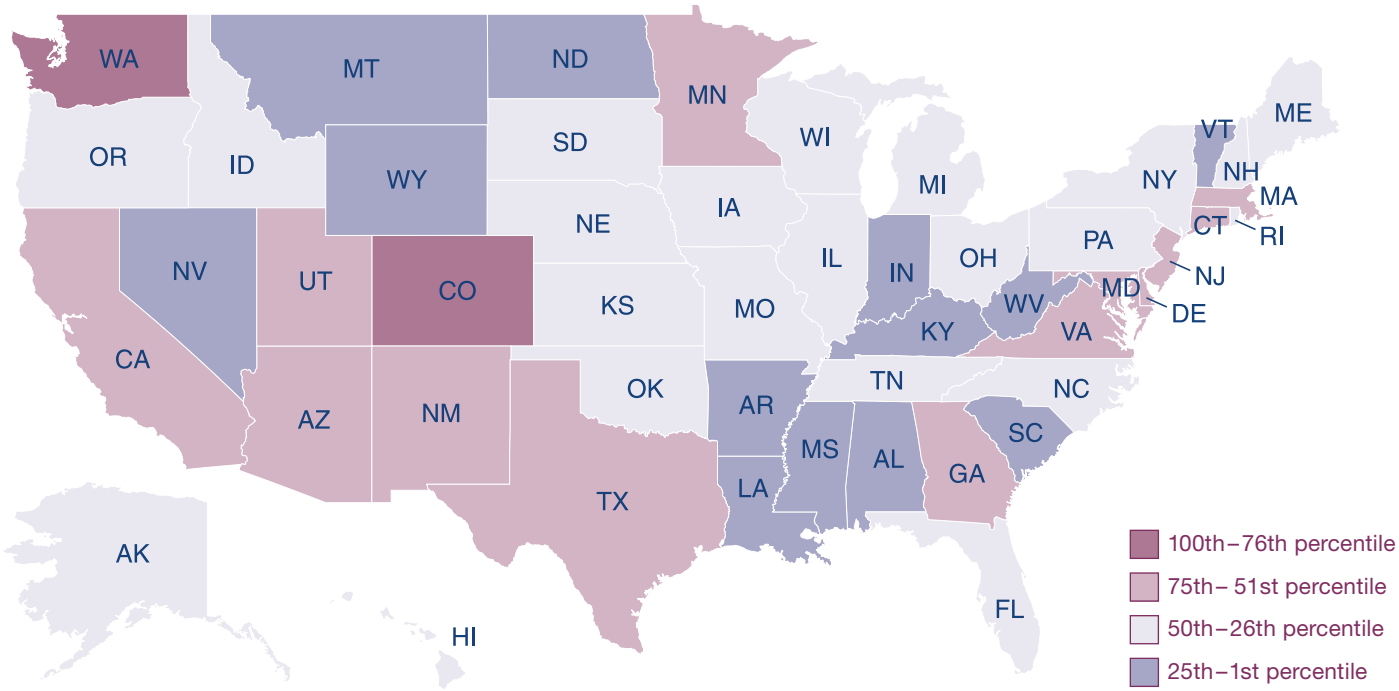
Why Is This Important? The Information Technology revolution continues to permeate the economy. As it does, states with a larger share of workers trained and skilled in the use of information technology will do better than states with a smaller share. And it's not just software and computer companies that employ workers skilled in information technology; it's virtually all sectors. For example, more than 90 percent of IT professionals in the Chicago area are employed by firms that use IT (such as insurance, banking, and health-care administration) rather than those that produce IT or provide IT services. Even "traditional" industries use IT, such as the automobile industry, which employs thousands of IT professionals designing and managing Web sites, operating electronic ordering systems, and using software to design and build cars. As a result, the average worker has more than $8,000 of IT hardware at her disposal.

The Rankings: Even after controlling for the size of states' software and IT-producing industries, in order to measure IT jobs in non-IT sectors, most of the states with high scores are high-tech states such as Colorado, Washington, and Massachusetts. Low-scoring states tend to have natural resources or traditional manufacturing-based economies.

The top five		Percentage of jobs in IT occupations
1	Colorado	3.32%
2	Washington	2.81%
3	Virginia	2.53%
4	Massachusetts	2.51%
5	Maryland	2.36%
	U.S. average	**1.70%**

Source: Bureau of Labor Statistics, 2000 data.

"The average worker has more than $8,000 of IT hardware at her disposal."



MANAGERIAL, PROFESSIONAL, AND TECHNICAL JOBS

Managers, professionals, and technicians as a share of the total workforce.

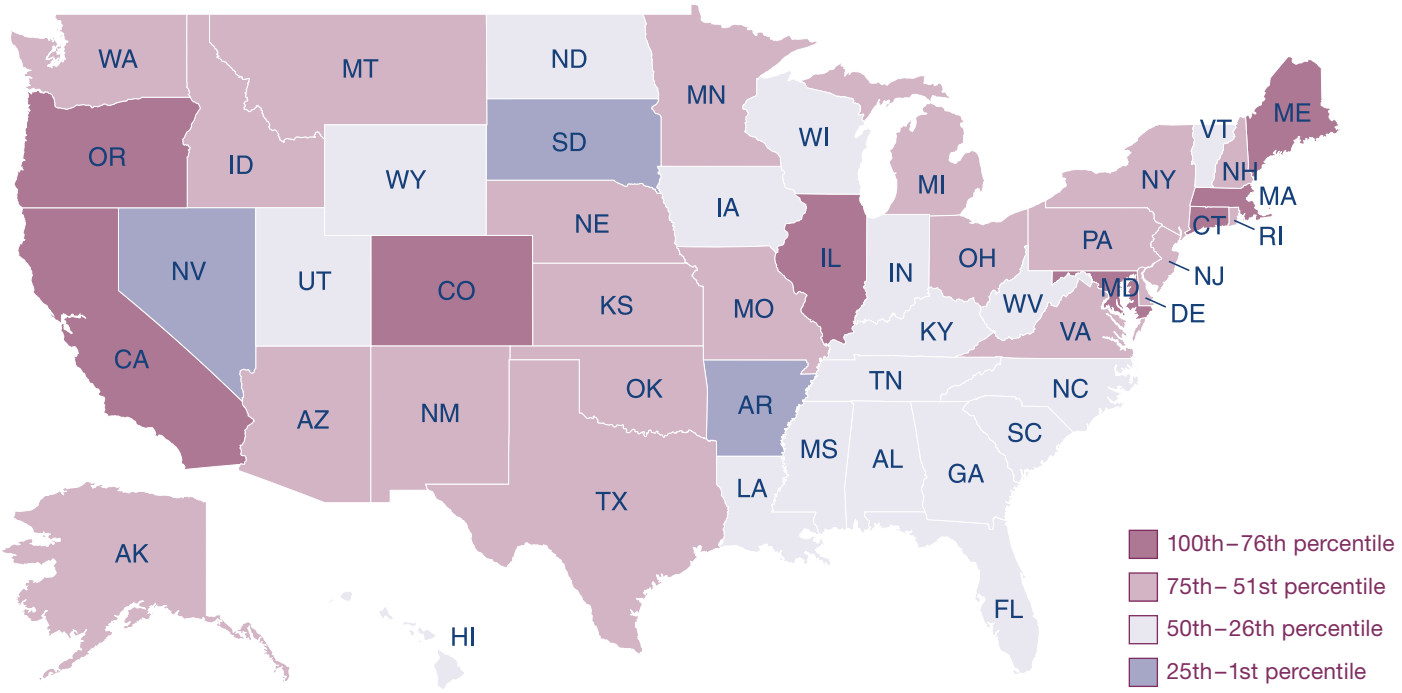
Why Is This Important? The rise of new industries has meant the rise of new jobs, while new technology and new ways of organizing work have transformed many existing jobs. Both trends have changed the occupational mix in America. In particular, managerial and professional jobs have increased as a share of total employment. These include managers, engineers and scientists, health professionals, lawyers, teachers, accountants, bankers, consultants, and engineering technicians.[7] As a result, nearly two-thirds of the new jobs created from 1992 to 1999 were managerial and professional jobs.

The top five		Percentage of jobs held by managers, professionals, and technicians
1	Oregon	31.4%
2	Massachusetts	31.4%
3	Maryland	31.4%
4	Maine	30.4%
5	California	28.8%
	U.S. average	**26.5%**

Source: Bureau of Labor Statistics, 1999 data.

The Rankings: States with high rankings tend to have a large number of technology and professional service companies, such as California, Connecticut, Massachusetts, New Jersey, and New York. In Connecticut, for example, Hartford is home to insurance and defense headquarters, while southwestern Connecticut is dominated by corporate headquarters (such as Pitney Bowes), financial services, and high-tech jobs—many of which have moved out of New York City. But many of the leading states, such as California, Colorado, Maine, and Oregon, also have a great quality of life, reinforcing the link between quality of life and knowledge jobs. States that score lower tend to have economies more rooted in agriculture and traditional manufacturing.

"Nearly two-thirds of the new jobs created from 1992 to 1999 were managerial and professional jobs."



WORKFORCE EDUCATION

A weighted measure of the educational attainment (advanced degrees, bachelor's degrees, associate's degrees, or some college coursework) of the workforce.[8]

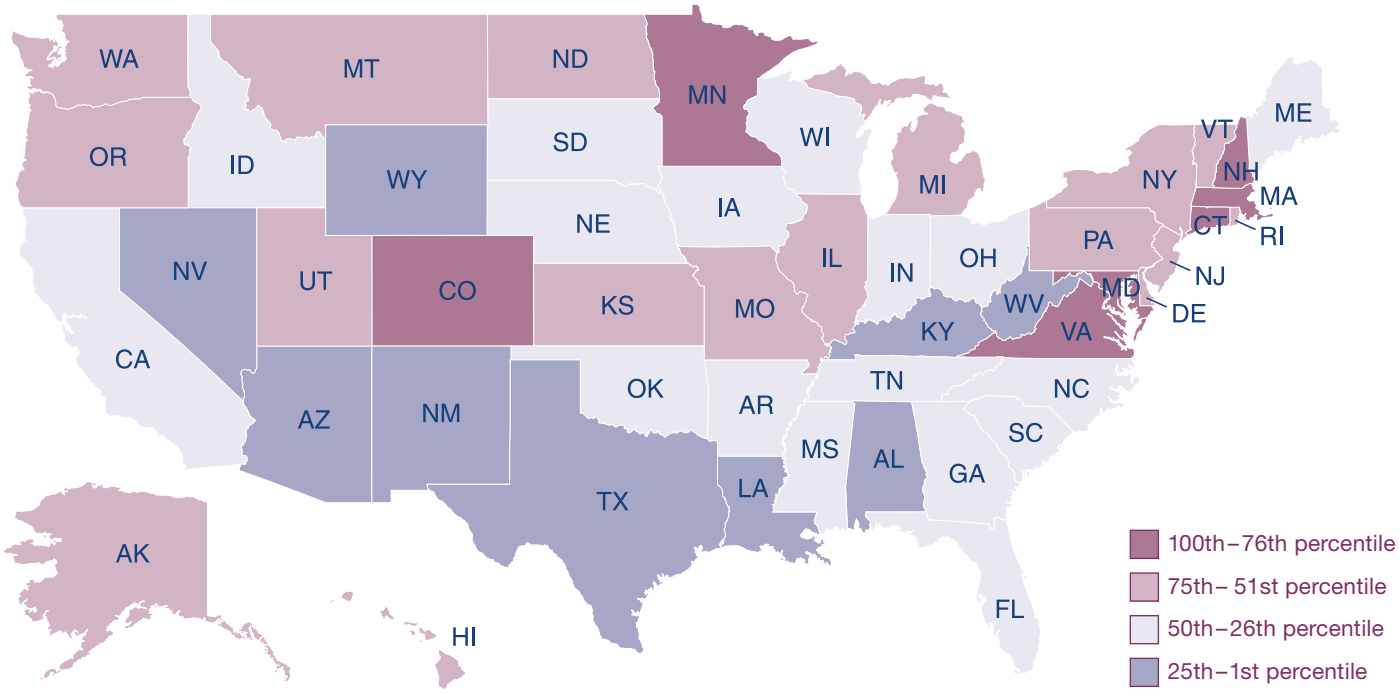
Why Is This Important? In the New Economy, which puts a premium on speed and flexibility, an educated workforce is critical to increasing productivity and fostering innovation. Fortunately, Americans have been getting more education. In 2000, 51 percent of workers had at least some college, up from 40 percent in 1991 and 33 percent in 1982. States with a more educated workforce are better positioned to capitalize on this trend.

"In 2000, 51 percent of workers had at least some college, up from 40 percent in 1991 and 33 percent in 1982."

The Rankings: Demographic studies have shown that highly educated individuals are more geographically mobile than less educated individuals.[9] As a result, states like Colorado, Hawaii, and Washington that have attracted large numbers of people from other states generally have a more-educated workforce. Maryland and Virginia score high, in part because of the immigration of more-educated individuals to the Washington, DC region. States that have strong education systems, particularly in higher education (such as Connecticut, Massachusetts, and Minnesota), also score well. Meanwhile, many states with a less-educated workforce have high net out-migration (for example, South Dakota, West Virginia, and Wyoming), or have historically invested less in education (like Alabama, Louisiana, Mississippi, and Nevada).

The top five		Composite score
1	Maryland	60.9
2	Colorado	59.6
3	Virginia	59.1
4	Massachusetts	58.2
5	New Hampshire	58.0
	U.S. average	**49.2**

Source: U.S. Census, 2001 data.



EDUCATION LEVEL OF THE MANUFACTURING WORKFORCE

A weighted measure of the educational attainment of the manufacturing workforce.[10]

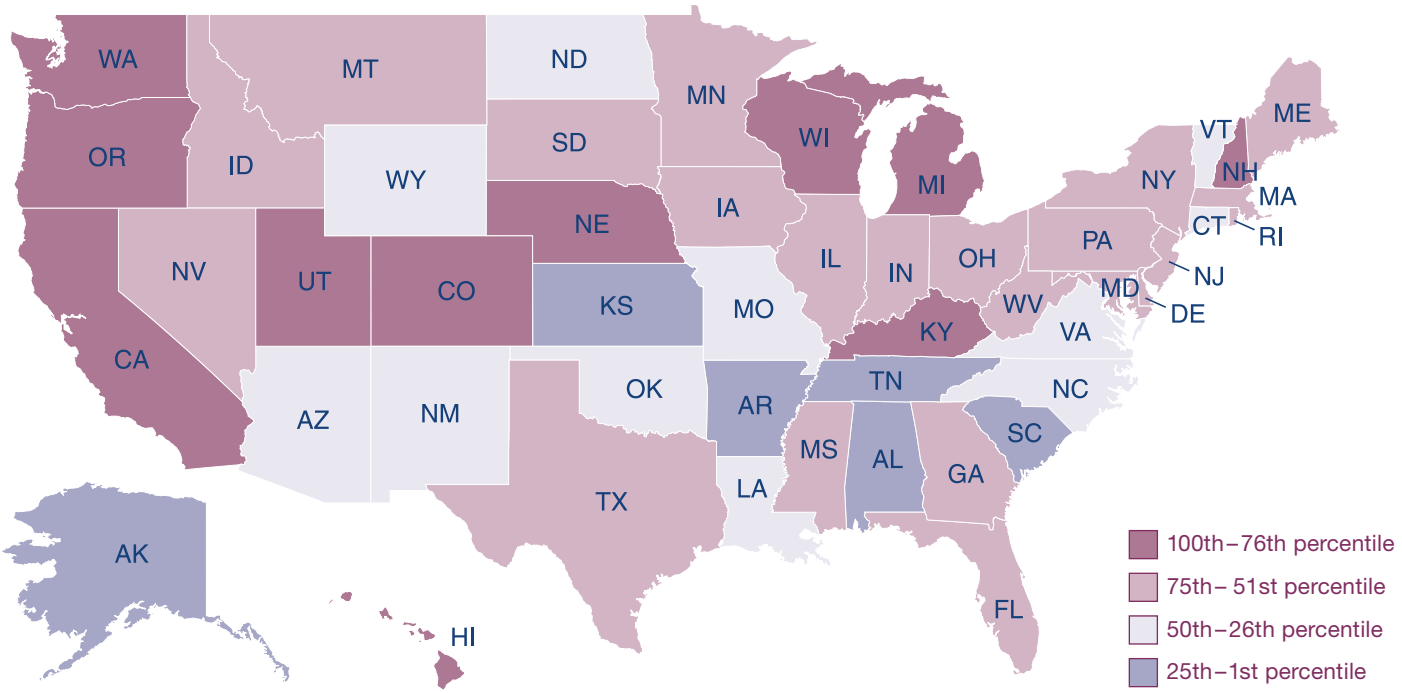
Why Is This Important? In the 1990s, an increasing share of companies abandoned old economy ways of organizing work in favor of giving workers more autonomy and the ability to work in self-managed teams.[11] At the same time, many manufacturing companies have deployed advanced production technologies. Both practices lead manufacturers to employ people with more education. For example, compared to manufacturers using fewer technologies, companies using more technologies employ almost half the share of employees with a high school diploma or less. As a result, education levels of the manufacturing workforce are an indicator of both the quality of the manufacturing workforce and the degree to which a state's manufacturers have embraced high-performance, technology-driven work organizations.

The top five		Composite score
1	Hawaii	1.76
2	Oregon	1.66
3	California	1.65
4	New Hampshire	1.56
5	Nebraska	1.56
	U.S. average	**1.00**

Source: U.S. Census, 2001 data.

The Rankings: High-scoring states generally have both more high-tech jobs and higher business costs. This makes sense, because manufacturing companies that compete more on quality and innovative capability need a more skilled workforce, and are less likely to locate in states principally to take advantage of low costs. These include states such as California, Hawaii, Michigan, Oregon, and Washington.

"Compared to manufacturers using fewer technologies, companies using more technologies employ almost half the share of employees with a high school diploma or less."



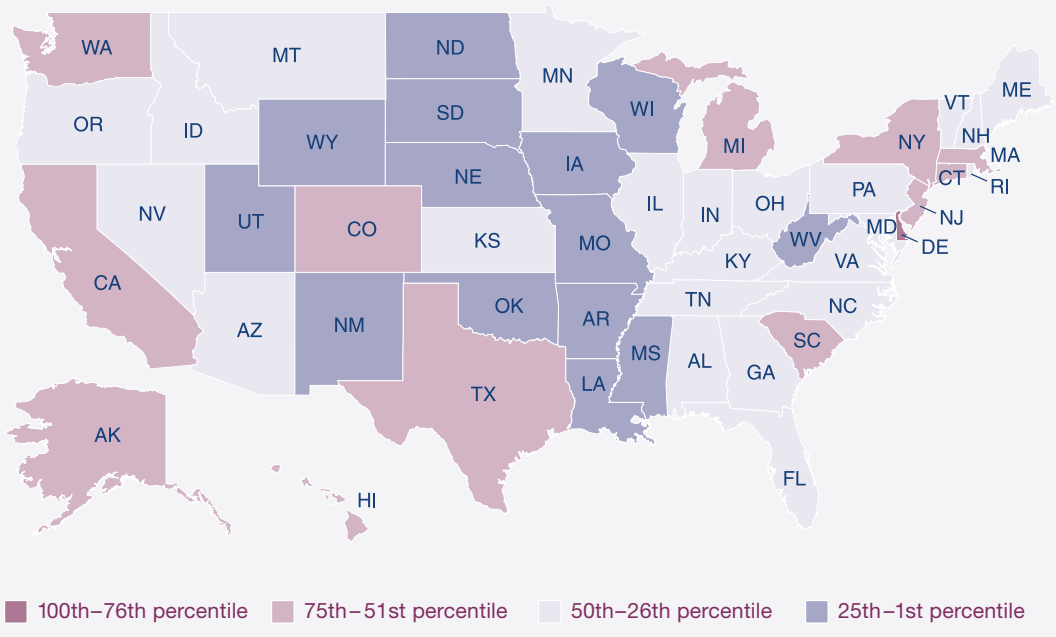
Rank	State	Score
1	Delaware	15.26
2	Alaska	12.76
3	Hawaii	12.69
4	New Jersey	12.66
5	New York	11.74
6	Connecticut	11.65
7	South Carolina	11.61
8	Michigan	11.42
9	Washington	11.35
10	California	11.26
11	Texas	11.21
12	Massachusetts	11.18
13	Colorado	11.11
14	North Carolina	11.09
15	Florida	10.62
16	Vermont	10.60
17	New Hampshire	10.50
18	Kentucky	10.49
19	Tennessee	10.45
20	Georgia	10.39
21	Illinois	10.28
22	Indiana	10.22
23	Virginia	10.18
24	Maine	10.10
25	Pennsylvania	10.04
26	Nevada	9.90
27	Ohio	9.89
28	Oregon	9.81
29	Minnesota	9.79
30	Maryland	9.49
31	Rhode Island	9.39
32	Idaho	9.39
33	Arizona	9.34
34	Kansas	9.28
35	Montana	9.26
36	Alabama	9.04
37	West Virginia	8.90
38	Missouri	8.83
39	Wisconsin	8.79
40	Nebraska	8.71
41	Utah	8.58
42	Louisiana	8.52
43	North Dakota	8.31
44	Oklahoma	8.29
45	Arkansas	8.14
46	Wyoming	7.96
47	Iowa	7.87
48	New Mexico	7.46
49	Mississippi	7.30
50	South Dakota	6.92
	U.S. average	**10.00**

While the old economy was national in scope, the New Economy is global. While in 1975 there were about 7,000 multi-national companies, today there are approximately 40,000.[12] By the time they are five years old, the average venture-backed company exports 36 percent of sales overseas. It is now a competitive requirement that fast-growing companies, as well as established mid-size and larger businesses, invest all over the globe to access markets, technology, and talent.

When the old economy emerged in the late 1940s, the winners were states whose businesses sold to national markets, as opposed to local or regional ones. At the beginning of the 21st century, the winners will be the states whose businesses are most integrated into the world economy. Despite the current slowdown in many nations, a global orientation ensures expanding markets for a state's industries. Since the workforce of globally oriented firms also earn more than workers in other firms, a global orientation means that a state's workforce will have a higher standard of living.

The globalization indicators in this section measure two things: 1) the extent to which the state's manufacturing workforce is employed producing goods for export,[13] and 2) the share of the workforce employed by foreign-owned companies.

Aggregated Globalization Scores



Source: Authors' calculations based on the states' scores in two indicators: export focus of manufacturing and foreign direct investment.

EXPORT FOCUS OF MANUFACTURING

Value of exports per manufacturing worker.[14]

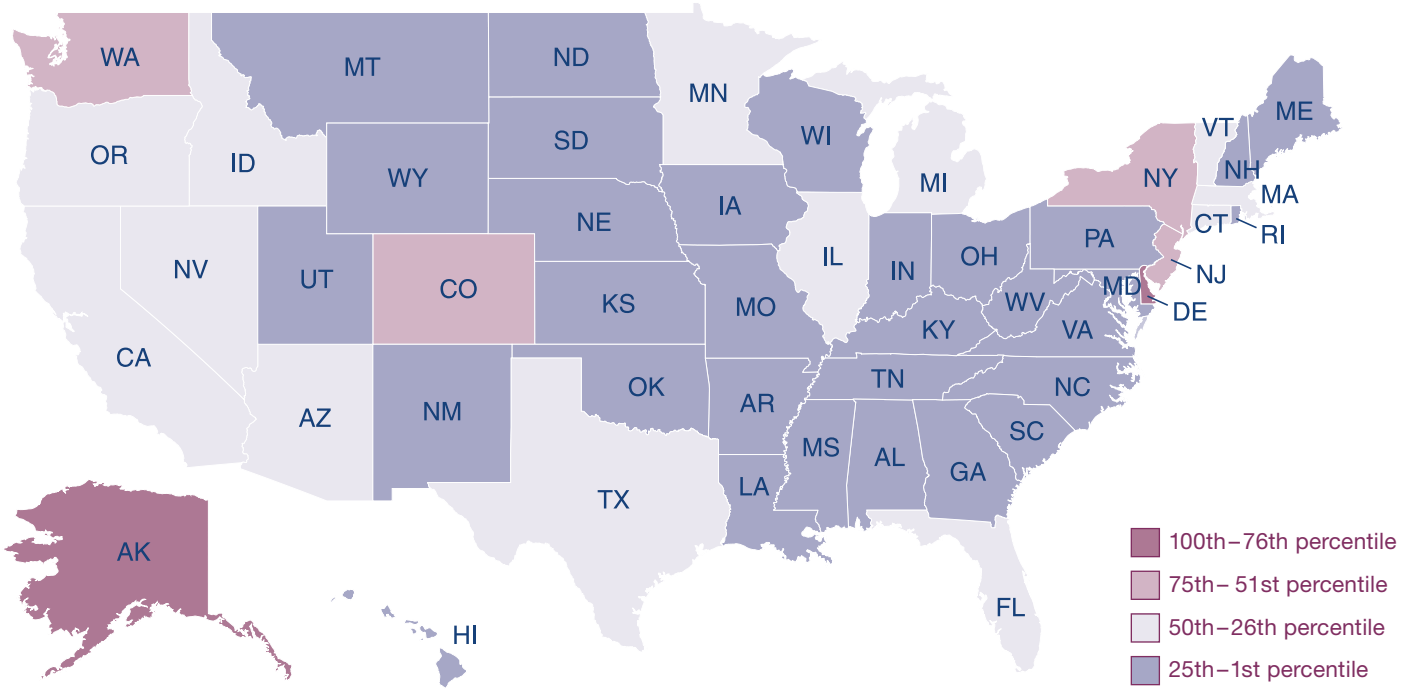
Why Is This Important? Trade has become an integral part of the U.S. and world economies. The combined total of U.S. exports and imports has increased from less than 5.5 percent of GDP in 1950, to 11 percent in 1970, to 24 percent in 2000. Moreover, the United States is increasingly specializing in more complex, higher value-added goods and services, which is benefiting many American workers. Workers employed in export-oriented firms earn 10 percent more than workers in similar firms that export less, or don't export at all.[15] As a result, states whose companies are not global traders risk being left behind.[16]

"Workers employed in export-oriented firms earn 10 percent more than workers in similar firms that export less."

The Rankings: The leading states are those that have high value-added, technologically advanced manufacturing sectors, such as Delaware and New Jersey (chemicals and pharmaceuticals), Washington (aviation), and California, Colorado, New York, and Texas (electronics and instruments). But even after holding constant the industry sectors' propensity to export, the manufacturing companies in these states export more. Alaska is the anomaly, but its high ranking is no doubt due to its high level of export of processed natural resources and its proximity to Asia. States with low rankings tend to have more lower value-added industries that compete directly with lower-wage nations, making it more difficult to export (e.g. Alabama, Arkansas, and Mississippi) or with mostly smaller firms who tend to export less than larger firms (such as Maine and Rhode Island).

The top five		Adjusted manufacturing export sales per manufacturing worker
1	Delaware	$122,362
2	Alaska	$115,098
3	Washington	$82,911
4	New York	$71,676
5	New Jersey	$68,225
	U.S. average	**$42,913**

Source: U.S. Census, 2000 data.



FOREIGN DIRECT INVESTMENT

The percentage of each state's workforce employed by foreign companies.

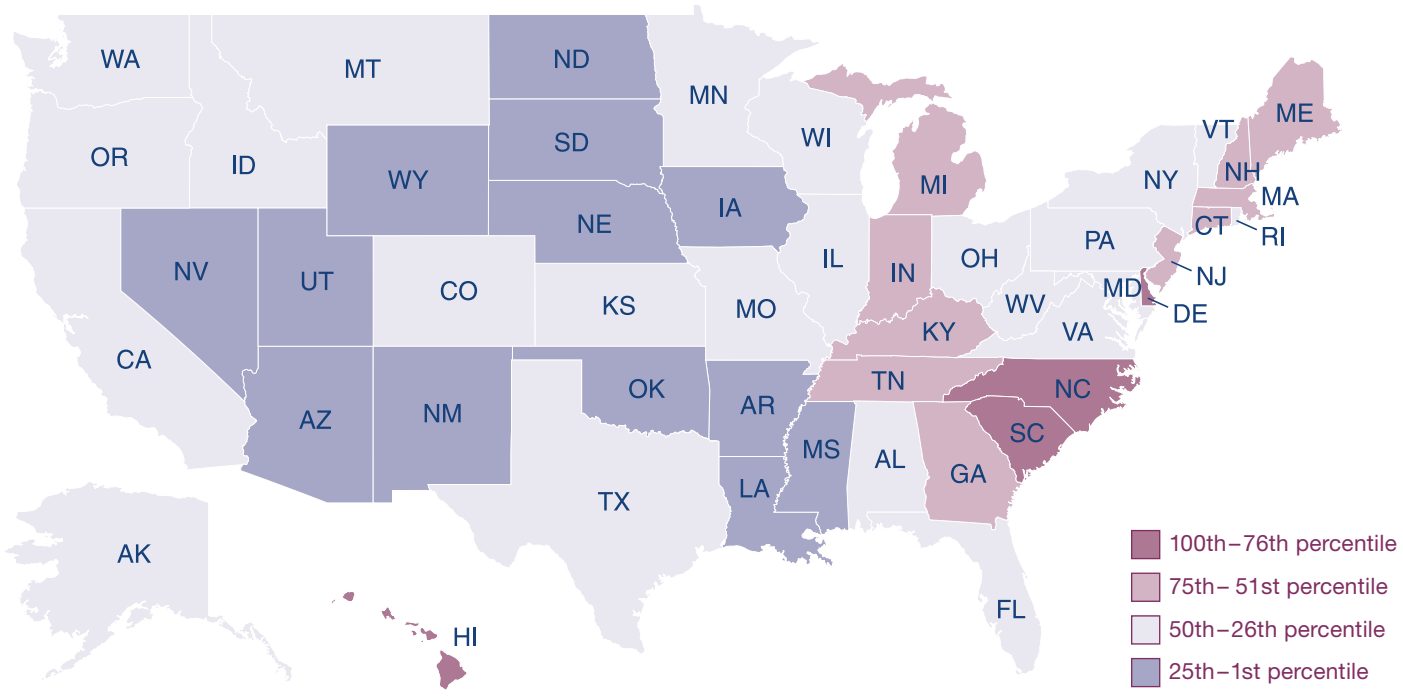
Why Is This Important? Foreign direct investment (FDI) includes significant investments by foreign companies, such as construction of production facilities or ownership stakes taken in U.S. companies. Incoming FDI continues to grow, from $137 billion in 1979, to $305 billion in 1989, to $451 billion in 1999 (in constant 1999 dollars) and from 2.3 percent of GDP, to 4.9 percent.[17]

"Incoming FDI continues to grow, from $137 billion in 1979, to $305 billion in 1989, to $451 billion in 1999."

The Rankings: With the exception of Hawaii, which has the top score because of its proximity to Asia, most states that score well are on the East Coast. This is in large part because most FDI comes from Europe and Canada. In 1999, Europe accounted for 65 percent of all FDI in the United States, with Asia accounting for less than 20 percent. European companies have invested in East Coast states in part because of their proximity to their corporate headquarters and because of the access to densely populated markets.

The top five		Percentage of workforce employed by foreign companies
1	Hawaii	8.3%
2	South Carolina	7.4%
3	Delaware	6.9%
4	North Carolina	6.7%
5	New Jersey	6.3%
	U.S. average	**4.7%**

Source: Bureau of Economic Analysis, 1999 data.

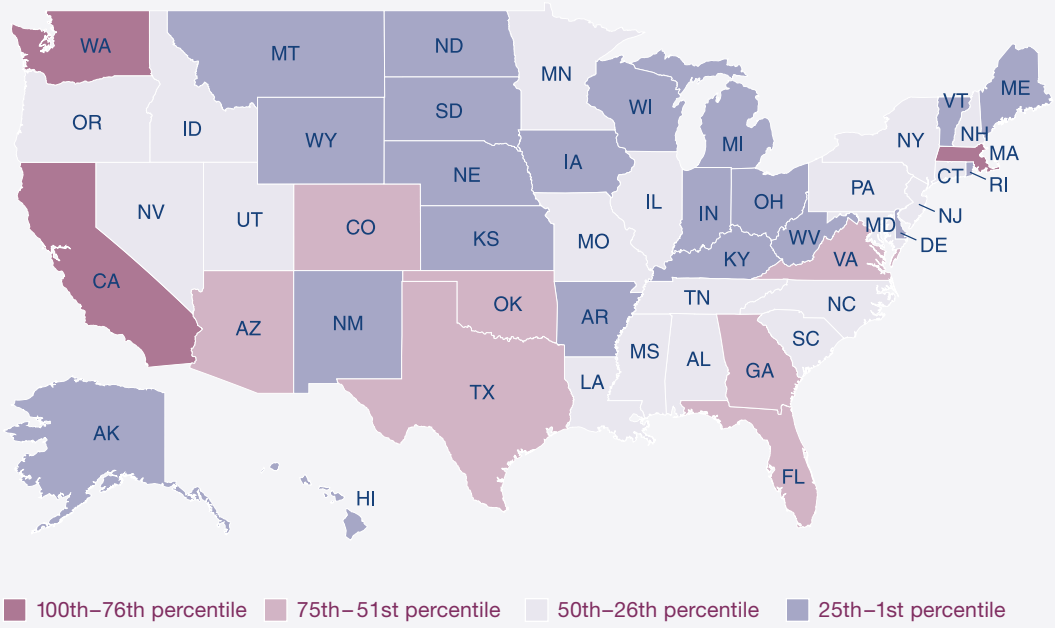


ECONOMIC DYNAMISM

The old economy was epitomized by large companies facing limited competition in stable, cost-based markets. The New Economy is all about economic dynamism and competition and is epitomized by fast-growing, entrepreneurial companies, one of its hallmarks. The 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.

The dynamism and competition indicators in this section measure three things: 1) the share of jobs in fast-growing gazelle firms; 2) the degree of job churning (which is a product of new business start-ups and existing business failures); and 3) the value of companies' IPOs.

Aggregated Economic Dynamism Scores



Rank	State	Score
1	Washington	19.83
2	California	16.56
3	Massachusetts	16.19
4	Colorado	14.08
5	Arizona	13.51
6	Florida	12.83
7	Virginia	12.81
8	Texas	12.80
9	Georgia	12.44
10	Oklahoma	12.43
11	Maryland	12.26
12	Utah	12.03
13	Nevada	11.77
14	Missouri	11.50
15	Connecticut	11.39
16	Illinois	11.17
17	Oregon	10.60
18	New Jersey	10.42
19	Minnesota	10.18
20	North Carolina	10.12
21	New York	10.11
22	Pennsylvania	9.87
23	Mississippi	9.70
24	Tennessee	9.63
25	New Hampshire	9.59
26	Louisiana	9.45
27	Alabama	9.17
28	South Carolina	9.08
29	Idaho	8.72
30	Indiana	8.52
31	Iowa	8.48
32	Maine	8.44
33	Kentucky	8.41
34	Kansas	8.38
35	Arkansas	8.38
36	Vermont	8.31
37	New Mexico	8.28
38	South Dakota	8.26
39	Alaska	8.02
40	Michigan	7.87
41	Nebraska	7.80
42	Rhode Island	7.76
43	Delaware	7.70
44	Ohio	7.47
45	Montana	7.45
46	Wisconsin	6.92
47	Wyoming	6.68
48	West Virginia	6.26
49	Hawaii	5.43
50	North Dakota	4.96
	U.S. average	**10.00**

Source: Authors' calculations based on the states' scores in three indicators–jobs in gazelle companies, job churning, and IPOs.

"GAZELLE" JOBS

Jobs in gazelle companies (companies with annual sales revenue that has grown 20 percent or more for four straight years) as a share of total employment.

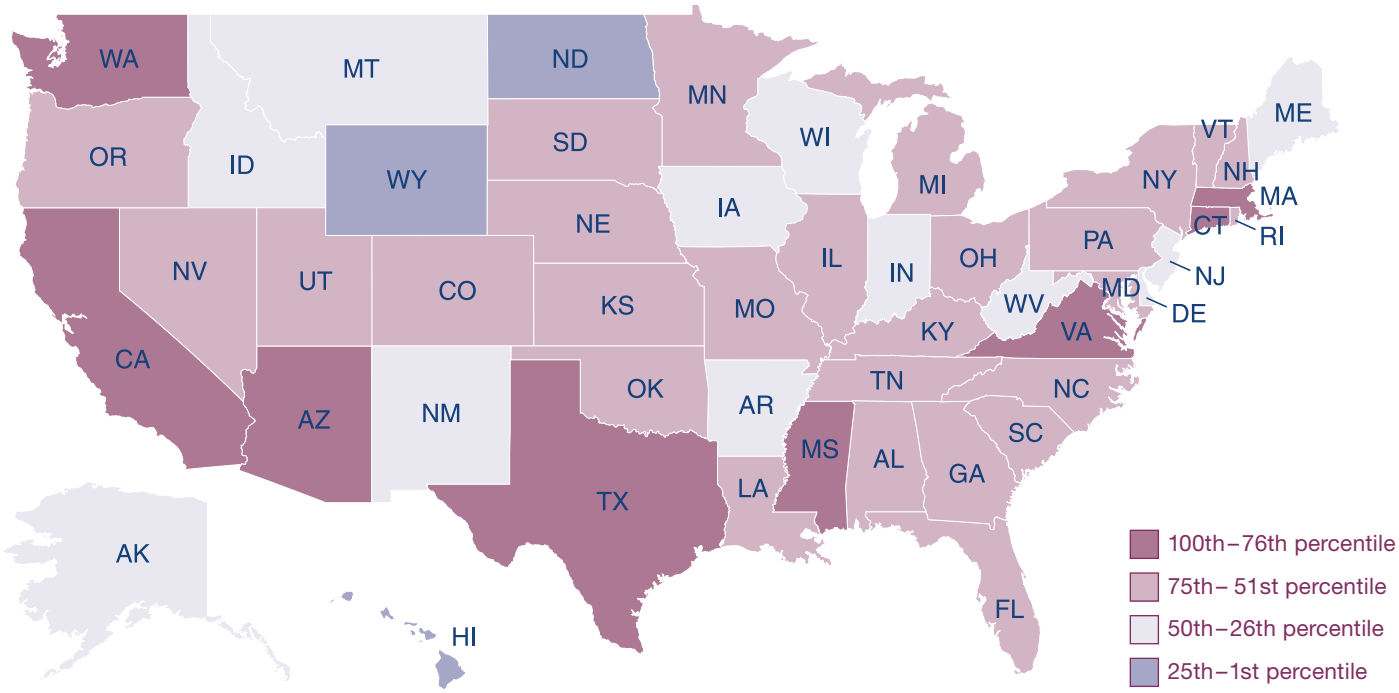
Why Is This Important? The degree to which a state's economy is composed of new, rapidly growing firms known as gazelles is indicative of the degree to which the state's economy is dynamic and adaptive, which is a key driver of the New Economy. It is not small firms per se that are the key, it is the relatively small number of fast-growing firms of all sizes that account for the lion's share of new jobs created in the 1990s. Between 1993 and 1999, the number of gazelles grew almost 40 percent, to over 350,000.

"Between 1993 and 1999, the number of gazelles grew almost 40 percent, to over 350,000."

The Rankings: While the high-ranking states in the 1999 *Index* tended to be Western and Southern states experiencing high rates of overall job growth, in the 2002 *Index* many high-ranking states are not particularly fast-growing, such as California, Connecticut, Maryland, Massachusetts, and Washington. These states were able to incubate new, fast-growing, often technology-based, entrepreneurial companies. More remote agricultural, natural resource, and tourism-dependent states (e.g., Alaska, Hawaii, Montana, North Dakota, Wyoming), and some older industrial states whose economies are dominated by larger, more established firms, (e.g., Delaware, West Virginia, and Wisconsin), produced relatively fewer gazelles.

The top five		Jobs in fast-growing companies as a percentage of total employment
1	Washington	16.5%
2	Arizona	15.7%
3	California	15.6%
4	Massachusetts	15.4%
5	Texas	15.2%
	U.S. average	**13.8%**

Source: Cognetics, 1999 data.



JOB CHURNING

The number of new start-ups and business failures, combined, as a share of all establishments in each state.

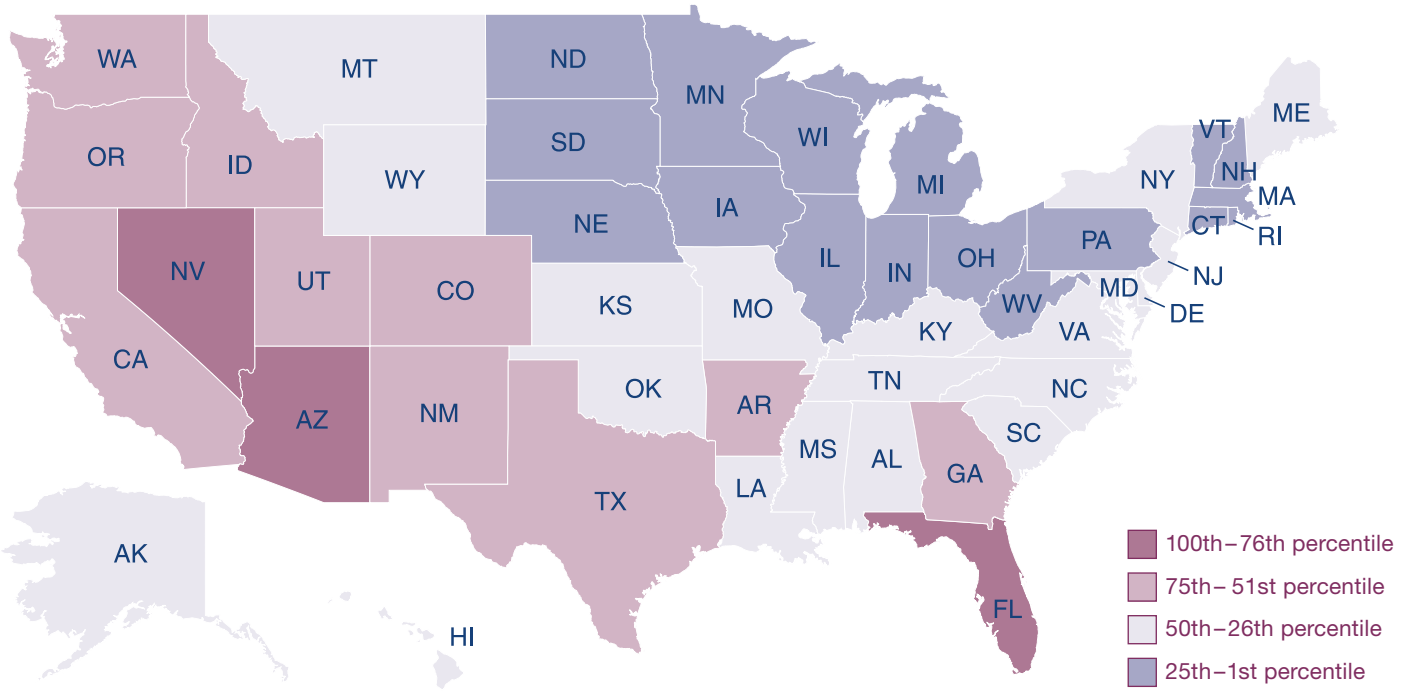
Why Is This Important? Steady growth in employment masks the constant churning of job creation and destruction, as less innovative and efficient companies downsize or go out of business and more innovative and efficient companies grow and take their place. A total of almost 650,000 jobs were added to the U.S. economy between 1997 and 1998, but that was after start-up firms had created 6.3 million jobs and failing firms eliminated 5.6 million jobs (jobs were also created and lost from expanding and contracting firms). This churning has accelerated as the number of new start-ups and existing business failures per year has grown. While such turbulence increases the economic risk faced by workers, companies, and even regions, it is also a major driver of economic innovation and growth.

"Almost 650,000 jobs were added to the U.S. economy between 1997 and 1998, but that was after start-up firms had created 6.3 million jobs and failing firms eliminated 5.6 million jobs."

The Rankings: Some fast-growing states (like Arizona, Florida, Nevada, and Utah) have seen a great deal of churning. In part, this is because fast-growing economies produce more start-ups, especially in local-serving industries (such as restaurants, dry cleaners, or accountants). But a high churn rate also reflects a dynamism that leads to the death of old, outmoded firms and the creation of innovative new companies that sell outside the state. States with slower overall growth rates, but with dynamic business sectors, such as California and Maryland, also see high rates of churn.

The top five		Business start-ups and failures as a percentage of total establishments
1	Nevada	25.0%
2	Florida	23.7%
3	Arizona	22.7%
4	Utah	22.5%
5	Georgia	22.4%
	U.S. average	**19.8%**

Source: U.S. Census, 1997-1998 data.



INITIAL PUBLIC OFFERINGS

A weighted measure of the value and number of initial public stock offerings of companies as a share of gross state product.[18]

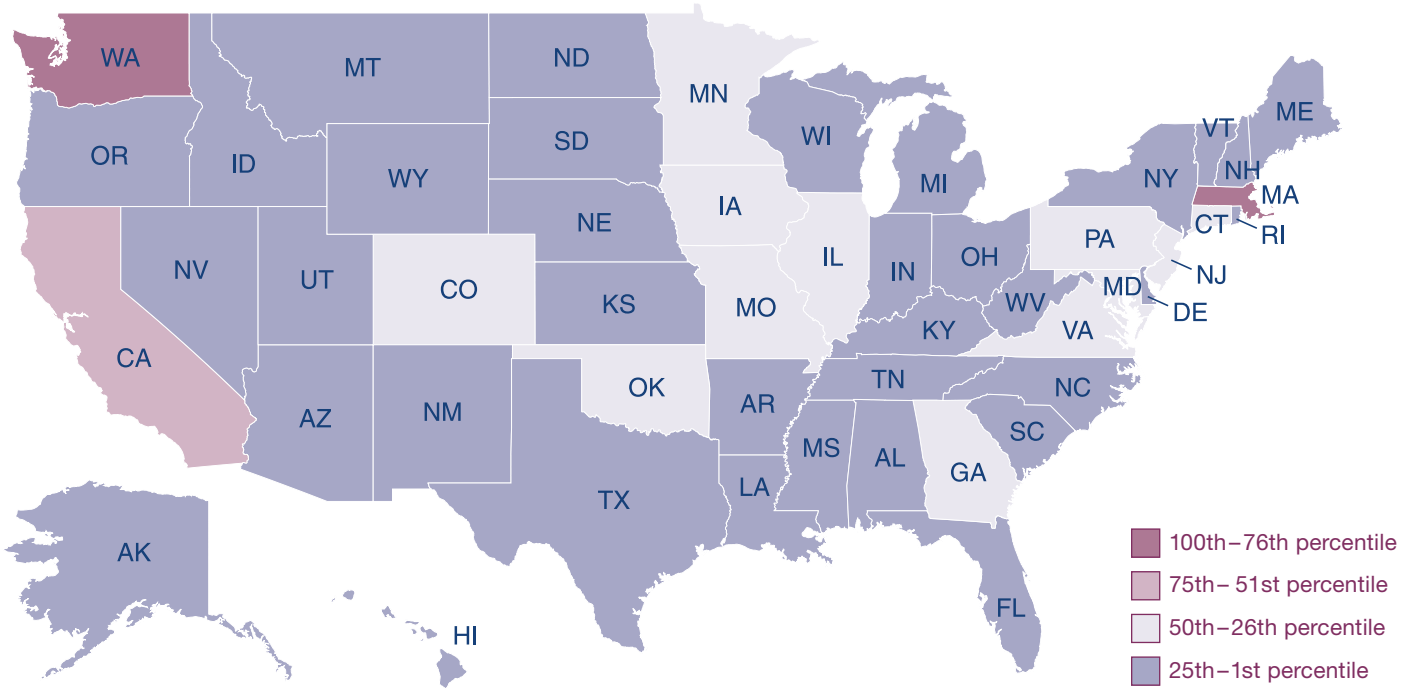
Why Is This Important? In the last two decades, financial markets have embraced entrepreneurial dynamism. One measure of this is the number of initial public offerings (first rounds of companies' stock sold when they make their debut in public markets). IPOs rose by 50 percent between the 1960s and 1990s and reached unprecedented levels in 2000. But even with the dramatic decline in IPOs in 2001, as the economy grows in 2002, IPOs are expected to rebound at least to the levels of relatively strong years like 1997 and 1998.

The Rankings: The top states for IPOs are also mostly states with high New Economy scores: Washington, Massachusetts, California, Colorado, Virginia, and Maryland. But the production of companies with high growth potential was not limited to what are commonly viewed as the high-tech leaders: states like Illinois, Iowa, Missouri, and Oklahoma also ranked high.

The top five		IPOs Score
1	Washington	11.8
2	Massachusetts	10.8
3	California	9.1
4	Colorado	7.1
5	Illinois	6.8
	U.S. average	**5.0**

Source: Hale & Dorr, 2000 and 2001 data.

"Even with the dramatic decline in IPOs in 2001… IPOs are expected to rebound at least to the levels of relatively strong years like 1997 and 1998."



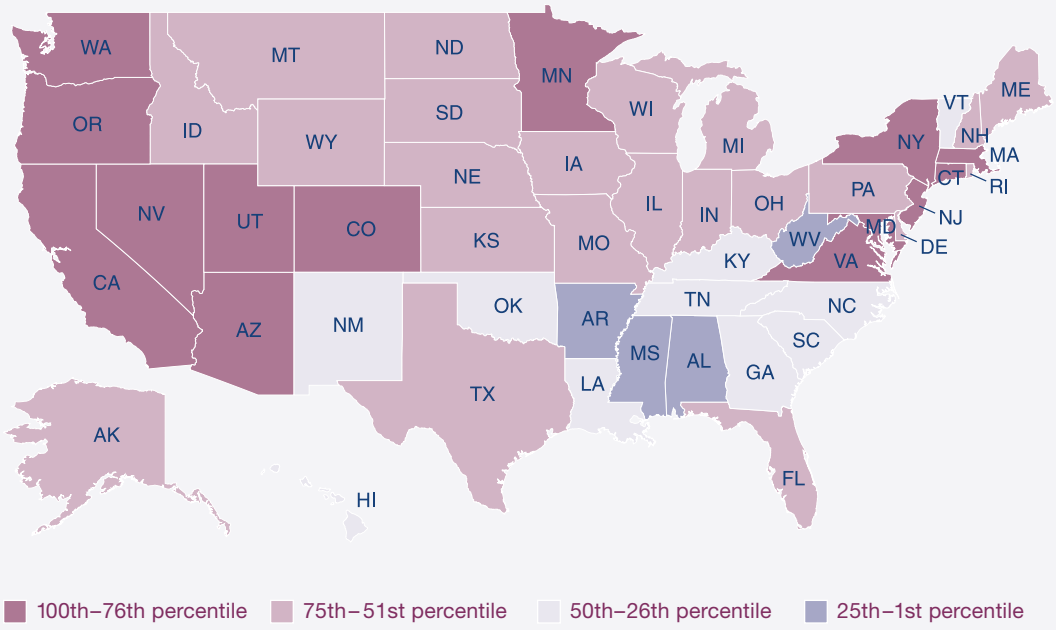
THE DIGITAL ECONOMY

In the old economy, virtually all economic transactions involved the transfer of physical goods and paper records, or the interaction of people in person or by phone. In the emerging digital economy, a significant share of both business and government transactions are being conducted through digital electronic means. As a result, the U.S. Internet economy was worth $830 billion by 2000. Worldwide, Internet hosts increased by 19 million in 2001, from 98 million to 117 million. Over half of U.S. households are online. Worldwide Internet use is expected to more than triple by 2005 to over 1.5 billion people.

In the last few years, the digital economy has begun to show up in the productivity statistics, as IT is being infused into virtually all sectors. Trucking companies use geo-positioning systems to better dispatch trucks. Farmers use the Internet to buy seed and fertilizer and sell crops. Insurance companies use the Internet to communicate with customers directly. Governments issue EZ passes to automate toll collection. In terms of productivity gains and increased standards of living, digital technology is likely to do as much to foster state economic growth in the 21st century as mechanical and electrical technologies did in the early and mid-20th century.

The digital economy indicators measure seven things: 1) the percentage of the population online; 2) commercial (".com") Internet domain names; 3) deployment and use of information technology in K-12 public schools; 4) the use of digital technologies to deliver state government services; 5) percentage of farmers online and using computers; 6) use of the Internet by manufacturers; and 7) broadband telecommunications availability and use.

Aggregated Digital Economy Scores



Rank	State	Score
1	Massachusetts	14.06
2	California	13.72
3	Washington	13.64
4	Utah	13.25
5	New Jersey	12.72
6	Oregon	12.62
7	Colorado	12.43
8	Connecticut	12.41
9	Minnesota	12.38
10	Arizona	12.15
11	Virginia	12.10
12	Nevada	11.97
13	Maryland	11.89
14	New York	11.68
15	Maine	11.38
16	Ohio	11.30
17	Texas	11.04
18	Nebraska	10.98
19	New Hampshire	10.89
20	Illinois	10.87
21	Florida	10.67
22	Kansas	10.65
23	Michigan	10.61
24	Rhode Island	10.34
25	Missouri	10.27
26	Idaho	10.14
27	Wisconsin	10.08
28	Pennsylvania	10.04
29	Iowa	9.87
30	North Dakota	9.66
31	Indiana	9.63
32	Wyoming	9.59
33	South Dakota	9.27
34	Montana	9.21
35	Delaware	9.21
36	Alaska	8.98
37	Hawaii	8.89
38	Georgia	8.46
39	Oklahoma	8.03
40	Vermont	7.94
41	New Mexico	7.92
42	South Carolina	7.70
43	Tennessee	7.64
44	Kentucky	7.32
45	North Carolina	7.22
46	Louisiana	7.04
47	Arkansas	6.06
48	West Virginia	5.26
49	Alabama	5.07
50	Mississippi	3.74
	U.S. average	**10.00**

Source: Authors' calculations based on the states' scores in seven indicators–online population, ".com" domain name registrations, technology in schools, digital government, farmers online and using computers, manufacturers online, and broadband telecommunications.

ONLINE POPULATION

The percentage of the population with Internet access in each state.

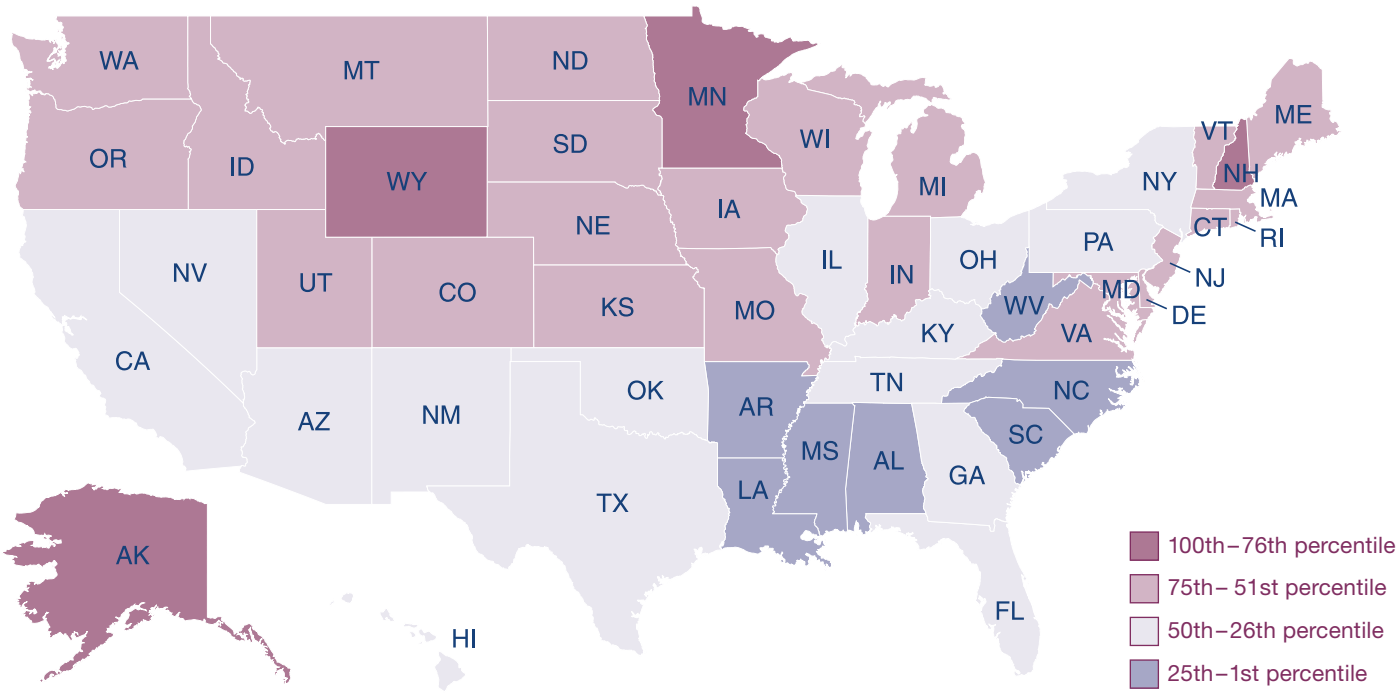
Why Is This Important? The number of people online is probably the most basic indicator of a state's progress toward the digital economy. At the end of 1998, one-third of American households were online; by November 2001, 50 percent were and even a greater percentage of adults were online. (Some people have access at work or school and not at home.)[19] The average income and education levels of Internet users continue to drop so that the online population is looking like the American population in general.[20] Moreover, as more and more places get Internet access, the percentage of Internet users in rural areas is now almost even with the national average.

The Rankings: States differ significantly in the degree to which their residents are online. At the end of 2001, approximately 69 percent of Alaska's population had Internet access compared to 43 percent in Louisiana and 42 percent in Mississippi. In general, residents of Southern and Plains states are less likely to be online than residents of Pacific, Mountain, and Northeast states.

The top five		Percentage of population online
1	Alaska	69%
2	Minnesota	64%
3	New Hampshire	64%
4	Wyoming	62%
5	Utah	61%
	U.S. average	**54%**

Source: National Telecommunications and Information Administration, 2001 data.

"As more and more places get Internet access, the percentage of Internet users in rural areas is now almost even with the national average."



COMMERCIAL INTERNET DOMAIN NAMES

The number of commercial Internet domain names (".com") per firm.

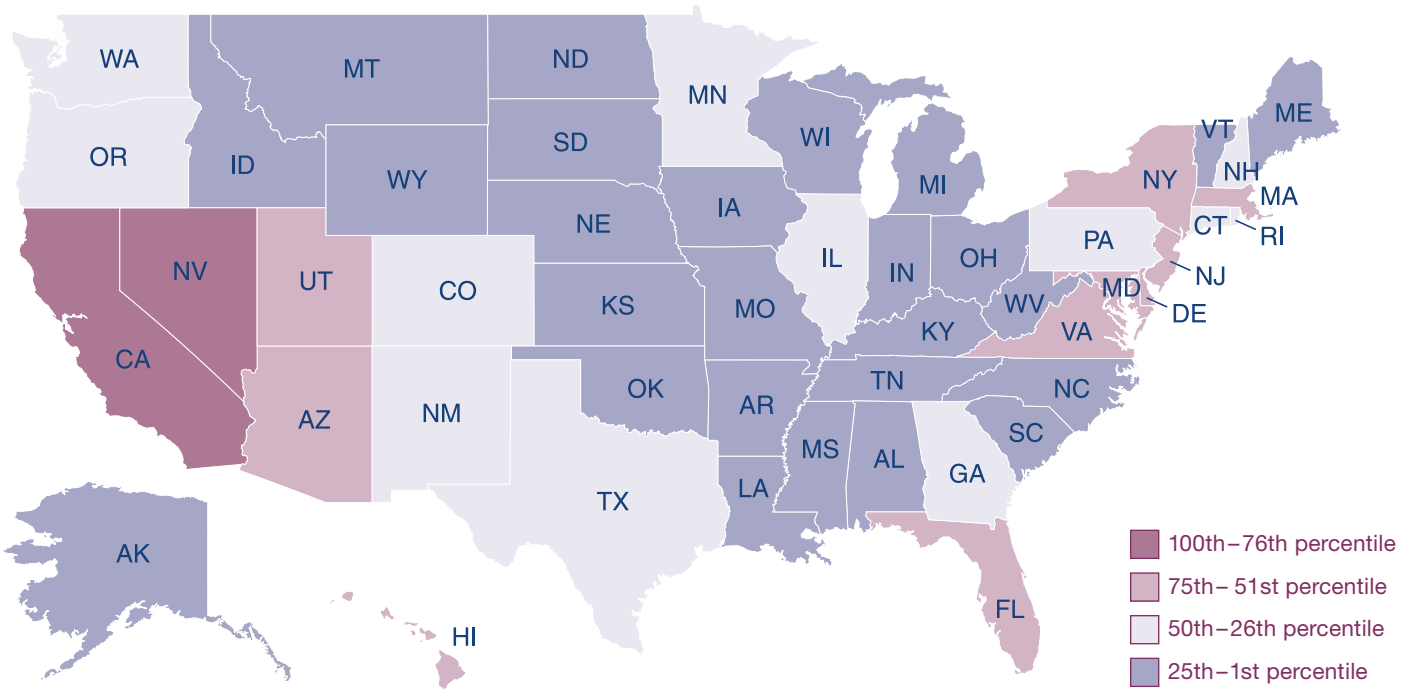
Why Is This Important? Despite the much ballyhooed failure of some high-flying "dot-bombs," the use of the Internet by business continues to grow.[21] The number of dot-com domain names registered in the United States actually grew from 9 million in July 2000 to 19 million in July 2001.[22] The big difference between the dot-com bubble of the late 1990s and today is, while many dot-coms were based on dubious business models, many of today's dot-com companies are using the Internet for strategic and effective commercial purposes.

The Rankings: The number of ".com" domains per firm varies significantly by state. The highest-ranking state, California, has more than six times more than the lowest-ranking state, South Dakota. Nevada's second-place finish could well be a dubious distinction: it may be attributable to a large number of gambling and adult sites. But most of the other top finishers, including Maryland, Massachusetts, New York, and Virginia, are states with a large presence of high-tech companies.

The top five		".com" domains per firm
1	California	1.86
2.	Nevada	1.71
3.	Arizona	1.34
4.	Massachusetts	1.34
5.	New York	1.27
	U.S. average	**0.95**

Source: Matthew Zook, U.C. Berkeley, 2000 data.

"The number of dot-com domain names registered in the United States actually grew from 9 million in July 2000 to 19 million in July 2001."



TECHNOLOGY IN SCHOOLS

A weighted measure of five factors measuring computer and Internet use in schools.[23]

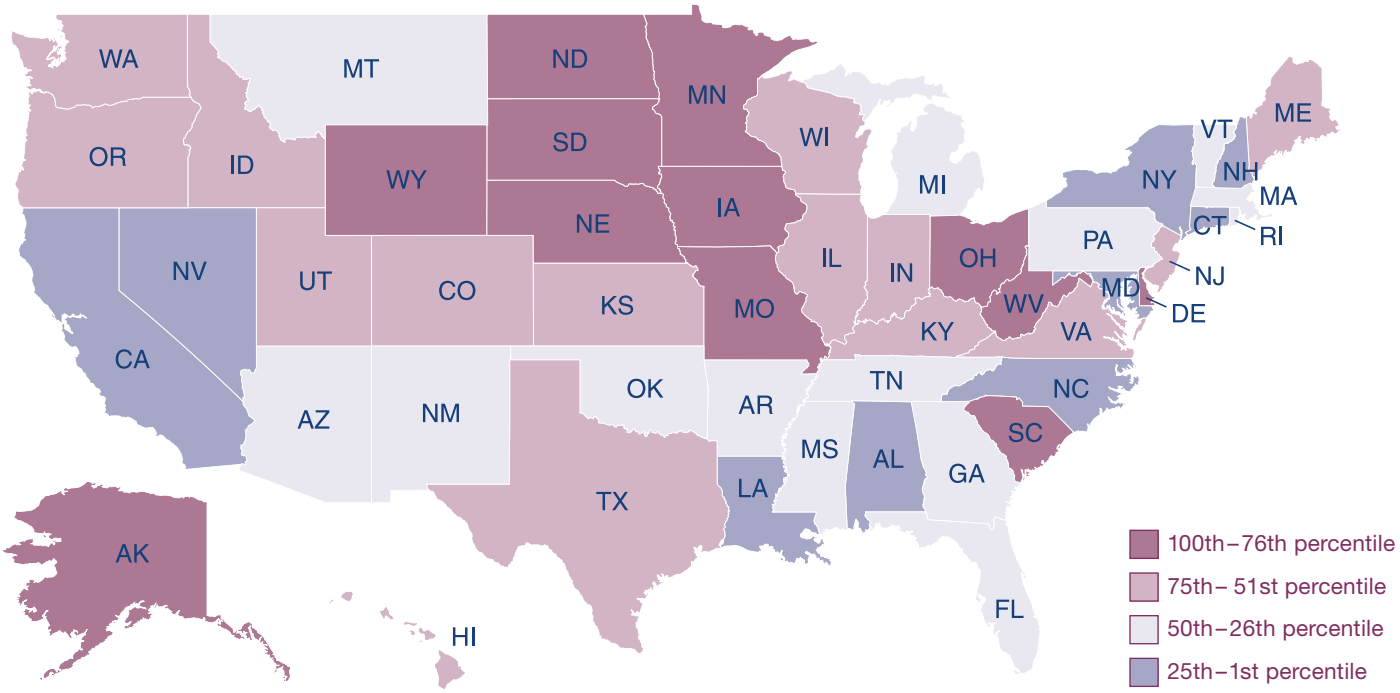
Why Is This Important? There is increasing evidence that when used right, computers and the Internet boost educational outcomes.[24] Not surprisingly, the use of information technology in America's schools is growing. The percentage of schools with at least one Internet connection has increased rapidly, from 78 percent in 1997, to 94 percent in 2000, while the percentage of classrooms with Internet access has gone from 27 percent in 1997, to 82 percent in 2000.[25]

"The percentage of classrooms with Internet access has gone from 27 percent in 1997, to 82 percent in 2000."

The Rankings: A number of states that are furthest ahead in integrating information technology into schools are the less populated and more geographically dispersed states, suggesting that a motivating factor is the desire to establish better connections to information and resources in other parts of the nation and the world. Political leaders in these and other states may recognize that the IT revolution is an important key to their future prosperity and that it is essential to properly train the next generation of workers. Surprisingly, a number of states with strong technology economies score notably low on this measure, including Connecticut, Maryland, New Hampshire, and California, which ranks last.

The top five		Total score
1	Nebraska	3.82
2	South Dakota	3.64
3	Delaware	3.58
4	Ohio	3.47
5	Iowa	3.37
	U.S. average	**2.00**

Source: Education Week, 2000 data.



DIGITAL GOVERNMENT

A measure of the utilization of digital technologies in state governments.[26]

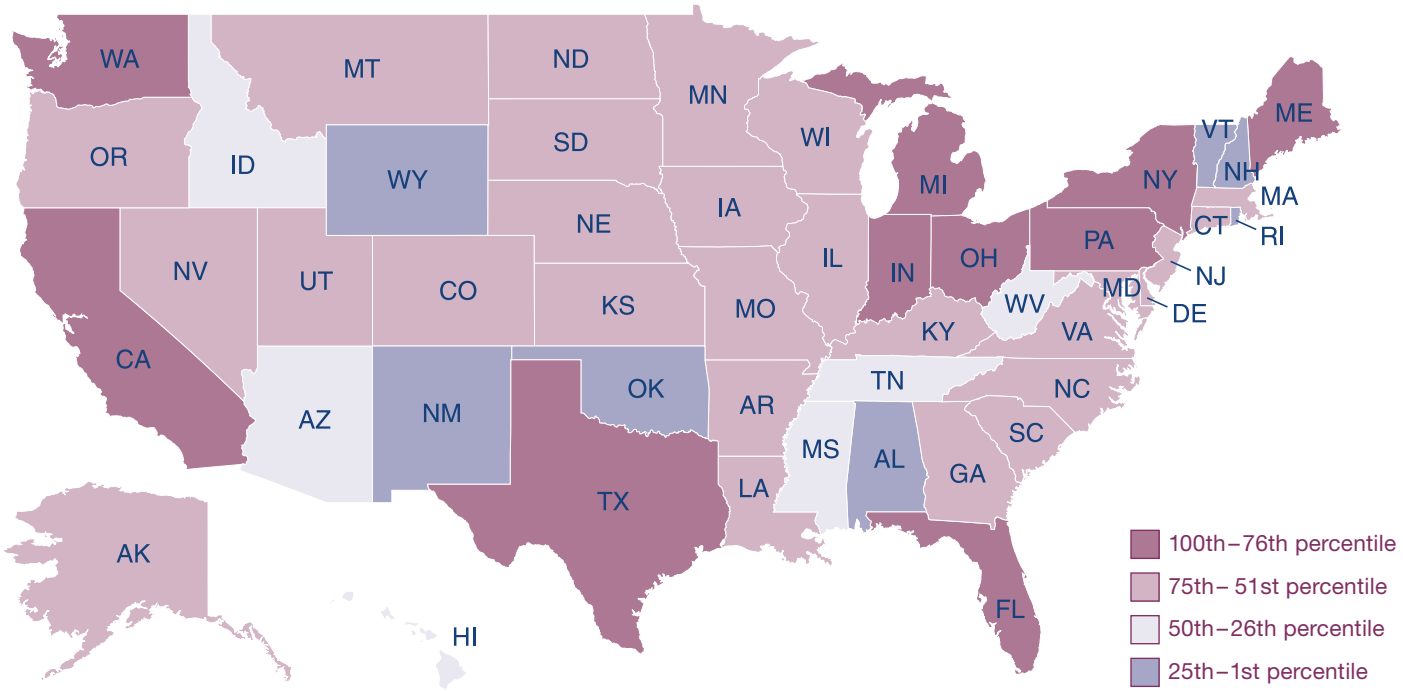
Why Is This Important? State governments that fully embrace the potential of networked information technologies will not only increase the quality and cut the costs of government services, but also help to foster broader use of information technologies among residents and businesses. In the last few years, state governments have made considerable progress, first putting up Web sites, then using the Internet to allow individuals to interact with government — from paying taxes to renewing drivers' licenses. But the next phase of e-government — breaking down bureaucratic barriers to create functionally oriented, citizen-centered government Web presences designed to give citizens a self-service government — has only just begun.[27]

"The next phase of e-government — breaking down bureaucratic barriers to create functionally-oriented, citizen-centered government Web presences — has only just begun."

The Rankings: States with a tradition of "good government," such as Michigan, Utah, and Washington, appear to have gone farther along the path toward digital government than states without this tradition. But this relationship is not completely predictive. In part, this may be because digital government efforts appear to be driven by the efforts of particular individuals — governors, secretaries of state, legislative committee chairmen — who believe that their states should move in this direction. In addition, because making the transformation to a digital government is expensive, more populous states with bigger budgets also tend to score higher.

The top five		Total score
1	Michigan	4.49
2	Washington	4.38
3	Texas	4.34
4	Indiana	4.29
5	Ohio	3.85
	U.S. average	**3.00**

Sources: Progress & Freedom Foundation, 2001 data; Darrell West, Brown University, 2001 data.



ONLINE AGRICULTURE

A measure of the percentage of farmers with Internet access and who use computers for business.

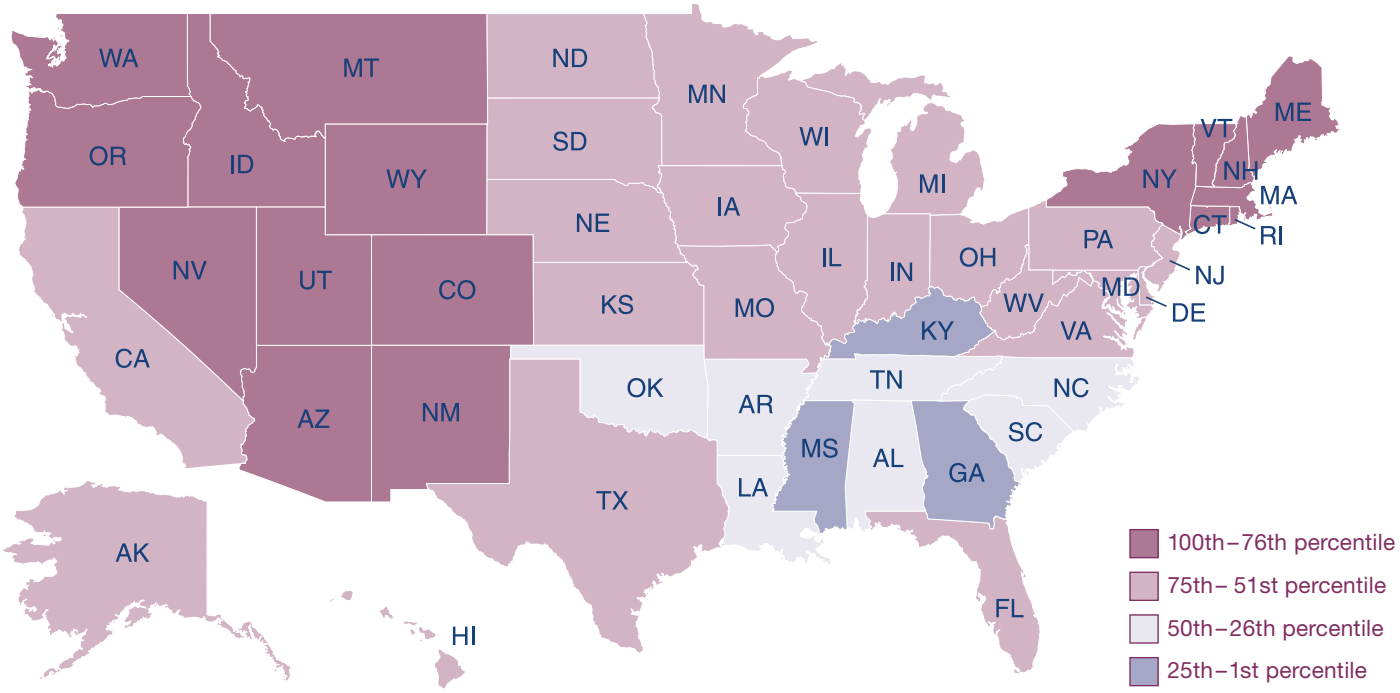
Why Is This Important? While agriculture accounts for less than 5 percent of employment, in many states agriculture remains an important sector. Like most economic sectors, the New Economy is transforming agriculture. Farmers and ranchers increasingly use the Internet to buy feed and seed, to check on weather conditions, to gain the latest technical information, and even to sell their livestock or crops. Farmers are also embracing mass customization, diversifying into new and varied crops and food products. The degree to which farmers embrace New Economy practices will increasingly determine their competitive success. One measure is the percentage of farmers with Internet access who use computers to run their farms.

"The degree to which farmers embrace New Economy practices will increasingly determine their competitive success."

The Rankings: Farmers in Western states lead the nation in use of computers and access to the Internet. The top 12 states are all Western and Mountain states, with New England states also scoring high. Southern states generally score low.

The top nine		Composite score
1	Idaho	5.0
2	Oregon	4.6
3	Montana	4.5
4	Arizona	3.9
5	Colorado	3.9
6	Utah	3.9
7	Nevada	3.9
8	Wyoming	3.9
9	New Mexico	3.9
	U.S. average	**3.00**

Source: U.S. Department of Agriculture, 2001 data.



ONLINE MANUFACTURERS

The percentage of manufacturing establishments with Internet access.

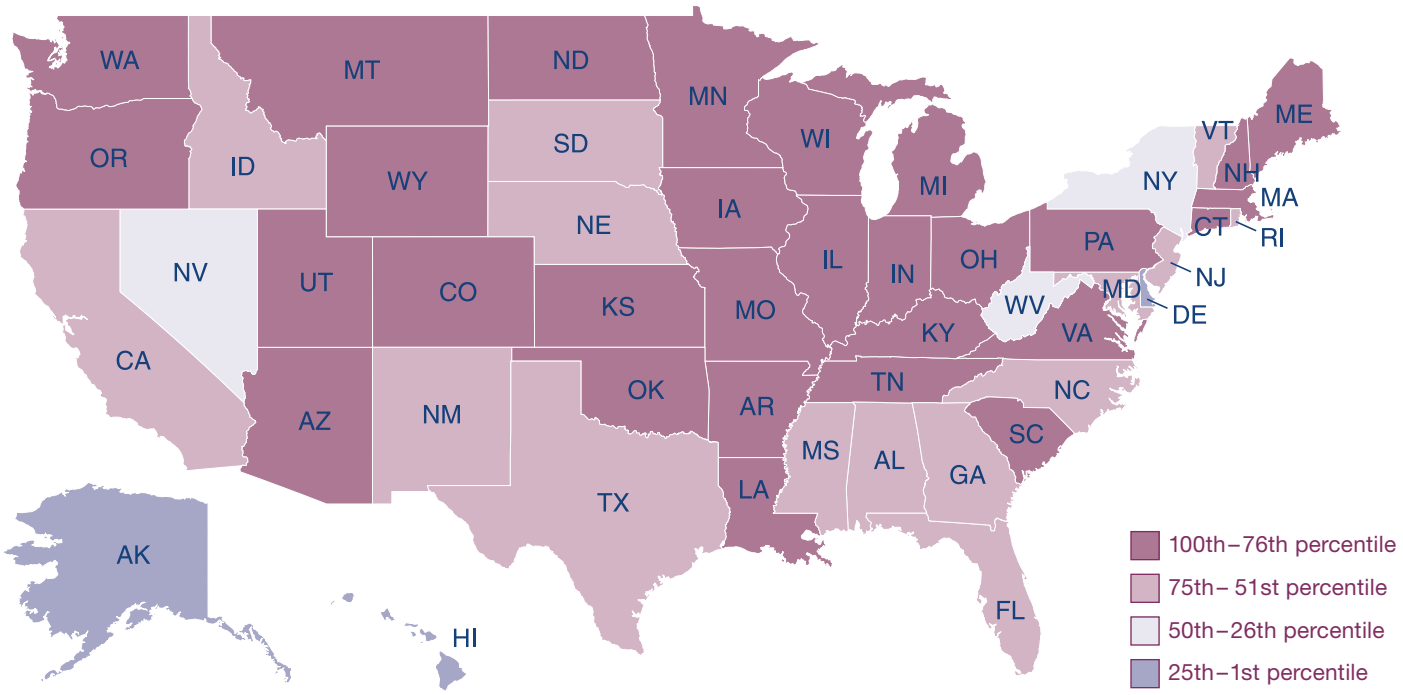
Why Is This Important? In the New Economy, success for manufacturers and their employees will come as a result of the degree to which they embrace technology, both in how they make products and incorporate technology into their products. Workers employed in manufacturing plants with more technologies (e.g., computer-aided design, CNC machines) earn 63 percent more than workers in plants using less.[28] One key technology that manufacturers are embracing is the Internet. In 2000, over 84 percent of manufacturers were online.[29] By the end of 2002, more than 54 percent plan to be able to accept orders from customers online, with 40 percent planning to offer online customer support.[30]

"Workers employed in manufacturing plants with more technologies earn 63 percent more than workers in plants using less."

The Rankings: The percentage of manufacturers online ranges from 92 percent in Minnesota to 67 percent in Delaware. While there is no clear geographic pattern to the rankings, there are a few surprises. For example, California ranks 32nd, while New York, generally viewed as a high-tech state, ranks 47th. These differences could result from the size mix of a state's industrial base, as smaller manufacturers are less likely to be online.

The top five		Percent of manufacturers with Internet access
1	Minnesota	91.7
2	North Dakota	90.3
3	Maine	89.5
4	Indiana	89.0
5	Louisiana	88.9
	U.S. average	**84.5**

Source: U.S. Census Bureau, 2000 data.



BROADBAND TELECOMMUNICATIONS

A measure of the use and deployment of broadband telecommunications infrastructure over telephone lines.[31]

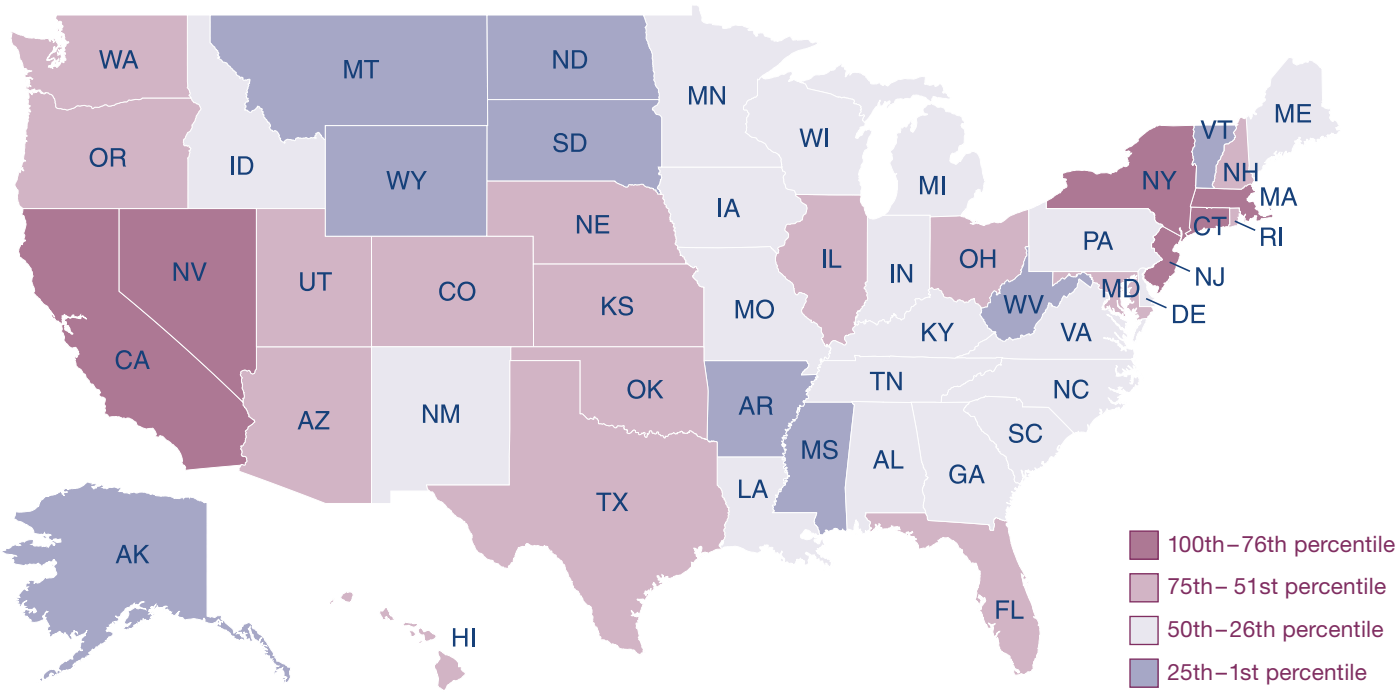
Why Is This Important? The ability to transfer large amounts of data is largely determined by bandwidth, the carrying capacity of the connections, or the "size of the pipes" between the sender and receiver of the data. Greater bandwidth allows faster transmission of larger amounts of data, something that is critical for the increasing number of businesses that use the Internet to communicate with customers, suppliers, and other parts of the company. But broadband access for households is also important, not only enabling a state's residents to more robustly engage in e-commerce, but also enabling telecommuting, distance education, tele-medicine, and a host of other applications that can boost productivity and quality of life. However, while over 70 percent of households have broadband telecommunications available to them (about two thirds of rural users have broadband access), only 12 percent actually buy it. But that number is growing as more broadband applications become available.

The Rankings: The two states with the most broadband are two of the most high-tech states, Massachusetts and California. In addition, because broadband is still relatively expensive, high scoring states tend to be higher income states. Because it's cheaper to deploy broadband in metropolitan areas, states that are more densely populated tend to have higher levels of broadband. As a result, the lagging states (e.g., Alaska, Mississippi, West Virginia, and Vermont) have more rural and/or lower income populations.

The top five		Composite score
1	Massachusetts	5.42
2	California	5.22
3	New Jersey	4.74
4	Nevada	4.45
5	New York	4.44
	U.S. average	**3.00**

Sources: Pinkham Group, 2001 data;
Federal Communications Commission, 2000 data.

"While over 70 percent of households have broadband telecommunications available to them, only 12 percent actually buy it. But that number is growing as more broadband applications become available."

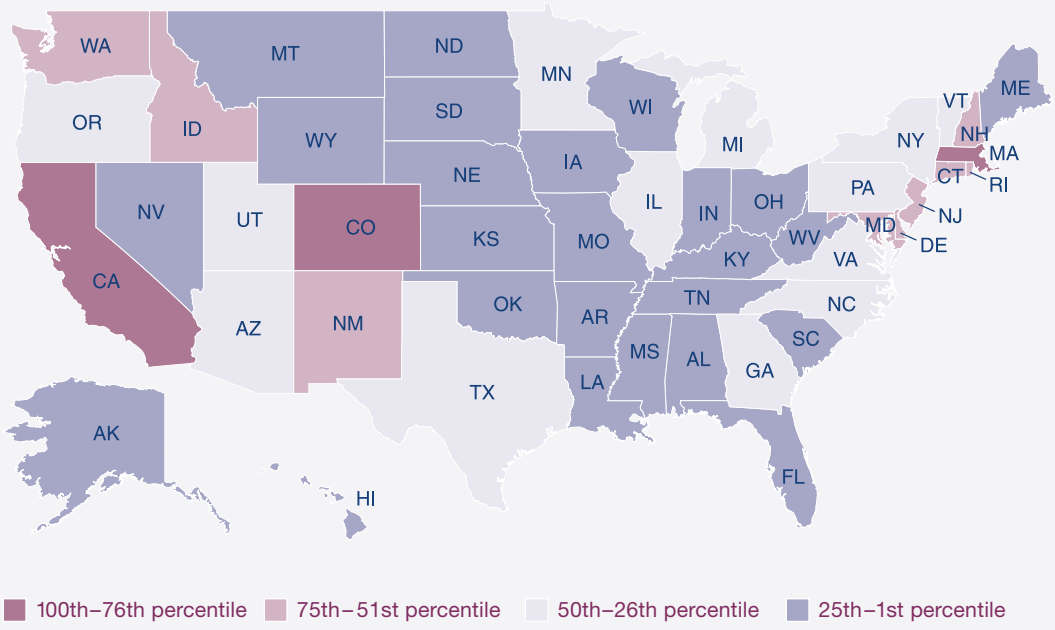


INNOVATION CAPACITY

In the old economy, a large share of economic growth stemmed from increases in the supply of capital, labor, or natural resources. Most growth in the New Economy, especially growth in per-capita incomes, stems from increases in knowledge and innovation and its widespread adoption.[32] Technological innovation, in particular, is one of the fundamental drivers of growth in the New Economy. Studies show that technological innovation is responsible for over two-thirds of per capita economic growth.[33]

The innovation capacity indicators in this section measure five things: 1) share of jobs in high-tech industries; 2) scientists and engineers as a share of the workforce; 3) the number of patents relative to the size of the workforce; 4) industry R&D as a share of GSP; and 5) venture capital invested as a share of GSP.

Aggregated Innovation Capacity Scores



Rank	State	Score
1	Massachusetts	18.58
2	California	17.41
3	Colorado	17.14
4	New Jersey	14.80
5	Delaware	14.72
6	Maryland	14.22
7	New Mexico	13.77
8	Washington	13.41
9	Connecticut	13.34
10	Idaho	13.07
11	New Hampshire	12.54
12	Rhode Island	12.44
13	Minnesota	12.17
14	New York	12.09
15	Utah	11.62
16	Vermont	11.53
17	Arizona	11.51
18	Oregon	11.45
19	Virginia	11.36
20	Pennsylvania	11.29
21	Texas	10.80
22	Illinois	10.01
23	North Carolina	9.82
24	Michigan	9.42
25	Georgia	9.15
26	Ohio	8.68
27	Florida	8.53
28	Kansas	8.34
29	Wisconsin	8.18
30	Missouri	8.15
31	Maine	7.87
32	Iowa	7.85
33	Montana	7.84
34	Nebraska	7.66
35	Hawaii	7.47
36	Indiana	7.39
37	Tennessee	7.27
38	North Dakota	7.24
39	Alaska	7.17
40	Oklahoma	7.17
41	Alabama	7.15
42	Nevada	7.03
43	South Carolina	6.70
44	Kentucky	6.64
45	West Virginia	6.62
46	South Dakota	6.54
47	Wyoming	6.53
48	Louisiana	6.35
49	Arkansas	6.07
50	Mississippi	5.90
	U.S. average	**10.00**

Source: Authors' calculations based on the states' scores in five indicators–high-tech jobs, scientists and engineers, patents, industry investment in R&D, and venture capital.

HIGH-TECH JOBS

Jobs in electronics manufacturing, software and computer-related services, telecommunications, and biomedical as a share of total employment.[34]

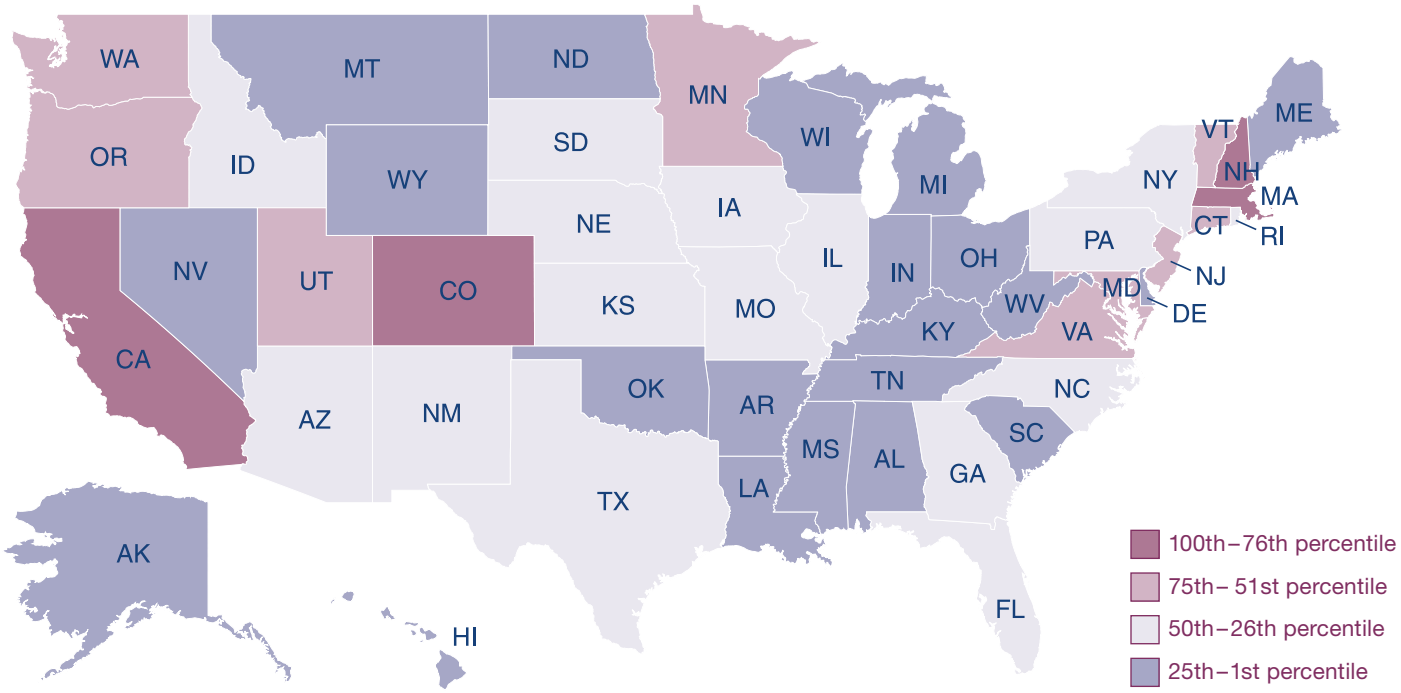
Why Is This Important? Notwithstanding the difficulties in the IT sector, technology companies remain key engines of the New Economy. High-tech output increased from 5.5 percent of GDP in 1990 to 6.2 percent in 1996 to 8.3 percent in 2000, while average wages in the sector are 73 percent higher than in the rest of the economy.[35] The slowdown in the IT and telecommunications sector is cyclical, in part a natural adjustment to the extremely high level of IT investment in 1999 and 2000 to respond to the Y2K crisis and the dot-com and telecom bubbles. Even so, IT investment in 2001 was higher than any year prior to 2000. And it's expected to grow as IT gets cheaper and more powerful, and a host of new technologies, including smart cards, voice recognition, expert systems, cheap storage devices, new display devices, intelligent transportation systems, "third generation" wireless communication devices, and robots are rolled out. And with the breakthroughs in the human genome project, biotechnology and related biomedical industries are poised for robust growth.

"IT investment in 2001 was higher than any year prior to 2000."

The Rankings: The high-tech focus of states varies significantly, from a high of 10.4 percent of the workforce in Massachusetts to 1.4 percent in Wyoming. While all states have high-tech jobs, the leaders tend to be in the Northeast, the Mountain states, and the Pacific region. High-tech jobs are often concentrated in particular regions of a state: information technology in southern New Hampshire, software around Provo, Utah and Seattle; Internet and telecommunications in the Washington, DC region; telecommunications in Denver; semiconductors in Phoenix; and a broad mix of technologies in Silicon Valley and Los Angeles.

The top five		High-tech jobs as a percentage of all jobs
1	Massachusetts	10.4%
2	Colorado	10.0%
3	New Hampshire	9.6%
4	California	8.9%
5	Virginia	7.5%
	U.S. average	**5.3%**

Sources: American Electronics Association, 2000 data, and U.S. Census (for biomedical sectors), 1999 data.



SCIENTISTS AND ENGINEERS

Civilian scientists and engineers as a percentage of the workforce.[36]

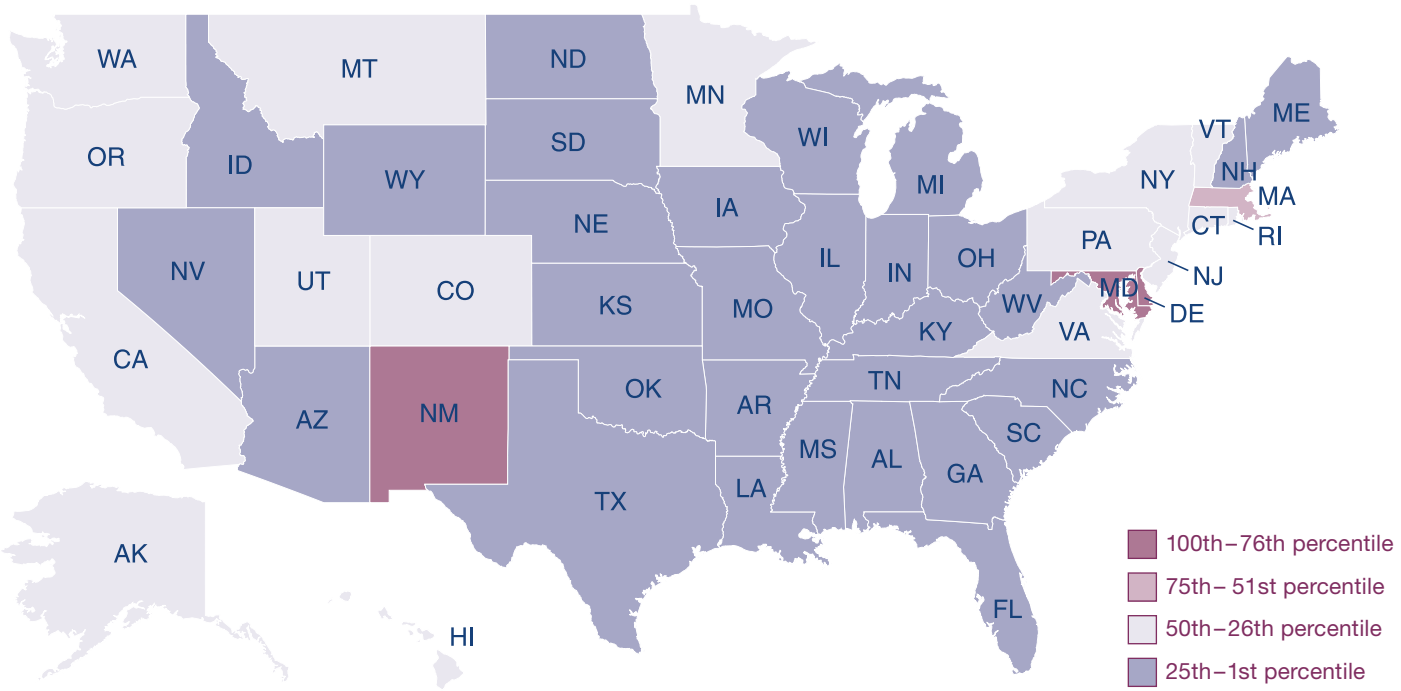
Why Is This Important? In the New Economy, the key engines of growth, technology, and research-based companies are fueled by a large and high-caliber scientific and engineering workforce. As the economy became more technology-based, scientists and engineers as a share of workforce increased by 16 percent between 1995 and 1999. In addition, in spite of the concern about "brain drain" of newly minted scientists and engineers to other states, the correlation between the number of employed Ph.D. scientists and engineers and Ph.D. degrees in science and engineering from universities in a state is remarkably high (0.97). So growing or attracting a high-quality scientific workforce is critical to continued economic growth. These workers enable more innovation in state economies (in both new products and production processes) and in so doing lead to more value-added and higher-wage jobs.

"The correlation between the number of employed Ph.D. scientists and engineers and Ph.D. degrees in science and engineering from universities in a state is remarkably high (0.97)."

The Rankings: States with the highest rankings tend to be high-tech states such as Massachusetts, California, and Colorado; states with significant corporate R&D laboratory facilities (such as Delaware, Connecticut, New Jersey, New York, and Vermont); or states with significant federal laboratory facilities (like Maryland, New Mexico, and Rhode Island). In addition, many of these states have robust higher education programs in science and engineering. States that lag behind have few high-tech companies or labs, and relatively limited science and engineering higher education programs.

The top five		Scientists and engineers as a percentage of all jobs
1	New Mexico	1.21%
2	Delaware	1.07%
3	Maryland	1.05%
4	Massachusetts	0.92%
5	Vermont	0.70%
	U.S. average	**0.49%**

Source: National Science Foundation, 1999 data.



PATENTS

The number of patents issued to companies or individuals per 1,000 workers.[37]

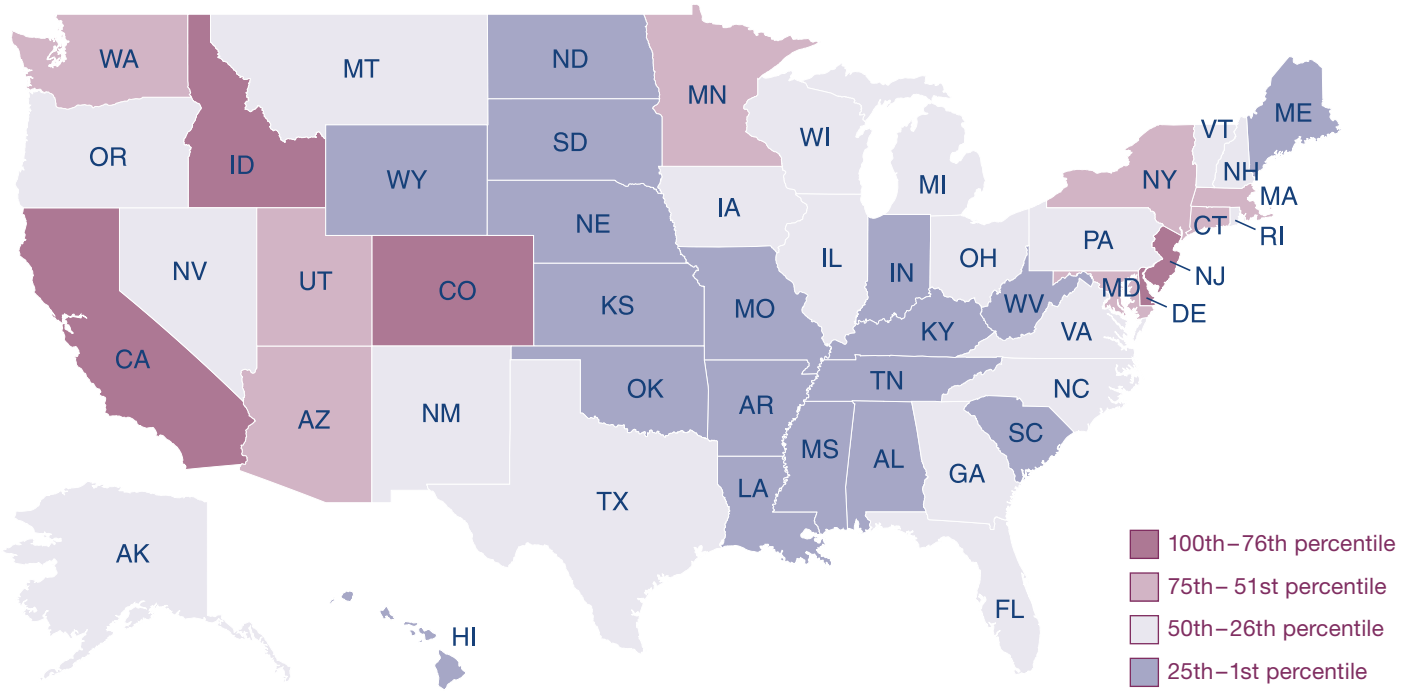
Why Is This Important? The capacity of firms to develop new products will determine their competitive advantage and ability to pay higher wages. One indicator of the rate of new product innovation is the number of patents issued. As technological innovation has become more important, the number of patents issued per year has increased from 38,000 in 1984, to more than 85,000 in 2000.

"Patents issued have increased from 38,000 in 1984, to more than 85,000 in 2000."

The Rankings: States with an above-average share of either high-tech corporate headquarters or R&D labs tend to score the highest. Somewhat surprisingly, Idaho leads the list, perhaps because of high-tech companies in Boise, including Micron, Novell, and Iomega. Many Northeastern states, as well as West Coast high-tech states like California and Washington, also score high.

The top five		Adjusted patents per 1,000 workers
1	Idaho	1.53
2	Delaware	1.49
3	New Jersey	1.29
4	Colorado	1.21
5	California	1.20
	U.S. average	**0.80**

Source: U.S. Patent and Trademark Office, 1998, 1999, and 2000 data.



INDUSTRY INVESTMENT IN R&D

Industry investment in research and development as a percentage of Gross State Product (GSP).[38]

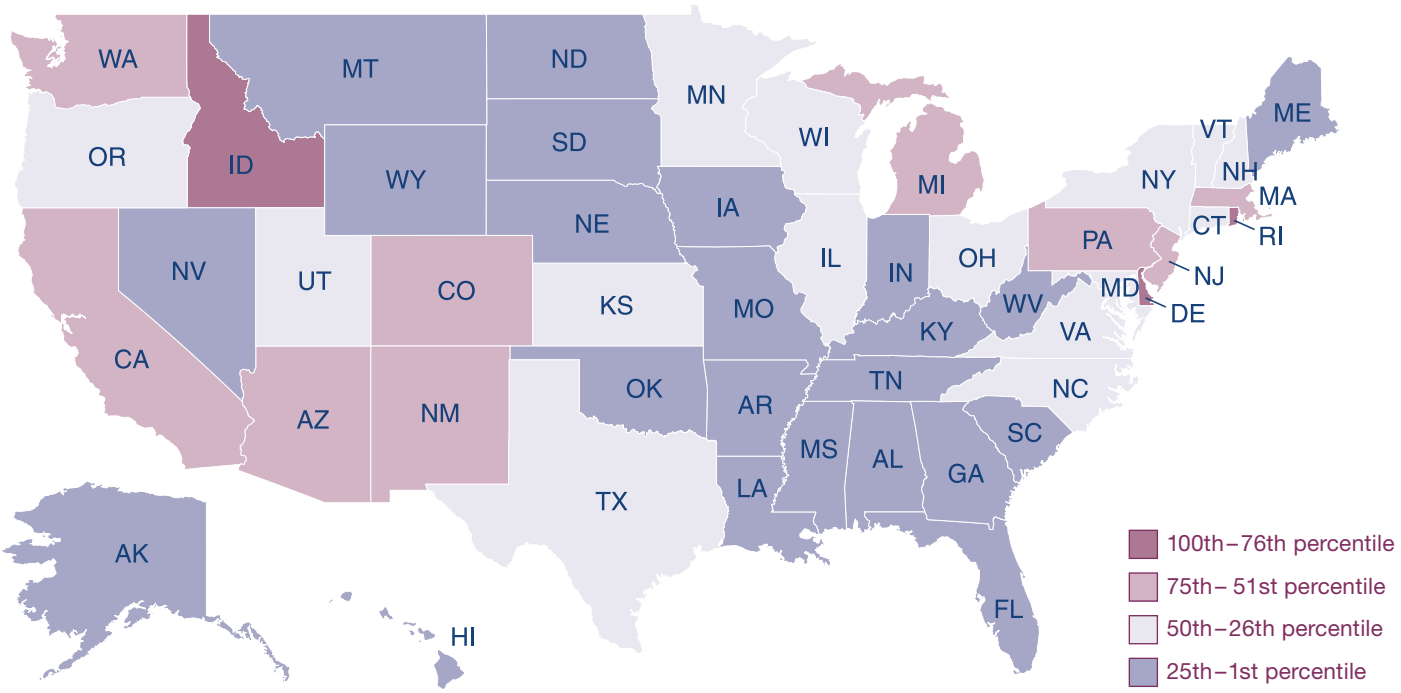
Why Is This Important? Research and development, which yields product innovations and adds to the knowledge base of industry, is a key driver of economic growth. Business provides more than two-thirds of all R&D funding. After steadily rising in the 1980s and falling in the early 1990s, business-funded R&D as a share of GDP has continued its upward climb, reaching its highest levels ever in 2000, both in inflation-adjusted dollars and as a share of GDP.

"Business-funded R&D as a share of GDP has continued its upward climb, reaching its highest levels ever in 2000."

The Rankings: The two smallest states, Rhode Island and Delaware, rank 1st and 3rd respectively in R&D intensity. Rhode Island's rank may be because of a number of defense electronics firms there and the fact that it instituted the nation's most generous R&D tax credit several years ago. In Delaware's case, the presence of Dupont and other R&D-intensive chemical and pharmaceutical firms led to its No. 3 showing. The other leading states (such as California, Massachusetts, or Washington) all tend to have strong high-tech sectors that perform significant amounts of R&D. In general, states score well that have significant corporate R&D laboratory facilities (like Connecticut, Michigan, and New Jersey), or significant federal laboratory facilities (as in Idaho and New Mexico), which may further stimulate corporate R&D.

The top five		Adjusted R&D as a percentage of state GSP
1	Rhode Island	4.29%
2	Idaho	3.68%
3	Delaware	3.63%
4	New Jersey	3.21%
5	New Mexico	3.15%
	U.S. average	**1.91%**

Source: National Science Foundation, 1999 data.



VENTURE CAPITAL

Venture capital invested as a percentage of GSP.

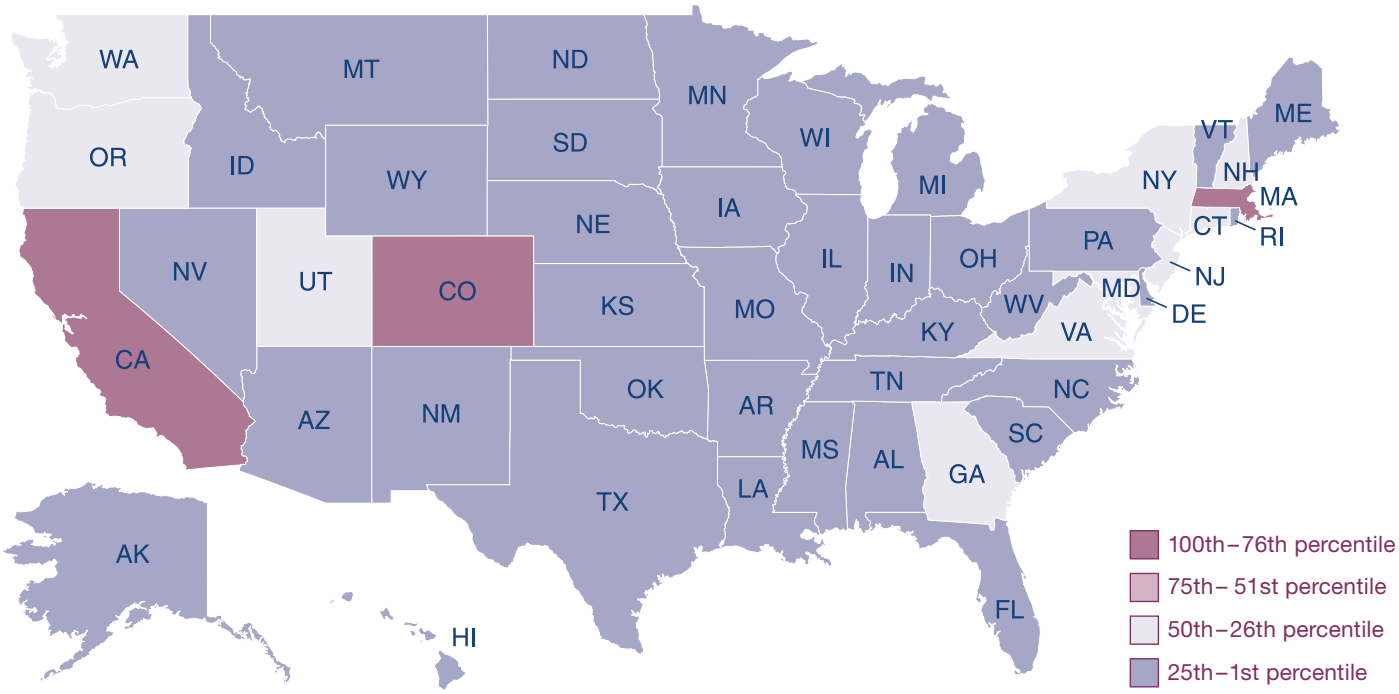
Why Is This Important? Venture capital is an important source of funding for new, fast-growing entrepreneurial companies. Notwithstanding some noted bankruptcies of Internet high fliers, venture capitalists continue to have faith in the nation's entrepreneurs. With $38 billion invested, 2001 was the third-highest year for venture capital, exceeding all years except 1999 and 2000. Venture capital increased from an average of $7.5 billion in the early 1980s to almost $16 billion in 1997 and to $37 billion in 2001 (in constant 2001 dollars), and from 0.10 percent of GDP in the mid-1980s to 0.37 percent in 2001. In 2000, it was disbursed to some 5,458 companies, more than two times more than in 1997. As a result, 16 states received more venture capital as a share of GSP in 2000 than the highest ranking state, Massachusetts, did in 1997.

"With $38 billion invested, 2001 was the third-highest year for venture capital, exceeding all years except 1999 and 2000."

The Rankings: While venture capital is significantly less concentrated geographically than it was a decade ago, it's still focused in a few states, particularly those with strong university engineering and science programs and an existing base of high-tech companies, both of which can be the source of entrepreneurial start-ups or spinoffs. There is also considerable continuity over the last few years in the high-ranking states. The top five states receiving venture capital in 1997 remain the top five in 2000, even after venture capital funding increased by more than sixfold.

The top five		Venture capital as percentage of GSP
1	Massachusetts	3.6%
2	California	3.4%
3	Colorado	3.0%
4	New Hampshire	1.6%
5	Washington	1.3%
	U.S. average	**1.1%**

Source: National Venture Capital Association, 2000 data.



As America emerges from what may be the shortest slump in memory — largely because of New Economy forces — it's becoming clear that the New Economy was not just a flash in the pan, but rather a major economic transformation, the kind that comes about every half century or so. As a result, it's time for states to refocus their efforts on the task of restructuring their economies to meet the realities of the New Economy. The states that do well in five years will be those that continue to press to put in place a comprehensive state New Economy policy framework.

The 1999 ***State Index*** laid out such a policy framework. The ***2002 State Index*** updates and expands that framework by discussing new goals and policy proposals states can adopt to succeed. But it is worth repeating one thing: To succeed in the New Economy, states will need to overhaul their familiar approaches to economic development. As a result, this report focuses on eight key steps states can take to "get better" in the New Economy: 1) focus on the quality, not just the quantity of jobs; 2) know your state's function in the global economy; 3) get smart about business incentives; 4) co-invest in the skills of the workforce; 5) co-invest in an infrastructure for innovation; 6) support industry clusters; 7) boost quality of life; and 8) help more regions succeed in the New Economy.

Before discussing the specific policy proposals, it's worth saying a word about the current state budget shortfalls. There is no doubt that the economic slowdown of 2001 has exacerbated state fiscal conditions. Projected revenue shortfalls in 2002 account for as much as 10 percent of state budgets. Some of these shortfalls result from the economic slowdown, but states are poorly positioned to respond. In spite of the good times of the 1990s, virtually all states ignored the advice of any sage financial planner to save for the future and instead focused their efforts on cutting taxes and expanding spending. The result, according to ***Governing*** magazine, is that the median balance of the 38 state rainy day accounts was just 3.26 percent of general fund revenues, and it's even less if the median included all 50 states. As a result, most states are cutting expenditures, including economic development. But collectively, if states are to grow their revenues, there's only one way to do it: grow the incomes of their residents, who will then pay more in taxes. Embracing the kinds of economic development strategies outlined here is even more of a priority in an era of slower fiscal growth.

FOCUS ON THE QUALITY, NOT JUST THE QUANTITY, OF JOBS

For more than a generation, many states' economic development offices have largely been on auto-pilot, relentlessly pursuing the goal of "getting big" and adding more jobs — whenever, wherever, whatever. It didn't matter if the unemployment rate was low, if some parts of the state were booming (with high housing prices and transportation congestion), or if the companies getting incentives provided low-paying, poor-quality jobs and were likely to leave for even greener pastures in a decade. The goal was often simple: the more jobs, the better. To paraphrase the television commercial, they measured success one new job at a time.

But in many states, an approach focused almost exclusively on getting more jobs does little to help residents earn higher incomes and enjoy a better quality of life. Some states that have been losing population, or states with regions with high unemployment or outmigration, like those on the Great Plains, want to retain a "get big" strategy (or at least a "don't get smaller" strategy). However, **for most states, the central focus of economic development should shift from adding new jobs to boosting incomes and creating better jobs for all of the state's residents.** To do this, states should replace, or at least supplement, the chief metric of success used today — job creation — with a new one: income growth. Governors should be able to proudly point out that per-capita incomes in their states grew significantly on their watch.

Shifting the goal from getting big to getting prosperous requires shifting the means from trying to get cheap to getting better. As states sought to grow jobs, many did it by trying to get cheaper. They provided physical infrastructure for factories, gap financing for big industrial projects, and financial and tax incentives to cut the costs for industry, all the while keeping general business costs as low as possible, even if it meant investing less in economic fundamentals like infrastructure and education and scrimping on programs like unemployment insurance. But following a low-cost, industrial recruitment strategy–cutting taxes and services or offering subsidies in hopes of making a state attractive to companies — is not the path to raising wages and quality of life.

Rather than simply trying to be a cheaper place in which to do business, states should focus on being a better place. This means boosting the skills of the region's workforce, developing an environment that supports technological innovation, creating fast and responsive government, and ensuring a high quality of life that will be attractive to knowledge workers. This is not to dismiss the importance of fiscal discipline. But low costs with a poor quality of life and minimal infrastructure for business is not the ticket to success.

TABLE: Beliefs About Economic Development in the Old and New Economies[39]

In the old economy, people believed that:	In the New Economy, people believe that:
Being a cheap place to do business was key.	Being a place rich in ideas and talent is key.
Attracting companies was key.	Attracting educated people is key.
A high-quality physical environment was a luxury that stood in the way of attracting cost-conscious businesses.	Physical and cultural amenities are crucial to attracting knowledge workers.
Regions won because they held a fixed competitive advantage in some resource.	Regions prosper if organizations and individuals have the ability or skill to learn and adapt.
Economic development was government-led.	Only bold partnerships among business, government, and the nonprofit sector can bring about change.

KNOW YOUR STATE'S FUNCTION IN THE GLOBAL ECONOMY

Crafting an economic strategy for the New Economy requires an acute understanding of the state economies and, in particular, how its key industrial sectors compete in a global economy. It behooves states to carefully analyze their economy to identify and assess the competitive position of their key industry clusters. For example, high-tech is not one industry, it is many, and each has different requirements and locational patterns. Biotech is different from pre-packaged software, which is different from telecommunications equipment. As a result, it's not appropriate to have a single "high-tech" policy. A state's strategy should grow out of its unique industrial structure, economic assets and limitations, differences in sub-state regional economies, and business and civic culture. Therefore, a state should develop an in-depth and ongoing understanding of its economy, including how the major economic sectors work and what these economic strengths and weaknesses are. Too often decisionmakers think they already know what's going on (e.g., "everyone knows that we are strong in venture capital") and skip this essential stage in the eagerness to "get on with it." But this is a critical mistake. States should also not be afraid to take off the rose-colored glasses and examine both their strengths and weaknesses, opportunities and threats. Too often states confuse economic development strategies with marketing documents, wanting to put forward their best face. But the best strategy is an honest one. Marketing the state's strengths can come later.

But there is another key step. After analysis, a state must organize to help translate its knowledge into action, at both the private and public sector levels. A number of states, including Kansas, Indiana, and Rhode Island, have developed public-private councils to foster economic and community development. As a result, states should **form economic policy councils that bring together key leaders in business, government, labor, civic groups, and higher education** to provide in-depth analyses of the economy, develop creative economic strategies, and build widespread consensus for action.

GET SMART ABOUT BUSINESS INCENTIVES

While most states have added New Economy economic development policies in the last few years, many still maintain expensive and usually wasteful industrial recruitment and retention incentive programs. Collectively, states spend more than $15 billion annually on firm-specific incentives.[40] Economic development incentives are seldom targeted to specific economic development goals, other than to "shoot anything that flies," while "claiming anything that falls." For example, several years ago, half the jobs created by companies in Minneapolis that got tax subsidies paid less than $8 per hour — surely not the route to raising incomes in the Twin Cities.

It's not that incentives are a bad idea all the time, it's that they mostly go to zero-sum activities. The lion's share of incentives are spent to convince particular companies to stay put or to move in. They do nothing to encourage firms to boost training, R&D, or investment in new capital equipment, all things that would increase their productivity or innovative capability.

Moreover, incentives often don't even change firms' location decisions. More often than not companies use the threat of moving or dangle the carrot of moving in to extract government booty after they've already decided where they want to locate. For example, even though Maryland gave Marriott Corporation more than $60 million not to move across the Potomac to Virginia, later information strongly suggested that Marriott had no intention of moving.[41] Even if incentives really do make the difference, it's not unusual for firms to renege on the deal, taking the money and

BOX: THE INCENTIVES "POKER GAME"

Every year states are confronted with hundreds if not thousands of offers and threats by businesses to move in or move out, taking or bringing with them tens of thousands of jobs. Companies want governments to make them offers they can't refuse, in the form of tax breaks, free land, low-interest loans, or agreements to buy their products (as Alabama did when it agreed to buy Mercedes Benz for the state motor pool). When states play this game, though, it's like playing a high-stakes poker game where the other player has all the advantages.

Engaging in an incentive negotiation for a state is like playing a draw poker game with three of your cards dealt face up, while the other player (the business and its professional site location consultants, many of whom are paid on commission) has all its cards dealt face down. In other words, businesses know all the information about the state, but the state doesn't know if the business is bluffing in its decision to move, or what the bottom line number is that will influence its decision.

But it's actually worse than this. In this high-stakes poker game the state is not playing with its own money, so it has little incentive to bid low. State staff responsible for placing the bets (e.g., crafting the incentive packages) have professional motivations to bet aggressively since successfully landing the company brings kudos, while people seldom know if the bet was too high. Moreover, not only does the money almost never come out of the budget of the department doing the bidding, it usually doesn't even come out of the budget of the governor, since most incentive packages are paid over a long period of time after the current governor is out of office. In addition, the person whose money the state is playing with (e.g., the public) can seldom find out how much is bet, since incentive packages are often hidden in a veil of secrecy. Losing the game means that not only does the state lose that particular hand, but it might be forced out of the game completely. In other words, governors are seldom criticized for bidding too high, but they are criticized by the media and business community for underbidding and losing that "big deal." Given all of that, why not 'let 'er rip' and bet high?

Finally, staff also have an incentive to play poker (industrial recruitment and incentives) and not a different game (supporting indigenous development by working with industry clusters, developing training programs, etc.) because many of the current staff of state development departments are very good at poker (e.g., finding and negotiating with prospects), but not so good at other games. As a result, current staffs have a big investment in keeping things the way they are.

running, either by later moving to another location or by not creating the jobs originally promised.

While it would be in the interest of all states to not provide incentives to attract or retain companies (there would still be the same number of jobs in the U.S. economy and government would have more to invest), public officials are locked in a Prisoner's Dilemma (a non-zero-sum game in which two parties can either both cooperate and benefit, or defect and lose). States need to find a way out of this, but if they are unable to do so, strong action by the federal government to limit bidding wars by taxing firm-specific incentives (and returning the revenues, along with current federal economic and community development assistance, to states that swear off incentives) may be needed. But absent federal action, there are things states can do to better play the incentives game. As a result, the time is ripe for states to seriously reform incentive policy and use the savings to invest in New Economy economic development investments. Therefore, states should:

Pass incentive disclosure laws. In most states it's hard to get information on the actual scope and extent of incentive packages that have been granted. Many states simply have no idea how much incentives are costing them. But there is little reason why government should keep incentive deals secret from taxpayers and voters. As a result, states should pass laws requiring the administration to disclose and post online all firm-specific incentives. Three states — Maine, Minnesota, and North Carolina — have passed comprehensive incentive reporting requirements, while five other states (Connecticut, Louisiana, Ohio, Texas, and West Virginia) have weaker disclosure statutes. In Minnesota, all companies that receive more than $25,000 in state aid are required to report the number of jobs created with the money, along with wages paid. The main argument against disclosure is that it compromises business secrets and taxpayer privacy. But the government is not forcing companies to take incentives, and the incentives reported are not those that any business can take as part of the tax code (such as the R&D tax credit); they are special deals that individual firms apply for and receive.

Pass "clawback" laws. In many states, companies that get incentives pay no penalty if they move out of the state or downsize, even though the state was basing its incentive package on a promised number of jobs. For example, in Cincinnati, 14 of 85 companies that received property tax abatements for proposed expansions failed to produce the jobs they promised. To put a stop to this, states should pass so-called "clawback laws" that require companies to repay incentives if they fail to meet the objectives they agreed to in the deal. For example, in Minnesota, businesses must repay their subsidy if they move out of state.

Some argue that this penalizes firms that might be doing poorly, but the incentives are never given just to help firms, they were given with an expectation of a return (e.g., more jobs). If the firm can't meet its commitments, it's appropriate for the public to get its investment back.

Make incentives contingent on higher wages. If states give public money to companies, they should at least expect it to lead to a higher standard of living. But it's not uncommon for states to provide incentives to firms paying wages much lower than the median wage. As a result, states should tie incentives to a wage floor so that if a certain share of a company's jobs pay below a certain level, they are not eligible for incentives. Several states have done this. Kansas allows only businesses that pay wages above average for the industry to take its corporate income tax credit.[42] Rhode Island tied eligibility for its investment tax credit to company wage levels. Minnesota won't provide any incentives to businesses that pay below a predetermined wage floor. Opponents complain that such provisions will deter companies from locating in these states. But in many cases incentives don't swing the decision, and even if they did, do states really want to spend money to lower their standard of living? By focusing incentives on firms with higher paying jobs, states take seriously the effort to raise incomes.

Require that incentives are paid for in near-term budgets. Many incentive packages accrue to firms over a number of years. For example, when Alabama gave Ipsco, a steel minimill, subsidies worth $187,000 per job, much of the money came from a waiver of corporate income taxes over 20 years. When it's not coming out of their own budgets, administrations are more likely to provide generous and wasteful incentives. As a result, states should pass legislation requiring at least half of any incentive package to be paid for out of the administration's current budget, even if the incentives are paid to the firm over a number of years. The state would have to deposit money from its current budget into an escrow fund to cover the future payments to the company.

Use incentives to support the state's economic strategy. Incentives are a means, not an end. But few states use incentives strategically to support their overall economic goals. To the extent that states continue to use incentives, they should be limited to achieving certain goals, such as encouraging development in distressed parts of the state or boosting key industrial clusters. For example, throughout the 1980s, Massachusetts encouraged biotech corporations to locate in Worcester to help build its biotech cluster.

Use savings on incentives to expand New Economy investments. If states cut their incentives even in half, the average state would gain tens of millions of dollars annually that could be used for the type of New Economy investments listed below. However, governors and other key officials need to make it clear that by reining in incentives they are not reining in economic development efforts, only making them more accountable and effective.

CO-INVEST IN THE WORKFORCE SKILLS

States need to adopt policies to ensure that American companies have the skilled workers they need to be productive, while simultaneously ensuring that American workers have the skills they need to navigate, adapt, and prosper in the New Economy. States can do several things to improve the skills of the workforce:

Create incumbent worker training programs funded through a supplemental unemployment insurance tax. A number of states, including California, Delaware, Minnesota, Massachusetts, New Jersey, Rhode Island, and Tennessee, assess a small surcharge on the unemployment insurance (UI) tax to pay for employer-based training. For example, Rhode Island assesses an additional 0.2 percent surcharge on employer UI taxes to fund an employer-based training grant program. Most of the funds go to industry consortia focused on upgrading the skills of workers in key industrial sectors. Indiana's training payroll tax funds an apprenticeship and job-training program. These programs not only improve company productivity and reduce the risks of layoffs, they provide skills to workers so that if they are laid off they can get back to work more quickly.[43]

Design incumbent worker training programs that encourage firms to become learning organizations. Many states spend a large share of the training funds on so-called "quick response" training that largely serves as a retention or attraction subsidy to individual companies. Incumbent worker training programs need to do more than simply train workers, they need to help firms become ongoing learning organizations. Programs can do this by requiring firms receiving assistance to develop long-term work-based training plans and by encouraging continuing investments by the employer in training. For example, Louisiana requires a firm to engage in a detailed planning process as part of submitting a training grant proposal and allows the training program to be up to two years in length. Both aspects support the firm in thinking about an overall training plan for the firm — not just the immediate training problems.[44]

Co-invest in industry-led regional skills alliances. A number of states, including Pennsylvania and Wisconsin, are shifting the focus of workforce training efforts to support industry-led skills alliances. For example, area manufacturers formed the Philadelphia Advanced Manufacturers Academy to address a shortage of skilled machinists through a 61-week program set in a modern learning factory environment. Similarly, Indiana worked

with the Inland Steel Corporation and its Indiana-based suppliers to form the Indiana Steel Industry Supplier Training Network. States should play active roles in the creation and co-funding of these alliances by shifting support for training away from individual firms and toward groups of firms and alliances.[45]

Fundamentally reorganize programs funded under the 1998 Workforce Investment Act (WIA). States should take advantage of the opportunities afforded by the federal Workforce Investment Act to ensure that the state's Workforce Investment Boards (WIBs) are more than just bureaucratic programs operating on the margin of the labor market. States should encourage local WIBs to be active partners with the private sector in creating a trained workforce. Best practices include doing in-depth labor market "audits" that identify broad business trends and specific skill needs; developing expertise in the needs of a specific industry sector and building long-term relationships and company and union training alliances within it; consolidating employer outreach into a single "employer services" unit; creating partnerships with private employment and training organizations; and developing tailored training programs.

States should avoid setting policy for WIA in isolation from the rest of its education and training programs. States and local areas need a coherent vision for all their workforce programs. This means aligning the missions of all programs, including WIA and TANF (Temporary Assistance for Needy Families), creating a one-stop system, using information technologies to automate services and improve quality, providing training and re-employment vouchers to individuals in need of services, and developing "consumer report cards" to track the performance of training providers. [46]

Reimburse community colleges for non-credit career-prep enrollments. With the New Economy's requirement for lifelong learning, career training is becoming more important. Not surprisingly, a growing number of community college students are enrolled in career training courses. Yet while states subsidize enrollment in college-prep courses, many require that students enrolled in non-credit career training courses pay full costs or more. Because they do not get reimbursed or get reimbursed less by the state, colleges have less incentive to develop good non-credit programs. As long as there are adequate standards for the non-credit courses (length of the course, connection to employer-based training, etc.), states should reimburse schools for enrollments. For example, Texas provides full reimbursement for non-credit courses that employers set up or that students take to get ready to go back to work. Oregon reimburses state community colleges for career courses, just as it does for college prep-courses. As a result, over 30 percent of Oregon students are in career advancement courses. Georgia's Hope Scholarship allows people to take any course that issues a technical certificate that is recognized by the state. North Carolina subsidizes career education, non-credit courses in order to keep the costs low. All states should put career-oriented non-credit courses on a level playing field with credit courses, and ideally work to ensure that non-credit courses are part of certificate programs.[47]

Establish tax credits for company investments in remedial education, literacy training, and English as a second language. Many companies seeking to upgrade the skills of their workforce often find that a significant share of their workforce lacks basic skills. Moreover, in most states there are long waiting lists for remedial education.[48] However, company-based programs for basic skills training have proven highly effective. As a result, states should create a tax credit for company investments in this kind of training.[49]

Create "Learning Stores." In most places it's extremely difficult for the average citizen to locate publicly supported workforce development programs. To fix this, states should create easy-to-find "Learning Stores" located where people typically go (e.g., shopping malls). In some cases this may be as easy as making sure that state "one-stop" workforce centers are located in easily available places. In other cases it may require creating expanded and more comprehensive centers. Individuals should be able to enter a learning store and consult with a learning specialist and/or get self-service at a kiosk to: access relevant labor market information, including growing occupational categories and their skill requirements; find out how to assess their skills; locate courses, degree programs, and certificate programs in the occupations/skills they are interested in; and determine the financial assistance they qualify for.

Boost science and technology college graduates. At a time when technology is becoming a more important driver of the economy, the number of science and engineering graduates is declining or stagnant. Moreover, in spite of the concern in some states about "brain drain," there is a remarkably high correlation (0.97) between the number of Ph.D. scientists and engineers employed in a state and the number of Ph.D. scientists and engineers that graduate in the state. States can do a number of things to boost S&T graduates at all levels. New Jersey provides funds to help colleges and universities develop science, math, and information technology curricula. Minnesota is considering a proposal to provide in-state tuition rates for high-achieving non-resident students majoring in science and technology fields. The Connecticut Innovations Technology Scholar Program provides financial assistance to Connecticut college students studying the sciences and also provides internships in science and technology fields. Pennsylvania provides a three-year science scholarship for students who maintain a "B" average and undertake an internship with a Pennsylvania technology company. Maryland has adopted a similar program. Through its Technology

Opportunity Program, Ontario has provided $228 million over three years, matched by $136 million from the private sector, to universities and colleges that commit to meeting goals for significantly increasing enrollments in fields such as electrical engineering, computer and software engineering, communications engineering and computer science.[50]

CO-INVEST IN AN INFRASTRUCTURE FOR INNOVATION

In an economy increasingly powered by technology and innovation, the ability of states to create an environment in which innovation thrives is critical to economic growth. But universities are not the only knowledge incubators; in fact, most knowledge is produced by companies. States need to foster strategies that enhance the ability of companies to produce and use knowledge. States should do several things, including:

Increase higher education funding to create key competencies that support New Economy growth. Universities can be key nodes in New Economy development. But in most states, higher education governance and budgets are considered separate from the state's economic development efforts. And too often when states seek to boost colleges and universities' role in economic development, they simply increase higher education funding indiscriminately. If states are to effectively enlist higher education in economic development, especially in helping small and mid-size entrepreneurial firms,[51] they need to tie at least a share of increased funding to specific goals (such as doing research related to key industry clusters, providing technical assistance to companies in the state, or obtaining industry funding for R&D) and outcomes (such as increasing the transfer of technology to companies in the state). While universities and colleges have key missions other than economic development, the latter is part of their mission and they should perform that mission well.[52] As a result, states should set clear economic development objectives for state-funded higher education institutions and tie a share of increased funding to how well they meet these goals. They should also encourage universities to establish external advisory councils made up of industry leaders and faculty to provide insight into research trends and entrepreneurial activities.

Boost university technology commercialization. While some universities excel at commercializing their discoveries, most do not. In many universities, faculty are simply not focused on working with industry and when they are, the technology transfer offices are focused on maximizing revenues from licensing faculty's intellectual property, even if this means giving little attention to technologies with less revenue potential but significant economic development impact. Commercialization succeeds when industry R&D staff is able to establish personal contacts with university researchers and where the university has an active and liberal policy to get its technologies in the marketplace and to allow faculty to become entrepreneurs. States should carefully examine rules regarding licensing of intellectual property and holding of equity positions with an eye toward making it easier for universities to commercialize research. For example, in order to address constitutional barriers to commercialization, Oregon has proposed the creation of a Higher Education Tech Transfer Account which would provide a mechanism to allow universities to hold equity in the products and companies created by their research. Oklahoma passed a state constitutional amendment overturning a provision that prohibited university faculty from holding equity positions in companies based on their technologies. In addition, states should boost funding for university research "centers of excellence" and other programs designed to develop and commercialize university technology.

Boost or create R&D tax credits. Over two-thirds of states offer an R&D tax credit, but most credits are modest, averaging around 5 percent. At 22.5 percent, Rhode Island has the highest rate in the nation. Studies show that the R&D tax credit is an effective way of stimulating private-sector R&D.[53]

Create or increase tax credits for research investments at universities or federal labs. Many states have (modest) tax credits for company expenditures on research whether it's conducted by the firm or at a university. But because the result of company-funded research at universities is shared, the benefits are less likely to be fully captured by an individual firm. As a result, firms will under-invest in this kind of extramural research. As a result, it makes sense for states to have more generous tax credits for company expenditures on research at universities or federal labs. At least one state, Massachusetts, has done this, by establishing a 15 percent credit for basic research expenditures at universities, compared to its regular 10 percent credit. Ontario's Business Research Institute Tax credit provides a fully refundable 20 percent credit on research expenditures incurred under approved contracts with eligible research institutes, including universities, hospital research institutes, and certain non-profit organizations, compared to its regular 10 percent credit.

SUPPORT INDUSTRY CLUSTERS

In regional economies, the whole is often greater than the sum of the parts. In other words, firms in related industries often cluster together in a particular region, allowing them to take advantage of common resources (e.g., a workforce trained in particular skills; technical institutes; a common supplier base). But clusters are important for another reason — in a knowledge-based economy, having knowledge is not enough; it must be shared, and in some regions clusters of firms that network and communicate are

able to raise the overall knowledge levels that they can draw upon. Perhaps the best known cluster is California's Silicon Valley, where a large agglomeration of high-tech firms makes it the world's most vibrant technology region. But it's not just Silicon Valley that has industry clusters, and many clusters do not consist of "high-tech" firms. As a result, states should reorient their economic development programs to support regional industrial clusters, both based on existing groups of firms but also around emerging clusters where the region has some initial capabilities (e.g., several firms and university research capabilities).

Catalyze and empower industry clusters. In many states, clusters of similar firms exist but have little formal interaction with each other. States can help by organizing roundtables to bring industry leaders together to talk about common challenges facing their industry and the steps the state can take to help boost the cluster's competitiveness. They can provide small matching grants to help clusters establish industry self-help associations. For example, as part of its efforts to create a statewide strategic economic plan, the Rhode Island Economic Policy Council brought together leaders from the state's software companies. With the help of a small state start-up grant, the companies formed an industry association that works to help all firms in the cluster become more competitive. States should also consider proactive efforts to foster "turn-key industry networks" whereby a major economic development agency sponsors the development of a network, nurtures it, and then lets it go on its own. For example, this is what the Massachusetts Technology Collaborative did in helping to form the Massachusetts Medical Device Industry Council, a trade association for medical device manufactures.[54]

Reorganize state programs around clusters. A cluster of firms, rather than the individual firm, is a much more logical point of economic development assistance for states. Working with entire clusters of firms is not only more cost effective, but also helps boost the synergies and cross-firm learning that can transform low-performing clusters into high-performing ones. As a result, whenever possible states should work with entire clusters of firms. For example, states should fund industry training programs through groups of firms with the same skill needs, as opposed to making grants to individual firms. They should reorient other programs, such as manufacturing extension, business finance, business assistance, and technology transfer, around clusters. In addition, states should tie increased funding to community colleges and four-year colleges and universities based on how they meet the training and research needs of regional clusters.[55] And to the extent that states continue industrial recruitment, it should compliment a cluster strategy. For example, Missouri is targeting efforts around life science clusters in St. Louis and Kansas City so that both major regions in the state reinforce each other.

BOOST QUALITY OF LIFE

Because a skilled workforce is now the most important factor of production, a region's pool of skilled workers is a key factor determining success. In the old economy, workers used to move to be near jobs. In the New Economy, companies increasingly look to move to where knowledge workers live. Because they are in greater demand and have more ability to be particular about who they work for and where they work, knowledge workers often choose to live in places that provide a high quality of life in addition to a good job. Most states face a number of challenges in creating a great quality of life, with high amenities, low crime, and good transportation.

For many states, boosting mobility in the state's crowded metropolitan areas is the most important task in improving quality of life. States like Washington, Georgia, California, Maryland, New York, and Massachusetts have major metropolitan areas that are near gridlock. Besides making life miserable for millions of commuters, road congestion severely reduces the economic attractiveness of a place.

In spite of this, little has been done to solve road congestion. Between 1987 and 1998, while vehicle miles traveled on freeways or principal arteries in urban areas increased by 42 percent, lane miles increased only 16 percent (with almost all coming from reclassifying rural areas as urban). No wonder congestion has worsened.[56]

This is not to say that states shouldn't continue to work on demand-reduction strategies such as encouraging transit-oriented and infill development, investing in transit, supporting rational metropolitan-wide planning, and imposing impact fees on new developments equal to public sector costs. However, while demand reduction strategies are needed, they are incapable of adequately responding to 20 years of failure to expand our nation's highway infrastructure to meet the needs of a larger and more mobile population. As a result, states should:

Expand road capacity in congested metropolitan areas. If states are serious about returning mobility to their residents, they will need to do more to increase the supply of transportation, particularly by building more roads and widening existing roads, especially in congested metropolitan areas. In most metropolitan areas there are ample opportunities to widen existing arterials without having to claim new rights-of-way. In fact, many states should place congestion mitigation as the top goal for their transportation efforts.

Pay for new road capacity with user charges. Few states have the money to pay for both maintenance of existing infrastructure and expansion. As a result, they have not made the needed investments to expand transportation infrastructure to meet demand. The fairest and most efficient way to add new revenues is for states to increase user fees, such as gas taxes and vehicle registration fees. States should also experiment with road pricing systems. The ability to collect tolls on the fly with EZ-pass systems (wireless transponders in vehicles) means that states can establish toll roads or toll lanes without impeding traffic flow.

Use information technology to modernize state transportation systems. Intelligent Transportation Systems (ITS) use advanced information technologies to manage and operate surface transportation. ITS involves devices to detect disturbances in traffic flow, real time traveler information systems, computer controlled ramps and traffic lights, "on the fly" toll collection systems, and a host of other applications. States should fund a wide array of applications, including building "HOT Lanes" to let drivers pay to use underutilized HOV lanes.

HELP MORE REGIONS SUCCEED IN THE NEW ECONOMY

In many states, the story of the 1990s was a common one: The state's major metropolitan areas boomed, while other parts of the state, including rural regions and smaller cities dependent on traditional manufacturing, lagged behind. Such development patterns hurt state economies by raising costs in congested metro areas and unemployment rates in other areas. As a result, it's incumbent upon states to develop and implement strategies that ensure that more regions thrive in the New Economy.

Develop "balanced growth" strategies. Few state economic development departments care much where growth occurs, they just want growth. As a result, governors should bring together key parties to craft a statewide balanced growth strategy that explicitly lays out a path of how to boost growth in lagging regions. A key part of any strategy will entail explicitly stating that supporting any and all growth in booming and crowded metropolitan areas is not in the best interests of the state. Siphoning off some growth from large, congested sprawling metros to smaller places will reduce congestion and costs in the former, and boost the economic prospects of the latter. Places like Boston, San Jose, and Washington, DC don't need more residents and jobs, but places like Springfield, Ill., Fresno, Calif., and Hagerstown, Pa. do, and could easily add more people with positive impacts, such as letting people have a good job while staying in the places they grew up.

Focus efforts on "growth poles." States need more than a plan, they need to make the hard political choices that enable them to target limited resources to investments in places that are most likely to be able to take advantage of opportunities. In contrast to what many think, the New Economy does not give every place the ability to be competitive — certain factors like quality of life, a reasonably sized labor pool, and access to transportation still matter. As a result, there will be some places that are very small, remote from metro areas, and with a poor quality of life and fewer amenities that are not likely to succeed in the New Economy. In contrast, other places that are of modest size and have a good quality of life have real opportunities, especially if they are linked with high-speed telecommunications connections. For example, a place like Cedar City, Utah, a small city of about 35,000 and located on I-15 about a 5-hour drive south of Salt Lake City, is poised to be a magnet of growth. With a state college, a Shakespeare festival, and a stunningly beautiful natural environment, Cedar City would be an ideal growth pole for Southern Utah. It's big enough that a software company from California might want to move there and be confident it could attract the kind of workers the company needs. But it's small enough that it's hard to imagine it suffering from congestion or high housing prices. In contrast, it would be much more difficult for a smaller town in Southern Utah, far from the Interstate and without the same quality of life, to be a magnet for growth.

As a result, states should provide regional planning grants to substate regions that are working to select growth poles for targeted development.

Once growth poles are identified, states should target economic development resources, including industrial recruitment efforts, to designated growth poles. They should also develop seed and early-stage venture funds to support the growth of new businesses in these areas. For example, prior to becoming governor of Virginia, Mark Warner helped create seed capital funds in areas of the state such as Hampton Roads, Charlottesville, and Roanoke. In addition, states should provide regional planning grants to support building the capacity of economic development leadership in growth pole areas. These grants should support a new model of public-private partnership that engages civic and business leaders in developing and implementing a regional development strategy.[57] Finally, state governments themselves are a job creator and their facilities can stimulate economic development. As a result, states should relocate government facilities that do not need to be in crowded metro areas to designated growth poles.

Aggregate demand in underserved areas to build a market for broadband.

The information technology revolution allows an increasing share of economic activities to remain functionally close (to customers, suppliers, and other parts of an organization) while becoming more physically distant. But for this to work, places need access to broadband telecommunications. As a result, states need to develop concerted efforts to ensure that most parts of their state have high speed broadband connections, particularly for businesses.

States can do several things to help facilitate the rollout of broadband, including reducing the rights-of-way charges and taxes they levy on providers. For example, the Michigan Senate has passed legislation that would preempt local authorities over rights-of-way for telecommunications use and reduce the fees that could be charged for access to those rights of way, while giving telecom providers tax credits for rights-of-ways fees.

States can also fund regional efforts to aggregate demand for broadband.[58] One reason why telecom providers have been slow to build out broadband to more rural communities is that the costs are higher and the revenues lower. When aggregated from government, education, and large business users, broadband demand in many rural areas can make investments pay off. As a result, a number of regions have developed initiatives to form broadband buying co-ops that invite telecom providers to bid for their business and extend affordable broadband to their area. For example, New Hampshire formed public-private partnerships to create the Monadnock and North Country "Connects," giving businesses in rural parts of the state access to high-speed telecommunications at affordable prices. New Hampshire modeled the initiative after Berkshire Connect, which expanded affordable telecom services in Western Massachusetts. The Massachusetts Technology Collaborative created an affinity group of business and government Internet users, and since early 2000, Berkshire Connect has provided high-speed Internet and data services to its members through a regional network constructed by private vendors chosen through a competitive proposal process.[59]

The Canadian province of Alberta is taking this concept a step farther. Through its Supernet project, it is working to connect every community that has a hospital, school, library, or provincial government office to an affordable high-speed, broadband Internet network. At the same time, Supernet will ensure that businesses and residences in 422 communities will have access to high-speed Internet (10 to 100 mb per second) at competitive rates.[60] The government will provide $193 million for the project to lay 8,410 kilometers of fiber. In areas of the province where it makes no sense to lay fiber, a wireless system will be used. Much of the investment will go to 368 communities where the private sector is simply unable to make a business case to build. In return for commitments by the government to purchase telecom services over the course of the next 10 years, the province has also obtained commitments from two private sector providers to build out in other areas. In all areas, Internet service providers will be able to purchase use on the network for resale to homes and businesses. Once the initial capital costs are covered by government, the network is designed to be self supporting.

Help industries located principally in non-metro areas become more competitive. One way to help non-metro areas thrive is to help the industries there become more competitive. As a result, states should carefully identify rural-based industries and how new technologies can make them more competitive. In many cases this means helping natural resource-based industries develop new products and adopt new production processes. A number of state programs do this. Kansas State University runs a technical assistance program to help agricultural co-ops develop value-added food processes. South Dakota's Value-Added Agriculture fund supports feasibility and marketing research for agricultural processing projects. South Dakota has also developed a regional program to boost wind energy production in the Southwest corner of the state, creating good jobs in the process. New Valley Connections, a public-private partnership in California's San Joaquin Valley, is implementing a cluster-based economic development strategy for the region's agri-businesses that focuses on making the San Joaquin Valley a center of research and development for agri-based new product development.[61]

SUMMARY

The New Economy is here to stay. It brings state economies enormous potential for growth, but also introduces challenges. If states do not invest in a knowledge infrastructure — world-class education, training, and technology — companies will not have the skilled workers and cutting-edge tools needed to grow and create well-paying jobs. Simply put, states that meet the challenges of the New Economy — focusing on innovation, learning, and constant adaptation — will be the ones that prosper.

Page 14 Indicator: **Information Technology Jobs**
Sources: IT jobs: Bureau of Labor Statistics occupational employment data, 1999, http://www.bls.gov/oes/home.htm. Total Employment: Statistical Abstract of the United States: 2000 United States Census Bureau.

Page 15 Indicator: **Managerial, Professional, and Technical Jobs**
Source: Managerial, Professional, and Technical Jobs: Bureau of Labor Statistics occupational employment data, 1999, www.bls.gov/oes/home.htm Total Employment: Statistical Abstract of the United States: 2000 U.S. Census Bureau.

Page 16 Indicator: **Workforce Education**
Source: Educational Attainment: United States Census Bureau, Current Population Survey, 2001. Compiled by Paul Gottlieb, Case Western Reserve University.

Page 17 Indicator: **Education Level of the Manufacturing Workforce**
Source: Educational Attainment: United States Census Bureau, Current Population Survey, 2001. Compiled by Paul Gottlieb, Case Western Reserve University.

Page 19 Indicator: **Export Focus of Manufacturing**
Source: Exports: Office of Trade and Economic Analysis, International Trade Administration, United States Department of Commerce.

Page 20 Indicator: **Foreign Direct Investment**
Sources: William J. Zeile, "U.S. Affiliates of Foreign Companies: Operations in 1999," Survey of Current Business, U.S. Department of Commerce, Bureau of Economic Analysis. Total Employment: Statistical Abstract of the United States: 2000 United States Census Bureau.

Page 22 Indicator: **"Gazelle" Jobs**
Source: Gazelles: David Birch, Anne Haggerty, and William Parsons, Corporate Demographics: Corporate Almanac, (Cambridge, Mass.: Cognetics, 2000).

Page 23 Indicator: **Job Churning**
Source: Data compiled by the United States Census Bureau.

Page 24 Indicator: **IPOs**
Sources: State IPO Totals: Hale and Dorr LLP, The 2000 IPO Report. Gross State Product: Bureau of Economic Analysis, Regional Accounts Data.

Page 26 Indicator: **Online Population**
Source: Households Online: National Telecommunications and Information Administration, *A Nation Online: How Americans Are Expanding Their Use of the Internet* (U.S. Department of Commerce: Washington, DC: 2002).

Page 27 Indicator: **Commercial Internet Domain Names**
Sources: Registrations: Matthew Zook, University of California, Berkeley, www.zooknic.com/Domains/alpha.html. Firms: David Birch, Anne Haggerty, and William Parsons, Corporate Demographics: Corporate Almanac (Cambridge, Mass.: Cognetics, 2000).

Page 28 Indicator: **Technology in Schools**
Source: Education Week, "Technology Counts 2001." (www.edweek.org).

Page 29 Indicator: **Digital Government**
Sources: Kent Lassman, *The Digital State 2001* (Washington, DC: Progress & Freedom Foundation, 2002). Darrell M. West, Brown University, *State and Federal E-Government in the United States, 2001* (Providence, R.I.: Brown University, 2001), www.brown.edu/Departments/Taubman_Center/polreports/egovtolus.html.

Page 30 Indicator: **Online Agriculture**
Source: U.S. Department of Agriculture, Farm Computer Usage and Ownership (Washington DC: 2001), usda.mannlib.cornell.edu/reports/nassr/other/computer/empc0701.pdf.

Page 31 Indicator: **Online Manufacturers**
Source: United States Census Bureau, http://landview.census.gov/eos/www/papers/MCDtables.pdf.

Page 32 Indicator: **Broadband Telecommunications**
Source: Pinkham Group, Broadband Market Study - DSL Current Deployment and Availability Q3. 2001 Broadband Lines: Federal Communications Commission, High-Speed Services for Internet Access, (Washington, DC: 2001).

Page 34 Indicator: **High-Tech Jobs**
Sources: High Tech Jobs: AeA, *Cyberstates 2001* (Washington DC: 2001), and United States Census Bureau, County Business Patterns: 1998-1999. Total Employment: Statistical Abstract of the United States: 2000 United States Census Bureau.

Page 35 Indicator: **Scientists and Engineers**
Source: Scientists and Engineers: National Science Foundation, Science and Engineering Profiles, 1999 Data Update (Arlington, Va.: 1999).

Page 36 Indicator: **Patents**
Source: United States Patent and Trademark Office, *Patent Counts by Country/State and Year: Utility Patents* (Washington DC, 2001).

Page 37 Indicator: **Industry Investment in R&D**
Sources: Industry Investment: totals compiled by the National Science Foundation. Gross State Product: Bureau of Economic Analysis, Regional Accounts Data.

Page 38 Indicator: **Venture Capital**
Sources: Venture Capital: totals compiled by the National Venture Capital Association. Gross State Product: Bureau of Economic Analysis, Regional Accounts Data.

WEIGHTING METHODOLOGY

Raw scores were calculated for each state for each indicator. In the composite analyses, the indicators were weighted so that closely correlated ones wouldn't bias the results. In addition, to measure the magnitude of differences between states and not just their ranks, in each indicator, scores were based on the standard deviation of each from the mean score of all of the states.

Weighting factors for final score:

KNOWLEDGE JOBS	Weight
IT Professionals	.75
Professional and Managerial Jobs	.75
Manufacturing Workforce Education	.75
Workforce Education	1.00
TOTAL	**3.25**

GLOBALIZATION	
Export Orientation	1.00
FDI	1.00
TOTAL	**2.00**

DYNAMISM AND COMPETITION	
Gazelles	1.00
Churn	1.00
IPOs	1.00
TOTAL	**3.00**

DIGITAL ECONOMY	
Online Population	.75
".com" Domain Names	.75
Technology in Schools	.50
Digital Government	.50
Farms and Technology	.50
Manufacturing and Technology	.50
Broadband	1.00
TOTAL	**4.50**

INNOVATION CAPACITY	
High-Tech Employment	.75
Scientists and Engineers	.75
Patents	.75
R&D	.75
Venture Capital	1.00
TOTAL	**4.00**

1. Data courtesy of Challenger, Gray & Christmas Inc., Chicago.
2. *Fortune,* October 1955.
3. This is done by measuring the overall propensity to export (or patent or invest in R&D) of each 2-digit manufacturing sector, and multiplying the number of jobs in each 2-digit sector for each state by the 2-digit national propensity to export factor. These were summed to create an adjusted total number of jobs for each state. A ratio was calculated comparing the unadjusted to adjusted. If the ratio was higher than one it means that the state's industrial mix was slanted toward industries that tend to export less. If it was lower than one, the state had more jobs than the national average in industries that export more. The total value of exports was multiplied by the ratio for a final adjusted score.
4. This is not to say that all other areas of the states are not embracing New Economy development. For example, the area around Athens, Ga. has seen growth in agricultural biotech and the creation of a number of vaccine manufacturers.
5. See PPI's *Metropolitan New Economy Index* for more information on how metropolitan areas rank, www.neweconomyindex.org.
6. To control for the fact that IT workers are heavily employed in IT sectors, such as software, computer and office equipment, and computer related services, this indicator estimates the number of IT jobs in IT sectors and subtracts this number from the total number of workers in IT occupations in a state. This enables a more accurate picture of the extent to which traditional industries (e.g., other than software) employ IT professionals.
7. Managerial and professional jobs were calculated using 22 separate Occupational Employment Statistics codes from the Bureau of Labor Statistics.
8. Each state's residents were classified by education level. The percentage of residents with more than a high school degree but no college degree and those receiving an associate's degree were weighted with a multiplier of 0.5. The multiplier for the percentage of residents with a college degree was 1, and the multiplier for graduate degrees was 2. The weighted percentages were added to find each state's total score. In other words, a state where 10 percent of the residents had a high school degree and some college (earning a weighted score of 5), 20 percent with a bachelor's degree (a weighted score of 20), and 10 percent with a graduate degree (a weighted score of 20), would earn a total score of 45.
9. Stuart A. Rosenfeld and Robert D. Atkinson, "Engineering Regional Growth," *Growth Policy in the Age of High Technology,* ed. by Jurgen Schmandt and Robert Wilson (Boston: Unwin Hyman, 1990).
10. Scores were calculated by combining the state's score on the average educational level of the manufacturing workforce. But in order to control for the overall educational levels in the state, the measure also added the state's score on its relative score of the difference between the education levels of its entire workforce and manufacturing workforce. For example, if a state standard deviation was 0.76 in educational level of the workforce and 0.95 in manufacturing workforce, it would receive a score of 1.71 for this sub-variable.
11. Paul Osterman, "Revolutionizing Work," *Blueprint Magazine* (Washington, DC: Democratic Leadership Council, 2000), www.ndol.org.
12. Early H. Fry, *The North American West in a Global Economy* (Los Angeles, Calif.: Pacific Council on International Policy, 2000). www.pacificcouncil.org/pdfs/fry%20report%20final.final.pdf
13. Data on exports by state are available only for manufacturing. See Cletus Coughlin and Patricia Pollart, "Comparing Manufacturing Export Growth Across States: What Accounts for the Differences," Federal Reserve Bank of St. Louis Review, January/February 2001, pp. 15-16, www.stls.frb.org/docs/publications/review/01/0101cc.pdf.
14. To better measure the propensity of all companies to export, export scores are calculated by controlling for the overall industrial mix in each state. See endnote 3.
15. Andrew B. Bernard and J. Bradford Jensen, "Exporters, Jobs, and Wages in U.S. Manufacturing: 1976-1987," *Brookings Papers in Microeconomics,* (1995) pp. 67-119.
16. Coughlin and Pollart.
17. William J. Zeile, *"U.S. Affiliates of Foreign Companies: Operations in 1999,"* Survey of Current Business, U.S. Department of Commerce, Bureau of Economic Analysis (2001).
18. The IPO measure is a weighted measure of the sum of the standard deviations for the number of IPOs as a share of GSP and the total value of IPOs as a share of GSP. IPO numbers are for 2000 and 2001.
19. www.digitrends.net/nwna/index_15935.html.
20. See www.ntia.doc.gov/ntiahome/dn/anationonline2.pdf.
21. The number of ".com" domains registered in a state will not be an exact measure of the number of businesses with Web sites for a number of reasons. For one thing, not all registered domains are in use. (Sometimes organizations register names they think they might use. And some domain names are held by speculators hoping to sell them.) Further, many ".com" domain names are registered by individuals for non-commercial purposes, to create personal Web pages, fan sites, and the like. And of the domains registered to businesses, not all of them are for commercial purposes, per se. (Some companies create rudimentary Web pages simply to make sure they're on the map, just as they might place an ad in the Yellow Pages. Others invest hundreds of thousands or millions of dollars building elaborate e-commerce systems in order to sell to markets around the world.) Nonetheless, these factors will be true across all states, and thus should cancel each other out.
22. www.zooknic.com/Domains/counts.html.
23. Factors used in this indicator were students per multimedia computer; students per Internet connected computer; percentage of schools with Internet access through a T1 or cable modem, percentage of schools where at least 50 percent of teachers use the Internet in class; and the percentage of schools where at least 50 percent of teachers have school-based email addresses.
24. Cathy Ringstaff and Loretta Kelley, *The Learning Return on Our Educational Technology Investment* (San Francisco, Calif.: WestEd, 2002), www.WestEd.org/online_pubs/learning_return.pdf.
25. *Education Week,* "Technology Counts 2001: The New Divides" (May 2001), www.edweek.org.
26. To calculate the scores for this indicator, the standard deviation scores of each study's final score were combined and then divided by two.
27. Andrew Leigh and Robert D. Atkinson, *Breaking Down Bureaucratic Barriers: The Next Phase of Digital Government* (Washington, DC: Progressive Policy Institute, November 2001).
28. Tim Dunne, *"Technology Usage in U.S. Manufacturing Industries: New Evidence From the Survey of Manufacturing Technology,"* Rand Journal of Economics, Vol. 25, no.3 Autumn, 1994, pp. 488-499.
29. A much better measure is the percentage of goods manufacturers buy and sell online. However, as with most Census Bureau data, it is collected but not released at the state level.
30. www.census.gov/eos/www/papers/MCDtables.pdf.
31. This indicator is a combined measure of high-speed lines (DSL, cable, and other methods) per household and establishment, and the percent of household in ADSL range.

32. Kenan Patrick Jarboe and Robert D. Atkinson, *The Case for Technology in the Knowledge Economy: R&D, Economic Growth, and the Role of Government* (Washington, D.C.: Progressive Policy Institute, 1998), www.ppi.online.org.
33. Ibid.
34. This indicator includes the NAICs codes from the AEA definition, plus the following biomedical industries: NAICs codes 2833-2836; 3829, 3841-3843, 8071, 8099, 8731, 8733, and 8734. Altogether this includes computer and office equipment, consumer electronics, communications equipment, electronic components and accessories, semiconductors, industrial electronics, photonics, defense electronics, small arms, electro medical equipment, pharmaceuticals, optical instruments and lenses, navigational, medical, measuring and control instruments, medical equipment and supplies, scientific R&D services, medical and diagnostic laboratories, communications services and software and computer related services.
35. Ibid.
36. Scientists and engineers counted include only those who have attained a doctorate in their field.
37. To better measure the propensity of all companies to patent, patent scores are calculated by controlling for the overall industrial mix in each state. See endnote 3.
38. To better measure the propensity of all companies to invest in R&D, R&D scores are calculated by controlling for the overall industrial mix in each state. See endnote 3.
39. For more on the old and new models of economic development, see Richard Shatten and Paul Gottlieb, "Aha! Knowledge Economy," *Innovation for Regional Advantage,* vol. 2 (2000): pp 4-7.
40. One study pegged the figure at $48 billion per year. Kenneth Thomas, *Competing for Capital: Europe and North America in a Global Era (Controversies in Public Policy),* (Washington, DC: Georgetown University Press, 2000).
41. Jay Hancock, "Marriott used VA. as ruse to raise Md. Bid: Public records suggest Bethesda's firm's threat to leave was bluff," *The Baltimore Sun,* 27 March, 1999.
42. K.S.A. 74:50, 115.
43. Robert D. Atkinson, "Modernizing Unemployment Insurance for the New Economy and the New Social Policy," (Washington, DC: Progressive Policy Institute, February 2002), www.ppionline.org.
44. Atkinson, "Building Skills for the New Economy: Regional Skills Alliances," (Washington, DC: Progressive Policy Institute, February 1998), www.ppionline.org.
45. Atkinson, "Building Skills."
46. Suzanne Teegarden and Barbara Baran, "The Promise of the Workforce Investment Act," Progressive Policy Institute, Washington, 2000. www.ppionline.org.
47. This section is based on a forthcoming report from Brian Bosworth, The FutureWorks Company, Cambridge, Mass.
48. John Comings, Andrew Sum, and Johan Uvin, "New Skills for a New Economy: Adult Education's Key Role in Sustaining Economic Growth and Expanding Opportunity," (Boston, Mass: MassInc, December 2000), www.massinc.org.
49. Robert Atkinson, "Making the New Economy Grow: An Action Agenda," (Washington, DC: Progressive Policy Institute, July 2000), www.ppionline.org.
50. www.edu.gov.on.ca/eng/document/nr/99.07/atop.html.
51. Grant Black, Department of Economics, Georgia State University, "Small Firm Innovation in Metropolitan Areas: Does the Local Technological Infrastructure Matter," presented at the Fall 2001 APPAM conference.
52. Louis G. Tornatzky, Paul Waugaman, and Dennis Gray, "Innovation U.: New University Roles in a Knowledge Economy," Southern Growth Policies Board, 2002.
53. Robert D. Atkinson, Boosting Technological Innovation Through the Research and Experimentation Tax Credit (Washington, DC: Progressive Policy Institute, May 1999), www.ppionline.org.
54. www.mtps.org/cluster/affiliates.htm#msmd.
55. www.governor.wa.gov/wcc/wcc.htm. Washington Gov. Gary Locke's Competitive Council recently made a similar proposal.
56. *Blueprint: Ideas for a New Century,* "Stuck! America's Growing Mobility Crisis—and How To Get Out of It" (September/October 2001), www.ndol.org/blueprint.
57. www.doc.gov/eda/pdf/1G3_21_stratplan-tech.pdf.
58. For an overview of rural broadband strategies, see Tom Bonnett, "Starting a Telecommunications Plan in Your Community," Rural Research Report, Illinois Institute of Rural Affairs, Spring 2001, www.iira.org.
59. www.bconnect.org.
60. www3.gov.ab.ca/innsci/supernet/quickfacts.html.
61. www.greatvalley.org/nvc/index.html.

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Robert D. Atkinson is the vice president of the Progressive Policy Institute and director of PPI's Technology & New Economy Project. He is the author of the New Economy Index series which looks at the impact of the New Economy on the U.S., state, and metropolitan economies. While at PPI, he has written groundbreaking reports on a wide range of technology issues, including the role of IT in homeland defense; Internet taxation, privacy, and spam; global e-commerce; digital government; and middleman opposition to e-commerce. He also directed PPI's New Economy Task Force, co-chaired by Senate Democratic Leader Tom Daschle and Gateway CEO Ted Waitt.

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