



**Index of Innovation
and Technology**

WASHINGTON STATE 2003

Executive Summary

WELCOME to the *2003 Index of Innovation and Technology for Washington State*. Innovation and technology represent the key to Washington's future economic strength and vitality. However, describing the relationship between economic prosperity and the drivers of a technology economy is difficult. The 2003 Index provides a set of indicators outlining the relationship between the prosperity and vitality of Washington State, its residents, and the innovation and technology drivers.

Added features in this year's full report include two special sections. One section provides analysis on selected index measures at a regional level, examining some of the drivers in communities across this state. A second section analyzes the index measures as a benchmark report against Washington's *Strategy for the Innovation Economy*. Also, this year's Index uses a different definition of high technology industry than in past reports, developed in cooperation with the Technology Alliance and the Washington Technology Center.

This document is an extract from the *2003 Index of Innovation and Technology for Washington State*. Complete text, definitions, data and references are found in the full report, which is available on the web at <http://www.watechcenter.org/techindex/index.html>.

Summary Findings

Washington's innovation and entrepreneurial economy is thriving. This report represents quantitative information about more than 40 key indicators, or measures. From these indicators, several conclusions can be drawn:

- Even more than last year, young companies in Washington remain the engine of growth for the state's economy. As technology continues to employ over 12 percent of the workforce, and aerospace continues to decline, Washington ranked number three nationally in employment among gazelle companies and second only to Utah in growth rate for employment in startup companies.

Several trends reported in the 2001 Index were reinforced in this report:

- Capital investment in Washington companies suffers from the general decline in capital markets experienced over the last year, but at a rate lower than much of the country. Washington's position nationally continued to decline overall in dollars invested by private and public markets. However, investment remains strong across the technology economy.
- Washington continues to be a state reliant upon exports, with almost 3/4 of the exports coming from aerospace and software. This year, Washington achieved number one status in exports on a per capita basis.
- Workforce issues continue to be of concern. While Washington is number one nationally in percentage of the population with high school diplomas, college degrees granted continue to remain low relative to workforce needs, although the number of degrees went up slightly in 2001.

A comparison of trends from previous years concludes that:

- Most of Washington's current technology employment base is located in the Seattle-Everett-Bellevue area. However, the rate of growth in technology employment was highest in Bellingham and the Tri-Cities.
- Overall, quality of life in Washington is high, and even traffic congestion is rated as improving relative to other regions.

Indicator Areas

Key indicators in six major areas are presented in this report. Summary findings are presented on these six elements, which are vital to Washington's economy.

INNOVATION

Washington continues to rely on innovation as a means for future growth, ranking high in innovation capacity and demonstrating continued growth in patents granted.

Research and development, a major component of innovation, continues to be mixed. Overall, research and development funding is holding steady at seventeenth nationally for a second year. State and local government R&D funding is on the upswing. However, while industry research continues to be the largest portion of the state's overall R&D investment, this important component of research and development continues to decline.

COMPETITIVENESS

Washington remains nationally competitive. Our position as an export center became more solid, taking over the lead as the state with the most export value per capita. Traditional industries continue to decline in national dominance, while newer industries are improving.

About 80 percent of the technology jobs in Washington remain in the Everett-Bellevue-Seattle corridor. Across the state, regions experienced a variety of positive and negative growth in their overall technology employment.

GROWTH

Startup companies are the engine upon which much future growth rests. Washington has the second highest growth rate for employment in startup companies. For the five-year period of 1992–1997, Washington was sixth nationally.

Washington has moved to the number three position nationally in employment among gazelle companies, down from second a year ago. Employment in technology industries overall remains steady, with declines in aerospace against increases in all other industries.

FINANCIAL CAPACITY

A conflicting financial picture arose in Washington over the last year. Venture investment decreased in Washington relative to other areas, and compared to the most recent years. However, IPOs continued across a number of industries, reflecting the diversification in Washington's high tech economy.

Federal funding for technology R&D supports a region's growth. Washington increased the number of both SBIR and ATP awards received in the last year. In order for Washington to remain on the forefront of the technology economy, there needs to be continued growth in access to capital at the R&D stage, private equity level, and in public markets.

HUMAN POTENTIAL

Washington has a strong base of human capital to support an innovation-driven economy. At the high school level, Washington ranks number one nationally in percentage of residents with high school diplomas and success on the SATs. An above average number of students also sit for the SATs.

Washington universities granted over 4,500 degrees at the collegiate level, an increase from 1999 to 2000. However, these levels were still below that of 1997, and below the level required to meet in-state workforce needs.

QUALITY OF LIFE

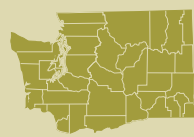
For the most part, Washington's quality of life continues to be very high. Housing prices and traffic congestion in Seattle remain the only negatives in this measure, though traffic congestion in Seattle moved from second worst in the country to fifth worst last year.

REGIONAL PERSPECTIVES

Other than Seattle, no single region in the state stands out in technology and innovation. Communities like Bellingham demonstrate high growth in technology employment and patents. The Tri-Cities, Spokane and Vancouver all have significant employment levels in technology. Small Business Innovation Research (SBIR) awards on a per capita basis are highest in the Tri-Cities, even when compared to Seattle.

BENCHMARKS FOR WASHINGTON'S STRATEGY FOR THE INNOVATION ECONOMY

In this inaugural year, the benchmarks show that Washington State is strong in R&D, is growing significant employment through new businesses, has good personal Internet access (but is lower in school Internet access), and is a leader in digital technologies in government.



Indexing Regions across the State

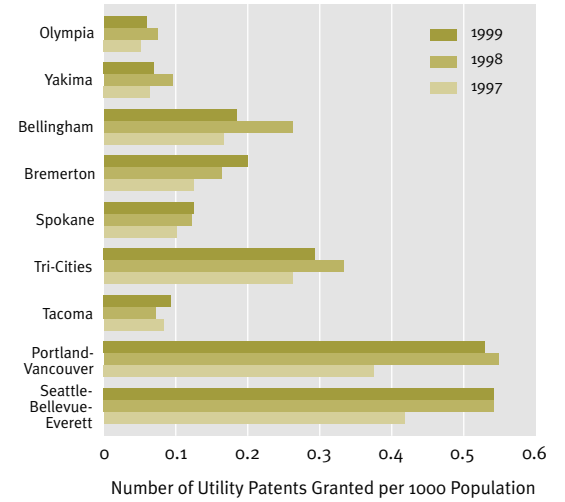
The 2003 Index has been enhanced by breaking out one measure regionally in each category. Nine regions were considered, those represented as Metropolitan Statistical Areas (MSAs). The definition for each general category and for the specific measures used below is described in the full body of the report. Reported here is the meaning of each measure on a regional basis.¹

INNOVATION

Patent generation was examined in this section. In order to normalize for communities of different size, patents per 1,000 population have been charted.

Greater Seattle had the highest rate, closely followed by Vancouver-Portland and the Tri-Cities. Bellingham is fourth, leading Bremerton and Spokane. This suggests several communities have a technical base from which to develop companies.

Greater Seattle, Vancouver-Portland and Tri-Cities regions lead the state in per capita patent production



COMPETITIVENESS

Technology employment by region was examined—looking at the base of employment change since the last Index, and technology jobs per 1,000 in population.

The results varied, with Bellingham showing the strongest growth in high-tech employment, while four other communities exhibited more tech jobs per 1,000 population than Bellingham. Areas suffering the worst job reductions were Vancouver and Spokane, ranking third and second, respectively, in high tech employment among these nine communities.

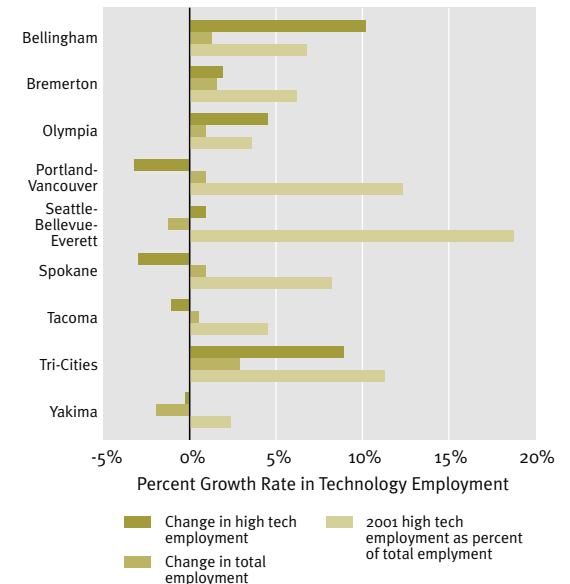
Bellingham and the Tri-Cities had the highest growth in tech employment

MSA	Total High-Tech Employment (2001)	% Change in Tech Employment (2000-2001)	Technology Jobs Per 1,000 Population
Bellingham	4,668	10.2%	27.3
Bremerton	4,548	1.9%	19.5
Olympia	3,063	4.4%	14.3
Seattle-Everett-Bellevue	257,683	0.8%	105.7
Spokane	15,455	-3.0%	36.5
Tacoma	10,816	-1.1%	15.9
Tri-Cities	9,728	9.0%	49.2
Vancouver	14,185	-3.3%	39.3
Yakima	2,028	-0.3%	9.1

GROWTH

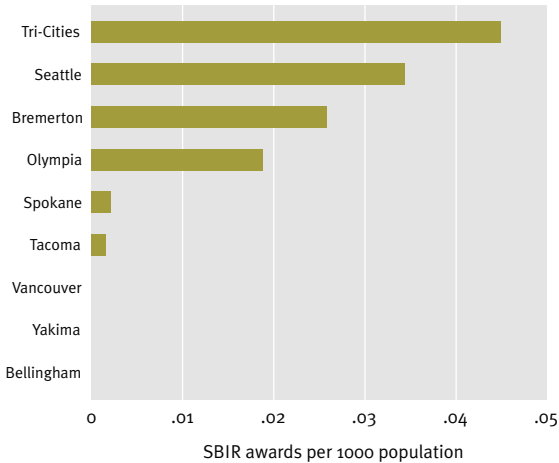
The percent of employment in high technology industries and its change over time was profiled—ranging from a high of over almost 18.8 percent in Seattle area to a low of 2.2 percent in Yakima. Bellingham and the Tri-Cities both experienced job growth in technology employment of 10 percent and 9 percent, respectively.

Tri-Cities and Bellingham showed the highest rates of growth in technology employment in 2001

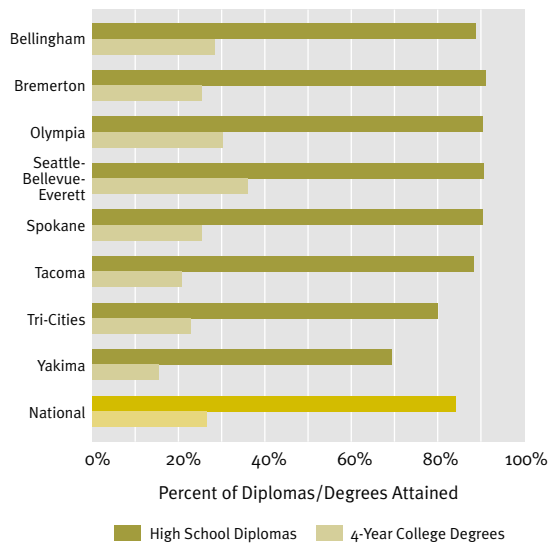


¹ For definitions of individual measures and data source citations, please see the full index report.

Tri-Cities leads the state in per capita SBIR awards



The Seattle-Everett-Bellevue region leads the state in attainment of 4-year college degrees



FINANCIAL CAPACITY

The Small Business Innovation Research program was broken out on a regional basis, looking at how some areas fare in federal R&D contracts or grants won on a per capita basis. Four areas have relatively strong performance on this indicator: the Tri-Cities, Seattle, Bremerton, and Olympia. Awards were also made to Spokane and Tacoma, at a lower per capita level than in the top regions. No awards were made to Vancouver, Yakima, or Bremerton in 2001. However, in number of awards won, Seattle is highest, followed by Spokane and the Tri-Cities.

HUMAN POTENTIAL

Most areas of the state are above the national average in the attainment of high school degrees, only the Tri-Cities and Yakima are below average. However, in attainment of a four-year college degree or higher, only three areas of the state rate above the national average—Seattle-Everett-Bellevue, Olympia and Bellingham.

Housing is most affordable in Spokane

MSA	Weighted Average HAI
Bellingham	138.53
Bremerton	135.23
Olympia	147.47
Seattle-Everett-Bellevue	127.64
Spokane	188.07
Tacoma	141.67
Tri-Cities	160.29
Yakima	160.87
State-wide average	132.53

QUALITY OF LIFE

In many ways, quality of life is a difficult factor to quantify. One measure was analyzed on a regional basis—the housing affordability index. The housing affordability index shows Seattle as the most expensive area, while Bellingham and Tacoma are closest to the state average. Spokane, Tri-Cities and Yakima have the highest affordability.



THE results from the 2003 *Index of Innovation and Technology* were organized in response to Washington's *Strategy for the Innovation Economy* as a means of establishing a benchmark and a basis for gauging progress on the strategy over the next few years. The benchmarks show that Washington State is strong in research and development, is growing a significant employment base through new businesses, has good personal Internet access (but is lower in school Internet access), and is a leader in digital technologies in government.¹

This first year is simply a statement of the benchmarks and Washington's current rankings. Future years will include an annual comparison for gauging progress in the *Strategy*. The benchmarks show that Washington State is:

- strong in research, ranking in the top quartile for R&D obligations nationally for universities and the second quartile nationally for industry obligations.
- growing employment in new companies—the second highest growth rate for employment in startups nationally—and ranked third nationally in employment in gazelle companies.
- highest in business churn, ranking number one in both business startups and business closures, and ninth in amount of average quarterly venture capital invested.
- high in personal Internet access, ranking third in the country in percentage of households with Internet access, but seventeenth in percentage of schools with Internet access.
- a leader in digital government, ranking second nationally in use of digital technologies in government.

INDICATOR	MEASURE	# OR RANK
Strengthen Our Research Institutions		
Number of patents earned by Washington inventors		2,400
Federal R&D obligations	National ranking for 2000	
	Universities	11
	Industrial firms	18
Overall R&D expenditures	Percent performed by sector	
	Universities	7%
	Industry	87%
	All other	6%
Workforce for the 20th Century		
Employment growth	Overall	-5%
	High tech with aerospace	.8%
	High tech % of overall workforce	12.20%
	High tech minus aerospace	.8%
	High tech % overall w/ aerospace	9.0%
Average technology job wage	WA average	\$118,252
Educational attainment	National ranking	1st
	% residents w/high school diploma—national ranking	1st
	% w/ 4-year college degree—national ranking	12th
Number of science & technology degrees earned in Washington—all levels		4,544
Educate Our Children		
SAT score average for Washington	Math	529
	Verbal	525
Washington student proficiency in standardized math & science testing	4th grade	51.8%
	7th grade	30.4%
	10th grade	37.3%
Expand Telecommunications		
Percent of households with Internet access	National ranking	
	Ranking by percent in state	3rd
	Ranking by # of households	15th
Percent of schools with Internet access	National ranking	
	Access to instructional computers	17th
Encouraging Tech Transfer, Entrepreneurship & Business Creation		
Growth rate for employment in startups	National ranking	2nd
Employment in gazelle companies	National ranking	3rd
New company creation	National ranking	1st
Company closures	National ranking	1st
Aggregate annual venture capital invested	National ranking	9th
Value of Initial Public Offerings	National ranking	9th
Lead the Nation in Digital Government		
Washington State government use of digital technologies—national comparison	Total score	4.38
	Overall ranking nationally	2nd

¹ For definitions of individual measures and data source citations, please see the full index report.