

October 30, 2006

**Educating Washington Citizens for High-Demand Jobs**

Prosperity Partnership  
Higher Education Working Group

**Introduction & Summary**

The Prosperity Partnership is a coalition of more than 200 organizations that is implementing a strategy to create new jobs and shared, long-term economic prosperity for the Puget Sound region. This in turn this will bring greater prosperity to the entire state of Washington.

A fundamental condition for creating jobs in the Puget Sound region is the provision of college education to as many of our residents as possible, with an emphasis on the fields that are driving our regional and state economies. Washington must produce more engineers, computer specialists, scientists and high-technology thinkers if we are going to maintain and expand our leadership position in the new global economy. Employment projections estimate that almost half the job openings in Washington between 2007 and 2012 will be in these fields. Our current production of these degrees must accelerate to fill these openings.

We must produce more college degree holders in general as well. Washington ranks highly among all states in the number of workers who currently hold bachelor's degrees, yet we rank 36<sup>th</sup> out of 50 states in per capita production of degrees. We must enable our children to earn bachelor's degrees so they can compete and fill the best jobs locally.

A foundation initiative of the Partnership is to increase the number of bachelor's degrees awarded in Washington. To achieve this goal, the entire higher education system—including independent colleges and community and technical colleges—must be part of the solution.

Community and technical colleges play a vital role in production of bachelor's degrees. These schools provide the first two years of college education for 42 percent of undergraduates at four-year schools. Community and technical colleges also prepare a large number of workers for technical, advanced work that does not require a four-year

degree. Independent colleges produce about a quarter of the baccalaureate and higher degrees earned in the state every year, and have the capacity to do more to help meet the demands of the changing economy and workforce.

The Prosperity Partnership's specific goal is for an additional 8,000 bachelor's degrees to be awarded annually in Washington by 2010, and for 2,000 more degrees to be awarded annually by 2020 (for a total annual increase of 10,000 graduates by 2020).<sup>1</sup>

**The additional degrees should be concentrated in the fields most demanded by the global economic marketplace: computer sciences, engineering, life sciences, medical research, nursing, and secondary teachers in math, science, ESL and special education.** We must also increase the number of associate's degrees awarded in the fields of medical diagnosing and treating and for health technologists and technicians.

While we increase the number of degree-holders, however, we must not sacrifice the quality of the education that comes along with those degrees. Maintaining quality is every bit as important as increasing quantity.

The actions we take to change our educational system must be transformative, not incremental. We must not deny our children and grandchildren the personal opportunities and quality of life that stem from a vibrant regional economy.

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<sup>1</sup> In 2004-5, 28,625 people earned a bachelor's degree in Washington (*Source: IPEDS*).

## **Background: Education and the New Global Economy**

The Puget Sound region has grown and prospered for more than a century, as each generation has been bolstered and inspired by the energy and entrepreneurial spirit of the people who came before.

In recent decades our region has emerged as a leading center for innovation in aerospace, information technology, engineering, biotechnology, medicine, software and environmental science. Talented people have flocked here for opportunities in these fields, and to work and live in a place of great natural beauty and cultural abundance.

But our prosperity in an increasingly connected global economy is not assured—in fact, it has never been more tenuous. Natural resources and political boundaries are no longer the key determinants of success. In an economy without borders, driven by information and high technology, a region's survival and prosperity depends on a robust and predictable supply of well-educated people in diverse fields.

The ability to attract and retain these people is a dynamic and sensitive process. New centers of the global creative economy can emerge quickly; established regions can lose position just as easily. Leaders of successful regions throughout the world recognize these dynamics and are taking action to assure their competitive standing. They are investing in education and in the infrastructure needed to support their economies, and are making their governments and societies more nimble in responding to challenges.

Consider two dramatic recent examples:

- One of the smallest countries in Europe—Ireland—has emerged over the past 15 years as a world technology powerhouse. The country's gross domestic product has nearly doubled. Now Ireland's leaders are building on the success by investing even more in education, with an emphasis on science. One example is the creation of Science Foundation Ireland, which will build new universities and research centers to train the people needed to keep and attract technology companies. Another element of this strategy is a competitive tax system, which draws potential employers. Perhaps the most striking feature is universal access to higher education.
- India has announced plans to leverage its success with information technology into the field of biotechnology. The government's Department of Biotechnology

aims to create and support at least ten biotech parks with incubator units by 2010. “India wants to be as successful in life sciences as it has been in software and information technology,” reported the *Financial Times*.

In 2005, the United States’ national academies of sciences, engineering and medicine issued a report warning that the scientific and technical building blocks of our economic leadership are eroding at a time when many nations are gathering strength.<sup>2</sup> People in China, India, the former Soviet Union and other countries are now enthusiastically establishing their presence in a global economy they once ignored. They are, says Fareed Zakaria, “...poorer, hungrier and in some cases well-trained, and will inevitably compete with Americans and America for a slice of the economic pie.”

Here at home, Washington has benefited from the efforts of entrepreneurs who have established many successful enterprises in aviation, software, information technology and high technology. But we dare not depend on our past good fortune to keep that momentum. Other regions, and other countries, are actively competing to draw away both the highly skilled workers and the employers that sustain our quality of life. We are not entitled; there are no guarantees we will maintain our current standard of prosperity.

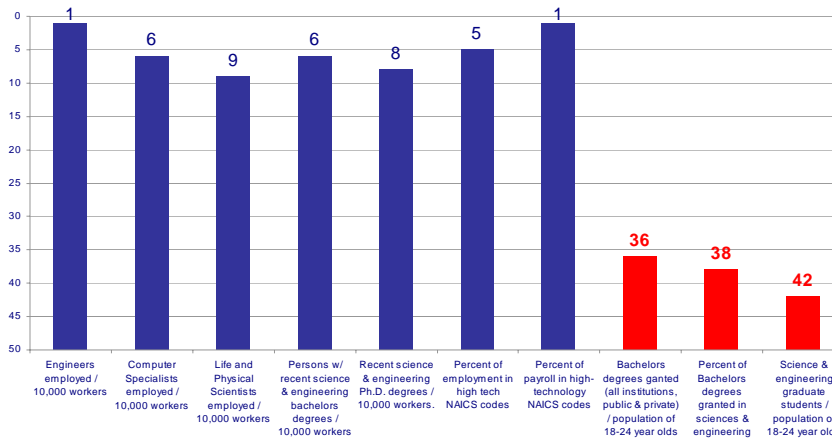
There are indications that our state is not producing the workforce needed for the future. Washington has a higher number of workers with bachelor’s degrees than most other states, yet we rank 36<sup>th</sup> out of 50 states in the number of degrees conferred per capita.<sup>3</sup> Our region’s powerful hunger for highly educated workers is being filled by people coming from out of state, drawn by high wages and the opportunity to live in an area of extraordinary beauty. We are not taking care of our own.

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<sup>2</sup> National Academies Committee on Science, Engineering and Public Policy, *Rising Above the Gathering Storm*, available at [www.nationalacademies.org/cosepup](http://www.nationalacademies.org/cosepup)

<sup>3</sup> National Science Foundation, *Science and Engineering Indicators*, 2006

Washington leads the nation in using bachelor's degrees, but is 36<sup>th</sup> in the Nation in the Production of Bachelor's Degrees



In an information- and technology-driven economy, quality education is the key to maintaining and spreading economic prosperity. With a well-educated populace, companies will be able to find qualified employees at home and maintain their ability to compete not just locally, but in the global economy. The ever-evolving economy demands workers who can think critically, are well-trained in science and technology, and have the ability to anticipate and adapt to fast-changing market conditions.

**What is the Prosperity Partnership Doing about Higher Education?**

The Partnership is a coalition of more than 200 government, business, nonprofit, labor and community leaders from King, Kitsap, Pierce and Snohomish counties who have developed and are implementing a regional economic strategy that will lead the region toward a shared goal: long-term economic prosperity for the Puget Sound region and, in turn, greater prosperity for the entire state of Washington.

The Prosperity Partnership is developing a consensus higher education proposal for Washington’s 2007 Legislative session. The proposal will focus on our most pressing need for the present and future marketplace: a talent pool of people with quality college degrees in relevant fields. The coalition will also make the case to the public about the importance of higher education reform—how that translates to greater economic health for the region, and social and economic benefits to each and every Washington resident.

Specifically, the Partnership:

- Has recruited a statewide coalition of organizations and people to develop a consensus-based higher education program to increase the number of graduates with an emphasis on high-demand bachelor's degrees.
- Is working directly with leaders active in improving the state's higher education system, including the Legislature, the Higher Education Coordinating Board, and Washington Learns, the education initiative sponsored by Gov. Gregoire.
- Will educate the general public, community leaders, key opinion leaders in the public and private sectors, and legislators on the importance of higher education and bachelor's degree production to the economy and to our individual communities and residents.

### **The Higher Education Working Group**

The Prosperity Partnership brought together a diverse group of regional leaders who arrived at the goal of expanding the talent pool of people with more bachelor's and advanced degrees. Higher Education Working Group (HEWG) members include:

- David Tang, Chairman, Partner, Preston Gates & Ellis LLC, and former HEC Board chair
- Dr. Mark Emmert, President, University of Washington
- Dr. V. Lane Rawlins, President, Washington State University
- Dr. Charles Mitchell, Chancellor, Seattle Community College District
- Charlie Earl, Executive Director of the Washington State Board for Community and Technical Colleges
- Violet Boyer, President and CEO of the Independent Colleges of Washington
- Business leaders
- Labor leaders
- Non-profit leaders

A complete list of the working group is included in Appendix A.

### **Analysis of Higher Education Needs**

To determine the scope of the deficit in the talent pool of degree-holders, the HEWG directed staff to examine three questions:

1. **What is the projected need for degree programs based on population growth?** The working group directed staff to project capacity needs using Washington State Office of Financial Management population projections and the Higher Education Coordinating Board’s participation rate (the rate of 17-22 year olds enrolled in higher education—currently 11.44 percent). The working group also directed staff to consider what the needs would be if participation rates increase to 13 percent and to 15 percent of 17-22 year olds.
  
2. **What level of degree production will be necessary to elevate Washington into the top-20 rank among states?** The HEWG also asked what it would take for Washington to rise into the top 10. Staff were directed to analyze National Science Foundation data, which currently ranks Washington 36<sup>th</sup> out of the 50 states in degree production per capita.
  
3. **What is the demand by industry for bachelor’s degrees?** The HEWG directed staff to examine U.S. Bureau of Labor Statistics (BLS) and Washington Employment Security Department (ESD) job projection data to determine industry demand for bachelor’s degrees.<sup>4</sup>

The results of this work are summarized in the following chart.

Method	Current	Needed	Difference
BLS-ESD job projections (2007-12)	28,265	24,566	(3,699)
NSF - Top 20 per-capita (2001)	23,441	28,376	4,935
2010 -11.44% part (public only)	20,692	27,734	7,042
2015 - 11.44% part (public only)	20,692	27,974	7,282
2020 - 11.44% part (public only)	20,692	28,420	7,728
Goal by 2010 - 8,000 additional degrees annually			
2010 -13% part (public only)	20,692	30,034	9,342
2015 - 13% part (public only)	20,692	30,205	9,513
NSF - Top 10 per-capita (2001)	23,441	33,270	9,829
2020 - 13% part (public only)	20,692	30,680	9,988
Goal by 2020 - 2,000 more degrees (10,000 total) annually			
2010 -15% part (public only)	20,692	32,983	12,291
2015 - 15% part (public only)	20,692	33,066	12,374
2020 - 15% part (public only)	20,692	33,577	12,885

<sup>4</sup> National forecast from U.S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review*, November 2005; State forecast from Washington Employment Security Department, *Washington Occupational Employment Projections*, May 2005

The population analysis concluded that, at current higher education participation rates, Washington must create the capacity to produce an additional 8,000 bachelor's degrees annually through 2020. If higher rates of students participate in degree programs, we must increase our capacity by an additional 2,000 degrees, to a total of 10,000 more degrees awarded annually.

An increase in the number of degrees will help our state climb in the National Science Foundation's per capita degree production rankings of states. However, without a clear picture of the work other states are undertaking to increase their degree production, an exact prediction of Washington's future ranking is impossible.

The staff then compared those data with current production to get a net need of the 8,000 additional bachelor degree-holders we must produce annually by 2010.

### **High-Demand Degrees<sup>5</sup>**

By examining BLS and ESD data, the HEWG identified the high-demand fields.

Between 2004 and 2014, the portion of the U.S. economy that will add jobs at the fastest rate—and will also add the most jobs overall—is professional services and related fields. Nearly all these jobs will require a bachelor's degree, and this portion of our economy contains almost all the jobs that require a bachelor's degree or higher education.

During this period, the U.S. economy will add over 6 million jobs that require a bachelor's degree. Most of these jobs will grow more quickly than the U.S. economy as a whole between 2004 and 2014, as projected by BLS.

The same can be said for our state's economy. In the years 2007-2012, the fields identified by the Prosperity Partnership as high demand will, for the most part, grow much more quickly than the state economy as a whole.

Between 2007 and 2012, high demand jobs will make up 41 percent of all job openings requiring a bachelor's degree or higher in the United States, and 47 percent of those in Washington. Computer specialists alone will account for just under 16 percent of the national and statewide openings.

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<sup>5</sup> US Bureau of Labor Statistics projections are to 2014; Washington State Employment Security Department projections are to 2012.

Code	Occupation	US Annual openings 2004-2014 (in 1,000s)	% of US openings	WA Annual openings 2007-2012 (in real #s)	% of WA openings
<b>High Demand Fields</b>					
15-1000	Computer Specialists	1,122	15.91%	3,895	15.84%
17-2000	Engineers	507	7.19%	1,553	6.32%
19-1000	Life Scientists	103	1.46%	440	1.79%
25-2031	Secondary teachers	436	6.18%	649	2.64%
29-1000	Health Diagnosing and Treating Practitioners	683	9.68%	3,353	13.64%
29-2000	Health Technologists & Technicians	74	1.05%	1,670	6.79%
<b>Subtotal - High Demand fields</b>		<b>2,926</b>	<b>41.49%</b>	<b>11,560</b>	<b>47.02%</b>
<b>All Other Fields</b>					
15-2000	Mathematical Sciences	39	0.55%	114	0.46%
17-1000	Architects Surveyors, etc	78	1.11%	239	0.97%
19-2000	Physical Scientists	94	1.33%	299	1.22%
19-3000	Social Scientists	206	2.92%	779	3.17%
21-0000	Community and social services occupations	677	9.60%	1,950	7.93%
23-0000	Legal occupations	239	3.39%	811	3.30%
25-1000	Postsecondary teachers	892	12.65%	1,270	5.17%
25-2000	Primary and special education teachers	1,109	15.72%	2,241	9.11%
25-3000	Other teachers and instructors	198	2.81%	1,059	4.31%
25-4000	Librarians, curators, and archivists	56	0.79%	312	1.27%
25-9000	Other education, training, and library occupations	81	1.15%	1,474	6.00%
27-0000	Arts, design, entertainment, sports, and media occupations	431	6.12%	2,203	8.96%
29-9000	Other Health Care	28	0.39%	275	1.12%
<b>Subtotal - all other fields</b>		<b>4,127</b>	<b>58.51%</b>	<b>13,026</b>	<b>52.98%</b>
		<b>7,053</b>	<b>100.00%</b>	<b>24,586</b>	<b>100.00%</b>

## The Degree Gap in Washington

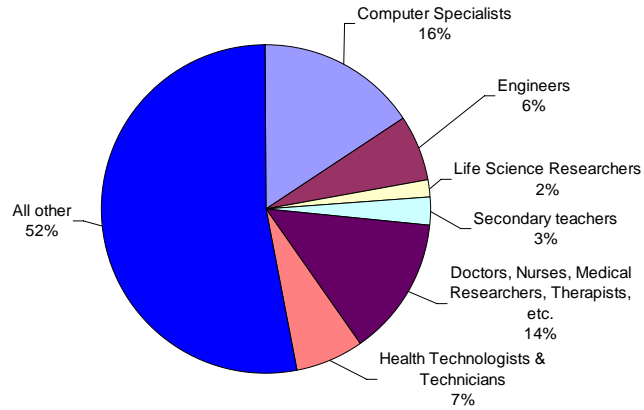
How serious is the shortfall? Consider a single example. “Computer specialist” ranks at the top of high-demand degree specialties in the coming decade. Annual openings for graduates with degrees in this field throughout the United States are estimated to be more than 1.1 million. In Washington alone, there will be nearly 3,900 openings a year between 2007 and 2012.<sup>6</sup> Yet colleges and universities in Washington produce 635 graduates a year in this field.

The charts below give a sobering illustration of the gap between current trend and future demand.

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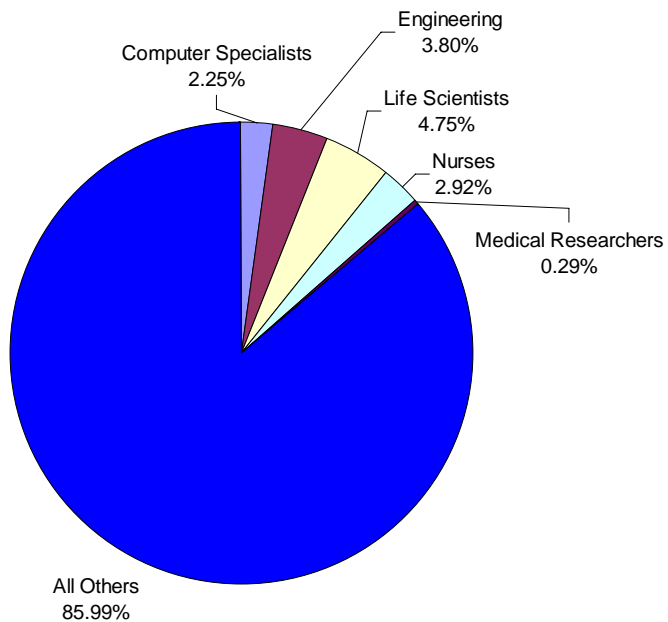
<sup>6</sup> National forecast from U.S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review*, November 2005; State forecast from Washington Employment Security Department, *Washington Occupational Employment Projections*, May 2005

**Washington Job Openings 2007-12**



*Source: Washington Employment Security Department*

**Current Production in Washington's 4-year system**



*Source: Integrated Postsecondary Education Data System (IPEDS), 2004-5 academic year*

A significant percentage of Washington's new degrees should be in the following high-demand fields:<sup>7</sup>

- Computer specialists (mostly computer scientists)
- Engineers
- Life scientists (biochemists, biophysicists, etc)
- Medical researchers
- Nurses
- Secondary teachers in math, chemistry, physics, biology, ESL and special education

Two vital associate in applied science degrees are closely tied to the bachelor's degrees listed above. Production in these fields should increase as well:<sup>8</sup>

- Diagnosing & treating practitioners (nursing, radiation and respiratory therapy)
- Health technologists & technicians

### **Washington Learns Identifies Need for More Bachelor's Degrees**

The HEWG's findings were reinforced by the work of Washington Learns, which was initiated by Gov. Christine Gregoire to examine our state's education system, including higher education. A recent study conducted by the Northwest Education Research Center (NORED) for the Washington Learns Steering and Higher Education Advisory committees confirmed that Washington is not producing enough bachelor's degrees to remain competitive with our peer states around the country. They specifically called out the need for more high-demand degrees: "High demand fields should have priority and may require extra resources for high-cost fields (e.g., computer science) and in some cases special incentives to attract students."<sup>9</sup> To fill the gap, Washington Learns is considering a wide range of recommendations, including increasing bachelor's degree production.

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<sup>7</sup> Standard Occupational Codes (SOC Codes) for the fields are as follow: Computer Specialists 15-1000, Engineers 17-2000; Life Scientists 19-1000; Medical Researchers 29-1000; Nurses 29-1000; Secondary Teachers 25-2031.

<sup>8</sup> SOC Codes for the fields are as follow: Health Diagnosing & Treating Practitioners 29-1000; Health Technologists & Technicians 19-2000.

<sup>9</sup> Northwest Education Research Center, *Making the Grade: Washington Higher Education and the Global Challenge*, June 2006, <http://www.nored.us/>

## **The Prosperity Partnership's Proposal**

The Prosperity Partnership proposes that Washington's goal should be to award an additional 8,000 bachelor's degrees annually by 2010 and to award a 2,000 more degrees by 2020 (for a total increase of 10,000 additional, degreed graduates by 2020). The additional degrees should be concentrated in the high-demand fields identified by the Partnership: computer specialists, engineers, life scientists, medical researchers, nurses, and secondary teachers. Capacity should also be filled in associate's degrees in health diagnosing and treating practitioners and health technologists and technicians.

## **Funding and Costs**

The annual cost of this initiative would depend on the percentage of additional degree-holders in high-demand fields. While an argument could be made that all the proposed 8,000 new bachelor's degrees should be in the high-demand fields, this is likely not feasible. Instead, it is more realistic to look at different mixes of degree disciplines. Assuming, for example, that the goal remains 8,000 new bachelor's degree holders each year:

- If 33 percent of the new graduates (a total of 2,640 degrees) are in the six high-demand fields, the additional cost will be \$335.7 million.
- If 47 percent (3,760 degrees), the cost will be \$375.1 million.
- If 50 percent (4,000), the cost will be \$383.5 million.
- If 65 percent (5,200), the cost will be \$425.6 million.
- If 100 percent (8,000), the cost will be \$523.9 million.

(Complete formulas and ratios are in Appendix X.)

## **Washington Must Prepare Students for Degree Programs**

While it is critically important that we increase the number of graduates from our higher education system, we must also ensure that our K-12 system is preparing enough students to fill the slots that will be created in degree programs. We cannot look at degree production in isolation from the overall education system. The NORED study looked at this issue and found serious problems with the current path to higher education:

- Washington ties for next-to-last place among all states in percentage of ninth graders who finish high school.

- Washington places last in percentage of ninth graders who make it into college.
- Washington ties for last place in percentage of those who are still enrolled their sophomore year.
- Washington places last in the percentage of college students who graduate within 150 percent of the expected time.

Washington must improve the path to higher education if we are to fill any new bachelor's degree capacity with Washington students.

### **Serving Under-Represented Communities Must be a Top Priority of the State**

The new economic reality means that we must marshal all our resources to compete successfully in a global economy. That means historically underserved communities must be fully integrated into the higher education system, and college participation rates of under-represented communities must increase, if we are to achieve our economic goals.

According to the *US Census Bureau*, only 17.2 percent of African Americans and 10 percent of Latinos 25-29 years old have a bachelor's degree or higher. Caucasians and Asians, in-contrast, have a significantly larger proportion of individuals who hold bachelor's degrees and higher. Specifically, 34.2 percent of Caucasians and 61.6 percent of Asians hold a bachelor's degree or higher. These statistics illustrate a critical need to focus efforts to increase the educational attainment of African Americans, Latinos and Native Americans. To effectively accomplish this, all stakeholders and the state must work together, using all resources to communicate this message. These resources include local community centers, leaders within the respective communities and other media that are targeted specifically at these populations.

The Prosperity Partnership commends thoughtful admissions processes. The Partnership is particularly supportive of holistic admissions processes that aim to enroll a diverse group of undergraduates who are rich in intellectual abilities, academic commitments, and diversity of perspectives, backgrounds and talents. Several schools throughout Washington have been working on admissions procedures aimed at increasing enrollment of under-represented communities while maintaining educational excellence. The Prosperity Partnership supports these programs and encourages even more schools to work on implementing similar admissions plans.

## **The Critical Role of Community and Technical Colleges**

A bright spot in Washington's education system is the tremendous contribution made by our state's community and technical colleges to the development of qualified degree candidates. Washington ranks among the top five states in the nation when it comes to community and technical college enrollment.

Our community and technical colleges serve two very important functions. First, they provide the first two years of college for 42 percent of the undergraduate population at our four-year schools, including a large number of students from families that have had little or no opportunity to attend college in the past.

Second, our community and technical colleges prepare a large number of workers for technical, advanced work that does not require a four-year degree. Associate-level nurses, lab technicians, therapists and other medical and research support staff are in as short supply as some of our bachelor's degree fields. The community and technical colleges play a critical role in supplying the health care system with qualified candidates in those fields, and they will continue to do so. They are an important part of our long-range strategy.

## **Independent Colleges: Vital Partners with the State**

We also recognize the important contributions made by the state's independent colleges and universities. The 10 members of Independent Colleges of Washington enroll more than 33,000 students and confer about a quarter of the baccalaureate and higher degrees earned in the state each year. ICW members are particularly prominent in the fields of teaching and nursing, in which they confer more than a third of the degrees annually. They also have strong, respected programs in computer science, engineering, and math. They are popular destinations for many of the students who begin their higher education at community colleges; approximately a quarter to a third of each year's new students at independent institutions are transfers.

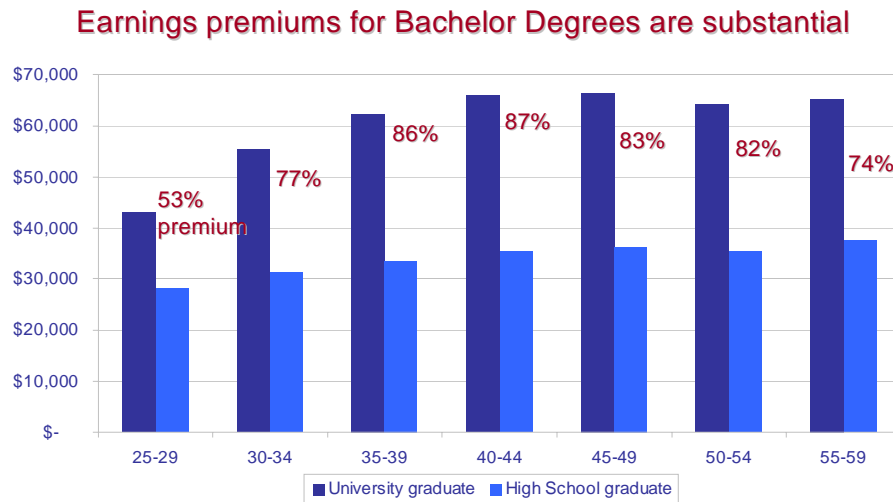
The independent colleges operate with significant private support and thus are cost-effective partners for the state, which gives them no direct subsidy but provides need-based financial aid to low-income students from Washington. The state's long-range strategy should continue to be student-focused and include creative ways to use existing capacity at independent colleges and universities. This will help us reach our ambitious

goal of increased degree production while reducing pressure on the state’s operating and capital budgets.

### The Benefits of Increasing Degree Production

An increase in the number of bachelor’s degrees awarded will benefit all segments of society. The earnings premium for a college education is substantial. From 2002-2003, workers in the 25-29 age group who have a college degree earned 53 percent more than those who had only a high school diploma. The earnings differential for those in the 40-44 age group was 87 percent.<sup>10</sup>

But the benefits are not limited to the degree-holders; higher levels of education translate to more jobs and higher wages across the board. A May 2005 Technology Alliance study, *The Economic Impact of Technology-based Industries in Washington State*, estimates that a graduate working in one of the high-demand science fields generates at least 3.8 spinoff jobs.

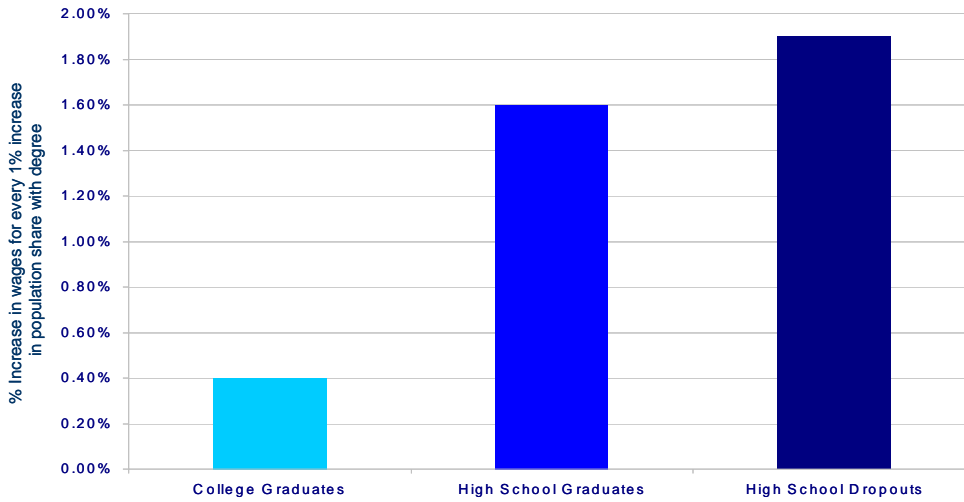


Additional studies have shown that a one percent increase in the number of bachelor’s degree holders yields an average increase in the wages of all workers.<sup>11</sup> In fact this ripple effect has a relatively larger benefit for high school dropouts than for high school graduates.

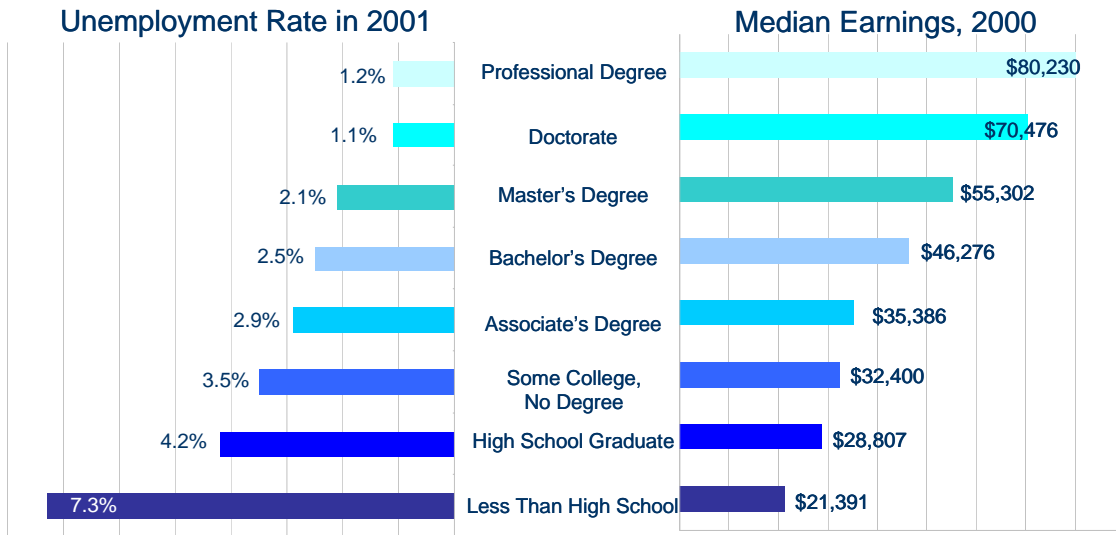
<sup>10</sup> Source: WP Carey School of Business, Arizona State University

<sup>11</sup> See Moretti, 2003, UCLA Department of Economics

**A 1% increase in the share of bachelor's degrees in the economy raises the wages of all levels of worker.**



Finally, as education levels rise, there is a corresponding drop in unemployment and the need for public assistance. The reduction in demand for these services reduces the burden on state and local governments, as well.



Source: US Census Bureau

Increases in the levels of education and skills translate into enhanced productivity and higher income. The non-monetary benefits include lowered crime rates as well as greater and more-informed civic participation—in other words, a more cohesive community.

## **Conclusion**

The Prosperity Partnership recognizes that the region's economic health is fragile. In the emerging global economy, many of the world's most prominent companies can be headquartered anywhere on the globe. Businesses will locate where there is a high quality of life, good schools, efficient transportation, affordable housing, and supportive government policies. There are no guarantees that the Puget Sound region will be able to attract new businesses, or keep and grow existing firms.

Higher education is one of the building blocks of Washington's economy. But a shortage of bachelor's degrees is straining our ability to keep up with the demands of a dynamic economy that requires highly skilled workers. Failure to invest in higher education will sentence Washington to a position of economic weakness from which it could take decades to recover. We have the resources and the brainpower to prevent that from happening. Washington must produce more engineers, computer specialists, scientists and high-technology thinkers if our children are going to be able to compete and fill the best jobs locally.

The region must take steps to remain competitive because if we fail to act, jobs and economic prosperity could pass us by. The Prosperity Partnership is taking action.