

HELP WANTED!

SUSTAINING WISCONSIN'S ECONOMIC PROSPERITY

Prepared for the

Wisconsin Economic Summit

November 30 – December 1, 2000

Milwaukee, WI

By

Dennis K. Winters

Table of Contents

Abstract	3
Introduction	4
Item 1 – Labor Quantity	5
Item 2 – Labor Quality	10
Item 3 – Wages, Income, and Wealth	12
Item 4 – Capital and Creative Resources	15
Item 5 – Wisconsin’s Image	20
Recommendations	23
Backnotes	25
Author’s Biography	26

Abstract

Wisconsin has traditionally been known as an agricultural and manufacturing state. Manufacturing employed the largest share of Wisconsin's workers until 1991. The Service sector now employs the most Wisconsin residents, 681,000 in 1997. The number of jobs in the state is forecast to grow by 485,000 from 1997 to 2010. More than half of those jobs will be created in the service sector, some 263,000. Manufacturing will add almost 62,000 new jobs by the year 2010, with the Trade and Government sectors contributing another 55,000 each.

However, slow population growth and inherent demographics will keep Wisconsin's labor resources extremely tight over the next ten to twenty years. Wisconsin needs to attract more immigrants to the state to satisfy the predicted demand for workers. The state has many attributes, such as good schools and a much-touted quality of life, but a lack of economic opportunity and image distortions keep potential residents at bay. Among the discouragements that keep people from moving to the state for work are low wages, low income, low wealth and high taxes. Wisconsin must increase the number of high-paying jobs in the state to avert becoming an economic backwater. Capital investment is required to begin the upward economic spiral that will lead to Wisconsin's future economic prosperity.

INTRODUCTION

Wisconsin has traditionally been known as an agricultural and manufacturing state. Manufacturing served the state well in the late 1980s and early 1990s with attractive wages to the anxious workers of the industrial recessions of the late 1970s and earlier 1980s. Wisconsin's manufacturing sector employed the largest share of Wisconsin's workers until 1991. Now, the Service sector employs the most Wisconsin residents, 681,000 in 1997, and will be responsible for the majority of new jobs in the future. The number of jobs in the state is forecast to grow by 485,000 from 1997 to 2010¹. More than half of those jobs will be created in the Service sector, some 263,000. Manufacturing will add 62,000 new jobs by the year 2010. The Trade and Government sectors will add another 55,000 jobs each.

However, labor shortages will continue to limit Wisconsin's economic potential. The state and national economies have been gripped in prosperity in a record setting expansion. Unemployment rates have reached historic lows in some locations. Labor shortages are lamented across almost all sectors of the economy. Slow population growth and inherent demographics will keep Wisconsin's labor pool extremely tight over the next ten to twenty years. Wisconsin needs to attract more immigrants to the state to satisfy the predicted demand for workers, but a lack of economic opportunity and image distortions keep potential residents at bay.

A new phase of economic expansion is emerging. This New Economy is based upon knowledge, information, and talent. Wisconsin's traditional economic sectors will not support the state as an economic power under the new economic order. The traditional sectors are encumbered by relatively low wages and rates of return on investment. Low wages do not attract workers and low returns do not attract capital. Furthermore, the state is burdened by low incomes, a lack of wealth and a relatively high tax burden. All of which detract from the state's appeal to new workers and its investment climate image.

Wisconsin has many valuable resources and quality attributes. It also has some disadvantages that must be overcome for the state to prosper in the New Economy. This paper looks at five issues critical to Wisconsin's economic future: 1) Labor Quantity, 2) Labor Quality, 3) Income, Wages and Wealth, 4) Capital and Creative Resources and, 5) Image. A brief analysis of each is presented below. Each raises concerns of where Wisconsin may be headed if we "stay the course".

In a somewhat chicken and egg situation, Wisconsin faces an economic dilemma. More investment is required if Wisconsin is to create the critical mass of high-paying New Economy jobs that will raise incomes, attract workers, build wealth, reduce the tax burden and begin the upward economic spiral that will lead Wisconsin on to future prosperity. On the other hand, the state must increase wages, incomes, and wealth and lower taxes to demonstrate to outsiders that Wisconsin is a place worth risking capital investment.

Recommendations are made at the end of this paper. It is hoped that the brain trust assembled at this Economic Summit will constitute the critical mass of ideas and initiatives that will thrust Wisconsin forward into the New Economy.

ITEM I – LABOR QUANTITY

Wisconsin's economy in the 1990s was indeed robust, as was the entire U.S. economy. The nation set the record for the longest period of economic expansion in modern times, surpassing the previous record set during the 1960s. The last U.S. recession was in 1991, almost ten years ago.

Figure 1 shows total Wisconsin employment during the 1990s for which we had history at the time of analysis². It is evident that Wisconsin employment grew rapidly coming out of the recession in the early 1990s and then slowed in the latter part of the decade. Also portrayed in Figure 1 are employment in Wisconsin's service and manufacturing sectors. The service sector was the fastest growing sector for Wisconsin and the nation during the 1990s and now ranks as the largest employment sector for both. Manufacturing served as an employment anchor for Wisconsin's economy through the 1990s, despite being a weakness for the nation as a whole, and will continue to do so over the next decade.

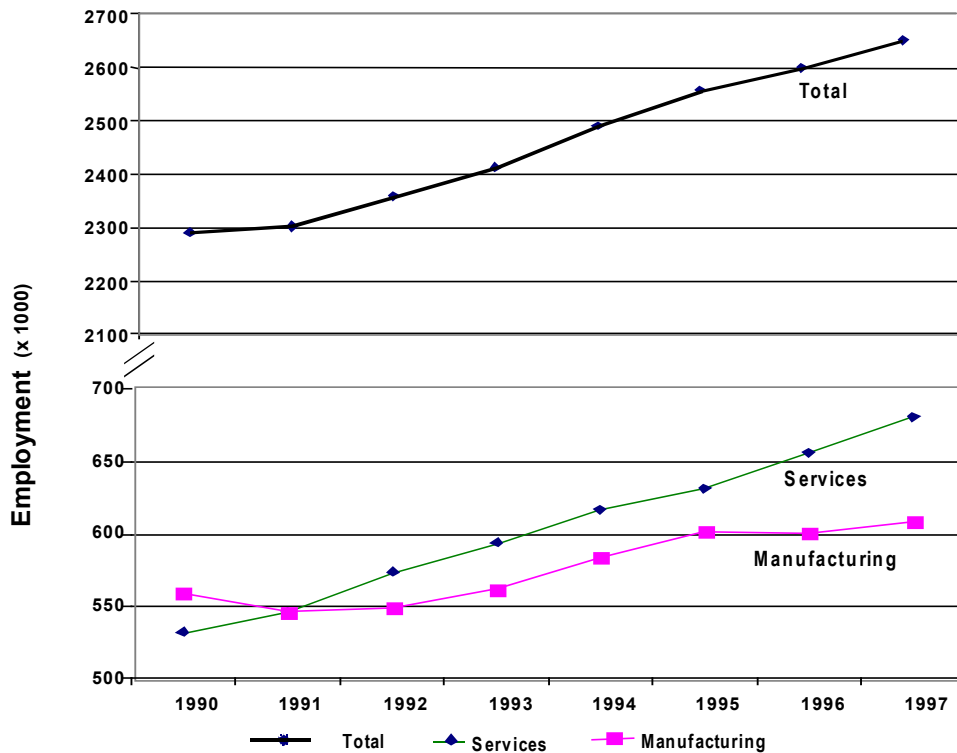


Figure 1

Wisconsin Employment: Total, Service and Manufacturing Jobs

Source: U.S. Department of Commerce, Bureau of Labor Statistics.

Sectoral Employment Detail

While the national and state economies were growing rapidly throughout the 1990s, employment gains decreased by the end of the decade in large part due to tight labor markets. Unemployment rates plunged, approaching and in some cases setting records. Wisconsin unemployment rates were among the lowest in

the country. Wisconsin employers across virtually all sectors have voiced consternation about the difficulty of obtaining enough workers. As we shall see, demographics have limited Wisconsin's workforce expansion. Technology and management practices have helped alleviate a problem that could have been worse.

The 1990s generated 360,800 new jobs in Wisconsin, a 16% increase, bringing total Wisconsin non-farm employment to 2,652,300 in 1997.³ See Figure 2. The most new jobs were created in the services sector, adding almost as many jobs as did the next three largest sectors of manufacturing, trade and government combined. The fastest growing sectors were Services and Construction. While not major growth sectors for the state, the manufacturing, trade, and government sectors added a substantial numbers of jobs during the 1990s.

Figure 2

Wisconsin Employment by Sector
(listed by 1997 employment)

Sector	Employment		Absolute Change		CAG %		
	1990	1997¹	2010	1990-97	1997-10	1990-97	1997-10
Services	532,000	681,000	944,208	149,000	263,208	3.6	2.5
Manufacturing	558,600	608,700	670,552	50,100	61,852	1.2	0.7
Trade	542,200	602,100	657,415	59,900	55,315	1.5	0.7
Government	342,900	386,700	441,275	43,800	54,575	1.7	1.0
FIRE	120,700	140,200	146,743	19,500	6,543	2.2	0.4
TCU	106,300	124,000	147,753	17,700	23,753	2.2	1.4
Construction	86,600	108,300	126,466	21,700	18,166	3.2	1.2
Mining	2,300	2,600	3,036	300	436	1.8	1.2
TOTAL	2,291,500	2,652,300	3,137,448	360,800	485,148	2.1	1.3

¹ Last historical data at time of analysis was for 1997.

Labor Force

Wisconsin's human resource base is affected by sheer numbers, in this case low numbers. The issue is somewhat complex and not the result of any single item. What follows is a brief explanation of why Wisconsin is facing a labor supply problem. Wisconsin's labor supply is based upon the state's population. The labor pool is a subset of the state's population, essentially those between the ages of 16 and 65 years of age. The labor force or workforce is a share of the labor pool. The ratio of the labor force to the labor pool is referred to as the participation rate.

Population

Wisconsin's population consists of two components, 1) natural increase and, 2) migration. Natural increase refers to the existing population plus the net difference between births and deaths. Migration is the movement of people into or out of the state. Net in-migration or positive migration means that more people took up residence in the state than moved out of the state. Economic opportunity is the primary factor driving migration.

Through the 1970s and 1980s, the Steel Belt of the Great Lakes region suffered as two energy crises, five recessions and international competition took its toll on the manufacturing sector of the economy. Wisconsin had a net out-migration of over 126,000 people during the 1980s.

Facing dire straits, the industrial heartland reinvented itself for global competition. Retooling, re-engineering and a weaker dollar lead to resurgence in the economic competitiveness of the Midwest industrial belt in the mid- to late-1980s, carrying into the 1990s. Wisconsin's population increased through the 1990s, the 7.0% increase over the eight-year period was stronger than that experienced in the 1970s of 6.5% and the 1980s of 4.0%. While the U.S. coastal states cycled between boom and bust, Wisconsin's steady economic growth attracted workers.

Population gains of the 1990s were increasingly a factor of net in-migration. Wisconsin's renewed economic competitiveness offered greater opportunities, attracting workers from out of state. In-migration accounted for an ever-increasing share of Wisconsin's population growth in the 1990s, rising from about 40% in 1990 to over half, 56% in 1997.

Figure 3

Wisconsin Population, Natural Increase and Migration

Year	Population ¹	Natural Increase ²	Migration ³
1995 ⁴	5,101,581	22,456	17,674
1996 ⁴	5,142,999	22,043	19,375
1997 ⁴	5,192,298	21,636	27,663
1998 ⁴	5,234,350	21,833	20,219

¹U.S. Census Bureau; ²Difference of births and deaths; ³Difference of Population increase and Natural Increase; ⁴Wisconsin Department of Administration, Demographics Services Center; ⁵Annual averages for 1970, 1980 and 1990.

Workforce

Wisconsin's 1995 population was estimated at 5,122,887⁴. Wisconsin's 1995 labor pool, those between the ages of 16 and 65, was estimated at 3,244,495. The labor force (those in the 16-65 age cohort who are working or seeking work) was estimated at 2,846,100 for 1995.

Figure 4

Labor Force Participation Rates by Age and Gender

Year	Males								Females							
	35-44		45-54		55-64		65 & Over		35-44		45-54		55-64		65 & Over	
	U.S.	WI	U.S.	WI	U.S.	WI	U.S.	WI	U.S.	WI	U.S.	WI	U.S.	WI	U.S.	WI
1950	97.6	96.1	95.8	93.9	86.9	86.2	45.8	42.7	39.1	33.9	37.9	32.3	27.0	23.2	9.7	8.0
1960	97.7	96.5	95.7	95.2	86.8	87.2	33.1	30.1	43.4	40.7	49.8	46.9	37.2	35.6	10.8	10.8
1970	96.9	96.4	94.2	94.7	83.0	84.0	26.8	25.2	51.1	50.7	54.4	54.3	43.0	44.6	9.7	10.6
1980	95.5	95.9	91.2	93.3	72.1	75.5	19.0	17.8	65.5	68.5	59.9	63.3	41.3	44.9	8.1	7.8
1990	94.4	94.7	90.7	92.4	67.7	68.3	16.4	15.8	76.5	81.2	71.2	76.0	45.3	48.8	8.7	7.3
2000 ²		93.7		92.2		70.0		16.4		84.2		82.0		57.0		7.6
2010 ²		92.6		91.8		71.5		17.2		86.5		87.0		63.0		8.1

¹ U.S. Bureau of the Census; ² Projected.

Labor participation rates for Wisconsin men and women were below the U.S. average in 1950. By 1990, that situation had reversed. In fact, Wisconsin's labor participation is the highest in the country. With

Wisconsin's male and female workforce participation rates at such high levels, there is little upside for further contribution from the existing labor pool. This is especially true given the fact that as the Baby Boomers age, their participation rates decline. The labor markets will begin to feel the squeeze very soon as the front edge of the Baby Boom wave reaches age 55 in the year 2001.

The Pinch

Combining decreasing birth rates and the aging of the population, the natural increase to the population will play less of a role in supplying Wisconsin's labor pool. Decreased birth rates over the last 25 years will result in some 30,000 fewer residents per year entering the workforce over the next 25 years. Furthermore, just as the Baby Boomers entered the labor force in droves from 1960 to 1985, they will exit the labor force *en masse* beginning about 2011, retiring at a rate as high as 70,000 per year.

Figure 5

Wisconsin Workforce by Age and Gender¹

<u>Age</u>	Males			
	<u>1990</u>	<u>2000²</u>	<u>2005²</u>	<u>2010²</u>
15-19	103,926	120,431	121,838	121,398
20-24	150,633	146,661	158,051	158,361
25-34	382,603	320,901	314,145	332,080
35-44	343,669	388,817	352,136	315,600
45-54	218,146	336,729	373,692	374,783
55-64	136,515	158,308	200,743	245,811
65 & Over	41,777	46,025	48,835	53,640
Total Males	1,377,270	1,517,871	1,569,440	1,601,674
	Females			
	<u>1990</u>	<u>2000²</u>	<u>2005²</u>	<u>2010²</u>
15-19	101,809	115,163	115,082	113,611
20-24	142,922	137,410	151,079	152,376
25-34	328,364	283,559	279,720	299,878
35-44	292,478	353,056	326,631	294,398
45-54	183,044	298,221	348,420	359,514
55-64	104,084	135,376	178,022	221,069
65 & Over	28,159	31,110	32,997	35,712
Total Females	1,180,859	1,353,895	1,431,951	1,476,558
Total Workforce	2,558,129	2,871,767	3,001,391	3,078,232

¹ Based upon U.S. Bureau of Census population projections for Wisconsin

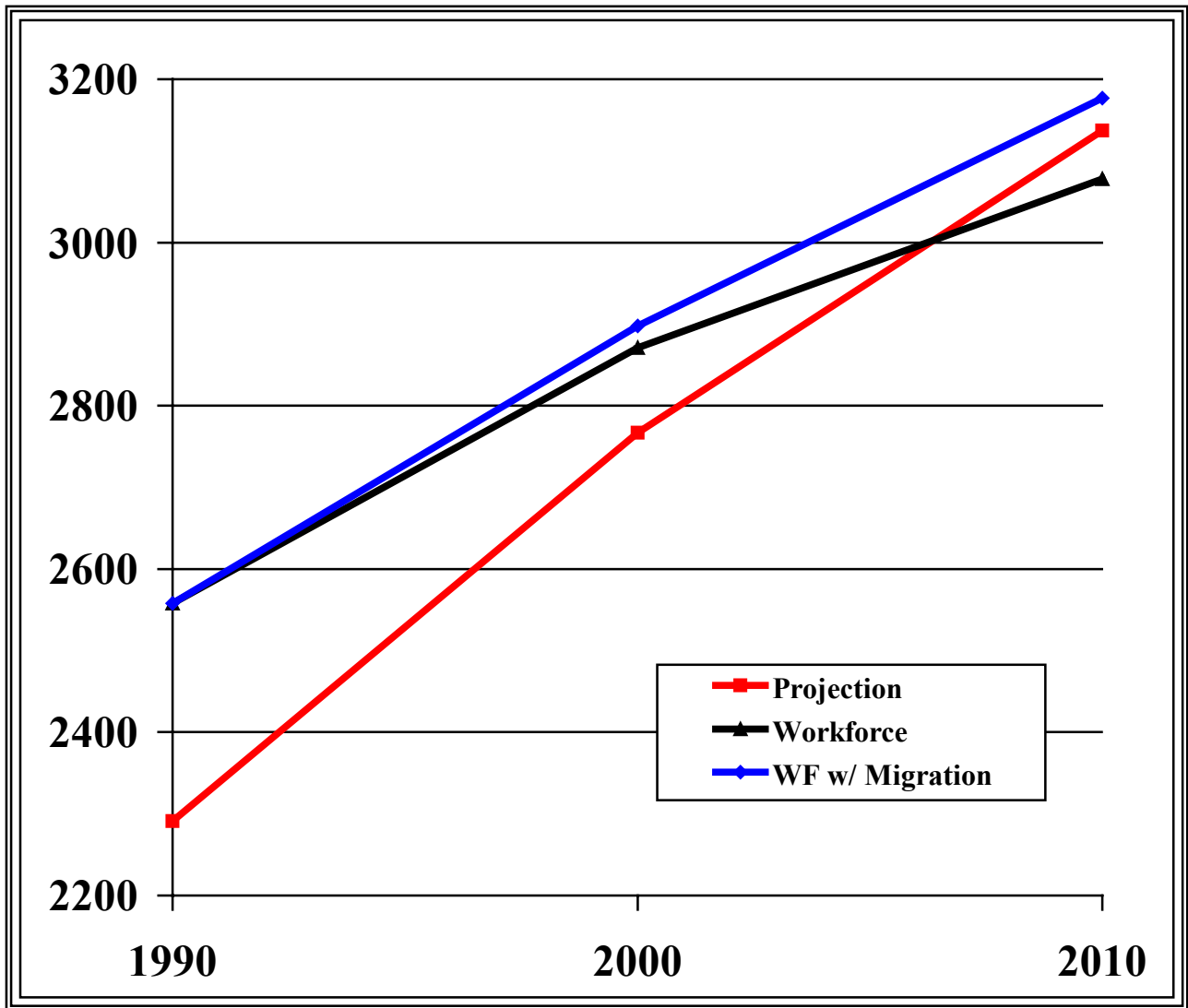
² Based upon projected participation rates

The impact of lower birthrates combined with huge retirements yields only 8,000 new workers to Wisconsin's labor force by the year 2010, 0.25% of an estimated 3,078,000 workforce. This calculation includes some 50,000 retirees per year by 2010. The situation becomes more acute after 2012 when the first edge of the Baby Boomers reach 65 years of age, swelling retirees to over 70,000 per year by 2020. Note the number of workers in the 55-64 age cohort increases in 2010, but the precipitous decline in participation rates more than offsets the gains.

Based upon our job growth estimates, Wisconsin must attract 15,000 to 20,000 net new residents each year from 1999 to 2010 to satisfy the aggregate labor demand (job growth and retirees) through 2010. Such an accomplishment would still yield a very low Wisconsin unemployment rate. The labor quantity gap presents a clear trend and critical concern – Wisconsin’s labor market will remain extremely tight over the foreseeable future. This puts the burden for Wisconsin’s labor pool and economic growth squarely on migration.

Figure 6

Labor Force Projections



Conclusion on Item I.

Wisconsin needs workers. What can be done to attract workers? Provide attractive economic opportunities.

ITEM II – LABOR QUALITY

Wisconsin already has a labor quantity problem in the traditional manufacturing sectors and across most other occupations. Also critical for the state's prosperity, is whether the state's workforce will be able to meet the demands of the "New Economy" jobs. Key to meeting the challenges of the new economy jobs is matching workforce skills with job requirements. Shifting from a traditional manufacturing employment base to a modern high-tech one will require training in the requisite aptitudes. Wisconsin has a solid foundation from which to work.

Productivity

Work ethic and the quality of Wisconsin's labor is consistently cited as a most important reason for the strength of Wisconsin's economy. Chief executive officers of Wisconsin manufacturers consider labor as the primary component of the state's business climate. The CEO's ranked worker's attitudes, skills, and productivity as the top three most desirable business components. They also placed Wisconsin's manufacturing workers' attitudes, productivity and skills in or near the 10 best states.⁵

Education

Wisconsin has a talented and productive workforce. Wisconsin's labor productivity has always been touted as an economic asset. Wisconsin's population is well educated. Elementary and secondary education students consistently score well above the national average in basic skills tests. Wisconsin high school students consistently rank at the top in ACT college entrance scores. The state has a greater percentage of its citizens with high school or higher degree attainment than the national average, 88% versus 83%.

The University of Wisconsin System is a world-class research and educational institution. The state's Vocational and Technical Education System is highly respected. For example, the Madison Area Technical College places upwards of 95% of its graduates.

Figure 7

Wisconsin Educational Attainment⁶ (% of resident population)

Education Attainment	Wisconsin	U.S.
ACT Scores*	22.3	21.0
High School or greater	88.0	82.8
Baccalaureate or greater	22.3	24.4

* actual scores, Wisconsin ranks first for three years in a row, 1996-98

Wisconsin must maintain the caliber of its institutions of higher education to assure the state's workforce is prepared for and will prosper in the new economy. As quickly as today's technologies, products and markets evolve, Wisconsin's workers must remain on the cutting edge of the requisite occupational skill set throughout their careers.

Brain Drain

The loss of intellectual capital is a problem, however. Wisconsin drops below the U.S. average for the percent of its population that holds a baccalaureate or greater degree, see Figure 7. Wisconsin has trouble retaining and attracting college educated workers.

Wisconsin ranks below the U.S. average in retention of baccalaureate degrees, 62% versus 71%. The state's retention rate ranks below all neighboring states. Wisconsin also ranks below the U.S. average in the net migration of people with bachelor's degrees or higher, with a 76% rating on a scale where 100% is zero net movement.⁷ Illinois, for example, rates a 122%.

Wisconsin's brain drain affects the state's economy in fiscal terms as well. For every bachelor's degreed resident who leaves the state, Wisconsin gives up a \$41,000 income. Every advanced degree leaving the state takes a \$64,000 income with it.

This issue centers around the economic opportunities available to college graduates. University departments have lists of graduates who would be willing to return to Wisconsin if the job opportunities were available. The issue is one of a lack of economic opportunity.

Conclusion on Item II.

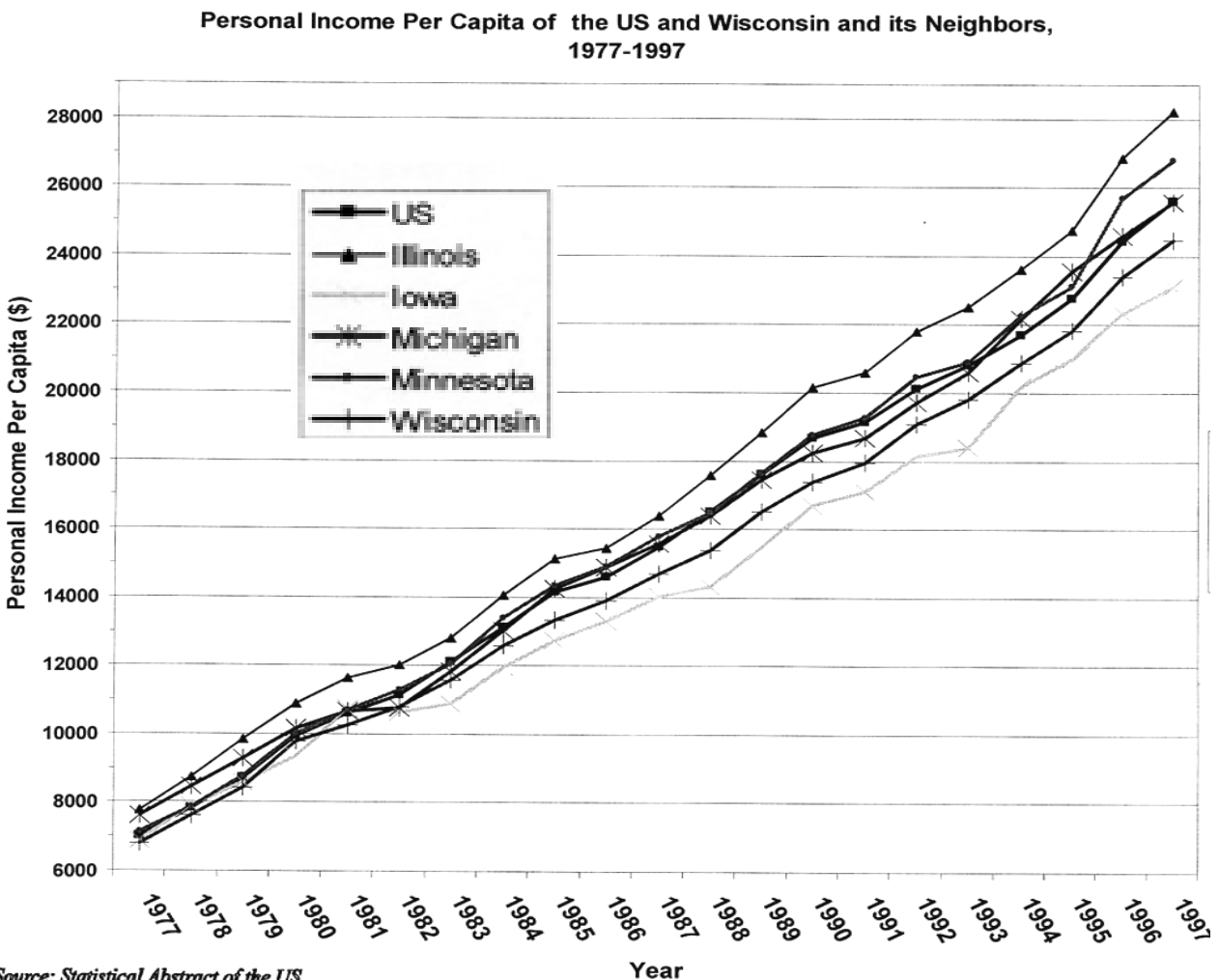
Wisconsin has the jobs and the talent. Why can't the state attract enough qualified workers to the state? Perhaps better incentives are required.

ITEM III – WAGES, INCOME AND WEALTH

Wisconsin has certainly created the jobs, about 400,000 since 1990. The state has had net positive migration for most of the decade. Even so, Wisconsin's unemployment rate is regularly one of the lowest in the country. Why aren't more people flocking to the state? Perhaps, they don't have the proper incentives.

Over the last twenty years, Wisconsin residents' personal income has fallen behind those of its neighboring states and the U.S. See Figure 8. There are a few reasons, explained below, that may shed some light on the cause.

Figure 8



Reason 1 – Wages

Wisconsin is considered a manufacturing state and ranks second of all the states in the share of its workforce that is employed in the manufacturing sector. In 1990, Wisconsin had the lowest manufacturing hourly earnings of all the nearby states. The state has outpaced many of its neighbors in manufacturing wage gains in recent years. However, Wisconsin manufacturing wages still have some

catching up to do. Wisconsin manufacturing wages are still the lowest among the manufacturing intensive states of Indiana, Michigan and Ohio. See Figure 9.

Figure 9

Manufacturing Wages & Personal Income
1999

<u>State</u>	<u>Manufacturing Wage</u> <u>(earnings per hour)</u>	<u>CAG %</u> <u>1990-98</u>	<u>Personal Income per</u> <u>Capita</u>	<u>CAG %</u> <u>1990-98</u>
Illinois	\$14.05	2.4	\$31,278	5.1
Indiana	15.26	2.6	26,092	5.2
Iowa	14.20	2.6	25,727	4.9
Michigan	18.33	3.2	27,844	4.8
Minnesota	14.35	2.7	30,622	5.4
Ohio	16.26	2.9	27,081	4.7
Wisconsin	14.51	3.1	27,412	5.4
U.S.	13.91	2.8	28,518	5.3

Source: Bureau of Economic Analysis, Bureau of Labor Statistics

Reason 2 – Income

Wisconsin ranks below the U.S. and most neighboring states in average personal income per capita. The state's per capita personal income has outpaced most of these states during the 1990s. However, the gains are not sufficient to close the gap on the U.S. average or the neighboring higher income states. Wisconsin's income gains would have to increase to 5.5% per year to begin to close the gap with the U.S. income averages and climb by over 6.0% to gain on Minnesota residents' income gains. While manufacturing wage gains may be helping, manufacturing plays a shrinking role in the state's total economic profile.

Another income disparity cause may lie in the fact that Wisconsin ranks below the U.S. average in number of its residents with college degrees, 22.3% versus 24.4%. The difference between a high school trained worker's income and that of a bachelor's degreed worker is almost \$18,000 per year. The spread for a professional degree is \$41,000 per year. The gaps have widened over the last twenty years. High school graduate incomes have actually declined in real terms over the 20-year period. See Figure 10.

Figure 10

Differences in Income by Education Attainment Level
(Constant 1998 Dollars)

<u>Education Level</u>	<u>Income</u>		<u>Difference: H.S. vs other degree</u>		
	<u>1977</u>	<u>1997</u>	<u>1977</u>	<u>1997</u>	<u>Lifetime</u>
High School	24,241	23,250			
Bachelors	38,210	41,106	13,969	17,856	710,520
Advanced Degree	51,308	64,210	27,067	40,960	1,557,570

Source: ACE and U.S. Census Bureau

If Wisconsin met the U.S. average share of bachelor's degreed residents, total state income would increase significantly. Based on a Wisconsin population of roughly 5.2 million, rising from a 22.3% share of residents with bachelor's degrees to the national average of 24.4%, would give Wisconsin another 109,200 residents with bachelor's degrees. Multiplying that number by the \$18,000 income spread between high school and baccalaureate graduates yields \$1.97 billion in forgone income for the state each year. This does not include the larger income gap associated with advanced degrees.

Further more, if Wisconsin's personal income per capita could rise to that of the U.S. average, the state's total personal income would increase by over \$5.2 billion. Increasing Wisconsin's personal income per capita to a level matching the average of neighboring states would raise the state's total personal income by some \$7.3 billion. Achieving Minnesota's personal income per capita would increase Wisconsin's total personal income by over \$16 billion. These are huge gains that would increase the purchasing power of the state's residents, help to increase savings and create a larger investment pool. The tax impacts of such gains are also substantial and are referred to in section five of this paper.

Reason 3 – Wealth

According to a report by the Wisconsin Taxpayers Alliance on recently released U.S. Internal Revenue Service data, Wisconsin ranks near the bottom of states in terms of the total assets of its residents. The IRS reports the states personal assets of some \$71.2 billion. While seemingly a very large figure, it amounts to just 1.3% of the U.S. total \$5.5 trillion in assets. With 1.95% of the nation's population, Wisconsin ranks 41st on an assets per capita basis. If Wisconsin's population and asset shares were equivalent, the state would possess some \$108 billion in personal assets. That amounts to an almost \$37 billion dollar difference, over 50% of held assets.

Figure 11

State Asset Comparisons

State	Assets*	Assets per capita	Relative Index**
Illinois	292.7	24,670	118.2
Indiana	76.3	13,189	63.2
Iowa	60.6	21,334	102.2
Michigan	145.9	15,100	72.3
Minnesota	79.0	17,153	82.2
Ohio	194.9	17,469	83.7
Wisconsin	71.2	13,862	66.4
U.S.	5,482	20,864	100.0
* in billions of dollars			
** assets per capita as percent of national average			

The primary accumulator of wealth is investment. Low wages contribute to low income. Low income detracts from savings, which is used for investment.

Conclusion on Item III.

Wisconsin needs to increase wages, income and wealth to attract workers. What can be done to do so? Create high-paying, attractive jobs.

ITEM IV. – CAPITAL AND CREATIVE RESOURCES

The creation of high-paying jobs requires investment. Those jobs that show the most promise for the next generation are the jobs in high-tech industries.

High-tech Industries in Wisconsin

In a recent study entitled *America's High-Tech Economy*, the Milken Institute identified a list of 14 industries (at the 3-digit SIC code level) that it characterized as “high-tech.” These industries spend an above-average amount of revenue on research and development and employ an above industry-average number of technology-using occupations.⁸

High-tech industry has a small presence in Wisconsin. The state’s high-tech sector is about half the size of the nation’s sector. In many of the industries, such as the communications equipment, Wisconsin’s industry is less than half of the national average. Wisconsin employs people in every high-tech industry except guided missiles and space vehicles. State employment in all of these are below national averages save one, medical instruments and supplies. The measuring and controlling devices industry also has a strong presence in Wisconsin.

Figure 12

Wisconsin High-Tech Employment 1997

Industry	SIC Code	Wisconsin		United States	
		Employment	% of Workforce	Employment	% of Workforce
<u>Nonfarm Workforce</u>		2,575,720		122,690,000	
Drugs	283	1,929	0.07%	268,600	0.22%
Computer and Office Equipment	357	4,710	0.18%	375,900	0.31%
Communications Equipment	366	1,012	0.04%	277,300	0.23%
Electronic Components and Accessories	367	9,027	0.35%	650,300	0.53%
Aircraft and Parts	372	425	0.02%	500,600	0.41%
Guided Missiles and Space Vehicles	376	0	0.00%	91,400	0.07%
Search and Navigation Equipment	381	1,882	0.07%	161,100	0.13%
Measuring and Controlling Devices	382	6,153	0.24%	300,800	0.25%
Medical Instruments and Supplies	384	8,625	0.33%	276,100	0.23%
Telephone Communication	481	10,937	0.42%	970,900	0.79%
Computer and Data Processing Services	737	17,710	0.69%	1,409,400	1.15%
Motion Picture Production & Services	781	1,030	0.04%	237,000	0.19%
Engineering and Architectural Services	871	13,266	0.52%	865,200	0.71%
Research and Testing Services	873	5,186	0.20%	588,000	0.48%
TOTAL		81,892	3.18%	6,972,600	5.68%

Source: BLS and Bureau of Workforce Information

Measuring Creativity

While there are no exact measurements of the technological prowess of an economy, there are several indicators. A combination of knowledge, experience, risk-taking, opportunity, and resources are needed to convert ideas into businesses and business improvements. Indicators related to these elements include R&D investments, telecommunication investments and use rate, educational investments, the size and quality of the business sector, venture capital investments, and patents. The willingness to take risks, perhaps the most important element, has no indicator.

Research and Development

One of the most important economic forces of today is the research and development process. The R&D process is both the search for new ideas and the implementation of new ideas in the marketplace. In total investment in research and development, Wisconsin is the 22nd largest state in the union. Wisconsin invests about \$1.7 billion in R&D each year, accounting for 1.2% of all research and development in the nation.

State and Local Government

State and local governments contributed \$42.5 million of research and development funds within the state in 1995. These funds went to R&D performed at colleges and universities. In addition to contributing funds to universities and colleges for R&D, the Wisconsin state government also runs several programs designed to foster growth in technology and high-tech industries. These programs are run through the Department of Development. The Technology Development Fund assists in financing projects aimed at turning new ideas into products or improving on existing projects. The state also runs the Manufacturing Assessment Center. The Center aids in the development process for Wisconsin's small- and medium-sized manufacturers. Other technology programs run by the state government include the Technology Clearinghouse and the Recycling Technology Assistance Program.

All of these programs are relatively new, most begun in the early 1990's. As economic growth becomes more dependent on technology, such programs may become more important, and the state government will have to have a more significant role in fostering the transfer of technology to the business sector.

Universities and Colleges

Twenty percent of all research and development in Wisconsin takes place at its many colleges and universities. Federal funding is an important source of revenue for research and development at institutions. In 1996, federal contributions to Wisconsin universities and colleges totaled \$246,991,000. The University of Wisconsin-Madison is by far the most important institution in R&D for the state, accounting for roughly 85% of all academic research. In terms of funding research, the University of Wisconsin-Madison is one of the largest investors in the country. In 1997, the University's R&D expenditures totaled \$419,810,000⁹. It is the third largest in the nation, behind Johns Hopkins University and the University of Michigan.

Through the facilitation of University of Wisconsin research, University-Industry Relations and the Research Park, new companies have been created from many of the ideas patented at the University. More than 172 such companies have been formed in Wisconsin since 1959, 70 of those in the last five years¹⁰. These companies have been very successful, with many still in business. They provide high-skill and high-wage opportunities for Wisconsin graduates, and currently employ almost 7,000 residents. These companies are also important in bringing federal R&D funds to the University. Small business grant and contract programs have brought more than \$40 million to the University since 1983.

Industry

Industrial research and development accounts for most of the state's R&D investment. In 1995, various Wisconsin industries funded \$1.68 billion dollars of R&D in 1995, three-quarters of the total. These funds were largely for R&D that was performed by those industries, but a small portion (\$17 million) was performed at colleges and universities. Wisconsin industries performed \$1.71 billion dollars of R&D in 1995, with the \$30 million difference being funded by the federal government.

However, Wisconsin is below the national average when measuring investment as a percent of gross state product. Wisconsin's R&D to GSP ratio was 1.68 in 1995, whereas the same ratio for the United States as a whole was 2.53.

The composition of Wisconsin industries is important to consider when evaluating the state's R&D investment. Figure 13 breaks down Wisconsin's economy to the two-digit SIC code level. These numbers show Wisconsin should be spending \$2.8 billion on R&D per year, nearly \$1 billion more than the present level. This method has several deficiencies, and should therefore be taken with some qualifications. The most obvious is that it ignores variations in industries that occur below the two-digit SIC code level. Nonetheless, there is something intimidating about coming up a billion dollars short. Ten years ago, Wisconsin was \$1 billion short on R & D. Little, if any, progress has been made during the last decade.

Figure 13

Wisconsin Industrial R&D Estimates
1995

INDUSTRY	OUTPUT (millions)	NATIONAL R&D / OUTPUT (percent)	INFERRED R&D EXPENDITURES (millions)
Gross State Product	\$132,246		
Total Private	117,626		
<u>Manufacturing</u>	37,466	7.80	
Food and tobacco products	4,425	1.11	\$49
Chemicals and allied products	2,032	11.24	228
Stone, clay, and glass products	574	1.48	9
Primary metal industries	1,446	1.23	17
Fabricated metal products	3,634	1.17	42
Industrial machinery*	6,907	3.56	246
Electronic and other electrical	3,286	13.72	451
Transportation equipment	2,472	24.71	611
Instruments and related products	1,233	24.41	301
Other manufacturing	11,420	3.45	394
<u>Non-manufacturing</u>	80,160	0.63	508
Inferred R&D Expenditures Total			\$2,856
Actual R&D Expenditures Total			\$1,706

*This ratio excludes R&D expenditures in electrical machinery. The national R&D/Output ratio for Industrial Machinery is actually higher.

Sources: R&D data from *Research and Development in Industry: 1995-96*, National Science Foundation; National and Wisconsin GSP data from *Gross Product by Industry, 1947-97 and Gross State Product by Industry, 1977-97*, Bureau of Economic Analysis.

Wisconsin also has fewer doctoral scientists and engineers than the national average. The number of scientists and engineers working in Wisconsin is an important statistic, because they are responsible for performing the research and development in the state. They are also usually highly paid positions. In 1995, Wisconsin had roughly 7,000 doctoral scientists, and 1,000 doctoral engineers.

Figure 14

Wisconsin's Technology Profile

	Wisconsin	United States	Rank
Doctoral Scientists, '95	6,899	453,928	23
Doctoral Engineers, '95	962	86,738	26
High-tech employment	81,892	6,972,600	
R&D expenditures, '95 (millions)	\$2,226	\$177,210	22
R&D/GSP	1.68	2.53	28
Venture Capital, '95-'98 ¹	\$156 million	\$40 billion	
Patents issued, '97	1,301	61,699	14

¹Source: National Science Foundation, except this item, which is from PricewaterhouseCoopers

Venture Capital

Venture capital is extremely important to the flow of new ideas into the economy. It is the money new companies require to get started. Between 1995 and 1998, Wisconsin companies received over \$150 million from various venture capital investment funds. These funds went to companies from a wide range of businesses – from health care, to biotechnology, to business services. About half of all venture funds, \$70 million, went to software and information firms, a reflection of the national trends.

In relative terms, however, these numbers are paltry. Wisconsin receives less than 1% of the nation's venture capital funds per year. National trends in venture capital investments are not surprising. California receives more venture capital than any other state, accounting for 30-40% of venture capital investments each year. Massachusetts receives another 7 to 10% annually. Texas receives about 5 to 7%, and the remainder is split among the remaining 47 states. Venture capital investment per capita in Wisconsin almost doubled from 1988 to 1998. However, that increase pales in the face of the U.S. average. See Figure 14.

Figure 15

Venture Capital per Capita
(\$ / capita)

	<u>1988</u>	<u>1998</u>	<u>Percent Increase</u>
Wisconsin	\$7.44	\$14.30	192
U.S. Average	21.48	71.79	334
Minnesota	16.35	137.19	839

Initiatives for \$25 million or \$50 million dollars for investment capital in the state are an important beginning, but very much a drop in the bucket of what is required. Wisconsin should set a target of \$1 billion per year in venture capital investment, money that is invested in and stays in the state.

Patents

The number of patents received by Wisconsin residents per year can also be a valuable indicator of the state's intellectual and academic achievements. In 1997, 1,301 Wisconsin residents received patents from the United States Patent Office, ranking Wisconsin 14th in the nation. A total of 61,699 patents were distributed that year, which means Wisconsinites received slightly more patents per capita than the national average, 0.25 per 1000 people compared to 0.23 for the nation.

Conclusion on Item IV.

Wisconsin is greatly under-funded in R&D spending and venture capital investment. What can be done to increase capital spending for new economy jobs? Provide more seed funds. Enhance capital networks. Broaden the scope and geographical coverage of investment vehicles. Create enticing image.

ITEM V. – WISCONSIN'S IMAGE

In order to entice more investment into Wisconsin to create the high-paying jobs that will increase residents' income and wealth, generate greater economic activity and attract more workers, capitalists must be convinced Wisconsin is their best investment choice.

Selling a product has two issues. The first issue is the challenge of an existing reputation: maintaining it or overcoming it. Wisconsin needs to do both depending upon the characteristic in question. The second burden is the facts. Before any capital investment is committed, thorough analysis is undertaken. Some items are harder to quantify than others.

Four essential criteria have been identified as factors driving high-tech location decisions:

1. Access to a skilled and educated workforce – we have that, see section 2.
2. Proximity to world-class research institutions – we have that, see section 4.
3. An attractive quality of life – we have that, as do others, see below.
4. Access to venture capital – we don't have that, see section 4.

Measures must be made on a relative basis. How is Wisconsin viewed on critical items of interest to investors, items such as taxes, return on investment, and quality of life? Let's consider in reverse order.

Quality of Life

Wisconsin has an image and reputation as being a clean and wholesome (if not backward), unencumbered place. That is why tourists spent some \$9 billion in the state in 1999 to relax and take in the scenery. Data presented earlier in this paper quantify the quality of Wisconsin's schools. However, quality of life comparisons become somewhat muted when a visitor from, say, Denver can't see a snow-capped peak, or someone from Boston can't find an ocean, or a Californian can't find either. Another deterrent is a property tax bill increase that equals private school tuition. One must mention climate. Is it better to stay inside for three months due to summer heat when daylight hours are many or due to winter cold when it is dark most of the day anyway? Climate impressions can be overcome as has been illustrated in Minnesota.

Return on Investment

Wisconsin also has an image and reputation as being an agricultural and manufacturing state. Indeed, Wisconsin ranks 10th in the nation in total cash receipts for agriculture products. The state is still the number one producer of cheese products. Wisconsin ranks second in the share of its workers that are employed in manufacturing, 23%. Wisconsin's reputation as a manufacturing success actually works against the state for capital attraction, as manufacturing is not seen as yielding a high return on investment or deemed a future growth market.

Capital is mobile. For the globetrotting capitalist, the low double-digit returns on manufacturing investment, when you can get them, pale in comparison to the triple and even quadruple returns available on high-tech businesses. In spite of the state's successful start-ups, the financial centers of New York, London, Tokyo, San Francisco, even Chicago, do not consider Wisconsin a significant place for emerging products or services.

Taxes

Wisconsin has long been considered a “high tax” state. Governor Thompson and former governors are often cited for the success they have made in decreasing income and property tax rates for both businesses and citizens. The Thompson administration has cut taxes 91 times, saving Wisconsin taxpayers over \$16 billion dollars.¹¹ Primary among the tax relief to Wisconsin businesses were the property tax exemptions on machinery and equipment in 1974 and on computer equipment in 1999. Governor Thompson issued a call to cut corporate taxes another \$80 million dollars in his January 26, 2000 State of the State address. Property tax relief in Wisconsin has been a political mantra since the early 1900s.

Despite a record of tax relief since the 1970s, Wisconsin still ranks near the top of the nation in most common measures of tax burden. The state has been ranked among the top 5 states for tax burden for most of the last 30 years. Wisconsin taxes have grown faster than the state’s population or personal income for most of the 1990s. While much debate goes on within Wisconsin as to whom and what are responsible for the state’s high tax burden, what matters is how burdened Wisconsin businesses and residents are by taxes.

Wisconsin’s Relative Tax Burden

Wisconsin cannot do anything about federal tax policies. Subtracting out federal taxes allows comparison of just the state and local tax burden. Wisconsin ranks 4th. Minnesota is 5th, with other regional states farther down the rankings. See Figure 16. (Note: Recent data suggest Minnesota’s rank is dropping.)

Figure 16

State and Local Tax Burdens 1999

<u>State</u>	<u>Income / capita</u>	<u>Tax / capita</u>	<u>Tax / income*</u>	<u>Rank</u>
Illinois	\$32,087	3,541	11.0	28
Indiana	26,092	2,881	11.1	25
Iowa	26,688	\$3,093	11.6	11
Michigan	28,685	3,274	11.4	16
Minnesota	30,012	3,954	13.2	5
Ohio	27,439	3,165	11.6	14
Wisconsin	27,342	3,761	13.8	4
U. S. Average	28,878	3,273	11.3	--

* tax as percent of total personal income

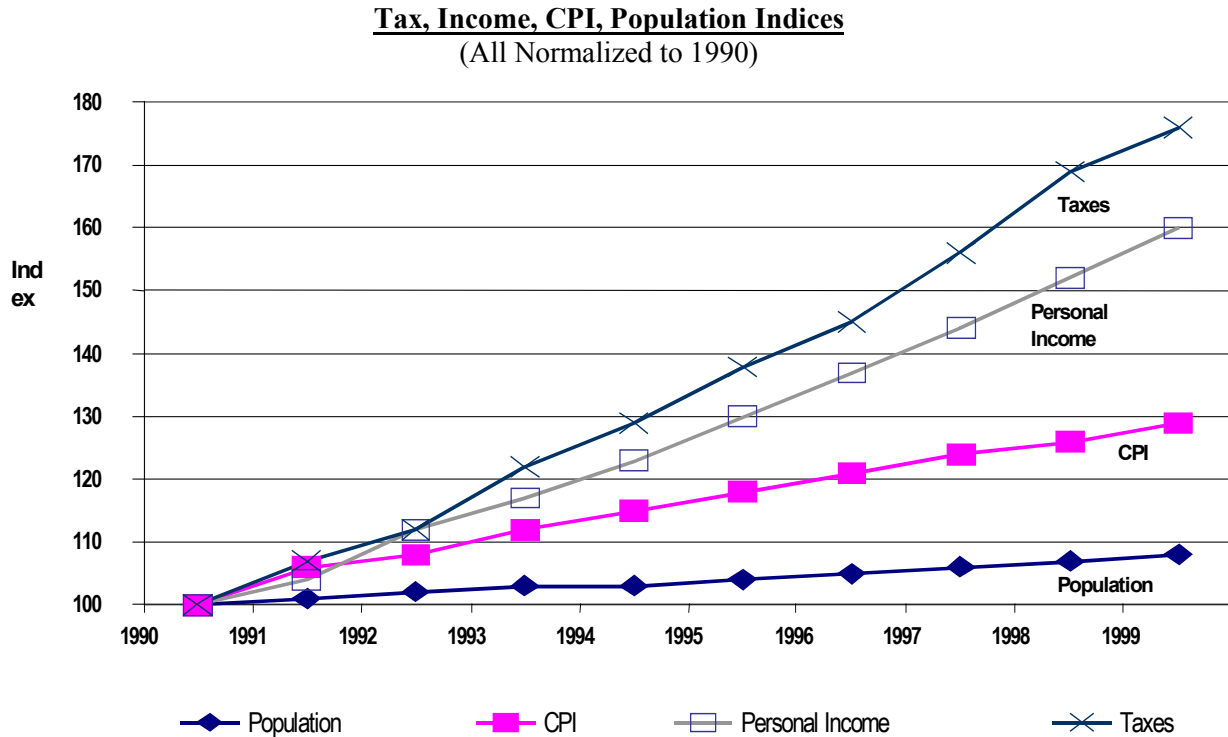
Source: Tax Foundation, Washington, D.C.

Breaking out the major components of taxes gives of indication of how Wisconsin taxes are shared across tax categories. Wisconsin ranks 6th in personal income taxes as a share of personal income, 15th on corporate income taxes, 7th for property taxes and 32nd on sales taxes. Breaking down property taxes further to state and local demarcations, Wisconsin ranks 17th and 6th, respectively.

Ominous Trend

It does not appear that Wisconsin's relative tax burden ranks will fall anytime soon. It is true that income and property tax rates have decreased in Wisconsin over the 1990s. It is also true that Wisconsin residents' percentage of personal income allocated to state and local taxes has been fairly constant over the last 20 years. However, tax revenues are growing faster than personal income, faster than prices and faster than the state's population.

Figure 17



Source: Wisconsin Taxpayers Alliance

With labor shortages now the primary business issue, personal tax burdens have become detrimental in attempts to attract workers to the state, especially those considering high paying positions. Wisconsin will face difficult fiscal times if income gains and property value appreciations begin to flatten out.

Severed Debate

While Wisconsin is often cited as a high tax state in some categories, the overall cost/benefit analysis always gets severed from the debate. Wisconsin relies heavily on state income and local property taxes, but the state makes little use of excise taxes, registration and license fees or user fees. After combining all government revenue-generating vehicles, Wisconsin's "government revenue burden" ranking drops to 17th place, not enviable, but much improved. If more federal money would flow back to the state (Wisconsin ranks 49th), Wisconsin would fall even further down the ranks of government burden.

To sum up, Wisconsin's ranking as a high tax state is burdensome although somewhat misleading.

Personal Income Gains and Tax Burden Relief

As stated in the section three of this paper, personal income gains would affect spending, savings, investment as well as taxes. In a simple comparison of relative personal income levels across neighboring states and the U.S., we find some substantial potential tax relief. For example, if Wisconsin could increase its share of residents with baccalaureate degrees to the national average, personal income per capita in the state would rise by \$2.0 billion dollars. Applying a 5% Wisconsin income tax rate to that figure would generate an additional \$100 million dollars in state income tax revenue. Viewed in a more enlightened manner, Wisconsin personal income tax could be reduced by \$100 million, a 1.9% decrease.¹²

If Wisconsin's personal income per capita rose to the U.S. average, using the same process above, state income taxes could be cut by \$302 million or 5.9%. Carrying it further to match Wisconsin's personal income per capita with the neighboring states' average would generate \$401 million in additional tax revenue, allowing for a 7.8% income tax cut to Wisconsin residents. Finally, by reaching Minnesota's personal income per capita level, Wisconsin taxpayers could be looking at a huge 17.3% cut in their personal income tax burden, some \$893 million. See Figure 17.

Figure 18

Tax Impacts of Increased Personal Income

Personal Income Factor Achievement Level	Personal Income Gains (Billions \$)	Additional Income Tax Revenue Generated @ 5% (Millions \$)	Percent of Total Wisconsin Personal Income Tax Revenue (1999)
Equal Share of BS Degrees	1.98	99.2	1.91
PI/c Equal to U.S. avg.	6.05	302	5.86
PI/c Equal to Neighbors	8.01	401	7.76
PI/c Equal to Minnesota	17.9	893	17.3

Conclusion for Item V.

Wisconsin is deemed a great place to live by its residents. However, it carries a mixed image beyond its borders. What can be done to accentuate the positive and relieve the negative? The creation of high-paying jobs would do much to alleviate Wisconsin's reputation as a high-tax, unattractive place for capital and workers. High-paying jobs would: 1) raise wages, income and wealth, 2) lower the relative tax burdens, 3) attract talented workers to the state, 4) attract high-tech businesses to the state, 5) increase the economic power of the state, and 6) begin the positive economic spiral that will thrust Wisconsin forward into the New Economy prosperity. Imagine, all that and a great quality of life.

RECOMMENDATIONS

Wisconsin finds itself with many fine attributes embedded within the Wisconsin Idea, the Forward motto and the state's quality of life. These attributes will assist in overcoming the state's shortcomings. It is a large undertaking and no single entity can accomplish the task. Building upon the state's attributes, the Business-Education-Government triumvirate should initiate the following:

- 1) Fill the \$3 Billion dollar investment hole. Wisconsin is almost \$1 billion below the national average on federal money flows back to the state. Wisconsin is \$1 billion below the national average on R&D spending. Wisconsin receives less than 0.05% of the \$40 billion annual U.S. venture capital investment. Set a target of a \$1 billion in venture capital investment.

- 2) Shatter inherent parochialism. Natural, Human, Capital and Creative Resources are limited. Initiatives must reap comparative advantages and trade.
- 3) Instill the entrepreneurial spirit. Offer incentives for risk taking to establish New Economy businesses. Establish, enhance and expand entrepreneurial enterprise zones.
- 4) Generate incentives to create, attract and keep New Economy workers. Extend forgivable loans to resident students, workers and businesses pursuing New Economy employment.
- 5) Install the New Economy infrastructure. Internet access and high-speed telecommunications are the backbone of New Economy jobs. Wisconsin needs ready access to the world. In some countries, it is actually the private sector that is paying for the network installation into entire communities.
- 6) Give incentives for regional economic development of New Economy jobs. Incentives should be directed at high-paying/high-tech jobs, not just jobs.

Back Notes

-
- 1) Winters, Dennis K., Strang, William A., Klus, John P., *Wisconsin's Economy in the Year 2010*, University of Wisconsin—Madison, School of Business, Wisconsin Economy Study 32, 2000
 - 2) Our analysis dealing with the 1990s employment numbers reflects the fact that historical data were only available through 1997 at the time of our analysis. Therefore, when we speak of employment in “the 1990s” or the “last decade” we are generally referring to the period of 1990 through 1997. Likewise, while we often refer to the “next decade”, our projection period actually covers 13 years, from 1998 through 2010.
 - 3) It should be noted that while this study is about employment, we are estimating the number of jobs. Many people do work more than one job. A recent study suggests that, in fact, Wisconsin workers have the highest propensity to work more than one job.
 - 4) *Wisconsin Projections, 1996-2006*, Wisconsin Department of Workforce Development, July 1998.
 - 5) Udell, Jon G., *Wisconsin's Quality of Business and Personal Life as Seen by Chief Executives*, Wisconsin Economic Study #28, Bureau of Business Research, University of Wisconsin—Madison, School of Business, March 1996.
 - 6) U.S. Department of Commerce, *Statistical Abstract of the United States*, and Wisconsin Department of Public Instruction.
 - 7) *Graduate Migration from Indiana's Postsecondary Institutions*, Indiana's Human Capital Retention Project, March 1999, p. 20, chart 14.
 - 8) DeVol, Ross C., *America's High-Tech Economy*, Milken Institute (Santa Monica, CA 1999), p.35.
 - 9) National Science Foundation
 - 10) University-Industry Relations
 - 11) McCallum, Scott, *My Opinion*, Businessfirst, Madison, WI, August 29, 2000, p3.
 - 12) Calculations are based upon a straight 5% Wisconsin income tax rate, a state population of 5.250 million, an \$18,000 average income differential between BS degreed earners and high school earners, and total state personal income tax revenue collections of \$5.162 billion in 1999.

Author's Biography

Dennis Winters is President of Relevant Economic Analysis Limited, an economic consulting firm located in Madison, WI. He has over twenty years experience in economic and market analysis and forecasting, encompassing everything from commodity futures markets to long-term public policy initiatives. Mr. Winters co-authored the recently published report, Wisconsin's Economy in the Year 2010, an analysis and projection of Wisconsin's employment situation for the next decade. That report serves as a basis for his Wisconsin Economic Summit paper, Help Wanted!, Sustaining Wisconsin's Economic Prosperity and his remarks at this conference today.

Mr. Winters has held senior positions at the Executive Office of Energy Resources for the Commonwealth of Massachusetts, DRI/McGraw-Hill (now Standard & Poor's DRI), Wharton Econometric Forecasting Associates and Clayton Brokerage Company of St. Louis.

Mr. Winters was educated at the University of Wisconsin—Madison and Colorado State University. He is a native of Wisconsin and after fifteen years living West, South and East, found the homestead too rich to ignore.

Dennis K. Winters
President
Relevant Economic Analysis Limited
7 North Pinckney Street
Suite 225
Madison, WI 53703
608-259-9990
608-259-9991 fax
winters@realecon.com