

**Michigan Workers in the Boom Years:
Employment and Employment Earnings 1991-2000**

by

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Between 1991 and 2000, Americans enjoyed the strongest economy since World War II, perhaps the strongest ever. Michigianians benefited greatly. The state's economy, by most measures, performed even better than the nation's.

Employment in Michigan boomed from the lows of the last recession in 1991 to the peak of the expansion in 2000. Michigan's economy in 2000 was at full employment. In fact, there were widespread labor shortages for the first time since World War II.

In this report we will go behind the headlines and explore in depth how Michigan workers fared in the boom of 1991-2000. (For ease of presentation, we refer to this period as the nineties.) The report is designed to provide an analysis on employment and employment earnings as well as to identify the economic trends that emerged in the nineties and are likely to drive Michigan's economy over the next decade or more.

Given the current downturn, some may ask how relevant are the data from the boom years. We are quite confident that there is a lot to be learned from the experience of Michigan workers in the nineties. Many of the trends that emerged are structural, not cyclical. The themes that we highlight are likely to be with us for the foreseeable future—in both good and bad economic times. Also, the full employment economy of 2000 provides a unique view of how workers fared at a time when employers were vigorously competing with others for workers—at all skill levels and in all industries. How labor markets functioned in the best of times provides us with valuable clues about both employment and employment earnings going forward.

The report is organized in three sections. In the first, we provide a summary of the highlights of the Michigan economy from 1991-2000 as well as look briefly at the current downturn. Section II analyzes in detail data on trends in employment and employment earnings for Michigan workers in the nineties. We end the report in Section III with an exploration of five trends that, we believe, help explain what happened to Michigan workers in the nineties and will most influence employment and employment earnings going forward.

Section I. Overview

We begin with the headlines:

In 2000, labor force participation and employment stood at all-time highs and the unemployment rate was at an all-time low. Five million Michigianians worked in 2000, an increase of 850,000 from 1991. The unemployment rate was 3.6%, down from 9.3% a decade earlier.

Incomes rose impressively too. Michigan's per capita income in 2000 was just above \$29,000, an increase, after correcting for inflation, of \$4,500.

In each of these categories Michigan's gains were greater than the nation's:

- Growth in the number of people with jobs of 20.4%, compared with 14.9% nationally.
- A decline of 5.7 percentage points in Michigan's unemployment rate, compared with 2.8 percentage points nationally.
- Per capita income up 18.3%—although still \$300 below the nation's—compared with growth of 16.4% nationally.

All in all, it was an extraordinary decade of economic growth and prosperity. Who in 1991 would have predicted an unemployment rate under 4%? Most economists thought full employment was around 6%. Or, that after decades of chronically high unemployment, there would be a job available for virtually every Michigianian who wanted work? Or, that for most of the nineties, Michigan's unemployment rate would be below the nation's?

As this report is written, Michigan is slowly recovering from the 2001 recession. Some of the gains of the nineties have been lost. For Michigianians, 2001 was a tough year economically:

- The number of people with jobs fell by 116,000, down 2.3% compared with a 0.1% decline nationally.
- Michigan's unemployment rate rose to 5.3%, compared with 4.8% nationally.
- Michigan's per capita income fell by 1.3%, compared with 0.1% nationally.

The weakness has continued into 2002. In the first half of the year, the unemployment rate continued to rise, to 6.2%.

Section II. How Michigan Workers Fared in the Nineties

In this section we present the highlights of the data we collected. Our focus is on individual workers and how they fared in the nineties. So the data presented are about individuals, not households or families.

We collected more data than is presented in the six topic areas. All of the data are presented in the appendix, which is available online at <http://www.ilir.umich.edu/ilir/lmr>. We encourage readers to review the complete data. It is a rich source of information on a wide variety of topics on how Michigan workers fared in the nineties.

All the data come from major ongoing federal government data reports:

Population data come from the 1990 and 2000 Census.

The labor force and unemployment data are from the Current Population Survey (CPS). The CPS is collected monthly by the Census Bureau for the Bureau of Labor Statistics in order to determine the unemployment rate and other labor statistics. The CPS provides the best national and state data on occupational employment and earnings for different types of workers. It is also the only source of data that allows us to distinguish between workers with different characteristics (for example, educational attainment or age).

The CPS is based on a national sample of 55,000 households, including about 2,000 Michigan households. Each March, households are asked about their employment and employment earnings for the previous year. For this report, we used the March 1992 and March 2001 surveys to provide us with detailed information about how Michigan workers fared in 1991 and 2000.

Data on employment by industry come from the Bureau of Labor Statistics Current Employment Statistics (CES) Series. Data on average wages by industry come from the Bureau of Labor Statistics ES 202 data series. The BLS CES data is based on responses of a sample of 390,000 businesses nationwide. The ES 202 employment data, also referred to as “covered employment,” is based on employer filings with state unemployment insurance agencies.

A. Population

Reports on employment don't usually start with population, but demographic trends will be a big force in shaping employment in Michigan for the next several decades. Michigan's population is both aging and growing slowly, as can be seen in Table 1. If these trends continue—and they are likely to do so—this will almost inevitably mean that for several decades, new entrants into Michigan's labor market will fall short of employers' need for new workers.

Table 1
Population by Age Category, Michigan and the United States

	Michigan			United States			Gap US-MI
	1990	2000	% Change	1990	2000	% Change	
Total Population	9,295,297	9,938,444	6.92	248,709,873	281,421,906	13.15	6.23
Age 16 or older	7,103,749	7,628,170	7.38	191,820,393	217,149,127	13.20	5.82
Age 0 to 15	2,191,548	2,310,274	5.42	56,889,480	64,272,779	12.98	7.56
Age 16 to 24	1,271,744	1,217,630	-4.26	33,452,718	35,164,487	5.12	9.37
Age 25 to 44	2,980,702	2,960,544	-0.68	80,754,835	85,040,251	5.31	5.98
Age 45 to 64	1,742,842	2,230,978	28.01	46,371,009	61,952,636	33.60	5.59
Age 65 or older	1,108,461	1,219,018	9.97	31,241,831	34,991,753	12.00	2.03

The population patterns are clear:

1. Michigan's population is growing substantially slower than the nation's. The state trailed the nation in every age grouping. The gap is greatest for those 24 and younger.
2. There were fewer in the 16-24 and 25-44 age cohorts in Michigan in 2000 compared with 1990. These cohorts will be the core of Michigan's workforce for the next several decades.
3. By far the fastest-growing age cohort in Michigan is the 45-64 group. These are the people who will be leaving the workforce over the next several decades.

B. Labor Force Participation and Employment

Despite slow population growth, labor force participation and employment boomed in Michigan in the nineties. This is clearly the economic headline of the decade. The strong economy of the nineties pulled lots of Michiganders into the labor force. Nearly everyone in the labor force found employment, as shown in Table 2.

Table 2
Labor Force and Employment, Michigan and the United States

	Year			Percentage Change	
	1991	2000	2001	1991-2000	2000-01
Labor Force and Employment					
Michigan Labor Force	4,592,200	5,201,404	5,175,083	13.3%	-0.5%
U.S. Labor Force	126,346,000	140,863,000	141,815,000	11.5%	0.7%
Michigan resident employment	4,165,400	5,016,048	4,900,723	20.4%	-2.3%
U.S. resident employment	117,718,000	135,208,000	135,073,000	14.9%	-0.1%
Michigan unemployment rate	9.3%	3.6%	5.3%	NA	NA
U.S. unemployment rate	6.8%	4.0%	4.8%	NA	NA
Michigan nonfarm wage and salary employment	3,891,100	4,673,900	4,586,500	20.1%	-1.9%
U.S. nonfarm wage and salary employment	108,249,000	131,759,000	132,213,000	21.7%	0.3%

(In Table 2 we report on employment using two measures: 1) resident employment, which is based upon surveys of households and 2) nonfarm wage and salary employment, which is compiled from employer surveys. Although they differ somewhat in the way they define employment, both are reliable and commonly used measures of employment. As can be seen in Table 2, the 1991-2001 Michigan data are consistent between the two data sets. We cannot explain the divergence between the two series in national employment growth. In this report we generally use the resident employment measure, except when we are analyzing employment by industry.)

The highlights are:

1. The labor force (those aged 16 and up, working or looking for work) grew by about 600,000, an increase of 13.3%.
2. The number of residents with jobs grew by 850,000—to 5.02 million, an increase of 20.4%.
3. Labor force growth accounted for most of Michigan's new workers. Of the 850,000 new workers, 240,000 came from a reduction in unemployment and 610,000 from new or returning entrants into the labor market.
4. The labor force grew substantially faster than the working-age population (13.3% compared with 7.7%). The availability of jobs in every industry and at every level pulled a higher proportion of the working-age population into the labor force.

C. The Proportion of Full-time/Year-Round Workers

We wanted to know, not just how many Michiganders were employed, but how much they worked. We divided the workforce into three categories, as shown in Table 3. (Note: The total number of workers with earnings in Table 3 is greater than the average annual employment shown in Table 2 because workers who only worked part of the year are counted fractionally in the employment data in Table 2.) The three categories are:

- full-time and year-round (full-time defined as 35 hours a week or more and year-round defined as working at least 50 weeks a year)
- full-time and part-year (this category mainly represents workers who lost or left a job during the year)
- part-time (including both year-round and part-year workers)

Table 3

Employment in Michigan by Full-Time, Full-Year Status, 1991 and 2000

All workers with earnings, age 20 or older	Number		Share	
	1991	2000	1991	2000
Full-time, year-round	2,710,828	3,457,030	59.6%	68.0%
Full-time, part-year	900,288	700,631	19.8%	13.8%
Part-time	934,490	923,482	20.5%	18.2%
All	4,547,597	5,083,143	100.0%	100.0%

1. Tight labor markets increased the proportion of Michigan workers who worked full-time and year-round. The growth in the workforce for those 20 and older occurred almost exclusively in the full-time/year-round group, which increased from 59.6% of the workforce in 1991 to 68.0% in 2000. The strong economy provided workers with employment for the entire year, as well as a chance for workers to move from part-time to full-time work. Not only were more Michiganders employed, but those who worked were more likely to work full-time and year-round.
2. Women make up a disproportionate share of part-time workers. Women are 46.4% of the workforce, but 70.9% of part-time workers. Nearly half of female part-time workers (46.5%) have a high school degree or less (see Table III in the online appendix).
3. Finally, a word about teenage workers. In 2000, 468,000 teens worked at least part of the year, up 41% from 1991. Most of them, 81.5%, were part-time workers (see appendix Table III). (The data in Tables 3, 4, and 5 of this report do not include the teenage cohort because teenagers are not fully committed to the labor force.)

D. Employment Earnings

As we have seen, there is nothing but good news on employment in Michigan in the nineties. The same cannot be said for employment earnings—how much one earned from work. As can be seen in Table 4, the news is decidedly mixed. Median employment earnings, adjusted for inflation, for all workers rose 15%, to about \$28,000; but for full-time/year-round workers it declined 2.5%, to about \$35,000.

The dominant trend in employment earnings is the growing importance of educational attainment. Only those with four-year college degrees or more saw their employment earnings substantially outpace inflation.

Table 4
Median Earnings (adjusted for inflation) for Michigan Workers
By Educational Attainment

	All Workers			Year-Round Full-Time Workers		
	1991	2000	% Change	1991	2000	% Change
All education categories	\$24,232	\$27,925	15.2%	\$35,655	\$34,783	-2.4%
Did not complete H.S.	\$15,797	\$13,662	-13.5%	\$25,855	\$21,923	-15.2%
H.S. graduate/GED	\$21,500	\$23,982	11.5%	\$27,903	\$29,854	7.0%
Some college	\$21,651	\$24,999	15.5%	\$32,351	\$33,308	3.0%
Associate's degree	\$29,038	\$31,790	9.5%	\$37,919	\$37,062	-2.3%
Bachelor's degree	\$35,773	\$38,778	8.4%	\$43,145	\$47,176	9.3%
Master's degree or more	\$51,022	\$60,011	17.6%	\$57,364	\$65,250	13.7%

The employment earnings highlights are:

1. Despite a full-employment economy, the typical Michigan full-time/year-round worker saw no real (corrected for inflation) increase in employment earnings. This partly reflects the fact that the full-time/year-round workforce in 2000 included a greater number of less-

experienced workers than it did in 1991, as many part-year or part-time workers in 1991 found full-time/full-year jobs.

2. The rise in median earnings for all workers seems to be largely attributable to workers working more: both the increased proportion of employees working full-time/year-round and part-time employees working more hours.
3. Clearly, the dominant trend in employment earnings is the rising importance of educational attainment. The higher the educational level, the higher the pay. That was true in 1991, and it mattered even more in 2000.
4. For those who did not complete high school or earn a GED, earnings declined. Earnings rose substantially only for those with a bachelor's degree or more. The big winners were those with a master's degree or more.
5. The most startling trend is that the number of Michigan workers with a bachelor's degree or more rose an astonishing 50%, to 1.42 million, as shown in Table 5. We have no doubt this trend is real, but because the reported increase is so large, we suspect that sampling difficulties may account for some of it.
6. The number of workers at the lower end of the earnings ladder (those earning less than \$20,000 per year in 2000 dollars) fell by almost 200,000 between 1991 and 2000. Still, at the height of the boom and in the midst of widespread labor shortages, 34% (1.73 million) of all workers had employment earnings of less than \$20,000. Most of these low-wage workers were part-time or part-year workers, but 15% (525,000) of full-time/year-round workers earned less than \$20,000.

Table 5
Employment by Education,
Education and Full-Time/Full-Year Status

	All Wage Levels			Earning Less Than \$20,000		
	1991	2000	Change	1991	2000	Change
All workers	4,545,606	5,081,144	535,538	1,927,379	1,729,661	-197,718
Did not complete H.S.	471,981	402,396	-69,585	271,734	261,528	-10,206
H.S. graduate/GED	1,644,054	1,697,815	53,761	794,381	654,474	-139,907
Some college	1,124,704	1,146,473	21,769	527,590	444,712	-82,878
Associate's degree	353,596	414,529	60,933	117,160	114,348	-2,812
Bachelor's degree	585,869	930,365	344,496	159,793	193,544	33,751
Master's or more	365,403	489,568	124,165	56,722	61,055	4,333
All full-year/full-time	2,710,829	3,457,030	746,201	520,447	524,826	4,379
Did not complete H.S.	218,921	212,529	-6,392	69,544	88,426	18,882
H.S. graduate/GED	930,537	1,163,263	232,726	248,015	232,135	-15,880
Some college	642,301	733,714	91,413	120,378	117,748	-2,630
Associate's degree	238,854	300,461	61,607	29,523	27,816	-1,707
Bachelor's degree	409,784	669,846	260,062	42,900	42,111	-789
Master's or more	270,433	377,217	106,784	10,087	16,589	6,502

E. Employment by Industry

Tables 6 and 7 look at both employment and earnings by industry. The share statistics for both employment and earnings calculate the proportion of Michigan's total that are represented by that industry. The location quotient is a measure of whether employment in an industry is more or less concentrated in Michigan compared with the nation. A location quotient of 1 means that an industry has the same share of employment in Michigan and the nation. A value greater than 1 means that the industry is more concentrated in Michigan, and a value less than 1 means that it is less concentrated in Michigan.

Table 6
Michigan Employment and Average Earnings by Industry, 2000

Industry	Standard Industrial Classification (SIC)	Employment 2000	Average Earnings 2000
Total wage and salary	NA	4,673,900	\$37,016
Mining	10-14	7,700	\$45,567
Construction	15-17	206,700	\$41,983
Motor vehicle manufacturing	371	293,000	\$74,787
Manufacturing except motor vehicles	NA	688,000	\$46,114
Transportation	40-47	115,300	\$37,063
Utilities	48-49	67,100	\$55,068
Wholesale trade	50-51	232,800	\$49,491
Eating and drinking establishments	58	298,100	\$11,073
Retail trade except eating and drinking	52-57,59	560,900	\$20,689
Finance, insurance and real estate	60-67	206,600	\$43,571
Personal, repair, and building services	72,75,76,734	126,200	\$22,305
Hotels, amusement, and motion picture services	70,78,79	109,700	\$19,391
Personnel supply services	736	172,000	\$24,793
Health services (private and government)	80	382,700	\$35,595
Education services (private and government)	82	407,600	\$33,691
Professional services	Bal 73,81,87	285,100	\$49,523
Other services	07,83-84,86,88,89	211,400	\$20,620
Government except education & health	NA	303,100	\$37,540

Table 7
Share of Employment and Earnings by Industry

Industry	Share of Employment		Share of Earnings		Location Quotient
	2000	Change 1991-2000	2000	Change 1991-2000	2000
Total wage and salary	100.00%	0.00%	100.00%	0.00%	1.00
Mining	0.16%	-0.07%	0.20%	-0.19%	0.40
Construction	4.42%	1.10%	5.02%	1.28%	0.87
Motor vehicle manufacturing	6.27%	-0.59%	12.67%	-0.63%	8.15
Manufacturing except motor vehicles	14.72%	-1.47%	18.34%	-1.94%	1.11
Transportation	2.47%	0.20%	2.47%	0.23%	0.72
Utilities	1.44%	-0.25%	2.14%	-0.52%	0.76
Wholesale trade	4.98%	-0.14%	6.66%	-0.03%	0.93
Eating and drinking establishments	6.38%	-0.14%	1.91%	-0.09%	1.04
Retail trade except eating and drinking	12.00%	-0.29%	6.71%	-0.36%	1.04
Finance, insurance and real estate	4.42%	-0.45%	5.20%	0.10%	0.77
Personal, repair, and building services	2.70%	-0.07%	1.63%	-0.02%	0.92
Hotels, amusement, and motion picture services	2.35%	0.24%	1.23%	0.21%	0.73
Personnel supply services	3.68%	2.28%	2.46%	1.70%	1.25
Health services (private and government)	8.19%	-0.57%	7.87%	-0.88%	0.99
Education services (private and government)	8.72%	-0.63%	7.94%	-0.36%	0.97
Professional services	6.10%	0.98%	8.16%	1.62%	0.85
Other services	4.52%	0.73%	2.52%	0.64%	0.90
Government except education and health	6.48%	-0.87%	6.58%	-1.06%	0.82

The main patterns that emerge from the employment by industry data are:

1. The service-producing sector is the dominant employer in Michigan. Including government as part of this sector, it accounts for roughly 70% of employment and about 60% of employment earnings. This sector's share changed little over the nineties: its employment share grew less than 1%, and its earnings share grew about 2%.
2. The other 30% of employment and 40% of earnings is in the industrial sector: manufacturing, construction, transportation, utilities and mining. Manufacturing is, by far, the largest of Michigan's industrial sector, with an employment share of about 21% and an earnings share of 31%.
3. The image of service-producing sector employment as low-wage is too simplistic. It is true that there are low-wage industries within the sector, largely concentrated in retail and personal services: restaurants and drinking establishments; retail trade except eating and drinking; personal, repair, and building services; hotel, amusement, and motion picture services; and other services. These industries, each with average earnings of less than

\$22,500 compared with an average for all workers of \$37,000, employ 1.2 million workers, with an employment share of 28%.

4. But there are also good-paying industries within the service-producing sector, where work is largely done in offices, schools, and hospitals: finance, insurance, and real estate; wholesale trade; health; education; professional services; and government, other than education and health. These industries employ about two million Michigianians, with an employment share of 42%. The average employment earnings in these industries is between \$33,700 and \$49,500.

5. We separated out motor vehicles from the rest of manufacturing because it remains such an important part of Michigan's economy. As can be seen from the location quotients, it is by far the industry that most distinguishes Michigan's economy from the nation's. Michigan is eight times more concentrated than the nation in motor vehicle manufacturing.

This category is a conservative measure of the industry, including only the motor vehicle manufacturers and most of the major automotive parts suppliers, but it does exclude some suppliers. (For example, the category does not include motor vehicle stampings, automotive electrical equipment, or automotive trim). Even without all the supplier industries, the motor vehicle manufacturing industry has an employment share of 6.3% and, perhaps most important, an earnings share of 12.7%. The average earnings of motor vehicle industry workers (\$74,000) is twice the state average.

6. By far the fastest-growing industry in the nineties was personnel supply services, largely staffing services and employee-leasing firms. Its employment share more than doubled, to 3.7%. Average earnings in the industry increased by 39%, to almost \$25,000. The industry is now placing employees in more than just lower-paying support jobs. It is also worth noting that although they are classified as part of the service industry, the industry's employees actually work in both the industrial and service sectors.

F. Employment by Occupation

The dominant trend in the occupational composition of Michigan's economy was a shift to more people working in high-skilled and high-paying occupations, as shown in Table 8.

1. The ten fastest-growing occupations were:
 - Mathematical, computer, and natural scientists
 - Health technologists and technicians
 - Engineers
 - Personal service occupations
 - Officials, executives, and managers
 - Construction trades
 - Health assessment and treatment
 - Teachers except college and university
 - Management related
 - Health diagnosing, lawyers, and college teachers (occupations requiring advanced degrees)

Table 8
Michigan Employment and Earnings by Occupation

Occupation	Median Earnings 2000	Employment 2000	Change, 1991-2000	
	Year-Round, Full-Time Workers		Number	Percentage
Officials, executives, and managers	\$59,000	527,637	180,407	52.0
Management related	\$45,800	165,833	38,491	30.2
Engineers	\$70,121	134,887	49,137	57.3
Mathematical, computer, and natural scientists	\$56,586	94,189	52,758	127.3
Health diagnosing, lawyers, and college teachers	\$94,541	96,976	20,177	26.3
Health assessment and treatment	\$40,636	116,285	37,503	47.6
Teachers except college and university	\$41,367	177,619	48,834	37.9
Other professional occupations	\$33,617	149,299	9,726	7.0
Health technologists and technicians	\$31,225	67,803	26,338	63.5
Engineering and science technicians	\$49,322	49,992	9,618	23.8
Technicians except health and engineering	\$31,553	42,876	6,450	17.7
Supervisors and proprietors, sales	\$37,621	155,393	25,457	19.6
Sales reps., finance and business services	\$44,774	75,429	4,193	5.9
Sales reps., commodities	\$40,359	61,127	7,040	13.0
Sales workers, retail, personal service, and related	\$18,481	261,406	24,989	10.6
Supervisors, administrative support	\$33,122	22,057	476	2.2
Secretaries, stenographers, and typists	\$27,824	118,082	-41,708	-26.1
Other administrative support	\$23,946	517,402	63,427	14.0
Private household workers	NA	22,183	-15,267	-40.8
Protective service workers	\$30,952	74,369	4,941	7.1
Food service workers	\$21,074	257,818	42,729	19.9
Health service workers	\$21,787	99,328	17,267	21.0
Cleaning and building service workers	\$21,986	108,350	-12,106	-10.0
Personal service occupations	\$10,184	115,526	39,583	52.1
Mechanics and repairers	\$38,256	179,405	15,989	9.8
Construction trades	\$35,949	224,874	73,304	48.4
Other precision production, craft, and repair	\$40,306	166,876	-3,051	-1.8
Machine operators, except precision	\$27,938	252,143	21,893	9.5
Fabricators and assemblers	\$27,083	184,063	28,651	18.4
Motor vehicle and material moving operators	\$32,750	192,512	31,047	19.2
Laborers, stock handlers, and cleaners	\$22,394	209,407	32,768	18.6
Farm, forestry, and fishing	\$23,757	97,817	6,451	7.1
Total	\$34,783	5,018,963	847,512	20.3

Employment grew 20% in the nineties. Each of these occupations, which are listed in order with the fastest growing at the top, grew at least 26%.

Of the ten, seven had average employment earnings for full-time/year-round workers of \$40,000 or more, and two had average employment earnings of between \$30,000 and \$40,000 (construction trades and health technologists and technicians). Only personal service occupations would be defined as low-wage.

2. This list is consistent with two trends we identified earlier:
 - The growth of higher-paying service employment in offices, schools, and hospitals
 - The rapid increase of workers with a four-year degree or more
3. Consistent with this trend of growth in high-wage occupations, only one of the ten slowest-growing occupations (sales reps in finance and business services) had average employment earnings of \$40,000 or more.

Section III. Trends that Are Driving Forces in Michigan's Economy

The nineties were an extraordinary decade of economic growth in Michigan. Clearly, the data we have just reviewed were influenced greatly by the cyclical boom. But we believe the data also reveal important structural trends that are driving forces in the Michigan economy in both good times and bad.

In this section we explore five trends that we believe help explain how Michigan workers fared in the nineties and that are likely to be major forces in the Michigan economy for the next decade or so:

- Structural labor shortages
- High pay for high skills
- An abundance of low-wage workers
- An economy centered in offices, schools and hospitals
- The auto industry still matters

Trend 1: Structural Labor Shortages

Our belief is that the labor shortage of the late nineties was at least as much structural as cyclical. Without question, the strong economy increased the demand for workers. At the same time, however, demographics were reducing the supply of potential new workers.

In the nineties, Michigan's working-age population grew 7.4%, the labor force rose 13.3%, and the number of workers with jobs increased 20.4%. This wide divergence between population growth and employment growth is not sustainable over the long term.

Michigan's basic demographic trends—an aging population and slow population growth—are going to be with us for some time. This reality is highly likely to produce an economy in which labor shortages are the rule rather the exception.

There are three sources of new workers:

1. Those moving from unemployment to employment.
2. A higher proportion of working-age people joining the labor force.
3. Those becoming part of the working-age population for the first time and joining the labor force.

Each has a limited capacity to provide the Michigan labor market with new entrants.

1. Of the 850,000 new workers in the nineties, 240,000 came from the ranks of those unemployed in 1991. In 1991, there was a pool of 425,000 unemployed. In 2000—as the unemployment rate shrank from 9.3% to 3.9%—the pool of unemployed was 185,000. The recession in 2001 caused the pool of unemployed workers to increase to 275,000, and the weak economic growth in the first half of 2002 pushed the number of unemployed workers up to 320,000, about 100,000 less than in 1991.

So those moving from unemployment to employment will be a much smaller contributor to employment growth in the current decade. Not only is the pool of unemployed substantially

smaller than it was in 1991, but there is some limit to how far the pool can decline. The unemployment rate won't ever shrink to zero because there will always be people between jobs, or who are unemployable.

2. Of the 850,000 new workers in the nineties, 610,000 came from new entrants or re-entrants into the labor force.

One source of new entrants was an increase in the labor force participation rate—the proportion of those 16 and older in the labor force. In the nineties, Michigan's working-age population grew 7.4% and its labor force grew 13.3%. So the increase in labor force participation was a substantial source of new workers. The participation rate rose to 68.2%, a very high level by historical standards.

There are good reasons for choosing not to join the labor force: full-time student, a preference to work in the home (usually on account of family care responsibilities), retirement, disability, giving up after an unsuccessful job hunt.

It is hard to imagine the participation rate growing much in the foreseeable future, given: (1) the strong pull of labor shortages in 1999 and 2000 to entice individuals into the labor market, (2) the strong public policy push to transition those on welfare to work, (3) historically high levels of female labor force participation (which has been a major source of increasing participation rates), and (4) the large cohort of Boomers moving towards retirement.

3. Our best guess is that the greatest number of new workers in the coming decade or so will come from those aged 0-24 today, and secondarily from net migration into Michigan.

Those aged 0-15 today are the major source of new entrants into the labor market. Today's 16- to 24-year-olds will both increase their labor force participation rate and, more important, move from part-time to full-time employment as they finish their education. Note that these were the two slowest-growing age groups in Michigan in the nineties. According to the 2000 Census, the population aged 0-15 increased by only 5.4% in Michigan compared with 13% in the nation, and the population aged 16-24 actually declined by 4.3% in Michigan, compared with growth of 5.1% in the nation.

The story on net migration is mixed. Although Michigan has not recently been a major center for immigration, the proportion of Michigan residents who are foreign born increased from 3.8% in 1990 to 5.3% in 2000. Immigrants were clearly an important source of new workers in the nineties and are likely to be so in the coming decade. On the other hand, Michigan is, at best, holding its own when it comes to working-age people moving from state to state.

This all adds up to the likelihood that Michigan will face structural labor shortages for the foreseeable future. We are leaving an era where labor markets were characterized by more workers looking for employment than there were available jobs, to a period where—except during recessions—employers will have more jobs available than there are workers to fill them.

Trend 2: High Pay for High Skills

A dominant trend in the nineties was the increased premium employers paid for education. Quite simply, on average, the more education one has, the higher one's compensation.

In this section we look at median employment earnings for full-time/year-round workers on an inflation-adjusted basis. This allows us to see the effects of educational attainment on employment earnings without major distortions from changes in hours worked and inflation.

As shown in Table 4, the education attainment premium is not new. In both 1991 and 2000, earnings were higher for each succeeding rung on the education attainment ladder. What happened in the nineties was that the premium rose dramatically for those with the highest skills: those with a four-year degree or more, and particularly those with a master's degree or more.

- In 2000, comparing those with a high school diploma and no college with those who have a four-year degree or more, the education premium was about \$23,200 (\$29,900 vs. \$53,100).
- In general, median earnings declined for those with less than a high school diploma, rose for those with a four-year degree or more, and stayed about the same for everyone else.
- The power of this trend is most visible at the extremes, where the median earnings for those with less than a high school diploma fell about 15%, and rose about 14% for those with a master's degree or more.
- Many Michigianians are responding to this trend: the proportion of all workers with a four-year degree or more grew from 21% in 1991 to 28% in 2000.

The foundation of this trend is the transition from the Industrial Age to the Information Age, a mega-trend that will be a driving force in our economy for the foreseeable future.

Our economy increasingly is organized around those who work with their minds more than their muscles. Machines are doing more of the heavy lifting. As we saw in the section on employment by occupation, the number of knowledge workers—those in professional, managerial, or technical occupations—is increasing rapidly. The need for more learning is not restricted to high-skilled occupations: more and more frontline work requires higher skills as workers are asked to exercise independent judgment, provide customer service, and be good problem solvers.

Trend 3: An Abundance of Low-Wage Workers

Although an increasing number of Michigianians are employed as high-paid knowledge workers, at the other end of the earnings ladder, in 2000, 34% (1.73 million) of all Michigan workers had employment earnings of \$20,000 or less. Most of these low-wage workers were part-time or part-year workers. A surprising 15% (525,000) of full-time/full-year workers had employment earnings of \$20,000 or less.

So about one-third of all workers in a full-employment economy were in lower-wage jobs. This is in an economy where lower-skilled workers had their greatest bargaining power in decades as employers were forced to compete for entry-level workers. All of us saw the signs—largely in the suburbs—offering fast-food workers pay substantially above minimum wage with benefits. In addition, the labor shortages gave employers a real incentive to offer more full-time work.

But even in a boom economy, many occupations continued to pay low wages and to be organized primarily around part-time work. We believe that, even with the structural labor shortages we envision for the future, a substantial portion of Michigianians will continue to work in low-wage jobs.

This low-wage work will continue to be concentrated in retail and personal services industries: restaurants and drinking establishments; retail trade except eating and drinking; personal, repair,

and building services; hotel, amusement, and motion picture services; and other services. Although they are not growing rapidly, these industries will continue to be large employers in the future.

Combining the low added value of lower-skilled workers and the structure of these industries places a ceiling on how high their compensation will go no matter how tight labor markets get.

This, of course, has important implications for policy makers. Ideally, most low-wage workers would be young singles working their way up the job ladder, those supplementing retirement income, or second household wage earners. But clearly these low-wage jobs are the primary source of income in many households, and many low-wage workers do not have the skills to move very far up the job ladder.

It is reasonably clear to us that for many low-wage workers, if their standard of living is to rise, it will be primarily through a more generous safety net. In the nineties, we increased the safety net for the working poor primarily through an expanded earned income tax credit, an increase in the federal minimum wage, expansion of Medicaid, and increased child care funding. These issues will continue to be relevant in the decades ahead.

Trend 4: An Economy Centered in Offices, Schools, and Hospitals

Much of the analysis and reporting on the Michigan economy for the past several decades has focused on the basic storyline of a transition in employment from high-paying manufacturing (and other blue-collar) jobs to low-wage retail and restaurant jobs. This turns out to be a far too simplistic analysis of long-run employment trends.

What is missing from this analysis is the growth of the higher-value-added service sector. As discussed in the section on employment by industry, these industries are largely centered in offices, schools, and hospitals. The industries are:

- Finance, insurance, and real estate
- Wholesale trade
- Health
- Education
- Professional service
- Government except education and health

These industries employ about two million Michigianians, or about 42% of all jobs in Michigan.

These numbers quite likely understate the growing importance of office work to the Michigan economy. It appears likely that a growing proportion of employment in other industries is increasingly office-centered. In manufacturing, for example, the trend in Michigan is away from factory floor work to pre-production and post-production work done in offices by knowledge workers.

So the predominate trend in employment is not a shift of work from factories to stores. Rather, it is a shift from both of these workplaces to offices, schools, and hospitals. These are the places where the high-skilled work of the Information Age is done. It is where eight of the ten fastest-growing occupations are found.

Trend 5: Autos Still Matter

We end this report with a discussion of Michigan's preeminent industry, motor vehicle manufacturing. For years it has seemed as if most political and economic agendas have established as a priority diversifying away from the automotive industry. The concentration of one of the world's largest industries in Michigan seems to many to be more curse than blessing.

We will leave to others the debate over whether this is a wise policy. What we do know is that the auto industry today and for the foreseeable future will be a critical component of the Michigan economy. We also know that if you could choose an industry to be concentrated in, auto manufacturing is still one of the best. It is one of the world's largest employers as well as one with a preponderance of high-paying jobs.

As mentioned earlier, the motor vehicle manufacturing industry accounts for more than 6% of Michigan employment and, because auto industry workers earn twice the state average, it accounts for more than 12% of Michigan employment earnings. It is what most distinguishes our economy from the nation's. We are 8 1/2 times more concentrated in auto industry employment than the rest of the nation.

But these numbers understate the importance of the industry to Michigan. The industry category includes the motor vehicle manufacturers and most of their major part suppliers, but it does not include all the other Michigan companies that are direct suppliers to the industry, such as the tooling industries that equip factories and professional services suppliers of information technology, accounting, marketing, engineering, research and development, transportation and logistics support, legal services, and much more.

Then there is the purchasing power of the industry's employees. With average earnings of \$74,000, they account for 1/8 of all the employment earnings in the state. This is a considerable amount of purchasing power that is spent throughout the state's economy.

As discussed earlier, the industry in Michigan is changing dramatically. The state still is a major center of motor vehicle and parts manufacturing, but increasingly its concentration is in the knowledge work of the industry: management, research and development, engineering and design, purchasing, logistics, marketing, and finance. While factory work is spreading out away from Michigan (mostly south), there is an increasing concentration of motor-vehicle-related knowledge work in Michigan.

The simple fact is that there is no industry that matters as much to Michigan's economy. For the foreseeable future, Michigan's economic fortunes are substantially tied to the health of its automotive industry.