

On May 7, 2004, the College of Letters & Science, UWM, and L'Institute, a joint venture of UWM, the University of Birmingham, United Kingdom, and the University of Ferrara, Italy, hosted a Workshop on the Development of the Milwaukee Economy. It had two interrelated objectives: i) to provide a forum at which interested faculty from different disciplines could exchange expertise and explore the relevance of each other's work to understanding economic development; ii) to identify and plan future research possibilities. The current issue of **Monitoring Wisconsin** provides a brief summary of the paper "Growth Potential of Wisconsin's New Economy," by Swarnjit S. Arora, Okey P. Akubeze, and James H. Peoples. A full copy of the paper is available for your perusal on our website: <http://www.uwm.edu/Dept/ISPR>.

Growth Potential of Wisconsin's New Economy

Introduction

The economy of Wisconsin, which traditionally has recorded unemployment rates lower than the national average, continues to show considerable strength as the recovery progresses. The unemployment rate for Wisconsin in May 2004 was 5.1 percent compared to 5.6 percent for the nation, and 5.4 percent for the Midwest region. However, the state's economy, like the national economy, seems to be undergoing a structural change. The manufacturing sector seems to be the most affected. In Wisconsin, the change is characterized by heavy investment in high tech areas where Wisconsin manufacturers have a comparative advantage. This transformation, despite declining employment numbers, has enabled manufacturing to play a strong role in the state's economy. This sector also continues to outperform a majority of its regional counterparts.

The recent decline in employment in the manufacturing sector can be attributed to four factors:

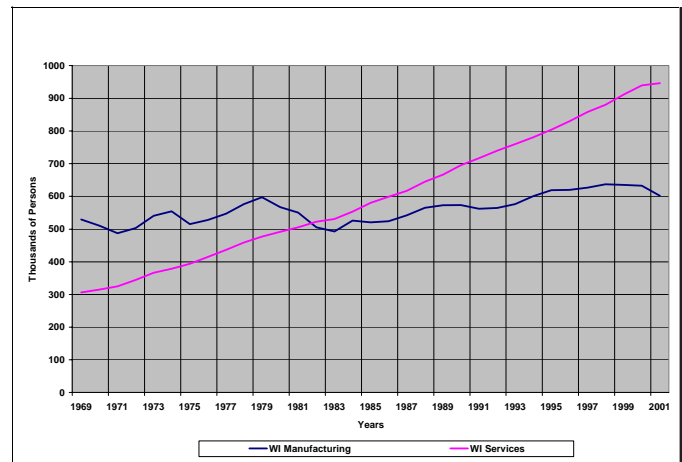
- Increase in productivity due to improved manufacturing technology in the 1990's.
- Substantial outsourcing of functions and development of supply chains, as companies downsized to position themselves for global competition.
- Outsourcing of low-level manufacturing operations to countries like China, India, and Mexico.
- Cyclical demand for durable goods. It is possible that employment during the nineties was above the norm and was not sustainable at those levels.

Structural Shifts in the Manufacturing and Services Sectors

While the services sector has grown significantly over the past three decades, manufacturing continues to play a major role in the economy of the State of Wisconsin. Indeed the number of persons employed in manufacturing has consistently surpassed 500,000 since the 1990's.

In the first quarter of 2001, employment in the manufacturing sector was 580,000 or 20 percent of total non-farm employment in Wisconsin. During the same period, employment in the services sector was 960,000 or 34 percent of total non-farm employment. By the end of 2003, manufacturing accounted for 18 percent of total non-farm employment, compared to 36 percent in the services sector (see Chart 1).

Chart 1 • Employment in Selected Wisconsin Sectors

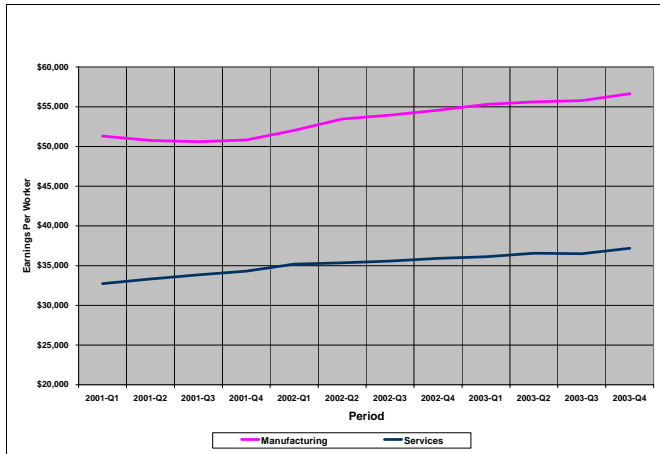


Source: Bureau of Labor Statistics

Although the proportion of employment in Wisconsin's services sector continues to increase, earnings per worker in that sector are still considerably less than those of the manufacturing sector. Average earnings per worker in manufacturing were \$39,998 during the first quarter of 2001 compared to \$25,133 in the services sector. In the fourth quarter of 2003, the sector's earnings per worker were \$42,702 compared to \$28,430 in the services sector (See Chart 2). Clearly, the manufacturing sector's per employee contribution to Wisconsin's personal income exceeds that of the services sector. Despite job losses in manufacturing seen through a national trend, magnified by the recent recession, manufacturing continues to be a major income generator in Wisconsin's economy. However, owing to the shift from the manufacturing sector to the services sector, Wisconsin's per capita real income has fallen below the national level.

As the focus of policy makers shifts to “high tech” or the new economy, it is important to underscore the role of manufacturing. Stability in this sector through difficult times may be linked to the ability of the sector to adapt to new high technology processes as global competition siphons lower level production activities to low wage competitors. For example, automation in manufacturing, employment of biotechnologies in agricultural production, and computing in financial services help to enhance and to structure Wisconsin’s economy.

Chart 2 • Income per Worker in Selected WI Sectors



Source: Bureau of Economic Analysis (Current Dollars)

The new economy is characterized by high technology industries. These, according to the Bureau of Labor Statistics, are industries in which employment in both R&D and in technology-oriented occupations, account for a proportion that is at least twice the average of all industries. The Humphrey Institute definition of the new economy industries excludes employment in R&D and puts the threshold of high-tech occupation concentration at three times the national average. By these definitions, the proportion of employment in high technology industries and occupations in Wisconsin is below the national average.

The Progressive Policy Institute’s (PPI) 2002 State New Economy Index incorporates technology in the non-tech sectors. With the goal of assessing the degree to which a state’s manufacturing sector is embracing high performance and high skill work practices, the Index measures the educational level of the state’s manufacturing workforce. This PPI New Economy Index includes 21 indicators divided into five categories – knowledge jobs, globalization, economic dynamism and competition, digital economy, and innovative capacity (See Table 1).

Based upon the above index, Wisconsin ranks in the first or second quartile in the education level of manufacturing employment, online manufacturers, workforce education, technology in schools, digital government, online agriculture and industrial investment in R&D. But as far as new business startups, availability of venture capital, employment in fast-growing companies, export-focused manufac-

Table 1: Ranking of New Economy Indicators for Wisconsin

Indicators	Wisconsin
OVERALL	40
A. Aggregated Knowledge Jobs	35
1. Information Technology Jobs	31
2. Managerial, Professional & Tech Jobs	43
3. Workforce Education	25
4. Education Level of the Manufacturing	11
B. Aggregated Globalization Score	39
5. Export Focus of Manufacturing	36
6. Foreign Direct Investor	34
C. Aggregated Economic Dynamism Scores	46
7. Gazelle Jobs	39
8. Job Churning	48
9. Initial Public Offerings	29
D. Aggregated Digital Economy	27
10. Online Population	21
11. Commercial Internet Domain Names	38
12. Technology in Schools	19
13. Digital Government	19
14. Online Agriculture	23
15. Online Manufacturers	13
16. Broadband Telecommunications	32
E. Aggregated Innovative Capacity	29
17. High Tech Jobs	31
18. Scientists and Engineers	34
19. Patents	28
20. Industry Investment in R&D	25
21. Venture Capital	32
Source: Progressive Policy Institute, June 2002	

turing, managerial, professional, and technical jobs, Wisconsin’s performance is not up to par. The overall ranking of Wisconsin is 40 out of 50. Some neighboring states like Illinois (17 out of 50) and Minnesota (13 out of 50) rank well above Wisconsin.

Concluding Remarks

We clearly see that Wisconsin has a very competitive manufacturing sector. The sector has managed to outperform others because the businesses in this sector have invested in high technology that has yielded high productivity. Further improvements in the manufacturing sector, using the “new economy” indicators as a guideline will ensure that Wisconsin maintains not only its comparative advantage, but also may experience job growth in this sector.

The economy of the state of Wisconsin is strong and had for a long time one of the lowest unemployment rates in the country. In terms of education, Wisconsin's students perform very well and score very high on the SAT and ACT. Compared to 82.8% nationally, 88% of the residents have a high school diploma or its equivalent. Wisconsin outperforms most of the other states in the number of students with graduate and doctoral degrees. However, Wisconsin is not able to retain this qualified and skilled labor force; hence, the state suffers a severe "brain drain."

During the year 2000, Wisconsin received a very small amount of venture capital (\$22.7 million) as compared to Michigan (\$56.4 million) and Indiana (\$90.86). Illinois and Minnesota received venture capital funds of \$780.04 million. The shortage of venture capital in Wisconsin poses a serious problem for economic growth. The shortage of venture capital also translates into low levels of R&D. Following the lead of Texas, Wisconsin may want to give a state tax credit of 5% to 10% on R&D expenditures.

Wisconsin has a comparative advantage in general industrial machinery; industrial organic and inorganic chemicals; and the paper and printing industries. We should develop these in collaboration with the University of Wisconsin System and Wisconsin's technical colleges. The establishment of the Wisconsin Technology Council and Governor Doyle's commitment to put \$40 million in high tech manufacturing are steps in the right direction. ■

ISPR Forecasts of Key Economic Variables

Starting with this issue, ISPR is pleased to provide forecasts of key economic variables for the US and the state of Wisconsin. With over thirty-five years of experience in the field, ISPR applies the latest econometric techniques to extract the most information from a given amount of data. The forecasts that we are providing in this issue are generated as Autoregressive Integrated Moving Averages (ARIMA), a simple technique to explain a variable's movement over time. With these models, future values are determined by the autoregressive and moving average patterns of all previous values. Some macroeconomic variables may be inherently trended to the point where we do not forecast the actual future value; rather, we forecast the difference between the current value and the future value. In such an instance, we say that the data are integrated. In the future, we plan to introduce more complex models with interactions among the different variables, such as the Bayesian Vector Autoregression, in order to portray the economic future as accurately as is possible. ■

Table 2 • Wisconsin Employment Data (in Thousands)

	1990	1995	2000	2001	2002	2003.II	2003.III	2003.IV	2004.I
Labor Force	2,583.3	2,882.3	2,968.1	3,032.1	3,024.8	3,076.4	3,090.3	3,086.1	3,113.5
Total Employment	2,468.8	2,775.5	2,862.7	2,895.0	2,858.2	2,901.3	2,915.0	2,918.6	2,953.7
Total Nonfarm Employment	2,291.5	2,558.6	2,833.8	2,813.9	2,782.4	2,778.8	2,789.3	2,778.8	2,810.4
Natural Resources & Mining	3.9	4.2	4.0	3.9	3.8	3.7	4.0	3.9	3.4
Construction	87.9	101.7	124.8	125.4	124.1	123.7	123.2	123.2	129.3
Manufacturing	523.0	566.6	594.1	560.3	528.3	507.0	505.5	501.8	506.6
Trade, Transportation & Utilities	458.7	502.4	552.9	547.7	536.7	538.0	542.6	539.4	546.9
Information	44.4	45.2	53.6	53.3	51.2	49.9	49.2	48.8	49.8
Financial Activities	123.9	134.3	149.1	151.8	153.8	157.0	158.3	159.5	161.0
Professional & Business Services	153.6	206.9	247.0	238.5	239.8	242.8	246.4	244.7	250.5
Educational & Health Services	237.4	280.4	339.6	349.6	357.2	363.8	369.7	371.0	375.5
Leisure & Hospitality	199.3	217.9	236.7	238.6	240.4	244.1	250.2	244.5	249.5
Other Services	116.6	120.3	126.3	131.3	132.2	132.9	132.3	129.6	127.6
Government	342.9	378.7	405.6	413.7	414.8	415.8	408.0	408.7	410.4

About ISPR:

The Institute for Survey & Policy Research (ISPR), a premier institute dedicated to high quality surveys and policy research, was established in 1968. It is a major resource for the University of Wisconsin-Milwaukee (UWM), the greater Milwaukee area, and the State of Wisconsin. Its services include the following:

- **The Greater Milwaukee Survey** – semiannual cost-shared survey of public opinion in the Milwaukee metropolitan area.
- **The Wisconsin Poll** – semiannual cost-shared survey of public opinion in the State of Wisconsin.
- **Monitoring Wisconsin** – quarterly review of the Wisconsin economy. It includes an analysis of a prominent sector of the economy, forecasts by sector using the latest techniques, and reports by UWM faculty on their Wisconsin-based research.
- **Survey Research** – survey research, program evaluation, needs assessment, policy research.
- **Econometric Research** – economic impact studies, economic forecasting.
- **Data Archive**—US Census Data, ICPSR data, economic data, demographic data.

In addition, the ISPR can help meet your organization's survey needs by providing the following services:

- **Proposal Assistance** – The ISPR can aid in preparing survey cost estimates and the writing of research proposals.
- **Sampling** – The ISPR can help you to choose the proper sampling frames for surveys that your organization conducts.
- **Questionnaire Design** – The ISPR can work with you to create surveys with proper question wording, question order and layout to ensure accurate data collection.
- **Survey Data Collection** – The ISPR can conduct surveys by telephone, in person, by mail, and on the Internet. All data collection is done by the ISPR's professionally-trained and supervised interviewing staff. Telephone surveys are conducted on the ISPR's state-of-the-art Computer-Assisted Telephone Interviewing (CATI) system.
- **Statistical Analysis** – If your organization has a survey that requires special statistical analysis, ISPR staff are trained in the latest computer software and statistical techniques.

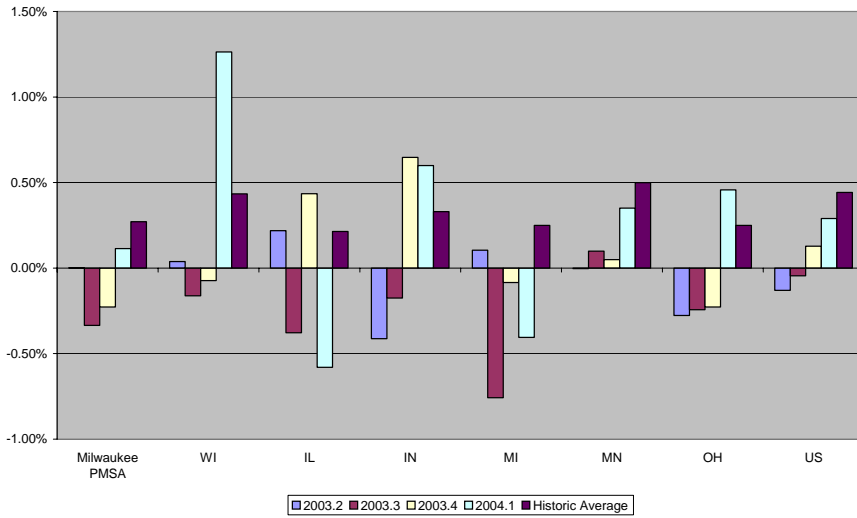
For more information, please contact Professor Swarnjit S. Arora, Director of ISPR, by email at ssa2@csd.uwm.edu or at 1.414.229.5313. Visit us on the web at <http://www.uwm.edu/Dept/ISPR/>.



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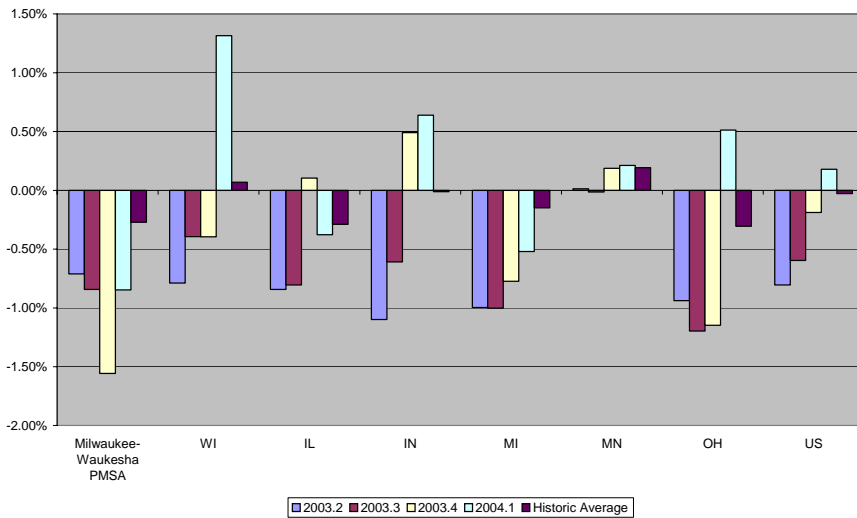
Nonfarm Employment
(Percent Change from Previous Quarter)



Seasonally-Adjusted, Non-farm Employment (Thousands)

Quarter	WI	US
2003.4	2,778.8	129,985.5
2004.1	2,810.4	130,361.7
2004.2 (forecast)	2,835.8	130,769.5
2004.3 (forecast)	2,855.2	131,189.1
Average (1977-present)	2,303.6	108,292.4

Goods-Producing Employment
(Percent Change from Previous Quarter)

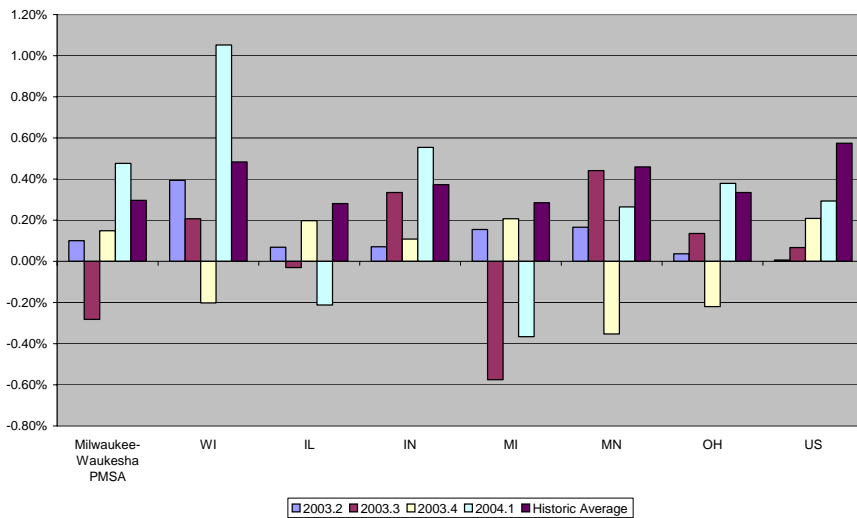


Seasonally-Adjusted, Goods-Producing¹ Employment (Thousands)

Quarter	WI	US
2003.4	629.4	21,676.7
2004.1	637.7	21,715.3
2004.2 (forecast)	640.1	21,822.2
2004.3 (forecast)	641	22,008.7
Average (1977-present)	663.1	23,410.9

¹ Goods-producing includes mining, manufacturing, and construction

Services-Providing Employment
(Percent Change from Previous Quarter)

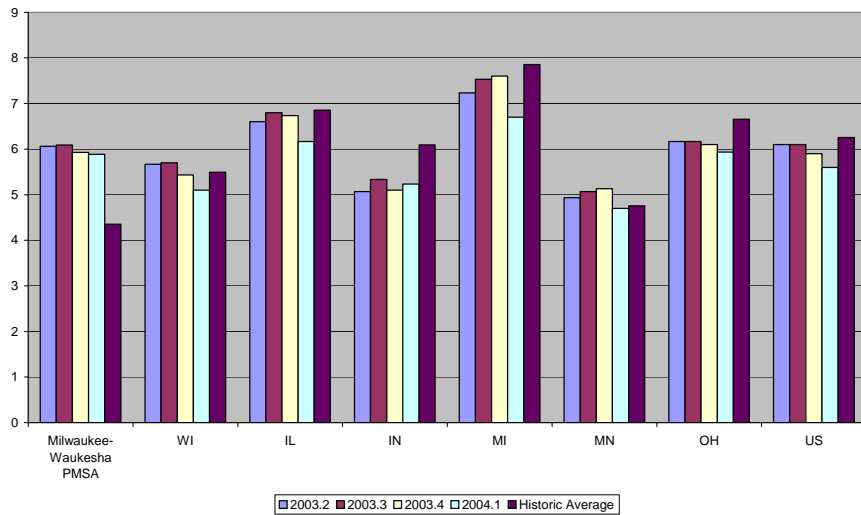


Seasonally-Adjusted, Services-Providing² Employment (Thousands)

Quarter	WI	US
2003.4	2,146.2	108,328
2004.1	2,168.8	108,646.3
2004.2 (forecast)	2,194.2	109,072.4
2004.3 (forecast)	2,238.8	109,616.7
Average (1977-present)	1,939	84,881.7

² Services-providing employment is non-farm employment less goods-producing employment.

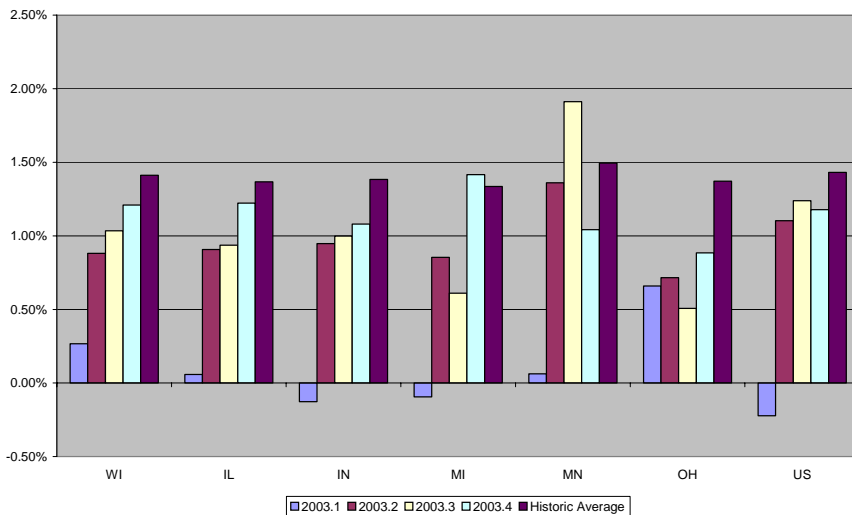
Unemployment Rate (%)
(Seasonally-Adjusted)



Unemployment Rate
Seasonally-Adjusted

Quarter	WI	US
2003.4	5.6	5.9
2004.1	5.4	5.6
2004.2 (forecast)	5.3	5.4
2004.3 (forecast)	5.1	5.3
Average (1977-present)	5.5	6.3

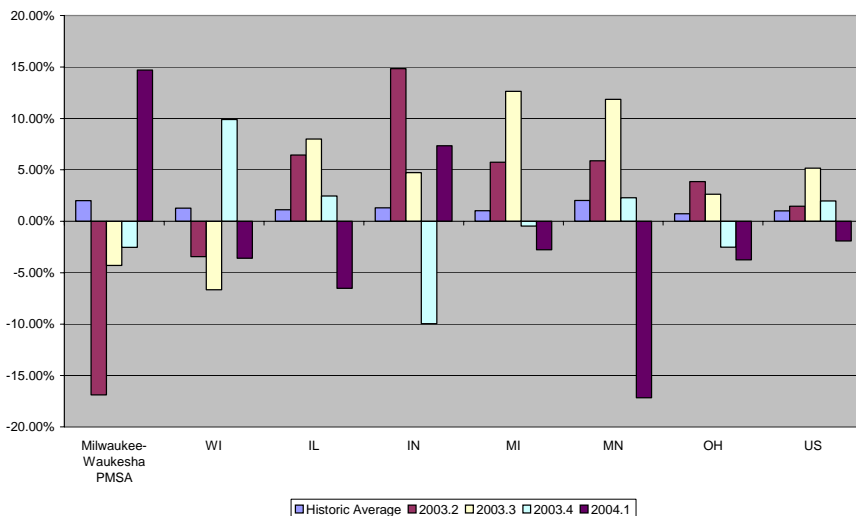
Personal Income per Capita
(Percent Change from previous quarter)



Per Capita Personal
Income Seasonally-Adjusted

Quarter	WI	US
2003.4	\$31,261.4	\$32,112
2004.1 (forecast)	\$31,679	\$32,506.1
2004.2 (forecast)	\$31,954.3	\$32,792
2004.3 (forecast)	\$32,177.2	\$33,308.1
Average (1977-present)	\$18,595	\$19,411

Housing Units Authorized
(Seasonally-adjusted, Percent Change from previous quarter)



Housing Units Authorized,
Seasonally-Adjusted
(Thousands)

Quarter	WI	US
2003.4	3.4	1,971.3
2004.1	3.3	1,933.7
2004.2 (forecast)	3.3	1,948.7
2004.3 (forecast)	3.3	1,963.7
Average (1977-present)	2.9	1,587.1