

Nearly One Million Jobs Will Be Open in Wisconsin Between 2006 and 2016

Wisconsin's employment is projected to grow by 8 percent, increasing from 3.08 million in 2006 to a record high of 3.33 million in 2016. A projected 246,400 new jobs will be created between 2006 and 2016. The greatest source of job openings will be replacement openings, which occur when people permanently leave an occupation due to retirement, illness, or a change in career. There will be 680,200 job openings due to replacement needs during the ten-year period. These 926,600 total job openings will be available throughout the state, and will be dispersed among approximately 800 occupations within nearly 90 industries. As Wisconsin's baby boomers retire at an increasing rate, there will be a vast need for people with a variety of educational backgrounds and skill sets to fill vacated positions.

The Office of Economic Advisors within Wisconsin's Department of Workforce Development helps people understand economic and demographic trends, and relationships between those trends. The Office helps users interpret labor force data and focus on the issues and trends influencing employment growth in the State of Wisconsin.

Department of
Workforce Development
Office of
Economic
Advisors

Employment in Wisconsin is projected to grow but at a slower pace between 2006 and 2016. The labor force growth is expected to slow, as the state's baby boomers enter their retirement stage. Demographics and technological change will continue to drive the long-term historic shift of employment from the goods-producing to the service-providing sector.

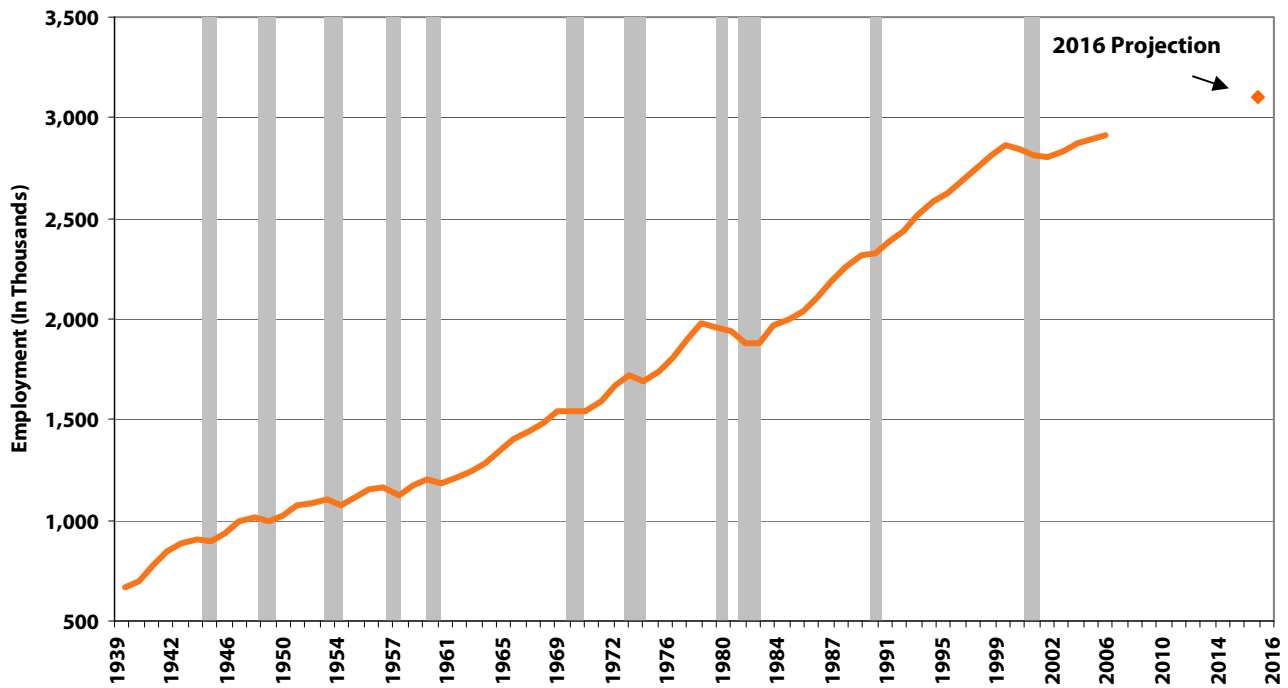
Employment projections are prepared by the Office of Economic Advisors at the Wisconsin Department of Workforce Development. The Office updates projections every two years. The current projections are for the 2006-2016 time period. This issue of projections supersedes the

2004-2014 projections published in 2006.

Employment projections are used by individuals planning their careers or seeking employment and by career counselors advising labor market participants on their employment opportunities. These projections are also used as a long-term planning tool by policymakers, economic developers, and academic authorities.

The 2006-2016 projections were constructed using methodology that combines econometric models, national projections, and analytical judgment. This report is organized into three sections: industry employment outlook, occupational employment outlook, and employment outlook by education and training categories.

Figure 1. Wisconsin Nonfarm Wage and Salary Employment, 1939-2007, and Projected 2016



Note: Shaded regions represent recessions as designated by the National Bureau of Economic Research (NBER). Employment figures on this graph do not include self-employed, unpaid family workers, and private households.

Source: Current Employment Statistics (CES) & Office of Economic Advisors, Wisconsin Projections 2006-2016

Historically, nonfarm employment in Wisconsin has been growing consistently except for periods of softening of the national economy. Figure 1 shows nonfarm wage and salary employment in Wisconsin from 1939 through the 2016 projection.

Employment growth in Wisconsin, like in most states, is dependent on national events affecting labor market conditions. However, during the past two recessions, as designated by the National Bureau of Economic Research (NBER), effects on Wisconsin's employment were rather different.

During the July 1990—March 1991 national recession, Wisconsin's robust labor market maintained positive growth. In fact, the annual average number of jobs in Wisconsin increased in 1990 despite the national recession.

Wisconsin's resilience wavered during the next national recession, March through November, 2001; and recovery of lost jobs was extended over several years. Prior-recession job levels were not achieved until 2004.

Today, much of uncertainty in the national economy's growth path is partially attributable to the recent turbulences in the credit and financial markets. Thus far Wis-

consin has been able to weather the national housing volatility and consequent mortgage turmoil. This is partially the result of a highly depreciated dollar that gives Wisconsin's export companies an advantage in the global economy.

Although it will be difficult to match the extraordinary employment growth of the 1990s, the number of jobs in Wisconsin is projected to increase 8.0 percent from 2006 to 2016. By 2016, Wisconsin will set a record high employment of 3.33 million, compared to 3.08 million in 2006.

There will be an estimated 246,400 new jobs created between 2006 and 2016. In addition to the new jobs created by employment growth there will be thousands of jobs generated from replacement openings. In fact, the greatest source of job openings is from employers needing to replace workers who permanently leave an occupation due to retirement, illness, or a change in career. During the ten-year projection period there will be 680,200 job openings due to replacement needs of employers. Together, the 926,600 total job openings will be dispersed among 800 occupations in nearly 90 industries.

A number of forces impact employment in Wisconsin.

These forces include domestic and global supply and demand for products and services, cost and availability of labor, domestic and global competition, government regulations and subsidies, and technological changes. In today's complex economy these and other forces exhibit multidimensional relationships which make it increasingly difficult to definitively quantify impacts of each of these factors individually. During the projection period, the three factors that will have the greatest impact on Wisconsin's employment are: aging population, technological change, and globalization.

The aging of the state's population is likely to have two conflicting effects on the labor market. On one hand, there will be an increased demand for healthcare and social assistance services, which will generate new employment opportunities for the state workers. But, on the other hand, these employment opportunities may go unfilled as employers struggle to find qualified workers to fill the jobs vacated by retiring baby boomers.

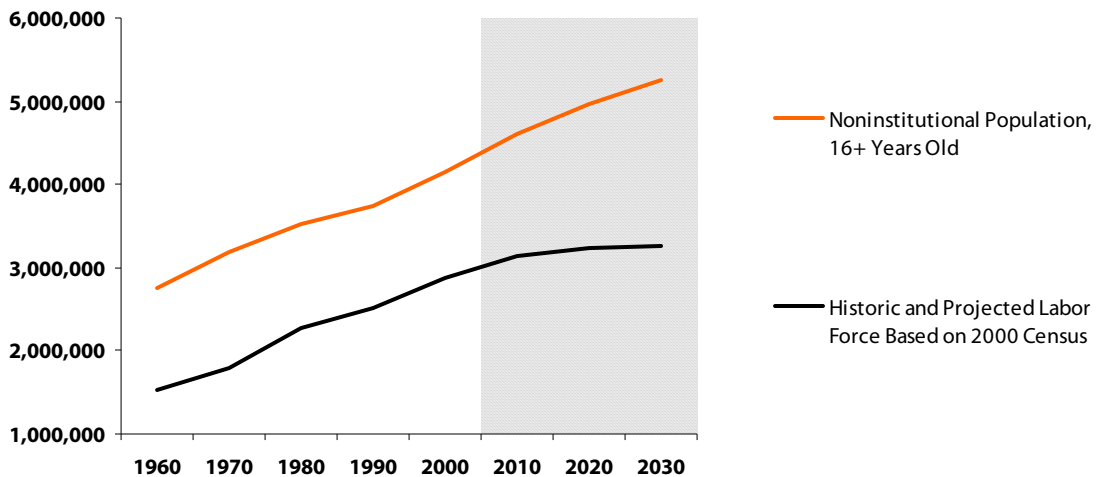
Growth in the labor force is a significant determinant of the state's potential rate of economic expansion. The labor force in Wisconsin is expected to grow slower compared to the growth of the past several decades. As the baby-boom generation ages into retirement, and consequently leaves the workforce, there are not enough new labor force entrants to make up for the loss.

Assuming that the labor force participation rates in Wisconsin in 2000 remain constant into the future, the

civilian labor force in Wisconsin is expected to increase by approximately 150,000 people, reaching 3.2 million in 2016. This increase translates into 0.5 percent annual increase in the state's labor force between 2006 and 2016. For comparison, the national labor force is projected to grow 0.8 percent annually between 2006 and 2016.

Figure 2 shows historic and projected labor force in Wisconsin (the black line). Note that the slope of the line becomes much flatter during the projection period, indicating that the labor force's growth rate will be slower than it had been in the past. For comparison, the orange line refers to noninstitutional population, 16 years old and over, which is projected to increase by 26.4 percent between 2000 and 2030. During the same period, the labor force is projected to increase by 13.2 percent.

**Figure 2. Population and Labor Force in Wisconsin:
1960-2000 Estimated and 2000-2030 Projected**



Note: Shaded region represents projected period.

Source: Office of Economic Advisors' analysis of data from WI Department of Administration Demographic Services Center, U.S. Census Bureau, and U.S. Bureau of Labor Statistics

Figure 3. Share of the Labor Force in Wisconsin, by Age Cohort



Source: Office of Economic Advisors' analysis of data from WI Department of Administration Demographic Services Center and U.S. Census Bureau

The age composition of the population, and therefore the labor force, affects the economy in many ways, primarily the growth rate. Figure 3 illustrates the share of the labor force in Wisconsin by age cohort in 2000 and 2030.

As seen from the chart, the share of workers who are 55 years old and over is projected to increase. In fact, in 2030 those workers will make up over a quarter of the total labor force in Wisconsin. Generally, labor force participation rate and age are negatively correlated. Thus as people age their labor force participation rates decline.

More on labor force is coming...

Technological change and globalization will also impact Wisconsin's employment. While it is almost impossible to predict when and what kind of new technology will emerge, we can be certain that new discoveries, changing the use of the human capital, will be made. Some of these new technological discoveries will alter the content of jobs; others will reduce the need for workers altogether. The introduction of computer-controlled process on the factory floor, for example, eliminated manual tasks and turned many production workers into monitors of highly sophisticated equipment.

Domestic and global competition drive new technological discoveries. In order to stay competitive and maximize its profits, businesses invest in quality- and productivity-enhancing technology, such as robotics, and computer-controlled production line.

An increasing share of the total projected job openings will be in the growing industries that are helping to preserve and enhance environmental quality, the so-called green-collar jobs. These workers install solar panels, build more efficient buildings and appliances, repair hybrid cars, and, in general, produce goods and provide services that are environmentally-friendly.

Industry Employment Outlook

Growing by 10.4 percent between 2006 and 2016, the service-providing sector will add nearly 94.0 percent of the 246,400 new jobs. The goods-producing sector will grow by 0.8 percent over the same period, adding over 5,000 new jobs.

As Figure 4 indicates, education and health services will add nearly 92,600 new jobs, the greatest number of new jobs of any super-sector industry.

The professional and business services super-sector industry will add the second greatest number of new jobs by creating 47,800 new jobs over the ten-year period.

Only two sectors, natural resources and mining and manufacturing, will have lower employment in 2016 than in 2006, with **Manufacturing** losing approximately 7,600 jobs by 2016, a decline of 1.5 percent.

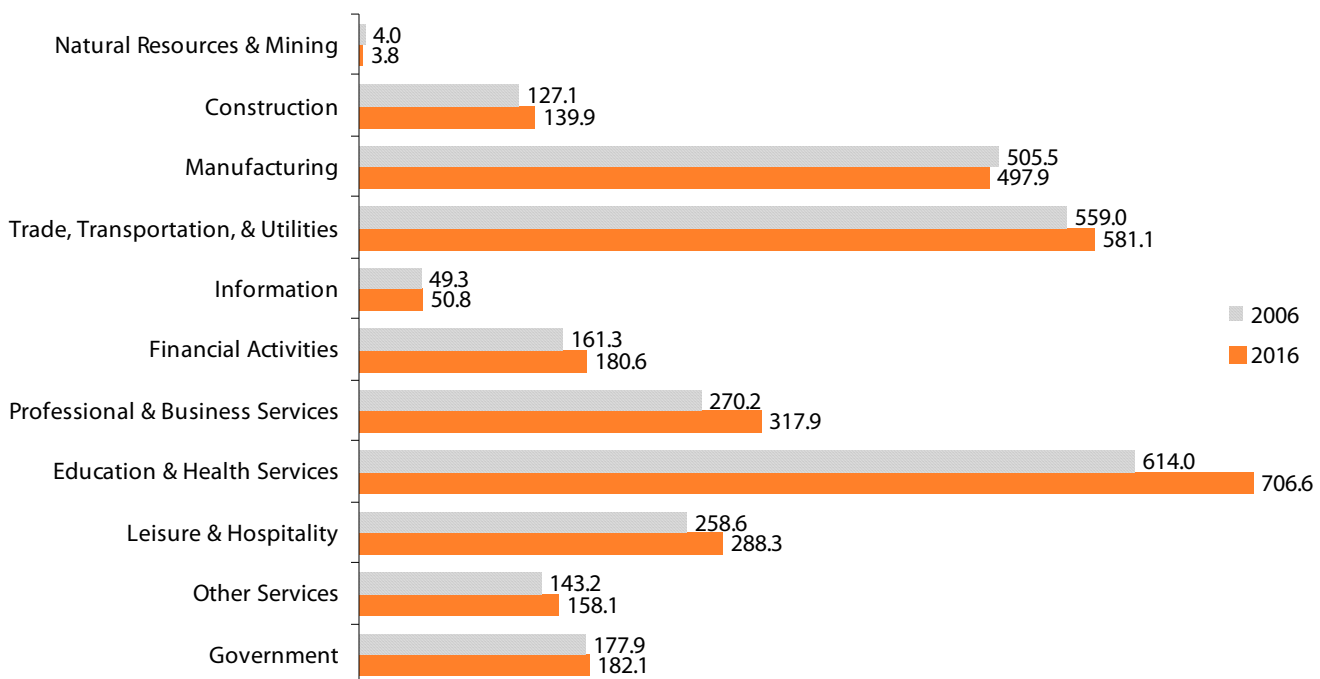
Domestic and foreign competition has forced manufacturing companies to adopt new technologies, including robots and computers, and practices, such as the use of temporary workers, in order to lower costs, raise productivity, and remain flexible. With an increase in technology and automation, the need for workers with less advanced skill sets declines while the demand for highly skilled workers, needed to operate and maintain complex machinery and equipment, rises.

Although manufacturing is projected to lose jobs from 2006 to 2016, there will still be a great demand for skilled workers largely because:

- Workers will be needed to replace positions held by retiring baby-boomers, or others changing careers.
- Instead of hiring workers directly, more and more manufacturing employers use temporary agencies. Workers hired through temporary agencies are included in the professional and business services sector, and are not included in manufacturing in official statistics. And, the professional and business services sector is the fastest growing sector in Wisconsin between 2006 and 2016, and is projected to add the second greatest number of new jobs in the state.
- Highly skilled workers will be needed to operate and maintain sophisticated cutting-edge equipment.

Even though manufacturing as a whole declines, there are sectors within manufacturing that are growing. The fastest growing industry within manufacturing will be nonmetallic mineral product manufacturing, increasing 13.0 percent and adding 1,500 new jobs by 2016.

Figure 4. Super-Sector Industry Employment, 2006 and 2016
(In Thousands Jobs)



Source: Office of Economic Advisors, Wisconsin Projections 2006-2016

The smallest super-sector industry, **Natural Resources and Mining**, is expected to decline 4.0 percent over the ten-year period, losing 200 jobs.

Construction is projected to grow faster than the state employment overall, growing 10.0 percent, and adding 12,700 new jobs to the Wisconsin's economy by 2016.

Trade, Transportation, and Utilities, the second largest super-sector industry after education and health services, will create 22,100 new jobs, growing 3.9 percent by 2016. The fastest growing segment of this sector is Transportation and Warehousing, which will add 12,000 new jobs while growing 10.7 percent. Wholesale Trade will grow 7.5 percent, adding 9,100 jobs to the state's economy. The modest growth rate of 0.5 percent in Retail Trade will nevertheless create 1,400 new jobs in this industry. The only industry in this sector which will lose jobs is Utilities. Declining at a rate of 4.3 percent, Utilities will lose 500 jobs over the decade.

Growing at a rate of 3.0 percent, the **Information** sector will create 1,500 new jobs. The Internet Service Providers, Web Search Portal, and Data Processing Services segment will add the greatest number of new jobs, 1,700 jobs, between 2006 and 2016.

Growing at above the state's overall growth rate (8.0%), **Financial Activities** employment is projected to increase by 19,300 jobs (+11.9%). This super-sector industry consists of two sectors: Finance and Insurance (+12.5%, +16,600 new jobs) and Real Estate and Rental and Leasing (+9.5%, +2,700 new jobs).

The **Professional and Business Services** super-sector industry expects to add the second most number of new jobs (+47,800 new jobs), after education and health services. Growing at 17.7 percent, more than double the state's rate, this industry is the fastest growing sector in Wisconsin's economy between 2006 and 2016. Over half of the new positions in this sector, 25,200 new jobs, will be open in Administrative and Support Services, which will grow at a rate of 19.0 percent over the ten-year period. Administrative and Support Services includes temporary agencies. This is an ever-increasing trend, particularly within manufacturing companies, to use temporary workers to remain flexible in the competitive market.

Education and Health Services, which includes state and local government employment in hospitals and education, will create 92,600 jobs, the largest number of new jobs created in Wisconsin between 2006 and 2016. Aging

baby-boomers will drive up the demand for health care and social assistance services causing this industry to grow by 23.1 percent, by adding an astonishing 81,400 new jobs during the decade. Additionally, workers will be needed to fill replacement job openings resulted from existing health care practitioners approaching retirement. Educational Services, another sub-sector of Education and Health Services, will grow 4.3 percent, creating 11,100 jobs throughout Wisconsin.

Employment in **Leisure and Hospitality** is expected to increase by 11.5 percent, adding a significant number of new jobs to the economy (+29,600 new jobs). Nearly 90 percent of these new jobs, 25,700 of them, will be concentrated within Accommodation and Food Services.

Other Services is expected to add 14,900 new jobs to the state's economy, growing 10.4 percent by 2016. The fastest growing segment of this sector is Religious, Grantmaking, Civic, Professional, and Similar Organizations which will create 10,900 new jobs while growing 12.4 percent between 2006 and 2016.

Government employment will increase by 4,200 new jobs, growing at a rate of 2.4 percent between 2006 and 2016. Nearly all of the growth will come from increase in local government which excludes education and hospitals, but includes tribal owned operations. Employment within state government is expected to slightly increase, causing a gain of just over 100 jobs over the decade. Federal government, except postal services, will remain relatively flat until 2016.

At a more detailed level, the top ten industries with the greatest number of new jobs created between 2006 and 2016 are shown in Figure 5 on the next page.

As the baby-boom generation enters its senior years, demand for health care and social assistance services will steadily increase. In fact, four out of the top ten industry sub-sectors with the greatest number of new jobs are within health care and social assistance. Ambulatory health care services will add 29,800 new jobs, the largest number of any industry sub-sector in the state. Occupations within ambulatory health care services that will gain the largest number of new jobs are registered nurses, medical assistants, and personal and home care aides.

Hospitals, including state and local government, will create 21,000 new jobs, and social assistance will increase its employment by 20,400 jobs. Nursing and residential care facilities will also see a large increase in employment,

adding 10,200 jobs to the economy.

Administrative and support services, which include employment services, will add the second greatest number of new jobs in Wisconsin. Over 24,000 jobs will be open in this industry. This industry includes establishments engaged in activities that support the day-to-day operations of other organizations (e.g., general management, personnel administration, clerical activities, cleaning activities).

Many of the activities performed in this subsector are ongoing routine support functions that all businesses and organizations must do and that they have traditionally done for themselves. Recent trends, however, are to contract or purchase such services from businesses that specialize in such activities and can, therefore, provide the services more efficiently. Temporary help agencies are also included in this industry. This industry comprises establishments primarily engaged in supplying workers to businesses for limited periods of time to supplement the work force of the business. The individuals provided are employees of the temporary help service establishment.

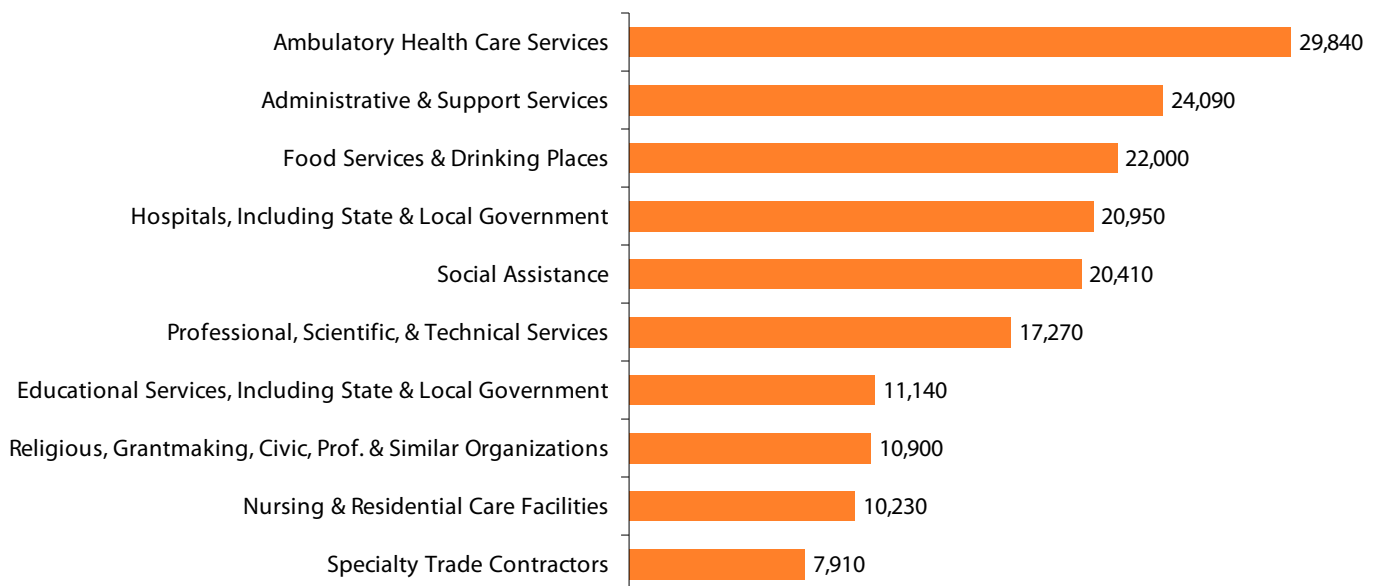
Employment in food services and drinking places is projected to grow by 22,000 new jobs during the ten-year period. Expansion in this industry continues to be driven by population and tourism growth, and tendencies for people to prepare fewer meals at home.

Within professional, scientific, and technical services, which will add 17,300 jobs, accountants and auditors, computer software engineers, and legal assistants will be among the top occupations with the most new job openings by 2016.

Educational services, and religious, grantmaking, civic, professional, and similar organizations will create 11,100 and 10,900 new jobs, respectively. Within educational services, the following occupations are expected to add the most number of new jobs: elementary school teachers (+2,100 new jobs), middle school teachers (+740 new jobs), and vocational education teachers (+590 new jobs).

The specialty trade contractors sub-sector comprises establishments whose primary activity is performing specific activities (e.g., pouring concrete, plumbing, painting, and electrical work) involved in building construction. The work performed may include new work, additions, alterations, maintenance, and repairs. Between 2006 and 2016, this industry will add over 7,900 new jobs. While there will certainly be many ups and downs in employment in this industry during the ten-year period, these projections only indicate where employment is expected to be in 2016 relative to 2006. The three occupations to add the most number of new jobs are plumbers, pipefitters, and steamfitters, electricians, and carpenters.

Figure 5. Top Ten Industries with the Most New Jobs, 2006 to 2016



Source: Office of Economic Advisors, Wisconsin Projections 2006-2016

Occupational Employment Outlook

Wisconsin will have nearly 93,000 annual job openings between 2006 and 2016, most of which will be due to replacement needs. Replacement openings occur when people permanently leave an occupation due to retirement, illness, or a change of occupation. A change of employers without a change of an occupation does not constitute a replacement opening.

Over 73 percent of the total number of job openings, or 680,200 jobs, will be available as a result of replacement openings. Wisconsin's employers from nearly 90 industries will seek workers to fill jobs dispersed among approximately 800 occupations. In general, Wisconsin will have job openings at every educational and training level, however, people with higher education or related work experience will typically have better job opportunities.

There are several factors that determine the need for a certain occupation. These factors include the mix of industries in the state's economy, technology, globalization, government subsidies and regulations, and social and demographic trends.

An increase in a particular industry translates into an increase in certain occupations within that industry. For example, employment in hospitals is projected to grow. Expectantly, this industry's growth means that there will be more surgical technologists within hospitals in 2016 than there were in 2006.

Conversely, a decline in a particular industry translates into a decline in certain occupations within that industry. For example, employment in food manufacturing industry is projected to decline between 2006 and 2016. As a result of this industry's decline, there will be fewer team assemblers within food manufacturing in 2016 than there were in 2006. In contrast, the number of team assemblers across all industries is projected to increase.

Additionally, occupational employment is affected by changing demographics in Wisconsin. As the state's population ages, there is an increase demand for health-care services which translates into more jobs for registered nurses, dental hygienists, and home health aides.

A decline in an occupation does not mean that there will be no job openings. It simply means that there will be no job openings due to growth, but there will still be openings due to replacement needs. Even occupations that are expected to decline over the ten-year period will have replacement openings. For example, there will be fewer stock clerks and order fillers employed in 2016 than

in 2006, but there will still be nearly 8,000 jobs available due to replacement needs.

While employment in Wisconsin's manufacturing sector will continue to experience structural declines, there will still be many job openings. The employees who remain in manufacturing will tend to be more highly skilled, productive, and higher paid. As workers of the baby-boom generation begin to retire in large numbers, a big challenge for Wisconsin's employers will be finding skilled, well-trained workers.

Occupations are grouped into ten broad categories depending on the type of work performed:

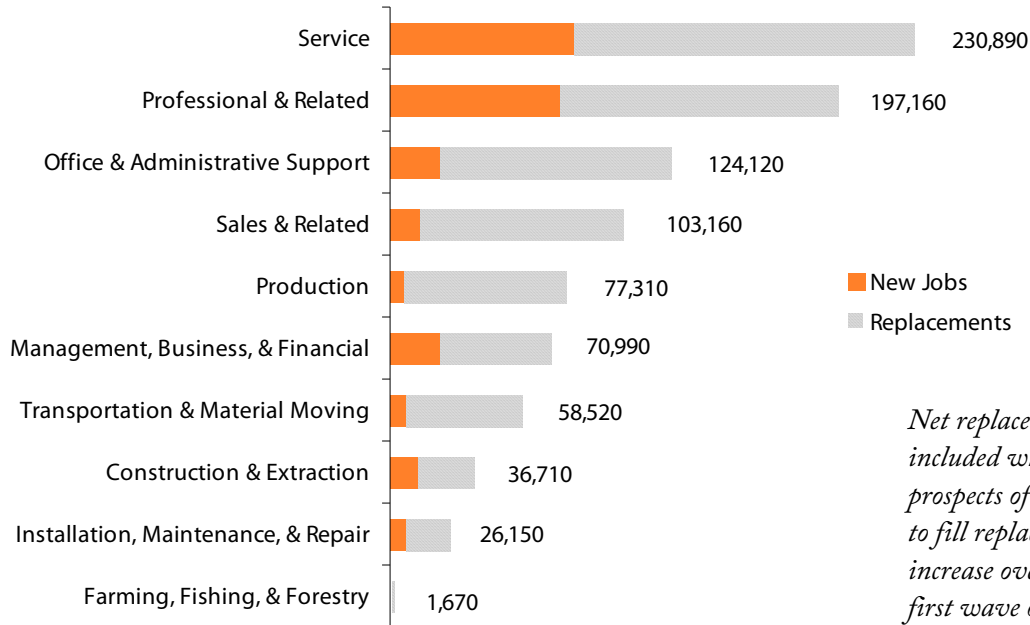
- Service
- Professional and related
- Office and administrative support
- Sales and related
- Production
- Management, business, and financial
- Transportation and material moving
- Construction and extraction
- Installation, maintenance, and repair
- Farming, fishing, and forestry

Service occupations are expected to have the greatest number of openings overall, with 230,900 jobs over the ten-year period (see Figure 6 on the next page). This group consists of healthcare support, food, maintenance, protective, and personal care services. This major occupational group is the fastest growing group in the state, with a growth rate of 13.5 percent. Within this group, healthcare support occupations will grow the fastest at 22.2 percent and food preparation and serving related occupations will add the most number of new jobs, 27,000.

Computer, engineering, social service, legal, education, entertainment, and healthcare practitioner occupations are included in **Professional and Related occupations**. Overall employment in this group will grow 12.5 percent, adding 75,300 new jobs to the state's economy. The rest of the job openings, 121,900, will come from replacement openings. Within this major group, health-care practitioners and technical occupations will create the greatest number of new jobs, 30,700, exhibiting the fastest growth rate of 20.7 percent.

Employment in **Office and Administrative Support occupations** will increase 4.6 percent, adding 22,000 new

Figure 6. Job Openings by Major Occupational Group, 2006 to 2016



Source: Office of Economic Advisors, Wisconsin Projections 2006-2016

Net replacement openings need to be included when exploring the future prospects of any occupation. The need to fill replacement openings will only increase over the next decade as the first wave of baby boomers begin to retire.

jobs to the economy. Together with replacement openings, there will be 124,100 positions open between 2006 and 2016. Three occupations that will add the most number of new jobs are customer service representatives, general office clerks, and bookkeeping, accounting, and auditing clerks. The fastest growing occupations in this category are bill and account collectors, customer service representatives, and medical secretaries.

Sales and Related occupations are projected to grow by 4.3 percent by 2016, adding 12,900 new jobs to the labor market. Additionally, there will be 90,300 replacement openings due to retirements, and other permanent job separations. These 103,200 positions will be open to new labor market entrants as well as those changing careers throughout the decade. Among sales and related occupations, insurance sales agents, securities, commodities, and financial services sales agents, and advertising sales agents will be the fastest growing occupations.

Concentrated mainly in manufacturing, **Production occupations**, are expected to exhibit the slowest rate of new jobs creation, +1.8 percent, of any other major occupational group. Despite the slow rate of growth, this group is expected to have 77,300 openings, both from new jobs and replacement needs. Dental laboratory technicians, cabinetmakers and bench carpenters, and welding, soldering, and brazing machine setters, operators, and tenders are among the occupations with the fastest

growth rates between 2006 and 2016.

Overall employment is **Management, Business, and Financial occupations** is projected to grow by 8.7 percent, adding 21,600 new jobs over the decade. There will also be 49,400 jobs open as a result of replacement needs. Within this major occupational group, the three occupations to exhibit the fastest growth are personal financial advisors, financial analysts, and employment, recruitment, and placement specialists.

Transportation and Material Moving occupations will create 7,100 new jobs, growing 3.0 percent between 2006 and 2016. These new jobs represent just over 12.0 percent of all job openings in this group. The rest of the job openings, 51,400 of them, will happen as a result of permanent separations due to retirement, illness, or a change in career. Among the occupations within this group, service station attendants, transit and intercity bus drivers, and heavy and tractor-trailer truck drivers are projected to grow the fastest between 2006 and 2016.

Construction and Extraction occupations will have 150,100 jobs in 2016 compared to 138,200 in 2006, an increase of 11,900 jobs. In addition to the new jobs, there will be 24,800 jobs open as a result of replacement needs. Tile and marble setters, roofers, and cement masons and concrete finishers are among the fastest growing occupations in this major group.

There will be nearly 26,200 job openings in **Install-**

tion, Maintenance, and Repair occupations during the decade. Approximately 7,500 of them will be due to new job creation. The rest, 18,700 jobs, will be due to replacement needs. The following occupations are expected to grow the fastest during the ten-year period: medical equipment repairers, tire repairers and changers, and industrial machinery mechanics.

Farming, Fishing, and Forestry occupations is the smallest occupational group in the state. There will be 500 new jobs, and 1,200 replacements, for a total of 1,700 total job openings between 2006 and 2016.

The top ten occupations in Wisconsin projected to have the most job openings are illustrated in Figure 7 below. Total job openings consist of job openings due to growth (new jobs) and replacement needs. These ten occupations will account for 24 percent of the total number of job openings between 2006 and 2016.

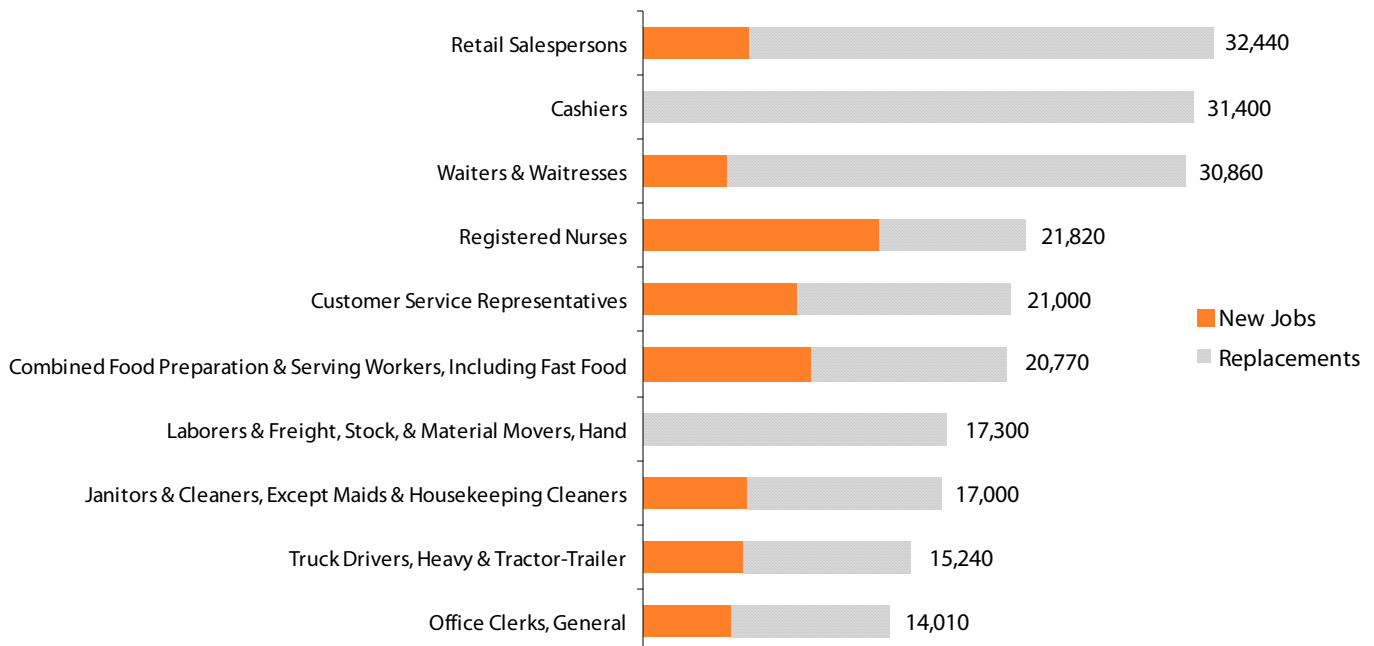
Retail salespersons will have over 32,400 job openings during the projected period, 26,400 of them will be open due to replacement needs. Cashiers will have the second most number of positions available, 31,400 jobs, all of

which will be due to replacement needs. This occupation is a perfect example of the significance of replacement openings in making important policy or career decisions. There will be almost 3,700 fewer cashiers in 2016 than in 2006. Thus there will not be any new jobs created due to growth in this occupation. But there will still be demand for workers to fill jobs as existing workers start to retire at an increasing rate.

Of the ten presented occupations, Registered nurses is the only occupation for which new jobs outpace replacement openings. This is not surprising given the growing proportion of older people in Wisconsin who tend to demand more healthcare attention. In fact, over 13.0 percent of all jobs in Wisconsin in 2016 will be in the healthcare and social assistance sector, which includes state and local government in hospitals, compared to just over 11 percent in 2006.

As the leisure and hospitality industry expands, we will see more waiters and waitresses, combined food preparation and serving workers, including fast food, and janitors and cleaners, except maids and housekeeping cleaners.

Figure 7. Top Ten Occupations with the Most Job Openings (New Jobs plus Replacements), 2006 to 2016

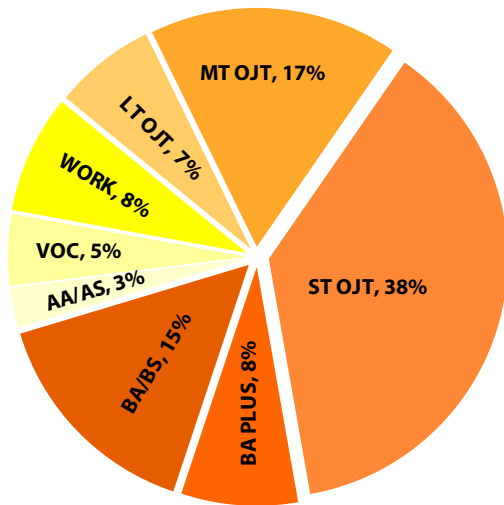


Source: Office of Economic Advisors, Wisconsin Projections 2006-2016

Education and Training

There are eleven education and training paths which provide a general indication of the education and training typically needed to enter a particular occupation. It is important to note that there may be other ways to enter an occupation, as well as additional education, training, or licensing requirements. The percentage of job openings projected in each education and training category is illustrated in Figure 8 below.

Figure 8. Percentage of Job Openings by Education and Training, 2006 to 2016



Source: Office of Economic Advisors, Wisconsin Projections 2006-2016

Over half of the total job openings in the state between 2006 and 2016 will typically require short- or moderate-term on-the-job training. **Short-term on-the-job training (ST OJT)** usually occurs at the workplace and lasts less than one month. There are 132 occupations in this training category whose employment represents a third of the total employment in the state (see the table on the next page). On average, occupations in this category will grow 6.3 percent between 2006 and 2016. There will be 348,600 job openings (+63,800 new jobs, 284,800 replacements), or 38.0 percent of all job openings in the state, that typically require short-term on-the-job training. Within this educational category, home health aides, personal and home care aides, and physical therapist aides will be among the fastest growing occupations.

Over 155,700 job openings (+39,600 new jobs, 116,200 replacements), or 17.0 percent of all openings, will typically require **moderate-term on-the-job training (MT OJT)**, which is training at the workplace lasting one to twelve months. This training is common in 174 occupations (see Figure 9 on the next page). Employment in these occupations is projected to increase by 6.5 percent by 2016. The three occupations projected to exhibit the fastest growth within this training category are medical assistants, dental assistance, and social and human service assistants.

About 7.0 percent of total openings, or 65,800 of them (+17,900 new jobs, 47,900 replacements), will generally require **long-term on-the-job training (LT OJT)**. Long-term training takes more than a year and typically involves a combination of learning at the workplace and formal educational training. It is common for the training to be in the form of an adult apprenticeship. There are 88 occupations in this training category. Employment in these occupations will grow by 7.4 percent during the decade. Audio and video equipment technicians, interpreters and translators, and dental laboratory technicians are among the fastest growing occupations within this category.

Employment in the **work experience in a related occupation (WORK)** category is expected to increase by 19,700 new jobs. In addition, there will be 53,100 replacement openings. Occupations in this training category usually require skills gained through experience in similar positions. There are 50 occupations which typically require work experience in a related occupation. First-line supervisory positions are among the common occupations within this category. Employment in this category is expected to grow 7.0 percent during the ten-year period.

About 5.0 percent of all job openings between 2006 and 2016 will generally require **postsecondary vocational training (VOC)**. There will be 44,900 job openings in this category (+16,000 new jobs, 28,900 replacements). Postsecondary vocational training is completed through formal training programs, such as those offered at technical colleges or vocational schools, and last anywhere from a few weeks to more than a year. Postsecondary vocational training is common in 52 occupations in Wisconsin. Employment in this educational category is projected

Figure 9. Number of Occupations, Employment, and Job Openings by Education and Training, 2006 to 2016

Education and Training Path	Number of Occupations	2006 Empl.	2016 Empl.	2006-16 %Change	Average Annual New Jobs	Annual Average Replacements	Average Annual Total Openings
Short-Term On-The-Job Training	132	1,019,370	1,083,160	6.3%	6,380	28,480	34,860
Moderate-Term On-The-Job Training	174	611,910	651,470	6.5%	3,960	11,620	15,580
Long-Term On-The-Job Training	88	241,810	259,750	7.4%	1,790	4,790	6,580
Work Experience in a Related Occupation	50	280,280	299,940	7.0%	1,970	5,310	7,280
Postsecondary Vocational Training	52	169,610	185,590	9.4%	1,600	2,890	4,490
Associate Degree	38	85,360	94,490	10.7%	910	1,720	2,630
Bachelor's Degree	117	430,550	486,900	13.1%	5,640	8,430	14,070
Master's Degree	43	70,530	81,120	15.0%	1,060	1,240	2,300
Doctoral Degree	44	28,260	32,270	14.2%	400	510	910
First Professional Degree	20	34,790	39,670	14.0%	490	630	1,120
Bachelor's or Higher Degree + Work Exp.	34	107,020	111,490	4.2%	450	2,460	2,910
Total, All Occupations	792	3,079,490	3,325,850	8.0%	24,650	68,080	92,730

Source: Office of Economic Advisors, Wisconsin Projections 2006-2016

to increase by 9.4 percent between 2006 and 2016. Surgical technologists and medical transcriptionists are among the fastest growing occupations in this group.

During the projected decade, there will be 26,300 job openings (+9,100 new jobs, 17,200 replacements) typically requiring an associate degree (AA/AS), or 3.0 percent of the total jobs open in Wisconsin. To achieve this education, people usually need to complete two years of full-time academic study beyond high school. There are 38 occupations in Wisconsin that typically require an associate degree. Employment in these occupations will grow 10.7 percent during the projected period. Dental hygienists, physical therapist assistants, and cardiovascular technologists and technicians are the fastest growing occupations in this category.

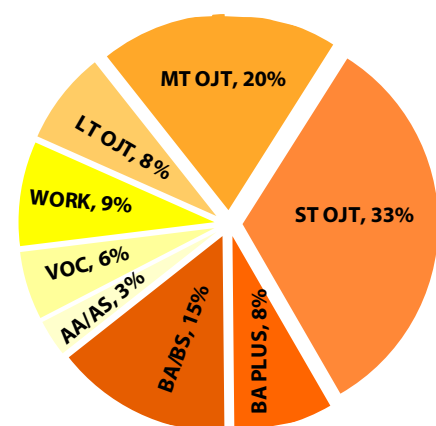
Occupations typically requiring a bachelor's degree (BA/BS) will create the second most number of new jobs (+56,400 new jobs), after occupations with short-term on-the-job training requirements. In addition to the new jobs, there will be 84,300 replacements. In Wisconsin, there are 117 occupations that generally require a bachelor's degree. This educational group is projected to grow at a fast rate of 13.1 percent by 2016. Network systems and data communications analysts, computer software applications engineers, and personal financial advisors are the fastest growing occupations.

The remaining 8.0 percent of total openings (+24,000 new jobs, 48,300 replacements) will typically require more than a bachelor's degree (BA PLUS). This group includes a bachelor's or higher degree plus work experience, master's, doctoral, or professional degrees. There

are 141 occupations in this group currently present in Wisconsin. Overall employment in this educational and training category is expected to increase by 10.0 percent during the projected decade. Within this training group, employment in occupations typically requiring master's degree will exhibit the fastest growth rate of 15.0 percent. Physician assistants (master's degree) and physical therapists (master's degree) are among the fastest growing occupations commonly requiring more than a bachelor's degree.

Figure 10 below indicates how projected employment in 2016 will be distributed among the education and training categories.

Figure 10. Projected Employment in 2016 by Education and Training



Source: Office of Economic Advisors, Wisconsin Projections 2006-2016

Notes

The projections were developed using the 2006 OES, 2006 QCEW, and 2006 CES data produced by the Bureau of Workforce Information in Wisconsin's Department of Workforce Development. Unpublished data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau was also used.

To the extent possible the projections take into account anticipated changes in Wisconsin's economy between 2006 and 2016. It is important to note that unanticipated events may affect the accuracy of the projections.

If you have questions about this publication or need more detailed projections data, please contact:

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Employment projections are also available on the Office of Economic Advisors website at <http://dwd.wisconsin.gov/oea>

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Projections Glossary

Employment

In projections, employment is defined as the number of part- or full-time jobs in an industry or an occupation. Only jobs in nonfarm establishments are included in calculation. Employment includes jobs covered by the Wisconsin's Unemployment Insurance law, as well as jobs that are not covered by the UI law. If a person holds multiple jobs, every one of those jobs will be counted.

In addition, self-employed, unpaid family, and private household jobs are included for a more complete picture of total employment in the state. Self-employed people are defined as owners of nonfarm, unincorporated, businesses who rely on their firms' profits for their main source of income and/or for supplemental income.

Unpaid family workers are defined as people who work unpaid for at least fifteen hours a week in family owned, nonfarm, businesses. Private household workers employed in private homes and perform jobs such as nanny, maid, and gardener.

The data used for self-employed and unpaid family workers are collected on an occupational, rather than industry basis, so an industry breakdown for these workers is not available.

Industry

An industry is a distinct group of businesses. Examples of industries: food manufacturing, construction of buildings, and truck transportation. Each industry has its own mix of occupations.

Occupation

An occupation describes the type of work a person performs. Examples of occupations: truck drivers, registered nurses, and secretaries. Some occupations, such as human resource specialists and general office clerks, are found in almost every industry. Other occupations, such as teachers and carpenters, are found in only a small number of industries.

Industry Classification System

Businesses are defined and organized by the 2002 North American Industry Classification System (NAICS) codes. Last year this system has been revised, and starting with the 2008-2018 projections modified 2007 NAICS codes will be used.

For complete list of industries along with their definitions based on 2002 NAICS codes, please visit: <http://www.census.gov/epcd/naics02/naicod02.htm>

For complete list of industries, their definitions, and changes between 2002 and 2007 NAICS codes, please visit: <http://www.census.gov/epcd/www/naics.html>

NAICS uses a six-digit hierarchical coding system to classify all economic activity. At the six-digit level there are 1,179 industries. These industries are then grouped into 725 five-digit NAICS industries, 317 four-digit NAICS industries, 100 three-digit NAICS industries (sub-sectors), and 20 two-digit NAICS industries (sectors). The 20 sectors are further combined into 11 super-sectors. The super-sectors are natural resources and mining; construction; manufacturing; trade, transportation, and utilities; information; financial activities; professional and business services; education and health services; leisure and hospitality; other services; and government.

Projected Employment

The projected employment is only for one point in time, in this case 2016. Employment in any particular industry or occupation may have many ups and downs during the ten-year period, but the projections do not provide information about these dynamics. The projections indicate the number of jobs that will actually be filled in 2016.

The projections do not estimate the demand or supply of workers in the strict economic sense of these words. For any given wage, it is not known how many jobs employers would really want to provide. Likewise, for any given wage, it is not known how many people would want to work for that wage.

Occupational Classification System

Occupations are defined and organized by the Standard Occupational Classification (SOC) system. The SOC system groups jobs into one of 821 detailed occupations. These occupations are then combined into 449 broad occupations, 96 minor groups, and 23 major groups. The U.S. Bureau of Labor Statistics has further combined the 23 major groups into 10 broad groups.

Although the SOC system identifies 821 detailed occupations, there are only 792 of these occupations present in Wisconsin's economy.

New Jobs

An estimate of the number of jobs created in a certain industry or an occupation in Wisconsin between 2006 and 2016. To arrive at an average annual number of new jobs, the total number of new jobs expected over the ten-year period is divided by ten.

Replacement Job Openings

Replacement openings are only available for occupations. They show how many job openings there will be in each occupation due to people permanently leaving the occupation on account of retirement, illness, death, or a change of career. An example of a change in career is when a person who is working as a teacher leaves that occupation and become a registered nurse.

Replacements do not include openings that result because people changes employers but remained in the same occupation. For example, if a person works as a teacher at School One, leaves this school and becomes a teacher at School Two, the opening at School One will not be counted as a replacement opening.

Total Openings

An estimate of the total number of jobs that will be open in Wisconsin in a given time period. Total openings are the sum of new jobs and replacement openings.

Typical Education and Training Path

The U.S. Bureau of Labor Statistics has identified eleven education and training categories. Each of Wisconsin's 792 occupations has been assigned to one of these categories.

Typical education and training path provides a general idea of required education and training preparation to enter an occupation. This is the most common way people can enter a certain occupation between 2006 and 2016, although there may be additional educational or licensing requirements.

Short-Term On-The-Jobs Training

These occupations require no more than one month on-the-job training. Included in this category are cashiers, home health aides, and retail salespeople.

Moderate-Term On-The-Job Training

This training usually occurs at the workplace and lasts from one to twelve months. Included in this category are pharmacy technicians, roofers, and insurance claims and policy processing clerks.

Long-Term On-The-Job Training

This group, usually in the form of adult apprenticeship, require more than one year of on-the-job training, or combined work experience and formal classroom instruction. Included in this category are fire fighters, plumbers, and telecommunications line installers.

Work Experience in a Related Occupation

Occupations in this category, many of which are first-line supervisory positions, require skills and experience gained in related jobs. Included in this category are first-line supervisors of retail workers, new account clerks, and construction and building inspectors.

Postsecondary Vocational Training

These formal training programs last from a few weeks to more than a year, and are offered at vocational or technical schools. These programs lead to a certificate or award, but not to a degree. Included in this category are medical transcriptionists, chiefs, and automotive mechanics.

Associate Degree

This degree usually requires two years of full-time academic work beyond high school. Most associate degree programs are at technical or community colleges. Included in this category are paralegals, dental hygienists, and electrical engineering technicians.

Bachelor's Degree

This degree requires four or five years of full-time academic work at a college or university. Included in this category are computer systems analysts, elementary school teachers, and accountants.

Master's Degree

This degree requires one to two years of full-time study beyond a bachelor's degree. Included in this category are occupational therapists, epidemiologists, and rehabilitation counselors.

Doctoral Degree

This degree usually requires at least three years of full-time study beyond a bachelor's degree. A doctoral degree is often needed to teach at the university level or to do advanced research in a business, government, or academic setting. Included in this category are university professors, clinical psychologists, and computer research scientists.

First Professional Degree

This degree typically requires at least three years of full-time study beyond a bachelor's degree. It includes degrees from law and medical schools. Included in this category are lawyers, physicians, and pharmacists.

Bachelor's or Higher Degree Plus Work Experience

Occupations in this category require a bachelor's or higher degree in addition to work experience in a related occupation. Most of these occupations are managerial or executive positions. Included in this category are financial managers, purchasing managers, and education administrators.

Projections Data Available on the Website

This publication provides a brief summary of the 2006-2016 employment projections. To view the entire projections, please visit our site at

http://dwd.wisconsin.gov/oea/employment_projections/long_term_projections.htm

On the site you will find the following projections products:

Projections by Industry:

- List of detailed industry projections
- Largest industries
- Fastest growing industries
- Industries adding the most number of new jobs

Projections by Occupation:

- List of detailed occupational projections
- Occupations with the most average annual openings
- Fastest growing occupations
- Occupations adding the most number of new jobs
- Occupations with the most job openings by education and training categories.
- Healthcare and information technology occupations

Additional Resources

WI Department of Workforce Development

<http://dwd.wisconsin.gov>

- Training and employment assistance
- Equal rights protection
- Unemployment insurance process
- Vocational rehabilitation services
- Worker's compensation issues

Office of Economic Advisors

<http://dwd.wisconsin.gov/oea>

- *Annual County Profiles*: snapshots of the labor market in every Wisconsin county
- *Data Dashboard*: most current labor force data for 11 Workforce Development Areas in Wisconsin
- *Economic Indicators*: monthly-updated set of 22 data series measuring Wisconsin's economic conditions
- *Employment Projections*: job outlook in Wisconsin's industries and occupations. Projections are developed for the state and for Workforce Development Areas.

Wisconsin's WORKnet

<http://worknet.wisconsin.gov>

- Unemployment rates and labor force estimates
- Occupational wage data
- Industry employment data
- Employer information by county, industry, and occupation

Wisconsin Job Centers

<http://www.wisconsinjobcenter.org>

Toll-free: 1-888-258-9966

- Employers can list job openings electronically
- Information on education and training programs
- Links to the unemployment insurance system.

Wisconsin JobNet

<http://dwd.wisconsin.gov/jobnet/mapWI.htm>

- Allows employers to post job openings and job seekers to find job opportunities
- Available for use anywhere through the Internet connection or at any job center in Wisconsin.

Acknowledgments

Thank you to the following people who served on the Projections Panel. This panel of economists and analysts from government, business, and academia provided their inputs for 42 key industries. Panel members' feedback was incorporated into industrial employment projections.

- Panel Leader: Victoria Udalova, Economist
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Office of Economic Advisors
Department of Workforce Development
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Center for Study of Jobs and Education in
Wisconsin and the U.S.
- Joseph Tumpach, Research Analyst
Office of Economic Advisors
Department of Workforce Development
- Professor Richard Tyson
Social Science Department
University of Wisconsin-Stout
- Karin Wells, Ph.D.
Wisconsin Association of Independent Colleges
And Universities
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