

Advanced Manufacturing in North Dakota

**The Manufacturing
sector comprises
establishments engaged
in the mechanical,
physical, or chemical
transformation of
materials, substances,
or components
into new products.**





NOTE: This publication is a summary of a statewide study conducted by Job Service North Dakota in 2008. Significant changes in the economy have taken place since this study was conducted and analysis was completed.

Executive Summary

Advanced Manufacturing in North Dakota

The growth of the Advanced Manufacturers industry has been crucial in the diversification of our economy over the past several decades. Since 1990, North Dakota's employment in manufacturing has grown by nearly 10,000 jobs or over 60% according to our Quarterly Census of Employment and Wages (QCEW) data table¹. During this same time frame, this industry has grown from the 6th largest employment sector to the 5th largest in the state.

This report is specifically focused on several areas of importance that Job Service North Dakota felt to be most critical in supporting this industry:


- Manufacturing industry and worker demographics
- The make-up of manufacturing employers' workforces
- Manufacturing application and screening processes
- Sources these employers use to obtain new employees (labor pool)
- Skills that firms most desire in new employees
- Manufacturing employers retention strategies and approaches
- Career ladders, leadership development and transfer of knowledge approaches

Replacing personnel losses with the right people for the job is an ongoing concern for human resource

managers. Employers indicated 82% of their energy involved in recruiting was spent trying to fill hourly employees. Responses indicate that the manufacturing workforce is closely linked to the geographical area of the business.

North Dakota manufacturers ranked active learning, active listening and critical thinking as the most important required skills for employees. The ability to operate and control equipment and perform equipment maintenance were most important when it came to technical skills. The most important social skills are coordination among employees, service orientation (the ability to actively look for ways to help people) and finally the ability to instruct people on the job.

The study showed turnover rate was a major concern for North Dakota manufacturers. Businesses that indicated turnover as unimportant had higher turnover rates. Those that indicated it as important had lower rates, indicating the firms concerned with turnover rates take actions to address it.

Additional labor market information can be obtained by contacting us at (701) 328-2868, 1-800-732-9787, ndwin@nd.gov, or by visiting us on the web at www.jobsnd.com and clicking on .

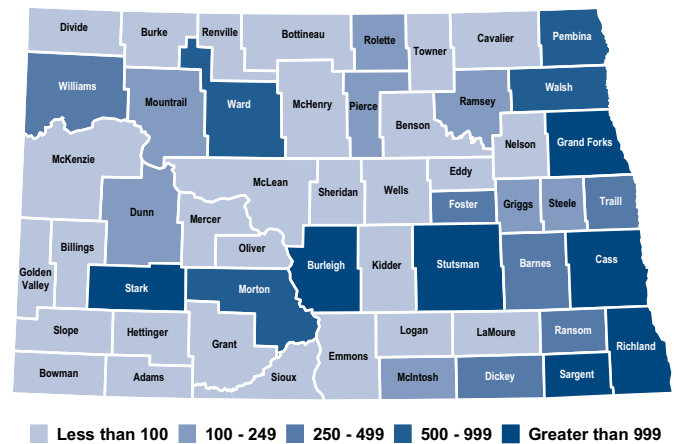
¹ Based upon Quarterly Census of Employment and Wages (QCEW).

Industry Demographics

Manufacturing Employment

Cass County had the highest average annual employment in 2007 with just over 8,300 in the Manufacturing sector.

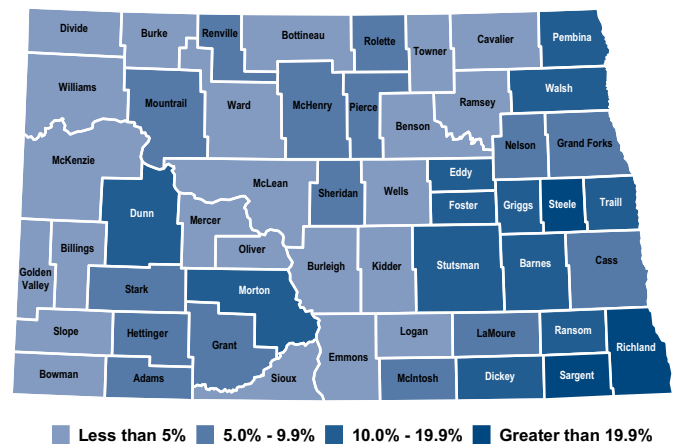
Average Manufacturing Employment by County*
Statewide Manufacturing Employment: 26,043



Manufacturing employment is based on private sector employment only. Government or public sector employment is excluded.

Richland and Sargent Counties had the largest percent (24% and 58% respectively) of their labor force employed by the Manufacturing sector.

Manufacturing as a Percent of Total Employment by County*
Statewide Manufacturing as a Percent of Total Employment: 7.6%

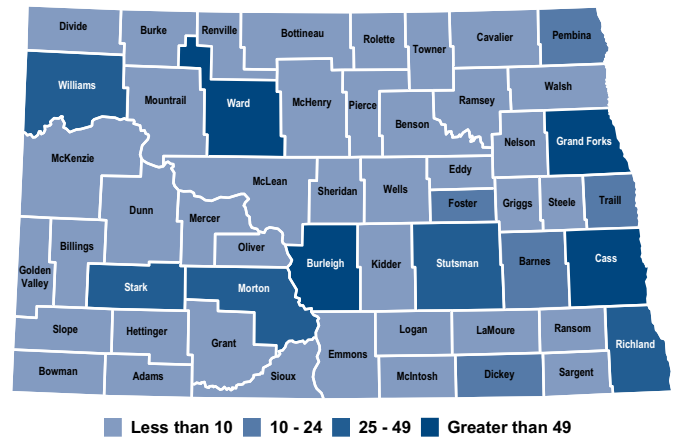


Manufacturing employment is based on private sector employment only. Total employment is a summation of private and public sector employment.

Manufacturing Establishments

Cass County had the largest number of Manufacturing establishments in the state (230), followed by Burleigh County (85), in 2007.

Manufacturing Establishments by County*
Statewide Manufacturing Establishments: 867



Establishment data are a unique count of all worksites in operation anytime during calendar year 2007. Data excludes public sector establishments.

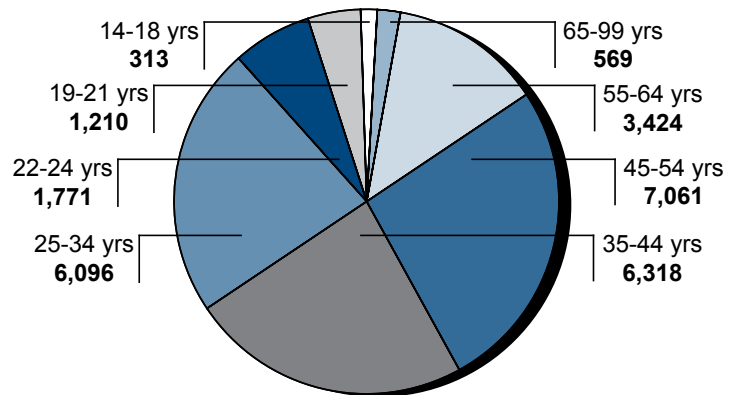
*Source: Quarterly Census of Employment & Wages (QCEW) Program, Labor Market Information Center, Job Service North Dakota (2007 Data)

Worker Demographics

Manufacturing Workforce

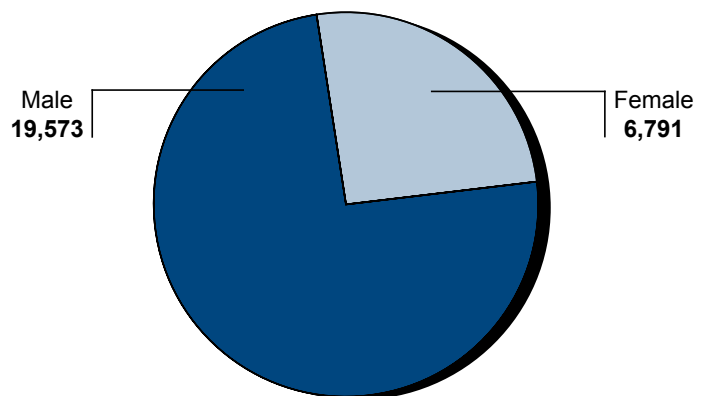
The 45-54 age group makes up the greatest percentage of the manufacturing workforce at 26%.

Number of Workers in Manufacturing by Age*



Males make up 75% of the manufacturing workforce.

Number of Workers in Manufacturing by Gender*



*Source: Quarterly Workforce Indicators, U.S. Census Bureau (2007 annual averages)

Manufacturing Occupations

Top 10 Occupations with Highest Percent of Employment in Manufacturing

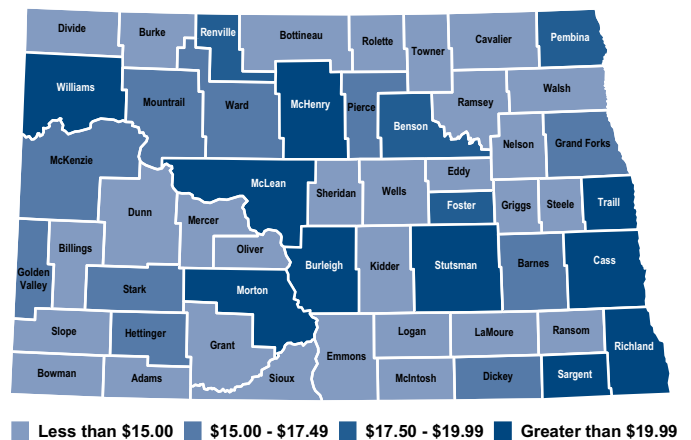
		PERCENTAGE OF MANUFACTURING INDUSTRY
OCCUPATION	Team Assemblers	9.8%
	Welders, Cutters, Solderers, and Brazers	4.6%
	First-Line Supervisors/Managers of Production & Operating Workers	4.4%
	Helpers - Production Workers	3.7%
	Laborers and Freight, Stock, and Material Movers	2.7%
	Packers and Packagers	2.1%
	Truck Drivers, Heavy and Tractor-Trailer	1.9%
	Maintenance and Repair Workers	1.8%
	Industrial Truck and Tractor Operations	1.7%
	Shipping, Receiving, and Traffic Clerks	1.6%

Wages & Benefits

Wages

In 2007, the average annual wage of manufacturing employees was \$40,170, nearly 20% above the average of all industries in the state.

Average Hourly Manufacturing Wages by County*
Statewide Average Hourly Manufacturing Wages: \$19.31



Hourly wages are calculated by dividing average annual wages by 2,080 hours (a standard measure of full-time, year-round employment).

Employee Benefits

97% of firms with 50 or more employees indicated they offered some form of insurance, and 80% of firms with less than 50 employees also offered some type of package.

		PERCENTAGE OF MANUFACTURING EMPLOYEE BENEFITS
BENEFITS	Health Insurance	86%
	Retirement Plan	62%
	Life Insurance	37%
	Disability Insurance	30%
	Childcare	4%
	Other Benefits	44%
	No Fringe Benefits	8%

*Source: Quarterly Census of Employment & Wages (QCEW) Program, Labor Market Information Center, Job Service North Dakota (2007 Data)

Survey Results

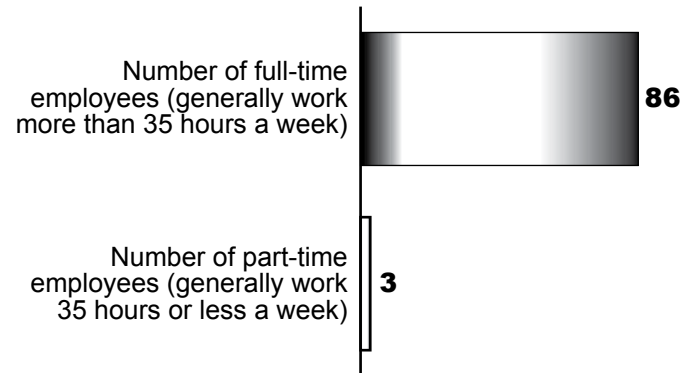


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Advanced Manufacturing Current Workforce

- 97% of manufacturing employees are full-time (greater than 35 hours); 3% are part-time.
- These numbers are fairly consistent regardless of the products produced, size of the employer or their location in the state.
- The typical manufacturing employer has 86 full-time and 3 part-time employees.

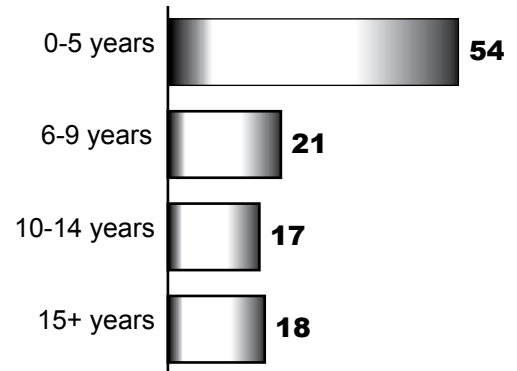
Hourly/non-exempt workforce of the typical North Dakota manufacturer



Longevity of the Manufacturing Workforce

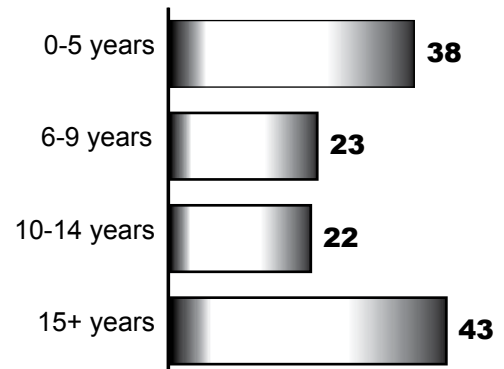
- 54% of hourly/non-exempt employees have been with the firm five years or less.
- The larger the firm, the more likely that their employees had been with them longer; this may be because smaller firms are more likely to be “start-ups”.
- The eastern half of the state has fewer employees with over 10 years of service, in comparison to the western half of the state.

Hourly/non-exempt workforce



- Nearly 65% of the salary/exempt workforce have at least 10 years of longevity with the firm.
- Textile product and furniture manufacturing groups reported nearly 50% of their salary/exempt employees have at least 15 years of experience.
- Bismarck employers reported the longest serving workforce within this group – 46% of salaried employees with at least 15 years of service.

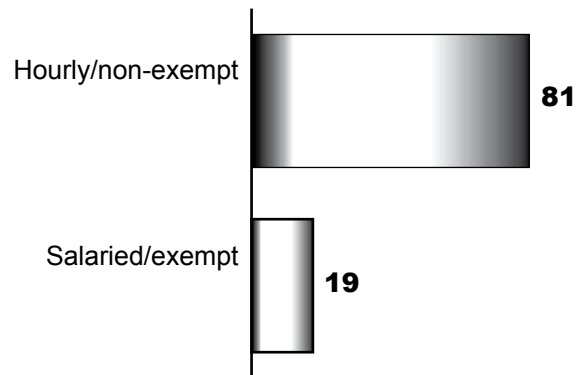
Salary/exempt workforce



Time and Energy Involved in Recruiting New Employees

- 81% of employer's time involved in recruiting is spent trying to fill hourly/non-exempt employees such as production workers or assemblers.
- Larger employers spend more time and energy recruiting salaried/exempt employees such as engineers and chemists.
- Larger firms are more likely to be able to recruit hourly wage employees based upon their name recognition and reputations in their local community. As such, these firms focus a greater share of their recruiting energies recruiting salaried employees with more unique, low density skill sets.
- Manufacturers that produce computer or electrical components spend a great deal more effort recruiting salaried/exempt employees such as engineers or chemists than producers of other products. This is likely because of the differences in the number of skills required to create their products.

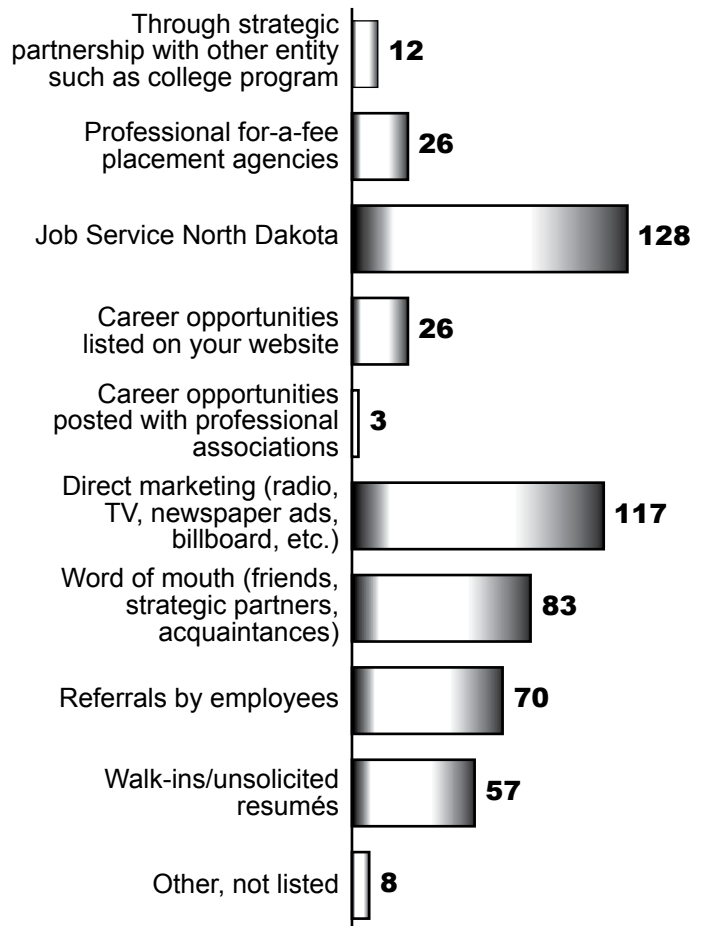
Percent of Time Spent Recruiting



Recruiting Methods

- The most common recruiting methods are the use of Job Service North Dakota (68%); direct marketing such as radio, TV, newspaper ads or billboards (62%); and word of mouth (44%).
- Respondents to the survey indicated they employ various other approaches including temporary-to-permanent employment and use of temporary services to “try out” employees.
- Word of mouth also tended to be a far more likely favorite among smaller firms (62%), while larger firms tended to be less likely to express a preference in this approach (26%). The larger firms were more likely to favor direct advertising (82%) or listing career opportunities on their website (35%) than their smaller counterparts. Manufacturers of all sizes appear to use both referrals by current employees and walk-in/unsolicited resumé.

Most Common Recruiting Methods

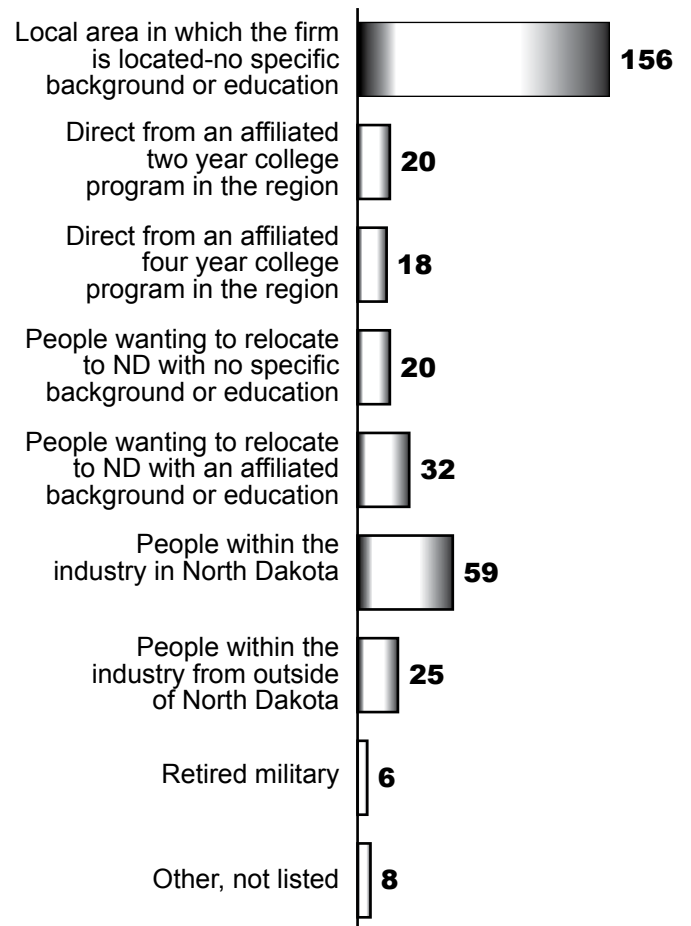


Sources of New Employees

Labor Pools

- A manufacturing employer's workforce is closely linked to the geographical area selected by the firm.
- 84% of respondents identified that the local area in which the firm is located, with no specific background or education of potential employees, as one of their primary sources of new employees.
- The second most commonly used source is people already within the industry in North Dakota (33%).

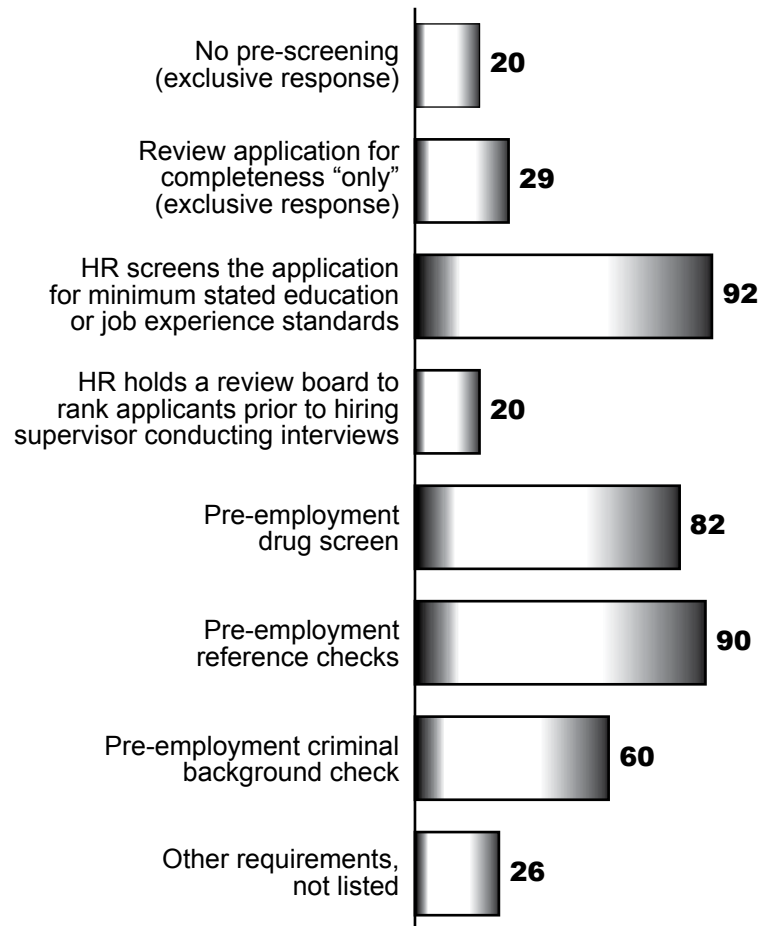
Sources of Employees



Application and Screening Process

- The more complex the product the firm produces, the more complex the process in selecting new employees.
- The size of the firm was the most clear determinant of what approach a firm took to their application and screening process. 38% of manufacturers with less than 20 employees conducted no or minimal prescreening, while only about 12% of those larger than 50 used this approach.
- Respondents provided a wide variety of examples of “other screening” approaches they use in selecting employees. These included: personality and aptitude assessments, interviews with behavior-based questions and medical screening.
- 55% of manufacturers require no specific formal education for the majority of their applicants.

Approach used for Applicant Screening



Most Desired Skills in New Employees

Human Resource Managers in Advanced Manufacturing appear to place higher value on a number of particular skills, other than a set of basic skills. What the responses from employers seemed to indicate was a desire to “join the team”. “Willingness to listen”, “follow instructions at work” and “become an integral part of the employers team” seem to permeate the responses from employers in this industry.

- 83% of respondents indicated Active Learning followed closely by Active Listening as important skills.
- Manufacturing employers, regardless of their product, are looking for new employees that are trainable to the responsibilities and tasks that the firm needs them to do.

- The results of the study indicate that today’s manufacturing employee is not just a “doer”, but he or she must also be a “thinker”, actively involved in problem solving and fixing when things go wrong.
- The ability to operate and maintain equipment are the two most important skills a potential new employee can have when applying for a job in manufacturing.
- Advanced Manufacturing employers place a great deal of emphasis on the ability of new employees to actively look for ways to help others (service orientation).

Retention Strategies & Approaches

Turnover Rates

Employers were asked about their current turnover, the importance they place on controlling turnover, and the approaches they employ to retain quality employees.

- 10% of the Advanced Manufacturers reported a turnover of less than 1%.
- 25% of all responding Advanced Manufacturers reported turnover rates in excess of 20% per year.
- Smaller firms tend to have a lower turnover rate than larger firms, with the exception of those with 500 or more employees.
- Firms with 100-499 employees seemed to have the highest rate with a full 38% reporting turnover rates in excess of 20%.
- Firms with 500 or more employees tended to have the lowest turnover rate of any of the size comparisons.
- Advanced Manufacturers in Bismarck, Fargo and Minot tend to have lower rates than the rest of the state.

Development and Knowledge

- 25% of employers “generally” have a career ladder defined.
- 30% of employers “generally” identify people for potential promotion well in advance.
- Advanced Manufacturers indicated that they “always” or “generally” select supervisors from within their current workforce 72% of the time, and managers 59% of the time.
- 32% of firms “always” or “generally” move potential leaders to ensure they are well-rounded.
- Ongoing and formal mentorship programs among Advanced Manufacturers in North Dakota are fairly rare.
- Formal processes to transfer developed knowledge from retirees to younger employees is also fairly rare among these employers in North Dakota.

Policies to Maintain Employee Morale & Impact Retention

Performance Recognition

- 44% of responding employers indicated that performance recognition was either something they always or generally had in place.
- 88% of firms with 100 employees or more indicated they had this kind of recognition, as compared to 37% of firms with less than 50 employees.
- Advanced Manufacturing employers in the eastern half of the state were more likely to have such a process.

Bonus Structure

- Bonuses were somewhat more common than “rewards and recognition.”
- 50% of Advanced Manufacturers reported having bonus structures in place.
- Over half of the firms that “always” provide bonuses were in the Fargo area. Those employers in the Minot and Jamestown area are also more likely to give bonuses than other areas of the state.

Flexible Work Arrangement

- 8% of Advanced Manufacturers responded with “always” or “generally”, indicating that they have programs in place to allow telecommuting.
- 79% indicated that they seldom or never allow telecommuting.
- The majority of firms that do have telecommuters among their employees have 100 employees or more and are in the Fargo area.

Flexible Schedules

- 30% of these employers indicated they allow flexible schedules either “always” or “generally.”
- Flexible schedules appear to be most common among smaller Advanced Manufacturers than larger ones.

Employee Communication Processes

- 30% of Advanced Manufacturers have mechanisms in place to measure overall satisfaction of employees.
- 51% of Advanced Manufacturing employers surveyed indicated that they had a mechanism in place to ensure bottom-up communication with their employees.
- Firms in the Grand Forks region were more likely to indicate they have such a process (65%) than other areas of the state.



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