

MINNESOTA MANUFACTURERS' WORKFORCE STUDY

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Dedication:

The research team would like to acknowledge the generous assistance of state officials in Oregon and Washington.

And we wish to express our gratitude to the participating employers, educators, and training providers all over the state of Minnesota who helped in this survey effort, and on whose concern and energy the future rests.

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INTRODUCTION

This report summarizes results from a series of interviews, focus groups, and surveys relating to Minnesota's workforce. The specific focus of the study relates to workforce issues as they impact Minnesota's manufacturing sector. The purpose of the study was to determine whether manufacturing workforce problems exist in Minnesota. If problems were discovered, a second purpose was to gather information that could form the basis for suggesting future state or regional studies and/or programs.

National studies and reports point to a transformation currently taking place within the United States economy. In the past, the American worker with a high school degree could earn a middle class living by working hard in America's factories. These historically high earnings were justified by high productivity levels as measured by output per worker. The high productivity resulted from assembly line techniques and the gains from specialization. High skills were generally not required. Shortages of workers occurred only when the national economy was growing at rapid pace. Thinking and planning within America's factories was to take place at the managerial level; workers were to follow the rules and procedures dictated from above.

Global competition, according to these national reports, is now forcing changes within American industries. The assembly line is now controlled by a computer and physical jobs requiring low skills are moving to other countries offering lower wages. American industry has responded by putting pressure on its workers to accept lower wages. A second response has been to introduce greater amounts of overtime, or to hire more temporary workers in order to avoid the costs of fringe benefits. And as American industry is continuously downsizing its permanent workforce, the remaining workers are being asked to pick up the slack left by the departure of their colleagues.

An alternative, and perhaps healthier response has been to introduce *high performance* work organization practices into the work place. High performance means the adoption of high technology, hiring workers with the needed skills to implement these technologies, and re-organizing management so that the workers have a greater say in product design and production

related decision making. Team management down to the shop floor is a major component of this form of work organization.

At least two states, Washington and Oregon, have responded to these national concerns by studying and, to some extent, implementing programs designed to encourage high performance organization practices. While Minnesota has not moved far in this direction, providers have been working hard to match needed skills to manufacturing needs.

Section 1: Review

The first section of this report reviews the national reports. Also contained in this first section are summaries of interviews between members of the Center for Economic Development research team and Oregon and Washington state officials, conducted in order to better understand their workforce related programs, successes, and concerns.

The first section also summarizes interviews with Minnesota agencies and organizations. These interviews were to determine our state's current position relative to workforce skills and training issues identified in other studies and in other states.

Section 2: Focus Groups

Section two of this report summarizes the results of focus group sessions held across the state of Minnesota. These focus groups were of two types:

- 1) A **providers' group** to determine their views relative to Minnesota workforce problems and issues.
- 2) A **manufacturing group** to determine whether manufacturers were facing problems in recruiting, training, or retaining a skilled workforce.

These sessions dealt with several specific questions. However, the personal nature of focus groups also allowed for free-wheeling discussions on workforce issues.

Section 3: Survey

The third section of this report presents a summary of a mail survey sent to a random sample of manufacturers in the state. Stratification was on the basis of firm size and regional location. The surveys and their results were originally intended as a supplement to the focus groups; however

the surveys exhibited a life of their own, in that their coverage in terms of firm size was more extensive than that of the focus groups.

Section 4: Recommendations

The final section of this report presents the research team's summary and conclusions, relative to the data that were gathered. Suggestions for future research are also contained in this section.

It should be kept in mind that this study was intended from the outset to be preliminary in form. The study focuses on one question: "Is there a manufacturing workforce problem in Minnesota?" The answer is yes. And more importantly, although the problems that do exist are not major at this time, looking at the trends and the concerns at the national level and the responses to our survey and within the focus groups, workforce related problems are likely to grow. A serious examination and response to workforce issues *now* could help us avoid serious problems in the future.

REVIEW

Peter Drucker's Analysis of Trends in America's Workforce

In the world, and certainly in the United States, there is a sense that a major economic transformation is under way. This transformation holds implications for America's workforce which are only now beginning to be recognized. Issues such as training, compensation levels, employment possibilities, the competitiveness of American industry, the color and ethnic background of the future workforce, and even ever-present income distribution questions come to mind.

A lucid view of this transformation recently appeared in the popular media. In an article written for *Atlantic Monthly* by Peter Drucker¹, Professor of Social Science at Claremont Graduate School, a view of the history and future of America's workforce problems and opportunities was offered. Professor Drucker began by noting that America's last major workforce transformation occurred when the economy moved from agriculture and domestic service to a manufacturing base. At the turn of the century, well over half of America's workforce was employed in agricultural pursuits. Today less than two percent of the workforce has anything to do with direct farming. At the turn of the century, domestic service was the largest category of employment outside of agriculture. Today it is a very minor portion of the total workforce.

Industrial workers made up forty percent of the workforce by 1950. Because they worked in one place and in close proximity, they were easier to organize than were farmers and domestic workers. The unions that industrial workers organized were effective. By 1950, unionized workers were well paid and had pensions, long vacations, and relatively safe working conditions. In addition, they had achieved significant political power.

Professor Drucker argues that we are now in a new transformation, a transformation just as significant as the one described above. The industrial worker is declining as a portion of the workforce; such workers constitute about twenty percent of the workforce today. Unions are in

¹Peter Drucker, "The Age of Social Transformation", *The Atlantic Monthly*, November 1994, pp. 53-80.

general retreat. The political power base is shifting. Professor Drucker contends that, by the early 21st century, the industrial worker will be no more significant than the agricultural worker is today. Replacing the industrial worker is what Professor Drucker called the "technologist," a highly trained and educated specialist.

Industrial workers were paid well because the new technologies of the factory increased worker productivity significantly. From 1881, there was a, "... fifty fold increase in output per worker over 110 years." Many of these gains in productivity accrued to the industrial worker. The industrial worker became America's, and indeed the world's, middle class. Living conditions and standards increased across the entire workforce throughout the twentieth century.

One significant difference in the present transformation compared to earlier transformations is that the switch from agriculture to industry required no significant workforce training or re-training. The agriculture worker had sufficient skills to begin work almost immediately as an assembly line worker. Professor Drucker named a new classification for today's worker: the *knowledge worker*. He predicted that such workers would make up a third of the workforce by the turn of the century. The transition from industrial worker to knowledge worker will not be as easy as was the transition from agriculture/domestic work to industrial work. The knowledge worker, as the name implies, will require extensive training and education to enter the workforce. What is more, training and education will have to be a lifetime commitment.

Industrial production (output) will continue to rise, but with fewer and fewer industrial workers involved. The road to the middle class will be much more difficult under this new arrangement than it has been in the recent past. Those who do not or cannot enter the knowledge workforce will find themselves left out of the middle class and doomed to low wage occupations in the industrial and service sectors.

Internationally, knowledge will become the key element in a country's comparative advantage. Knowledge itself will be a produced good and will constitute a fifth factor of production in addition to labor, capital, land, and enterprise. Old economic theories will need to be modified to take this new "resource" into account. Societies that do not make this transition will find themselves facing competitive disadvantages in the global market place. Creating the knowledge worker will be a prime competitive strategy in the twenty-first century.

However, knowledge is transferable to a much greater extent than were the other resources. International competition is going to be much keener than in previous years with the struggle to keep ahead being a permanent feature of the international landscape. An advantage this year will not necessarily constitute an advantage next year.

Society is going to have to organize itself to keep ahead in the knowledge game. Educational institutions and methods will need to be constantly re-organized and improved. Training will need to take on dimensions previously unheard of. Skills development, skills recognition, and skills forecasting will need to be both expanded and the subject of significant innovations. Formal schooling will become much more important to high skill categories as opposed to the apprenticeship programs that were so prevalent in the industrial era.

Our definition of an educated person will change. The generalists will be a thing of the past. Liberal education will no longer suffice in the modern knowledge based community according to Professor Drucker. Increasingly, the individual will have a skills based education. The knowledge worker will be a specialist to a greater extent than any time in history. Training in practical problem solving will be more important than training in the classics.

What will happen to the non-knowledge worker who works with his or her hands? This will be the challenge of the new society. Everyone will have access to knowledge. Those who do not participate may be left behind. This could create new class warfare between the knowledge worker and other workers. However, since escape from the non-knowledge worker class only requires formal training and education, admission to the upper class will be easier and more realizable than was true in the industrial society.

Since knowledge workers are specialists, they will need to develop skills in communicating their specialties to others. They will also be resistant to "taking orders" from a hierarchical management scheme. They will be employees, but will not answer to the culture of employees. They will consider themselves to be professionals and deserving of the respect accorded to professionals. They will also be capitalists as ownership of capital will be diffused through pension plans and stock options. In other words, they will be the new owner class.

These four facts--*workers are specialists, they will not appreciate taking orders, they will view themselves as professionals, and they will be the owners of capital*--lead one to the belief that team processes will become an important feature of the knowledge society. Not teams we have been seeing recently, where the individual worker is still emphasized and the team is making recommendations to higher management, but rather, true quality teams will be organized, with responsibilities and resulting rewards given to the team rather than to the individual. Management will need to be completely restructured and the theory of management revamped to take this new reality into account. Industry will take on an even greater technological character than exists now.

Management will have to concern itself to a greater extent with the setting of institutional (organizational) goals and strategic plans. They will be less concerned with minute direction of employees. Management will no longer be a "... bundle of techniques, such as budgeting and personnel relations.... The essence of management is to make knowledge productive. Management...is a social function."

The Commission on the Skills of the American Workforce

The Commission on the Skills of the American Workforce from the National Center on Education and the Economy published a manuscript, "America's Choice: High Skills or Low Wages,"² in 1990, four years before Drucker's article appeared. The Commission's findings were by and large the same as those of Professor Drucker. For example, the Commission agrees that there is a world transformation going on, carrying with it serious implications for the American workforce and for the competitiveness of the American economy. The report's contention is that much of our past economic growth can be attributed to increases in the size of the workforce. (It is interesting to note that they don't mention technology or capital accumulation, but their point is nevertheless difficult to dispute.)

Future growth will not come from workforce expansion. Future growth will depend on increases in worker *productivity* which, in turn, depends upon technology and the ability to use and implement technology. Since technology is becoming more and more portable, better abilities to

²"America's Choice: High Skills or Low Wages", The Report of the Commission on the Skills of the American Workforce, (National Center on Education and the Economy), June 1990.

utilize new and future technologies will be the engine that drives a country's future competitive position in the world.

Drucker argues that the knowledge based worker will not be content with the old, hierarchical form of work organization. These workers will consider themselves to be professionals and will demand respect. One form of respect will manifest itself in work organizations that involve workers in the decision process, usually through worker teams.

The Commission agrees. More specifically, the Commission argues that the future competitive position of regions will depend on re-organization into what they term as "high performance work organization(s)." The Taylor model, which depended on educated managers controlling large numbers of lesser educated workers, worked in the past. But it **won't** work as a method of organizing highly trained, educated, and specialized workers.

Under high performance organization, "...management layers disappear as front-line workers assume responsibility for many of the tasks...that others used to do." Such organizations require a high level of training and team participation. The Commission contends that the United States is a long way from dealing with this major change in the structure of the work place, and it hints quite strongly that we are behind the rest of the world in this regard.

To continue down our current path will not only put the United States (and by implication, Minnesota) behind the rest of the world, it will also lead to a nation of two major classes (also mentioned by Drucker)--one a professional class making up about 30% of the workforce (Drucker agrees) and the other 70% consisting of low skill and low wage workers in the industrial and in the services sectors.

The Commission goes on to criticize about the following:

- ! Current firms and owners do not recognize the changes that are taking place. They are still working with the old organizational model. Since the old organization does not require a high level of skills, they are reporting few shortages of specific skills, other than regional shortages, such as in rural areas. **This is a key point to remember when reviewing the results of our survey.**
- ! Training is still a small part of what American work organizations do. Our country's industries spend less on training than do most other countries. Couple this with the fact

that our country has a minimal commitment to the concept of life-long learning and our competitive future looks bleak, according to the Commission. Most of the training our industries offer focuses on safety, or on specific training/education for upper management (clinging to the Taylor model of hierarchical organization.)

- ! While basic education is important to any workforce, and is apparently lacking when the United States is compared to the rest of the world, the United States is even further behind other nations when it comes to the training component of formal education. Other countries are better organized and suited for the necessary move into high performance work organizations.
- ! We do little in the way of setting standards for our educational system. Where we do, these standards do not enable us to judge whether a person is graduating with skills necessary to a high performance organization scheme.
- ! We are not doing a good job of reaching the people who drop out of our educational system. We are losing a large and potentially competitive workforce by ignoring these people, not to mention the social disruption caused by these people having no access to meaningful employment. The rest of the world continually attempts to integrate the disenfranchised and uneducated into the work environment.
- ! Worker productivity in the United States has lagged behind the rest of the world. To the extent that we have realized increases in labor productivity, they have come as a result of laying off workers and asking the remaining workforce to do the same job, i.e., downsizing. The Commission does not perceive continual downsizing to be a viable, long-run solution to our nation's workforce problems.
- ! The gap in earnings between workers with a college education vs. workers without is widening, leading towards the two class structure identified by Professor Drucker. The pace of this widening gap is accelerating. What is worse, only certain fields among the college educated are accounting for most of this divergence, i.e., a simple college degree does not account for the widening differences.
- ! More and more people in poverty consist of the working poor, i.e., people who are working but whose wages are too low or hours of work are too few to elevate them above the poverty line.
- ! Our country doesn't even know what we mean by skills. We are so entrenched in the Taylor model of work organization that we hold the most valuable attributes of an

employee to be loyalty, the work ethic, and appropriate social behavior. In other words, we look to personal attributes for success as opposed to skills. Yet in the technological future, it is clear that skills will be critical. Even our own business leaders are failing to perceive the problem they will soon be facing.

- ! Since we can't really define skills, we aren't able to determine or measure when skills are lacking or are being created. While definitions are undergoing revision, the nation still looks at the workforce in terms of occupations. The problem is that occupation titles, as descriptors, are in the process of losing their meanings.
- ! While we will probably be able to educate our future workforce to meet occupational needs, and while we need to work continuously on worker attitudes towards work, neither of these achievements will lead to future growth or increases in our international competitive position. Only a move to an entirely new work organization (high performance) can do this for us.
- ! Mass production organization under the Taylor system is becoming inefficient because it is too bureaucratic. It is also too slow in the development of new products and work processes. Therefore, costs tend to be excessive and product line development too slow to meet the challenge of constantly changing global needs and wants. Only a work organization based on teamwork can respond to constantly changing global economic conditions. These team work processes require a highly trained and educated workforce.
- ! Workers are finding their relative wages tied more and more to productivity. As a result, work organizations that reduce productivity are also reducing the worker's ability to make a middle class living. Workers only hope for long term increases in earnings is through increases in their productivity. Increases in productivity can only be achieved by either working excessive hours or through training and education oriented towards greater responsibilities in the workplace. In short, the choice between low and high wages is a choice of how we train and utilize our workers. High wages can only be justified by high productivity, which to the Commission, depends on high performance work organization practices.
- ! We need to structure our education system differently, if we buy into the earlier arguments of this report. The Commission points out that the American student is currently at the bottom when compared to the rest of the world when it comes to basic knowledge, as indicated by performance on standardized tests. Most education is currently based on

college preparation as opposed to life and work skills. Since only a small portion of our workforce is college bound, this represents a misplaced emphasis. We need to do more for the individual who is not college bound.

- ! Our country's real downfall is a failure to create programs that help the transition from school to work. We offer very little help in this very important area. This problem is especially noticeable in the disadvantaged neighborhoods of the country, where modes of dress, of talking, and personal habits often exclude otherwise qualified individuals from a workplace that bases its hiring on middle class standards and value.
- ! The technical training we do offer is kept too distant from academic training. The dichotomy does not need to be exclusive. We demand too little of our technical students. They will respond to increasing demands along these lines.
- ! The U.S. performance is weak in the area of matching skills to jobs. Our employment offices do not look very closely at skills and do not integrate their mission with the education/training missions of our educational institutions to a great enough extent.
- ! While this has been pointed to a number of times earlier, the Commission makes quite a point of pointing out where and how other nations are ahead of us in dealing with worker productivity. Other countries' education systems are often better suited for high performance organization, for all of the reasons ours is not. This will pose a major problem for our country in the years to come, according to the Commission.

RECOMMENDATIONS - The Commission had several recommendations concerning workforce preparation for America's future:

- ! A performance standard, probably monitored through standardized examinations, needs to be implemented. The Commission argues for a minimum level of competency in basic achieved education for students before they are allowed to move to the next step. Such basic competency would be certified through the granting of a "Certificate of Initial Mastery." Whereas this certificate would normally be achieved at the age of sixteen, it could be obtained by anyone at any age. After this certificate is obtained, further certificates and other indicators of mastery could be obtained as the student moves up the educational/training ladder.
- ! Some will go on to college preparatory training, while others will go into work and study programs leading to a technical education. After the technical and/or college training, the

individual enters the workforce, but is fed back through portions of the system in a series of life learning exercises.

- ! States will have the responsibility for making sure their citizens obtain the certificate of initial mastery. There would be a complicated system of youth centers to help recover students that drop out. These centers will try alternative approaches to education, designed specifically to reach and train this special class of individuals. Such a program should also make sure that the students realize that the education and training they achieve will pay off in the workplace.
- ! America should have laws, similar to laws in other countries, which make it difficult for companies to pay low wages and lay off workers. This would force companies to emphasize high productivity and training to maintain their competitive positions *vis-a-vis* the rest of the world. There should be strong incentives for companies to dedicate a portion of their budgets and employee work hours for training. Once skills are achieved, employees should be given greater responsibilities and should be treated as the professionals they have become.
- ! A system of employment and training boards should be established to oversee the transformation of our educational and work systems to the new system envisioned by the Commission.

The Supply-Side Nature of These Arguments

The Commission's suggestions are on the supply side of the economic ledger. Certainly the supply side contains the principles needed for long-term workforce modifications. What does this view imply?

In order for the Commission's vision to result in increased wages and employment for America's workforce, the following scenario must play itself out. The increased training and changed structure for industrial management must result in higher worker productivity. Higher worker productivity results in lower *per unit* costs of production. These lower costs are passed forward to the consumer in the form of lower prices.

This last point is key. The market must be competitive enough for these lower costs to be reflected in lower prices. Otherwise, the lower costs will simply be reflected in increased profits for the owners. Whether the costs are passed forward to consumers or result in higher property

incomes depends on the nature of competition. The more competition, the more likely falling prices will attend lower costs. The Commission's contention is that global competition will assure that this is the case. Moving on:

Lower prices result in increased competitiveness of local industries, relative to the global marketplace. Greater competitiveness leads to increased demand for the products of American industries. Increased demand for products leads to increased demand for labor, technical labor. Increased labor demand results in increased employment and increased wages.

Couple this argument with the argument that high performance work organizations also lead to innovations--innovations in production leading to even lower costs and innovations in products leading to increased competitiveness--and the vision of a highly employed, well paid workforce makes sense.

The supply side view cannot really work without both the training component and the work reorganization component. Technical professionals will not work under the same conditions as did lower skilled workers. Innovations must come from the work floor where problems are encountered and solved. Management must give up some of its traditional power in favor of a smoother running, more competitive operation. All pretty big orders for a country used to doing things one way for much of its post-industrial revolution history.

State Responsibilities, The Oregon and Washington Experiences

If the Commission and Professor Drucker are correct in their assessments, much of the responsibility for transforming America's workforce will fall on the states. This was true even before the current trend to push Federal programs to the states because education has traditionally been a state and local responsibility.

What is more, production is a local phenomenon. Industries are located within specific regions. In the short run, they must contend with local labor availabilities, both in terms of numbers and worker skills. Attracting, training, or otherwise providing an effective workforce must certainly be the concern of state and local authorities interested in making their region competitive in the national as well as in the global marketplaces.

At least two states have recognized this and are in the process of establishing policies to improve the competitiveness of their industries, both through workforce training and through encouraging changes in state industry management practices.

Oregon and Washington have cooperated on a number of research efforts relating to their collective workforces. However, Oregon has taken the implementation of the research much further than has Washington in terms of public policy. Therefore, we will deal with Oregon's experience first and follow with some of the programs undertaken in Washington.

THE OREGON EXPERIENCE - Oregon recently went through a state-wide strategic planning exercise. Values were identified, visions were constructed, goals were cataloged, strategies identified, and outcomes assessment procedures were put in place. Two goals from this process stand out: 1) Oregon wants to have the best trained workforce in the United States by the year 2000, and 2) Oregon wants to have the best trained workforce in the world by the year 2010.

Oregon arrived at these goals utilizing the logic contained in the National Commission's report. Oregon wants a highly trained workforce. In addition, the state wants this well trained workforce to work in local industries that have adopted high performance work organization management practices and that pay a living wage. The goals are obvious; to have a high skills, high wage workforce by the year 2010, just as the Commission recommends.

In January 1993, Oregon completed a comprehensive study on workforce issues in the state. The study assessed worker training and work organization practices of the state's employers. Part of the impetus to conduct such a study was created by the passage of Oregon's "measure 5," which significantly reduced the dependence on property taxes to fund local education. Oregon attempted to forge discussions on policy innovations with fewer resources.

OREGON LEGISLATION - Legislation that accompanied or followed the research effort included three major statutes:

! *The Oregon Education Reform Act for the 21st Century.*

This piece of legislation mandated student assessment at grades 3, 5, 8, and 10 and established a Certificate of Initial Mastery much along the lines suggested by the

Commission. It also established alternative learning centers and extended the length of the school year.

! *Youth Apprenticeship:*

This legislation established a pilot program to evaluate youth apprenticeships. High school students over the age of 16 who are enrolled in technical/vocational programs are the intended participants in this program.

! *The Oregon Workforce Quality Council:*

This piece of legislation established the Oregon Workforce Quality Council consisting of representatives from labor, business, and state agencies. In addition, fifteen regional Workforce Quality Committees work with the Council to inform them of regional and local workforce needs and issues. The local councils are also responsible for the development of education and training plans for their local areas.

THE OREGON PROGRESS BOARD - Oregon has a nine member committee, including the Governor, called the Progress Board. The Progress Board sets benchmarks for the state in different areas, such as adult literacy, job skill preparation, and workforce adaptability. The benchmarks guide all workforce development legislation in the state.

As a part of the process of attempting to reform and coordinate its education and training systems, Oregon conducted an employer survey that attempted to evaluate and assess the opinions of Oregon's employers on worker training and work organization. In addition, Oregon conducted focus groups of employers to examine these issues in depth.

The survey and focus groups also identified certain challenges for Oregon. Information was gathered on Oregon industry opinions relative to reforming and improving public education and training systems to create a more highly skilled workforce. Information was also gathered on Oregon industry's knowledge of and willingness to implement high performance work organization practices, should a workforce with greater skills become available.

The Workforce Quality Council established by the legislation was to use the research results to set benchmarks and to monitor progress towards the stated goals coming out of the strategic planning process. It was the impression of the research team that high skills and high

performance work organization were a given and that the survey was used, in part, to inform industry of this fact. The survey was also geared towards obtaining necessary information so that the Quality Council could set realistic measures for progress towards these goals.

SOME DETAILS REGARDING THE WORKFORCE QUALITY COUNCIL - There was a type of advisory council that pre-dated the Workforce Quality Council. The earlier council identified six goals and a vision out of a document titled *Oregon Shines*. The Workforce Quality Council then developed a priority work plan based on the original council's recommendations. The work plan related to four groups of individuals: 1) the current workforce, 2) the emerging workforce, including those entering the labor force for the first time, 3) the transitional workforce, and 4) the disadvantaged.

During the first biennium, the Council divided the state into regions each with a regional center. There are currently fifteen regions, with the local centers concerned primarily with service delivery.

The Council was supposed to re-organize the workforce bureaucracy. However, to date they have been unsuccessful in obtaining needed legislation. The Council also attempted to develop a shared data system. This task is yet to be completed but is underway. Privacy and confidentiality of data is key and serves as an obstacle to data sharing efforts. There are five state agencies involved in data sharing in phase one. They hope to add five agencies, including education, in phase two.

The Workforce Quality Council's link to training is through its regional centers. They now have \$6.5 million to be distributed to the local councils. In phase one, this money was used for staffing (\$100,000 per region), formula funding for projects, and a competitive component out of which six local councils were funded for special projects.

Competitive projects included ideas such as an industrial training center for short-term and specialized training. These projects were tied to existing educational institutions which will eventually administer them out of their own funds. Another project created training modules for short term training. The training was on-site at employers' shops.

Literacy was seen as a major roadblock to high performance organization. Therefore, one project adopted the Jostin System, a private system for literacy training. This system was introduced in the various plants where literacy training has been taking place.

All of the above grants were performance based, i.e., they must measure outcomes. However, the Council has decided it won't use competition for grants in the future because of the divisiveness associated with such competition.

In addition, officials within the Council feel the major problem they have to solve relative to workforce training is long term in nature. Since legislators are constantly running for election resulting in short term horizons, outcomes in the early periods of these programs were relatively modest.

The Council's organization is bottom up. Local control of the local councils is the goal. Every region has professional staffing. The regions are defined on the basis of labor market areas. These regions were developed using a top down approach. Economic Development created their regions from a bottom up approach. Therefore, the two don't coincide, which has created tremendous problems. There is work at reconciling the two at this time; all believe that economic development and workforce training should be organized in such a way that the two coincide.

The state Council currently has a mobile staff of two. They work between the regional councils in a coordination role. Additional staffing includes an executive director and a secretary. The council has absorbed one additional staff member recently taken from the vocational area.

Results from Interviews with Oregon Officials

Several interviews were conducted with personnel associated with Oregon's workforce program. Specifically, officials from the Quality Council, the Oregon Office of Employment Security, Oregon's Economic Development Commission, were contacted and interviewed. The research team was indeed fortunate to have tremendous help and cooperation from Oregon officials.

Interviews tended to be free form. Therefore, this review will not be in the form of questions and answers. What follows is a summary of these interviews.

- ! Oregon looked at several other states to try to see what other regions used as a definition of high performance. One thing became clear to Oregon's officials, high performance is not the same as high technology. Many so-called high technology operations still use the Taylor model for management.
- ! Oregon is moving away from high school diplomas and towards certificate programs. They are trying to stop vocational education from being the dumping ground for otherwise non-academically qualified students.
- ! Even with the Workforce Quality Council, there is great difficulty in linking economic development (especially regional development) with workforce issues. This is why retail, tourism, and other minimum wage types of operations still get such a large play in the state. Oregon's development and elected officials too often don't think about the links between the levels, skills, and high performance they desire for the workforce and the types of institutions (employers) they work to bring into the state.

- ! Oregon has defined high wage, high skill employment at \$10.75 per hour (excluding benefits). This over-all goal is adjusted somewhat to take into account the differing structures of local economies--especially rural economies--that could in no way support such a wage level.
- ! A new governor took over in 1986. This new governor worked closely with state leaders. They developed a plan and report titled *Oregon Shines*.
- ! The 1989 legislature commissioned a workforce study. The workforce study identified outcomes related to the goals identified in *Oregon Shines*. Tasks and procedures leading to these outcomes were to be evaluated through a series of cost/benefit types of studies.
- ! A new governor picked up the ball in 1991. The legislature created the Workforce Quality Council to monitor the benchmarks for the Progress Board. At the same time, the legislature designated the state's lottery money for economic development. Workforce was identified as being a key part of economic development in that legislation.
- ! There were a number of discussions during the interviews that related to Oregon's workforce study. They had problems with sample size, with obtaining accurate mailing lists, with getting people to attend their focus groups, etc. However, most officials were reasonably happy with this first effort. A second follow-up survey is currently being prepared for distribution. However, funding from the legislature for this second survey was questionable at the time of our interviews.

Results from Interviews with Washington Officials

Washington has not adopted the national commission's emphasis nearly to the extent as has Oregon. However, Washington has identified workforce training and development as one of its major issues in the coming years. It is working to cooperate with Oregon in terms of sharing data, conducting joint research projects, and related matters.

Washington did conduct an extensive survey, including focus groups, on workforce issues. Much of our discussion with one of the officials centered on the conduct of this survey.

Washington has nothing equivalent to Oregon's Workforce Quality Council or to Oregon's emphasis on high performance--high skill types of workforce programs. Nevertheless, our interviews with Washington officials were both instructive and interesting. A summary of these

interviews follows:

- ! In 1990, the Governor initiated this effort by appointing a capitol advisory committee. It was this committee that decided to initiate a study. The committee had as its membership representatives from business and labor. Government officials (legislators) served as non-voting *ex officio* members.
- ! Both the committee and the resulting study focused on vocational issues related to workforce evaluation for jobs not requiring a baccalaureate degree.
- ! The word training was defined to include any preparation related to employee competencies short of a baccalaureate degree. One of the identified problems of the initial study related to who filled out the survey instruments, i.e., the Washington research team had difficulty in determining whether the individuals filling out the surveys were speaking for those who do the hiring and placement. They often found that the survey was passed around until someone became "stuck" with filling it out. For example, when the survey respondent says, "Community colleges don't provide enough or the right kinds of skills."; does the respondent even know how many employees in their shop went to a community college? Focus groups answered some of these questions and served to help verify printed survey results.
- ! Washington officials have been wrestling with the concept of lifetime learning for people already employed. They recommended a "pay or play" for employer based training to the legislature, but it didn't pass. The diversion of a portion of the unemployment tax was a substitute for the pay or play proposal. However, the diversion has no effect on current workers.
- ! In future work, they want to look at issues associated with high performance organization (along the lines developed in Oregon). They want to move towards a high wage - high skills orientation.
- ! The impetus for workforce concerns in Washington was a sense of frustration from the fragmentation in responsibility for workforce issues. However, business leaders wanted to know where current workforce related monies were being spent before spending more. The Washington (and part of the Oregon study) really came out of a rump group that was formed after several workforce proposals failed in the legislature. This group was formed to do some background work for future legislative sessions.
- ! While the officials we interviewed were generally happy with the organization of the study,

a few problems and successes were especially noted:

- 1) The tight time frame for the publishing of results made it impossible to sequence things very well. The various groups engaged in the research did not have time to get together in any kind of meaningful sequencing effort leading to coordination problems.
- 2) With this many groups involved, territorial problems emerged--again making coordination difficult.
- 3) The organization of the study included an advisory council made up of business, labor, and government leaders. The role of this council was never made very clear. Therefore, the council was somewhat ineffective. However, including these various groups was politically wise. Such a coalition was especially helpful when proposals were brought before the legislature.
- 4) The Washington study team visited Denmark and Germany to view these countries' workforce organization practices. Advisory board members were included in this fact finding mission. This too was a wise move. Many individuals on the advisory board who were ordinarily at odds with one another (labor and management) bonded during this trip and came back unified in many of their points of view.
- 5) While the study originated in the governor's office, there was not a great deal of political pressure to come up with any one specific answer. In fact, the results of the research effort were given good hearings by both the governor and the legislature. Washington was able to avoid making workforce a political issue.

Comparisons Between Oregon and Washington Studies

Skills were defined differently between the two studies. These differences in definition resulted from differences in the focuses of the two studies. Washington was trying to determine levels of satisfaction with current training. A related issue was to recommend procedures for mitigating areas of dissatisfaction. Oregon's analysis had "high performance work organization" as a goal. While Oregon also wanted to survey for levels of satisfaction/dissatisfaction, it especially wanted to determine whether or not high performance skills were valued by businesses.

Washington was looking for a modified approach to work with workforce issues. Such an approach would include re-organization of existing government entities so that a higher level of coordination of workforce practices would be achieved.

Oregon was trying to establish a series of specific benchmarks to indicate where they were at the

time, and to use in evaluating progress. The benchmarking practice is itself an integral part of high performance procedures.

Training was looked at somewhat the same by both states. Both were looking at training levels somewhere between the eighth grade and before a college degree is earned. Generally, the highest level where the word, "training" applied was at the community college level. Training was generally defined to be inclusive: apprenticeships, on-the-job training, public education, etc.

Minnesota Study Initiatives

SOUTHEASTERN MINNESOTA LABOR MARKET SURVEY 1994 SUMMARY OUTLOOK - The Private Industry Council (PIC) in Southeastern Minnesota conducted a labor market survey to evaluate problems and challenges in their ten county service delivery area. Their survey covered Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele and Wabasha counties. In the targeted survey group were 468 employers in these counties.

Their survey examined and identified:

- A. Employers' needs for trained workers and specific areas of shortage. The survey also attempted to identify sectors of both employment growth and reduction.
- B. Employers' training needs and how they are being met.

The survey was broad in its focus and looked at industries in all the major industry groups (from SIC 1500 to 9721), including agriculture. However, the survey sample consisted of employers who employed 100 workers or more.

Some of their key findings for Southeastern Minnesota are outlined below:

- ! There are existing and anticipated labor shortages in the region. Employers plan to address these by either cutting back business, increasing overtime, moving, restricting expansion, or importing products.
- ! Turnover was not viewed as a major challenge for businesses in the area with a fairly low 8% or so turnover rate.
- ! Ninety percent of the respondents cited personal qualifications such as "strong work ethic, initiative, flexible" as the most important skills needed in a new employee. This finding is certainly consistent with the National Commission's concern that the concept of skills in the

workplace is not very well understood in America.

- ! Interestingly enough, these "skills" were also cited as most frequently lacking in the region. In addition, certain other skills such as "communication skills," "problem solving skills," and "job related technical qualifications" were also cited as being in short supply.
- ! The most used training option by regional industry was in-house training, followed by training provided by associations and industry groups. Post secondary education training institutions ranked a distant third as an option.
- ! Some of the specific manufacturing occupations that were in especially short supply included: welders, assembly/production workers, machinists, and machine operators.

WEST CENTRAL INITIATIVE FUND STUDY - Another, similar study was conducted in Minnesota under the auspice of the West Central Minnesota Initiative Fund. Like the previous study, this survey was designed to identify skilled labor shortages and employee training needs in the region served by the fund. The study requested data from business executives and educational administrators, and coupled the results with secondary information to establish baseline information for the region. Findings from this survey:

- ! 20% of the business executives complained of difficulty in finding qualified individuals to fill vacancies.
- ! Most of these shortages were in skilled or semi-skilled categories.
- ! Skill shortages were stated in terms of occupation groups (another complaint by the National Commission) and included: Truck Drivers, Assembly Line Machine Operators, Electricians, Welders, Registered Nurses, and Management Information System Personnel.
- ! The two most often cited conditions which employers felt lead to skill shortages were: inadequate on the job experience and inadequate academic credentials.
- ! Most employers either used classified ads or a job service to locate their employees.
- ! Training needs identified by the business executives included: continuing education in medical occupations, workplace safety, on-site equipment maintenance & repair, supervisory skills, teams responsible for a job, truck driving, automation, hazardous materials handling & disposal, and vulnerable adult legalities.
- ! The most frequently cited sources employers used to meet their training needs included: in-house experience, private trainer inside the region, private trainer from outside the

region, and through local technical colleges.

Interviews With Minnesota Agencies/Organizations

The interviews with Washington and Oregon agencies and organizations were for the purposes of learning how these two states were reacting to and attempting to implement elements of the national task force recommendations. We also conducted interviews with Minnesota state agencies and organizations for the purpose of determining our own state's current position relative to workforce and training/educational issues.

An overall impression is that, while the state is certainly concerned with matching a trained workforce to industry needs, it has in no way adopted the conclusions and recommendations of the national study. Indeed, most of the agency and organization personnel we interviewed were only vaguely familiar with the study, if they knew of it at all.

The Minnesota interviews were of two types: 1) Direct interviews with representatives from selected state agencies and organizations. These interviews were generally held in the agency or organization offices with officials identified as having the greatest concern with workforce and training/educational issues.

Different members of the interview team handled asking questions differently. There was a series of six agreed upon questions to ask. Some members of the research team focused very directly on those questions. Others allowed for more of a free form discussion, always with the six questions in mind.

2) Interviews with agency, organization, manufacturing, and community leaders were also held in focus group sessions. These interviews were held around the state covering all but one of the territories of each regional office of Minnesota Technology, Inc.

This section of the report summarizes the interviews coming out of the first of the two types identified above. The next section will summarize the focus group sessions. The summary immediately below is taken from interviews with representatives of the Minnesota Department of Education, the office of the State Demographer, the Higher Education Coordinating Board, the Minnesota Community Colleges Board, the Minnesota Technical Colleges Board, the Minnesota Education Association, the Minnesota Federation of Teachers, the Minnesota High Technology Council, and the Minnesota Business Partnership. The summary will list each of the six questions

asked and summarize the views of the interviewed officials relative to each question.

1. Are there adequate numbers of skilled and technical as well as literate workers to meet the needs of Minnesota employers? If no, what shortages exist and what is needed to eliminate these shortages?

- ! There was general agreement that shortages of at least certain skills do exist in particular regions of the state. However, most did not see it to be at a crisis point, at least not at this time.
- ! There was also general agreement that one of the problems is a policy based de-emphasis of technical education. This de-emphasis is manifest in funding levels, but it is also evident in attitudes. Many argued that there was too much emphasis on college preparation in our high schools. Technical education is seen as a track for those "not smart enough" for college. Little is being done in our state to change this image of technical education and that is seen as a problem by those interviewed.
- ! One respondent reported that technical colleges are currently being asked to become more academic. Thus, technical education will be further de-emphasized in the very institutions that are set up to offer such programs. As can be inferred from some of the above statements, there is a great deal of concern on the part of these individuals about the status of technical education in the state of Minnesota.
- ! Some felt that the lower status of technical education, coupled with the classic complaints about too much television, too little parental involvement in education, and the peer pressure on students to not succeed, leads to a young population that does not take education and training, let alone work, very seriously. Such an attitude on the part of young people leads to skill shortages as well as to a general lack of commitment to hard work.

2. What do you perceive to be the needs of Minnesota for technically-trained, literate workers? Do you believe the state or units therein should reform and/or improve education and training systems to prepare more technically- trained, literate workers?

- ! There was some feeling that more training is needed in the state, especially from the post-secondary schools. Special efforts need to be made to make sure the product of the schools matches the needs of employers. While efforts are currently underway to improve

this aspect of Minnesota's training system, much more needs to be done, according to those interviewed.

- ! There were calls for increased public education regarding what technical and skills-based education are all about. The "public" in this response was generally defined quite broadly. It included parents, but it also included teachers and councilors at the high school level. Responses to this question once again emphasized the view that technical training has to be seen as a viable alternative to college.
- ! Others noted that, while innovations are constantly being tried at many different places in our educational system, there is little coordination. We need to be better aware of what is going on and generally adopt those experiments that meet with success.
- ! There were also calls for greater public and private cooperation on training. The form of this cooperative enterprise was not detailed, but at a minimum it would require the exchange of information and links to the business world in the form of apprenticeships or in-house training at the workplace.

3. How do you perceive and measure the ability of your students (graduates) to meet the needs of employers in Minnesota for high skilled, technical jobs? Are there any deficiencies?

- ! There was a consensus that some kind of outcomes measurements are necessary. Some campuses in the state are already well on the way to establishing such measures. Coordination and systematic procedures across all campuses is lacking or could be improved. Some of the current efforts could eventually lead to an evaluation design for all of post secondary education.
- ! At least one individual noted that, while outcomes measurements are necessary, outcomes will necessarily be less than we desire if the inputs are ignored. No system of outcomes measurement will be successful without the necessary support for delivering the education product.
- ! The technical colleges were often cited as leaders in performance measurement with the goal of designing programs that best meet the needs of employers in mind. Certain community colleges were also cited. One campus in the State University system was seen to be a leader. These could stand as models for the rest of higher education according to a number of the respondents.

4. In the best of all worlds, how would you respond to the public, political, business (particularly manufacturing) pressures to adjust or change your educational/training programs? How do you actually respond? Is there much interaction between the educational systems and the business community?

! Some complained about the inability of higher education to respond to changing needs. Two mentioned that responding to change is often a problem in private industry as well. One respondent argued that there needs to be some kind of feedback system where needs are identified, educational systems respond, and these responses are evaluated.

! Because systems are slow to respond to changing circumstances, there is a need for reliable occupation and skill requirements forecasting. It was observed that businesses need to give educational institutions some lead time so they will have time to develop new programs.

! Over and over again, respondents said that there needs to be more and better communication between industry and the educational system. One respondent even called for educators to spend some time in industry to become more familiar with the challenges industry faces. This same individual thought businesspeople should also be invited to engage in the teaching of pupils as well.

! Once again, the technical colleges were presented as leaders in the business-education dialog process.

! However, at least one individual was skeptical of the education-business partnership idea. This individual argued that others should also be a part of this partnership; government officials, citizens, parents, etc. Two mentioned that there should be more stability in the job market and that there should be jobs waiting for the students when they graduate. The European education model was mentioned in this regard.

5. The national study discussed how the workforce would be changing rapidly in the near future. There are likely to be few white males, more women, minorities, and people with disabilities. Has your agency thought about how this will change your training and/or education programs (e.g., life-time learning, more supportive services, etc.)? If so, how?

- ! At least one individual indicated that the workforce will not only be changing for the nation, but for Minnesota. The rural to urban migration has been over for some time. In Minnesota, the early rural to urban migrants had a culture for work that is not necessarily the same as will be true for the next wave of immigrants into the workplace. This individual's agency has thought a great deal about this, but primarily from a research and prediction point of view.
- ! Others pointed once again to the slowness of response in most educational institutions. Rapid change could mean serious workforce problems in the future. We need to find ways to respond to change in a more rapid fashion.
- ! While the majority of respondents did not feel enough was being done at the current time, at least two individuals pointed to initiatives in the technical college system that should help improve response to changing workforce conditions.

6. Is there anything more you would like to discuss with me regarding the training/education of technically-trained, literate workers in the State of Minnesota?

- ! Some responded that we should de-emphasize liberal education at the university level in favor of training. Training should take place first, then work experience, then liberal education, according to this point of view.
- ! Another argued that we should direct students through their education to a greater extent than is being done at this time. People should not be allowed to major and become immersed in fields that are not wanted, not needed, or that are overcrowded.
- ! Others referred to the many social problems that are being brought to today's schools; drugs, poverty, and violence came immediately to mind. Any real reform in education will have to be accompanied by progress in these areas or the reforms will be unsuccessful.

FOCUS GROUPS

Purpose and Questions

Twelve focus groups were planned, two in each of six regions in the state, in order to obtain more in-depth views of the workforce situation in Minnesota. One set of groups was for the "providers" (representatives from education, employment training, labor, and government) and the other for manufacturers. To obtain participants in the groups, each of the six Minnesota Technology, Inc. (MTI) regional offices was asked to create lists of manufacturers and providers, and to invite them to participate in the focus groups. Information on the objectives and methods of the study was provided to each of the regional offices. Each regional office was asked to invite representatives of labor to be present in the "provider" groups where possible. Ten to twelve participants were planned for in each group and the questions asked of each group and their responses are shown in tables 1-12. The questions asked of each group were previewed by individuals knowledgeable about the specific problem, and reviewed for content and face validity in terms of the objectives of the study.

Groups Conducted and Procedure

Ten focus groups were conducted. In the Central region a number of groups were already planned or had been conducted by other studies; one of the MTI Regional Directors participated in one such group and provided us with notes. A total of 77 people participated in the ten groups that were conducted: 34 manufacturers and 43 providers. It is our judgment that the provider groups were representative of the providers in the region.

The manufacturing groups are less representative however, and a larger number of people invited chose not to participate. In two of the six regions only four representatives participated. We speculated on reasons for this apparent lack of interest: It could be that manufacturers were very busy at this time. It is also possible that manufacturers may have been recently surveyed or interviewed by others. In any event, the focus group information from manufacturers needs to be interpreted on the basis of somewhat less-than-hoped-for participation, and also checked against

the other information in this study.

Two members of the research team participated in each of the focus groups. At the beginning of each session, the objectives of the study were explained, the funders identified, and the participants informed that they would get a summary of the findings. Also, the research team members introduced themselves and asked the participants to do the same. Participants were told that speakers would not be identified, but that individual statements would be reported for the group. Throughout the focus group session, one of the research team members asked the questions and wrote the answers in key words on an easel pad, while the other member took more extensive notes on what was being said. The information reported here is what the research team gathered out of these two sets of notes. Care has been taken to preserve the anonymity of participating individuals and to report accurately.

Results

Tables 1-6 show typical statements made by the manufacturing groups, ordered by question and region. Tables 7-12 show typical statements from the provider groups, ordered by question and region. Note: The Central region is not included in tables 1-12. Due to the inability to conduct a focus group in that region, the group of questions asked in other regions did not get asked. However, the notes provided to us from that region are included in the material on which our conclusions are based.

The questions for the manufacturing group were as follows:

1.	<i>Are you, as a business able to recruit and retain an adequate number of skilled workers?</i>
2.	<i>If you are not able to recruit and retain an adequately skilled workforce, what are you doing to deal with the problem?</i>
3.	<i>Are there changes or improvements that could be made in your community or region that would improve your ability to recruit and retain skilled workers?</i>
4a.	<i>Where do you recruit your skilled workforce from?</i>
4b.	<i>Are the educational and training institutions providing adequate training to manufacturers?</i>
5.	<i>If your region does have workforce problems, what ideas do you have for dealing with them?</i>

The questions for the providers (educators, labor, trainers, and government entities) group were as follows:

1.	<i>Do you feel that you as providers are meeting the training needs of manufacturers for skilled workers in your region?</i>
2.	<i>Are there impediments you encounter in attempting to meet the needs of the manufacturers?</i>
3.	<i>Do you face specific impediments in attracting students into your programs? What are these impediments?</i>
4.	<i>As providers do you think manufacturers have problems with recruiting and retaining an adequately skilled workforce in your region?</i>
5.	<i>Are manufacturers in your region willing to form agreements/alliances to enhance the level of skills of their workforce?</i>
6.	<i>If your region does have workforce problems what ideas do you have for dealing with them?</i>

The focus group took a free flowing form of discussion with probes from the facilitators to focus discussion on the issues involved.

MANUFACTURING GROUP

Question 1: ***Are you, as a business able to recruit and retain an adequate number of skilled workers?***

Table 1

AREA	TYPICAL FOCUS GROUP PERCEPTIONS
North-east	<p>P Agreed they do not currently face a worker shortage.</p> <p>P The present pool of candidates is smaller and have more limited skills than before.</p> <p>P There are problems with the work ethic of the workforce.</p>
North-west	<p>P Group felt that there is a workforce problem in the region.</p> <p>P There is a shortage of both skilled and unskilled labor.</p> <p>P View themselves as a training ground for labor-losing employees to other cities for higher wages.</p> <p>P There is severe competition for skilled labor, lose employees over small wage differentials.</p>
South-west	<p>P There is a problem with recruiting and retaining skilled workforce.</p> <p>P Shortage of welders, CNC equipment operators, tool and die makers.</p> <p>P The labor market is drying up, especially in the age category of 18-30.</p> <p>P There is an inadequate level of basic skill.</p> <p>P Lack of commitment and work ethic are issues.</p>
South-east	<p>P Both recruitment and retention are a problem for their businesses.</p>
Metro	<p>P Manufacturers present are barely able to recruit the number of skilled workers they need.</p> <p>P In some cases there is a pure shortage.</p> <p>P There appears to be a large demand for skilled workers. There is severe competition among manufacturers for workers.</p> <p>P There is a definite shortage of younger, skilled workers.</p> <p>P The work ethic is lacking.</p> <p>P Retention is somewhat easier, although still a problem</p>

COMMENTS

All but one region (Northeast), reported problems with recruiting and retaining skilled and unskilled labor at this time. The particular skills shortages vary by region where mentioned, though welders generally seem to be in short supply. Also, the intensity of the problem both in recruiting and retaining skilled workers, appears to vary among regions. Lastly, the regions appear to experience varying degrees of availability of labor, skilled or unskilled.

Question 2: ***If you are not able to recruit and retain an adequately skilled workforce, what are you doing to deal with the problem?***

Table 2

AREA	TYPICAL FOCUS GROUP PERCEPTIONS	COMMENTS
North-east	<p>P Although no apparent shortage of skilled labor, quality has declined and companies are responding in ways such as automating, raising wage levels to attract better workers. Also sending employees to school, paying tuition and books.</p> <p>P Talk of introducing new management practices such as self-directed work teams.</p>	<p>There appears to be little difference in the strategies employed across regions. The strategies for dealing with recruitment range from automating (less dependence on workers) to targeting specific groups to offering cash incentives to existing employees who bring in new employees. In terms of retention, training, pay and benefits are used in all regions. Interestingly, providing a progressive working environment and introducing new management practices seem to be strategies used by some manufacturers for retaining workers.</p>
North-west	<p>P Group said they are responding by offering better benefits, higher wages. Attempting to create more flexibility in work schedules and benefits.</p> <p>P Increasingly involved in apprenticeship programs, schools, technical colleges.</p>	
South-west	<p>P Need to hire minority, immigrant employees--Asians and Africans.</p> <p>P Need to pay reasonable wages and benefits.</p> <p>P Target people who have not been a part of the labor pool, such as homemakers.</p> <p>P Offer incentives like "finder's fees" to employees who bring in a new employee</p> <p>P Making the workplace a better place to work.</p>	
South-east	<p>P Work with the Minnesota Job Service on a regular basis.</p> <p>P Cash incentive to hold employees.</p> <p>P Profit sharing plans and ESOPs for employees</p> <p>P Making workplace more friendly, more social, after work programs.</p>	
Metro	<p>P Training is used as incentive; most train employees in-house or use some innovative training providers in the metro area.</p>	

Question 3: **Are there changes or improvements that could be made in your community or region that would improve your ability to recruit and retain skilled workers?**

Table 3

AREA	TYPICAL FOCUS GROUP PERCEPTIONS	COMMENTS
North-east	<p>P Increase job opportunities in the region so that young skilled people will not leave.</p> <p>P Increase cooperative opportunities with schools, bringing students into workplaces, giving them on-the-job experience.</p>	
North-west	<p>P Lack of adequate housing is an impediment to attracting skilled labor.</p> <p>P Smaller communities have infrastructure problems, little recreation, lack medical facilities.</p>	
South-west	<p>P Inadequate skill level attributed to inadequate job done by schools teaching basic skills.</p> <p>P Role of parents discussed; life skills as taught in the past are not being taught. Attitude of "Generation X" seen as a deterrent. Belief that parents and teachers need to do more to teach life skills.</p> <p>P Not enough is being done to encourage technical education. K-12 focuses on college bound education. Few people enter technical programs where most of the job growth is.</p> <p>P Housing shortage is a major impediment. Local officials do not support construction and/or housing needs.</p> <p>P State taxes cited as a problem for recruiting people from other states.</p> <p>P State rules and regulations a problem--MPCA, OSHA.</p> <p>P Workers compensation and corporate taxes in Minnesota are prohibitive, diverting funds away from training and development.</p>	<p>Better cooperation between educational institutions and manufacturers is mentioned in several regions as a needed change. Also, educational institutions are criticized for not giving students the necessary basic skills and life skills, though parents are also mentioned as not doing an adequate job. In two regions lack of affordable housing is cited as a problem. In one region the availability of quality jobs is cited as the problem. Taxes and regulations are also cited as problems.</p>
South-east	<p>P Enhancing the relationship between high schools, technical colleges and manufacturers.</p> <p>P Better career counseling needed in schools.</p>	

Metro	<p>P Need for greater cooperation between technical schools and manufacturers.</p> <p>P Public transportation is a problem for manufacturers located outside city.</p> <p>P Quality of immigrant workforce excellent and no problems with integration perceived.</p>
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Question 4a: ***Where do you recruit your skilled workforce from?***

Table 4

AREA	TYPICAL FOCUS GROUP PERCEPTIONS
North-east	<p>P Recruit from technical colleges.</p> <p>P Minnesota Job Service.</p>
North-west	<p>P Technical colleges.</p> <p>P Minnesota Job Service.</p>
South-west	<p>P Employees are recruited through employee referrals, newspaper advertisements, technical and high schools.</p>
South-east	<p>P Technical colleges.</p> <p>P Minnesota Job Service.</p>
Metro	<p>P Primary sources of recruitment are high schools and technical colleges.</p> <p>P A few manufacturers cited suburban locations and proximity to technical colleges as a great help in providing workforce.</p>

COMMENTS

Manufacturers in almost all regions report that they recruit primarily from technical colleges and with the help of the Minnesota Job Service.

Question 4b: **Are the educational and training institutions providing adequate training to manufacturers?**

Table 5

AREA	TYPICAL FOCUS GROUP PERCEPTIONS
North-east	<p>P Group believed that technical colleges are meeting their needs, although not doing a good job with basic skills.</p>
North-west	<p>P Group voiced opinion that technical colleges did an adequate job teaching technical skills but not work ethic and responsibility.</p>
South-west	<p>P Basic skills training is lacking; satisfied with technical education.</p> <p>P K-12 system is years behind other parts of the developed world in TQM and team dynamics.</p> <p>P Believe technical schools not in position to gear training to company needs; takes too long to revise systems, rigid curriculum.</p> <p>P Public technical schools are not good at catering training programs to meet manufacturers' needs.</p> <p>P Group talked about instructors in technical colleges not knowledgeable about actual work done in companies.</p>
South-east	<p>P Education and training system needs revision.</p>
Metro	<p>P Technical schools doing fair job with training in technical skills, but a poor job with basic skills and soft skills.</p> <p>P Group believed high schools are not doing a good enough job teaching basic skills, also believe students are sorely lacking in life skills.</p>

COMMENTS

Technical colleges were reported across the regions as doing an adequate to fair job in technical training. Two technical colleges were cited specifically for doing an excellent job in both technical and core skills. High schools were judged to do a poor job in the basic skills areas as well as the life skills areas. Some technical colleges were cited as not being able to meet specific needs of manufacturers.

Question 5: ***If your region does have workforce problems, what ideas do you have for dealing with them?***

Table 6

AREA	TYPICAL FOCUS GROUP PERCEPTIONS	COMMENTS
North-east	<ul style="list-style-type: none"> P Enhance internships and cooperative learning opportunities. P Encourage on-the-job training for students. 	
North-west	<ul style="list-style-type: none"> P (Warned of declining quality of workforce, getting exponentially worse.) Apprenticeship programs could prepare future employees for jobs. P Upgrade quality of education and expectations, especially K-12, in key areas such as basic skills, communication skills and critical thinking. P Group talked about the need for manufacturers to embrace new management techniques and to enhance productivity. 	
South-west	<ul style="list-style-type: none"> P Encourage children toward a technical education. P Re-evaluate how schools gear children for school-to-work transition. P Overhaul education to work toward an outcome based system. P Increase parent involvement in K-12. P Focus on basic skills and math. Focus on soft skills (communication, interpersonal skills). P Technical schools work with manufacturers so students get theoretical and hands-on experience. Keep instructors in touch with changes. P Expansion of Youth Apprenticeship and Coop Programs. P City government should address lack of housing and poor infrastructure and work with business on these problems. Group hoped such an effort would attract employees. 	<p>The suggestions made by the focus group from the Southwest region include encouraging parents and children towards a technical rather than college education, and specific changes in the K-12 and technical college programs. Some manufacturers call for more training in what they call soft skills and new skills required by new management methods.</p>
South-east	<ul style="list-style-type: none"> P Enhance career counseling in schools. P Set standards for achieving basic skills in K-12. 	
Metro	<ul style="list-style-type: none"> P Better coordination between high schools, technical and community colleges, universities and manufacturers is needed. P Infrastructure needs should be addressed at a macro level for the state and communities. P Education needs to be reevaluated, especially K-12 and technical education. Basic skills, life skills and soft skills should be emphasized. 	

PROVIDERS GROUP

Question 1: ***Do you feel that you as providers are meeting the training needs of manufacturers for skilled workers in your region?*** COMMENTS

Table 7

AREA	TYPICAL FOCUS GROUP PERCEPTIONS
North-east	<p>P Meeting the needs of manufacturers; very responsive to the changing needs of manufacturers; good interaction when manufacturers are clear about what they are looking for.</p> <p>P Group felt skilled labor far exceeded the number of jobs; workforce is not a factor in keeping new industry out.</p> <p>P If the job is a good one (wages and benefits) there are no problems attracting skilled workers. Agreed that firms will attract workforce if they are willing to pay attractive wages and benefits.</p>
North-west	<p>P Not meeting the training needs of manufacturers because job requirements are changing faster than technical schools can.</p> <p>P Technical schools lack the money to keep up with changes in equipment.</p> <p>P Technical colleges are not talking enough to each other to understand needs.</p>
South-west	<p>P Fairly responsive in meeting the needs of manufacturers.</p>
South-east	<p>P Group felt they did not seem to interact with manufacturers enough, not meeting the needs in their region.</p> <p>P Customized Training meets the needs of the larger manufacturers only.</p>
Metro	<p>P Almost entire group subscribed to the idea that colleges and training schools are responding to the need of manufacturers fairly well.</p>

There are clear regional differences in the answers to this question. The answers range from **not at all to being able to meet** the needs of manufacturers and being very responsive to changing needs. The latter answer comes from Northeastern Minnesota where the problem expressed by manufacturers was the lack of an adequate number of jobs requiring skills. This same situation is expressed by the providers. Also, in this region the statement is made that the skilled workforce is available if a company is willing to pay for it. In other regions lack of interaction with manufacturers is mentioned as a problem in trying to meet their needs. Lack of the necessary flexibility is also mentioned as well as lack of funds to keep up with equipment. Finally, the technical colleges customized training programs are seen as largely not available to small manufacturers because of the costs involved and their ability to pay.

Question 2: **Are there impediments you encounter in attempting to meet the needs of the manufacturers?**

Table 8

AREA	TYPICAL FOCUS GROUP PERCEPTIONS
North-east	<p>P Manufacturers are often unwilling to participate in training programs and apprenticeships, especially when investment is involved.</p> <p>P Curriculum requirements make the training time too long and manufacturers are unwilling to wait a 2-3 year period in order to hire workforce.</p> <p>P Degrees alone do not guarantee students have achieved an acceptable competency; curriculums need to be altered to include practical experience.</p>
North-west	<p>P We as a nation and region have not done a good job of short and long term forecasting of jobs and requirements.</p> <p>P Educators and trainers are not communicating with manufacturers.</p> <p>P Technical colleges are strapped for certain funding.</p>
South-west	<p>P Rigidity in curriculum and training programs; training time too long to meet needs of manufacturers.</p> <p>P Mind set of parents and students is for four years of college; not enough students entering technical programs.</p> <p>P Industry sends mixed messages about their expectations: greater technical skills in specialized areas but also more general education requirements.</p> <p>P See a need for enhanced basic skills training and improvement of life skills (K-12)</p>
South-east	<p>P Technical colleges are made to be fairly rigid, in terms of response time to create specific programs and change curriculum.</p> <p>P Manufacturers' ability to pay for customized training is a major factor in the ability of technical colleges to provide service.</p>

COMMENTS

There is agreement on many of the points across the regions with regard to this question. One thing there is agreement on is the lack of communication between manufacturers and educational institutions. This prevents educators from being aware of the needs of manufacturers and manufacturers from being aware of the constraints and needs of educators. As an example, the flexibility of technical colleges is restricted by enrollment based funding of degree programs and the need to make money on customized training. Another problem mentioned by the providers is the tendency of parents and the community to emphasize college education above all other alternatives. Thus, there is a basic lack of students in technical programs. There is agreement that K-12 basic skills and life skills training need to be improved. Funding problems are also mentioned. In one region it was mentioned that there is an unwillingness on the part of some manufacturers to see training as an investment in the same way as investment in plant and equipment.

Metro	<p>P Manufacturers do not provide enough lead time to educators and trainers.</p> <p>P Raw number of students entering program is simply not there.</p>
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Question 3: ***Do you face specific impediments in attracting students into your programs? What are these impediments?***

Table 9

AREA	TYPICAL FOCUS GROUP PERCEPTIONS
North-east	<p>P Better career counseling is needed in K-12.</p> <p>P Enhanced use of youth apprenticeships would work.</p> <p>P Students do not have an adequate level of basic life skills when they enter post-secondary education. Remedial programs divert valuable resources.</p> <p>P High schools counselors emphasize only college track.</p> <p>P K-12 needs to work better with technical colleges, community colleges and universities.</p>
North-west	<p>P No pride left in a manufacturing career; students are reluctant to choose it. As a result, technical colleges face reduced enrollments.</p> <p>P Parents and schools gear student for college; more difficult to attract students into technical colleges.</p>
South-west	<p>P Problems in attracting students into their programs.</p> <p>P Existing rules prohibit changes needed in the education system.</p>
South-east	<p>P Not enough students entering programs; in part due to social bias; K-12 gears students toward college track.</p>
Metro	<p>P Not enough students entering technical programs.</p> <p>P Curriculum needs reevaluation.</p> <p>P Need more communication between high school, technical colleges, community colleges and universities.</p> <p>P Programs not well marketed.</p> <p>P Higher education not user friendly.</p>

COMMENTS

The answer to this question is uniform across regions. There are not enough students enrolling in technical programs. Parents and the community do not promote technical education or manufacturing jobs.

Question 4: ***As providers do you think manufacturers have problems with recruiting and retaining an adequately skilled workforce in your region?***

Table 10

AREA	TYPICAL FOCUS GROUP PERCEPTIONS	COMMENTS
North-east	<p>P Lack of workforce is not an issue here. Workers compensation and distance to major markets are reasons for firms moving.</p> <p>P High turnover rates are a problem for some firms; companies have not been progressive enough.</p>	
North-west	<p>P Group felt manufacturers are having problems in recruiting and retaining skilled and unskilled labor.</p> <p>P Impossible to find welders in this area; shortage is apparent state-wide.</p>	
South-west	<p>P Believe manufacturers face problems in numbers of workers; shortage of population accounts for this.</p> <p>P Believe that wages are low in Southwest Minnesota; fails to attract skilled employees.</p> <p>P Believe the best students leave in search of better opportunities.</p>	<p>Three of the five regions answered this question in the affirmative. One of the five reported no problem with workforce (Northeast Minnesota), and one reported that manufacturers who could afford to provide good paying jobs and benefits were not having problems with recruiting a skilled workforce (Southeast Minnesota).</p>
South-east	<p>P Manufacturers who provide good paying jobs and benefits are not having problems. Companies that pay low wages--food processing industry in their region, for example, face problems.</p>	
Metro	<p>P Believe manufacturers are having problems recruiting and retaining because of: inadequate public transportation; lack of availability of housing; not enough integration of diverse populations and people with disabilities.</p>	

Question 5: **Are manufacturers in your region willing to form agreements/alliances to enhance the level of skills of their workforce?**

Table 11

AREA	TYPICAL FOCUS GROUP PERCEPTIONS	COMMENTS
North-east	<p>P Manufacturers have been willing to form alliances with educators and trainers.</p> <p>P Customized training works well for larger manufacturers who can pay for training.</p> <p>P Often the needs of small and mid-sized firms are not met.</p> <p>P Manufacturers need to be more proactive when pressured for enhanced training; they should view training as a continuous process, encourage apprenticeship.</p>	<p>Most of the regions report some experience with alliances. In one region the group reported little familiarity with alliances but believe that there should be one between manufacturers and school districts.</p>
North-west	<p>P Believes manufacturers are unfamiliar with arrangements/alliances for training.</p> <p>P Mistrust exists between manufacturers and public educators and trainers.</p> <p>P Very little in terms of partnerships in school-to-work, apprenticeships, and internships; there should be alliances between manufacturers and school districts.</p>	<p>Also, the experiences with alliances reported seem to vary in quality and the motivation seems to be different.</p>
South-west	<p>P Manufacturers are willing for form agreements; have not worked as well as they should. Some success here; some missed opportunities.</p> <p>P Problem recruiting welders. Manufacturers asked local technical colleges to put in a welding program but colleges could not provide such a program.</p>	
South-east	<p>P Larger and mid-sized manufacturers are willing to form alliances; others are willing if they can get "free" training.</p>	
Metro	<p>P Some manufacturers are willing to form alliances and agreements; more joint programs needed.</p> <p>P Manufacturers are hesitant to pay for programs but once done right they are willing. Education needs to do a better job marketing and providing a return-on-investment model to manufacturers.</p>	

Question 6: ***If your region does have workforce problems, what ideas do you have for dealing with them?***

Table 12

AREA	TYPICAL FOCUS GROUP PERCEPTIONS
North-east	<ul style="list-style-type: none"> P Need for improvement in working relationships between manufacturers and trainers. P Should be greater emphasis on internships, apprenticeships, and workforce retraining. P Enhance basic skills of children in the school system.
North-west	<ul style="list-style-type: none"> P West Central Minnesota Initiative Fund is addressing workforce issues in region; various scattered efforts occurring in the region need to be brought together. P Career development must be emphasized in K-12. P Better coordination between manufacturers, technical colleges and schools is needed.
South-west	<ul style="list-style-type: none"> P Better cooperation between industry, education and government. P Need for constant communication about changing needs to insure acceptable skill levels in workforce. P Education reform needed to improve basic skills and life skills. P Parents and children need better assumptions about the value of a technical education. P Better links between K-12, technical and college education needed. P Governments should help issue revenue bonds for low cost housing. Employee recruitment must be supported by government as well as business recruitment. P MTI needs to work to help with a return-on-investment model to sell training to manufacturers. MTI should undertake a cost-benefit approach for the state. P Employers in this region need to make jobs attractive and safe.
South-east	<ul style="list-style-type: none"> P Need for partnerships between manufacturers and trainers; manufacturers should help with equipment for interns, so that students get job experience. P Businesses should work with schools on career counseling.

COMMENTS

The nature of the suggestions put forth by the providers is not very different than the ones put forth by the manufacturers. There is a call for greater cooperation between the two groups. Education must become more user friendly. K-12 education needs to do a better job of preparing students for technical education. The image of technical education and manufacturing alike needs to be enhanced. Curricula needs to be more flexible. Life skills need to be improved. Low cost housing is needed. Manufacturers need to see training as an investment. Jobs and the work environment need to be made more attractive. There needs to be more emphasis on apprenticeship programs.

Metro	<ul style="list-style-type: none"><li data-bbox="337 180 967 239">P Communication gap between manufacturers and providers, at state and regional levels.<li data-bbox="337 247 1011 415">P Education has to be more user friendly; curriculum should adapt to changing needs and technology. Merger of technical colleges and community colleges are dragging the system in the wrong direction.<li data-bbox="337 424 943 483">P Technical education needs to be marketed better in K-12.<li data-bbox="337 491 976 550">P K-12 education needs enhancement of basic skills.<li data-bbox="337 558 971 653">P Need for increased cooperative programs so student can get experience on the newest technologies.
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In Sum

In sum, all regions but one report problems with recruitment and retention of skilled (and unskilled) workers. The one region reported rather a problem with having an adequate number of jobs that require skills at a higher technical level. Manufacturers included in these focus groups report recruitment and retention problems even in face of trying to use better wages, benefits and other "soft" incentives such as new management techniques. Lack of basic skills and life skills are cited by almost all regions. Even though not emphasized as much, lack of communication, teamwork and problem solving skills are also mentioned. Technical schools are cited as doing an adequate job in the technical skills area. High schools are criticized for not doing an adequate job of basic skills training, as are parents.

It should be pointed out that participation from manufacturers was less than hoped for and that the sample clearly consists of many more smaller and regional manufacturers rather than medium size and larger urban manufacturers.

SURVEY

Methodology

Prior to designing the survey instrument, the research team reviewed similar work done by other states as well as work done by other groups in Minnesota. The survey was designed to take a preliminary look at whether Minnesota's manufacturers faced a workforce problem. Part of the workforce study dealt with a survey of manufacturers within the State of Minnesota. The survey asked a variety of questions dealing with the availability of skilled workers and the ability of firms to both recruit and retain skilled workers.

The survey was three pages in length and had 18 questions. The data source for the survey was a relational database maintained by Minnesota Technology Inc (MTI). The database was created by the company for their internal use and includes all known manufacturing establishments in Minnesota. The survey was mailed to a sample of 1270 manufacturers in the state in February 1995. The recipients were selected by a random selection process, stratified by region and employment size. The regions were identified based on MTI's six service areas identified below:

NORTHWEST

the following counties are included in the region

Kittson	Roseau	Lake of the Woods
Beltrami	Clearwater	Pennington
Marshall	Polk	Red Lake
Hubbard	Becker	Clay
Norman	Wilkin	Otter Tail
Traverse	Grant	Stevens
Douglas		

NORTHEAST

the following counties are included in the region

Koochiching	Itasca	St. Louis
Lake	Cook	Carlton
Aitkin		

CENTRAL

the following counties are included in the region

Benton	Sherburne	Stearns
Morrison	Mille Lacs	Kanabec
Pine	Isanti	Chisago
Wright	Todd	Crow
Wing	Cass	Wadena

METRO

the following counties are included in the region

Hennepin	Anoka	Washington
Carver	Scott	Dakota
Ramsey		

SOUTHWEST

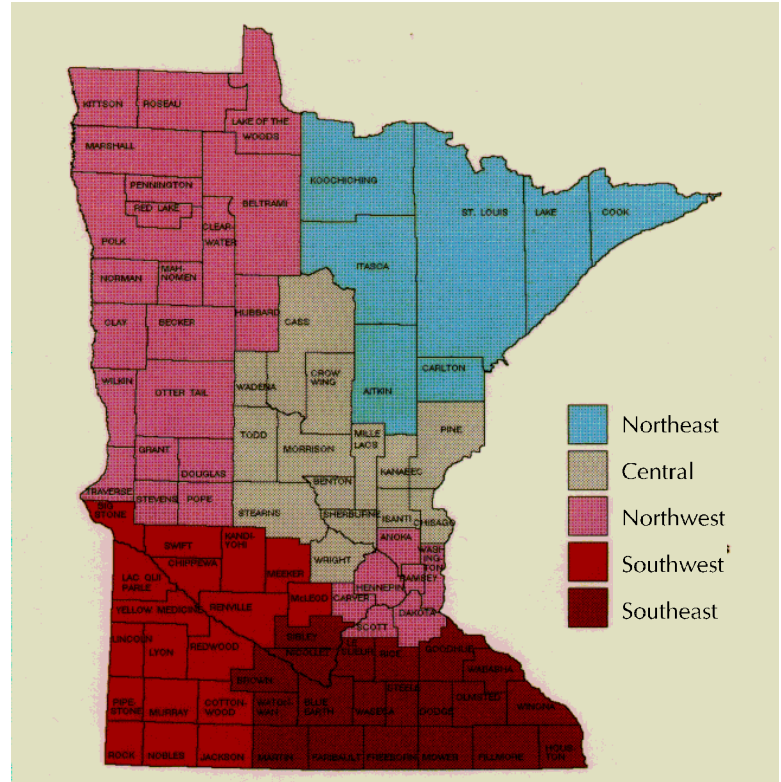
the following counties are included in the region

Big Stone	Swift	Kandiyohi
Meeker	McLeod	Renville
Chippewa	Lac Qui Parle	
Yellow Medicine	Lincoln	Lyons
Pipestone	Rock	Nobles
Murray	Jackson	
Cottonwood	Redwood	

SOUTHEAST

the following counties are included in the region

Le Seuer	Waseca	Freeborn
Mower	Fillmore	Houston
Winona	Olmstead	Dodge
Steele	Rice	Goodhue
Wabashsa	Sibley	Nicollet
Brown	Watonwan	Martin
Faribault	Blue Earth	



The stratification by employment size aimed at including small, medium, and large employers in all six regions. In certain areas that had a limited number of large firms, surveys were sent to all firms and responses were weighted through a weighting scheme to adjust for this variation. In all, 331 responses were received of which 325 responses were usable. The responses were coded and analyzed. SPSS for windows was the software used for the analysis. It should be noted that the purpose of this preliminary survey was to gather information to determine if Minnesota's manufacturers face a workforce problem and if they do whether further research is needed in that direction. Given the preliminary nature of the study, in comparing regional and size results, only apparent variations were discussed.

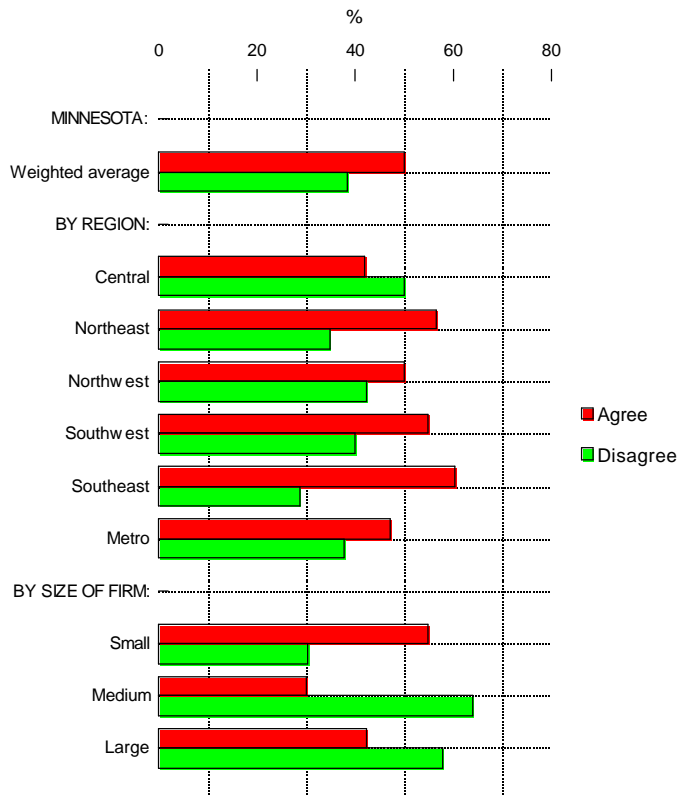
RESULTS

Each question on the survey will be discussed in three different ways. First, the response of all firms completing the questionnaire will be discussed. Then, the responses by region within the State will be discussed. Finally, the results will be discussed in terms of the size of the firm responding to the survey. For purposes of analysis, a small firm was defined as one that had less than \$5 million in annual gross revenues. The medium-sized firm was defined as one that had annual gross revenues equal to or greater than \$5 million, but less than \$50 million. Large firms were defined to be those who had annual gross revenues equal to or greater than \$50 million.

Figure 1

Lack of Skilled Workers Has Had Little or No Effect on Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	49.9	38.2
BY REGION:		
Central	42.1	50.0
Northeast	56.5	34.8
Northwest	50.0	42.3
Southwest	55.0	40.0
Southeast	60.4	28.8
Metro	47.0	37.8
BY SIZE OF FIRM:		
Small	54.9	30.2
Medium	29.8	63.8
Large	42.3	57.7

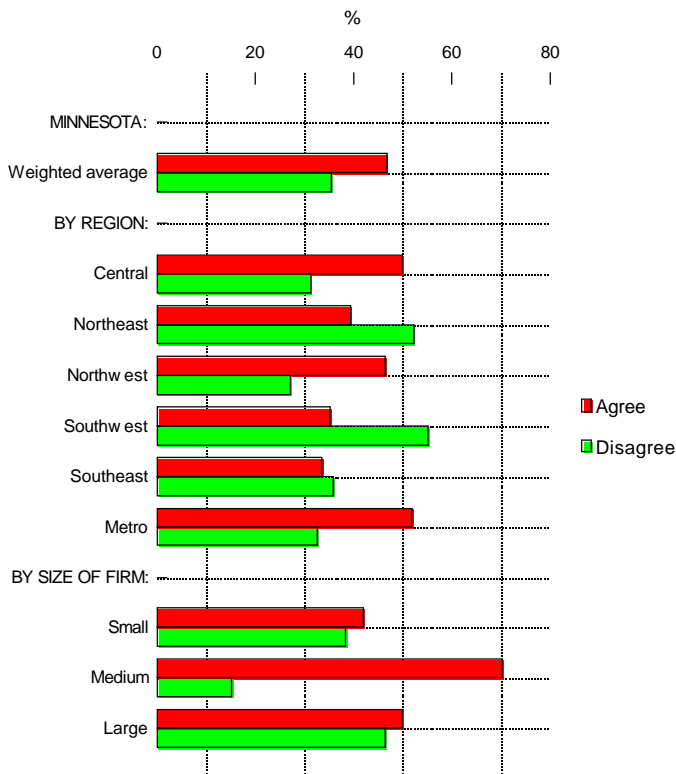


The first question asked respondents to indicate how strongly they agreed or disagreed with a number of statements. Each statement had a lead-in clause that said "A lack of skilled workers in your region has affected your firm in the following ways." The first statement said that a lack of skilled workers in your region has had little or no effect on your firm. Approximately 50% of all state respondents agreed with that statement while 38% of all state respondents disagreed. The remaining state respondents neither agreed nor disagreed, so they are viewed as being indifferent regarding the statement. When the regional responses are examined, it can be seen that respondents in three of the six MTI regions had a higher percentage of agreements than did the state respondents. The Southeast had the highest percentage respondents agree (above 60 percent). On the other hand, Central region respondents had a slightly lower percentage agreeing with the statement than did the respondents for the state as a whole. The different size firms responded quite differently to this statement. A slightly higher percentage of small-size respondents agreed with the statement (54.9%), while medium and large firm respondents had lower percentage agreements (29.8% and 42.3%, respectively) and higher percentage of disagreements (63.8% and 57.7%, respectively).

Figure 2

A Lack of Skilled Workers Has Adversely Affected Productivity of Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	46.7	35.3
BY REGION:		
Central	50.0	31.3
Northeast	39.1	52.2
Northwest	46.2	26.9
Southwest	35.0	55.0
Southeast	33.3	35.7
Metro	51.7	32.6
BY SIZE OF FIRM:		
Small	41.7	38.3
Medium	70.2	14.9
Large	50.0	46.2

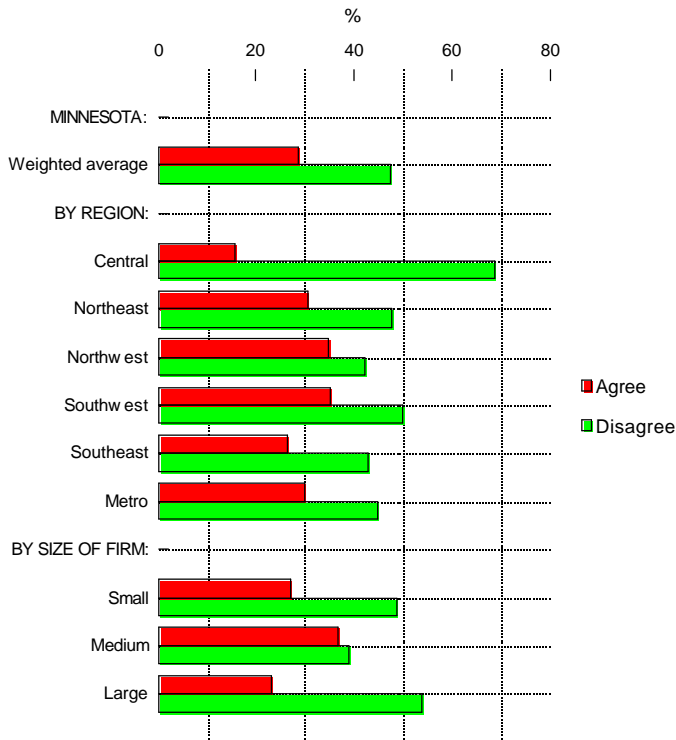


The second statement asked respondents whether they agreed or disagreed with the statement that a lack of skilled workers has adversely affected productivity in their firms. 46.7% of all state respondents agreed with the statement, while 35.3% disagreed. In the Northeast, Southwest, and Southeast regions, significantly smaller percentages of the respondents agreed with the statement than was true for the state as a whole. Once again, significant differences to the statement occurred when looking at respondents in different size firms. Smaller firms had smaller percentage of the respondents that agreed with the statement while the medium and large firms had a higher percentage that agreed. Fewer medium size firms disagreed with the statement when compared to the state responses, while a larger percentage of respondents in large firms disagreed.

Figure 3

A Lack of Skilled Workers Has Prevented Expansion of Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	28.7	47.4
BY REGION:		
Central	15.6	68.8
Northeast	30.4	47.8
Northwest	34.6	42.3
Southwest	35.0	50.0
Southeast	26.2	42.9
Metro	29.9	44.8
BY SIZE OF FIRM:		
Small	27.1	48.7
Medium	36.7	38.8
Large	23.1	53.8

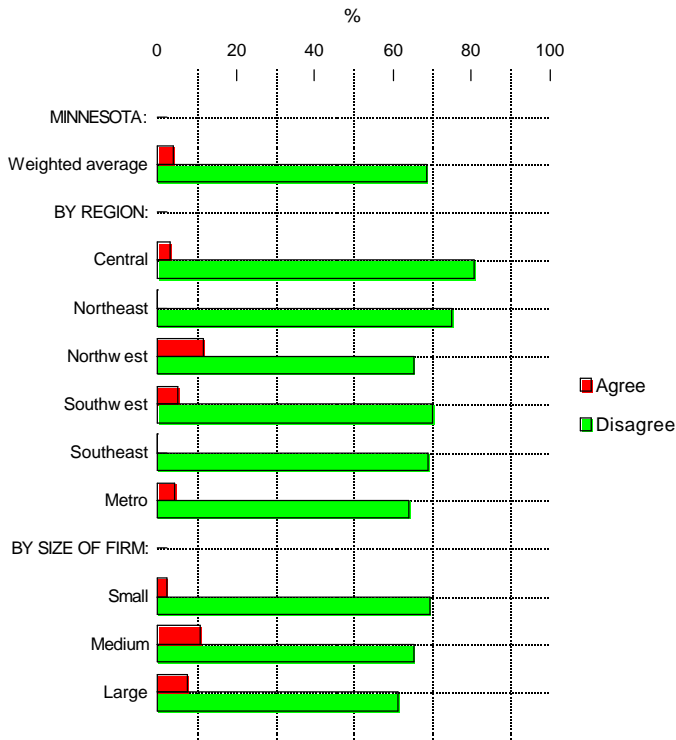


The third statement asked respondents how strongly they agreed or disagreed that a lack of skilled workers prevented expansion of their firm. 28.7% of all state respondents agreed with the statement, while 47.4% disagreed. The Central region had responses that were materially different from that of all state respondents. A much smaller percentage of Central region respondents agreed with the statement, while a much larger percentage disagreed. The respondents in all size firms had similar responses to that of all state respondents.

Figure 4

Lack of Skilled Workers Has Caused Your Firm to Move to Another Minnesota Region

	Agree %	Disagree %
MINNESOTA:		
Weighted average	3.9	68.4
BY REGION:		
Central	3.2	80.6
Northeast	0.0	75.0
Northwest	11.5	65.4
Southwest	5.0	70.0
Southeast	0.0	69.1
Metro	4.4	64.1
BY SIZE OF FIRM:		
Small	2.3	69.5
Medium	10.9	65.2
Large	7.7	61.5

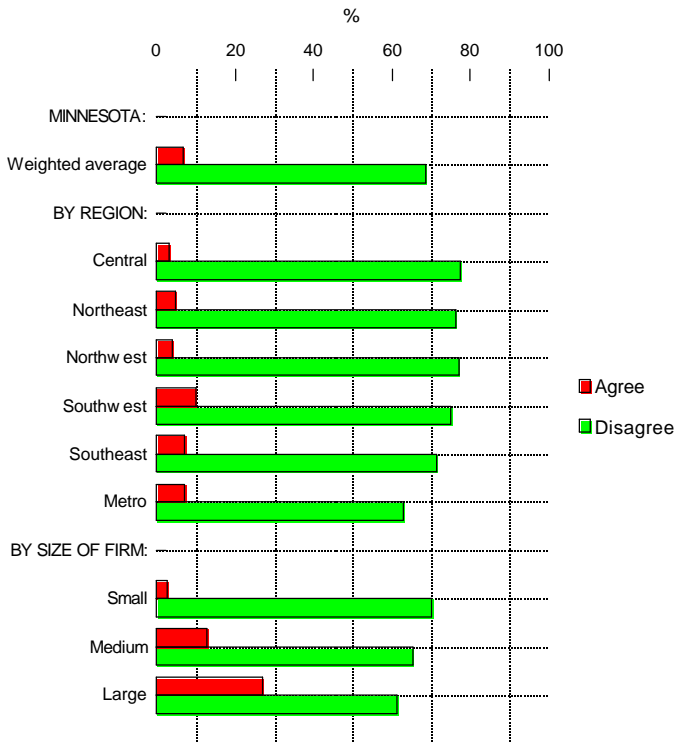


The fourth statement in question one asked the respondents how strongly they agreed or disagreed that a lack of skilled workers has caused a segment of their firm to move to another region in Minnesota. Only 3.9% of all state respondents agreed with the statement, while 68.4% disagreed. The only region that showed significant variation from this was the Northwest region in which 11.5% of that region's respondents agreed with the statement. Respondents in all firm sizes had similar responses to those of the state as a whole, although slightly more medium and large firms agreed with the statement (10.9% and 7.7%, respectively).

Figure 5

A Lack of Skilled Workers Has Caused Your Firm to Move Outside Minnesota

	Agree %	Disagree %
MINNESOTA:		
Weighted average	6.6	68.6
BY REGION:		
Central	3.2	77.4
Northeast	4.8	76.2
Northwest	3.9	76.9
Southwest	10.0	75.0
Southeast	7.1	71.4
Metro	7.0	63.1
BY SIZE OF FIRM:		
Small	2.7	70.3
Medium	13.0	65.2
Large	26.9	61.5

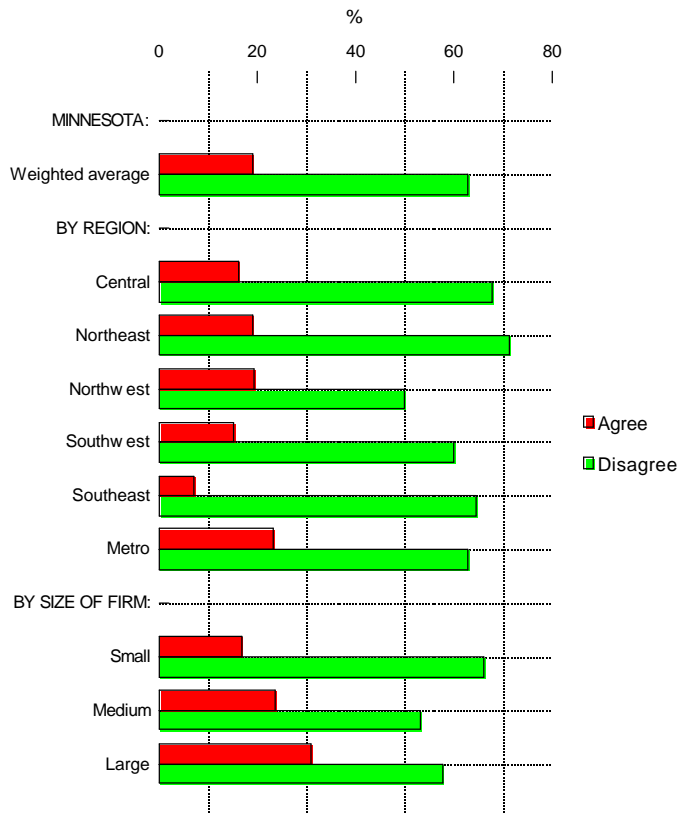


The fifth statement in question one asked respondents how strongly they agreed or disagreed that a lack of skilled workers caused a segment of their firm to move out of Minnesota. 6.6% of all state respondents agreed with the statement, while 68.6% disagreed. There were no significant variations from this response from any of the six MTI regions respondents. However, different size firms had significant variations from the state responses. A smaller percentage of small firm respondents agreed with the statement (2.7%), while a larger percentage of medium and large respondents agreed (13.0% and 26.9%, respectively). More medium and large sized firms appear to move out of the state in response to a shortage of skilled workers than is true for smaller firms.

Figure 6

A Lack of Skilled Workers Has Forced Your Firm to Import Workers from Another Minnesota Region

	Agree %	Disagree %
MINNESOTA:		
Weighted average	19.1	62.9
BY REGION:		
Central	16.1	67.7
Northeast	19.1	71.4
Northwest	19.2	50.0
Southwest	15.0	60.0
Southeast	7.1	64.3
Metro	23.3	62.9
BY SIZE OF FIRM:		
Small	16.7	66.1
Medium	23.4	53.2
Large	30.8	57.7

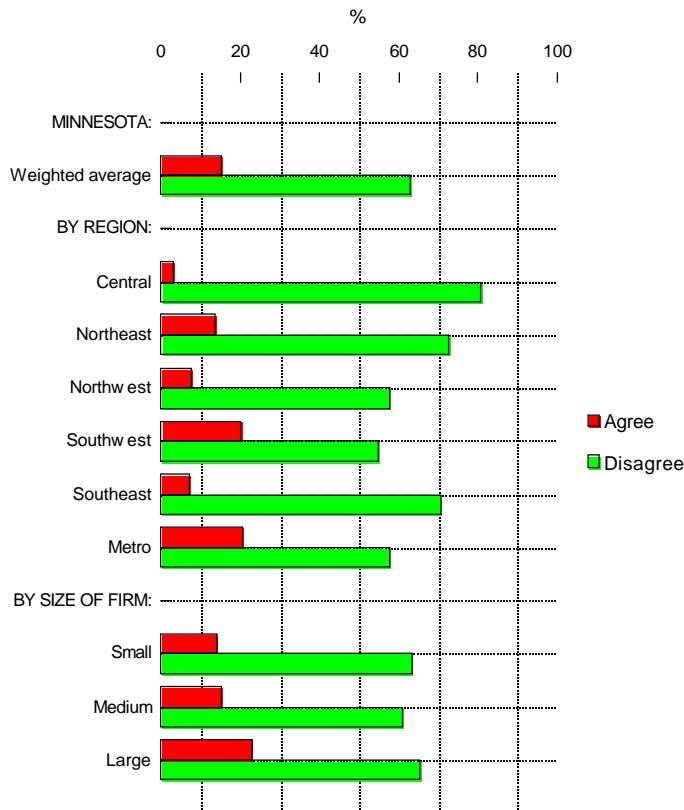


The sixth statement asked respondents how strongly they agreed or disagreed that a lack of skilled workers forced them to import skilled workers from another region in Minnesota. 19.1% of state respondents agreed with the statement, while 62.9% disagreed. The Southeast region had a much smaller percentage of their respondents agree with the statement (7.1%), while the Metro region had a higher percentage of respondents agree with the statement. Once again, there were some deviations to the state responses when looking at firm size of the respondents. Respondents in smaller firms had a somewhat smaller percentage agree (16.7%), while medium and large firms had a higher percentage agree (23.4% and 30.8%, respectively).

Figure 7

A Lack of Skilled Workers Has Forced Your Firm to Import Workers from Outside Minnesota

	Agree %	Disagree %
MINNESOTA:		
Weighted average	15.3	62.9
BY REGION:		
Central	3.2	80.6
Northeast	13.6	72.7
Northwest	7.7	57.7
Southwest	20.0	55.0
Southeast	7.3	70.7
Metro	20.6	57.6
BY SIZE OF FIRM:		
Small	14.1	63.4
Medium	15.2	60.9
Large	23.1	65.4

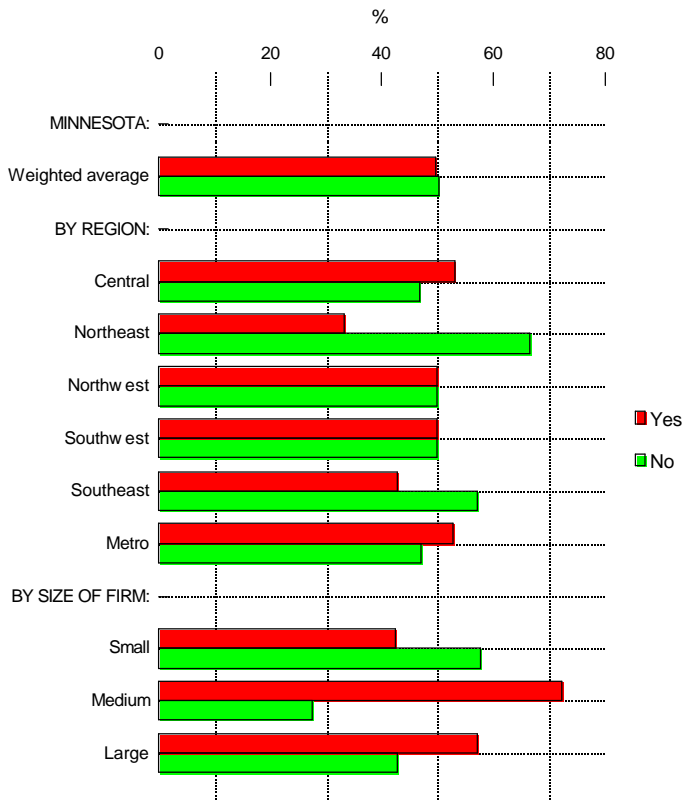


Finally, the last statement in the first question asked respondents how strongly they agreed or disagreed that a lack of skilled workers had forced them to import skilled workers from outside the state. A little over 15% of all state respondents agreed with this statement, while 63% disagreed. There was significant deviation to this response on the part of respondents in the six MTI regions looked at individually. A smaller percentage of respondents agreed with this statement in the Central region (3.2%), the Northwest region (7.7%), and the Southeast region (7.3%). A large percentage agreed with the statement in the Southwest region (20.0%) and Metro region (20.6%). The only deviation to the state response when looked at by size of the respondent's firm was that a greater percentage of respondents in large firms agreed with the statement (23.1%).

Figure 8

Your Firm Has Had Difficulty Hiring Skilled Workers Over the Past Few Years

	Yes %	No %
MINNESOTA:		
Weighted average	49.8	50.2
BY REGION:		
Central	53.1	46.9
Northeast	33.3	66.7
Northwest	50.0	50.0
Southwest	50.0	50.0
Southeast	42.9	57.1
Metro	52.9	47.1
BY SIZE OF FIRM:		
Small	42.4	57.6
Medium	72.5	27.5
Large	57.1	42.9



The second question asked respondents whether their firm had difficulty in hiring skilled workers over the past few years. The state respondents were almost equally divided on this question: 49.8% responded yes and 50.2% responded no. The Northeast region had results that were inconsistent with the state responses. In the Northeast region, 33.3% of the respondents said yes, while 66.7% said no. A slightly smaller percentage of respondents in the small firms agreed with the statement (42.4%), while a slightly greater percentage of large firm respondents agreed (57.1%). However, a much larger percentage of respondents in medium sized firms agreed (72.5%).

Those firms that indicated they had difficulty in hiring skilled workers over the past few years were asked from which occupations their firm had the most difficulty hiring skilled workers in question 3. The four most frequently listed responses were: assembler, machinist, welder, and tool & die maker. Question 4 then asked the respondents to indicate the dollar per hour they were currently paying for the occupations listed in question 3. The dollar per hour ranged from the weighted mean average calculated when the occupation was listed first, second, and third. The range of wages paid to assemblers throughout the state was from a low of \$6.79 per hour to a high of \$9.43 per hour. These ranges differed to some degree among the various MTI regions within the state. In the Central region the range was from \$5.75 an hour to \$6.47 an hour. In the Southeast region, the range was from \$6.79 an hour to \$9.00 per hour. In the Metro region, the range was from \$7.49 to \$9.75. Assemblers were not identified as occupations in which firms had difficulty hiring skilled workers in the Northeast region and Southwest regions. Across the various size categories, hourly wages varied from \$6.49 to \$9.88 for small firms; \$8.00 to \$11.75 for medium firms; and from \$7.92 to \$13.77 for large firms.

The range of wages for machinists throughout the state was from a low of \$11.89 an hour to a high of \$13.48 per hour. Once again, the regional linkages were somewhat different. The range in the Central region was from a low of \$10.65 an hour to a high of \$12.82 an hour. The range in the Southeast region was from a low of \$9.75 an hour to a high of \$12.00 an hour. Finally, the range in the Metro region was from \$14.29 an hour to \$15.21 an hour. Across the various size categories, hourly wages for machinists varied from \$10.98 to \$12.15 for small firms; from \$13.21 to \$14.74 for medium firms; and figures were unavailable for the large firm category.

The wage range for welders throughout the state was from a low of \$9.97 per hour to a high of \$11.41 per hour. The range in the Metro region was from \$11.11 an hour to \$11.55 an hour. In the Southeast region, it ranged from \$10.35 an hour to \$11.24 an hour. Across the various size categories, hourly wages for welders varied from a low of \$9.43 to a high of \$10.02 for small firms; from \$10.12 to \$10.46 for medium firms; and data were unavailable for the large firm category.

Finally, the wage range for tool & die makers throughout the state was from a low of \$15.03 to a high of \$15.60 per hour. In the Southeast region the range was \$11.71 an hour to \$13.00 per hour. The range in the Metro region was from \$15.88 to \$16.61 an hour. For the tool and die

maker category, hourly wages across the various size categories varied from \$6.60 to \$13.00 for small firms; from \$13.43 to \$16.15 for large firms; and figures were unavailable for the medium size firm category.

Question 5 asked respondents from what source they primarily recruit their skilled workers. 36.2% of all state respondents indicated they use more than one of the sources to primarily recruit skilled workers. Of the single source identified, public technical colleges, was the largest source followed by other firms, "other," high schools, and private technical colleges. Respondents in the six MTI regions had similar rankings with a few minor deviations among the regions.

40.9% of respondents in small firms indicated they had more than one primary source of skilled workers, 22.4% of respondents in medium firms indicated the same, and 19.2% of large firm respondents had more than one primary source. The rank ordering of the remaining sources by firm size was as follows:

Small firms:

- 1) Other firms
- 2) Public technical schools
- 3) "Other"
- 4) High schools
- 5) Private technical schools

Medium firms:

- 1) Public technical schools
- 2) "Other"
- 3) Other firms
- 4) Private technical schools
- 5) High schools

Large firms:

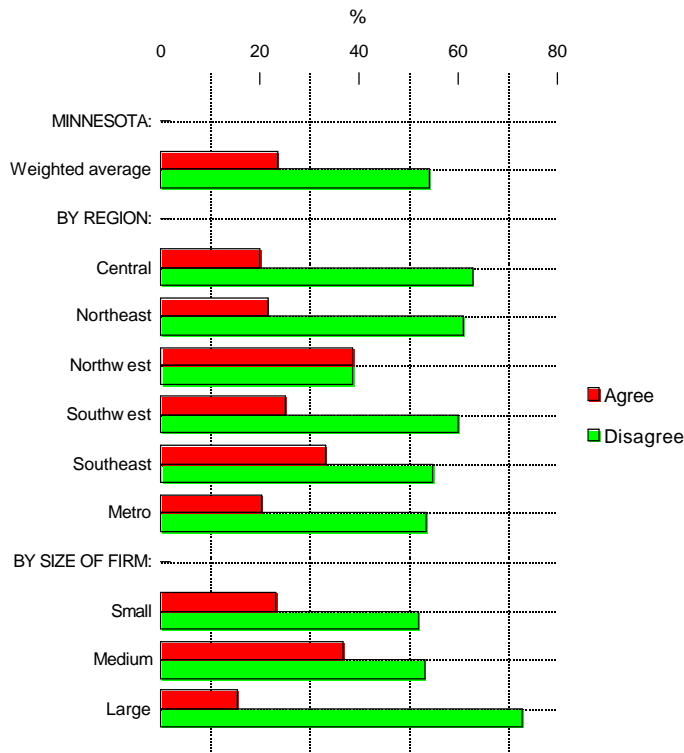
- 1) Other firms
- 2) "Other"
- 3) Public technical schools
- 4) High schools and private technical schools (tied for 4th place)

The primary sources appear to be three in number: public technical colleges, other firms, and "other."

Figure 9

Your Firm Has Difficulty Retaining Skilled Workers

	Agree %	Disagree %
MINNESOTA:		
Weighted average	23.6	54.3
BY REGION:		
Central	20.0	62.9
Northeast	21.7	60.9
Northwest	38.5	38.5
Southwest	25.0	60.0
Southeast	33.3	54.8
Metro	20.1	53.5
BY SIZE OF FIRM:		
Small	23.0	51.9
Medium	36.7	53.1
Large	15.4	73.1

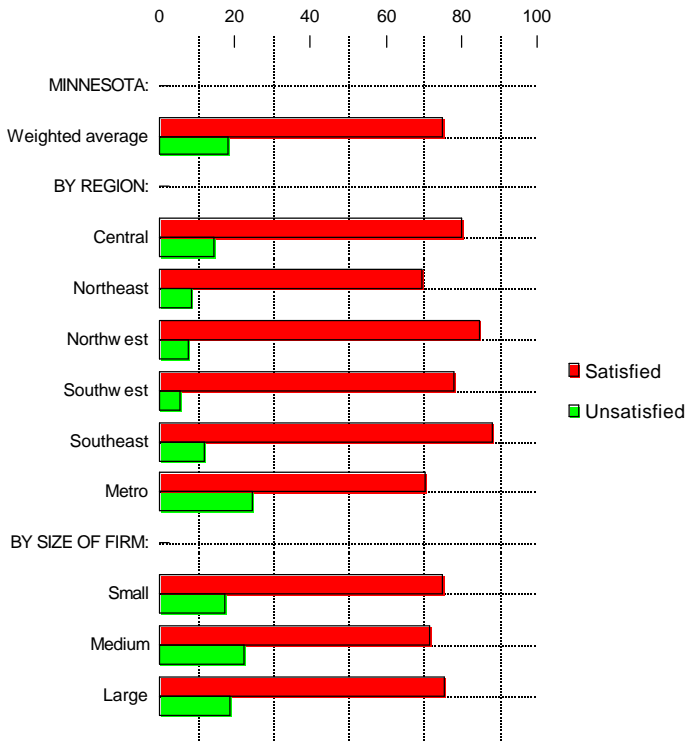


Question 6 asked respondents how strongly they agreed or disagreed with the statement which said your firm has difficulty in retaining its skilled workers. 23.6% of all state respondents agreed with the statement, while 54.3% disagreed. Respondents in the Northwest and Southeast regions had higher percentage agree than for all state regions (38.5% and 33.3%, respectively). Respondents in small sized firms had the same percentage agree as the state as a whole. However, medium sized firms had much higher percentage agree (36.7%), while large size firms had smaller percentage agree (15.4%).

Figure 10

You are Satisfied with the Basic Skills of Your Current Skilled Workers

	Satisfied %	Unsatisfied %
MINNESOTA:		
Weighted average	74.9	18.4
BY REGION:		
Central	80.0	14.3
Northeast	69.6	8.7
Northwest	84.6	7.7
Southwest	77.8	5.6
Southeast	88.1	11.9
Metro	70.1	24.7
BY SIZE OF FIRM:		
Small	74.9	17.3
Medium	71.4	22.4
Large	75.2	18.7



Question 7 asked respondents how satisfied or dissatisfied they were with the performance of their current skilled workers in the following areas:

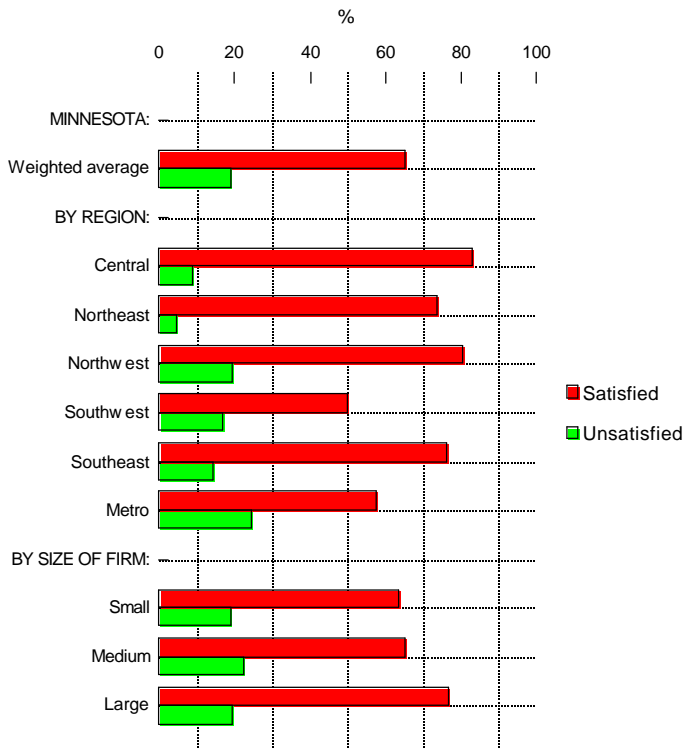
- Basic skills
- Technical skills
- Interpersonal skills
- Communication skills
- Work ethic
- Thinking and reasoning skills

Almost 75% of all state respondents were satisfied with the basic skills of their current skilled workers, while only 18.4% were unsatisfied. Respondents in the Northwest and Southeast regions had a higher percentage that were satisfied with basic skills than for all state respondents (84.6% and 88.1%, respectively). Respondents in the Northeast region and Metro regions had a smaller percentage satisfied than all state respondents (69.6% and 70.1%, respectively). Interestingly, respondents in every region except the Metro had a **lower** percentage respond that they were unsatisfied than the state as a whole, while the Metro region had a **higher** percentage unsatisfied about the basic skills of their current skilled workers. There were no significant variations in results among the various sized firms to that of all-state respondents results.

Figure 11

You are Satisfied with the Technical Skills of Your Current Skilled Workers

	Satisfied %	Unsatisfied %
MINNESOTA:		
Weighted average	65.4	18.9
BY REGION:		
Central	82.9	8.6
Northeast	73.9	4.3
Northwest	80.7	19.2
Southwest	50.0	16.7
Southeast	76.2	14.3
Metro	57.5	24.7
BY SIZE OF FIRM:		
Small	63.7	18.9
Medium	65.3	22.4
Large	76.9	19.2

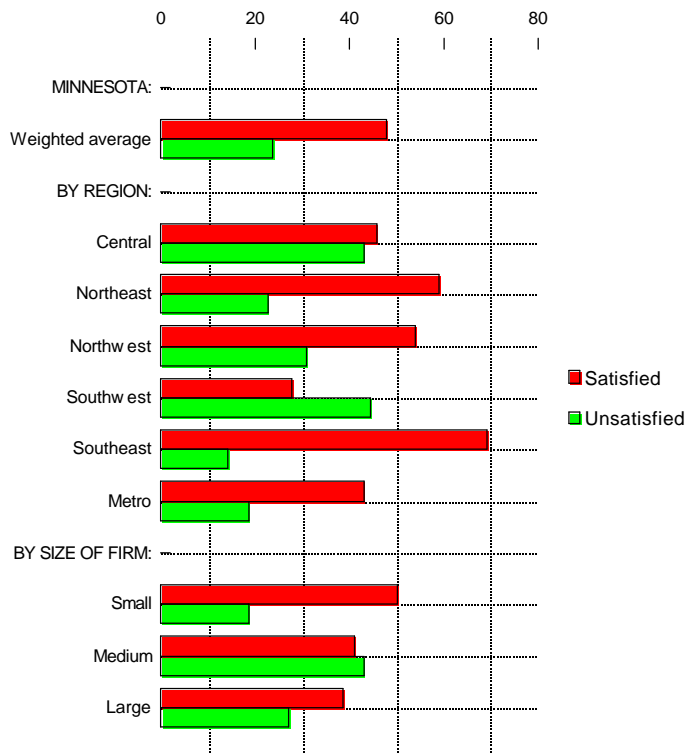


65.4% of all state respondents were satisfied with the technical skills of their current skilled workforce, while 18.9% were unsatisfied. Once again, responses in the various MTI regions varied from the total response to a considerable extent. Respondents in the Central region, Northwest, Southeast, and Northeast regions had higher percentage of respondents satisfied than for the state as a whole. On the other hand, respondents in the Metro and Southwest regions had a smaller percentage satisfied with technical skills of their workforce than all state respondents. Once again, no significant deviation to all state respondents when looked at by size of the firm responding.

Figure 12

You are Satisfied with the Interpersonal Skills of Your Current Skilled Workers

	Satisfied %	Unsatisfied %
MINNESOTA:		
Weighted average	47.8	23.5
BY REGION:		
Central	45.7	42.9
Northeast	59.1	22.7
Northwest	53.8	30.8
Southwest	27.8	44.4
Southeast	69.0	14.3
Metro	43.1	18.4
BY SIZE OF FIRM:		
Small	50.2	18.6
Medium	40.8	42.9
Large	38.5	26.9

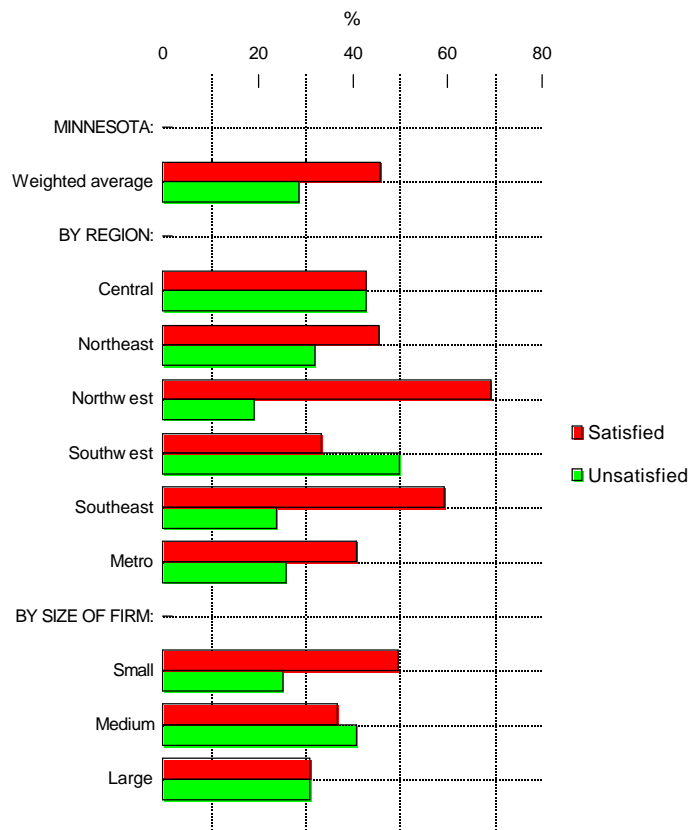


47.8% of all state respondents were satisfied with the interpersonal skills of their current skilled workers, while 23.5% were unsatisfied. The Southwest region had the lowest percentage of respondents that were satisfied (27.8%) and the highest percentage unsatisfied (44.4%), while the Southeast region respondents had the highest percentage satisfied (69.0%) and the lowest percentage unsatisfied (14.3%). Fewer respondents in medium and large sized firms were satisfied with the interpersonal skills of skilled workers (40.8% and 38.5%, respectively), and more were unsatisfied (42.9% and 26.9%, respectively).

Figure 13

You are Satisfied with the Communication Skills of Your Current Skilled Workers

	Satisfied %	Unsatisfied %
MINNESOTA:		
Weighted average	46.0	28.5
BY REGION:		
Central	42.9	42.9
Northeast	45.5	31.8
Northwest	69.2	19.2
Southwest	33.3	50.0
Southeast	59.2	23.8
Metro	40.8	25.9
BY SIZE OF FIRM:		
Small	49.4	25.3
Medium	36.7	40.8
Large	30.8	30.8

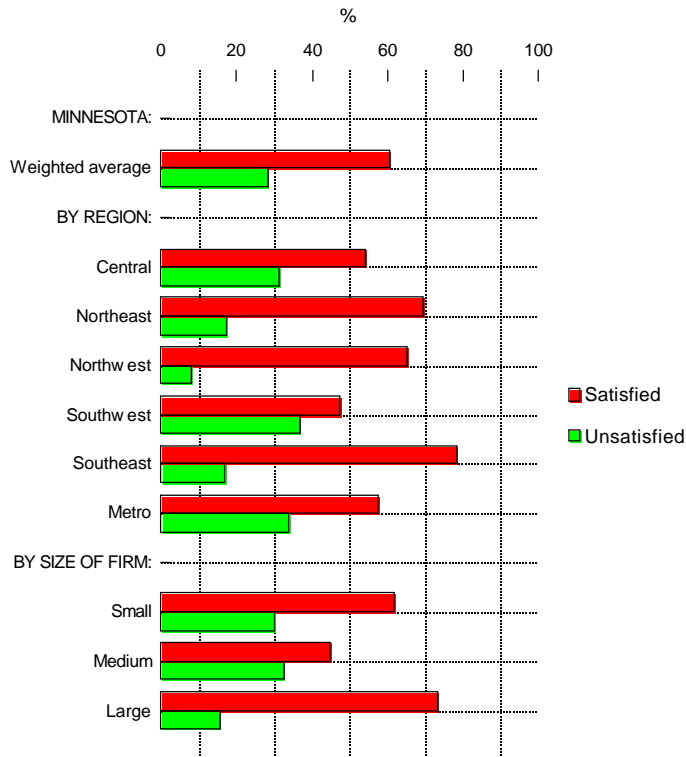


46% of all state respondents indicated they were satisfied with the communication skills of their current skilled workers, and 28.5% indicated they were unsatisfied. A significantly greater percentage of respondents in Northwest and Southeast regions were satisfied (69.2% and 59.2%, respectively) and a smaller percentage were satisfied in the Southwest (33.3%). A slightly larger percentage of respondents in smaller firms were satisfied with communication skills of their workers (49.4%), while a smaller percentage of the respondents in medium and large firms were satisfied (36.7% and 30.8% respectively).

Figure 14

You are Satisfied with the Work Ethic of Your Current Skilled Workers

	Satisfied %	Unsatisfied %
MINNESOTA:		
Weighted average	60.5	28.5
BY REGION:		
Central	54.3	31.4
Northeast	69.6	17.4
Northwest	65.4	7.7
Southwest	47.4	36.8
Southeast	78.6	16.7
Metro	57.5	33.9
BY SIZE OF FIRM:		
Small	61.8	30.0
Medium	44.9	32.7
Large	73.1	15.4

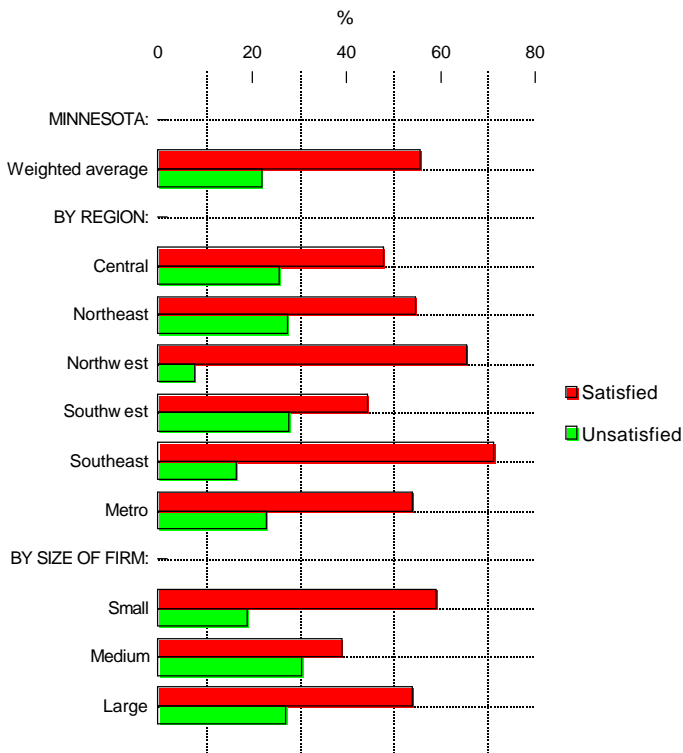


60.5% of all state respondents were satisfied with the work ethic of their current skilled workers, while 28.5% were unsatisfied. A greater percentage were satisfied and a smaller percentage were unsatisfied in the Southeast region (78.6% versus 16.7%), while a smaller percentage of the respondents were satisfied in the Southwest region and a larger percentage were unsatisfied (47.4% versus 36.8%). A much smaller percentage of respondents in medium size firms were satisfied with the employee work ethic (44.9%), while a much greater percentage of respondents in large firms were satisfied (73.1%).

Figure 15

You are Satisfied with the Thinking & Reasoning Skills of Your Current Skilled Workers

	Satisfied %	Unsatisfied %
MINNESOTA:		
Weighted average	55.6	21.9
BY REGION:		
Central	47.7	25.7
Northeast	54.5	27.3
Northwest	65.4	7.7
Southwest	44.4	27.7
Southeast	71.4	16.7
Metro	54.0	22.9
BY SIZE OF FIRM:		
Small	59.1	19.0
Medium	38.8	30.6
Large	53.8	26.9



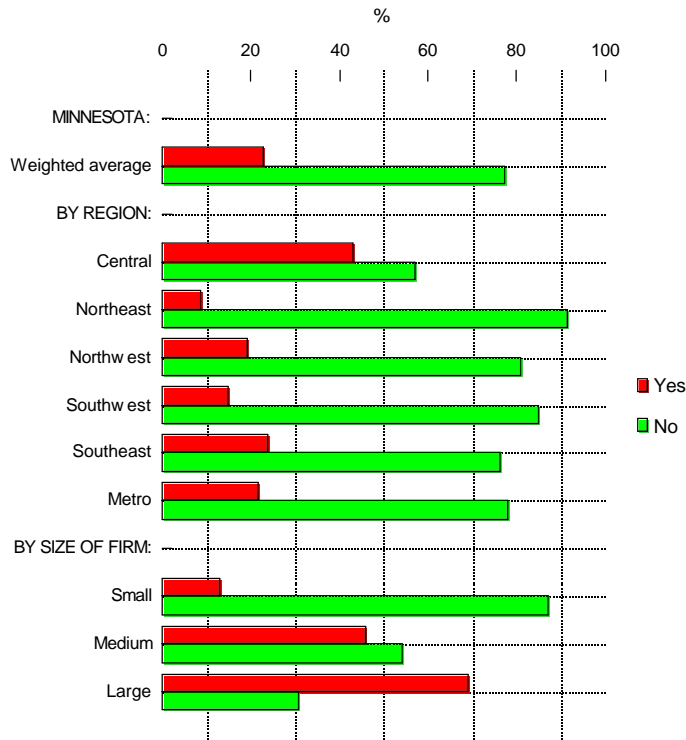
Finally, 55.6% of state respondents were satisfied with the thinking and reasoning skills of their current workers, while 21.9% were unsatisfied. A greater percentage of respondents in the Southeast and Northwest regions were satisfied than percentage of all state respondents (71.4% and 65.4%, respectively), while a smaller percentage of respondents were satisfied in the Southwest (44.4%). Response varied in medium size firms from total response in that a much lower percentage were satisfied with the thinking and reasoning skills (38.8%) and a higher percentage were unsatisfied (30.6%).

It appears as though there was considerable difference in the satisfaction levels of respondents among the six MTI regions in general. The Southeast, and to some extent Northwest regions, appear to be more satisfied with the skill levels of their current workforce than the state as a whole. On the other hand, fewer respondents in the Southwest were satisfied compared to all state respondents. Also, large and particularly medium firms seemed to be more dissatisfied with the various measures of worker performance than respondents for the state as a whole.

Figure 16

Your Firm Has a Formal Budget Allocated for Training Skilled Workers

	Yes %	No %
MINNESOTA:		
Weighted average	22.7	77.3
BY REGION:		
Central	42.9	57.1
Northeast	8.7	91.3
Northwest	19.2	80.8
Southwest	15.0	85.0
Southeast	23.8	76.2
Metro	21.8	78.2
BY SIZE OF FIRM:		
Small	13.0	87.0
Medium	45.8	54.2
Large	69.2	30.8

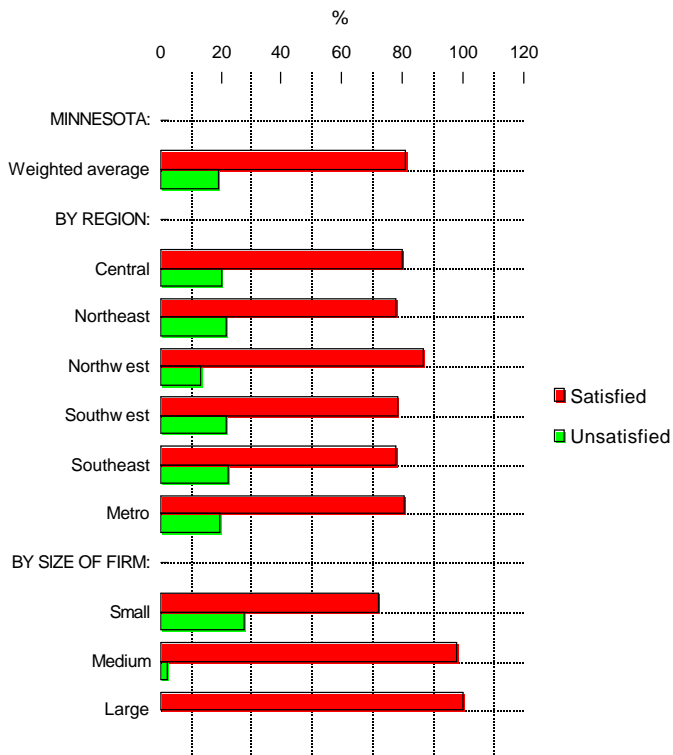


Question 8 asked the respondents whether or not their firm has a formal budget allocation for training skilled workers. 22.7% of all state respondents indicated yes, while 77.3% said no. However, there was considerable variation among the six MTI regions. In the Central region, 42.9% of the respondents indicated that they did have a budget allocation for training, while only 15.0% said yes in the Southwest, and 8.7% said yes in Northeast region. There were also significant variations on the part of respondents in different sized firms. A smaller percentage of small firm respondents said yes (13.0%), while significantly larger percentages of medium and large firm respondents said yes (45.8% and 69.2%, respectively).

Figure 17

Your Firm Provides Its Workforce with Some Form of Training

	Yes %	No %
MINNESOTA:		
Weighted average	80.9	19.1
BY REGION:		
Central	80.0	20.0
Northeast	78.1	21.9
Northwest	86.7	13.3
Southwest	78.3	21.7
Southeast	77.7	22.3
Metro	80.5	19.5
BY SIZE OF FIRM:		
Small	72.3	27.7
Medium	97.7	2.3
Large	100.0	---

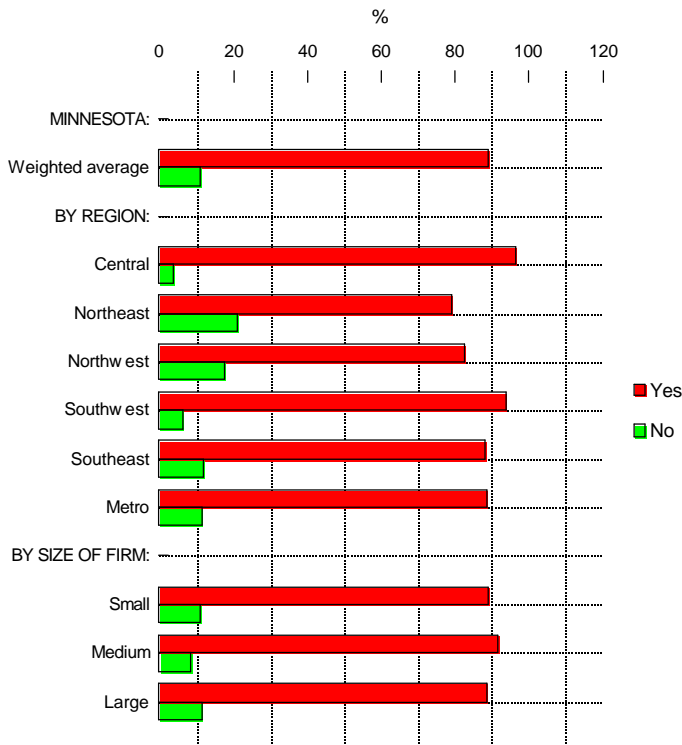


Question 9 asked the respondents whether or not their firm presently provides its skilled workers with any form of training. Almost 81% of all state respondents said yes, while approximately 19% said no. There were no significant variations to this across the six MTI regions. However, respondents in different size firms varied considerably with the state responses. In general, a smaller percentage of small firms responded affirmatively to the question (72.3%), while a larger percentage of medium and large firms did (97.7% and 100%, respectively).

Figure 18

Your Firm Provides On-the-Job Training to Its Skilled Workers

	Yes %	No %
MINNESOTA:		
Weighted average	89.1	10.9
BY REGION:		
Central	96.2	3.8
Northeast	78.9	21.1
Northwest	82.4	17.6
Southwest	93.8	6.2
Southeast	88.2	11.8
Metro	88.7	11.3
BY SIZE OF FIRM:		
Small	89.1	10.9
Medium	91.7	8.3
Large	88.5	11.5

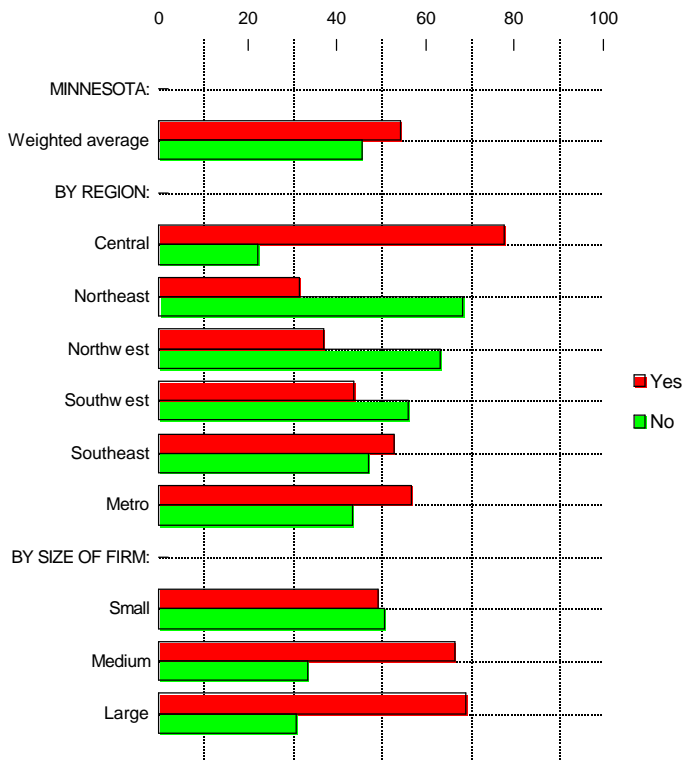


For those firms that indicated they did provide some form of training, question 10 asked what type of training activities are provided. The first choice was informal "on the job" training. 89.1% of all state respondents indicated yes to the question, while 10.9% said no. Only in the Northeast region did the respondents indicate a significantly different affirmative response to this question (78.9%). The responses among different size firms were also basically consistent with the state response.

Figure 19

Your Firm Provides Training for New Skilled Workers

	Yes %	No %
MINNESOTA:		
Weighted average	54.3	45.7
BY REGION:		
Central	77.7	22.3
Northeast	31.6	68.4
Northwest	36.8	63.2
Southwest	43.8	56.2
Southeast	52.9	47.1
Metro	56.7	43.3
BY SIZE OF FIRM:		
Small	49.4	50.6
Medium	66.7	33.3
Large	69.2	30.8

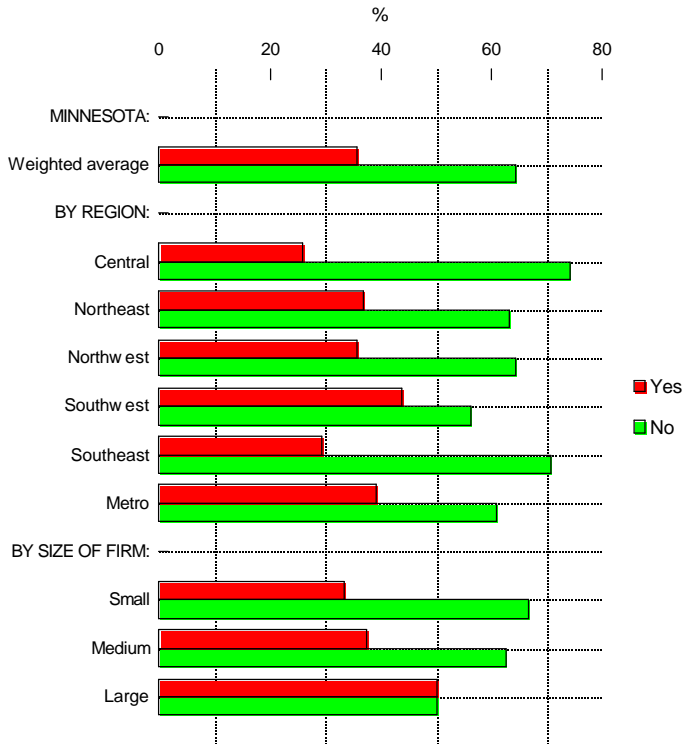


The second type of training question 10 identified was training for new workers. 54.3% of all state respondents responded yes to this type of training, while 45.7% said no. Respondents in the Central region had significantly higher percentage of affirmative responses (77.7%), while respondents in the Northeast region, Northwest region, and the Southwest region had lower affirmative percentage responses (31.6%, 36.8%, and 43.8%, respectively). A somewhat smaller percentage of smaller firms responded affirmatively (49.4%), while a larger percentage of respondents in medium and large firms said yes (66.7% and 69.2%, respectively).

Figure 20

Your Firm Provides Training to Its Existing Skilled Workers

	Yes %	No %
MINNESOTA:		
Weighted average	35.6	64.4
BY REGION:		
Central	25.9	74.1
Northeast	36.8	63.2
Northwest	35.7	64.3
Southwest	43.8	56.2
Southeast	29.4	70.6
Metro	39.1	60.9
BY SIZE OF FIRM:		
Small	33.5	66.5
Medium	37.5	62.5
Large	50.0	50.0

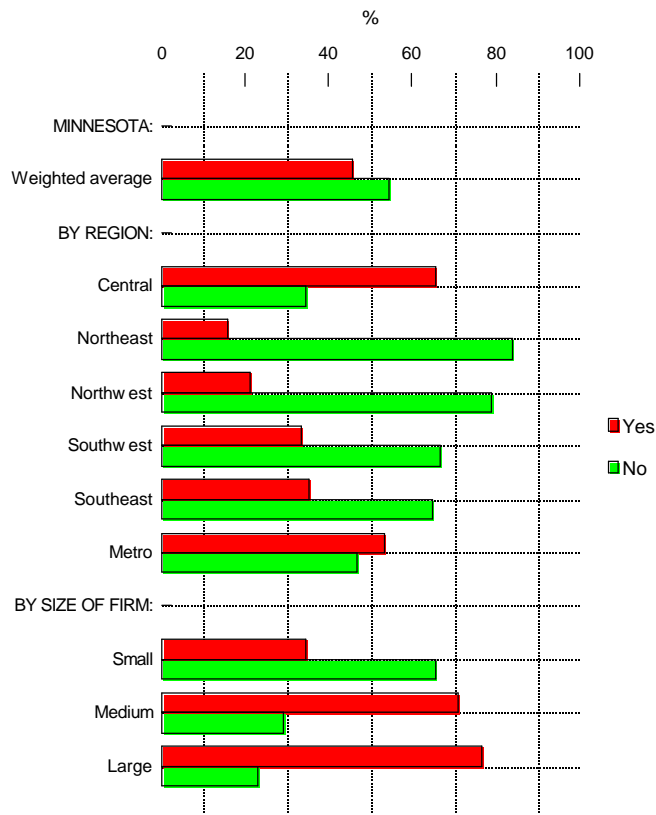


The next section of question 10 asked if the firms provide retraining to existing workers. 35.6% of all state respondents said yes, while 64.4% said no. A generally similar response occurred in all six of the MTI regions. The only deviation from this response by respondents in different sized firms was that 50% of large firm respondents indicated yes to this question.

Figure 21

Your Firm Provides Tuition Reimbursement to Its Skilled Workers

	Yes %	No %
MINNESOTA:		
Weighted average	45.7	54.3
BY REGION:		
Central	65.4	34.6
Northeast	15.8	84.2
Northwest	21.1	78.9
Southwest	33.3	66.7
Southeast	35.3	64.7
Metro	53.2	46.8
BY SIZE OF FIRM:		
Small	34.3	65.7
Medium	70.8	29.2
Large	76.9	23.1

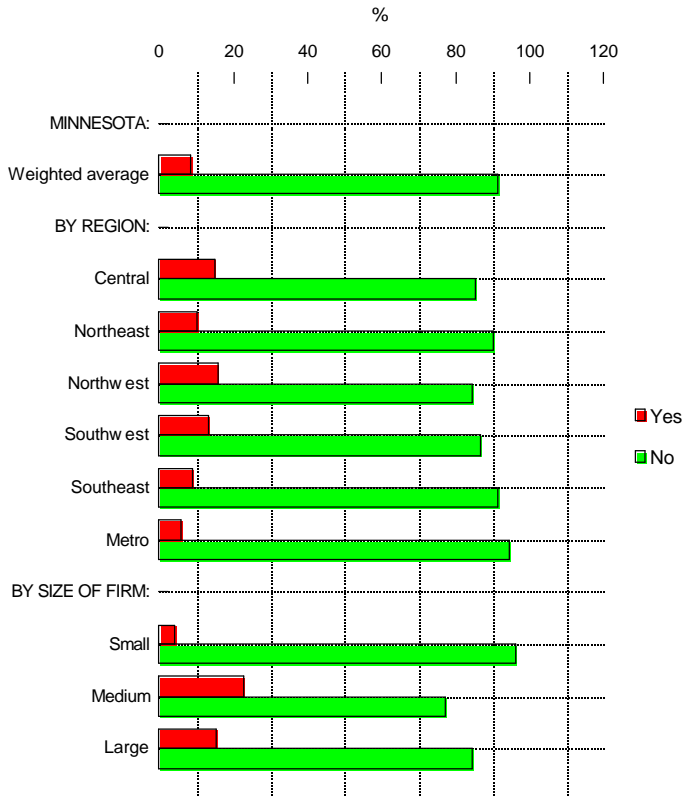


Question 10 then asked whether the respondent firms provided tuition reimbursement to their skilled employees. 45.7% of all state respondents replied yes, while 54.3% said no. In the Central region a percentage of affirmative responses was again significantly above those for the state (65.4%). On the other hand, only 15.8% of the respondents said yes in the Northeast region, 21% yes in the Northwest region, 33.3% in the Southwest region, and 35.3% in the Southeast region. The Metro region also had a slightly greater percentage of affirmative responses than did the state (53.2%). This wide variation by region was also matched by variations by different firm sizes. A smaller percentage of respondents in smaller firms said yes (34.3%), while a greater percentage of respondents in medium and large firms said yes (70.8% and 76.9%, respectively).

Figure 22

Your Firm Has Special Agreements with Public Providers for Worker Training

	Yes %	No %
MINNESOTA:		
Weighted average	8.5	91.5
BY REGION:		
Central	14.8	85.2
Northeast	10.0	90.0
Northwest	15.8	84.2
Southwest	13.3	86.7
Southeast	8.8	91.2
Metro	5.8	94.3
BY SIZE OF FIRM:		
Small	4.0	96.0
Medium	22.9	77.1
Large	15.4	84.6



Question 10 then asked the respondents whether their firm had special agreements with schools or public providers for worker training. 8.5% of the all state respondents indicated yes, while 91.5% indicated no. A somewhat higher percentage of affirmative responses were obtained in the Northwest, Central region, and Southwest regions (15.8%, 14.8%, and 13.3%, respectively), while a smaller percentage of Metro respondents indicated yes (5.8%). Once again, a smaller percentage of small firm respondents said yes to the question (4%), while a greater percentage of medium and large firm respondents said yes (22.9% and 15.4%, respectively).

Figure 23

Your Firm Has Special Agreements with Private Providers for Worker Training

	Yes %	No %
MINNESOTA:		
Weighted average	3.1	96.9
BY REGION:		
Central	3.8	96.2
Northeast	0.0	100.0
Northwest	5.3	94.7
Southwest	12.5	87.5
Southeast	2.9	97.1
Metro	2.1	97.9
BY SIZE OF FIRM:		
Small	1.1	98.9
Medium	6.3	93.7
Large	11.5	88.5

Question 10 then asked the respondents whether their firms had special agreements with schools or private providers for worker training. 3.1% of all state respondents said yes, while 96.9% said no. The only major deviation from this response by region was that 12.5% of respondents in the Southwest region said yes. A somewhat smaller percentage of small firm respondents said yes (1.1%), while a slightly greater percentage of medium and large firms did (6.3% and 11.5%, respectively).

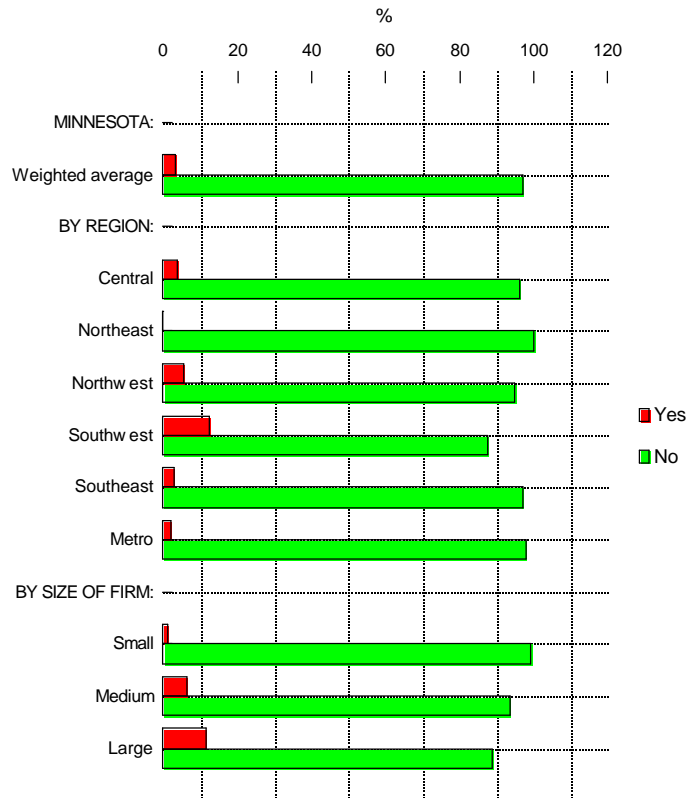
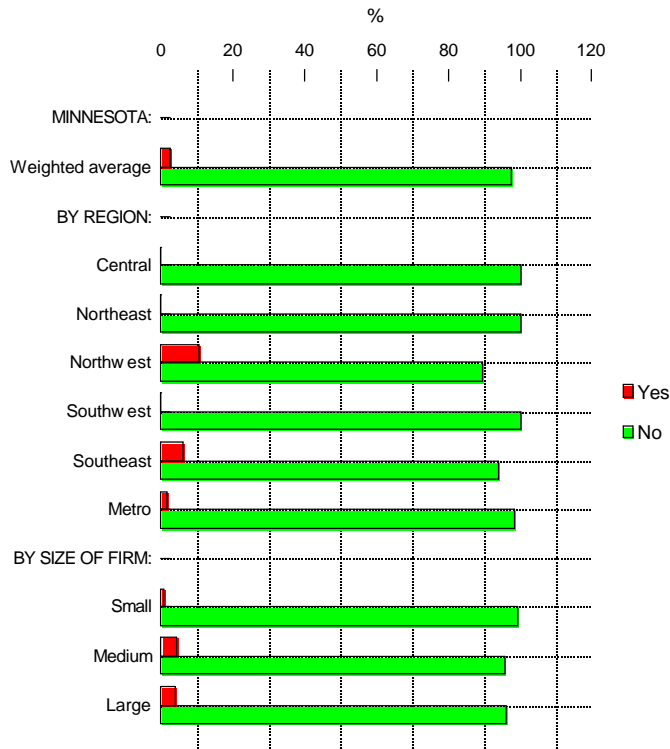


Figure 24

Your Firm Has Special Agreements for Other Training for Its Skilled Workers

	Yes %	No %
MINNESOTA:		
Weighted average	2.4	97.6
BY REGION:		
Central	0.0	100.0
Northeast	0.0	100.0
Northwest	10.5	89.5
Southwest	0.0	100.0
Southeast	5.9	94.1
Metro	1.4	98.6
BY SIZE OF FIRM:		
Small	0.6	99.4
Medium	4.2	95.8
Large	3.8	96.2



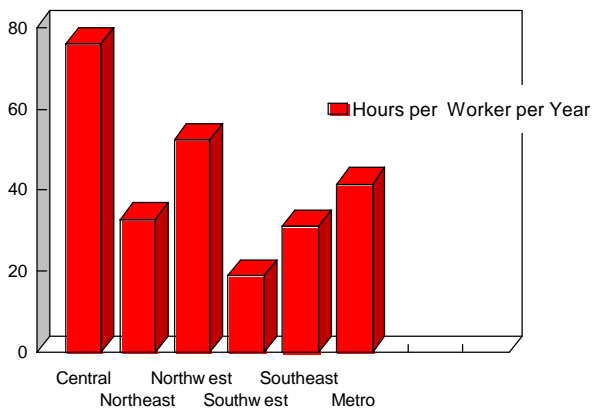
Finally, question 10 asked whether their firm had any other training activities that they provided their employees. Only 2.4% of all state respondents said yes, while 97.6% said no. All of the regional responses were very low or zero in the affirmative with the exception of Northwest, which had 10.5% of their respondents reply yes. Results similar to those of all state respondents were given by respondents in all 3 firm sizes.

Figure 25

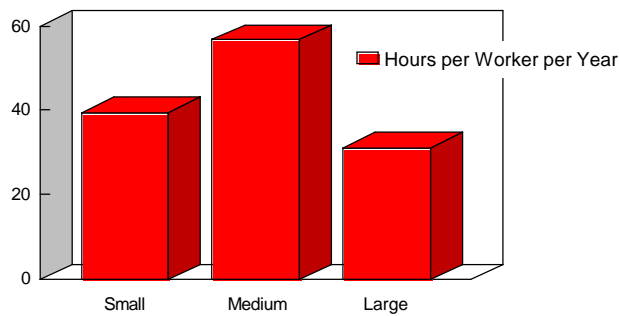
Training Hours Allocated Per Skilled Worker Per Year

Hours per Worker per Year

Central	75.8
Northeast	32.8
Northwest	52.3
Southwest	18.9
Southeast	30.9
Metro	41.5



Small	39.6
Medium	56.8
Large	31.3

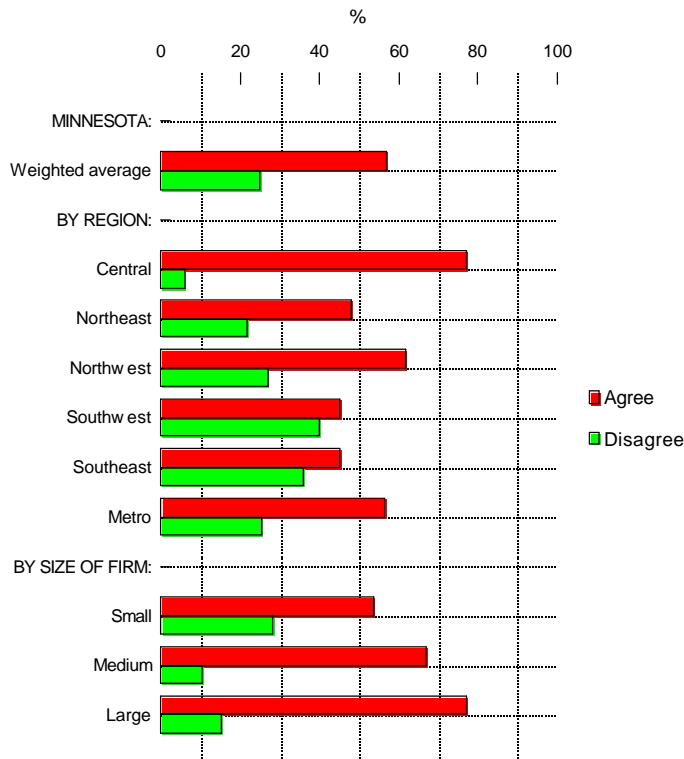


Question 11 asked the respondents to identify approximately how many hours per skilled worker their firm allocates for training per year. The weighted mean response from all state respondents was 41.7 hours. Several of the MTI regions had significantly more hours per worker. These include the Central region with 75.8 hours per worker and Northwest with 52.3 hours per worker. On the other hand, Southwest respondents had fewer hours (18.9) as did Southeast and Northeast region respondents (30.9 and 32.8, respectively). The smaller firm responses were very similar to the weighted state average. However, medium size firms provided considerably more hours per worker per year than the state average (56.8 hours). Somewhat surprisingly, however, large firms provided considerably less hours of training per worker per year than the state average (31.3 hours).

Figure 26

There is a Need for a Training Strategy for Skilled Workers in Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	56.7	24.7
BY REGION:		
Central	77.1	5.7
Northeast	47.8	21.7
Northwest	61.5	26.9
Southwest	45.0	40.0
Southeast	45.2	35.7
Metro	56.3	25.2
BY SIZE OF FIRM:		
Small	53.6	28.0
Medium	66.7	10.4
Large	76.9	15.4

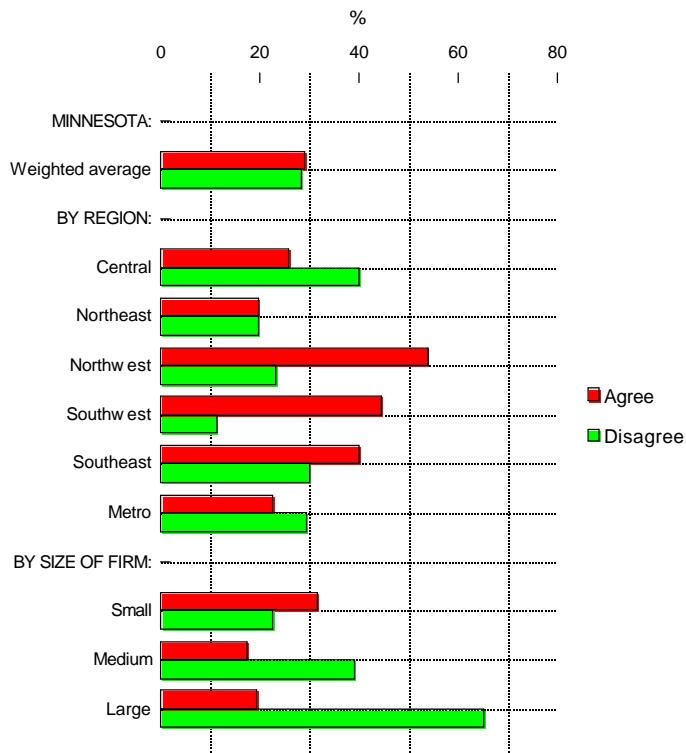


Question 12 asked respondents whether they agreed or disagreed with the following statement: "In your firm, there is a need for a training strategy for skilled workers." 56.7% of all state respondents agreed with the statement, while 24.7% disagreed. A greater percentage of respondents agreed with the statement and a smaller percentage disagreed in the Central region (77.1% versus 5.7%). A smaller percentage agreed in the Southwest region (45.0%), in the Southeast region (45.2%) and the Northeast region (47.8%). A slightly smaller percentage of respondents in smaller sized firms agreed with the statement (53.6%), while significantly large percentage of respondents in the medium and large sized firms agreed (66.7% and 76.9%, respectively).

Figure 27

Better Housing Would Help in Hiring/Retaining Skilled Workforce in Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	29.0	28.2
BY REGION:		
Central	25.7	40.0
Northeast	19.5	19.5
Northwest	53.9	23.1
Southwest	44.4	11.1
Southeast	40.0	30.0
Metro	22.6	29.3
BY SIZE OF FIRM:		
Small	31.7	22.5
Medium	17.4	39.1
Large	19.2	65.3

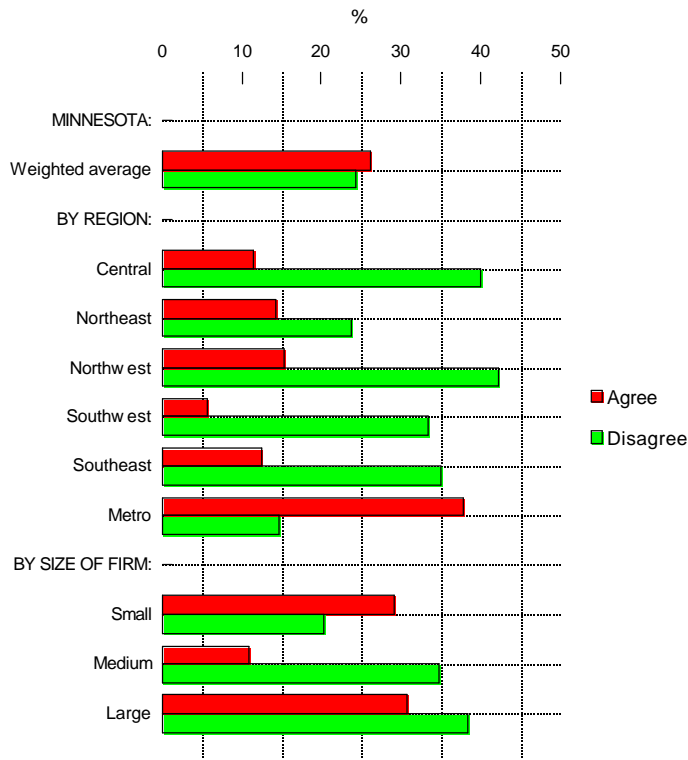


Finally, using a list of factors in question 13, respondents were asked how strongly they would agree or disagree on whether the factor would help in hiring or retaining a skilled manufacturing workforce for their firm. The first factor identified was better housing available in the community. 29.0% of all state respondents agreed that better housing would help in hiring and retaining, while 28.2% disagreed. There was once again significant differences in responses to this question across the six MTI regions. A much larger percentage of respondents agreed with the statement in the Northwest region (53.9%), the Southwest region (44.4%), and the Southeast region (40.0%). On the other hand, a smaller percentage of respondents agreed with the statement in the Northeast region (19.5%) and the Metro region (22.6%). A somewhat larger percentage of respondents in small firms agreed with the statement (31.7%), while a smaller percentage of respondents in medium and large firms agreed (17.4% and 19.2%, respectively).

Figure 28

Better Transportation Would Help in Hiring/Retaining Skilled Workforce in Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	26.1	24.3
BY REGION:		
Central	11.4	40.0
Northeast	14.3	23.8
Northwest	15.4	42.3
Southwest	5.6	33.3
Southeast	12.5	35.0
Metro	37.8	14.6
BY SIZE OF FIRM:		
Small	29.1	20.3
Medium	10.9	34.8
Large	30.8	38.5

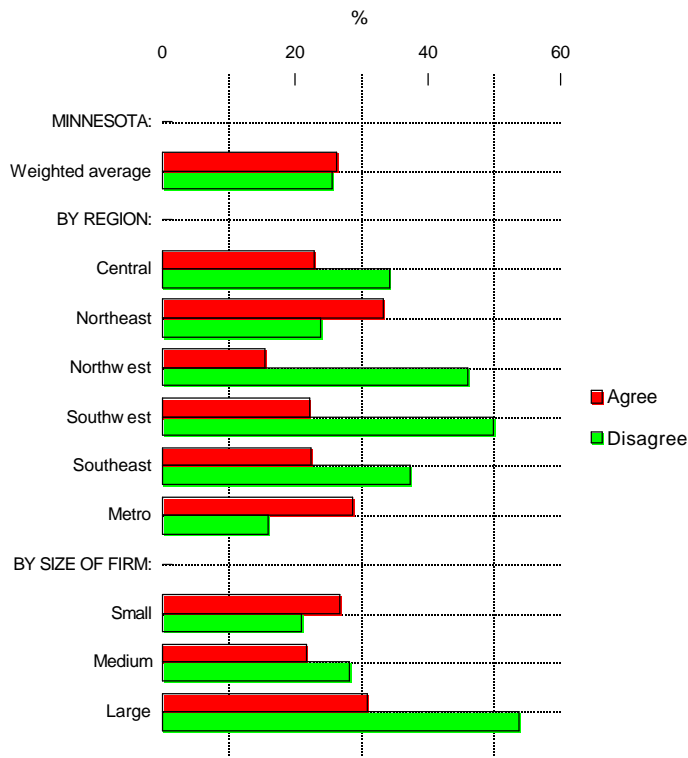


The next factor identified was better transportation facilities in the community. 26.1% of all state respondents agreed that that factor was an asset in hiring or retaining a skilled workforce, while 24.3% disagreed. The responses from firms across the six MTI regions shows this factor to be a primary concern in the Metro region since 37.8% of Metro respondents agreed. Respondents in all other regions were well below the percentage agreeing to the statement by all respondents. The only significant difference by respondents in different firm sizes was that a much smaller percentage of respondents in medium firms agreed with the statement (10.9%).

Figure 29

Better Schools Would Help in Hiring/Retaining Skilled Workforce in Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	26.3	25.6
BY REGION:		
Central	22.9	34.3
Northeast	33.3	23.8
Northwest	15.4	46.2
Southwest	22.2	50.0
Southeast	22.5	37.5
Metro	28.7	15.9
BY SIZE OF FIRM:		
Small	26.9	21.1
Medium	21.7	28.3
Large	30.8	53.8

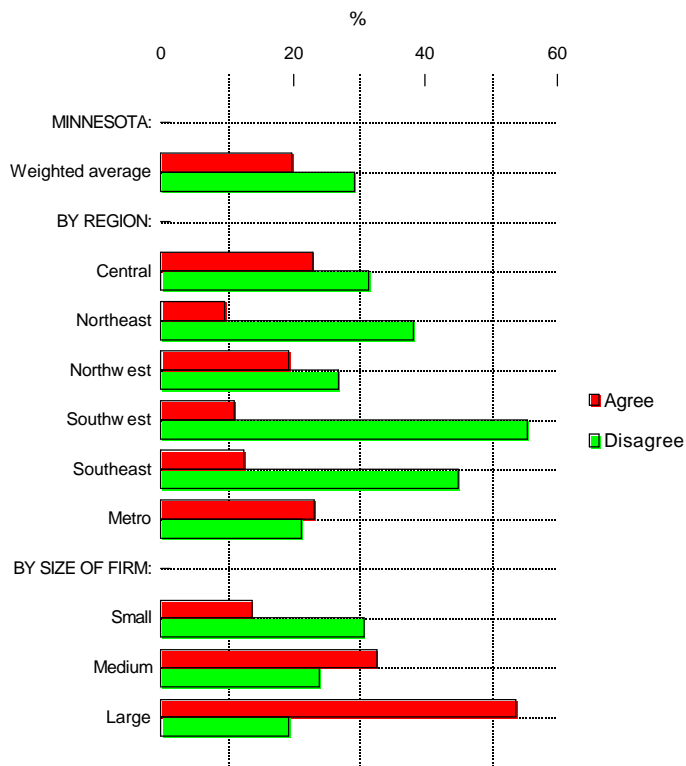


The next factor identified was better schools in the community. 26.3% of all state respondents agreed with the statement, while 25.6% disagreed. Most respondents in all regions except Northwest were similar to the all-state affirmative response. Only 15.4% of the respondents in the Northwest region responded affirmatively. On the other hand, a smaller percentage of respondents in the Metro region disagreed with this statement than did all state respondents, while a greater percentage disagreed in Southwest (50.0%), Northwest (46.2%), Southeast (37.5%), and Central region (34.3%). The percentage of affirmative responses among small and large firm respondents was a little larger than the state, while the percentage responding affirmatively in the medium size firms was less (21.7%). However, a much larger percentage of large firm respondents disagreed with the statement (53.8%).

Figure 30

More Successful Integration of Diverse Populations Would Help in Hiring/Retaining Skilled Workforce in Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	19.8	29.2
BY REGION:		
Central	22.9	31.4
Northeast	9.5	38.1
Northwest	19.2	26.9
Southwest	11.1	55.5
Southeast	12.5	45.0
Metro	23.2	21.3
BY SIZE OF FIRM:		
Small	13.7	30.8
Medium	32.6	23.9
Large	53.8	19.2

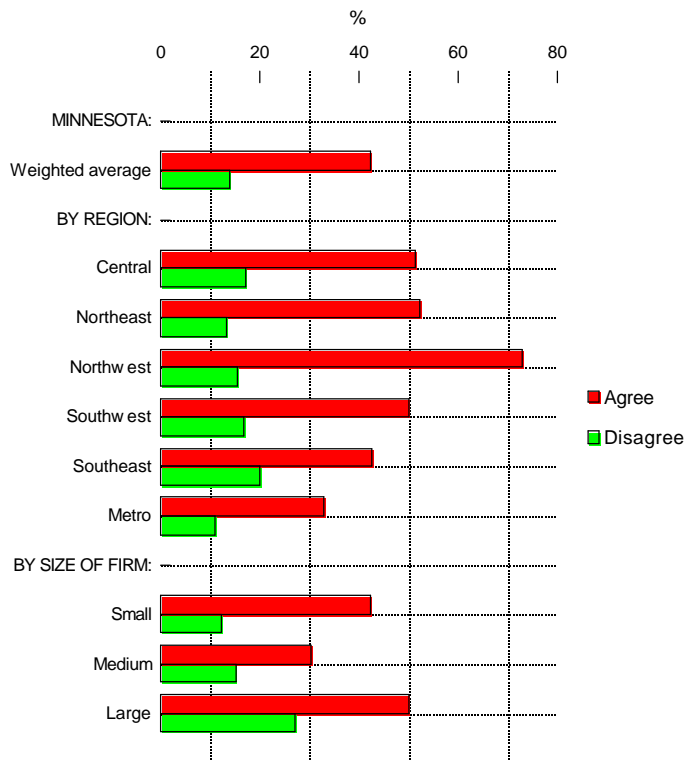


The next factor identified in question 13 was more successful integration of diverse populations into the community. 19.8% of all state respondents agreed with the statement, while 29.2% disagreed. A smaller percentage of respondents agreed and a larger percentage disagreed in the Northeast region (9.5% and 38.1% respectively), the Southwest region (11.1% and 55.5%, respectively), and the Southeast region (12.5% and 45.0% respectively). A smaller percentage of small firm respondents agreed (13.7%) while larger percentage of medium and large firm respondents agreed (32.6% and 53.8%, respectively).

Figure 31

**Adequate Employment for Employee Spouse
Would Help in Hiring/Retaining
Skilled Workforce in Your Firm**

	Agree %	Disagree %
MINNESOTA:		
Weighted average	42.1	13.7
BY REGION:		
Central	51.4	17.1
Northeast	52.2	13.0
Northwest	73.1	15.4
Southwest	50.0	16.7
Southeast	42.5	20.0
Metro	32.9	10.9
BY SIZE OF FIRM:		
Small	42.3	12.3
Medium	30.4	15.2
Large	50.0	26.9

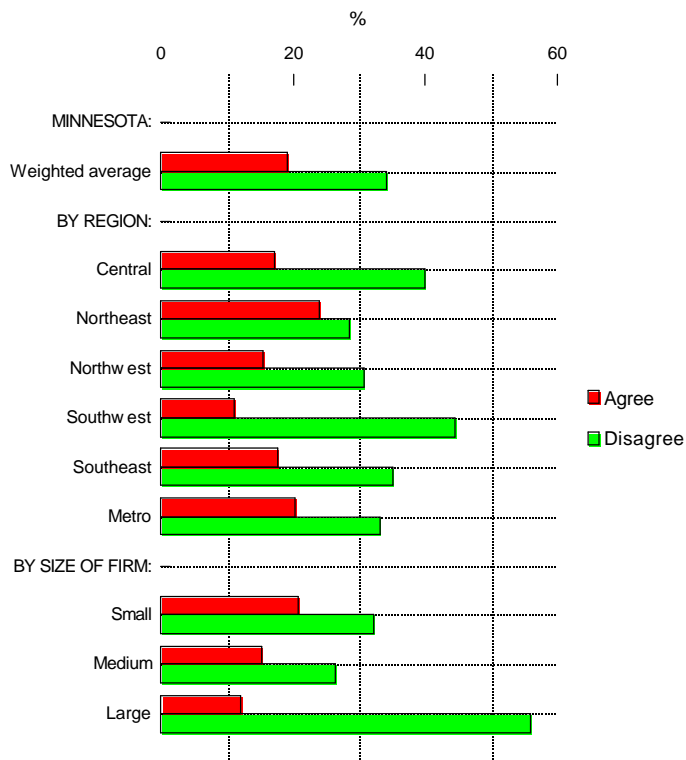


The next factor identified in question 13 was adequate employment opportunities for a worker's spouse. 42.1% of all state respondents agreed with the statement while 13.7% disagreed. A much larger percentage of respondents agreed in the Northwest region (73.1%), while a larger percentage agreed in the Central region, Northeast, and Southwest regions (51.4%, 52.2%, and 50.0%, respectively). Respondents in small size firms basically agreed with the state responses, while smaller percent of medium firm respondents agreed (30.4%) and a larger percentage of large firm respondents agreed (50.0%).

Figure 32

Changes in Company Policies & Practices Would Help in Hiring/Retaining Skilled Workforce in Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	19.1	34.2
BY REGION:		
Central	17.1	40.0
Northeast	23.8	28.6
Northwest	15.4	30.8
Southwest	11.1	44.4
Southeast	17.5	35.0
Metro	20.2	33.1
BY SIZE OF FIRM:		
Small	20.7	32.2
Medium	15.2	26.3
Large	12.0	56.0

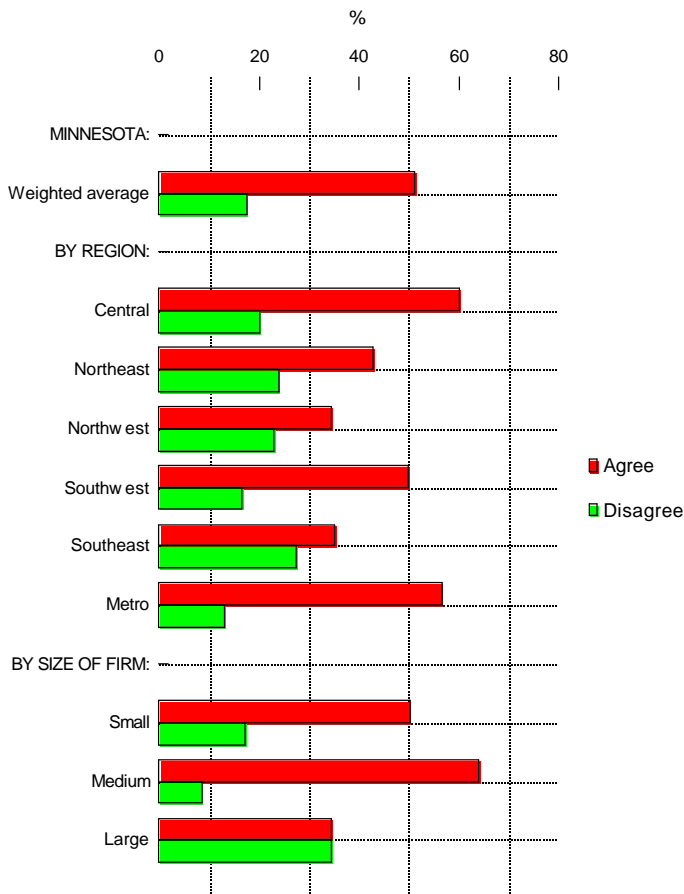


The next factor identified in question 13 was changes in company policies and practices. 19.1% of all state respondents agreed, while 34.2% disagreed. The only significant deviation from this result among the six MTI regions was in the Southwest, in which 11.1% of the respondents agreed and 44.4% disagreed. Small firm respondents basically agreed with the all state responses, while a small percentage of respondents in the medium and large firms agreed (15.2% and 12.0%, respectively).

Figure 33

Changes in Work Values of Workers Would Help in Hiring/Retaining Skilled Workforce in Your Firm

	Agree %	Disagree %
MINNESOTA:		
Weighted average	51.0	17.6
BY REGION:		
Central	60.0	20.0
Northeast	42.9	23.8
Northwest	34.6	23.1
Southwest	50.0	16.7
Southeast	35.0	27.5
Metro	56.5	12.9
BY SIZE OF FIRM:		
Small	50.2	17.2
Medium	63.8	8.5
Large	34.6	34.6



Finally, the last factor identified in question 13 was changes in work values of skilled workers. 51.0% of all state respondents agreed, while 17.6% disagreed. A greater percentage of respondents in the Central region and the Metro agreed (60.0% and 56.5%, respectively), while a smaller percentage of respondents in Northeast, Northwest, and Southeast agreed (42.9%, 34.6%, and 35.0%, respectively). Small firm respondents basically agreed with the all state responses. Medium firm respondents had a higher percentage agreement than the state (63.8%), while large firm respondents had a smaller percentage agree (34.6%).

CONCLUSIONS AND RECOMMENDATIONS

The questions the workforce study team was asked to address at the beginning of the project were as follows:

- ***Is there a workforce problem in Minnesota?***
- ***If so, what is it?***

Based on the information provided in both direct interviews and focus groups as well as the survey data, our first conclusion is that there *is* a workforce problem in Minnesota. Almost 50% of the firms responding to the survey indicated they had had difficulty in hiring skilled workers over the last few years. This we view as a problem. As a result, firms indicated that a lack of skilled workers in their region has had adverse impact on their overall levels of productivity, and had prevented expansion of their firms. Only a small percentage of firms indicated that the lack of skilled workers caused a segment of their firm to move to another region in Minnesota or to move out of the state.

Metro region firms appear to have more difficulty with the lack of skilled workers than some of the other regions in the state. Furthermore, the Metro region is uniquely concerned with certain aspects of the work environment, such as lack of transportation services. The Central and Southeast regions seemed similar in terms of their various responses to survey questions. The Southwest and Northwest regions seemed to be pointing towards more of a problem than the other four regions within the state. The respondents from these regions seemed to be relatively unhappy compared to the other regions in the state. Finally, the Northeast Minnesota region indicated the major problem facing manufacturers in their region was not the lack of skilled workers, but the lack of good jobs.

The larger firm respondents appeared to have more difficulty in hiring skilled workers than did smaller firm respondents. Furthermore, the larger firm respondents generally had more negative implications to their firms from the lack of skilled workers than was true for smaller firm respondents. And of particular importance to state policy, we note that a much larger percentage of medium and larger firms had moved at least a part of their operation to another state in response to a lack of skilled workers.

On the other hand, information received from direct interviews of many officials within the state, as well as from the providers within the focus groups, suggests that while there is considerable work and effort being done to provide skilled workers to manufacturers within the State of Minnesota, much of it is uncoordinated in nature.

Given this backdrop, the first recommendation is

- ***that a mechanism be established within the State of Minnesota to provide more meaningful coordination and communication between the providers of skilled workers (technical colleges, high schools, etc.) and the demanders of skilled workers (manufacturing firms).***

In our opinion this is a first step effort in addressing the supply side of the work force situation in Minnesota. This recommendation is consistent with the type of programs underway in the States of Oregon and Washington and is consistent with the national workforce study.

However, we also believe there is a demand side to the workforce problem within the State of Minnesota. Based on the focus groups discussions, as well as some of the responses to the survey questions, it appears that many of the particularly small manufacturers do not understand (or do not accept) the long term economics of investing in technology and training. Therefore, there is a high possibility that they will remain marginally profitable, if at all, pay low wages to a marginal workforce, and just exist (living dead). Therefore, our second recommendation is

- ***that further study be undertaken to identify those characteristics or traits that will lead to the success of businesses, over time, within Minnesota.***

The results of these analyses should guide business development efforts in the state in the future. Continuing to invest dollars in marginal firms with minimal probability of long term success should be discontinued. A highly trained workforce is not an asset to the state unless there are solid, successful firms to employ this workforce.

Finally, the survey results indicated that medium-sized firms appear to have very different opinions and experiences in the workforce area than is true for either small or large firms. The reasons for this phenomenon are not clear to the study team. Therefore, our third recommendation is

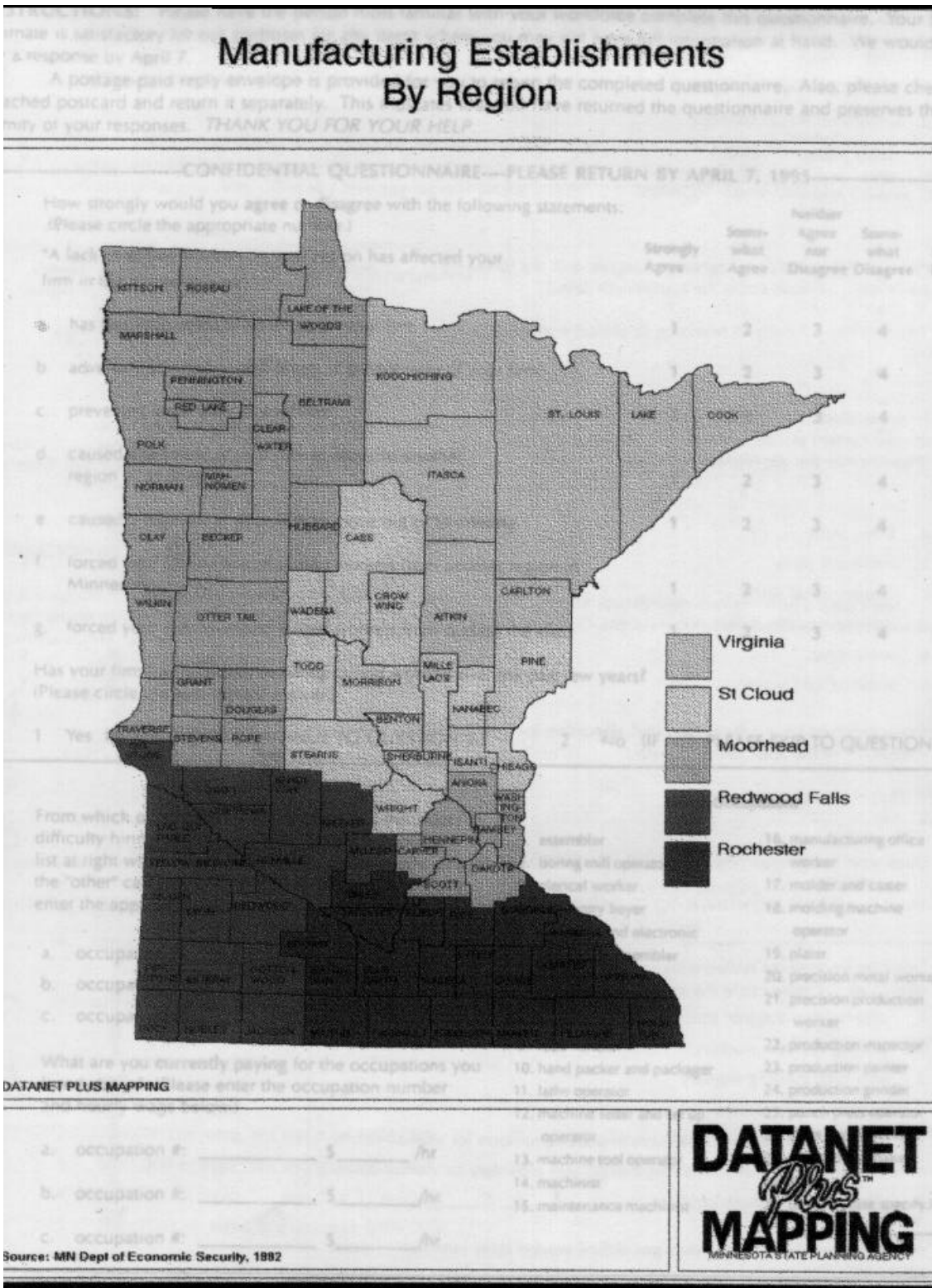
- ***that further analysis of medium-sized firms be undertaken in order to determine why they behave and believe as they do, and to determine what might be done to increase their prospects for success in the future.***

The manufacturing representatives in the focus groups suggested that retaining skilled workers was also a serious problem for them. However, survey data shows this to be a much smaller problem in relative terms. Less than one quarter of the respondents to the state survey agreed with the statement "My firm has difficulty in retaining its skilled workers." Again, there was some variation by region (Northwest and the Southwest respondents indicated more agreement than the other regional respondents) and by size (large firms had less agreement while medium size firms had much more agreement).

The focus group discussions also suggested that firms were unhappy with the performance of their current skilled workers in many areas such as basic skills, technical skills, interpersonal skills, communication skills, thinking and reasoning skills, and work ethic. When this question was asked on the survey, however, a smaller percentage of survey respondents appeared unsatisfied in this regard. Two of the points mentioned showed about 28% of respondents unsatisfied, while the remaining four were a little above or below the 20% level. Again, in relative terms at least, this suggests that this is not a large problem in the State of Minnesota.

These differences in results between the survey and focus groups may have been because of some bias in the focus group participants. It appeared as though many of the manufacturing representatives to the focus groups were in relatively small firms, some of which were only marginally successful.

APPENDIX



MINNESOTA EMPLOYER'S WORKFORCE SURVEY

INSTRUCTIONS: Please have the person most familiar with your workforce complete this questionnaire. Your best estimate is satisfactory for our purposes for any items where you may not have full information at hand. We would appreciate a response by April 7.

A postage-paid reply envelope is provided for you to return the completed questionnaire. Also, please check the attached postcard and return it separately. This indicates that you have returned the questionnaire and preserves the anonymity of your responses. *THANK YOU FOR YOUR HELP.*

-----CONFIDENTIAL QUESTIONNAIRE-----PLEASE RETURN BY APRIL 7, 1995-----

1 How strongly would you **agree** or **disagree** with the following statements:
(Please circle the appropriate number.)

"A **lack of skilled workers** in your region has affected your firm in the following ways:"

	Strongly Agree	Some-what Agree	Neither Agree nor Disagree	Some-what Disagree	Strongly Disagree
a. has had little effect or no effect on your firm	1	2	3	4	5
b. adversely affected overall levels of productivity of your firm	1	2	3	4	5
c. prevented expansion of your firm	1	2	3	4	5
d. caused a segment of your firm to move to another region in Minnesota	1	2	3	4	5
e. caused a segment of your firm to move out of Minnesota	1	2	3	4	5
f. forced your firm to import skilled workers from another region in Minnesota	1	2	3	4	5
g. forced your firm to import skilled workers from outside the state	1	2	3	4	5

2 Has your firm had **difficulty in hiring** skilled workers over the past few years?
(Please circle the appropriate answer.)

1 Yes (IF YES, PLEASE CONTINUE TO QUESTION 3.) 2 No (IF NO, PLEASE SKIP TO QUESTION 5.)

3 From which **occupations** has your firm had the **most** difficulty hiring skilled workers? (Select 3 from the list at right which most closely reflect your needs, or use the "other" category and specify an occupation. Please enter the appropriate occupation numbers below.)

a. occupation #: _____

b. occupation #: _____

c. occupation #: _____

- Skilled Occupations**
- | | |
|--|---------------------------------|
| 1. assembler | 16. manufacturing office worker |
| 2. boring mill operator | 17. molder and caster |
| 3. clerical worker | 18. molding machine operator |
| 4. data entry keyer | 19. plater |
| 5. electrical and electronic equipment assembler | 20. precision metal worker |
| 6. electrician | 21. precision production worker |
| 7. electronics mechanic | 22. production inspector |
| 8. food processor | 23. production painter |
| 9. food handler | 24. production grinder |
| 10. hand packer and packager | 25. punch press operator |
| 11. lathe operator | 26. sheet metal worker |
| 12. machine setter and set up operator | 27. tool and die maker |
| 13. machine tool operator | 28. welder |
| 14. machinist | 29. other (Please specify.) |
| 15. maintenance machinist | _____ |

4 What are you **currently paying** for the occupations you listed above? (Please enter the occupation number and hourly wage below.)

a. occupation #: _____ \$ _____/hr

b. occupation #: _____ \$ _____/hr

c. occupation #: _____ \$ _____/hr

5 From what **source** does your firm **primarily** recruit its skilled workers?
(Please circle the appropriate item.)

1. high schools
2. public technical colleges
3. private technical colleges
4. other firms
5. other (Please specify.) _____

6 How strongly would you **agree** or **disagree** with the following statement: (Please circle the appropriate item.)

"My firm has difficulty in **retaining** its skilled workers."

	Strongly Agree	Some-what Agree	Neither Agree nor Disagree	Some-what Disagree	Strongly Disagree
	1	2	3	4	5

7 How **satisfied** or **unsatisfied** are you with the **performance** of your current skilled workers in the following areas:
(Please circle the appropriate number.)

	Very Satisfied	Some-what Satisfied	Neither Satisfied nor Unsatisfied	Some-what Unsatisfied	Very Unsatisfied
a. basic skills	1	2	3	4	5
b. technical skills	1	2	3	4	5
c. interpersonal skills	1	2	3	4	5
d. communication skills	1	2	3	4	5
e. work ethic	1	2	3	4	5
f. thinking and reasoning skills	1	2	3	4	5

8 Does your firm have a **formal budget allocation for training skilled workers**?
(Please circle the appropriate answer.)

- 1 Yes
- 2 No

9 Does your firm presently provide its skilled workers with any form of **training**? (Please circle the appropriate answer.)

- 1 Yes (PLEASE CONTINUE TO QUESTION 10.)
- 2 No (PLEASE SKIP TO QUESTION 12.)

10 Does the training for skilled workers provided by your firm currently **consist of**: (Please circle the appropriate number.)

1. informal "on-the-job" training
2. training for new workers
3. retraining existing workers
4. tuition reimbursement
5. special agreements with schools or **public** providers for worker training
6. special agreements with schools or **private** providers for worker training
7. other (Please explain:) _____

11 Approximately how many hours **per skilled worker** does your firm allocate for training **per year**?
_____ hrs/per skilled worker

(Next page please.)

12 Would you **agree** or **disagree** with the following statement:

	Strongly Agree	Some-what Agree	Neither Agree nor Disagree	Some-what Disagree	Strongly Disagree
In your firm, there is a need for a training strategy for skilled workers.	1	2	3	4	5

13 How strongly would you **agree** or **disagree** that the following factors would **help** in hiring or retaining a skilled manufacturing workforce for your firm: (Please circle one number for each item.)

	Strongly Agree	Some-what Agree	Neither Agree nor Disagree	Some-what Disagree	Strongly Disagree
a. better housing available in the community	1	2	3	4	5
b. better transportation facilities in the community	1	2	3	4	5
c. better schools in the community	1	2	3	4	5
d. more successful integration of diverse populations into the community	1	2	3	4	5
e. adequate employment opportunities for worker's spouse	1	2	3	4	5
f. changes in company policies and practices	1	2	3	4	5
g. changes in work values of skilled workers	1	2	3	4	5
h. other factors (Please specify.) _____	1	2	3	4	5

INFORMATION ABOUT YOUR FIRM

Please answer the following questions on the blanks provided or by circling the appropriate answer. Also please note: **All responses on this survey are compiled as anonymous data.** In no case shall any answers you provide be associated with you, your particular firm, or the name of your firm.

14 **Total number of locations:** _____

15 **Total number of locations in Minnesota:** _____

16 **Number of skilled workers:** (Please circle one.)

- | | |
|--------------------------------|--------------------------------|
| 1. less than 10 workers | 5. between 250 and 499 workers |
| 2. between 10 and 49 workers | 6. between 500 and 999 workers |
| 3. between 50 and 99 workers | 7. 1,000 workers or more |
| 4. between 100 and 249 workers | |

17 **Primary industry sector (or SIC code):** _____

18 **What are your firm's gross revenues?** (Please circle one.)

- | | |
|---|---|
| 1. less than \$100,000 | 6. \$5 million or more, but less than \$10 million |
| 2. \$100,000 or more, but less than \$250,000 | 7. \$10 million or more, but less than \$25 million |
| 3. \$250,000 or more, but less than \$500,000 | 8. \$25 million or more, but less than \$50 million |
| 4. \$500,000 or more, but less than \$1 million | 9. \$50 million or more |
| 5. \$1 million or more, but less than \$5 million | |

END

THANK YOU FOR THE TIME AND ATTENTION YOU HAVE GENEROUSLY GIVEN TO THIS SURVEY EFFORT.

