

**Canadian Manufacturers and Exporters -
Manitoba Division
General Manufacturing Sector
Human Resource Needs Study
Executive Summary
August 7, 2008**

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Executive summary

Background

The Canadian Manufacturers and Exporters (CME)-Manitoba Division (hereafter referred to as “CME-Manitoba”) commissioned **kisquared** to conduct a human resource needs assessment on behalf of Manitoba’s general manufacturing sector. The goals of the study included determining the sector’s high demand occupations, hard-to-find skills, education/training needs, and the impact changing technology may have on the sector’s human resource needs in the future.

Methodology

Consultations: The first phase consisted of two initial consultation sessions. The first was held January 31, 2008 with CME-Manitoba Steering Committee members to review and finalize the research plan and to identify the industries to be included in the scope of this study. The industries included are: aerospace, food processing, electronics, heavy equipment, life sciences, metal, packaging, plastics, printer and book binder, garment, windows and doors, and wood and wood products. The vehicle manufacturing industry was conducting a similar study at the same time as this CME study, and was therefore excluded. The second consultation took place February 21, 2008 with 19 industry representatives. This consultation was designed to inform the research process by eliciting insights regarding the sector’s human resource challenges, high-demand occupations, and hard-to-find skills.

Interviews with general manufacturers: From March 3 to 14, 2008, **kisquared** conducted 11 one-on-one telephone interviews with general manufacturers to validate the information obtained from the industry consultation and to inform development of the upcoming survey.

Background research: **kisquared** reviewed recent labour market data including literature on skills shortages and labour force projections for manufacturing occupations, labour market trends and recruitment and retention challenges and solutions (at the Manitoba and national level). Findings were used in questionnaire development and in developing some final recommendations.

Interviews with education sector: **kisquared** conducted a combination of telephone and in-person interviews with 13 Manitoba education institutions between April 18 and May 16, 2008. Education representatives were solicited for solutions to address the manufacturing sector’s high demand occupations and hard-to-find skill sets both now and in the future.

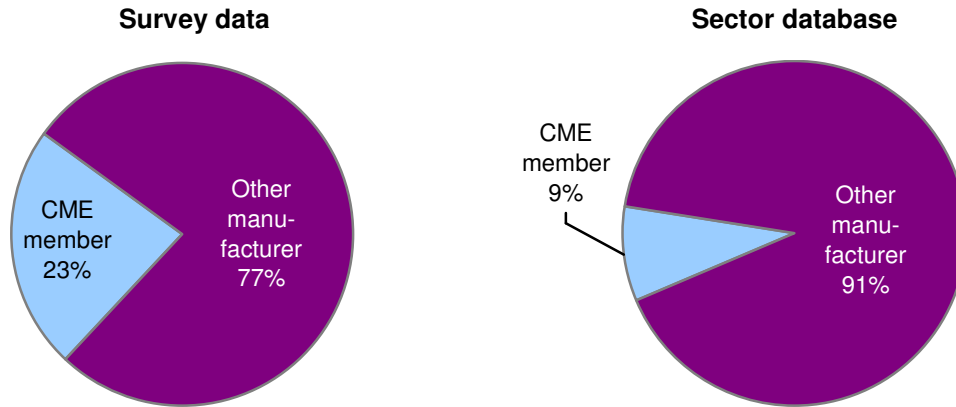
Survey with general Manitoba manufacturers: **kisquared** designed a survey instrument by in consultation with the CME-Manitoba Steering Committee. A Steering Committee representative provided approval on the final version. **kisquared** interviewers completed 226 telephone surveys between April 14 and May 9, 2008 with general Manitoba manufacturers (referred to as “employers” in the findings). The sample was compiled using the supplied CME member database, as well as contacts from the Manitoba Companies Directory. **kisquared** obtained contact information from the Manitoba Companies Directory for the relevant industries only.

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Human resource profile

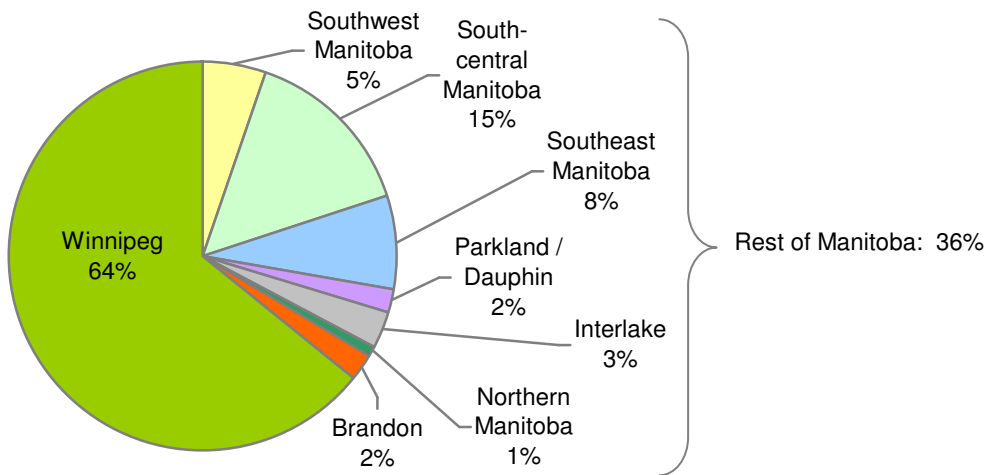
Figure 1 CME MEMBERSHIP



Region

Nearly two-thirds of interviews were conducted with Winnipeg-based employers; 36% were conducted with employers outside the city.

Figure 2 MANITOBA REGION



Employment

- We estimate the Manitoba manufacturing sector (vehicle manufacturing excluded) employs approximately 48,000 workers.
 - Note: The vehicle manufacturing industry was conducting a similar study at the same time as this CME study, and was therefore excluded.
- Over 13,000 are in skilled occupations and over 34,000 are in unskilled occupations.
- On average, each firm has 108 employees, of which 30 are employed in skilled occupations.
- Seventy-one percent of manufacturers export to other countries.
- On average, 32% of revenues come from sales to other countries.

Salary and wage data

Figure 3 STARTING HOURLY WAGE

NOC code	Occupation	25%	Median (50%)	75%	Mean
7241	Electricians	\$18.00	\$24.04	\$28.23	\$22.95
7311	Construction Millwrights and Industrial Mechanics	\$17.75	\$20.00	\$24.04	\$21.07
7232	Tool and Die Makers	\$18.00	\$20.50	\$23.73	\$20.27
7381	Printing Press Operators	\$15.00	\$16.78	\$20.00	\$18.21
7265	Welders and Related Machine Operators	\$14.00	\$16.00	\$18.00	\$17.06
9511	Machining Tool Operators	\$14.00	\$15.00	\$18.51	\$16.71
9472	Camera, Plate Making and other Prepress occupations	\$13.50	\$16.41	\$18.31	\$16.32
9473	Binding and Finishing Machine Operators	\$11.25	\$16.00	\$19.23	\$15.97
9496	Industrial Painters and Coaters	\$12.25	\$15.00	\$18.00	\$15.37
9422	Plastics Processing Machine Operators	\$12.00	\$13.46	\$15.00	\$14.17
9513	Woodworking Machine Operators	\$11.75	\$13.46	\$15.00	\$14.09
9619	Entry-level employees or unskilled labourers	\$10.00	\$11.00	\$12.02	\$11.64

- The National Occupational Classification (NOC) is the nationally accepted system for classifying occupations in Canada. It organizes over 30,000 job titles into 520 occupational group descriptions and is used to compile, analyze and communicate information about occupations throughout Canada's labour market. Many companies use this classification system and the related job profiles to assist them with their human resource processes. For more information on the NOC, visit <http://www5.hrsdc.gc.ca/NOC-CNP/app/index.aspx?lc=e>.

Figure 4 STARTING ANNUAL SALARY

NOC code	Occupation	25%	Median (50%)	75%	Mean
4163	International Business Development Personnel	\$57,750	\$70,000	\$85,000	\$72,000
0016	General Managers	\$50,000	\$70,000	\$87,000	\$70,705
0911	Plant Managers	\$41,600	\$55,000	\$70,000	\$58,972
0211	Research and Development Scientists and Technicians	\$41,600	\$50,000	\$60,000	\$53,253
0911	Manufacturing Managers	\$40,000	\$50,000	\$60,000	\$52,042
2146	Aerospace Engineers	\$46,500	\$50,000	\$57,500	\$51,600
2132	Mechanical Engineers	\$45,000	\$50,000	\$60,000	\$51,115
2141	Industrial and Manufacturing Engineers	\$40,000	\$50,000	\$57,500	\$51,012
2142	Metallurgical and Materials Engineers	\$46,000	\$50,000	\$55,000	\$50,346
0721	Facility Operation and Maintenance Managers	\$40,000	\$48,920	\$60,000	\$49,701
0611; 1122	Sales and Marketing	\$37,440	\$49,000	\$55,000	\$48,608
2174	Computer Programmers	\$40,000	\$50,000	\$55,500	\$48,285
0113	Materials Managers	\$40,000	\$50,000	\$58,750	\$48,270
2133	Electrical and Electronics Engineers	\$40,000	\$45,000	\$55,000	\$47,361
2171	IT Professionals	\$37,720	\$45,000	\$53,500	\$47,100
1111	Accountants	\$33,280	\$45,000	\$57,500	\$46,612
2173;2174; 2175;2252; 5223;5241; 5245	Designers	\$35,193	\$40,000	\$50,000	\$43,064
1476	Logistics Personnel	\$35,000	\$40,000	\$50,000	\$43,044
2232	Mechanical Engineering Technologists and Technicians	\$32,380	\$40,000	\$50,000	\$42,363
7211; 7231	Supervisors, Machinists and Related Occupations	\$33,710	\$40,000	\$45,000	\$40,010
1453	Customer service personnel	\$25,500	\$31,200	\$39,000	\$33,302

Information sources for setting wages or compensation levels

- Employers use five general categories of sources to help them set wages or compensation levels:
 - Industry / market knowledge and sources (59%);
 - Internal experience and knowledge (25%);
 - Public sector labour market information (LMI) or human resources (HR) sources (14%);
 - Private sector HR websites and sources (14%); and
 - Not-for-profit organizations (13%).

In-demand occupations

- Within the next five years, employers expect the greatest increase in the number of individuals employed in occupations requiring minimal education, such as machine operators (of various types) and entry-level or unskilled workers. Another trend expected is an increase in the number of CNC operators, indicating a potential shift to more automated manufacturing processes.
- Generally, the number of individuals in management positions is not expected to increase within the next five years, except for supervisors, machinists and related occupations.

Figure 5 INCREASE IN PERSONNEL OVER THE NEXT FIVE YEARS

NOC code	Occupation	%
9473	Binding and Finishing Machine Operators	83%
9511	Machining Tool Operators, including CNC operators	73%
9619	Entry-level employees or unskilled labourers	71%
2232	Mechanical Engineering Technologists and Technicians, including Electrical Mechanical Technologists and Draftsmen who are CAD operators	67%
7211; 7231	Supervisors, Machinists and Related Occupations, including CNC setup and programming specialists	67%
9422	Plastics Processing Machine Operators	64%
7232	Tool and Die Makers, including Mould Makers, Rotational Mould Makers and Setup, Operators, Maintenance and Programmers for CNC machine tools	62%
9472	Camera, Plate Making and other Prepress occupations	60%
7265	Welders and Related Machine Operators, including TIG and MIG Welders	60%
2141	Industrial and Manufacturing Engineers	59%
7381	Printing Press Operators	58%
2146	Aerospace Engineers	57%
0611; 1122	Sales and Marketing	56%
4163	International Business Development Personnel	56%
9496	Industrial Painters and Coaters	55%
2133	Electrical and Electronics Engineers	55%
2132	Mechanical Engineers, including Design Engineers	54%
2173; 2174; 2175; 2252; 5223; 5241; 5245	Designers	50%
0211	Research and Development Scientists and Technicians	50%
7311	Construction Millwrights and Industrial Mechanics	48%
1453	Customer service personnel	43%
9513	Woodworking Machine Operators, including Labourers, Woodworkers, CNC Setup, Programming and Operating Specialists for woodworking machines	42%
1476	Logistics Personnel	38%
2174	Computer Programmers	37%
2142	Metallurgical and Materials Engineers, including composites	36%
2171	IT Professionals	36%
7241	Electricians	34%
0911	Manufacturing Managers	31%
0721	Facility Operation and Maintenance Managers	27%
0113	Materials Managers	24%
0911	Plant Managers	23%
1111	Accountants	20%
0016	General Managers	18%

Note: The percentage reflects the share of employers expecting an increase in personnel for each occupation.

Turnover statistics

For the purposes of this study, skilled positions and occupations usually require university or college education, or apprenticeship training; unskilled refers to occupations that usually require secondary school, occupation-specific training, or where on-the-job training is usually provided.

Figure 6 TURNOVER STATISTICS, OVERALL AND BY INDUSTRY

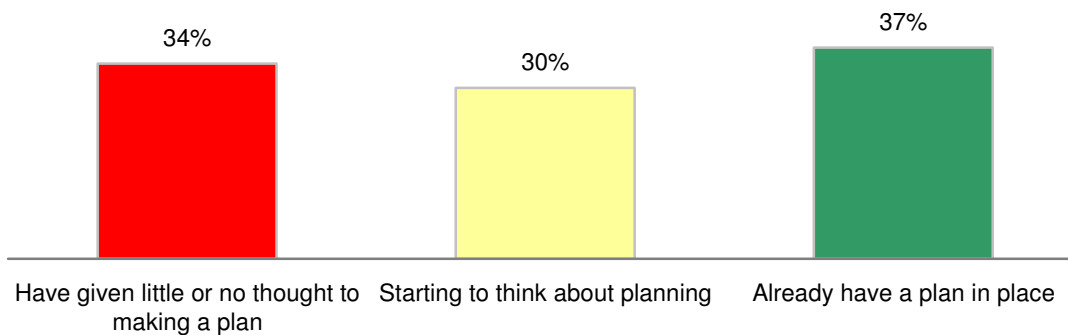
Turnover rates	Industry	Skilled %	Unskilled %	Total
	Metal	10%	12%	11%
	Electronics	6%	23%	18%
	Plastic	7%	11%	10%
	Heavy equipment	11%	23%	20%
	Wood and wood products	12%	33%	30%
	Life sciences	13%	12%	12%
	Printer and book binder	12%	10%	10%
	Food processing	11%	14%	13%
	Aerospace	7%	4%	6%
	Packaging	6%	7%	7%
	Garment	2%	19%	17%
	Window and door	10%	23%	23%

Skilled	9%
Unskilled	18%
Total	15%

Notes: Turnover rate is calculated by dividing the number of employees who left voluntarily in the past 12 months by the total number of employees for current workforce. Industries with better turnover rates than average are circled in blue, while industries with turnover rates that are worse than average (i.e., higher turnover rates) are circled in red.

Succession planning

Figure 7 SUCCESSION PLANNING



- Large firms are more likely than small ones to do succession planning:
 - One-half of large employers have a succession plan in place, compared to only one-third of small employers.



Recruitment challenges by occupation

Employers were read a list of occupations developed through employer consultations and key informant interviews and asked which ones they have difficulty finding (recruitment).

Figure 8 OCCUPATIONAL RECRUITING CHALLENGES

NOC code	Occupation	%
2142	Metallurgical and Materials Engineers, including Composites	82%
7232	Tool and Die Makers which include Mould Makers and Setup, Operators, Maintenance, and Programmers for CNC machine tools	79%
7211; 7231	Supervisors, Machinists and Related Occupations which include CNC setup and programming Specialists	78%
2132	Mechanical Engineers including Design Engineers	77%
2133	Electrical and Electronics Engineers	71%
7381	Printing Press Operators	70%
9511	Machining Tool Operators which include CNC Operators	69%
9473	Binding and Finishing Machine Operators	67%
2146	Aerospace Engineers	67%
7311	Construction Millwrights and Industrial Mechanics	67%
2141	Industrial and Manufacturing Engineers	67%
7241	Electricians	66%
9496	Industrial Painters and Coaters	64%
2232	Mechanical Engineering Technologists and Technicians including Electrical Mechanical Technologists and Draftsmen that are CAD operators	64%
9422	Plastics Processing Machine Operators	63%
9513	Woodworking Machine Operators including Labourers, Woodworkers, CNC Setup, Programming and Operating Specialists for Woodworking machines	61%
2173; 2174; 2175; 2252; 5223; 5241; 5245	Designers	60%
7265	Welders and Related Machine Operators, including TIG and MIG welders	58%
0211	Research and development scientists and technicians	56%
9619	Entry level employees or unskilled Labourers	52%
9472	Camera, Plate making and other Prepress occupations	50%
0911	Manufacturing Managers	46%
0721	Facility Operation and Maintenance Managers	44%
1476	Logistics Personnel	44%
0611; 1122	Sales and Marketing	44%
4163	International Business Development Personnel	42%
0911	Plant Managers	42%
2171	IT Professionals	38%
1453	Customer Service Personnel	36%
0016	General Managers	34%
0113	Materials Managers	33%
1111	Accountants	30%
2174	Computer Programmers	29%



Recruitment challenges - national study comparison

The first Manitoba column in Figure 9 below (Manitoba (all)) represents all Manitoba general manufacturers, which is comparable to the national study, while the last column (Manitoba) represents only those manufacturers who employ individuals in these occupations.

Figure 9 OCCUPATIONAL RECRUITMENT CHALLENGES, NATIONAL COMPARISON

NOC code	Occupation	National	Manitoba(all)	Manitoba
9619	Entry-level employees or unskilled labourers	20%	46%	52%
0611;1122	Sales and Marketing personnel	14%	28%	44%
7265	Welders	14%	22%	58%
0911	Plant Managers	6%	20%	42%
1111	Accountants	5%	19%	30%
1453	Customer Service personnel	8%	17%	36%
0016	General Managers	6%	16%	34%
7232	Tool and Die Makers	8%	12%	79%
2171	IT Professionals	6%	12%	38%
7241	Electricians	7%	11%	66%
2173; 2174; 2175; 2252; 5223; 5241; 5245	Designers	9%	11%	60%
0113	Materials Managers	6%	8%	33%
0211	Research and Development Scientists and Technicians	5%	6%	56%
4163	International Business Development	6%	4%	42%
2174	Computer Programmers	4%	4%	29%

Note: National data from Canadian Manufacturers and Exporters. (2007). View from the top for future markets: 2007-2008 management issues survey. Toronto, ON.



Recruitment solutions

Figure 10 RECRUITMENT SOLUTIONS



- Companies with a large number of full-time positions (more than 50) in the Manitoba workforce are consistently more likely to use or consider the recruitment methods tested to attract employees than employers with fewer employees. Differences in recruitment strategy that vary most by employer size:
 - Utilizing headhunting services (79% of large employers use/consider compared to 28% of small employers);
 - Recruiting through professional associations (72% of large employers use/consider compared to 37% of small employers); and
 - Creating recruitment ads that focus on the benefits to new employees (82% of large employers use/consider compared to 47% of small employers).
- Winnipeg-based employers are more likely (77%) to recruit directly from educational institutions, whereas those in the rest of Manitoba are somewhat less likely (61%) to do so. Recruiting through professional associations is more likely (58%) to be done by Winnipeg employers, whereas those outside the city are less likely (39%) to do so.

Figure 11 RECRUITMENT SOLUTIONS, NATIONAL COMPARISON

Recruitment solution	National	Manitoba	
	Considering	Considering	Already doing
Hiring foreign-trained professionals	26%	27%	26%
Recruiting directly from abroad	7%	16%	23%
Recruiting people from Aboriginal communities	13%	21%	45%
Attract personnel from other companies	14%	14%	26%

Note: National data from Canadian Manufacturers and Exporters. (2007). View from the top for future markets: 2007-2008 management issues survey. Toronto, ON.

- Manitoba employers are far ahead of the national trend in recruiting Aboriginal people and people from abroad.
- Manitoba employers are also more active in attracting personnel from other companies.

Retention challenges by occupation

Employers were read a list of occupations developed through employer consultations and key informant interviews and asked which ones they have difficulty keeping (retention).

Figure 12 OCCUPATIONAL RETENTION CHALLENGES

NOC code	Occupation	%
2146	Aerospace Engineers	57%
9619	Entry level employees or unskilled labourers	57%
2142	Metallurgical and Materials Engineers, including Composites	55%
9422	Plastics Processing Machine Operators	46%
7241	Electricians	42%
7265	Welders and Related Machine Operators, including TIG and MIG Welders	41%
9473	Binding and Finishing Machine Operators	25%
9496	Industrial Painters and Coaters	38%
9513	Woodworking Machine Operators including Labourers, Woodworkers, CNC Setup, Programming and Operating Specialists for woodworking machines	37%
9511	Machining Tool Operators which include CNC Operators	35%
2232	Mechanical Engineering Technologists and Technicians including Electrical Mechanical Technologists and Draftsmen that are CAD operators	35%
7211; 7231	Supervisors, Machinists and Related Occupations which include CNC setup and programming specialists	33%
7232	Tool and Die Makers which include Mould Makers, Rotational Mould Makers and Setup, Operators, Maintenance, and Programmers for CNC machine tools	31%
2133	Electrical and Electronics Engineers	31%
7311	Construction Millwrights and Industrial Mechanics	30%
2141	Industrial and Manufacturing Engineers	29%
2173; 2174; 2175; 2252; 5223; 5241; 5245	Designers	24%
2132	Mechanical Engineers including Design Engineers	23%
0911	Plant Managers	21%
4163	International Business Development Personnel	20%
1453	Customer Service Personnel	19%
0611; 1122	Sales and marketing	18%
0911	Manufacturing Managers	18%
0211	Research and development scientists and technicians	15%
1476	Logistics Personnel	15%
0113	Materials Managers	15%
0721	Facility Operation and Maintenance Managers	14%
2171	IT Professionals	13%
7381	Printing Press Operators	10%
2174	Computer Programmers	10%
1111	Accountants	9%
0016	General Managers	7%
9472	Camera, Plate making and other Prepress occupations	5%



Retention challenges - national study comparison

The first Manitoba column in Figure 9 below (Manitoba (all)) represents all Manitoba general manufacturers, which is comparable to the national study, while the last column (Manitoba) represents only those manufacturers who employ individuals in these occupations.

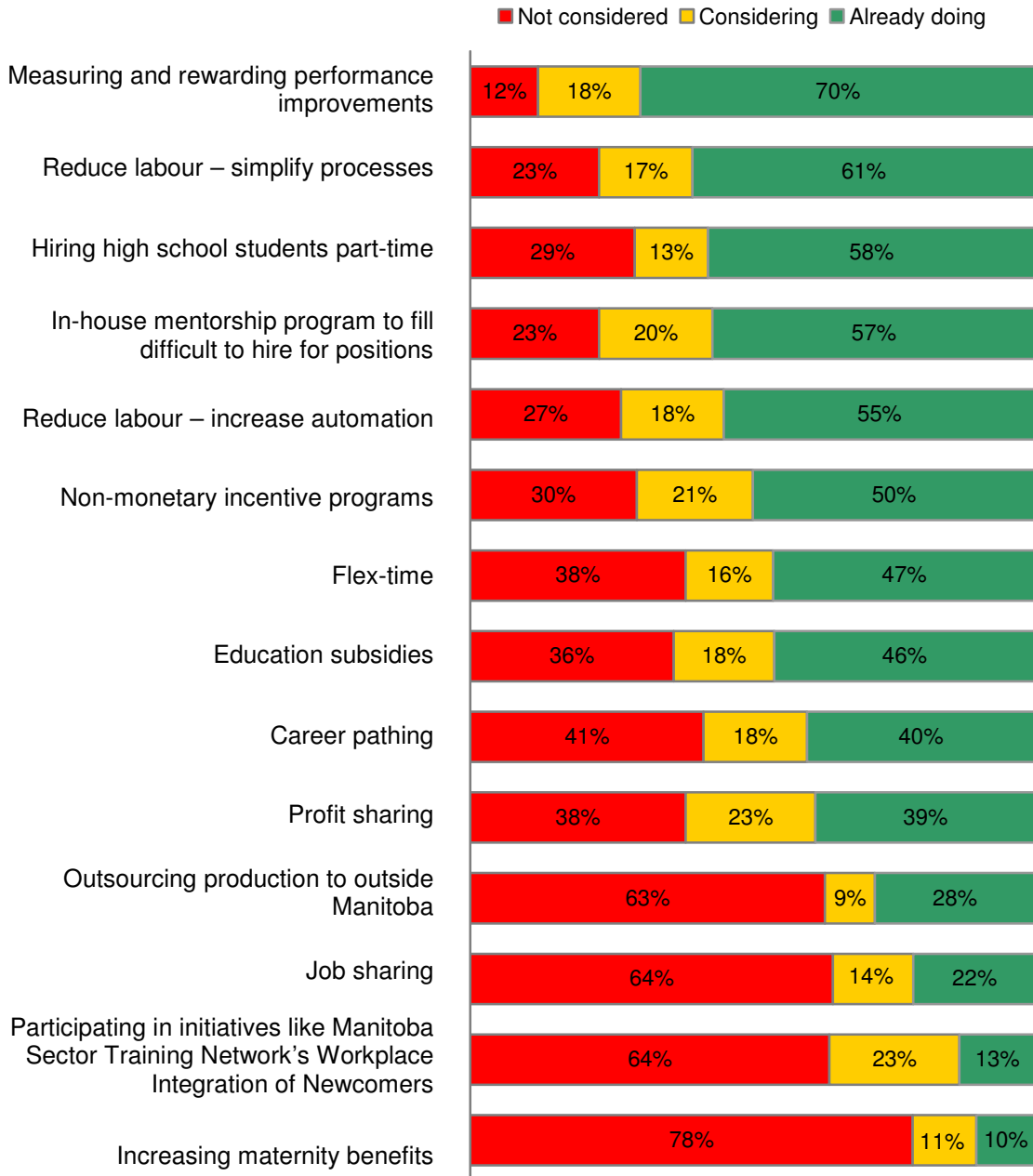
Figure 13 OCCUPATIONAL RETENTION CHALLENGES, NATIONAL COMPARISON

NOC code	Occupation	National	Manitoba(all)	Manitoba
9619	Entry-level employees	21%	50%	57%
0611;1122	Sales and Marketing	11%	12%	18%
1453	Customer Service Personnel	7%	9%	19%
7265	Welders	10%	9%	41%
0911	Plant Managers	9%	8%	21%
2173; 2174; 2175; 2252; 5223; 5241; 5245	Designers	9%	7%	24%
1111	Accountants	7%	6%	9%
0016	General Managers	5%	5%	7%
2171	IT Professionals	5%	5%	13%
7241	Electricians	6%	4%	42%
0113	Materials Managers	6%	4%	15%
7232	Tool and Die Makers	5%	4%	31%
2174	Computer Programmers	3%	2%	10%
4163	International Business Development	3%	1%	20%
0211	Research and Development Scientists and Technicians	6%	1%	15%

Note: National data from Canadian Manufacturers and Exporters. (2007). View from the top for future markets: 2007-2008 management issues survey. Toronto, ON.

Retention solutions

Figure 14 RETENTION SOLUTIONS





- Large firms (51+ employees) are significantly more likely to be implementing or considering the following:
 - Educational subsidies (74%, versus 57% of smaller firms);
 - Career pathing (76%, versus 47% of smaller firms);
 - Profit sharing (72%, versus 55% of smaller firms); and
 - Initiatives for newcomers to Canada (47%, versus 29% of smaller firms).
- Winnipeg employers are more likely to use or consider implementing process simplification and education subsidies, whereas employers outside of Winnipeg are more likely to use or consider hiring high school students part-time.

Retention solutions – national study comparison

Figure 15 RETENTION SOLUTIONS, NATIONAL COMPARISON

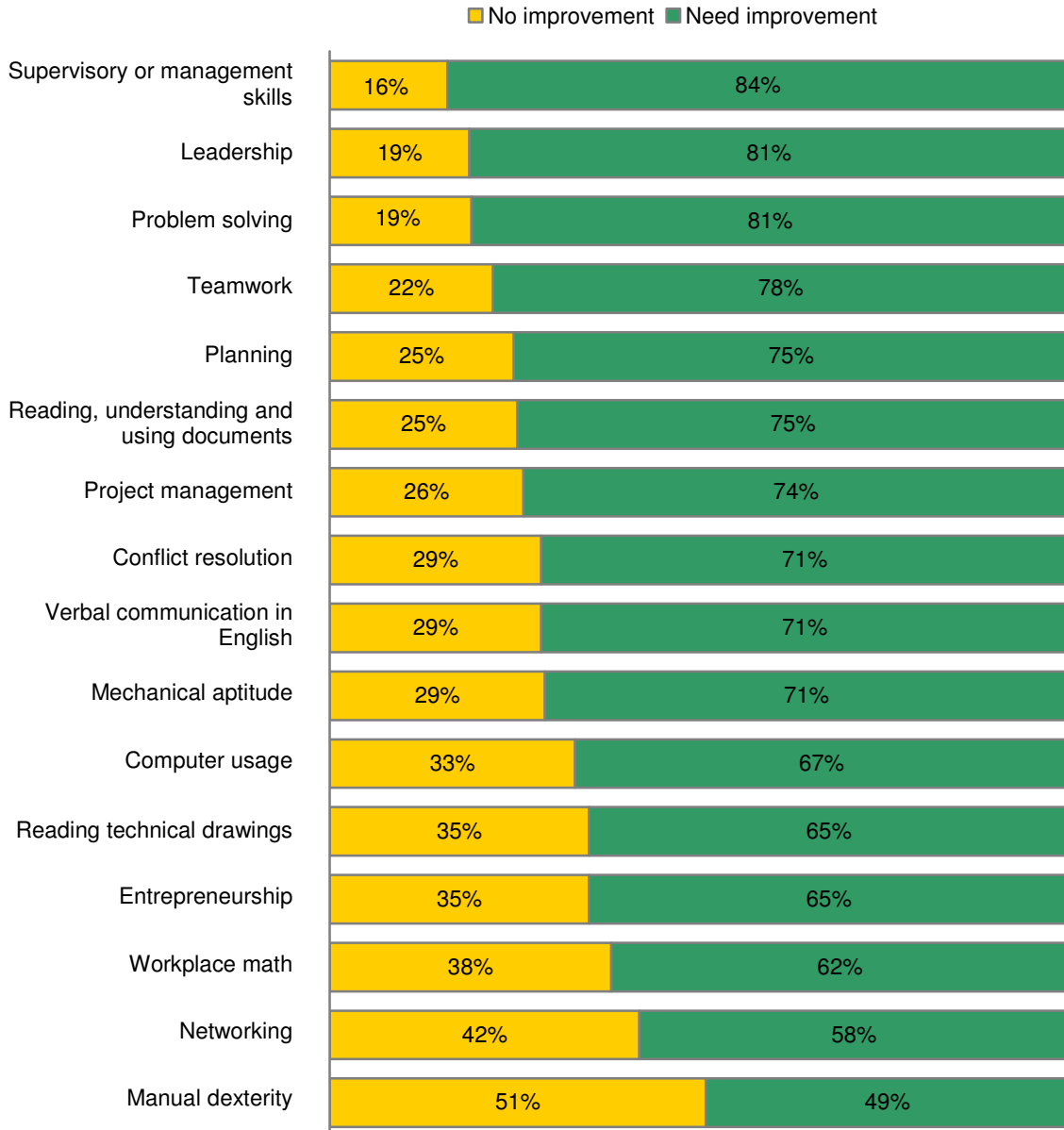
Retention solution	National	Manitoba	
	Considering	Considering	Already doing
Increase automation to reduce required labour pool	26%	18%	55%
Outsourcing production	14% - 22%	9%	28%
Simplify business processes to reduce HR needs	28%	17%	61%





Skills gaps

Figure 16 SKILLS REQUIRING IMPROVEMENT



- For nine skills, large firms are more likely than small ones to say they need improvement. These relate broadly to management and thinking skills. See Figure 17 below.

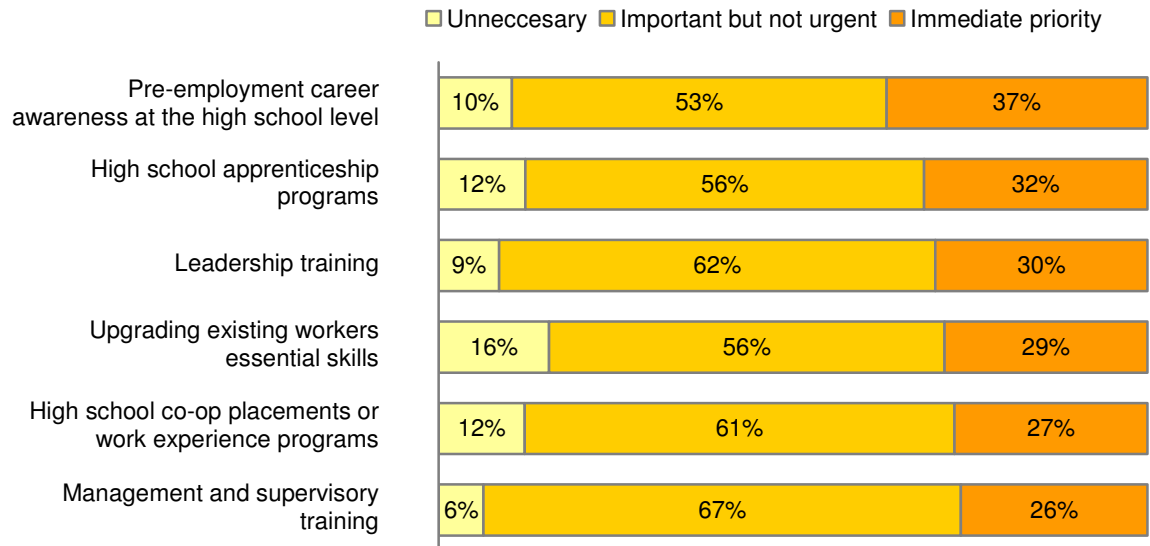
Figure 17 TOP SKILLS REQUIRING IMPROVEMENT, BY EMPLOYER SIZE

Occupation	Small	Large
Supervisory or management skills	80%	98%
Leadership	77%	94%
Problem solving	78%	90%
Teamwork	74%	90%
Conflict resolution	66%	89%
Project Management	70%	88%
Computer usage	61%	85%
Verbal communication in English	68%	83%
Workplace math	58%	75%

- Approximately one-third of employers say that each of verbal communication in English (33%), leadership (31%), and supervisory or management skills (31%) need *significant* improvement. No other skill was identified by over 30% of employers as requiring significant improvement.

Sector priorities

Figure 18 PRIORITIES FOR MANITOBA'S MANUFACTURING SECTOR



Training budget

Figure 19 TRAINING BUDGET, PER EMPLOYEE

	Average training cost per employee	Median training cost per employee
Small size (1 – 50 employees)	\$662.43	\$350.00
Large size (50+ employees)	\$923.20	\$327.87
Winnipeg	\$1,060.86	\$428.57
Rest of Manitoba	\$427.42	\$265.52
Overall	\$901.23	\$323.10