

UPSKILLING: WORKERS AT RISK?

Rising Skill Levels
in Selected Occupations
in Waterloo Wellington



SUMMARY REPORT



Guiding today's workforce for tomorrow's workplace

Prepared for
Waterloo Wellington Training
Adjustment Board

by Larry Smith
Essential Economics Corporation

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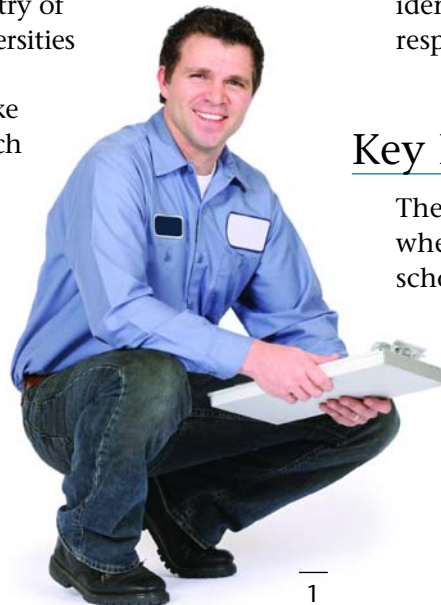
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Background

The Waterloo Wellington Training and Adjustment Board (WWTAB) has been concerned for some time that some older workers, currently employed, may not be able to keep up with increasing skill levels within their same occupation or employment sector. This could put them at risk should technological change or layoff displace them.

With increasing competitive pressure and rapid technological change, it is clear that training to improve the skill levels of some existing workers is essential. Otherwise, not only the employability of these workers is at risk but also the prosperity of the local economy.

In order to deliver such training effectively and efficiently, it is necessary to know which workers in which occupations are in need of training, and how urgent that need is. Since there was a shortage of such information, WWTAB sought funding to undertake research to identify rising skill levels for selected occupations in their service area of Waterloo Wellington. Funding was received from the Ministry of Training, Colleges and Universities and Essential Economics Corporation was hired to take on this research project which will help the community to better understand how skill levels are changing in specific occupations. The intention is to provide information to local educators, trainers, employers and service providers about these changing skill levels within the existing labour force.



The Report

The report specifically focuses on those occupational categories where there was reason to believe that skill levels are shifting rapidly, and therefore workers may be at risk if they do not adapt quickly.

An examination of the specialized Statistics Canada /Local Board Database made it possible to identify changing skill levels for 52 specific occupations (at the three-digit level of the National Occupational Classification). Changing skill levels were inferred for each occupation from changing levels of education among the younger workers (25 to 44 years old) compared to the older workers (45 years and older). Educational attainment in 2001 was measured for less than high school, some high school, high school graduation, some college, college graduation, some university and university graduation.

The detailed observations for each occupation are presented in the main report and its Appendix Tables. Trainers can use this data to identify areas of priority need and to shape their responses.

Key Findings

The following two tables show occupations where more than half of the workers have high school graduation or less.

Table 1 Younger Workers¹ at Risk
Occupations in Which More Than Half the Workers Have High School Graduation or Less • WWTAB 2001

NOC	Occupation	Less than High School Diploma	High School Diploma	High School Diploma or Less
661	Cashiers	46.8	40.4	87.2
662	Other Sales & Related Occupations	23.9	36.4	60.3
664	Food Counter Attend, Kitchen Help & Rel. Occ	33.8	35.9	69.7
666	Cleaners	33.6	24.5	58.1
727	Carpenters & Cabinetmakers	39.6	17.5	57.1
729	Other Construction Trades	35.7	21.4	57.1
734	Upholst, Tailors, Shoe Repair, Jewellers & Related	22.2	40.7	62.9
741	Motor Vehicle & Transit Drivers	37.1	21.0	58.1
742	Heavy Equipment Operators	34.7	26.1	60.8
744	Other Installers, Repairers & Services	29.2	28.3	57.5
761	Trades Helpers & Labourers	37.1	23.1	60.2
843	Agriculture & Horticulture Workers	76.4	13.6	90.0
941	Machine Operators & Related Workers in Metal &* Mineral Products Processing	23.8	30.8	54.6
942	Machine Operators & Related Workers in Chemical, Plastic & Rubber Processing	34.0	26.5	60.5
944	Machine Operators & Related Workers in Textile Processing	46.6	29.3	75.9
946	Machine Operators & Related Workers in Food, Beverage & Tobacco Processing	32.4	33.3	65.7
947	Printing Machine Operators & Related Occupations	36.7	24.5	61.2
948	Mechanical, Electrical & Electronic Assemblers	31.4	26.0	57.4
949	Other Assembly & Related Occupations	44.8	23.9	68.7
951	Machining, Metalworking, Woodworking & Related	33.9	25.0	58.9
961	Labourers in Processing, Manufacturing Utilities	37.7	27.8	65.5

1: From 25 to 44 years old

Source: Statistics Canada/Local Board Database

Table 2 Older Workers¹ at Risk

Occupations in Which More Than Half the Workers Have High School Graduation or Less • WWTAB 2001

NOC	Occupation	Less than High School Diploma	High School Diploma	High School Diploma or Less
141	Clerical Occupations, General Office Skills	20.2	31.4	51.6
143	Finance and Insurance Clerks	10.6	50.0	60.6
146	Mail & Message Distribution Occupations	30.6	27.0	57.6
147	Recording, Scheduling & Distributions Occ.	41.4	20.4	61.8
621	Sales & Service Supervisors	39.0	22.9	61.9
624	Chefs and Cooks	49.2	17.9	67.1
662	Other Sales & Related Occupations	36.4	37.7	74.1
664	Food Counter Attend, Kitchen Help & Rel. Occ	50.5	17.6	68.1
666	Cleaners	57.2	15.5	72.7
734	Upholst, Tailors, Shoe Repair, Jewellers & Related	34.7	18.2	52.9
741	Motor Vehicle & Transit Drivers	51.8	14.5	66.3
742	Heavy Equipment Operators	55.5	16.7	72.2
744	Other Installers, Repairers & Services	35.4	17.7	53.1
761	Trades Helpers & Labourers	50.7	10.7	61.4
843	Agriculture & Horticulture Workers	64.2	8.5	72.7
921	Supervisors, Processing Occupations	34.8	19.1	53.9
941	Machine Operators & Related Workers in Metal &* Mineral Products Processing	60.4	19.8	80.2
942	Machine Operators & Related Workers in Chemical, Plastic & Rubber Processing	35.8	21.6	57.4
944	Machine Operators & Related Workers in Textile Processing	55.7	13.9	69.6
946	Machine Operators & Related Workers in Food, Beverage & Tobacco Processing	55.4	15.4	70.8
947	Printing Machine Operators & Related Occupations	50.0	16.7	66.7
948	Mechanical, Electrical & Electronic Assemblers	45.6	18.2	63.8
949	Other Assembly & Related Occupations	50.0	12.0	62.0
951	Machining, Metalworking, Woodworking & Related	48.1	15.8	63.9
961	Labourers in Processing, Manufacturing Utilities	65.8	12.4	78.2

1: 45 years and older

Source: Statistics Canada/Local Board Database

A selection of other key findings is highlighted below, all of which refer to Waterloo Wellington specifically. Further details can be found in the main report.

1 *A relatively large number of workers have not completed high school.*

For example, 19.8 percent of the employed labour force have not completed high school. That means that almost one in every five workers is at risk of being overwhelmed by technological change. There is no doubt that these workers have valuable experience. The concern is their ability to adapt.

Moreover, considering the group 25 to 44, 15.7 percent have not graduated from high school. Because of their relatively young age, a significant number of these workers will have no choice but to try to adapt. They will not be “rescued” by retirement.

Moreover, in some occupations the risk appears even greater. For example, 37.7 percent of the younger workers and labourers in processing/manufacturing/utilities (NOC 961) have not graduated from high school.

2 *As expected, younger workers have higher skill levels than the older workers as measured by educational attainment.*

For example, 30.6 percent of the younger group have trade certificates or are college graduates, compared to 27.2 percent of the older group. University graduates represent 22.1 percent of the younger group, compared to 18.0 percent of the older group.

3 *The occupational profile is strongly affected by the educational profile.*

For example, three of the 10 broad occupational categories used by Statistics Canada (trades/transport/equipment operators, primary industry occupations and processing/manufacturing occupations), employed 76.9 percent of those with less than grade 9 education. By contrast, only 6.1 percent of those with university degrees work in these three occupations.

A different four categories (social sciences, management, business/finance/administration and natural and applied sciences) employed 77.5 percent of university graduates.

Considering those who are college graduates with certificates and diplomas, it is apparent that this educational designation represents the widest range of occupational competencies. Management, business/finance/administration, natural and applied sciences, health and social sciences occupations employed one-half of the college graduates; arts/culture/sports, sales/service, trades /transport/equipment operators, primary industry occupations and processing/manufacturing occupations employed the other half. No other educational designation provides the same degree of range.



4

Some education, short of completion, affects occupational choices, competence and mobility. This is true at the high school, college and university levels.

For example, increasing years of high school education, even short of graduation, increased the likelihood of being employed in business/finance/administration and sales/service occupations and reduced likelihood of entering occupations in trades/transport/equipment operators and processing/manufacturing. This strongly suggests that educational training, even in relatively small increments, can alter occupational competence and mobility.

5

University and college graduates appear in some occupations where their education may not seem relevant.

For example, 4.2 percent of the workers 25 to 44 hold university degrees and work as labourers in processing and manufacturing and 7.0 percent of the machine operators and related workers/food hold university degrees. And among younger workers, 12.8 percent of cashiers are college graduates. It might be doubted that this is a sign of rising skill levels. It could just as easily be the result of inadvisable educational or career choices. This suggests that career counselling should be an important part of all training initiatives.



6

Twenty-seven occupations showed a strong or significant shift to college graduate skills.

Table 3 lists the occupations where the number of college graduates grew in proportion among younger workers. Each of these occupations seems to be urgent candidates for training initiatives.

For example, clerical supervisors (NOC 121) showed a strong shift to college graduates, including trades. However, among younger workers in this occupation, 44 percent of those employed have less than college graduation. Moreover, 25.5 percent have high school or less. Some of these workers appear to be at risk without further training.



The majority of the occupations showing this shift to college graduates, including trades, are in the business/finance/administrative occupations and the sales/service occupations.

Only a few such shifts occurred in the other categories, including trades/transportation and equipment operators.

Table 3 Strong or Significant Shift to College¹ Graduate Skills

NOC	Occupation	Percentage-Point Change in Attainment of those 25-44 years old less those 45+
		Strong Shift ²
121	Clerical Supervisors	10.6
123	Finance and Insurance Administrative	10.0
143	Finance and Insurance Clerks	23.1
341	Assisting Occupations in Support of Health Services	11.3
624	Chefs and Cooks	25.4
627	Technical Occupations in Personal Services	12.6
643	Occupations in Travel and Accommodation	10.4
648	Other Occupations in Personal Service	38.1
662	Other Sales and Related Occupations	16.8
665	Security Guards and Related Occupations	24.4
667	Other Occupations in Travel, Accommodation, Amusement and Recreation	66.7
722	Supervisors, Railway & Motor Transportation Occupations	22.6
744	Other Installers, Repairers and Services	10.6
941	Machine Operators and Related Workers in Metal and Mineral Products Processing	15.8
944	Machine Operators & Related Workers in Textile Processing	12.7
		Significant Shift³
122	Administrative & Regulatory Occupations	4.7
141	Clerical Occupations, General Office Skills	9.2
146	Mail and Message Distribution Occupations	7.4
147	Recording, Scheduling & Distributions Occupations	4.2
621	Sales and Service Supervisors	8.7
647	Childcare and Home Support Workers	6.8
731	Machinery and Transportation Equipment Mechanics (except Motor Vehicles)	7.5
741	Motor Vehicle and Transit Drivers	4.1
742	Heavy Equipment Operators	5.8
861	Primary Production Labourers	6.6
947	Printing Machine Operators & Related Occupations	7.8
951	Machining, Metalworking, Woodworking and Related Machine Operators	5.0

1: Includes Trades

2: 10.0 percentage-point shift or greater

3: 4.0 to 9.9 percentage-point shift

Source: Statistics Canada /Local Board Database.

Thirteen occupations showed a strong or significant shift to university graduates.

Table 4 lists the occupations where the number of university graduates grew in proportion among younger workers. It is not surprising that this list is shorter than for college graduates, since the research excluded many occupations that are dominated by university graduates. Of course, a shift to university graduates strongly suggests an urgent need for further training.

For example, sales representatives/wholesale trade (NOC 641) showed a particularly strong shift to university graduates. However, among younger workers in this occupation the number of college graduates has risen only slightly and 23.8 percent have only high school or less.

Table 4 Strong or Significant Shift to University Graduate Skills

NOC	Occupation	Percentage-Point Change in Attainment of those 25-44 years old less those 45+
		Strong Shift ¹
122	Administrative and Regulatory Occupations	10.8
123	Finance and Insurance Administrative	14.0
143	Finance and Insurance Clerks	10.5
641	Sales Representatives, Wholesale Trade	15.1
		Significant Shift ²
142	Office Equipment Operators	6.6
144	Administrative Support Clerks	8.2
146	Mail and Message Distribution Occupations	5.4
341	Assisting Occupations in Support of Health Services	6.0
621	Sales and Service Supervisors	5.2
647	Childcare and Home Support Workers	6.7
648	Other Occupations in Person Service	8.3
922	Supervisors, Assembly and Fabrication	9.1
946	Machine Operators and Related Workers Food, Beverage and Tobacco Processing	4.4

1: 10.0 percentage-point shift or greater

2: 4.0 to 9.9 percentage-point shift

Source: Statistics Canada/Local Board Database.

8

Eight occupations showed strong or significant shifts to both college and university graduates.

Administrative and regulatory occupations (NOC 122), finance and insurance administrative (NOC 123), finance and insurance clerks (NOC 143), mail and message distribution occupations (NOC 146), assisting occupations in support of health services (NOC 341), sales and service supervisors (NOC 621), childcare and home support workers (NOC 647) and other occupations in personal service (NOC 648) showed a strong or significant shift to post-secondary graduates.

For example, in the finance/insurance administrative occupations (NOC 123), the proportion of college graduates increased by 10 percentage points and university graduates by 14 percentage points. Nevertheless, among the younger workers in this occupation, 21.1 percent have only high school and another 20.1 percent have not completed their post-secondary studies.



9

Fourteen occupations showed a shift from university graduates to college graduates and ten showed a shift from college to university graduates.

For example, among clerical supervisors (NOC 121) the proportion of younger workers who are college graduates rose sharply, while the proportion who are university graduates fell. By contrast, in the same broad category, among administrative support clerks (NOC 144) there was a significant increase in the proportion of university graduates and the proportion of college graduates fell.

In the above cases, the nature of the work appears to be changing. As a result, a different type of training or education is required. It is important to note that college and university graduates are not always interchangeable, One cannot necessarily do the job of the other.

10

Six occupations showed a shift away from both college and university graduates.

Cashiers (NOC 661), metal forming, shaping and erecting trades (NOC 726), carpenters and cabinetmakers (NOC 727), upholsterers, tailors, shoe repairers, jewellers and related occupations (NOC 734), agriculture and horticulture workers (NOC 843) and machine operators and related workers in chemical, plastic and rubber processing (NOC 942) showed a decline in the proportion of both college graduates, including trades, and university graduates.

For example, among younger workers, 46.8 percent of workers have less than high school graduation. This indicates an acute risk for these workers.

Moreover, it is a matter of concern that among carpenters and cabinetmakers (NOC 727), for example, the proportion of those with post-secondary graduation including trades certificates has fallen. Among younger workers, 57.1 percent in this occupation have high school education or less.



11

Among the 52 occupations studied, there is great variation with respect to changing skill levels.

These 52 occupations cannot be treated alike. Some occupations show small changes. Others show a decline in one level and an increase in another. Still others show strong increases in several levels of attainment. Therefore, training initiatives should be targeted precisely, with respect to what is being taught, at what level and to whom.

The tables in the main report and in its Appendix provide further guidance. Copies of the full report can be downloaded from www.wwtab.com.



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