

Rising Skill Levels in Selected Occupations
in
Waterloo Wellington

Prepared for
Waterloo Wellington Training and Adjustment Board

by
Larry Smith
Essential Economics Corporation
March 1, 2007

Table of Contents

Executive Summary	04
Introduction.....	06
Methodology	07
Overview of the Educational and Occupational Profile of the Employed Labour Force	09
Selecting Specific Occupations.....	18
Presenting the Data	21
Business/Finance and Administrative Occupations	22
Assisting Occupations in Support of Health Services.....	25
Sales and Service Occupations	27
Trades/Transportation and Equipment Operators	30
Primary Industry Occupations	33
Processing and Manufacturing Occupations.....	35
Summary Observations.....	38
Appendix A.....	40

List of Tables

Table 1: Educational Profile of the Total Employed Labour Force.....	12
Table 2: Occupational Profile of the Total Employed Labour Force	17
Table 3: Selected Occupations.....	19
Table 4: Business/Finance/Administrative Profile of Changing Educational Attainment by Age Waterloo Wellington 2001	24
Table 5: Assisting Occupations in Support of Health Services Profile of Changing Educational Attainment by Age Waterloo Wellington 2001	26
Table 6: Sales/Service Profile of Changing Educational Attainment by Age Waterloo Wellington 2001.....	29
Table 7: Trades/Transport/Equipment Operators Profile of Changing Educational attainment by Age Waterloo Wellington 2001	32
Table 8: Primary Industry Occupation Profile of Changing Educational attainment by Age Waterloo Wellington 2001	34
Table 9: Processing and Manufacturing Occupations Profile of Changing Educational attainment by Age Waterloo Wellington 2001	37

Executive Summary

An examination of the Statistics Canada/Ministry of Training, Colleges and Universities Database made it possible to identify changing skill requirements 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 compared to the older workers. Educational attainment 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 text and the Appendix Tables.

There was clear evidence that educational levels and presumed skill levels are rising to different degrees in different occupations. However, a few occupations appear to have sharply falling skill requirements. Other occupations appear to be changing much more slowly, if at all. While much of the increase in the educational attainment is at the post-secondary level, many workers in these occupations are high school graduates or failed to graduate high school.

The observations did not support generic approaches to training. It is therefore important that training initiatives be precisely focused given the varying needs of specific occupations.

It was also noted that some occupations included a significant number of persons whose educational attainments do not seem relevant to their occupations. Indeed, it appears that the educational level was higher than might be necessary. In these cases, one might wonder whether there have been inadvisable educational or career choices. This suggests that career counselling may be as important as training programs in assuring the productivity of the workforce.

There was considerable evidence that incremental education has significant effects on career choice, competence and mobility. This suggests the value of training initiatives in the form of short courses or programs. Of course, more intensive training is also indicated.

Given the clear evidence of rising skill levels in many occupations and the number of workers with lesser educational attainment, the need for training grows ever more urgent.

Introduction

The Waterloo Wellington Training and Adjustment Board (WWTAB) asked Essential Economics Corporation to undertake research to identify rising skill requirements for selected occupations in their service area of Waterloo Wellington. The principal source for information is the Statistics Canada Database provided to the Training and Adjustment Boards of Ontario by the Ministry of Training, Colleges and Universities (MTCU). While it is well understood that the skill levels expected of workers in Ontario is rising sharply, there is little information available about specific occupations. By providing this more detailed look at selected occupations, the research will help the community to better understand how skill levels are changing in these occupations. The intention is to provide information to local educators, trainers and service providers about these changing skill requirements within the existing labour force. It will be particularly important to identify those occupations where workers may need to improve their skills to remain in the workplace.

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

Methodology

The methodology needs to be specified carefully because of limitations arising from the data.

First, the research infers changing skill levels from changing levels of formal educational attainment. It is, of course, true that experience plays a vital role in the attainment of skill and can in some circumstances substitute for formal education. However, we do not have a rigorous and practical way to assess the effects of experience. As a result, formal education is taken as a proxy for the attainment of skill.

Second, measuring educational attainment over time would be the most precise way to document these changes. However, while educational attainment figures are available over time, they are not available at a detailed occupational level for regional jurisdictions. We are therefore restricted to working with the MTCU data for the single year, 2001.

Fortunately, the database is able to document educational attainment by age range. By looking at educational attainment by age, we are in effect looking backward in time. For example, if in a given year 10 percent of 40-years olds have college graduation and 20 percent of 30-year olds have the equivalent designation, it means that over time more persons felt the need for a college education. In other words the skill level, as defined by education, has risen over time.

Third, it was impractical to conduct a detailed analysis of every specific occupation in the MTCU database. In addition, some of the occupations have long been recognized as highly skilled. For example, it is not necessary to note that lawyers, physicians and other professionals have long required university attainment.

Since the goal of the research is to provide practical guidance to educators, trainers and service providers, it appears more useful to focus on occupations in which the skill level may be

rising significantly and for which adjustments by the workers and potential workers should be encouraged. In order to select these occupations, it was necessary to provide an overview of the educational and occupational profile of the employed labour force in Waterloo Wellington.

Further detail concerning the selection of the occupations is presented below.

Fourth, an educational profile for each selected occupation was generated and analysis focused on changes in post-secondary education of workers between 25 and 44 years old and those 45 year and older. If the proportion of the younger group who attained a particular educational level was higher than for the older group at the same level of attainment, the formal level of education (as defined by the level of attainment) has risen over time. It is then presumed that the skill level has also risen.

The larger the difference in attainment from the older group to the younger group, the more rapidly the skill level is rising. Of course, the more rapidly the skill level changes, the more urgent is the need for further training.

Fifth, there is a significant limitation to this approach. In some cases, the employers may be actively looking for a higher educational level and are finding that it is unavailable. In this circumstance, the proportion of *employed* persons with the desired education/skill might not have risen significantly, or at all.

In addition, it is possible that, in some cases, the employer's desire for higher skill level is offset by an unwillingness to pay a higher wage.

Overview of the Educational and Occupational Profile of the Employed Labour Force

An analysis of the educational attainment of employees in Waterloo Wellington is necessary in order to assist in the identification of the specific occupations to be studied and to provide context for the analysis. The data is reported as highest level of educational attainment. This means someone designated as a high school graduate has only completed that level of education. A community college graduate would have completed both high school and college.

Considering everyone employed over the age of 15, 19.8 percent of the total have less than high school graduation and only 15.9 percent have graduated from high school. The rest of the population has some form of post-secondary education. Those with trades and college certificates or diplomas equal 28.7 percent of the total. (It is not possible to separate the skilled trades specifically since some of the skilled trades are included under the trades certificate or diploma and some are included under the college certificate or diploma.) In addition, 6.8 percent have completed part but not all of their trades or college education. Finally, 19.8 percent have a university degree and 8.9 percent have completed part of a degree program.

Considering the age group 16 to 24, those with less than high school graduation equal 24.8 percent of the total and 29.3 percent have graduated from high school. (Of course, part of this age group is still in high school.) Those with trades certificates or college certificates or diplomas equal 21.4 percent of the total, which is less than for the overall population. Those individuals who pursued college education immediately after high school should have completed their studies by age 24. However, those who have completed part of their trades or college studies represent 10.8 percent of the total. Clearly, some persons have started their trades or college education with some interruption after high school. University degree holders in this age group represent 5.9 percent of the total and 7.7 percent have not yet completed their studies. Again this supports the view that some persons are delaying the start of their post-secondary

education. It is also possible that a significant proportion of the degree holders in the age group has left the area.

Considering the group 25 to 44, 15.7 percent have not graduated from high school. Since this is well past the usual high school leaving age, this suggests that a significant part of this age group may be at risk. That these workers have valuable experience is not to be doubted. However, their ability to adapt to shifting job requirements would be a matter of concern.

While high school graduates represented only 15 percent of the total, compared to 29.3 percent of the age group 16 to 24, this is a result of the fact that the older group had a higher proportion that attained a post-secondary education. For example, 30.6 percent of the latter group has trades or college certificates or diplomas, compared to 21.4 percent of those 16 to 24 years of age. And only 7.4 percent of those aged 25 to 44 have partly completed trades or college studies. Moreover, 22.1 percent of this group has university degrees, compared to 5.9 percent of those aged 16 to 24.

It also becomes clear that comparing the 16 to 24 age group to those 25 to 44 is of limited analytic value since clearly a large part of the 16 to 24 year-old group has not yet completed their educations. This means that these two age groups would not yield the best guidance about rising skill levels. The better comparison will be the one between those who are in the age group 25 to 44 compared to those who are 45 years old and over. Comparing those 45 and older, 25.1 percent of them have not graduated from high school, compared to the 15.7 percent of those in the younger group. In other words, relatively more persons have completed their high school studies. Those with trades or college certificates or diplomas represented 27.2 percent of the older group, compared to 30.6 percent of the younger group. Only 5.1 percent of the older group has completed part of their college studies, compared to 7.4 percent of the younger group. Finally,

19.0 percent of the older group has university degrees, compared to 22.1 percent of the younger group.

There has therefore been an increase in educational attainment at the post-secondary school level between those aged 25 to 44 and those 45 and older.

Details are presented in Table 1.

Table 1
Educational Profile of the Total Employed Labour Force
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total			
	Age Range			
	15+	16-24	25-44	45+
Less than Grade 9	4.2	6.1	2.2	7.0
Grades 9-10	6.8	4.2	5.0	10.0
Grades 11-13	8.8	14.5	8.5	8.1
High School Graduate	15.9	29.3	15.0	14.7
Trade Certificate or Diploma	3.6	1.2	2.8	5.4
Without Certificate or Diploma	6.8	10.8	7.4	5.1
Certificate or Diploma	25.1	20.2	27.8	21.8
Without Degree	8.9	7.7	9.2	8.6
Bachelor's Degree or Higher	19.8	5.9	22.1	19.0
Total ¹	100.0	100.0	100.0	100.0

1: May not sum because of rounding.

Source: Statistics Canada/MTCU Database.

In order to document this skill shift more precisely, educational attainment by broad occupation must be examined. There is a clear clustering of occupation and education. The 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. Sales/service occupations employed 14 percent of those with less than grade 9, compared to 7.3 percent of those with university degrees.

Considering those who have early high school (grades 9 and 10), the pattern shifts. Primary industry occupations become much less important. Trades/transport/equipment operators and processing/manufacturing together employed 59 percent of those with early high school. Sales/service employed 15.6 percent, just a bit higher than those with less than grade 9. By contrast business/finance/administrative occupations employed 10.6 percent of those with early high school, compared to only 1.6 percent with less than grade 9.

Considering those with late high school (grades 9-13) but not graduation, 50 percent were employed in trades/transport/equipment operators and processing/manufacturing which is down from the 59 percent for the early high school group. Business/finance/administrative occupations employed 16.1 percent of the late high school group, compared to 10.6 percent for the early high school group.

Concerning those who have attained high school graduation, the proportion in trades/transport/equipment operators and processing manufacturing also declined to 40 percent and in the business/finance/administrative occupations the proportion rose to 23.0 percent. The sales/service proportion also rose to 17.3 percent from 16.0.

It should also be noted that the proportion employed in management occupations also rose with increasing years of high school education culminating with 10.8 percent of those in this

occupation who have high school graduation. This demonstrates both the important value of experience and the ownership of enterprises by some of those with these levels of educational attainment.

The trend is clear. 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 a reduction 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.

Considering those with trades certificates, it is not surprising that 40.1 percent of them worked in trades/transport/equipment operators, and 9.3 percent in processing/manufacturing. In addition, 15.1 percent of this group were in sales/service, 12.2 percent in management occupations and 12.5 percent in business/finance/administration. However, these numbers must be treated with caution since trades certificates and diplomas represent those with formal training in the skilled trades, and others with the same skills and certification are counted as college certificate and diploma holders. This means that college certificates and diploma holders include some of the skilled trades and other college specializations. As a result, observations about the skilled trades and college graduates must be treated with caution.

Considering those who have completed high school and undertaken some trades or college studies (without completing a certificate or diploma), the largest proportion is employed in business/finance/administration at 23.8 percent, followed by trades/transport/equipment operators at 22.3 percent. Processing/manufacturing employed 17.0 percent of this group. Compared to high school graduates, some college education increases the likelihood of working in natural and applied sciences, health and trades/transportation/equipment operators. Again, there is a discernable effect of increased education that is short of completion.

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.

Considering those with some university studies (without yet graduating), management occupations employed 21.2 percent of this group, a significant increase over the college graduates. The other proportions were broadly similar to those for college graduates, except for trades/transport/equipment operators, where the proportion was much lower.

Considering those who hold degrees, the social sciences occupations employed 26.3 percent of this group, with 20.7 percent in management, 14.7 percent in business/finance/administration and 15.8 percent in natural and applied sciences occupations. Together these occupations represent 77.5 percent of the university graduates. The relative participation of this group in sales/service, trades/transport/equipment operators, primary industry and processing/manufacturing occupations is lower than for any of the other designations. Clearly, the university graduates are as skewed to a particular set of occupations as are those with less than grade 9 education, each representing the opposite occupational picture from the other.

From the perspective of training and educational planning, it is important to note that some education, short of completion, affects occupational choices, competence and mobility. This is true at the high school, college and university levels. Completion, of course, has a

powerful effect on occupation. Nevertheless, this suggests that training in “short” courses is both practical *and* effective.

Details are presented in Table 2.

Table 2
Occupational Profile of the Total Employed Labour Force
by
Highest Level of Educational Attainment
Waterloo Wellington
2001

Broad Occupational Category	Percent of Educational Level								
	Less than Grade 9	Grades 9-10	Grades 11-13	High School Graduate	Trades Certificate or Diploma	Without Certificate or Diploma	Certificate or Diploma	Without Degree	Degree
Management	5.6	7.7	10.4	10.8	12.2	12.2	12.4	21.2	20.7
Business, Finance, Administration	1.6	10.6	16.1	23.0	12.5	23.8	18.0	19.9	14.7
Natural and Applied Sciences	0.6	0.1	1.9	2.7	5.2	4.2	10.0	10.7	15.8
Health	0.4	0.7	0.9	0.9	1.9	1.3	6.0	4.6	5.8
Social Sciences	0.6	1.0	1.4	1.7	1.0	1.4	4.0	6.5	26.3
Art, Culture, Sport	0.3	0.3	1.0	1.0	1.0	1.2	1.8	2.5	3.3
Sales/Service	14.0	15.6	16.0	17.3	15.1	15.3	13.0	14.0	7.3
Trades, Transport Equipment	24.9	28.6	23.6	19.1	40.1	22.3	25.0	9.0	2.5
Primary Industry	25.6	4.1	2.5	2.5	1.7	1.3	1.3	2.0	0.8
Processing Manufacturing	26.4	30.4	26.4	20.9	9.3	17.0	9.0	8.3	2.8
Total ¹	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1: May not sum because of rounding.

Source: Statistics Canada/MTCU Database.

Selecting Specific Occupations

Since the goal of the research is to identify specific occupations where skill levels are changing quickly and where employment may be at risk, the research focused on those occupations where the skill levels may be called upon to rise, at least with respect to our ability to infer it from formal education. This meant that the research chose to exclude those broad occupational groups where university attainment is predominant. These occupations include management, natural and applied sciences, and the social sciences.

All of the health is excluded except for assisting occupations in support of health services (NOC 341). The latter occupation employed relatively large numbers who do not have a university education.

Art/culture/sport was excluded since the number involved is relatively low.

As a consequence, the research chose to concentrate on occupations within business/finance/administration, sales/service, trades/transport/equipment operators, primary industry occupations and processing/manufacturing occupations.

The work was conducted at the three-digit level of the National Occupation Classification System, which allows a relatively-detailed analysis.

Fifty-two specific occupations were examined and a list of these occupations is presented in Table 3.

**Table 3
Selected Occupations**

NOC	Title
121	Clerical Supervisors
122	Administrative and Regulatory Occupations
123	Finance and Insurance Administrative
141	Clerical Occupations, General Office Skills
142	Office Equipment Operators
143	Finance and Insurance Clerks
144	Administrative Support Clerks
145	Library, Correspondence and Related Information Clerks
146	Mail and Message Distribution Occupations
147	Recording, Scheduling and Distributions Occupations
341	Assisting Occupations in Support of Health Services
621	Sales and Service Supervisors
622	Technical Sales Specialists, Wholesale Trade
624	Chefs and Cooks
627	Technical Occupations in Personal Services
641	Sales Representatives, Wholesale Trade
643	Occupations in Travel and Accommodation
645	Occupations in Food and Beverage Service
647	Childcare and Home Support Workers
648	Other Occupations in Personal Service
661	Cashiers
662	Other Sales and Related Occupations
664	Food Counter Attendants, Kitchen Helpers and Related Occupations
665	Security Guards and Related Occupations
666	Cleaners
667	Other Occupations in Travel, Accommodation, Amusement and Recreation
721	Contractors and Supervisors, Trades and Related Workers
722	Supervisors, Railway and Motor Transportation Occupations
723	Machinists and Related Occupations
725	Plumbers, Pipe Fitters and Gas Fitters
726	Metal Forming, Shaping and Erecting Trades
727	Carpenters and Cabinetmakers
729	Other Construction Trades
731	Machinery and Transportation Equipment Mechanics (except Motor Vehicles)
734	Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations
741	Motor Vehicle and Transit Drivers
742	Heavy Equipment Operators
744	Other Installers, Repairers and Services
761	Trades Helpers and Labourers
843	Agriculture and Horticulture Workers
861	Primary Production Labourers
921	Supervisors, Processing Occupations
922	Supervisors, Assembly and Fabrication
941	Machine Operators and Related Workers in Metal and Mineral Products Processing
942	Machine Operators and Related Workers in Chemical, Plastic and Rubber Processing

NOC	Title
944	Machine Operators and Related Workers in Textile Processing
946	Machine Operators and Related Workers in Food, Beverage and Tobacco Processing
947	Printing Machine Operators and Related Occupations
948	Mechanical, Electrical and Electronics Assemblers
949	Other Assembly and Related Occupations
951	Machining, Metalworking, Woodworking and Related Machine Operators
961	Labourers in Processing, Manufacturing and Utilities

Source: Statistics Canada/MTCU Database

Presenting the Data

In order to document the shift in skill requirements, as inferred by changing educational attainment, the proportion of those aged 45 years and older who hold each level of educational attainment is subtracted from the proportion of those between 25 and 44 who hold the same attainment. When this percentage-point change is positive it means that the younger age group has a higher level of attainment than the older group. Thus, the level of educational attainment is rising over time.

By contrast when this calculation is negative, the younger group has a lower level of proportional attainment than the older group. This suggests some decline in the availability or need for the skill implied by the educational level. It can also occur because of a relative increase in attainment in other categories.

The tables, which follow in the main text, report the percentage-point shift for the following designations: some college (without certificate or diploma graduation), college graduation (with certificate or diploma), some university (without degree) and university graduates (with degrees). The skilled trades and college graduates are included together since skilled trades also appear in the college certificate and diploma holders (a result of a change in reporting practices that occurred over the time frame involved). The full array of proportions by educational attainment is presented in the tables in Appendix A.

The higher the number, the stronger is the shift toward that particular level of attainment. In addition, some occupations show a positive shift in more than one category of attainment, implying a broadly-based increase in skill requirements. Occupations with relatively high positive shifts or multiple positive shifts suggest a need for training, especially for workers with high school graduation or less. Detailed breakdowns of high school graduation or less are presented in the Appendix Tables.

Business/Finance and Administrative Occupations

The selected occupations in business/finance and administrative occupations generally showed a shift to higher educational levels. The declines in educational level (negative values) are relatively infrequent and some of the occupations showed increases at all the educational levels reported.

Finance and insurance clerks (NOC 143) showed increasing educational attainment in all categories reported, particularly in both college and university graduates. Finance and insurance administration (NOC 123) also showed large increases in both college and university graduates, as did administrative and regulatory occupations (NOC 122). Clerical supervisors (NOC 121) also had a large increase in college graduates and in some college training.

Clerical occupations/general office skills (NOC 141), mail and message distribution occupations (NOC 146), and recording, scheduling and distribution operations (NOC 147) showed significant gains across all educational levels.

Office equipment operators (NOC 142), and administrative support clerks (NOC 144) and library correspondence and related information clerks (NOC 145) showed a decline in college graduates and an increase in university graduates.

The data suggests that all the selected occupations involve rising skill levels. Yet many of the workers in these fields have qualifications less than those indicated above. For example, 40 percent of clerical supervisors over the age of 45 have high school graduation or less and 25.5 percent of those in the younger age group have the equivalent. In clerical occupations/general office skills, 32.5 percent of the younger group has high school or less and in office equipment operators, 37.5 percent has the same level of attainment. In other words, skill levels appear to be rising in these areas and a significant

number of workers in the occupations have educational attainment that is less suited to the changing requirements. They appear to be at risk.

Details are presented in Table 4 and in Appendix Tables A1 to A10.

Table 4
Business, Finance and Administrative
Profile of Changing Educational Attainment
by Age
Waterloo Wellington
2001

NOC	Occupation	Percentage Point Change in Attainment of those 25-44 years old less those 45+			
		Shift to Some College ¹	Shift to College Graduate ¹	Shift to Some University	Shift to University Graduate
121	Clerical Supervisors	7.9	10.6	0.4	-4.4
122	Administrative & Regulatory Occupations	-2.0	4.7	-2.1	10.8
123	Finance/Insurance Administrative	1.4	10.0	-3.0	14.0
141	Clerical Occup., General Office Skills	3.5	9.2	2.4	2.5
142	Office Equipment Operators	-6.4	-1.9	6.5	6.6
143	Finance & Insurance Clerks	8.5	23.1	2.6	10.5
144	Administrative Support Clerks	1.2	-2.1	6.5	8.2
145	Library/Corres. & Related Inform. Clerks	0.3	-4.7	-6.7	3.4
146	Mail & Message Distribution Occupations	2.0	7.4	2.4	5.4
147	Recording/Scheduling & Distribution Occupations	5.3	4.2	2.8	1.8

1: Includes skilled trades.

2: Statistics Canada/MTCU Database.

Assisting Occupations in Support of Health Services

Assisting occupations in support of health services (NOC 341) showed a strong shift to college graduates and a lesser shift to university graduates. Thus, *some* college or university training appears less important. Both factors suggest an emphatic increase in educational levels.

However, 22 percent of the younger workers has only high school or less, with 33.3 percent of the older workers in the same situation. These workers appear to be at considerable risk without further training.

Details are presented in Table 5 and in Appendix Table A11.

Table 5
Assisting Occupations in Support of Health Services
Profile of Changing Educational Attainment
by Age
Waterloo Wellington
2001

NOC	Occupation	Percentage Point Change in Attainment of those 25-44 years old less those 45+			
		Shift to Some College ¹	Shift to College Graduate ¹	Shift to Some University	Shift to University Graduate
341	Assisting Occupations in Support of Health Services	-3.9	11.3	-2.3	6.0

1: Includes skilled trades.

2: Statistics Canada/MTCU Database.

Sales and Service Occupations

The selected occupations in the sales and service category often showed rising skill levels, especially in the form of college graduates. There was a strong shift to college graduates in other occupations in travel/accommodation/amusement and recreation (NOC 667), chefs and cooks (NOC 624), other occupations in personal service (NOC 648), other sales and related occupations (NOC 662) and security guards and related occupations (NOC 665). In addition, there was a significant shift to college graduates in sales and service supervisors (NOC 621), technical occupations in personal service (NOC 627), and occupations in travel and accommodation (NOC 643).

There was a strong increase in university graduates in sales and service supervisors (NOC 621), sales representatives/wholesale trade (NOC 641), childcare and home support workers (NOC 647) and other occupations in personal service.

A strong shift to some university also occurred for technical sales/wholesale trade (NOC 622) and security guards and related occupations (NOC 665). Also, there were significant increases in some university for cleaners (NOC 666) occupations in food and beverage (NOC 645) and technical occupations in personal service (NOC 627).

Some college education has occurred for sales and service supervisors (NOC 621), chefs and cooks (NOC 624), technical occupations in personal services (NOC 627), occupations in travel and accommodation (NOC 643), occupations in food and beverage (NOC 645), food-counter attendant (NOC 664) and cleaners (NOC 666).

The occupation of cashier (NOC 661) represented a rather startling anomaly in as much as the education attainment has fallen sharply in all of the selected categories. In other words, the skill level among the younger group was lower than that of the older group. Among the younger group, 87.2 percent has high school graduation or less

compared to 47.1 percent of the older group. There may be more than one explanation for this development. Perhaps the work of cashier is so machine managed that only limited formal education is necessary; perhaps those with limited education are being driven into this occupation in the face of rising skill expectations elsewhere.

In most of these occupations, there were significant proportions of workers with high school graduation or less. For example, among cleaners 25 to 44 (NOC 666), 33.6 percent has less than high school graduation and 24.5 percent has only high school.

Details are presented in Table 6 and Appendix Tables A12 to A26.

Table 6
Sales/Service
Profile of Changing Educational Attainment
by Age
Waterloo Wellington
2001

NOC	Occupation	Percentage Point Change in Attainment of those 25-44 years old less those 45+			
		Shift to Some College ¹	Shift to College Graduate ¹	Shift to Some University	Shift to University Graduate
621	Sales and Service Supervisors	3.8	8.7	2.3	5.2
622	Tech. Sales Spec/ Wholesale Trade	1.1	-2.1	13.2	2.1
624	Chefs and Cooks	7.2	25.4	0.8	-8.9
627	Tech. Occup. in Personal Services	4.1	12.6	4.5	-3.9
641	Sales Repres./Wholesale Trade	-0.2	0.3	0.2	15.1
643	Occup. in Travel/Accommodation	10.5	10.4	-4.2	1.7
645	Occup. in Food/Beverage Service	14.3	1.0	4.4	-10.0
647	Childcare/Home Support Workers	-1.6	6.8	1.6	6.7
648	Other Occup. in Personal Service	-22.7	38.1	-4.9	8.3
661	Cashiers	-12.5	-5.2	-16.7	-5.5
662	Other Sales and Related Occupations	1.4	16.8	-5.0	0.5
664	Food Counter Attend./Kitchen Helpers and Related Occupations	9.2	2.3	-7.1	-5.9
665	Security Guards/ Related Occupations	-13.3	24.4	20.8	-13.3
666	Cleaners	5.5	1.6	8.4	-1.0
667	Other Occup. in Travel/Accom./Amusement/Recreation	0	66.7	0	-41.7

1: Includes skilled trades.

2: Statistics Canada/MTCU Database.

Trades/Transportation and Equipment Operators

The selected occupations in trades/transportation/equipment operators presented a significantly more varied situation than the two previous categories of occupation. In addition, the shift towards college graduates was somewhat less prevalent.

Supervisors/railway and motor transportation occupations (NOC 722), plumbers/pipe and gas fitters (NOC 725), machinery/transportation equipment mechanics (NOC 731), motor vehicle/transit drivers (NOC 741), heavy equipment operators (NOC 742), other installers/repairers (NOC 744) and trades helpers (NOC 761) showed an increase among college graduates in the younger group of workers compared to the older group of workers. This category of occupations is, of course, affected by the fact that the skilled trades have had certificate requirements for some time and therefore the shifts are less likely to be based on age range.

However in six of the selected occupations, the proportion of college graduates (including trades certificate holders) has fallen. And in the case of contractors and supervisors (NOC 721), metal forming/shaping/erecting trades (NOC 726), carpenters/cabinet makers (NOC 727), other construction trades (NOC 729) and upholsters/tailors/shoe repairers/jewelers and related occupations (NOC 734), the fall was significant.

In the category of upholsters/tailors/shoe repairers/jewelers and related occupations (NOC 734) the proportion with some college rose significantly while it declined in all other educational categories. In other words, the younger group was less qualified, at least in a formal sense.

It appears that in many of these occupations, skilled trades work was being performed by those without the requisite training and formal qualification. For example,

in machinists and related occupations (NOC 723) those with high school or less equalled 23.5 percent of the category of younger workers, compared to 28.2 percent of the older group. This constitutes a significant number of younger workers who lack the formal training mandated for the work. While they may or may not have acquired the skills through experience, they have no certification of it.

In this broad category, some training at the college level, short of graduation, appears to have some value. That does not appear to be as true at the university level.

The apparent lack of evidence of rising skill levels, even in the face of education below the mandated level, may result from several factors. Employers may be seeking relatively more persons with skilled trades certification and cannot find them; as a result, they cope with semi-skilled workers, who are captured in skilled trades numbers generated by Statistics Canada's Census protocols for occupations. It may also be the case that some employers believe that semi-skilled workers are all they really need or wish to pay for.

Details are presented in Table 7 and in Appendix Tables A27 to A39.

Table 7
Trades/Transportation/Equipment operators
Profile of Changing Educational Attainment
by Age
Waterloo Wellington
2001

NOC	Occupation	Percentage Point Change in Attainment of those 25-44 years old less those 45+			
		Shift to Some College ¹	Shift to College Graduate ¹	Shift to Some University	Shift to University Graduate
721	Contractors and Supervisors, Trades and Related Workers	1.5	-6.7	-1.3	0.6
722	Supervisors, Railway and Motor Transportation Occupations	-31.2	22.6	-6.2	0
723	Machinists and Related Occupations	6.4	-0.3	-2.7	1.3
725	Plumbers, Pipe Fitters and Gas Fitters	1.8	2.3	-2.3	0
726	Metal Form., Shaping, Erecting Trades	5.8	-5.8	3.9	-0.1
727	Carpenters and Cabinetmakers	0.9	-6.2	-2.9	-2.8
729	Other Construction Trades	0.4	-8.3	-4.7	1.9
731	Machinery and Transportation Equipment Mechanics (except Motor Vehicles)	2.9	7.5	-0.9	-0.9
734	Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations	9.6	-5.8	-7.5	-6.1
741	Motor Vehicle and Transit Drivers	2.8	4.1	0.4	0.9
742	Heavy Equipment Operators	3.2	5.8	2.3	0
744	Other Installers, Repairers, Services	-6.1	10.6	0	-8.9
761	Trades Helpers and Labourers	-1.9	1.9	1.0	0

1: Includes skilled trades.

2: Statistics Canada/MTCU Database.

Primary Industry Occupations

Only two primary industry occupations have been analyzed: agriculture and horticulture workers and primary production labourers. With respect to agriculture and horticulture workers (NOC 843), it is clear that the younger group of workers was proportionately less skilled than those in the older group. There has been a shift away from some college training and away from college and university graduation. In the context of the industrial world, this would seem surprising. Moreover, it cannot be said that either agriculture or horticulture does not use sophisticated procedures or technology.

Among primary production labourers (NOC 861), there has been an increase in those with some college education and in those who were college graduates. The numbers of those with some university education have declined proportionately, although there has been a small shift towards the employment of university graduates.

Details are presented in Table 8 and Appendix Tables A40 to A41.

Table 8
Primary Industry Occupations
Profile of Changing Educational Attainment
by Age
Waterloo Wellington
2001

NOC	Occupation	Percentage Point Change in Attainment of those 25-44 years old less those 45+			
		Shift to Some College ¹	Shift to College Graduate ¹	Shift to Some University	Shift to University Graduate
843	Agriculture & Horticulture Workers	-3.8	-8.7	0.8	-5.7
861	Primary Production Labourers	3.5	6.6	-12.7	1.8

1: Includes skilled trades.

2: Statistics Canada/MTCU Database.

Processing and Manufacturing Occupations

The selected occupations in the processing and manufacturing category revealed rising relative educational levels with respect to some college education and college graduation. There was also some relative increase among the younger workers who had some university education and university graduation.

Machine operators and related workers/metal (NOC 941), machine operators and related workers/textile (NOC 944), printing machine operators (NOC 947), machining/metal working/woodworking operators (NOC 951) saw strong increases in the number of college graduates. Those in the mechanical/electrical and electronics assemblers (NOC 948), other assembly and related occupations (NOC 949) and labourers in processing/manufacturing (NOC 961) also experienced some increase in the relative number of those with college graduation.

There was also an increase in university graduates in supervisors/processing (NOC 921), supervisors/assembly and fabrication (NOC 922), machine operators and related workers/metal (NOC 941), machine operators and related workers/food (NOC 946), other assembly and related occupations (NOC 949) and labourers in process/manufacturing (NOC961). (Except for the supervisory occupations, there is some concern about whether this represents a true skill shift, or a miscalculated educational choice.)

In eight of the eleven occupations examined in this category, there was an increase in some college education. Some education at the university level was generally less prevalent among the younger workers compared to those older.

Machine operators/chemical (NOC 942) had declines in all levels of education.

Notwithstanding this clear shift towards post-secondary education and graduation, these occupations also had large proportions of those with high school or less. For example, 54.6 percent of the younger workers in machine operators and related workers/metal (NOC 941) have high school education or less; 60.5 percent of the younger workers in machine operators and related workers/chemical (NOC 942) have high school graduation or less. If skill levels continue to rise, this represents a relatively large number of workers who need training to accommodate the rising skill levels and who may be at risk without it. The processing and manufacturing industry seems a highly appropriate focus for renewed training efforts.

Details are presented in Table 9 and Appendix Tables A42 to A 52.

Table 9
Processing and Manufacturing Occupations
Profile of Changing Educational Attainment
by Age
Waterloo Wellington
2001

NOC	Occupation	Percentage Point Change in Attainment of those 25-44 years old less those 45+			
		Shift to Some College ¹	Shift to College Graduate ¹	Shift to Some University	Shift to University Graduate
921	Supervisors, Processing Occupations	8.2	-1.6	-0.5	1.2
922	Supervisors, Assembly and Fabrication	4.3	-5.3	5.3	9.1
941	Machine Operators and Related Workers in Metal and Mineral Products Processing	11.1	15.8	-2.3	1.2
942	Machine Operators and Related Workers Chemical, Plastic and Rubber Processing	-0.6	-1.1	-0.3	-1.2
944	Machine Operators, Related Workers in Textile Processing	-8.9	12.7	0	-10.1
946	Machine Operators, Related Workers in Food, Beverage and Tobacco Processing	1.8	-3.1	1.0	4.4
947	Printing Machine Operat, Relat. Occup.	-2.4	7.8	0	0
948	Mech., Elect.,Electronics Assemblers	5.0	1.1	0.8	-0.5
949	Other Assembly and Related Occupations	2.6	1.1	-4.6	-5.8
951	Machining, Metalworking, Woodworking and Related Machine Operators	2.9	5.0	-1.6	-1.5
961	Labourers in Process, Manufact,Utilities	7.5	2.0	2.5	0.8

1: Includes skilled trades.

2: Statistics Canada/MTCU Database.

Summary Observations

The Statistics Canada/Ministry of Training, Colleges and University Database represents a rich array of indicators relevant to educational and training initiatives. While this data has to be examined for its individual implications, several overriding observations can be made.

First, training initiatives must be very precisely focused. Each of the broad categories examined contain occupations of widely-varying shifts in educational attainment. This in turn suggests dramatically different situations with respect to skills expectations. The data do not support generic approaches to, for example, either the skilled trades or administrative occupations. In each of these categories, there are occupations shifting towards college-level skills and others where they are shifting away. Treating them alike would be highly counter productive. The tables in the text and in the Appendix provide this individual detail. The stronger the shift to higher skills, the more urgent is the need for additional training.

Second, it appears that there are occupations in which an increase in skill is not required, or the job may be less skilled than in the past. But such a conclusion must be made cautiously since while the data can present a changed situation, it cannot necessarily explain it. A decrease in relative education may have occurred because the skilled aspects of the job have been taken over by machinery. Alternatively, employers, for whatever reason, may be unable to find more skilled workers and they hire the best that is available. Detailed examination would be required to determine which of these two possibilities was true.

Third, 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.

As well as increased training efforts, greater attention should be paid to career and educational counselling. It is essential that workers end up where they *want* to be with the skills required of them. Moreover, all workers need a foundation upon which to build their skill set, allowing them to respond to changing requirements.

Fourth, notwithstanding the above observations, there is strong evidence that throughout occupations examined, there is a strong relative increase in educational and presumed skill requirements. Moreover, relatively large proportions of these workers have high school graduation or less. This existing level of education may be inadequate to take them to their retirement. The need for expanded training initiatives for existing workers is therefore urgent.

Appendix A

Detailed Educational Profiles by Individual Three-Digit NOC Codes

Table A1
Educational Profile
for
Clerical Supervisors
(NOC 121)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	3.8	4.7	-0.9
Grades 11-13	5.4	10.6	-5.2
High School Graduate	16.3	24.7	-8.4
Trade Certificate or Diploma	0	0	0
Without Certificate or Diploma	18.5	10.6	7.9
Certificate or Diploma	35.3	24.7	10.6
Without Degree	9.8	9.4	0.4
Bachelor's Degree or Higher	10.9	15.3	-4.4
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A2
Educational Profile
for
Administrative and Regulatory Occupations
(NOC 122)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	1.1	1.8	-0.7
Grades 9-10	1.4	5.2	-3.8
Grades 11-13	5.4	7.7	-2.3
High School Graduate	16.1	20.6	-4.5
Trade Certificate or Diploma	2.4	3.9	-1.5
Without Certificate or Diploma	7.1	9.1	-2.0
Certificate or Diploma	28.6	22.4	6.2
Without Degree	13.5	15.6	-2.1
Bachelor's Degree or Higher	24.4	13.6	10.8
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A3
Educational Profile
for
Finance and Insurance Administrative
(NOC 123)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	2.2	-2.2
Grades 9-10	0	10.4	-10.4
Grades 11-13	5.9	8.7	-2.8
High School Graduate	15.2	22.1	-6.9
Trade Certificate or Diploma	2.2	3.5	-1.3
Without Certificate or Diploma	11.4	10.0	1.4
Certificate or Diploma	33.4	22.1	11.3
Without Degree	8.7	11.7	-3.0
Bachelor's Degree or Higher	23.5	9.5	14.0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A4
Educational Profile
for
Clerical Occupations, General Office Skills
(NOC 141)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	2.0	-2.0
Grades 9-10	2.6	6.4	-3.8
Grades 11-13	7.6	11.8	-4.2
High School Graduate	22.3	31.4	-9.1
Trade Certificate or Diploma	1.7	3.2	-1.5
Without Certificate or Diploma	11.7	6.7	3.5
Certificate or Diploma	34.5	23.8	10.7
Without Degree	9.1	6.7	2.4
Bachelor's Degree or Higher	10.4	7.9	2.5
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A5
Educational Profile
for
Office Equipment Operators
(NOC 142)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	5.9	-5.9
Grades 11-13	10.0	10.6	-0.6
High School Graduate	27.5	25.9	1.6
Trade Certificate or Diploma	0	9.4	-9.4
Without Certificate or Diploma	11.2	17.6	-6.4
Certificate or Diploma	27.5	20.0	7.5
Without Degree	11.2	4.7	6.5
Bachelor's Degree or Higher	12.5	5.9	6.6
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A6
Educational Profile
for
Finance and Insurance Clerks
(NOC 143)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	2.8	4.0	-1.2
Grades 11-13	9.5	6.6	2.9
High School Graduate	3.5	50.0	-46.5
Trade Certificate or Diploma	3.0	1.0	2.0
Without Certificate or Diploma	14.3	5.8	8.5
Certificate or Diploma	36.7	15.6	21.1
Without Degree	12.1	9.5	2.6
Bachelor's Degree or Higher	18.1	7.6	10.5
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A7
Educational Profile
for
Administrative Support Clerks
(NOC 144)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	0	0
Grades 11-13	0	15.8	-15.8
High School Graduate	19.1	17.1	2.0
Trade Certificate or Diploma	0	6.6	-6.6
Without Certificate or Diploma	7.8	6.6	1.2
Certificate or Diploma	34.8	30.3	4.5
Without Degree	18.3	11.8	6.5
Bachelor's Degree or Higher	20.0	11.8	8.2
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A8
Educational Profile
for
Library, Correspondence and Related Information Clerks
(NOC 145)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	2.9	5.5	-2.6
Grades 11-13	4.2	11.1	-6.9
High School Graduate	19.6	15.7	3.9
Trade Certificate or Diploma	1.7	6.5	-4.8
Without Certificate or Diploma	13.3	13.0	0.3
Certificate or Diploma	27.9	27.8	0.1
Without Degree	15.0	8.3	6.7
Bachelor's Degree or Higher	15.4	12.0	3.4
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A9
Educational Profile
for
Mail and Message Distribution Occupations
(NOC 146)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	3.6	-3.6
Grades 9-10	0	13.5	-13.5
Grades 11-13	17.0	13.5	3.5
High School Graduate	23.4	27.0	-3.6
Trade Certificate or Diploma	0	0	0
Without Certificate or Diploma	7.4	5.4	2.0
Certificate or Diploma	30.8	23.4	7.4
Without Degree	9.6	7.2	2.4
Bachelor's Degree or Higher	11.7	6.3	5.4
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A10
Educational Profile
for
Recording, Scheduling and Distributions Occupations
(NOC 147)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	2.4	6.9	-4.5
Grades 9-10	8.9	18.3	-9.4
Grades 11-13	11.5	16.2	-4.7
High School Graduate	24.0	20.4	3.6
Trade Certificate or Diploma	2.6	4.2	-1.6
Without Certificate or Diploma	13.4	8.1	5.3
Certificate or Diploma	23.5	17.7	5.8
Without Degree	7.3	4.5	2.8
Bachelor's Degree or Higher	6.3	4.5	1.8
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A11
Educational Profile
for
Assisting Occupations in Support of Health Services
(NOC 341)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	3.1	-3.1
Grades 9-10	0	7.0	-7.0
Grades 11-13	4.8	14.7	-9.9
High School Graduate	17.2	8.5	8.7
Trade Certificate or Diploma	0	11.6	-11.6
Without Certificate or Diploma	6.2	10.1	-3.9
Certificate or Diploma	52.4	29.5	22.9
Without Degree	5.5	7.8	-2.3
Bachelor's Degree or Higher	13.8	7.8	6.0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A12
Educational Profile
for
Sales and Service Supervisors
(NOC 621)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	11.4	-11.4
Grades 9-10	3.7	16.2	-12.5
Grades 11-13	9.7	11.4	-1.7
High School Graduate	28.4	22.9	5.5
Trade Certificate or Diploma	4.5	4.8	-0.3
Without Certificate or Diploma	6.7	2.9	3.8
Certificate or Diploma	26.1	17.1	9.0
Without Degree	9.0	6.7	2.3
Bachelor's Degree or Higher	11.9	6.7	5.2
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A13
Educational Profile
for
Technical Sales Specialists, Wholesale Trade
(NOC 622)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	11.1	-11.1
Grades 11-13	9.7	5.0	4.7
High School Graduate	8.5	16.1	-7.6
Trade Certificate or Diploma	4.5	3.0	1.5
Without Certificate or Diploma	5.1	4.0	1.1
Certificate or Diploma	21.6	25.2	-3.6
Without Degree	23.3	10.1	13.2
Bachelor's Degree or Higher	27.3	25.2	2.1
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A14
Educational Profile
for
Chefs and Cooks
(NOC 624)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	17.9	-17.9
Grades 9-10	9.7	13.4	-3.7
Grades 11-13	11.6	17.9	-6.3
High School Graduate	21.4	17.9	3.5
Trade Certificate or Diploma	3.9	6.0	-2.1
Without Certificate or Diploma	8.7	1.5	7.2
Certificate or Diploma	37.9	10.4	27.5
Without Degree	6.8	6.0	0.8
Bachelor's Degree or Higher	0	8.9	-8.9
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A15
Educational Profile
for
Technical Occupations in Personal Services
(NOC 627)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	10.5	-10.5
Grades 11-13	3.7	3.9	-0.2
High School Graduate	0	6.6	-6.6
Trade Certificate or Diploma	14.9	22.4	-7.5
Without Certificate or Diploma	6.7	2.6	4.1
Certificate or Diploma	70.1	50.0	20.1
Without Degree	4.5	0	4.5
Bachelor's Degree or Higher	0	3.9	-3.9
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A16
Educational Profile
for
Sales Representatives, Wholesale Trade
(NOC 641)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	3.7	-3.7
Grades 9-10	2.2	7.9	-5.7
Grades 11-13	4.6	11.2	-6.6
High School Graduate	17.0	16.3	0.7
Trade Certificate or Diploma	1.9	6.5	-4.6
Without Certificate or Diploma	7.7	7.9	-0.2
Certificate or Diploma	26.9	22.0	4.9
Without Degree	14.2	14.0	0.2
Bachelor's Degree or Higher	25.4	10.3	15.1
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A17
Educational Profile
for
Occupations in Travel and Accommodation
(NOC 643)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	4.4	-4.4
Grades 11-13	4.2	8.9	-4.7
High School Graduate	8.4	17.8	-9.4
Trade Certificate or Diploma	0	8.9	-8.9
Without Certificate or Diploma	12.7	2.2	10.5
Certificate or Diploma	43.7	24.4	19.3
Without Degree	22.5	26.7	-4.2
Bachelor's Degree or Higher	8.4	6.7	1.7
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A18
Educational Profile
for
Occupations in Food and Beverage Service
(NOC 645)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	19.5	-19.5
Grades 11-13	12.7	14.6	-1.9
High School Graduate	19.0	7.3	11.7
Trade Certificate or Diploma	0	14.6	-14.6
Without Certificate or Diploma	14.3	0	14.3
Certificate or Diploma	25.4	9.8	15.6
Without Degree	19.0	14.6	4.4
Bachelor's Degree or Higher	9.5	19.5	-10.0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A19
Educational Profile
for
Childcare and Home Support Workers
(NOC 647)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	5.1	7.3	-2.2
Grades 9-10	8.1	10.6	-2.5
Grades 11-13	5.9	16.3	-10.4
High School Graduate	16.9	15.4	1.5
Trade Certificate or Diploma	0	8.1	-8.1
Without Certificate or Diploma	7.3	8.9	-1.6
Certificate or Diploma	36.0	21.1	14.9
Without Degree	7.3	5.7	1.6
Bachelor's Degree or Higher	13.2	6.5	6.7
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A20
Educational Profile
for
Other Occupations in Personal Services
(NOC 648)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	0	0
Grades 11-13	0	18.2	-18.2
High School Graduate	13.0	13.6	-0.6
Trade Certificate or Diploma	0	0	0
Without Certificate or Diploma	0	22.7	-22.7
Certificate or Diploma	60.8	22.7	38.1
Without Degree	8.7	13.6	-4.9
Bachelor's Degree or Higher	17.4	9.1	8.3
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

**Table A21
Educational Profile
for
Cashiers
(NOC 661)
by
Age Range
Waterloo Wellington
2001**

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	10.6	18.0	-7.4
Grades 11-13	36.2	8.3	27.9
High School Graduate	40.4	20.8	19.6
Trade Certificate or Diploma	0	6.9	-6.9
Without Certificate or Diploma	0	12.5	-12.5
Certificate or Diploma	12.8	11.1	1.7
Without Degree	0	16.7	-16.7
Bachelor's Degree or Higher	0	5.5	-5.5
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A22
Educational Profile
for
Other Sales and Related Occupations
(NOC 662)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	7.8	-7.8
Grades 9-10	6.6	20.8	-14.2
Grades 11-13	17.3	7.8	9.5
High School Graduate	36.4	37.7	-1.3
Trade Certificate or Diploma	0	0	0
Without Certificate or Diploma	6.6	5.2	1.4
Certificate or Diploma	20.7	3.9	16.8
Without Degree	4.1	9.1	-5.0
Bachelor's Degree or Higher	8.3	7.8	0.5
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A23
Educational Profile
for
Food Counter Attendants, Kitchen Helpers and Related Occupations
(NOC 664)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	2.2	18.8	-16.6
Grades 9-10	12.0	18.8	-6.8
Grades 11-13	19.6	12.9	6.7
High School Graduate	35.9	17.6	18.3
Trade Certificate or Diploma	0	0	0
Without Certificate or Diploma	16.3	7.1	9.2
Certificate or Diploma	14.1	11.8	2.3
Without Degree	0	7.1	-7.1
Bachelor's Degree or Higher	0	5.9	-5.9
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A24
Educational Profile
for
Security Guards and Related Occupations
(NOC 665)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	8.0	-8.0
Grades 9-10	0	14.7	-14.7
Grades 11-13	0	8.0	-8.0
High School Graduate	29.4	17.3	12.1
Trade Certificate or Diploma	0	10.7	-10.7
Without Certificate or Diploma	0	13.3	-13.3
Certificate or Diploma	47.1	12.0	35.1
Without Degree	23.5	2.7	20.8
Bachelor's Degree or Higher	0	13.3	-13.3
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

**Table A25
Educational Profile
for
Cleaners
(NOC 666)
by
Age Range
Waterloo Wellington
2001**

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	5.1	20.8	-15.7
Grades 9-10	11.2	26.1	-14.9
Grades 11-13	17.3	10.3	7.0
High School Graduate	24.5	15.5	9.0
Trade Certificate or Diploma	3.4	4.0	-0.6
Without Certificate or Diploma	9.5	4.0	5.5
Certificate or Diploma	17.0	14.8	2.2
Without Degree	9.9	1.5	8.4
Bachelor's Degree or Higher	2.0	3.0	-1.0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A26
Educational Profile
for
Other Occupations in Travel, Accommodation, Amusement
and Recreation
(NOC 667)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	0	0
Grades 11-13	0	0	0
High School Graduate	0	25	-25
Trade Certificate or Diploma	0	0	0
Without Certificate or Diploma	0	0	0
Certificate or Diploma	100	33.3	66.7
Without Degree	0	0	0
Bachelor's Degree or Higher	0	41.7	-41.7
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A27
Educational Profile
for
Contractors and Supervisors, Trades
and Related Workers
(NOC 721)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges²
	Age Range		
	25-44	45+	
Less than Grade 9	2.5	5.1	-2.6
Grades 9-10	6.0	6.5	-0.5
Grades 11-13	11.7	6.9	4.8
High School Graduate	15.8	11.6	4.2
Trade Certificate or Diploma	7.3	10.6	-3.3
Without Certificate or Diploma	6.6	5.1	1.5
Certificate or Diploma	39.6	43.0	-3.4
Without Degree	4.7	6.0	-1.3
Bachelor's Degree or Higher	5.7	5.1	0.6
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A28
Educational Profile
for
Supervisors, Railway and Motor Transportation Occupations
(NOC 722)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	0	0
Grades 11-13	0	0	0
High School Graduate	46.1	31.2	14.9
Trade Certificate or Diploma	0	31.2	-31.2
Without Certificate or Diploma	0	31.2	-31.2
Certificate or Diploma	53.8	0	53.8
Without Degree	0	6.2	-6.2
Bachelor's Degree or Higher	0	0	0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A29
Educational Profile
for
Machinists and Related Occupations
(NOC 723)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	1.1	6.9	-5.8
Grades 9-10	4.5	5.5	-1.0
Grades 11-13	7.1	6.5	0.6
High School Graduate	10.8	9.3	1.5
Trade Certificate or Diploma	5.6	16.2	-10.6
Without Certificate or Diploma	10.1	3.7	6.4
Certificate or Diploma	51.0	40.7	10.3
Without Degree	5.6	8.3	-2.7
Bachelor's Degree or Higher	4.1	2.8	1.3
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A30
Educational Profile
For
Plumbers, Pipe Fitters and Gas Fitters
(NOC 725)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	0	0	0
Grades 11-13	5.9	4.7	1.2
High School Graduate	4.9	7.8	-2.9
Trade Certificate or Diploma	8.8	12.5	-3.7
Without Certificate or Diploma	4.9	3.1	1.8
Certificate or Diploma	71.6	65.6	6.0
Without Degree	3.9	6.2	-2.3
Bachelor's Degree or Higher	0	0	0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A31
Educational Profile
For
Metal Forming, Shaping and Erecting Trades
(NOC 726)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	2.9	12.2	-9.3
Grades 9-10	8.5	14.0	-5.5
Grades 11-13	11.0	11.1	-0.1
High School Graduate	17.8	6.8	11.0
Trade Certificate or Diploma	7.5	16.8	-9.3
Without Certificate or Diploma	10.8	5.0	5.8
Certificate or Diploma	34.6	31.1	3.5
Without Degree	5.0	1.1	3.9
Bachelor's Degree or Higher	1.7	1.8	-0.1
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A32
Educational Profile
for
Carpenters and Cabinetmakers
(NOC 727)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	6.5	15.6	-9.1
Grades 9-10	11.7	12.2	-0.5
Grades 11-13	21.4	9.6	11.8
High School Graduate	17.5	8.7	8.8
Trade Certificate or Diploma	4.5	10.4	-5.9
Without Certificate or Diploma	5.2	4.3	0.9
Certificate or Diploma	24.0	24.3	-0.3
Without Degree	5.8	8.7	-2.9
Bachelor's Degree or Higher	3.2	6.0	-2.8
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A33
Educational Profile
for
Other Construction Trades
(NOC 729)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	4.0	17.9	-13.9
Grades 9-10	13.5	8.9	4.6
Grades 11-13	18.2	12.5	5.7
High School Graduate	21.4	7.1	14.3
Trade Certificate or Diploma	3.2	8.9	-5.7
Without Certificate or Diploma	11.1	10.7	0.4
Certificate or Diploma	20.6	23.2	-2.6
Without Degree	2.4	7.1	-4.7
Bachelor's Degree or Higher	5.5	3.6	1.9
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A34
Educational Profile
for
Machinery and Transportation Equipment Mechanics
(except Motor vehicles)
(NOC 731)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges²
	Age Range		
	25-44	45+	
Less than Grade 9	1.1	5.8	-4.7
Grades 9-10	5.4	5.8	-0.4
Grades 11-13	3.0	7.5	-4.5
High School Graduate	6.5	5.4	1.1
Trade Certificate or Diploma	6.2	20.4	-14.2
Without Certificate or Diploma	7.9	5.0	2.9
Certificate or Diploma	64.2	42.5	21.7
Without Degree	4.9	5.8	-0.9
Bachelor's Degree or Higher	0.8	1.7	-0.9
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A35
Educational Profile
for
Upholsterers, Tailors, Shoe Repairers, Jewellers
and Related Occupations
(NOC 734)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	12.1	-12.1
Grades 9-10	0	15.1	-15.1
Grades 11-13	22.2	7.5	14.7
High School Graduate	40.7	18.2	22.5
Trade Certificate or Diploma	0	7.5	-7.5
Without Certificate or Diploma	11.1	1.5	9.6
Certificate or Diploma	25.9	24.2	1.7
Without Degree	0	7.5	-7.5
Bachelor's Degree or Higher	0	6.1	-6.1
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A36
Educational Profile
for
Motor Vehicle and Transit Drivers
(NOC 741)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	3.8	14.0	-10.2
Grades 9-10	17.5	25.5	-8.0
Grades 11-13	15.8	12.3	3.5
High School Graduate	21.0	14.5	6.5
Trade Certificate or Diploma	5.2	5.5	-0.3
Without Certificate or Diploma	10.2	7.4	2.8
Certificate or Diploma	19.1	14.7	4.4
Without Degree	4.7	4.3	0.4
Bachelor's Degree or Higher	2.6	1.7	0.9
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A37
Educational Profile
for
Heavy Equipment Operators
(NOC 742)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	4.3	19.4	-15.1
Grades 9-10	7.6	23.6	-16.0
Grades 11-13	22.8	12.5	10.3
High School Graduate	26.1	16.7	9.4
Trade Certificate or Diploma	10.9	4.2	6.7
Without Certificate or Diploma	8.7	5.5	3.2
Certificate or Diploma	13.0	13.9	-0.9
Without Degree	6.5	4.2	2.3
Bachelor's Degree or Higher	0	0	0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A38
Educational Profile
for
Other Installers, Repairers and Services
(NOC 744)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	4.0	10.1	-6.1
Grades 9-10	12.1	13.9	-1.8
Grades 11-13	13.1	11.4	1.7
High School Graduate	28.3	17.7	10.6
Trade Certificate or Diploma	6.1	7.6	-1.5
Without Certificate or Diploma	4.0	10.1	-6.1
Certificate or Diploma	32.3	20.2	12.1
Without Degree	0	0	0
Bachelor's Degree or Higher	0	8.9	-8.9
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A39
Educational Profile
for
Trades Helpers and Labourers
(NOC 761)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	7.4	20.0	-12.6
Grades 9-10	11.6	14.7	-3.1
Grades 11-13	18.1	16.0	2.1
High School Graduate	23.1	10.7	12.4
Trade Certificate or Diploma	7.4	13.3	-5.9
Without Certificate or Diploma	7.4	9.3	-1.9
Certificate or Diploma	19.8	12.0	7.8
Without Degree	5.0	4.0	1.0
Bachelor's Degree or Higher	0	0	0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A40
Educational Profile
for
Agriculture and Horticulture Workers
(NOC 843)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	57.3	53.8	3.5
Grades 9-10	7.3	8.5	-1.2
Grades 11-13	11.8	1.9	9.9
High School Graduate	13.6	8.5	5.1
Trade Certificate or Diploma	0	0	0
Without Certificate or Diploma	0	3.8	-3.8
Certificate or Diploma	6.4	15.1	-8.7
Without Degree	3.6	2.8	0.8
Bachelor's Degree or Higher	0	5.7	-5.7
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A41
Educational Profile
for
Primary Production Labourers
(NOC 861)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	10.9	-10.9
Grades 9-10	10.7	14.5	-3.8
Grades 11-13	21.4	12.7	8.7
High School Graduate	16.1	9.1	7.0
Trade Certificate or Diploma	0	9.1	-9.1
Without Certificate or Diploma	8.9	5.4	3.5
Certificate or Diploma	37.5	21.8	15.7
Without Degree	0	12.7	-12.7
Bachelor's Degree or Higher	5.4	3.6	1.8
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A42
Educational Profile
for
Supervisors, Processing Occupations
(NOC 921)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	9.6	-9.6
Grades 9-10	6.6	15.6	-9.0
Grades 11-13	17.1	9.6	7.5
High School Graduate	23.0	19.1	3.9
Trade Certificate or Diploma	5.9	7.0	-1.1
Without Certificate or Diploma	9.9	1.7	8.2
Certificate or Diploma	17.8	18.3	-0.5
Without Degree	9.9	10.4	-0.5
Bachelor's Degree or Higher	9.9	8.7	1.2
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A43
Educational Profile
for
Supervisors, Assembly and Fabrication
(NOC 922)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	12.3	-12.3
Grades 9-10	9.0	15.1	-6.1
Grades 11-13	8.1	8.5	-0.4
High School Graduate	18.6	13.2	5.4
Trade Certificate or Diploma	0	6.6	-6.6
Without Certificate or Diploma	10.0	5.7	4.3
Certificate or Diploma	32.4	31.1	1.3
Without Degree	10.0	4.7	5.3
Bachelor's Degree or Higher	11.9	2.8	9.1
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A44
Educational Profile
for
Machine Operators and Related Workers
in Metal and Mineral Products Processing
(NOC 941)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	17.4	-17.4
Grades 9-10	11.0	31.4	-20.4
Grades 11-13	12.8	11.6	1.2
High School Graduate	30.8	19.8	11.0
Trade Certificate or Diploma	2.9	4.6	-1.7
Without Certificate or Diploma	13.4	2.3	11.1
Certificate or Diploma	23.3	5.8	17.5
Without Degree	2.3	4.6	-2.3
Bachelor's Degree or Higher	3.5	2.3	1.2
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A45
Educational Profile
for
Machine Operators and Related Workers
In Chemical, Plastic and Rubber Processing
(NOC 942)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	2.2	10.8	-8.6
Grades 9-10	8.4	12.2	-3.8
Grades 11-13	23.4	12.8	10.6
High School Graduate	26.5	21.6	4.9
Trade Certificate or Diploma	2.2	8.1	-5.9
Without Certificate or Diploma	7.5	8.1	-0.6
Certificate or Diploma	19.0	14.2	4.8
Without Degree	7.1	7.4	-0.3
Bachelor's Degree or Higher	3.5	4.7	-1.2
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A46
Educational Profile
for
Machine Operators and Related Workers
in Textile Processing
(NOC 944)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	36.7	-36.7
Grades 9-10	20.7	11.4	9.3
Grades 11-13	25.9	7.6	18.3
High School Graduate	29.3	13.9	15.4
Trade Certificate or Diploma	6.9	1.3	5.6
Without Certificate or Diploma	0	8.9	-8.9
Certificate or Diploma	17.2	10.1	7.1
Without Degree	0	0	0
Bachelor's Degree or Higher	0	10.1	-10.1
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A47
Educational Profile
for
Machine Operators and Related Workers
In Food, Beverage and Tobacco Processing
(NOC 946)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	16.2	-16.2
Grades 9-10	17.5	26.4	-8.9
Grades 11-13	14.9	12.8	2.1
High School Graduate	33.3	15.4	17.9
Trade Certificate or Diploma	0	4.3	-4.3
Without Certificate or Diploma	6.1	4.3	1.8
Certificate or Diploma	15.8	13.7	2.1
Without Degree	5.3	4.3	1.0
Bachelor's Degree or Higher	7.0	2.6	4.4
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A48
Educational Profile
for
Printing Machined Operators and Related Occupations
(NOC 947)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	0	0	0
Grades 9-10	14.3	36.1	-21.8
Grades 11-13	22.4	13.9	8.5
High School Graduate	24.5	16.7	7.8
Trade Certificate or Diploma	0	0	0
Without Certificate or Diploma	14.3	16.7	-2.4
Certificate or Diploma	24.5	16.7	7.8
Without Degree	0	0	0
Bachelor's Degree or Higher	0	0	0
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A49
Educational Profile
for
Mechanical, Electrical and Electronics Assemblers
(NOC 948)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	3.1	11.1	-8.0
Grades 9-10	11.9	22.2	-10.3
Grades 11-13	16.4	12.3	4.1
High School Graduate	26.0	18.2	7.8
Trade Certificate or Diploma	0	8.6	-8.6
Without Certificate or Diploma	10.2	5.2	5.0
Certificate or Diploma	21.3	11.6	9.7
Without Degree	7.2	6.4	0.8
Bachelor's Degree or Higher	3.9	4.4	-0.5
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A50
Educational Profile
for
Other Assembly and Related Occupations
(NOC 949)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	7.2	17.1	-9.9
Grades 9-10	15.5	15.2	0.3
Grades 11-13	22.1	17.7	4.4
High School Graduate	23.9	12.0	11.9
Trade Certificate or Diploma	2.1	6.3	-4.2
Without Certificate or Diploma	8.9	6.3	2.6
Certificate or Diploma	16.7	11.4	5.3
Without Degree	2.4	7.0	-4.6
Bachelor's Degree or Higher	1.2	7.0	-5.8
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A51
Educational Profile
for
Machining, Metalworking, Woodworking
and Related Machine Operators
(NOC 951)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges²
	Age Range		
	25-44	45+	
Less than Grade 9	3.2	16.9	-13.7
Grades 9-10	11.5	20.8	-9.3
Grades 11-13	19.2	10.4	8.8
High School Graduate	25.0	15.8	9.2
Trade Certificate or Diploma	4.9	4.6	0.3
Without Certificate or Diploma	7.9	5.0	2.9
Certificate or Diploma	20.1	15.4	4.7
Without Degree	5.7	7.3	-1.6
Bachelor's Degree or Higher	2.3	3.8	-1.5
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.

Table A52
Educational Profile
for
Labourers in Processing, Manufacturing and Utilities
(NOC 961)
by
Age Range
Waterloo Wellington
2001

Highest Level of Educational Attainment	Percent of Total		Percentage Point Difference Between Age Ranges ²
	Age Range		
	25-44	45+	
Less than Grade 9	4.6	22.5	-17.9
Grades 9-10	13.1	26.1	-13.0
Grades 11-13	20.0	17.2	2.8
High School Graduate	27.8	12.4	15.4
Trade Certificate or Diploma	1.9	2.9	-1.0
Without Certificate or Diploma	10.9	3.4	7.5
Certificate or Diploma	12.3	9.3	3.0
Without Degree	5.1	2.6	2.5
Bachelor's Degree or Higher	4.2	3.4	0.8
Total ¹	100.0	100.0	

1: May not sum because of rounding.

2: Percent for Age Range 25-44 less percent for Age Range 45+

Source: Statistics Canada/MTCU Database.