

**A Look at Employment-Equity Groups Among
Recent Postsecondary Graduates:
Visible Minorities, Aboriginal Peoples and
the Activity Limited**
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Explanation of Symbols

The data presented in this paper originate from a sample survey and are therefore estimates of the target population figures. In general, the variability of the estimates increases as the sample size decreases. The relative variability of an estimate is measured by the coefficient of variation. Statistics Canada publication guidelines prohibit the publication of estimates with a coefficient of variation greater than 33 percent. In tables, these estimates are replaced with the symbol "..". Estimates with a coefficient in the range of 16.5 to 33 percent are published with a cautionary asterisk (*), denoting their relatively high variability.

Abstract

Employment equity legislation is becoming more prevalent in Canadian labour markets, yet -- other than broad availability numbers -- the labour market experiences of designated groups have not been well documented. Using the National Graduates Survey of 1992, this report profiles the early labour market experiences of visible minorities, Aboriginal peoples and persons with disabilities who graduated from Canadian universities and community colleges in 1990. In general, we find that the earnings of designated group members are very similar to the earnings of their classmates. However, we also find that members of these groups are more likely to be unemployed and are less likely to participate in the labour force than others in their class.

Key Words: earnings, wages, earnings gap, gender, employment equity, disabled persons, visible minorities, Aboriginal peoples, discrimination graduates, university, community college

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HIGHLIGHTS

Visible Minorities

The representation rate of visible minorities among 1990 postsecondary graduates is roughly proportional to their share of the broader population. More than ten percent of the 1990 graduates from universities and community colleges are members of visible minorities (the visible minority share of the 1991 population is nine-and-a-half percent). Visible minorities are particularly well-represented in science-based fields of study.

The earnings of visible minority graduates differ only slightly from the earnings of other graduates: among full-time workers, visible minority university graduates earned an average of two percent more than other graduates while visible minority community college graduates earned two percent less.

A multivariate earnings model was used in order to estimate whether visible minorities were rewarded the same as other graduates, controlling for population characteristics. The results are statistically significant, but account for less than one percent of average earnings. So holding population characteristics equal, visible minorities are rewarded about the same as their classmates: fractionally better among university graduates, fractionally worse among community college graduates.

In contrast, the employment rates for visible minorities are substantially lower than those of other graduates: by almost eight percentage points for university graduates and about six percentage points for community college graduates. These differences, which are due to both lower participation rates and higher unemployment rates for visible minority graduates, appear for graduates of most fields of study and in most regions (except British Columbia).

A multivariate model of employment for university graduates indicates that employment disparities are more acute for visible minority men than for visible minority women. Relative to other male graduates, unemployment was higher for visible minority members whose mother tongue was other than English or French, who were married or divorced and particularly those who graduated from a science-based field of study. Given the equality of earnings, it is difficult to cite the unemployment disparity as unambiguous evidence of hiring discrimination. Alternatively, employer adherence to tacit hiring quotas could produce similar results.

Aboriginal Peoples

Aboriginal peoples are under-represented among postsecondary graduates relative to their presence in the overall population. While their share of the 1991 population is 3.8 percent, the representation rate of the Aboriginal peoples is only 1.2 percent among 1990 university graduates and 2.8 percent among community college graduates. At universities, Aboriginal peoples' representation is particularly low among advanced degree holders (0.5 percent).

Aboriginal peoples earn about the same as other graduates. A multivariate model estimated only negligible differences - about a tenth of a percent of average earnings -- between the reward structure for Aboriginal peoples and other graduates.

While the employment situation for Aboriginal peoples does not differ greatly from that of other university graduates, a great disparity exists among community college graduates. Indeed, the unemployment rate for Aboriginal peoples is almost ten percentage points higher than for other community college graduates. In the absence of greater sample sizes and more geographical detail, it is impossible to determine why the unemployment rate is so high for Aboriginal community college graduates.

Activity Limited

The National Graduates Survey(NGS) uses a much shorter set of questions on activity limitation than the sequence used to produce official estimates of persons with disabilities. Consequently, we use the term *activity limited* rather than *persons with disabilities* in this report. According to the NGS sequence, just under four percent of university graduates and six-and-a-half percent of community college graduates are in some way limited in their activities at work, school or home. Persons with disabilities were estimated to comprise seven percent of the 1991 population.

The activity limited earned less than other graduates in 1992. The earnings gap was about seven percent among university graduates and one-and-a half percent among community college graduates. However, the multivariate earnings models do not provide strong evidence of differential treatment for activity-limited graduates.

Among university graduates, the employment rate of the activity limited is six percentage points lower than for other graduates. For community college graduates, this gap in the employment rate rises to twelve percent. On average, activity-limited graduates experience both lower participation rates and higher unemployment rates than other graduates. In contrast to other areas of the country, university and community college graduates with activity limitations had lower unemployment rates in Alberta than others in their class. This was also the case for university graduates in Manitoba.

To explore the notion that employment problems might be related to the severity of a handicap, we constructed a crude index of the severity of an individual's limitations. Although labour force participation tended to fall as the index increased, the unemployment rate was fairly consistent across all index levels. This seems to indicate that even those with relatively minor limitations have more difficulty in finding a job than other graduates.

I. Introduction

The Employment Equity Act of 1986 established the goal of workplace equality for women, visible minorities, Aboriginal peoples and persons with disabilities. While the Act is primarily concerned with the representation of designated groups in the workplace, the general notion of equality encompasses much more. It is the tacit assumption of this paper that equality in the labour market can be measured as the labour market rewards -- in terms of earnings and employment -- to investments in education and training.

This report focuses on a small segment of the population: 1990 graduates of Canadian universities and community colleges. Attention is further limited to visible minorities, Aboriginal peoples and persons with disabilities. Gender issues are covered in a separate paper.¹ The issues involved in identifying members of the designated groups are covered in the first section of the report. The second section presents the representation rates for each of the designated groups in the class of 1990. The third section provides a descriptive comparison of the earnings of designated groups and the earnings of other graduates. A more rigorous, multivariate comparison of earnings follows. Next is an examination of the employment, participation and unemployment rates of designated groups compared to others. Finally, the results for each designated group are summarized and discussed.

The main finding of these analyses is quite clear. Although there is little difference between the earnings of the designated groups and the remainder of the population, members of each designated group (except Aboriginal university graduates) were less likely to be employed than other postsecondary graduates. Accordingly, designated group members were over-represented among both the unemployed and those not-in-the-labour-force.

¹Wannell and Caron. *The Gender Earnings Gap Among Recent Postsecondary Graduates, 1984-92*. Statistics Canada, 1994.

II. Data, Concepts and Definitions

This report is based on data from the 1992 National Graduates Survey(NGS). The survey population is representative of the 1990 graduates of Canadian universities, community colleges and trade/vocational schools. Due to the small sample size of trade/vocational graduates, the analyses are limited to university and community college graduates. The data file contains information on 19,284 university respondents and 14,794 community college respondents, representing total graduate populations of 126,266 and 90,908, respectively.

The question of whom to include in each of the designated groups is addressed in the Employment Equity Regulations that accompany the Employment Equity Act.² The regulations outline the following concepts:

Visible Minority - persons, other than Aboriginal peoples, who are non-Caucasian in race and non-white in colour.

Aboriginal peoples - persons who are Indians, Inuit or Métis.

Persons with Disabilities - persons who:

- (i) have any persistent physical, mental, psychiatric, sensory or learning impairment;
- (ii) consider themselves to be, or believe that an employer or a potential employer would be likely to consider them to be, disadvantaged in employment by reason of an impairment referred to in subparagraph (i).

The concepts outlined in the regulations are operationalized by an Interdepartmental Working Group on Employment Equity Data. Data on visible minorities and Aboriginal peoples come from the Census of the Population, while data on persons with disabilities come from the Health and Activity Limitation Survey (HALS).

Visible minorities are identified primarily by the Census ethnicity question. This question asks: "To which ethnic or cultural group(s) did (the respondent's) ancestors belong?". The Working Group has prepared a list of responses that corresponds as closely as possible to the conceptual definition (see Appendix A). Note that respondents may provide more than one ethnicity response -- this is termed multiple response. In the case of multiple response, a person is classified as a member of a visible minority if any of their responses matches one on the list. The ethnicity information is supplemented by information on places of birth (e.g. Haiti) or first languages (e.g. Hindi) that likely indicate visible minority status.

²*Women, Visible Minorities, Aboriginal Peoples and Persons with Disabilities: The 1991 Employment Equity Definitions.* The Interdepartmental Working Group on Employment Equity Data. December, 1993.

Aboriginal peoples are similarly identified by the Census ethnicity question. Thus any single or multiple response referring to North American Indian, Inuit, Métis or a specific First Nation or band name leads to an Aboriginal peoples designation.

As noted above, persons with disabilities are identified through HALS. HALS is a post-censal survey of census respondents designed to collect data on the nature and severity of disabilities, as well as the problems associated with disabilities. HALS disability status is determined through a sequence of approximately 15 questions (see Appendix A). The HALS sample is partially stratified according to a screening sequence of four questions on the Census of the Population . Approximately 20 percent of those identified as potentially disabled by the Census screening sequence fail to conform to the HALS disability definition.³ Conversely, about five percent of those who answer no to all the Census screening questions are subsequently identified as disabled by HALS.

The questions used to identify designated group status on the 1992 National Graduates Survey do not conform precisely to the operational definitions as outlined by the Interdepartmental Working Group.

One difference relates to the wording of the NGS ethnicity question. While the Census question asks about the cultural or ethnic background of the respondent's *ancestors*, the NGS question asks about the background of the *respondent*. Overall, this apparently minor difference has a large impact on the level of multiple ethnicity response -- 18 percent on the NGS compared to 32 percent for a similar group of Census respondents⁴. Paradoxically, the multiple response rate is higher for visible minorities in the NGS (16 percent) than in the Census (13 percent).

The other difference between the Census and NGS coding of visible minority status is in the use of country of birth and mother tongue to supplement the ethnicity question. As noted above, the Census uses these variables to pick up some visible minority members who may be missed by the ethnicity question. This option is not available on the NGS since mother tongue is not captured at a detailed level for languages other than English or French and place of birth is not captured at all. Since these steps account for some five percent of the visible minorities identified in the Census, NGS estimates of visible minority representation are likely lower by a similar factor.

With respect to persons with disabilities, the NGS uses the four Census screening questions rather than the much longer HALS screening sequence. While this makes sense in the context that the NGS was already a very long survey, it leads to estimates of persons with disabilities that would differ substantially from the official HALS definition. In recognition of this difference, we use the term *activity limited* in this paper rather than *persons with disabilities*.

³*Health and Activity Limitation Survey - 1991 User's Guide*. Post-Censal Surveys Program, Statistics Canada. 1993.

⁴The Census comparison group consists of university and community college graduates reweighted to have approximately the same age distribution as the NGS respondents.

III. Representation Rates

Designated groups' representation rates are calculated by dividing the number in the designated group in a population by the total population. Non-response and responses for which the designated status is unknown (e.g. ethnicity = "other") are not included in the calculations.

III.i. Visible Minorities

Table 1. Visible Minorities Representation Among 1990 University Graduates

	Visible Minority	Not Visible Minority	Visible Minority Rate
Total	11905	101047	10.5%
Degree Level			
Bachelors / 1st Prof.	9706	87010	10.0%
Masters	1844	12470	12.9%
Doctorate	353	1480	19.3%
Field of Study			
None/Unknown	473 *	3941	10.7% *
Education	799	18572	4.1%
Fine Arts & Humanities	1332	15643	7.8%
Commerce, Economics & Law	2376	20179	10.5%
Other Social Sciences	1589	18659	7.8%
Agricultural & Biological Sciences	1197	5959	16.7%
Engineering	1678	6262	21.1%
Medical & Other Health	1104	6567	14.4%
Math & Physical Sciences	1357	5265	20.5%
Province / Region			
Atlantic Provinces	466	11356	3.9%
Quebec	2115	26276	7.5%
Ontario	5844	41281	12.4%
Manitoba	427	3747	10.2%
Saskatchewan	228	4105	5.3%
Alberta	1107	7167	13.4%
British Columbia	1719	7116	19.5%

Ten-and-a-half percent of 1990 university graduates are members of visible minorities. The visible minority representation rate increases with degree level - from 10 percent at the undergraduate level to 19 percent at the PhD level. Visible minorities were far more prevalent in natural sciences and engineering than in the arts and social sciences.

The representation rate, in general, rises from east to west, ranging from 4 percent in the Atlantic Provinces to almost 20 percent in British Columbia.

Table 2. Visible Minorities Representation Among 1990 Community College Graduates

	Visible Minority	Not Visible Minority	Visible Minority Rate
Total	8403	72764	10.4%
Diploma Type			
Trade Certificate / Diploma	3894	26286	12.9%
College Certificate / Diploma	4509	46458	8.8%
Field of Study			
Arts & Humanities	1623	10006	14.0%
Health Sciences	1535	15166	9.2%
Other Engineering Technology	633	4112	13.3%
Electronics, Math & Computer Science	567	4011	12.4%
Mechanical & Structural Engineering Tech.	374	5007	7.0%
Natural Sciences & Primary Industries	317 *	4794	6.2% *
Social Sciences and Services	944	9748	8.8%
Secretarial Sciences & Merchandising	448	5313	7.8%
Management & Administration	1303	11170	10.4%
Miscoded	660	3436	16.1%
Province			
Atlantic Provinces	68	5279	1.3%
Quebec	715	15222	4.5%
Ontario	4134	28385	12.7%
Manitoba	208	2226	8.5%
Saskatchewan	44 *	2292	1.9% *
Alberta	810	7083	10.3%
British Columbia & Territories	2424	12277	16.5%

Members of visible minorities comprise 10.4 percent of the 1990 graduating class of community colleges. The visible minority representation rate is much higher for trade and vocational programs (13 percent) than for programs that lead to a community college certificate or diploma (about 9 percent). In contrast to the university graduates, there is no clear split between the representation rates in arts as opposed to science and technology. Among community college graduates, visible minority representation is lowest in the Atlantic provinces and Saskatchewan and highest in British Columbia.

III.ii. Aboriginal Peoples

Table 3. Aboriginal Peoples Representation Among 1990 University Graduates

	Aboriginal Peoples	Not Aboriginal Peoples	Representation Rate
Total	1,568	124,467	1.2%
Degree Level			
Bachelors/ 1st Professional	1,469	106,379	1.4%
Masters/Doctorate	99	18,079	0.5%
Field of Study			
Education	370 *	21,129	1.7% *
Fine Arts, Humanities	230 *	18,637	1.2% *
Commerce, Economics, Law	147 *	24,587	0.6% *
Other Social Sciences	441 *	22,666	1.9% *
Sciences	290 *	32,635	0.9% *
Province / Region			
Atlantic Provinces	141 *	11,936	1.2% *
Quebec	268 *	29,706	0.9% *
Ontario	504 *	53,362	0.9% *
Manitoba	154 *	5,170	2.9% *
Saskatchewan	247	4,803	4.9%
Alberta	142 *	9,572	1.5% *
British Columbia	113 *	9,919	1.1% *

Just over one percent of 1990 university graduates indicated Aboriginal peoples status, quite low compared to Aboriginal peoples' 3.8 percent share of the total population and 3 percent share of the workforce population. Aboriginal peoples' representation is particularly low -- half of a percent -- among advanced degree graduates. By field of study, the percentage of Aboriginal peoples ranges from 0.6 percent in Commerce, Economics and Law to 1.7 percent in Education. Universities in Saskatchewan (4.9 percent) and Manitoba (2.9 percent) have the highest percentages of Aboriginal peoples graduates.

Table 4. Aboriginal Peoples Representation Among 1990 Community College Graduates

	Aboriginal Peoples	Not Aboriginal Peoples	Representation Rate
Total	2560	88348	2.8%
Diploma Type			
Trade Certificate / Diploma	1334	33006	3.9%
College Certificate / Diploma	1226	55322	2.2%
Field of Study			
Arts & Humanities	321 *	12664	2.5% *
Health Sciences	507	18219	2.7%
Electronics, Comp Sci, Math, Other Eng. Tech	176 *	10278	1.7% *
Mechanical & Structural Engineering Tech.	208 *	5987	3.4% *
Natural Sciences & Primary Industries	208 *	5495	3.6% *
Social Sciences and Services	431	11446	3.6%
Secretarial Sciences & Merchandising	122 *	6279	1.9% *
Management & Administration	452	13551	3.2%
Province			
Atlantic Provinces	93 *	5343	1.7% *
Quebec	173 *	16380	1.0% *
Ontario	897	35495	2.5%
Manitoba	199	2805	6.6%
Saskatchewan	198	2599	7.1%
Alberta	342	9299	3.5%
British Columbia, Yukon	503	16351	3.0%
Northwest Territories	155	77	66.8%

The Aboriginal peoples representation rate among 1990 community college graduates (3 percent) is more than double the rate among university graduates. At the community colleges, Aboriginal peoples tend to be concentrated in trade and vocational programs rather than in diploma or certificate programs. By field of study, the representation rate ranges from a low of 1.7 percent in Electronics, Computer Science, Math and Other Engineering Technologies to highs of 3.6 percent in Natural Sciences and Primary Industries and Social Sciences and Services. Fully two-thirds of community college graduates in the Northwest Territories indicate Aboriginal peoples origins. Elsewhere, Aboriginal peoples comprise from one percent (Quebec) to 7 percent (Saskatchewan) of community college graduates.

III.iii. Activity Limited

Table 5. Activity-Limited Representation Among 1990 University Graduates

	Activity Limited	Not Activity Limited	Representation Rate
Total	4,875	121,160	3.9%
Degree Level			
Bachelors / 1st Prof.	4,238	103,611	3.9%
Masters	574	15,521	3.6%
Doctorate	63	2,020	3.0%
Field of Study			
None / Unknown	222 *	4,681	4.5% *
Education	754	20,745	3.5%
Fine Arts & Humanities	972	17,895	5.2%
Commerce, Economics & Law	817	23,918	3.3%
Other Social Sciences	1,102	22,004	4.8%
Agricultural & Biological Sciences	183 *	7,816	2.3% *
Engineering	200 *	8,726	2.2% *
Medical & Other Health	376 *	8,189	4.4% *
Math & Physical Sciences	249 *	7,187	3.3% *
Province			
Newfoundland	126	2,274	5.2%
Prince Edward Island	24 *	420	5.5% *
Nova Scotia	243	5,799	4.0%
New Brunswick	125	3,064	3.9%
Quebec	620 *	29,355	2.1% *
Ontario	2,071	51,795	3.8%
Manitoba	287	5,038	5.4%
Saskatchewan	274	4,775	5.4%
Alberta	613	9,101	6.3%
British Columbia	493	9,538	4.9%

Nearly 4 percent of 1990 university graduates are in some way limited in their activities at work, school or home. This compares to an estimate of seven percent among the 1991 population as a whole and six-and-a-half percent among the workforce.⁵ The representation of activity-limited individuals drops slightly with each step up in degree level. Among fields of study, Engineering has the lowest rate of activity-limited graduates (2.2 percent), while Fine Arts and Humanities has the highest (5.2 percent).

⁵These estimates are based on the 1991 Census screening sequence which served as the model for the NGS screening sequence. The Health and Activity Limitations Survey is the source of official estimates of persons with disabilities.

Geographically, the activity-limited representation rate ranges from 2.1 percent in Quebec to 6.3 percent in Alberta.

Table 6. Activity-Limited Representation Among 1990 Community College Graduates

	Activity Limited	Not Activity Limited	Representation Rate
Total	5,887	85,021	6.5%
Diploma Type			
Trade Certificate / Diploma	3,029	31,310	8.8%
College Certificate / Diploma	2,858	53,691	5.1%
Field of Study			
Arts & Humanities	1,007	11,979	7.8%
Health Sciences	1,056	17,670	5.6%
Other Engineering Technology	318 *	5,091	5.9% *
Electronics, Math & Computer Science	246 *	4,799	4.9% *
Mechanical & Structural Engineering Tech.	442	5,753	7.1%
Natural Sciences & Primary Industries	403	5,300	7.1%
Social Sciences and Services	848	11,029	7.1%
Secretarial Sciences & Merchandising	305 *	6,095	4.8% *
Management & Administration	873	13,130	6.2%
Miscoded	388	4,175	8.5%
Province / Region			
Newfoundland	88	1,257	6.6%
Prince Edward Island	36 *	758	4.6% *
Nova Scotia	44 *	660	6.3% *
New Brunswick	159	2,434	6.1%
Quebec	423 *	16,130	2.6% *
Ontario	2,293	34,099	6.3%
Manitoba	256	2,748	8.5%
Saskatchewan	185	2,611	6.6%
Alberta	804	8,836	8.3%
British Columbia, Territories	1,599	15,488	9.4%

Persons with activity limitations are more prevalent among community college than university graduates, accounting for six-and-a-half percent of the 1990 graduating class. Within the community colleges, activity-limited persons are more likely to graduate from trade and vocational programs than diploma or certificate programs. Those with activity limitations are fairly evenly spread across fields of study, with representation rates ranging from 4.8% in Secretarial Sciences and Merchandising to 7.8 percent in Arts and Humanities. The rate is also fairly consistent across provinces, with the exception of Quebec which has a much lower than average percentage of activity-limited graduates.

IV. Earnings Comparisons

In the National Graduates Survey, respondents are asked to estimate their yearly earnings based on working at the job they held in the week prior to the survey for an entire year. To control for the possibility that differential rates of part-time employment might affect the earnings comparisons, we limit the population to full-time workers (i.e. those who worked more than 30 hours in the reference week). An inspection of the earnings of full-time workers revealed a number of responses at the extreme high and low ends of the earnings scale. By cross-checking these responses against industry, occupation and previous year income, we judged that nearly all values outside the range of \$5,000 to \$500,000 were coding or response error. As such, we excluded these out-of-range values from the tabulations.

The earnings ratio expresses the average earnings of the designated group as a percentage of the average earnings of other graduates. If both groups earn the same, the ratio would be 100. If the designated group earns less, the ratio will be less than 100; if more, greater than 100.

For the earnings comparisons, there are no restrictions on multiple designated group status. For example, when the earnings of Aboriginal peoples are compared to all others, both groups will include women, activity-limited persons and visible minorities (to the extent that there is multiple response overlap between Aboriginal peoples and visible minorities).

Some variation in the category by category earnings ratio is to be expected. While consistent large differences may be indicative of differential treatment, it is important to recognize that earnings are the result of a multitude of factors. As such, it is inappropriate to interpret a low earnings ratio within a single category of industry, occupation or field of study as evidence of discrimination. Conversely, a high earnings ratio should not be construed as "reverse discrimination". To simultaneously control for the many factors that influence earnings, a multivariate model is presented in section V.

IV.i. Visible Minorities

Table 7. Average 1992 Earnings by Visible Minority Status, 1990 University Graduates (Full-time Workers, Earnings \$5,000 - \$500,000)

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Visible Minority	Not Visible Minority	Visible Minority	Not Visible Minority	
			\$'000	\$'000	%
Total	7118	68233	35.8	35.1	101.9
Highest Degree June 1992					
Bachelors / 1st Prof.	5565	54949	33.9	33.1	102.5
Masters	1243	11961	42.6	43.2	98.7
Doctorate	310	1277	42.9	49.7	86.5
Occupation					
Managers	603	7757	40.3	39.7	101.6
Managerial Related	1007	7573	36.2	35.9	101.0
Physical & Life Sciences	198 *	1572	32.7 *	33.4	97.7 *
Architecture & Engineering	684	3912	38.7	37.5	103.4
Math & Computer Science	727	2917	38.1	39.0	97.7
Social Sciences & Religion	457 *	7894	33.2 *	36.3	91.5 *
University Teaching	315 *	1768	29.0 *	32.5	89.2 *
Other Teaching	605	14548	37.9	36.3	104.5
Health Diagnosis	299 *	1673	59.6 *	47.4	125.7 *
Nursing, Other Health	424 *	4253	43.3 *	36.9	117.3 *
Arts & Recreation	154 *	1994	31.0 *	26.9	115.3 *
Clerical	870	4384	24.6	25.0	98.5
Sales	278 *	3429	34.0 *	31.4	108.3 *
Service Occupations	218 *	2077	24.7 *	27.5	89.9 *
Blue Collar	266 *	2456	32.1 *	28.1	114.1 *

On average, visible minorities earn slightly more than other university graduates. However, the earnings of visible minorities don't rise as much at higher degree levels, so they average less than other graduates at the masters and doctoral level. In most occupations, visible minorities earn about the same as other graduates. There are a couple of occupations where they earn appreciably less than others (University Teaching and Service Occupations) and several where they earn appreciably more (Health Occupations and Arts & Recreation).

Table 7. Average 1992 Earnings by Visible Minority Status, 1990 University Graduates (Full-time Workers, Earnings \$5,000 - \$500,000) - completed

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Visible Minority	Not Visible Minority	Visible Minority	Not Visible Minority	
			\$'000	\$'000	
Industry					
Primary Industries	..	1,388	..	35.5	..
Manufacturing & Construction	787	6,676	35.3	34.6	102.1
Transport, Communications & Utilities	483 *	2,756	37.9 *	37.3	101.8 *
Wholesale Trade	207 *	1,521	32.2 *	31.8	101.2 *
Retail & Consumer Services	536 *	5,857	30.0 *	27.3	110.1 *
Finance	626	2,510	30.2	35.0	86.3
Insurance & Real Estate	256 *	1,897	32.8 *	35.7	91.9 *
Education	1,151	18,625	35.0	36.5	95.8
Health	905	9,069	45.3	36.9	122.9
Welfare & Religion	185 *	1,344	29.7 *	28.3	104.9 *
Services to Business Management	1,200	9,456	36.8	35.9	102.4
Public Administration	685	7,122	34.7	36.3	95.5
Field of Study					
None / Unknown	238 *	2,395	28.1 *	33.3	84.5 *
Education	571 *	13,215	40.2 *	37.2	108.1 *
Fine Arts & Humanities	583 *	8,468	30.3 *	28.7	105.5 *
Commerce, Economics & Law	1,581	15,340	36.5	37.8	96.7
Other Social Sciences	977	11,477	30.3	31.9	95.0
Agricultural & Biological Sciences	539 *	3,662	28.0 *	29.3	95.5 *
Engineering	1,076	4,781	36.9	38.3	96.4
Medical & Other Health	744	5,142	49.5	42.2	117.2
Math & Physical Sciences	810	3,754	35.5	35.0	101.5

Visible minority graduates working in Finance, Insurance and Real Estate industries earn somewhat less, on average, than other graduates, while those in health industries earn somewhat more. In line with health industries and occupations, the Medical & Other Health field of study also shows elevated earnings for visible minority graduates. Visible minority graduates earn significantly less than others where there is no field of study specialization.

Table 8. Average 1992 Earnings by Visible Minority Status, 1990 Community College Graduates (Full-time Workers, Earnings \$5,000 - \$500,000)

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Visible Minority	Not Visible Minority	Visible Minority	Not Visible Minority	
			\$'000	\$'000	
Total	4,730	46,757	26.1	26.5	98.2
Certificate Type					
Trade Certificate or Diploma	1,391	12,288	22.6	24.7	91.4
College Certificate or Diploma	2,663	31,742	26.7	27.0	99.0
Occupation					
Managers	342 *	3,250	28.8 *	27.7	103.7 *
Managerial Related	306 *	2,560	26.8 *	26.3	102.1 *
Physical & Life Sciences	..	790	..	27.1	..
Architecture & Engineering	211 *	2,027	28.7 *	28.7	99.8 *
Math & Computer Science	223 *	1,555	33.8 *	31.0	109.1 *
Social Sciences & Religion	149 *	1,888	26.5 *	26.4	100.0 *
University Teaching	..	95	..	27.7	..
Other Teaching	94 *	1,586	23.3 *	24.2	96.0 *
Health Diagnosis	..	159	..	28.8	..
Nursing, Other Health	734	7,766	30.4	30.7	99.2
Arts & Recreation	..	1,297	..	24.2	..
Clerical	920	7,526	22.9	22.2	103.1
Sales	138 *	2,374	26.2 *	23.5	111.6 *
Service Occupations	447	4,124	19.9	24.3	82.1
Blue Collar	1,069	9,714	25.6	27.4	93.6

Members of a visible minority earn, on average, slightly less than other community college graduates. The gap is somewhat larger for trade and vocational programs than diploma and certificate programs. The gap varies only modestly by occupation, with the exception of Service Occupations -- where visible minorities earn an average of 18 percent less than other graduates.

Table 8. Average 1992 Earnings by Visible Minority Status, 1990 Community College Graduates (Full-time Workers, Earnings \$5,000 - \$500,000)
- completed

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Visible Minority	Not Visible Minority	Visible Minority	Not Visible Minority	
			\$'000	\$'000	
Industry					
Primary Industries	..	1,645	..	28.2	..
Manufacturing & Construction	962	7,942	25.8	27.3	94.5
Transport, Communications & Utilities	323 *	3,180	30.4 *	29.3	103.7 *
Wholesale Trade	172 *	1,801	23.1 *	24.8	93.4 *
Retail & Consumer Services	756	7,484	20.7	21.2	97.8
Finance	166 *	1,212	24.9 *	24.2	102.9 *
Insurance & Real Estate	201 *	1,094	27.7 *	25.2	109.9 *
Education	143 *	1,771	26.9 *	26.9	100.0 *
Health	1,110	11,275	28.1	28.7	97.7
Welfare & Religion	..	389	..	24.7	..
Services to Business Management	486	4,392	26.1	24.7	105.4
Public Administration	285 *	4,549	30.3 *	29.3	103.4 *
Field of Study					
Arts & Humanities	851	5,830	25.1	25.0	100.4
Health Sciences	871	9,087	28.7	29.7	96.8
Other Engineering Technology	363 *	2,916	26.5 *	28.4	93.3 *
Electronics, Math & Computer Science	365 *	3,044	26.1 *	27.2	95.9 *
Mechanical & Structural Engineering Tech.	217 *	3,421	26.9 *	29.1	92.4 *
Natural Sciences & Primary Industries	224 *	2,950	27.9 *	25.8	108.3 *
Social Sciences and Services	494	6,534	25.7	26.4	97.1
Secretarial Sciences & Merchandising	271 *	3,566	24.5 *	24.1	101.5 *
Management & Administration	772	7,341	24.5	23.1	106.0
Miscoded	301 *	2,067	24.6 *	26.9	91.2 *

The earnings of visible minorities and other community college graduates do not differ greatly by industry or field of study. All ratios in these categories are within ten percent of equality.

IV.ii. Aboriginal Peoples

Table 9. Average 1992 Earnings by Aboriginal Peoples Status, 1990 University Graduates (Full-time Workers, Earnings \$5,000 - \$500,000)

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Aboriginal Peoples	Not Aboriginal Peoples	Aboriginal Peoples	Not Aboriginal Peoples	
			\$'000	\$'000	
Total	1,052	82,564	36.1	35.2	102.5
Highest Degree June 1992					
Bachelors / 1st Prof.	895	66,428	34.7	33.1	104.7
Masters / Doctorate	157	16,136	44.3	43.3	102.4
Occupation					
Managers	150 *	9,081	41.5 *	39.8	104.1 *
Managerial Related	..	9,236	..	35.3	..
Physical & Life Sciences	..	1,967	..	33.7	..
Architecture & Engineering	..	5,074	..	37.5	..
Math & Computer Science	..	4,098	..	38.5	..
Social Sciences & Religion	158 *	9,073	34.9 *	36.4	95.8 *
University Teaching	..	2,294	..	32.2	..
Other Teaching	246 *	16,475	35.6 *	36.5	97.4 *
Health Diagnosis	..	2,185	..	51.0	..
Nursing, Other Health	..	5,084	..	37.4	..
Arts & Recreation	..	2,305	..	27.0	..
Clerical	..	5,876	..	24.9	..
Sales	..	4,134	..	31.1	..
Service Occupations	..	2,599	..	27.3	..
Blue Collar	..	3,043	..	28.7	..

The relatively small number of Aboriginal peoples among 1990 university graduates makes it difficult to produce reliable estimates of earnings for most subgroups. Overall, Aboriginal peoples earn slightly higher average salaries than other graduates.

Table 9. Average 1992 Earnings by Aboriginal Peoples Status, 1990 University Graduates (Full-time Workers, Earnings \$5,000 - \$500,000) - completed

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Aboriginal Peoples	Not Aboriginal Peoples	Aboriginal Peoples	Not Aboriginal Peoples	
			\$'000	\$'000	
Industry					
Primary Industries	..	1,632	..	36.1	..
Manufacturing & Construction	..	8,272	..	34.7	..
Transport, Communications & Utilities	..	3,604	..	37.2	..
Wholesale Trade	..	1,947	..	32.3	..
Retail & Consumer Services	..	7,601	..	26.8	..
Finance	..	3,379	..	34.1	..
Insurance & Real Estate	299 *	2,466	34.8 *	34.9	99.5 *
Education	187 *	21,580	32.5 *	36.5	89.0 *
Health	..	10,930	..	38.0	..
Welfare & Religion	..	974	..	30.2	..
Services to Business Management	176 *	11,583	37.6 *	35.8	105.1 *
Public Administration	..	8,582	..	36.2	..
Field of Study					
Education	304 *	15,008	40.6 *	37.2	109.1 *
Fine Arts & Humanities	154 *	9,724	31.1 *	28.6	108.6 *
Commerce, Economics & Law	..	18,420	..	37.7	..
Other Social Sciences	252 *	13,849	31.3 *	31.7	98.8 *
Agricultural & Biological Sciences	..	4,620	..	29.1	..
Engineering	..	6,576	..	37.9	..
Medical & Other Health	..	6,446	..	43.8	..
Math & Physical Sciences	..	5,058	..	35.0	..

Table 10. Average 1992 Earnings by Aboriginal Peoples Status, 1990 Community College Graduates (Full-time Workers, Earnings \$5,000 - \$500,000)

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Aboriginal Peoples	Not Aboriginal Peoples	Aboriginal Peoples	Not Aboriginal Peoples	
			\$'000	\$'000	%
Total	1352	56396	26.6	26.6	100.0
Certificate Type					
Trade Certificate or Diploma	512	15169	25.7	24.7	104.0
College Certificate or Diploma	789	37498	27.0	27.0	100.1
Occupation					
Managers	..	3895	..	27.7	..
Managerial Related	..	3128	..	26.3	..
Physical & Life Sciences	105 *	876	28.4 *	27.7	102.5 *
Architecture & Engineering	..	2479	..	28.8	..
Math & Computer Science	..	1909	..	31.1	..
Social Sciences & Religion	..	2165	..	28.1	..
University Teaching	..	105	..	27.7	..
Other Teaching	133 *	1846	28.5 *	23.8	120.0 *
Health Diagnosis	..	174	..	31.8	..
Nursing, Other Health	..	9388	..	30.6	..
Arts & Recreation	137 *	1548	29.1 *	24.0	121.3 *
Clerical	..	9099	..	22.3	..
Sales	263 *	2793	21.2 *	23.7	89.5 *
Service Occupations	..	4950	..	23.5	..
Blue Collar	146 *	11995	29.8 *	27.4	108.9 *

On average, Aboriginal peoples earn the same as other community college graduates. While the earnings ratio apparently swings widely among occupations, the sample sizes in each case are relatively small -- leading to unstable estimates.

Table 10. Average 1992 Earnings by Aboriginal Peoples Status, 1990 Community College Graduates (Full-time Workers, Earnings \$5,000 - \$500,000) - completed

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Aboriginal Peoples	Not Aboriginal Peoples	Aboriginal Peoples	Not Aboriginal Peoples	
			\$'000	\$'000	
Industry					
Primary Industries	310 *	1,880	25.8 *	27.9	92.4 *
Manufacturing & Construction	..	9,807	..	27.4	..
Transport, Communications & Utilities	203 *	3,893	25.9 *	29.6	87.6 *
Wholesale Trade	..	2,269	..	24.8	..
Retail & Consumer Services	..	9,265	..	21.1	..
Finance	170 *	1,509	17.0 *	24.1	70.5 *
Insurance & Real Estate	..	1,424	..	25.5	..
Education	..	2,061	..	25.8	..
Health	..	13,566	..	29.0	..
Welfare & Religion	320 *	393	27.2 *	25.5	106.7 *
Services to Business Management	..	5,268	..	24.9	..
Public Administration	..	5,038	..	29.5	..
Field of Study					
Arts & Humanities	93 *	7,362	23.6 *	24.8	95.3 *
Health Sciences	256 *	11,025	24.9 *	29.9	83.1 *
Other Engineering Technology	..	3,708	..	28.3	..
Electronics, Math & Computer Science	..	3,715	..	27.2	..
Mechanical & Structural Engineering Tech.	137 *	4,028	35.8 *	28.9	123.9 *
Natural Sciences & Primary Industries	107 *	3,410	25.2 *	26.4	95.5 *
Social Sciences and Services	256 *	7,477	28.9 *	26.2	110.3 *
Secretarial Sciences & Merchandising	..	4,217	..	24.1	..
Management & Administration	252 *	8,897	23.6 *	23.4	100.8 *
Miscoded	..	2,558	..	26.7	..

Again the earnings ratio bounces up and down among industries and fields of study, but should be interpreted cautiously due to the small sample sizes within categories.

IV.iii. Activity Limited

Table 11. Average 1992 Earnings by Activity-Limited Status, 1990 University Graduates (Full-time Workers, Earnings \$5,000 - \$500,000)

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Activity Limited	Not Activity Limited	Activity Limited \$'000	Not Activity Limited \$'000	
Total	2,843	80,773	32.9	35.3	93.2
Highest Degree June 1992					
Bachelors / 1st Prof.	2,276	65,047	30.6	33.2	92.1
Masters	508	13,988	40.8	43.4	94.1
Doctorate	59	1,737	54.2	48.0	112.9
Occupation					
Managers	254 *	8,976	40.2 *	39.8	101.1 *
Managerial Related	266 *	9,087	32.5 *	35.6	91.1 *
Physical & Life Sciences	..	1,936	..	33.7	..
Architecture & Engineering	194 *	4,910	34.6 *	37.6	92.0 *
Math & Computer Science	171 *	3,983	33.3 *	38.8	85.8 *
Social Sciences & Religion	446 *	8,786	31.9 *	36.6	87.1 *
University Teaching	..	2,237	..	32.3	..
Other Teaching	547 *	16,175	36.5 *	36.5	100.1 *
Health Diagnosis	..	2,162	..	50.9	..
Nursing, Other Health	255 *	4,910	37.5 *	37.3	100.4 *
Arts & Recreation	..	2,161	..	27.4	..
Clerical	229 *	5,689	23.0 *	25.0	91.9 *
Sales	..	4,103	..	31.0	..
Service Occupations	..	2,568	..	27.2	..
Blue Collar	..	3,051	..	28.7	..

University graduates who indicated they have some activity limitation earned an average of seven percent less than other graduates. While the activity limited earned eight percent less at the undergraduate level and six percent less at the masters level, they earned 12 percent more at the doctoral level. The average earnings of the activity limited equaled that of other graduates in Management, Other Teaching (i.e. elementary and secondary) and Nursing & Other Health, but was lower in all other occupational groups.

Table 11. Average 1992 Earnings by Activity-Limited Status, 1990 University Graduates (Full-time Workers, Earnings \$5,000 - \$500,000) - completed

Characteristics	Weighted Number		Average Earnings		Earnings Ratio
	Activity Limited	Not Activity Limited	Activity Limited	Not Activity Limited	
			\$'000	\$'000	
Industry					
Primary Industries	..	1,604	..	36.0	..
Manufacturing & Construction	192 *	8,194	32.9 *	34.9	94.2 *
Transport, Communications & Utilities	..	3,614	..	37.2	..
Wholesale Trade	..	1,905	..	32.2	..
Retail & Consumer Services	322 *	7,387	23.4 *	27.1	86.4 *
Finance	..	3,273	..	34.1	..
Insurance & Real Estate	..	2,462	..	34.9	..
Education	766	21,113	35.0	36.5	95.9
Health	547 *	10,571	34.3 *	38.1	90.0 *
Welfare & Religion	..	937	..	30.3	..
Services to Business Management	469 *	11,178	31.1 *	36.0	86.3 *
Public Administration	238 *	8,520	38.6 *	36.2	106.8 *
Field of Study					
None / Unknown	..	2,826	..	32.6	..
Education	495 *	14,816	37.5 *	37.3	100.5 *
Fine Arts & Humanities	409 *	9,470	23.6 *	28.9	81.7 *
Commerce, Economics & Law	637	17,880	33.7	37.8	89.2
Other Social Sciences	537 *	13,564	29.6 *	31.8	93.2 *
Agricultural & Biological Sciences	..	4,587	..	29.0	..
Engineering	150 *	6,467	35.9 *	38.0	94.5 *
Medical & Other Health	295 *	6,237	39.8 *	43.9	90.7 *
Math & Physical Sciences	170 *	4,926	33.8 *	35.1	96.3 *

Activity-limited graduates earned lower average salaries in every industry except Public Administration and every field of study except education.

Table 12. Average 1992 Earnings by Activity-Limited Status, 1990 Community College Graduates (Full-time Workers, Earnings \$5,000 - \$500,000)

	Weighted Number		Average Earnings		Earnings Ratio
	Activity Limited	Not Activity Limited	Activity Limited	Not Activity Limited	
			\$'000	\$'000	
Total	2,940	54,808	26.2	26.6	98.5
Certificate Type					
Trade Certificate or Diploma	1,249	17,621	22.8	25.7	89.0
College Certificate or Diploma	1,691	37,167	28.7	27.0	106.1
Occupation					
Managers	286 *	3,695	29.1 *	27.6	105.4 *
Managerial Related	170 *	3,064	31.4 *	26.1	120.1 *
Physical & Life Sciences	..	877	..	27.9	..
Architecture & Engineering	98 *	2,394	31.1 *	28.8	108.1 *
Math & Computer Science	..	1,915	..	31.1	..
Social Sciences & Religion	161 *	2,137	22.9 *	28.5	80.3 *
University Teaching	..	105	..	27.7	..
Other Teaching	161 *	1,732	25.6 *	23.7	108.1 *
Health Diagnosis	..	173	..	31.1	..
Nursing, Other Health	420	9,105	30.0	30.6	98.0
Arts & Recreation	..	1,539	..	24.1	..
Clerical	395	8,967	21.7	22.3	97.4
Sales	201 *	2,614	20.7 *	23.9	86.7 *
Service Occupations	299 *	4,797	21.9 *	23.8	91.9 *
Blue Collar	654	11,651	27.6	27.3	101.2

Overall, activity-limited community college graduates earn one-and-half percent less than other graduates. Earnings differ widely by program type: the activity limited earn 11 percent less than others who took trade programs and 6 percent more in diploma and certificate programs. The gap swings widely by occupation, but the sample size in most categories is relatively small.

**Table 12. Average 1992 Earnings by Activity-Limited Status,
1990 Community College Graduates
(Full-time Workers, Earnings \$5,000 - \$500,000) - completed**

	Weighted Number		Average Earnings		Earnings Ratio
	Activity Limited	Not Activity Limited	Activity Limited	Not Activity Limited	
			\$'000	\$'000	
Industry					
Primary Industries	..	1,882	..	27.6	..
Manufacturing & Construction	438	9,572	28.9	27.3	105.8
Transport, Communications & Utilities	127 *	3,813	26.1 *	29.7	88.2 *
Wholesale Trade	142 *	2,140	25.0 *	24.8	100.6 *
Retail & Consumer Services	570	8,864	20.5	21.1	97.4
Finance	..	1,443	..	23.9	..
Insurance & Real Estate	93 *	1,378	32.8 *	25.2	130.3 *
Education	145 *	1,989	28.7 *	26.4	108.6 *
Health	725	13,162	27.4	29.1	94.3
Welfare & Religion	..	386	..	25.6	..
Services to Business Management	296 *	5,061	23.8 *	24.9	95.3 *
Public Administration	224 *	5,095	29.0 *	29.5	98.3 *
Field of Study					
Arts & Humanities	377	7,078	24.1	24.8	96.9
Health Sciences	554	10,727	28.7	29.9	95.9
Other Engineering Technology	184 *	3,604	28.6 *	28.3	101.3 *
Electronics, Math & Computer Science	114 *	3,652	27.9 *	27.1	103.0 *
Mechanical & Structural Engineering Tech.	192 *	3,973	23.5 *	29.4	80.1 *
Natural Sciences & Primary Industries	207 *	3,310	24.2 *	26.5	91.3 *
Social Sciences and Services	485	7,249	26.3	26.3	100.1
Secretarial Sciences & Merchandising	156 *	4,122	28.1 *	24.0	117.3 *
Management & Administration	508	8,641	26.2	23.2	112.6
Miscoded	163 *	2,453	22.4 *	26.9	83.3 *

The earnings gap varies widely by industry and field of study, but the estimates in most instances are relatively unstable due to small sample sizes.

V. Earnings Models

An individual's earnings are affected by a number of different factors, many of which are measured by the National Graduates Survey. Multivariate models are used to isolate the influence that each of a number of factors plays in a group's average earnings. A special construction of a multivariate model can be used to test the hypothesis that groups are treated differently in the labour market.⁶

The model divides the difference between two groups' average earnings into two components. The first is referred to as the explained or characteristics component. It captures the difference in earnings due to the differences in the earnings-related characteristics of each group. For example, if one group has more graduates with advanced degrees or who graduated from high-earnings fields of study, they are expected to earn more and this difference is captured by the characteristics component. The second component, the coefficient or residual component, picks up differences in the way in which the characteristics of each group are rewarded. If a group is treated significantly worse for a number of different characteristics, the evidence of differential treatment gets stronger.

In the interpretation of the model, a certain number of conditions must be met to provide compelling evidence of labour market discrimination. In the list that follows we describe these conditions in lay and technical terms (in brackets).

1. A model that includes the possibility of differential rewards for a designated group is better at explaining average earnings than a similar model that doesn't isolate the designated group. (An F-test for adding a designated group dummy variable and a full set of interaction terms is significant at the .05 level.)
2. The overall effect of the differential rewards for the designated group -- the coefficient component -- is negative.
3. Net of all the other characteristics, there should be a negative effect associated with being a member of the designated group identifier. (The designated group dummy variable should be negative and significant at the .05 level.)
4. There should be some evidence of characteristics that are rewarded differently for which the most obvious explanation is discrimination. (There should be significant and negatively signed interaction terms that aren't easily attributable to other models of labour market behaviour.)

⁶The tests and rules outlined in this section are adapted from John D. Jackson and James T. Lindley, *Measuring the extent of wage discrimination: a statistical test and a caveat*. **Applied Economics**, 21, 515-540.

Each of these points is addressed in the following summary tables. The inter-group earnings differential is expressed as the difference in the log of earnings for each group which indicates the percentage difference between the groups. In the first table, for example, the log earnings of visible minorities minus the log earnings of others equals .013: visible minorities earn about one-and-a-third percent more than other university graduates. The coefficient component indicates the net effect of differential treatment in the labour market. A check mark is placed beside a value that is statistically significant. So in the first table visible minorities earn just less than a percent more than others due to differing rewards, and the difference is statistically significant. The "designated group intercept" captures differences in earnings not captured by other factors. Again, its significance is denoted by a check mark. Finally, we list all variables for which the treatment was significantly different for the designated group, indicating whether the difference was positive or negative.

The model includes information on age, marital status, children, parents' education, home language, previous work experience, field of study, level of degree or length of program, public sector employment, region of residence and hours of work. The earnings differentials will be somewhat different from the previous section, since a slightly more restrictive population is used⁷ and missing values for each variable in the model have to be dropped. Detailed results are available upon request.

⁷The population is further limited to those who were employed full-time in January and October of 1991 to control for work experience since graduation.

V.i. Visible Minorities

**Table 13. Visible Minorities Earnings Model, 1990 University Graduates
(Full-time at All Timepoints, Earnings \$5,000 - \$500,000)**

Differences in Log of 1992 Earnings	
Difference between designated group and all others	0.013
difference due to characteristics	0.005
difference due to coefficients (1)	0.008 ✓
Designated Group Variable	
coefficient of designated group intercept (1)	0.310
Characteristics Rewarded Differently	
<u>Higher Designated Group Rewards</u>	<u>Lower Designated Group Rewards</u>
Parents with Postsecondary Education Home Language is French	Quebec Public Sector

(1) A check mark, "✓", indicates significance at .05 level.

Visible minority university graduates in the model earned 1.3 percent more than other graduates. The net effect of differential labour market treatment was in the favour of visible minorities. At a more detailed level, visible minorities apparently earned a premium, vis-à-vis other graduates, for Parents Postsecondary Education and Home Language - French and penalties for working in Quebec or the Public Sector (includes public administration, health, education and welfare).

**Table 14. Visible Minorities Earnings Model,
1990 Community College Graduates
(Full-time at All Timepoints, Earnings \$5,000 - \$500,000)**

Differences in Log of 1992 Earnings	
Difference between designated group and all others	-0.007
difference due to characteristics	0.001
difference due to coefficients (1)	-0.008 ✓
Designated Group Variable	
coefficient of designated group intercept (1)	0.246
Characteristics Rewarded Differently	
<u>Higher Designated Group Rewards</u>	<u>Lower Designated Group Rewards</u>
	One Year Program
	Two Year Program
	Atlantic Provinces

(1) A check mark, "✓", indicates significance at .05 level.

Overall, visible minorities earned just under a percent less than other community college graduates, while the model estimated that they should be earning fractionally more. Although the coefficient effect is significant, the positive (but insignificant) designated group intercept indicates that any differential treatment would not be broad and systemic but confined to effects captured by the model. The model estimates that visible minorities earn smaller returns for graduating from one and two year programs and for working in the Atlantic provinces.

V.ii. Aboriginal Peoples

**Table 15. Aboriginal Peoples Earnings Model,
1990 University Graduates
(Full-time at All Timepoints, Earnings \$5,000 - \$500,000)**

Differences in Log of 1992 Earnings	
Difference between designated group and all others	0.061
difference due to characteristics	0.069
difference due to coefficients (1)	-0.008
Designated Group Variable	
coefficient of designated group intercept (1)	-0.245
Characteristics Rewarded Differently	
Higher Designated Group Rewards	Lower Designated Group Rewards
Full-time Experience < 1 Year	Public Sector Employment

(1) A check mark, "√", indicates significance at the .05 level.

The university earnings model indicates that Aboriginal peoples earned about six percent more than others and, overall, were not treated differently in the labour market. At a more detailed level, Aboriginal peoples apparently received somewhat better-than-average returns for previous work experience of less than one year and somewhat less-than-average returns to public sector employment.

**Table 16. Aboriginal Peoples Earnings Model,
1990 Community College Graduates
(Full-time at All Timepoints, Earnings \$5,000 - \$500,000)**

Differences in Log of 1992 Earnings	
Difference between designated group and all others	0.029
difference due to characteristics	0.030
difference due to coefficients (1)	-0.001 ✓
Designated Group Variable	
coefficient of designated group intercept (1)	0.402
Characteristics Rewarded Differently	
<u>Higher Designated Group Rewards</u>	<u>Lower Designated Group Rewards</u>
	One Year Program Atlantic Provinces

(1) A check mark, "✓", indicates significance at the .05 level.

There is a very small (i.e. one-tenth of a percent) but statistically significant difference in the estimated labour market rewards for Aboriginal peoples graduates of community colleges. On the other hand, a positive but insignificant Aboriginal peoples identifier provides no indication of systematically different treatment. The model indicates that some penalty may exist for Aboriginal peoples who graduated from one-year programs or who work in the Atlantic provinces.

V.iii. Activity Limited

**Table 17. Activity-Limited Earnings Model,
1990 University Graduates
(Full-time at All Timepoints, Earnings \$5,000 - \$500,000)**

Differences in Log of 1992 Earnings	
Difference between designated group and all others	-0.030
difference due to characteristics	0.024
difference due to coefficients (1)	-0.055
Designated Group Variable	
coefficient of designated group intercept (1)	0.409
Characteristics Rewarded Differently	
<u>Higher Designated Group Rewards</u>	<u>Lower Designated Group Rewards</u>
Female	

(1) A check mark, "✓", indicates significance at the .05 level.

Overall, activity-limited university graduates earn three percent less than other graduates, but the model indicates the labour market does not reward them differently.

**Table 18. Activity-Limited Earnings Model,
1990 Community College Graduates
(Full-time at All Timepoints, Earnings \$5,000 - \$500,000)**

Differences in Log of 1992 Earnings	
Difference between designated group and all others	-0.015
difference due to characteristics	0.042
difference due to coefficients (1)	-0.057 ✓
Designated Group Variable	
coefficient of designated group intercept (1)	0.379
Characteristics Rewarded Differently	
<u>Higher Designated Group Rewards</u>	<u>Lower Designated Group Rewards</u>
Home Language is French	Mechanical, Structural Eng. Tech.
Children Present, June 1992	Hours
Two Year Program	
Prev. Full-time Experience < 1 Year	

(1) A check mark, "✓", indicates significance at the .05 level.

Among community college graduates, the activity limited earn a percent-and-a-half less than others, while the model estimates that they should earn about 4 percent more. The overall difference of 5.7 percent due to different treatment is significant, but the positive and insignificant activity-limited identifier provides no evidence of systemic discrimination not explicitly captured by the model. However, one of the characteristics rewarded differently is hours, indicating that activity-limited community college graduates generally earn lower wages than other graduates. The activity limited also receive lower-than-average returns to graduating from Mechanical and Structural Engineering Technologies programs (MSE). Working in the favour of the activity limited were higher returns to French home language, children, graduating from a two-year program and previous full-time work experience less than a year.

VI. Employment, Unemployment and Labour Force Participation

The following tables refer to the respondent's labour force status in the week prior to the survey. The unemployment rate for a group is calculated by dividing the number of unemployed by the sum of the number of employed plus the number of unemployed. The participation rate for a group is calculated by dividing the sum of employed plus unemployed by the population of the group. Respondents for whom the labour force status or designated group status are unknown are not included in the calculations.

VI.i. Visible Minorities

Table 19. Labour Force Status (June 1992) by Visible Minority Status, 1990 University Graduates

Labour Force Status	Visible Minorities		Not Visible Minority	
	Number	Percent	Number	Percent
Employed	9,044	76.0%	84,714	83.8%
Unemployed	1,473	12.4%	9,538	9.4%
Not in Labour Force	1,387	11.6%	6,780	6.7%
Total	11,903	100.0%	101,032	100.0%
Unemployment Rate		14.0%		10.1%

The employment rate for visible minorities is almost eight percentage points below the rate for other university graduates. While the majority of the difference is due to lower labour force participation by visible minorities, the unemployment rate for visible minorities is about a third higher than for other graduates.

Table 20. Labour Force Participation Rate and Unemployment Rate (June 1992) by Visible Minority Status, 1990 University Graduates

	Participation Rate		Unemployment Rate	
	Visible Minorities	All Others	Visible Minorities	All Others
Total	88.4%	93.3%	14.0%	10.1%
Sex				
Male	87.1%	93.6%	14.4%	10.0%
Female	89.7%	93.0%	13.6%	10.2%
Field of Study				
None/ Unknown	80.8% *	91.2%	19.5% *	13.8%
Education	96.7%	97.3%	11.3%	8.0%
Fine Arts & Humanities	86.0%	89.8%	21.2%	12.9%
Commerce, Economics & Law	94.1%	96.8%	11.3%	9.8%
Other Social Sciences	91.6%	91.5%	6.6%	12.0%
Agricultural & Biological Sciences	78.6%	85.6%	21.8%	12.3%
Engineering	86.6%	93.4%	15.9%	10.3%
Medical & Other Health	91.9%	96.1%	11.4%	3.4%
Math & Physical sciences	82.2%	89.1%	15.1%	8.2%
Province / Region				
Atlantic Provinces	84.2%	93.7%	26.2%	12.9%
Quebec	86.9%	92.7%	18.1%	12.6%
Ontario	89.4%	93.4%	14.5%	9.0%
Manitoba	83.0%	93.0%	10.7%	8.2%
Saskatchewan	79.1% *	93.3%	9.3% *	7.3%
Alberta	83.3%	94.2%	12.0%	8.4%
British Columbia & Territories	92.3%	93.2%	8.5%	8.4%

The differences in the labour force participation and unemployment rates of visible minorities persist across almost all subgroups of university graduates. The differences are somewhat smaller for female graduates than for males. For example, the unemployment rate gap is 4.4 percentage points for men and 3.4 percentage points for women. Visible minority graduates of all fields of study except Other Social Sciences (e.g. Geography, Political Science, Sociology) have lower participation rates and higher unemployment rates. The gap between the unemployment rate of visible minorities and that of others is generally higher in eastern Canada than western Canada, virtually disappearing in British Columbia.

Table 21. Labour Force Status (June 1992) by Visible Minority Status, 1990 Community College Graduates

Labour Force Status	Visible Minorities		Not Visible Minority	
	Number	Percent	Number	Percent
Employed	6,482	77.1%	60,556	83.2%
Unemployed	1,315	15.6%	8,734	12.0%
Not in Labour Force	606	7.2%	3,459	4.8%
Total	8,403	100.0%	72,749	100.0%
Unemployment Rate		16.9%		12.6%

Among community college graduates, the employment rate is six percentage points lower for visible minorities than for other graduates (Table 21). More than half of the difference is due to higher unemployment rates for visible minority graduates of community colleges.

Among community college graduates, unemployment is a particularly acute problem for visible minority men (Table 22). Their unemployment rate of over 20 percent is nearly six percentage points higher than that of other male graduates. The disparity is somewhat smaller, 2.8 percentage points, among female graduates.

Visible minorities have lower unemployment rates than other community college graduates in the fields of Health Sciences, Mechanical and Structural Engineering Technologies and Natural Sciences and Primary Industries. Their unemployment rate is higher in all other fields.

The unemployment rate for visible minority community college graduates is highest in the Atlantic provinces, Quebec, Ontario and Alberta -- with particularly large gaps vis-à-vis other graduates in the latter two provinces. Visible minorities experience lower rates of unemployment than other graduates in Saskatchewan and about the same rates in Manitoba and British Columbia.

Table 22. Labour Force Participation Rate and Unemployment Rate (June 1992) by Visible Minority Status, 1990 Community College Graduates

	Participation Rate		Unemployment Rate	
	Visible Minorities	All Others	Visible Minorities	All Others
Total	92.8%	95.2%	16.9%	12.6%
Sex				
Male	93.6%	96.8%	20.1%	14.4%
Female	92.0%	94.1%	13.8%	11.2%
Field of Study				
Arts & Humanities	91.8%	93.2%	17.3%	13.8%
Health Sciences	93.5%	96.4%	4.0%	6.2%
Other Engineering Technology	94.1%	96.2%	24.8%	14.7%
Electronic, Math & Computer Science	90.8%	95.8%	21.2%	12.9%
Mechanical & Structural Engineering Tech.	96.8%	96.3%	15.1%	17.0%
Natural Sciences & Primary Industries	95.7% *	96.4%	18.1% *	21.3%
Social Sciences and Services	90.6%	95.6%	22.2%	11.4%
Secretarial Sciences & Merchandising	91.2%	94.6%	14.9%	12.0%
Management & Administration	92.0%	94.7%	16.3%	14.2%
Miscoded	96.1%	92.8%	29.5%	15.7%
Province / Region				
Atlantic Provinces	88.6%	96.6%	22.8%	19.5%
Quebec	92.4%	95.2%	15.0%	11.6%
Ontario	91.4%	94.8%	19.4%	12.3%
Manitoba	92.9%	96.8%	12.5%	12.7%
Saskatchewan	88.2% *	95.5%	0.0% *	12.6%
Alberta	94.2%	94.5%	17.2%	9.9%
British Columbia & Territories	94.9%	95.6%	13.5%	13.2%

VI.ii. Aboriginal Peoples

Table 23. Labour Force Status (June 1992) by Aboriginal Peoples Status, 1990 University Graduates

Labour Force Status	Aboriginal Peoples		Not Aboriginal Peoples	
	Number	Percent	Number	Percent
Employed	1,320	84.2%	103,062	82.7%
Unemployed	172 *	10.8% *	12,305	9.9%
Not in Labour Force	9,310	7.5%
Total	1,568	100.0%	124,677	100.0%
Unemployment Rate		11.5% *		10.7%

Among 1990 university graduates, both the employment and unemployment rates are slightly higher for Aboriginal peoples than for other graduates. The gap in the unemployment rate is about three percentage points for men, while female Aboriginal peoples graduates have a lower unemployment rate than other women (Table 24).

The unemployment rate for Aboriginal peoples is higher than others in about half the university fields. Small sample sizes prevent a more detailed analysis.

The Atlantic provinces and Saskatchewan have high rates of unemployment for Aboriginal peoples compared to other university graduates. In other areas of the country, the unemployment rates of Aboriginal peoples and other university graduates are more-or-less equal.

Table 24. Labour Force Participation Rate and Unemployment Rate (June 1992) by Aboriginal Peoples Status, 1990 University Graduates

	Participation Rate		Unemployment Rate	
	Aborigines	All Others	Aborigines	All Others
Total	95.0%	92.5%	11.5%	10.7%
Sex				
Male	97.6%	92.7%	13.6%	10.6%
Female	93.6%	92.4%	10.4%	10.8%
Field of Study				
Education	97.6% *	97.0%	12.8% *	8.1%
Fine Arts & Humanities	100.0% *	89.1%	8.5% *	14.2%
Commerce, Economics & Law	100.0% *	96.6%	8.6% *	9.6%
Other Social Sciences	94.9% *	91.1%	12.6% *	12.1%
Sciences	83.6% *	89.9%	13.4% *	9.7%
Province / Region				
Atlantic Provinces	100.0% *	93.2%	20.0% *	13.1%
Quebec	90.8% *	91.9%	12.0% *	12.9%
Ontario	100.0% *	92.6%	10.4% *	10.4%
Manitoba	100.0% *	92.5%	7.3% *	8.1%
Saskatchewan	92.6%	92.8%	18.7%	6.4%
Alberta	91.6% *	93.1%	5.6% *	8.7%
British Columbia & Territories	92.9% *	92.8%	7.0% *	8.4%

Table 25. Labour Force Status (June 1992) by Aboriginal Peoples Status, 1990 Community College Graduates

Labour Force Status	Aboriginal Peoples		Not Aboriginal Peoples	
	Number	Percent	Number	Percent
Employed	1,796	70.1%	73,381	83.1%
Unemployed	514	20.1%	10,713	12.1%
Not in Labour Force	251 *	9.8% *	4,239	4.8%
Total	2,560	100.0%	88,333	100.0%
Unemployment Rate		22.2%		12.7%

There is a gap of 13 percentage points between the employment rate of Aboriginal peoples and other community college graduates. Most of the difference is due to the very high unemployment rate -- 22.2 percent -- of Aboriginal peoples, although their participation rate is also 5 percentage points lower than that of other graduates.

Most of the difference in the participation rates between Aboriginal peoples and other community college graduates is attributable to the low participation rates of Aboriginal women -- 87 percent of whom participated in the labour market compared to 94 percent of other female community college graduates (Table 26). Both male and female Aboriginal peoples experience much higher levels of unemployment than other community college graduates.

Unemployment rates for Aboriginal peoples are higher for all community college fields of study except Electronics, Math, Computer Science and Other Engineering Technologies, even though the participation rate is not very different in most fields.

The unemployment rate for Aboriginal peoples is at least half again as high as for other community college graduates in every region of the country. Relatively small proportions of Aboriginal peoples community college graduates participate in the labour market in Saskatchewan and Alberta -- both compared to other community college graduates in those provinces and Aboriginal peoples elsewhere in the country.

Table 26. Labour Force Participation Rate and Unemployment Rate (June 1992) by Aboriginal Peoples Status, 1990 Community College Graduates

	Participation Rate		Unemployment Rate	
	Aborigines	All Others	Aborigines	All Others
Total	90.2%	95.2%	22.2%	12.7%
Sex				
Male	95.6%	96.5%	27.2%	14.6%
Female	86.8%	94.2%	18.8%	11.3%
Field of Study				
Arts & Humanities	79.6% *	93.4%	38.0% *	14.0%
Health Sciences	95.0%	96.5%	9.8%	6.2%
Electronics, Comp Sci, Math, Other Eng. Tech.	94.4% *	95.6%	12.8% *	14.2%
Mechanical & Structural Engineering Tech.	95.4% *	96.6%	27.1% *	17.1%
Natural Sciences & Primary Industries	94.7% *	95.8%	33.5% *	20.4%
Social Sciences and Services	87.5%	95.3%	19.6%	12.1%
Secretarial Sciences & Merchandising	93.9% *	94.3%	31.9% *	11.3%
Management & Administration	90.0%	95.0%	20.8%	14.0%
Miscoded	83.3% *	93.0%	30.1% *	17.5%
Province / Region				
Atlantic Provinces	94.7%	96.5%	31.3%	19.3%
Quebec	91.2% *	95.0%	23.7% *	11.5%
Ontario	91.9%	94.6%	18.9%	12.8%
Manitoba	94.0%	96.4%	32.3%	11.2%
Saskatchewan	85.1%	96.5%	36.5%	10.5%
Alberta	75.1%	95.3%	16.8%	10.8%
British Columbia & Yukon	96.0%	95.8%	20.0%	13.5%
Northwest Territories	92.3%	98.0%	20.9%	3.3%

VI.iii. Activity Limited

Table 27. Labour Force Status (June 1992) by Activity-Limited Status, 1990 University Graduates

Labour Force Status	Activity Limited		Not Activity Limited	
	Number	Percent	Number	Percent
Employed	3,757	76.8%	100,625	82.9%
Unemployed	614	12.6%	11,863	9.8%
Not in the Labour Force	522	10.7%	8,868	7.3%
Unemployment Rate		14.1%		10.5%

The employment rate for university graduates with activity limitations is six percentage points lower than for other graduates. While a smaller proportion of the activity limited participate in the labour force, their unemployment rate is about one-third higher than that of other graduates. The differences are greater for women than men: the participation and unemployment rates gap are about five percentage points for women and one-and-a-half percentage points for men (Table 28).

The unemployment rates of activity-limited university graduates vary greatly by field of study. While the unemployment rate for the activity limited is higher than for other university graduates in most fields, their rate is lower for graduates of Engineering, Medical and Other Health and Commerce, Economics and Law.

The activity limited experience higher unemployment rates than other university graduates in every province except Manitoba and Alberta.

Table 28. Labour Force Participation Rate and Unemployment Rate (June 1992) by Activity-Limited Status, 1990 University Graduates

	Participation Rate		Unemployment Rate	
	Activity Limited	All Others	Activity Limited	All Others
Total	89.3%	92.7%	14.1%	10.5%
Sex				
Male	91.4%	92.8%	12.3%	10.5%
Female	87.7%	92.6%	15.5%	10.6%
Field of Study				
None/ Unknown	95.0% *	90.2%	27.7% *	13.9%
Education	93.9%	97.1%	8.8%	8.2%
Fine Arts & Humanities	89.9%	89.2%	19.2%	13.8%
Commerce, Economics & Law	94.0%	96.7%	6.2%	9.7%
Other Social Sciences	82.0%	91.7%	18.5%	11.8%
Agricultural & Biological Sciences	75.1% *	84.0%	48.2% *	13.8%
Engineering	92.9% *	92.0%	6.0% *	11.2%
Medical & Other Health	93.4% *	95.2%	0.9% *	4.9%
Math & Physical sciences	87.0% *	87.4%	12.7% *	9.4%
Province				
Newfoundland	91.9%	95.2%	18.2%	12.8%
Prince Edward Island	100.0% *	98.8%	30.0% *	16.4%
Nova Scotia	87.3%	91.6%	16.6%	11.4%
New Brunswick	96.5% *	94.1%	21.1% *	14.7%
Quebec	86.4%	92.1%	17.9%	12.8%
Ontario	89.6%	92.7%	16.2%	10.1%
Manitoba	89.4%	92.9%	7.2%	8.2%
Saskatchewan	84.8% *	93.2%	11.1% *	6.9%
Alberta	91.8%	93.2%	6.0%	8.9%
British Columbia & Territories	89.2%	93.0%	11.4%	8.3%

Table 29. Labour Force Status (June 1992) by Activity-Limited Status, 1990 Community College Graduates

Labour Force Status	Activity Limited		Not Activity Limited	
	Number	Percent	Number	Percent
Employed	4,187	71.1%	70,989	83.5%
Unemployed	955	16.2%	10,272	12.1%
Not in the Labour Force	744	12.6%	3,745	4.4%
Unemployment Rate		18.6%		12.6%

There is a gap of more than 12 percentage points between the employment rates of activity-limited and other community college graduates. While two-thirds of this gap is due to lower labour force participation among the activity limited, that group also has a 50 percent higher unemployment rate.

In contrast to most of the other groups examined, the participation rate of activity-limited men is lower than the female rate among community college graduates. The rates for both genders are well below the corresponding rates for other community college graduates. Similarly, men with activity limitations have a higher unemployment rate and a larger gap vis-à-vis other graduates than is the case for female community college graduates with activity limitations.

Activity-limited community college graduates have higher unemployment rates and lower participation rates than other graduates within every field of study.

The participation rate for activity-limited community college graduates is lower than for other graduates in every province, with particularly large differences in Ontario, New Brunswick and Quebec. The activity limited experienced higher rates of unemployment than other community college graduates in all provinces but New Brunswick, Alberta and Northwest Territories.

**Table 30. Labour Force Participation Rate and Unemployment Rate
(June 1992) by Activity-Limited Status,
1990 Community College Graduates**

	Participation Rate		Unemployment Rate	
	Activity Limited	All Others	Activity Limited	All Others
Total	87.4%	95.6%	18.6%	12.6%
Sex				
Male	86.8%	97.2%	22.9%	14.4%
Female	87.9%	94.4%	14.8%	11.3%
Field of Study				
Arts & Humanities	81.0%	94.1%	17.7%	14.2%
Health Sciences	92.3%	96.7%	10.7%	6.0%
Other Engineering Technology	89.5% *	96.0%	26.2% *	14.3%
Electronic, Math & Computer Science	78.4% *	96.4%	16.6% *	13.3%
Mechanical & Structural Engineering Tech.	86.2%	97.3%	27.2%	16.8%
Natural Sciences & Primary Industries	85.1%	96.6%	22.5%	20.8%
Social Sciences and Services	89.7%	95.5%	15.4%	12.1%
Secretarial Sciences & Merchandising	88.9% *	94.6%	15.6% *	11.5%
Management & Administration	86.9%	95.3%	18.5%	13.9%
Miscoded	92.9%	92.7%	33.1%	16.4%
Province / Region				
Newfoundland	93.4%	96.5%	27.8%	21.7%
Prince Edward Island	87.9% *	97.2%	35.6% *	14.7%
Nova Scotia	91.8%	94.9%	21.3%	17.7%
New Brunswick	84.0%	97.9%	15.8%	19.6%
Quebec	85.9%	95.2%	13.6%	11.6%
Ontario	80.7%	95.5%	20.6%	12.4%
Manitoba	90.7%	96.7%	19.8%	12.0%
Saskatchewan	90.8%	96.0%	22.2%	11.5%
Alberta	93.1%	94.7%	9.8%	11.1%
British Columbia & Yukon	93.1%	96.0%	20.0%	13.1%
Northwest Territories	89.3% *	95.3%	0.0% *	12.6%

Why are fewer designated group members employed than other graduates?

Most categories of designated group graduates have lower participation rates and higher unemployment rates than other graduates. Before discussing the possibility of discrimination to explain these results, we explore some alternative explanations.

Visible Minorities

More visible minorities may have been visa students and therefore ineligible to seek work in Canada.

A larger proportion of visible minorities were indeed visa students. However, the employment rates for former visa students do not differ greatly from other students -- the employment and unemployment gap for visible minorities exists within both groups.

Since more visible minority graduates are former visa students and a higher proportion of visible minorities are recent immigrants, their language skills in English or French may lag those of other graduates.

To start with, the fact that those with foreign mother tongues or home languages have graduated from Canadian postsecondary institutions limits the validity of this proposition. Empirically, a slightly higher proportion of visible minorities do have mother tongues or home languages other than English or French. But again an employment gap exists between visible minorities and others in every category. In fact, the group with the highest employment rate is comprised of those with a mother tongue other than English or French who are not in a visible minority group.

Aboriginal Peoples

A greater percentage of Aboriginal Peoples may live in areas where jobs are scarce (e.g. reserves or other non-urban areas), thereby increasing their unemployment rate vis-à-vis groups who are concentrated in larger labour markets.

There may be some merit to this proposition, but it can't be readily tested with the National Graduates Surveys which only contain data at the provincial level. Remember that Aboriginal peoples graduates of universities, which tend to be in larger centres, have similar employment rates to other graduates.

Activity Limited

Those with severe activity limitations may be less employable than those with relatively minor limitations and could therefore account for much of the unemployment gap vis-à-vis other graduates.

One might argue, on the other hand, that if someone is able to complete postsecondary studies and look for work then they should be sufficiently able to perform a range of paid jobs. Never-the-less, we constructed an index based on

the number of activity limitations cited by respondents -- work, home, school and other -- and the presence of a long-term disability or handicap. While the participation rate tended to fall with the index of limitation, there was no clear correlation between the index value and the unemployment rate. Respondents who reported any level of activity limitation, according to this index, had higher unemployment rates than those with no limitations. Thus severity of limitation appears to have an impact on the participation rate, but merely the presence of any limitation triggers an increase in the unemployment rate.

In summary, no single factor that can be tested with the National Graduates Survey readily accounts for the elevated unemployment rates of graduates in most designated groups. To examine the possibility that hiring discrimination played a role in the elevated unemployment rates for these groups, we tested a model of the probability of being employed similar to the earnings model described in the previous section. Although the non-linear model used to estimate the probability of being employed is more restrictive than the linear model used to estimate earnings, it does allow us to test some of the same propositions.⁸

Similar to the earnings analyses, a model that doesn't allow for the differential treatment is compared to one that does. A statistical test is used to determine whether, overall, the designated group is rewarded differently in terms of the probability of employment. The target group identifier variable captures effects not explicitly included in the model and is therefore an indicator of systemic bias. Other variables in the model point to characteristics that are rewarded differently for members of the target group.

We tested the employment model on visible minorities versus others among university graduates, since they provided the largest sample size. Sample size was important, since we felt it appropriate to run separate models for men and women.⁹ The models estimated more substantial negative employment impacts for visible minority men than visible minority women.

For both men and women, the model estimated statistically significant overall employment rewards for visible minority versus other graduates. However for women, the effect was much smaller. Furthermore there was no single characteristic for which

⁸A logistic regression model was used to estimate the probability of employment versus unemployment. Due to the shape of the logistic function, the average probability does not decompose into the sum of the characteristics and residual components. Logistic regression employs a maximum likelihood estimator (MLE) that requires convergence criteria be met through successive iterations. We tested models for Aboriginal peoples and the activity limited, as well as visible minorities, but abandoned them when convergence could not be achieved within 500 iterations.

⁹There are two reasons to run models for each gender. First, the unemployment gap is smaller for women than men. Second, another study by the same authors (*The Gender Earnings Gap Among Recent Postsecondary Graduates, 1984-92*) indicates that women interact differently with the labour market than men.

visible minority women were rewarded significantly worse than other female graduates. The indicator variable for visible minority in the female model was negative but not statistically significant. Therefore the model provides scant evidence of hiring discrimination for visible minority women compared to other female university graduates.

In the male employment model, there were a number of significant negative factors. Visible minorities received lower employment returns to being married or divorced, to having a mother tongue other than English or French and, particularly, to graduating from science-based fields of study (Agriculture & Biology, Engineering, Medical & Other Health and Math & Physical Sciences). On the other hand, visible minorities received significantly higher employment returns to graduating with a PhD and having previous full-time work experience of greater than a year. The identifier variable was positive but not statistically significant. Thus evidence of differential hiring treatment is strongest for visible minority graduates of university science programs, with weaker language and marital status effects.

Given the results of the employment model, hiring discrimination cannot be ruled out as an explanation for the higher unemployment rates of visible minority university graduates -- particularly graduates of science programs. But it is hard to envision how a classical model of discrimination would produce the results presented in the paper. Employment and wage discrimination must be supported by an employer and customer preference for dealing with members of one group. Customer complicity is required, since non-discriminating employers should be able to hire members of the disadvantaged group at lower wages. Unless customers clearly prefer to deal only with discriminating firms, competitive forces would then work to the advantages of nondiscriminating firms -- eventually putting upward pressure on the employment rate and wages of the disadvantaged group. Why then would employment discrimination be focused on the graduates of science-based programs? And why would visible minority graduates be earning the same or more than other graduates when their unemployment rate is much higher?

An alternative interpretation is related to tacit hiring quotas¹⁰. If employers hire visible minority graduates in relation to their overall labour market representation, science graduates will be underrepresented. Remember that visible minorities receive a high proportion of science degrees in relation to their representation among university graduates and the population as a whole. Thus adherence to broadly defined quotas could have detrimental effects for visible minority graduates of science programs. That is not to say that blind adherence to hiring quotas does not constitute a form of discrimination -- particularly if quotas are treated as ceilings. However, if employers had discriminatory tendencies, one would expect to see it in differential earnings growth over time. This does not appear to be the case for visible minority university graduates.

¹⁰The authors are not aware of any explicit hiring quotas under Canadian legislation, but employers may well adopt tacit quotas if their employment equity performance is subject to legislative or quasi-judicial review.

We ran the same earnings model presented earlier, using data from the 1991 Follow-up of Graduates Survey. This survey was a re-interview of 1986 graduates **five** years after graduation. Overall, earnings for visible minorities were essentially the same as for other university graduates. Earnings for visible minorities were higher in all four of the science fields, significantly so in two of the fields -- Engineering and Medical & Other Health. In fact, this is what one would expect if visible minorities and others were being treated equally after being hired, since visible minority graduates who did make it in probably had better-than-average qualifications and perceived capabilities to begin with. Thus, on average, employers do not seem to discriminate against visible minority graduates already in their employ.

On the other hand, if employers were perfectly rational and non-discriminatory, one might expect that the high relative performance of visible minority graduates (assuming earnings are a measure of performance) would eventually result in increased hiring proportions for this group. This also, does not seem to be the case.

VII. Summary and Discussion

Throughout this report the results have been organized primarily by the type of analysis with the numbers for each designated group presented in succession. While some of the findings were similar for each group, there were some significant differences. Therefore, we thought it appropriate to conclude by summarizing and discussing all of the results for each group separately.

Visible Minorities

Visible minorities fared well in terms of their representation in the 1992 graduating class of Canadian universities and community colleges. Visible minorities comprised just over 10 percent of the graduates at each type of institution compared to their nine-and-a-half percent share of the 1991 population. At the universities, the representation of visible minorities increased with degree level -- from 10 percent at the undergraduate level to just over 19 percent at the PhD level. Members of visible minorities tended to be concentrated in science-based fields of studies at the universities, but the same pattern was not evident at community colleges.

The earnings of visible minority graduates did not differ greatly from the earnings of other graduates. Among full-time workers, visible minority university graduates earned an average of two percent more than other graduates; visible minority community college graduates earned two percent less. The relative earnings of visible minority university graduates fell with each step up in degree level -- from 102.5 at the undergraduate level to 98.7 at the masters level to 86.5 at the PhD level.

Even though the earnings of visible minorities were nearly the same as the earnings of other graduates, the possibility remains that they are rewarded differently in the labour market. Accordingly, we used a multivariate earnings model to estimate whether visible minorities were rewarded the same as other graduates. While the model results were statistically significant, the net effect accounted for less than one percent of average earnings. The effect was positive (i.e. better than others) for university graduates and negative for community college graduates. In terms of earnings, then, both the descriptive and multivariate analyses indicated negligible differences between visible minorities and other graduates.

In contrast to the earnings results, the employment patterns of visible minorities differ substantially from those of other graduates. Visible minorities have low participation rates and high unemployment rates relative to other graduates. These differences are evident for graduates of most fields of study and occur in most regions, the main exception being British Columbia. Since these results raise the possibility of hiring discrimination against visible minority members, we tested a multivariate model of employment (versus unemployment) for the university graduates. The model indicated

that for women, the employment differences between visible minorities and others were not that great. On the other hand, the model showed negative employment effects for visible minority men, particularly if they had graduated from science-based fields of study.

Several explanations for the high rate of unemployment for visible minorities were explored, none of which seemed fully satisfactory. Since the elevated unemployment rates were widespread, hiring discrimination based on employers' and customers' preferences may be a factor. But such a form of discrimination would probably lead to lower earnings for the disadvantaged group and that is not the case for visible minorities. An alternative explanation relates to tacit hiring quotas: if employers blindly hire visible minorities in relation to their population share, visible minority university graduates -- particularly in science-based fields -- will be underrepresented. While this explanation fits better with the earnings patterns, it too is not fully satisfactory. Longer term data indicate that earnings grow faster for visible minority graduates -- what one might expect given the statistically more selective hiring pattern. Why, then, wouldn't employers adjust their hiring patterns to reflect the better performance (assuming wage growth is a measure of performance) of visible minority employees? In all probability, some elements of discrimination and quota distortion contribute to the elevated unemployment rate of visible minorities. Unfortunately, the relative strength of these effects cannot be directly estimated with the NGS data.

Aboriginal Peoples

The representation rate of Aboriginal peoples is much lower among 1990 university graduates, at 1.2 percent, than among community college graduates, 2.8 percent. Both figures are lower than the Aboriginal peoples share of the 1991 population, 3.8 percent, and their share of the workforce, 3.0 percent. Among university graduates, the representation rate is particularly low for advanced degree holders. Provincially, Aboriginal peoples were best represented among the graduates of Saskatchewan and Manitoba universities. Two-thirds of the community college graduates in the Northwest Territories identified themselves as Aboriginal peoples.

Aboriginal peoples earned, on average, about the same as other graduates. The multivariate model estimated that Aboriginal peoples were not treated differently than other university graduates in terms of earnings. While there was a statistically significant effect for community college graduates, it amounted to only a tenth of a percent of the average earnings. Thus it would be hard to conclude that there is any discernible level of earnings discrimination for Aboriginal peoples in the class of 1990.

The employment situation is very different for Aboriginal peoples who graduated from universities than for those who attended community colleges. Among university graduates, Aboriginal peoples had a slightly lower participation rate and a slightly higher unemployment rate than others in their class. The unemployment rate for Aboriginal peoples was relatively high for men and those living in Saskatchewan and the Atlantic

provinces. Elsewhere in the country and among women, Aboriginal peoples had unemployment rates equal to or less than other graduates.

In contrast to the university graduates, there is a pervasive gap between the unemployment situation for Aboriginal peoples and other community college graduates. Overall, the unemployment rate for Aboriginal peoples is almost ten percentage points higher than for other graduates. This gap persists in all regions and within all fields of study except one (the combination of Electronics, Math, Computer Science and Other Engineering Technologies).

Why should the unemployment rate of Aboriginal peoples be so high compared to other community college graduates or Aboriginal peoples who graduated from universities? We can think of several possible explanations, none of which can be fully addressed with the NGS data. First, Aboriginal peoples graduates of community colleges may be more concentrated in non-urban areas, particularly reserves, with higher local unemployment rates than are other community college graduates. Unfortunately, the NGS does not contain the geographical detail to test this hypothesis. Aboriginal peoples graduating from universities may not be affected for several reasons. First, universities are usually located in larger centres with a greater range of job opportunities. Secondly, the number of Aboriginal peoples graduating from universities is so small in relation to the population that the demand for public sector professionals and administrators, even in rural locations, provides relatively more opportunities for this group. The NGS does have some evidence to support this: 63 percent of Aboriginal-peoples university graduates are employed in the public sector compared to 52 percent of other university graduates and 55 percent of Aboriginal peoples community college graduates.

The data do not allow us to overlook the possibility of hiring discrimination against Aboriginal peoples. However, the fact that Aboriginal peoples earn, on average, the same as other graduates limits this argument to some extent. It is also hard to argue that implicit quotas would dampen the employment opportunities for highly-qualified Aboriginal peoples, since their representation among postsecondary graduates is lower than their proportion of the population. Unfortunately, we were unable to fit a model of employment to shed any further light on this issue.

Activity Limited

We employ the term "activity limited" as opposed to "persons with disabilities" due to the differences in the screening sequences used in the NGS and the Employment Equity Data Program (see Appendix A.). The activity limited comprise just under four percent of 1990 university graduates and six-and-a-half percent of community college graduates. The Employment Equity Data Program estimates that persons with disabilities comprised seven percent of the total population in 1991 and six-and-a-half percent of the workforce.

Thus, if "activity limited" closely approximates "persons with disabilities", this group is underrepresented at universities and proportionately represented at community colleges. The only point that stands out in relation to the distribution of activity-limited graduates is the low representation rate among graduates of Quebec universities and community colleges.

Activity-limited university graduates earn about seven percent less than others in their class. The gap for community college graduates is only one-and-a-half percent. The earnings models did not generate any strong evidence of earnings discrimination towards activity-limited graduates.

Activity-limited graduates have lower labour force participation rates and higher unemployment rates than other graduates, with the differences being somewhat larger in the community college class. While the participation rate of activity-limited graduates was lower in all regions of the country and across all fields of study, the unemployment rate was not consistently higher. Activity-limited university graduates in several fields of study had lower unemployment rates than other graduates. In Alberta, the unemployment rates of activity-limited graduates of universities and community colleges were both lower than the rates of other graduates. In Manitoba, the unemployment rate of activity-limited university graduates was lower.

We explored the notion that the low participation rate and high unemployment rate of activity-limited graduates may be related to the severity of the limitation. While the participation rate falls off as a simple index of severity rises, the unemployment rate remains fairly constant. Although the results do not rule out hiring discrimination, some may argue that it is not so much discrimination as a perception of added employment costs that dampens the job opportunities for the activity limited. One might also suppose that the job search patterns may differ for the activity limited. In either case, public policy remedies may be appropriate since measurable costs are associated with providing increased access for persons with disabilities and providing any necessary assistance to increase the efficiency of their job search patterns. One might even examine whether there is a set of policies in Alberta that accounts for the relatively low unemployment rate of activity-limited graduates in that province.

Appendix A.

Identification Questions

<u>1992 NGS</u>	<u>Employment Equity Data Program</u>
<p style="text-align: center;"><u>Visible Minorities</u></p> <p>Canadians come from many ethnic, cultural or racial backgrounds; for example, British, French, North American Indian, Chinese, Black, Japanese or Greek. What is <u>your</u> ethnic or cultural background?</p> <p><i>Any single response or element of a multiple response corresponding to the following list was coded as a visible minority.</i></p> <ul style="list-style-type: none"> - Blacks - South Asians - Chinese - Koreans - Japanese - South East Asians - Filipinos - Other Pacific Islanders - West Asians and Arabs - Latin Americans 	<p style="text-align: center;"><u>Visible Minorities</u></p> <p>To which ethnic or cultural group(s) did this person's ancestors belong?</p> <p><i>Any single response or element of a multiple response corresponding to the following list was coded as a visible minority.</i></p> <ul style="list-style-type: none"> - Blacks - South Asians - Chinese - Koreans - Japanese - South East Asians - Filipinos - Other Pacific Islanders - West Asians and Arabs - Latin Americans <p>+ Ethnicity and Birthplace</p> <p>+ Mother tongue</p> <p>+ Ethnicity write-ins</p>
<p style="text-align: center;"><u>Aboriginal Peoples</u></p> <p>Identified through the ethnicity question</p> <ul style="list-style-type: none"> - North American Indian - Inuit - Métis 	<p style="text-align: center;"><u>Aboriginal Peoples</u></p> <p>Identified through the ethnicity question</p> <ul style="list-style-type: none"> - North American Indian - Inuit - Métis - Specific First Nation or Band Name

<u>Activity Limited</u>	<u>Persons with Disabilities</u>
<p>Are you limited in the kind or amount of activity you can do because of a long-term physical condition, mental condition or health problem, that is, one that has lasted or is expected to last six months or more.</p> <ul style="list-style-type: none">- at home?- at school?- at work?- in any other activities, such as transportation to or from work or leisure time activities? <p>Do you have any long-term disabilities or handicaps, that is, ones that have lasted or are expected to last six months or more?</p>	<p>Because of a long-term physical condition or health problem, that is, one that has lasted or is expected to last 6 months or more, are you limited in the kind or amount of activity you can do at work?</p> <p>Because of a long-term emotional, psychological, nervous or psychiatric condition, that is, one that has lasted or is expected to last six months or more, are you limited in the kind or amount of activity you can do at work?</p> <p>Do you feel limited by the fact that a health professional has labeled you with a specific mental health condition, whether you agree with this label or not - at work?</p> <p>Are you limited in the kind or amount of work you can do at your present (or a) job or business because of your condition or health problem?</p> <p>Are you limited in the kind or amount of work you can do at a job or business because of your condition or health problem?</p> <p>Does your condition or health problem limit the kind or amount of work you could do at a job or business?</p> <p>Do you believe that your current employer or any prospective employer would be likely to consider you disadvantaged in employment because of your condition or health problem?</p>

<u>Activity Limited (continued)</u>	<u>Persons with Disabilities (continued)</u>
	<p>Because of your condition or health problem would you require any of the following to be able to work?</p> <ul style="list-style-type: none">i) Human support such as: reader, oral or sign language interpreter, job coach personal assistantii) Technical aids and devices such as: voice synthesizer, telecommunications device for the deaf (TDD), infrared system, computeriii) Communication services such as: conversion of print to Braille, to audio tape, to enlarged printiv) Job redesign (modified or different duties)v) Modified hours or days or reduced work hoursvi) Accessible transportationvii) Other, please specify <p>Do you require modified features or arrangements at your workplace, such as ...</p> <ul style="list-style-type: none">i) Handrails, rampsii) Appropriate parkingiii) Accessible elevatoriv) Accessible workstationv) Accessible washroomsvi) Other, please specify <p>In the past five years, do you believe that because of your condition or health problem, you have been refused:</p> <ul style="list-style-type: none">(a) employment(b) a promotion(c) access to training programs, or(d) has your employment been terminated <p>Does your condition or health problem completely prevent you from working at a job or business?</p>

<u>Activity Limited (continued)</u>	<u>Persons with Disabilities (continued)</u>
	<p>Some people have encountered barriers which have discouraged them from looking for work. Could you think about your own situation and indicate which of the following situations might apply to you? Please answer yes or no to each of the statements.</p> <ul style="list-style-type: none"><li data-bbox="829 604 1328 674">i) You would lose some or all of your current income if you went to work.<li data-bbox="829 716 1365 825">ii) You would lose some or all of your current additional support such as your drug plan or housing if you went to work.<li data-bbox="829 867 1247 936">iii) Your family or friends have discouraged your going to work.<li data-bbox="829 978 1349 1012">iv) Family responsibilities prevent you.<li data-bbox="829 1054 1252 1123">v) Information about jobs is not accessible to you.<li data-bbox="829 1165 1344 1234">vi) You worry about being isolated by other workers on the job.<li data-bbox="829 1276 1256 1346">vii) You have been the victim of discrimination.<li data-bbox="829 1388 1256 1457">viii) You feel your training is not adequate.<li data-bbox="829 1499 1321 1533">ix) Lack of accessible transportation.<li data-bbox="829 1575 1122 1608">x) No jobs available.

Appendix B.

Industry and Occupation Coding

<u>Industry Description</u>	<u>Standard Occupation Classification (1980) Codes</u>
Managers	1111 - 1158
Managerial Related	1171 - 1179
Physical & Life Sciences	2111 - 2139
Architecture & Engineering	2141 - 2169
Math & Computer Science	2181 - 2189
Social Sciences & Religion	2311 - 2519
University Teaching	2711 - 2719
Other Teaching	2731 - 2799
Health Diagnosis	3111 - 3119
Nursing, Other Health	3130 - 3169
Arts & Recreation	3311 - 3379
Clerical	4110 - 4199
Sales	5130 - 5199
Service Occupations	6111 - 6199
Blue Collar	7113 - 9599
Not Specified	Less than 1111 or 9910 - 9919

<u>Occupation Description</u>	<u>Standard Industrial Classification (1980) Codes</u>
Primary Industries	001 - 092
Manufacturing & Construction	101 - 449
Transport, Communications & Utilities	451 - 499
Wholesale Trade	501 - 599
Retail & Consumer Services	601 - 692 & 911- 999
Finance	701 - 729 & 741 - 749
Insurance & Real Estate	731 - 733 & 751 - 761
Education	851 - 859
Health	861 - 866
Welfare & Religion	867 - 869 & 981
Services to Business Management	771 - 779
Public Administration	811 - 841
Not Specified	Greater than 999