



Analysis of Some Indicators of Economic Development of First Nation and Northern Communities

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EXECUTIVE SUMMARY

Background, Purpose and Scope

The Economic Development Branch of Indian and Northern Affairs Canada (INAC), as part of its mandate to deliver economic development programs, needs to develop a picture of the state of economic development in First Nations, Northern, and Inuit communities as well as of progress made in this area. Further, there is a need to identify the factors likely to enhance community economic development.

The purpose of this project was to build a consistent data set from available community data and select appropriate indicators of economic development and assess changes in these over time. Also, data permitting, community characteristics associated with economic development were to be identified. Lastly, future lines of inquiry were to be recommended.

To meet these objectives, INAC supplied census data that permit the measurement of progress by improved educational attainment, increased employment earnings, and increased employment. These census data are the ones used in this report. The population studied is that aged 15 and over.

Besides census data, INAC also supplied administrative data and excerpts from the Statistics Canada Business Register pertaining to the regions of interest. These other data were studied to see how they may assist in explaining the results obtained from census data and disclose the factors that enhance economic development.

Conclusions

1. Data

The data pertain to small areas with small populations and therefore suffer from suppression and rounding made to protect confidentiality. Moreover, in every census table there are gaps in the geographical coverage of specific communities. There are many areas for which there are data for a particular community in one census file but not in another. This affects both the accuracy of the aggregate results and the data at the community level.

In the aggregate, cancellation of errors by rounding up and down may render the sums over a number of communities approximately accurate, however, because of suppressions and non-responses, all sums are under-estimates. However, this report is concerned less with such under-estimated sums than with the detailed results at the community level.

It should be noted that the amount of suppression diminishes for data covering larger geographic areas. For example, national or provincial data will have less suppression than community level data.

At the community level, the magnitude of the errors varies according to the size of the populations involved. For a small population, the errors, expressed in per cent of the population, are relatively large, and more so when the population is sub-classified according to characteristics of a very small number of people.

2. Employment

Because the number of communities covered varies from one census date to another, the total employment numbers at any census date are not comparable to those of another census. However, the rates of employment growth between two census dates in a large number of communities covered at two census dates may be taken as indicative of the development of all communities, including those not covered in the census data.

This growth in employment must be compared with demographic growth. Employment growth is considered to be significant when it involves an increasing proportion of the population, either by increased participation in the labour market or by reduction in unemployment rates.

a. First Nation Communities

In 425 communities (77% of the total number), employment increased by 41.7 per cent from 1991 to 1996. In 432 communities (79% of the total number), employment increased by 7.8 per cent from 1996 to 2001. In 398 communities (72%), employment increased by 57 per cent from 1991 to 2001.

Thus there was strong employment growth in the 1991-96 period and the gains made were maintained in the 1996-2001 period but the rates of growth varied greatly across communities in each period. Significant employment gains were made by 73 per cent of communities in 1991-96 and 56 per cent in 1996-2001, the remaining 27 or 44 per cent showing significant losses. One-third of the communities showed significant employment growth in both periods.

b. Tribal Councils

With the inclusion of the Unaffiliated¹ communities included, Tribal Councils encompass the same population as the First Nation Communities. Because of their larger populations, the incidence of errors by rounding and suppression may be smaller in the case of Tribal Councils than in the case of their constituent communities. Therefore, the census data for Tribal Councils were studied to double-check the results for First Nation Communities.

For 70 (84% of the total number) Tribal Council areas and the Unaffiliated, employment increased by 16.7 per cent from 1996 to 2001. Exclusion of the Unaffiliated from the 1991 census data

¹Unaffiliated First Nations Communities are those that do not belong to Tribal Councils and generally consists of large Communities such as Akwesasne and Six Nations.

precluded a similar percentage growth calculation for the 1991-1996 and 1991-2001 periods.

The strong employment growth observed in 1991-96 and the weaker one in 1996-2001 do not correspond with the Canada-wide experience. For Canada as a whole, 1991 and later were recession years and 1996-2001 were times of stronger economic performance. That the opposite is observed in First Nations makes their experience in 1991-96 appear to be unique, and suggests that some non-economic factors could have been at work, such as growth in the First Nations' public sector and devolution.

c. Northern Communities.

In the North total employment growth was slower than in First Nations. Employment in 82 communities (57 per cent of the total number) increased by 16.1 per cent from 1991 to 1996. In 123 communities (85%) employment increased by one-tenth of one per cent between 1996 and 2001. In 85 communities (59%) employment increased by 14.6 per cent between 1991 and 2001. Analysis of this growth shows that it was unsatisfactory in the sense of not involving increasing proportions of the population. The percentage of communities showing some satisfactory growth was 52% in 1991-1996 and 60% in 1996-2001. Only 19 per cent of Northern communities showed satisfactory employment growth in both 5-year periods, 1991-1996 and 1996-2001.

3. Average Employment Income

The average employment income data available are those for 1995 and 2000 from the 1996 and 2001 censuses. These data were adjusted for inflation to obtain real average employment incomes.

a. First Nations

Notwithstanding mediocre employment gains in 1996-2001, there was an overall increase in the real average employment income. The regional distribution of real average employment income across communities is fairly equal, but the rate of growth is distributed unequally. Sixty-five per cent of communities and 77 per cent of Tribal Council areas showed increased real employment income; the rest showed decreases.

The averages do not seem to be greatly affected by the inclusion of earnings of non-aboriginals in the average real employment income of a community. Employment income differences between males and females are relatively small.

There is no relationship between growth in average employment income and growth in the number of persons employed.

b. Northern Communities

Average real employment incomes are higher in the North than in First Nations but their rate of

growth was smaller. The higher level appears to be affected by the inclusion of earnings of non-aboriginals. Differences between the earnings of males and females are relatively small among aboriginals, but not so among non-aboriginals.

There is no relationship between growth in average employment income and growth in the number of persons employed.

4. Educational Attainment

The data on highest achieved level of education are those from the 1996 and 2001 censuses.

First Nations and Northern Communities.

There were very small but positive changes in the achievement of completed post-secondary education between 1996 and 2001.

In 2001, those with post-secondary education are found primarily among non-aboriginals. The proportion of females with post-secondary education other than trades certificates is larger among both non-aboriginals and aboriginals. The distribution of persons at this level is very uneven between communities.

The changes in the proportion of people without a secondary school certificate or diploma show no relationship to either the growth rate of both average real employment income or the rate of growth of employment.

Further Lines of Inquiry

There are several additional lines of inquiry that may be pursued. First, sums of results at the community level may be compared with provincial level data that do not suffer by rounding and suppression for confidentiality reasons.

Second, other data such as information from Statistics Canada Business Register and administrative data on certificates of possession, indices of access to natural resources and remoteness of communities may help to identify factors that affect employment and income growth. This would apply primarily to First Nations Communities since most of the variables apply exclusively to these communities.

Third, data on INAC's economic development expenditures may also be prove to be helpful in explaining economic development in First Nations Communities. An analysis of these data will however first require a matching First Nations Communities with Tribal Councils. Further, it would be interesting to determine what lags if any exist between the provision of funds and economic development as measured by employment and income growth.

Fourth, it may be advantageous to consider the top and bottom 10 to 20 First Nations Communities that experienced economic growth or decline in both periods under study and consider their geographic location, size, self-governance and financial management. This may provide useful information for future studies.

Lastly, while statistical methods can be applied to determine how closely employment growth is related to the factors identified in these other data files, the exercise may not be promising. This is because exceptional employment growth in any community can be associated with any change, plus or minus, in average employment income and educational achievement. Consequently, it may be difficult to isolate specific factors of employment growth. That would certainly be the case if the employment growth observed in 1991-96 was unique and related more to growth in First Nations public sector. In-depth case studies that apply as much data as can be had to a small number of selected Communities may be more fruitful than statistical studies in providing an answer to what happened in that 5-year period.

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I. INTRODUCTION

Background

The Economic Development Branch of Indian and Northern Affairs Canada (INAC), as part of its mandate to deliver economic development programs, needs to develop a picture of the state of economic development in First Nations, Northern, and Inuit communities as well as of progress made in this area. Further, there is a need to identify the factors likely to enhance community economic development.

INAC has access to a number of statistical and administrative data banks that could potentially furnish insights into the extent and causal factors of First Nations, Northern and Inuit community economic development. These data need to be organised, linked, assessed and analysed in order that they may be applied to address community economic development issues. To this end INAC requested a report that provides a description of the data sources and their limitations, and analysis of the state and progress of economic development in First Nations, Northern and Inuit communities, possibly a section on the determinants of economic development in these communities and recommendations for further lines of inquiry.

Objectives

The objectives of this assignment are to:

1. Determine the extent to which data drawn from different sources can be cross-tabulated following mutually consistent coding;
2. Select indicators of community economic development and find the change in such indicators over time;
3. Data permitting, apply statistical methods suitable for identification of community characteristics associated with economic development;
4. Prepare a report on the state and progress of economic development in First Nations, Northern and Inuit communities; and
5. Recommend future lines of inquiry.

To meet these objectives, INAC supplied census data that permit the measurement of the communities' progress by improved educational attainment, increased employment earnings, and increased employment. These census data are the ones used in this report.

Besides census data, INAC also supplied administrative data and excerpts from the Statistics Canada Business Register pertaining to the regions of interest. These other data have been studied to see how they may assist in explaining the results obtained from census data and disclose the factors that enhance economic development. The present report deals with progress in education, average employment income, and employment. The population studied is that aged 15 and over. Henceforth, "population" should be read as "population 15+."

II. DATA SOURCES

INAC provided community level census data relating to population, education, labour force, employment, and employment earnings spread over 14 files according to census year and subject. The census years are 1991, 1996 and 2001. The subjects are employment and labour force participation, employment incomes, and highest level of education achieved. These three types of data are compared over time and across communities.

The population covered by the community level data includes a large number but not all First Nations and Northern communities. Northern communities include those in Labrador, Northern Quebec, and the three territories, some of which are rather large, such as Chibougamau, Whitehorse and Yellowknife. The locations of First Nation communities range from Prince Edward Island to British Columbia and reach up to Inuvik. However, no First Nation communities are included in the data and analysis of Northern Communities. There are two data sets for First Nations. In one they are classified by community and in the other under Tribal Councils. The latter has a category of “Unaffiliated” that in the 2001 Census Employment Data comprised a population of 57,720 in a total of 207,720 of persons aged 15+. The Unaffiliated include a number of important and large First Nation Communities, such as Akwesasne and Six Nations, that are not shown in the data classified by community.

Two questions can be considered regarding the Census data: (1) the reliability of the Census figures, and (2) technical issues derived from the retrieval of the Census data.

Data Reliability

Questions arise regarding the reliability of Census data for First Nations, because of the fact that some First Nation communities have chosen to not participate in some Censuses and the potential for under-reporting. According to Statistics Canada's 2001 Census, there are 212,465 persons 15 years or over living on reserve, of which 181,205 are Aboriginal and 172,080 are North American Indian. There were 30 First Nations which did not participate in the 2001 Census, with estimated missed populations of 30,000 to 35,000. According to the Indian Register maintained by Indian and Northern Affairs Canada, as of December 31, 2001, there were 263,027 registered Indians living on-reserve aged 15 and over Canada-wide. Persons that are not registered Indians may live on reserve but are not included in the registry. While the differences seem large in the aggregate, as between 263,000 and 172,000, it must be observed that the two aggregate figures are not strictly comparable.

The Census and the Indian Register serve very different purposes. As a result, their counts are not directly comparable. Differences include: (1) differences in timing, with the Census conducted on May 15, 2001 (earlier in some remote communities) and the Indian Register count taken as of December 31, 2001; (2) there are reporting lags for births and deaths in the Indian Register; (3) the Census is a self-reporting enumeration process which produces a domestic count of Aboriginal and non-Aboriginal people present in Canada on Census day, while population counts for Registered

Indians from the Indian Register are based on the registration of individuals who meet criteria established by the Indian Act; (4) the Indian Register operates on the basis of affiliation to registry groups rather than geographic location, so its classification of individuals as on- or off-reserve may not be current; and (5) published census counts do not include the institutional population.

Technical issues regarding the Census data

The census data are public use data retrieved by INAC. As such, they have two principal limitations. The first derives from the fact that they pertain to small population groups. The second resulted from INAC's selection of data extracted from the census. These two limitations are discussed only in general and briefly below, leaving the details to appear later when necessary.

To preserve confidentiality of public use data pertaining to census respondents in small areas, some data have been suppressed and all other were rounded to the nearest multiple of 5. In consequence, sums of data do not equal their parts, and the results of computations with such data must be regarded as indicative without expecting them to be exact. Data compiled at the provincial level are not subjected to suppressions for confidentiality reasons, and therefore may be consulted to assess the accuracy of aggregated results obtained from community level data

Inaccuracies caused by data suppression and rounding are major when small numbers of people are classified and sub-classified into tiny groups. For example, in the 2001 Census in one First Nation community, where the non-aboriginal population and employment is given as zero, the data show the number of aboriginals employed at census time as 20, consisting of 10 males and zero females. Further, total employment of aboriginals and non-aboriginals is given as 10 males and 10 females, with the total shown as only 15.

To enable the assessment of progress over time, INAC retrieved community level data from the 1991, 1996 and 2001 censuses. However, the geographical areas covered by each census are not the same in every case. Because of confidentiality concerns or other reasons, there are several areas for which there are no data from one, two or all three censuses. There are population data for 549 First Nation Communities. For these 549, there are employment data for 382 of them in all three censuses of 1991, 1996 and 2001, and 263 of them are represented in all 1996 and 2001 census data sets about employment, employment income and education. Similarly only 68 of 85 Tribal Councils and 89 of 144 Northern communities appear in the 1996 and 2001 census files of labour force activity, education, and employment earnings.

Moreover, the depth of detail available, and the coding of geographical areas vary from one census file to the other. To facilitate comparisons over time and ensure their accuracy the geographical areas had to be recoded and the non-comparable details discarded. A spreadsheet file was prepared with the main census data arranged in a way that facilitates linking data across years and dimensions.²

²See attached spreadsheet files on diskette.

III. EMPLOYMENT

Employment growth is generally taken as an indicator of economic progress. It is an important indicator of progress, because jobs are not created easily. However, in a growing population, employment data taken by itself is not an unambiguous indicator because employment can grow at the same time as the unemployment rate. For example, if the unemployment rate rises from 10 to 20 per cent while the number of people willing and able to work rises from 100 to 200, then the number of jobs goes from 90 to 160 and the number of unemployed quadruples from 10 to 40. Moreover, the change in the unemployment rate is also insufficient as an indicator because it can fall for disappointing reasons. It can fall when discouraged people stop looking for work and cease to participate in the labour market, that is when the labour force participation rate falls. Thus one needs to look at both unemployment and participation rates to find progress in employment growth.

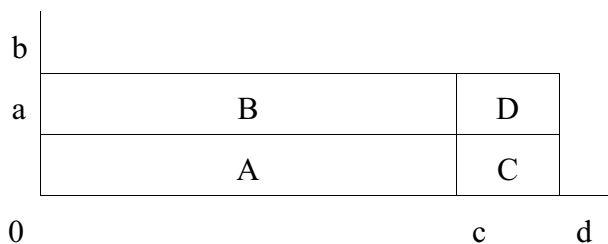
Because of deficiencies with employment growth as an indicator of economic progress, this study also applies an attribution approach to enhance understanding of the progress that has occurred. In this approach, participation and unemployment rates are related to employment by this formula:

$$\text{Number of employed persons} = N \times p \times (1 - u)$$

where N is the population above the age of 15, p is the rate of participation in the labour force, and u is the unemployment rate. Based on this formula one can attribute employment growth by computing the growth of four parts:

1. the rate of growth of the employable population, N ,
2. the change in the participation rate p ,
3. the change in the unemployment rate u , and
4. a remainder attributed by the interaction of the first three.

The logic of this decomposition of employment change can be illustrated by a change in the labour force. In the diagram below, population age 15+ is measured horizontally, and the participation rate vertically.



Starting with a population $0c$ and a participation rate $0a$ one gets a labour force represented by the rectangle A. If next population increased by cd and the participation rate by ab , then B is the addition to the labour force attributed to increased participation and C is the addition to the labour force due

to demographic growth. Finally, the rectangle D represents the labour force increase attributed to both at once.

The decomposition of employment growth can then be applied to assess progress in employment growth. The suggested criterion is that there was progress when the number of jobs attributed to changes in both the participation and unemployment rates has grown. In such a case the benefits of job creation reached a larger number of an existing population, and the employment attributed to population growth would have happened as well.

In the terms of the diagram above, the growth measured by B is deemed significant. When population also grows then, if one finds B one knows that there is also C and D.

By requiring only a positive combined *change* in the participation and unemployment rates, the suggested criterion for progress in job creation is a weak one. Stronger criteria that require an *increase* in the participation rate and/or a *decrease* in the unemployment rate would rule out progressive situations. For example, improved prospects of a community may encourage a labour market participation so high that there is a temporary *rise* in the unemployment rate and yet total employment increases. In another case, a reduction in the unemployment rate can raise total employment sufficiently to enable some workers to *reduce* their participation in favour of full-time schooling, full-time homemaking, or retirement.

Data drawn from the 1991, 1996, and 2001 censuses permit computation of the four factors listed above for varying numbers of First Nation and Northern communities.

It should be noted that the attribution approach does not suggest causality (e.g. that population growth led to employment growth); rather, the attribution approach simply provides a technique for understanding progress related to employment over time.

First Nation Communities

The Census figures show a growth of total employment in First Nation communities by 41.7 per cent from 1991 to 1996 and by 7.8 per cent from 1996 to 2001. These figures include both women and men, and a relatively small number of non-aboriginals. The results of the analysis of the sources of this employment growth are summarised in Table 1.³

³ The table summarizes community-level details provided in a separate spreadsheet attached to this report. The employment numbers reported here are not census results but were derived from census figures for population aged 15+, participation rates, and employment rates. The differences with census employment results are insignificant in the aggregate. The sum of results for 1991-96 and 1996-2001 does not equal the results for 1991-2001 because of the different numbers of communities involved.

Table 1 shows that during the 1991 to 1996 period 425 First Nation Communities enjoyed progress in job creation because there were both increased labour force participation and reduced unemployment rates. In 1996, 3,787 jobs were held by people who previously had not been in the labour force, and 1,353 gained jobs thanks to reduced unemployment rates.

In the next five years from 1996 to 2001 the employment in 432 communities increased by another 7.8 per cent, but the net effect of changes in participation and unemployment was negative. A gain of three-tenths of one per cent can be attributed to reduced unemployment rates, but a minor reduction in the participation rate augmented by its interaction with population growth caused a reduction in the proportion of the population aged 15+ that was employed. That is shown in the same Table 1 by the 8.2 per cent increase in the population aged 15+ against the 7.8 per cent increase in the number of employed persons.

Table 1: SOURCES OF EMPLOYMENT GROWTH --- SUMMARY					
		F.N. COMMUNITIES			T. C.s
		1991 to 1996	1991 to 2001	1996 to 2001	1996 to 2001
		<i>Number of jobs</i>			
Number of communities		425	398	432	71
Initial number of jobs in the above number of communities		45,895	42,290	67,350	68,945
Change in the above		19,140	24,120	5,255	11,525
Due to:	Population growth	11,970	16,727	5,541	10,736
	Increased participation	3,787	3,744	(43)	(310)
	Reduced unemployment	1,353	1,538	232	952
	Residual interaction	2,030	2,111	(475)	147
		<i>in per cent of the initial number of jobs</i>			
Rate of employment growth		41.7	57.0	7.8	16.7
Due to:	Population growth	26.1	39.6	8.2	15.6
	Increased participation	8.3	8.8	0.0	-0.4
	Reduced unemployment	2.9	3.6	0.3	1.4
	Residual interaction	4.4	5.0	-0.7	0.2

The improvement during 1991-96 was maintained through 1996-2001 but not repeated. Moreover, the size of the differences in the percentage rates of employment growth between 1991-96 and 1996-2001 is so great that it may seem that the 1991-96 experience was unique. The available data will not explain the uniqueness of the 1991-96 period. Consequently, the growth experienced in 1991-96 may be related to other factors such as growth in First Nation public services with devolution.

Tribal Councils.

Tribal Councils and the unaffiliated encompass the same population as the First Nation Communities but, by being fewer in number and containing larger population groups, they may furnish data that are less error prone and so it is worthwhile to check the Communities' results against those of the Councils. However, because the 1991 data exclude the large number of Unaffiliated Communities from the total under Tribal Councils and Unaffiliated, the comparison of results cannot be made for the 1991-96 period.

Total employment in 71 Tribal Council and Unaffiliated areas grew by 16.7 per cent from 1996 to 2001. The sources of this growth are shown in the last column of Table 1. One finds there net additions to jobs by reduced unemployment (1.4 per cent) that exceed the number lost to reduced participation (0.4 per cent), so that total employment could rise faster, by 16.7 per cent, than population which rose at 15.6 per cent over that period. In relative terms, 93 per cent of employment growth can be attributed to population growth alone.

Regardless of whether one is guided by the Community or the Council numbers, one may say that from 1996 to 2001 nearly all employment growth can be attributed to population growth and not to changes in unemployment and participation rates, factors which are more closely associated with the economic progress of a given population.

Northern Communities

The North presents a different picture. Total employment rose by 16.1 per cent from 1991 to 1996, and by one-tenth of one per cent from 1996 to 2001 (Table 2 and Note 3). Falling labour force participation and its interaction with the other factors made employment growth fall behind population growth in both five-year periods.

Over the years 1991 to 2001, and in 85 (59%) of the Northern communities, the effect of reduced unemployment rates was beneficial: it can be credited with 566 jobs over ten years. However, reduced participation rates account for a reduction of 3,828 in the number of persons employed. In all, only 8,230 jobs were created even though the growth in the population could have produced 11,843 jobs without any change in unemployment and participation rates.

Table 2: SOURCES OF EMPLOYMENT GROWTH SUMMARY FOR NORTHERN COMMUNITIES				
		1991 to 1996	1991 to 2001	1996 to 2001
		<i>Number of jobs</i>		
Number of communities		82	85	123
Initial number of jobs in the above number of communities		49,190	56,170	60,645
Change in the above		7,905	8,230	85
Attributed to:	Population growth	11,795	11,843	(469)
	Increased participation	(2,904)	(3,828)	(363)
	Reduced unemployment	(268)	566	922
	Residual interaction	(716)	(351)	(5)
		<i>in per cent of the initial number of jobs</i>		
Rate of employment growth		16.1	14.6	0.1
Due to:	Population growth	24.0	21.1	-0.8
	Increased participation	-5.9	-6.8	-0.6
	Reduced unemployment	-0.5	1.0	1.5
	Residual interaction	-1.5	-0.6	0.0

Disparities in Employment Growth

Over the ten years considered, the criterion for progress applied here was met by First Nation Communities and not by Northern Communities. However, the experience of individual communities in each of the two larger groups has been quite varied. Some communities showed progress while other ones did not; some progressed in one 5-year period and not in the other; and many progressed in both periods.

Seventy-two per cent of First Nation Communities showed employment gains by increased labour force participation and decreased unemployment rates between 1991 and 1996 and another 56 per cent showed a similar gain in 1996-2001. In the North the number of such communities was 52 per cent of the total reporting in 1991-96 and 60 per cent in 1996-2001 (Table 3). In many cases the same conditions ruled in both periods. Change in labour force participation and unemployment rates

increased employment in both 1991-1996 and 1996-2001 in 138 Southern and 19 Northern communities. This failed to happen in 83 Northern communities and 300 Southern ones.

Table 3: FREQUENCY OF SIGNIFICANT EMPLOYMENT CHANGES						
	F. NATIONS		T. C.s		NORTH	
	1991 to 1996	1996 to 2001	1991 to 1996	1996 to 2001	1991 to 1996	1996 to 2001
Number of communities covered	425	432	0	71	82	123
Cases of employment growth by change in p and u	308	240	---	45	43	74
Cases of reduced employment by change in p and u	117	192	—	26	39	49

Table 4: COMMUNITIES RANKED BY SIGNIFICANT EMPLOYMENT GROWTH							
Rank		Growth rate		Rank		Growth rate	
91-96	96-01	91-96	96-01	91-96	96-01	91-96	96-01
FIRST NATION COMMUNITIES				NORTHERN COMMUNITIES			
1	n.a.	201.2	n.a.	1	107	55.7	-8.4
2	75	200.0	27.4	2	n.a.	52.5	n.a.
3	189	158.3	6.1	3	117	39.1	-20.9
4	n.a.	155.6	n.a.	4	97	33.9	-6.8
5	432	150.2	-60.3	5	104	27.5	-7.8
6	340	127.5	-14.6	6	48	23.6	6.5
7	13	126.4	72.9	7	92	18.2	-4.5
8	35	124.6	47.7	8	16	16.1	19.1
9	n.a.	119.8	n.a.	9	19	15.9	17.6
10	141	115.7	13.7	10	77	15.3	-0.2
416	n.a.	-49.9	n.a.	73	88	-17.7	-2.4
417	253	-50.6	-0.5	74	98	-18.3	-6.9
418	291	-51.5	-6.0	75	57	-22.0	3.5
419	372	-53.3	-22.4	76	121	-22.5	-27.8
420	399	-66.1	-30.4	77	53	-24.1	4.6
421	80	-66.7	26.3	78	26	-24.2	14.1
422	370	-67.3	-20.7	79	56	-27.4	3.6
423	397	-69.1	-30.0	80	86	-37.2	-2.2
424	300	-81.3	-6.9	81	106	-41.0	-7.9
425	n.a.	-107.9	n.a.	82	49	-55.6	5.8

Table 4 shows an extract from an appendix file where communities had been sorted by the percentage rate of growth of employment attributable to both participation and unemployment rate change in 1991-96, and their ranks are compared with their new ranks in 1996-2001.⁴ The rankings change significantly from one period to the next, but many of those first ranked at the bottom tend to remain there.

Comparison with Canada as a whole --- Year 2001

While unemployment rates had been falling and participation rates rising, these are different from those in Canada as a whole.

Table 5 shows that the differences between participation rates of women are smaller than those for men. That they are lower in First Nation communities than in Canada as a whole may be due to emigration from the communities in search of jobs elsewhere, and to the inclusion of teenagers in the labour force, who may be relatively larger in number in First Nation Communities than elsewhere. The high participation rates of non-aboriginals in the North can be attributed to the fact that they migrated there in search of jobs and return South for retirement at the latest, if not earlier for schooling of teenagers.

Table 5: PARTICIPATION AND UNEMPLOYMENT RATES --- 2001 CENSUS				
		Canada	First Nation Communities	Northern Communities
<i>Participation Rates (in per cent of the population aged 15+)</i>				
Aboriginals	Males	61.4	55.7	65.0
	Females	56.5	47.3	59.6
Non-aboriginals	Males	72.9	64.8	83.4
	Females	60.6	54.9	74.2
<i>Unemployment rates (in per cent of the labour force)</i>				
Aboriginals	Males	19.1	33.2	26.2
	Females	9.4	10.3	17.5
Non-aboriginals	Males	7.2	10.5	9.5
	Females	4.2	5.7	7.3

⁴ The appendix file is a spreadsheet on diskette.

The differences between unemployment rates are also smaller for women than for men, in Canada as a whole and in First Nation communities. In the North, the unemployment experience of women is comparatively worse than that of men.

IV. EMPLOYMENT INCOME

Employment income data from the 1996 and 2001 censuses, for the years 1995 and 2000, were received in the following column classifications of Northern communities in Quebec:

For all other areas, the 1996 data show only a number of employed persons of both sexes and the corresponding average employment income. For Northern communities in Quebec, the only data comparable with those of all other communities are the average employment income of persons not in full-time school attendance in 1996 and the average employment income of all persons in 2001. Inclusion of incomes of persons in school in 2001 or in school but not in Quebec in 1996 may cause error in the measured trend of employment incomes. In all cases, the earnings of non-aboriginals are included with those of aboriginals in the calculation of the average employment income.

Table 6: EMPLOYMENT INCOME DATA AVAILABLE FOR NORTHERN COMMUNITIES IN QUEBEC				
1996 CENSUS			2001 CENSUS	
Number of persons employed	All employed persons	Total - Both Sexes	Average employment income --- all persons	Total - Both Sexes
		Female		Female
		Male		Male
	Not attending school full-time	Total - Both Sexes	Aboriginal Population	Total - Both Sexes
		Female		Female
		Male		Male
Average employment income	All employed persons	Total -Both Sexes	Non-Aboriginal Population	Total - Both Sexes
		Female		Female
		Male		Male
	Not attending school full-time	Total -Both Sexes		
		Female		
		Male		

As a first step, for measure of progress by comparison over time, employment income data were adjusted for inflation using the Statistics Canada Consumer Price Index (all items, 1992 = 100) for 1995 (index number 104.2) and for 2000 (index number 113.5).⁵

As a second step, *real* average incomes were calculated to obtain the average incomes of workers scattered over numerous areas. The appropriate weights of individual incomes are the numbers of persons reporting the incomes that were averaged. For the 1995 incomes in the 1996 census, those weights are total numbers not attending school full-time. As no comparable datum was available for

⁵ Published in <http://www.statcan.ca/english/Pgdb/econ46.htm> on August 19, 2003.

the year 2000 from the 2001 census data supplied, the proxy weights are the numbers reporting employment in the 2001 census period filed in labour force and employment data.

First Nation Communities

Real average employment incomes weighted by numbers of earners are shown in the first row of Table 7. The remaining rows summarize the differences observable across the various First Nations Communities and Tribal Councils covered in the Census data.⁶

The average real employment income in a community is a simple average of the values for all communities, without regard to the sizes of the communities and the number of employed persons in each. The average real employment income of a person is computed considering the number of persons earning employment income; it is the average for all persons in all communities.

Table 7: REAL EMPLOYMENT INCOME CHANGE SUMMARY FOR FIRST NATIONS						
	F. N. COMMUNITIES			TRIBAL COUNCILS		
	1995	2000	Change	1995	2000	Change
	1992 dollars per year		per cent	1992 dollars per year		per cent
Avge. real employment income of a person	15,960	17,753	11.2	15,866	17,356	9.4
Average real employment income in a community	14,692	15,485	8.7	14,968	15,871	7.7
Dispersion of community average	4,468	4,670	21.6	3,546	3,898	13.6
Number of cases:						
---Cases of employment income	307	315	270	80	73	69
---Cases showing increases	--	--	175	--	--	53
---Cases showing decreases	--	--	95	--	--	16

The average real employment incomes of persons exceed the comparable averages for communities. For example, in 2000, the resident of an average First Nation Community earned 15,485 real dollars per year, but the average employed person earned 17,753 real dollars. The difference suggests that

⁶ This description applies also to Table 8, as well as to all other tables below that report a summary of results.

employment incomes are higher in areas where larger numbers of people are employed, especially non-aboriginals.

The dispersion of average earnings in communities is a measure of inequality. It shows the range around the community average that embraces 84 per cent of the communities.⁷ Considering again Communities in the year 2000, the dispersion of 4,670 dollars means that in about 42 per cent of Communities the average income is between 10,815 and 15,485 dollars, in another 42 per cent of cases it is between 15,485 and 20,155, and in the remaining 16 per cent it is either under 10,815 or over 20,155. Thus 84 per cent of the Communities had average employment income within 30 per cent of the average for all Communities. That measure of inequality in the regional distribution of average employment income may be regarded as modest.

However, the income change over time is very unequal. The dispersion of the rate of growth of employment income is a multiple of the average rate of growth because there were a number of decreases at the same time as a number of large increases. The rows in Table 6 below the dispersion row show the frequency with which employment income was reported and the number of areas showing increases or decreases. Overall, 175 or 65 per cent of the 270 communities for which there are census results for both 1996 and 2001 showed an increase in their average real employment income and the remaining 35 per cent suffered a decrease. For the average community, average employment income increased 8.7 per cent but for 84 per cent of Communities the change ranged from -12.9 to +30.3 per cent.

The percentage change in employment attributed to change in participation and unemployment rates in three communities where average employment income increased by more than 80 per cent were 25%, 36%, and 43%, while in four other communities where employment decreased by more than 40 per cent, average employment incomes changed by +6%, -31%, +1%), and -30%.

Tribal Councils

The change in employment income under Tribal Councils is shown in the same Table 7 for comparison with the Communities that embrace the same population. Differences in the results for Tribal Councils and Communities have three main causes: a lesser incidence of errors by rounding and data suppression in the Case of Tribal Councils, greater participation in the Census by Tribal Councils as suggested by the correspondingly larger population, and the effect of averaging over larger areas. The latter shows in the somewhat smaller difference between average real employment incomes of persons and average real employment incomes in communities. By including Communities where incomes rise and fall, the Tribal Councils show the smaller dispersion, both in the incomes of the year and in the rate of growth.

⁷ That is, if average real incomes in communities are distributed in the shape of a bell curve, then 84 per cent of the communities are within the average over all communities, plus or minus the dispersion; and 97 per cent are within the average plus or minus 2 times the dispersion.

Average real employment income increased by 54 per cent in one Tribal Council area and by 30 per cent in three other ones. Decreases of more than 19 per cent were in three other areas.

In Chart 1 each dot represents a community and its position shows the corresponding percentage changes in employment and in average real employment income, the change in employment being that attributable to change in participation and unemployment rates and measured in per cent of the total employment in 1996. The chart shows that the observations are so scattered that one cannot infer any correlation between employment and average employment income changes.⁸ That is to be expected, because workers are attracted by increased wages but employers would rather hire at lower wages.

Table 8: EMPLOYMENT INCOME CHANGE SUMMARY FOR NORTHERN COMMUNITIES			
	1995	2000	Change
	1992 dollars per year		per cent
Avge. real employment income of a person	26,588	27,940	5.1
Avge. real empl. income in a community	21,139	20,782	2.3
Dispersion of community average	7,678	5,983	16.1
Number of cases:			
---Cases of employment income	80	78	76
---Cases showing increases	--	--	57
---Cases showing decreases	--	--	19

Northern Communities

Table 8 shows levels and changes in average real employment incomes in Northern communities. These were higher to begin with but increased by a smaller percentage. Compared to First Nations, the dispersion decreased from 36 per cent in 1995 to 28 per cent in 2000 and so there seems to have

⁸ All correlation coefficients computed with the data in this and subsequent charts are sufficiently close to zero to be statistically insignificant.

been a trend towards greater equality. However, the dispersion of the rates of growth is a larger multiple of the average rate of growth than in the case of First Nations. That makes it seem that employment income in low income communities rose a lot and not so much in high income communities.

Among Northern Communities, average real employment income increased in 57 or 75 per cent of all Northern communities where employment income was reported in both 1996 and 2001.

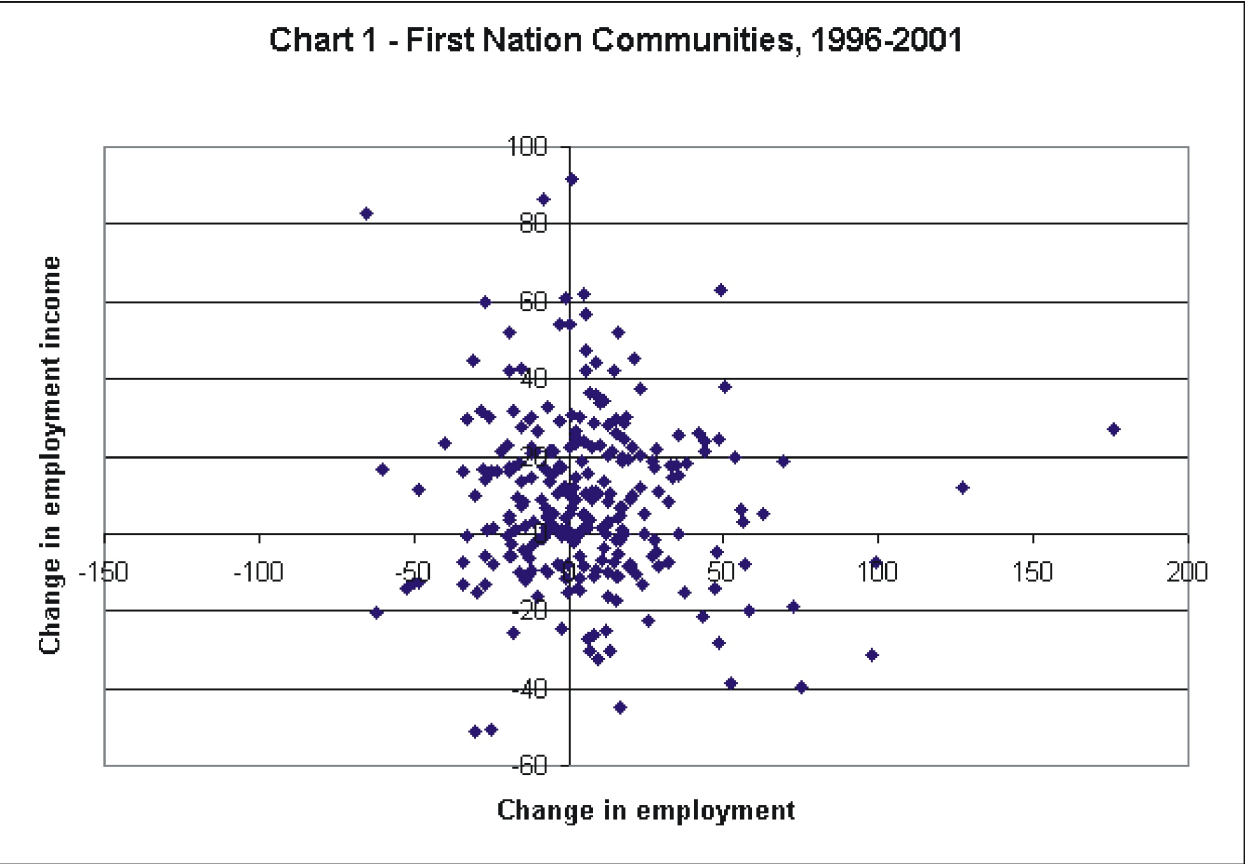
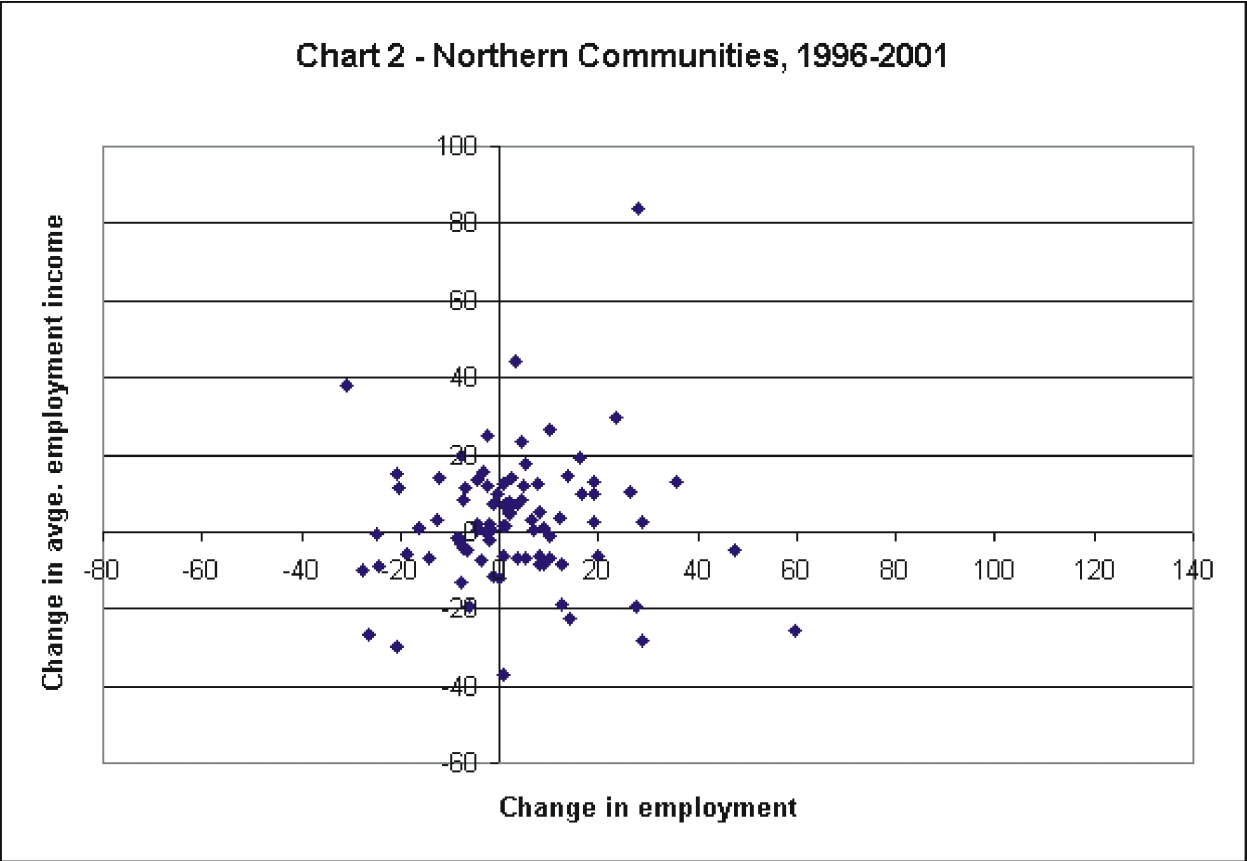


Chart 2 shows that in the North, as in First Nations, there is no correlation between percentage change in employment by change in participation and unemployment rates, and the percentage change in real average employment income during the 1996-2001 period.



Employment earnings by aboriginal status and sex in 2000.

The 2001 Census data on average employment earnings were sub-classified by aboriginal or non-aboriginal status, and each of these by sex. Table 9 shows the income differences between the four groups. These data show also that the presence of non-aboriginals raises the level of the average income but does not necessarily affect the rate of growth.

Table 8 shows that, in First Nation Communities the non-aboriginals are fewer than one-third in number than the aboriginals. It also shows that their average earnings are higher but, because they are in a minority, their earnings do not affect the average for the Communities very much. Whereas in 2000 a person earned on average 17,753 real dollars (Table 6), a male aboriginal earned on average 91 per cent of that (\$16,219).

Also, there is less inequality among aboriginals than among non-aboriginals, as shown both by the different relative sizes of the dispersions that indicate regional inequality, and the relatively smaller differences between the earnings of aboriginal men and women compared to those between non-aboriginal men and women. However, an aboriginal earned on average \$16,219, which is less than the average for aboriginals in a community (\$17,169). That indicates that the earnings of aboriginals are lower where they are employed in larger numbers. Average employment incomes of aboriginals in First Nation communities are also lower than the average employment incomes of aboriginals elsewhere in Canada, and more so for men than for women. The comparable figures in 1992 dollars for average employment incomes of aboriginals in Canada as a whole are \$21,780 for men and \$15,822 for women.⁹

Table 9: EMPLOYMENT INCOME --- 2001 CENSUS SUMMARY FOR FIRST NATION COMMUNITIES				
	Aboriginal		Non-aboriginal	
	Male	Female	Male	Female
	<i>in 1992 dollars earned in 2000</i>			
Number of persons	31,215	30,495	9,020	7,685
Avg. real employment income of a person	16,219	14,700	33,469	23,110
Avg. real empl. income in a community	17,169	15,473	34,052	26,779
Dispersion of community average	4,724	3,676	11,935	10,153
Number of cases	313	314	110	99

Except for the last, these observations apply equally to Tribal Councils (Table 10); and most do not apply to Northern communities (Table 11).

In the North the aboriginals represent about 36 per cent of all earners and so the average employment income in a Northern community can be affected by the earnings of non-aboriginals. Similar to First Nation Communities and Tribal Councils, in the North also there are smaller differences among aboriginals than among non-aboriginals. As measured by the dispersion in ratio to the community average, the earnings differences among aboriginals are smaller than for non-aboriginals. As measured by the real average earnings per person, the real average earnings of aboriginal women (\$16,130) are 89 per cent of those of aboriginal men (\$18,067), whereas the earnings of non-aboriginal women (\$25,411) are 71 per cent of those of non-aboriginal men (\$35,906).

⁹The corresponding figures for non-aboriginals, Canada as a whole, are \$34,085 and \$21,638.

**Table 10: EMPLOYMENT INCOME --- 2001 CENSUS
SUMMARY FOR TRIBAL COUNCILS AND UNAFFILIATED**

	Aboriginal		Non-aboriginal	
	Male	Female	Male	Female
	<i>in 1992 dollars earned in 2000</i>			
Number of persons	33,575	32,690	9,105	7,705
Avge. real employment income of a person	18,067	16,130	35,906	25,411
Avge. real empl. income in a community	16,340	13,745	29,972	23,303
Dispersion of community average	3,568	2,850	9,931	9,366
Number of cases	73	73	56	52

**Table 11: EMPLOYMENT INCOME --- 2001 CENSUS
SUMMARY FOR NORTHERN COMMUNITIES**

	Aboriginal		Non-aboriginal	
	Male	Female	Male	Female
	<i>in 1992 dollars earned in 2000</i>			
Number of persons	13,110	13,560	25,710	21,625
Avge. real employment income of a person	22,034	18,899	43,782	29,623
Avge. real empl. income in a community	21,076	17,148	43,024	32,922
Dispersion of community averages	4,465	5,314	10,678	10,372
Number of cases	97	97	94	91

V. EDUCATIONAL ATTAINMENT

General

Education and training are believed to be associated with employment and income growth. The census data permit some assessment of the change in achieved levels of education. Table 12 shows the various educational characteristics of the population extracted from 1996 and 2001 census data.

The classifications of the population by educational characteristics tabulated in the data files are evidently quite different. Fewer characteristics are considered in the 2001 file. However, the 2001 data are sub-divided by aboriginal and non-aboriginal status, and each of these by male and female.

In both sets of data the small numbers of persons with post-secondary education suffer the proportionately larger measurement errors that arise by rounding to the nearest multiple of 5 and by suppression of confidential data. The sub-classification by aboriginal status and sex made with the 2001 data increases the incidence of rounding errors and suppressions.

Table 12: AVAILABLE CENSUS DATA RELATING TO EDUCATION	
1996 CENSUS	2001 CENSUS
Total	Total
Subtotal - Less than grade 9	
--No schooling or kindergarten only	
--Grades 1-4	
--Grades 5-8	
Subtotal - Grade 9 - 13	
--Without secondary school graduation certificate	No secondary school certificate
--With secondary school graduation certificate	With secondary school graduation certificate
Subtotal - Trades and/or other non-university only	
--Without other non-university or trades certificate or diploma	No certificate or degree
--With trades certificate or diploma only	Trades certificate or diploma
--With other non-university certificate or diploma	Other non-university with certificate
Subtotal - University	With university
--With university degree	--With university degree
----Undergraduate degree	
----Graduate degree	
----Post-graduate degree	
--Without university degree	--Without university degree
Subtotal - Post-Secondary Education	With post-secondary education, completed or not
--Incomplete - without degree/certificate/diploma	
--Complete - with degree/certificate/diploma	

The change in education from 1996 to 2001 is measured as a change in the percentage of the population that has or has not achieved successively higher levels of education. However, such a percentage is not an unambiguous measure. For example, the percentage of those with some post-secondary education may have increased, even if the percentage of those with a secondary certificate has decreased. A simple count of years of schooling would be less ambiguous but cannot be made with the data on file.¹⁰

¹⁰ Statistics Canada can estimate the years of schooling from its other data.

First Nation Communities

Table 13 shows a remarkable increase in the percentage of the population that holds no secondary school certificate, with little change in the other categories. The population averages were calculated from the sums over all communities, whereas the mean percentages are averages of the percentages computed, one for each community. The number of cases is that of census areas that returned some educational data.

The dispersion shows the percentage points plus and minus the mean that cover 84 per cent of the population. For example, in 1996, 84 per cent of 476 Communities had between 41.7% and 74.7% of their labour force reporting no secondary school certificate.¹¹ In 2001, the proportion of the population of 429 communities without secondary school certificate was smaller by about 4 percentage points than in 1996.

Table 13: HIGHEST LEVEL OF SCHOOLING SUMMARY FOR FIRST NATION COMMUNITIES						
	1996 CENSUS			2001 CENSUS		
Number of cases	476			429		
Population	182,440			197,415		
	Population average	Mean perc'tage	Dispersion	Population average	Mean perc'tage	Dispersion
No secondary certificate	58.2	58.2	16.5	54.6	53.7	16.2
With secondary certificate	6.5	6.8	5.7	7.6	7.6	8.3
Incomplete post-secondary	13.6	13.5	8.2	14.7	14.9	5.7
With trade certificate	10.4	11.0	7.7	11.6	12.6	7.7
Other non-university	7.4	7.7	7.2	7.4	7.8	7.0
University degree	3.8	2.9	4.3	4.2	3.3	4.4
Total	100.0	100.0	---	100.0	100.0	---

The reduction in the proportion of persons without secondary school certificate was accompanied by small increases in the proportion of persons with post-secondary education. Most of that increase is found in the incomplete post-secondary category.

¹¹ The dispersion is the standard deviation and, therefore, if the proportion without secondary school certificate is distributed according to a bell curve, the probability that a community is within one standard deviation of that proportion from its mean is 84 per cent.

The large size of the dispersion compared to the mean of the other education categories shows that those other characteristics are highly dispersed across communities, with a large proportion of First Nation Communities not displaying completed post-secondary education.

Tribal Councils

The educational characteristics of Tribal Councils (Table 14), are, predictably, similar to those of Communities, except that the dispersions are relatively smaller. As before, that is a result of averaging the characteristics of different and smaller Communities included under larger Tribal Councils.

Table 14: HIGHEST LEVEL OF SCHOOLING SUMMARY FOR TRIBAL COUNCILS AND UNAFFILIATED						
	1996 CENSUS			2001 CENSUS		
Number of cases	81			72		
Population	185,190			207,735		
	Population average	Mean perc'tage	Dispersion	Population average	Mean perc'tage	Dispersion
No secondary certificate	58.1	57.8	14.3	54.3	52.7	13.5
With secondary certificate	6.6	6.8	3.0	7.7	7.7	3.3
Incomplete post-secondary	13.7	13.5	5.0	14.7	14.8	4.5
With trade certificate	10.5	11.0	4.8	11.7	12.9	4.6
Other non-university	7.4	7.9	4.6	7.6	8.3	4.6
University degree	3.8	3.0	2.3	4.1	3.6	2.5
Total	100.0	100.0	---	100.0	100.0	---

Northern communities

The results for the Northern Communities (Table 15) differ from those for the First Nation Communities and Councils: the proportion without secondary school certificate fell by a smaller amount and the dispersion is greater. The larger dispersion shows especially in a larger difference between the population average and the unweighted mean for the communities. The numbers of those having higher levels of education are relatively stable in total but vary greatly across communities.

**Table 15: HIGHEST LEVEL OF SCHOOLING
SUMMARY FOR NORTHERN COMMUNITIES**

	1996 CENSUS			2001 CENSUS		
Number of cases	138			135		
Population	114,760			117,130		
	Population average	Mean perc'tage	Dispersion	Population average	Mean perc'tage	Dispersion
No secondary certificate	40.6	51.1	16.2	39.2	48.5	15.8
With secondary certificate	9.2	5.9	5.2	9.3	7.7	6.0
Incomplete post-secondary	15.7	13.4	6.2	16.1	13.8	6.1
With trade certificate	13.5	13.1	7.1	14.0	13.7	6.8
Other non-university	11.4	9.4	7.2	11.1	9.5	6.6
University degree	9.7	6.2	5.2	10.2	6.5	5.1
Total	100.0	100.0	---	100.0	100.0	---

A conclusion from this section is that, judging by the numbers of persons and proportions with secondary and some post-secondary education, there has been progress primarily among First Nations.

Level of highest schooling attained, by aboriginal status and sex in 2001.

The 2001 census file permits separate assessment of education levels reached by the aboriginal and non-aboriginal, and also by males and females. Table 16 shows proportions of aboriginals, non-aboriginals, males and females that completed successively higher levels of education. Because of the large effect of rounding and data suppression on the small numbers of persons attaining the higher levels, no First Nation Community but Tribal Council data are considered. The results show that, in general, non-aboriginal and female high-school graduates reach higher levels than aboriginal males. This fact may be related to the smallness of an aboriginal male/female wage differential and the larger size of the aboriginal/non-aboriginal wage differential discussed above.

Table 16: DISTRIBUTION OF HIGHEST LEVELS OF SCHOOLING --- 2001 CENSUS SUMMARY FOR TRIBAL COUNCILS AND UNAFFILIATED				
	ABORIGINAL		NON-ABORIGINAL	
	Male	Female	Male	Female
	<i>in per cent of the total</i>			
No secondary school certificate	60.78	55.97	32.69	29.13
With secondary school certificate	6.79	6.93	10.61	14.03
With incomplete non-university post-secondary	7.01	8.18	6.36	7.42
With trades certificate	13.83	8.63	18.66	10.24
With other non-university certificate or diploma	5.13	8.50	9.11	14.71
With incomplete university course	5.07	8.48	9.30	10.63
With university degree	1.39	3.31	13.27	13.84
Total	100.00	100.00	100.00	100.00

The situation is somewhat similar in the North (Table 17), only there the non-aboriginals are more heavily represented at the higher end of the education levels, and that may be related to the larger employment income differences between aboriginals and non-aboriginals observed there.

Relationship of high school achievement with employment and real average employment income

The changes in educational attainment may appear too small to establish any relationship between them and the changes in employment and in average earnings from employment. However, for any single community, the change in educational achievement can be greater than it is for all communities taken as a whole. Such larger changes can be correlated with the growth rates of employment and average real employment income.

Table 17: DISTRIBUTION OF HIGHEST LEVELS OF SCHOOLING --- 2001 CENSUS SUMMARY FOR NORTHERN COMMUNITIES				
	ABORIGINAL		NON-ABORIGINAL	
	Male	Female	Male	Female
	<i>in per cent of the total</i>			
No secondary school certificate	57.67	56.34	25.98	23.71
With secondary school certificate	5.60	6.16	10.84	13.34
With incomplete non-university post-secondary	10.19	11.57	5.79	6.47
With trades certificate	15.44	8.40	20.07	10.14
With other non-university certificate or diploma	7.26	10.77	11.08	14.98
With incomplete university course	2.59	4.34	10.23	12.84
With university degree	1.26	2.43	16.00	18.52
Total	100.00	100.00	100.00	100.00

For every community covered in both 1996 and 2001 censuses, Charts 3 and 4 plot the percentage changes in real average employment income against the percentage change in the proportion of the population without a secondary school certificate. These charts show that both in First Nation Communities and in the North there is no definite relationship between high school achievement and average real employment income.

Chart 3 - First Nation Communities, 1996-2001

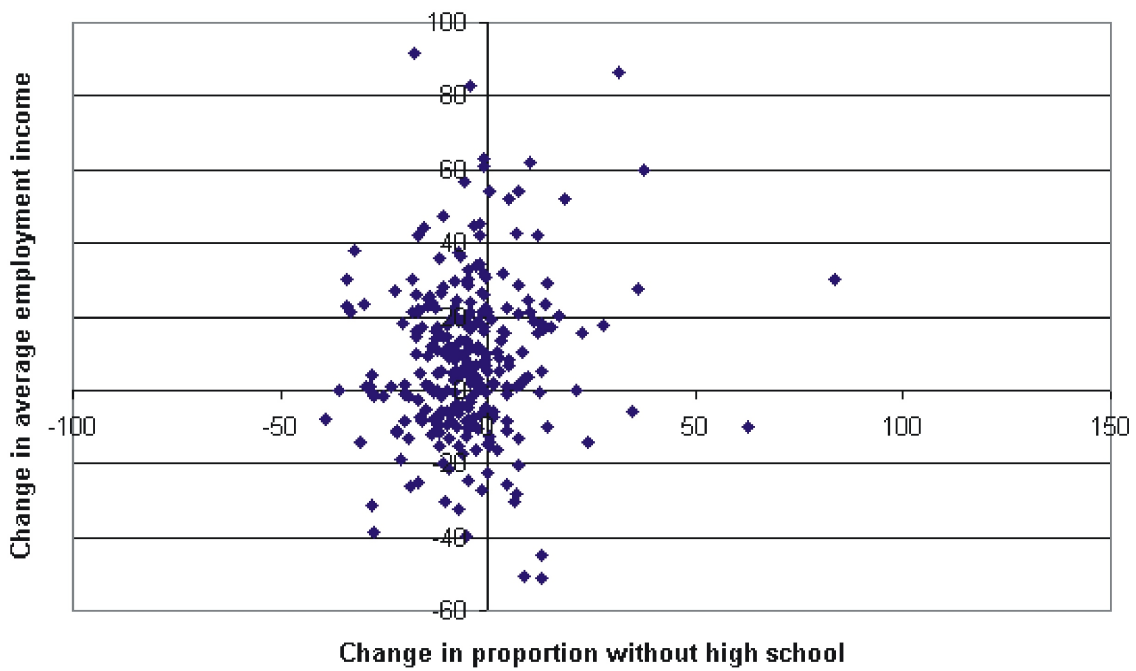
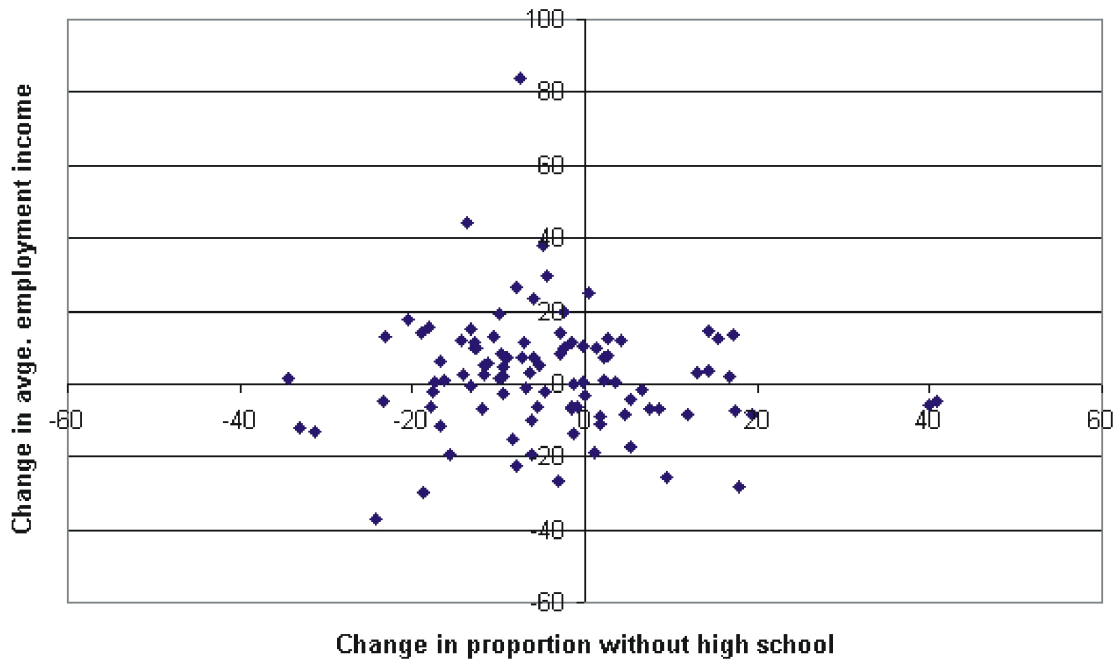
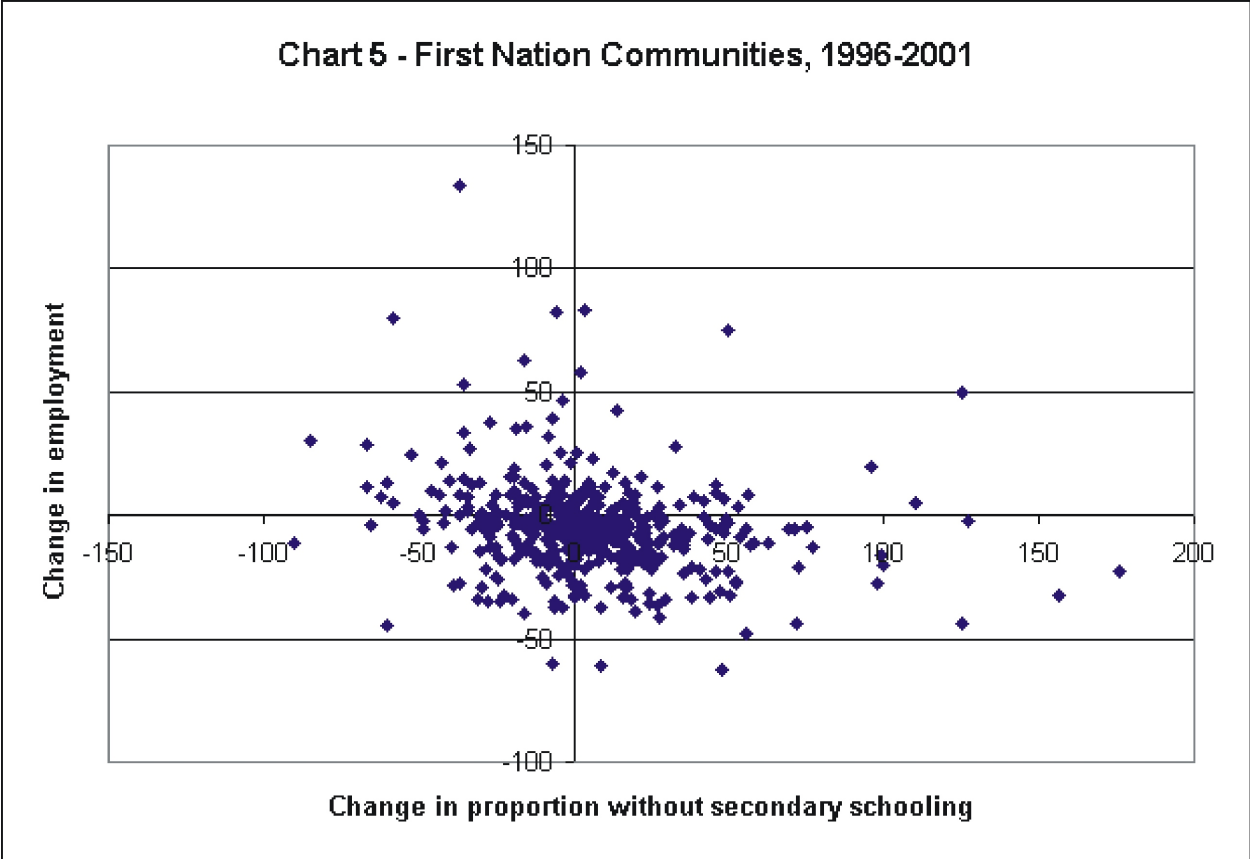


Chart 4 - Northern Communities, 1996-2001



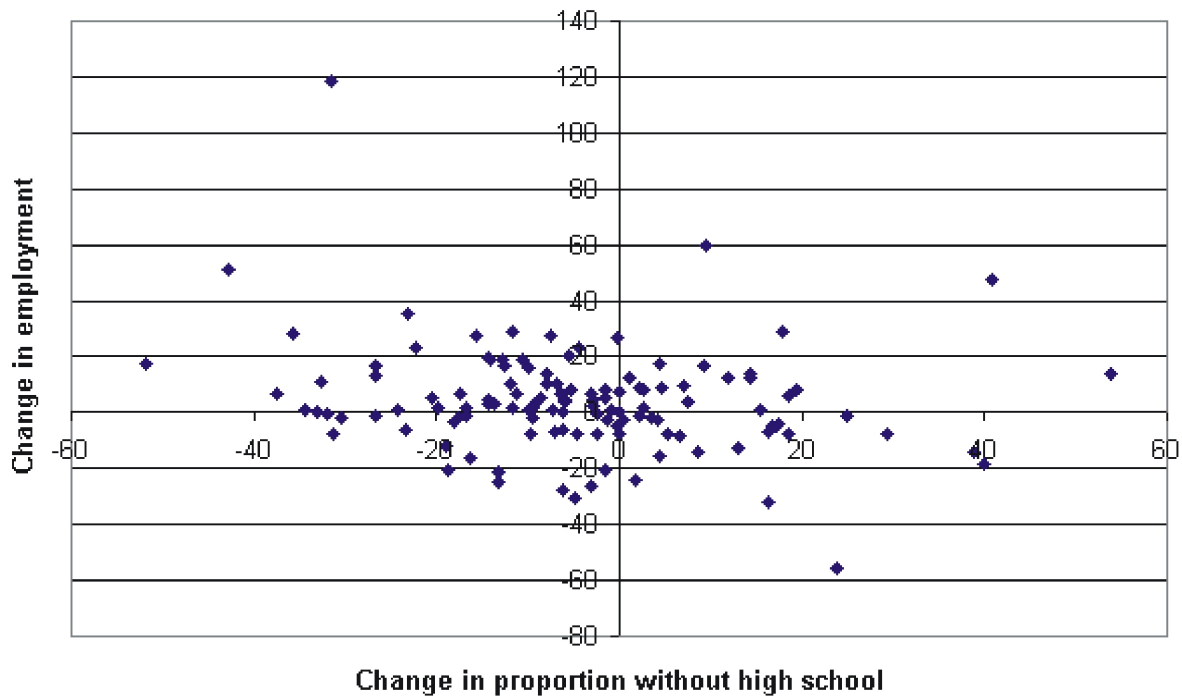
Charts 5 and 6 plot the percentage changes in employment attributable to changes in participation and unemployment rates, as a per cent of total employment in 1996, against the percentage change in the proportion of the population without a secondary school certificate. These charts show that both in First Nation Communities and in the North there is no definite relationship between high school achievement and employment growth.¹²

There is not only a lack of correlation but also an unexpected positioning of the data in the diagrams. If lack of a high school certificate was associated with inability to participate in the labour force, or with increased unemployment of those who do participate, or with lower wages, then one would expect the majority of the plotted points to fall below the horizontal line drawn through the zero. That is not the case, and it suggests that there must be other factors than wage levels and education that influence the labour market performance of these populations.



¹²All correlation coefficients computed with the data in these charts are far too close to zero to be meaningful.

Chart 6 - Northern Communities, 1996-2001



VI. FURTHER LINES OF INQUIRY

With regard to the aggregate results, these may be improved by study of provincial level data that do not suffer from rounding and suppression for confidentiality reasons.

As regards community level data, the results reported here may be related to other available information. INAC had provided StatsCan Business Register data for 1998 and 2002 and several administrative data files. These files contain information about factors that can affect or be affected by employment and employment income growth, such as the growth in the number of firms in the Business Register, the prevalence of certificates of possession, indices of access to natural resources, and remoteness of settlements. Some data are qualitative rather than quantitative, for example ranges of values and rankings from 1 to 3 whose explanatory power can be explored with rank correlation. The field to explore would be primarily the First Nation Communities and not the Tribal Councils or the North because most variables selected as interesting relate exclusively to the former.

INAC also supplied the department's economic development expenditures in fiscal years 1995-6 to 2000-01. The use of these expenditures as explanatory variables will pose a technical difficulty because both Communities and Tribal Councils are shown as recipients. Expenditure in a Community may show an exaggerated effect when that Community benefits from expenditures that benefit the corresponding Tribal Council. Expenditure for a Tribal Council may show no effect unless one considers also the expenditure on the constituent Communities. A coding that serves to link Communities to Councils would be required before embarking on the analysis of programme expenditures. The combined expenditures on Communities and Tribal Councils could then be related to growth under Tribal Councils. Moreover, since most progress with employment growth occurred in the 1991-96 period, it would be useful to have economic development expenditure data extended back year by year to fiscal year 1990-91. The back-casting would need to go even further if there was interest in finding the lag between an expenditure and its effect.

It may be advantageous to consider the top and bottom 10 to 20 First Nations Communities that experienced economic growth or decline in both periods under study and consider their geographic location, size, self-governance and financial management. This may provide useful information for future studies.

Statistical methods can be applied to determine how closely employment growth is related to the factors identified in these other files. The sample size is certainly large enough for the task but the exercise may not be promising. This is because exceptional employment growth in any community can be associated with any change, plus or minus, in average employment income and educational achievement. Consequently, it may be difficult to isolate specific factors of employment growth. That would certainly be the case if the employment growth observed in 1991-96 was unique and related more to growth in First Nation public service and devolution than to economic development. In-depth case studies that apply as much data as can be had to a small number of selected Communities may be more fruitful than statistical studies in providing an answer to what happened in that 5-year period.