

Regional Population Growth and Income Inequality

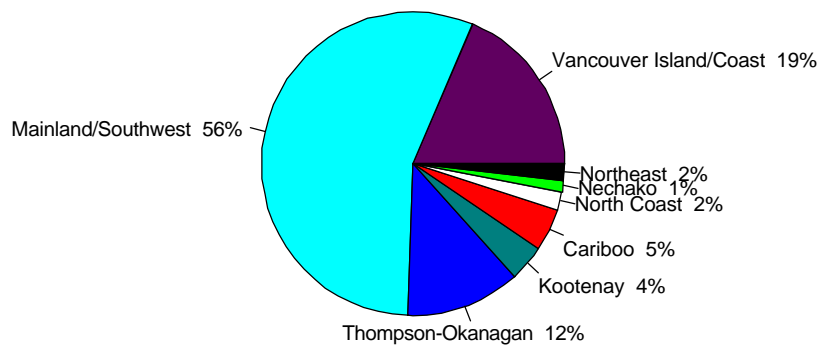
by Lillian Hallin ¹

The regional distribution of British Columbia's population

British Columbia's population is concentrated in the southwestern region of the province: six out of every eight British Columbians live in either the Lower Mainland, the Sunshine/Central Coast area, or on Vancouver Island. The Thompson/Okanagan region, an area which includes the cities of Kamloops, Kelowna, Penticton and Vernon, also has a sizable population, with about 430,000 people, or one-eighth of the province's inhabitants. As Figure 1 illustrates, the remainder of the population is spread over the Kootenay, Cariboo and northern regions of British Columbia.

Figure 1

Three quarters of British Columbians live in the Mainland/
Southwest and Vancouver Island/Coast regions



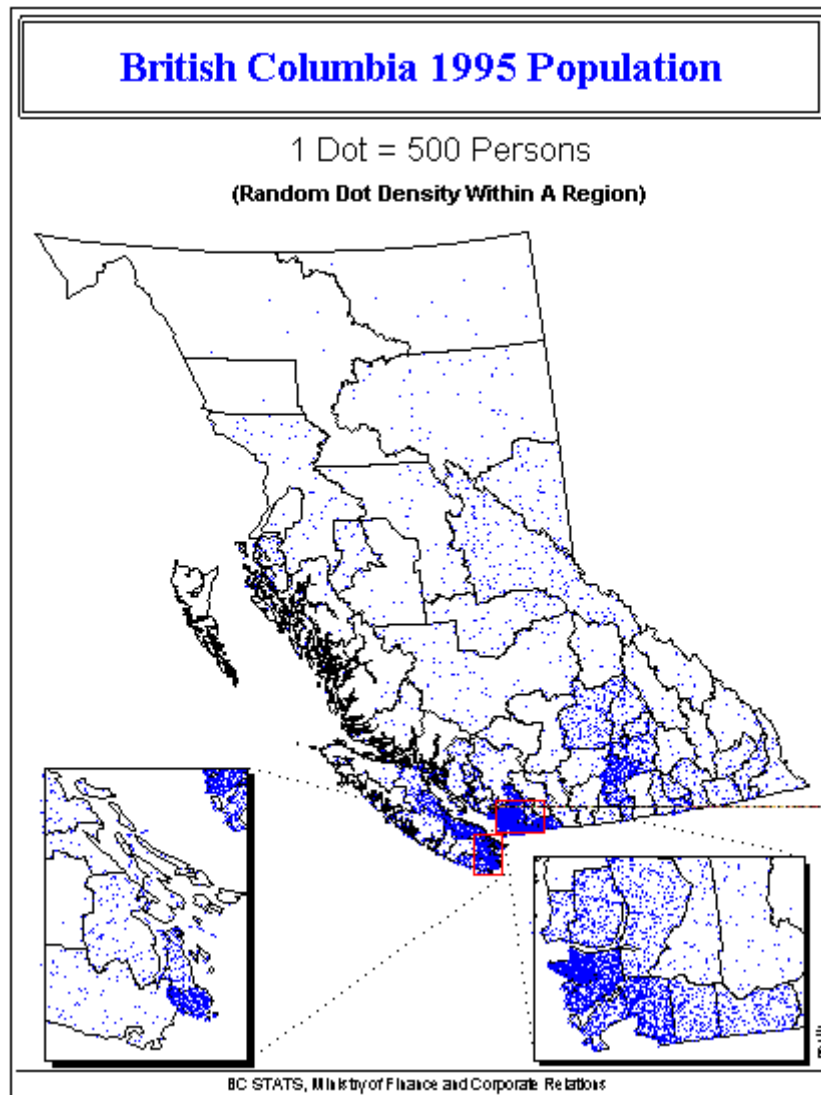
1993

BC STATS

The map on the following page (Figure 2) shows how British Columbia's population is distributed. In addition to the major urban centres of the Lower Mainland and the Capital Regional District (CRD), other areas with populations of at least 100,000 people in 1993 include the Nanaimo Regional District (114,000), the Thompson-Nicola District (Kamloops and the surrounding area—112,000), and the Central Okanagan (the Kelowna area—128,000). The northern and central coast areas of the province are very sparsely populated: 2,500 people live in the Stikine, the Central Coast Region has a population of 3,800, and the Fort Nelson-Liard Region has 5,300 inhabitants.

¹ The views expressed in this paper are those of the author and not necessarily those of the Government of British Columbia.

Figure 2

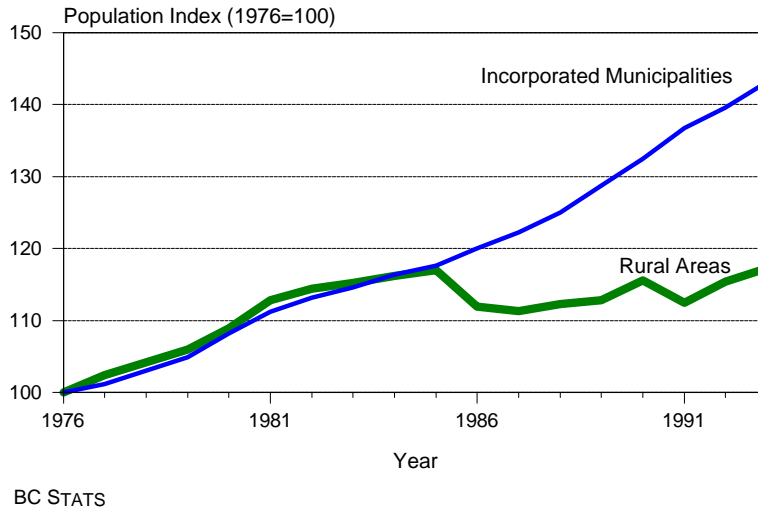


Urban and rural population growth

British Columbia's population increased by 39 per cent—from 2.5 to 3.5 million—between 1976 and 1993. Urban areas (incorporated municipalities) experienced the strongest growth, with the number of people increasing by 43 per cent during that period.² Population growth in rural (unincorporated) areas kept pace with that in urban centres until 1985, but since then it has levelled off. As a result, the rural population increased by only 17 per cent overall between 1976 and 1993, as indicated in Figure 3. In 1993, 86 per cent of British Columbians lived in incorporated municipalities, up from 83 per cent in 1976.

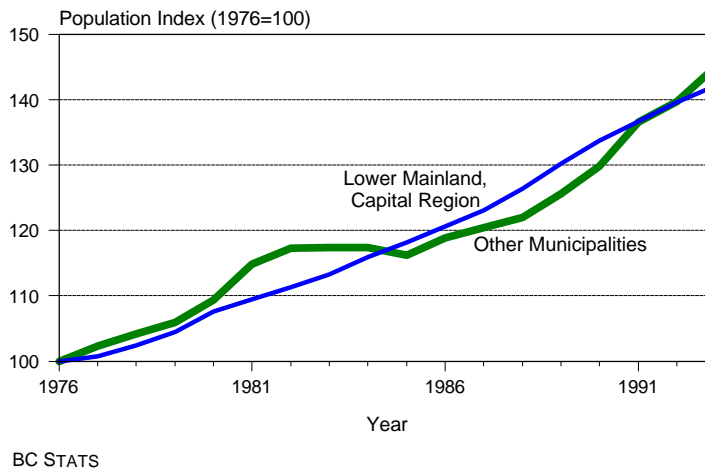
² It should be noted that some of the population growth in incorporated municipalities is due to the incorporation of previously unorganized municipalities in areas surrounding the large urban centres.

Figure 3
British Columbia's population growth has mainly been in urban centres, where 86% of the people live



Two-thirds of the province's urban population (or 58% of all British Columbians) reside in either the Lower Mainland or the Capital Regional District. These two regions have been growing steadily, increasing by a total of 42 per cent between 1976 and 1993. However, as Figure 4 indicates, population growth in other incorporated municipalities has been much more erratic, with rapid expansion occurring between 1978 and 1982, followed by a period of slow growth to the middle of the decade. During the last few years, these municipalities have been growing rapidly, and their population is now 45 per cent higher than in 1976.

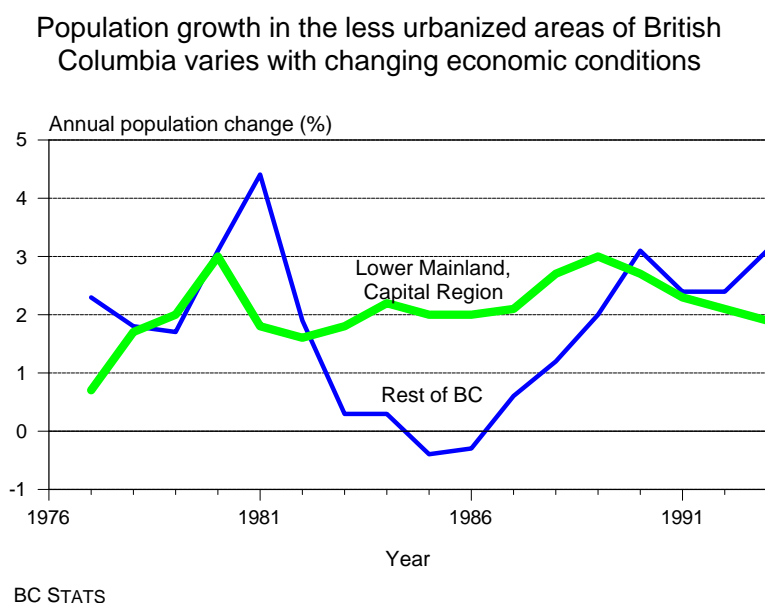
Figure 4
Growth in the Lower Mainland and CRD has been more stable than in other incorporated municipalities



One possible explanation for the more stable population growth in the Lower Mainland and the Capital Region is that both urban areas have well-developed service sectors. In

the CRD, government is a major employer, while the Lower Mainland is a centre for financial, transportation and other services. Other cities in the province tend to be more dependent on industries in the resource, manufacturing or tourism sectors, and are therefore more vulnerable to changes in the business cycle. The comparison of year-over-year population change in Figure 5 illustrates the greater susceptibility of the more rural regions of the province to uncertain economic conditions. Between 1976 and 1982, when the resource sector was booming, population growth in the Lower Mainland and CRD typically lagged behind that in the rest of the province. During the slower-growth period following the recession of 1981/82, annual population growth in the rest of the province fell from a high of 4.4 per cent in 1981 to a low of -0.4 per cent in 1985, even though the urban centres were only slightly affected by the economic downturn. By 1990, population growth in the rest of British Columbia had recovered to about the same level as in the CRD and the Lower Mainland.

Figure 5



During the last four years, the Central Okanagan has been growing very rapidly, with population increases of 5 to 6 per cent each year. Another area which has been experiencing above average growth is the Nanaimo Regional District, where the annual increase in population has varied from 4 to 6 per cent in each of the years since 1989. In the regions surrounding the Lower Mainland, the Sunshine Coast, Fraser-Cheam and Dewdney-Alouette Regional Districts have also been experiencing strong growth.

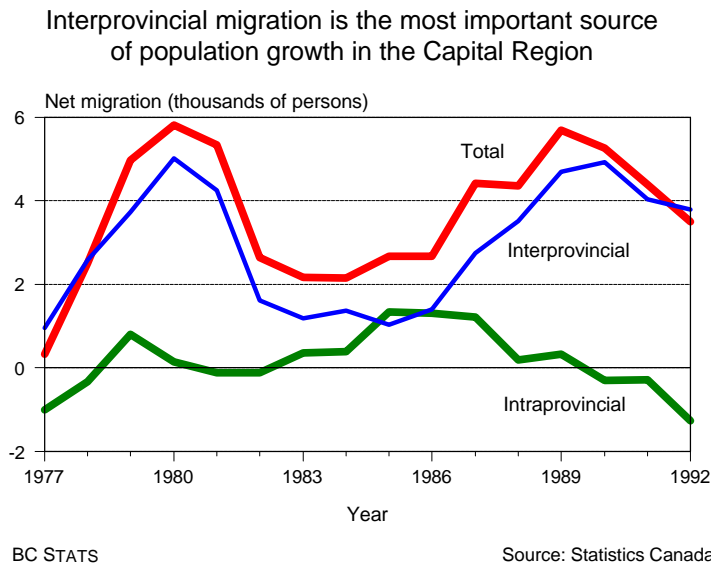
Sources of regional population growth

Population growth occurs as a result of either natural increase (the amount by which the number of births exceeds the number of deaths each year) or migration. The relative importance of these two factors varies considerably among regions. In the Capital Region, for example, natural increase is not a major factor. It generally accounts for about 10 per cent of total population growth. In the Greater Vancouver area, however,

about 30 per cent of the population growth is attributable to natural increase. Outside the Vancouver and Victoria regions, natural increase is often the largest contributor to population growth. Of course, the relative importance of natural increase depends not only on fertility and mortality rates, but also on the age structure of the population, as well as whether a region is attracting people from other areas or losing people to migration. This section examines in more detail the role of migration in population growth in British Columbia.

Migration can be *intraprovincial* (when people move within the province), *interprovincial* (when people move between provinces) or *international*, and the composition of net migrants varies considerably from region to region. For example, as Figure 6 indicates, migration from other provinces usually accounts for most of the population growth in the Capital Region. International migration is also an important source of population growth in the CRD.

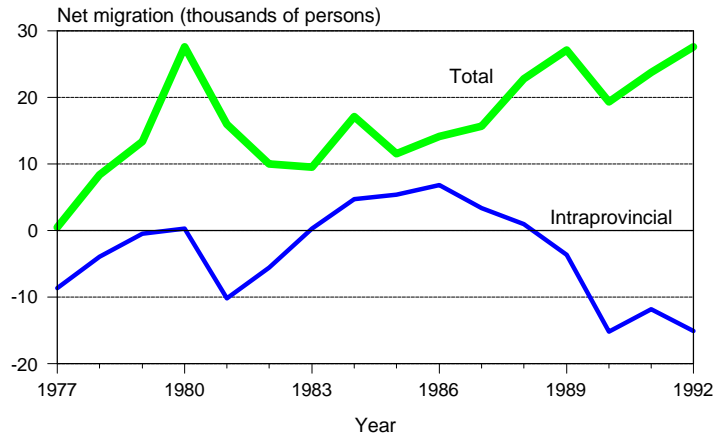
Figure 6



As illustrated in Figure 7, population growth in the Lower Mainland is mainly attributable to international and interprovincial migration. Although the Lower Mainland tends to lose people to other parts of the province, some of this migration may be to surrounding areas in the Fraser Valley. These areas have experienced rapid growth in recent years as an increasing number of individuals are choosing to commute to Vancouver, or to work in outlying areas where housing is more affordable.

Figure 7

Population growth in the Lower Mainland is mainly attributable to international and interprovincial migration



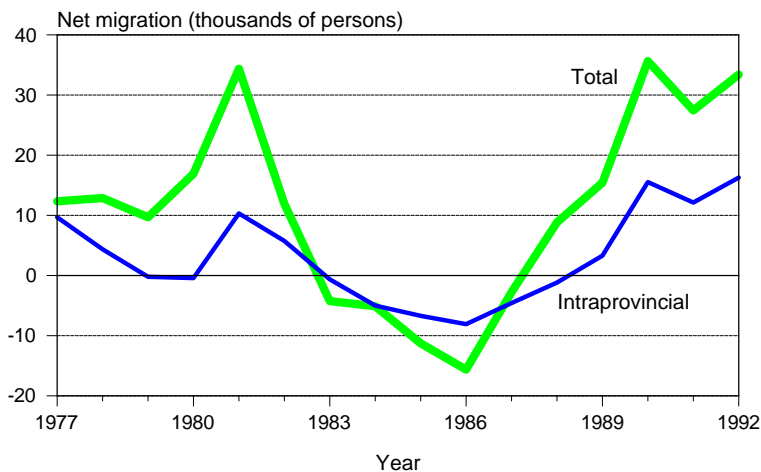
BC STATS

Source: Statistics Canada

In the rest of British Columbia, intraprovincial migration has been a major contributor to population growth in some regions, and has, in some years, been large enough to counterbalance net outflows of people due to interprovincial and international migration. Figure 8 illustrates the relationship between intraprovincial migration and total net migration to areas outside the Lower Mainland and the Capital Region.

Figure 8

In the rest of BC, intraprovincial migration has been a major contributor to population growth in recent years



BC STATS

Source: Statistics Canada

Reasons for migration between regions

Why do some areas gain population due to migration while other areas lose people? A wide range of factors may influence an individual's decision to move from one area to

another. These may include economic considerations such as better career opportunities, lower unemployment rates, more affordable housing, or a more robust economy. Personal considerations such as the desire to be close to family or friends, the climate or nature of a particular area, and the availability of recreational and cultural amenities may also affect migration flows. Although the relative significance of these factors varies among individuals, it is generally believed that economic considerations play an important role in the decision to move from one region to another.

The extent to which economic considerations influence migration patterns is difficult to quantify since there are no readily available measures to show how individuals rank each of the factors listed above. However, an analysis of various regional economic indicators such as unemployment rates, industrial structure, housing costs, or average incomes should provide some information about the strength of the link between each of these factors and intraprovincial migration patterns.

A complete analysis of all of the factors influencing migration patterns is beyond the scope of this paper. Instead, the next section of this article will focus on regional income differentials as one possible explanatory variable. Average incomes in each region will be compared with intraprovincial migration patterns. The last section of the paper will analyze trends in regional income disparities in British Columbia using an index of income inequality developed by *BC STATS*.

How is income measured?

The following definitions describe the standard measures used to determine income.

In British Columbia, about 83 per cent of the total income received by individuals in 1993 could be described as *earned income*. This includes wages and salaries (64 per cent), self-employment income (7 per cent) and investment income (12 per cent).

Individuals may also receive income in the form of *transfer payments*, such as unemployment insurance, social assistance, pensions and family allowances. Transfer payments may be used to redistribute income, or alternatively, to promote certain activities or types of behaviour. Transfer payments made up about 17 per cent of the income received by British Columbians in 1993.

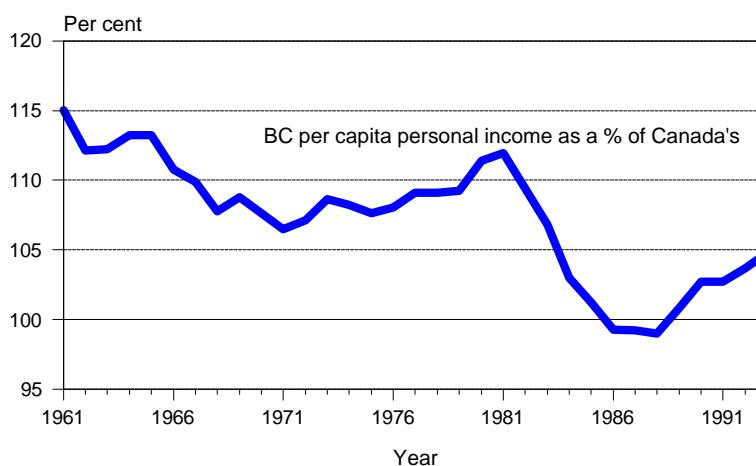
Personal income is defined as the total of earned income and transfer payments. In 1993, personal income for the province totalled 82 billion dollars, which translates into a per capita personal income of \$23,164 per year.

The income available to individuals for purchasing goods and services is reduced by income taxes and other transfers to government such as licences, fees, fines and hospital premiums. In 1993, the average British Columbian paid out \$5,148 (or an average of 22 per cent of personal income) in taxes and transfers to government. *Personal disposable income*, which measures the difference between personal income and taxes and transfers paid to government, averaged \$18,016 per person in 1993.

Regional income disparities

British Columbians are, overall, slightly better off than other Canadians. On a per capita basis, personal income in this province has tended to exceed the Canadian average, as illustrated in Figure 9. However, British Columbia's relative advantage has been declining over time. Although per capita personal income in British Columbia was about 15 per cent higher than the Canadian average in 1961 (\$1,928 compared to \$1,676), the differential in 1993 was only 5 per cent (\$23,164 compared to \$22,102).

Figure 9
Although per capita income in BC continues to exceed the Canadian average, the size of the differential has declined



BC STATS

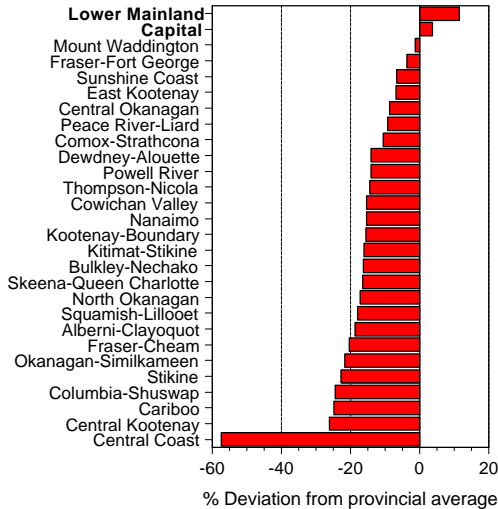
Figure 10 shows the ranking of per capita earned income (excluding transfers) in 28 of British Columbia's regional districts based on how each region compares with the provincial average.³ As the graph shows, the average individual living in one of British Columbia's two large urban centres tends to earn more money than other residents of the province. In 1991, when per capita earned income in British Columbia was \$18,598, the average individual living in the Lower Mainland earned \$20,731, and per capita earned income in the Capital Region was \$19,303. In contrast, earned income per person in the Central Coast Region was 57 per cent below the provincial average, at \$7,916 per year.

³ Since these estimates are derived using taxation data from Revenue Canada, no information is available for 1992 or 1993. Data for the 1992 taxation year will not be released until the fall of 1994.

Data for the Fort Nelson-Liard and Peace River regions, and the Greater Vancouver and Central Fraser Valley regions, were aggregated due to changes in regional boundaries during the 1980's.

Figure 10

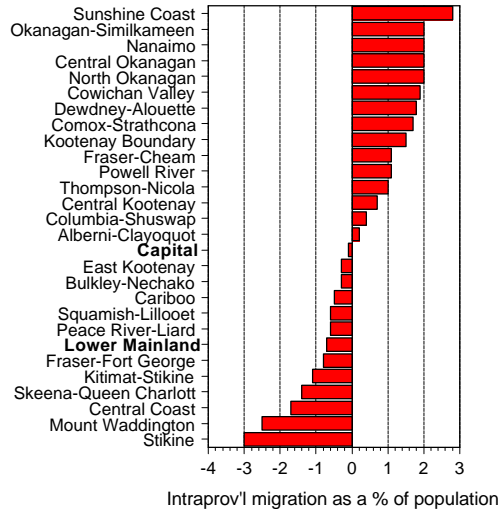
In 1991, both the Lower Mainland and the Capital Region had higher than average earned income* per capita...



*Wages and salaries, self-employment and investment income
BC STATS

Figure 11

...but both regions experienced net outflows of people to other parts of the province



BC STATS

Despite having above-average earned incomes, the Lower Mainland and the Capital Region both lost people to other parts of the province in 1991. Figure 11 shows the ranking of percentage increases or declines in population due to intraprovincial migration during 1991. While some of this migration may have been from the Lower Mainland and the CRD to "bedroom communities" in the surrounding areas, it appears that income differences alone do not adequately explain migration within the province.

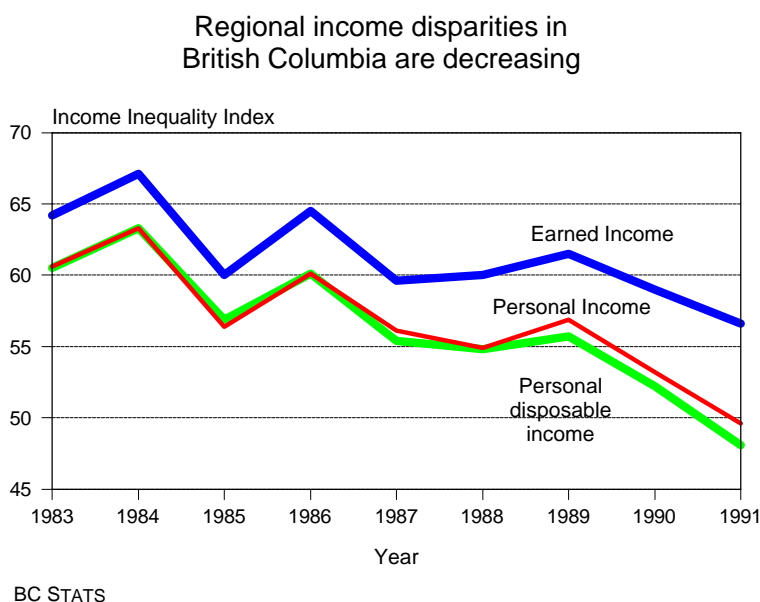
Although it appears that interregional income differences may not significantly affect intraprovincial migration, income differentials may be a more important consideration for people planning to migrate to British Columbia from other provinces or countries. As illustrated in Figures 6, 7 and 8, interprovincial and international immigration are much more significant sources of growth in the Capital Region and the Lower Mainland than in the rest of British Columbia.

Nevertheless, interregional income disparities are good indicators of the magnitude of differences in standards of living between regions as well as the effectiveness of tax and transfer policies aimed at reducing income disparities among the various regions of the province. The remainder of this paper investigates how regional income inequality has changed since 1983.

An index of regional income inequality

The regional income inequality index⁴ is a quantitative measure of income disparities among regions over time. The indices were calculated using regional estimates of earned income, personal income and personal disposable income which were developed by *BC STATS*. An index value which is close to 0 indicates that income differentials between regions are small, while index values close to 100 show a high degree of disparity between incomes in the various regions. The difference between earned and personal income can be viewed as a measure of the efficiency of government transfer payments as a tool for income distribution. Similarly, the size of the gap between personal income and personal disposable income is a measure of the redistributive effects of tax policies.

Figure 12



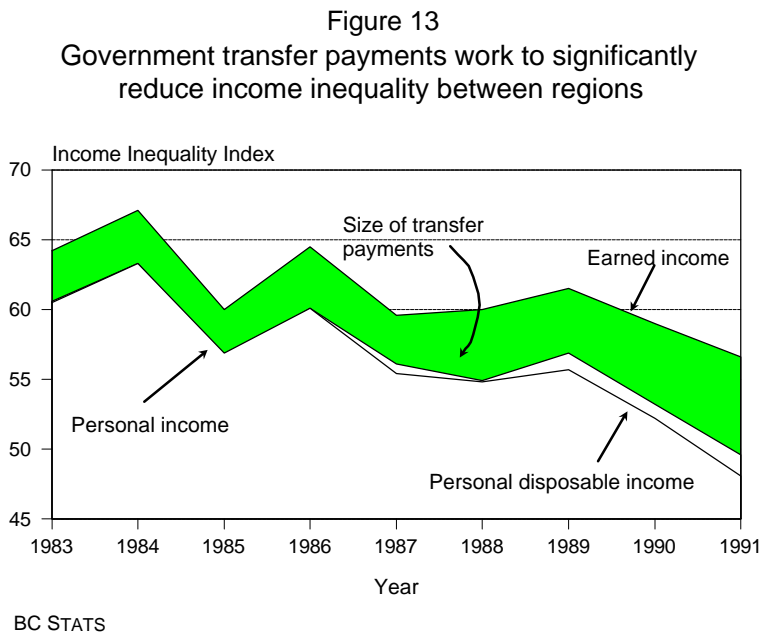
As Figure 12 indicates, the variability of incomes within the province is fairly high, and although the decline in the inequality index has not been continuous, income disparities between the regions of British Columbia appear to be decreasing over time. Unfortunately, no regional income data are available for the period prior to 1983, so it is not possible to examine trends over a longer interval, which would be necessary if a more definitive conclusion were to be made.

Not surprisingly, the inequality index is highest for earned income—the wages and salaries, self-employment and investment income received by individuals. The average variation from the provincial level of \$11,769 per capita in 1983 was about 64 per cent. By 1991, the average deviation was slightly lower, at 57 per cent of provincial per capita earned income (\$18,598).

⁴ For an explanation of how this index is derived, see the appendix.

The overall effect of income redistribution resulting from government transfer payments is illustrated by comparing the income inequality index for personal income with the index for earned income. As illustrated in Figure 13, transfer payments tend to decrease the size of interregional differences in personal income—the personal income inequality index declined from 61 to 50 per cent between 1983 and 1991. While the average personal income per British Columbian in 1991 was \$22,151, personal income varied from a low of \$10,932 per person in the Central Coast area to an average of \$24,136 for each resident of the Lower Mainland.

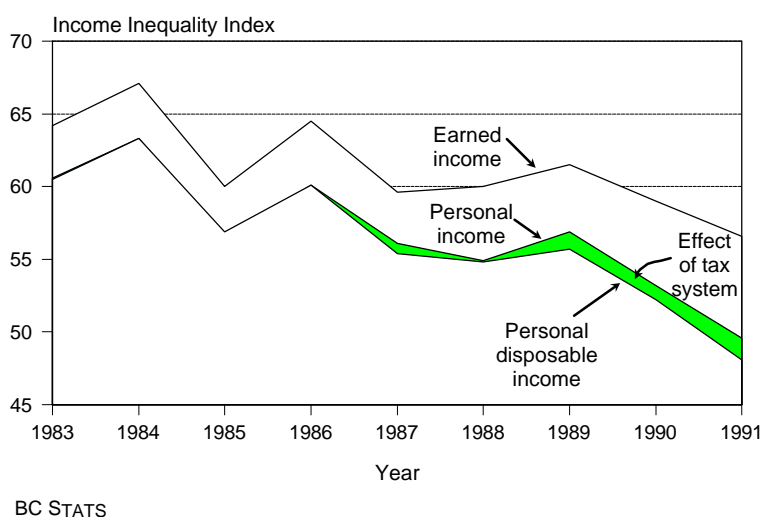
The net effect of transfer policies on income inequality over time is equal to the difference between personal income and earned income. Figure 13 shows that the gap between the two inequality indices has been expanding since 1983, indicating that transfer payments are an effective tool for reducing the income differentials between poorer and wealthier regions of the province.



The variation in personal disposable income is somewhat lower than for either earned or personal income. Disposable income ranges from a low of \$8,989 in the Central Coast area to a high of \$18,649 in the Capital Region. As a result, the regional income inequality index is lowest for personal disposable income, declining from 61 per cent in 1983 to 48 per cent in 1991. Average after tax income for British Columbians in 1991 was \$17,135.

The tax system contributes only moderately toward the redistribution of income, as indicated by the relatively small gap between the inequality indices for personal and personal disposable income, as shown in Figure 14. Since 1983, however, the difference between the two indices has grown, indicating an increase in the redistributive function of income taxes.

Figure 14
The tax system contributes only moderately to the redistribution of income between BC's regions



Conclusions

There is a great deal of variability in the distribution of population and income among the regions of British Columbia. While interregional income differences may explain some of the migration patterns observed within the province, the two regions with the highest incomes (the Lower Mainland and the Capital Regional District) have tended to lose people to other parts of the province. This suggests that other economic factors such as unemployment rates, the industrial structure of a region, the type of jobs available in an area, and the cost of housing are more likely to influence an individual's decision to move within the province. However, although income differentials do not adequately explain intraprovincial migration, they may have a greater influence on the pattern of interprovincial and international migration to British Columbia.

The number of people living in urban areas of the province is growing, and now accounts for 86 per cent of the population. At the same time, income inequalities between the regions of the province have been declining, partly as a result of government tax and transfer policies.

Of course, there are many possible explanations for differences in income between regions. Per capita figures include those who are not in the work force, so in regions where there is a higher than average number of children or elderly people, estimates of income per person will be lower. Other explanations of income differentials between regions include the degree of industrial diversification, the type of major industry, and the sensitivity of dominant industries in an area to changes in the business cycle.

Whether or not income equality between regions is desirable is a matter of opinion. However, if regional income inequality continues to decline over time, it is likely that this will have some effect on future population growth in the regions of British Columbia. The exact nature of the relationship is a matter for further study.

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Appendix

A measure of income inequality ⁵

One way of looking at changes in income inequality over time is to compare average incomes in each region with the national or provincial total. More income equality will mean that the differences between average incomes in each area will decline, while increasing income inequality will result in growing discrepancies between average incomes over time.

The degree to which regional incomes vary from the overall average can be measured using the *coefficient of variation* (cv), which is calculated by dividing an average of the differences between per capita income in each region and provincial per capita income—the standard deviation of the series—by the arithmetic average of per capita income for British Columbia or Canada:

$$cv = \frac{\left(\sum_{i=1}^n (y_i - y)^2 \cdot \frac{p_i}{P} \right)^{1/2}}{y}$$

Where:

- y_i = per capita income in a region
- y = average per capita income in British Columbia
- p_i = population in region i
- P = total population of British Columbia
- n = number of regions

The population share of each region is used to weight average income difference, approximating the result that would be obtained if there were individual data for each resident of a region.

The *income inequality index* is simply a time series of coefficients of variation. When it declines, it indicates that regional income differentials are decreasing. In contrast, a rising coefficient of variation indicates that the gap between low and high income areas is growing.

⁵ The derivation of the income inequality index is based on the approach outlined in an article by Horst Alter and Thomas Greenberg (*Taxes, Transfers and Regional Disparities*) which was published in the Winter 1990 issue of Statistics Canada's *Perspectives on Labour and Income* (catalogue 75-001) and in a paper entitled *More Per Capita Income Inequality* which was presented by Gary Smith of Washington State University at the 26th Pacific Northwest Region Economic Conference in May of 1992.