# MIGRATION AND SETTLEMENT:
# 6. CANADA

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## FOREWORD

Interest in human settlement systems and policies has been a central part of urban-related work at the International Institute for Applied Systems Analysis (IIASA) from the outset. From 1975 through 1978 this interest was manifested in the work of the Migration and Settlement Task, which was formally concluded in November 1978. Since then, attention has turned to dissemination of the Task's results and to the conclusion of its comparative study, which under the leadership of Dr. Frans Willekens is focusing on a comparative quantitative assessment of recent migration patterns and spatial population dynamics in all of IIASA's 17 National Member Organization countries.

The comparative analysis of national patterns of interregional migration and spatial population growth is being carried out by an international network of scholars who are using methodology and computer programs developed at IIASA.

In this report, Professor Marc Termote of the Institut National de la Recherche Scientifique du Québec analyzes regional demographic changes in Canada. The investigation on a provincial basis leads him to draw attention to some very important implications of recent demographic behavior in Canada and to emphasize the need for a more conscious population distribution policy.

Reports summarizing previous work on migration and settlement at IIASA are listed at the end of this report.

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## ACKNOWLEDGMENTS

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CONTENTS

# 1 INTRODUCTION

Canada presents an interesting problem to the regional demographer in that the population is spatially distributed as a thin, 7,000-km-long ribbon along the border with the United States of America, with only half a dozen points of high population density. The historical divide between the English- and French-speaking communities (the latter concentrated in one province – Quebec) and the two-tier method of government (federal and provincial) combine to make the spatial distribution of the population an important factor in the economic and political development of the country. Much of Canada's recent history, and much of its future, has been and will be determined by the relative demographic weight of each province.

The purpose of this report is to analyze the role of fertility, mortality, and spatial mobility in this interprovincial redistribution of population and the interrelations between them (Section 2); to derive the long-term implications of current demographic behavior (Section 3); and, finally, to discuss some policy measures which, directly or indirectly, may have affected this redistribution (Section 4).

The limitations of this purely demographic approach should be stressed. The main aim of this report is to illustrate with Canadian data the usefulness of the multiregional demographic model adopted and disseminated by the Migration and Settlement Task at IIASA. It is not intended to provide a new explanation of the demographic behavior of the Canadian population, nor to forecast the interprovincial distribution of this population. Moreover, due to space constraints, it is necessary to assume that the reader is familiar with the above-mentioned model, and with the various measures derived from it.

Before proceeding to the results of our multiregional analysis, which will be limited to the period 1966–1971, a short historical review seems in order.

Between 1951 and 1976, Canada's population grew from 14 million to 23 million, an increase of almost two-thirds. This rather high (though recently declining*) rate of growth was accompanied by a considerable redistribution of the population among the ten provinces** (see Figure 1 for territorial delineations), characterized mainly by a marked westward shift. Three provinces benefited from this shift: the centrally located province of Ontario (which increased its share of the total population from 33% in 1951 to 36% in 1976) and the two western provinces, Alberta and British Columbia. The total share of these two provinces increased from 15% to 19%, having been only 5% at the beginning of the century (Table 1).

Simultaneously, each of the seven other provinces experienced a continuous decline in its share: the total proportion of the population found in the four eastern, so-called "Atlantic" provinces (i.e., Newfoundland, Prince Edward Island, Nova Scotia, and New Brunswick) decreased from 12% to 9% between 1951 and 1976 (it was 19% in 1901***), that of Quebec from 29% to 27%, and the total share of Manitoba and Saskatchewan (which together with Alberta constitute the so-called "Prairie" provinces) from 11% to 9%.

Summarizing the westward shift of the population since the beginning of this century, we may conclude that the "Atlantic" provinces lost half of their share of the total population, mainly to the two most western provinces, which had their share increased fourfold; the two central, and also most populous, provinces have contained an almost constant part of the total population since 1911 (the total share of Ontario and Quebec was 63% in 1911 and the same in 1976).

It should be noted that this important shift in the distribution of the population among provinces was not accompanied by any deconcentration. The index of concentration (obtained by subtracting the observed percentage of the population living in each province from the percentage expected in the case of equal distribution, and summing the positive differences) was 43.6 in 1951 and 46.4 in 1976 (40.3 in 1921); redistribution has thus led toward greater concentration (at least since the end of World War I).

The interprovincial redistribution of Canada's population can be attributed mainly to differences in fertility, and migration. Historically, there have undoubtedly been important mortality differentials. In 1931, the average expectation of life of a Canadian male at birth was 60.0 years, but it was only 56.2 for males born in Quebec, compared with 63.5 for male births in the

*The yearly growth rate was 2.7% between 1951 and 1961, but only 1.4% between 1966 and 1976. It should, however, be noted that the increase remained approximately constant in terms of absolute numbers: 3 million were added to the Canadian population over the 10 years 1966–1976, while a comparable 9.6 million were added over the preceding 35 years (1931–1966).

**It should be emphasized that this study will be limited to analyzing population redistribution between provinces. For the consideration of other spatial units, see, for instance, Stone (1969), where the urban–rural dimension is included, and Simmons (1977, 1978), where interurban migration is analyzed.

***In order to ensure comparability, the share of Newfoundland, which joined the Canadian Confederation in 1948, has been included in the 1901 figure.

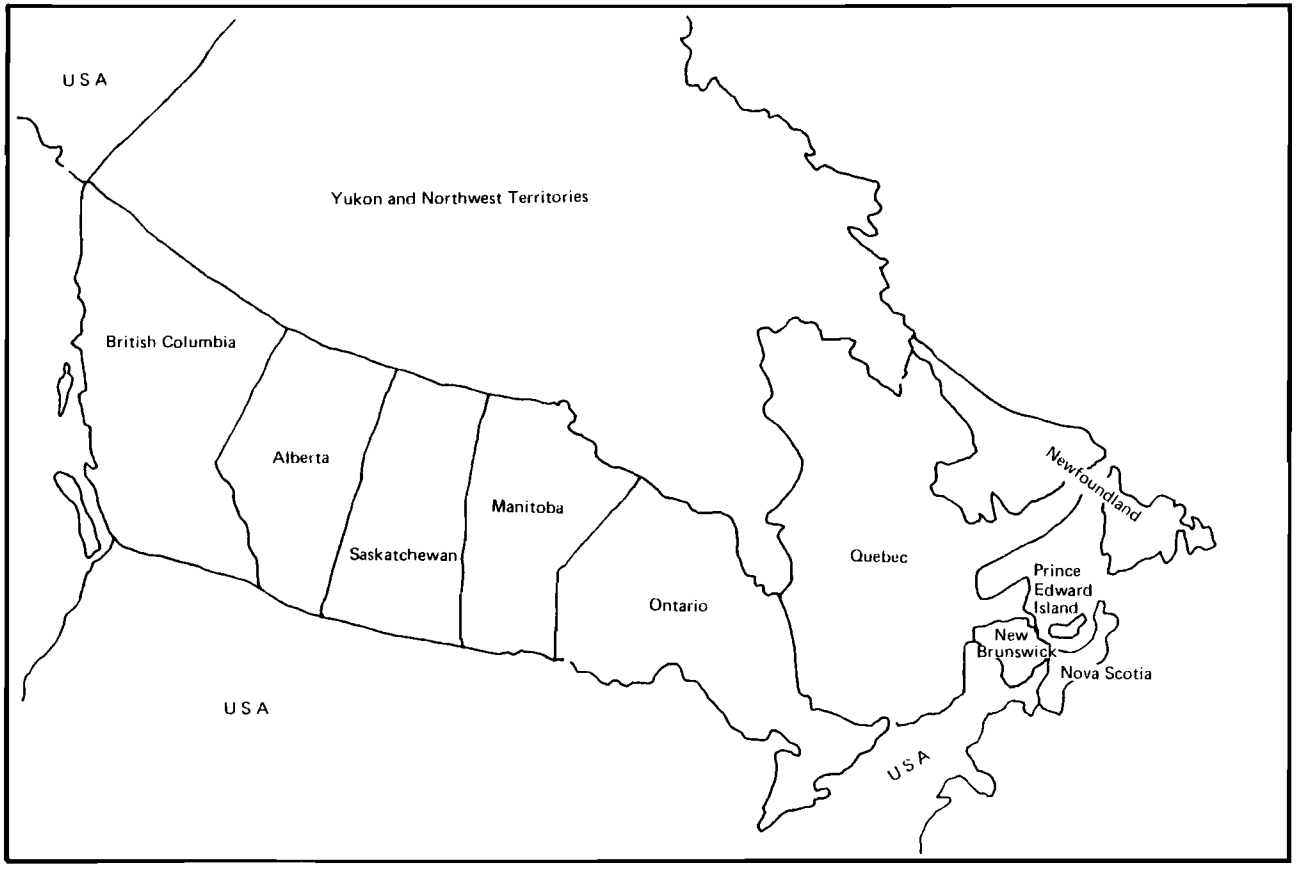


FIGURE 1 The provinces and territories of Canada. Only the ten provinces will be considered in this study since the population of the Yukon and Northwest Territories is negligible.

TABLE 1 Percentage distribution of population[a], by provinces, 1901–1976.

| Province or territory | 1901 | 1911 | 1921 | 1931 | 1941 | 1951 | 1956 | 1961 | 1966 | 1971 | 1976 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Newfoundland | – | – | – | – | – | 2.6 | 2.6 | 2.5 | 2.5 | 2.4 | 2.4 |
| Prince Edward Island | 1.9 | 1.3 | 1.0 | 0.8 | 0.8 | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 |
| Nova Scotia | 8.6 | 6.8 | 6.0 | 4.9 | 5.0 | 4.6 | 4.3 | 4.0 | 3.8 | 3.7 | 3.6 |
| New Brunswick | 6.2 | 4.9 | 4.4 | 3.9 | 4.0 | 3.7 | 3.4 | 3.3 | 3.1 | 2.9 | 2.9 |
| Quebec | 30.7 | 27.8 | 26.9 | 27.7 | 29.0 | 29.0 | 28.8 | 28.8 | 28.9 | 27.9 | 27.1 |
| Ontario | 40.6 | 35.1 | 33.4 | 33.1 | 32.9 | 32.8 | 33.6 | 34.2 | 34.8 | 35.7 | 36.0 |
| Manitoba | 4.7 | 6.4 | 6.9 | 6.8 | 6.3 | 5.5 | 5.3 | 5.1 | 4.8 | 4.6 | 4.5 |
| Saskatchewan | 1.7 | 6.8 | 8.6 | 8.9 | 7.8 | 5.9 | 5.5 | 5.1 | 4.8 | 4.3 | 4.0 |
| Alberta | 1.4 | 5.2 | 6.7 | 7.1 | 6.9 | 6.7 | 7.0 | 7.3 | 7.3 | 7.6 | 8.0 |
| British Columbia | 3.3 | 5.5 | 6.0 | 6.7 | 7.1 | 8.3 | 8.7 | 8.9 | 9.3 | 10.1 | 10.7 |
| Yukon and Northwest Territories | 0.9 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 |
| Canada | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

[a]Data from 1971 and 1976 censuses, Statistics Canada (1973a, 1976, 1978).

"Prairie" provinces. By 1951, Canadian males had increased their expectation of life to 66.3, i.e., by 6.3 years, with Quebec only 1.9 years below this average (instead of 3.8 in 1931) and the "Prairie" provinces only 2.1 years above (compared with 3.5 in 1931). After 1951, mortality differentials continued to decrease, so that in 1971, Quebec, by gaining almost 4 years in life expectancy (68.3), was only 1 year below the average (69.3), while, at the other extreme, Saskatchewan was only 0.8 year above.

The difference between life expectancy for Canadian females and life expectancy for Canadian males was only 2.1 years in 1931, but by 1951 the difference had increased to 4.5 years and in 1971 it had reached 7.1 years. In Quebec the difference in life expectancies was only 0.6 year in 1931, but by 1971 it was almost equal to the figure for Canada as a whole (7.0). Canadian females at birth had an average expectation of life of 62.1 years in 1931, with Quebec being 5.3 years below and the "Prairies" 3.4 years above this figure; in 1971, the Canadian average was 76.4, Quebec still lying at the lower end of the scale, though now only 1.1 years below the average, and Saskatchewan, at the other extreme, 1.2 years above. The reduction in mortality differentials between provinces is thus as significant for females as for males.

Fertility differentials, however, have definitely played an important role in the redistribution of Canada's population. Even the gross reproduction rates (defined as the sum of the age-specific rates, multiplied by five, the age interval) measured in the 1970s are almost twice as high in one province as in another. There was actually an increase in fertility differentials between 1951 and 1971: in 1951 the highest rate was 2.2 (in New Brunswick) and the lowest 1.6 (in British Columbia), the Canadian average being 1.8; in 1971, however, the highest rate was 1.7 (in Newfoundland) and the lowest 0.9 (in Quebec), with the Canadian rate at 1.1.

In considering the role of fertility differentials with respect to population redistribution, we have to take into account not only the differentials in the level of these rates, but also the differences in the evolution of these rates. Between 1961 and 1976, all provinces experienced a considerable decline in fertility, so that in 1976 only one province (Newfoundland) had a fertility rate markedly above the reproduction level, while in four provinces (Nova Scotia, Quebec, Ontario, and British Columbia) the fertility rates were well below the reproduction level.

However, there were considerable disparities in the rate of decline of provincial fertility rates. Quebec, which had the highest gross reproduction rate in 1931, had the lowest rate in 1971. The decrease in this rate was particularly rapid. Starting at 2.0 in 1931, it was still at 1.9 in 1946 and remained constant at the 1.9–2.0 level throughout the period 1946–1960. However, in the 10-year period from 1961 to 1971, it decreased by half and in 1976 was well below reproduction level. On the other hand, the gross reproduction rate in Ontario, which in 1931 was the second lowest rate in Canada (1.3), was only slightly smaller in 1971 (1.1).

Fertility differentials represented a brake to the westward shift of population. All four Atlantic provinces had a gross reproduction rate significantly higher than the Canadian average, while the corresponding figure for British Columbia was much lower (and had been for decades). Among the three provinces which benefited from population redistribution, only Alberta had an above-average gross reproduction rate.

The shift of population toward the West was thus essentially due to migration, both international and interprovincial. The following historical analysis of migration, therefore, will be more comprehensive than those given for mortality and fertility differentials.

International migration has been an important source of demographic growth, not only for Canada as a whole, but also for most of its provinces. However, precise historical data are difficult to find. Some rough estimates (Stone 1969, pp. 140–141) indicate that during the last decades of the 19th century and until World War I, the provinces which proved most attractive to international migrants were Manitoba and Saskatchewan, which together received almost twice as many immigrants as Ontario or British Columbia. The period 1891–1911 corresponds to the peak of the western settlement. After the War, Ontario emerged as the main pole of attraction, receiving about 40% of the immigrants who entered Canada between 1921 and 1941. However, the Great Depression substantially reduced the number of immigrants, which declined from 750,000 in 1921–1931 to 190,000 in 1931–1941, a decrease of almost 75%. Immigration flourished again in the 1950s and 1960s, with a total inflow of 2.6 million people between 1951 and 1971 (almost 20% of the total population of Canada in 1951). More than half of these immigrants settled in Ontario.

Using rough estimates of emigration (Statistics Canada 1975, pp. 197–201), one may obtain some indication of the contribution of international migration to total demographic growth. For Canada as a whole, international migration represented about one-quarter of the population growth between 1951 and 1971, increasing to 30% at the end of this period. However, the percentage of migrants entering and leaving each province was not necessarily proportional to that province's share of Canada's population. For instance, between 1961 and 1971, Ontario and British Columbia received a proportion of the inflow (53% and 13%, respectively) which was significantly larger than their share of the total population (35% and 10%, respectively), while the percentage emigrating from these provinces corresponded more or less to this share. The net gain of these two provinces represented about 90% of the total net gain of the country (75% for Ontario, 15% for British Columbia). The other provinces were either losing population by international migration (as was the case for the Atlantic provinces), or achieving a net percentage gain which was much smaller than their percentage share of the total population. (Quebec's net gain was only 8% of the total net inflow, while its share of Canada's population was 28%.)

The implication of this is, of course, that in our multiregional projection, where international migration was excluded because of nonexistent or unreliable

data, the percentage of the population attributed to Ontario and British Columbia will be systematically underestimated, while that of all other provinces, and particularly Quebec, will be overestimated.

The pattern of interprovincial migration is similar to that of international migration. Since the beginning of the century, Ontario and British Columbia have gained population at the expense of other provinces, just as they were the main beneficiaries of international migration. Manitoba and Saskatchewan were beneficiaries during the first two decades of this century, but started to lose population to the rest of Canada during the period 1921–1931; since then, their net interprovincial migration figures have been continuously negative. We have seen that the same historical pattern is valid for the international migration flows of these two provinces. The most western of the three Prairie provinces, Alberta, benefited from the "go west" movement for longer than Manitoba and Saskatchewan: the figure representing net interprovincial migration became negative only in the 1930s. Since the 1950s, Alberta has again been attracting more interprovincial migrants than it has been losing, mainly due to its important natural resources. The gain has been particularly marked since 1974, as a result of the "energy crisis." The four Atlantic provinces, on the other hand, consistently lost population through interprovincial migration until the beginning of the 1970s. Finally, Quebec was able to maintain a rough balance between out-migration and in-migration until the 1940s; since the end of the Second World War, however, Quebec has been losing population through interprovincial migration almost every year.

An analysis of the evolution of interprovincial migration over the last 25 years using census migration data is obviously not feasible, since these data are available only for the periods 1956–1961, 1966–1971, and 1971–1976. An analysis of this type would, however, be meaningful, because it is important to know whether the interprovincial migration pattern observed through the 1971 census data for the 1966–1971 period (which will be projected in our multiregional analysis) may be taken as representative of a longer period of time, or whether it reflects an exceptional situation.

In order to throw some light on the evolution of interprovincial migration over the period 1951–1976, we will use the yearly migration estimates obtained by Statistics Canada (1975, 1977) from data on family allowance transfers. These estimates are based on certain assumptions which are themselves liable to criticism. Moreover, the estimates are not comparable to the migration data obtained from the census because of the difficulties introduced by multiple migrations, mortality, and emigration among interprovincial migrants, and because of under-enumeration. For the 1966–1971 period, the number of interprovincial migrants estimated from the data on family allowance transfers is actually twice as large as the number of interprovincial migrants enumerated by the census. However, even if the *level* of the yearly rates of migration obtained in this way is open to dispute, the *evolution* of these rates may be considered as a correct representation of the real trend. Since the census data on migration

used in our multiregional analysis cover a 5-year period, we will only discuss the evolution of migration rates over 5-year periods from 1951 to 1976.

The rates presented in Table 2 lead to some interesting results.

(a) Two provinces have continuously had an out-migration rate which is lower than average. Quebec has the lowest rate (primarily because of linguistic and cultural barriers), followed by Ontario (which has the strongest and most advanced economy of all the provinces). Newfoundland (a large island in the Atlantic far from any other province) has an out-migration rate close to the average. Prince Edward Island has the highest rate, which is not surprising, since this province is a small island close to Quebec, Nova Scotia, and New Brunswick. The latter two provinces and the three Prairie provinces also have high out-migration rates, almost twice as high as the Canadian average. These provinces are all industrially underdeveloped, although Alberta has advanced considerably since the 1960s.

(b) There is a strong positive correlation between in-migration rates and out-migration rates: the higher the out-migration rate of a province, the higher its in-migration rate.

(c) Over the total period considered (1951–1976), the province with the highest (positive) net interprovincial migration rate was British Columbia, but Ontario was the province that benefited the most from these migrations in terms of numbers of people: its net gain represents more than half (53%) of the total net gain received by all provinces. Alberta had a small (but recently increasing) positive net migration. All other provinces have lost population through interprovincial migration, the most unfavorable situation being that of Saskatchewan (which takes 27% of the total net loss), followed by a group comprising all four of the Atlantic provinces and Manitoba. Quebec's net migration rate was only slightly below zero, though its share in the total net loss was considerable (22%).

(d) It is worthy of note that the 1966–1971 out-migration rates used in our multiregional analysis are close to the 1951–1976 average rates, the difference only exceeding 10% in the case of Prince Edward Island, where, however, the absolute number of migrants is small. Of course, because net migration rates are much lower than out-migration rates, they are more sensitive to a particular situation. Thus, the net migration rates for 1966–1971 may be quite different from those estimated for the whole 1951–1976 period (see, for instance, the figures for New Brunswick, Quebec, Saskatchewan, and British Columbia).

(e) On the whole, it appears that for the eight provinces which have higher than average out-migration rates (and which, except for Alberta and British Columbia, also have a negative net migration), there has been a slow decrease in both the out-migration and the net migration rates (Quebec, Manitoba, and Saskatchewan being exceptions to the latter). Thus, in the period 1971–1976, some of these previously permanent losers have become winners in the population stakes: this is the case for three of the four Atlantic provinces. Yearly data

TABLE 2 Interprovincial migration rates[a] (%). The figures given are yearly averages over the 5-year periods[b] 1951–1956, 1956–1961, 1961–1966, 1966–1971, and 1971–1976.

| | In-migration | | | | | Out-migration | | | | | Net migration | | | | | Average migration 1951–1976 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Province | I | II | III | IV | V | I | II | III | IV | V | I | II | III | IV | V | In | Out | Net |
| Newfoundland | 1.2 | 1.4 | 1.4 | 1.7 | 2.3 | 2.0 | 2.4 | 2.0 | 2.5 | 2.4 | −0.8 | −1.0 | −0.6 | −0.8 | −0.1 | 1.6 | 2.3 | −0.7 |
| Prince Edward Island | 4.7 | 5.1 | 3.4 | 3.4 | 4.1 | 6.8 | 5.7 | 3.9 | 3.9 | 3.4 | −2.1 | −0.6 | −0.5 | −0.5 | 0.7 | 4.1 | 4.7 | −0.6 |
| Nova Scotia | 3.9 | 4.2 | 2.8 | 3.0 | 3.1 | 4.7 | 4.9 | 3.5 | 3.5 | 2.8 | −0.8 | −0.7 | −0.7 | −0.5 | 0.3 | 3.4 | 3.9 | −0.5 |
| New Brunswick | 3.1 | 3.9 | 2.9 | 3.1 | 3.4 | 5.2 | 5.2 | 3.8 | 3.7 | 2.9 | −2.1 | −1.3 | −0.9 | −0.6 | 0.5 | 3.3 | 4.2 | −0.9 |
| Quebec | 1.1 | 1.2 | 0.8 | 0.7 | 0.6 | 1.5 | 1.3 | 0.9 | 1.1 | 0.9 | −0.4 | −0.1 | −0.1 | −0.4 | −0.3 | 0.9 | 1.1 | −0.2 |
| Ontario | 2.5 | 2.2 | 1.4 | 1.6 | 1.2 | 1.7 | 1.7 | 1.2 | 1.2 | 1.3 | 0.8 | 0.5 | 0.2 | 0.4 | −0.1 | 1.8 | 1.4 | 0.4 |
| Manitoba | 3.8 | 3.8 | 2.8 | 2.9 | 2.9 | 4.6 | 4.5 | 3.3 | 3.7 | 3.4 | −0.8 | −0.7 | −0.5 | −0.8 | −0.5 | 3.2 | 3.9 | −0.7 |
| Saskatchewan | 3.5 | 3.5 | 2.5 | 2.4 | 2.8 | 5.0 | 4.9 | 3.3 | 4.1 | 3.7 | −1.5 | −1.4 | −0.8 | −1.7 | −0.9 | 2.9 | 4.2 | −1.3 |
| Alberta | 5.1 | 5.1 | 3.3 | 3.8 | 4.2 | 4.7 | 4.6 | 3.3 | 3.4 | 3.5 | 0.4 | 0.5 | 0.0 | 0.4 | 0.7 | 4.3 | 3.9 | 0.4 |
| British Columbia | 4.3 | 3.8 | 3.1 | 3.6 | 3.3 | 3.3 | 3.2 | 2.2 | 2.4 | 2.5 | 1.0 | 0.6 | 0.9 | 1.2 | 0.8 | 3.6 | 2.7 | 0.9 |
| Canada | 2.6 | 2.6 | 1.8 | 1.9 | 1.8 | 2.6 | 2.6 | 1.8 | 1.9 | 1.8 | – | – | – | – | – | 2.1 | 2.1 | – |

[a] These are calculated as a percentage from (number of migrations)/(arithmetic mean of initial and final populations).

[b] Columns I–V refer respectively to the periods 1951–1956, 1956–1961, 1961–1966, 1966–1971, and 1971–1976. Data source for columns I and II: Statistics Canada (1975), p. 204; for columns III–V: Statistics Canada (1977), pp. 43–47 and 49–56. As they are based on another estimation procedure, the rates for these last three periods are not strictly comparable to the rates for the first two periods.

show that, since 1974, even Newfoundland and Saskatchewan have become winners. The main victim of this reversal in migration trends is Ontario, which, after having been the main beneficiary of interprovincial migration for half a century, is now a province of net out-migration. There are some indications that this reversal, which actually started in the mid-sixties, could mark the beginning of a new trend, possibly toward a more balanced pattern of interprovincial migration flows (Termote and Fréchette 1979).

## 2 PATTERNS OF SPATIAL POPULATION GROWTH: 1966–1971

The main purpose of this section is to describe the most important demographic characteristics of the period 1966–1971. Before that, however, a short critical discussion of the data used is in order, the basic data themselves being presented in Appendix A.

### *2.1 Discussion of the Data*

#### 2.1.1 REGIONAL DISAGGREGATION

As mentioned previously, the spatial units used in this multiregional population analysis of Canada are the ten provinces (see Figure 1). The Yukon and Northwest Territories were left out, as data for these regions are either nonexistent or highly unreliable. However, the impact of this exclusion should be negligible since together these two regions contain only 0.3% of the total population of Canada.

The urban–rural dimension was also excluded from our analysis, mainly due to lack of data (particularly as far as fertility is concerned) but also because we wanted to keep the number of figures to be analyzed at a manageable level. With the two sexes, eighteen age groups, ten regions, and four demographic variables (population, births, deaths, and interregional migration flows by origin and destination), we already have 4680 basic "input" figures, from which tens of thousands of "output" numbers are generated.

Data constraints (mainly with regard to emigration) also prevented us from considering international migration, but in this case there is another, more basic reason for not introducing this component of demographic growth. The main purpose of our study is to analyze the observed demographic behavior of the Canadian population, i.e., the population residing on Canadian territory, and not to forecast the number of future residents in each of the regions. Of course, emigration is part of the behavior of the population presently residing on the territory covered by the study, so by not considering this phenomenon we do not actually analyze fully the demographic behavior of the Canadian population. The loss in coverage is, however, relatively small, since only about 60,000 Canadian residents are estimated to emigrate each year; this is almost seven times less than the annual number of interprovincial migrants, and represents only 0.3% of the total population.

### 2.1.2 CHOICE OF THE PERIOD

Only the census is able to provide reliable data on the age structure of migrants. A specific question on migration was introduced in the census questionnaire for the first time in 1941. The 1951 census had no question on migration, but detailed data relating to the 1956–1961 period were collected in the 1961 census. The 20% sample comprised persons aged 5 years and over in 1961 and residing in private households (including one-person households). The sample was increased to 30% in the 1971 census, and all households (private and public) were considered: the head of each household was asked where he lived 5 years earlier (on June 1, 1966). The 1976 census also contained a question on the place of residence 5 years earlier, but the results were not available while this report was being prepared. Because the 1971 census was the most recent one for which all necessary data had been published, the choice was clear: our multiregional population analysis will refer to the demographic conditions observed during the 5-year period from June 1, 1966 to May 31, 1971.

### 2.1.3 BIRTHS

Data on the number of births, categorized by the sex of the child and by the age of the mother (5-year age groups), are available (Statistics Canada, published yearly) for each province for each civil year (from January 1 to December 31). In order to translate these data into census years, we had to use monthly data for 1966 and 1971. The monthly data, however, are not disaggregated by age of mother, and by sex of child, so that we had to apply the distributions observed for the whole year 1966 to the total number of births registered from June to December 1966; the same was done to disaggregate the data for the sub-period January–May 1971. This may of course introduce some errors, but it seems acceptable to assume that the impact of these disaggregation errors will be negligible. Since they refer only to short sub-periods, we may suppose that any errors will be diluted when the data for the sub-periods are added to the "correct" data observed for 1967–1970.

A more important problem results from the fact that the data for Newfoundland are not disaggregated by the age of the mother. As Newfoundland has the highest gross reproduction rate of all the provinces, we estimated the number of births to mothers in different age groups by adopting the age-specific fertility rates observed for Prince Edward Island, which has the second largest gross reproduction rate and which is also an island in the Atlantic. The difference between the total number of births so estimated and the total number of births observed was then distributed over the 5-year age groups of the mother in the same relative proportions as the earlier estimate. By transferring the structure of age-specific fertility rates from one province to another, we may of course introduce some errors. It is, however, highly probable that these errors will be small. Indeed, it has been found that ". . . even under greatly

differing conditions of fertility, the relative levels of age-specific rates for women in the age group from 15–19 to 40–44 are not very different." (United Nations 1957). Lavoie (1978) has recently provided a more complete proof of the acceptability of our estimates. Using hospital data on the number of childbirths by age of mother (childbirths in hospitals representing 99.3% of the total number of births in 1966–1971), Lavoie obtained the following fertility rates (%) for each of the 5-year age groups (starting with the 15–19-year-old group): 4.0, 11.4, 10.4, 7.4, 4.5, and 1.9. As may be verified by referring to Table 4 (Section 2.2.2), these rates are quite close to our own estimates, except in the case of the 15–19 age group, for which however only a small number of births are involved. We may thus be confident that the estimated disaggregation by age of mother of the total number of births observed in Newfoundland will be acceptable.*

### 2.1.4 DEATHS

Data on the number of deaths categorized by sex and age are available for each province. It was therefore only necessary to convert the data from civil years to census years. The procedure used to solve this problem was similar to that adopted for the data on births.

### 2.1.5 MIGRATION

Only interprovincial migration is considered here. It is widely accepted that migration data derived from a census question on the place of residence "5 years ago" are subject to a number of limitations. These limitations are related to under-enumeration,** multiple migration,*** return migration,† emigration,

*Note that Statistics Canada (1975), in projecting the population over the 1971–2001 period, chose to apply to Newfoundland the age-specific fertility rates observed in Nova Scotia, modified by a ratio equal to 1.35, representing the excess fertility of Newfoundland. The choice of Nova Scotia was justified by the fact that the 1.35 ratio between the total number of actual births in Newfoundland and the total number of births estimated using Nova Scotia fertility rates was more or less constant over the 1961–1971 period. Such a constant ratio is an important criterion when fertility forecasts have to be made (this was the case for Statistics Canada) but is not relevant for us, as we consider only the characteristics of a single period. As a check, we compared Newfoundland's gross reproduction rate as obtained by Statistics Canada (1975) with the result obtained here: our figure is 1.90, while Statistics Canada gave 1.85.

**The rate of population under-enumeration is usually larger at the ages of high mobility. This is also the case for the 1971 Canadian census: the rate has been estimated by Statistics Canada to be 1.9% averaged over all ages, but 2.6% for the 15–19 age group, 4.5% for the 20–24 age group, and 2.5% for the 25–39 age group. For interprovincial migrants, the national rate of under-enumeration has been estimated to be 1.1% for the 5–14 age group, 11.3% for the 15–19 age group, 10.5% for the 20–24 age group, 4.8% for the 25–29 age group, 3.5% for the 30–64 age group, and 7.2% for the group aged 65 years and over, the average rate of under-enumeration being 5.0%.

***A comparison between the yearly data on interprovincial migration as estimated from declarations of family allowance transfers, and the 1971 census data on the number of interprovincial migrants between 1966 and 1971, shows that, on the average, each of these "census migrants" had made about two interprovincial migrations during this 5-year period.

†The 1971 census showed that return migrants (i.e., those who had the same municipality of residence in 1971 as in 1966, but had made at least two migrations between 1966 and 1971) represented 13.4% of the total number of intermunicipal migrants. Using a 10% sample of workers insured against unemployment, Vanderkamp (1973) has estimated that return migrants represented 28.8% of all interprovincial migrants in 1966–1967, and 22.1% in 1967–1968.

and mortality among migrants. It should, however, be noted that when census data on migration are used for population projections, as is the case in our multiregional analysis, only the error due to under-enumeration has to be considered. (This is because we project the number of migrants who survive in the country, and not the number of migrations.) However, we did not correct for this factor because only the national rate of under-enumeration of inter-provincial migration is known by age group. Application of this national rate would introduce some bias, because there seem to be important differences in the rate of under-enumeration among the various provinces.

It was necessary to solve certain problems in order to convert the census data on migration into a form more suitable for our analysis. Most of these problems relate to the age of the migrant.

(a) *Migrants aged 0–4 years* at the end of the census period are not enumerated, since they were not alive on June 1, 1966 and therefore had no place of residence at the time! In order to obtain migration data for this age group, it was necessary to rely on the results of the question on the place of birth: those residing in 1971 in a province other than that in which they were born are by definition migrants. Data obtained in this way are not strictly comparable to data obtained directly from the census question on migration, because rates of under-enumeration may differ from one question to another, but it is likely that the differences are small.

Other ways in which migration estimates for the 0–4 age group could have been obtained are (i) assign to the children aged 0–4 the mobility status observed for the head of the family (or household in the case of non-family members); or (ii) apply the appropriate fertility rates to the observed number of female migrants (assuming no fertility differentials between female migrants and female non-migrants). The advantage of these last two methods is that the number of projected migrants in the 0–4 age group is always in agreement with the number of mothers or household heads who are expected to move. The disadvantage, however, is that it is necessary to assume that all these children were born before the migration of the mother or household head.

(b) *Migrants aged 5–14 years* at the end of the census period were not required to fill in the census questionnaire, and therefore the question on migration remained unanswered. Statistics Canada therefore assigned to the population in this age group the mobility status of the head of the family (for the family members) or of the household (for non-family members). The procedure seems acceptable, but again, as in the case of the number of migrants aged 0–4 years, the data are not strictly comparable with those obtained directly from answering the census question on migration.

(c) Only the total number of *migrants aged 65 years and over* at the time of the census was tabulated by Statistics Canada (1976). For the purpose of our multiregional demographic analysis, however, it was more meaningful to disaggregate the data for this population by age. The disaggregation procedure adopted was suggested and realized by Dimiter Philipov, of the International Institute for Applied Systems Analysis (IIASA). The technique is based on a

linear extrapolation within the group aged 65 years and over, using the following rule: if $x$ represents the total number of migrants aged 65 years and over, then the number of migrants aged 65–69 years is estimated to be equal to $5x/15$; the number in the 70–74 age group is equal to $4x/15$; the number in the 75–79 age group is equal to $3x/15$; the number in the 80–84 age group is equal to $2x/15$; and the number aged 85 years and over is equal to $x/15$. (The denominator is of course obtained by summing the weights given to each age group.)

This procedure is clearly rather arbitrary, but probably no more so than any other procedure which could have been adopted. In this particular case, it seems to lead to a slight overestimation of migration for the oldest age group, and a slight underestimation of migration for the group aged 65–69 years. However, the number of migrants aged 65 years and over is so small that the impact of the estimation error is not significant.

(d) *Migrants whose previous place of residence is unknown* are quite numerous: in the 1971 census, 279,300 persons (7.1% of the total number of intermunicipal migrants aged 5 years and over) reported that they had moved between 1966 and 1971, but did not indicate their 1966 place of residence. Some of these migrants did, however, report their previous province of residence, leaving only the municipality unknown. It was therefore necessary to distribute only the migrants whose previous province of residence was not known; migrants were assigned to each province in proportion to the known interprovincial migration flows.*

(e) *Random rounding* was applied to all 1971 census data, and therefore the number of migrants obtained by summing over all age groups does not correspond to the total number of migrants tabulated directly; the difference between the figures has been redistributed among the age groups in the same proportions as the original disaggregated data.

#### 2.1.6 POPULATION

The data on population were taken from the 1966 and 1971 censuses. The figures for each of the ten provinces had been categorized into 5-year age groups, and were averaged in order to obtain the necessary estimates of the population at mid-period.

### *2.2 Patterns of Regional Growth: 1966–1971*

This section describes the pattern of each of the various components of multiregional demographic growth, and the resultant age and sex structure of the

*This is one of the three factors which explain why the total number of interprovincial migrants (980,160) used in our analysis differs from the figure published in the 1971 census (Statistics Canada 1974). According to this publication, the total number of interprovincial migrants aged 5 years and over was 851,495. To this figure we added 52,600 migrants whose province of origin had not been declared, and 85,160 migrants aged between 0 and 4 years; by subtracting the 9,095 migrants who had left either the Yukon or Northwest Territories (which are excluded from our study), we obtained a total number of interprovincial migrants equal to 980,160.

population. Firstly, the relative importance of each component of growth will be investigated.

### 2.2.1 RELATIVE IMPORTANCE OF COMPONENTS OF REGIONAL GROWTH

Table 3 presents the total increase in population for each province between 1966 and 1971, and its decomposition into three components: natural growth (difference between number of births and number of deaths), net interprovincial migration (difference between number of in-migrants and number of out-migrants), and net international migration (difference between number of immigrants and number of emigrants). These data suggest the following points:

(a) Two-thirds of Canada's increase in population between 1966 and 1971 was due to natural growth. Half of Canada's demographic growth was concentrated in Ontario, which contained only 35% of the total population in 1966. British Columbia and Alberta, which in 1966 contained respectively 9% and 7% of Canada's total population, took respectively 20% and 11% of the total increase, while Quebec, with a 1966 share in the total population of 29%, received only 16% of the increase.

(b) The relative contribution of each component of growth differed considerably among provinces. Natural growth was the major component tending to increase the population of the Atlantic provinces, representing in some cases (New Brunswick and Newfoundland) almost twice the total population increase. Much the same is true of Manitoba and Saskatchewan, though international migration also played a significant role in the growth of Manitoba's population. Ontario, Alberta, and British Columbia benefited from all three sources of demographic growth to differing extents. Migration (particularly interprovincial migration) was the predominant source in British Columbia, where natural growth represented only 28% of the total, while it was only secondary in Alberta, the contribution of migration being only 36% in 1966–1971. (However, since the oil crisis of 1973–1974, migration to Alberta has increased dramatically.) Half of Ontario's growth can be attributed to migration, especially international migration. Quebec's population increase was due mainly to natural growth, with a gain from international migration partially compensating for a considerable loss (in absolute terms) due to interprovincial migration.

(c) About 70% of Canada's natural growth was concentrated in three provinces: Ontario (34%), Quebec (27%), and Alberta (10%). But two-thirds of Canada's growth due to international migration took place in Ontario, and 18% in British Columbia, the eight other provinces having to share the remaining 15%. Interprovincial migration showed the same pattern: Ontario and British Columbia received 87% of the total gain through interprovincial migration, but in this case British Columbia was the main beneficiary, receiving 60% of the total interprovincial gains. On the negative side, the two main "losers" from interprovincial migration between 1966 and 1971 were Quebec and Saskatchewan, each of which suffered one-third of the total interprovincial losses.

TABLE 3 Components of multiregional demographic growth, 1966–1971.

| Province or territory | Total increase in population[a] | Natural growth[b] | Net interprovincial migration[c] | Net international migration[d] |
|---|---|---|---|---|
| Newfoundland | 28,708 | 49,096 | −17,589 | −2,799 |
| Prince Edward Island | 3,106 | 5,211 | −1,139 | −966 |
| Nova Scotia | 32,921 | 37,411 | −8,790 | 4,300 |
| New Brunswick | 17,769 | 35,233 | −8,764 | −8,700 |
| Quebec | 246,919 | 288,727 | −78,404 | 36,596 |
| Ontario | 742,236 | 373,072 | 60,757 | 308,407 |
| Manitoba | 25,181 | 49,259 | −34,535 | 10,457 |
| Saskatchewan | −29,102 | 50,868 | −79,309 | −661 |
| Alberta | 164,671 | 105,295 | 26,423 | 32,953 |
| British Columbia | 310,947 | 88,494 | 138,215 | 84,238 |
| Yukon and Northwest Territories | 10,075 | 6,500 | 3,135 | 440 |
| Canada | 1,553,431 | 1,089,166 | – | 464,265 |

[a]Data from 1966 and 1971 censuses, Statistics Canada (1973a,b, 1974, 1976). Total increase is the difference between the total population enumerated at the 1971 census and total population enumerated at the 1966 census.
[b]Vital Statistics, Statistics Canada (published yearly).
[c]1971 census, Statistics Canada (1973b).
[d]Obtained as a residual, by subtracting the sum of the increase due to natural growth and net interprovincial migration from the total increase in population.

As mentioned earlier, international migration is not included in our multiregional analysis. However, given its considerable share in the total growth of some provinces, and the very uneven interprovincial distribution of the gains from international migration, one may expect that international migration has a significant effect on population redistribution. The impact of international migration on the interprovincial redistribution of the Canadian population is considered in Section 4.

### 2.2.2 REGIONAL FERTILITY DIFFERENTIALS

It is not surprising that a large country with considerable socioeconomic regional disparities should display corresponding differences in fertility. Table 4 presents the age-specific fertility rates observed for each province in 1966–1971, as well as the resulting gross reproduction rate, crude birth rate, and mean age of fertility. (The contributions made by the age groups 10–14 years and 45–49 years were considered negligible and are therefore not included in the table).

Quebec had the lowest gross reproduction rate, and the lowest fertility rates for the three youngest age groups. (The decrease in fertility in Quebec was particularly rapid and quite recent.) It also had the lowest crude birth rate and

TABLE 4 Provincial fertility differentials, 1966–1971.

| Province | Age-specific fertility rates[b] (%) | | | | | | Gross reproduction rate[a,b] | Crude birth rate[b] (per thousand) | Mean age of mother[b,c] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | | | Observed | Calculated from fertility schedule |
| Newfoundland | 2.8 | 11.4 | 10.9 | 6.7 | 4.3 | 1.7 | 1.9 | 25.5 | 26.5 | 28.1 |
| Prince Edward Island | 2.2 | 8.8 | 8.6 | 5.5 | 3.5 | 1.4 | 1.5 | 18.7 | 26.8 | 28.1 |
| Nova Scotia | 2.8 | 8.4 | 7.5 | 4.4 | 2.5 | 0.9 | 1.3 | 18.3 | 26.0 | 27.1 |
| New Brunswick | 2.7 | 8.7 | 7.9 | 4.8 | 2.9 | 1.0 | 1.4 | 19.1 | 26.1 | 27.5 |
| Quebec | 1.1 | 6.5 | 7.0 | 4.2 | 2.4 | 0.8 | 1.1 | 16.5 | 27.3 | 28.2 |
| Ontario | 2.5 | 7.7 | 7.4 | 4.2 | 2.0 | 0.6 | 1.2 | 17.8 | 26.4 | 27.0 |
| Manitoba | 2.4 | 8.0 | 8.2 | 4.7 | 2.4 | 0.7 | 1.3 | 18.2 | 26.4 | 27.3 |
| Saskatchewan | 2.7 | 9.5 | 8.6 | 5.0 | 2.8 | 0.9 | 1.5 | 18.7 | 26.3 | 27.3 |
| Alberta | 2.9 | 9.1 | 8.0 | 4.4 | 2.2 | 0.7 | 1.4 | 20.0 | 26.0 | 26.8 |
| British Columbia | 2.8 | 7.8 | 7.1 | 3.8 | 1.7 | 0.5 | 1.2 | 17.0 | 25.9 | 26.5 |
| Canada | 2.2 | 7.7 | 7.5 | 4.3 | 2.2 | 0.7 | 1.2 | 17.8 | 26.5 | 27.3 |

[a]The gross reproduction rate is the sum of the age-specific fertility rates multiplied by five (the width of the age groups). When larger than 1.05 (1.05 instead of 1.0 because of mortality before the last age of reproduction), it indicates that the population can reproduce itself.

[b]Rates and mean ages were computed directly from vital statistics data published yearly by Statistics Canada. They refer to a yearly average reflecting the whole 1966–1971 period, and not to the arithmetic mean of the yearly figures. All rates are obtained by dividing one-fifth of the number of births observed between 1966 and 1971 by the arithmetic mean of the relevant 1966 and 1971 population (total population for the crude birth rate).

[c]The mean age of the mother has been computed using the formula:

$$\bar{m} = \sum_{x} (x + 2.5) \cdot p(x)/100$$

where $p(x)$ is the percentage share of mothers between ages $x$ and $x + 5$ at time of childbearing; the mean age thus depends on the age structure of the population. In order to eliminate the effect of the age structure, the mean age from the fertility schedule has also been computed using the formula:

$$\bar{m}^* = \sum_{x} (x + 2.5) \cdot F(x) / \sum_{x} F(x)$$

where $F(x)$ is the age-specific fertility rate.

the highest mean age of fertility, and is the only province where the 25–29 fertility rate was significantly higher than the 20–24 rate (though it was still the lowest of all 25–29 provincial rates). These figures imply that if the 1966–1971 rates were to prevail in Quebec, the population would remain just above replacement level. However, Quebec's fertility rates have continued to decline during the 1970s, so that the population is actually below replacement level: in 1976, the gross reproduction rate was 0.8. The only other province which had a fertility level significantly below average is British Columbia, though the younger age groups were an exception; this could be partially due to immigration. Ontario had a fertility regime which is about the average. Manitoba and the Atlantic province of Nova Scotia had almost the same fertility level, slightly above average, while the other three Atlantic provinces and Saskatchewan all had relatively high rates. The highest rates were found in Newfoundland, which in 1966–1971 had a gross reproduction rate of 1.9 and a crude birth rate of 2.6%.

In order to illustrate the importance of the fertility differentials among provinces, Figure 2 shows the age-specific fertility rates of the two extreme cases (Quebec and Newfoundland) compared to the Canadian average.

The comparison between the observed mean age of the mothers and the mean age from the fertility schedule (which eliminates the effect of age structure) does not introduce any new information, the difference between the measures being small; only in the four Atlantic provinces was this difference more than 1 year, being largest in Newfoundland, which also had the lowest mean age of population (26.4 years).

### 2.2.3 REGIONAL MORTALITY DIFFERENTIALS

It is not necessary to present the observed death rates for each age group, as mortality differences among provinces are significant only at the extremes of age. Table 5 therefore shows the death rates for only the 0–4 and 60–64 age groups, subcategorized by sex, as well as the gross death rate (sum of the age-specific death rates multiplied by the age interval), the crude death rate, and the expectation of life at birth.

Infant mortality was still quite high in Canada (4.5 deaths per thousand children aged 0–4 years), and the differences among provinces were quite significant: the highest rate for both sexes (in Newfoundland) is 44% higher than the lowest rate (in Ontario), the range going from 4.5 per thousand to 6.5 per thousand for males and from 3.5 per thousand to 5.0 per thousand for females.

On the whole, the provinces with low infant mortality rates also had high death rates in the older age groups (e.g., the rate for the 60–64 age group). This is, of course, not unexpected: in regions with high infant mortality rates, only the fittest survive through childhood to benefit from the more healthy, less industrialized environment often correlated with high infant mortality. The highest death rate for the 60–64 age group was found in Quebec, which

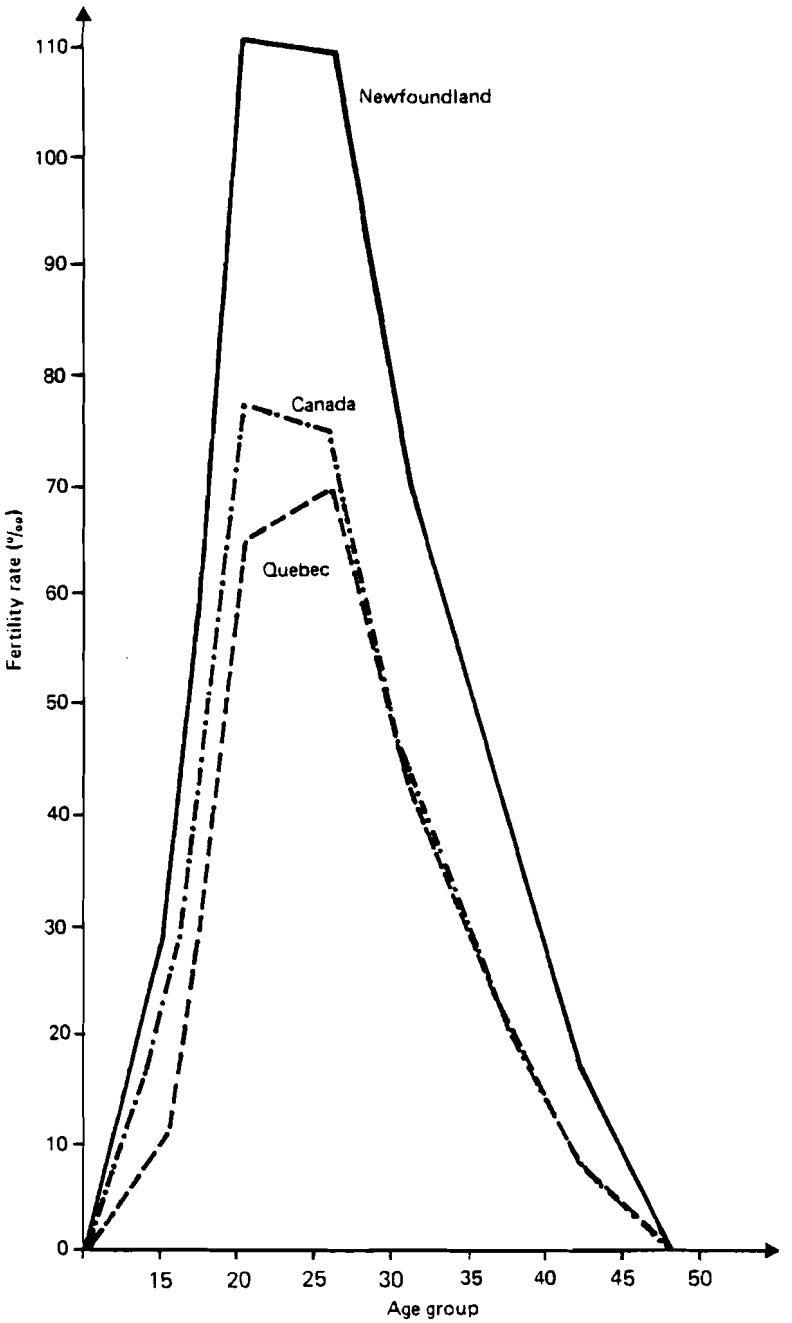


FIGURE 2 Age-specific fertility rates (‰) in Quebec, Newfoundland, and Canada, 1966–1971.

TABLE 5 Provincial mortality differentials[a], 1966–1971. Data are given for males (M) and females (F) separately.

| Province | Death rate 0–4 years (per thousand) | | Death rate 60–64 years (per thousand) | | Gross death rate | | Crude death rate (per thousand) | | Life expectancy | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | M | F | M | F |
| Newfoundland | 6.5 | 5.0 | 21.1 | 11.8 | 2.8 | 2.1 | 7.2 | 5.1 | 69.5 | 75.3 |
| Prince Edward Island | 6.2 | 4.1 | 22.8 | 10.1 | 2.7 | 1.8 | 10.6 | 7.8 | 69.1 | 76.5 |
| Nova Scotia | 5.1 | 3.9 | 23.9 | 12.4 | 2.8 | 2.0 | 9.9 | 7.3 | 68.6 | 75.7 |
| New Brunswick | 5.2 | 4.2 | 22.5 | 11.6 | 2.8 | 2.0 | 9.0 | 6.6 | 69.1 | 75.8 |
| Quebec | 5.0 | 4.1 | 25.8 | 12.8 | 3.0 | 2.2 | 7.8 | 5.6 | 68.4 | 75.0 |
| Ontario | 4.5 | 3.5 | 24.7 | 11.6 | 2.9 | 2.0 | 8.7 | 6.5 | 69.3 | 76.4 |
| Manitoba | 5.4 | 4.0 | 20.0 | 10.4 | 2.6 | 1.9 | 9.5 | 6.6 | 70.1 | 76.8 |
| Saskatchewan | 5.9 | 4.6 | 17.5 | 9.1 | 2.5 | 1.7 | 9.6 | 6.1 | 70.8 | 77.5 |
| Alberta | 4.9 | 3.9 | 19.1 | 9.7 | 2.5 | 1.8 | 7.8 | 5.0 | 70.7 | 77.2 |
| British Columbia | 5.0 | 3.9 | 21.6 | 10.6 | 2.7 | 1.8 | 9.8 | 6.7 | 69.7 | 76.8 |
| Canada | 5.0 | 3.9 | 23.4 | 11.5 | 2.8 | 2.0 | 8.6 | 6.1 | 69.3 | 76.1 |

[a]Calculation of rates and life expectancy is based on data published by Statistics Canada, Vital Statistics (published yearly), and refers to a yearly average reflecting the whole 1966–1971 period (not to the arithmetic mean of the yearly figures). All rates are obtained by dividing one-fifth of the number of deaths observed between 1966 and 1971 by the arithmetic mean of the relevant 1966 and 1971 population. The gross rate is equal to the sum of the age-specific rates, multiplied by five (the width of the age interval). Because of the assumption of linearity within the 5-year age groups and within the 1966–1971 period, these rates and expectancies are not strictly comparable to those published by Statistics Canada.

also had one of the lowest infant mortality rates. The Quebec mortality figures for males and females in this age group were 25.8 and 12.8 per thousand, respectively, i.e., more than 40% higher than the lowest rates (observed in Saskatchewan).

It is striking that the four Atlantic provinces, and Quebec, all had infant mortality rates which are higher, and life expectancies which are lower, than the Canadian average. The exact opposite was the case for the five provinces west of Quebec, with the exception of infant mortality in Manitoba and Saskatchewan. This was true for males as well as for females.

Looking at the gross death rate, the main conclusion is that the three Prairie provinces had the most "favorable" mortality conditions (their gross rates were all significantly below average), while Quebec had the "worst" mortality regime. All other provinces were about average.

Because of differences in the age structure in different regions, it is of course not very meaningful to compare crude death rates among provinces. However, a comparison of crude death rates with crude birth rates may prove

interesting. Newfoundland, Alberta, and Quebec, the three provinces with the youngest age structure (Section 2.2.5) naturally had the lowest crude death rates, but the crude birth rates in Newfoundland and Alberta were the highest in the country, while Quebec's was the lowest.

Unlike the crude death rates, the mean ages from the mortality schedules may be compared between provinces, as the effect of age structure on the mortality level has been eliminated. A comparison of the observed mean age at death and the mean age from the mortality schedule, as shown in Table 6, provides an estimate of the importance of the age structure of the population.

These results show that if the age structure of the population is taken into account, there were no significant differences in mortality between the regions: for males, the mean age from the mortality schedule lay in the range 77.2 to 77.6 years, and for females in the range 78.8 to 79.3 years. The range of the mean age at death was much larger, going from 57.9 (Newfoundland) to 65.1 years (Saskatchewan) for males and from 61.5 (Newfoundland) to 69.8 years (Prince Edward Island) for females. For both sexes, the difference between the two measures was largest for Newfoundland and Quebec, reflecting the younger age structure in these provinces. This is a result of the high fertility rates prevailing in the recent past.

Finally, despite all these interprovincial differences in infant and old-age mortality, the number of years a baby born in 1966–1971 may have expected to live shows little variation between provinces. The expectation of life lay between 68.4 and 70.8 years for males, and between 75.0 and 77.5 years for females, the lowest life expectancy being observed in Quebec and the highest in Saskatchewan.

### 2.2.4 REGIONAL MIGRATION DIFFERENTIALS

It is obviously impossible to analyze every migration rate, disaggregated by age and sex, for each origin–destination pair (the data are presented in Appendix B). Since the age and sex structure of these rates were similar for all flows, we will analyze only the total (i.e., for all ages and sexes) migration rates between provinces. We will, however, also present the mean age for each migration flow and discuss the age and sex structure of the migrants for all flows. (In Section 3 we introduce a disaggregation by age and sex when constructing the multiregional life tables.)

Table 7 shows that provinces could be classified into three groups on the basis of their interprovincial out-migration rates.

(a) Three provinces had a low rate of total out-migration: Ontario, British Columbia, and Quebec. Ontario and British Columbia were also the main beneficiaries of interprovincial migration (see Table 3), while Quebec was one of the main losers from interprovincial migration. The low out-migration rates of Ontario and British Columbia were mainly due to their favorable economic situation (British Columbia's peripheral location may also have played a role).

TABLE 6 Mean ages of males and females at death in each of the Canadian provinces, 1966–1971.

| | Mean age at death[a] | | | |
|---|---|---|---|---|
| | Observed | | Calculated from mortality schedule | |
| Province | M | F | M | F |
| Newfoundland | 57.9 | 61.5 | 77.6 | 79.3 |
| Prince Edward Island | 64.5 | 69.8 | 77.2 | 78.8 |
| Nova Scotia | 63.4 | 68.4 | 77.2 | 79.1 |
| New Brunswick | 62.4 | 66.9 | 77.4 | 79.1 |
| Quebec | 59.9 | 64.2 | 77.5 | 79.2 |
| Ontario | 63.2 | 68.0 | 77.6 | 79.3 |
| Manitoba | 64.6 | 67.9 | 77.5 | 79.1 |
| Saskatchewan | 65.1 | 66.6 | 77.4 | 78.9 |
| Alberta | 62.2 | 64.0 | 77.6 | 79.1 |
| British Columbia | 64.9 | 68.0 | 77.3 | 78.9 |
| Canada | 62.5 | 66.6 | 77.4 | 79.1 |

[a]See footnotes to Table 4.

Though Quebec was in a relatively poor economic condition, the main reason for the low rate of out-migration is probably cultural heterogeneity. The fact that 80% of the population of Quebec is French-speaking and that there are only small French-speaking minorities in the other provinces constitutes a formidable cultural barrier which is difficult to overcome. Out-migration from Quebec was composed largely of the English-speaking population, which had an out-migration rate about 13 times larger than that observed for the French-speaking population: if English-speaking out-migrants were excluded, Quebec's out-migration rate would have been three times smaller than it actually was! (The English-speaking population of Quebec had a yearly interprovincial out-migration rate of 2.7%, compared with the corresponding figure for the French-speaking population of 0.2%, and an out-migration rate of 0.6% for the total population of Quebec.) Quebec's only relatively large out-migration flow was directed toward Ontario, this being partly the reflection of an urban growth phenomenon. (Canada's capital city, Ottawa, is located on the Ontario side of the border between Ontario and Quebec.) All provinces east of Ontario had their highest out-migration flows directed toward this province, and all provinces west of Ontario had their second highest out-migration flow into Ontario. Since it is centrally located and economically dominant, this province was able to attract large numbers of migrants from all over Canada. Of the migrants who left the other nine provinces, 37% went to Ontario.

TABLE 7 Total ("crude") migration rates[a] (per thousand) between provinces, 1966–1971.

| Province of origin | Province of destination | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | Total |
| Newfoundland (NFD) | – | 0.2 | 1.9 | 0.9 | 1.1 | 9.2 | 0.3 | 0.1 | 0.4 | 0.8 | 14.8 |
| Prince Edward Island (PEI) | 0.6 | – | 4.9 | 3.2 | 1.5 | 8.4 | 0.6 | 0.3 | 1.2 | 1.3 | 22.2 |
| Nova Scotia (NS) | 0.8 | 0.7 | – | 2.6 | 1.6 | 8.5 | 0.5 | 0.2 | 1.1 | 2.0 | 18.1 |
| New Brunswick (NB) | 0.5 | 0.6 | 3.5 | – | 3.4 | 7.6 | 0.6 | 0.2 | 0.9 | 1.3 | 18.5 |
| Quebec (QUE) | 0.1 | 0.0 | 0.3 | 0.4 | – | 4.2 | 0.2 | 0.1 | 0.3 | 0.7 | 6.3 |
| Ontario (ONT) | 0.2 | 0.1 | 0.7 | 0.5 | 1.8 | – | 0.6 | 0.2 | 0.8 | 1.6 | 6.6 |
| Manitoba (MAN) | 0.1 | 0.1 | 0.5 | 0.4 | 1.2 | 6.2 | – | 2.7 | 4.5 | 6.7 | 22.4 |
| Saskatchewan (SAS) | 0.0 | 0.0 | 0.2 | 0.1 | 0.4 | 3.2 | 4.5 | – | 11.6 | 8.0 | 28.1 |
| Alberta (ALB) | 0.1 | 0.0 | 0.3 | 0.2 | 0.6 | 2.9 | 1.3 | 1.9 | – | 9.5 | 16.8 |
| British Columbia (BC) | 0.1 | 0.0 | 0.3 | 0.2 | 0.6 | 2.6 | 0.8 | 0.8 | 3.5 | – | 8.9 |

[a]Migration rates are obtained by dividing one-fifth of the 1966–1971 migrants enumerated at the 1971 census by the arithmetic mean of the population enumerated in 1966 and 1971 in the province of origin. Because of rounding, the total out-migration rate is not necessarily equal to the sum of the destination-specific rates.

(b) Four provinces had middle-range out-migration rates: Newfoundland, Nova Scotia, New Brunswick, and Alberta. The three Atlantic provinces were also provinces of net out-migration, while the Prairie province of Alberta gained population from interprovincial migration. The relatively low rate of out-migration from Newfoundland may at first sight appear surprising because, from the economic point of view, the island was a depressed area with a very high unemployment rate. This low level of migration may be explained by the location of the province in the Atlantic Ocean, far from the main economic centers of Canada. In such a case, once the decision to move has been made, distance is not a major factor in the choice of destination; thus it is not surprising to find that almost two-thirds of Newfoundland's out-migrants went to Ontario, 3,000 kilometers away. Ontario was also the destination of more than half of the migrants from Nova Scotia and New Brunswick, and attracted a sizable number of out-migrants from Alberta [though the majority of Alberta's out-migrants (60%) actually went to British Columbia].

(c) Three provinces had relatively high out-migration rates: Prince Edward Island, Manitoba, and Saskatchewan. All of these had a level of economic development which was well below average, and are located so as to encourage potential out-migrants to leave: Prince Edward Island is a tiny island with an economy based on fishing and agriculture, located close to Nova Scotia, New Brunswick, and Quebec; Manitoba and Saskatchewan are both agricultural regions located between Canada's two main poles of economic growth, Ontario and Alberta–British Columbia.

The "crude" out-migration rates given in Table 7 are obtained by dividing the total number of out-migrants by the total population, in the same way as the "crude" birth rate is obtained by dividing the total number of births by the total population. It is also possible to calculate "gross" migration rates by summing the age-specific migration rates, and multiplying this sum by five (the width of the age-groups) to obtain what has been called the "gross migraproduction rate" (GMR), a measure analogous to the gross reproduction rate (GRR) used in Section 2.2.2. Table 8 presents the gross migraproduction rates for each migration flow and for the total out-migration of each province between the years 1966 and 1971.

It is clear that Ontario occupied a dominant position in the interprovincial migration pattern: its GMR to each province of destination was always much lower than that of the corresponding counter-flow. The reverse was true for Prince Edward Island, Saskatchewan, and Manitoba. These GMRs demonstrate the high geographical mobility of the Canadian population over the considerable distances separating the provinces. It is interesting to note that the lowest GMR in Canada – 0.48 for Ontario – was larger than the highest GMR in Bulgaria, even though the interregional distances in Canada are very much larger (Philipov 1978).

TABLE 8 Gross migraproduction rates[a] between provinces, 1966–1971.

| Province of origin | Province of destination | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | Total |
| Newfoundland (NFD) | – | 0.02 | 0.13 | 0.06 | 0.09 | 0.62 | 0.02 | 0.01 | 0.03 | 0.06 | 1.03 |
| Prince Edward Island (PEI) | 0.04 | – | 0.37 | 0.24 | 0.10 | 0.60 | 0.04 | 0.02 | 0.09 | 0.10 | 1.61 |
| Nova Scotia (NS) | 0.06 | 0.05 | – | 0.19 | 0.11 | 0.59 | 0.04 | 0.01 | 0.08 | 0.14 | 1.28 |
| New Brunswick (NB) | 0.03 | 0.04 | 0.27 | – | 0.25 | 0.53 | 0.04 | 0.01 | 0.06 | 0.09 | 1.33 |
| Quebec (QUE) | 0.01 | 0.00 | 0.02 | 0.03 | – | 0.33 | 0.01 | 0.01 | 0.02 | 0.06 | 0.49 |
| Ontario (ONT) | 0.02 | 0.01 | 0.05 | 0.03 | 0.13 | – | 0.05 | 0.02 | 0.06 | 0.13 | 0.48 |
| Manitoba (MAN) | 0.00 | 0.01 | 0.03 | 0.03 | 0.09 | 0.46 | – | 0.20 | 0.32 | 0.57 | 1.70 |
| Saskatchewan (SAS) | 0.00 | 0.00 | 0.02 | 0.01 | 0.03 | 0.24 | 0.33 | – | 0.85 | 0.66 | 2.14 |
| Alberta (ALB) | 0.01 | 0.00 | 0.02 | 0.01 | 0.04 | 0.21 | 0.09 | 0.13 | – | 0.81 | 1.33 |
| British Columbia (BC) | 0.00 | 0.00 | 0.02 | 0.01 | 0.04 | 0.19 | 0.06 | 0.06 | 0.26 | – | 0.66 |

[a]The gross migraproduction rate is obtained by summing the age-specific out-migration rates and multiplying the result by five (the width of the age group). This rate represents the number of out-migrations a person should make over his entire life span if he lived through all of the age groups considered. Because of rounding, the total migraproduction rate is not necessarily equal to the sum of the destination-specific rates.

The results of Table 8 also show that it is possible to achieve a relatively large flow of migrants between non-adjacent provinces (e.g., the number of expected migrations from the Atlantic Provinces to Ontario, British Columbia, and Alberta). This could mean that once the decision has been made to move over a large distance (and in Canada, distances between provinces are in most cases very large . . .), the distance itself becomes less important: the marginal cost of moving a few hundred kilometers more becomes negligible. The empirical results of many migration models have shown that economic factors become dominant when long-distance migration is considered. In the Canadian case, however, linguistic and cultural factors also play a role: migrants from the Atlantic provinces tended to bypass Quebec for these reasons. Nova Scotia was expected to send more migrants 6,000 kilometers to British Columbia than to Quebec, a distance of "only" 1,200 kilometers.*

The mean age of the migrants for each origin–destination pair is considered in Table 9. It reveals that there were wide disparities among provinces, for total migration as well as for the destination-specific out-migration flows. Because of the age selectivity inherent in migration, and the significant differences in the age structure of the provinces (Section 2.2.5), it is not surprising to find that there was a considerable difference between the mean age of the migrants and the mean age calculated using the mobility schedule. The difference between these two measures is about 10 years, the mean age of all interprovincial migrants being 24 years, and the mean age from the schedule being 34 years.

The lowest mean ages calculated from the schedule are those of the out-migrants from the four Atlantic provinces (about 30 years), while the highest are those of migrants from Quebec (37) and Alberta (38). It is interesting to note that on the matrix of Table 9, the highest mean ages are generally close to the diagonal: the mean age of migration seems to be higher for short distances than for long distances. There is, however, one main exception to this apparent rule: British Columbia received among the oldest migrants from every province of origin. All regions west of the Atlantic provinces seemed to send their "oldest" migrants to the west coast; this could be related to retirement.

Finally, Figure 3 shows the age structure of all the interprovincial migrants. No distinction was made between the sexes, because the rates for females were close to those for males. It was found that females had slightly higher migration rates than males in the 20–24 and 55+ age groups (this could be explained by marriage and widowhood, respectively). In all other age groups, females had slightly lower rates than males.

Figure 3 also shows the age structure of the interprovincial migrants between 1956 and 1961, and the age-specific migration rates for various regional levels. (This data is only available for the period 1956–1961.) The graph can be examined for any correlation between the age structure of migrants and the

*The impact of the linguistic barrier seems to be increasing. A recent econometric analysis has shown that this effect was larger in 1971–1976 than in 1961–1966 and 1966–1971, and was more important than physical distance (Termote and Fréchette 1979, pp. 151–152).

TABLE 9 Mean age[a] of interprovincial migrants, 1966–1971.

| Province of origin | Province of destination | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | |
| Newfoundland (NFD) | – | 27 | 21 | 22 | 23 | 21 | 22 | 24 | 24 | 22 | 22 |
| | – | (43) | (31) | (32) | (35) | (30) | (31) | (32) | (32) | (34) | (31) |
| Prince Edward Island (PEI) | 23 | – | 24 | 22 | 21 | 21 | 20 | 24 | 23 | 24 | 22 |
| | (30) | – | (32) | (31) | (26) | (28) | (27) | (38) | (30) | (31) | (29) |
| Nova Scotia (NS) | 22 | 24 | – | 22 | 21 | 22 | 21 | 20 | 22 | 23 | 22 |
| | (31) | (34) | – | (31) | (30) | (30) | (27) | (26) | (28) | (30) | (29) |
| New Brunswick (NB) | 20 | 24 | 24 | – | 22 | 22 | 22 | 21 | 22 | 23 | 22 |
| | (27) | (36) | (34) | – | (32) | (30) | (29) | (29) | (29) | (32) | (31) |
| Quebec (QUE) | 21 | 26 | 24 | 24 | – | 25 | 24 | 25 | 24 | 27 | 25 |
| | (30) | (40) | (35) | (37) | – | (36) | (33) | (37) | (32) | (40) | (37) |
| Ontario (ONT) | 22 | 23 | 23 | 22 | 22 | – | 25 | 24 | 24 | 27 | 24 |
| | (31) | (32) | (31) | (31) | (32) | – | (34) | (34) | (31) | (37) | (33) |
| Manitoba (MAN) | 20 | 22 | 20 | 21 | 24 | 24 | – | 22 | 24 | 29 | 25 |
| | (25) | (30) | (26) | (27) | (31) | (32) | – | (32) | (31) | (39) | (34) |
| Saskatchewan (SAS) | 24 | 22 | 21 | 23 | 25 | 24 | 23 | – | 22 | 27 | 24 |
| | (32) | (30) | (28) | (31) | (33) | (31) | (31) | – | (30) | (38) | (32) |
| Alberta (ALB) | 23 | 21 | 21 | 22 | 24 | 23 | 22 | 22 | – | 27 | 25 |
| | (31) | (30) | (29) | (31) | (32) | (33) | (31) | (34) | – | (41) | (38) |
| British Columbia (BC) | 22 | 23 | 23 | 24 | 25 | 24 | 24 | 27 | 24 | – | 24 |
| | (29) | (28) | (30) | (31) | (32) | (32) | (33) | (38) | (32) | – | (32) |

[a]The first line of figures for each province (no parentheses) refers to the observed mean age of the migrants. The second line of figures (between parentheses) refers to the mean age calculated using the schedule (i.e., excluding the effect of the age structure). Since it is based on census data, the mean age of the migrants does not correspond to the mean age at the moment of migration, but to the mean age of the migrant at the time of the census. Assuming that the number of people migrating has a uniform distribution over the census period, about 2.5 years should be subtracted in order to obtain an estimate of the mean age at migration. See also footnote *c* to Table 4.

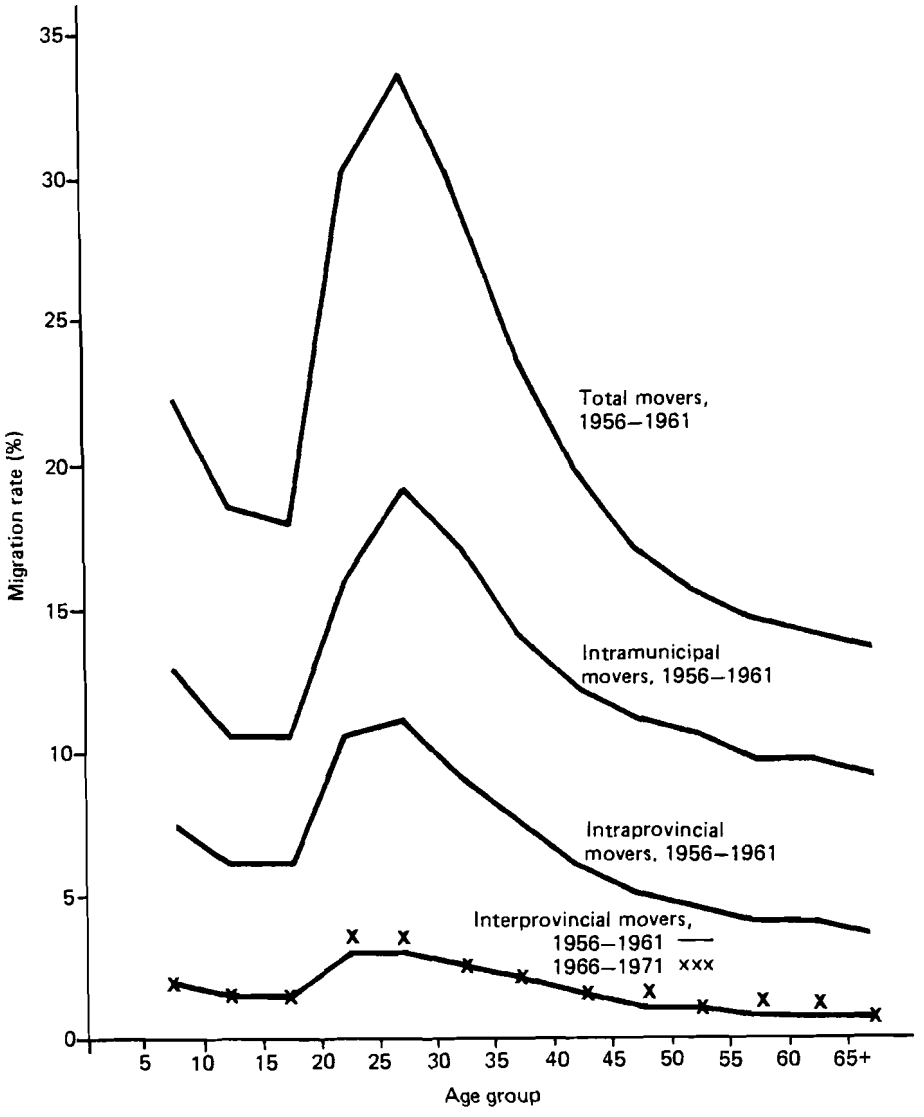


FIGURE 3 Age-specific migration rates (%) at various regional levels. The 1956–1961 rates were calculated from data presented by George (1970), Table 7.8, p. 160. The 1966–1971 rates were computed from a special tabulation made by Statistics Canada.

distance travelled. The age profile is quite similar at various regional levels, for both long- and short-distance migration, and did not change much between 1956–1961 and 1966–1971. However, there are two differences which seem worthy of mention. Firstly, the increase in the migration rate observed between the 15–19 age group and the 20–24 age group was proportionately larger for interprovincial migrants than for intramunicipal migrants. The rate for short-distance (intramunicipal) migration continued to increase in the next age group, while it remained stable for the case of long-distance migration. The second difference is that between 1956–1961 and 1966–1971 there seems to have been an increase in the propensity for migration over long distances in the age groups of high mobility (20–29 years), and also among the older age groups (45 years and over).

### 2.2.5 REGIONAL DIFFERENCES IN THE AGE–SEX STRUCTURE

The long-run evolution of fertility, mortality, and migration, briefly described in Section 1, and the recent trends in these demographic determinants, analyzed above, have led to a particular age–sex structure for each province. This section will be devoted to an analysis of this structure.

Table 10 presents, for each province and for Canada as a whole, the percentage of the total areal population aged 0–19, 20–64, and 65 years and over; the mean observed age is also given. The "rate of masculinity" (percentage of males in the total population) did not differ significantly among provinces, varying between 50% and 51%, and is therefore not presented.

Division into broad age groups is, of course, rather a primitive method of assessing the age structure of a population, but it can give a rough impression of the shape of the age profile. We shall define as "young" a population which has a relatively large percentage of its members in the 0–19 age group, and as "old" a population which has a relatively large percentage aged 65 years and over. This leads to the interesting possibility that the "youngest" population may not always be the least "old"!

For example, only two other provinces had a higher proportion of their population in the 0–19 age group than had Prince Edward Island – the population of Prince Edward Island may therefore have been described as "young." However, the same province also had the highest percentage in the "old" age group, so that the population was "old." Saskatchewan was in a similar situation. Both were provinces of heavy out-migration; since migrants are predominantly young, this partly explains the high percentage of older people left behind.

Ontario, which was the main beneficiary of international and interprovincial migration, had a relatively small percentage of both young people and old people: in-migrants, and particularly immigrants, were mostly aged 20–64 years. On the whole, considering the percentage of "young" and "old" age groups simultaneously, Newfoundland was by far the youngest province, followed by Alberta and New Brunswick. Manitoba and Saskatchewan (regions

TABLE 10 Age structure and mean age of the population of each province, 1966–1971.

| Province | Percentage of population in age group | | | Mean age (years) |
|---|---|---|---|---|
| | 0–19 years | 20–64 years | 65+ years | |
| Newfoundland | 50 | 44 | 6 | 26.4 |
| Prince Edward Island | 43 | 46 | 11 | 31.0 |
| Nova Scotia | 42 | 49 | 9 | 30.6 |
| New Brunswick | 45 | 47 | 8 | 29.4 |
| Quebec | 42 | 52 | 6 | 29.2 |
| Ontario | 39 | 53 | 8 | 31.0 |
| Manitoba | 40 | 51 | 9 | 31.5 |
| Saskatchewan | 42 | 48 | 10 | 31.3 |
| Alberta | 43 | 50 | 7 | 29.2 |
| British Columbia | 38 | 53 | 9 | 31.9 |
| Canada | 41 | 51 | 8 | 30.8 |

of heavy out-migration) and British Columbia (with low fertility and a relatively high mean age of in-migration) were the three "oldest" provinces.

In keeping with these differences in the relative proportions of "young" and "old" age groups among the provinces, there were also significant differences in the percentage population of the "supporting" age groups (20–64 years). All the Atlantic provinces, plus Saskatchewan, had a percentage of "supporting" population well below the Canadian average: they were all regions of important and continuous net out-migration, and age selectivity of migration has undoubtedly had an effect. At the other extreme, the percentage of the population in the "supporting" age group was highest in Ontario, British Columbia, and Quebec. These are also the provinces which had the lowest fertility rates, and which were the main beneficiaries of migration (Quebec benefiting only from international migration).

Since Canada is an immigrant country, with a history of relatively high fertility and relatively low mortality, it is not surprising to find that its 1966–1971 population was young compared to that of other "economically advanced" countries. Almost half of the population was less than 25 years old, and the mean age was 31, the only major deviation from this being in Newfoundland, where the mean age was considerably lower.

## 3 MULTIREGIONAL POPULATION ANALYSIS

This section presents the main results obtained by applying the multiregional demographic programs developed at the International Institute for Applied Systems Analysis (IIASA) to the Canadian data described and analyzed in the

previous sections. The three most important outputs of this analysis are: the multiregional life table (Section 3.1); the population projection and the stable equivalent population (Section 3.2); and some measures of the role of fertility and migration in population redistribution (Section 3.3).

## *3.1 The Multiregional Life Table*

Age–sex disaggregated data on the number of deaths in each province, and on the number of surviving (census) migrants for each origin–destination pair may be used to compute the age–sex specific probabilities of death and migration.* These probabilities allow us to determine the number of deaths and migrants, and hence the population, expected at each age in each region. We assume a hypothetical birth cohort (radix) of 100,000 in each region. This makes it possible to compute the number of years lived in each region by the initial cohort, the survivorship proportions and the life expectancies of residents of each province.

### 3.1.1 LIFE HISTORY OF THE BIRTH COHORT

It would obviously be very tedious to analyze the probabilities of death (in each province) and migration (between all provinces), and the corresponding expected number of survivors, at each age and for each sex. (The complete set of numbers of survivors is, however, presented in Appendix C; the probabilities may be obtained by dividing these numbers by 100,000.) Table 11 therefore shows only the probabilities that an individual born in a particular province will still be there at exact age 20, at exact age 35, and at exact age 65. These ages were chosen to represent the three most significant periods in a working lifetime: entry into the labor market, mid-term job mobility, and retirement. Thus it is possible to see whether a baby born in a given province will spend all his "active" (i.e., "working") life in the province of his birth.

The data of Table 11 again demonstrate the mobility of the Canadian population. Some provinces (Saskatchewan, Manitoba, and Prince Edward Island) will have lost about 40% of their potential labor force before this potential can be realized. This means that 40% of the babies born in these provinces will be supported for 20 years by a local "active" (20–65-year-old) population, but will never contribute to the labor force of their province of birth. Thus the small "supporting" population in these provinces will continue to decline. Things are even worse if we consider what happens to the population of these provinces between the ages of 20 and 35: up to half of those who remained until the age of 20 will leave the province before reaching 35. Finally,

*The procedure for deriving the probabilities from the observed rates of mortality and migration is presented in detail by Willekens and Rogers (1978) pp. 49–53. Note that those born during 1966–1971 (0–4 year group) were, on the average, exposed to migration during only half this period. As a consequence, the yearly out-migration rate of this age group has been multiplied by two. Thus the basic data given in Appendix A for the number of migrants in the 0–4 age group should be divided by two.

TABLE 11 Probabilities (%) of surviving at exact ages 20, 35, and 65 in the province of birth.

| | Probability of surviving in province of birth | | | | | |
|---|---|---|---|---|---|---|
| | At age 20 | | At age 35 | | At age 65 | |
| Province | M | F | M | F | M | F |
| Newfoundland | 74 | 75 | 46 | 49 | 27 | 33 |
| Prince Edward Island | 61 | 63 | 29 | 31 | 15 | 19 |
| Nova Scotia | 67 | 66 | 40 | 40 | 22 | 26 |
| New Brunswick | 67 | 67 | 39 | 40 | 21 | 26 |
| Quebec | 85 | 86 | 73 | 75 | 46 | 56 |
| Ontario | 84 | 85 | 72 | 75 | 48 | 59 |
| Manitoba | 60 | 60 | 35 | 36 | 18 | 21 |
| Saskatchewan | 55 | 54 | 24 | 25 | 13 | 15 |
| Alberta | 69 | 70 | 50 | 51 | 28 | 33 |
| British Columbia | 80 | 81 | 64 | 66 | 44 | 53 |

less than 20% of those born in these provinces will still be there at the age of 65.

At the other extreme, Ontario, Quebec, and British Columbia are able to retain a relatively large proportion of the people born within their boundaries, so that about half of them will still reside in their province of birth at the age of 65. For Ontario and British Columbia, this is mainly due to the favorable economic climate prevailing in these regions. The relative spatial inertia of people born in Quebec, however, is probably to be explained less by economic conditions (which are rather poor) than by cultural factors.

Not surprisingly, the probability of surviving in the province of birth is always higher for females than for males, reflecting the lower spatial mobility and higher probability of survival of women. However, the difference is particularly marked in the case of Ontario, Quebec, and British Columbia. This appears to be related to two major factors: the economic structure of these provinces provides relatively more jobs for women; and, since Ontario, Quebec, and British Columbia are provinces of heavy international immigration with a relatively high percentage of men in the population, women born in these regions have a higher probability of finding a partner in the province of their birth.

### 3.1.2 LIFE EXPECTANCIES

One of the most useful products of the multiregional life table is undoubtedly the disaggregation of life expectancy (at any age) by province of residence. Using the multiregional life table, it is possible to calculate the number of years to be lived in every possible region by a person of a given age and place of residence. The pattern of residence for people aged 20, 35, and 65 years is similar to that described for the corresponding groups in the previous section.

Thus, only the disaggregation of life expectancy at birth will be analyzed, i.e., the number of years a person born in one region may expect to spend in any of the others. Table 12 presents the results of these calculations for each sex separately.

We have already shown that the total number of years a newborn baby may expect to live is not very dependent on the province of birth. There are, however, striking differences in the proportion of time spent in the province of birth. For both sexes, this share may be twice as great in one province as in another. Babies born in Saskatchewan or Prince Edward Island will spend only about 40% of their life in their native province, while babies born in Quebec and Ontario may expect to live in their province of birth for about 80% of the time. The figures illustrate once again the very high mobility of Canada's population over long distances. Comparing these data with the figures obtained by Philipov (1978) for Bulgaria, we find that no group is expected to spend less than 74% of their life in the region of their birth, even though the regions are smaller than in Canada. Thus even the most mobile section of the Bulgarian population appears spatially inert when compared with an average Canadian.*

It is interesting to note that the "average" baby boy born in any province east of Quebec, or in Manitoba, will spend at least 11 years of his life in Ontario. The corresponding figure for girls is even higher, varying from 13 to 19 years. In fact, the "average" Canadian male born in a region other than Ontario will spend at least 6 years in this province, while a similarly "average" female would be expected to live in Ontario for 7 years. This phenomenon is obviously having considerable economic impact on both the provinces of birth and Ontario.

Finally, let us compare the life expectancies at birth, calculated excluding migration (see last two columns of Table 5), with the spatial life expectancies of Table 12. All the provinces west of Ontario have spatial life expectancies *lower* than the "nonspatial" values. This means that, on the average, people born in these provinces shorten their life expectancy by moving. This result is not surprising: these provinces all have "local" mortality conditions (life expectancies) which are much better than in any other region, so that moving away can only decrease the total life expectancy. (The model used in the multiregional analysis assumes that migrants are subject to the mortality conditions prevailing in the region of destination, rather than the region of birth.) Provinces like Quebec and Nova Scotia have spatial life expectancies *higher* than the "nonspatial" values. Here the local mortality conditions are worse than in any other province, and moving out can increase total life expectancy.

### *3.2 Population Projection and Stability*

It is well known that under constant conditions of fertility, mortality, and interregional migration, a population will ultimately grow at a constant rate to attain

*Note that different data on migration were used in this Bulgarian study. Because of multiple migration (excluded from the data on migrants used in the Canadian case), the Bulgarian mobility level tends to an overestimate when compared to the Canadian level.

TABLE 12 The disaggregation of life expectancies[a] at birth, for both sexes, by province of residence.

| | | Province of residence | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Province of birth | Sex | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | Total |
| Newfoundland (NFD) | M | 40.1 | 0.3 | 2.7 | 1.5 | 2.9 | 16.7 | 0.3 | 0.4 | 1.2 | 2.6 | 69.1 |
| | F | 43.2 | 0.3 | 3.0 | 1.6 | 3.2 | 19.0 | 0.8 | 0.3 | 1.4 | 2.9 | 75.7 |
| Prince Edward Island (PEI) | M | 1.1 | 30.0 | 5.9 | 4.3 | 3.4 | 16.3 | 1.2 | 0.6 | 2.3 | 3.8 | 68.8 |
| | F | 0.9 | 32.0 | 6.3 | 4.1 | 4.5 | 18.7 | 1.2 | 0.7 | 3.1 | 5.0 | 76.2 |
| Nova Scotia (NS) | M | 1.3 | 0.8 | 35.6 | 3.4 | 3.8 | 15.7 | 1.0 | 0.5 | 2.3 | 4.6 | 68.9 |
| | F | 1.4 | 0.8 | 37.6 | 3.7 | 4.6 | 18.2 | 1.2 | 0.5 | 2.6 | 5.4 | 76.1 |
| New Brunswick (NB) | M | 0.9 | 0.7 | 4.2 | 35.1 | 6.2 | 14.6 | 1.0 | 0.5 | 2.1 | 3.7 | 69.0 |
| | F | 0.9 | 0.7 | 4.9 | 37.4 | 7.5 | 16.4 | 1.1 | 0.5 | 2.3 | 4.2 | 75.9 |
| Quebec (QUE) | M | 0.3 | 0.1 | 0.6 | 0.8 | 54.2 | 9.0 | 0.5 | 0.2 | 1.0 | 2.1 | 68.7 |
| | F | 0.3 | 0.1 | 0.6 | 0.8 | 59.2 | 10.3 | 0.5 | 0.2 | 1.0 | 2.3 | 75.4 |
| Ontario (ONT) | M | 0.5 | 0.2 | 1.3 | 0.9 | 4.1 | 54.8 | 1.1 | 0.5 | 1.9 | 4.0 | 69.5 |
| | F | 0.5 | 0.2 | 1.3 | 0.9 | 4.7 | 60.5 | 1.2 | 0.5 | 2.1 | 4.5 | 76.4 |
| Manitoba (MAN) | M | 0.2 | 0.2 | 1.0 | 0.7 | 2.7 | 11.3 | 31.9 | 2.9 | 7.3 | 11.5 | 69.7 |
| | F | 0.2 | 0.2 | 1.1 | 0.8 | 3.2 | 13.2 | 33.7 | 3.2 | 7.9 | 13.2 | 76.6 |
| Saskatchewan (SAS) | M | 0.2 | 0.1 | 0.7 | 0.4 | 1.5 | 7.6 | 4.6 | 26.8 | 13.9 | 14.1 | 69.7 |
| | F | 0.2 | 0.1 | 0.7 | 0.4 | 1.7 | 8.8 | 5.2 | 27.7 | 15.5 | 16.3 | 76.6 |
| Alberta (ALB) | M | 0.2 | 0.1 | 0.7 | 0.4 | 1.6 | 6.9 | 2.1 | 2.2 | 40.9 | 15.0 | 70.0 |
| | F | 0.2 | 0.1 | 0.8 | 0.5 | 1.8 | 7.9 | 2.1 | 2.5 | 43.4 | 17.6 | 76.8 |
| British Columbia (BC) | M | 0.2 | 0.1 | 0.7 | 0.4 | 1.6 | 6.5 | 1.5 | 1.3 | 6.2 | 51.1 | 69.7 |
| | F | 0.2 | 0.1 | 0.7 | 0.4 | 1.9 | 7.6 | 1.6 | 1.3 | 6.9 | 55.9 | 76.7 |

[a]Because of rounding, the total life expectancy may not be exactly equal to the sum of the life expectancies in each province of residence.

a stable age–sex structure and a stable regional distribution. This stable structure and distribution are independent of the initial structure and distribution, being a function only of the conditions of fertility, mortality, and migration.* Besides analyzing the stable equivalent of the population under 1966–1971 rates, we will also briefly discuss the evolution of the population over time and results obtained for three intermediate years: 1976, because the projection can be compared with the 1976 census data; 2001, because this year marks the end of the population projections made by Statistics Canada; and 2021, because this year – or one close to it – has been chosen as a reference for all IIASA comparative studies.**

Table 13 presents the following characteristics of the projected population: total population in absolute numbers, provincial distribution, rate of growth, mean age, percentage aged less than 20 years, and percentage aged 65 years and over. The data are given for the base year (1971), the three intermediate years (1976, 2001, 2021), and the stable situation.

(a) In interpreting the figures reproduced in Table 13, it should be emphasized that they are merely the result of a pure projection (i.e., a measure of the future impact of current patterns of behavior). They should by no means be considered a forecast of the future evolution of the population of Canada and its provinces. However, it may be interesting to compare our projection for 1976 with the results of the 1976 census. In order to do this, we have to take the average of the 1971 and 1976 census figures, because our projection is based on the average of the 1966 and 1971 population census data. Table 14 shows the results of this comparison, and presents estimates for the net international migration, which was excluded from the projection.

It is rather surprising to see how close the projected figures are to the observed figures: in seven of the ten provinces the magnitude of the difference is less than 12,000, and the largest difference does not represent more than 2.3% of the population concerned. The only provinces for which the difference is considerable (in absolute numbers) are the main beneficiaries of international migration (excluded from our projection procedure): these are Ontario, Alberta, and British Columbia. It may therefore be concluded that, over the short term (5 years), the multiregional population projection model could also be useful for forecasting if international migration is excluded. (It is necessary to consider international migration separately, anyway, because of its characteristic cyclical and political variations.) However, this conclusion is valid only for the total population, as discussed below.

International migration cannot explain all of the differences between the enumerated and the projected population. The differences between the values

*This is why a critical analysis of the data used in the projection is so important (see Section 2.1).
**Since the projection has been made using 1966–1971 data, with rates computed on the arithmetic mean of the 1966 and 1971 populations, 2.5 years should be subtracted from the years chosen as reference marks.

TABLE 13 Projection of the population to its stable equivalent, disaggregated by province, described in terms of the variation of certain characteristics with time.

| Population characteristics | Year | Province | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | Canada |
| Absolute numbers (× 1,000) | 1971 | 508 | 110 | 773 | 626 | 5,904 | 7,332 | 976 | 941 | 1,546 | 2,029 | 20,743 |
| | 1976 | 541 | 115 | 805 | 655 | 6,132 | 7,803 | 993 | 913 | 1,692 | 2,281 | 21,929 |
| | 2001 | 758 | 147 | 1,016 | 840 | 7,307 | 10,546 | 1,123 | 835 | 2,537 | 3,759 | 28,867 |
| | 2021 | 953 | 175 | 1,194 | 985 | 7,845 | 12,702 | 1,241 | 830 | 3,217 | 5,039 | 34,181 |
| | Stable | 989 | 110 | 748 | 562 | 2,539 | 7,905 | 730 | 467 | 2,510 | 4,426 | 20,986 |
| Distribution (%) | 1971 | 2.5 | 0.5 | 3.7 | 3.0 | 28.5 | 35.3 | 4.7 | 4.5 | 7.5 | 9.8 | 100.0 |
| | 1976 | 2.5 | 0.5 | 3.7 | 3.0 | 28.0 | 35.6 | 4.5 | 4.1 | 7.7 | 10.4 | 100.0 |
| | 2001 | 2.6 | 0.5 | 3.5 | 2.9 | 25.3 | 36.6 | 3.9 | 2.9 | 8.8 | 13.0 | 100.0 |
| | 2021 | 2.8 | 0.5 | 3.5 | 2.9 | 23.0 | 37.2 | 3.6 | 2.4 | 9.4 | 14.7 | 100.0 |
| | Stable | 4.7 | 0.5 | 3.5 | 2.7 | 12.1 | 37.7 | 3.5 | 2.2 | 12.0 | 21.1 | 100.0 |
| Growth rate (over 5 years) (%) | 1971–1976 | 6.6 | 4.2 | 4.2 | 4.7 | 3.9 | 6.4 | 1.8 | −3.0 | 9.4 | 12.4 | 5.7 |
| | 1996–2001 | 6.1 | 4.7 | 4.2 | 4.3 | 2.3 | 5.2 | 2.0 | −1.4 | 6.7 | 8.6 | 4.6 |
| | 2016–2021 | 5.8 | 4.4 | 4.0 | 3.9 | 1.5 | 4.4 | 2.7 | 0.6 | 5.6 | 6.9 | 4.1 |
| | Stable | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 |
| Mean age (years) | 1971 | 26.4 | 31.0 | 30.6 | 29.4 | 29.2 | 31.0 | 31.5 | 31.3 | 29.2 | 31.9 | 30.3 |
| | 1976 | 27.0 | 31.5 | 31.2 | 30.2 | 30.5 | 31.7 | 32.2 | 32.5 | 29.8 | 32.5 | 31.2 |
| | 2001 | 28.0 | 32.1 | 32.6 | 31.8 | 34.2 | 33.6 | 33.1 | 34.1 | 31.3 | 34.2 | 33.4 |
| | 2021 | 28.7 | 33.2 | 33.7 | 33.1 | 36.2 | 34.7 | 33.8 | 34.1 | 32.5 | 35.5 | 34.6 |
| | Stable | 29.1 | 33.6 | 33.9 | 33.3 | 35.5 | 35.0 | 33.8 | 33.7 | 33.2 | 36.4 | 34.7 |
| Proportion less than 20 years old (%) | 1971 | 50.0 | 43.4 | 42.1 | 44.8 | 41.7 | 39.0 | 39.9 | 41.7 | 42.6 | 38.0 | 40.7 |
| | 1976 | 47.7 | 41.2 | 39.6 | 41.8 | 38.2 | 37.2 | 37.7 | 39.5 | 40.5 | 36.3 | 38.2 |
| | 2001 | 45.4 | 38.6 | 36.2 | 37.8 | 32.0 | 33.6 | 35.4 | 36.7 | 37.1 | 32.8 | 34.1 |
| | 2021 | 44.2 | 36.9 | 34.6 | 35.9 | 29.7 | 32.1 | 34.2 | 36.1 | 35.6 | 31.2 | 32.5 |
| | Stable | 43.9 | 36.6 | 34.5 | 35.9 | 30.6 | 32.0 | 34.3 | 36.5 | 35.1 | 30.5 | 32.8 |
| Proportion aged 65 years and over (%) | 1971 | 6.0 | 10.9 | 9.0 | 8.4 | 6.5 | 8.3 | 9.5 | 9.8 | 7.2 | 9.5 | 7.9 |
| | 1976 | 6.3 | 11.0 | 9.4 | 8.7 | 7.2 | 8.7 | 10.0 | 10.9 | 7.4 | 9.7 | 8.4 |
| | 2001 | 7.2 | 10.7 | 10.2 | 9.6 | 10.2 | 10.5 | 11.3 | 14.2 | 8.5 | 11.2 | 10.3 |
| | 2021 | 7.8 | 11.5 | 11.1 | 10.8 | 12.6 | 11.4 | 11.3 | 12.9 | 9.5 | 12.3 | 11.5 |
| | Stable | 8.7 | 12.7 | 11.9 | 11.6 | 12.3 | 12.3 | 11.8 | 12.9 | 11.0 | 14.4 | 12.4 |

TABLE 14 Comparison between projected and observed population, 1971–1976.

| Province | Enumerated population[a] (× 1,000) | Difference between enumerated and projected population (× 1,000) | Net international migration[a] (× 1,000) |
|---|---|---|---|
| Newfoundland | 540 | −1 | −1 |
| Prince Edward Island | 115 | 0 | −1 |
| Nova Scotia | 809 | 4 | 1 |
| New Brunswick | 656 | 1 | −2 |
| Quebec | 6,131 | −1 | 40 |
| Ontario | 7,984 | 181 | 299 |
| Manitoba | 1,005 | 12 | 17 |
| Saskatchewan | 924 | 11 | −11 |
| Alberta | 1,733 | 41 | 47 |
| British Columbia | 2,326 | 45 | 94 |
| Canada | 22,222 | 292 | 483 |

[a]1971 and 1976 censuses. Statistics Canada (1978). Net international migration estimates 1971–1976 were obtained as a residual from census data on population and interprovincial migration, and vital statistics data on births and deaths. The enumerated population is taken as the average of the 1971 and 1976 figures.

for the total population are small, but much greater differences are found between the values for each age group. More particularly, the enumerated and projected populations differ significantly for the 0–4 age group in each province. The projected figure is higher by about 10% in all cases; this reflects the decline in fertility which took place during the period of projection. On the other hand, the projected figures for the age groups between 20 and 39 years are smaller than the enumerated figures for all provinces. This largely reflects the impact of international migration, but is also due to a change in the pattern of interprovincial migration. The underestimation of the population in the 20–39 age group is much larger (in absolute numbers) than the overestimation of the population in the 0–4 age group. This goes a long way toward explaining the excess of net international migration over the difference between enumerated population and projected population (Table 14) in Quebec, Ontario, Alberta, and British Columbia. We therefore conclude that, although the multiregional projection model produced a good forecast of the growth of the total population over a short period (5 years), the changes in the age structure of this population were not reproduced accurately by the model.

It may be of some interest to compare the results of our projection for the year 2001 with the results obtained by Statistics Canada* for the same year. Statistics Canada actually produced a large number of projections, each of which was characterized by a different set of assumptions on the anticipated evolution of the components of demographic growth. Among the set of assumptions considered as "the most probable," we chose the one based on the assumption of low fertility (a gross reproduction rate of 0.9 instead of the figure of 1.2 observed in 1966–1971), relatively small net international migration (60,000 yearly instead of the 1966–1971 value of 90,000), and a level of interprovincial migration equal to that observed for 1966–1971.

Table 15 shows that the provincial distribution of population obtained by Statistics Canada using this set of basic assumptions is not very different from that obtained using the multiregional model. The difference in the projected absolute numbers is surprisingly small: Statistics Canada projected that the population of Canada would reach 28.4 million by the year 2001, while we obtained 28.9 million. It is probable that the effect of the lower fertility level in Statistics Canada's projection was neutralized by a positive international migration, which we assumed to be nonexistent.

The close agreement between the results should in no way be considered as a "proof" of the usefulness of the model as a forecasting device, which it is not and does not pretend to be. However, the similarity between the results of Statistics Canada's "forecast" and IIASA's "extrapolation" shows that, even using the "unrealistic" assumptions of unchanging demographic conditions, the results which are obtained are as good as those based on more "realistic" assumptions.

(b) It is obviously more meaningful to analyze the evolution of each provincial population in terms of percentages rather than absolute numbers.

Table 13 shows that by 1971 the population of some provinces already approximated to their equilibrium share of the total population; this is the case for Prince Edward Island, Nova Scotia, and New Brunswick. Ontario, which in 1966–1971 was a province with low out-migration rates and net in-migration, but low fertility, increases its share only slightly. Three provinces show a steady decline in their projected share: Saskatchewan, Manitoba, and Quebec. During 1966–1971, Saskatchewan and Manitoba both had high out-migration rates and lost population through net out-migration, though this was compensated to a certain extent by a relatively high fertility level. Thus, for Manitoba at least, the decline was relatively small. Quebec contained 28% of Canada's population in 1971, this figure falling to only 12% at equilibrium. This province appears to

*Statistics Canada adopted a completely different approach. This is characterized mainly by the use of absolute numbers (instead of rates) for projecting migration, and by the fact that each component of demographic growth is projected separately (Statistics Canada 1975, pp. 13–55). In a recent publication, Statistics Canada (1979, pp. 29, 38) proposed a new set of projections, applying a new methodology (interprovincial migration rates instead of absolute numbers), and using the results of the 1976 census with a new set of assumptions. Their new projections for the year 2001 are closer to the results obtained here than are their previous projections.

TABLE 15 Comparison between two projections of the population in the year 2001, and its distribution among provinces.

| Province | Population distribution (%) | |
|---|---|---|
| | Statistics Canada[a] | IIASA[b] |
| Newfoundland | 2.4 | 2.6 |
| Prince Edward Island | 0.4 | 0.5 |
| Nova Scotia | 2.9 | 3.5 |
| New Brunswick | 2.4 | 2.9 |
| Quebec | 22.5 | 25.3 |
| Ontario | 41.0 | 36.6 |
| Manitoba | 3.4 | 3.9 |
| Saskatchewan | 1.9 | 2.9 |
| Alberta | 8.7 | 8.8 |
| British Columbia | 14.0 | 13.0 |
| Canada[c] | 100% = 28.4 million | 100% = 28.9 million |

[a]Statistics Canada (1974), p. 93, Table 9.3, Projection C. See also p. 15.
[b]See Table 13.
[c]The sum of the provincial population distributions (percentages) quoted from Statistics Canada does not equal 100% because 0.4% of the population was allocated to the Yukon and Northwest Territories – the IIASA projection did not take these regions into account.

have everything working against it: migration, fertility, and mortality. Though it has the lowest out-migration rates, its in-migration rates are even lower, so that it experiences an important net loss due to interprovincial migration (Table 3). Quebec also has the lowest fertility rates, and is only just capable of reproducing itself (Table 4). This province is even in an unfavorable position as regards mortality, having the highest death rates for older age groups and the lowest life expectancies at birth.

Finally, there are three provinces which show a marked increase in their share of the total population: British Columbia, Alberta, and Newfoundland. British Columbia increases its share by 50% during the first 50 years of projection, and reaches equilibrium with a share more than twice the 1971 value. This province has a low rate of out-migration and a considerable net in-migration, with fertility rates which are about average. The increase in the share of total population is smaller for Alberta than British Columbia: Alberta's rate of out-migration is twice as large as that of British Columbia, but Alberta has the benefit of relatively high fertility rates. The third province with a marked increase in its share of total population comes as rather a surprise: Newfoundland, which started as the second smallest province of Canada, with only 2.5% of the total population, finishes as the fifth largest province, containing 4.7% of the Canadian population. This can be explained by relatively low out-migration

rates, and by the fact that this province has by far the highest fertility rates and the youngest age structure.*

(c) The evolution of the (5 year) rate of demographic growth in each province is markedly different. Stable population theory requires that, at equilibrium, each region should experience the same rate of growth. For Canada, this equilibrium rate is equal to 3.8% over 5 years. A growth rate approaching this value was achieved in Nova Scotia, New Brunswick, and over Canada as a whole only 50 years into the projection. The growth rates of most of the provinces appear to evolve in a wave-like fashion, all but one peaking in the period 1976–1981. (The growth rate for Prince Edward Island reached a maximum in 1971–1976.) Saskatchewan, however, shows a continuously increasing rate of growth, and British Columbia a steady decline.

(d) Stable population theory requires not only that each region should have a constant share in the total population, and a constant and equal rate of demographic growth at equilibrium, but also that the age structure should remain constant. It is obviously not possible in this brief report to analyze in detail the projected evolution of the age structure of each province. Our discussion will be limited to three aspects of this problem: the mean age of the population, the percentage of the population less than 20 years old, and the percentage of the population aged 65 years and over.

Table 13 shows that the stable population of all provinces will be "older" than the 1971 population, and that there are wide disparities in the rate of "aging." Newfoundland, which was the "youngest" province in 1971, with the lowest mean age, the highest percentage of people less than 20 years old and the lowest percentage of people aged 65 years and over, will age at a much slower rate than any other province. At the other extreme, Quebec, which in 1971 had the second lowest mean age, an above average percentage of young people, and the second lowest percentage of old people, would become the "oldest" province of Canada by the year 2021. It would then have the highest mean age, the lowest percentage of young people, and the second highest percentage of old people, the latter almost doubling in the 50 years of the projection. The socioeconomic implications of such a fundamental change in the age structure are clearly important.

At equilibrium, however, British Columbia would replace Quebec as the "oldest" province of Canada, with Newfoundland still being by far the "youngest." All other provinces would have an age structure close to the national average.

One of the most interesting features of the stable equivalent population, when compared to the observed population, is that the effect of age structure

*In a recent paper, Liaw (1978, p. 294) applied a variation of the Rogers model to data slightly different from those used in the present report. He obtained stable provincial shares relatively close to those found here: 34.9% for Ontario, 9.1% for Quebec, and 25.5% for British Columbia, compared with our values of 37.7%, 12.1%, and 21.1%, respectively.

on the growth of the population is eliminated. We investigated this age-structure effect for three provinces: Quebec, Ontario, and Newfoundland. The first has low fertility, low out-migration rates, and a negative net migration; the second has low fertility, low out-migration rates, but a sizable positive net migration; and the third has very high fertility, relatively low out-migration rates and negative net migration. Figure 4 shows that the age-structure profile is much smoother for the stable equivalent population than for the observed population in all three provinces. In particular, the rapid decrease in the observed population between the ages of 25 and 39 years (related to the Depression and the War) is not apparent in the stable population profile. Moreover, the changes in the age profiles illustrate how various populations may age in different ways and at different rates. For instance, Quebec had a very young age structure in 1966–1971, with a high "peak" between the ages of 5 and 14, and a rapid decrease thereafter. (The number of people in the 0–4 age group is much less than that in the 5–14 age group because Quebec's fertility started to fall during the 1960s.) However, the stable equivalent population of Quebec has an age profile which decreases very slowly until age 40, the general level of the curve being much lower than that of the observed population. On the other hand, Ontario, which started with an age profile quite similar to that observed for Quebec, has at stability a sharply declining curve which is much closer to the initial level than in the case of Quebec. The "stable curve" actually lies above the initially observed curve, with the exception of the 0–24 age groups, which reflects Ontario's decreasing fertility. However, even in this case, the difference is much smaller than was found for Quebec. Finally, Newfoundland shows an important increase in the level of its age profile, almost doubling the number of people in each age group.

### *3.3 Spatial Reproduction and Migraproduction Levels*

The multiregional life table can also be used to compute some refined measures of spatial fertility, such as the spatial net reproduction rate (Willekens and Rogers 1978).

The spatial net reproduction rate (NRR) is defined as

$$ {}_{i}\mathrm{NRR}_{j} = \sum_{x=0}^{z} {}_{i}L_{j}(x)F_{j}(x) $$

where

${}_{i}\mathrm{NRR}_{j}$ is the total number of children a member of a life table population born in region $i$ may expect to have in region $j$

${}_{i}L_{j}(x)$ is the number of person-years lived in each region $j$ between the ages $x$ and $x + 4$ by a member of the multiregional life table population born in region $i$

$F_{j}(x)$ is the age-specific fertility rate in region $j$

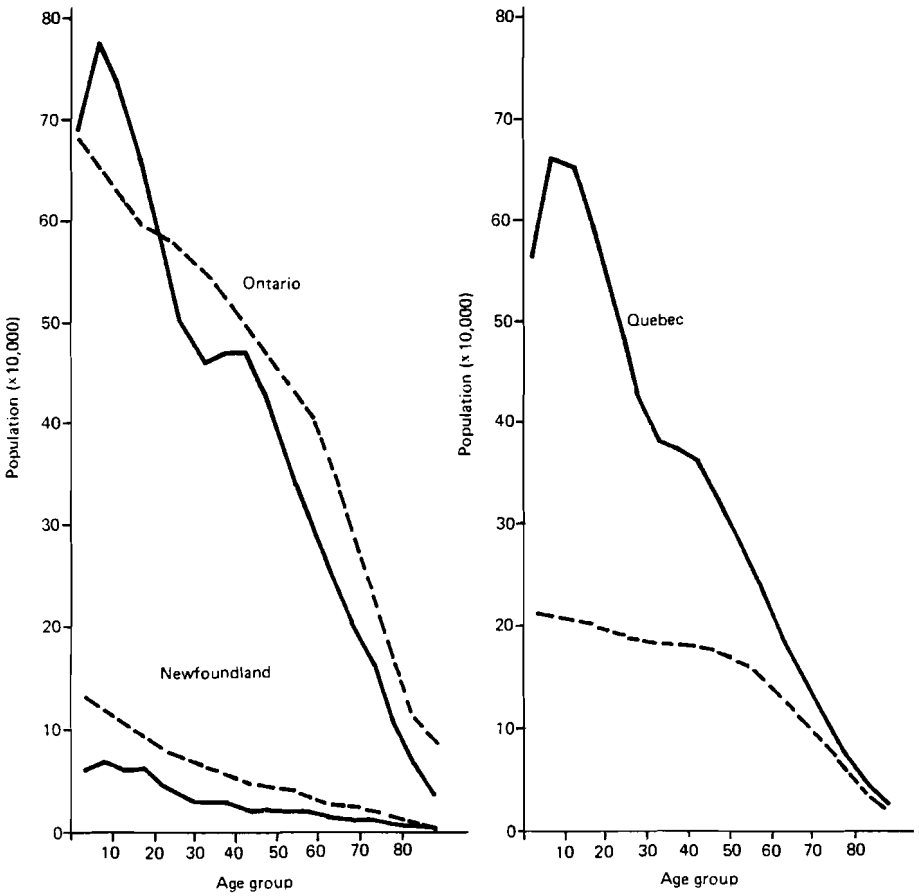


FIGURE 4 Observed (–) and stable equivalent (---) populations in each age group, for Newfoundland, Ontario, and Quebec.

It is clear that when the NRRs are summed over all regions of residence for a given region of birth, the resulting total NRR is not equal to the single-region NRR. This is because the spatial NRR includes the impact of migration on fertility. In general, the spatial NRR for a region with heavy out-migration to regions of lower fertility will be less than the nonspatial NRR; conversely, the total spatial NRR for a birth region with heavy out-migration to regions of higher fertility will be greater than the nonspatial value.

The NRR will always be lower than the GRR (gross reproduction rate), even if there were no out-migration, because the NRR takes mortality into account. The spatial NRR is therefore a measure of the impact of migration and mortality on fertility, assuming that the migration and mortality regime of the region of residence are adopted.

The spatial NRRs presented in Table 16 confirm this reasoning; because of heavy out-migration to provinces of lower fertility, the total spatial NRRs of Newfoundland, Prince Edward Island, and Saskatchewan are significantly lower than the single-region NRRs. On the other hand, the three provinces with fertility levels below the average, namely Quebec, Ontario, and British Columbia, all have larger spatial NRRs. By moving out of these provinces, people are able to "benefit" from the "better" fertility conditions offered by the rest of Canada. However, because these three provinces also have out-migration rates below the average, the difference between the total spatial NRR and the single-region (i.e., without migration) NRR is small. The range of the spatial NRRs (1.07–1.55) is less than that of the single-region NRRs (1.06–1.82). The NRR for the whole of Canada is increased from 1.18 to 1.22 on taking migration into account.

The single-region NRRs of Table 16 are all above replacement level (1.00), so that in the period 1966–1971 the population of each province was capable of reproducing itself. Including migration in the calculation did not induce the net reproduction rate to fall below replacement level, since the total spatial NRRs of Table 16 are also all larger than one. Note, however, that only one province (Newfoundland) is able to reproduce its own population without the "help" of in-migrants: it has the only diagonal figure equal to or greater than one. It is also interesting to see how Ontario benefits from the migration of potential childbearers. Table 16 shows that a group of 100 persons born in Ontario will give birth to only a very small number of babies in another province (from 0 in Prince Edward Island to 6 in Quebec). However, a group of 100 persons born in any other province will give birth to at least 9 babies in Ontario (as is the case for the natives of British Columbia), this figure reaching 27 for the natives of Newfoundland and Prince Edward Island.

The impact of migration on reproduction is shown clearly by the spatial allocation of the net reproduction levels, i.e., the distribution of place of birth of children born to natives of each province. The results are presented in Table 17, which shows that three provinces appear particularly unattractive to their natives as far as childbearing is concerned. Persons born in Saskatchewan,

TABLE 16 Spatial net reproduction rates (NRR), 1966–1971.

| Province of birth of parent | Province of residence of parent and birthplace of child | | | | | | | | | | | Single-region NRR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | Total[a] | |
| Newfoundland (NFD) | 1.10 | 0.00 | 0.05 | 0.03 | 0.04 | 0.27 | 0.01 | 0.01 | 0.02 | 0.03 | 1.55 | 1.82 |
| Prince Edward Island (PEI) | 0.02 | 0.64 | 0.11 | 0.08 | 0.05 | 0.27 | 0.02 | 0.01 | 0.04 | 0.05 | 1.30 | 1.44 |
| Nova Scotia (NS) | 0.03 | 0.02 | 0.70 | 0.07 | 0.06 | 0.25 | 0.02 | 0.01 | 0.04 | 0.06 | 1.25 | 1.27 |
| New Brunswick (NB) | 0.02 | 0.01 | 0.08 | 0.73 | 0.10 | 0.23 | 0.02 | 0.01 | 0.03 | 0.05 | 1.27 | 1.35 |
| Quebec (QUE) | 0.01 | 0.00 | 0.01 | 0.01 | 0.87 | 0.13 | 0.01 | 0.00 | 0.01 | 0.02 | 1.07 | 1.06 |
| Ontario (ONT) | 0.01 | 0.00 | 0.02 | 0.02 | 0.06 | 0.97 | 0.02 | 0.01 | 0.03 | 0.05 | 1.19 | 1.18 |
| Manitoba (MAN) | 0.00 | 0.00 | 0.02 | 0.01 | 0.04 | 0.18 | 0.63 | 0.06 | 0.14 | 0.16 | 1.24 | 1.28 |
| Saskatchewan (SAS) | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.11 | 0.10 | 0.55 | 0.29 | 0.20 | 1.29 | 1.41 |
| Alberta (ALB) | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.10 | 0.04 | 0.04 | 0.83 | 0.22 | 1.27 | 1.32 |
| British Columbia (BC) | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.09 | 0.03 | 0.02 | 0.11 | 0.87 | 1.17 | 1.14 |

[a]Because of rounding, the total is not necessarily equal to the sum of the rates for the individual provinces.

TABLE 17 Net reproduction allocations[a] (%), 1966–1971.

| Province of birth of parent | Province of residence of parent and birthplace of child | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | Total |
| Newfoundland (NFD) | 71 | 0 | 3 | 2 | 2 | 17 | 1 | 1 | 1 | 2 | 100 |
| Prince Edward Island (PEI) | 2 | 49 | 9 | 6 | 4 | 21 | 1 | 1 | 3 | 4 | 100 |
| Nova Scotia (NS) | 2 | 1 | 56 | 6 | 5 | 20 | 1 | 1 | 3 | 5 | 100 |
| New Brunswick (NB) | 2 | 1 | 6 | 57 | 8 | 18 | 1 | 1 | 2 | 4 | 100 |
| Quebec (QUE) | 1 | 0 | 1 | 1 | 81 | 12 | 1 | 0 | 1 | 2 | 100 |
| Ontario (ONT) | 1 | 0 | 2 | 2 | 5 | 82 | 1 | 1 | 2 | 4 | 100 |
| Manitoba (MAN) | 0 | 0 | 1 | 1 | 3 | 15 | 51 | 5 | 11 | 13 | 100 |
| Saskatchewan (SAS) | 0 | 0 | 1 | 1 | 2 | 9 | 8 | 42 | 22 | 15 | 100 |
| Alberta (ALB) | 0 | 0 | 1 | 1 | 2 | 8 | 3 | 3 | 65 | 17 | 100 |
| British Columbia (BC) | 0 | 0 | 1 | 1 | 2 | 8 | 3 | 2 | 9 | 74 | 100 |

[a]Taken from Table 16.

Manitoba, and Prince Edward Island have a probability of only about 50% of giving birth in their province of origin. In other words, these three provinces will receive only about half the number of offspring expected from their natives. At the other extreme, Quebec and Ontario will receive almost all the babies born to their natives; moreover, Ontario will also provide the birthplace for a large proportion (16–21%) of the children born to natives of the Atlantic provinces.

Just as in the analysis of gross migraproduction rates (Table 8), we may compare the two elements symmetrical to the main diagonal of Table 17. This shows whether more children are born to natives of province A in province B than are born to natives of province B in province A. From this point of view, it is not surprising that Ontario gains from all the provinces and Prince Edward Island loses to all the provinces. It appears that the provinces preferred for childbearing are also generally the provinces of highest in-migration. This is not unexpected since the ages of heavy migration (20–29 years) are also the ages with the highest fertility rates.

The net migraproduction rate (Willekens and Rogers 1978, pp. 103–109) is defined as

$$ {}_i\mathrm{NMR}_j = \sum_{x=0}^{z} {}_iL_j(x)m_j(x) $$

where

${}_i\mathrm{NMR}_j$ is the number of migrations a member of the life table population born in region $i$ may expect to make from region $j$

${}_iL_j(x)$ is the number of person-years lived in each region $j$ between the ages of $x$ and $x + 4$ by a member of the multiregional life table population born in region $i$

$m_j(x)$ is the age-specific rate of out-migration from region $j$

These net migraproduction rates are an important complement to the regional life expectancies defined and analyzed in Section 3.1, i.e., the expected number of years to be lived in a particular region *j* by an individual born in region *i* (see Table 12). Since migration is a recurrent event, it is also important to know the number of migrations from region *j* (including *i*) an individual born in region *i* may expect to make during his lifetime. This is measured by the net migraproduction rate (NMR). Since the NMRs for both sexes are similar, only the results for the total population will be analyzed. The NMRs for all pairs of provinces are given in Table 18.

The final column shows the total number of migrations made by a native of each province, taking the effect of mortality into account. An individual born in Prince Edward Island, Manitoba, or Saskatchewan may expect to be an interprovincial migrant at least once during his lifetime, while only half of the individuals born in Quebec or Ontario are expected to migrate. If we take a cohort of one hundred persons born in any of the Atlantic provinces, at least eight will migrate from Ontario during their lifetime. This could be related to return migration. A clearer picture is given by transforming the data of Table 18 to a common basis, as in Table 19. This table presents the net migraproduction allocations of all provinces, i.e., the percentage of the total number of migrations made by individuals born in a given province from each province of residence.

Table 19 confirms that most of the interprovincial migrations are made from the province of birth. However, this percentage varies quite widely between provinces, ranging from 64% for Saskatchewan to 76% for Quebec. At least 30% of the migrations made by natives of Prince Edward Island, Manitoba, Saskatchewan, and British Columbia are from provinces other than their province of birth. This shows that migrants originally from these provinces are more ready to migrate again (possibly a return migration) than natives from other provinces.

We have now analyzed the implications of the 1966–1971 migration regime as far as duration of stay (regional life expectancies) and frequency (gross and net migraproduction rates) are concerned. To conclude, we will investigate the equilibrium implications of this regime, i.e., the stable population equivalent which would be obtained if migration differentials only were in operation. In this case it is necessary to put the age-specific mortality and fertility rates in each province equal to the national average, keeping only the observed values of the age-specific interprovincial migration rates. The differences between the stable population equivalent obtained previously, which considered fertility, mortality, and migration differentials, and the stable population equivalent obtained here, using migration differentials only, are largely a measure of the impact of fertility on population distribution. (Mortality differentials are negligible, so that the difference between the two stable equivalents may be viewed as measuring the impact of fertility differentials only.)

TABLE 18 Spatial net migraproduction rates (NMR), 1966–1971.

| Province of birth | Province of out-migration | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | Total[a] |
| Newfoundland (NFD) | 0.60 | 0.00 | 0.04 | 0.02 | 0.02 | 0.09 | 0.01 | 0.01 | 0.02 | 0.02 | 0.83 |
| Prince Edward Island (PEI) | 0.01 | 0.76 | 0.09 | 0.06 | 0.02 | 0.09 | 0.02 | 0.01 | 0.04 | 0.03 | 1.14 |
| Nova Scotia (NS) | 0.02 | 0.01 | 0.69 | 0.05 | 0.02 | 0.09 | 0.02 | 0.01 | 0.04 | 0.03 | 0.98 |
| New Brunswick (NB) | 0.01 | 0.01 | 0.06 | 0.70 | 0.04 | 0.08 | 0.02 | 0.01 | 0.03 | 0.02 | 0.98 |
| Quebec (QUE) | 0.00 | 0.00 | 0.01 | 0.01 | 0.34 | 0.05 | 0.01 | 0.00 | 0.01 | 0.01 | 0.45 |
| Ontario (ONT) | 0.01 | 0.00 | 0.02 | 0.01 | 0.02 | 0.36 | 0.02 | 0.01 | 0.03 | 0.03 | 0.50 |
| Manitoba (MAN) | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.06 | 0.78 | 0.08 | 0.11 | 0.08 | 1.15 |
| Saskatchewan (SAS) | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.04 | 0.10 | 0.86 | 0.22 | 0.10 | 1.34 |
| Alberta (ALB) | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.04 | 0.04 | 0.05 | 0.70 | 0.11 | 0.96 |
| British Columbia (BC) | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.03 | 0.03 | 0.03 | 0.09 | 0.46 | 0.67 |

[a]Because of rounding, the total is not necessarily equal to the sum of the rates for the individual provinces.

TABLE 19 Net migraproduction allocations[a] (%), 1966–1971.

| Province of birth | Province of out-migration | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NFD | PEI | NS | NB | QUE | ONT | MAN | SAS | ALB | BC | Total |
| Newfoundland (NFD) | 73 | 1 | 5 | 2 | 2 | 11 | 1 | 1 | 2 | 2 | 100 |
| Prince Edward Island (PEI) | 1 | 67 | 8 | 5 | 2 | 8 | 2 | 1 | 3 | 3 | 100 |
| Nova Scotia (NS) | 2 | 1 | 71 | 5 | 2 | 9 | 2 | 1 | 4 | 3 | 100 |
| New Brunswick (NB) | 1 | 1 | 6 | 72 | 4 | 8 | 2 | 1 | 3 | 2 | 100 |
| Quebec (QUE) | 0 | 0 | 2 | 2 | 76 | 11 | 2 | 1 | 3 | 3 | 100 |
| Ontario (ONT) | 1 | 0 | 4 | 2 | 4 | 72 | 4 | 2 | 6 | 5 | 100 |
| Manitoba (MAN) | 0 | 0 | 1 | 1 | 1 | 5 | 68 | 7 | 10 | 7 | 100 |
| Saskatchewan (SAS) | 0 | 0 | 1 | 0 | 1 | 3 | 7 | 64 | 17 | 7 | 100 |
| Alberta (ALB) | 0 | 0 | 1 | 1 | 1 | 4 | 4 | 5 | 73 | 11 | 100 |
| British Columbia (BC) | 0 | 0 | 2 | 2 | 2 | 4 | 4 | 4 | 13 | 69 | 100 |

[a]Taken from Table 18.

The results show that if provincial fertility rates were to converge toward the national average, we would expect the following changes: a decrease in the stable growth rate from 3.8% to 3.2% over 5 years; an "older" population in provinces with fertility levels above the average, and a "younger" population in provinces with levels below the average; and an important redistribution of the population among provinces.

The impact of eliminating fertility and mortality differentials is particularly important in two provinces, Newfoundland and Quebec, since the former has the highest fertility level while the latter has the lowest. The stable total population of Newfoundland is reduced threefold by bringing fertility levels down to the national average, and its share in the total population decreases from 5% to 1%. In contrast, Quebec's stable share in the total population increases from 12% to 18% on eliminating fertility differentials. However, this figure is still much lower than the initial share of 29% in 1966. Thus, even if Quebec had a fertility regime identical to the Canadian average, it would still experience a substantial reduction in its relative demographic weight within the Canadian Confederation at equilibrium. In fact, only about one-third of the decline in Quebec's share of the population is due to its low level of fertility: interprovincial migration plays the major role. The policy implications of this kind of result are, of course, important, and will be discussed in the next, and final, section of this report.

## 4 CONCLUSION

The spatial distribution of the population is an important factor in the political and economic development of Canada. There are three fundamental reasons why this should be so.

1. Canada is a confederation. This implies that the spatial distribution of political power is an issue of fundamental importance. While some fields (e.g., defense, money) are clearly the exclusive responsibility of the federal government, and others (e.g., education) are decided solely at the provincial level, in most cases there is an overlapping of responsibility and sometimes a conflict of interests. The demographic weight of a province can play an important part in resolving any such trials of strength.

2. The spatial distribution of the Canadian population is basically linear and multipolar. The land area of Canada is second in size only to that of the Soviet Union, but there are at least 30 countries with a greater total population. The 6 million inhabitants of Quebec occupy four times as much space as the 55 million inhabitants of France, and Quebec is one of the most populous provinces of Canada! This relatively sparse population is distributed as a thin ribbon along the 7,000-km border with the United States, with half a dozen points of high population density. Starting on the Pacific Ocean, the first of these is Vancouver (British Columbia), and moving east we find Edmonton and Calgary (Alberta), Winnipeg (Manitoba), Windsor–Toronto–Ottawa (Ontario), Montreal –Quebec (Quebec), concluding at a relatively small pole on the Atlantic coast, Halifax (Nova Scotia). It is often emphasized that "the narrowness and length of this band of habitation deprives Canada of a point of gravity and a corresponding point of identification" (Beaujot 1978, p.4). Thus any important shift of population along this line is viewed firstly as a regional (provincial) problem, and only marginally as a national redistribution process. Moreover, because of the vast distances involved, the costs of transportation, communications, social services, and electrical power in Canada are very high, and regional disparities in these costs per capita are directly related to the distribution of the population along this "band of habitation."

The population density along this line, "*a mari usque ad mare*" (Canada's motto, meaning "from ocean to ocean"), is particularly great between Windsor (Ontario) and Quebec City. Between these two cities, in a rectangle about 1,000-km long and 150-km deep, live 55% of the total population of Canada. It could be said that there is a "knot" in the ribbon, and that this knot lies between Ontario and Quebec. The strength of the knot depends on the equilibrium between the demographic weights of the provinces on either side.

3. There is considerable antagonism between the English- and French-speaking communities. More than 90% of all French-speaking Canadians are concentrated in Quebec, the French-speaking minorities in the nine English-speaking provinces having been almost totally assimilated, except in New Brunswick. One of the main problems facing Canada today, and one on which its future depends, is the resolution of this demographic tête-à-tête between the two "founding races."

And yet, despite all this, Canada still has no population policy, and more particularly, no policy for spatial redistribution of the population. In a recent

analysis of Canada's population trends and public policy issues, Stone and Marceau (1977) came to the following conclusions:

> "It can be said generally that few public policies have been adopted to reach demographic objectives. Those that seem closely related to demographic objectives, such as the Immigration Act, have in fact been adopted most often to meet a great number of needs which are quite different and sometimes contrary to the requirements of a certain control of demographic evolution."

Beaujot (1978, p.38) arrived at the same conclusion:

> "Like the U.S., Canada has no national population policy in the sense of a coherent set of programs deliberately aimed at influencing the size, rate of growth, distribution, and composition of the country's population."

The need for a policy of direct intervention in the spatial redistribution of the population is highlighted by the results of our multiregional analysis. It must be emphasized that projecting the 1966–1971 multiregional demographic rates until a stable equilibrium is reached does *not* represent a forecast of the future. However, we hope that the behavioral characteristics revealed in this type of multiregional projection may help policy makers to define the objectives of a long-range population policy, and decide on the best means of achieving these objectives.

One of the main results of our multiregional projection is the rapid decline of Quebec's share in the total population if the fertility, mortality, and interprovincial migration rates are kept fixed at the 1966–1971 level. Quebec's share in the total population of Canada (which is closely related to the weight of the French-speaking component) would be reduced from 27% in 1976 to 12% at equilibrium. It is clear that if Canada wants to maintain two languages and two cultures side-by-side in the future, some measures must be introduced to safeguard this aim today. These measures may influence the components of regional demographic growth, either directly or indirectly. Let us consider direct intervention first.

The value of 12% for Quebec's equilibrium share in the total population of Canada was obtained by assuming that fertility would remain constant at the 1966–1971 level. However, Quebec's fertility level continued to decline markedly in the 1970s relative to the fertility levels of the other provinces, and by 1978 was well below the replacement value. In order to estimate the impact of fertility differentials, we put the fertility rates in each province equal to the Canadian average and repeated the projection. Quebec's equilibium share increased from 12% to 18% under these conditions, which shows that the results are very sensitive to the fertility regime. However, this also indicates that a projection based on declining fertility levels in Quebec, e.g., the 1978 figures, would "predict" an equilibrium share even less than 12%.

Canada appears reluctant to intervene directly by encouraging changes in the pattern of fertility, however. (Canada has never had a national fertility survey and did not join the countries participating in the World Fertility Survey.) It is doubtful whether this type of intervention would have a significant effect: a fertility survey made in Quebec showed that, even with extremely pronatalist policy measures, the women of Quebec would only increase their fertility level marginally (Henripin and Lapierre-Adamcyk 1974).

The impact of international migration seems to be at least as important as the impact of fertility differentials. As shown in Section 2, international migration represents about 30% of Canada's total population growth, with 85% of the gain from migration between Canada and the rest of the world benefiting Ontario and British Columbia. A recent article by Liaw (1978) shows that by taking international migration into account, Ontario's long-run share of the total population increases from 35% to 41%, and British Columbia's share from 25% to 30%, while Quebec's long-run share decreases from 9.1% (compared to our 12%) to 6.1%. It is clear from these figures that Canada's international migration policy has strongly influenced the interprovincial redistribution of its population, and, if maintained, will tend to decrease the French component of Canada's population still further. Once a minority group suspects that its share in the total population is decreasing rapidly, it is likely to wonder whether its individual culture will survive, and to ask for measures to safeguard its future.

Since direct intervention on fertility and internal mobility has been ruled out on the grounds that it is a matter of personal choice, a national population policy would have to rely on controlling international migration. It is no exaggeration to state that the aims of the Canadian population policy will be enforced through immigration policies. This is also the conclusion reached by the Department of Manpower and Immigration (1974): "There are few firm handholds for policy in the field of demographic planning. One . . . can be furnished through the control of immigration volume."

If controlling the volume of immigration means reducing the number of immigrants, then the provinces which at present receive the main bulk of these immigrants (Ontario and British Columbia) will suffer a decrease in their relative share of the population. This will increase the relative share of those provinces which do not gain from international migration: immigration policy measures have then exerted a direct influence on population redistribution.* However, it is also necessary to take into consideration the capacity of each province to retain these immigrants. Not only do Ontario and British Columbia receive much more than their "fair" share of immigrants, but they also receive immigrants who, having initially chosen to live in another province, decided to move after a few years in Canada. Quebec, for instance, loses about one-third of its immigrants 3 years after their arrival.

*This is, of course, even more valid if we introduce the urban dimension, since most immigrants settle in metropolitan areas.

The spatial distribution of the population may be influenced by control not only of the quantity of immigrants but also of their characteristics, as determined by the selection criteria. The fact that in 1974 these selection criteria were modified to discriminate in favor of immigrants whose occupation is in demand in Canada has given an advantage to the provinces that are the economic leaders of the country: it is highly probable that most of these occupations are in demand in Ontario and British Columbia.

The effect of immigration on the interprovincial redistribution of population, and more particularly the linguistic "balance," has recently attracted the attention of policy makers. In 1977 the federal government, which had previously assumed full responsibility for immigration, took the unprecedented step of allowing the provincial government of Quebec to intervene in the selection procedure. Quebec now has a degree of control over the number and type of immigrants allowed to settle in this province.

This kind of measure is probably the closest the federal government has come to intervening in the spatial redistribution of the population. A 1975 recommendation by the Special Joint Committee of the Senate and by the House of Commons on Immigration Policy that "area demand be . . . used experimentally to encourage prospective immigrants to settle in communities where population growth is desired and is compatible with regional development plans" has not been implemented to date. Even if this type of recommendation were to be adopted by the legislative body, its impact may be reduced by the internal mobility of the immigrants. The result would probably be an increase in the relative attractiveness of the provinces which already receive the largest number of immigrants, because it is precisely in these provinces that "area demand" is the strongest.

The federal government does not attempt to control the population directly through internal migration because freedom of movement on Canadian territory is considered a basic right which may not be affected in any way. (This is probably the main reason why the principle of an "identity card," adopted by most European countries, has never been accepted in Canada.) However, provincial governments may try to influence the geographic mobility of the population. The provincial government of Quebec has been particularly active during recent years in developing policies which, directly or indirectly, have had a strong impact on interprovincial migration flows.

Direct control of fertility and internal migration being excluded, the Quebec government has chosen to influence mobility via the language barrier in order to try to protect French culture. The most striking manifestation of this policy was a measure, introduced in 1977, which allowed into English schools only those children whose parents had themselves attended an English school in Quebec. The immediate results of this policy were a considerable reduction in the amount of in-migration from the other (English-speaking) provinces and a significant increase in the number of out-migrants, which actually doubled. The volume and composition of the flow of international migrants to Quebec was also affected.

This is probably the most striking example of intervention in one small sector of domestic policy (education, in this case) having a considerable, indirect impact on the spatial redistribution of population. Indeed, even if there is no direct intervention, there are a great number of policy measures which have an indirect influence on this redistribution. It seems highly probable that, even if there were a population redistribution policy, its effects would be more than offset by the results of other indirect measures. Almost all policy measures, in every field, have an indirect impact on population redistribution, though this is not always planned. We shall discuss the effect of several such measures on migration and settlement in the Canadian provinces.

As already noted, there is no direct control of fertility. However, certain modifications to the Criminal Code related to abortions, adopted in 1969, may have had an important impact on provincial fertility differentials, and thus on population redistribution. The change in the law permits the doctor to perform an abortion once a committee has accepted that the abortion is necessary for the mother's continued physical well-being. The effect of this modification is difficult to estimate, and varies from province to province because the number of committees and their readiness to accept abortion is different in each province. The use of sterilization may also influence provincial fertility differentials since in some provinces it is the most frequently used method of contraception, while in others it is still regarded with some suspicion. (In Quebec, about 40% of couples of reproductive age rely on sterilization as a means of contraception, female sterilization being adopted in 90% of the cases.)

Any employment policy has regional implications, and will therefore affect the spatial distribution of the population. Recognizing that migration is one way through which regional labor market disequilibria may be controlled, the Economic Council of Canada (1977, summary p. 10) recently recommended that

> "Canadians who want to improve their financial situation must to some extent be ready to move into the regions where well-paid jobs are offered, particularly if these jobs are located in the social and cultural environment where these migrants come from."

In order to encourage workers from areas of high unemployment to move to regions of high labor demand, the federal government introduced a Manpower Mobility Program in 1965. This was essentially an attempt to help ease the financial barriers to mobility. Grants are provided to unemployed and underemployed workers to help them search for a job (exploratory grants) or accept a job (relocation grants) in a different area. In order to qualify for a relocation grant, workers must have obtained continuing employment "in the nearest area where suitable jobs are available," and their income must not be above a a certain limit based on the number of dependents and the duration of the unemployment. Recipients of relocation grants may also benefit from a re-establishment allowance if their family is large enough.

Though the financial aid provided through this program may be important to migrant workers (relocation grants averaged more than $600 in the period 1975–1976), the impact of this kind of intervention appears to have been rather small. Between 1967 and 1972, an annual average of 6,500 relocation grants were provided, but during the same period the yearly number of migrations between municipalities amounted to 1,250,000 (Jenness 1974, p. 13). In the period 1974–1975, relocation grants helped to fill only 2% of the job vacancies and contributed to only 5% of the total number of interprovincial migrations (Economic Council of Canada 1977, p. 196). Helping people to move does not represent a policy of spatial redistribution of population if no precise spatial objectives are defined.

This kind of spatial objective is implicit in a regional development policy. "Since the birth of the Confederation, a balanced regional development has always been implicitly, if not explicitly, one of the objectives of national policy." (Economic Council of Canada 1964). The first problem, of course, is to understand what is meant by a "balanced" regional development. The activities of the various agencies set up by the federal government in the last two decades lead to the conclusion that balanced regional development means improving the viability of regions of poor economic growth.

It is obviously not possible in this short review to give a detailed account of Canada's regional development policy,* but it is doubtful whether this would serve a useful purpose anyway. As concluded by Brewis (1969, p. 247) in his study of regional economic policies in Canada:

> "There is a serious lack of co-ordination among the various bodies concerned . . . and it is often difficult to know who is responsible for doing what . . . there seems to be something for everybody. But how effective are these various incentives, and what sort of a pattern of regional development is likely to emerge from them? No one is sure . . . to a very large extent the government is still operating in the dark."

However, the situation has improved since the creation of the Department of Regional Economic Expansion (DREE) in 1969. This department tries to coordinate various regional programs and, with a relatively small budget, attempts to influence regional economic growth differentials. The financial help provided by this department has been divided approximately equally between three programs: infrastructure works (particularly roads, water distribution, and sewers in urban regions); rural development; and the establishment of new plants or the expansion of existing ones in regions with a low economic growth rate.

Many criticisms have been leveled at the activities of DREE. Among these are the large spatial dispersion of the help provided, the fact that a large part

*For a detailed analysis of regional economic policies in the 1960s, see Brewis (1969) p. 303. For the 1970s, see the Annual Reports of the Department of Regional Economic Expansion.

of this help goes to urban regions which have problems of industrial concentration, and the fact that most of the aid goes to small private industries which are rarely the most polarizing, since they often have a rather low "multiplier" effect.

It is of course particularly difficult to assess the effect (if any) of this regional development policy on interprovincial migration flows. There are, however, some indications that the reversal in migration flows observed during the 1970s may have been reinforced by this policy. Table 20 presents some data on the distribution of the aid provided by DREE through its regional development programs.

There is clearly a correlation between the aid supplied to a province (Table 20) and the evolution of net migration rates between 1966–1971 and 1971–1976 (Table 2). The four Atlantic provinces benefited the most from DREE's help and also registered the most impressive improvement in their migration balance, while Ontario and British Columbia received less aid and experienced a considerable deterioration in their net migration rates. This does not, of course, imply that Canada's regional development policy is solely responsible for the recent reversal in interprovincial flows. One may however assume that it has helped to shape the new pattern of migration.*

The major problem in trying to evaluate the indirect relationship between various policy measures and spatial mobility is that these effects are often contradictory. Comparing the Manpower Mobility Program put forward by the Ministry of Manpower and the regional development policy administered by DREE provides a good example. Both have the same objective: to equalize labor supply and labor demand in all regions. But the former tries to reach this goal by increasing the mobility of the population ("bringing the people to the jobs") while the latter tries to reduce it ("bringing the jobs to the people").

The main instrument used by the federal government to achieve a better balance of provincial opportunities is to be found not in its regional development policy, but in a system of equalization grants. The main function of these grants is to ensure that standards are maintained at an adequate level in the social services. The grants include revenue equalization payments made by the federal government to the governments of the low-income provinces, as well as grants to all provinces to support higher education, universal hospitalization, and medical insurance programs.

One measure which may have a significant and immediate impact on regional development, and thus on population redistribution, is the federal government's policy of decentralizing some of its services. The first step in this direction was taken at the end of the 1960s, when it was decided to move some

*In a recent econometric analysis of interprovincial migration flows in Canada, we obtained a significant relationship between the variation in these flows and the provincial disparities in DREE's per capita expenditures for regional development. However, the contribution of this policy variable in "explaining" total variance was small (about 10% in the best case). (Termote and Fréchette 1979, pp. 178–179.)

TABLE 20 Provincial distribution of aid for regional development.

| Province | Per capita expenditures[a] (Can $) | Jobs created[b] (% of 1971 employment) |
|---|---|---|
| Newfoundland | 95 | 2.4 |
| Prince Edward Island | 173 | 3.2 |
| Nova Scotia | 50 | 3.0 |
| New Brunswick | 81 | 4.6 |
| Quebec | 17 | 3.4 |
| Ontario | 2 | 0.3 |
| Manitoba | 21 | 2.5 |
| Saskatchewan | 23 | 1.3 |
| Alberta | 10 | 0.5 |
| British Columbia | 4 | 0.2 |

[a]Given as a yearly average 1969–1976.
[b]Jobs created with the help of the Department of Regional Economic Expansion (DREE) between 1969 and 1975. Taken from DREE Annual Reports.

federal agencies from Ottawa to Hull. This is a suburb of Ottawa located on the Quebec side of the Ottawa River, the border between Ontario and Quebec. This measure, which was in line with the suburbanization of the capital city of Canada, has clearly had an important impact on migration flows between Ontario and Quebec. In recent years, the federal government has started to move some of its services to more remote, underdeveloped regions of the country. In some cases, the impact of such measures may be significant. Moving the Ministry of War Veterans from Ottawa may not produce any noticeable effect on Ontario's migration balance, but relocating this Ministry in Prince Edward Island is likely to have a considerable impact on the population flow to this province. (In the period 1966–1971 Prince Edward Island had a negative yearly net migration of only about 200 persons.)

Other fields in which changes in policy may have an indirect impact on population redistribution include: export, defense, transportation, taxation, housing, wages (minimum wage rate, for instance), prices, and energy. Most of these areas are subject to both provincial and federal jurisdiction, and there may be wide disparities between the measures introduced by different provinces.

The main conclusion of this highly sketchy review of the effects of various policies on the interprovincial redistribution of population in Canada is probably that no conclusion can be reached. There are too many interrelations between different measures introduced at various government levels, and too many indirect influences to be considered, to be able to isolate the impact of a given policy measure directly.

One of the advantages of the multiregional demographic model is that it can be used to examine the demographic implications of various policy scenarios.

The results obtained in this report show that there is an urgent need for such an investigation, to enable policy makers to make informed decisions on matters which may well direct the future course of Canada's demographic and economic development.

Of course, all models have their limitations. The quality of the output obtained from a model depends to a great extent on the input, i.e., on the quality of the data. Even in a country as rich in statistical data as Canada, there are still some fertility and migration data which have to be estimated.

Moreover, in choosing a particular method of computing the various rates, one also accepts a particular set of implicit assumptions (e.g., the linearity of each function within a 5-year period and within a 5-year age group). But this is also one of the strengths of the model: it allows us to test the sensitivity of the results to a change in the estimation of certain data or the way in which some rates are computed. This type of sensitivity analysis may thus provide the basis for a data-collecting policy.

Though the empirical results produced in this paper may be subject to dispute, at least one clear conclusion emerges: the effects of fertility, mortality, and migration, as observed in 1966–1971, combined to produce a strong continued westward shift of the Canadian population. More precisely, projection on the basis of the 1966–1971 demographic regime suggests that the population of the two most western provinces (Alberta and British Columbia) will increase dramatically, with the demographic weight of Quebec becoming as marginal in the long run as the relative weight of the Atlantic provinces today. The trends observed in fertility differentials and interprovincial migration in the 1970s, and the impact of international migration (excluded from our analysis), serve to reinforce these conclusions.

Results of this type go some way toward explaining recent developments in the spatial distribution of economic and political power, and in the relations between federal and provincial governments. The distribution of the population between provinces is a crucial issue for Canada, both economically and politically. It is hoped that this outline will stimulate further applications of the multiregional demographic model to the Canadian population system.

## REFERENCES

Beaujot, R. (1978) Canada's Population: Growth and Dualism. Washington, DC: Population Reference Bureau.

Brewis, T.N. (1969) Regional Economic Policies in Canada. Toronto: Macmillan.

Department of Manpower and Immigration (1974) Report of the Canadian Immigration and Population Study. Vol. 1, p. 7. Ottawa.

Department of Regional Economic Expansion (published yearly) Annual Reports. Ottawa.

Economic Council of Canada (1964) First Annual Review. Ottawa.

Economic Council of Canada (1977) Living Together – A Study of Regional Disparities. Catalogue 22-54. Ottawa.

George, M.V. (1970) Internal Migration in Canada. Demographic Analyses. Ottawa: Dominion Bureau of Statistics.

Henripin, J., and E. Lapierre-Adamcyk (1974) La fin de la revanche des berceaux: qu'en pensent les Québécoises? P. 164. (The End of the Cradles' Revenge: What is the Opinion of the Women of Quebec?) Montreal: Presses de la Université de Montréal.

Jenness, R.A. (1974) Canadian Migration and Immigration. Patterns and Government Policy. International Migration Reviews 8:5–22.

Lavoie, Y. (1978) Estimation de la fécondité des Terre-Neuviennes à l'aide des statistiques hospitalières (Estimation of the Fertility of Newfoundland Women from Hospital Statistics). Cahiers Québécois de Démographie 7:87–96.

Liaw, K.L. (1978) Dynamic Properties of the 1966–1971 Canadian Spatial Population System. Environment and Planning A 10:389–398.

Philipov, D. (1978) Migration and Settlement in Bulgaria. Environment and Planning A 10:593–617.

Simmons, J.W. (1977) Migration and the Canadian Urban System. Part I. Spatial Patterns. Research Paper No. 85, Center for Urban and Community Studies, University of Toronto. Reprinted in R.M. Irving (Ed.), Readings in Canadian Geography, 1978, pp. 47–67. Toronto: Holt, Rinehart and Winston.

Simmons, J.W. (1978) Migration and the Canadian Urban System. Part II. Simple Relationships. Research Paper No. 98, Center for Urban and Community Studies, University of Toronto.

Statistics Canada (published yearly) Vital Statistics. Data for 1966–1970: Catalogue 84-202; data for 1971: Catalogue 84-204 (births) and 84-206 (deaths). Ottawa.

Statistics Canada (1973a) Revised Annual Estimates of Population, Catalogue 91-512. Ottawa.

Statistics Canada (1973b) 1971 Census. Catalogue 92-702. Ottawa.

Statistics Canada (1974a) 1971 Census. Catalogue 92-719. Ottawa.

Statistics Canada (1974b) Population Projections for Canada and the Provinces, 1972–2001. Catalogue 91-514. Ottawa.

Statistics Canada (1975) Technical Report on Population Projections for Canada and the Provinces, 1972–2001. Catalogue 91-516. Ottawa.

Statistics Canada (1976) 1971 Census. Catalogue 99-701. Ottawa.

Statistics Canada (1977) International and Interprovincial Migration in Canada, 1961–1962 to 1975–1976. Catalogue 91-208. Ottawa.

Statistics Canada (1978) 1976 Census. Catalogue 92-823. Ottawa.

Statistics Canada (1979) Population Projections for Canada and the Provinces, 1976–2001. Catalogue 91-520. Ottawa.

Stone, L.O. (1969) Migration in Canada. Regional Aspects. Ottawa: Dominion Bureau of Statistics.

Stone, L.O., and C. Marceau (1977) Canadian Population Trends and Public Policy Through the 1980s. P. 57. Montreal: Institute for Research on Public Policy.

Termote, M., and R. Fréchette (1979) Les variations du courant migratoire interprovincial, 1951–1977 (The Variations in the Interprovincial Migration Flow, 1951–1977). Ottawa: Ministère des Affaires Urbaines.

United Nations (1957) Methods for Population Projections by Sex and Age. P. 44. Population Studies No. 25, St/SOA/Series A, New York.

Vanderkamp, J. (1973) La mobilité de la main-d'oeuvre au Canada (Mobility Patterns in the Canadian Labor Force). Ottawa: Conseil Economique du Canada.

Willekens, F., and A. Rogers (1978) Spatial Population Analysis: Methods and Computer Programs. RR-78-18. Laxenburg, Austria: International Institute for Applied Systems Analysis.

FURTHER READING

Anderson, I.B. (1966) Internal Migration in Canada, 1921–1961. Ottawa: Economic Council of Canada.

Barrett, M., and C. Taylor (1977) Population and Canada. Toronto: University of Toronto.

Department of Manpower and Immigration (1976) Toward a Demographic Policy for Canada. Ottawa.

Grindstaff, C.I., C. Boydell, and P. Whitehead (1971) Population Issues in Canada. Toronto: Holt, Rinehart and Winston.

Hawkins, F. (1972) Canada and Immigration: Public Policy and Public Concern. Montreal and London: McGill, Queen's University Press.

Liaw, K.L. (1976) Sensitivity Analysis of Discrete Time Interregional Population Systems. Demography 13:521–539.

Liaw, K.L., V. Aresta, and K. George (1979) Major Cyclical Components of the 1966–1971 Canadian Interregional Population System. Geographical Analysis 11:109–119.

Rogers, A. (1975) Introduction to Multiregional Mathematical Demography. New York: Wiley.

Stone, L.O. (1974) What We Know about Migration within Canada. A Selective Review and Agenda for Future Research. International Migration Review 8:267–281.

Stone, L.O., and A.J. Signer (Eds.) (1974) The Population of Canada: A Review of Recent Patterns and Trends. Paris: CICRED.

Stone, L.O., and S. Fletcher (1977) Migration in Canada. Statistics Canada, Catalogue 99-705, Ottawa.

# APPENDIXES

*Appendix A*

# OBSERVED POPULATION, NUMBERS OF BIRTHS, DEATHS, AND MIGRANTS, DISAGGREGATED BY SEX, AGE, AND PROVINCE: 1966–1971

# APPENDIX A

## Observed population characteristics: males.

region nw.found

| age | population | births | deaths | migration from nw.found to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 33361. | 0. | 1086. | 0. | 30. | 540. | 180. | 210. | 2050. | 90. | 40. | 40. | 150. |
| 5 | 34365. | 0. | 108. | 0. | 5. | 282. | 185. | 212. | 974. | 37. | 18. | 34. | 185. |
| 10 | 32745. | 47. | 103. | 0. | 15. | 135. | 97. | 146. | 737. | 52. | 11. | 52. | 64. |
| 15 | 28669. | 4112. | 128. | 0. | 20. | 185. | 84. | 124. | 1284. | 27. | 5. | 62. | 103. |
| 20 | 19874. | 1,786. | 142. | 0. | 31. | 438. | 179. | 159. | 3153. | 75. | 65. | 101. | 163. |
| 25 | 15968. | 8728. | 101. | 0. | 41. | 326. | 152. | 175. | 1398. | 54. | 5. | 51. | 119. |
| 30 | 13626. | 4547. | 102. | 0. | 10. | 166. | 115. | 152. | 751. | 43. | 18. | 39. | 71. |
| 35 | 13248. | 2770. | 149. | 0. | 21. | 117. | 87. | 69. | 441. | 27. | 12. | 17. | 48. |
| 40 | 12477. | 1010. | 239. | 0. | 0. | 79. | 34. | 88. | 304. | 27. | 23. | 22. | 75. |
| 45 | 12095. | 109. | 323. | 0. | 11. | 63. | 43. | 38. | 294. | 11. | 18. | 17. | 16. |
| 50 | 11163. | 0. | 509. | 0. | 10. | 40. | 33. | 39. | 161. | 5. | 12. | 5. | 5. |
| 55 | 9612. | 0. | 688. | 0. | 5. | 5. | 16. | 33. | 182. | 11. | 0. | 11. | 5. |
| 60 | 7154. | 0. | 753. | 0. | 0. | 31. | 0. | 29. | 107. | 0. | 5. | 0. | 11. |
| 65 | 5343. | 0. | 873. | 0. | 5. | 2. | 5. | 8. | 24. | 2. | 0. | 2. | 7. |
| 70 | 4052. | 0. | 964. | 0. | 4. | 1. | 4. | 6. | 19. | 2. | 0. | 2. | 6. |
| 75 | 2802. | 0. | 1056. | 0. | 3. | 1. | 3. | 5. | 14. | 1. | 0. | 1. | 4. |
| 80 | 1617. | 0. | 969. | 0. | 2. | 1. | 2. | 3. | 9. | 1. | 0. | 1. | 3. |
| 85 | 944. | 0. | 971. | 0. | 1. | 0. | 1. | 2. | 5. | 0. | 0. | 0. | 1. |
| total | 259115. | 33109. | 9264. | 0. | 214. | 2412. | 1220. | 1498. | 11907. | 465. | 232. | 457. | 996. |

region p.edouar

| age | population | births | deaths | migration from p.edouar to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 5786. | 0. | 178. | 40. | 0. | 170. | 200. | 40. | 410. | 40. | 20. | 40. | 50. |
| 5 | 6525. | 0. | 23. | 19. | 0. | 192. | 138. | 54. | 244. | 32. | 8. | 15. | 49. |
| 10 | 6306. | 4. | 22. | 0. | 0. | 162. | 61. | 66. | 176. | 10. | 4. | 11. | 21. |
| 15 | 5707. | 651. | 46. | 6. | 0. | 82. | 56. | 29. | 191. | 16. | 8. | 25. | 44. |
| 20 | 4075. | 1812. | 34. | 40. | 0. | 239. | 154. | 41. | 551. | 32. | 4. | 79. | 27. |
| 25 | 3086. | 1328. | 25. | 31. | 0. | 166. | 120. | 54. | 342. | 15. | 12. | 35. | 38. |
| 30 | 2900. | 793. | 36. | 21. | 0. | 110. | 56. | 23. | 162. | 21. | 12. | 30. | 16. |
| 35 | 2803. | 486. | 32. | 11. | 0. | 78. | 60. | 35. | 104. | 10. | 4. | 11. | 17. |
| 40 | 2747. | 189. | 53. | 9. | 0. | 71. | 34. | 12. | 78. | 5. | 0. | 20. | 27. |
| 45 | 2720. | 23. | 85. | 4. | 0. | 76. | 38. | 0. | 52. | 5. | 4. | 5. | 28. |
| 50 | 2652. | 0. | 134. | 0. | 0. | 32. | 11. | 0. | 31. | 0. | 0. | 10. | 11. |
| 55 | 2564. | 0. | 191. | 0. | 0. | 0. | 11. | 5. | 22. | 0. | 0. | 0. | 16. |
| 60 | 2097. | 0. | 239. | 0. | 0. | 5. | 12. | 0. | 16. | 0. | 4. | 10. | 0. |
| 65 | 1844. | 0. | 279. | 3. | 0. | 11. | 8. | 0. | 12. | 2. | 1. | 0. | 0. |
| 70 | 1529. | 0. | 349. | 3. | 0. | 9. | 6. | 0. | 10. | 2. | 1. | 0. | 0. |
| 75 | 1121. | 0. | 375. | 2. | 0. | 7. | 5. | 0. | 7. | 1. | 1. | 0. | 0. |
| 80 | 677. | 0. | 379. | 1. | 0. | 4. | 3. | 0. | 5. | 1. | 1. | 0. | 0. |
| 85 | 461. | 0. | 471. | 1. | 0. | 2. | 2. | 0. | 2. | 0. | 0. | 0. | 0. |
| total | 55600. | 5286. | 2951. | 191. | 0. | 1416. | 975. | 359. | 2385. | 192. | 84. | 291. | 344. |

region n.scotia

| age | population | births | deaths | migration from n.scotia to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 39842. | 0. | 1023. | 280. | 190. | 0. | 900. | 680. | 2600. | 120. | 90. | 310. | 450. |
| 5 | 44088. | 0. | 168. | 195. | 176. | 0. | 678. | 345. | 1803. | 115. | 44. | 229. | 455. |
| 10 | 42900. | 47. | 143. | 122. | 154. | 0. | 477. | 201. | 1440. | 102. | 30. | 142. | 413. |
| 15 | 39448. | 5562. | 313. | 75. | 96. | 0. | 404. | 181. | 1311. | 96. | 25. | 154. | 298. |
| 20 | 30528. | 13120. | 354. | 267. | 146. | 0. | 705. | 328. | 2995. | 205. | 119. | 400. | 529. |
| 25 | 24240. | 9154. | 210. | 255. | 129. | 0. | 508. | 492. | 2098. | 168. | 54. | 388. | 502. |
| 30 | 21413. | 4768. | 209. | 168. | 99. | 0. | 445. | 260. | 1246. | 100. | 40. | 161. | 336. |
| 35 | 20828. | 2689. | 240. | 108. | 97. | 0. | 314. | 221. | 962. | 57. | 34. | 105. | 212. |
| 40 | 20379. | 913. | 424. | 65. | 52. | 0. | 281. | 119. | 754. | 46. | 20. | 60. | 260. |
| 45 | 20642. | 72. | 636. | 38. | 43. | 0. | 212. | 60. | 518. | 43. | 19. | 83. | 168. |
| 50 | 19943. | 0. | 973. | 38. | 27. | 0. | 91. | 55. | 300. | 6. | 10. | 27. | 97. |
| 55 | 17928. | 0. | 1398. | 5. | 27. | 0. | 50. | 38. | 199. | 0. | 0. | 22. | 33. |
| 60 | 14301. | 0. | 1706. | 17. | 26. | 0. | 29. | 11. | 97. | 0. | 0. | 0. | 21. |
| 65 | 11050. | 0. | 1950. | 9. | 11. | 0. | 27. | 13. | 57. | 0. | 0. | 4. | 11. |
| 70 | 8591. | 0. | 2285. | 7. | 9. | 0. | 22. | 11. | 46. | 0. | 0. | 3. | 9. |
| 75 | 6171. | 0. | 2417. | 5. | 6. | 0. | 16. | 8. | 34. | 0. | 0. | 2. | 7. |
| 80 | 3738. | 0. | 2268. | 4. | 4. | 0. | 11. | 5. | 23. | 0. | 0. | 1. | 5. |
| 85 | 2464. | 0. | 2526. | 2. | 2. | 0. | 5. | 3. | 11. | 0. | 0. | 1. | 2. |
| total | 388494. | 36325. | 19242. | 1660. | 1294. | 0. | 5175. | 3029. | 16494. | 1058. | 485. | 2092. | 3808. |

region brunswic

| age | population | births | deaths | migration from brunswic to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 33596. | 0. | 880. | 180. | 180. | 890. | 0. | 1170. | 1970. | 160. | 60. | 250. | 330. |
| 5 | 37852. | 0. | 141. | 76. | 86. | 658. | 0. | 566. | 1163. | 107. | 34. | 134. | 283. |
| 10 | 37547. | 33. | 139. | 69. | 69. | 511. | 0. | 382. | 990. | 111. | 22. | 95. | 180. |
| 15 | 34280. | 4663. | 246. | 41. | 53. | 398. | 0. | 355. | 1091. | 81. | 35. | 96. | 167. |
| 20 | 25157. | 11114. | 302. | 166. | 115. | 728. | 0. | 839. | 2481. | 143. | 91. | 311. | 268. |
| 25 | 18829. | 7472. | 146. | 124. | 86. | 654. | 0. | 692. | 1550. | 85. | 39. | 213. | 268. |
| 30 | 16348. | 4013. | 147. | 57. | 66. | 405. | 0. | 379. | 808. | 63. | 34. | 90. | 141. |
| 35 | 16013. | 2429. | 174. | 69. | 59. | 283. | 0. | 289. | 628. | 50. | 22. | 74. | 136. |
| 40 | 16173. | 869. | 286. | 38. | 34. | 233. | 0. | 177. | 535. | 40. | 5. | 42. | 101. |
| 45 | 15999. | 66. | 519. | 16. | 40. | 225. | 0. | 144. | 325. | 40. | 12. | 75. | 85. |
| 50 | 14805. | 0. | 713. | 0. | 32. | 146. | 0. | 102. | 310. | 23. | 5. | 26. | 56. |
| 55 | 13302. | 0. | 961. | 17. | 22. | 95. | 0. | 50. | 145. | 0. | 5. | 11. | 11. |
| 60 | 10641. | 0. | 1198. | 0. | 5. | 76. | 0. | 44. | 64. | 5. | 5. | 16. | 11. |
| 65 | 8419. | 0. | 1436. | 0. | 11. | 57. | 0. | 30. | 30. | 2. | 0. | 2. | 15. |
| 70 | 6581. | 0. | 1596. | 0. | 9. | 45. | 0. | 24. | 24. | 2. | 0. | 2. | 12. |
| 75 | 4701. | 0. | 1798. | 0. | 6. | 34. | 0. | 18. | 18. | 1. | 0. | 1. | 9. |
| 80 | 2797. | 0. | 1691. | 0. | 4. | 23. | 0. | 12. | 12. | 1. | 0. | 1. | 6. |
| 85 | 1745. | 0. | 1779. | 0. | 2. | 11. | 0. | 6. | 6. | 0. | 0. | 0. | 3. |
| total | 314785. | 30659. | 14152. | 853. | 883. | 5472. | 0. | 5229. | 12150. | 914. | 369. | 1439. | 2082. |

## APPENDIX A *Continued.*

region quebec

| age | population | births | deaths | migration from nw.found | p.edouar | quebec to n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 285943. | 0. | 7206. | 370. | 80. | 580. | 990. | 0. | 9130. | 390. | 190. | 670. | 1210. |
| 5 | 335812. | 0. | 1189. | 182. | 72. | 483. | 853. | 0. | 6730. | 341. | 65. | 606. | 1046. |
| 10 | 332023. | 71. | 975. | 158. | 36. | 431. | 520. | 0. | 6068. | 236. | 69. | 427. | 890. |
| 15 | 299558. | 16818. | 1963. | 89. | 15. | 334. | 361. | 0. | 5051. | 230. | 93. | 391. | 798. |
| 20 | 253106. | 85624. | 2420. | 116. | 47. | 547. | 588. | 0. | 7749. | 335. | 173. | 741. | 1251. |
| 25 | 214353. | 76988. | 1627. | 194. | 46. | 475. | 813. | 0. | 7085. | 371. | 140. | 718. | 1211. |
| 30 | 188377. | 40971. | 1538. | 147. | 48. | 398. | 592. | 0. | 4854. | 270. | 81. | 403. | 965. |
| 35 | 183922. | 22413. | 2154. | 141. | 41. | 316. | 410. | 0. | 4331. | 208. | 70. | 364. | 830. |
| 40 | 176621. | 7156. | 3240. | 125. | 28. | 225. | 256. | 0. | 3614. | 189. | 60. | 214. | 602. |
| 45 | 156896. | 645. | 4800. | 66. | 16. | 130. | 226. | 0. | 3123. | 100. | 64. | 239. | 604. |
| 50 | 135183. | 7. | 6942. | 26. | 15. | 91. | 134. | 0. | 2118. | 74. | 27. | 131. | 378. |
| 55 | 115886. | 0. | 9771. | 27. | 11. | 54. | 109. | 0. | 1182. | 50. | 15. | 49. | 242. |
| 60 | 91805. | 0. | 11863. | 11. | 5. | 49. | 96. | 0. | 838. | 34. | 0. | 62. | 230. |
| 65 | 68190. | 0. | 13142. | 2. | 7. | 26. | 71. | 0. | 503. | 10. | 7. | 15. | 128. |
| 70 | 47727. | 0. | 13458. | 1. | 5. | 21. | 57. | 0. | 402. | 8. | 6. | 12. | 103. |
| 75 | 29978. | 0. | 12795. | 1. | 4. | 15. | 43. | 0. | 302. | 6. | 4. | 9. | 77. |
| 80 | 16167. | 0. | 10564. | 1. | 3. | 10. | 29. | 0. | 201. | 4. | 3. | 6. | 51. |
| 85 | 8691. | 0. | 9448. | 0. | 1. | 5. | 14. | 0. | 101. | 2. | 1. | 3. | 26. |
| total | 2940238. | 250693. | 115095. | 1657. | 480. | 4190. | 6162. | 0. | 63382. | 2858. | 1068. | 5060. | 10642. |

region ontario

| age | population | births | deaths | migration from nw.found | p.edouar | ontario to n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 354384. | 0. | 8020. | 1020. | 400. | 2150. | 1840. | 7840. | 0. | 1620. | 660. | 2050. | 3470. |
| 5 | 397307. | 0. | 1002. | 553. | 289. | 1634. | 1173. | 3820. | 0. | 1302. | 548. | 1672. | 2870. |
| 10 | 377780. | 227. | 863. | 319. | 216. | 1215. | 802. | 2798. | 0. | 1206. | 425. | 1471. | 2711. |
| 15 | 333402. | 41865. | 1947. | 198. | 86. | 758. | 534. | 1714. | 0. | 949. | 336. | 1088. | 2320. |
| 20 | 287776. | 114689. | 2185. | 527. | 199. | 1604. | 806. | 2820. | 0. | 1281. | 631. | 1740. | 3633. |
| 25 | 251047. | 95377. | 1583. | 898. | 234. | 1771. | 1095. | 4599. | 0. | 1411. | 564. | 2135. | 3589. |
| 30 | 234325. | 50018. | 1597. | 420. | 190. | 1255. | 717. | 3332. | 0. | 1095. | 391. | 1465. | 2415. |
| 35 | 239847. | 24508. | 2470. | 266. | 159. | 878. | 638. | 2376. | 0. | 783. | 313. | 1015. | 2103. |
| 40 | 237479. | 7135. | 4028. | 184. | 99. | 577. | 435. | 1614. | 0. | 689. | 210. | 862. | 1783. |
| 45 | 214018. | 469. | 6075. | 120. | 77. | 492. | 312. | 1264. | 0. | 501. | 166. | 620. | 1595. |
| 50 | 183868. | 2. | 8728. | 95. | 27. | 324. | 166. | 663. | 0. | 298. | 153. | 409. | 1091. |
| 55 | 158772. | 0. | 12429. | 71. | 27. | 158. | 120. | 553. | 0. | 165. | 39. | 175. | 703. |
| 60 | 127884. | 0. | 15774. | 43. | 15. | 128. | 113. | 305. | 0. | 111. | 37. | 98. | 539. |
| 65 | 99608. | 0. | 19057. | 25. | 22. | 77. | 49. | 218. | 0. | 111. | 42. | 83. | 412. |
| 70 | 72408. | 0. | 20203. | 20. | 17. | 62. | 39. | 175. | 0. | 89. | 33. | 66. | 329. |
| 75 | 47724. | 0. | 20013. | 15. | 13. | 46. | 30. | 131. | 0. | 66. | 25. | 50. | 247. |
| 80 | 27124. | 0. | 17169. | 10. | 9. | 31. | 20. | 87. | 0. | 44. | 17. | 33. | 165. |
| 85 | 15674. | 0. | 16231. | 5. | 4. | 15. | 10. | 44. | 0. | 22. | 8. | 17. | 82. |
| total | 3660027. | 334290. | 159374. | 4789. | 2083. | 13175. | 8899. | 34353. | 0. | 11758. | 4548. | 15049. | 30057. |

region manitoba

| age | population | births | deaths | migration from manitoba to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 47981. | 0. | 1290. | 40. | 40. | 260. | 160. | 520. | 2270. | 0. | 1560. | 1640. | 1760. |
| 5 | 52446. | 0. | 125. | 20. | 57. | 173. | 153. | 369. | 1780. | 0. | 777. | 1328. | 1823. |
| 10 | 51183. | 56. | 126. | 11. | 39. | 110. | 113. | 284. | 1475. | 0. | 559. | 1032. | 1578. |
| 15 | 46652. | 5843. | 291. | 7. | 17. | 67. | 56. | 148. | 1055. | 0. | 496. | 892. | 1281. |
| 20 | 38411. | 15646. | 365. | 16. | 11. | 186. | 38. | 212. | 1547. | 0. | 667. | 1402. | 1700. |
| 25 | 30965. | 12706. | 233. | 54. | 34. | 191. | 110. | 348. | 1904. | 0. | 773. | 1463. | 1743. |
| 30 | 27710. | 6537. | 249. | 11. | 23. | 122. | 61. | 326. | 1418. | 0. | 518. | 1000. | 1326. |
| 35 | 27704. | 3418. | 307. | 15. | 17. | 69. | 103. | 245. | 1122. | 0. | 311. | 737. | 1012. |
| 40 | 27972. | 1109. | 456. | 0. | 18. | 48. | 56. | 158. | 922. | 0. | 341. | 554. | 832. |
| 45 | 27361. | 102. | 696. | 0. | 11. | 26. | 43. | 115. | 704. | 0. | 272. | 390. | 908. |
| 50 | 25470. | 0. | 1081. | 5. | 0. | 25. | 33. | 89. | 412. | 0. | 152. | 356. | 698. |
| 55 | 23022. | 0. | 1511. | 6. | 5. | 5. | 5. | 74. | 212. | 0. | 121. | 171. | 461. |
| 60 | 18875. | 0. | 1883. | 0. | 0. | 0. | 0. | 43. | 118. | 0. | 37. | 105. | 332. |
| 65 | 14932. | 0. | 2379. | 0. | 4. | 5. | 0. | 4. | 97. | 0. | 78. | 72. | 337. |
| 70 | 11474. | 0. | 2726. | 0. | 3. | 4. | 0. | 3. | 78. | 0. | 63. | 58. | 269. |
| 75 | 8676. | 0. | 3093. | 0. | 2. | 3. | 0. | 2. | 58. | 0. | 47. | 43. | 202. |
| 80 | 5368. | 0. | 3164. | 0. | 1. | 2. | 0. | 1. | 39. | 0. | 31. | 29. | 135. |
| 85 | 3236. | 0. | 3099. | 0. | 1. | 1. | 0. | 1. | 19. | 0. | 16. | 14. | 67. |
| total | 489438. | 45417. | 24274. | 185. | 283. | 1297. | 931. | 2942. | 15230. | 0. | 6819. | 11286. | 16464. |

region saskatch

| age | population | births | deaths | migration from saskatch to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 47723. | 0. | 1414. | 20. | 20. | 100. | 40. | 140. | 1190. | 1580. | 0. | 4780. | 2580. |
| 5 | 53277. | 0. | 124. | 14. | 13. | 94. | 80. | 145. | 775. | 1248. | 0. | 2768. | 1953. |
| 10 | 52652. | 45. | 132. | 19. | 6. | 51. | 16. | 111. | 578. | 747. | 0. | 2028. | 1615. |
| 15 | 46851. | 6276. | 361. | 5. | 0. | 35. | 6. | 44. | 628. | 832. | 0. | 2131. | 1661. |
| 20 | 33378. | 15902. | 367. | 20. | 0. | 78. | 33. | 112. | 1125. | 2009. | 0. | 4768. | 2609. |
| 25 | 26676. | 11618. | 235. | 10. | 25. | 68. | 27. | 113. | 1078. | 1273. | 0. | 3879. | 2002. |
| 30 | 25299. | 6378. | 212. | 10. | 6. | 57. | 27. | 100. | 637. | 817. | 0. | 2025. | 1223. |
| 35 | 26451. | 3672. | 274. | 12. | 0. | 40. | 21. | 66. | 507. | 601. | 0. | 1505. | 1043. |
| 40 | 26913. | 1256. | 433. | 0. | 7. | 33. | 22. | 50. | 413. | 412. | 0. | 1097. | 923. |
| 45 | 26542. | 121. | 652. | 4. | 0. | 11. | 5. | 28. | 268. | 342. | 0. | 814. | 757. |
| 50 | 25168. | 1. | 951. | 10. | 0. | 5. | 5. | 22. | 155. | 260. | 0. | 526. | 606. |
| 55 | 22867. | 0. | 1289. | 0. | 13. | 0. | 11. | 11. | 97. | 215. | 0. | 385. | 492. |
| 60 | 18999. | 0. | 1659. | 0. | 0. | 0. | 0. | 0. | 80. | 102. | 0. | 293. | 483. |
| 65 | 15114. | 0. | 2093. | 0. | 0. | 0. | 0. | 12. | 50. | 74. | 0. | 168. | 392. |
| 70 | 11919. | 0. | 2483. | 0. | 0. | 0. | 0. | 9. | 40. | 59. | 0. | 134. | 314. |
| 75 | 9649. | 0. | 3378. | 0. | 0. | 0. | 0. | 7. | 30. | 45. | 0. | 101. | 235. |
| 80 | 6481. | 0. | 3892. | 0. | 0. | 0. | 0. | 5. | 20. | 30. | 0. | 67. | 157. |
| 85 | 3921. | 0. | 3583. | 0. | 0. | 0. | 0. | 2. | 10. | 15. | 0. | 34. | 78. |
| total | 479880. | 45269. | 23132. | 124. | 90. | 572. | 293. | 977. | 7681. | 10661. | 0. | 27498. | 19123. |

APPENDIX A *Continued.*

region alberta

| age | population | births | deaths | migration from alberta to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 83342. | 0. | 2036. | 60. | 50. | 190. | 120. | 360. | 2000. | 1100. | 1520. | 0. | 5080. |
| 5 | 91859. | 0. | 207. | 23. | 15. | 265. | 98. | 218. | 1412. | 620. | 938. | 0. | 3970. |
| 10 | 87224. | 70. | 209. | 28. | 10. | 118. | 98. | 211. | 1106. | 422. | 646. | 0. | 3777. |
| 15 | 73398. | 10973. | 560. | 12. | 0. | 93. | 45. | 120. | 791. | 351. | 498. | 0. | 2851. |
| 20 | 60254. | 28623. | 614. | 37. | 15. | 163. | 60. | 224. | 1050. | 504. | 695. | 0. | 3606. |
| 25 | 52791. | 21536. | 417. | 58. | 15. | 148. | 60. | 272. | 1409. | 682. | 651. | 0. | 3259. |
| 30 | 49776. | 10894. | 421. | 43. | 16. | 119. | 98. | 223. | 1102. | 494. | 643. | 0. | 2896. |
| 35 | 50373. | 5521. | 541. | 0. | 15. | 132. | 71. | 156. | 861. | 362. | 460. | 0. | 2401. |
| 40 | 47118. | 1646. | 766. | 24. | 6. | 54. | 50. | 124. | 755. | 273. | 337. | 0. | 1952. |
| 45 | 41868. | 139. | 1031. | 18. | 0. | 32. | 21. | 108. | 490. | 157. | 218. | 0. | 1807. |
| 50 | 35972. | 0. | 1420. | 12. | 0. | 31. | 5. | 59. | 272. | 155. | 209. | 0. | 1420. |
| 55 | 30829. | 0. | 1919. | 7. | 0. | 10. | 0. | 22. | 177. | 50. | 113. | 0. | 1174. |
| 60 | 25425. | 0. | 2423. | 5. | 0. | 0. | 0. | 22. | 92. | 28. | 36. | 0. | 902. |
| 65 | 20096. | 0. | 2990. | 0. | 0. | 2. | 2. | 0. | 53. | 10. | 63. | 0. | 692. |
| 70 | 14755. | 0. | 3256. | 0. | 0. | 2. | 2. | 0. | 42. | 8. | 50. | 0. | 554. |
| 75 | 10839. | 0. | 3975. | 0. | 0. | 1. | 1. | 0. | 32. | 6. | 38. | 0. | 415. |
| 80 | 6976. | 0. | 3890. | 0. | 0. | 1. | 1. | 0. | 21. | 4. | 25. | 0. | 277. |
| 85 | 4120. | 0. | 3853. | 0. | 0. | 0. | 0. | 0. | 11. | 2. | 13. | 0. | 138. |
| total | 787015. | 79402. | 30528. | 327. | 142. | 1361. | 732. | 2119. | 11676. | 5228. | 7153. | 0. | 37171. |

region b.columb

| age | population | births | deaths | migration from b.columb to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 93355. | 0. | 2314. | 80. | 10. | 320. | 100. | 460. | 2060. | 830. | 720. | 2830. | 0. |
| 5 | 105656. | 0. | 327. | 30. | 20. | 223. | 124. | 320. | 1284. | 515. | 477. | 2152. | 0. |
| 10 | 103327. | 99. | 225. | 25. | 50. | 160. | 66. | 266. | 1168. | 334. | 324. | 1513. | 0. |
| 15 | 91722. | 12691. | 679. | 7. | 11. | 85. | 52. | 130. | 883. | 214. | 311. | 1281. | 0. |
| 20 | 79553. | 31661. | 822. | 21. | 5. | 199. | 85. | 304. | 1481. | 474. | 427. | 2217. | 0. |
| 25 | 69779. | 25011. | 602. | 47. | 15. | 216. | 134. | 498. | 1945. | 671. | 436. | 2890. | 0. |
| 30 | 63930. | 11914. | 646. | 54. | 31. | 141. | 74. | 293. | 1436. | 423. | 354. | 1443. | 0. |
| 35 | 64921. | 5527. | 796. | 32. | 15. | 140. | 39. | 242. | 1046. | 257. | 210. | 1196. | 0. |
| 40 | 63447. | 1553. | 1222. | 27. | 22. | 116. | 51. | 192. | 835. | 154. | 213. | 869. | 0. |
| 45 | 58808. | 108. | 1684. | 9. | 5. | 52. | 39. | 116. | 695. | 150. | 183. | 715. | 0. |
| 50 | 53493. | 1. | 2384. | 0. | 0. | 21. | 12. | 69. | 321. | 102. | 106. | 443. | 0. |
| 55 | 47486. | 0. | 3222. | 0. | 5. | 5. | 28. | 48. | 198. | 75. | 38. | 325. | 0. |
| 60 | 38151. | 0. | 4127. | 0. | 0. | 16. | 6. | 27. | 113. | 43. | 63. | 228. | 0. |
| 65 | 30573. | 0. | 5005. | 2. | 0. | 9. | 2. | 9. | 72. | 39. | 68. | 152. | 0. |
| 70 | 22956. | 0. | 5530. | 1. | 0. | 7. | 2. | 7. | 58. | 31. | 54. | 122. | 0. |
| 75 | 17701. | 0. | 6576. | 1. | 0. | 5. | 1. | 6. | 43. | 23. | 41. | 91. | 0. |
| 80 | 12155. | 0. | 7045. | 1. | 0. | 4. | 1. | 4. | 29. | 16. | 27. | 61. | 0. |
| 85 | 7567. | 0. | 7220. | 0. | 0. | 2. | 0. | 2. | 14. | 8. | 14. | 30. | 0. |
| total | 1024480. | 88565. | 50426. | 337. | 189. | 1721. | 816. | 2993. | 13631. | 4359. | 4066. | 18058. | 0. |

Observed population characteristics: females.

region nw.found

| age | population | births | deaths | migration from nw.found to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 31745. | 0. | 789. | 0. | 40. | 400. | 240. | 200. | 2010. | 70. | 20. | 60. | 160. |
| 5 | 32989. | 0. | 70. | 0. | 37. | 260. | 97. | 161. | 948. | 64. | 20. | 52. | 96. |
| 10 | 31631. | 46. | 45. | 0. | 5. | 148. | 70. | 104. | 617. | 39. | 0. | 26. | 68. |
| 15 | 28295. | 3932. | 62. | 0. | 0. | 189. | 95. | 115. | 1314. | 20. | 20. | 26. | 110. |
| 20 | 20414. | 11261. | 58. | 0. | 37. | 502. | 116. | 247. | 2974. | 69. | 14. | 97. | 174. |
| 25 | 15465. | 8338. | 39. | 0. | 27. | 304. | 174. | 183. | 1288. | 44. | 12. | 92. | 81. |
| 30 | 12789. | 4348. | 46. | 0. | 17. | 128. | 72. | 108. | 580. | 44. | 14. | 35. | 52. |
| 35 | 12055. | 2648. | 90. | 0. | 15. | 88. | 59. | 61. | 364. | 25. | 14. | 41. | 63. |
| 40 | 11344. | 968. | 130. | 0. | 6. | 61. | 33. | 67. | 369. | 15. | 0. | 20. | 40. |
| 45 | 10932. | 104. | 161. | 0. | 10. | 55. | 56. | 34. | 203. | 19. | 6. | 15. | 12. |
| 50 | 10139. | 0. | 239. | 0. | 15. | 38. | 16. | 28. | 232. | 5. | 6. | 20. | 22. |
| 55 | 8428. | 0. | 290. | 0. | 6. | 33. | 22. | 17. | 161. | 0. | 0. | 20. | 5. |
| 60 | 6547. | 0. | 387. | 0. | 5. | 16. | 23. | 5. | 135. | 0. | 0. | 0. | 17. |
| 65 | 5407. | 0. | 528. | 0. | 4. | 21. | 2. | 12. | 45. | 2. | 0. | 0. | 8. |
| 70 | 4417. | 0. | 716. | 0. | 3. | 17. | 1. | 10. | 36. | 2. | 0. | 0. | 6. |
| 75 | 3081. | 0. | 850. | 0. | 2. | 13. | 1. | 7. | 27. | 1. | 0. | 0. | 5. |
| 80 | 1807. | 0. | 829. | 0. | 1. | 8. | 1. | 5. | 18. | 1. | 0. | 0. | 3. |
| 85 | 1150. | 0. | 1065. | 0. | 1. | 4. | 0. | 2. | 9. | 0. | 0. | 0. | 2. |
| total | 248635. | 31645. | 6394. | 0. | 231. | 2285. | 1078. | 1366. | 11330. | 420. | 126. | 504. | 924. |

region p.edouar

| age | population | births | deaths | migration from p.edouar to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 5508. | 0. | 112. | 30. | 0. | 180. | 140. | 60. | 380. | 30. | 30. | 90. | 60. |
| 5 | 6271. | 0. | 15. | 5. | 0. | 155. | 58. | 40. | 216. | 23. | 10. | 40. | 49. |
| 10 | 6122. | 3. | 10. | 0. | 0. | 101. | 85. | 46. | 177. | 4. | 0. | 6. | 45. |
| 15 | 5598. | 616. | 16. | 5. | 0. | 118. | 88. | 29. | 202. | 4. | 5. | 11. | 35. |
| 20 | 3938. | 1723. | 9. | 29. | 0. | 229. | 131. | 110. | 553. | 28. | 0. | 100. | 55. |
| 25 | 2969. | 1261. | 2. | 29. | 0. | 123. | 70. | 63. | 255. | 28. | 11. | 45. | 39. |
| 30 | 2728. | 751. | 9. | 24. | 0. | 85. | 76. | 40. | 174. | 10. | 11. | 34. | 30. |
| 35 | 2654. | 460. | 23. | 0. | 0. | 80. | 32. | 22. | 87. | 14. | 0. | 0. | 20. |
| 40 | 2615. | 177. | 40. | 0. | 0. | 62. | 33. | 12. | 71. | 4. | 0. | 22. | 15. |
| 45 | 2673. | 19. | 57. | 0. | 0. | 48. | 28. | 0. | 44. | 4. | 0. | 10. | 35. |
| 50 | 2671. | 0. | 71. | 0. | 0. | 54. | 16. | 5. | 27. | 0. | 5. | 5. | 19. |
| 55 | 2367. | 0. | 91. | 0. | 0. | 11. | 11. | 6. | 16. | 0. | 0. | 11. | 5. |
| 60 | 1978. | 0. | 100. | 5. | 0. | 11. | 5. | 0. | 22. | 0. | 0. | 5. | 5. |
| 65 | 1791. | 0. | 163. | 0. | 0. | 16. | 11. | 2. | 7. | 0. | 4. | 2. | 2. |
| 70 | 1664. | 0. | 215. | 0. | 0. | 13. | 9. | 2. | 6. | 0. | 3. | 2. | 1. |
| 75 | 1348. | 0. | 290. | 0. | 0. | 10. | 6. | 1. | 4. | 0. | 2. | 1. | 1. |
| 80 | 875. | 0. | 344. | 0. | 0. | 7. | 4. | 1. | 3. | 0. | 1. | 1. | 1. |
| 85 | 715. | 0. | 567. | 0. | 0. | 3. | 2. | 0. | 1. | 0. | 1. | 0. | 0. |
| total | 54485. | 5010. | 2134. | 127. | 0. | 1306. | 805. | 439. | 2245. | 149. | 83. | 385. | 417. |

## APPENDIX A *Continued.*

region n.scotia

| age | population | births | deaths | migration from n.scotia to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 37756. | 0. | 730. | 350. | 210. | 0. | 1030. | 850. | 2500. | 210. | 100. | 290. | 560. |
| 5 | 42235. | 0. | 108. | 232. | 157. | 0. | 515. | 357. | 1651. | 126. | 44. | 204. | 451. |
| 10 | 40839. | 43. | 82. | 103. | 121. | 0. | 415. | 201. | 1400. | 102. | 50. | 127. | 371. |
| 15 | 37725. | 5244. | 102. | 101. | 97. | 0. | 384. | 171. | 1396. | 77. | 13. | 159. | 345. |
| 20 | 29986. | 12374. | 81. | 230. | 107. | 0. | 599. | 422. | 3172. | 151. | 44. | 426. | 520. |
| 25 | 23477. | 8634. | 61. | 184. | 142. | 0. | 552. | 498. | 2077. | 131. | 44. | 409. | 504. |
| 30 | 20810. | 4497. | 85. | 129. | 103. | 0. | 453. | 192. | 1076. | 71. | 44. | 187. | 256. |
| 35 | 20734. | 2535. | 136. | 98. | 101. | 0. | 315. | 146. | 772. | 44. | 13. | 73. | 190. |
| 40 | 20805. | 862. | 214. | 39. | 35. | 0. | 209. | 109. | 630. | 65. | 0. | 64. | 228. |
| 45 | 21062. | 70. | 399. | 17. | 37. | 0. | 164. | 55. | 547. | 39. | 0. | 66. | 137. |
| 50 | 19832. | 0. | 518. | 28. | 20. | 0. | 73. | 44. | 347. | 16. | 19. | 38. | 80. |
| 55 | 17011. | 0. | 693. | 32. | 24. | 0. | 81. | 61. | 233. | 11. | 6. | 21. | 52. |
| 60 | 13881. | 0. | 863. | 11. | 16. | 0. | 40. | 28. | 158. | 0. | 0. | 5. | 37. |
| 65 | 11841. | 0. | 1138. | 16. | 21. | 0. | 58. | 23. | 105. | 6. | 0. | 10. | 26. |
| 70 | 10042. | 0. | 1524. | 13. | 17. | 0. | 46. | 18. | 84. | 5. | 0. | 8. | 21. |
| 75 | 7525. | 0. | 1948. | 9. | 13. | 0. | 35. | 14. | 63. | 3. | 0. | 6. | 15. |
| 80 | 4764. | 0. | 2027. | 6. | 8. | 0. | 23. | 9. | 42. | 2. | 0. | 4. | 10. |
| 85 | 3681. | 0. | 3222. | 3. | 4. | 0. | 12. | 5. | 21. | 1. | 0. | 2. | 5. |
| total | 384006. | 34259. | 13931. | 1601. | 1233. | 0. | 5004. | 3199. | 16274. | 1060. | 377. | 2099. | 3808. |

region brunswic

| age | population | births | deaths | migration from brunswic to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 31737. | 0. | 667. | 140. | 130. | 930. | 0. | 1080. | 1770. | 120. | 80. | 260. | 340. |
| 5 | 36042. | 0. | 93. | 119. | 80. | 576. | 0. | 504. | 1121. | 110. | 20. | 155. | 210. |
| 10 | 35813. | 31. | 80. | 69. | 91. | 404. | 0. | 483. | 1028. | 84. | 25. | 125. | 210. |
| 15 | 33392. | 4408. | 113. | 54. | 64. | 432. | 0. | 352. | 1084. | 91. | 35. | 126. | 181. |
| 20 | 24284. | 10508. | 73. | 114. | 106. | 799. | 0. | 1095. | 2413. | 74. | 31. | 275. | 298. |
| 25 | 18147. | 7065. | 56. | 97. | 101. | 694. | 0. | 679. | 1306. | 95. | 20. | 145. | 202. |
| 30 | 16239. | 3799. | 67. | 33. | 67. | 397. | 0. | 419. | 688. | 75. | 40. | 84. | 127. |
| 35 | 16205. | 2301. | 105. | 27. | 42. | 283. | 0. | 202. | 609. | 40. | 10. | 68. | 111. |
| 40 | 16440. | 825. | 163. | 16. | 62. | 210. | 0. | 171. | 376. | 54. | 0. | 47. | 89. |
| 45 | 16206. | 64. | 248. | 16. | 21. | 198. | 0. | 156. | 417. | 19. | 15. | 51. | 99. |
| 50 | 14611. | 0. | 385. | 6. | 10. | 142. | 0. | 91. | 298. | 25. | 11. | 20. | 37. |
| 55 | 12843. | 0. | 455. | 5. | 17. | 108. | 0. | 54. | 114. | 0. | 0. | 11. | 32. |
| 60 | 10668. | 0. | 617. | 11. | 16. | 60. | 0. | 81. | 49. | 10. | 0. | 0. | 31. |
| 65 | 9075. | 0. | 850. | 2. | 12. | 61. | 0. | 64. | 75. | 5. | 2. | 9. | 11. |
| 70 | 7610. | 0. | 1143. | 1. | 9. | 49. | 0. | 51. | 60. | 4. | 1. | 7. | 9. |
| 75 | 5541. | 0. | 1469. | 1. | 7. | 37. | 0. | 38. | 45. | 3. | 1. | 5. | 7. |
| 80 | 3533. | 0. | 1538. | 1. | 5. | 25. | 0. | 25. | 30. | 2. | 1. | 4. | 4. |
| 85 | 2503. | 0. | 2153. | 0. | 2. | 12. | 0. | 13. | 15. | 1. | 0. | 2. | 2. |
| total | 310889. | 29001. | 10275. | 712. | 882. | 5417. | 0. | 5558. | 11498. | 812. | 292. | 1394. | 2000. |

region quebec

| age | population | births | deaths | migration from quebec to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 270560. | 0. | 5613. | 310. | 90. | 480. | 1060. | 0. | 8890. | 480. | 100. | 740. | 1190. |
| 5 | 322451. | 0. | 746. | 220. | 38. | 470. | 749. | 0. | 6522. | 306. | 159. | 575. | 864. |
| 10 | 317768. | 68. | 532. | 124. | 33. | 285. | 413. | 0. | 5354. | 262. | 69. | 386. | 939. |
| 15 | 294248. | 15860. | 735. | 83. | 22. | 262. | 400. | 0. | 4970. | 184. | 32. | 313. | 704. |
| 20 | 258679. | 80743. | 798. | 127. | 38. | 382. | 663. | 0. | 8213. | 319. | 97. | 656. | 1167. |
| 25 | 215233. | 72572. | 695. | 137. | 99. | 413. | 814. | 0. | 6678. | 293. | 149. | 593. | 1148. |
| 30 | 187182. | 38640. | 844. | 134. | 40. | 278. | 491. | 0. | 4746. | 220. | 118. | 429. | 911. |
| 35 | 185079. | 21153. | 1249. | 90. | 27. | 276. | 325. | 0. | 3850. | 151. | 53. | 284. | 681. |
| 40 | 179597. | 6755. | 1920. | 56. | 18. | 185. | 249. | 0. | 3441. | 142. | 26. | 227. | 573. |
| 45 | 161652. | 608. | 2594. | 49. | 15. | 150. | 184. | 0. | 2900. | 100. | 21. | 200. | 447. |
| 50 | 140028. | 5. | 3714. | 39. | 21. | 59. | 115. | 0. | 1680. | 81. | 32. | 100. | 348. |
| 55 | 120462. | 0. | 5064. | 16. | 11. | 62. | 139. | 0. | 1168. | 37. | 22. | 88. | 297. |
| 60 | 99547. | 0. | 6357. | 16. | 16. | 53. | 111. | 0. | 944. | 43. | 21. | 63. | 250. |
| 65 | 78979. | 0. | 8175. | 6. | 8. | 45. | 80. | 0. | 710. | 22. | 16. | 26. | 130. |
| 70 | 58532. | 0. | 9721. | 5. | 6. | 36. | 64. | 0. | 568. | 17. | 13. | 21. | 104. |
| 75 | 38899. | 0. | 11258. | 3. | 5. | 27. | 48. | 0. | 426. | 13. | 10. | 15. | 78. |
| 80 | 22060. | 0. | 11086. | 2. | 3. | 18. | 32. | 0. | 284. | 9. | 7. | 10. | 52. |
| 85 | 13113. | 0. | 12174. | 1. | 2. | 9. | 16. | 0. | 142. | 4. | 3. | 5. | 26. |
| total | 2964069. | 236404. | 83275. | 1418. | 492. | 3490. | 5953. | 0. | 61486. | 2683. | 948. | 4731. | 9909. |

region ontario

| age | population | births | deaths | migration from ontario to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 337119. | 0. | 5946. | 1000. | 340. | 2190. | 1500. | 7590. | 0. | 1570. | 610. | 1870. | 3080. |
| 5 | 379484. | 0. | 677. | 539. | 256. | 1552. | 1113. | 3761. | 0. | 1401. | 450. | 1700. | 2905. |
| 10 | 360210. | 216. | 507. | 262. | 210. | 1186. | 797. | 2481. | 0. | 1098. | 418. | 1359. | 2506. |
| 15 | 322879. | 39667. | 760. | 149. | 143. | 670. | 501. | 1881. | 0. | 864. | 278. | 1087. | 2282. |
| 20 | 291814. | 108666. | 698. | 512. | 137. | 1204. | 709. | 3739. | 0. | 1303. | 428. | 1780. | 3428. |
| 25 | 249557. | 90363. | 706. | 608. | 268. | 1550. | 973. | 3963. | 0. | 1299. | 482. | 1958. | 3273. |
| 30 | 228328. | 47394. | 895. | 316. | 174. | 1011. | 624. | 2766. | 0. | 854. | 287. | 1246. | 2044. |
| 35 | 231122. | 23226. | 1422. | 188. | 114. | 654. | 475. | 1758. | 0. | 734. | 276. | 879. | 1638. |
| 40 | 234275. | 6762. | 2372. | 109. | 79. | 452. | 422. | 1383. | 0. | 511. | 146. | 732. | 1498. |
| 45 | 216378. | 444. | 3468. | 85. | 57. | 379. | 199. | 1087. | 0. | 485. | 189. | 548. | 1424. |
| 50 | 183398. | 1. | 4493. | 68. | 51. | 221. | 196. | 636. | 0. | 271. | 110. | 333. | 1006. |
| 55 | 159665. | 0. | 6090. | 42. | 29. | 174. | 123. | 537. | 0. | 173. | 95. | 211. | 803. |
| 60 | 134204. | 0. | 7754. | 69. | 37. | 120. | 92. | 506. | 0. | 173. | 41. | 153. | 622. |
| 65 | 113880. | 0. | 10325. | 41. | 17. | 87. | 60. | 337. | 0. | 126. | 56. | 93. | 434. |
| 70 | 92848. | 0. | 13804. | 33. | 14. | 69. | 48. | 270. | 0. | 101. | 45. | 74. | 347. |
| 75 | 67024. | 0. | 16966. | 25. | 10. | 52. | 36. | 202. | 0. | 76. | 34. | 56. | 260. |
| 80 | 41662. | 0. | 18110. | 17. | 7. | 35. | 24. | 135. | 0. | 50. | 22. | 37. | 174. |
| 85 | 28113. | 0. | 23590. | 8. | 3. | 17. | 12. | 67. | 0. | 25. | 11. | 19. | 87. |
| total | 3671960. | 316739. | 118583. | 4071. | 1946. | 11623. | 7854. | 33099. | 0. | 11114. | 3978. | 14135. | 27811. |

## APPENDIX A *Continued.*

region manitoba

| age | population | births | deaths | migration from manitoba to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 45937. | 0. | 914. | 40. | 30. | 280. | 160. | 490. | 2300. | 0. | 1580. | 1510. | 1850. |
| 5 | 50413. | 0. | 84. | 14. | 48. | 170. | 166. | 428. | 1693. | 0. | 693. | 1222. | 1635. |
| 10 | 49023. | 53. | 76. | 7. | 40. | 140. | 108. | 232. | 1473. | 0. | 537. | 1048. | 1417. |
| 15 | 45437. | 5557. | 114. | 0. | 17. | 82. | 66. | 196. | 1099. | 0. | 498. | 822. | 1215. |
| 20 | 37779. | 14883. | 113. | 35. | 11. | 136. | 76. | 320. | 1914. | 0. | 694. | 1636. | 1928. |
| 25 | 30108. | 12087. | 95. | 14. | 11. | 120. | 91. | 375. | 1820. | 0. | 746. | 1362. | 1565. |
| 30 | 26828. | 6220. | 92. | 14. | 11. | 120. | 80. | 264. | 1163. | 0. | 377. | 880. | 1070. |
| 35 | 27333. | 3252. | 190. | 0. | 27. | 66. | 63. | 193. | 902. | 0. | 314. | 609. | 985. |
| 40 | 28573. | 1055. | 301. | 0. | 11. | 38. | 40. | 141. | 737. | 0. | 301. | 379. | 831. |
| 45 | 28432. | 98. | 442. | 13. | 10. | 27. | 29. | 121. | 586. | 0. | 186. | 338. | 843. |
| 50 | 25866. | 1. | 584. | 0. | 5. | 16. | 23. | 94. | 358. | 0. | 132. | 256. | 658. |
| 55 | 23120. | 0. | 806. | 0. | 0. | 11. | 5. | 79. | 251. | 0. | 81. | 179. | 594. |
| 60 | 18845. | 0. | 982. | 0. | 0. | 0. | 7. | 43. | 170. | 0. | 86. | 132. | 553. |
| 65 | 15590. | 0. | 1293. | 0. | 2. | 5. | 2. | 26. | 161. | 0. | 63. | 80. | 367. |
| 70 | 12805. | 0. | 1784. | 0. | 2. | 4. | 1. | 21. | 129. | 0. | 50. | 64. | 294. |
| 75 | 9714. | 0. | 2349. | 0. | 1. | 3. | 1. | 16. | 97. | 0. | 38. | 48. | 220. |
| 80 | 6232. | 0. | 2549. | 0. | 1. | 2. | 1. | 10. | 65. | 0. | 25. | 32. | 147. |
| 85 | 4182. | 0. | 3322. | 0. | 0. | 1. | 0. | 5. | 32. | 0. | 13. | 16. | 73. |
| total | 486217. | 43206. | 16090. | 137. | 223. | 1221. | 919. | 3054. | 14950. | 0. | 6414. | 10613. | 16241. |

region saskatch

| age | population | births | deaths | migration from saskatch to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 45623. | 0. | 1053. | 30. | 20. | 100. | 40. | 100. | 1210. | 1850. | 0. | 4840. | 2600. |
| 5 | 51290. | 0. | 83. | 0. | 12. | 67. | 46. | 109. | 811. | 1059. | 0. | 2816. | 1998. |
| 10 | 50128. | 43. | 82. | 15. | 0. | 38. | 36. | 70. | 578. | 852. | 0. | 1917. | 1593. |
| 15 | 45235. | 5945. | 137. | 0. | 0. | 44. | 5. | 44. | 426. | 1037. | 0. | 2371. | 1385. |
| 20 | 32122. | 15067. | 113. | 22. | 6. | 72. | 21. | 132. | 1267. | 1976. | 0. | 5650. | 2517. |
| 25 | 26040. | 11008. | 83. | 15. | 6. | 49. | 26. | 131. | 871. | 1119. | 0. | 3213. | 1802. |
| 30 | 24475. | 6036. | 127. | 21. | 6. | 67. | 52. | 82. | 609. | 601. | 0. | 1678. | 1152. |
| 35 | 25230. | 3472. | 152. | 0. | 6. | 28. | 11. | 44. | 405. | 491. | 0. | 1120. | 856. |
| 40 | 26130. | 1187. | 270. | 8. | 0. | 16. | 15. | 44. | 340. | 289. | 0. | 883. | 811. |
| 45 | 26312. | 112. | 381. | 8. | 0. | 16. | 11. | 28. | 229. | 329. | 0. | 718. | 600. |
| 50 | 24530. | 0. | 487. | 0. | 0. | 11. | 11. | 16. | 215. | 246. | 0. | 512. | 708. |
| 55 | 21619. | 0. | 639. | 0. | 7. | 0. | 0. | 28. | 112. | 141. | 0. | 367. | 634. |
| 60 | 17420. | 0. | 792. | 0. | 0. | 6. | 0. | 16. | 81. | 112. | 0. | 268. | 579. |
| 65 | 14061. | 0. | 1043. | 3. | 0. | 6. | 5. | 13. | 73. | 99. | 0. | 211. | 379. |
| 70 | 11592. | 0. | 1436. | 2. | 0. | 5. | 4. | 11. | 59. | 79. | 0. | 169. | 303. |
| 75 | 9053. | 0. | 1962. | 2. | 0. | 3. | 3. | 8. | 44. | 59. | 0. | 126. | 227. |
| 80 | 6029. | 0. | 2301. | 1. | 0. | 2. | 2. | 5. | 29. | 39. | 0. | 84. | 152. |
| 85 | 4021. | 0. | 2998. | 1. | 0. | 1. | 1. | 3. | 15. | 20. | 0. | 42. | 76. |
| total | 460910. | 42870. | 14139. | 128. | 63. | 531. | 289. | 884. | 7374. | 10398. | 0. | 26985. | 18372. |

region alberta

| age | population | births | deaths | migration from alberta to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 79252. | 0. | 1537. | 70. | 10. | 230. | 90. | 330. | 1840. | 880. | 1600. | 0. | 4780. |
| 5 | 88290. | 0. | 141. | 30. | 23. | 199. | 95. | 192. | 1291. | 582. | 842. | 0. | 4063. |
| 10 | 82666. | 64. | 127. | 17. | 23. | 113. | 125. | 210. | 1061. | 440. | 608. | 0. | 3535. |
| 15 | 71546. | 10399. | 210. | 5. | 12. | 79. | 54. | 133. | 750. | 258. | 427. | 0. | 2867. |
| 20 | 61881. | 27115. | 196. | 30. | 12. | 125. | 64. | 269. | 1347. | 513. | 745. | 0. | 3984. |
| 25 | 52674. | 20405. | 192. | 35. | 12. | 141. | 52. | 283. | 1274. | 574. | 917. | 0. | 3567. |
| 30 | 47434. | 10333. | 222. | 24. | 24. | 148. | 96. | 223. | 939. | 408. | 635. | 0. | 2575. |
| 35 | 46490. | 5241. | 327. | 12. | 5. | 75. | 41. | 163. | 733. | 263. | 365. | 0. | 1997. |
| 40 | 44865. | 1564. | 441. | 5. | 12. | 50. | 38. | 121. | 609. | 166. | 279. | 0. | 1704. |
| 45 | 41099. | 132. | 606. | 7. | 0. | 35. | 27. | 69. | 471. | 156. | 189. | 0. | 1744. |
| 50 | 34957. | 1. | 762. | 12. | 5. | 17. | 16. | 58. | 241. | 87. | 139. | 0. | 1338. |
| 55 | 29381. | 0. | 964. | 23. | 0. | 12. | 0. | 33. | 181. | 91. | 136. | 0. | 1116. |
| 60 | 23395. | 0. | 1132. | 0. | 0. | 17. | 0. | 27. | 112. | 44. | 87. | 0. | 962. |
| 65 | 18501. | 0. | 1467. | 0. | 2. | 8. | 9. | 18. | 83. | 37. | 76. | 0. | 685. |
| 70 | 14252. | 0. | 1920. | 0. | 2. | 6. | 7. | 15. | 67. | 29. | 61. | 0. | 548. |
| 75 | 10580. | 0. | 2371. | 0. | 1. | 5. | 5. | 11. | 50. | 22. | 46. | 0. | 411. |
| 80 | 6781. | 0. | 2792. | 0. | 1. | 3. | 4. | 7. | 33. | 15. | 30. | 0. | 274. |
| 85 | 4478. | 0. | 3426. | 0. | 0. | 2. | 2. | 4. | 17. | 7. | 15. | 0. | 137. |
| total | 758522. | 75254. | 18833. | 270. | 144. | 1265. | 725. | 2166. | 11099. | 4572. | 7197. | 0. | 36287. |

region b.columb

| age | population | births | deaths | migration from b.columb to nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 88757. | 0. | 1724. | 80. | 20. | 200. | 140. | 460. | 1930. | 590. | 500. | 2900. | 0. |
| 5 | 101992. | 0. | 198. | 11. | 35. | 231. | 69. | 249. | 1432. | 510. | 368. | 1959. | 0. |
| 10 | 99034. | 95. | 163. | 33. | 35. | 174. | 59. | 219. | 1199. | 357. | 294. | 1624. | 0. |
| 15 | 88041. | 12046. | 238. | 5. | 29. | 61. | 60. | 211. | 973. | 218. | 289. | 1297. | 0. |
| 20 | 77905. | 30048. | 245. | 39. | 0. | 169. | 87. | 419. | 1646. | 420. | 410. | 2396. | 0. |
| 25 | 67226. | 23734. | 264. | 48. | 6. | 185. | 96. | 426. | 1938. | 611. | 372. | 2135. | 0. |
| 30 | 59477. | 11312. | 341. | 28. | 24. | 187. | 66. | 261. | 1152. | 315. | 246. | 1229. | 0. |
| 35 | 59402. | 5254. | 408. | 22. | 18. | 98. | 32. | 225. | 769. | 186. | 165. | 1020. | 0. |
| 40 | 61325. | 1477. | 663. | 23. | 12. | 49. | 27. | 165. | 658. | 139. | 133. | 698. | 0. |
| 45 | 60777. | 103. | 1038. | 0. | 0. | 27. | 33. | 116. | 464. | 102. | 122. | 548. | 0. |
| 50 | 55105. | 1. | 1386. | 0. | 0. | 16. | 16. | 77. | 305. | 92. | 118. | 332. | 0. |
| 55 | 47222. | 0. | 1714. | 0. | 0. | 26. | 6. | 56. | 136. | 81. | 88. | 361. | 0. |
| 60 | 37521. | 0. | 1986. | 0. | 0. | 32. | 11. | 39. | 159. | 27. | 103. | 238. | 0. |
| 65 | 30995. | 0. | 2562. | 2. | 2. | 13. | 9. | 31. | 146. | 78. | 115. | 234. | 0. |
| 70 | 26192. | 0. | 3435. | 2. | 2. | 10. | 7. | 25. | 117. | 63. | 92. | 187. | 0. |
| 75 | 20604. | 0. | 4556. | 1. | 1. | 8. | 5. | 19. | 88. | 47. | 69. | 140. | 0. |
| 80 | 13784. | 0. | 5496. | 1. | 1. | 5. | 4. | 13. | 58. | 31. | 46. | 94. | 0. |
| 85 | 9108. | 0. | 7302. | 0. | 0. | 3. | 2. | 6. | 29. | 16. | 23. | 47. | 0. |
| total | 1004667. | 84070. | 33715. | 291. | 185. | 1494. | 729. | 3017. | 13199. | 3883. | 3551. | 17439. | 0. |

*Appendix B*

# OBSERVED DEMOGRAPHIC RATES: 1966–1971

# APPENDIX B

## Fertility rates: total population.

| age | nw.found | p.eduar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 10 | 0.000289 | 0.000113 | 0.000215 | 0.000174 | 0.000043 | 0.000120 | 0.000218 | 0.000171 | 0.000158 | 0.000192 |
| 15 | 0.028242 | 0.022415 | 0.028005 | 0.026809 | 0.011006 | 0.024847 | 0.024759 | 0.026543 | 0.029490 | 0.027522 |
| 20 | 0.114411 | 0.088232 | 0.084258 | 0.087466 | 0.065014 | 0.077073 | 0.080139 | 0.094562 | 0.091273 | 0.078382 |
| 25 | 0.108587 | 0.085516 | 0.074556 | 0.078629 | 0.069630 | 0.074206 | 0.081191 | 0.085841 | 0.079535 | 0.071158 |
| 30 | 0.067348 | 0.054869 | 0.043886 | 0.047945 | 0.042396 | 0.042110 | 0.046782 | 0.049881 | 0.043672 | 0.037641 |
| 35 | 0.042825 | 0.034671 | 0.025138 | 0.029362 | 0.023613 | 0.020288 | 0.024238 | 0.027647 | 0.022221 | 0.017344 |
| 40 | 0.016607 | 0.013652 | 0.008620 | 0.010388 | 0.007810 | 0.005892 | 0.007654 | 0.009211 | 0.006980 | 0.004857 |
| 45 | 0.001850 | 0.001558 | 0.000681 | 0.000807 | 0.000787 | 0.000424 | 0.000717 | 0.000882 | 0.000653 | 0.000353 |
| 50 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000009 | 0.000002 | 0.000004 | 0.000004 | 0.000003 | 0.000004 |
| 55 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 60 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 65 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 70 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 75 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 80 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 85 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| gross | 1.900797 | 1.505120 | 1.326796 | 1.407911 | 1.101540 | 1.224810 | 1.328509 | 1.473709 | 1.369926 | 1.187257 |
| crude | 0.025506 | 0.018706 | 0.018274 | 0.019071 | 0.016500 | 0.017759 | 0.018167 | 0.018737 | 0.020013 | 0.017016 |
| m.age | 28.0058 | 28.1311 | 27.1577 | 27.4904 | 28.1602 | 26.9885 | 27.3269 | 27.2997 | 26.7874 | 26.5383 |

## Out-migration rates: total population.

| | | migration from nw.found to | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| age | total | nw.found | p.eduar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 0.020060 | 0.000000 | 0.000215 | 0.002888 | 0.001290 | 0.001259 | 0.012472 | 0.000492 | 0.000184 | 0.000307 | 0.000952 |
| 5 | 0.010770 | 0.000000 | 0.000125 | 0.001609 | 0.000837 | 0.001108 | 0.005707 | 0.000300 | 0.000113 | 0.000255 | 0.000716 |
| 10 | 0.007413 | 0.000000 | 0.000062 | 0.000879 | 0.000519 | 0.000777 | 0.004207 | 0.000283 | 0.000034 | 0.000242 | 0.000410 |
| 15 | 0.013282 | 0.000000 | 0.000070 | 0.001313 | 0.000628 | 0.000839 | 0.009122 | 0.000165 | 0.000088 | 0.000309 | 0.000748 |
| 20 | 0.042663 | 0.000000 | 0.000338 | 0.004666 | 0.001464 | 0.002015 | 0.030416 | 0.000715 | 0.000392 | 0.000983 | 0.001673 |
| 25 | 0.028798 | 0.000000 | 0.000433 | 0.004009 | 0.002074 | 0.002278 | 0.017090 | 0.000624 | 0.000108 | 0.000910 | 0.001273 |
| 30 | 0.018285 | 0.000000 | 0.000204 | 0.002226 | 0.001416 | 0.001969 | 0.010078 | 0.000659 | 0.000242 | 0.000560 | 0.000931 |
| 35 | 0.012402 | 0.000000 | 0.000285 | 0.001620 | 0.001154 | 0.001028 | 0.006363 | 0.000411 | 0.000206 | 0.000458 | 0.000877 |
| 40 | 0.010604 | 0.000000 | 0.000050 | 0.001175 | 0.000563 | 0.001301 | 0.005650 | 0.000353 | 0.000193 | 0.000353 | 0.000966 |
| 45 | 0.007999 | 0.000000 | 0.000182 | 0.001025 | 0.000860 | 0.000625 | 0.004317 | 0.000261 | 0.000208 | 0.000278 | 0.000243 |
| 50 | 0.006497 | 0.000000 | 0.000235 | 0.000732 | 0.000460 | 0.000629 | 0.003690 | 0.000094 | 0.000169 | 0.000235 | 0.000253 |
| 55 | 0.005898 | 0.000000 | 0.000122 | 0.000421 | 0.000421 | 0.000554 | 0.003803 | 0.000122 | 0.000000 | 0.000344 | 0.000111 |
| 60 | 0.005605 | 0.000000 | 0.000073 | 0.000686 | 0.000336 | 0.000496 | 0.003533 | 0.000000 | 0.000073 | 0.000000 | 0.000409 |
| 65 | 0.002344 | 0.000000 | 0.000130 | 0.000353 | 0.000112 | 0.000316 | 0.001098 | 0.000056 | 0.000000 | 0.000037 | 0.000242 |
| 70 | 0.002645 | 0.000000 | 0.000142 | 0.000401 | 0.000118 | 0.000354 | 0.001252 | 0.000071 | 0.000000 | 0.000024 | 0.000283 |
| 75 | 0.003060 | 0.000000 | 0.000170 | 0.000476 | 0.000136 | 0.000408 | 0.001428 | 0.000068 | 0.000000 | 0.000034 | 0.000340 |
| 80 | 0.003914 | 0.000000 | 0.000234 | 0.000643 | 0.000175 | 0.000526 | 0.001811 | 0.000117 | 0.000000 | 0.000058 | 0.000350 |
| 85 | 0.004107 | 0.000000 | 0.000191 | 0.000573 | 0.000191 | 0.000573 | 0.002006 | 0.000096 | 0.000000 | 0.000096 | 0.000382 |
| gross | 1.031724 | 0.000000 | 0.016302 | 0.128486 | 0.063774 | 0.085280 | 0.620199 | 0.024417 | 0.010054 | 0.027415 | 0.055798 |
| crude | 0.014834 | 0.000000 | 0.000174 | 0.001850 | 0.000905 | 0.001128 | 0.009153 | 0.000348 | 0.000141 | 0.000379 | 0.000756 |
| m.age | 31.0051 | 0.0000 | 43.9267 | 31.0848 | 31.2186 | 35.1455 | 29.7113 | 31.0090 | 30.9294 | 31.7276 | 34.5124 |

migration from p.edouar to

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontarlo | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.035594 | 0.001240 | 0.000000 | 0.006198 | 0.006021 | 0.001771 | 0.013990 | 0.001240 | 0.000885 | 0.002302 | 0.001948 |
| 5 | 0.020585 | 0.000375 | 0.000000 | 0.005424 | 0.003063 | 0.001469 | 0.006721 | 0.000860 | 0.000281 | 0.000860 | 0.001532 |
| 10 | 0.015690 | 0.000000 | 0.000000 | 0.004232 | 0.002350 | 0.001802 | 0.005681 | 0.000225 | 0.000064 | 0.000274 | 0.001062 |
| 15 | 0.016877 | 0.000195 | 0.000000 | 0.003538 | 0.002548 | 0.001026 | 0.006953 | 0.000354 | 0.000230 | 0.000637 | 0.001398 |
| 20 | 0.059953 | 0.001722 | 0.000000 | 0.011681 | 0.007113 | 0.003769 | 0.027555 | 0.001498 | 0.000100 | 0.004468 | 0.002047 |
| 25 | 0.048753 | 0.001982 | 0.000000 | 0.009546 | 0.006276 | 0.003865 | 0.019719 | 0.001420 | 0.000760 | 0.002642 | 0.002543 |
| 30 | 0.033227 | 0.001599 | 0.000000 | 0.006930 | 0.004691 | 0.002239 | 0.011940 | 0.001102 | 0.000817 | 0.002274 | 0.001635 |
| 35 | 0.021440 | 0.000403 | 0.000000 | 0.005791 | 0.003372 | 0.002089 | 0.007000 | 0.000880 | 0.000147 | 0.000403 | 0.001356 |
| 40 | 0.017717 | 0.000336 | 0.000000 | 0.004961 | 0.002499 | 0.000895 | 0.005558 | 0.000336 | 0.000000 | 0.001567 | 0.001567 |
| 45 | 0.014129 | 0.000148 | 0.000000 | 0.004599 | 0.002448 | 0.000000 | 0.003560 | 0.000334 | 0.000148 | 0.000556 | 0.002336 |
| 50 | 0.008491 | 0.000000 | 0.000000 | 0.003231 | 0.001014 | 0.000188 | 0.002179 | 0.000000 | 0.000188 | 0.000564 | 0.001127 |
| 55 | 0.004624 | 0.000000 | 0.000000 | 0.000446 | 0.000892 | 0.000446 | 0.001541 | 0.000000 | 0.000000 | 0.000446 | 0.000852 |
| 60 | 0.004908 | 0.000245 | 0.000000 | 0.000785 | 0.000834 | 0.000000 | 0.001865 | 0.000000 | 0.000196 | 0.000736 | 0.000245 |
| 65 | 0.003851 | 0.000165 | 0.000000 | 0.001265 | 0.000880 | 0.000110 | 0.000935 | 0.000110 | 0.000220 | 0.000110 | 0.000055 |
| 70 | 0.003821 | 0.000125 | 0.000000 | 0.001378 | 0.000877 | 0.000063 | 0.000940 | 0.000063 | 0.000251 | 0.000063 | 0.000063 |
| 75 | 0.003969 | 0.000162 | 0.000000 | 0.001377 | 0.000891 | 0.000081 | 0.000972 | 0.000081 | 0.000243 | 0.000081 | 0.000081 |
| 80 | 0.004897 | 0.000129 | 0.000000 | 0.001675 | 0.001160 | 0.000129 | 0.001160 | 0.000129 | 0.000258 | 0.000129 | 0.000129 |
| 85 | 0.004082 | 0.000170 | 0.000000 | 0.001361 | 0.000850 | 0.000170 | 0.001020 | 0.000170 | 0.000170 | 0.000170 | 0.000000 |
| gross | 1.613047 | 0.044982 | 0.000000 | 0.372089 | 0.238898 | 0.100558 | 0.596447 | 0.043998 | 0.024793 | 0.091407 | 0.099875 |
| crude | 0.022150 | 0.000576 | 0.000000 | 0.004947 | 0.003232 | 0.001450 | 0.008415 | 0.000620 | 0.000302 | 0.001278 | 0.001381 |
| m.age | 29.0031 | 29.4120 | 0.0000 | 31.7349 | 30.6583 | 25.6284 | 26.8872 | 26.5896 | 36.6091 | 28.8278 | 30.0514 |

migration from n.scotia to

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontarlo | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.030207 | 0.001624 | 0.001031 | 0.000000 | 0.004974 | 0.003943 | 0.013145 | 0.000851 | 0.000490 | 0.001546 | 0.002603 |
| 5 | 0.018014 | 0.000989 | 0.000772 | 0.000000 | 0.002764 | 0.001622 | 0.008003 | 0.000558 | 0.000208 | 0.001003 | 0.002099 |
| 10 | 0.014261 | 0.000537 | 0.000657 | 0.000000 | 0.002130 | 0.000960 | 0.006783 | 0.000487 | 0.000191 | 0.000642 | 0.001872 |
| 15 | 0.013950 | 0.000456 | 0.000500 | 0.000000 | 0.002042 | 0.000912 | 0.007015 | 0.000448 | 0.000098 | 0.000811 | 0.001666 |
| 20 | 0.037562 | 0.001643 | 0.000836 | 0.000000 | 0.004310 | 0.002479 | 0.020382 | 0.001177 | 0.000539 | 0.002730 | 0.003467 |
| 25 | 0.038271 | 0.001840 | 0.001136 | 0.000000 | 0.004443 | 0.004133 | 0.017499 | 0.001253 | 0.000411 | 0.003341 | 0.004217 |
| 30 | 0.025417 | 0.001407 | 0.000957 | 0.000000 | 0.004254 | 0.002141 | 0.010999 | 0.000810 | 0.000398 | 0.001648 | 0.002804 |
| 35 | 0.018584 | 0.000991 | 0.000953 | 0.000000 | 0.003027 | 0.001766 | 0.008344 | 0.000486 | 0.000226 | 0.000857 | 0.001934 |
| 40 | 0.014744 | 0.000505 | 0.000422 | 0.000000 | 0.002380 | 0.001107 | 0.006721 | 0.000539 | 0.000097 | 0.000602 | 0.002370 |
| 45 | 0.010771 | 0.000264 | 0.000384 | 0.000000 | 0.001803 | 0.000552 | 0.005107 | 0.000393 | 0.000091 | 0.000715 | 0.001463 |
| 50 | 0.006617 | 0.000332 | 0.000236 | 0.000000 | 0.000825 | 0.000498 | 0.003253 | 0.000111 | 0.000146 | 0.000327 | 0.000890 |
| 55 | 0.005123 | 0.000212 | 0.000292 | 0.000000 | 0.000750 | 0.000567 | 0.002473 | 0.000063 | 0.000034 | 0.000246 | 0.000487 |
| 60 | 0.003520 | 0.000199 | 0.000298 | 0.000000 | 0.000490 | 0.000277 | 0.001810 | 0.000000 | 0.000000 | 0.000035 | 0.000412 |
| 65 | 0.002962 | 0.000183 | 0.000236 | 0.000000 | 0.000638 | 0.000271 | 0.001214 | 0.000044 | 0.000000 | 0.000096 | 0.000280 |
| 70 | 0.003295 | 0.000215 | 0.000268 | 0.000000 | 0.000708 | 0.000301 | 0.001342 | 0.000043 | 0.000000 | 0.000118 | 0.000301 |
| 75 | 0.003592 | 0.000219 | 0.000292 | 0.000000 | 0.000774 | 0.000336 | 0.001460 | 0.000044 | 0.000000 | 0.000131 | 0.000336 |
| 80 | 0.004281 | 0.000282 | 0.000353 | 0.000000 | 0.000894 | 0.000400 | 0.001764 | 0.000047 | 0.000000 | 0.000141 | 0.000400 |
| 85 | 0.003873 | 0.000228 | 0.000325 | 0.000000 | 0.000814 | 0.000358 | 0.001562 | 0.000065 | 0.000000 | 0.000130 | 0.000391 |
| gross | 1.275229 | 0.060629 | 0.049741 | 0.000000 | 0.190093 | 0.113106 | 0.594384 | 0.037094 | 0.014625 | 0.075604 | 0.139952 |
| crude | 0.018060 | 0.000845 | 0.000655 | 0.000000 | 0.002635 | 0.001613 | 0.008484 | 0.000548 | 0.000223 | 0.001085 | 0.001972 |
| m.age | 29.2620 | 29.7543 | 34.3587 | 0.0000 | 30.7629 | 28.0669 | 28.9344 | 26.3910 | 23.8562 | 27.3749 | 29.9009 |

## APPENDIX B *Continued.*

migration from brunswic to

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.030735 | 0.000980 | 0.000949 | 0.005571 | 0.000000 | 0.006888 | 0.011449 | 0.000857 | 0.000429 | 0.001561 | 0.002051 |
| 5 | 0.016110 | 0.000528 | 0.000449 | 0.003340 | 0.000000 | 0.002761 | 0.006182 | 0.000587 | 0.000146 | 0.000782 | 0.001334 |
| 10 | 0.013490 | 0.000376 | 0.000436 | 0.002495 | 0.000000 | 0.002358 | 0.005502 | 0.000532 | 0.000128 | 0.000600 | 0.001063 |
| 15 | 0.013997 | 0.000281 | 0.000346 | 0.002453 | 0.000000 | 0.002089 | 0.006428 | 0.000508 | 0.000207 | 0.000656 | 0.001028 |
| 20 | 0.041856 | 0.001133 | 0.000894 | 0.006177 | 0.000000 | 0.007823 | 0.019797 | 0.000878 | 0.000494 | 0.002371 | 0.002290 |
| 25 | 0.038133 | 0.001195 | 0.001011 | 0.007291 | 0.000000 | 0.007416 | 0.015448 | 0.000974 | 0.000319 | 0.001936 | 0.002542 |
| 30 | 0.024384 | 0.000552 | 0.000816 | 0.004922 | 0.000000 | 0.004898 | 0.009182 | 0.000847 | 0.000454 | 0.001068 | 0.001645 |
| 35 | 0.018636 | 0.000596 | 0.000627 | 0.003514 | 0.000000 | 0.003048 | 0.007679 | 0.000559 | 0.000199 | 0.000881 | 0.001533 |
| 40 | 0.013676 | 0.000331 | 0.000589 | 0.002717 | 0.000000 | 0.002134 | 0.005587 | 0.000576 | 0.000031 | 0.000546 | 0.001165 |
| 45 | 0.012160 | 0.000199 | 0.000404 | 0.002627 | 0.000000 | 0.001863 | 0.004608 | 0.000366 | 0.000168 | 0.000782 | 0.001143 |
| 50 | 0.009111 | 0.000041 | 0.000286 | 0.001958 | 0.000000 | 0.001312 | 0.004134 | 0.000326 | 0.000109 | 0.000313 | 0.000632 |
| 55 | 0.005332 | 0.000168 | 0.000298 | 0.001553 | 0.000000 | 0.000796 | 0.001981 | 0.000000 | 0.000038 | 0.000168 | 0.000329 |
| 60 | 0.004543 | 0.000103 | 0.000197 | 0.001276 | 0.000000 | 0.001173 | 0.001061 | 0.000141 | 0.000047 | 0.000150 | 0.000394 |
| 65 | 0.003773 | 0.000011 | 0.000217 | 0.001155 | 0.000000 | 0.000915 | 0.001029 | 0.000069 | 0.000011 | 0.000103 | 0.000263 |
| 70 | 0.004200 | 0.000014 | 0.000240 | 0.001283 | 0.000000 | 0.001015 | 0.001142 | 0.000070 | 0.000014 | 0.000127 | 0.000296 |
| 75 | 0.004648 | 0.000020 | 0.000273 | 0.001406 | 0.000000 | 0.001133 | 0.001269 | 0.000078 | 0.000020 | 0.000137 | 0.000312 |
| 80 | 0.005624 | 0.000032 | 0.000348 | 0.001706 | 0.000000 | 0.001359 | 0.001517 | 0.000095 | 0.000032 | 0.000158 | 0.000379 |
| 85 | 0.005414 | 0.000000 | 0.000282 | 0.001695 | 0.000000 | 0.001318 | 0.001507 | 0.000094 | 0.000000 | 0.000141 | 0.000377 |
| gross | 1.329090 | 0.032798 | 0.043313 | 0.265691 | 0.000000 | 0.251490 | 0.527498 | 0.037788 | 0.014241 | 0.062404 | 0.093887 |
| crude | 0.018513 | 0.000500 | 0.000551 | 0.003481 | 0.000000 | 0.003448 | 0.007560 | 0.000551 | 0.000211 | 0.000906 | 0.001305 |
| m.age | 30.7640 | 24.7545 | 35.8422 | 34.3513 | 0.0000 | 41.3148 | 29.1370 | 28.6835 | 26.5472 | 28.1291 | 31.2613 |

migration from quebec to

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.009685 | 0.000244 | 0.000061 | 0.000381 | 0.000737 | 0.000000 | 0.006476 | 0.000313 | 0.000104 | 0.000507 | 0.000863 |
| 5 | 0.006162 | 0.000122 | 0.000033 | 0.000290 | 0.000487 | 0.000000 | 0.004026 | 0.000197 | 0.000068 | 0.000359 | 0.000580 |
| 10 | 0.005140 | 0.000087 | 0.000021 | 0.000220 | 0.000287 | 0.000000 | 0.003516 | 0.000153 | 0.000042 | 0.000250 | 0.000563 |
| 15 | 0.004827 | 0.000058 | 0.000012 | 0.000201 | 0.000256 | 0.000000 | 0.003375 | 0.000139 | 0.000042 | 0.000237 | 0.000506 |
| 20 | 0.009070 | 0.000095 | 0.000033 | 0.000363 | 0.000489 | 0.000000 | 0.006238 | 0.000256 | 0.000106 | 0.000546 | 0.000945 |
| 25 | 0.009952 | 0.000154 | 0.000068 | 0.000413 | 0.000757 | 0.000000 | 0.006408 | 0.000309 | 0.000135 | 0.000610 | 0.001098 |
| 30 | 0.008055 | 0.000150 | 0.000047 | 0.000360 | 0.000577 | 0.000000 | 0.005112 | 0.000261 | 0.000106 | 0.000443 | 0.000999 |
| 35 | 0.006747 | 0.000125 | 0.000037 | 0.000321 | 0.000398 | 0.000000 | 0.004434 | 0.000195 | 0.000067 | 0.000351 | 0.000819 |
| 40 | 0.005744 | 0.000102 | 0.000026 | 0.000230 | 0.000284 | 0.000000 | 0.003961 | 0.000186 | 0.000048 | 0.000248 | 0.000660 |
| 45 | 0.005421 | 0.000072 | 0.000019 | 0.000176 | 0.000257 | 0.000000 | 0.003782 | 0.000126 | 0.000053 | 0.000276 | 0.000660 |
| 50 | 0.003974 | 0.000047 | 0.000026 | 0.000109 | 0.000181 | 0.000000 | 0.002760 | 0.000113 | 0.000043 | 0.000168 | 0.000528 |
| 55 | 0.003029 | 0.000036 | 0.000019 | 0.000098 | 0.000210 | 0.000000 | 0.001989 | 0.000074 | 0.000031 | 0.000116 | 0.000456 |
| 60 | 0.002970 | 0.000028 | 0.000022 | 0.000107 | 0.000216 | 0.000000 | 0.001863 | 0.000080 | 0.000022 | 0.000131 | 0.000502 |
| 65 | 0.002109 | 0.000008 | 0.000018 | 0.000083 | 0.000177 | 0.000000 | 0.001412 | 0.000037 | 0.000027 | 0.000048 | 0.000300 |
| 70 | 0.002629 | 0.000009 | 0.000021 | 0.000104 | 0.000220 | 0.000000 | 0.001760 | 0.000047 | 0.000034 | 0.000058 | 0.000376 |
| 75 | 0.003235 | 0.000012 | 0.000026 | 0.000128 | 0.000270 | 0.000000 | 0.002163 | 0.000058 | 0.000044 | 0.000073 | 0.000462 |
| 80 | 0.004332 | 0.000016 | 0.000031 | 0.000167 | 0.000361 | 0.000000 | 0.002904 | 0.000078 | 0.000058 | 0.000099 | 0.000617 |
| 85 | 0.004981 | 0.000018 | 0.000037 | 0.000193 | 0.000413 | 0.000000 | 0.003330 | 0.000092 | 0.000064 | 0.000119 | 0.000715 |
| gross | 0.490312 | 0.006920 | 0.002786 | 0.019715 | 0.032886 | 0.000000 | 0.327537 | 0.013562 | 0.005469 | 0.023192 | 0.058246 |
| crude | 0.006321 | 0.000104 | 0.000033 | 0.000260 | 0.000410 | 0.000000 | 0.004230 | 0.000188 | 0.000068 | 0.000332 | 0.000696 |
| m.age | 37.3094 | 27.9442 | 40.8298 | 36.1392 | 38.4913 | 0.0000 | 37.3006 | 33.3915 | 38.4923 | 31.6572 | 41.0833 |

migration from ontario to

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.011800 | 0.000584 | 0.000214 | 0.001255 | 0.000966 | 0.004463 | 0.000000 | 0.000923 | 0.000367 | 0.001134 | 0.001894 |
| 5 | 0.007090 | 0.000281 | 0.000140 | 0.000820 | 0.000589 | 0.001952 | 0.000000 | 0.000696 | 0.000257 | 0.000868 | 0.001487 |
| 10 | 0.005821 | 0.000157 | 0.000115 | 0.000651 | 0.000433 | 0.001431 | 0.000000 | 0.000624 | 0.000228 | 0.000767 | 0.001414 |
| 15 | 0.004825 | 0.000106 | 0.000070 | 0.000435 | 0.000315 | 0.001096 | 0.000000 | 0.000551 | 0.000187 | 0.000663 | 0.001402 |
| 20 | 0.009138 | 0.000359 | 0.000116 | 0.000969 | 0.000523 | 0.002263 | 0.000000 | 0.000892 | 0.000365 | 0.001215 | 0.002437 |
| 25 | 0.012253 | 0.000602 | 0.000201 | 0.001327 | 0.000826 | 0.003421 | 0.000000 | 0.001083 | 0.000418 | 0.001635 | 0.002741 |
| 30 | 0.008884 | 0.000318 | 0.000157 | 0.000980 | 0.000580 | 0.002636 | 0.000000 | 0.000843 | 0.000271 | 0.001172 | 0.001928 |
| 35 | 0.006480 | 0.000193 | 0.000116 | 0.000651 | 0.000473 | 0.001757 | 0.000000 | 0.000645 | 0.000250 | 0.000805 | 0.001590 |
| 40 | 0.004996 | 0.000124 | 0.000075 | 0.000436 | 0.000363 | 0.001271 | 0.000000 | 0.000509 | 0.000151 | 0.000676 | 0.001391 |
| 45 | 0.004461 | 0.000095 | 0.000062 | 0.000405 | 0.000237 | 0.001092 | 0.000000 | 0.000458 | 0.000165 | 0.000543 | 0.001403 |
| 50 | 0.003304 | 0.000089 | 0.000042 | 0.000297 | 0.000170 | 0.000707 | 0.000000 | 0.000310 | 0.000143 | 0.000404 | 0.001142 |
| 55 | 0.002637 | 0.000071 | 0.000035 | 0.000209 | 0.000153 | 0.000685 | 0.000000 | 0.000212 | 0.000084 | 0.000242 | 0.000946 |
| 60 | 0.002459 | 0.000085 | 0.000040 | 0.000189 | 0.000156 | 0.000619 | 0.000000 | 0.000232 | 0.000060 | 0.000192 | 0.000886 |
| 65 | 0.001839 | 0.000053 | 0.000031 | 0.000131 | 0.000088 | 0.000446 | 0.000000 | 0.000190 | 0.000079 | 0.000141 | 0.000679 |
| 70 | 0.002139 | 0.000063 | 0.000036 | 0.000152 | 0.000102 | 0.000519 | 0.000000 | 0.000221 | 0.000092 | 0.000163 | 0.000789 |
| 75 | 0.002452 | 0.000071 | 0.000042 | 0.000176 | 0.000119 | 0.000598 | 0.000000 | 0.000253 | 0.000105 | 0.000188 | 0.000905 |
| 80 | 0.003044 | 0.000090 | 0.000052 | 0.000218 | 0.000145 | 0.000739 | 0.000000 | 0.000314 | 0.000131 | 0.000233 | 0.001122 |
| 85 | 0.003142 | 0.000091 | 0.000055 | 0.000224 | 0.000151 | 0.000763 | 0.000000 | 0.000324 | 0.000132 | 0.000242 | 0.001160 |
| gross | 0.483831 | 0.017169 | 0.008004 | 0.047625 | 0.031946 | 0.132263 | 0.000000 | 0.046397 | 0.017432 | 0.056414 | 0.126581 |
| crude | 0.006556 | 0.000242 | 0.000110 | 0.000676 | 0.000457 | 0.001840 | 0.000000 | 0.000624 | 0.000233 | 0.000796 | 0.001578 |
| m.age | 33.1990 | 29.8784 | 32.3684 | 30.2229 | 29.8481 | 31.0727 | 0.0000 | 33.9993 | 34.3338 | 30.9395 | 38.4465 |

migration from manitoba to

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.035116 | 0.000170 | 0.000149 | 0.001150 | 0.000681 | 0.002151 | 0.009732 | 0.000000 | 0.006687 | 0.006708 | 0.007688 |
| 5 | 0.024393 | 0.000066 | 0.000196 | 0.000667 | 0.000620 | 0.001550 | 0.006763 | 0.000000 | 0.002858 | 0.004958 | 0.006724 |
| 10 | 0.020364 | 0.000036 | 0.000158 | 0.000499 | 0.000441 | 0.001030 | 0.005884 | 0.000000 | 0.002187 | 0.004151 | 0.005978 |
| 15 | 0.017405 | 0.000015 | 0.000074 | 0.000324 | 0.000265 | 0.000747 | 0.004678 | 0.000000 | 0.002159 | 0.003722 | 0.005421 |
| 20 | 0.032889 | 0.000134 | 0.000058 | 0.000845 | 0.000299 | 0.001397 | 0.009085 | 0.000000 | 0.003573 | 0.007975 | 0.009524 |
| 25 | 0.041668 | 0.000223 | 0.000147 | 0.001018 | 0.000658 | 0.002368 | 0.012195 | 0.000000 | 0.004974 | 0.009251 | 0.010833 |
| 30 | 0.032212 | 0.000092 | 0.000125 | 0.000887 | 0.000517 | 0.002164 | 0.009465 | 0.000000 | 0.003282 | 0.006894 | 0.008787 |
| 35 | 0.024674 | 0.000055 | 0.000160 | 0.000491 | 0.000603 | 0.001592 | 0.007355 | 0.000000 | 0.002271 | 0.004891 | 0.007257 |
| 40 | 0.019125 | 0.000000 | 0.000103 | 0.000304 | 0.000340 | 0.001058 | 0.005868 | 0.000000 | 0.002271 | 0.003300 | 0.005882 |
| 45 | 0.016568 | 0.000047 | 0.000075 | 0.000190 | 0.000258 | 0.000846 | 0.004624 | 0.000000 | 0.001642 | 0.002610 | 0.006277 |
| 50 | 0.012888 | 0.000019 | 0.000019 | 0.000160 | 0.000218 | 0.000713 | 0.003000 | 0.000000 | 0.001106 | 0.002384 | 0.005267 |
| 55 | 0.009796 | 0.000026 | 0.000022 | 0.000069 | 0.000043 | 0.000663 | 0.002007 | 0.000000 | 0.000876 | 0.001517 | 0.004573 |
| 60 | 0.008621 | 0.000000 | 0.000000 | 0.000000 | 0.000037 | 0.000456 | 0.001527 | 0.000000 | 0.000652 | 0.001257 | 0.004692 |
| 65 | 0.007306 | 0.000000 | 0.000033 | 0.000059 | 0.000007 | 0.000164 | 0.001448 | 0.000000 | 0.000793 | 0.000852 | 0.003951 |
| 70 | 0.008279 | 0.000000 | 0.000033 | 0.000058 | 0.000008 | 0.000189 | 0.001648 | 0.000000 | 0.000898 | 0.000972 | 0.004473 |
| 75 | 0.008700 | 0.000000 | 0.000033 | 0.000065 | 0.000011 | 0.000196 | 0.001729 | 0.000000 | 0.000946 | 0.001022 | 0.004698 |
| 80 | 0.010241 | 0.000000 | 0.000034 | 0.000069 | 0.000017 | 0.000241 | 0.002034 | 0.000000 | 0.001103 | 0.001190 | 0.005552 |
| 85 | 0.010488 | 0.000000 | 0.000054 | 0.000081 | 0.000000 | 0.000216 | 0.002103 | 0.000000 | 0.001132 | 0.001213 | 0.005689 |
| gross | 1.703668 | 0.004412 | 0.007362 | 0.034681 | 0.025124 | 0.088694 | 0.456677 | 0.000000 | 0.197055 | 0.324342 | 0.566321 |
| crude | 0.023386 | 0.000066 | 0.000104 | 0.000516 | 0.000379 | 0.001229 | 0.006187 | 0.000000 | 0.002712 | 0.004489 | 0.006704 |
| m.age | 34.0345 | 23.2630 | 30.8371 | 25.1367 | 25.2805 | 30.2969 | 31.7553 | 0.0000 | 30.9061 | 30.5076 | 40.6210 |

APPENDIX B *Continued.*

migration from saskatch to

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.045508 | 0.000107 | 0.000086 | 0.000429 | 0.000171 | 0.000514 | 0.005142 | 0.007349 | 0.000000 | 0.020611 | 0.011098 |
| 5 | 0.026792 | 0.000027 | 0.000048 | 0.000308 | 0.000241 | 0.000486 | 0.003033 | 0.004412 | 0.000000 | 0.010680 | 0.007557 |
| 10 | 0.019984 | 0.000066 | 0.000012 | 0.000173 | 0.000101 | 0.000352 | 0.002249 | 0.003112 | 0.000000 | 0.007677 | 0.006242 |
| 15 | 0.023139 | 0.000011 | 0.000000 | 0.000172 | 0.000024 | 0.000191 | 0.002289 | 0.004059 | 0.000000 | 0.009778 | 0.006616 |
| 20 | 0.068449 | 0.000128 | 0.000018 | 0.000458 | 0.000165 | 0.000745 | 0.007304 | 0.012168 | 0.000000 | 0.031811 | 0.015652 |
| 25 | 0.059591 | 0.000095 | 0.000118 | 0.000444 | 0.000201 | 0.000926 | 0.007394 | 0.009075 | 0.000000 | 0.026906 | 0.014432 |
| 30 | 0.036847 | 0.000125 | 0.000048 | 0.000498 | 0.000317 | 0.000731 | 0.005007 | 0.005698 | 0.000000 | 0.014879 | 0.009543 |
| 35 | 0.026145 | 0.000046 | 0.000023 | 0.000263 | 0.000124 | 0.000426 | 0.003529 | 0.004226 | 0.000000 | 0.010158 | 0.007349 |
| 40 | 0.020202 | 0.000030 | 0.000026 | 0.000185 | 0.000140 | 0.000354 | 0.002839 | 0.002643 | 0.000000 | 0.007447 | 0.006548 |
| 45 | 0.015772 | 0.000045 | 0.000000 | 0.000102 | 0.000061 | 0.000212 | 0.001881 | 0.002539 | 0.000000 | 0.005797 | 0.005135 |
| 50 | 0.013312 | 0.000040 | 0.000000 | 0.000064 | 0.000064 | 0.000153 | 0.001489 | 0.002036 | 0.000000 | 0.004177 | 0.005288 |
| 55 | 0.011298 | 0.000000 | 0.000090 | 0.000000 | 0.000049 | 0.000175 | 0.000940 | 0.001601 | 0.000000 | 0.003381 | 0.005062 |
| 60 | 0.011093 | 0.000000 | 0.000000 | 0.000033 | 0.000000 | 0.000088 | 0.000884 | 0.001175 | 0.000000 | 0.003081 | 0.005832 |
| 65 | 0.008720 | 0.000014 | 0.000000 | 0.000034 | 0.000027 | 0.000144 | 0.000727 | 0.001015 | 0.000000 | 0.002228 | 0.004531 |
| 70 | 0.009749 | 0.000017 | 0.000000 | 0.000034 | 0.000034 | 0.000170 | 0.000808 | 0.001140 | 0.000000 | 0.002484 | 0.005061 |
| 75 | 0.009742 | 0.000021 | 0.000000 | 0.000032 | 0.000032 | 0.000160 | 0.000802 | 0.001144 | 0.000000 | 0.002481 | 0.005069 |
| 80 | 0.010839 | 0.000016 | 0.000000 | 0.000032 | 0.000032 | 0.000192 | 0.000911 | 0.001263 | 0.000000 | 0.002766 | 0.005627 |
| 85 | 0.011181 | 0.000025 | 0.000000 | 0.000050 | 0.000025 | 0.000176 | 0.000932 | 0.001309 | 0.000000 | 0.002846 | 0.005817 |
| gross | 2.141822 | 0.000871 | 0.002344 | 0.016558 | 0.009046 | 0.030981 | 0.240804 | 0.329822 | 0.000000 | 0.845940 | 0.662256 |
| crude | 0.028070 | 0.000053 | 0.000033 | 0.000234 | 0.000124 | 0.000396 | 0.003201 | 0.004477 | 0.000000 | 0.011582 | 0.007971 |
| m.age | 32.4463 | 31.5186 | 27.9298 | 27.0507 | 30.2845 | 33.7455 | 30.9482 | 30.2026 | 0.0000 | 29.0618 | 38.5571 |

migration from alberta to

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.024982 | 0.000160 | 0.000074 | 0.000517 | 0.000258 | 0.000849 | 0.004723 | 0.002436 | 0.001838 | 0.000000 | 0.012128 |
| 5 | 0.016515 | 0.000059 | 0.000042 | 0.000515 | 0.000214 | 0.000455 | 0.003001 | 0.001334 | 0.001976 | 0.000000 | 0.008918 |
| 10 | 0.014772 | 0.000053 | 0.000039 | 0.000272 | 0.000263 | 0.000496 | 0.002551 | 0.001015 | 0.001476 | 0.000000 | 0.008608 |
| 15 | 0.012896 | 0.000023 | 0.000017 | 0.000237 | 0.000137 | 0.000349 | 0.002126 | 0.000840 | 0.001276 | 0.000000 | 0.007890 |
| 20 | 0.022013 | 0.000110 | 0.000044 | 0.000472 | 0.000203 | 0.000807 | 0.003925 | 0.001665 | 0.002358 | 0.000000 | 0.012429 |
| 25 | 0.025428 | 0.000176 | 0.000051 | 0.000548 | 0.000212 | 0.001052 | 0.005088 | 0.002382 | 0.002973 | 0.000000 | 0.012945 |
| 30 | 0.022027 | 0.000138 | 0.000082 | 0.000549 | 0.000399 | 0.000918 | 0.004199 | 0.001856 | 0.002629 | 0.000000 | 0.011256 |
| 35 | 0.016749 | 0.000025 | 0.000041 | 0.000427 | 0.000231 | 0.000659 | 0.003291 | 0.001290 | 0.001703 | 0.000000 | 0.009081 |
| 40 | 0.014261 | 0.000063 | 0.000039 | 0.000226 | 0.000191 | 0.000533 | 0.002966 | 0.000955 | 0.001339 | 0.000000 | 0.007949 |
| 45 | 0.013376 | 0.000060 | 0.000000 | 0.000162 | 0.000116 | 0.000427 | 0.002317 | 0.000755 | 0.000981 | 0.000000 | 0.008560 |
| 50 | 0.011493 | 0.000068 | 0.000014 | 0.000135 | 0.000059 | 0.000330 | 0.001447 | 0.000682 | 0.000981 | 0.000000 | 0.007777 |
| 55 | 0.010447 | 0.000100 | 0.000000 | 0.000073 | 0.000000 | 0.000183 | 0.001189 | 0.000468 | 0.000827 | 0.000000 | 0.007607 |
| 60 | 0.009562 | 0.000020 | 0.000000 | 0.000070 | 0.000000 | 0.000201 | 0.000836 | 0.000295 | 0.000504 | 0.000000 | 0.007636 |
| 65 | 0.007726 | 0.000000 | 0.000010 | 0.000041 | 0.000047 | 0.000083 | 0.000606 | 0.000207 | 0.000617 | 0.000000 | 0.006114 |
| 70 | 0.009260 | 0.000000 | 0.000014 | 0.000048 | 0.000062 | 0.000097 | 0.000724 | 0.000248 | 0.000738 | 0.000000 | 0.007329 |
| 75 | 0.009982 | 0.000000 | 0.000009 | 0.000056 | 0.000065 | 0.000103 | 0.000784 | 0.000271 | 0.000794 | 0.000000 | 0.007900 |
| 80 | 0.011558 | 0.000000 | 0.000015 | 0.000058 | 0.000073 | 0.000131 | 0.000901 | 0.000305 | 0.000930 | 0.000000 | 0.009144 |
| 85 | 0.012142 | 0.000000 | 0.000023 | 0.000070 | 0.000070 | 0.000116 | 0.000954 | 0.000326 | 0.000977 | 0.000000 | 0.009607 |
| gross | 1.325952 | 0.005275 | 0.002575 | 0.022384 | 0.013002 | 0.038934 | 0.208143 | 0.086652 | 0.134595 | 0.000000 | 0.814392 |
| crude | 0.016775 | 0.000077 | 0.000037 | 0.000340 | 0.000189 | 0.000554 | 0.002947 | 0.001268 | 0.001857 | 0.000000 | 0.009506 |
| m.age | 38.3150 | 29.1437 | 31.0014 | 28.3141 | 31.3539 | 31.3707 | 32.0978 | 29.9712 | 33.5199 | 0.0000 | 42.3848 |

| | migration from b.columb to | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| age | total | nw.found | p.eduar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 0.015628 | 0.000176 | 0.000033 | 0.000571 | 0.000264 | 0.001010 | 0.004382 | 0.001559 | 0.001340 | 0.006293 | 0.000000 |
| 5 | 0.009640 | 0.000039 | 0.000053 | 0.000437 | 0.000186 | 0.000548 | 0.002616 | 0.000987 | 0.000814 | 0.003960 | 0.000000 |
| 10 | 0.007808 | 0.000057 | 0.000084 | 0.000330 | 0.000124 | 0.000479 | 0.002339 | 0.000683 | 0.000611 | 0.003100 | 0.000000 |
| 15 | 0.006806 | 0.000013 | 0.000045 | 0.000162 | 0.000125 | 0.000379 | 0.002065 | 0.000481 | 0.000668 | 0.002868 | 0.000000 |
| 20 | 0.013717 | 0.000076 | 0.000006 | 0.000467 | 0.000218 | 0.000918 | 0.003972 | 0.001136 | 0.001063 | 0.005859 | 0.000000 |
| 25 | 0.017758 | 0.000133 | 0.000031 | 0.000585 | 0.000336 | 0.001349 | 0.005668 | 0.001871 | 0.001180 | 0.006606 | 0.000000 |
| 30 | 0.012571 | 0.000133 | 0.000089 | 0.000532 | 0.000227 | 0.000898 | 0.004194 | 0.001196 | 0.000972 | 0.004330 | 0.000000 |
| 35 | 0.009189 | 0.000087 | 0.000053 | 0.000383 | 0.000114 | 0.000751 | 0.002920 | 0.000713 | 0.000603 | 0.003565 | 0.000000 |
| 40 | 0.007026 | 0.000080 | 0.000054 | 0.000264 | 0.000125 | 0.000572 | 0.002393 | 0.000470 | 0.000555 | 0.002512 | 0.000000 |
| 45 | 0.005563 | 0.000015 | 0.000008 | 0.000132 | 0.000120 | 0.000388 | 0.001855 | 0.000421 | 0.000510 | 0.002112 | 0.000000 |
| 50 | 0.003739 | 0.000000 | 0.000000 | 0.000068 | 0.000052 | 0.000269 | 0.001153 | 0.000357 | 0.000413 | 0.001427 | 0.000000 |
| 55 | 0.003120 | 0.000000 | 0.000011 | 0.000066 | 0.000072 | 0.000220 | 0.000706 | 0.000330 | 0.000266 | 0.001450 | 0.000000 |
| 60 | 0.002920 | 0.000000 | 0.000000 | 0.000127 | 0.000045 | 0.000174 | 0.000719 | 0.000185 | 0.000439 | 0.001232 | 0.000000 |
| 65 | 0.002742 | 0.000010 | 0.000006 | 0.000062 | 0.000029 | 0.000114 | 0.000607 | 0.000328 | 0.000510 | 0.001075 | 0.000000 |
| 70 | 0.003093 | 0.000012 | 0.000008 | 0.000069 | 0.000037 | 0.000126 | 0.000684 | 0.000370 | 0.000574 | 0.001213 | 0.000000 |
| 75 | 0.003164 | 0.000010 | 0.000005 | 0.000073 | 0.000037 | 0.000131 | 0.000700 | 0.000376 | 0.000590 | 0.001243 | 0.000000 |
| 80 | 0.003454 | 0.000015 | 0.000008 | 0.000077 | 0.000039 | 0.000139 | 0.000763 | 0.000409 | 0.000640 | 0.001365 | 0.000000 |
| 85 | 0.003508 | 0.000012 | 0.000012 | 0.000071 | 0.000036 | 0.000154 | 0.000770 | 0.000427 | 0.000652 | 0.001375 | 0.000000 |
| gross | 0.657227 | 0.004348 | 0.002533 | 0.022388 | 0.010916 | 0.043101 | 0.192534 | 0.061494 | 0.061992 | 0.257923 | 0.000000 |
| crude | 0.008867 | 0.000062 | 0.000037 | 0.000317 | 0.000152 | 0.000592 | 0.002644 | 0.000812 | 0.000751 | 0.003499 | 0.000000 |
| m.age | 32.2999 | 26.9248 | 28.8439 | 29.0666 | 30.2382 | 30.9340 | 31.1126 | 33.2795 | 38.9676 | 32.0708 | 0.0000 |

APPENDIX B *Continued.*

Death rates: males.

| age | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.006511 | 0.006153 | 0.005135 | 0.005239 | 0.005040 | 0.004526 | 0.005377 | 0.005926 | 0.004886 | 0.004957 |
| 5 | 0.000629 | 0.000705 | 0.000762 | 0.000745 | 0.000708 | 0.000504 | 0.000477 | 0.000465 | 0.000451 | 0.000619 |
| 10 | 0.000629 | 0.000698 | 0.000667 | 0.000740 | 0.000587 | 0.000457 | 0.000492 | 0.000501 | 0.000479 | 0.000436 |
| 15 | 0.000893 | 0.001612 | 0.001587 | 0.001435 | 0.001311 | 0.001168 | 0.001248 | 0.001541 | 0.001526 | 0.001481 |
| 20 | 0.001429 | 0.001669 | 0.002319 | 0.002401 | 0.001912 | 0.001519 | 0.001900 | 0.002199 | 0.002038 | 0.002067 |
| 25 | 0.001265 | 0.001620 | 0.001733 | 0.001551 | 0.001518 | 0.001261 | 0.001505 | 0.001762 | 0.001580 | 0.001725 |
| 30 | 0.001497 | 0.002483 | 0.001952 | 0.001798 | 0.001633 | 0.001363 | 0.001797 | 0.001676 | 0.001692 | 0.002021 |
| 35 | 0.002249 | 0.002283 | 0.002305 | 0.002173 | 0.002342 | 0.002063 | 0.002216 | 0.002072 | 0.002148 | 0.002452 |
| 40 | 0.003831 | 0.003859 | 0.004161 | 0.003537 | 0.003669 | 0.003392 | 0.003260 | 0.003218 | 0.003251 | 0.003852 |
| 45 | 0.005341 | 0.006250 | 0.006153 | 0.006488 | 0.006119 | 0.005677 | 0.005088 | 0.004913 | 0.004925 | 0.005727 |
| 50 | 0.009119 | 0.010106 | 0.009758 | 0.009632 | 0.010271 | 0.009494 | 0.008488 | 0.007557 | 0.007895 | 0.008913 |
| 55 | 0.014315 | 0.014899 | 0.015596 | 0.014449 | 0.016863 | 0.015656 | 0.013127 | 0.011274 | 0.012449 | 0.013599 |
| 60 | 0.021051 | 0.022794 | 0.023858 | 0.022517 | 0.025844 | 0.024669 | 0.019952 | 0.017464 | 0.019060 | 0.021635 |
| 65 | 0.032678 | 0.030260 | 0.035294 | 0.034113 | 0.038545 | 0.038264 | 0.031864 | 0.027696 | 0.029757 | 0.032741 |
| 70 | 0.047581 | 0.045651 | 0.053195 | 0.048503 | 0.056396 | 0.055803 | 0.047516 | 0.041665 | 0.044134 | 0.048179 |
| 75 | 0.075375 | 0.066905 | 0.078334 | 0.076494 | 0.085363 | 0.083870 | 0.075911 | 0.070018 | 0.073346 | 0.074301 |
| 80 | 0.119852 | 0.111965 | 0.121348 | 0.120915 | 0.130686 | 0.126596 | 0.117884 | 0.107761 | 0.111525 | 0.115919 |
| 85 | 0.205720 | 0.204338 | 0.205032 | 0.203897 | 0.217420 | 0.207107 | 0.191533 | 0.182759 | 0.187039 | 0.190829 |
| gross | 2.749831 | 2.671243 | 2.845947 | 2.783140 | 3.031134 | 2.916954 | 2.648178 | 2.452337 | 2.540908 | 2.657267 |
| crude | 0.007150 | 0.010615 | 0.009906 | 0.008992 | 0.007829 | 0.008709 | 0.009510 | 0.009641 | 0.007758 | 0.009844 |
| m.age | 77.5753 | 77.1790 | 77.1889 | 77.3513 | 77.4570 | 77.6163 | 77.5282 | 77.4497 | 77.5829 | 77.2598 |

Death rates: females.

| age | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.004971 | 0.004067 | 0.004867 | 0.004203 | 0.004149 | 0.003528 | 0.003979 | 0.004616 | 0.003879 | 0.003885 |
| 5 | 0.000424 | 0.000478 | 0.000511 | 0.000516 | 0.000463 | 0.000357 | 0.000333 | 0.000324 | 0.000319 | 0.000388 |
| 10 | 0.000285 | 0.000327 | 0.000402 | 0.000447 | 0.000335 | 0.000282 | 0.000310 | 0.000327 | 0.000307 | 0.000329 |
| 15 | 0.000438 | 0.000572 | 0.000541 | 0.000677 | 0.000500 | 0.000471 | 0.000502 | 0.000606 | 0.000587 | 0.000541 |
| 20 | 0.000568 | 0.000457 | 0.000540 | 0.000601 | 0.000617 | 0.000478 | 0.000598 | 0.000704 | 0.000633 | 0.000629 |
| 25 | 0.000504 | 0.000135 | 0.000520 | 0.000617 | 0.000646 | 0.000566 | 0.000631 | 0.000637 | 0.000729 | 0.000785 |
| 30 | 0.000719 | 0.000660 | 0.000817 | 0.000825 | 0.000902 | 0.000784 | 0.000686 | 0.001038 | 0.000936 | 0.001147 |
| 35 | 0.001493 | 0.001733 | 0.001312 | 0.001296 | 0.001350 | 0.001231 | 0.001390 | 0.001205 | 0.001407 | 0.001374 |
| 40 | 0.002292 | 0.003059 | 0.002057 | 0.001983 | 0.002138 | 0.002025 | 0.002107 | 0.002067 | 0.001966 | 0.002162 |
| 45 | 0.002945 | 0.004265 | 0.003789 | 0.003061 | 0.003209 | 0.003206 | 0.003109 | 0.002896 | 0.002949 | 0.003403 |
| 50 | 0.004714 | 0.005316 | 0.005224 | 0.005270 | 0.005305 | 0.004900 | 0.004516 | 0.003971 | 0.004360 | 0.005030 |
| 55 | 0.006882 | 0.007689 | 0.008148 | 0.007086 | 0.008408 | 0.007628 | 0.006972 | 0.005911 | 0.006562 | 0.007259 |
| 60 | 0.011822 | 0.010111 | 0.012434 | 0.011567 | 0.012772 | 0.011556 | 0.010422 | 0.009093 | 0.009677 | 0.010586 |
| 65 | 0.019530 | 0.018202 | 0.019221 | 0.018733 | 0.020702 | 0.018133 | 0.016588 | 0.014835 | 0.015859 | 0.016532 |
| 70 | 0.032420 | 0.029841 | 0.030353 | 0.030039 | 0.033216 | 0.029735 | 0.027864 | 0.024776 | 0.026944 | 0.026229 |
| 75 | 0.055177 | 0.043027 | 0.051774 | 0.053023 | 0.057883 | 0.050627 | 0.048363 | 0.043345 | 0.044820 | 0.044224 |
| 80 | 0.091754 | 0.078629 | 0.085097 | 0.087065 | 0.100508 | 0.086938 | 0.081804 | 0.076331 | 0.082348 | 0.079745 |
| 85 | 0.185217 | 0.158601 | 0.175061 | 0.172034 | 0.185678 | 0.167823 | 0.158871 | 0.149117 | 0.153015 | 0.156897 |
| gross | 2.110791 | 1.815847 | 2.008334 | 1.995212 | 2.193896 | 1.951322 | 1.845227 | 1.708991 | 1.786484 | 1.805729 |
| crude | 0.005143 | 0.007833 | 0.007256 | 0.006610 | 0.005619 | 0.006459 | 0.006618 | 0.006135 | 0.004966 | 0.006712 |
| m.age | 79.2914 | 78.7931 | 79.0861 | 79.0939 | 79.2472 | 79.2739 | 79.1093 | 78.9498 | 79.0891 | 78.9148 |

*Appendix C*

# MULTIREGIONAL LIFE TABLE

## APPENDIX C

Expected number of survivors at exact age $x$ in each region: males.

| age | initial region of cohort: nw.found | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 100000. | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 5 | 96836. | 87599. | 84. | 1427. | 495. | 653. | 5622. | 250. | 113. | 143. | 450. |
| 10 | 96535. | 82664. | 100. | 2009. | 946. | 1239. | 7919. | 342. | 161. | 280. | 875. |
| 15 | 96240. | 79191. | 142. | 2234. | 1161. | 1651. | 9620. | 473. | 193. | 456. | 1120. |
| 20 | 95773. | 73809. | 192. | 2594. | 1340. | 2012. | 12900. | 550. | 210. | 670. | 1495. |
| 25 | 95044. | 58846. | 264. | 3616. | 1744. | 2692. | 23108. | 842. | 415. | 1202. | 2316. |
| 30 | 94418. | 50694. | 374. | 4242. | 2099. | 3755. | 26951. | 1065. | 426. | 1697. | 3117. |
| 35 | 93702. | 45613. | 400. | 4453. | 2410. | 4629. | 28762. | 1231. | 515. | 1998. | 3691. |
| 40 | 92676. | 42405. | 467. | 4525. | 2596. | 5046. | 29484. | 1306. | 569. | 2154. | 4125. |
| 45 | 90994. | 39531. | 448. | 4466. | 2606. | 5368. | 29695. | 1374. | 648. | 2270. | 4587. |
| 50 | 88491. | 36927. | 462. | 4404. | 2609. | 5400. | 29474. | 1368. | 703. | 2333. | 4810. |
| 55 | 84469. | 34338. | 470. | 4269. | 2526. | 5281. | 28387. | 1316. | 729. | 2275. | 4877. |
| 60 | 78416. | 31103. | 459. | 3930. | 2380. | 5008. | 26679. | 1258. | 678. | 2157. | 4764. |
| 65 | 69987. | 27296. | 411. | 3601. | 2117. | 4522. | 23839. | 1138. | 631. | 1946. | 4485. |
| 70 | 58734. | 22943. | 378. | 3022. | 1798. | 3774. | 19646. | 972. | 552. | 1666. | 3982. |
| 75 | 45438. | 17874. | 321. | 2315. | 1421. | 2876. | 14809. | 770. | 451. | 1327. | 3274. |
| 80 | 30502. | 12067. | 244. | 1561. | 974. | 1891. | 9652. | 526. | 320. | 908. | 2357. |
| 85 | 16249. | 6410. | 147. | 839. | 528. | 974. | 4996. | 290. | 187. | 509. | 1369. |

| age | initial region of cohort: p.edouar | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 100000. | 0. | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 5 | 97016. | 614. | 81396. | 2523. | 2921. | 752. | 6399. | 607. | 307. | 657. | 843. |
| 10 | 96684. | 831. | 72644. | 4561. | 4333. | 1518. | 8994. | 952. | 396. | 897. | 1558. |
| 15 | 96365. | 829. | 66787. | 6060. | 4786. | 2353. | 11039. | 1036. | 440. | 1077. | 1958. |
| 20 | 95635. | 863. | 61175. | 6604. | 5136. | 2754. | 13334. | 1197. | 522. | 1426. | 2623. |
| 25 | 94793. | 1284. | 45529. | 8545. | 6176. | 3593. | 21354. | 1626. | 553. | 2721. | 3411. |
| 30 | 94071. | 1696. | 34739. | 9391. | 6752. | 4978. | 26019. | 1789. | 700. | 3510. | 4498. |
| 35 | 93175. | 1894. | 29450. | 9623. | 6794. | 5708. | 27771. | 1981. | 861. | 3923. | 5171. |
| 40 | 92149. | 1978. | 25968. | 9590. | 6888. | 6332. | 28675. | 2017. | 907. | 4054. | 5741. |
| 45 | 90479. | 1994. | 23256. | 9463. | 6776. | 6511. | 29083. | 2004. | 910. | 4175. | 6308. |
| 50 | 87848. | 1937. | 20897. | 9435. | 6628. | 6423. | 28720. | 1969. | 945. | 4132. | 6762. |
| 55 | 83747. | 1834. | 19199. | 9056. | 6184. | 6161. | 27630. | 1858. | 932. | 3999. | 6894. |
| 60 | 77687. | 1684. | 17477. | 8275. | 5740. | 5760. | 25689. | 1716. | 872. | 3691. | 6793. |
| 65 | 69140. | 1495. | 15264. | 7348. | 5140. | 5085. | 22764. | 1544. | 816. | 3373. | 6310. |
| 70 | 58141. | 1287. | 12873. | 6208. | 4344. | 4212. | 18790. | 1313. | 722. | 2850. | 5542. |
| 75 | 45016. | 1031. | 10042. | 4789. | 3408. | 3186. | 14186. | 1034. | 596. | 2236. | 4508. |
| 80 | 30495. | 714. | 7025. | 3252. | 2321. | 2075. | 9257. | 702. | 429. | 1509. | 3211. |
| 85 | 16425. | 390. | 3865. | 1755. | 1246. | 1057. | 4800. | 384. | 255. | 831. | 1841. |

age  initial region of cohort  n.scotia

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 5 | 97471. | 625. | 408. | 84665. | 1939. | 1625. | 5928. | 284. | 207. | 724. | 1065. |
| 10 | 97115. | 955. | 681. | 77058. | 3020. | 2313. | 9159. | 503. | 290. | 1164. | 1971. |
| 15 | 96807. | 1139. | 896. | 71586. | 3659. | 2723. | 11567. | 684. | 349. | 1425. | 2778. |
| 20 | 96083. | 1202. | 992. | 66522. | 4116. | 3075. | 13810. | 853. | 396. | 1719. | 3398. |
| 25 | 95067. | 1501. | 1021. | 58840. | 4679. | 3899. | 19923. | 1280. | 594. | 2674. | 4656. |
| 30 | 94317. | 1904. | 1057. | 46368. | 4934. | 5330. | 23859. | 1595. | 673. | 3672. | 5924. |
| 35 | 93493. | 2106. | 1121. | 39655. | 5284. | 6135. | 25875. | 1750. | 778. | 4000. | 6739. |
| 40 | 92457. | 2207. | 1193. | 35690. | 5398. | 6668. | 27143. | 1796. | 843. | 4165. | 7353. |
| 45 | 90739. | 2207. | 1175. | 32433. | 5463. | 6853. | 27835. | 1817. | 878. | 4190. | 7888. |
| 50 | 88112. | 2143. | 1142. | 29888. | 5365. | 6791. | 27676. | 1807. | 908. | 4199. | 8193. |
| 55 | 84034. | 2061. | 1102. | 27678. | 5047. | 6545. | 26712. | 1718. | 909. | 4021. | 8239. |
| 60 | 77898. | 1892. | 1055. | 25135. | 4678. | 6107. | 24897. | 1593. | 851. | 3737. | 7953. |
| 65 | 69254. | 1695. | 965. | 22060. | 4168. | 5393. | 22065. | 1436. | 772. | 3348. | 7354. |
| 70 | 57942. | 1446. | 842. | 18309. | 3516. | 4473. | 18205. | 1211. | 680. | 2837. | 6423. |
| 75 | 44511. | 1143. | 680. | 13873. | 2758. | 3389. | 13738. | 945. | 558. | 2231. | 5195. |
| 80 | 29783. | 783. | 491. | 9236. | 1875. | 2210. | 8963. | 639. | 398. | 1509. | 3680. |
| 85 | 15369. | 424. | 280. | 4879. | 1005. | 1128. | 4644. | 346. | 233. | 833. | 2098. |

age  initial region of cohort  brunswic

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 100000. | 0. | 0. | 0. | 0. | 0. | 0. |
| 5 | 97424. | 480. | 454. | 2274. | 83481. | 3168. | 5347. | 426. | 169. | 691. | 935. |
| 10 | 97074. | 635. | 595. | 3454. | 76801. | 4236. | 7836. | 638. | 249. | 1004. | 1625. |
| 15 | 96739. | 763. | 698. | 4236. | 71801. | 4962. | 9821. | 839. | 301. | 1216. | 2102. |
| 20 | 96062. | 808. | 756. | 4756. | 66705. | 5607. | 12059. | 985. | 374. | 1444. | 2568. |
| 25 | 95020. | 1079. | 836. | 5655. | 53881. | 7503. | 18312. | 1326. | 557. | 2362. | 3509. |
| 30 | 94308. | 1376. | 886. | 6424. | 44149. | 9389. | 22206. | 1515. | 628. | 3155. | 4580. |
| 35 | 93513. | 1482. | 957. | 6735. | 38873. | 10354. | 24041. | 1638. | 732. | 3434. | 5266. |
| 40 | 92494. | 1605. | 1021. | 6801. | 34996. | 10894. | 25240. | 1699. | 785. | 3610. | 5843. |
| 45 | 90859. | 1625. | 1011. | 6725. | 32090. | 10999. | 25969. | 1729. | 799. | 3649. | 6264. |
| 50 | 88173. | 1581. | 1012. | 6682. | 29388. | 10832. | 25845. | 1731. | 825. | 3702. | 6576. |
| 55 | 84080. | 1498. | 1001. | 6500. | 26784. | 10382. | 25173. | 1671. | 824. | 3566. | 6681. |
| 60 | 78006. | 1402. | 966. | 6092. | 24311. | 9606. | 23511. | 1546. | 779. | 3311. | 6482. |
| 65 | 69408. | 1245. | 866. | 5518. | 21306. | 8475. | 20858. | 1401. | 714. | 2995. | 6031. |
| 70 | 58096. | 1056. | 763. | 4712. | 17676. | 7016. | 17213. | 1184. | 627. | 2536. | 5313. |
| 75 | 44820. | 831. | 622. | 3673. | 13630. | 5302. | 12998. | 925. | 515. | 1995. | 4333. |
| 80 | 30006. | 567. | 453. | 2521. | 9098. | 3648. | 8882. | 626. | 367. | 1349. | 3095. |
| 85 | 15953. | 305. | 261. | 1380. | 4775. | 1754. | 4399. | 339. | 215. | 746. | 1780. |

APPENDIX C *Continued.*

age — initial region of cohort: quebec

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 0. | 100000. | 0. | 0. | 0. | 0. | 0. |
| 5 | 97514. | 123. | 27. | 196. | 317. | 93017. | 2991. | 131. | 65. | 231. | 416. |
| 10 | 97174. | 172. | 48. | 330. | 532. | 89917. | 4727. | 223. | 87. | 409. | 728. |
| 15 | 96893. | 213. | 59. | 447. | 649. | 87353. | 6232. | 287. | 112. | 533. | 1009. |
| 20 | 96263. | 229. | 63. | 534. | 720. | 84724. | 7554. | 354. | 142. | 657. | 1285. |
| 25 | 95360. | 242. | 71. | 680. | 794. | 80303. | 9859. | 472. | 193. | 960. | 1787. |
| 30 | 94649. | 327. | 87. | 835. | 985. | 75961. | 11966. | 604. | 242. | 1315. | 2328. |
| 35 | 93888. | 384. | 111. | 977. | 1146. | 72544. | 13443. | 701. | 288. | 1500. | 2795. |
| 40 | 92817. | 437. | 132. | 1076. | 1236. | 69324. | 14690. | 761. | 322. | 1647. | 3192. |
| 45 | 91151. | 473. | 141. | 1121. | 1271. | 66189. | 15607. | 812. | 351. | 1713. | 3472. |
| 50 | 88462. | 481. | 145. | 1141. | 1288. | 62474. | 16207. | 823. | 382. | 1773. | 3749. |
| 55 | 84161. | 469. | 146. | 1137. | 1251. | 58125. | 16202. | 812. | 392. | 1748. | 3879. |
| 60 | 77593. | 446. | 145. | 1079. | 1201. | 52693. | 15400. | 776. | 375. | 1640. | 3837. |
| 65 | 68454. | 403. | 133. | 994. | 1114. | 45676. | 13924. | 718. | 341. | 1502. | 3649. |
| 70 | 56670. | 344. | 121. | 855. | 971. | 37252. | 11675. | 613. | 306. | 1282. | 3250. |
| 75 | 42958. | 272. | 101. | 673. | 789. | 27706. | 8975. | 485. | 257. | 1017. | 2683. |
| 80 | 28129. | 187. | 77. | 468. | 558. | 17694. | 5988. | 332. | 187. | 696. | 1943. |
| 85 | 14535. | 101. | 46. | 260. | 314. | 8803. | 3190. | 183. | 112. | 389. | 1136. |

age — initial region of cohort: ontario

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 100000. | 0. | 0. | 0. | 0. |
| 5 | 97753. | 265. | 101. | 553. | 470. | 2071. | 92222. | 913. | 175. | 551. | 932. |
| 10 | 97502. | 379. | 158. | 884. | 714. | 2884. | 88991. | 666. | 291. | 932. | 1603. |
| 15 | 97275. | 442. | 201. | 1118. | 869. | 3468. | 86388. | 889. | 381. | 1258. | 2260. |
| 20 | 96695. | 466. | 210. | 1250. | 961. | 3820. | 84076. | 1069. | 448. | 1523. | 2872. |
| 25 | 95927. | 529. | 218. | 1516. | 1036. | 4479. | 80298. | 1332. | 538. | 2070. | 3912. |
| 30 | 95294. | 751. | 248. | 1840. | 1231. | 5753. | 75540. | 1578. | 627. | 2779. | 4948. |
| 35 | 94601. | 833. | 284. | 2050. | 1370. | 6623. | 72179. | 1735. | 709. | 3153. | 5666. |
| 40 | 93602. | 876. | 314. | 2152. | 1475. | 7101. | 69515. | 1800. | 766. | 3362. | 6242. |
| 45 | 91996. | 887. | 321. | 2162. | 1522. | 7293. | 67021. | 1844. | 803. | 3474. | 6670. |
| 50 | 89414. | 874. | 321. | 2174. | 1525. | 7298. | 64015. | 1839. | 831. | 3504. | 7033. |
| 55 | 85302. | 851. | 310. | 2142. | 1464. | 7037. | 60271. | 1782. | 847. | 3413. | 7186. |
| 60 | 79011. | 800. | 299. | 2010. | 1387. | 6590. | 55213. | 1677. | 799. | 3188. | 7049. |
| 65 | 70073. | 721. | 271. | 1826. | 1268. | 5842. | 48389. | 1534. | 729. | 2878. | 6615. |
| 70 | 58237. | 618. | 241. | 1556. | 1081. | 4857. | 39603. | 1313. | 651. | 2457. | 5861. |
| 75 | 44414. | 492. | 199. | 1212. | 858. | 3689. | 29629. | 1040. | 542. | 1947. | 4807. |
| 80 | 29361. | 339. | 147. | 832. | 591. | 2413. | 19148. | 714. | 391. | 1330. | 3455. |
| 85 | 15462. | 185. | 86. | 456. | 322. | 1237. | 9807. | 393. | 232. | 742. | 2000. |

age  initial region of cohort  manitoba

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 100000. | 0. | 0. | 0. |
| 5 | 97361. | 83. | 74. | 485. | 301. | 1025. | 4283. | 81999. | 2673. | 3081. | 3357. |
| 10 | 97122. | 122. | 155. | 744. | 538. | 1621. | 6929. | 72420. | 3472. | 4982. | 6137. |
| 15 | 96884. | 147. | 206. | 895. | 691. | 2060. | 8942. | 65383. | 3927. | 6233. | 8401. |
| 20 | 96257. | 157. | 217. | 972. | 752. | 2283. | 10390. | 59762. | 4188. | 7295. | 10240. |
| 25 | 95343. | 190. | 193. | 1195. | 743. | 2694. | 12815. | 51330. | 3984. | 9369. | 12830. |
| 30 | 94620. | 330. | 223. | 1454. | 895. | 3529. | 15815. | 41609. | 4083. | 11425. | 15256. |
| 35 | 93802. | 382. | 253. | 1612. | 1002. | 4218. | 17853. | 35072. | 4233. | 12202. | 16974. |
| 40 | 92766. | 419. | 273. | 1689. | 1129. | 4635. | 19154. | 30724. | 4158. | 12514. | 18070. |
| 45 | 91180. | 430. | 285. | 1700. | 1183. | 4827. | 19972. | 27454. | 4162. | 12449. | 18719. |
| 50 | 88741. | 428. | 281. | 1680. | 1192. | 4856. | 20162. | 24646. | 4116. | 12118. | 19261. |
| 55 | 84905. | 421. | 266. | 1641. | 1150. | 4720. | 19612. | 22192. | 3973. | 11565. | 19365. |
| 60 | 79191. | 400. | 258. | 1524. | 1082. | 4437. | 18328. | 19946. | 3723. | 10690. | 18804. |
| 65 | 71055. | 360. | 230. | 1368. | 972. | 3947. | 16286. | 17517. | 3325. | 9578. | 17472. |
| 70 | 60067. | 308. | 203. | 1161. | 821. | 3261. | 13497. | 14395. | 2904. | 8107. | 15408. |
| 75 | 46867. | 245. | 166. | 901. | 645. | 2461. | 10236. | 10913. | 2365. | 6368. | 12567. |
| 80 | 31729. | 169. | 121. | 615. | 440. | 1597. | 6709. | 7152. | 1669. | 4300. | 8956. |
| 85 | 17231. | 92. | 70. | 335. | 237. | 811. | 3493. | 3730. | 965. | 2369. | 5129. |

age  initial region of cohort  saskatch

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 100000. | 0. | 0. |
| 5 | 97127. | 45. | 39. | 208. | 90. | 324. | 2360. | 2756. | 78016. | 8413. | 4879. |
| 10 | 96895. | 73. | 62. | 377. | 230. | 609. | 3688. | 4146. | 68297. | 11600. | 7813. |
| 15 | 96656. | 105. | 77. | 469. | 278. | 839. | 4696. | 4714. | 61914. | 13399. | 10166. |
| 20 | 95937. | 113. | 77. | 529. | 301. | 955. | 5750. | 5398. | 54994. | 15294. | 12527. |
| 25 | 94947. | 150. | 72. | 693. | 356. | 1296. | 7979. | 7491. | 39645. | 20674. | 16591. |
| 30 | 94173. | 230. | 113. | 881. | 462. | 1881. | 10460. | 7945. | 29037. | 23813. | 19350. |
| 35 | 93362. | 286. | 138. | 1027. | 574. | 2361. | 12056. | 7803. | 24240. | 23872. | 21005. |
| 40 | 92340. | 313. | 153. | 1135. | 659. | 2669. | 13124. | 7534. | 21142. | 23482. | 22129. |
| 45 | 90764. | 330. | 166. | 1174. | 717. | 2852. | 13878. | 7186. | 18965. | 22682. | 22814. |
| 50 | 88377. | 335. | 163. | 1173. | 731. | 2904. | 14131. | 6792. | 17269. | 21617. | 23241. |
| 55 | 84684. | 335. | 155. | 1152. | 705. | 2872. | 13813. | 6386. | 15820. | 20202. | 23243. |
| 60 | 79213. | 317. | 158. | 1072. | 675. | 2712. | 12978. | 5923. | 14291. | 18498. | 22589. |
| 65 | 71366. | 286. | 141. | 965. | 609. | 2421. | 11587. | 5304. | 12520. | 16467. | 21065. |
| 70 | 60722. | 245. | 124. | 820. | 517. | 2012. | 9629. | 4435. | 10517. | 13851. | 18572. |
| 75 | 47805. | 194. | 101. | 637. | 409. | 1527. | 7324. | 3425. | 8233. | 10805. | 15150. |
| 80 | 32655. | 134. | 74. | 435. | 280. | 998. | 4817. | 2286. | 5594. | 7245. | 10793. |
| 85 | 17994. | 73. | 42. | 238. | 152. | 510. | 2516. | 1217. | 3113. | 3959. | 6174. |

APPENDIX C *Continued.*

| age | initial region of cohort alberta | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 100000. | 0. |
| 5 | 97581. | 70. | 54. | 219. | 137. | 438. | 2271. | 1169. | 1548. | 86207. | 5468. |
| 10 | 97353. | 96. | 68. | 467. | 242. | 687. | 3631. | 1642. | 2199. | 79497. | 8825. |
| 15 | 97121. | 125. | 82. | 574. | 337. | 928. | 4710. | 1912. | 2584. | 73969. | 11900. |
| 20 | 96399. | 135. | 80. | 655. | 381. | 1075. | 5594. | 2163. | 2813. | 69148. | 14355. |
| 25 | 95435. | 169. | 84. | 805. | 424. | 1420. | 7074. | 2632. | 2786. | 62525. | 17516. |
| 30 | 94682. | 264. | 101. | 964. | 510. | 1989. | 9091. | 3130. | 2814. | 55979. | 19838. |
| 35 | 93864. | 328. | 128. | 1091. | 636. | 2433. | 10606. | 3358. | 3099. | 50411. | 21774. |
| 40 | 93028. | 342. | 148. | 1213. | 715. | 2719. | 11637. | 3429. | 3187. | 46354. | 23084. |
| 45 | 91239. | 366. | 158. | 1242. | 768. | 2897. | 12432. | 3423. | 3236. | 42820. | 23897. |
| 50 | 88842. | 374. | 154. | 1238. | 778. | 2979. | 12756. | 3326. | 3222. | 39496. | 24518. |
| 55 | 85121. | 371. | 147. | 1219. | 743. | 2925. | 12528. | 3226. | 3198. | 36083. | 24679. |
| 60 | 79573. | 351. | 144. | 1136. | 704. | 2753. | 11819. | 3016. | 3022. | 32482. | 24146. |
| 65 | 71632. | 319. | 129. | 1021. | 634. | 2460. | 10566. | 2721. | 2718. | 28488. | 22577. |
| 70 | 60902. | 272. | 113. | 866. | 538. | 2035. | 8784. | 2286. | 2393. | 23694. | 19920. |
| 75 | 47911. | 215. | 92. | 672. | 426. | 1538. | 6686. | 1776. | 1966. | 18268. | 16273. |
| 80 | 32688. | 148. | 67. | 459. | 291. | 1001. | 4401. | 1194. | 1400. | 12110. | 11617. |
| 85 | 17991. | 80. | 39. | 250. | 158. | 509. | 2302. | 641. | 817. | 6538. | 6657. |

| age | initial region of cohort b.columb | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 100000. |
| 5 | 97551. | 82. | 13. | 315. | 106. | 490. | 2097. | 801. | 689. | 2734. | 90224. |
| 10 | 97255. | 109. | 33. | 493. | 220. | 784. | 3206. | 1162. | 1025. | 4315. | 85907. |
| 15 | 97039. | 132. | 75. | 611. | 282. | 1029. | 4197. | 1358. | 1230. | 5273. | 82851. |
| 20 | 96332. | 135. | 82. | 666. | 327. | 1156. | 5013. | 1483. | 1405. | 6105. | 79958. |
| 25 | 95359. | 150. | 75. | 798. | 383. | 1497. | 6561. | 1857. | 1469. | 7780. | 74788. |
| 30 | 94568. | 225. | 89. | 967. | 512. | 2152. | 8638. | 2324. | 1597. | 9507. | 68557. |
| 35 | 93676. | 293. | 125. | 1082. | 602. | 2582. | 10168. | 2529. | 1811. | 10114. | 64370. |
| 40 | 92581. | 326. | 142. | 1187. | 652. | 2876. | 11162. | 2575. | 1872. | 10482. | 61306. |
| 45 | 90887. | 350. | 159. | 1239. | 701. | 3055. | 11865. | 2543. | 1952. | 10516. | 58508. |
| 50 | 88371. | 351. | 157. | 1238. | 720. | 3106. | 12186. | 2497. | 2007. | 10387. | 55722. |
| 55 | 84524. | 339. | 150. | 1205. | 691. | 3030. | 11944. | 2413. | 1998. | 9934. | 52820. |
| 60 | 78868. | 316. | 148. | 1117. | 671. | 2852. | 11245. | 2279. | 1877. | 9269. | 49094. |
| 65 | 70718. | 284. | 132. | 1013. | 608. | 2540. | 10047. | 2073. | 1726. | 8380. | 43910. |
| 70 | 59857. | 244. | 116. | 862. | 516. | 2104. | 8351. | 1765. | 1553. | 7146. | 37201. |
| 75 | 46815. | 194. | 94. | 671. | 408. | 1591. | 6356. | 1390. | 1301. | 5656. | 29155. |
| 80 | 31894. | 134. | 68. | 459. | 279. | 1037. | 4181. | 946. | 943. | 3847. | 20000. |
| 85 | 17442. | 73. | 39. | 251. | 151. | 528. | 2185. | 514. | 558. | 2133. | 11009. |

Expected number of survivors at exact age $x$ in each region: females.

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| initial region of cohort nw.found | | | | | | | | | | | |
| 0 | 100000. | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 5 | 97574. | 88193. | 115. | 1118. | 684. | 663. | 5821. | 210. | 66. | 203. | 503. |
| 10 | 97369. | 83516. | 208. | 1715. | 913. | 1150. | 8153. | 381. | 125. | 383. | 824. |
| 15 | 97228. | 80619. | 218. | 2012. | 1069. | 1476. | 9639. | 481. | 136. | 492. | 1085. |
| 20 | 97009. | 75259. | 212. | 2414. | 1289. | 1846. | 13144. | 538. | 196. | 618. | 1492. |
| 25 | 96740. | 61014. | 284. | 3654. | 1496. | 2919. | 22881. | 784. | 231. | 1144. | 2333. |
| 30 | 96480. | 52862. | 373. | 4256. | 2027. | 4004. | 26906. | 985. | 321. | 1741. | 3006. |
| 35 | 96108. | 48594. | 423. | 4438. | 2253. | 4714. | 28573. | 1173. | 417. | 2015. | 3508. |
| 40 | 95445. | 45448. | 480. | 4529. | 2417. | 5083. | 29472. | 1267. | 497. | 2248. | 4003. |
| 45 | 94416. | 42601. | 485. | 4533. | 2486. | 5396. | 30343. | 1316. | 502. | 2357. | 4397. |
| 50 | 92955. | 40463. | 502. | 4531. | 2585. | 5509. | 30386. | 1372. | 538. | 2401. | 4678. |
| 55 | 90726. | 38069. | 537. | 4487. | 2520. | 5521. | 30339. | 1355. | 565. | 2420. | 4911. |
| 60 | 87470. | 35666. | 544. | 4379. | 2514. | 5425. | 29674. | 1297. | 560. | 2409. | 5002. |
| 65 | 82526. | 32622. | 546. | 4158. | 2471. | 5180. | 28469. | 1219. | 540. | 2260. | 5062. |
| 70 | 75152. | 29089. | 522. | 3851. | 2244. | 4782. | 26102. | 1135. | 519. | 2063. | 4844. |
| 75 | 64463. | 24371. | 478. | 3371. | 1924. | 4139. | 22573. | 1000. | 473. | 1777. | 4405. |
| 80 | 49592. | 18097. | 401. | 2653. | 1470. | 3158. | 17570. | 793. | 393. | 1399. | 3660. |
| 85 | 31623. | 11108. | 277. | 1759. | 945. | 1936. | 11347. | 531. | 275. | 908. | 2536. |

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| initial region of cohort p.edouar | | | | | | | | | | | |
| 0 | 100000. | 0. | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 5 | 97995. | 493. | 81677. | 2779. | 2178. | 1100. | 6262. | 495. | 472. | 1469. | 1070. |
| 10 | 97768. | 567. | 74114. | 4462. | 2770. | 1708. | 8994. | 781. | 571. | 1958. | 1843. |
| 15 | 97607. | 575. | 68619. | 5364. | 3612. | 2348. | 11143. | 825. | 563. | 2020. | 2543. |
| 20 | 97335. | 621. | 62635. | 6395. | 4428. | 2775. | 13678. | 881. | 600. | 2181. | 3140. |
| 25 | 97094. | 970. | 45599. | 8402. | 5373. | 4715. | 22147. | 1287. | 516. | 3749. | 4329. |
| 30 | 96897. | 1368. | 36518. | 8840. | 5660. | 6167. | 25996. | 1696. | 706. | 4521. | 5425. |
| 35 | 96519. | 1650. | 30556. | 9099. | 6184. | 7014. | 28176. | 1816. | 884. | 4923. | 6218. |
| 40 | 95831. | 1623. | 27593. | 9370. | 6195. | 7408. | 29134. | 1940. | 900. | 4880. | 6789. |
| 45 | 94720. | 1562. | 25041. | 9441. | 6251. | 7583. | 29708. | 1957. | 894. | 5011. | 7272. |
| 50 | 93068. | 1512. | 23043. | 9373. | 6155. | 7542. | 29746. | 1956. | 899. | 4952. | 7889. |
| 55 | 90745. | 1451. | 21389. | 9372. | 5937. | 7445. | 29314. | 1899. | 938. | 4796. | 8204. |
| 60 | 87366. | 1390. | 20094. | 8913. | 5751. | 7256. | 28314. | 1812. | 921. | 4638. | 8277. |
| 65 | 82615. | 1344. | 18625. | 8374. | 5402. | 6880. | 26858. | 1693. | 882. | 4347. | 8211. |
| 70 | 75430. | 1219. | 16616. | 7651. | 4952. | 6278. | 24574. | 1557. | 875. | 3949. | 7758. |
| 75 | 65336. | 1036. | 14307. | 6600. | 4282. | 5373. | 21210. | 1354. | 813. | 3387. | 6974. |
| 80 | 51142. | 784. | 11331. | 5108. | 3284. | 4051. | 16465. | 1062. | 682. | 2648. | 5726. |
| 85 | 33265. | 491. | 7459. | 3334. | 2114. | 2448. | 10603. | 702. | 479. | 1709. | 3925. |

## APPENDIX C *Continued.*

age — initial region of cohort n.scotia

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| 5 | 98080. | 817. | 472. | 83477. | 2329. | 2112. | 6026. | 497. | 242. | 730. | 1382. |
| 10 | 97843. | 1223. | 725. | 76314. | 3119. | 2840. | 9112. | 725. | 324. | 1157. | 2306. |
| 15 | 97656. | 1379. | 897. | 71055. | 3668. | 3263. | 11602. | 892. | 417. | 1421. | 3063. |
| 20 | 97395. | 1478. | 1002. | 66003. | 4120. | 3626. | 14161. | 1018. | 438. | 1758. | 3792. |
| 25 | 97132. | 1675. | 941. | 54756. | 4494. | 4783. | 20859. | 1292. | 466. | 2811. | 5054. |
| 30 | 96858. | 1909. | 1077. | 45391. | 4958. | 6213. | 24998. | 1555. | 594. | 3810. | 6354. |
| 35 | 96458. | 2073. | 1140. | 40389. | 5406. | 6869. | 26897. | 1682. | 727. | 4189. | 7084. |
| 40 | 95824. | 2150. | 1240. | 37119. | 5592. | 7230. | 28059. | 1734. | 772. | 4305. | 7623. |
| 45 | 94836. | 2103. | 1215. | 34564. | 5640. | 7427. | 28780. | 1807. | 775. | 4352. | 8175. |
| 50 | 93231. | 2043. | 1190. | 32408. | 5540. | 7445. | 29084. | 1825. | 787. | 4334. | 8575. |
| 55 | 90912. | 1980. | 1150. | 30655. | 5321. | 7356. | 28845. | 1792. | 816. | 4225. | 8770. |
| 60 | 87477. | 1922. | 1133. | 28639. | 5179. | 7192. | 28013. | 1725. | 814. | 4054. | 8805. |
| 65 | 82506. | 1800. | 1096. | 26420. | 4885. | 6853. | 26595. | 1612. | 785. | 3783. | 8677. |
| 70 | 75242. | 1647. | 1031. | 23537. | 4476. | 6265. | 24416. | 1493. | 754. | 3450. | 8173. |
| 75 | 64862. | 1411. | 931. | 19853. | 3872. | 5368. | 21138. | 1306. | 687. | 2967. | 7329. |
| 80 | 50304. | 1075. | 771. | 15028. | 2979. | 4056. | 16463. | 1030. | 569. | 2331. | 6002. |
| 85 | 32431. | 677. | 530. | 9570. | 1923. | 2454. | 10635. | 684. | 398. | 1509. | 4101. |

age — initial region of cohort brunswic

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 100000. | 0. | 0. | 0. | 0. | 0. | 0. |
| 5 | 97932. | 404. | 352. | 2502. | 84061. | 3118. | 5128. | 349. | 229. | 765. | 1025. |
| 10 | 97689. | 670. | 507. | 3569. | 77440. | 4230. | 7673. | 594. | 273. | 1136. | 1595. |
| 15 | 97485. | 807. | 670. | 4184. | 72094. | 5211. | 9862. | 760. | 332. | 1409. | 2155. |
| 20 | 97179. | 881. | 756. | 4798. | 66912. | 5903. | 12216. | 936. | 400. | 1702. | 2675. |
| 25 | 96898. | 1044. | 804. | 5919. | 53978. | 8622. | 18713. | 1108. | 422. | 2563. | 3725. |
| 30 | 96604. | 1261. | 951. | 6797. | 45029. | 10536. | 22346. | 1369. | 511. | 3142. | 4662. |
| 35 | 96199. | 1334. | 1010. | 7163. | 40092. | 11574. | 24111. | 1545. | 653. | 3418. | 5299. |
| 40 | 95578. | 1369. | 1056. | 7323. | 36753. | 11910. | 25461. | 1609. | 694. | 3582. | 5817. |
| 45 | 94600. | 1347. | 1109. | 7323. | 34347. | 12062. | 26117. | 1692. | 693. | 3651. | 6258. |
| 50 | 93094. | 1331. | 1082. | 7312. | 31932. | 12066. | 26587. | 1694. | 728. | 3670. | 6692. |
| 55 | 90760. | 1289. | 1042. | 7246. | 29837. | 11866. | 26558. | 1688. | 750. | 3583. | 6900. |
| 60 | 87428. | 1241. | 1031. | 7031. | 28118. | 11457. | 25764. | 1610. | 739. | 3441. | 6992. |
| 65 | 82504. | 1183. | 1011. | 6658. | 25959. | 10903. | 24384. | 1524. | 711. | 3209. | 6963. |
| 70 | 75216. | 1077. | 947. | 6108. | 23076. | 9956. | 22435. | 1410. | 685. | 2936. | 6585. |
| 75 | 64779. | 917. | 852. | 5295. | 19408. | 8519. | 19468. | 1233. | 624. | 2532. | 5930. |
| 80 | 50030. | 696. | 705. | 4122. | 14517. | 6426. | 15202. | 972. | 517. | 1994. | 4878. |
| 85 | 32095. | 438. | 485. | 2704. | 9091. | 3879. | 9847. | 646. | 363. | 1297. | 3346. |

age  initial region of cohort  quebec

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 0. | 100000. | 0. | 0. | 0. | 0. | 0. |
| 5 | 97952. | 110. | 32. | 174. | 358. | 93276. | 3090. | 167. | 41. | 268. | 435. |
| 10 | 97728. | 174. | 44. | 314. | 551. | 90298. | 4847. | 252. | 91. | 443. | 714. |
| 15 | 97566. | 209. | 56. | 398. | 642. | 87996. | 6244. | 323. | 116. | 562. | 1020. |
| 20 | 97322. | 224. | 63. | 470. | 727. | 85777. | 7606. | 375. | 129. | 671. | 1280. |
| 25 | 97039. | 241. | 65. | 572. | 813. | 81914. | 10096. | 471. | 150. | 950. | 1754. |
| 30 | 96719. | 294. | 105. | 723. | 1014. | 78075. | 12181. | 578. | 221. | 1244. | 2285. |
| 35 | 96290. | 349. | 122. | 845. | 1148. | 74940. | 13757. | 663. | 282. | 1444. | 2741. |
| 40 | 95651. | 380. | 136. | 950. | 1219. | 72315. | 14965. | 714. | 313. | 1571. | 3089. |
| 45 | 94844. | 389. | 142. | 1005. | 1272. | 69741. | 15971. | 757. | 325. | 1652. | 3391. |
| 50 | 93135. | 398. | 145. | 1050. | 1282. | 67035. | 16734. | 786. | 340. | 1701. | 3664. |
| 55 | 90751. | 401. | 151. | 1055. | 1268. | 64216. | 16949. | 801. | 356. | 1691. | 3864. |
| 60 | 87139. | 391. | 154. | 1046. | 1282. | 60712. | 16748. | 785. | 363. | 1660. | 3998. |
| 65 | 81939. | 377. | 159. | 1020. | 1260. | 56172. | 16189. | 760. | 363. | 1588. | 4052. |
| 70 | 74226. | 347. | 153. | 958. | 1183. | 50039. | 15132. | 714. | 359. | 1463. | 3879. |
| 75 | 63297. | 300. | 141. | 853. | 1052. | 41815. | 13357. | 635. | 336. | 1273. | 3537. |
| 80 | 48078. | 230. | 120. | 683. | 834. | 30777. | 10628. | 510. | 286. | 1012. | 2948. |
| 85 | 29630. | 147. | 85. | 462. | 557. | 18079. | 7031. | 346. | 206. | 664. | 2052. |

age  initial region of cohort  ontario

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 100000. | 0. | 0. | 0. | 0. |
| 5 | 98244. | 275. | 91. | 587. | 409. | 2117. | 92760. | 421. | 170. | 534. | 880. |
| 10 | 98066. | 394. | 147. | 916. | 653. | 2962. | 89475. | 711. | 270. | 942. | 1597. |
| 15 | 97925. | 450. | 192. | 1155. | 818. | 3513. | 87013. | 922. | 364. | 1262. | 2236. |
| 20 | 97691. | 464. | 218. | 1269. | 912. | 3947. | 84954. | 1089. | 421. | 1547. | 2869. |
| 25 | 97448. | 528. | 202. | 1432. | 967. | 4913. | 81644. | 1320. | 451. | 2121. | 3871. |
| 30 | 97164. | 665. | 257. | 1716. | 1162. | 6042. | 77577. | 1553. | 572. | 2745. | 4876. |
| 35 | 96769. | 736. | 286. | 1916. | 1304. | 6797. | 74770. | 1683. | 654. | 3081. | 5541. |
| 40 | 96160. | 763. | 311. | 2014. | 1391. | 7177. | 72670. | 1771. | 723. | 3283. | 6058. |
| 45 | 95180. | 757. | 316. | 2046. | 1462. | 7391. | 70747. | 1807. | 747. | 3396. | 6512. |
| 50 | 93661. | 752. | 316. | 2067. | 1454. | 7483. | 68575. | 1842. | 784. | 3424. | 6964. |
| 55 | 91385. | 738. | 317. | 2057. | 1429. | 7426. | 66151. | 1828. | 797. | 3377. | 7265. |
| 60 | 87981. | 715. | 314. | 2009. | 1413. | 7258. | 62997. | 1773. | 802. | 3269. | 7430. |
| 65 | 83074. | 689. | 313. | 1923. | 1361. | 6956. | 58834. | 1691. | 778. | 3092. | 7436. |
| 70 | 75881. | 637. | 293. | 1770. | 1255. | 6373. | 53297. | 1577. | 754. | 2836. | 7089. |
| 75 | 65449. | 551. | 265. | 1541. | 1094. | 5473. | 45563. | 1389. | 692. | 2454. | 6428. |
| 80 | 50826. | 425. | 220. | 1205. | 849. | 4146. | 35038. | 1104. | 577. | 1940. | 5321. |
| 85 | 32702. | 272. | 152. | 795. | 554. | 2518. | 22326. | 739. | 406. | 1264. | 3675. |

APPENDIX C *Continued.*

age initial region of cohort manitoba

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 100000. | 0. | 0. | 0. |
| 5 | 98032. | 88. | 59. | 539. | 316. | 1017. | 4543. | 81969. | 2811. | 3003. | 3687. |
| 10 | 97865. | 120. | 129. | 800. | 574. | 1727. | 7170. | 72680. | 3507. | 4849. | 6309. |
| 15 | 97712. | 141. | 187. | 994. | 727. | 2110. | 9293. | 65665. | 3953. | 6212. | 8431. |
| 20 | 97461. | 141. | 205. | 1085. | 805. | 2434. | 10873. | 60151. | 4231. | 7293. | 10242. |
| 25 | 97172. | 206. | 177. | 1214. | 831. | 3107. | 14022. | 50550. | 3938. | 9874. | 13253. |
| 30 | 96856. | 269. | 189. | 1370. | 950. | 3983. | 17006. | 41589. | 4235. | 11646. | 15618. |
| 35 | 96449. | 322. | 209. | 1580. | 1091. | 4582. | 18804. | 36074. | 4277. | 12341. | 17168. |
| 40 | 95802. | 337. | 248. | 1660. | 1165. | 4938. | 19962. | 32177. | 4313. | 12621. | 18380. |
| 45 | 94810. | 340. | 257. | 1673. | 1209. | 5134. | 20708. | 29378. | 4327. | 12512. | 19272. |
| 50 | 93314. | 351. | 256. | 1668. | 1208. | 5226. | 21032. | 26995. | 4250. | 12217. | 20111. |
| 55 | 91128. | 345. | 253. | 1644. | 1189. | 5226. | 20912. | 25005. | 4115. | 11813. | 20624. |
| 60 | 87906. | 342. | 247. | 1594. | 1156. | 5135. | 20347. | 23043. | 3945. | 11258. | 20839. |
| 65 | 83299. | 326. | 238. | 1520. | 1103. | 4912. | 19367. | 20835. | 3741. | 10521. | 20734. |
| 70 | 76470. | 301. | 224. | 1395. | 1014. | 4496. | 17902. | 18437. | 3477. | 9554. | 19669. |
| 75 | 66458. | 261. | 203. | 1211. | 880. | 3859. | 15605. | 15436. | 3073. | 8185. | 17745. |
| 80 | 52277. | 201. | 168. | 945. | 680. | 2921. | 12233. | 11657. | 2474. | 6401. | 14597. |
| 85 | 34241. | 129. | 117. | 622. | 443. | 1770. | 7955. | 7395. | 1682. | 4123. | 10006. |

age initial region of cohort saskatch

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 100000. | 0. | 0. |
| 5 | 97757. | 67. | 39. | 214. | 94. | 267. | 2514. | 3334. | 77169. | 8907. | 5151. |
| 10 | 97595. | 75. | 63. | 353. | 191. | 518. | 3943. | 4468. | 67480. | 12226. | 8278. |
| 15 | 97438. | 103. | 73. | 441. | 272. | 705. | 5011. | 5180. | 61023. | 13970. | 10660. |
| 20 | 97156. | 102. | 79. | 514. | 300. | 859. | 5881. | 6093. | 54274. | 16275. | 12779. |
| 25 | 96840. | 150. | 76. | 652. | 346. | 1339. | 8605. | 7933. | 37844. | 22894. | 16999. |
| 30 | 96512. | 209. | 93. | 805. | 445. | 1958. | 10900. | 8200. | 29171. | 24882. | 19848. |
| 35 | 96046. | 264. | 121. | 1018. | 598. | 2407. | 12436. | 8010. | 24871. | 24741. | 21582. |
| 40 | 95414. | 278. | 144. | 1100. | 652. | 2693. | 13422. | 7760. | 22322. | 24305. | 22740. |
| 45 | 94433. | 287. | 153. | 1126. | 699. | 2884. | 14133. | 7437. | 20421. | 23617. | 23677. |
| 50 | 92968. | 293. | 150. | 1138. | 717. | 2983. | 14488. | 7181. | 18904. | 22644. | 24471. |
| 55 | 90849. | 291. | 149. | 1130. | 718. | 3017. | 14532. | 6907. | 17457. | 21583. | 25063. |
| 60 | 87756. | 295. | 151. | 1101. | 700. | 2999. | 14206. | 6558. | 16136. | 20315. | 25294. |
| 65 | 83322. | 279. | 146. | 1071. | 671. | 2903. | 13596. | 6071. | 14672. | 18785. | 25129. |
| 70 | 76696. | 259. | 139. | 993. | 630. | 2687. | 12632. | 5538. | 13061. | 16919. | 23837. |
| 75 | 66934. | 225. | 128. | 870. | 558. | 2333. | 11070. | 4775. | 11081. | 14380. | 21514. |
| 80 | 53065. | 174. | 107. | 685. | 440. | 1786. | 8723. | 3712. | 8581. | 11155. | 17702. |
| 85 | 35028. | 112. | 75. | 454. | 292. | 1097. | 5703. | 2426. | 5610. | 7122. | 12136. |

| age | initial region of cohort alberta | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 100000. | 0. |
| 5 | 98077. | 86. | 14. | 268. | 113. | 426. | 2213. | 997. | 1700. | 86807. | 5454. |
| 10 | 97916. | 117. | 41. | 463. | 215. | 656. | 3534. | 1486. | 2272. | 80055. | 9079. |
| 15 | 97765. | 138. | 68. | 574. | 339. | 902. | 4652. | 1821. | 2642. | 74525. | 12103. |
| 20 | 97485. | 139. | 83. | 643. | 396. | 1091. | 5554. | 2021. | 2815. | 70077. | 14668. |
| 25 | 97183. | 171. | 79. | 745. | 435. | 1552. | 7456. | 2462. | 2740. | 63373. | 18169. |
| 30 | 96835. | 229. | 95. | 896. | 509. | 2125. | 9410. | 2921. | 3151. | 56549. | 20951. |
| 35 | 96372. | 273. | 129. | 1100. | 647. | 2563. | 10818. | 3168. | 3434. | 51379. | 22860. |
| 40 | 95715. | 293. | 144. | 1181. | 699. | 2858. | 11805. | 3241. | 3513. | 47816. | 24166. |
| 45 | 94743. | 298. | 157. | 1208. | 744. | 3047. | 12550. | 3228. | 3535. | 44774. | 25201. |
| 50 | 93270. | 300. | 152. | 1216. | 762. | 3134. | 12986. | 3219. | 3509. | 41708. | 26283. |
| 55 | 91115. | 303. | 153. | 1203. | 758. | 3166. | 13048. | 3161. | 3441. | 38918. | 26964. |
| 60 | 87977. | 319. | 150. | 1174. | 736. | 3127. | 12799. | 3090. | 3380. | 35972. | 27229. |
| 65 | 83511. | 300. | 145. | 1145. | 703. | 3017. | 12280. | 2900. | 3248. | 32737. | 27035. |
| 70 | 76831. | 275. | 140. | 1059. | 661. | 2785. | 11428. | 2706. | 3078. | 29029. | 25670. |
| 75 | 66987. | 237. | 130. | 926. | 586. | 2413. | 10033. | 2385. | 2773. | 24302. | 23202. |
| 80 | 53114. | 182. | 109. | 728. | 462. | 1843. | 7922. | 1895. | 2272. | 18580. | 19121. |
| 85 | 34948. | 116. | 77. | 482. | 308. | 1129. | 5190. | 1268. | 1570. | 11683. | 13126. |

| age | initial region of cohort b.columb | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 100000. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 100000. |
| 5 | 98076. | 87. | 22. | 213. | 150. | 515. | 2076. | 607. | 514. | 2953. | 90939. |
| 10 | 97888. | 100. | 54. | 414. | 216. | 760. | 3347. | 1004. | 795. | 4420. | 86778. |
| 15 | 97728. | 130. | 85. | 557. | 275. | 978. | 4412. | 1250. | 1009. | 5517. | 83514. |
| 20 | 97465. | 131. | 109. | 598. | 332. | 1200. | 5354. | 1397. | 1201. | 6429. | 80714. |
| 25 | 97163. | 164. | 88. | 715. | 388. | 1711. | 7181. | 1709. | 1285. | 8310. | 75613. |
| 30 | 96800. | 222. | 94. | 873. | 489. | 2317. | 9351. | 2183. | 1519. | 9764. | 69986. |
| 35 | 96288. | 265. | 124. | 1079. | 589. | 2729. | 10716. | 2372. | 1697. | 10312. | 66405. |
| 40 | 95637. | 290. | 147. | 1162. | 631. | 3027. | 11577. | 2418. | 1789. | 10716. | 63881. |
| 45 | 94629. | 305. | 157. | 1178. | 666. | 3207. | 12216. | 2420. | 1839. | 10754. | 61887. |
| 50 | 93079. | 300. | 151. | 1174. | 685. | 3292. | 12531. | 2400. | 1875. | 10568. | 60103. |
| 55 | 90819. | 293. | 148. | 1156. | 680. | 3307. | 12560. | 2370. | 1896. | 10221. | 58187. |
| 60 | 87587. | 288. | 145. | 1134. | 666. | 3258. | 12239. | 2323. | 1896. | 9856. | 55782. |
| 65 | 83023. | 271. | 140. | 1111. | 646. | 3132. | 11742. | 2174. | 1893. | 9287. | 52626. |
| 70 | 76304. | 251. | 134. | 1028. | 606. | 2886. | 10942. | 2074. | 1886. | 8567. | 47931. |
| 75 | 66590. | 218. | 123. | 898. | 536. | 2493. | 9611. | 1862. | 1765. | 7443. | 41641. |
| 80 | 52851. | 168. | 103. | 706. | 421. | 1899. | 7590. | 1503. | 1493. | 5895. | 33073. |
| 85 | 34884. | 108. | 73. | 467. | 280. | 1160. | 4972. | 1019. | 1061. | 3845. | 21900. |

APPENDIX C *Continued.*

Expectations of life by place of birth: males.

| age | initial region of cohort nw.found | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 69.11513 | 40.11380 | 0.27208 | 2.69547 | 1.50047 | 2.85959 | 16.69305 | 0.76138 | 0.38070 | 1.21367 | 2.62493 |
| 5 | 66.29153 | 36.58115 | 0.27880 | 2.74670 | 1.53670 | 2.93616 | 17.09330 | 0.77981 | 0.39021 | 1.24963 | 2.69907 |
| 10 | 61.49049 | 32.28588 | 0.27491 | 2.66629 | 1.50417 | 2.89631 | 16.79594 | 0.76690 | 0.38434 | 1.24258 | 2.67317 |
| 15 | 56.67113 | 28.18029 | 0.26946 | 2.56424 | 1.45405 | 2.83010 | 16.39177 | 0.74806 | 0.37633 | 1.22729 | 2.62953 |
| 20 | 51.93556 | 24.32401 | 0.26204 | 2.45074 | 1.39586 | 2.74831 | 15.88394 | 0.72501 | 0.36765 | 1.20389 | 2.57411 |
| 25 | 47.31463 | 21.02121 | 0.25206 | 2.30619 | 1.32545 | 2.64566 | 15.05859 | 0.69396 | 0.35402 | 1.16387 | 2.49362 |
| 30 | 42.61175 | 18.26019 | 0.23684 | 2.11342 | 1.23250 | 2.49250 | 13.83299 | 0.64810 | 0.33410 | 1.09482 | 2.36630 |
| 35 | 37.91838 | 15.83029 | 0.21799 | 1.89758 | 1.12164 | 2.28786 | 12.45231 | 0.59180 | 0.31154 | 1.00461 | 2.20276 |
| 40 | 33.31041 | 13.63117 | 0.19700 | 1.67639 | 0.99902 | 2.05220 | 11.01891 | 0.52992 | 0.28575 | 0.90373 | 2.01632 |
| 45 | 28.87993 | 11.63199 | 0.17549 | 1.46035 | 0.87458 | 1.80402 | 9.59668 | 0.46610 | 0.25760 | 0.79888 | 1.81423 |
| 50 | 24.62621 | 9.80099 | 0.15474 | 1.25106 | 0.75198 | 1.55086 | 8.19657 | 0.40182 | 0.22671 | 0.69143 | 1.60005 |
| 55 | 20.67972 | 8.15843 | 0.13452 | 1.05392 | 0.63580 | 1.30860 | 6.87435 | 0.34150 | 0.19512 | 0.58798 | 1.38951 |
| 60 | 17.08292 | 6.70179 | 0.11528 | 0.87386 | 0.52846 | 1.08159 | 5.64937 | 0.28580 | 0.16532 | 0.49208 | 1.18938 |
| 65 | 13.83926 | 5.42289 | 0.09808 | 0.71007 | 0.43146 | 0.87144 | 4.52521 | 0.23462 | 0.13846 | 0.40478 | 1.00226 |
| 70 | 11.01187 | 4.32349 | 0.08327 | 0.56418 | 0.34747 | 0.68530 | 3.54129 | 0.18975 | 0.11464 | 0.32857 | 0.83390 |
| 75 | 8.50244 | 3.34286 | 0.06916 | 0.43558 | 0.27203 | 0.51993 | 2.68176 | 0.14943 | 0.09299 | 0.26003 | 0.67867 |
| 80 | 6.44186 | 2.52586 | 0.05671 | 0.33113 | 0.20892 | 0.38381 | 1.99012 | 0.11636 | 0.07531 | 0.20423 | 0.54941 |
| 85 | 4.89929 | 1.89864 | 0.04632 | 0.25219 | 0.16097 | 0.27965 | 1.48209 | 0.09277 | 0.06334 | 0.16538 | 0.45793 |

| age | initial region of cohort p.edouar | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 68.84292 | 1.12729 | 29.96926 | 5.86613 | 4.30830 | 3.44532 | 16.33648 | 1.19661 | 0.56589 | 2.27579 | 3.75184 |
| 5 | 65.88340 | 1.14615 | 26.21664 | 5.98154 | 4.36553 | 3.53191 | 16.67405 | 1.21778 | 0.57540 | 2.32887 | 3.84554 |
| 10 | 61.10124 | 1.11273 | 22.32366 | 5.81894 | 4.19297 | 3.48536 | 16.33333 | 1.18166 | 0.55920 | 2.29670 | 3.79669 |
| 15 | 56.29503 | 1.07333 | 18.78025 | 5.56264 | 3.97027 | 3.39648 | 15.86761 | 1.13398 | 0.53935 | 2.25308 | 3.71805 |
| 20 | 51.70589 | 1.03728 | 15.57862 | 5.27406 | 3.74123 | 3.28892 | 15.35164 | 1.08426 | 0.51831 | 2.20486 | 3.62671 |
| 25 | 47.14307 | 0.98987 | 12.90289 | 4.92138 | 3.47613 | 3.15073 | 14.57318 | 1.01944 | 0.49455 | 2.11508 | 3.49980 |
| 30 | 42.48539 | 0.91829 | 10.86868 | 4.48245 | 3.15921 | 2.94710 | 13.42595 | 0.93651 | 0.46502 | 1.96571 | 3.31645 |
| 35 | 37.87000 | 0.83082 | 9.25097 | 4.01540 | 2.82614 | 2.68873 | 12.11183 | 0.84439 | 0.42760 | 1.78520 | 3.08893 |
| 40 | 33.26373 | 0.73504 | 7.85046 | 3.53885 | 2.48640 | 2.39203 | 10.71527 | 0.74534 | 0.38439 | 1.58867 | 2.82729 |
| 45 | 28.83150 | 0.63887 | 6.63526 | 3.07771 | 2.15473 | 2.08131 | 9.31715 | 0.64801 | 0.34128 | 1.39063 | 2.54656 |
| 50 | 24.62024 | 0.54612 | 5.57749 | 2.63209 | 1.83783 | 1.77558 | 7.95127 | 0.55436 | 0.29871 | 1.19587 | 2.25091 |
| 55 | 20.70332 | 0.46027 | 4.65364 | 2.20898 | 1.54538 | 1.48688 | 6.65845 | 0.46728 | 0.25729 | 1.01169 | 1.95346 |
| 60 | 17.12336 | 0.38295 | 3.83641 | 1.82359 | 1.28255 | 1.21924 | 5.46205 | 0.38874 | 0.21930 | 0.84313 | 1.66540 |
| 65 | 13.93118 | 0.31535 | 3.12678 | 1.48415 | 1.04803 | 0.97781 | 4.38532 | 0.31893 | 0.18537 | 0.69192 | 1.39751 |
| 70 | 11.09370 | 0.25537 | 2.50840 | 1.18205 | 0.83849 | 0.76301 | 3.42817 | 0.25645 | 0.15429 | 0.55519 | 1.15227 |
| 75 | 8.59922 | 0.20108 | 1.96710 | 0.91598 | 0.65246 | 0.57458 | 2.59635 | 0.20089 | 0.12608 | 0.43461 | 0.93009 |
| 80 | 6.50360 | 0.15375 | 1.50461 | 0.69296 | 0.49348 | 0.41685 | 1.91085 | 0.15420 | 0.10209 | 0.33461 | 0.74020 |
| 85 | 4.93302 | 0.11738 | 1.13598 | 0.52447 | 0.37339 | 0.29715 | 1.40805 | 0.12084 | 0.08540 | 0.26512 | 0.60523 |

| age | initial region of cohort n.scotia | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 68.93381 | 1.28175 | 0.76185 | 35.55788 | 3.36944 | 3.75675 | 15.70760 | 1.02212 | 0.52294 | 2.34527 | 4.60821 |
| 5 | 65.65758 | 1.29899 | 0.77116 | 31.74409 | 3.40713 | 3.81253 | 15.96311 | 1.04134 | 0.53120 | 2.38756 | 4.70045 |
| 10 | 60.88919 | 1.26308 | 0.74595 | 27.69731 | 3.29195 | 3.72513 | 15.63326 | 1.02491 | 0.52034 | 2.34774 | 4.63951 |
| 15 | 56.07479 | 1.21302 | 0.70759 | 23.94669 | 3.12991 | 3.60692 | 15.14771 | 0.99753 | 0.50548 | 2.28834 | 4.53161 |
| 20 | 51.47863 | 1.16125 | 0.66380 | 20.53373 | 2.95119 | 3.48324 | 14.60158 | 0.96507 | 0.48992 | 2.22378 | 4.40506 |
| 25 | 47.00179 | 1.10256 | 0.61797 | 17.56160 | 2.75141 | 3.33705 | 13.87046 | 0.91929 | 0.46914 | 2.13201 | 4.24030 |
| 30 | 42.35600 | 1.02108 | 0.56780 | 15.04522 | 2.51849 | 3.11899 | 12.82035 | 0.85041 | 0.43930 | 1.98076 | 3.99359 |
| 35 | 37.70703 | 0.92283 | 0.51456 | 12.90423 | 2.26744 | 2.83988 | 11.60339 | 0.76846 | 0.40435 | 1.79308 | 3.68882 |
| 40 | 33.10176 | 0.81653 | 0.45777 | 11.01161 | 2.00400 | 2.52551 | 10.29990 | 0.68119 | 0.36504 | 1.59241 | 3.34779 |
| 45 | 28.68119 | 0.71038 | 0.40121 | 9.34322 | 1.74270 | 2.20081 | 8.98018 | 0.59454 | 0.32453 | 1.39236 | 2.99128 |
| 50 | 24.46165 | 0.60815 | 0.34742 | 7.85350 | 1.48742 | 1.87931 | 7.67287 | 0.50941 | 0.28352 | 1.19585 | 2.62421 |
| 55 | 20.52751 | 0.51261 | 0.29750 | 6.52205 | 1.24985 | 1.57377 | 6.42723 | 0.42924 | 0.24320 | 1.00934 | 2.26272 |
| 60 | 16.94752 | 0.42613 | 0.25171 | 5.34083 | 1.03621 | 1.29167 | 5.27717 | 0.35680 | 0.20585 | 0.83985 | 1.92129 |
| 65 | 13.75069 | 0.34983 | 0.21021 | 4.30373 | 0.84524 | 1.03777 | 4.24053 | 0.29201 | 0.17295 | 0.68891 | 1.60853 |
| 70 | 10.94728 | 0.28263 | 0.17327 | 3.40220 | 0.67995 | 0.81471 | 3.33095 | 0.23480 | 0.14409 | 0.55655 | 1.32813 |
| 75 | 8.49616 | 0.22251 | 0.14007 | 2.62125 | 0.53273 | 0.61896 | 2.54191 | 0.18450 | 0.11805 | 0.43984 | 1.07633 |
| 80 | 6.46114 | 0.17085 | 0.11106 | 1.97766 | 0.40727 | 0.45505 | 1.89332 | 0.14275 | 0.09615 | 0.34342 | 0.86361 |
| 85 | 4.93439 | 0.13041 | 0.08705 | 1.48811 | 0.31068 | 0.32827 | 1.40990 | 0.11280 | 0.08104 | 0.27559 | 0.71055 |

| age | initial region of cohort brunswic | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | total | nw.fuund | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
| 0 | 68.98789 | 0.92412 | 0.66432 | 4.24071 | 35.09889 | 6.23322 | 14.56757 | 1.02000 | 0.47947 | 2.05868 | 3.70093 |
| 5 | 65.74568 | 0.93624 | 0.67022 | 4.29446 | 31.31854 | 6.31673 | 14.81550 | 1.03603 | 0.48780 | 2.09538 | 3.77479 |
| 10 | 60.97396 | 0.91091 | 0.64562 | 4.16243 | 27.30375 | 6.14885 | 14.52947 | 1.01235 | 0.47879 | 2.05930 | 3.72248 |
| 15 | 56.17660 | 0.87796 | 0.61444 | 3.97812 | 23.55808 | 5.93246 | 14.12351 | 0.97767 | 0.46623 | 2.00906 | 3.63904 |
| 20 | 51.55447 | 0.84326 | 0.58092 | 3.77211 | 20.11935 | 5.69918 | 13.65353 | 0.93708 | 0.45195 | 1.95399 | 3.54311 |
| 25 | 47.09262 | 0.80287 | 0.54540 | 3.53959 | 17.16740 | 5.41677 | 13.00424 | 0.88655 | 0.43240 | 1.87529 | 3.42210 |
| 30 | 42.42908 | 0.74384 | 0.50386 | 3.24611 | 14.69827 | 5.00986 | 12.02827 | 0.81793 | 0.40424 | 1.74320 | 3.23349 |
| 35 | 37.76865 | 0.67374 | 0.45889 | 2.92192 | 12.60373 | 4.52466 | 10.89417 | 0.74060 | 0.37131 | 1.58187 | 2.99776 |
| 40 | 33.15714 | 0.59772 | 0.41049 | 2.58825 | 10.74597 | 4.00018 | 9.68216 | 0.65856 | 0.33439 | 1.40890 | 2.73052 |
| 45 | 28.70908 | 0.51960 | 0.36198 | 2.26269 | 9.09355 | 3.46981 | 8.44745 | 0.57610 | 0.29681 | 1.23453 | 2.44655 |
| 50 | 24.50730 | 0.44451 | 0.31565 | 1.95147 | 7.62743 | 2.95650 | 7.23565 | 0.49555 | 0.25981 | 1.06371 | 2.15703 |
| 55 | 20.57861 | 0.37460 | 0.27116 | 1.65452 | 6.32855 | 2.46964 | 6.07093 | 0.41852 | 0.22343 | 0.89938 | 1.86786 |
| 60 | 16.98636 | 0.31082 | 0.22924 | 1.37981 | 5.18382 | 2.02135 | 4.98338 | 0.34800 | 0.18946 | 0.74903 | 1.59145 |
| 65 | 13.78088 | 0.25396 | 0.19166 | 1.13256 | 4.18290 | 1.62053 | 4.00256 | 0.28497 | 0.15916 | 0.61470 | 1.33789 |
| 70 | 10.97734 | 0.20436 | 0.15890 | 0.91287 | 3.31987 | 1.26947 | 3.14360 | 0.22924 | 0.13244 | 0.49637 | 1.11022 |
| 75 | 8.48835 | 0.15963 | 0.12871 | 0.71555 | 2.55702 | 0.95840 | 2.38989 | 0.17952 | 0.10798 | 0.39065 | 0.90100 |
| 80 | 6.44496 | 0.12201 | 0.10267 | 0.55272 | 1.92587 | 0.70256 | 1.78050 | 0.13891 | 0.08786 | 0.30490 | 0.72696 |
| 85 | 4.91982 | 0.09288 | 0.08124 | 0.42832 | 1.44821 | 0.50630 | 1.33018 | 0.11002 | 0.07418 | 0.24515 | 0.60334 |

APPENDIX C *Continued.*

initial region of cohort quebec

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 68.66090 | 0.26750 | 0.08380 | 0.64663 | 0.76492 | 54.16660 | 9.00859 | 0.45943 | 0.21127 | 0.96157 | 2.09060 |
| 5 | 65.34739 | 0.27116 | 0.08523 | 0.65810 | 0.77629 | 50.59891 | 9.16155 | 0.46778 | 0.21498 | 0.98015 | 2.13323 |
| 10 | 60.56720 | 0.26453 | 0.08359 | 0.64687 | 0.75716 | 46.06953 | 8.99504 | 0.46029 | 0.21181 | 0.96711 | 2.11126 |
| 15 | 55.73557 | 0.25537 | 0.08106 | 0.62869 | 0.72888 | 41.62929 | 8.73836 | 0.44846 | 0.20730 | 0.94561 | 2.07255 |
| 20 | 51.08418 | 0.24556 | 0.07842 | 0.60734 | 0.69808 | 37.43295 | 8.43757 | 0.43476 | 0.20207 | 0.92088 | 2.02654 |
| 25 | 46.54439 | 0.23554 | 0.07564 | 0.58125 | 0.66499 | 33.46110 | 8.06101 | 0.41724 | 0.19520 | 0.88721 | 1.96519 |
| 30 | 41.87498 | 0.22230 | 0.07202 | 0.54560 | 0.62298 | 29.58484 | 7.54505 | 0.39195 | 0.18520 | 0.83378 | 1.87126 |
| 35 | 37.19414 | 0.20518 | 0.06733 | 0.50178 | 0.57129 | 25.87034 | 6.92962 | 0.36037 | 0.17261 | 0.76558 | 1.75003 |
| 40 | 32.59465 | 0.18543 | 0.06157 | 0.45229 | 0.51373 | 22.34779 | 6.25186 | 0.32515 | 0.15817 | 0.68966 | 1.60899 |
| 45 | 28.14469 | 0.16387 | 0.05522 | 0.40032 | 0.45434 | 19.03951 | 5.53517 | 0.28795 | 0.14258 | 0.61011 | 1.45562 |
| 50 | 23.92429 | 0.14189 | 0.04883 | 0.34858 | 0.39583 | 15.98217 | 4.80436 | 0.25051 | 0.12620 | 0.53014 | 1.29580 |
| 55 | 20.01897 | 0.12091 | 0.04270 | 0.29872 | 0.34063 | 13.21641 | 4.08714 | 0.21476 | 0.10966 | 0.45262 | 1.13543 |
| 60 | 16.50211 | 0.10166 | 0.03695 | 0.25260 | 0.29049 | 10.76477 | 3.41493 | 0.18177 | 0.09421 | 0.38177 | 0.98295 |
| 65 | 13.37147 | 0.08422 | 0.03177 | 0.21060 | 0.24475 | 8.60939 | 2.79989 | 0.15145 | 0.08064 | 0.31799 | 0.84077 |
| 70 | 10.63208 | 0.06879 | 0.02720 | 0.17284 | 0.20369 | 6.74123 | 2.25278 | 0.12421 | 0.06884 | 0.26128 | 0.71122 |
| 75 | 8.22779 | 0.05494 | 0.02296 | 0.13908 | 0.16630 | 5.11267 | 1.77008 | 0.09996 | 0.05800 | 0.21084 | 0.59297 |
| 80 | 6.24741 | 0.04317 | 0.01924 | 0.11101 | 0.13421 | 3.77304 | 1.37345 | 0.08004 | 0.04905 | 0.16974 | 0.49448 |
| 85 | 4.75221 | 0.03401 | 0.01612 | 0.08970 | 0.10962 | 2.74446 | 1.07941 | 0.06621 | 0.04332 | 0.14191 | 0.42745 |

initial region of cohort ontario

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 69.46925 | 0.51987 | 0.19865 | 1.29784 | 0.91518 | 4.14915 | 54.83886 | 1.09166 | 0.49514 | 1.94871 | 4.01419 |
| 5 | 66.00845 | 0.52504 | 0.20062 | 1.31353 | 0.92418 | 4.19155 | 51.18327 | 1.10619 | 0.50206 | 1.97940 | 4.08260 |
| 10 | 61.17200 | 0.50989 | 0.19448 | 1.28008 | 0.89619 | 4.07531 | 46.66870 | 1.08138 | 0.49140 | 1.94645 | 4.02812 |
| 15 | 56.30918 | 0.48997 | 0.18571 | 1.23162 | 0.85760 | 3.92160 | 42.27050 | 1.04395 | 0.47527 | 1.89471 | 3.93828 |
| 20 | 51.63203 | 0.46942 | 0.17621 | 1.17777 | 0.81542 | 3.75668 | 38.11684 | 0.99960 | 0.45668 | 1.83419 | 3.82921 |
| 25 | 47.02500 | 0.44723 | 0.16647 | 1.11511 | 0.76990 | 3.57044 | 34.13789 | 0.94504 | 0.43465 | 1.75524 | 3.68302 |
| 30 | 42.32070 | 0.41660 | 0.15538 | 1.03448 | 0.71555 | 3.32571 | 30.27628 | 0.87499 | 0.40698 | 1.63969 | 3.47504 |
| 35 | 37.61239 | 0.37778 | 0.14246 | 0.93925 | 0.65206 | 3.02302 | 26.59436 | 0.79385 | 0.37465 | 1.49494 | 3.22002 |
| 40 | 32.98717 | 0.33618 | 0.12800 | 0.83703 | 0.58302 | 2.68874 | 23.09376 | 0.70793 | 0.33924 | 1.33690 | 2.93636 |
| 45 | 28.51958 | 0.29416 | 0.11298 | 0.73440 | 0.51177 | 2.34454 | 19.78668 | 0.62129 | 0.30252 | 1.17449 | 2.63676 |
| 50 | 24.27083 | 0.25341 | 0.09831 | 0.63436 | 0.44136 | 2.00425 | 16.69423 | 0.53626 | 0.26558 | 1.01332 | 2.32976 |
| 55 | 20.32039 | 0.21507 | 0.08455 | 0.53847 | 0.37502 | 1.68074 | 13.85652 | 0.45598 | 0.22921 | 0.85946 | 2.02537 |
| 60 | 16.73917 | 0.17999 | 0.07199 | 0.44998 | 0.31467 | 1.38338 | 11.30569 | 0.38285 | 0.19539 | 0.71902 | 1.73621 |
| 65 | 13.55550 | 0.14870 | 0.06084 | 0.37053 | 0.26011 | 1.11632 | 9.05159 | 0.31714 | 0.16580 | 0.59430 | 1.47018 |
| 70 | 10.80230 | 0.12142 | 0.05121 | 0.30068 | 0.21215 | 0.88393 | 7.11384 | 0.25936 | 0.14027 | 0.48605 | 1.23339 |
| 75 | 8.38626 | 0.09675 | 0.04235 | 0.23847 | 0.16906 | 0.67801 | 5.43099 | 0.20760 | 0.11681 | 0.38941 | 1.01680 |
| 80 | 6.40410 | 0.07559 | 0.03460 | 0.18668 | 0.13236 | 0.50602 | 4.06227 | 0.16463 | 0.09725 | 0.31004 | 0.83466 |
| 85 | 4.91353 | 0.05873 | 0.02799 | 0.14627 | 0.10361 | 0.37065 | 3.03229 | 0.13349 | 0.08379 | 0.25381 | 0.70290 |

age  initial region of cohort  manitoba

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 69.70995 | 0.23635 | 0.17545 | 1.00679 | 0.69453 | 2.66617 | 11.30564 | 31.90734 | 2.92476 | 7.29715 | 11.49576 |
| 5 | 66.53202 | 0.24062 | 0.17830 | 1.02164 | 0.70562 | 2.71213 | 11.50216 | 28.09904 | 2.93542 | 7.41587 | 11.72121 |
| 10 | 61.68919 | 0.23593 | 0.17282 | 0.99252 | 0.68576 | 2.65068 | 11.24178 | 24.19315 | 2.78444 | 7.22653 | 11.50559 |
| 15 | 56.83444 | 0.22956 | 0.16392 | 0.95267 | 0.65573 | 2.56219 | 10.85983 | 20.69665 | 2.60034 | 6.95487 | 11.15868 |
| 20 | 52.18884 | 0.22316 | 0.15399 | 0.91041 | 0.62252 | 2.46611 | 10.42857 | 17.58133 | 2.40654 | 6.64890 | 10.74731 |
| 25 | 47.66478 | 0.21618 | 0.14471 | 0.86233 | 0.58928 | 2.35923 | 9.91999 | 14.83677 | 2.21532 | 6.27564 | 10.24534 |
| 30 | 43.01014 | 0.20409 | 0.13483 | 0.79894 | 0.55050 | 2.21284 | 9.23939 | 12.49463 | 2.01912 | 5.77419 | 9.58160 |
| 35 | 38.36323 | 0.18689 | 0.12332 | 0.72417 | 0.50472 | 2.02566 | 8.42261 | 10.55986 | 1.81508 | 5.19481 | 8.80611 |
| 40 | 33.76390 | 0.16738 | 0.11053 | 0.64328 | 0.45291 | 1.80969 | 7.51938 | 8.90467 | 1.60923 | 4.58674 | 7.96008 |
| 45 | 29.30776 | 0.14701 | 0.09718 | 0.56155 | 0.39738 | 1.58175 | 6.57741 | 7.46441 | 1.40913 | 3.98208 | 7.08988 |
| 50 | 25.04460 | 0.12687 | 0.08392 | 0.48177 | 0.34138 | 1.35245 | 5.62753 | 6.20179 | 1.21467 | 3.39943 | 6.21478 |
| 55 | 21.06301 | 0.10762 | 0.07162 | 0.40574 | 0.28782 | 1.13159 | 4.71059 | 5.10281 | 1.03137 | 2.85566 | 5.35819 |
| 60 | 17.40240 | 0.08948 | 0.06026 | 0.33508 | 0.23810 | 0.92417 | 3.85275 | 4.14075 | 0.86282 | 2.35914 | 4.53985 |
| 65 | 14.10890 | 0.07300 | 0.05002 | 0.27169 | 0.19308 | 0.73499 | 3.07607 | 3.29682 | 0.71365 | 1.91620 | 3.78339 |
| 70 | 11.23242 | 0.05854 | 0.04114 | 0.21612 | 0.15379 | 0.56940 | 2.39916 | 2.57169 | 0.58493 | 1.53066 | 3.10700 |
| 75 | 8.69181 | 0.04553 | 0.03301 | 0.16697 | 0.11890 | 0.42454 | 1.80890 | 1.94597 | 0.46856 | 1.18961 | 2.48981 |
| 80 | 6.64595 | 0.03470 | 0.02610 | 0.12712 | 0.09011 | 0.30737 | 1.33681 | 1.45101 | 0.37422 | 0.91664 | 1.98187 |
| 85 | 5.13439 | 0.02609 | 0.02032 | 0.09616 | 0.06769 | 0.21663 | 0.98133 | 1.09307 | 0.30686 | 0.72032 | 1.60592 |

age  initial region of cohort  saskatch

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 69.73930 | 0.18000 | 0.09386 | 0.65486 | 0.39086 | 1.49893 | 7.59864 | 4.56918 | 26.76818 | 13.90100 | 14.08381 |
| 5 | 66.72855 | 0.18416 | 0.09563 | 0.66897 | 0.40012 | 1.53493 | 7.76270 | 4.63341 | 22.97805 | 14.09571 | 14.37489 |
| 10 | 61.88235 | 0.18155 | 0.09325 | 0.65556 | 0.39283 | 1.51453 | 7.62523 | 4.46642 | 19.25804 | 13.61309 | 14.08186 |
| 15 | 57.02871 | 0.17739 | 0.08988 | 0.63528 | 0.38066 | 1.48082 | 7.42717 | 4.24827 | 15.93763 | 13.00004 | 13.65156 |
| 20 | 52.43733 | 0.17304 | 0.08655 | 0.61403 | 0.36844 | 1.44516 | 7.21062 | 4.01662 | 13.01059 | 12.34975 | 13.16252 |
| 25 | 47.95838 | 0.16794 | 0.08356 | 0.58827 | 0.35500 | 1.40097 | 6.92437 | 3.71916 | 10.65442 | 11.53153 | 12.53316 |
| 30 | 43.33175 | 0.15922 | 0.07935 | 0.55132 | 0.33619 | 1.32814 | 6.49175 | 3.33992 | 8.91864 | 10.44525 | 11.68198 |
| 35 | 38.68645 | 0.14678 | 0.07331 | 0.50502 | 0.31135 | 1.22609 | 5.94522 | 2.94724 | 7.56950 | 9.25910 | 10.70284 |
| 40 | 34.08706 | 0.13218 | 0.06623 | 0.45210 | 0.28139 | 1.10349 | 5.32933 | 2.56463 | 6.42463 | 8.07956 | 9.65351 |
| 45 | 29.63543 | 0.11675 | 0.05858 | 0.39636 | 0.24838 | 0.97059 | 4.67812 | 2.20370 | 5.43147 | 6.94829 | 8.58318 |
| 50 | 25.36838 | 0.10110 | 0.05085 | 0.34067 | 0.21414 | 0.83343 | 4.01215 | 1.86780 | 4.55320 | 5.88283 | 7.51221 |
| 55 | 21.36558 | 0.08572 | 0.04367 | 0.28689 | 0.18111 | 0.69865 | 3.36214 | 1.56021 | 3.77491 | 4.90478 | 6.46750 |
| 60 | 17.66854 | 0.07107 | 0.03680 | 0.23651 | 0.15007 | 0.57065 | 2.74879 | 1.27948 | 3.08533 | 4.02214 | 5.46770 |
| 65 | 14.33640 | 0.05776 | 0.03036 | 0.19116 | 0.12157 | 0.45358 | 2.19048 | 1.02686 | 2.48537 | 3.23957 | 4.53970 |
| 70 | 11.41131 | 0.04600 | 0.02475 | 0.15118 | 0.09651 | 0.35060 | 1.70098 | 0.80588 | 1.97259 | 2.55922 | 3.70360 |
| 75 | 8.81914 | 0.03545 | 0.01964 | 0.11585 | 0.07420 | 0.26029 | 1.27401 | 0.61257 | 1.52503 | 1.96131 | 2.94079 |
| 80 | 6.75084 | 0.02676 | 0.01537 | 0.08749 | 0.05592 | 0.18780 | 0.93558 | 0.45952 | 1.17394 | 1.48941 | 2.31904 |
| 85 | 5.21441 | 0.01981 | 0.01177 | 0.06530 | 0.04153 | 0.13131 | 0.67909 | 0.34716 | 0.92077 | 1.14637 | 1.85131 |

## APPENDIX C *Continued.*

age — initial region of cohort: alberta

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 70.04483 | 0.20324 | 0.09043 | 0.71066 | 0.42496 | 1.55003 | 6.89881 | 2.06921 | 2.17473 | 40.87749 | 15.04525 |
| 5 | 66.71902 | 0.20648 | 0.09130 | 0.72268 | 0.43198 | 1.57723 | 7.01163 | 2.09055 | 2.18896 | 37.12012 | 15.27808 |
| 10 | 61.86970 | 0.20269 | 0.08839 | 0.70677 | 0.42324 | 1.55205 | 6.87653 | 2.02327 | 2.09788 | 32.95198 | 14.94690 |
| 15 | 57.01160 | 0.19748 | 0.08476 | 0.68166 | 0.40935 | 1.51421 | 6.67825 | 1.93663 | 1.97979 | 29.08035 | 14.44913 |
| 20 | 52.41987 | 0.19222 | 0.08118 | 0.65488 | 0.39380 | 1.47362 | 6.46104 | 1.84546 | 1.85466 | 25.58656 | 13.87645 |
| 25 | 47.92423 | 0.18620 | 0.07768 | 0.62326 | 0.37669 | 1.42316 | 6.19446 | 1.73852 | 1.72672 | 22.39576 | 13.18177 |
| 30 | 43.28540 | 0.17624 | 0.07340 | 0.58150 | 0.35503 | 1.34447 | 5.81688 | 1.60020 | 1.59257 | 19.44481 | 12.30030 |
| 35 | 38.64087 | 0.16199 | 0.06793 | 0.53182 | 0.32760 | 1.23840 | 5.34296 | 1.44134 | 1.44896 | 16.78064 | 11.29921 |
| 40 | 34.04407 | 0.14576 | 0.06123 | 0.47570 | 0.29488 | 1.11346 | 4.80354 | 1.27464 | 1.29585 | 14.36182 | 10.21719 |
| 45 | 29.59337 | 0.12890 | 0.05390 | 0.41672 | 0.25936 | 0.97898 | 4.22767 | 1.10910 | 1.14244 | 12.16849 | 9.10782 |
| 50 | 25.32443 | 0.11153 | 0.04655 | 0.35818 | 0.22284 | 0.84006 | 3.63295 | 0.94911 | 0.99154 | 10.18046 | 7.99120 |
| 55 | 21.32226 | 0.09452 | 0.03973 | 0.30167 | 0.18792 | 0.70337 | 3.04919 | 0.79815 | 0.84632 | 8.40575 | 6.89565 |
| 60 | 17.63440 | 0.07842 | 0.03335 | 0.24870 | 0.15556 | 0.57399 | 2.49682 | 0.65768 | 0.70990 | 6.83757 | 5.84239 |
| 65 | 14.31223 | 0.06375 | 0.02753 | 0.20099 | 0.12611 | 0.45568 | 1.99235 | 0.53039 | 0.58828 | 5.46770 | 4.85945 |
| 70 | 11.39345 | 0.05073 | 0.02244 | 0.15894 | 0.10023 | 0.35145 | 1.54908 | 0.41829 | 0.48214 | 4.28901 | 3.97116 |
| 75 | 8.80480 | 0.03905 | 0.01781 | 0.12175 | 0.07712 | 0.26029 | 1.16190 | 0.31976 | 0.38542 | 3.26236 | 3.15934 |
| 80 | 6.74114 | 0.02946 | 0.01395 | 0.09194 | 0.05818 | 0.18737 | 0.85504 | 0.24156 | 0.30747 | 2.45844 | 2.49774 |
| 85 | 5.20569 | 0.02178 | 0.01068 | 0.06858 | 0.04323 | 0.13061 | 0.62200 | 0.18398 | 0.25055 | 1.87548 | 1.99878 |

age — initial region of cohort: b.columb

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 69.65376 | 0.18870 | 0.08581 | 0.71480 | 0.39518 | 1.63169 | 6.52160 | 1.53942 | 1.26780 | 6.23785 | 51.07091 |
| 5 | 66.33949 | 0.19132 | 0.08764 | 0.72468 | 0.40237 | 1.66009 | 6.63156 | 1.55753 | 1.28198 | 6.32435 | 47.47795 |
| 10 | 61.53399 | 0.18698 | 0.08675 | 0.70611 | 0.39521 | 1.63239 | 6.51544 | 1.51180 | 1.24184 | 6.16242 | 43.09505 |
| 15 | 56.66516 | 0.18116 | 0.08417 | 0.67923 | 0.38315 | 1.58930 | 6.33918 | 1.45025 | 1.18649 | 5.92910 | 38.84312 |
| 20 | 52.06302 | 0.17555 | 0.08071 | 0.65107 | 0.37016 | 1.54426 | 6.14671 | 1.38718 | 1.12681 | 5.67735 | 34.90322 |
| 25 | 47.56871 | 0.16987 | 0.07741 | 0.61933 | 0.35532 | 1.49045 | 5.90600 | 1.31375 | 1.06294 | 5.37125 | 31.20240 |
| 30 | 42.94548 | 0.16137 | 0.07370 | 0.57783 | 0.33464 | 1.40645 | 5.55359 | 1.21420 | 0.99077 | 4.95916 | 27.67377 |
| 35 | 38.33076 | 0.14907 | 0.06870 | 0.52865 | 0.30810 | 1.29350 | 5.10460 | 1.09625 | 0.90926 | 4.48277 | 24.38986 |
| 40 | 33.75465 | 0.13411 | 0.06230 | 0.47364 | 0.27788 | 1.16141 | 4.58900 | 0.97138 | 0.82057 | 3.97963 | 21.28473 |
| 45 | 29.33693 | 0.11801 | 0.05517 | 0.41575 | 0.24585 | 1.01989 | 4.04110 | 0.84869 | 0.73067 | 3.47617 | 18.38562 |
| 50 | 25.10120 | 0.10156 | 0.04778 | 0.35753 | 0.21266 | 0.87464 | 3.47579 | 0.73028 | 0.63947 | 2.98381 | 15.67767 |
| 55 | 21.12985 | 0.08578 | 0.04087 | 0.30156 | 0.18060 | 0.73296 | 2.92027 | 0.61829 | 0.55010 | 2.51858 | 13.18083 |
| 60 | 17.46577 | 0.07116 | 0.03437 | 0.24961 | 0.15036 | 0.59907 | 2.39461 | 0.51390 | 0.46669 | 2.09050 | 10.89551 |
| 65 | 14.19144 | 0.05814 | 0.02843 | 0.20311 | 0.12247 | 0.47752 | 1.91797 | 0.41930 | 0.39310 | 1.70760 | 8.86381 |
| 70 | 11.31221 | 0.04663 | 0.02322 | 0.16165 | 0.09774 | 0.37017 | 1.49746 | 0.33507 | 0.32745 | 1.36888 | 7.08392 |
| 75 | 8.76705 | 0.03623 | 0.01850 | 0.12481 | 0.07562 | 0.27596 | 1.12927 | 0.25995 | 0.26629 | 1.06659 | 5.51381 |
| 80 | 6.69893 | 0.02747 | 0.01448 | 0.09462 | 0.05712 | 0.19907 | 0.83164 | 0.19850 | 0.21502 | 0.82069 | 4.24033 |
| 85 | 5.17808 | 0.02051 | 0.01113 | 0.07126 | 0.04272 | 0.13975 | 0.60819 | 0.15368 | 0.17815 | 0.64356 | 3.30915 |

Expectations of life by place of birth: females.

age — Initial region of cohort nw.found

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 75.68020 | 43.18897 | 0.34147 | 2.95112 | 1.59659 | 3.20268 | 18.96421 | 0.81205 | 0.32963 | 1.37780 | 2.91567 |
| 5 | 72.49951 | 39.44090 | 0.34702 | 2.99585 | 1.61876 | 3.26532 | 19.28653 | 0.82687 | 0.33614 | 1.40684 | 2.97527 |
| 10 | 67.64704 | 35.11531 | 0.33948 | 2.92944 | 1.58116 | 3.22565 | 18.96839 | 0.81344 | 0.33195 | 1.39473 | 2.94748 |
| 15 | 62.74145 | 30.94582 | 0.32901 | 2.83784 | 1.53250 | 3.16278 | 18.53841 | 0.79245 | 0.32572 | 1.37424 | 2.90267 |
| 20 | 57.87757 | 26.99863 | 0.31865 | 2.73019 | 1.47522 | 3.08431 | 17.99317 | 0.76796 | 0.31790 | 1.34874 | 2.84280 |
| 25 | 53.03127 | 23.55195 | 0.30672 | 2.58097 | 1.40733 | 2.96972 | 17.11212 | 0.73592 | 0.30773 | 1.30695 | 2.75185 |
| 30 | 48.16772 | 20.66480 | 0.29054 | 2.38298 | 1.31984 | 2.79833 | 15.86822 | 0.69208 | 0.29427 | 1.23572 | 2.62094 |
| 35 | 43.34441 | 18.10566 | 0.27096 | 2.16605 | 1.21362 | 2.58237 | 14.48648 | 0.63864 | 0.27621 | 1.14279 | 2.46163 |
| 40 | 38.62818 | 15.76819 | 0.24918 | 1.94623 | 1.09973 | 2.34370 | 13.06675 | 0.57916 | 0.25418 | 1.03907 | 2.28200 |
| 45 | 34.02172 | 13.60853 | 0.22633 | 1.72747 | 0.98189 | 2.09175 | 11.62526 | 0.51706 | 0.23049 | 0.92847 | 2.08446 |
| 50 | 29.51736 | 11.58878 | 0.20336 | 1.51085 | 0.86095 | 1.83135 | 10.17475 | 0.45290 | 0.20615 | 0.81511 | 1.87316 |
| 55 | 25.18124 | 9.70981 | 0.17975 | 1.29947 | 0.74142 | 1.57241 | 8.75143 | 0.38888 | 0.18084 | 0.70229 | 1.65494 |
| 60 | 21.02546 | 7.96378 | 0.15556 | 1.09443 | 0.62512 | 1.31808 | 7.36191 | 0.32755 | 0.15541 | 0.59041 | 1.43322 |
| 65 | 17.13518 | 6.37215 | 0.13187 | 0.90137 | 0.51153 | 1.07578 | 6.04155 | 0.27097 | 0.13140 | 0.48433 | 1.21422 |
| 70 | 13.57130 | 4.94453 | 0.10929 | 0.72337 | 0.40484 | 0.84995 | 4.81906 | 0.21927 | 0.10908 | 0.38804 | 1.00387 |
| 75 | 10.40714 | 3.69304 | 0.08862 | 0.56321 | 0.31030 | 0.64490 | 3.73043 | 0.17283 | 0.08869 | 0.30345 | 0.81166 |
| 80 | 7.77809 | 2.66207 | 0.07088 | 0.42840 | 0.23222 | 0.47045 | 2.82535 | 0.13429 | 0.07164 | 0.23432 | 0.64848 |
| 85 | 5.77743 | 1.86597 | 0.05757 | 0.32306 | 0.17320 | 0.33511 | 2.14480 | 0.10593 | 0.05955 | 0.18507 | 0.52716 |

age — Initial region of cohort p.edouar

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 76.21690 | 0.94694 | 32.03947 | 6.25160 | 4.09693 | 4.47578 | 18.48309 | 1.21219 | 0.65087 | 3.12334 | 4.93668 |
| 5 | 72.72489 | 0.95374 | 28.06005 | 6.30859 | 4.12517 | 4.53927 | 18.70144 | 1.22437 | 0.65214 | 3.14977 | 5.01036 |
| 10 | 67.88823 | 0.92886 | 24.14162 | 6.13812 | 4.00823 | 4.47801 | 18.35483 | 1.19460 | 0.62698 | 3.06946 | 4.94751 |
| 15 | 62.99595 | 0.90115 | 20.52559 | 5.89656 | 3.85136 | 4.38161 | 17.86931 | 1.15543 | 0.59898 | 2.97263 | 4.84333 |
| 20 | 58.16485 | 0.87296 | 17.21170 | 5.61099 | 3.65560 | 4.26237 | 17.28168 | 1.11483 | 0.57079 | 2.87303 | 4.71089 |
| 25 | 53.30325 | 0.83416 | 14.46765 | 5.24394 | 3.41219 | 4.08009 | 16.40220 | 1.06177 | 0.54348 | 2.72749 | 4.53027 |
| 30 | 48.40632 | 0.77553 | 12.37834 | 4.80972 | 3.13432 | 3.80760 | 15.19335 | 0.98694 | 0.51305 | 2.51965 | 4.28780 |
| 35 | 43.58641 | 0.70041 | 10.68958 | 4.36393 | 2.83983 | 3.48114 | 13.84980 | 0.89985 | 0.47389 | 2.28492 | 4.00305 |
| 40 | 38.88111 | 0.62004 | 9.24929 | 3.91342 | 2.53726 | 3.12990 | 12.45408 | 0.80833 | 0.43076 | 2.04557 | 3.69246 |
| 45 | 34.30810 | 0.54325 | 7.96864 | 3.46284 | 2.23854 | 2.77096 | 11.04721 | 0.71498 | 0.38849 | 1.80851 | 3.36468 |
| 50 | 29.87274 | 0.47031 | 6.81845 | 3.01893 | 1.94504 | 2.41384 | 9.64625 | 0.62258 | 0.34722 | 1.57297 | 3.01715 |
| 55 | 25.57320 | 0.40072 | 5.76883 | 2.57976 | 1.66169 | 2.06273 | 8.26601 | 0.53232 | 0.30548 | 1.34466 | 2.65102 |
| 60 | 21.46582 | 0.33492 | 4.80494 | 2.15630 | 1.39153 | 1.72187 | 6.93675 | 0.44672 | 0.26409 | 1.12672 | 2.28196 |
| 65 | 17.55642 | 0.27145 | 3.90958 | 1.75717 | 1.13408 | 1.39313 | 5.66609 | 0.36635 | 0.22472 | 0.91960 | 1.91424 |
| 70 | 13.99063 | 0.21237 | 3.11400 | 1.39344 | 0.89894 | 1.08972 | 4.50118 | 0.29356 | 0.18787 | 0.73223 | 1.56732 |
| 75 | 10.76583 | 0.15890 | 2.41186 | 1.06342 | 0.68448 | 0.81223 | 3.44468 | 0.22756 | 0.15229 | 0.56465 | 1.24576 |
| 80 | 8.05992 | 0.11402 | 1.82795 | 0.78624 | 0.50459 | 0.57698 | 2.55900 | 0.17262 | 0.12150 | 0.42635 | 0.97069 |
| 85 | 6.04784 | 0.07948 | 1.39813 | 0.57429 | 0.37002 | 0.39862 | 1.89994 | 0.13281 | 0.09957 | 0.32798 | 0.76700 |

APPENDIX C *Continued.*

age — initial region of cohort n.scotia

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 76.06725 | 1.38765 | 0.84777 | 37.55905 | 3.73913 | 4.63963 | 18.15381 | 1.15951 | 0.53550 | 2.61838 | 5.42683 |
| 5 | 72.50468 | 1.39394 | 0.85231 | 33.61636 | 3.75282 | 4.67646 | 18.35493 | 1.16950 | 0.53980 | 2.65094 | 5.49763 |
| 10 | 67.67693 | 1.34525 | 0.82385 | 29.61622 | 3.62285 | 4.56144 | 18.01330 | 1.14117 | 0.52669 | 2.60925 | 5.41691 |
| 15 | 62.80150 | 1.28123 | 0.78390 | 25.90019 | 3.45604 | 4.41393 | 17.51745 | 1.10196 | 0.50873 | 2.54825 | 5.28981 |
| 20 | 57.96301 | 1.21132 | 0.73727 | 22.45148 | 3.26540 | 4.24893 | 16.90307 | 1.05587 | 0.48815 | 2.47349 | 5.12802 |
| 25 | 53.11364 | 1.13345 | 0.68926 | 19.40434 | 3.05257 | 4.04404 | 16.04763 | 0.99927 | 0.46621 | 2.36261 | 4.91426 |
| 30 | 48.25639 | 1.04414 | 0.63911 | 16.87420 | 2.81722 | 3.77163 | 14.90928 | 0.92860 | 0.44015 | 2.19839 | 4.63367 |
| 35 | 43.44841 | 0.94535 | 0.58434 | 14.72169 | 2.56043 | 3.44836 | 13.62677 | 0.84860 | 0.40776 | 2.00029 | 4.30482 |
| 40 | 38.71733 | 0.84142 | 0.52610 | 12.79624 | 2.29030 | 3.10315 | 12.28249 | 0.76508 | 0.37133 | 1.79183 | 3.94940 |
| 45 | 34.09470 | 0.73807 | 0.46689 | 11.03992 | 2.01808 | 2.74911 | 10.91211 | 0.67972 | 0.33442 | 1.58228 | 3.57411 |
| 50 | 29.63867 | 0.63961 | 0.41045 | 9.43413 | 1.75303 | 2.39766 | 9.54833 | 0.59404 | 0.29830 | 1.37660 | 3.18650 |
| 55 | 25.33100 | 0.54530 | 0.35658 | 7.94060 | 1.49906 | 2.05180 | 8.19892 | 0.50973 | 0.26181 | 1.17635 | 2.79084 |
| 60 | 21.22756 | 0.45519 | 0.30533 | 6.55785 | 1.25783 | 1.71658 | 6.89595 | 0.42921 | 0.22549 | 0.98594 | 2.39817 |
| 65 | 17.35578 | 0.36986 | 0.25616 | 5.28460 | 1.02866 | 1.39441 | 5.65671 | 0.35395 | 0.19062 | 0.80789 | 2.01294 |
| 70 | 13.79009 | 0.29106 | 0.21021 | 4.13492 | 0.81693 | 1.09318 | 4.50795 | 0.28495 | 0.15787 | 0.64559 | 1.64743 |
| 75 | 10.59674 | 0.21980 | 0.16823 | 3.12421 | 0.62588 | 0.81976 | 3.47350 | 0.22265 | 0.12758 | 0.50158 | 1.31356 |
| 80 | 7.93990 | 0.15989 | 0.13231 | 2.29485 | 0.46652 | 0.58869 | 2.61001 | 0.17097 | 0.10207 | 0.38344 | 1.03113 |
| 85 | 5.92482 | 0.11279 | 0.10473 | 1.66077 | 0.34519 | 0.41064 | 1.95652 | 0.13289 | 0.08366 | 0.29831 | 0.81933 |

age — initial region of cohort brunswic

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 75.89679 | 0.87707 | 0.73757 | 4.89079 | 37.42357 | 7.52527 | 16.43740 | 1.06148 | 0.48185 | 2.25260 | 4.20920 |
| 5 | 72.44666 | 0.88528 | 0.74415 | 4.93020 | 33.51511 | 7.60458 | 16.65359 | 1.07500 | 0.48619 | 2.28063 | 4.27192 |
| 10 | 67.62098 | 0.86002 | 0.72402 | 4.78711 | 29.46555 | 7.43548 | 16.36750 | 1.05355 | 0.47456 | 2.23767 | 4.21551 |
| 15 | 62.75703 | 0.82393 | 0.69533 | 4.59827 | 25.69230 | 7.20890 | 15.95202 | 1.02102 | 0.46004 | 2.17707 | 4.12814 |
| 20 | 57.94641 | 0.78311 | 0.66081 | 4.38164 | 22.19703 | 6.94565 | 15.43418 | 0.98061 | 0.44264 | 2.10389 | 4.01686 |
| 25 | 53.10744 | 0.73573 | 0.62247 | 4.11786 | 19.14250 | 6.59107 | 14.68104 | 0.93072 | 0.42271 | 1.99996 | 3.86339 |
| 30 | 48.26149 | 0.67832 | 0.57894 | 3.80134 | 16.63859 | 6.11534 | 13.66318 | 0.86945 | 0.39984 | 1.85839 | 3.65810 |
| 35 | 43.45407 | 0.61374 | 0.53040 | 3.45455 | 14.49652 | 5.56650 | 12.51335 | 0.79739 | 0.37127 | 1.69573 | 3.41463 |
| 40 | 38.72191 | 0.54706 | 0.47980 | 3.09823 | 12.58124 | 4.98863 | 11.29848 | 0.72011 | 0.33848 | 1.52372 | 3.14617 |
| 45 | 34.09506 | 0.48092 | 0.42752 | 2.74311 | 10.83188 | 4.40649 | 10.05182 | 0.64031 | 0.30531 | 1.34826 | 2.85945 |
| 50 | 29.60602 | 0.41677 | 0.37560 | 2.39447 | 9.22716 | 3.82978 | 8.79905 | 0.55974 | 0.27208 | 1.17346 | 2.55792 |
| 55 | 25.30316 | 0.35532 | 0.32675 | 2.05504 | 7.76301 | 3.26905 | 7.56147 | 0.48098 | 0.23836 | 1.00386 | 2.24932 |
| 60 | 21.17323 | 0.29653 | 0.27992 | 1.72518 | 6.40190 | 2.72683 | 6.35377 | 0.40502 | 0.20486 | 0.84131 | 1.93790 |
| 65 | 17.28679 | 0.24076 | 0.23474 | 1.41328 | 5.14503 | 2.21191 | 5.21309 | 0.33422 | 0.17314 | 0.68999 | 1.63064 |
| 70 | 13.71961 | 0.18897 | 0.19241 | 1.12592 | 4.01374 | 1.73294 | 4.16204 | 0.26909 | 0.14353 | 0.55260 | 1.33835 |
| 75 | 10.52728 | 0.14246 | 0.15395 | 0.86724 | 3.02082 | 1.29912 | 3.21544 | 0.21047 | 0.11617 | 0.43061 | 1.07100 |
| 80 | 7.89379 | 0.10383 | 0.12153 | 0.65229 | 2.21613 | 0.93532 | 2.43091 | 0.16235 | 0.09341 | 0.33136 | 0.84666 |
| 85 | 5.90773 | 0.07350 | 0.09679 | 0.48507 | 1.61554 | 0.65528 | 1.83811 | 0.12705 | 0.07704 | 0.26018 | 0.67916 |

age  initial region of cohort  quebec

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 75.38789 | 0.25240 | 0.09712 | 0.64460 | 0.84268 | 59.16560 | 10.32873 | 0.49532 | 0.22297 | 1.01936 | 2.31910 |
| 5 | 71.91200 | 0.25486 | 0.09834 | 0.65364 | 0.85115 | 55.46982 | 10.46583 | 0.50141 | 0.22659 | 1.03383 | 2.35650 |
| 10 | 67.07091 | 0.24816 | 0.09662 | 0.64267 | 0.82984 | 50.90076 | 10.28674 | 0.49182 | 0.22375 | 1.01801 | 2.33252 |
| 15 | 62.17828 | 0.23877 | 0.09421 | 0.62551 | 0.80065 | 46.41686 | 10.01965 | 0.47790 | 0.21881 | 0.99396 | 2.29196 |
| 20 | 57.32768 | 0.22826 | 0.09138 | 0.60478 | 0.76748 | 42.06921 | 9.68896 | 0.46115 | 0.21306 | 0.96479 | 2.23862 |
| 25 | 52.49352 | 0.21697 | 0.08834 | 0.57975 | 0.73011 | 37.87579 | 9.26215 | 0.44074 | 0.20651 | 0.92594 | 2.16722 |
| 30 | 47.65335 | 0.20383 | 0.08421 | 0.54812 | 0.68520 | 33.86149 | 8.71594 | 0.41504 | 0.19760 | 0.87220 | 2.06972 |
| 35 | 42.85457 | 0.18804 | 0.07870 | 0.50986 | 0.63212 | 30.03966 | 8.08136 | 0.38467 | 0.18542 | 0.80631 | 1.94843 |
| 40 | 38.12451 | 0.17024 | 0.07250 | 0.46636 | 0.57450 | 26.39183 | 7.38473 | 0.35127 | 0.17109 | 0.73290 | 1.80909 |
| 45 | 33.50346 | 0.15175 | 0.06593 | 0.41968 | 0.51483 | 22.92018 | 6.64611 | 0.31617 | 0.15604 | 0.65559 | 1.65718 |
| 50 | 29.00575 | 0.13310 | 0.05929 | 0.37132 | 0.45462 | 19.62007 | 5.87590 | 0.27988 | 0.14069 | 0.57621 | 1.49467 |
| 55 | 24.70207 | 0.11459 | 0.05270 | 0.32310 | 0.39630 | 16.51982 | 5.10238 | 0.24351 | 0.12522 | 0.49789 | 1.32658 |
| 60 | 20.62234 | 0.09662 | 0.04614 | 0.27623 | 0.33956 | 13.62040 | 4.34712 | 0.20811 | 0.10979 | 0.42238 | 1.15600 |
| 65 | 16.77249 | 0.07932 | 0.03954 | 0.23072 | 0.28356 | 10.91861 | 3.61811 | 0.17419 | 0.09461 | 0.35010 | 0.98372 |
| 70 | 13.25543 | 0.06317 | 0.03315 | 0.18807 | 0.23072 | 8.47583 | 2.93915 | 0.14265 | 0.08016 | 0.28374 | 0.81879 |
| 75 | 10.11257 | 0.04854 | 0.02727 | 0.14902 | 0.18228 | 6.31148 | 2.32145 | 0.11400 | 0.06658 | 0.22470 | 0.66726 |
| 80 | 7.53274 | 0.03637 | 0.02234 | 0.11648 | 0.14205 | 4.53940 | 1.81099 | 0.09068 | 0.05539 | 0.17722 | 0.54183 |
| 85 | 5.65775 | 0.02712 | 0.01892 | 0.09220 | 0.11283 | 3.23590 | 1.44551 | 0.07481 | 0.04829 | 0.14583 | 0.45634 |

age  initial region of cohort  ontario

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 76.42145 | 0.49869 | 0.21647 | 1.34712 | 0.94328 | 4.69882 | 60.48211 | 1.18948 | 0.51574 | 2.07848 | 4.45126 |
| 5 | 72.74277 | 0.50062 | 0.21801 | 1.35625 | 0.94972 | 4.72895 | 56.65808 | 1.20003 | 0.52064 | 2.10204 | 4.50843 |
| 10 | 67.86996 | 0.48448 | 0.21233 | 1.32038 | 0.92435 | 4.60805 | 52.11497 | 1.17333 | 0.51039 | 2.06822 | 4.45345 |
| 15 | 62.96399 | 0.46364 | 0.20398 | 1.26942 | 0.88811 | 4.44938 | 47.68427 | 1.13333 | 0.49494 | 2.01493 | 4.36199 |
| 20 | 58.10897 | 0.44138 | 0.19397 | 1.21044 | 0.84595 | 4.26913 | 43.39782 | 1.08461 | 0.47602 | 1.94786 | 4.24180 |
| 25 | 53.24754 | 0.41702 | 0.18367 | 1.14417 | 0.79984 | 4.05247 | 39.23195 | 1.02550 | 0.45484 | 1.85862 | 4.07945 |
| 30 | 48.39595 | 0.38754 | 0.17241 | 1.06652 | 0.74741 | 3.78245 | 35.24999 | 0.95458 | 0.42985 | 1.73887 | 3.86632 |
| 35 | 43.58362 | 0.35293 | 0.15908 | 0.97706 | 0.68677 | 3.46622 | 31.45826 | 0.87489 | 0.39993 | 1.59548 | 3.61302 |
| 40 | 38.84376 | 0.31618 | 0.14456 | 0.88107 | 0.62106 | 3.12487 | 27.82424 | 0.79063 | 0.36667 | 1.44013 | 3.33434 |
| 45 | 34.21783 | 0.27950 | 0.12958 | 0.78352 | 0.55253 | 2.77440 | 24.34365 | 0.70479 | 0.33185 | 1.27952 | 3.03849 |
| 50 | 29.73233 | 0.24374 | 0.11481 | 0.68645 | 0.48366 | 2.42240 | 21.01975 | 0.61883 | 0.29639 | 1.11823 | 2.72807 |
| 55 | 25.41058 | 0.20903 | 0.10038 | 0.59072 | 0.41683 | 2.07487 | 17.85757 | 0.53384 | 0.26052 | 0.96004 | 2.40677 |
| 60 | 21.29702 | 0.17581 | 0.08633 | 0.49806 | 0.35219 | 1.73791 | 14.87872 | 0.45216 | 0.22517 | 0.80833 | 2.08233 |
| 65 | 17.40726 | 0.14393 | 0.07256 | 0.40916 | 0.28950 | 1.41281 | 12.09119 | 0.37460 | 0.19094 | 0.66464 | 1.75794 |
| 70 | 13.82037 | 0.11392 | 0.05946 | 0.32628 | 0.23074 | 1.10760 | 9.54303 | 0.30242 | 0.15858 | 0.53233 | 1.44604 |
| 75 | 10.62463 | 0.08670 | 0.04760 | 0.25181 | 0.17777 | 0.83165 | 7.28779 | 0.23732 | 0.12865 | 0.41511 | 1.16022 |
| 80 | 7.96222 | 0.06362 | 0.03746 | 0.18919 | 0.13332 | 0.59778 | 5.42003 | 0.18299 | 0.10325 | 0.31844 | 0.91612 |
| 85 | 5.98948 | 0.04557 | 0.02984 | 0.14108 | 0.09991 | 0.41966 | 4.03854 | 0.14354 | 0.08528 | 0.24998 | 0.73607 |

APPENDIX C *Continued.*

age ***  initial region of cohort manitoba

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 76.63634 | 0.21482 | 0.17292 | 1.09628 | 0.78203 | 3.18105 | 13.16675 | 33.71682 | 3.18777 | 7.88195 | 13.23594 |
| 5 | 73.12500 | 0.21689 | 0.17488 | 1.10454 | 0.78968 | 3.21899 | 13.31529 | 29.75328 | 3.18010 | 7.96365 | 13.40771 |
| 10 | 68.24542 | 0.21193 | 0.17038 | 1.07223 | 0.76830 | 3.15439 | 13.03880 | 25.85341 | 3.02413 | 7.77664 | 13.17522 |
| 15 | 63.34801 | 0.20558 | 0.16257 | 1.02800 | 0.73623 | 3.06114 | 12.63795 | 22.35413 | 2.83798 | 7.50578 | 12.81864 |
| 20 | 58.50470 | 0.19888 | 0.15295 | 0.97729 | 0.69884 | 2.95245 | 12.15322 | 19.18436 | 2.63536 | 7.17869 | 12.37266 |
| 25 | 53.67119 | 0.19052 | 0.14356 | 0.92104 | 0.65884 | 2.81867 | 11.54886 | 16.39334 | 2.43303 | 6.75836 | 11.80495 |
| 30 | 48.83838 | 0.17888 | 0.13456 | 0.85736 | 0.61503 | 2.64489 | 10.78571 | 14.06864 | 2.23002 | 6.22498 | 11.09830 |
| 35 | 44.03382 | 0.16432 | 0.12479 | 0.78450 | 0.56472 | 2.43405 | 9.90299 | 12.11491 | 2.01879 | 5.62947 | 10.29528 |
| 40 | 39.31421 | 0.14823 | 0.11369 | 0.70523 | 0.50964 | 2.20206 | 8.95823 | 10.41566 | 1.80826 | 5.01607 | 9.43713 |
| 45 | 34.69951 | 0.13193 | 0.10155 | 0.62473 | 0.45238 | 1.95952 | 7.97958 | 8.90155 | 1.59935 | 4.40586 | 8.54307 |
| 50 | 30.21570 | 0.11554 | 0.08943 | 0.54525 | 0.39489 | 1.71337 | 6.98921 | 7.53395 | 1.39520 | 3.81398 | 7.62489 |
| 55 | 25.88069 | 0.09921 | 0.07760 | 0.46746 | 0.33859 | 1.46776 | 6.00619 | 6.28814 | 1.19919 | 3.24625 | 6.69031 |
| 60 | 21.73745 | 0.08331 | 0.06622 | 0.39249 | 0.28429 | 1.22689 | 5.05290 | 5.15208 | 1.01390 | 2.70909 | 5.75628 |
| 65 | 17.80149 | 0.06789 | 0.05533 | 0.32074 | 0.23220 | 0.99321 | 4.14048 | 4.12014 | 0.83928 | 2.20528 | 4.82694 |
| 70 | 14.16804 | 0.05347 | 0.04517 | 0.25408 | 0.18372 | 0.77434 | 3.29183 | 3.20418 | 0.67824 | 1.74590 | 3.93713 |
| 75 | 10.92572 | 0.04039 | 0.03590 | 0.19430 | 0.14014 | 0.57671 | 2.52725 | 2.41261 | 0.53402 | 1.34160 | 3.12279 |
| 80 | 8.21133 | 0.02926 | 0.02786 | 0.14388 | 0.10354 | 0.40894 | 1.88152 | 1.77140 | 0.41363 | 1.00801 | 2.42326 |
| 85 | 6.21983 | 0.02059 | 0.02172 | 0.10529 | 0.07607 | 0.28187 | 1.39866 | 1.31347 | 0.32808 | 0.77064 | 1.90343 |

age ***  initial region of cohort saskatch

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 76.63342 | 0.17648 | 0.09728 | 0.69848 | 0.42645 | 1.70481 | 8.79245 | 5.17013 | 27.72623 | 15.51033 | 16.33077 |
| 5 | 73.33466 | 0.17882 | 0.09851 | 0.70903 | 0.43383 | 1.73710 | 8.92993 | 5.20352 | 23.83163 | 15.63849 | 16.57381 |
| 10 | 68.45186 | 0.17547 | 0.09604 | 0.69566 | 0.42725 | 1.71987 | 8.77931 | 5.01228 | 20.16570 | 15.12302 | 16.25725 |
| 15 | 63.55824 | 0.17118 | 0.09269 | 0.67641 | 0.41608 | 1.69128 | 8.56375 | 4.77281 | 16.90118 | 14.47529 | 15.79757 |
| 20 | 58.73563 | 0.16640 | 0.08904 | 0.65381 | 0.40257 | 1.65597 | 8.30838 | 4.49661 | 13.98347 | 13.73908 | 15.24032 |
| 25 | 53.91894 | 0.16042 | 0.08531 | 0.62584 | 0.38720 | 1.60463 | 7.96149 | 4.14918 | 11.65093 | 12.77268 | 14.52125 |
| 30 | 49.09381 | 0.15166 | 0.08121 | 0.59022 | 0.36801 | 1.52470 | 7.48331 | 3.74537 | 9.95461 | 11.57855 | 13.61616 |
| 35 | 44.31964 | 0.14010 | 0.07603 | 0.54564 | 0.34264 | 1.41849 | 6.91218 | 3.34158 | 8.59619 | 10.34304 | 12.60376 |
| 40 | 39.59690 | 0.12685 | 0.06959 | 0.49378 | 0.31216 | 1.29428 | 6.28049 | 2.95055 | 7.41666 | 9.12653 | 11.52602 |
| 45 | 34.98199 | 0.11322 | 0.06247 | 0.43997 | 0.27963 | 1.16007 | 5.61622 | 2.57887 | 6.36208 | 7.95261 | 10.41684 |
| 50 | 30.49390 | 0.09940 | 0.05533 | 0.38603 | 0.24594 | 1.02060 | 4.93511 | 2.22643 | 5.40486 | 6.83395 | 9.28625 |
| 55 | 26.14696 | 0.08564 | 0.04840 | 0.33263 | 0.21217 | 0.87931 | 4.25167 | 1.89067 | 4.53035 | 5.77632 | 8.13980 |
| 60 | 21.98052 | 0.07197 | 0.04155 | 0.28079 | 0.17923 | 0.73891 | 3.58282 | 1.57371 | 3.73303 | 4.78635 | 6.99215 |
| 65 | 18.01695 | 0.05859 | 0.03486 | 0.23056 | 0.14762 | 0.60114 | 2.93927 | 1.27852 | 3.00726 | 3.86786 | 5.85128 |
| 70 | 14.35770 | 0.04614 | 0.02857 | 0.18320 | 0.11796 | 0.47086 | 2.33830 | 1.01059 | 2.36310 | 3.03823 | 4.76074 |
| 75 | 11.08704 | 0.03481 | 0.02277 | 0.14035 | 0.09077 | 0.35200 | 1.79403 | 0.77278 | 1.80605 | 2.31231 | 3.76118 |
| 80 | 8.33130 | 0.02510 | 0.01764 | 0.10377 | 0.06749 | 0.24990 | 1.33039 | 0.57493 | 1.35175 | 1.71367 | 2.89665 |
| 85 | 6.33414 | 0.01760 | 0.01371 | 0.07593 | 0.05001 | 0.17281 | 0.98583 | 0.43291 | 1.03494 | 1.29168 | 2.25871 |

age  initial region of cohort  alberta

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 76.82873 | 0.19215 | 0.09630 | 0.76670 | 0.46437 | 1.82566 | 7.86896 | 2.14751 | 2.52071 | 43.35426 | 17.59211 |
| 5 | 73.28600 | 0.19374 | 0.09783 | 0.77491 | 0.47059 | 1.85060 | 7.96682 | 2.16420 | 2.52679 | 39.44251 | 17.79800 |
| 10 | 68.40213 | 0.18889 | 0.09659 | 0.75753 | 0.46300 | 1.82602 | 7.83316 | 2.10435 | 2.42951 | 35.24690 | 17.45617 |
| 15 | 63.50442 | 0.18268 | 0.09396 | 0.73219 | 0.44955 | 1.78902 | 7.63600 | 2.02305 | 2.30761 | 31.34874 | 16.94161 |
| 20 | 58.67925 | 0.17612 | 0.09036 | 0.70308 | 0.43199 | 1.74305 | 7.39615 | 1.93033 | 2.17428 | 27.73028 | 16.30362 |
| 25 | 53.85432 | 0.16870 | 0.08647 | 0.66957 | 0.41196 | 1.68051 | 7.08450 | 1.82102 | 2.03816 | 24.38372 | 15.50970 |
| 30 | 49.03845 | 0.15899 | 0.08229 | 0.62959 | 0.38906 | 1.59162 | 6.67446 | 1.68856 | 1.89339 | 21.37512 | 14.55536 |
| 35 | 44.26233 | 0.14672 | 0.07690 | 0.58082 | 0.36094 | 1.47765 | 6.18184 | 1.53874 | 1.73167 | 18.67816 | 13.48888 |
| 40 | 39.54880 | 0.13294 | 0.07030 | 0.52523 | 0.32825 | 1.34619 | 5.63336 | 1.38191 | 1.56211 | 16.21539 | 12.35312 |
| 45 | 34.92906 | 0.11871 | 0.06306 | 0.46759 | 0.29355 | 1.20420 | 5.04853 | 1.22541 | 1.39216 | 13.93860 | 11.17723 |
| 50 | 30.44123 | 0.10454 | 0.05576 | 0.41000 | 0.25783 | 1.05756 | 4.44381 | 1.07195 | 1.22533 | 11.84067 | 9.97377 |
| 55 | 26.10197 | 0.09044 | 0.04870 | 0.35332 | 0.22224 | 0.90970 | 3.83458 | 0.92224 | 1.06363 | 9.90848 | 8.74865 |
| 60 | 21.94395 | 0.07599 | 0.04181 | 0.29836 | 0.18772 | 0.76331 | 3.23690 | 0.77751 | 0.90775 | 8.13383 | 7.52078 |
| 65 | 17.98361 | 0.06154 | 0.03519 | 0.24488 | 0.15467 | 0.62018 | 2.65920 | 0.63976 | 0.75788 | 6.51185 | 6.29846 |
| 70 | 14.32983 | 0.04817 | 0.02898 | 0.19445 | 0.12374 | 0.48529 | 2.11896 | 0.51297 | 0.61793 | 5.06822 | 5.13112 |
| 75 | 11.06833 | 0.03613 | 0.02319 | 0.14897 | 0.09539 | 0.36260 | 1.62942 | 0.39834 | 0.49038 | 3.82267 | 4.06124 |
| 80 | 8.30637 | 0.02585 | 0.01801 | 0.11005 | 0.07099 | 0.25698 | 1.20991 | 0.30091 | 0.38102 | 2.80273 | 3.12993 |
| 85 | 6.32439 | 0.01801 | 0.01407 | 0.08073 | 0.05285 | 0.17794 | 0.90083 | 0.23105 | 0.30421 | 2.09470 | 2.45000 |

age  initial region of cohort  b.columb

| | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 76.66225 | 0.18272 | 0.09768 | 0.73877 | 0.42249 | 1.92827 | 7.59807 | 1.59448 | 1.31768 | 6.89539 | 55.88670 |
| 5 | 73.11679 | 0.18408 | 0.09904 | 0.74783 | 0.42696 | 1.95295 | 7.69416 | 1.61028 | 1.33043 | 6.95535 | 52.11570 |
| 10 | 68.25289 | 0.17967 | 0.09729 | 0.73326 | 0.41845 | 1.92414 | 7.57047 | 1.57224 | 1.29955 | 6.78047 | 47.67736 |
| 15 | 63.36035 | 0.17408 | 0.09388 | 0.70962 | 0.40658 | 1.88281 | 7.38434 | 1.51716 | 1.25551 | 6.53736 | 43.39902 |
| 20 | 58.52491 | 0.16785 | 0.08913 | 0.68190 | 0.39211 | 1.83204 | 7.15380 | 1.45337 | 1.20221 | 6.24862 | 39.30388 |
| 25 | 53.69858 | 0.16077 | 0.08433 | 0.65023 | 0.37480 | 1.76284 | 6.85346 | 1.37798 | 1.14197 | 5.88874 | 35.40344 |
| 30 | 48.89073 | 0.15139 | 0.07995 | 0.61166 | 0.35354 | 1.66544 | 6.45221 | 1.28265 | 1.07383 | 5.44404 | 31.77600 |
| 35 | 44.13754 | 0.13954 | 0.07470 | 0.56421 | 0.32743 | 1.54328 | 5.96552 | 1.17123 | 0.99603 | 4.95174 | 28.40384 |
| 40 | 39.42099 | 0.12599 | 0.06813 | 0.50947 | 0.29777 | 1.40333 | 5.42338 | 1.05399 | 0.91168 | 4.43577 | 25.19147 |
| 45 | 34.81411 | 0.11162 | 0.06083 | 0.45307 | 0.26667 | 1.25360 | 4.85255 | 0.93739 | 0.82553 | 3.91581 | 22.13704 |
| 50 | 30.35225 | 0.09722 | 0.05357 | 0.39743 | 0.23484 | 1.09993 | 4.26869 | 0.82354 | 0.73951 | 3.40835 | 19.22917 |
| 55 | 26.04525 | 0.08331 | 0.04666 | 0.34319 | 0.20310 | 0.94563 | 3.68421 | 0.71272 | 0.65411 | 2.92090 | 16.45143 |
| 60 | 21.91425 | 0.06980 | 0.04002 | 0.29050 | 0.17216 | 0.79313 | 3.11236 | 0.60506 | 0.57002 | 2.45564 | 13.80556 |
| 65 | 17.98145 | 0.05680 | 0.03365 | 0.23886 | 0.14211 | 0.64429 | 2.56135 | 0.50289 | 0.48724 | 2.01420 | 11.30006 |
| 70 | 14.34474 | 0.04468 | 0.02766 | 0.18981 | 0.11362 | 0.50384 | 2.04369 | 0.40798 | 0.40633 | 1.60661 | 9.00053 |
| 75 | 11.07248 | 0.03360 | 0.02205 | 0.14518 | 0.08735 | 0.37536 | 1.57018 | 0.31971 | 0.32853 | 1.23992 | 6.95061 |
| 80 | 8.30106 | 0.02409 | 0.01707 | 0.10706 | 0.06481 | 0.26516 | 1.16470 | 0.24365 | 0.25982 | 0.93137 | 5.22334 |
| 85 | 6.28881 | 0.01677 | 0.01327 | 0.07820 | 0.04798 | 0.18247 | 0.86426 | 0.18839 | 0.21057 | 0.71305 | 3.97385 |

*Appendix D*

# STABLE EQUIVALENT TO ORIGINAL TOTAL POPULATION, DISAGGREGATED BY PROVINCE AND AGE

## APPENDIX D

Stable equivalent to original population.

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1839842. | 124193. | 10697. | 68715. | 53830. | 199107. | 672750. | 67805. | 45591. | 241948. | 358795. |
| 5 | 1750771. | 111810. | 10127. | 65667. | 51270. | 197759. | 641248. | 64058. | 43529. | 225192. | 340510. |
| 10 | 1683364. | 103592. | 9866. | 63401. | 49517. | 193325. | 616647. | 60858. | 41718. | 212127. | 332113. |
| 15 | 1616764. | 95338. | 9455. | 60985. | 47174. | 187456. | 594781. | 57820. | 39588. | 200422. | 324245. |
| 20 | 1549766. | 81205. | 8234. | 56843. | 42742. | 182412. | 580867. | 55286. | 34798. | 191678. | 316142. |
| 25 | 1485022. | 67302. | 7041. | 52417. | 38254. | 180795. | 566354. | 52757. | 29950. | 184399. | 305752. |
| 30 | 1422697. | 59556. | 6627. | 49677. | 36121. | 179380. | 544902. | 49951. | 28173. | 174291. | 294018. |
| 35 | 1360547. | 54131. | 6457. | 47421. | 34633. | 174822. | 522631. | 46936. | 27208. | 162884. | 283423. |
| 40 | 1296096. | 49514. | 6232. | 44819. | 33027. | 167829. | 499750. | 43901. | 26043. | 152009. | 272972. |
| 45 | 1226567. | 45277. | 5853. | 42065. | 31167. | 158999. | 474294. | 40945. | 24883. | 140702. | 262382. |
| 50 | 1148609. | 41299. | 5457. | 39356. | 28867. | 148362. | 444189. | 37923. | 23639. | 128830. | 250688. |
| 55 | 1057939. | 37212. | 5081. | 36208. | 26447. | 135893. | 408111. | 34689. | 22032. | 116272. | 235991. |
| 60 | 950596. | 32792. | 4643. | 32510. | 23860. | 121135. | 364783. | 31053. | 19989. | 102860. | 216971. |
| 65 | 823066. | 28028. | 4100. | 28198. | 20707. | 103634. | 313495. | 26912. | 17719. | 88264. | 192009. |
| 70 | 674903. | 22802. | 3472. | 23093. | 17029. | 83461. | 254567. | 22181. | 15125. | 71962. | 161210. |
| 75 | 507065. | 16892. | 2744. | 17330. | 12812. | 60896. | 189107. | 16725. | 11874. | 53626. | 125058. |
| 80 | 328839. | 10695. | 1898. | 11287. | 8290. | 37628. | 121322. | 10892. | 8101. | 34434. | 84293. |
| 85 | 263994. | 7656. | 1657. | 8833. | 6468. | 26019. | 95032. | 9052. | 7428. | 28024. | 73823. |
| total | 20986038. | 988894. | 109642. | 747925. | 562218. | 2538914. | 7904810. | 729703. | 467188. | 2510125. | 4426395. |

Percentage distribution.

| age | total | nw.found | p.edouar | n.scotia | brunswic | quebec | ontario | manitoba | saskatch | alberta | b.columb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 8.7650 | 12.5588 | 9.7559 | 9.1875 | 9.5747 | 7.8422 | 8.5106 | 9.2922 | 9.7585 | 9.6389 | 8.0158 |
| 5 | 8.3426 | 11.2661 | 9.2363 | 8.7799 | 9.1192 | 7.7891 | 8.1121 | 8.7787 | 9.3133 | 8.9714 | 7.6927 |
| 10 | 8.0214 | 10.4756 | 8.9980 | 8.4769 | 8.8075 | 7.6185 | 7.8009 | 8.3401 | 8.9257 | 8.4588 | 7.5030 |
| 15 | 7.7040 | 9.6409 | 8.6237 | 8.0870 | 8.3907 | 7.3833 | 7.5283 | 7.9238 | 8.4700 | 7.9846 | 7.3253 |
| 20 | 7.3847 | 8.2116 | 7.5099 | 7.5966 | 7.6025 | 7.1846 | 7.3483 | 7.5710 | 7.4451 | 7.6362 | 7.1422 |
| 25 | 7.0762 | 6.8058 | 6.4221 | 7.0083 | 6.8042 | 7.1210 | 7.1647 | 7.2294 | 6.4080 | 7.3462 | 6.9075 |
| 30 | 6.7793 | 6.0225 | 6.0444 | 6.6420 | 6.4248 | 7.0652 | 6.8933 | 6.8453 | 6.0278 | 6.9435 | 6.6428 |
| 35 | 6.4831 | 5.4739 | 5.8095 | 6.3403 | 6.1601 | 6.8857 | 6.6115 | 6.4322 | 5.8212 | 6.4891 | 6.4030 |
| 40 | 6.1760 | 5.0070 | 5.6838 | 5.9925 | 5.8795 | 6.6103 | 6.3221 | 6.0162 | 5.5721 | 6.0558 | 6.1669 |
| 45 | 5.8447 | 4.5786 | 5.3382 | 5.6242 | 5.5437 | 6.2625 | 6.0001 | 5.6112 | 5.3239 | 5.6054 | 5.9277 |
| 50 | 5.4732 | 4.1763 | 4.9775 | 5.2620 | 5.1348 | 5.8435 | 5.6192 | 5.1970 | 5.0577 | 5.1324 | 5.6635 |
| 55 | 5.0411 | 3.7630 | 4.6345 | 4.8411 | 4.7040 | 5.3524 | 5.1628 | 4.7538 | 4.7138 | 4.6321 | 5.3314 |
| 60 | 4.5297 | 3.3160 | 4.2350 | 4.3467 | 4.2439 | 4.7711 | 4.6147 | 4.2555 | 4.2767 | 4.0978 | 4.9018 |
| 65 | 3.9220 | 2.8343 | 3.7193 | 3.7702 | 3.6832 | 4.0818 | 3.9659 | 3.6880 | 3.7910 | 3.5163 | 4.3378 |
| 70 | 3.2160 | 2.3058 | 3.1668 | 3.0877 | 3.0289 | 3.2873 | 3.2209 | 3.0397 | 3.2361 | 2.8669 | 3.6420 |
| 75 | 2.4162 | 1.7082 | 2.5031 | 2.3171 | 2.2789 | 2.3985 | 2.3923 | 2.2920 | 2.5405 | 2.1364 | 2.8253 |
| 80 | 1.5669 | 1.0815 | 1.7307 | 1.5091 | 1.4745 | 1.4821 | 1.5348 | 1.4927 | 1.7333 | 1.3718 | 1.9043 |
| 85 | 1.2580 | 0.7742 | 1.5113 | 1.1810 | 1.1505 | 1.0248 | 1.2022 | 1.2405 | 1.5893 | 1.1165 | 1.6678 |
| total | 100.0000 | 100.0000 | 100.0000 | 100.0000 | 100.0000 | 100.0000 | 100.0000 | 100.0000 | 100.0000 | 100.0000 | 100.0000 |
| m.ag | 34.6867 | 29.0947 | 33.5855 | 43.8632 | 33.3265 | 35.5055 | 34.9800 | 33.7787 | 33.7499 | 33.1686 | 36.3912 |
| sha | 100.0000 | 4.7122 | 0.5225 | 3.5639 | 2.6790 | 12.0981 | 37.6671 | 3.4771 | 2.2271 | 11.9609 | 21.0921 |
| lam | 1.037742 | 1.037742 | 1.037742 | 1.037742 | 1.037742 | 1.037742 | 1.037742 | 1.037742 | 1.037742 | 1.037742 | 1.037742 |
| R | 0.007409 | 0.007409 | 0.007409 | 0.007409 | 0.007409 | 0.007409 | 0.007409 | 0.007409 | 0.007409 | 0.007409 | 0.007409 |

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