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Administrative Record Comparison (ARC):
Report on Demographic Comparisons with the 1991 Canadian Census
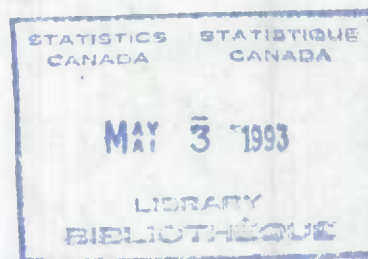
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ADMINISTRATIVE RECORD COMPARISON (ARC): REPORT OF DEMOGRAPHIC COMPARISONS WITH THE 1991 CANADIAN CENSUS

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ABSTRACT

Can administrative data provide similar information to Census data? Statistics Canada has compared the 1991 Census of Population with data from their most comprehensive source of administrative records, the Canadian taxation (T1) family file (FF). Individual income tax records are combined to reconstruct census families, creating the income tax family file (T1FF).

The T1FF counted 95% of the Canadian Census population in 1986. By the 1991 Census, the T1FF covered 97% of the Census population. This paper is a report of the comparisons of the 1990 T1FF and the 1991 Census demographics for both individuals and families. Among the comparisons are population by gender and five-year age group for Canada's provinces and territories, and population by single years of age at the national level. In addition, there are comparisons of T1FF and Census for non-family persons and for census families. Included in the family demographic comparisons are number of husband-wife and lone parent families, number of families by family size and by ages of children, and population within these families.

KEYWORDS

Administrative Data, Census Data, Population, Families

1.0 INTRODUCTION

To conduct a census is an expensive operation. Can we afford a census every five years? People both within and outside the Government of Canada have asked this question. From an economic perspective, the cancellation of a census would save a considerable sum of money for the Canadian taxpayer.

Administrative records are a possible alternative to census records. In Canada, the most comprehensive administrative record file is the Canadian personal income tax file, the file of individual T1 tax returns. From the T1 file, Statistics Canada reconstructs census families, resulting in the income tax family file (T1FF).

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When the Canadian Treasury Board asked the Minister Responsible for Statistics Canada whether administrative data could replace a quinquennial census, Statistics Canada replied that they could not. "The census provides a wider variety of variables [than administrative records] on the social and demographic flavour of Canada and offers a much richer data source for cross-tabulations and for analyzing relationships between variables of interest to federal policy-makers." (Leyes, 1988)

In addition, the comparability of the variables that are common to the two data sets was largely unknown. Leyes (1988) recommended "a planned detailed comparison between the 1991 Census of Population and the data from administrative records ... in the 1991-1994 period." It is the intention of the Administrative Record Comparison (ARC) to test whether one can use administrative records to derive reliable counts of the population and reliable estimates of the income of individuals and families.

This paper focuses on the evaluation of the T1FF as a measure of population and as a measure of the number of families in Canada. First, there is a brief description of the T1FF file. Then, there is a presentation of some comparisons of the 1990 T1FF with the 1991 Census.

2.0 THE TAXATION FAMILY FILE (T1FF)

Each fall, Statistics Canada receives the individual tax file from Revenue Canada. The taxation file contains information on individuals as reported on their T1 Personal Income Tax forms. Unlike the United States, tax filing in Canada is done solely by individuals (no joint filing). When filing, however, a taxfiler reports information not only about themselves, but also about their spouse. In particular, they report their own and their spouse's Social Insurance Numbers (SINs, the equivalent to the Social Security Number in the United States). In addition, taxfilers report information about their dependents (spouses, children, other dependents) to receive a tax deduction or to apply for a refundable tax credit.

From this file of individuals, the T1FF process creates families according to the census definition of census families:

> "a now-married couple (with or without never-married sons and/or daughters of either or both spouses), a couple living common-law (again with or without never-married sons and/or daughters of either or both partners), or a lone parent of any marital status, with at least one never-married son or daughter living in the same dwelling." (Statistics Canada, 1992)

By combining individual tax records, it is possible to reconstruct families and to identify and impute non-filing dependents. A matching of SIN and spousal SIN links most husbands and wives (more than 99% of now-married husbands and wives). A match using name and address link the remaining married couples. Address, name and age difference link

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common-law partners. Finally, address, name and age match filing children with their filing parents.

After the matching processes are complete, each record is examined to identify the reporting of dependents. The records within each family are combined to determine which dependents filed and which did not. The non-filing dependents are imputed.

In summary, the process is an enumeration of people identified within the taxation system (filers and dependents, unduplicated). The individuals who appear on the T1FF either filed a tax return themselves, or were reported as a dependent of a taxfiler.

The output, the T1FF file, includes:

1) husband-wife families (legally married or common-law) with any unmarried children living at home;

2) lone parent families with their unmarried children living at home; and

3) non-family persons.

The main difference between the T1FF family and the census family is with "never married." The tax file does not include information about never-married. Marital status serves as a proxy. To be eligible as a child, a taxfiler must report their marital status as single, must not report any children of their own, and cannot have matched to another filer as a spouse. The non-family persons are those taxfilers who neither matched to another filer nor reported any dependents.

In the past, there was concern about whether the tax file would include a representative number of low-income individuals and families, people with no tax liability. However, there are incentives for lower-income people to file tax returns, as increasingly, a Canadian individual tax form serves a second purpose. It has become an application for means-tested social benefits, "refundable tax credits." The social benefits are contingent on the combined income (both taxable and non-taxable) of an individual taxfiler and their spouse. Thus, someone applying for a refundable tax credit reports both taxable and non-taxable types of income on their T1 tax return. The non-taxable income includes social assistance, workers' compensation, a guaranteed income supplement for the elderly, and income earned on Indian reserves. As a result, the taxation system includes people with taxable income and those with little or even none.

3.0 POPULATION

A comparison of the population as measured by the T1FF and the Census should take the following two points into consideration. First, the reference dates of the two sources are not

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the same. Tax returns are annual, predominately calendar-year-based. The 1990 T1FF population includes those people as of December 31, 1990. The Census counted people as of June 4, 1991. Thus, the 1990 T1FF does not take into account the changes to the population and to its demographic characteristics over a five month period.

Second, the comparisons between the 1990 T1FF and the 1991 Census assume that the latter represents the true population of Canada. However, the census experiences undercoverage. This census coverage error varies across regions as well as across age and gender groups. In order to see the effect of Census undercoverage on the comparisons of the T1FF and the Census for the total population of provinces and territories, the 1991 Census was adjusted for net undercoverage. As shown in Tables A-3 and A-4 of the Appendix, the T1FF coverage rates are lower than those presented in the next section, with decreases in percentage points ranging from 1.1 (Prince Edward Island) to 5.9 (Northwest Territories) points. However, the relative ranking of provinces and territories changes little. All further analyses of this paper are based on unadjusted Census counts. Thus, coverage rates over 100% of T1FF counts relative to the Census does not necessarily imply overcoverage of the true population.

3.1 Total Population

The population of Canada, according to the 1991 Census, is 27,296,855 (June 4, 1991). The T1FF population is 26,576,790 (December 31, 1990), or 97.4% of the Census. The Census counts exceed the T1FF data for nine of the twelve provinces and territories (Table 1).
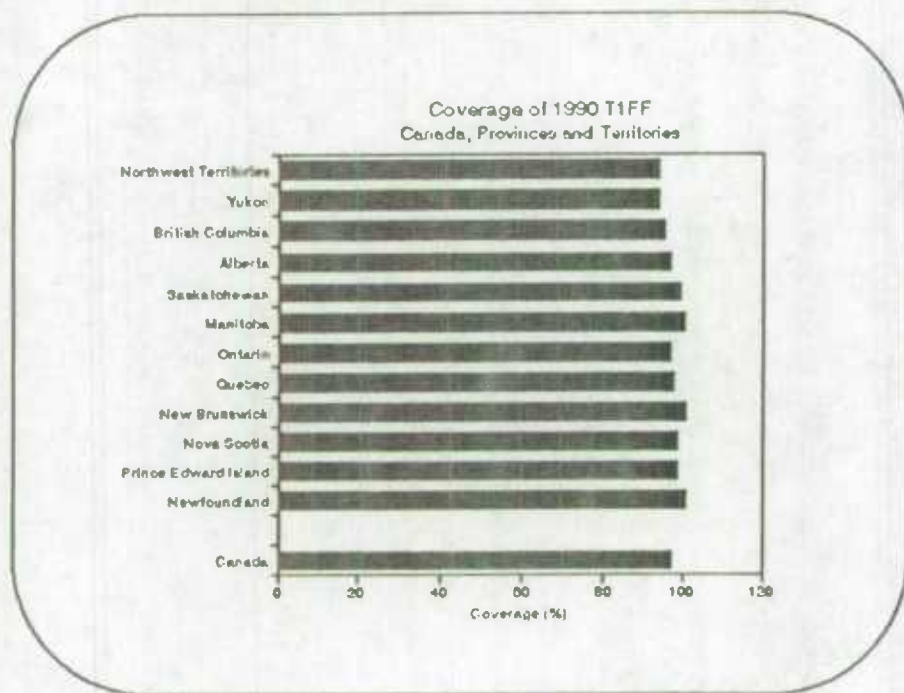

figure 1

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The lowest coverage rates of the T1FF file are for the least populous areas: the Yukon and the Northwest Territories (94% in each case). Those provinces with the largest interprovincial migration flows experience lower than average coverage: British Columbia (95.7%), Ontario (96.7%) and Alberta (97.1%). Conversely, the T1FF estimates of three provinces are higher than the Census counts: Manitoba (100.4%), Newfoundland (100.8%) and New Brunswick (101.0%).

The range of rates for provinces and territories is only seven percentage points, from 94.0% to 101.0%. This similarity in coverage rates stems largely from the uniformity across provinces and territories in the tax program.

Table 1

Coverage (%) of 1990 T1FF with respect to 1991 Census
Canada, Provinces and Territories

	Total	Male	Female
Canada	97.4	97.4	97.3
New Brunswick	101.0	101.3	100.3
Newfoundland	100.8	101.6	100.4
Manitoba	100.4	100.3	100.4
Saskatchewan	99.3	99.5	99.2
Nova Scotia	98.7	99.3	98.2
Prince Edward Island	98.7	99.2	98.1
Quebec	97.6	97.8	97.4
Alberta	97.1	96.8	97.4
Ontario	96.7	96.7	96.7
British Columbia	95.7	95.2	96.2
Yukon	94.0	93.1	95.0
Northwest Territories	94.0	93.0	95.0

3.2 Population by Gender

The coverage of the T1FF file at the Canada level is virtually the same for each gender (97.4% males and 97.3% females). This is also the case for Ontario, Canada's most populated province (96.7% in each case), and its neighbours: Quebec (97.8% and 97.4%), Manitoba (100.3% and 100.4%) and Saskatchewan (99.5% and 99.2%).

In the four Atlantic provinces, coverage for males is about one percentage point higher than that for females. For the western-most provinces and the territories, the opposite is true. In Alberta (0.6 points), British Columbia (1.0), the Yukon (1.9) and the Northwest Territories (2.0), the female coverage rates surpass the male rates. The total coverage for these last four regions are also amongst the lowest in the country.

3.3 Population by Age and Gender

Table 2 and Figures 2 and 3 contain a comparison of the population of Canada by five-year age group. Except for ages 10-14 and 15-19, the T1FF counts are lower than the Census counts.

3.3.1 Genders Combined

Differences in coverage rates are larger among age groups than across regions. There are various reasons for these differences. The T1FF system captures the adult population differently from the population of children. Most adults are tax filers, while most children are not. Furthermore, coverage of young children and their parents is very good. There are incentives for parents to report their children on their tax returns. These incentives include tax deductions for children, tax deductions for child care expenses, and the refundable tax credits. Within a family, the higher income parent reports benefits received from the universal family allowance program. These programs ensure that parents report their children on their tax returns.

Coverage of the older segment of the population that are no longer part of the workforce diminishes appreciably. Even though there is an incentive to file, perhaps not everyone is aware of it. In addition, the incentive for the elderly may not be as great as for other segments of the population. They are not eligible to receive as much money, for example, as a needy mother with young children. Persons without children do not qualify for the same level of refundable tax credits as those with children.

Finally, the Census does not evenly cover the population. Differential coverage error may bias some of the comparisons, particularly for young adults where the Census coverage error is high.
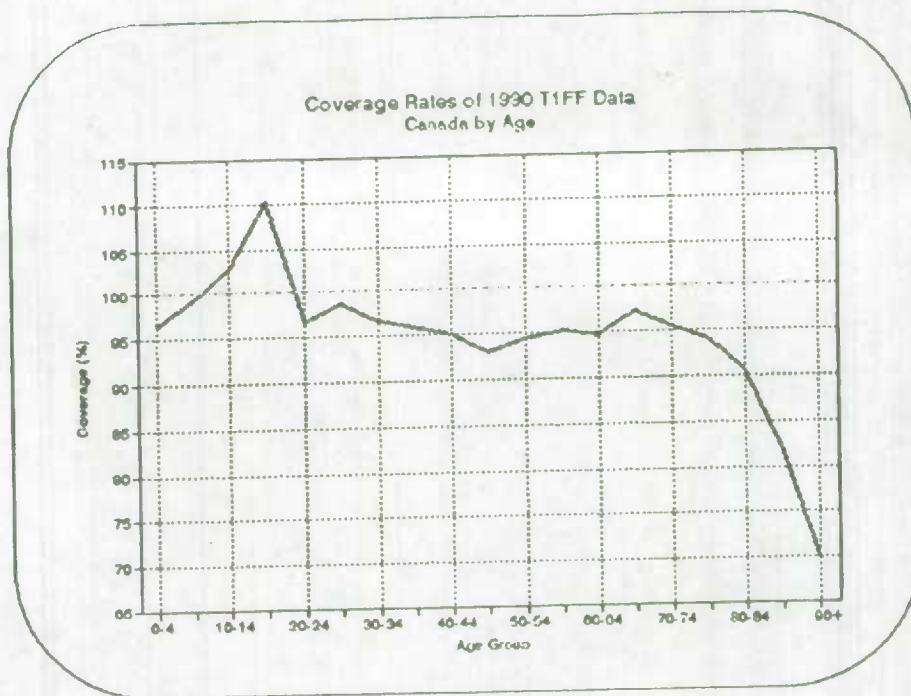
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Coverage Rates of 1990 T1FF Data
Canada by Age

figure 2

Thus, the youngest age groups experience the highest coverage rates as seen in Table 2 and Figure 2. The T1FF counts for age groups 10-14 and 15-19 are larger than the Census counts (102.8% and 110.4%, respectively). These and the lower coverage for the age group 0-4 (96.4%) are largely due to the imputation method. The imputation methodology distributed children throughout the 0-18 age group. It used the age distribution from the 1986 Census, a distribution different from the age distribution for 1991. Too many children were given higher ages, not enough given lower ages. The result is T1FF counts of 110% of the Census for the age group 15-19, and 96% for those aged 0-4.

The coverage rates for all age groups between 30 and 79 years are very stable. The rates vary between 93.1% for those 45-49 to the Canadian average of 97.4% for the 65-69 group. After age 69, the coverage begins to decrease. Significant drops in coverage occur past age 79, and by 90+ the rate is 69.9%.

3.3.2 Males and Females

The general age pattern of coverage rates described above applies to both males and females (Figure 3). Comparisons of coverage rates by gender should only begin from about age 20.

The rates for younger males and females are the same due to the large amount of imputation. Most children are identified as dependents of their parents. Gender is captured only for the

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small number of filing children, and is assigned from census proportions elsewhere.

Between age groups 20-24 and 55-59, there is not much difference between the two sets of rates. The exception is for age groups 50-54 and 55-59 where coverage for males is higher than for females.

Table 2

Coverage (%) of 1990 T1FF with respect to 1991 Census Canada by Age and Gender

	Total	Male	Female
All Ages	97.4	97.4	97.3
0-4	96.4	96.4	96.3
5-9	99.3	99.6	99.1
10-14	102.8	102.5	103.2
15-19	110.4	111.8	109.0
20-24	96.7	96.3	97.1
25-29	98.7	98.4	99.0
30-34	96.7	96.3	97.0
35-39	95.8	95.3	96.3
40-44	95.1	94.8	95.4
45-49	93.1	93.3	92.9
50-54	94.4	95.0	93.8
55-59	95.2	96.0	94.4
60-64	94.7	95.1	94.2
65-69	97.4	96.0	98.5
70-74	95.5	93.3	97.3
75-79	94.0	91.5	95.8
80-84	90.4	87.6	92.1
85-89	81.8	81.2	82.2
90+	69.9	67.4	70.8

At age 70 the rates for males turn downward, a trend that accelerates with age. The coverage rate for males aged 65-69 is 96%. For males aged 70-74 the rate is 93%. By age 90+, the coverage for males is 67.4%.

The female pattern, though similar, begins with a sharp increase in the rates for the age group 65-69 (from 94.2% to 98.5%). There is no fiscal explanation for this, but it does coincide with the age (65) at which Canadians become eligible for government benefits provided to senior citizens, Old Age Security (OAS). The lower-income individuals among this group also may qualify for the Guaranteed Income Supplement (GIS). However, filing a tax return is not a requirement for receipt of either OAS or GIS benefits. Both these social benefit programs are administered by Health & Welfare Canada, not by Revenue Canada.
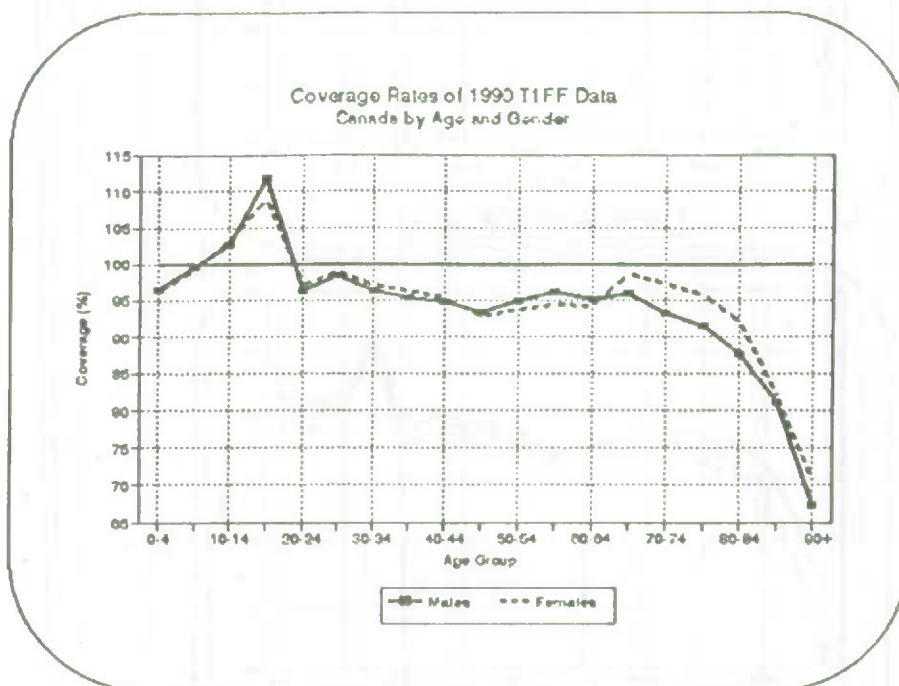
figure 3

3.4 Provinces

As with gender, the age patterns for the provincial coverage rates are the same as those for Canada. The similarities stem largely from the uniformity across Canada in the tax laws and social benefits. Figure 4a presents the coverage rates by age for the four provinces with the highest overall rates. Figures 4b and 4c present the regions with average and low provincial coverage rates, respectively.

There are two main age intervals where differences in coverage rates exist among the provinces and territories: ages 0-9 and 65+. First, for age groups 0-4 and 5-9, the Canadian coverage rates are 96.4% and 99.3%, respectively. For age group 0-4, the rate is high for

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Figure 4.
Coverage Rates of 1990 T1FF Data Compared with 1991 Census Data:
Canada by Single Year of Age

4a)
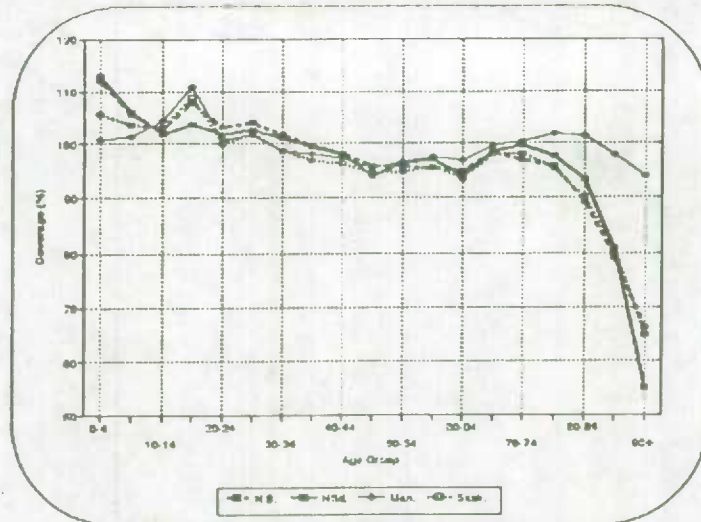
4b)

4c)

some provinces and low for others (113% in Newfoundland and 92% in Ontario). Similar differences occur for age group 5-9 (Figures 4a and 4b). This is possibly due to the imputation procedure for children. The TIFF system uses the distribution for Canada. This may have had varying degrees of success across provinces.
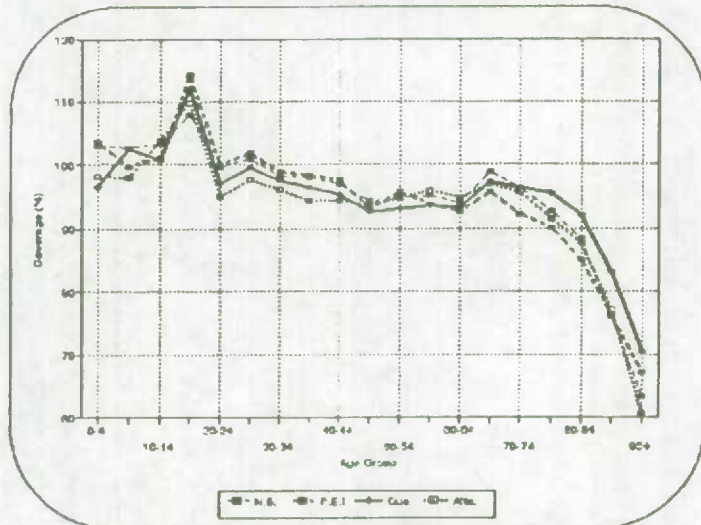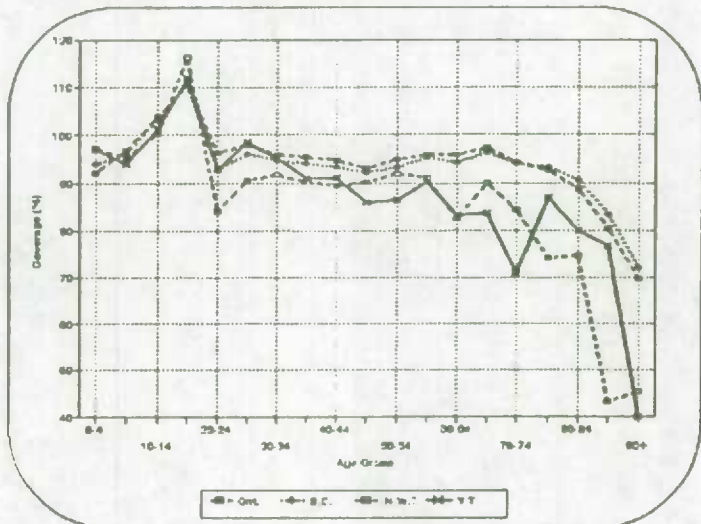
For age group 65+ the coverage rates for three regions are different from the others: Manitoba, Yukon and the Northwest Territories. For the two northern territories, the low overall coverage rates and the erratic rates for older ages is a reflection of a sparse population. The case of Manitoba illustrates the effect of one of the few differences in tax laws across the provinces. In this province there is an additional incentive to file in order to apply for the Manitoba cost-of-living and property tax credits, both refundable tax credits. As this program has been in existence for many years, people are knowledgeable of it, and the coverage of the population, particularly the coverage of the elderly population, reflects this. The coverage in Manitoba for those aged 65+ is 100.1% compared with that for Canada, 93.7%.

3.5 Canada by single year of age

More variation is shown in the comparisons by single year of age than for the five-year age-groups. Nevertheless, there are three ages where the rates are very different from the rest: 17-18, 44-45 and 71.

The TIFF is counting 111% of those aged 16 enumerated by the Census. At 17, the rate starts increasing, and reaches more than 119% for age 18 before dropping to 97% at age 19. The differences before age 19 are largely due to the imputation method (section 3.3.1). At age 19, however, the taxation information changes. Parents can only claim the dependent deduction for children above the age of 18 if those children are mentally or physically infirm. Thus, to appear in the taxation system beyond the age of 18, most individuals must either file or be reported as a dependant spouse. The drop in coverage at age 19 is likely due to the end of tax benefits for parents of older dependent children, children who are not yet filing.

The reasons for the decreases in coverage for ages 44-45 and 71 are more intriguing. Those in the older age group were born in 1919; the younger group was born in 1945 and 1946. These people belong to cohorts born just following the two World Wars. The discrepancy of five months between the two data sets may account for part of this difference in coverage. Typically, after the end of a war there is a baby boom. The Census data report age as of June 4th, 1991. The taxation data report age on December 31, 1990. The population increases for a given age may be misplaced by these few months. An adjustment for this difference may, at least partially, explain these disagreements between the two data sources.

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Coverage Rates of 1990 T1FF Data
Canada by Single Year of Age
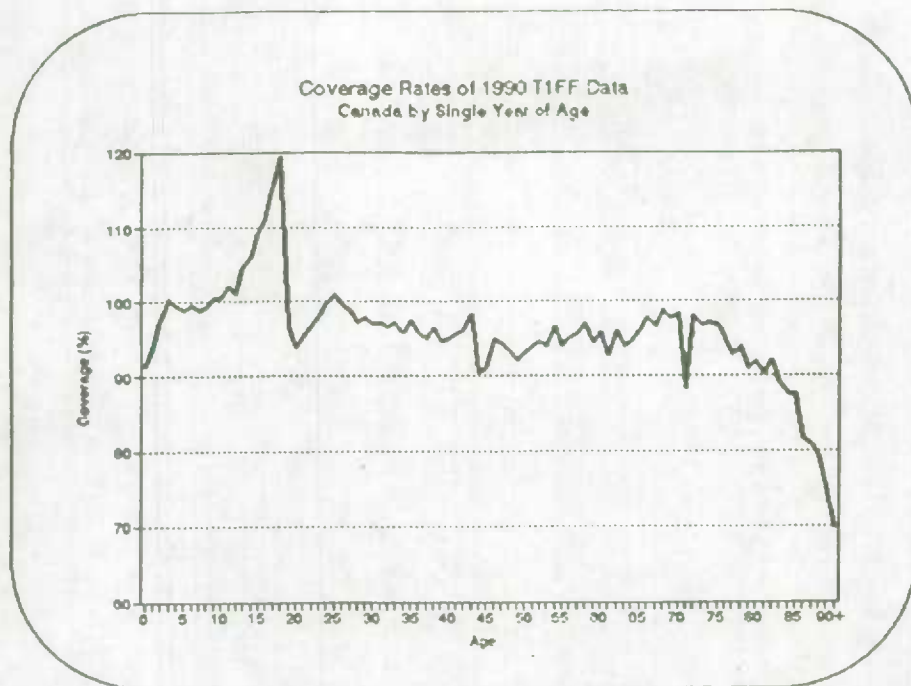
figure 5

4.0 NON-FAMILY PERSONS & FAMILIES

The overall population comparisons include, for the Census, the institutionalized population of 565,000 people. If some institutionalized individuals are filing tax returns, they are treated like all other taxfilers. Whereas the T1FF counts 97% of the total population, it counts 99% of the population in private households. For these comparisons, the T1FF has only one estimate, whereas the Census has two (Table 3).

The population in private households is divided into two components: census families and non-family persons. The T1FF and the Census agree on the population of both: T1FF counts 99% of the Census population in census families and 101% of the non-family persons. Census families are further divided into husband-wife families and lone parent families. The T1FF identified fewer people in husband-wife families (97%), and more people in lone-parent families (nearly 114%) than the Census.

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Table 3

Population by Family type: 1990 T1FF and 1991 Census, Canada

Population	1990 T1FF ('000s)	1991 Census ('000s)	(%)
Total	26,577	27,297	97.4
Institutionalized	?	565	
Private households	26,577	26,732	99.4
Census Families: Total	22,371	22,559	99.2
Husband-wife	19,589	20,111	97.4
Lone Parent	2,781	2,447	113.7
Non-family persons	4,206	4,173	100.8

Sources: 1990 T1FF
Census Publication 93-312, Tables 1 & 3

In addition to counting the numbers of people within each family, the T1FF and Census count the number of families. These comparisons are presented in Table 4, and are similar to the comparisons of Table 3. The levels of agreement between the two data sources are very close for the number of total and husband-wife families and for the number of people within these families.

Table 4

Numbers of Families: 1990 T1FF and 1991 Census, Canada

Number of Families	1990 T1FF ('000s)	1991 Census ('000s)	Percent
Total	7,287	7,356	99.1
- Husband-Wife	6,226	6,401	97.3
- Lone Parent	1,061	955	111.2

Sources: 1990 T1FF
Census Publication 93-312, Tables 1, 2, 3, & 7

4.1 Non-family Persons

The T1FF count of non-family persons is nearly the same as the Census count (100.8%). Table 5 contains the comparisons by age group. For counts of non-family persons aged less than 35 years, T1FF counts nearly 104% of the Census. Some of these may be children who did not match to their parents in the T1FF process. In general, for all age groups, some of T1FF's non-family persons might be common-law partners of each other or of lone parents. Because these matches rely on the more difficult address and name linkages, some may have been missed.

Table 5
Non-family Persons by Age Group: 1990 T1FF and 1991 Census, Canada

Age Group	1990 T1FF	1991 Census	Percent
Total	4,205,940	4,173,495	100.8
<35	1,717,060	1,658,020	103.6
35-44	549,860	561,820	97.9
45-54	392,930	388,415	101.2
55-64	428,000	444,695	96.2
65+	1,118,110	1,120,555	99.8

Sources: 1990 T1FF
        Census Publication 93-312, Table 7 and 93-310 Table 1

4.2 Numbers of Families

The T1FF counted 97% of the Census number of husband-wife families and 111% of lone parent families.

4.2.1 Husband-wife families

Husband-wife families include both those in which the spouses are now-married, and those living common-law. The T1FF estimated fewer husband-wife families than the Census (97.3% of the Census count). The two estimates are very close for the number of married couples, with the T1FF identifying slightly more than the Census (100.4%). However, the

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Census identified many more common-law couples than did the T1FF. The T1FF counted only 72.5% of the Census number of common-law families.

Table 6

Husband-Wife Families: 1990 T1FF and 1991 Census, Canada

Husband-wife Families	1990 T1FF	1991 Census	(%)
Total	6,225,780	6,401,460	97.3
-- now-married	5,699,380	5,675,510	100.4
-- common-law	526,400	725,950	72.5

Sources: 1990 T1FF
Census Publication 93-312, Table 3

4.2.1.1 Common-law families

The matching of common-law couples depends on address, name and age. Addresses must be the same, surnames different (to avoid matching brothers and sisters) and ages within 15 years of each other (to avoid matching parents and children). Matching by address and name is more difficult than matching by Social Insurance Number, which is the matching process for the bulk of the now-married husbands and wives. The process may have missed some matches. Perhaps some lone parent families and non-family persons (or some combination thereof) should have been matched as common-law partners.

4.2.2 Lone Parent Families

The definition of lone parent families is difficult with the tax file, as it is difficult in real life. If, after a separation, children spend six months with each parent, how many lone parent families are there? Of what size? Within the tax system, particularly within the year of separation, both parents could report information about the same children. Because children most often remain with their mothers, one would expect that the tax system would count too many male lone parents. And it does count more than the Census (114% of the Census count). T1FF also counts more female lone parents than the Census (nearly 111% of the Census count) (Table 7).

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Table 7

Lone Parents by Age Group and Gender: 1990 T1FF and 1991 Census, Canada

Age	Total			Male			Female		
	1990 T1FF	1991 Census	%	1990 T1FF	1991 Census	%	1990 T1FF	1991 Census	%
Total	1,061,210	954,715	111.2	192,410	168,240	114.4	868,800	786,475	110.5
<25	106,580	53,455	199.4	7,730	2,460	314.2	98,850	50,990	193.9
25-34	301,170	214,295	140.5	40,520	21,820	185.7	260,640	192,480	135.4
35-44	318,750	287,180	111.0	62,830	52,690	119.2	255,930	234,485	109.1
45-54	160,140	179,345	89.3	42,460	44,110	96.3	117,670	135,245	87.0
55-64	86,130	105,095	82.0	20,970	24,115	86.9	65,160	80,985	80.5
65+	88,450	115,355	76.7	17,900	23,040	77.7	70,550	92,295	76.4

Source: 1990 T1FF
    Census Publications 93-312, Table 7 and 93-310, Table 1

The T1FF and Census often do not agree on the number of lone parents by age group (Table 7). For both genders, the T1FF counts more lone parents younger than age 45 than does the Census, and fewer older than age 44.

In particular, the T1FF and Census differ the most for lone parents aged less than 25 years of age. For those under 25 years, the T1FF counts 3.1 times as many males as Census counts (7,730 versus 2,460) and nearly twice as many female lone parents (98,850 versus 50,990). The seemingly larger discrepancy for males is, in part, due to the magnitude of the numbers (Table 7).

4.3 Number of Families by Family Size

The T1FF estimates more large families than the Census. For both husband-wife and lone parent families with 3 or more children, the T1FF number of families is larger than the Census count.

4.3.1 *Husband-wife Families*

The T1FF estimate of husband-wife families is 97% of the Census estimate. The two estimates are even closer for husband-wife families without children (T1FF is 99% of the

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Census count). More variation between the two estimates occurs for the families with children. For husband-wife families with one or two children, the T1FF estimates are 94% of the Census. And for husband-wife families with three or more children, the T1FF counts slightly more than the Census (101%) (Table 8).

Table 8

Number of Husband-Wife Families by Number of Persons in the Family: 1990 T1FF and 1991 Census, Canada

	1990 T1FF	1991 Census	Percent
Husband-Wife families	6,225,780	6,401,455	97.3
By Number of Persons in the family:			
2 (no children)	2,564,860	2,579,845	99.4
3 (1 child)	1,309,050	1,384,995	94.5
4 (2 children)	1,547,630	1,640,065	94.4
5+ (3+ children)	804,250	796,555	101.0
Average family size:			
All	3.1	3.1	100.0
With Children	3.9	3.9	100.0

Sources: 1990 T1FF
Census Publication 93-312, Tables 2 & 3

4.3.2 Lone Parent Families

The T1FF identified more lone parent families than Census (111%). The largest discrepancy between the two sources is for lone parent families with 3 or more children. The T1FF estimate is 132% of the Census count. The average size of lone parent families from both estimates, however, is the same, 2.6 people.

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Table 9

Number of Lone Parent Families by Number of Persons in the Family:
1990 T1FF and 1991 Census, Canada

	1990 T1FF	1991 Census	Percent
Lone Parent families	1,061,210	954,710	111.2
By Number of Persons in the family:			
2 (1 child)	616,720	559,875	110.2
3 (2 children)	301,430	286,740	105.1
4+ (3+ children)	143,060	108,095	132.4
Average family size	2.6	2.6	100.0

Sources: 1990 T1FF
          Census Publication 93-312, Tables 2 & 3

4.4 Number of families by Age of Children

The T1FF and Census estimates are closest for families with a mixture of young and old children (Table 10). The largest deviations occur for families in which all the children are older than 17 years of age. For both husband-wife and lone parent families, T1FF estimates fewer families with all children older than 17 than does the Census, but especially for lone parent families. Conversely, for lone parent families, T1FF estimates more families with all children less than 18 years of age.

4.4.1 Husband-wife Families by Age of Children

The Census and T1FF agree closely on the number of husband-wife families by age of children. There is one exception. For families with all children older than 17, T1FF counts 91.4% of the families that Census counts.

Census may be including children who are away at school as family members living at home. Taxation may have counted these same children as living elsewhere as non-family persons. In addition, some older children may not be filing and some linkages may have been missed because of the reliance on the more difficult address and name matches for children to their parents.

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When there is a mixture of children by age group, some older than 17 as well as some less than 18, T1FF counts 99% of the Census count. For the comparisons of husband-wife families by age of children, the closest agreement between T1FF and Census is for this age mixture of children (Table 10).

Table 10

Families by Age Composition of Children: 1990 T1FF and 1991 Census, Canada

Family Composition	All Families			Number of Husband-Wife Families			Number of Lone Parent Families		
	1990 T1FF ('000s)	1991 Census ('000s)	%	1990 T1FF ('000s)	1991 Census ('000s)	%	1990 T1FF ('000s)	1991 Census ('000s)	%
All Families	7,287	7,356	99.1	6,226	6,401	97.3	1,061	955	111.2
With Children	4,722	4,776	98.9	3,661	3,822	95.8	1,061	955	111.2
By Ages of Children:									
All <18	3,209	3,113	103.1	2,494	2,576	96.8	715	537	133.2
All >=18	1,017	1,164	87.4	747	817	91.4	270	346	77.9
Some <18 and Some >=18	496	500	99.3	420	428	98.0	77	72	106.9

Sources: 1990 T1FF
Census Publication 93-312, Table 4

4.4.2 *Number of Lone Parent families by Age of Children*

The overall T1FF/Census comparison of 111% for lone parent families includes two extremes (Table 10). The T1FF counts more lone parent families with all children younger than 18 (133%); and fewer lone parent families with all children older than 17 (78%).

For the young families, those in which all the children are less than 18 years, the tax system might be counting both ex-spouses of some previous husband-wife families as lone parents. Each parent could be reporting some deductions or claiming some benefits for the same children, resulting in an over-counting of lone parent families. Most children below the age of 18 are imputed, so these family creations are not dependent on the matching of records.

For the older families, those in which all the children are above the age of 17, the situation

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is quite different: the child (or children) must file, their parent must file, and the linkage must be made. Because there is only one parent, unlike the case of husband-wife families, there is one chance of the parent filing. If these particular lone parents are elderly lone parents who are living with their single, older children, they may not have the same incentive to file.

In addition, having only one parent file, especially one's mother, may reduce the likelihood of matching children to her. If mothers use their maiden names and the children use the surname of their father, because of these differing surnames the children and their mother will not be matched as a lone-parent family. It is more likely that younger women keep and use their maiden names, but their children are unlikely to be filing, therefore will not require the matching process.

5.0 REGIONAL COMPARISONS

Across provinces and territories, the two data sources are closest for the estimates of census families, and most different among the estimates of non-family persons.

5.1 Census families

For the number of census families, the range of agreement (T1FF/Census) was from 95.4% for the Yukon to 103.2% for Newfoundland. Each extreme is within 5% of the Canadian figure of 99.1%. For the population within these census families, the agreement between the two data sources is, again, high. It ranges from 95.7% in the Yukon to 104.6% Saskatchewan (Table A-5, Appendix). Only for Saskatchewan has the T1FF counted more than 5% of its national coverage of 99.2%, and then only slightly more.

5.1.1 *Number of Families by Family Size*

T1FF and Census estimates are compared for families of 2, 3, and 4 or more persons. These are provided for the nation, the provinces and the territories (Table A-5, Appendix). The two sources of estimates are closest for families of 3 persons. The ratios (T1FF/Census) range from 91.3% for the Yukon to 100.1% for Saskatchewan, a difference of 8.8. These extremes are within 5 of the Canadian rate of 96.3%.

By family size, the T1FF and Census estimates of number of families with two persons show the most variation among provinces. For families with 2 persons, the rates range from 98.1% for the Yukon to 114.9% for Newfoundland, a difference of 16.8. These extremes are within 14 of the Canadian figure of 101.3%. For both Newfoundland and the Northwest Territories (114%), the T1FF estimates differ substantially from the Census. Either the T1FF is counting too many 2-person families or the Census is missing some.

Closely following this level of variation is the variation among the estimates for numbers of

families with 4 or more persons, where the extremes are for the Northwest Territories (92.6%) and Saskatchewan (106.6%), a difference of 14. These are within 9 of the Canadian rate of 98.0%.

In every province and territory except one (Alberta), the T1FF and the Census agree on the average number of persons per family. The average is 3.1 for Canada according to both sources, and ranges from 3.0 in British Columbia to 3.7 in the Northwest Territories For Alberta, where the single difference occurred, the T1FF estimated 3.2 persons per family and the Census estimated 3.1.

In summary, the T1FF and Census agree closely on the number of families, but some disagreements were identified for the number of families according to family size. In Newfoundland and the Northwest Territories, the T1FF is counting substantially more small families, whereas for Saskatchewan the T1FF is counting more large families.

5.2 Non-family persons

Some of the largest discrepancies across regions between the T1FF and Census data are for the counts of non-family persons. For Saskatchewan the tax family file counted only 87% of the Census non-family persons. At the other extreme, for Newfoundland the T1FF identified 111% of the Census count of non-family persons. This is a range of 23.8 points, much broader than the ranges for other regional variations. The lower value of 87.4% is furthest from the Canadian figure, nearly 14 points from 100.8%.

In the three most westerly provinces (British Columbia, Alberta and Saskatchewan) and in the Northwest Territories, the T1FF counts are lower than Census counts. In the other eight regions, the T1FF counts are higher than the Census.

6.0 CONCLUSIONS

Data from two sources have been compared: the 1990 taxation family file (T1FF) and the 1991 Census. Some of the highlights of the comparison (T1FF expressed as a percentage of Census) include:

♦ T1FF covers 97% of the Census population. By age group this coverage includes: 102% of the number of people less than age 18; 97% of those aged 65-74; 89% of the people aged 75 years or older; and 82% of those aged 85-89.

♦ The T1FF covers 99% of the population in families. By family type this includes 97% of husband-wife families and 111% of lone parent families. Of the husband-wife families, 100% of the married husband-wife families are counted and only 72% of the common-law partners.

♦ The T1FF counted 101% of non-family persons.

To provide a flavour of the comparisons, the above highlights include both some of the agreements as well as some of the disagreements between the two data sources. Some potential problems seem to exist with the small sub-populations: lone parent and common law families, and the aged.

The smallest geographic areas included in these comparisons are provinces and territories. Data for smaller areas are available from both sources. However, the geographic building blocks are different: census uses enumeration areas, T1FF uses postal codes. To convert from one to the other ranges from difficult to impossible. In addition, the postal code on administrative records is not always for a residential address. Some taxfilers use a business address or a post office box. Data comparisons are difficult because of the inaccuracy of converting from one geographic system to another. In spite of this, some comparisons will be made for Census Metropolitan Areas and Census Divisions.

The T1FF and Census agree well on the total population, the number of families, and the population within these families. Most of the estimates are within five percentage points of each other. The T1FF is also a reliable, timely, annual source of detailed income information, including some measures of labour market activity. In addition, it is the basis for detailed annual migration estimates. Finally, it is less expensive and more timely than census for population, migration and income data. The use of administrative data reduces response burden. Exclusive use would eliminate response burden.

However, the T1FF is at a disadvantage with respect to census data when considering many of the socio-economic variables for which it has no information. Among these are: information about housing, mother tongue or language spoken at home, education, place of birth, citizenship, ethnic group, and occupation.

7.0 FUTURE CONSIDERATIONS

Future considerations could include improvements to the existing T1FF system:

1. The use of a more up-to-date age distribution of children would improve the age assignment to children less than 19 years of age.

2. Improvements to the existing method of address parsing might allow more matches that rely on address (common-law spouses and filing children).

3. An examination of some of the potential problems identified through these comparisons could result in improvements to the T1FF process.

In addition, among the list of future considerations must be included the recent changes to the taxation system:

1. With the 1992 taxation year, an additional marital status category exists on the tax return, "living common-law." In addition, the tax laws have changed to treat common-law spouses the same as legally-married spouses. This is likely to improve the enumeration of common-law spouses. The matching can now include SINs and, for the first time, non-filing common-law spouses can be identified and imputed.

2. With the 1993 taxation year, some key information will be lost. Revenue Canada has dropped the exemption for children. In addition, Health & Welfare Canada no longer administers a universal family allowance program. A new means-tested child benefits program replaces both, administered by Revenue Canada. For families who do not qualify for the new child benefits, the T1FF system will lose a source of information on children.

One of the difficulties of working with administrative data is that the statistician trying to derive information from the file does not have control of the input. If the question of census cancellation is seriously considered in Canada, then the T1FF file will receive serious consideration as the best alternative. The T1FF can, however, only partially replace a census. And if it were to do that on a consistent basis, then Departments within the government of Canada would have to agree on a method to guarantee the continuity of essential information.

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Table A-1

Population of Canada, Provinces and Territories:
1990 T1FF and 1991 Census

	1990 T1FF			1991 Census (unadjusted)		
	Total	Male	Female	Total	Male	Female
Canada	26,576,790	13,101,440	13,475,350	27,296,905	13,454,580	13,842,325
Nfld.	573,090	287,550	285,540	568,475	283,845	284,635
PEI	128,020	63,490	64,530	129,765	63,975	65,780
NS	888,630	438,620	450,020	899,945	441,640	458,295
NB	730,850	362,840	368,010	723,900	357,175	366,715
Que.	6,729,630	3,302,860	3,426,760	6,895,965	3,377,690	3,518,295
Ont.	9,754,690	4,791,880	4,962,810	10,084,885	4,953,090	5,131,820
Man.	1,095,830	540,060	555,770	1,091,945	538,515	553,430
Sask.	982,170	488,090	494,080	988,930	490,775	498,155
Alta.	2,471,220	1,236,250	1,234,970	2,545,555	1,277,345	1,268,185
BC	3,142,310	1,548,340	1,593,970	3,282,060	1,625,965	1,656,085
Yukon	26,140	13,490	12,640	27,800	14,495	13,305
NWT	54,220	27,960	26,250	57,650	30,070	27,625

Table A-2
Population of Canada by Age and Gender: 1990 T1FF and 1991 Census

	1990 T1FF			1991 Census (unadjusted)		
	Total	Male	Female	Total	Male	Female
All Ages	26,576,790	13,101,440	13,475,350	27,296,855	13,454,570	13,842,285
0-4	1,836,990	940,990	896,000	1,906,500	975,765	930,735
5-9	1,895,420	974,140	921,280	1,908,040	978,215	929,825
10-14	1,931,370	987,400	943,970	1,878,015	962,925	915,090
15-19	2,062,920	1,071,050	991,870	1,868,650	958,415	910,235
20-24	1,896,710	948,680	948,030	1,961,860	985,215	976,645
25-29	2,345,700	1,164,200	1,181,500	2,375,525	1,182,570	1,192,955
30-34	2,407,840	1,191,720	1,216,120	2,491,045	1,237,685	1,253,360
35-39	2,189,380	1,080,650	1,108,730	2,284,475	1,133,670	1,150,805
40-44	1,983,740	987,550	996,180	2,086,900	1,042,180	1,044,720
45-49	1,527,750	769,050	758,700	1,640,780	824,200	816,580
50-54	1,250,950	630,010	620,930	1,325,460	663,285	662,175
55-59	1,164,530	583,840	580,690	1,222,925	608,085	614,840
60-64	1,113,950	544,170	569,780	1,176,705	571,940	604,765
65-69	1,044,760	472,680	572,080	1,073,175	492,505	580,670
70-74	785,320	334,830	450,490	821,895	358,950	462,945
75-79	578,160	231,170	346,990	614,775	252,530	362,245
80-84	340,640	122,700	217,940	376,790	140,130	236,660
85-89	155,080	49,720	105,360	189,490	61,250	128,240
90+	6,5590	16,880	48,720	93,850	25,055	68,795

Table A-3

**Coverage (%) of 1990 T1FF with respect to 1991 Adjusted Census
Canada, Provinces and Territories**

	Total	Male	Female
Canada	94.2	93.7	94.7
Newfoundland	98.6	99.2	98.1
Prince Edward Island	97.5	96.8	98.1
Nova Scotia	96.5	96.4	96.6
New Brunswick	97.5	97.4	97.7
Quebec	94.8	94.5	95.2
Ontario	92.7	92.2	93.3
Manitoba	98.5	97.4	99.5
Saskatchewan	97.2	97.3	97.1
Alberta	94.9	94.3	95.4
British Columbia	92.7	91.8	93.6
Yukon	90.2	88.8	91.7
Northwest Territories	88.2	86.4	90.2

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Table A-4
Population of Canada, Provinces and Territories:
1990 T1FF and 1991 Census (adjusted)

	1990 T1FF			1991 Census (adjusted)		
	Total	Male	Female	Total	Male	Female
Canada	26,576,790	13,101,440	13,475,350	28,203,316	13,975,820	14,227,496
Nfld.	573,090	287,550	285,540	581,056	289,870	291,186
PEI	128,020	63,490	64,530	131,362	65,563	65,799
NS	888,630	438,620	450,020	920,946	455,082	465,864
NB	730,850	362,840	368,010	749,414	372,657	376,757
Que.	6,729,630	3,302,860	3,426,760	7,095,546	3,494,370	3,601,176
Ont.	9,754,690	4,791,880	4,962,810	10,517,566	5,197,065	5,320,501
Man.	1,095,830	540,060	555,770	1,112,977	554,367	558,610
Sask.	982,170	488,090	494,080	1,010,298	501,692	508,606
Alta.	2,471,220	1,236,250	1,234,970	2,604,877	1,310,882	1,293,995
BC	3,142,310	1,548,340	1,593,970	3,388,892	1,686,738	1,702,154
Yukon	26,140	13,490	12,640	28,978	15,188	13,790
NWT	54,220	27,960	26,250	61,454	32,356	29,098

Census Families (Husband-wife and Lone parent) by Number of Persons:
1990 T1FF and 1991 Census, Canada

	Number of Families				Population	
	Total	**Family Size**			**Persons in families**	**Persons not in families**
		2	**3**	**4+**		
Canada						
1990 T1FF	7,286,990	3,181,580	1,610,480	2,494,940	22,370,850	4,205,940
1991 Census	7,356,170	3,139,725	1,671,735	2,544,705	22,558,360	4,173,495
Coverage	99.1	101.3	96.3	98.0	99.2	100.8
Nfld						
1990 T1FF	155,520	54,690	37,030	63,800	509,490	63,600
1991 Census	150,715	47,615	37,545	65,550	501,725	57,205
Coverage	103.2	114.9	98.6	97.3	101.5	111.2
PEI						
1990 T1FF	34,230	13,610	7,530	13,100	110,350	17,670
1991 Census	33,895	12,850	7,690	13,350	109,730	16,825
Coverage	101.0	105.9	97.9	98.1	100.6	105.0
Nova Scotia						
1990 T1FF	244,730	105,010	56,360	83,360	752,150	136,490
1991 Census	244,615	102,155	58,445	84,010	751,215	129,500
Coverage	100.0	102.8	96.4	99.2	100.1	105.4
New Brunswick						
1990 T1FF	201,860	82,850	47,300	71,710	626,950	103,900
1991 Census	198,010	78,740	47,895	71,365	615,220	94,235
Coverage	101.9	105.2	98.8	100.5	101.9	110.3
Quebec						
1990 T1FF	1,841,010	800,670	439,790	600,530	5,570,170	1,159,460
1991 Census	1,883,230	809,095	461,935	612,200	5,676,290	1,070,770
Coverage	97.8	99.0	95.2	98.1	98.1	108.3

	Number of Families				Population	
	Total	Family Size			Persons in families	Persons not in families
		2	3	4+		
Ontario						
1990 T1FF	2,698,550	1,191,470	590,060	917,030	8,241,750	1,512,940
1991 Census	2,726,740	1,151,695	615,615	959,425	8,389,725	1,510,340
Coverage	99.0	103.5	95.8	95.6	98.2	100.2
Manitoba						
1990 T1FF	292,970	127,400	60,500	105,070	920,070	175,570
1991 Census	285,935	123,680	60,885	101,370	886,930	173,845
Coverage	102.5	103.0	99.4	103.6	103.7	101.0
Saskatchewan						
1990 T1FF	262,270	109,340	50,790	102,140	850,810	131,360
1991 Census	257,555	110,970	50,725	95,850	813,685	150,230
Coverage	101.8	98.5	100.1	106.6	104.6	87.4
Alberta						
1990 T1FF	665,320	271,920	141,240	252,160	2,117,150	354,060
1991 Census	667,985	275,850	144,490	247,640	2,095,670	389,315
Coverage	99.6	98.6	97.8	101.8	101.0	90.9
B.C.						
1990 T1FF	871,100	417,660	175,710	277,740	2,604,190	538,130
1991 Census	887,660	420,555	182,085	285,025	2,648,625	567,605
Coverage	98.1	99.3	96.5	97.4	98.3	94.8
N.W.T.						
1990 T1FF	12,670	4,100	2,650	5,910	46,430	7,780
1991 Census	12,720	3,595	2,755	6,380	47,450	8,825
Coverage	99.6	114.0	96.2	92.6	97.9	88.2
Yukon						
1990 T1FF	6,780	2,860	1,520	2,390	21,150	4,990
1991 Census	7,105	2,915	1,665	2,535	22,100	4,790
Coverage	95.4	98.1	91.3	94.3	95.7	104.2

Source: 1990 T1FF
Census Publication 93-312, Table 1