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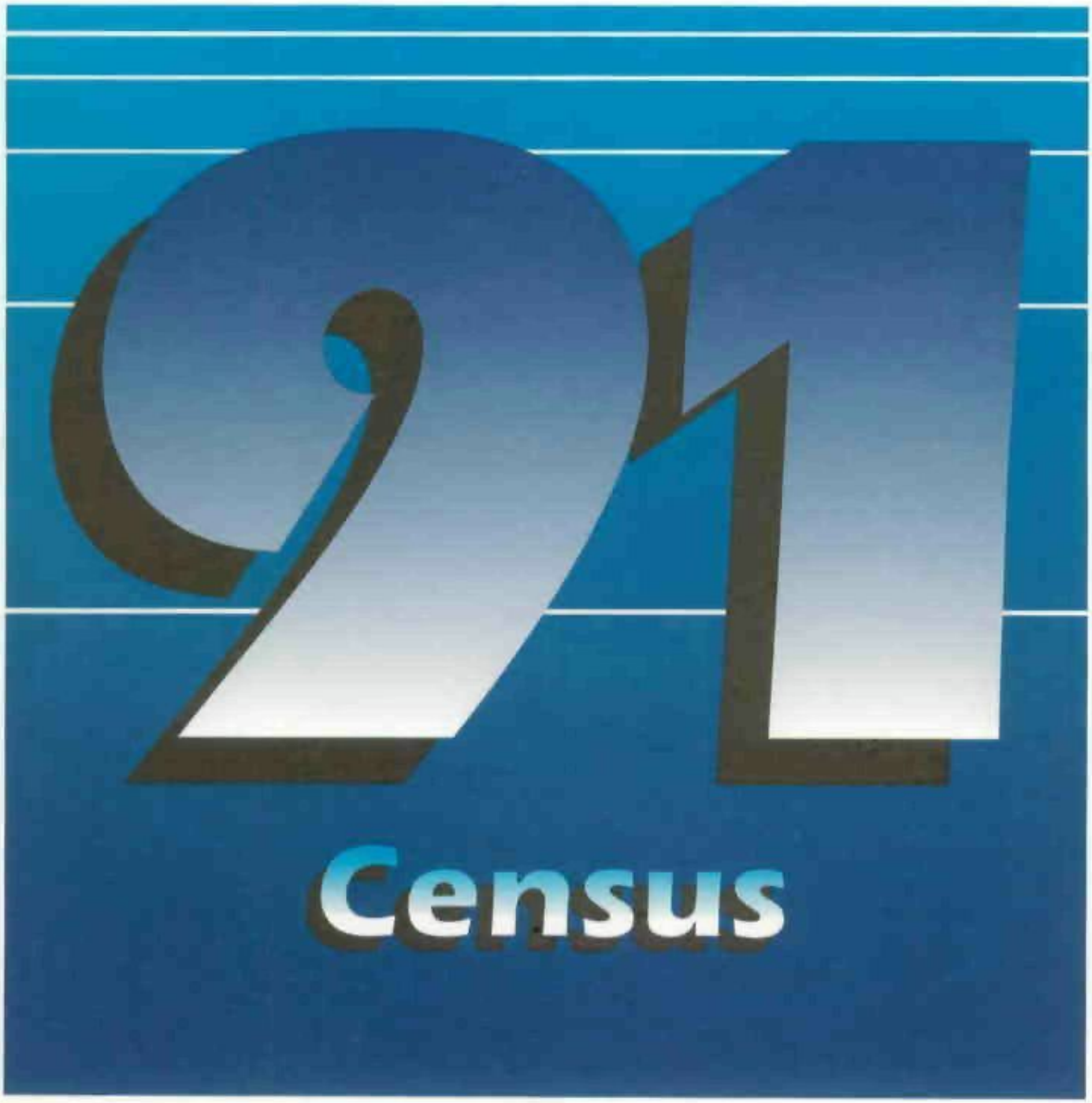
Catalogue 92-327E

Fertility

1991 Census Technical Reports



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Preface

Through time, the census of Canada has become the primary source of information about Canadians and how they live. Decisions based on this information affect the social and economic affairs of all Canadians.

Statistics Canada, as the professional agency in charge of producing this information, has the responsibility for informing users of data quality. The agency must describe the concepts and methodology used in collecting and processing the data, as well as any other features that may affect their use or interpretation.

In order to describe the quality of the 1991 Census data, Statistics Canada has prepared the following publications: a census **Dictionary**, which provides concise and easy to understand textual and graphical information pertaining to census concepts; a **Handbook**, which provides an overview of how the census is conducted; and a series of **Technical Reports**, which present, in greater detail, information on the quality of data for specific characteristics, such as fertility, as covered in this report.

Information on data quality is important for users. It allows them to assess the usefulness of census data for their purposes as well as the risks involved in basing conclusions or decisions on these data. The 1991 Census was a large and complex undertaking and, while considerable effort was taken to ensure high standards throughout all collection and processing operations, the resulting data are inevitably subject to a certain degree of error.

Information on data quality is also important to Statistics Canada. It plays an integral part in the development and maintenance of pertinent and reliable statistical programs.

This publication is a major contribution to achieving these goals. It has been prepared by **A. Rahim**, with the support of staff from three Divisions in Statistics Canada: Demography, Census Operations and Social Survey Methods.

Finally, I would like to express my appreciation to the millions of Canadians who completed their questionnaires on June 4, 1991, as well as to those who assisted Statistics Canada in planning and conducting the census.

Ivan P. Fellegi

Chief Statistician of Canada

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I. Introduction

Every five years a census of population is carried out in Canada. The national census of population is a major project conducted by Statistics Canada to collect, verify and publish data. The national census provides the most comprehensive database on the characteristics of Canadians, their families and their households. The information ranges from age and sex of individuals to their ethnic origin, education, occupation, labour force activity, industry, and sources of income, as well as their family and household characteristics. The census is an invaluable source of information that is useful to the various levels of government, to businesses, associations, educational institutions, interest groups, and to the general public. The data can be used in government planning of social and economic programs, assessment of the need for educational and health facilities, and planning by private enterprise.

Information is obtained through a series of questions established after detailed consultation and testing. It is collected by trained enumerators, checked for inconsistencies and entered into a computer database where missing and erroneous data are detected and corrected. The final results are stored in a computer database at Statistics Canada. Data are analyzed, published and disseminated in various forms.

In a massive project such as the census, however, the results are never perfect. Although considerable effort has been made to maintain high standards of quality, errors inevitably occur at various stages of the collection and processing operations. Users must be aware of the nature and scope of any errors that the census data may contain, as well as of the risks involved in basing conclusions or decisions on these data.

The **1991 Census Technical Reports** have been designed to inform data users of the potential problems or intricacies concerning the 1991 Census data. The reports inform users of the conceptual framework and definitions used in the data collection, of any unusual circumstances which may influence the data, of likely principal sources of error and, where possible, of the size of the error.

This product is a specialized analytical tool. It complements and coordinates other reference products and assists the more sophisticated user in understanding variable details and methodological information on coverage, sampling and weighting.

II. Concepts and Definitions

Census data are produced for four distinct "universes". They are the population universe, the family universe, the dwelling universe, and the households universe.

The fertility variable discussed in this report falls under the population universe. The population universe covers a wide variety of characteristics (demographic, ethno-cultural, language, mobility, schooling, income, labour force, etc.) of individuals. A complete list of these variables can be found in the 1991 Census Dictionary (Catalogue No. 92-301E).

Concepts

Fertility refers to the actual reproductive performance of women. Data for fertility come from three basic sources:

(1) the vital statistics registration system; (2) the national census; and (3) sample surveys. Vital statistics provide birth records of all births. Since it is a continuous process and tells the time of each birth, we can measure current fertility. Commonly used fertility measures like **crude birth rate, general fertility rate, age-specific fertility rate,** and **total fertility rate** are the measures of current fertility.

The census provides data on cumulative fertility over a woman's lifetime or up to a certain time (i.e. up to the date of the census). The most commonly used fertility measure from census data is the average number of children ever born per woman. Fertility data captured in the 1991 Census give the actual number of children a woman has given birth to during her reproductive life. For women who have attained post-reproduction age by the time of the census date, the data are used to measure **completed lifetime fertility** or **completed family size.** Surveys collect detailed fertility data which allow in-depth analysis, but with geographic limitations.

The distribution of women by the number of children ever born yields statistics on **childlessness.** Similarly, this distribution, when arranged according to birth order, makes possible the calculation of **parity-progression ratios,** a measure of the chance of having an additional child.

III. Data Collection and Coverage

The 1991 Census of Canada, held on June 4, served to collect information on more than 10 million dwellings. Persons were enumerated at their usual place of residence, regardless of where they happened to be on Census Day. This method of enumeration is known as the "de jure" approach to census-taking. Also enumerated were any Canadians staying in a dwelling on Census Day who had no usual place of residence elsewhere in Canada.

Coverage

Respondents were required to meet the following eligibility criteria:

- Canadian citizen or landed immigrant on Census Day;
- Canadian citizen or landed immigrant who was outside Canada on Census Day, but who had a usual place of residence in Canada (Canadian government representative, member of the Canadian Armed Forces, and person on merchant vessels or ocean liners, and his or her family);
- Canadian citizen residing abroad, attached to a diplomatic mission, or in military corps.

For the first time in 1991, the census of population also included non-permanent residents. They include:

- persons holding student authorizations;
- persons holding employment authorizations;
- persons holding Minister's permits;
- refugee claimants.

Foreign residents are not enumerated and so are excluded from the census. They include:

- representatives of governments of other countries and their families;
- members of the Armed Forces of other countries and their families;
- residents of other countries visiting in Canada temporarily.

Census Questionnaire

Like previous censuses, the 1991 Census used two basic types of questionnaires, known as the short (2A) questionnaire and the long (2B) questionnaire. The short questionnaire contains the questions on age, sex, marital status, family relationship, language spoken in childhood, and home ownership. The long questionnaire, in addition to the questions on the 2A questionnaire, asks questions on ethnic origin, aboriginal status, immigration, education, language, mobility, labour force activity, occupation, income, and **fertility.** The 1991 Census questionnaire included the following question on fertility:

23.	**For WOMEN only:**	
	How many children were ever born to this person?	08 ○ None
	Count all children including those who may have died since birth or who may now be living elsewhere. Do not include stillbirths.	**OR** 09 □ ◄ Number of children

The question, only asked of women who are 15 years of age and over, was followed by two instructions: (1) count all children, including those who may have died since birth or who may now be living elsewhere, and (2) do not include stillbirths. Respondents were also instructed in the guide accompanying the questionnaire to exclude step-children, foster children or adopted children. The question was expected to collect data on all children ever born, i.e. all children born alive during the lifetime of the woman in question up to the census date. All women aged 15 and over, irrespective of their marital statuses, reported the total number of children they ever gave birth to.

Data Collection Methods

Two **collection methods** were used for the 1991 Census: **self-enumeration** and **canvasser enumeration**. In self-enumeration areas, a questionnaire (Form 2A or Form 2B) was dropped off at each household before Census Day (June 4). A member of the household was to complete the questionnaire on Census Day. Questionnaires were mailed back in pre-addressed envelopes. In 1991, less than 2% of households were enumerated by canvassers: census representatives completed a long questionnaire (Form 2D) for these households by interview. This method was used to enumerate each household in remote or northern areas and on Indian reserves where irregular mail service makes mail-back impractical. Some of the remote areas were enumerated as early as March 1991. Data were collected on **every Canadian citizen, landed immigrant and non-permanent resident alive at midnight between June 3 and June 4, 1991.**

Sampling

Fertility information was collected by the 2B questionnaire from a 20 percent sample (one in every five) of all households in the 1991 Census. The sample data were weighted up to represent the total population in the processing stage.

Edit and Follow-up

A field edit, or review of the write-in entries for the question, was done in the field to all questionnaires. "Failed field edit" conditions occurred when the write-in entry was not legible, and/or the question was unanswered, even when Question 6 was answered "Never married" (because never-married women were also asked to give the number of children ever born). In the case of a failed-edit question, a telephone follow-up was done to get the needed information. If the failed-edit questionnaire could not be completed by telephone follow-up, a census representative visited the household to complete the information.[1] It may be noted that CRs were instructed: (i) not to erase or change an answer reported; (ii) not to correct or mark for follow-up the question in which there was a multiple entry (i.e. both "None" and "Number of children" boxes were marked); and (iii) not to check for inconsistencies (e.g., a 15-year-old woman who entered 10 children). These errors were to be corrected at later stages of processing. Once the questionnaires were field-edited and followed-up, they were sent to the respective regional offices.

[1] Canada, Statistics Canada, Procedures Manual – Mail-Back Areas, Form 41, 1991 Census of Canada (Ottawa: Statistics Canada, 1991).

IV. Data Assimilation

Data assimilation is the processing phase during which data from the census questionnaires are edited, coded and captured. The process includes the transformation of the questionnaire responses into machine-readable form.

The four main components of data assimilation are:

- Regional Office Processing
- Direct Data Entry
- Head Office Processing
- Automated Coding

Regional Office Processing (ROP)

At this stage, ROP staff ensure that information appearing on the questionnaires is suitable for key entry into the computer. This operation employs approximately 2,000 people, and is conducted in Revenue Canada – Taxation (RCT) regional processing centres in St. John's, Jonquière, Shawinigan, Sudbury, Winnipeg and Surrey. In Ottawa, ROP is conducted at the Statistics Canada head office. For the 1991 Census, the operation took place in the period between July and November of 1991.

ROP operations consisted of the following:

(a) Receipt and Document Preparation

When completed questionnaires reached the regional processing centres, they were logged, counted and prepared for key entry. Preparation included consistency checks between the questionnaires and the Visitation Record – making sure, for example, that the number of household members on both documents matched. Legibility checks ensured that the documents were suitable for computer entry. Finally, all written answers on household relationships (Question 2) were converted to numerical codes.

(b) Reverse Record Check

A sample of persons was selected from the 1986 Census records and external sources, and 1991 documents were searched for these same persons. If a person was found, 1991 characteristics were noted and sent to the head office. For those not found, further tracing determined if they had been enumerated elsewhere in Canada or missed altogether. The results of these searches were coded and captured and the resulting data file was turned over to the Data Quality Project for weighting and the production of undercoverage estimates.

(c) Economic Coding

Written responses for some questions, including the fertility question on the long questionnaire, were converted into numeric codes suitable for direct data entry. For the fertility question, the following was done:

If numbers were written in Roman numerals or alphabetically, the keyer had to convert the response to Arabic numerals.[2]

Supervisors and coding consultants resolved any discrepancies in coding before the questionnaires for an enumeration area (EA) proceeded to the next stage. Sometimes other sources (city directories and subject-matter personnel, for example) were consulted.

(d) Processing

Questionnaires were transferred in "work units" for direct data entry at Revenue Canada – Taxation regional processing centres. From there, after keying, they were sent to Statistics Canada's head office in Ottawa.

[2] Canada, Statistics Canada, ***1991 Census Key Entry Operator Work Instructions,*** 1991 Census of Canada (Ottawa: Statistics Canada, 1991) unpublished.

Data Capture (Direct Data Entry)

The information from the questionnaires entered by the Direct Data Entry operation at the regional offices was stored on cartridges. These cartridges were read by a computer and the information on the cartridges was stored in the computer's memory. The computer analysed the information using a set of pre-determined criteria. For children ever born, the responses were categorized four ways, as follows: (1) "None" – where the respondent actually marked "None"; (2) a number – where the respondent had entered a number, valid or invalid; (3) an invalid entry (i.e. when an entry was neither blank nor numeric); and (4) a non-response.

Head Office Processing (HOP)

Head Office Processing is a combination of automated and manual processing designed to carry out structural edits on the census data and to process special enumeration returns. Included are returns for Canadians overseas, temporary residents, and personnel of merchant and navy ships. HOP also processes coverage study returns such as the **Reverse Record Check (RRC), Vacancy Check (VC), and Overcoverage Study (OC).** In addition, HOP is responsible for the preliminary and final population and dwelling counts and for the microfilming of census questionnaires for archival purposes. The HOP operation employs approximately 150 people and is conducted at the Statistics Canada head office in Ottawa.

Head Office Processing consisted of four major activities performed in three phases:

- **DA I – Receipt, Registration and Storage**

  Visitation records and questionnaires for each enumeration area were received, registered and stored at the head office. Tapes containing respondent data were copied and loaded into the HOP database.

- **DA II – Data Analysis**

  Automated structural edits were carried out at the enumeration area, household and person levels, and inconsistencies, such as person count conflicts and household number conflicts, were resolved manually.

- **DA III – Special Processing**

  Special enumeration returns from Canadians living outside Canada, temporary residents and persons aboard merchant, naval and coast-guard vessels were processed, and population figures adjusted to include the data thus collected. In addition, coverage study returns for checking vacant dwellings, under- and overcoverage were processed, and adjustments were done to the data based on the results of the vacancy check.

- **DA I and/or DA II**

HOP was also responsible for the preliminary and final population and dwelling counts and for the microfilming of census questionnaires for archival purposes.

Automated Coding (AC)

The automated coding operation converted written responses to numeric codes. Automated coding was applied to questions on mother tongue, home language, knowledge of other languages, registered Indian status, place of birth, ethnic origin, major field of study, religion and place of residence 1 year ago and 5 years ago.

To obtain corresponding numeric codes, the responses were matched against an automated reference file/classification structure containing a series of words or phrases. An analysis was conducted for each variable to ensure data quality objectives were maintained prior to transferring the records for edit and imputation.

V. Edit and Imputation

In the edit and imputation phase, all remaining errors, discrepancies, inconsistencies and missing answers are identified and corrected (this includes imputation) by a fully automated series of computer programs. The final set of usable "clean" data (free of invalid, inconsistent and missing responses) is produced, comprising a unique database which provides Canada's most detailed information about the population and its characteristics, from the national to the neighbourhood level. The errors were of three kinds for the fertility question: (1) non-response;

(2) inconsistency; and (3) invalid response. Non-response is understood as being when the respondent (a woman of 15 years or more) neither checked the "None" box nor entered a value in the "Number of children" box. Inconsistency is understood as being when the respondent entered a value which was not consistent with other information for the same woman (for example, a woman 20 years old reported to have had 10 children). Invalid response is understood as being when the respondent entered more than 19 as the number of children ever born.

Edit Rules

Non-responses, inconsistencies and invalid responses were corrected at the head office. A computer system called SPIDER was used for this purpose. The system identified (edited) the errors and replaced the erroneous values with the valid (imputed) ones. For the women 15 years or older, "edit failure" occurred if:

(1) the number of children ever born was BLANK (not reported);

(2) the number of children ever born was INVALID (i.e. more than 19); and

(3) the women's age minus the number of children ever born was less than 14.

These rules were developed on the assumption that all women 15 years or older should have marked either the "None" box or reported a number (from 1 to 19) in response to the fertility question. Also, the minimum age for a woman to have a child was assumed to be 15 years.

Imputation Process

Errors found at this stage can be the result of respondents answering the questions incorrectly or incompletely, or they can be due to errors generated during coding activities and data capture. After errors are detected, values for missing or incomplete entries are imputed. Imputation, which is the correction of the errors, is done using either a "deterministic" or a "hot deck" method. For deterministic imputation, errors are corrected by inferring the appropriate value from answers to other questions. The "hot deck" approach selects a record that has a number of characteristics in common with the record in error, and imputes the missing information from this "donor" record.

In the course of the edit and imputation process, the age of women was stratified into six homogeneous groups in order to make the application of edit rules and auxiliary constraints simple and straightforward. The stratification was based on the following age groups: 15-19, 20-24, 25-29, 30-44, 45-64, and 65 and over. Institutional residents, men, and women aged 0-14 were excluded by the edit rules for fertility. As shown in Table 5.1, proportions of edit failure at the national and at the regional levels were extremely small. This suggests that data on children ever born were virtually unaffected by the erroneous records failing edit rules.

Table 5.1 Proportion of Non-response, Edit Failure, and Imputed Records for the Question on Children Ever Born, Canada and Regions, 1991

Regions	Total non-response	Edit failure	Total imputed
Canada	3.72	.01	3.73
East	3.18	.02	3.20
Quebec	3.75	.01	3.76
Ontario	3.79	.03	3.81
West	3.72	.02	3.74
2C questionnaire	6.36	.02	5.38

Weighting

One in every five households, or 20% of the population, receives a more detailed long questionnaire (Form 2B) and is asked additional socio-economic questions. A weighting algorithm is developed so that the data can be used to estimate response from 100% of the population. The procedure for weighting sample data in 1991 has been revised since 1986 and is known as the "Generalized Least Squares Estimation Procedure (GLSEP)". The GLSEP begins with initial weights of approximately 5 and then, using basic census information known for every person, i.e. age, sex, and marital status, adjusts it to obtain the desired agreement between the sample estimates and the population counts. Once data are finalized and weights are calculated, final data are transferred to the Canada retrieval databases; these databases are used to produce the published and custom products.

VI. Data Evaluation and Quality

In a census, data on fertility, like those obtained for many other variables, are subject to sampling error, coverage error, response error, and processing error. It is, therefore, important to evaluate the quality of the data after edit and imputation operations were completed.

- **Sampling Error**

  Since fertility data in the 1991 Census were collected on the basis of a 20 percent sample of Canada's population, they are likely to be affected by sampling error. The probability of this error for these data was expected to be smaller because of the larger universe (the fertility question was asked of all women aged 15 years and over instead of restricting its application to ever-married women only, as in the past censuses). More detailed information on sampling error will be contained in the 1991 Census Technical Report entitled ***"Sampling and Weighting"*** (Catalogue No. 92-342), which is to be published later in 1994.

- **Coverage Error**

  A coverage error occurs when a person or a household is missed completely in the census count or counted more than once. The undercoverage rates for single and younger women are usually higher than for ever-married women. For fertility, therefore, some coverage error may be expected, although no direct information is available on the extent and impact of it.

- **Response Error**

  In any census or survey, response error in the data on children ever born is almost unavoidable. For example, underreporting occurs because many women tend to forget to count their older children who are away at school, who are at work, or who are married. This usually happens to those women with a large number of children ever born. When the questionnaire is filled in by a respondent other than the woman to whom the question refers, the rate of underreporting increases. This is more serious in the case when children, especially those born out of wedlock, have been given up for adoption. Overreporting of children, on the other hand, occurs due to the inclusion of adopted, step-, or foster children as "own" children or the reporting of stillbirths as live births.

  Data on children ever born collected through one of the 1978 Census Tests (called Modular Test-4), and those obtained through interviews with the same women respondents (who were asked about the children living in the household, any children who had died, and children living away from their mother) were compared. It was found that exact agreement on the number of children ever born between the two sources occurred for 91 percent of the women.[3]

- **Processing Error**

  Processing error may occur due to coding of write-in responses, loss of data, or entering the wrong data at the time of the computer processing stages. This error may also occur at the edit and imputation stage, due to deficiencies in the E & I program.

- **Evaluation of Fertility Data**

  Several procedures were used for evaluation of the quality of the 1991 Census data on fertility:

  (1) estimates of blank and invalid responses were established;

  (2) trend analysis of the data for 1971, 1981, and 1991 was undertaken;

  (3) expected values were derived, based on the 1981 Census data, for children ever born and childlessness for older women (50+ years old) and then compared with the observed values in the 1991 Census;

  (4) the numbers of children ever born from vital statistics data were compared with census data;

  (5) the number of children ever born among currently married and ever-married women in the 1991 Census was compared with the findings from the General Social Survey (1990).

[3] Bali Ram, ***Evaluating the Question on Fertility Through Modular Test-4*** (Ottawa: Characteristics Division, Census and Households Surveys Field, Statistics Canada; April 1978).

1. Blank and Invalid Responses

In the 1991 Census database, there were 2,242,706 records concerning women aged 15 and over. Of these, only 83,804 (3.73 percent) required imputation to compensate for blank and invalid entries. The remaining 2,158,902 (96.27 percent) did not require E & I changes to the variable "children ever born". The proportion of blank and invalid responses in the 1991 Census data on fertility was slightly less than that of the 1981 Census (4 percent of all records). This suggests that, overall, the data on children ever born in the 1991 Census are of high quality. At the regional level, the proportions of blank and invalid responses were close to the proportion of blank and invalid responses at the national level, although there were variations between the regions ranging from 3.20 percent to 3.81 percent. The proportion in 2C records, however, was as high as 6.36 percent (Table 6.1).

Table 6.1 Blank and Invalid Responses to the Question on Children Ever Born to All Females 15 and Over, Canada and Regions, 1991

Regions	Number	%
Canada	83,804	3.73
East	6,008	3.20
Quebec	21,368	3.76
Ontario	30,491	3.81
West	25,408	3.74
2C questionnaire	529	6.38

The percentage of blank and invalid responses by age of women are shown in Table 6.2. The highest rates of blank and invalid responses were observed among younger women. The rate declined with the increase of age; this pattern persisted in the regions as well. The Eastern region recorded lower rates of blank and invalid responses compared with other regions and with Canada as a whole. The reason for the high non-response rate among younger women could be a tendency to leave the question on children ever born unanswered if they had never had children. These women, perhaps, did not consider this question applicable to them.

Table 6.2 Blank and Invalid Responses as a Percentage of Total of Females 15 and Over by Age, Canada and Regions, 1991

Age	Canada	East	Quebec	Ontario	West	2C questionnaire
15	19.90	16.72	20.22	19.70	20.39	27.69
16	16.33	13.48	17.92	16.01	16.18	34.23
17	14.00	12.13	15.21	13.78	13.89	15.88
18	11.65	10.17	12.40	12.05	11.09	21.90
19	9.46	8.39	10.07	10.21	8.55	9.78
20	7.88	6.70	8.44	8.76	6.81	11.32
21	6.54	5.46	6.59	7.09	5.95	7.57
22	5.41	3.83	5.34	6.27	4.95	6.08
23	4.77	3.62	4.40	5.53	4.41	10.40
24	4.11	3.00	3.76	4.71	3.95	6.61
25	3.50	2.79	3.06	4.07	3.34	4.90
26	3.15	2.20	2.78	3.54	3.14	7.40
27	2.75	3.01	2.14	3.21	2.76	6.45
28	2.65	1.53	2.17	3.02	2.82	4.96
29	2.38	1.39	1.86	2.70	2.63	4.07
30	2.37	2.11	1.78	2.69	2.47	5.95
31	2.25	1.34	1.62	2.55	2.53	6.32
32	2.07	1.40	1.56	2.45	2.18	4.16
32+	2.36	1.95	2.60	2.32	2.29	4.47
Total	**3.73**	**3.20**	**3.76**	**3.81**	**3.74**	**6.38**

In the course of imputation, blank and invalid responses were assigned "valid" values taken from "clean records" obtained by matching with the relevant characteristics of women. As shown in Table 6.3, more than 60 percent of all blank and invalid responses were given a zero value by imputation (i.e. women with no children). The remainder, fewer than 40 percent, were imputed a particular non-zero number corresponding to the number of children reported by the women.

Table 6.3 Percentage Distribution of Imputed Number of Children Born to All Women 15 and Over, Canada and Regions, 1991

Number of Children	Canada	East	Quebec	Ontario	West	2C questionnaire
0	64.31	66.22	70.26	63.39	60.05	60.11
1	8.20	8.00	6.91	8.02	9.46	12.66
2	10.20	8.47	7.88	11.35	11.02	18.71
3	6.83	6.85	5.19	7.52	7.38	6.42
4	3.84	3.21	3.25	3.72	4.66	1.37
5	2.23	1.99	2.15	2.16	2.46	.78
6	1.33	1.28	1.14	1.28	1.60	0
7	.86	1.29	.93	.77	.83	0
8	.64	.54	.56	.71	.67	0
9	.46	.38	.52	.40	.52	0
10	.29	.34	.28	.24	.36	0
11	.23	.85	.23	.13	.22	0
12	.22	.24	.25	.12	.33	0
13	.10	.05	.16	.03	.16	0
14	.08	.05	.10	.04	.10	0
15	.04	.05	.03	.03	.06	0
16	.03	.01	.04	.04	.03	0
17	.02	.05	.04	.006	.01	0
18	.01	.02	.02	.01	.02	0
19	.003	.03	0	0	0	0
Total	**100**	**100**	**100**	**100**	**100**	**100**

Two facts were clear in the distribution of blank and invalid responses which were assigned a non-zero value. First, the proportion of imputed values gradually declined with the rise in parity of women. Second, a larger number of records were imputed in the second parity (10.20 percent) than in the first (8.20 percent). These observations are quite consistent with the overall distribution of women by parity.

2. Fertility Trend

Available information, such as vital statistics data and various survey results, suggests that fertility rates in Canada have been declining in recent years. It is, therefore, reasonable to assume that data would be unreliable if the average number of children ever born to ever-married women were greater in the 1991 Census than in the 1971 and 1981 censuses. Because of various error factors, some variations in certain age groups may be tolerated to some extent. However, overall, particularly for ages 25-49, a decline in fertility during 1971 and 1991 is most likely to be expected. Data shown in Table 6.4 meet this expectation.

Table 6.4 Number of Children Ever Born per 1,000 Ever-married Women by Age and Province, Canada

Canada

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	634	429	385	-32.3	-10.3
20-24	910	687	603	-24.5	-12.2
25-29	1,706	1,285	1,087	-24.7	-15.4
30-34	2,621	1,880	1,680	-28.3	-10.6
35-39	3,158	2,330	1,960	-26.2	-15.9
40-44	3,348	2,842	2,102	-15.1	-26.0
45-49	*	3,260	2,356	*	-27.7
50-54	3,257	3,407	2,814	4.6	-17.4
55-59	*	3,379	3,235	*	-4.3
60-64	3,049	3,272	3,386	7.3	3.5
65-69	** N/A	3,131	3,365	** N/A	7.5
70 +	** N/A	3,316	3,181	** N/A	-4.1

Newfoundland

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	830	924	583	11.3	-36.9
20-24	1,410	1,114	854	-21.0	-23.3
25-29	2,432	1,748	1,324	-28.1	-24.3
30-34	3,658	2,394	1,929	-34.6	-19.4
35-39	4,643	3,130	2,232	-32.6	-28.7
40-44	5,069	3,961	2,575	-21.9	-35.0
45-49	*	4,855	3,132	*	-35.5
50-54	5,183	5,149	4,022	-0.7	-21.9
55-59	*	5,185	4,749	*	-8.4
60-64	4,787	5,143	4,932	7.4	-4.1
65-69	** N/A	4,921	4,959	** N/A	0.8
70 +	** N/A	4,932	4,917	** N/A	-0.3

Prince Edward Island

Age groups	1971	1981	1991	Percent change 1971 - 1981	Percent change 1981 - 1991
15-19	823	752	462	-8.6	-38.6
20-24	1,150	956	801	-16.9	-16.2
25-29	2,126	1,577	1,368	-25.8	-13.3
30-34	3,287	2,170	1,939	-34.0	-10.6
35-39	4,093	2,937	2,293	-28.2	-21.9
40-44	4,452	3,550	2,478	-20.3	-30.2
45-49	*	4,132	2,940	*	-28.8
50-54	4,296	4,177	3,637	-2.8	-12.9
55-59	*	4,351	3,965	*	-8.9
60-64	3,977	4,109	4,073	3.3	-0.9
65-69	** N/A	3,982	4,304	** N/A	8.1
70 +	** N/A	3,816	3,914	** N/A	2.6

Nova Scotia

Age groups	1971	1981	1991	Percent change 1971 - 1981	Percent change 1981 - 1991
15-19	734	552	421	-24.8	-23.7
20-24	1,079	839	634	-22.2	-24.4
25-29	2,001	1,422	1,143	-28.9	-19.6
30-34	2,974	1,994	1,724	-33.0	-13.5
35-39	3,555	2,576	2,002	-27.5	-22.3
40-44	3,778	3,208	2,214	-15.1	-31.0
45-49	*	3,673	2,554	*	-30.5
50-54	3,647	3,769	3,122	3.3	-17.2
55-59	*	3,651	3,593	*	-1.6
60-64	3,397	3,512	3,700	3.4	5.4
65-69	** N/A	3,477	3,611	** N/A	3.9
70 +	** N/A	3,533	3,464	** N/A	-2.0

New Brunswick

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	682	610	374	-10.6	-38.7
20-24	1,146	895	709	-21.9	-20.8
25-29	2,089	1,515	1,206	-27.5	-20.4
30-34	3,197	2,145	1,778	-32.9	-17.1
35-39	3,903	2,662	2,057	-31.8	-22.7
40-44	4,256	3,381	2,255	-20.6	-33.3
45-49	*	4,018	2,634	*	-34.4
50-54	4,200	4,350	3,289	3.6	-24.4
55-59	*	4,306	3,869	*	-10.1
60-64	3,903	4,218	4,116	8.1	-2.4
65-69	** N/A	3,926	4,224	** N/A	7.6
70 +	** N/A	4,298	4,083	** N/A	-5.0

Quebec

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	593	309	269	-47.9	-12.9
20-24	792	548	472	-30.8	-13.9
25-29	1,552	1,190	985	-23.3	-17.2
30-34	2,475	1,788	1,560	-27.8	-12.8
35-39	3,136	2,187	1,811	-30.3	-17.2
40-44	3,554	2,721	1,969	-23.4	-27.6
45-49	*	3,275	2,210	*	-32.5
50-54	3,746	3,635	2,678	-3.0	-26.3
55-59	*	3,846	3,214	*	-16.4
60-64	3,679	3,887	3,596	5.7	-7.5
65-69	** N/A	3,830	3,840	** N/A	0.3
70 +	** N/A	4,257	3,887	** N/A	-8.7

Ontario

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	610	428	426	-29.8	-0.5
20-24	887	684	593	-22.9	-13.3
25-29	1,652	1,247	1,030	-24.5	-17.4
30-34	2,523	1,833	1,653	-27.3	-9.8
35-39	2,964	2,282	1,958	-23.0	-14.2
40-44	3,033	2,729	2,090	-10.0	-23.4
45-49	*	3,060	2,316	*	-24.3
50-54	2,844	3,108	2,734	9.3	-12.0
55-59	*	2,999	3,065	*	2.2
60-64	2,587	2,838	3,124	9.7	10.1
65-69	** N/A	2,700	3,025	** N/A	12.0
70 +	** N/A	2,754	2,750	** N/A	-0.1

Manitoba

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	657	572	582	-12.9	1.7
20-24	905	790	772	-12.7	-2.3
25-29	1,799	1,389	1,235	-22.8	-11.1
30-34	2,742	2,028	1,883	-26.0	-7.1
35-39	3,296	2,519	2,137	-23.6	-15.2
40-44	3,407	3,055	2,229	-10.3	-27.0
45-49	*	3,409	2,562	*	-24.8
50-54	3,195	3,415	3,037	6.9	-11.1
55-59	*	3,307	3,432	*	3.8
60-64	2,898	3,179	3,493	9.7	9.9
65-69	** N/A	2,976	3,301	** N/A	10.9
70 +	** N/A	3,238	3,050	** N/A	-5.8

Saskatchewan

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	712	571	502	-19.8	-12.1
20-24	1,025	934	883	-8.9	-5.5
25-29	2,035	1,632	1,518	-19.8	-7.0
30-34	3,020	2,263	2,137	-25.1	-5.6
35-39	3,532	2,725	2,371	-22.8	-13.0
40-44	3,684	2,279	2,481	-38.1	8.9
45-49	*	3,666	2,771	*	-24.4
50-54	3,386	3,690	3,257	9.0	-11.7
55-59	*	3,581	3,643	*	1.7
60-64	3,363	3,377	3,654	0.4	8.2
65-69	** N/A	3,255	3,541	** N/A	8.8
70 +	** N/A	3,898	3,436	** N/A	-11.9

Alberta

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	639	416	393	-34.9	-5.5
20-24	945	698	696	-26.1	-0.3
25-29	1,837	1,306	1,218	-28.9	-6.7
30-34	2,754	1,972	1,785	-28.4	-9.5
35-39	3,252	2,445	2,092	-24.8	-14.4
40-44	3,380	2,975	2,224	-12.0	-25.2
45-49	*	3,340	2,494	*	-25.3
50-54	3,230	3,404	2,934	5.4	-13.8
55-59	*	3,425	3,382	*	-1.3
60-64	3,048	3,223	3,517	5.7	9.1
65-69	** N/A	3,129	3,397	** N/A	8.6
70 +	** N/A	3,390	3,202	** N/A	-5.5

British Columbia

Age groups	1971	1981	1991	Percent change 1971 – 1981	Percent change 1981 – 1991
15-19	607	373	374	-38.6	0.3
20-24	928	671	570	-27.7	-15.1
25-29	1,687	1,230	1,078	-27.1	-12.4
30-34	2,554	1,778	1,631	-30.4	-8.3
35-39	2,985	2,227	1,903	-25.4	-14.5
40-44	3,035	2,714	2,027	-10.6	-25.3
45-49	*	3,024	2,263	*	-25.2
50-54	2,754	3,120	2,671	13.3	-14.4
55-59	*	2,961	3,047	*	2.9
60-64	2,371	2,740	3,094	15.6	12.9
65-69	** N/A	2,474	2,966	** N/A	19.9
70 +	** N/A	2,558	2,614	** N/A	2.2

* In 1971 data were reported for the age groups of 45-54 and 55-64. Therefore, the information found under the age range 50-54 and 60-64 in the 1971 column is actually for the age range 45-54 and 55-64 respectively.

** N/A – Counts not available.

Fertility increases among younger women, particularly in the 15-19 and 20-24 age groups, are also consistent with the recent trend found in the vital statistics, except in the Eastern region where fertility decline in those age groups does not conform with the trend in the vital statistics (according to the vital statistics, a slight increase in fertility was observed during that period). However, the observed trend for other age groups in that region are consistent with the vital statistics – the fertility decline during 1981-1991 was much lower compared with the decline during 1971-1981. With the error tolerance limit presently in effect, the overall data on fertility in the 1991 Census are of reasonable quality.

3. Data for Older Women

As older women may omit the number of children ever born who died, who left home or who are married, fertility data from them tend to be less reliable compared with those for younger women. For the purpose of evaluation of data quality, however, fertility data for older women are highly useful. It is almost universal that among women in their forties, the changes in fertility are small and that among those in their fifties, there is virtually no change. The data would be unreliable if the average numbers of children ever born per 1,000 ever-married women for the age groups 40-44, 45-49 and 50-54 in 1981 did not equal those for the age groups 50-54, 55-59 and 60-64 respectively in 1991. As shown in Table 6.5, most ratios of the expected to the observed number of children ever born per 1,000 ever-married women are close to unity at the national as well as at the regional levels (i.e. the differences between the observed and the expected values lie within the tolerance limit of 10 percent).

Table 6.5 Observed and Expected Number of Children Ever Born per 1,000 Ever-married Women, 1991 Census

Region	50-54			55-59			60-64		
	Obs. (O)	Exp.* (E)	E/O	Obs. (O)	Exp.** (E)	E/O	Obs. (O)	Exp.*** (E)	E/O
Canada	2,814	2,842	1.010	3,235	3,260	1.008	3,386	3,407	1.006
East	3,414	3,459	1.013	3,953	4,081	1.032	4,124	4,310	1.045
Quebec	2,678	2,721	1.016	3,214	3,275	1.019	3,596	3,635	1.011
Ontario	2,734	2,729	0.998	3,065	3,060	0.998	3,124	3,108	0.995
West	2,869	2,915	1.016	3,275	3,264	0.997	3,340	3,328	0.996

* Values for women aged 40-44 in 1981.

** Values for women aged 45-49 in 1981.

*** Values for women aged 50-54 in 1981.

A similar comparison between these censuses was done for ever-married women reported to be childless **(Table 6.6)**. The proportion of childlessness among ever-married women aged 40-44, 45-49, and 50-54 in 1981 approximates the proportion of childlessness among women aged 50-54, 55-59 and 60-64 respectively in 1991. The deviations of the observed from the expected values lie within the tolerance limit of 10 percent at the national as well as the regional levels. The extent of childlessness is slightly overestimated in the Eastern region for women aged 55 and over, and among women aged 55-59 in Quebec (the tolerance errors are more than 10 percent). Further investigation is required to identify the causes of such overestimation.

Table 6.6 Observed and Expected Proportion of Ever-married Women with Number of Children Ever Born, 1991 Census

Number of children	50-54			55-59			60-64		
	Obs. (O)	Exp.* (E)	E/O	Obs. (O)	Exp.** (E)	E/O	Obs. (O)	Exp.*** (E)	E/O
Canada									
0	8.03	7.34	0.91	7.89	7.20	0.91	8.84	8.35	0.94
1	10.02	9.92	0.99	8.67	8.98	1.04	9.41	9.43	1.00
2	28.90	29.17	1.01	22.66	22.88	1.01	21.07	21.23	1.01
3	25.36	25.40	1.00	23.15	22.89	0.99	20.49	20.80	1.02
4	14.39	14.68	1.02	16.30	16.53	1.01	15.49	15.43	1.00
5	6.81	6.88	1.01	9.27	9.30	1.00	9.57	9.47	0.99
6+	6.50	6.61	1.02	12.07	12.22	1.01	15.14	15.29	1.01
East									
0	6.25	5.77	0.92	7.07	5.84	0.83	8.06	6.88	0.85
1	7.94	7.76	0.98	7.12	7.27	1.02	8.09	7.62	0.94
2	21.63	21.47	0.99	16.55	16.19	0.98	15.76	15.31	0.97
3	22.83	22.69	0.99	19.35	18.30	0.95	16.95	15.89	0.94
4	16.89	17.37	1.03	15.65	16.02	1.02	14.78	15.33	1.04
5	10.40	10.55	1.01	11.45	12.20	1.07	10.98	11.20	1.02
6+	14.07	14.36	1.02	22.77	24.15	1.06	25.38	27.78	1.09
Quebec									
0	9.19	8.26	0.90	9.36	7.93	0.85	9.98	9.19	0.92
1	11.91	12.19	1.02	9.59	9.96	1.04	9.62	9.72	1.01
2	29.85	29.99	1.00	21.99	22.10	1.01	18.01	18.39	1.02
3	24.16	23.74	0.98	21.40	21.57	1.01	17.94	18.42	1.03
4	12.84	12.91	1.01	15.47	15.79	1.02	15.43	14.64	0.95
5	6.20	6.62	1.07	9.25	9.42	1.02	10.22	10.25	1.00
6+	5.86	6.29	1.07	12.94	13.23	1.02	18.80	19.39	1.03
Ontario									
0	7.88	7.36	0.93	7.55	7.24	0.96	8.69	8.15	0.94
1	10.15	9.88	0.97	9.30	9.47	1.02	10.19	8.46	0.83
2	30.29	31.00	1.02	24.80	25.11	1.01	23.99	21.35	0.89
3	26.25	26.49	1.01	24.29	24.20	1.00	22.12	31.63	1.43
4	13.77	14.20	1.03	16.07	16.11	1.00	14.90	16.58	1.11
5	6.23	6.09	0.98	8.42	8.47	1.01	8.42	10.17	1.21
6+	5.44	4.98	0.92	9.56	9.40	0.98	11.70	13.64	1.17

Table 6.6 Observed and Expected Proportion of Ever-married Women with Number of Children Ever Born, 1991 Census (Concluded)

Number of children	50-54			55-59			60-64		
	Obs. (O)	Exp.* (E)	E/O	Obs. (O)	Exp.** (E)	E/O	Obs. (O)	Exp.*** (E)	E/O
West									
0	7.67	6.88	0.90	7.19	6.82	0.95	8.18	7.63	0.93
1	8.68	8.44	0.97	7.35	7.86	1.07	8.51	8.24	0.97
2	28.26	28.28	1.00	22.08	22.64	1.03	21.39	21.81	1.02
3	26.05	26.43	1.01	24.40	23.84	0.98	21.64	22.70	1.05
4	15.99	16.24	1.02	17.64	18.02	1.02	16.60	17.05	1.03
5	7.11	7.05	0.99	9.85	9.45	0.96	10.16	9.53	0.94
6+	6.24	6.65	1.07	11.50	11.36	0.99	13.53	13.04	0.96

* Values for women aged 40-44 in 1981.

** Values for women aged 45-49 in 1981.

*** Values for women aged 50-54 in 1981.

In addition, the ratios of the expected to the observed proportion of ever-married women ranked by number of children ever born are close to unity in Canada and the regions, suggesting that fertility data obtained from the 1991 Census are of reasonable quality.

4. Comparison with Vital Statistics

The number of children ever born to a group of women born during a certain period is the sum of all annual births to these women up to the current reference period. For example, the number of children ever born to women aged 40-44 in 1991 will be equal to the registered births to all women born during 1947-1951. The comparison of census data with vital statistics will, however, be influenced by the children born outside Canada to immigrant women and by the children who may not be reported in the census. Table 6.7 shows the expected number of children ever born per 1,000 women aged 40-49, in 1991, calculated from vital statistics and the observed number of children ever born per 1,000 women of the same group obtained from the 1991 Census. As expected, the ratios of the expected to the observed number of children ever born are close to unity at the national level and in each province, suggesting that the observed data from the 1991 Census are highly consistent with the expected data derived from vital statistics.

Table 6.7 Observed and Expected Number of Children Ever Born per 1,000 Women of Ages 40-44 and 45-49, Canada and Provinces, 1991

	Observed* (O)	Expected** (E)	E/O
Canada* **			
40-44	1,971	2,069	1.050
45-49	2,237	2,370	1.059
Prince Edward Island			
40-44	2,352	2,371	1.008
45-49	2,775	2,690	0.969
Nova Scotia			
40-44	2,095	2,117	1.011
45-49	2,438	2,483	1.018
New Brunswick			
40-44	2,142	2,164	1.010
45-49	2,505	2,529	1.010
Quebec			
40-44	1,807	1,790	0.991
45-49	2,052	2,000	0.975
Ontario			
40-44	1,966	2,090	1.063
45-49	2,211	2,378	1.076
Manitoba			
40-44	2,101	2,167	1.031
45-49	2,439	2,468	1.012
Saskatchewan			
40-44	2,380	2,388	1.003
45-49	2,687	2,644	0.984
Alberta			
40-44	2,125	2,331	1.097
45-49	2,419	2,630	1.087
British Columbia			
40-44	1,913	2,107	1.101
45-49	2,175	2,314	1.064

* Calculated from the 1991 Census.

** Calculated from age-specific fertility rates available in published reports of vital statistics.

*** Excluding Newfoundland. Data on births by the age of the mother were not available through the vital statistics registration system for Newfoundland.

5. Comparison with GSS (1990)

Although General Social Survey (GSS) data are based on a sample, they are weighted in such a way that the weighted sample tends to be equal to the total population, which facilitates the comparison of 1991 Census data with that of the GSS of 1990. It is, however, important to mention that although the sample is weighted, the sampling errors are not eliminated from the data. Thus, variations between the estimates from survey and census data are always expected. If the variations are small (within a specified tolerance limit) one can conclude that the data are reliable and valid.

Table 6.8 shows the percentage distribution of ever-married and currently married women broken down by number of children ever born for the GSS (1990) and the 1991 Census of Canada. The differences between the two sets of data are usually below 10% for most age groups. For currently married women aged 15-19, the difference was beyond 10%.

Table 6.8 Percentage Distribution of Ever-married and Currently Married Women by Number of Children Ever Born and Age, Canada, GSS (1990) and 1991 Census

Age group	Ever-married											
	Number of Children											
	0			1			2			3+		
	GSS	1991	Diff.	GSS	1991	Diff.	GSS	1991	Diff.	GSS	1991	Diff.
15-19	64.5	68.7	4.2	35.5	25.3	-10.2	0.0	5.0	5.0	0.0	1.1	1.1
20-24	46.5	58.8	12.3	31.5	26.3	-5.2	16.2	11.7	-4.5	5.8	3.2	-2.6
25-29	38.9	38.0	-0.9	27.9	27.7	-0.2	22.7	24.9	2.2	10.5	9.5	-1.0
30-34	15.1	19.0	3.9	22.5	21.6	-0.9	41.5	38.8	-2.7	20.9	20.6	-0.3
35-39	12.0	13.0	1.0	15.8	16.4	0.6	46.1	42.9	-3.2	26.1	27.7	1.6
40-44	10.9	10.7	-0.2	12.9	14.7	1.8	44.6	43.1	-1.5	31.6	31.5	-0.1
45-49	10.7	9.4	-1.3	10.6	12.6	2.0	36.2	38.1	1.9	42.5	40.0	-2.5
50-54	4.7	8.0	3.3	9.6	10.0	0.4	34.9	28.9	-6.0	50.8	53.1	2.3
55-59	7.5	7.9	0.4	10.9	8.7	-2.2	19.7	22.7	3.0	61.9	60.8	-1.1
60-64	7.3	8.8	1.5	10.1	9.4	-0.7	21.7	21.1	-0.6	60.9	60.7	-0.2
65+	13.2	12.1	-1.1	10.9	12.7	1.8	20.8	21.6	0.8	55.1	53.6	-1.5
	Currently Married											
15-19	77.3	69.3	-8.0	22.7	25.2	2.5	0.0	4.6	4.6	0.0	0.8	0.8
20-24	49.2	60.2	11.0	29.9	25.7	-4.2	15.4	11.1	-4.3	5.5	3.0	-2.5
25-29	38.8	38.6	-0.2	27.4	27.6	0.2	22.6	24.6	2.0	11.2	9.2	-2.0
30-34	14.0	18.6	4.6	21.9	21.1	-0.8	42.4	39.5	-2.9	21.7	20.8	-0.9
35-39	10.0	12.3	2.3	14.6	15.3	0.7	49.4	43.8	-5.6	26.0	28.5	2.5
40-44	9.3	10.2	0.9	11.6	13.4	1.8	45.1	44.0	-1.1	34.0	32.4	-1.6
45-49	11.2	9.0	-2.2	7.0	11.7	4.7	37.8	38.8	1.0	44.0	40.5	-3.5
50-54	4.0	7.8	3.8	8.8	9.5	0.7	33.1	29.5	-3.6	54.1	53.2	-0.9
55-59	7.6	7.7	0.1	11.9	8.2	-3.7	20.8	23.2	2.4	59.7	60.9	1.2
60-64	4.5	8.8	4.3	11.3	8.9	-2.4	21.3	21.5	0.2	62.9	60.9	-2.0
65+	13.0	12.0	-1.0	10.5	11.6	1.1	22.4	22.6	0.2	54.1	53.8	-0.3

Special attention may be given to verifying data for this age group. Overall, the fertility data of the 1991 Census are quite consistent with GSS (1990) findings.

VII. Historical Comparability

Collection of fertility data through the census started only in 1941 in Canada. Since then, the fertility variable has been dropped in two censuses – first in 1951 and for the second time in 1986. Variations in the wording and structure of the fertility question were also evident from one census to the next. In the 1941 Census questionnaire, all women who were or had been married were asked to answer the following questions:

- Number of children born to this mother...
- Number of children living on June 2, 1944...

Although these were then the most elaborate questions on fertility posed in the history of the Canadian census, the wording of the questions was not very specific. The above questions were expected to be answered by all ever-married women, but the clause "women who are or have been married" may have caused confusion among many of the respondents who were widowed, divorced, or separated.

Another concern at the time was that although the enumerators were instructed to include children of current and all previous marriages, and to exclude stillbirths, adopted children, or stepchildren, both the inclusion of stillbirths and the omission of deceased children were found to occur in the 1941 Census. Moreover, cases of reporting adopted children and stepchildren as "own children" were observed.[4]

In the 1961 Census the following question was asked of all married, widowed, and divorced women.

- How many live born children have you had?

... or ☐ None

It was assumed that respondents who were separated would consider themselves as married, but for some, that might not have been understood as expected. As a result, some separated women were likely to skip the question. As we see in the question, the children born to an ever-married woman were referred to as "live births". This wording reduced the frequency of inclusion of stillbirths. In 1961, for the first time, data on children ever born were included in the long (2B) questionnaire which was delivered to 20 percent sample households.

Another serious weakness in the 1961 question is the inclusion of the "None" box without any accompanying instructions. It was expected that the "None" box would be checked by those women who had had no live births. However, some left it unanswered instead of writing zero, which created a problem. If the "None" box remained unanswered, it seemed to be a non-response to the fertility question.

In the 1971 Census, fertility data were collected from a one-third sample of households by a question similar to the 1961 Census question, except for slight modifications. The structure and wording of the fertility question for the 1971 Census were as follows:

[4] Enid Charles, ***The Changing Size of the Family in Canada,*** Census Monograph No. 1, Eighth Census of Canada, 1941 (Ottawa: Dominion Bureau of Statistics, 1948).

For women ever married:

How many babies have you had, not counting stillbirths?

O None	O 5	O 10
O 1	O 6	O 11
O 2	O 7	O 12
O 3	O 8	O 13
O 4	O 9	O 14+

The question "How many babies have you had?" reduced the quality of the data collected by allowing the inclusion of adopted children or stepchildren in the count of live births by the respondents. The confusion could have arisen from use of the word "babies" instead of the term "live births". However, the clause "not counting stillbirths" removed the chance of inclusion of stillbirths in the count of the number of children ever born.

Questions on fertility in the 1981 Census were the most appropriate for capturing fertility information.

37. For WOMEN who are married or have been married: How many children were ever born to you? (Count all children including those who may have died since birth or who may now be living elsewhere. However do not include stillbirths.)

09 ☐ None OR

10 ☐ Number of children

The questions in the 1981 Census and in the 1991 Census are very much alike but for a variation in terms of clarity. In the 1981 Census, all women who were or had been married were asked to answer the fertility questions. No accompanying instruction appeared with the questions for women living in common-law unions. The instructions, however, were printed in the guide, and stated that women living in common-law unions were to consider themselves as married for the purposes of the census. The general reluctance of respondents to read the instruction guide may have excluded these women and thus affected the quality of the data. The problem, however, has been solved in the 1991 Census by addressing the fertility questions to all "women", and not restricting them to married or ever-married women. In the 1981 Census, fertility data were collected from a 20 percent sample of households.

VIII. Other Products and Services

The national census is the richest source of data on various characteristics of Canada's population. These data are a major input for planning and policy decisions at all levels of business and government. Census data, therefore, are used in the analysis of a variety of social, economic and demographic phenomena. A census is not complete until the information collected is made available to potential users in a form suited to their needs.

Statistics Canada publishes a series of products for use by Canadians. These products come in several forms, ranging from sets of data in univariate tables to electronic public use microdata files. The 1991 Census data on fertility are available in the following major publications series.

Nation Series

This type of publication is designed to illustrate the basic data on variables collected by the 1991 Census. Cross-tabulations are included for selected variables to illustrate the analytical potential of the data. Although the series provides national coverage, most of the tables show provincial and territorial data. Selected data for census metropolitan areas are also included in several publications.

For the fertility variable, the Nation Series presents data on the distribution of women by the number of children ever born, showing women's marital status, education, mother tongue, ethnic origin, country of birth, and work experience. The publication (Catalogue No. 93-321) was released in June 1993.

Basic Summary Tabulations

The 1991 Census basic summary tabulations (BSTs) are a series of tables, each of which illustrates two or more interrelated variables. All variables covered in the 1991 Census are represented in the BST program.

The 1991 Census BSTs are expected to be released no later than two months after the release of the equivalent Nation Series publication. The catalogue number of the BST on fertility data is E9104.

Bibliography

Canada. Statistics Canada. ***1991 Census Dictionary.*** Ottawa: Supply and Services Canada, 1992. Catalogue No. 92-301E.

_____. Statistics Canada. ***1991 Census Handbook.*** Ottawa: Supply and Services Canada, 1992. Catalogue No. 92-305E.

Charles, Enid. ***The Changing Size of the Family in Canada.*** Census Monograph No. 1, Eighth Census of Canada, 1941. Ottawa: Dominion Bureau of Statistics, 1948.

Ram, Bali. ***A User's Guide to the 1981 Census Data on Fertility.*** Ottawa: Demography Division, Statistics Canada, 1983. [unpublished]

_____. ***An Examination of the Response to the Question on Fertility in Phase III.*** Ottawa: Characteristics Division, Census and Household Surveys Field, Statistics Canada, 1978. [unpublished]

_____. ***Analysis of the Marital Status, Fertility and Nuptiality Data in the National Census Test,*** 1988. Ottawa: Demography Division, Statistics Canada, 1989. [unpublished]

_____. ***Evaluating the Question on Fertility Through Modular Test-4.*** Ottawa: Characteristics Division, Census and Household Surveys Field, Statistics Canada; 1978. [unpublished]

Other Census Reference Products

Canada. Statistics Canada. ***1991 Census Key Entry Operator Work Instructions.*** 1991 Census of Canada. Ottawa: Statistics Canada, 1991. [unpublished document]

_____. Statistics Canada. DA II – ***Edit Processing Manual.*** H-200, Head Office Processing, 1991 Census of Canada. Ottawa: Supply and Services Canada, 1991.

_____. Statistics Canada. ***Operation 2, Document Preparation.*** R-200, Regional Office Processing, 1991 Census of Canada. Ottawa: Supply and Services Canada, 1991.

_____. Statistics Canada. ***Procedures Manual – Mail-back Areas.*** Form 41, 1991 Census of Canada. Ottawa: Supply and Services Canada, 1991.

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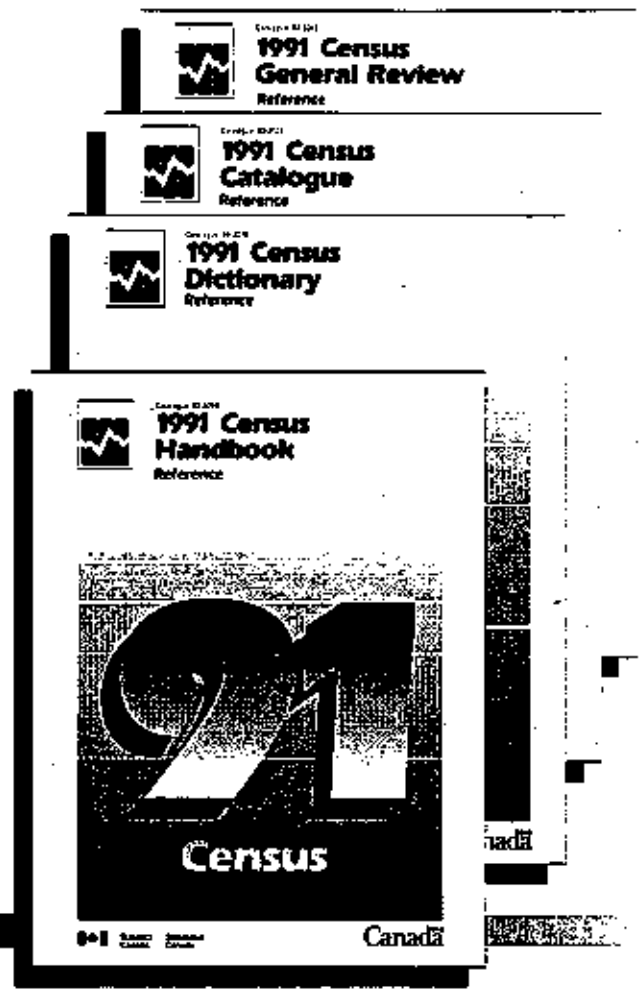

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