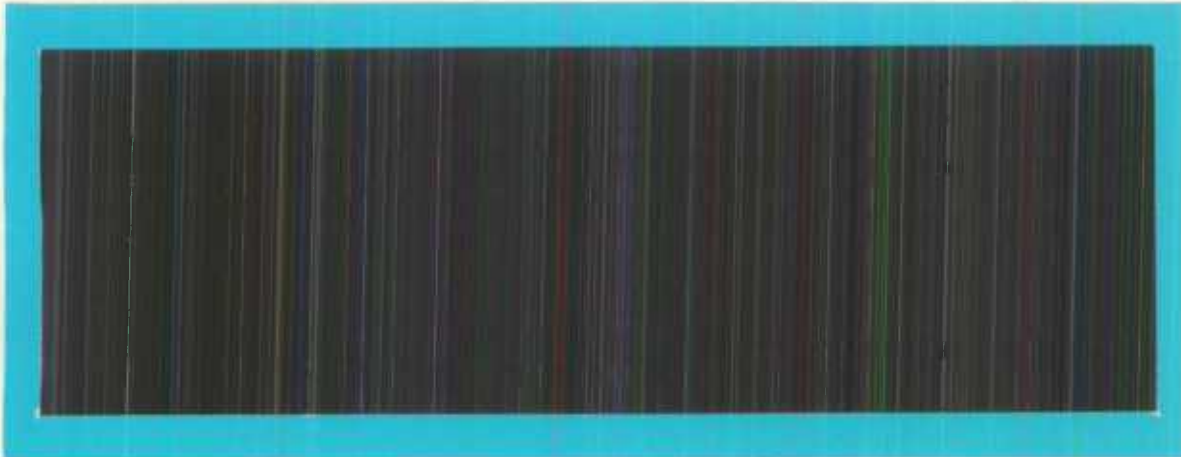


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Methodology Branch

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Methods Division

Direction de la méthodologie

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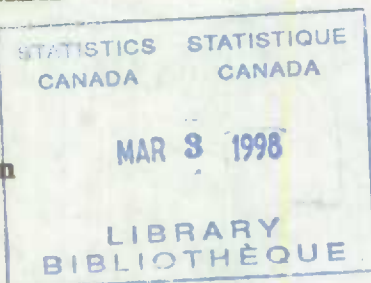
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Methodology

**DATA COLLECTION INITIATIVES  
FOR THE 1991 CENSUS OF CANADA**

SSMD-90-010 E

**Philip Giles  
Social Survey Methods Division  
Statistics Canada**



September 1990

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## DATA COLLECTION INITIATIVES FOR THE 1991 CENSUS OF CANADA

Philip Giles, Statistics Canada

The Canadian Census of Population, conducted every five years by Statistics Canada, is next scheduled for June 4, 1991. The intercensal period is filled with planning design modifications which hopefully will result in improvements to the Census. While a Census is far more than just the data collection, it is this aspect which is the most visible to the public.

This paper will describe important initiatives being planned by Statistics Canada for improving the data collection in the 1991 Census. Of principal concern is the improvement of coverage of the population. The introduction of an address register in urban areas is expected to lead to a decrease in dwelling undercoverage. Statistics Canada will implement special procedures to enumerate the homeless in large cities as part of the Census. Evaluations have led to changes in the data collection for certain subpopulations such as the native population and persons residing in collective dwellings. The design of the Census questionnaire has been modified to make it easier for respondents. These latter changes have been made in the hopes of lowering the undercoverage of persons, as well as improving response rates. In addition, the dropoff/pickup collection methodology is being eliminated, with the result that most of the country will be covered by a dropoff/mailback methodology. The paper provides details on each of these topics, as well as on other important initiatives for the next Canadian Census.

INITIATIVES TOUCHANT LA COLLECTE DES DONNÉES POUR LE RECENSEMENT  
DU CANADA DE 1991

Philip Giles, Statistique Canada

Le recensement canadien de la population, mené à tous les cinq ans par Statistique Canada, est prévu pour le 4 juin 1991. On planifie durant la période intercensitaire un grand nombre de modifications à la conception du recensement, qui doivent en principe assurer l'amélioration de celui-ci. Bien qu'un recensement représente beaucoup plus que la simple collecte des données, c'est ce dernier aspect qui est le plus visible aux yeux du public.

Le présent article décrira certaines initiatives importantes planifiées par Statistique Canada en vue d'améliorer la collecte des données au cours du recensement de 1991. L'amélioration de la couverture de la population assume une importance primordiale. L'introduction d'un registre des adresses dans les régions urbaines devrait permettre de diminuer le sous-dénombrement des logements. Statistique Canada mettra en application des procédures spéciales en vue de dénombrer, dans le cadre du recensement, les sans-abri des grandes villes. Des évaluations ont entraîné des changements dans la collecte des données pour certaines sous-populations, notamment la population autochtone et les personnes demeurant dans des logements collectifs. La conception du questionnaire du recensement a été modifiée afin de faciliter la tâche des répondants. Ces derniers changements ont été apportés dans l'espoir de diminuer le sous-dénombrement des personnes, ainsi que d'améliorer les taux de réponse. De plus, on a procédé à l'élimination de la méthodologie de collecte par livraison/reprise, ce qui aura pour conséquence la couverture de la plus grande partie du pays par une méthodologie de livraison/retour par la poste. L'article contient des détails sur chacun de ces sujets, ainsi que sur d'autres initiatives importantes destinées au prochain recensement du Canada.

# DATA COLLECTION INITIATIVES FOR THE 1991 CENSUS OF CANADA

Philip Giles, Statistics Canada

August 9, 1990

## **A. Introduction**

The first Canadian Census of Population was conducted in 1666. A decennial Census has been conducted since 1871, and a quinquennial Census since 1956. The Census has been conducted in June since 1911, with the date being changed from June 1 to the first Tuesday in June for the 1981 Census. Due to the large-scale nature of a census operation, the procedures are not completely redesigned each time. Rather, the plan is to start with the previous Census as a base, and to make changes according to problem areas which are identified by various evaluations. Originally, the mid-decade Census (in years ending in a six) was planned to be on a smaller scale, intended only to provide certain population benchmarks. As time has evolved, this has changed to the point where there is no difference in scale between Censuses. The next Census of Canada will be conducted on June 4, 1991, and it is estimated that it will count approximately 27 million people in approximately 10.5 million dwellings.

Although they are not completely different, in some respects the Canadian Census collection activities differ from the approach taken in other countries. A more detailed description is given in Section B. Briefly however, an interviewer is responsible for all collection activities in a specific geographical area for both the Census of Population and the Census of Agriculture, which are conducted simultaneously. As can be recognized, the data collection is very decentralized, and dependent on the thoroughness of the field staff. Another major difference in the Canadian Census, as compared to that in other countries, is due to the population distribution in the country. The majority of the population is concentrated in southern areas of Canada, leaving a low population density in the remainder. However, the Census, by definition, is required to collect data from all areas of the country. Unlike many European countries, the Census of Canada uses the "de jure" method of counting people. This method enumerates people where they happen to be on Census Day, but adjusts these numbers in order to count people at their

usual place of residence. The other approach to counting people, the "de facto" method, simply reports the counts of persons where they are enumerated.

The paper will first provide an overall description of the collection procedures for the Canadian Census of Population. Following this, a description will be given of the major components of the Census collection, with special emphasis on the new procedures planned for the 1991 Census. These procedures are grouped into four categories: coverage improvement, special populations, reduced cost, and higher quality data. While many of the new initiatives could appropriately be placed in more than one group, they are assigned to a particular category for the purpose of presentation in this paper. This is particularly true of coverage improvement, as it was a driving force behind many of the new collection initiatives. Certain sections, as indicated by an asterisk, do not completely qualify as new initiatives for the 1991 Census, but they are included as they are felt to be of interest. Other related descriptions are given in references (1), (5) and (7).

## **B. Description of Collection Procedures**

In order to conduct the Census, the country is divided into geographical areas (Enumeration Areas (EA)). For the 1991 Census there will be about 44,000 EAs. In general, an EA is an area for which one Census Representative (CR) is responsible. While the number of households per EA varies according to the population density of the area as well as the extent of agricultural activity in the area, on average an EA contains about 325 households. A CR is responsible for all collection activities in the EA. For cost-efficiency reasons, the Census of Agriculture is conducted at the same time as the Census of Population and the CR is responsible for the same collection activities for the Census of Agriculture, if any agricultural activity occurs in the EA.

The CR is given a map of the EA and required to travel completely through the EA, identifying all dwellings and farm operators. These are listed in the Visitation Record (VR), which the CR uses to plan and record all work. As in many other countries, there is a short-form questionnaire (Form 2A) and a long-form questionnaire (Form 2B), with all questions on the short form also included on the long form. Given a random start, the CR systematically leaves a Form 2B at every fifth household. Thus, responses to some questions are available from 100% of the population, whereas responses to most are available from 20% of the population. If necessary,



a Census of Agriculture questionnaire is also left. The questionnaire(s) is (are) self-completed by one of the residents of the dwelling. On Census Day the questionnaires are to be mailed back. The questionnaires are delivered by the Post Office to the office of the Census Commissioner (CC). The CC is the supervisor of approximately fourteen CRs. The CC sorts and returns the questionnaires to the appropriate CR. Upon receipt, the CR then edits the questionnaires. The editing consists primarily of ensuring that all questions are answered. Questionnaires which fail edit are followed up. Households that do not mail back their questionnaires are also followed up. If a telephone number is available (the CR might get it at dropoff, or from the questionnaire if followup is for failed edit), followup is attempted by telephone. If telephone followup is not possible or unsuccessful, the CR makes a personal visit. The CR's work is completed only when a questionnaire which passes edit is obtained for every household, or the CC is satisfied that it is not possible to obtain any more data. (In the case where the complete questionnaire is missing, a specific form is created which leads to imputation during the data processing.) The CR is paid on a piece-rate basis. That is, the remuneration is determined on the basis of the number of completed questionnaires in the EA. The piece-rates are calculated according to the amount of time it takes to perform all collection duties for an average household, and then multiplying this by a prespecified hourly wage. It can be seen that the Canadian approach greatly contrasts with the centralized-office approach used in the U.S.A., where a separate field staff is used for each of the collection operations. The other major difference between the Canadian and American approaches is that, in the U.S.A., an address list is compiled prior to the Census, and the questionnaires are mailed out.

Since the collection is decentralized, it is difficult to supervise and monitor the work of each CR. Therefore a set of field quality checks are instituted, not only to detect incidents where the CR does not complete the work and to detect CRs who have misunderstood some of the instructions, but also to identify EAs which require extra effort to meet the specified quality standards, even when it is not the fault of the CR. (More details on this are given in Section F7.) The CC conducts regular visits with each CR during the course of all phases of collection. Finally, at the end of collection, a Quality Control Technician (QCT), who is hired independently of both the CR and CC, is called in to examine the questionnaires, as well as other forms which are completed during the collection activities, for the entire EA. The QCT implements a statistical quality control on the questionnaires. If the EA passes the quality control then collection is

complete for that EA. If the EA does not pass quality control, then the questionnaires for that EA are returned to the field for more work. Depending on the number and nature of errors, either the original CR or another person, a clean-up CR, would correct the errors.

In certain areas of the country, such as in remote northern areas where travel is very expensive, on Indian Reserves, and in the downtown core of certain larger cities where the mail response rates are traditionally poor, data collection is completed by a direct interview. This is referred to as the "canvasser" approach. The other major deviation from the collection procedures stated above is in "collective dwellings". In noninstitutional collectives such as hotels, rooming houses, and school residences, self-enumeration is used. In institutional collectives, such as hospitals, nursing homes, and jails, enumeration of the residents proceeds using the administrative records of the institution; thus, only basic information is collected for this population. Staff members of institutions and their families who live on the premises are enumerated through self-enumeration. If large enough, a collective dwelling could be a separate EA.

### **C. Coverage Improvement**

There are two activities which are described in this section, both of which are new for the 1991 Census of Population. The Coverage Improvement section is listed first as many of the activities described later have a coverage-improvement objective as well. The improvement of coverage has been one of the primary focuses of the planning for the collection of the 1991 Census data. From the 1966 through the 1981 Census, the undercoverage rate of persons was relatively stable at about 2%. For the 1986 Census, the estimated undercoverage rate was 3.2%, a large increase. It was felt necessary to institute procedures in order to reduce undercoverage problems in the 1991 Census.

#### **C1. Address Register**

The Address Register (AR) is undoubtedly the most significant new initiative for the 1991 Census. In addition, its utility for Statistics Canada is intended to be more widespread than the Census of Population, extending to its use as a sampling frame for household surveys. The Address Register is, as the name implies, a list of residential addresses. The prime requirements of a

useful AR are that it be in machine-readable format and that it be coded to a low geographical level (one side of a city block). In addition, it should be as complete and up-to-date as possible.

An Address Register will be created at Statistics Canada for use by the 1991 Census. It will be created by merging several administrative files. It will cover only those areas of the country which have already been geocoded (i.e., there is an automated link between the address and statistical geographical areas); in general, these are urban areas with population greater than 50,000. The areas currently geocoded cover a total of about fifty-five percent of the Canadian population. Also, through an agreement with the province of British Columbia, the AR in that province will be extended to cover up to eighty-eight percent of the population (compared with sixty-six percent of the areas in B.C. already geocoded).

For the 1991 Census, the AR will be used mainly as a coverage improvement tool after dropoff. In areas covered by the AR, the CR, following the usual instructions, will list in the VR all dwellings at which a questionnaire is left. Following this, the CR will be given a copy of the AR for that EA. The CR will be required to compare the two lists, identifying dwellings found on one list but not on the other. Those dwellings listed on the AR, but not on the VR, will be followed up in the field to determine whether they are valid dwellings. For those dwellings which are found to be valid, the CR will either leave a questionnaire or complete the questionnaire directly, according to the respondent's wishes, since they should have been listed originally. During the reconciliation of the AR and VR, those dwellings listed on the VR, but not on the AR, will be added to the AR. In this way, the AR can be updated.

An additional use of the AR for the Census collection is due to the fact that telephone numbers will be available for some addresses. These telephone numbers can be used to conduct follow-up by telephone in situations where field visits would otherwise have been necessary.

Based on initial studies, the expected coverage improvement for the 1991 Census is approximately 68,000 persons (excluding the extension of the AR in British Columbia). These results would translate into a reduction of about a quarter of a percentage point in the Census undercoverage rate. (In 1986, the national undercoverage rate was estimated to be 3.21%). In terms of cost-effectiveness, the AR is expected to perform well in comparison with other similar

coverage-improvement methods. A postal check has been used in the Canadian Census in the past. (The postal carrier compares the Census list of households to the addresses on the postal walk.) It is estimated that, based on a unit cost, the AR will be roughly three times more effective than the postal check. More details on the AR are given in references (2) and (6). A post-censal evaluation will determine the coverage improvement due to the Address Register.

Two field tests of the Address Register were conducted in November 1987 and in September 1989. The major findings of these tests were as follows. The existence of an AR will provide coverage improvement, but perhaps not as large as originally estimated. This is difficult to quantify since the tests were not designed to produce national estimates of coverage improvement due to the AR. The AR was found to be very effective in identifying basement apartments, and also conversions of single-family dwellings to multiple dwellings. The detection of "hidden" dwellings such as these, which are difficult to find in the field, is one of the prime objectives of the AR.

Potential problems were identified by the tests. First, the reconciliation in the field often takes considerable time due to the fact that the order of dwellings on the AR is not, in general, the same as the route the CR takes when listing the dwellings. Second, the geocoding of addresses (automated assignment of an address to an EA) contained certain problems which led to inaccurate AR lists being sent to the field. Third, the AR does introduce some overcoverage, as, for example, it has been found to sometimes include commercial establishments. Steps are being taken to alleviate these types of problems.

Overall, the coverage of the AR has been found to be lower than expected. At the beginning of the project, it was thought possible to produce an AR which would be 95% complete at the EA level. Based on the tests, it appears that 75% is a more realistic target. With improvements to the geocoding, the coverage may increase. However, without updating based on Census dwelling lists, the use of the AR as a sampling frame for surveys seems problematic. To compensate for this, Census updates to the AR will be data-captured. As a result of these updates, the AR coverage will be equivalent to the Census coverage.

It should be added that the first AR field test considered using the list of dwellings in different ways for coverage improvement. In particular, instead of a post-dropoff check, an option was considered in which the CR was given a copy of the AR prior to dropoff, as an aid in identifying dwellings. This approach was found to be a less expensive option, but with a poorer effect on coverage. The observers felt, and the evaluation confirmed, that the CR was too dependent on the AR, tending to treat it as the "truth". However, this approach could be used in future Censuses if the initial accuracy of the AR is better than will be the situation for the 1991 Census.

## **C2. Prelisting**

Prelisting was initiated as a coverage improvement method, as discussed in reference (4). It is similar to the Address Register in that it provides an independent list of dwellings which the CR can compare to the list of dwellings in the VR. In exactly the same manner, the two lists are reconciled and any dwellings on the prelist which were not originally listed are followed up in the field in order to determine whether or not they are valid dwellings. A questionnaire is either left or completed at valid dwellings which were missed. The essential difference between the AR and the prelist is the method in which they are created. The prelist is created by a person, other than the CR or CC for that EA, travelling throughout the EA, making a list of dwellings. In other words, the prelist follows the CR dropoff instructions in order to make the prelist. As with dropoff, contact with the respondent is attempted. If contact is made when prelisting, an explanation of the operation is provided to the respondent, and the respondent is asked whether there are other living quarters in the building.

The prelist was considered for small urban areas of the country; that is, areas which have not yet been geocoded (and therefore one cannot easily translate an address and postal code to an EA code), but which have street addresses to make the reconciliation possible. Due to the fact that the prelist is created in exactly the same manner as the VR, it is expected that the same (hidden) dwellings would tend to be missed by the two methods, thus diminishing the value of the prelist. However, it may provide some insurance against an inadequate Census questionnaire dropoff. This is so since it is planned that the prelist would be conducted by an experienced lister, such as an ongoing Statistics Canada interviewer, whereas the CR is usually inexperienced and may not understand the listing instructions well.

A test was proposed to determine the field costs as well as the coverage improvement which could be expected with the prelist. However priority was given to other studies, such as content testing. Therefore the prelisting test did not take place in the intercensal period. Given that the evidence in favour of the prelist was not overwhelmingly positive, a decision has been made to conduct a test of the prelisting, as discussed below, as part of the 1991 Census. Results from this test will be used to make a decision on the use of prelisting in future Censuses. Even if the prelist does not prove to be a cost-effective coverage-improvement procedure, a benefit of conducting the test as part of the actual Census is that any coverage improvement in test areas, however small, will aid the Census.

The prelist test will be conducted in twelve cities across Canada. No sites in British Columbia are included, due to the duplication with the AR extension discussed in Section C1. The selected cities were chosen according to data variables which have been identified to be linked to undercoverage. Within each city, one Census Commissioner District (CCD) (i.e., the set of all EAs for which a CC is responsible) will be selected, being that CCD which is considered to be most troublesome for Census data collection. All EAs in the selected CCDs will be part of the prelist test, for a total of about 180 EAs. Based on an evaluation of the prelisting operation, a decision can be made on whether to fully implement these procedures in future Censuses.

#### **D. Special Populations**

##### **D1. Aboriginal Peoples Cooperation Strategy**

An organized boycott by some Indian Reserves resulted in 77 Indian bands on 136 reserves (out of a total of 592 bands on 816 reserves) refusing to participate in the 1986 Census. The protest was aimed at the Federal government's policies towards the aboriginal peoples, and not at the Census in particular. The Census was simply viewed as a convenient vehicle for publicizing their concerns. Further details are available in reference (7). In order to convince residents of Indian Reserves to respond to the 1991 Census, a four-part strategy was developed. These four parts

are: (a) intercensal liaison, (b) precensal public communications, (c) a school information package, and, (d) increased participation in census operations.

First, liaison officers have been hired to provide the communication link between Statistics Canada and the Indian Reserves. They provide information to the bands about Statistics Canada's activities and products. A database of information on reserves, bands and organizations has been created from several sources, and will be used to assist Statistics Canada in its communications with each band in order to ensure a high-quality Census data collection. This database will be updated based on the knowledge of the liaison officers. Participating bands will receive, free of charge, statistical profiles developed from the 1991 Census.

Second, low-key, regionally-targeted precensal public communications will provide material on the Census in the two or three months prior to Census Day. The announcements will consist of letters to community leaders, and the provision of text suitable for the use of both the electronic and the print media.

Third, a national school package, in two parts (one for schools on-reserve and another for the remainder (majority) of the Canadian school population), is being prepared in order to stimulate the interest and to broaden the knowledge of school children, with the objective of developing positive attitudes towards the Census. For the 1991 Census, the package for the use of schools in the general population will include material on aboriginal people in order to promote an awareness and understanding of native persons. A school package for use in aboriginal communities is being developed to be more relevant to these children, with the result that the objectives might more easily be met.

Finally, the recruitment of members of the aboriginal communities to positions with the 1991 Census will be undertaken to the extent possible. This has been done in the past. However, for the 1991 Census, this effort has been started earlier, with the message being passed through the leaders of the communities. In addition, the knowledge of local authorities will be utilized to verify Census collection maps and to comment on the precensal raw population counts. With rare exceptions, Census collection on reserves will be carried out by personal interview. Even

if local interviewers are not hired, local recruits may be used as guides for the interviewers or as local coordinators, responsible for recruitment, training and supervision. The other major change that is being instituted for the 1991 Census is the development of a special canvasser questionnaire. More detail on the canvasser questionnaire is given in Section F1.

In order to make the counts from the 1986 Census as accurate as possible despite the group refusals, Statistics Canada estimated the population for the 1986 refusal reserves. The 1981 Census data were used to estimate population growth as observed from the reserves which participated in both Censuses. However, it was felt that the only estimates whose data quality was high enough for public release, were the population size and the number of privately occupied dwellings, at the provincial level. Therefore any Census tabulations of population below the provincial level, or of other data items at any level, did not include the missed population on the refusal reserves. In the event of a mass refusal to the 1991 Census, Statistics Canada is currently investigating estimation procedures which could be used for refusal reserves. These studies are not yet complete. However, the hope is that they may provide good-quality estimates at a lower geographical level than was possible for the 1986 Census. Obviously, this is a contingency plan which will be used only if all attempts to avert large-scale refusals fail.

## **D2. Enumeration of the Homeless**

The traditional method of Census collection is to identify all dwellings where people live, and then to enumerate all residents of these dwellings. In this way, all persons should be included in the Census. Problems with this approach arise from two directions: those persons with more than one residence and those persons with no residence. The first problem is dealt with by asking the respondent to identify a "usual" residence, according to a definition which is provided. Persons with no residence have been covered in the past if they stay overnight on Census Day in any type of recognized "standard" sleeping place. This includes private dwellings, institutions such as jails and hospitals, commercial establishments such as hotels and motels, and social service agencies such as hostels and shelters. There is still a group of people who are unlikely to be enumerated. These are persons who have no residence and do not stay in one of these types of places; for example, they stay overnight on Census Day in a park or in an abandoned building. Indications from social service agencies are that the number of persons in this group



is increasing, and homelessness has recently become a topical subject in many countries. Statistics Canada is responding to this by attempting to increase the coverage of the population for the Census by implementing formalized procedures for enumerating those persons without shelter on Census Day.

Three methods of enumeration were considered: street blitz, soup kitchen and passive approach. Street-blitz enumeration entails assigning a team of interviewers to a geographical area, such as a city block or a park, and requiring the interviewer to enumerate anyone that is encountered on the street. In order to maximize the discrimination between those persons with and without shelter, this should be done late at night or in the very early morning around dawn. With the soup-kitchen approach, persons are enumerated at agencies which serve meals at little or no charge. The theory behind this approach is that persons without shelter would need food during the day, and therefore most would use these social services due to a lack of money. The passive approach can be used with both the previous two approaches, but is usually done on the streets. The only difference is that no attempt is made to interview any of the persons. Only a head count plus observable characteristics, for example, age, sex, race, are recorded.

Statistics Canada has decided to carry out soup-kitchen enumeration in order to improve population coverage as part of the 1991 Census. The decision was based on a number of factors. First, the safety factor for the field staff was deemed to be highly important. This dictated strongly against a street blitz. In addition, observation of the U.S. Census illustrated some difficulties with street enumeration. The enumerators were often not diligent due to fear of visiting certain areas. Also, persons sleeping "outside" usually prefer to find some hidden location where they are unlikely to be disturbed. The passive approach was not thought to be an effective method, since no data on a person's residence (or lack thereof) are obtained. The soup-kitchen enumeration remained. While problems with this approach have been identified by other studies, it was felt that this approach would provide the best results in Canada.

A field test was mounted in Canada's three largest cities, Montreal, Toronto, and Vancouver, in the spring of 1990 in order to test the effectiveness of this approach, and to refine enumeration procedures. The overall results were of mixed success. First, the number of persons enumerated during the test who stated that they had stayed the previous night outdoors, or in

some "nonstandard" sleeping place, was about ten percent, lower than was expected. The majority of the persons enumerated lived in rooming houses or had stayed in a shelter the previous night. Since the rate of nonresponse in rooming houses and shelters is relatively high, enumeration at soup kitchens would still provide data which would not otherwise be obtained. The most positive result from the test was the surprisingly (at least to the working group which designed the test) low rate of item nonresponse. It was impossible to accurately measure complete nonresponse, but the overall feeling of the observers was that it was in the order of thirty to forty per cent, also lower than expected. (According to the test design, it would have been possible to calculate the rate of complete nonresponse. However, this turned out to be not feasible since, at some locations, it was difficult to determine who had and had not been enumerated.) Item nonresponse rates were of the order of four or five percent, comparable to the regular Census questionnaire. These results contradict the earlier warnings from various social workers who said that obtaining any responses from this group of people would be almost impossible.

More details on the test are available in reference (3). However some test data are provided here. These counts reflect raw test results only, with no inferences being made to any population, homeless or otherwise. After removing those persons who reported that they had been previously enumerated, a total of 2368 persons were enumerated for the test. Of these, 490 (21%) were complete refusals. For these persons, the interviewer recorded an estimated age, and indicated whether the person was male or female. On the other hand, 1538 persons (65%) provided responses to all questions, leaving 340 (14%) who answered at least one question, but not all. About 91% of those enumerated were male. The median age was 39, with the first and third quartiles having values 29 and 51 respectively. Even "Name" did not prove to be troublesome. Disregarding the complete refusals (i.e., persons who did not answer any questions on the survey), the distribution of responses for this variable was: Full Name (78%), Partial Name Only (16%), Nickname or Obviously False Name (< 1%), Item Nonresponse (6%).

Based on the test results, Statistics Canada will be implementing soup-kitchen enumeration in the 1991 Census in sixteen major cities across the country. Those persons who have not been enumerated elsewhere will be added into the population counts. A key element from the test which will remain for the Census will be the use of personal interviews to obtain and record the

answers. Although enumeration for the test was conducted on two days, Census enumeration will be limited to Census Day only. The questionnaire will be one page in length, and will be the test questionnaire, with modifications as recommended from the test. In terms of content, it is very similar to the regular Census short form. A major output will be to construct a database containing Census data collected in soup kitchens, as well as in hostels, shelters and low-cost hotels. Review of the data after processing will determine to what extent data will be released. This certification of Census data will be similar to that which is conducted on all Census data prior to public release.

It should be stressed that the implementation of these procedures is foremost for the purposes of coverage improvement of a subpopulation which is felt to be missed at a high rate by the Census. While some data will be released separately for persons enumerated in soup kitchens and in shelters, there is no intent to estimate the homeless population. Persons enumerated in soup kitchens and in shelters who provide information on addresses where they could or should be enumerated, will be traced in order to determine whether they were, in fact, enumerated. Adjustments to the population counts are made for those who are found to be not enumerated. Those persons who indicate no such address information will be counted as a resident of the place where they were enumerated.

### **D3. Early Enumeration \***

In many remote northern areas of Canada, June is a poor month for Census data collection. This is due to the fact that many villages "move" during the late spring and summer in order to hunt and to fish. However, due to the severe climate, the population is very stable throughout the winter. Based on contacts with each northern community, Statistics Canada decides for which communities it is preferable to conduct early enumeration (in March prior to the Census).

In preparing for the 1991 Census, Statistics Canada updated its list of communities to be covered by early enumeration. A questionnaire was sent to all communities in the Yukon, Northwest Territories and Labrador, and to several communities in Northern Quebec. While many questions were asked, essentially the objective was to determine the optimal time to

conduct the Census. With a few exceptions, it was interesting to see that there was a clear split along geographical lines. The western communities of the North are best enumerated during the summer, and thus will have a Census date in June. Eastern communities felt that winter would be a better time for the Census, and will be enumerated in March.

#### **D4. Persons Outside Canada \***

In order to attempt to enumerate all persons who are part of the Census target population, three groups of persons outside Canada are covered by the collection procedures. The first group is those persons who are aboard ships under Canadian registry. This includes merchant, commercial and passenger vessels. Due to the costs involved and the large number of ships, only those vessels of more than one thousand tons net tonnage are covered, if they are away from port. The second group is Canadian Armed Forces and civilian personnel and their families on Canadian Armed Forces bases outside Canada. The third group is Canadian Government (Federal and Provincial) Foreign Service personnel and their families who are living outside Canada. While persons in these three groups are actively sought for the Census, Canadian embassies throughout the world are given questionnaires for any Canadian who visits an embassy wishing to be enumerated for the Census. Approximately 20,000 persons were enumerated "Outside Canada" in the 1986 Census.

#### **E. Reduced Cost**

##### **E1. Extension of Mailback**

An investigation of the appropriate collection methodology was necessary prior to the introduction of self-enumeration for the Census in 1971. At that time, the decision was made to use a different approach in urban and rural areas. In urban areas (covering about 70 % of the EAs), a dropoff/mailback methodology has been used, while rural areas (covering about 29 % of the EAs) have used a dropoff/pickup methodology. (One per cent of the EAs, which include Indian Reserves and remote areas, have been covered by a canvasser methodology (i.e., personal interview).)

In 1977, a field study was conducted to determine if there were any reasons to change the collection methodology. The results indicated that potential cost savings could be realized by dropping the pickup methodology in rural areas, and using a mailback methodology. However, there was felt to be potential risks to timeliness, coverage, and data quality. These potential risks were judged to outweigh the cost savings; thus the status quo was retained. Prior to the 1986 Census, the issue was again raised. At this time, the collection methodology was not changed due to the high cost of redelineation of the EAs in rural areas. (With a mailback methodology, EAs could be made larger due to reduced travel times. Personal visits need only be made in cases where telephone followup is either not successful or not possible.)

A working group was formed after the 1986 Census to revisit all the issues, in order to assess whether there had been changes to their validity. Certain advantages to the standardization of collection methodology remained. There would be less travel, which would lead to needing fewer enumerators; thus collection costs would be reduced. The standardization would result in a reduction in procedures and training manuals, and the complexity of the pay system would be reduced. Rural respondents would not feel that they were being treated differently. Editing should be improved since it would be done at the interviewer's home, and not in front of the respondent. The public communications message to remind people to complete and return their questionnaires could be simpler. It is felt that, in general, respondents feel that their responses are more confidential if they are mailed back. Also, problems due to respondents becoming upset that their enumerator is a neighbour would be reduced, since post-censal contact would only take place for edit failure and complete nonresponse. While the disadvantages of the changes remained, they were not believed to be as strong as in previous years. Timeliness in the completion of collection in rural areas should not be unduly delayed due to the postal service. The extra resources required for the redelineation of the EAs in rural areas were provided. Risks to coverage for the Census of Agriculture were reduced by adding a question to the Census of Population questionnaires to identify farm operators.

Resulting from the recommendations of the working group, the dropoff/pickup methodology will be eliminated for the 1991 Census. The dropoff/mailback methodology will be extended to rural areas, and will continue in urban. While this change will lead to an increase in costs for the Census of Agriculture, the savings by the Census of Population will more than offset it.

## **E2. Student / Youth Program \***

As one of the conditions with the reinstatement of the 1986 Census, Statistics Canada was to give priority to students and youth when hiring CRs. A target of sixty per cent student/youth was set. This resulted in overall cost savings to the federal government as money was made available to Statistics Canada from student/youth employment programs in other departments. The evidence from the 1986 Census on the performance of the student/youth CRs as compared to the other CRs is inconclusive. Since the Census job was only of about six weeks duration, many quit when a longer-term position became available. However, in terms of the quality of work performed, there is no strong evidence that the work done by the student/youth CRs was different than that done by the other CRs. (This was a concern at Statistics Canada prior to the Census.) For example, the estimated undercoverage rates of EAs where no student/youth CRs were employed in the 1986 Census was about 0.5 % lower than in other EAs. However this difference can partly be explained by factors associated with the inherent difficulty of enumeration.

Once again, a student/youth hiring program will be implemented for the 1991 Census. As a result of lessons learned in the 1986 Census, it is planned to minimize the negative aspects of the program.

## **F. Higher Data Quality**

### **F1. Questionnaire**

The development of the 1991 2A/2B Census questionnaire (i.e., regular short and long forms) was a high priority. Questionnaire design and cognitive research have been very topical subjects for the past few years. As a natural subject, considerable effort in the 1986/1991 intercensal period went into the evaluation of the 1986 Census questionnaire, in order to identify problem areas which should be corrected for the 1991 questionnaire. Examples of problems identified were: (a) that the questionnaire flow was confusing, resulting in respondents not knowing whether to answer certain questions, and not knowing whether they had completely answered

the questionnaire, and, (b) the grouping of the dwelling and coverage questions (since they were not person-level questions) led to confusion on the intent of the questions. Some of the identified problems may have led to population coverage errors, while others resulted in incorrect responses being provided. As a result of this research, major changes to questionnaire format and layout have been implemented for the 1991 questionnaire. The addition of a household roster is intended to reduce the number of missed persons. More details are provided in reference (8).

A major initiative for the 1991 Census is the development of a questionnaire for use in canvasser EAs. In the past, the interviewers have used a Form 2B. However, the question formulation on the Form 2B is designed for a self-enumeration situation. Therefore, although the content of the canvasser questionnaire will be identical to the Form 2B, there are two major differences. First, the questions have been reworded for use in an interview situation. Second, since the canvasser questionnaire is used on Indian Reserves and in remote areas, certain examples have been changed from the Form 2B to make them more relevant to the respondents. For example, when asking for "kind of work", medical lab technician and accounting clerk are two of the examples given on the Form 2B. On the canvasser questionnaires, two of the examples used to aid the respondent are trapper and hunting guide.

## **F2. Target Population**

For the 1991 Census, the target population of the Census has been extended. In 1986 and in previous Censuses, the target population included all Canadian citizens and landed immigrants who either lived in Canada on Census Day, or who were temporarily outside the country on Census Day. It also included persons outside the country, as explained in Section D4. The extension of the target population now means that refugee claimants and persons in Canada on work permits, student visas or Ministerial permits are also included in the Census. The primary motivation behind this change is that persons in these groups make use of services provided by municipalities and provinces, and therefore should be included in the Census counts. This change in target population also brings Canada more in line with United Nations recommendations on Census populations. In the past, it has been thought that many persons in these groups responded in any case to the Census as they felt that it "legitimized" their

residence in Canada. Therefore, the actual effect on the final population count cannot be estimated.

### **F3. Training of Field Staff**

Due to the large numbers of temporary staff required for the Census data collection, training is of great importance. The introduction of new training methods is intended to improve the quality of the collected data.

Most Census training uses the verbatim style. That is, the trainer is required simply to read the training material to the class. This method is used for two main reasons. First, the trainer is generally a temporary employee with only a little more knowledge and experience than the persons being trained. Therefore, it is undesirable to give heavy training responsibilities to a person who is inexperienced in both staff training and in the Census. Secondly, since training is conducted in many locations, the use of a verbatim training ensures consistency for all field staff. Another reason is the use of the "cascade" method of training. This means that one group is first trained. Each person in this group trains another group, and so on through the hierarchy of the field staff.

The major changes being implemented for the 1991 Census training are in the use of some audio-visual training. With the widespread accessibility to VCRs, it is felt that their use in training is possible. Another advantage to the use of audio-visual material is that it will provide "changes of pace" in the training class. This should result in the instructor being better able to maintain interest and attention to the material at hand.

### **F4. Increased Supervision**

One of the necessary consequences of the 1986 Census budget reductions was an increase over 1981 in the number of CRs for which each CC was responsible. In the 1986 Census, this ratio was, on average, 19.5 to 1. Evidence suggests that in many cases, this number was too high. The CC was often unable to devote the time and attention needed to solve specific problems. The result of this was that the CR would not have the necessary counsel before



making a decision. If an inappropriate decision was made, data quality could suffer. With this in mind, Statistics Canada felt that increasing the amount of supervision by reducing the ratio of CRs to each CC, to 14 to 1, was a high priority for the 1991 Census. While it is one of the more costly initiatives for the 1991 Census, it is felt to be a simple but effective method in increasing the level of data quality, including coverage.

#### **F5. Enhanced TAS**

The Telephone Assistance Service (TAS) is provided to allow persons who have questions about the Census or about completing their questionnaire to receive quick assistance. The TAS numbers are printed on the questionnaire, as well as publicly advertised. The dates and hours of service were reduced in the 1986 Census as a cost-cutting measure. Evaluations have indicated that there were many situations where a person could not obtain help from the TAS. As was the case with the higher CR/CC ratio discussed above, persons unable to receive TAS assistance might make an error in completing a questionnaire, subsequently resulting in data-quality problems. Another reason for calling might be that the person never received a questionnaire. Failure to reach a TAS operator would lead to undercoverage for the Census. For the 1991 Census, TAS levels of service will be restored to that provided during the 1981 Census. Again, this is a costly step. However, it is felt necessary to obtain a high data-quality level.

Another change which is expected to result in greater use of the TAS for the 1991 Census is that the TAS numbers will be "1-800" numbers, rather than ZENITH numbers which have been used in the past. It is thought that the public is much more accustomed to "1-800" numbers than they had been to ZENITH numbers. Therefore there may be less reluctance to use the "1-800" number if help is needed.

#### **F6. Public Communications**

The goal of the public communications program is to reduce respondent follow-up whenever possible. To achieve this goal, the aim is to increase public knowledge of the Census, in order to instill a favourable attitude among Canadians towards it. While the paid advertising will cover

both the pre- and post-censal periods, it is during the post-censal period, when the Census no longer commands a central position in the consciousness of the national media, that the impact of paid advertising is felt. It has been found to be very useful to remind people after Census Day that it is not too late to return their questionnaire.

Another casualty of the 1986 Census budget reductions was the elimination of paid advertising. As with the CR/CC ratio and the TAS, the result of the 1986 Census experience pointed out the real need for these activities. Indications of their true value were found, which would not have been possible otherwise. For the 1991 Census, funds for public communications have been increased and paid advertising has been restored, in order to aid in collecting high quality data. Third-party endorsements, which were successfully used in the 1986 Census, are again planned.

#### **F7. Field Quality Checks**

The field quality checks were briefly described in Section 2. They are broken into four groups: (a) CC District Familiarization, (b) CC Supervisory Check, (c) CC Quality Check, and, (d) Quality Control Technician (QCT) checks. Prior to the recruitment of the CRs, a visit is made to all EAs for which the CC is responsible. In general, the purpose of these visits is to become familiar with the areas, which will be useful in assisting the CRs during Census collection. Particular tasks are to ensure that the maps are correct, that the EA boundaries are easy to identify in the field, to identify areas where large growth has taken place, and, where possible, to identify "hidden" dwellings that might be difficult for the CR to find. While the CRs are conducting the various collection activities, the CC visits each one on occasion in order to verify that the tasks are being conducted properly. For these meetings the CC decides the amount of checking to do. Generally they are instructed to concentrate on those CRs who seem to be having difficulties. The intent of these checks is to identify and correct improper work in order to reduce the amount of work which must be redone. When the CR reports that the work in his EA has been completed, the CC conducts a more thorough check. A questionnaire must be present for every dwelling listed in the VR. A random check of questionnaires is made to ensure that the editing has been properly performed. The EA map must be included, with updates indicated. If all appears to be properly done, the CC indicates that the EA is ready for the QCT's examination.

The QCT repeats many of the checks performed by the CC. Although the checks are directed towards the work of the CR, the QCT indirectly ensures that the CC is also working properly. Statistical quality control is applied on the editing of questionnaires. The general rule is for the QCT to select eight Forms 2B. If fewer than three errors are made on these sampled questionnaires, then the EA passes this check.

While the essential field quality checks have not been changed for the 1991 Census, some additional checks have been added in order to reduce some of the problems encountered in the 1986 Census. One of the checks which is done is on the percentage of dwellings for which the CR is unable to obtain a completed questionnaire. (This may be due to a refusal situation or the residents being out of town during the entire Census collection period.) The allowable limit is two percent of the number of occupied dwellings in the EA, unless there are exceptional circumstances. There has been past evidence (although somewhat conflicting) to indicate that this rule is sometimes being circumvented by reclassifying from occupied to unoccupied some of the dwellings for which a questionnaire cannot be obtained (although the dwelling is actually occupied). The effect of this action is that persons are missed in the Census. For 1991, the two percent limit remains. In addition, any reclassification of a dwelling from occupied to unoccupied must have an accompanying explanation, since there are valid situations where this must be done. Other changes of this nature have been implemented, with the expectation of a reduction in errors, both advertent and inadvertent.

## **G. Summary**

The collection of Census data poses an enormous challenge to statistical agencies such as Statistics Canada. While it is certainly not the only facet of a Census, data collection is the activity which is both the most visible to and the most dependent upon the public. There is growing public resistance to providing personal information to surveys. Many individuals feel that, in some way, it will be used against them. Apart from the Census, a general attitude of mistrust of government is increasing. These factors combine to necessitate improvements to Census-taking procedures in order that high-quality data continue to be produced from the Census of Canada. As evidenced by the activities described in the paper, Statistics Canada is determined to meet these challenges.

## H. References

The information provided in this report was compiled from many documents, and it is not possible to list them all, as their intentions generally were as working tools and not as a complete documentation of an activity. The papers given below are some of the summary documents which formed the basis for much of the work described in this report.

1. Carter, R.G. (1987). Undercoverage in the 1991 Census - A Discussion Note. Statistics Canada technical report, Social Survey Methods Division.
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5. Royce, D. (1988). Coverage Improvement Plans for the 1991 Census of Canada. Statistics Canada technical report, Social Survey Methods Division.
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