

Recensement Census

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NCT Report No. 22

PLACE OF WORK
MODE OF TRANSPORTATION

RECENSEMENT

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CENSUS



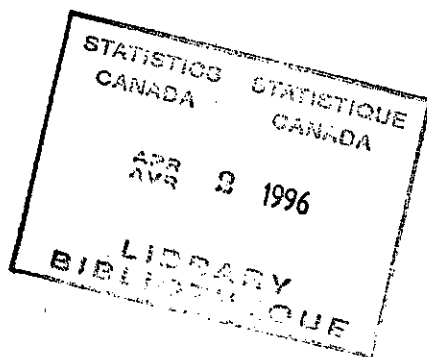
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NCT Report No. 22

PLACE OF WORK MODE OF TRANSPORTATION



B. Hawkes
R. Nadwodny
B. Singbeil

Census Operations Division

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EXECUTIVE SUMMARY

Two questions were asked and analyzed on the 1996 National Census Test.

Question 42 - The Place of Work question, has been asked each decennial census since 1971. There were minor changes and better examples tested on the NCT.

Question 43 - The Mode of Transportation question, a new question tested at the request of the transportation planning community.

Summary Results of Analysis: Question 42 - Place of Work

No major response errors were detected with the place of work question.

- 86.5% of responses were both clean and valid.
- 9.9% of responses were incomplete or dirty, but could easily be cleaned by automated edit modules.
- 3.6% of responses were missing or invalid, therefore requiring hot-deck imputation.

Analysis of the 1996 NCT suggested that due to the design of the place of work question, previous censuses did not accurately measure respondents with "no fixed workplace address".

In 1991, respondents with no usual place of work were instructed to write-in this information. In 1991, 1.1% of the employed labour force were coded as having "no usual place of work". For the 1996 NCT, an explicit "no fixed workplace address" response category was tested on the questionnaire. This had a significant effect on the response rate - where 9.2% of respondents indicated that they had "no fixed workplace address".

The occupations of these "additional" respondents were analyzed and it was determined that they represented valid occupations for this category, employed as travelling sales representatives, landscapers, construction workers, fishermen, supply teachers and delivery personnel.

Respondents with a "usual place of work address" dropped from 78.4% in 1991 to 68.7% on the 1996 NCT, as a result of the improved measurement of the "no fixed workplace" category.

In previous censuses, respondents who did not write-in "no usual place of work" received a donor record with a "usual place of work address" - inflating this work status. Changing the "no usual place of work" write-in to an explicit response category, using the easier understood phrase of "no

fixed workplace address", increased the percentage of respondents indicating this place of work status, and lowered the percentage of respondents identified as having a "usual place of work".

62 NCT respondents labelled the place of work question as being difficult to answer.

These respondents gave a written response to their objection indicating that they could not give a complete workplace address response as shown in the question example.

However, 56% of respondents were able to provide a complete workplace address. An additional 37% of respondents provided a complete workplace address, minus their workplace postal code. The POW autocoding system has been designed to handle incomplete responses.

Summary Results of Analysis: Question 43 - Mode of Transportation

There were few problems identified in testing this question.

14 NCT respondents labelled the mode of transportation question as being difficult to answer.

Most objections were attributed to not being permitted to respond to more than one category, or why the government was asking this type of question in the first place on a census form.

Some respondents, representing a small minority did not like having to choose one single, usual mode of transportation.

Respondents interpreted usual mode of transportation to include modes which were used in equal proportions, like carpooling - one week as a driver and the other as a passenger.

The NCT responses for different modes of transportation were compared to other external data sources such as the 1992 General Social Survey, the 1991 Angus Reid Urban Canada study and the 1990 U.S. Bureau of the Census. The percentage of use among different modes of transportation were found to be fairly consistent between the different data sources, suggesting that the NCT question worked well in capturing a usual mode of transportation response.

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1.0 INTRODUCTION

The 1996 Census of Population National Census Test (November 1993) contained two questions falling under the responsibility of the Place of Work Unit:

Question 42 Place of Work

Question 43 Mode of Transportation

A) Place of Work Question

The intent of the place of work concept is to identify the physical location of Canada's experienced labour force while at work. In concert with residence locations, this information is used for the production of origin-destination "commuter" matrices. Place of work data also facilitate the development of "area profiles" of persons working (not necessarily living) within specified geographic areas - referred to as the "daytime population".

The first objective of the place of work question is to identify the general location of experienced labour force persons while at work, this is accomplished through measurement of the place of work status variable. There are four place of work statuses (categories):

Work at home

persons who live and work at the same physical location, such as farmers, teleworkers and workcamp workers.

Work outside Canada

persons who work outside Canada at the time of the census. Most often applicable to persons completing 2C questionnaires and "civilian" Canadians who work in the United States.

No fixed workplace address

persons who do not necessarily commute to the same workplace at the beginning of each shift, such as trades persons, construction workers and delivery personnel.

Usual place of work (worked at the address specified below)

persons who commute to an employer's address most of the time. This applies to most of Canada's experienced labour force. Respondents are instructed to provide a complete civic address, though street intersections and/or building names are accepted.

Respondents were to "mark" only one of the four place of work statuses.

The second objective of the place of work question is to identify the specific location of workplaces, for those persons who marked "worked at the address specified below". This is accomplished through the use of a place of work address write-in variable. There are four place of work address fields:

Street address

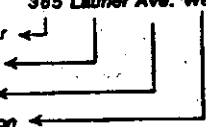
Name of city, town, village, Indian reserve etc.

Province/territory

Postal code

The 1996 National Census Test place of work question appeared as follows:

<p>1. NAME</p> <p>Make sure you copy the names in the same order as your list in Step 2.</p> <p><i>If you need help, please use the Guide or call us toll free at 1-800-565-5595.</i></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="background-color: black; color: white; padding: 2px;">PERSON 1</th> <th style="background-color: black; color: white; padding: 2px;">PERSON 2</th> </tr> <tr> <td style="padding: 2px;">Family name</td> <td style="padding: 2px;">Family name</td> </tr> <tr> <td style="padding: 2px;">Given name Initial</td> <td style="padding: 2px;">Given name Initial</td> </tr> </table>	PERSON 1	PERSON 2	Family name	Family name	Given name Initial	Given name Initial
PERSON 1	PERSON 2						
Family name	Family name						
Given name Initial	Given name Initial						

<p>42. At what address did this person usually work?</p> <p><i>Example of complete street address:</i></p> <p style="text-align: center;">365 Laurier Ave. West</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>Number ←</p> <p>Name ←</p> <p>Type ←</p> <p>Direction ←</p> </div>  </div> <p><i>If direction (e.g., North, South, East or West) is a part of the street address, please include it.</i></p> <p><i>If street address is unknown, print the name of the building or nearest street intersection.</i></p> <p>Note: Some large cities are made up of smaller cities or towns called municipalities. Where applicable, identify the municipality rather than the larger city, for example, Dorval rather than Montréal, Scarborough rather than Toronto, St. Albert rather than Edmonton, Saanich rather than Victoria.</p>	<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>1 <input type="radio"/> Worked at home (including farms) Go to Question 44</p> <p>2 <input type="radio"/> Worked outside Canada Go to Question 44</p> <p>3 <input type="radio"/> No fixed workplace address Go to Question 43</p> <p>4 <input type="radio"/> Worked at the address specified below:</p> <p>Please enter complete address (see example)</p> <p>Street address</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Name of city, town, village, Indian reserve, etc.</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Province/territory</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Postal code</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div> </td> <td style="width: 50%; vertical-align: top;"> <p>1 <input type="radio"/> Worked at home (including farms) Go to Question 44</p> <p>2 <input type="radio"/> Worked outside Canada Go to Question 44</p> <p>3 <input type="radio"/> No fixed workplace address Go to Question 43</p> <p>4 <input type="radio"/> Worked at the address specified below:</p> <p>Please enter complete address (see example)</p> <p>Street address</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Name of city, town, village, Indian reserve, etc.</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Province/territory</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Postal code</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div> </td> </tr> </table>	<p>1 <input type="radio"/> Worked at home (including farms) Go to Question 44</p> <p>2 <input type="radio"/> Worked outside Canada Go to Question 44</p> <p>3 <input type="radio"/> No fixed workplace address Go to Question 43</p> <p>4 <input type="radio"/> Worked at the address specified below:</p> <p>Please enter complete address (see example)</p> <p>Street address</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Name of city, town, village, Indian reserve, etc.</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Province/territory</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Postal code</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<p>1 <input type="radio"/> Worked at home (including farms) Go to Question 44</p> <p>2 <input type="radio"/> Worked outside Canada Go to Question 44</p> <p>3 <input type="radio"/> No fixed workplace address Go to Question 43</p> <p>4 <input type="radio"/> Worked at the address specified below:</p> <p>Please enter complete address (see example)</p> <p>Street address</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Name of city, town, village, Indian reserve, etc.</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Province/territory</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>Postal code</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>
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Changes to the Place of Work Question

The place of work question has been asked in virtually the same format in each decennial census since 1971. On the 1996 National Census Test questionnaire, three changes were introduced to the place of work question to make it easier to understand, and encourage respondents to provide complete workplace address responses.

- o the "county" write-in box was removed after investigation indicated that most persons did not respond to the county field, and many of those who did respond confused "county" with "country" and wrote "Canada" as a response.
- o the "no fixed workplace address" response category was made explicit. In previous censuses a ROP clerk "marked" a box if a respondent wrote "no usual place of work" in the address fields. This instruction/response category was explained in Census Guides, but many respondents do not read the Guides. It was suspected that previous censuses have under counted the number of persons with "no fixed workplace address". In addition, focus group testing indicated that respondents better understood the term "no fixed workplace address" over "no usual place of work", so the terminology was changed.
- o clearer instructions, with an example of a complete civic address response, were included to assist respondents in providing a complete workplace address.

B) Mode of Transportation Question

The mode of transportation question was new to the Census and was tested on the 1996 National Census Test at the request of transportation academics, planners and engineers across Canada. This question provided respondents with an opportunity to indicate the mode of transportation they usually use to get to work. Consultation with transportation academics, planners and engineers, and focus group testing, resulted in the mode of transportation question instructing respondents to "mark" only one mode of transportation - *the one used for most of the travel distance*. (See Section 3, pg. 11 for a detailed description on how this new question was introduced and tested).

The 1996 National Census Test mode of transportation question appeared as follows:

	PERSON 1	PERSON 2
1. NAME Make sure you copy the names in the same order as your list in Step 2. <i>If you need help, please use the Guide or call us toll free at 1-800-565-5595.</i>	Family name Given name Initial	Family name Given name Initial
43. How did this person usually get to work? <i>If this person used more than one method of transportation, mark the one used for most of the travel distance.</i>	<p>1 <input type="radio"/> Car, truck or van — as driver</p> <p>2 <input type="radio"/> Car, truck or van — as passenger</p> <p>3 <input type="radio"/> Public transit (e.g., bus, street car, subway, light rail transit, commuter train, ferry)</p> <p>4 <input type="radio"/> Taxicab</p> <p>5 <input type="radio"/> Motorcycle</p> <p>6 <input type="radio"/> Bicycle</p> <p>7 <input type="radio"/> Walked to work</p> <p>8 <input type="radio"/> Other method — Specify <input type="text"/></p>	<p>1 <input type="radio"/> Car, truck or van — as driver</p> <p>2 <input type="radio"/> Car, truck or van — as passenger</p> <p>3 <input type="radio"/> Public transit (e.g., bus, street car, subway, light rail transit, commuter train, ferry)</p> <p>4 <input type="radio"/> Taxicab</p> <p>5 <input type="radio"/> Motorcycle</p> <p>6 <input type="radio"/> Bicycle</p> <p>7 <input type="radio"/> Walked to work</p> <p>8 <input type="radio"/> Other method — Specify <input type="text"/></p>

C) Place of Work Universe

The place of work universe is equivalent to the experienced labour force. Under regular Census processing conditions, place of work universe respondents are defined by the edit and imputation rules of the Census Labour Force subject matter personnel. In tabulating National Census Test data contained in the tables which follow, "filtering" conditions were utilized so as to create a subset of data which "roughly approximated" the experienced labour force. The filters utilized excluded all persons who:

- Date of Birth
 - were younger than 15 years of age
 - were older than 65 years of age
- School
 - were attending school full time
- Labour Force
 - did not work prior to 1992
 - have never worked

Data contained in all following tables were generated from one of four data files. These four files include 1991 Census of Population data files as they were "loaded" for edit and imputation processing (these files were also utilized during 1991 Certification), and three 1996 National Census Test files.

Data File(s)	Acronym
1991 Census of Population E&I Load files	1991 LOAD
SPEC.ICT9311.NCT.LFSAMP.APR14.PUBREAD	Final NCT
SPEC.ICT9311.EFS.V08.APR05.PUBREAD	EFS NCT
SPEC.ICT9311.NCT.RAW1728.NONTEMP.PUBREAD	Raw NCT

2.0 PLACE OF WORK STATUS

A) Final NCT, EFS NCT and 1991 LOAD Data

Table 1 shows place of work status response patterns, it consists of three univariate distributions of the place of work status variable. Each distribution was generated from a separate data set.

The distribution labelled "1991 LOAD" reflects the actual distribution of the place of work status variable as it was received by the 1991 Census of Population Edit & Imputation operation. The data in this distribution reflect the state of the place of work status variable for the exact place of work universe, as all other variables were previously processed by 1991 automated edit and imputation modules.

The distribution labelled "Final NCT" reflects the distribution of the place of work status variable as it would exist prior to being submitted to an automated edit and imputation operation. In this respect, the "Final NCT" and "1991 LOAD" data have been processed to the same extent, hence they are comparable. The data in the "Final NCT" distribution reflect the state of the place of work status variable for the place of work universe as defined in section 1.0.C.

The distribution labelled "EFS NCT" reflects the distribution of the place of work status variable as it existed prior to being processed by the NCT manual edit operation. This distribution provides an indication of the level of response/non-response to the place of work status variable, prior to field follow-up. The data in this distribution reflect the state of the place of work status variable for the place of work universe as defined in section 1.0.C.

Figures which are highlighted in bold within Table 1 indicate valid response patterns. 67.9% of the "EFS NCT" responses fall in this category. Figures which are not highlighted are not necessarily invalid responses, some are merely incomplete or "dirty" but could be easily cleaned by automated edit modules. An additional 20.2% of the "EFS NCT" responses may be classified as incomplete/dirty, bringing the total to 88.1% valid or incomplete/dirty. The remaining 11.9% of "EFS NCT" responses may be classified as invalid and would, if not for the manual edit operation, be subjected to hot-deck imputation during automated edit and imputation processing. The existence of a manual edit operation reduces the incidence of invalid and incomplete/dirty responses as illustrated within the "Final NCT" distribution.

Figures pertaining to the "Final NCT" distribution indicate that 86.5% of responses can be considered valid. The 18.6% (86.5% - 67.9%) increase in valid response patterns, from "EFS NCT" to "Final NCT", is largely the result of the manual edit operation "marking" the box labelled "worked at address specified below" on behalf of respondents who failed to mark this box, but did provide a workplace address response. An additional 9.9% of the "Final NCT" responses may be classified as incomplete/dirty and easily cleaned by automated edit modules. This brings the total to 96.4% valid or incomplete/dirty responses. The remaining 3.6% of "Final NCT" responses are to be classified as invalid, they would clearly be subjected to hot-deck imputation during automated edit and imputation processing. The "1991 LOAD" distribution illustrates that 4.9% of responses were clearly candidates for hot-deck imputation as they entered the 1991 Census of Population automated edit and imputation process.

Taken together, these three distributions indicate that place of work status responses are fairly clean. However, the manual edit operation does make a substantial contribution to cleaning raw responses, though, a vast majority of this clean-up could be handled by an automated edit process simply because "marking" the "work at the address specified below" box is all which is required. "Final NCT" and "1991 LOAD" distributions are fairly similar, with the "Final NCT" distribution suggesting that slightly fewer responses can be labelled as clearly requiring hot-deck imputation during automated imputation processing.

Table 1 Place of Work Status Response Patterns

	1991 LOAD	Final NCT	EFS NCT
Non-response:	4.2%	3.2%	11.6%
Single response/code:			
Box 01: Work at home	7.4%	8.4%	7.4%
Box 02: Work outside Canada	0.8%	0.2%	0.2%
Box 03: Usual place of work	0.7%	0.2%	0.2%
Box 04: No usual place of work	<0.01%	9.2%	7.1%
Box 05: Write-in	6.1%	8.2%	16.8%
Two responses/codes:			
Work at home and work outside Canada	<0.01%	<0.01%	0.0%
Work at home and usual place of work	0.05%	0.0%	0.02%
Work at home and no usual place of work	<0.01%	0.07%	0.1%
Work at home and write-in	0.6%	0.5%	0.9%
Work outside Canada and usual place of work	0.01%	0.0%	0.0%
Work outside Canada and no usual place of work	<0.01%	<0.01%	0.0%
Work outside Canada and write-in	0.03%	0.03%	0.02%
Usual place of work and no usual place of work	<0.01%	<0.01%	0.02%
Usual place of work and write-in	78.4%	68.7%	53.1%
No usual place of work and write-in	1.1%	0.50%	0.78%
Three responses/codes:			
Box 01, Box 02 and Box 03	<0.01%	0.00%	0.00%
Box 01, Box 02 and Box 04	<0.01%	0.00%	0.00%
Box 01, Box 02 and Box 05	<0.01%	0.00%	0.00%
Box 01, Box 03 and Box 04	0.00%	0.00%	0.00%
Box 01, Box 03 and Box 05	0.25%	0.44%	1.26%
Box 01, Box 04 and Box 05	<0.01%	0.01%	0.00%
Box 02, Box 03 and Box 04	<0.01%	0.00%	0.00%
Box 02, Box 03 and Box 05	0.02%	0.02%	0.02%
Box 02, Box 04 and Box 05	0.01%	0.00%	0.00%
Box 03, Box 04 and Box 05	0.22%	0.21%	0.41%
Four responses/codes:			
Box 01, Box 02, Box 03 and Box 04	0.0%	0.01%	0.0%
Box 01, Box 02, Box 03 and Box 05	<0.01%	0.0%	0.0%
Box 01, Box 02, Box 04 and Box 05	<0.01%	0.0%	0.0%
Box 01, Box 03, Box 04 and Box 05	<0.01%	0.0%	0.0%
Box 02, Box 03, Box 04 and Box 05	<0.01%	0.0%	0.0%
Five responses/codes:			
Box 01, Box 02, Box 03, Box 04 and Box 05	<0.01%	<0.01%	0.00%

where;

Write-in With respect to 1991 LOAD data, indicates the presence of any write-in the seven SGC boxes located at the bottom of the question. With respect to NCT data, indicates the presence of a written response in any of the place of work "address" write-in fields.

1991 LOAD 1991 Census of Population, Place of Work universe records, after field edits and after the automated edit and imputation of all other Census variables. N=3,183,498

Final NCT NCT labour force sample based records. N=15108/32696

EFS NCT NCT Edit Failure Study labour force sample based records. N=4586/9986

0.00% Indicates that there were no responses of this type.

Non-response

The proportion of respondents failing to respond to the place of work question is lower with respect to Final NCT data (3.2%) than was the case with 1991 LOAD data (4.2%). This decrease in non-response (0.9%) is small, consistent with expectations, and mostly likely the result of both clearer place of work question instructions and the NCT manual edit operation (EFS NCT non-response 11.6%).

Work at home

The proportion of respondents indicating, in a "single" response, that they worked at home is consistent with expectations: 1991 LOAD = 7.4%, Final NCT = 8.4%, and EFS NCT = 7.4%. The proportion of respondents providing a less than clean (multiple) work at home response is not extensive, and is consistent between 1991 LOAD data (0.9%) and Final NCT data (1.0%).

Work outside Canada

The proportion of respondents providing a clean worked outside Canada response drops dramatically between 1991 LOAD data (0.8%) and Final NCT data (0.2%). This significant decrease (0.6%) was expected and can largely be explained as resulting from the manner in which Census of Population and NCT respondents are sampled. The Census has most of the "worked outside Canada" responses coded through 2C questionnaires used by Canadians living and working outside of Canada at the time of the census. The NCT did not have a 2C questionnaire. If we ignore the 1991 2C database, for a single response of Outside Canada, the percentage of responses drops from 0.8% to 0.4% - much closer, and more comparable, to the Final NCT results of 0.2%.

The proportion of respondents providing a less than clean (multiple) worked outside Canada response is not extensive and again is consistent between 1991 LOAD data (0.1%) and Final NCT data (0.1%). Nearly one-half of all "multiple" worked outside Canada responses are classified as multiple responses because they also include a response to the place of work address write-in fields. Multiple responses of this nature do not create difficulties during processing, they actually assist in validating whether or not respondents' workplaces are in fact located inside, or outside, Canada.

In total, eight (8) Final NCT respondents both indicated that they work outside Canada and provided at least one response to the place of work address write-in fields. A complete listing of the occupations written by these respondents is provided in Appendix 2.0A Place of Work Status: Work Outside Canada. Of these eight respondents, five (5) provided a Canadian address response, while the others supplied responses which clearly indicated that they worked outside of Canada.

The place of work automated coding system is designed to code all address write-in responses, therefore, these five responses would be place of work coded within Canada and subsequent automated edit modules would resolve the discrepancy between the place of work status (outside Canada) and the place of work address code (inside Canada).

The automated edit modules resolve all discrepancies created by "multiple" place of work status responses.

No fixed workplace address

"No fixed workplace address" did not exist as an explicit response category to the place of work question until November 1993. Prior to the National Census Test, the only methods available for respondents to learn that "no usual place of work" was a valid response to the place of work question was to read the *Census Guide* which accompanied the questionnaire, or solicit assistance from Census personnel. Unfortunately, the proportion of respondents who have read *Census Guides* in previous Censuses is small, therefore lowering the probability that respondents who have "no usual place of work" would have communicated this, thus leading to under counting of "no fixed workplace address" workers.

The proportion of respondents providing a clean "no fixed workplace address" response increases dramatically between 1991 LOAD data (1.1%) and Final NCT data (9.2%). This significant increase was anticipated and can be explained as resulting from the explicit inclusion of the "no fixed workplace address" response category on the National Census Test questionnaire.

1991 Census of Population place of work data revealed that a vast majority of respondents indicating that they had "no usual place of work" were employed as travelling sales representatives, landscapers or grounds keepers, fishermen, construction workers or truck drivers. A complete listing of the occupations written by all NCT respondents who indicated that they had "no fixed workplace address" is provided in Appendix 2.0A Place of Work Status: No Fixed Workplace Address. A comparison between the 1991 Census and 1996 NCT respondents indicates that they basically hold the same occupations. This suggests that "no fixed workplace address" responses observed on the NCT are valid responses. The significant increase in the incidence of response to this place of work status may be explained as resulting from the explicit inclusion of the no fixed workplace address response category on the NCT questionnaire.

The proportion of respondents providing a less than clean (multiple) "no fixed workplace address" response is not extensive and is basically consistent between 1991 LOAD data (0.3%) and Final NCT data (0.2%). Again, multiple place of work status responses do not create difficulties, they are resolved by automated edit modules during processing. When no fixed workplace address respondents provide place of work address write-in responses these discrepancies are resolved in a fashion similar to that explained in the case of persons who work outside Canada and provide a Canadian workplace addresses.

Usual Place of Work (worked at address specified below)

The proportion of respondents providing a complete worked at address specified below response drops dramatically between 1991 LOAD data (78.4%) and Final NCT data (68.7%). This significant decrease was expected and can be explained as resulting from the explicit inclusion of the No Fixed Workplace Address response category.

The proportion of respondents providing an incomplete¹ response is somewhat consistent between 1991 LOAD data (6.1%) and Final NCT data (8.2%). The proportion of respondents providing multiple responses has increased slightly between 1991 LOAD data (0.6%) and Final NCT data (0.7%). This increase is largely the result of a higher proportion of respondents indicating that they work at home, and work at the address specified below, and provide a workplace address write-in response. As was the case with respect to "multiple" worked outside Canada responses, this particular response pattern is not substantial and does not create difficulties during processing, these multiple responses actually assist in validating whether or not respondents' workplaces are located at their homes.

B) Worked At Address Specified Below

Univariate Distribution

Respondents indicating that they worked at the address specified below (usual place of work) were to provide a complete workplace address write-in. All other respondents were to leave the address write-in fields blank.

Table 2 shows the address write-in response patterns for both the Final NCT and the EFS NCT. 1991 LOAD data was not available for analysis as the place of work address write-ins were not data captured.

The place of work address write-in consists of four distinct fields: street address, city, province and postal code. Overall, 73.3% of all EFS NCT respondents completed at least one of the four place of work address write-ins. The manual edit operation resulted in 78.6% of all Final NCT responses containing at least one place of work address write-in.

Excluding all non-response records, the EFS NCT distribution indicates that 89.6% of all responses were either complete responses, or missing only a postal code, this figure increases to 92.2% with respect to Final NCT data. Response rates of this magnitude are good for coding, however, it is only through a cross classification of place of work status with place of work address write-ins that we can begin to estimate the rate at which place of work addresses would be imputed during an automated edit and imputation process.

NCT collection rules called for all non-responses to place of work address write-ins to be subjected to telephone follow-up. Regional offices advised head office that their schedule for follow-up was being compromised because of non-response to the place of work postal code write-in field. Subject matter therefore dropped the rule for following up missing postal codes, this decision does not seriously harm the ability to code place of work data.

Table 2 Place of Work Address Write-in Response Patterns

	Final NCT	EFS	Final NCT	EFS
Place of work address write-ins	100%	100%	100%	100%
Non-response	Non-Response Excluded			
All place of work address write-ins blank	21.4%	26.7%	0.0%	0.0%
One address write-in				
Street	1.6%	3.2%	2.0%	4.4%
Municipality	0.0%	0.0%	0.0%	0.0%
Province	0.0%	0.0%	0.0%	0.0%
Postal code	0.0%	0.0%	0.0%	0.0%
Two address write-ins				
Street, municipality	2.7%	2.6%	3.4%	3.5%
Street, province	0.5%	0.6%	0.6%	0.8%
Street, postal code	0.3%	0.2%	0.3%	0.3%
Municipality, province	0.0%	0.0%	0.0%	0.0%
Municipality, postal code	0.0%	0.0%	0.0%	0.0%
Province, postal code	0.0%	0.0%	0.0%	0.0%
Three address write-ins				
Street, municipality, province	28.5%	24.2%	36.3%	33.0%
Street, municipality, postal code	0.1%	0.1%	0.2%	0.1%
Street, province, postal code	1.0%	0.8%	1.2%	1.1%
Municipality, province, postal code	0.0%	0.0%	0.0%	0.0%
Four address write-ins				
All write-ins filled	43.9%	41.5%	55.9%	56.6%

where;

Final NCT NCT labour force sample based records. N=15108/32696

EFS NCT NCT Edit Failure Study labour force sample based records. N=4586/9986

Bivariate Distribution

In Table 3, the place of work status variable has been cross-classified with the address write-in. Persons working at home, outside Canada or having no fixed workplace address were not instructed to provide a response to the place of work address write-in. However, all other persons were required to complete the address write-ins.

Responses for the address write-in were excellent for the persons having a usual place of work, 98.1% provided multiple address field responses. Only 0.4% failed to provide any address information. Of the 3.2% of respondents who did not provide a place of work status response, 69.1% provided multiple address field responses, 28.4% provided no address information. Automated edit modules resolve whether these persons should have responded to the status, or address write-in, questions.

Where respondents were instructed to skip the address write-in the vast majority did. This skip pattern was followed correctly by 94.4% of those working at home, 94.8% of those with no fixed workplace address, and by 84.4% of those working outside Canada. The working outside Canada category, the smallest place of work status category, represents only 0.2% of the "final NCT" respondents and is expected to represent less than 1% of 1996 Census responses. Of those providing a response, only 12.5% provided a response to multiple address fields. This is much lower than the 98.1% rate for persons with a usual place of work.

The high level of address responses observed for persons with a usual place of work, coupled with low rates of response for the other place of work status categories, demonstrates that place of work data is very clean as it enters the coding operation. In addition, the Census is not capturing a large volume of address write-in responses which are never used for coding. In those few instances where persons work at home, outside Canada or have no fixed workplace address, and they do provide a workplace address response, the automated edit process validates the place of work status response using the workplace address write-ins.

Table 3 Place of Work Status by Place of Work Address Write-In

Final NCT Data	Non-Response	Single Response	Multiple Responses	TOTAL
Place of work status/address write-in	All Fields Blank			
Non-response				
All fields blank	28.4%	2.45	69.1%	100%
Single place of work status				
At home	94.4%	0.5%	5.0%	100%
Outside Canada	84.4%	3.1%	12.5%	100%
No fixed workplace address	94.8%	1.1%	4.1%	100%
Usual POW	0.4%	1.5%	98.1%	100%
Two place of work statuses				
At home, outside Canada	100%	0.0%	0.0%	100%
At home, no fixed workplace address	83.3%	8.3%	8.3%	100%
At home, usual	0.0%	6.1%	93.9%	100%
Outside Canada, no fixed workplace	100%	0.0%	0.0%	100%
Outside Canada, usual POW	0.0%	0.0%	100%	100%
No fixed workplace, usual POW	3.1%	15.6%	81.2%	100%
Four place of work statuses				
All fields filled	66.7%	0.0%	33.3%	100%

Appendix 2.0 B - place of work status by place of work address write-in contains a detailed version of Table 3.

3.0 MODE OF TRANSPORTATION

A) Univariate Distribution

A Mode of Transportation question was tested for the first time on the 1996 National Census Test, at the request of transportation academics, planners and engineers across Canada. Prior to the commission of the National Census Test, both single mode and multiple mode of transportation questions were subjected to focus group testing in Montréal, Toronto and Calgary. It was observed that, given the opportunity to "check-off" multiple modes of transportation, many respondents did just so. Respondents vocalized that since they "walked from their house to the car", "walked from home to the bus stop", or "walked from the bus stop to their workplace" they therefore utilized multiple modes of transportation. It was not the intent of the mode of transportation question to measure every mode of transportation utilized, an intent of this type would virtually guarantee that every worker walks at some time during their commute to work. It was concluded that the validity of data collected from a self-administered Census question, permitting multiple-mode of transportation responses, would be questionable. Consequently, a decision was made to restrict responses to the mode of transportation question to "single modes" of transportation, and acknowledge that the data collected by such a question would under-represent the utilization of "multiple-modes" transportation.

A multiple means of transportation question was also tested by the United States in 1985, in preparation for the 1990 U.S. Census. The American analysis came back with the recommendation to ask a "single mode" usual means of transportation question. Their report concluded that, *"although the number of persons reporting multiple modes of transportation in the NCT sample was small, the analysis showed that allowing respondents to mark more than one usual means of transportation led to the reporting of illogical mode combinations. One possible explanation for some of the inconsistent answers is that respondents may have misunderstood the question and reported how they got to work on different days of the previous week."*²

On the 1996 National Census Test (November 1993), respondents reporting no fixed workplace address, or a usual place of work, were to respond to the mode of transportation question. Respondents reporting that they worked at home or outside Canada were instructed to skip the mode of transportation question.

Table 4. Mode of Transportation Response Patterns

	Final NCT	EFS NCT	Final NCT	EFS NCT
Mode of transportation:	100%	100%	100%	100%
Non-response:	Non-Response Excluded			
All mode of transportation fields blank	8.5%	13.4%	0.0%	0.0%
Single mode responses:				
Car, truck, van as driver	69.0%	64.3%	75.4%	74.3%
Car, truck, van as passenger	7.6%	7.1%	8.3%	8.3%
Public transit	4.3%	3.5%	4.5%	4.0%
Taxi cab	0.3%	0.3%	0.4%	0.3%
Motorcycle	0.1%	0.1%	0.1%	0.1%
Bicycle	0.7%	0.9%	0.7%	1.0%
Walked	7.6%	7.2%	8.3%	8.3%
Other	1.4%	1.6%	1.5%	1.8%
Multiple mode responses:				
Car, truck, van as driver and one subsequent mode	0.3%	0.9%	0.4%	1.1%
Car, truck, van as driver and two subsequent modes	0.04%	0.1%	0.04%	0.1%
Car, truck, van as driver and three subsequent modes	<0.01%	0.02%	<0.01%	0.03%
Car, truck, van as passenger and one subsequent mode	0.1%	0.3%	0.1%	0.3%
Car, truck, van as passenger and two subsequent modes	0.02%	0.04%	0.02%	0.05%
Public transit and one subsequent mode	0.05%	0.11%	0.05%	0.1%
Taxi and one subsequent mode	<0.01%	0.02%	<0.01%	0.03%
Taxi and two subsequent modes	0.0%	0.02%	0.0%	0.03%
Motorcycle and one subsequent mode	0.01%	0.02%	0.01%	0.03%
Bicycle and one subsequent mode	0.03%	0.1%	0.03%	0.1%
All fields filled	0.0%	0.0%	0.0%	0.0%

Non-response

As illustrated by the EFS NCT data, 13.4% of respondents did not respond to the mode of transportation question. The non-response rate falls to 8.5% with respect to Final NCT data. This decrease in non-response (4.9%) is, mostly likely, largely the result of the NCT manual edit operation. A Final NCT non-response rate of 8.5% was expected, it is consistent with the distribution of place of work status observed in Table 1, where 11.8% of respondents either did not respond to the place of work status question, or clearly indicated that they either worked at home or outside Canada.

Modes of Transportation

A more careful examination of EFS NCT and Final NCT, single and multiple mode of transportation distributions, suggests that the NCT manual edit operation significantly reduced the incidence of multiple mode of transportation responses. This operation also increased the incidence of single mode of transportation responses, particularly with respect to the "car, truck, van as driver" and "public transit" response categories.

"Other" Modes of Transportation

The "other" mode of transportation response category asked respondents to write-in the "other" mode of transportation which they utilize. This response category was designed in this manner so as to identify potential weaknesses in the choice of mode of transportation check boxes. It was expected that the "other" response category would capture less common modes of transportation such as; "boat", "hovercraft", "plane", "helicopter", "snowmobile", etc. Appendix 3.0B Mode of Transportation: Other Modes by Place of Work Status, provides a listing of the "other" modes of transportation responses received. Many respondents used the "other" write-in box to indicate that they used no transportation at all, they worked at home. This indicated that the skip level instructions were not followed. More importantly, the write-in responses indicated that the mode of transportation question did not adequately account for respondents who used their work vehicles to get to work (e.g. school bus) or respondents who "carpooled" on an equal basis - drove one week and were a passenger the next.

B) Bivariate Distributions

The place of work question instructed those persons who work at home, and those persons who work outside Canada, to skip the mode of transportation question. It was only respondents having "no fixed workplace" or a "usual place of work" who were to respond to the mode of transportation question. Because of this design, evaluation of mode of transportation responses are clearly more meaningful when analyzed in the context of the place of work status variable.

Table 5 Place of Work Status by Mode of Transportation

Final NCT Data	Non-Response	Single	Multiple	TOTAL
Place of work status/mode	All Modes Blank	Modes	Modes	
Non-response				
All fields blank	20.8%	78.6%	0.6%	100%
Single place of work status				
At home	62.4%	37.3%	0.3%	100%
Outside Canada	46.9%	50.0%	3.1%	100%
No fixed workplace	0.9%	97.9%	1.1%	100%
Usual POW	0.5%	98.9%	0.6%	100%
Two place of work statuses				
At home, outside Canada	0.0%	100%	0.0%	100%
At home, no fixed workplace	0.0%	100%	0.0%	100%
At home, usual POW	18.2%	80.3%	1.5%	100%
Outside Canada, no fixed workplace	0.0%	100%	0.0%	100%
Outside Canada, usual POW	0.0%	100%	0.0%	100%
No fixed workplace, usual POW	0.0%	96.9%	3.1%	100%
Four place of work statuses				
All fields filled	66.7%	33.3%	0.0%	100%

A more detailed version of Table 5 is provided in Appendix 3.0B Place of Work Status by Mode of Transportation.

Non-Response

Table 5 illustrates that 20.8% of those persons who failed to specify a place of work status, also failed to respond to the mode of transportation question. 78.6% of these same non-respondents provided a single mode of transportation response, virtually all claiming to travel by car, truck or van as a driver. A more careful examination of the modes of transportation utilized by these non-respondents reveals that they commute in a similar fashion and incidence as those persons with usual places of work.

It is important to note that 71.59% of these "non-respondents" did provide a workplace address response (Appendix 2.0B Place of Work Status by Place of Work Address Write-in). Given their incidence of response to the mode of transportation and workplace address write-in questions, these non-respondents are easily "cleaned" by automated edit programs. Most, if not all, of these non-respondents would be edited to become "usual place of work" persons.

Work At Home

Nearly two-thirds of respondents who provided a single work at home response followed the skip pattern associated with this response category and did not respond to the subsequent mode of transportation question. However, 38% of "at home" workers did not follow the skip pattern and instead provided either a single (37.6%) or multiple (0.3%) mode of transportation response. Virtually all of these at home workers commute by car, truck or van as a driver, walk, or use an "other" mode of transportation. Appendix 3.0B Mode of Transportation: Other Modes by place of Work Status illustrates that "at home" workers who use other modes of transportation actually write-in that they "work at home". Obviously, the "skip" instruction was not always followed.

Appendix 2.0B Place of Work Status by Place of Work Address Write-in illustrates that less than 6% of "at home" workers provide a response to the place of work address write-in question. Because of the lack of a workplace address write-in, regardless of the mode of transportation utilized by these workers, their over-response to the mode of transportation question is easily resolved (eliminated) by automated edit programs.

Outside Canada

Less than one-half of respondents who provided a single work outside Canada response followed the skip pattern associated with this response category by not responding to the mode of transportation question. A total of 53.1% of persons working outside Canada provided either a single response (50.0%) or multiple responses (3.1%) to the mode of transportation question. All work outside Canada respondents who provided a single mode of transportation response commuted to work either by car, truck or van as a driver, or they walked.

Appendix 2.0B Place of Work Status by Place of Work Address Write-in illustrates that slightly more than 15% of "outside Canada" workers provided a response to the place of work address write-in question. All place of work address write-ins will be reviewed and, where possible, coded during the 1996 Census of Population place of work coding operation. Those "outside Canada" workers who provide a workplace address located in Canada will be coded and converted to "usual place of work" persons by subsequent edit processing modules, therefore responses to the mode of transportation question will be preserved. All remaining outside Canada workers will remain "outside Canada", and their responses to the mode of transportation question eliminated by automated edit modules.

No Fixed Workplace

Persons who responded that they had no fixed workplace address were instructed to respond to the mode of transportation question. Table 5 illustrates that 97.9% of these persons did provide a single mode of transportation response, where as, an additional 1.1% provided multiple responses to the mode of transportation question, thus resulting in a non-response rate of only 0.9%.

It appears that the "Go to Question 43" instruction which accompanied the no fixed workplace address response category was effective in soliciting mode of transportation responses from these persons.

Usual Place of Work

Persons having a usual place of work were not instructed to skip the mode of transportation question, nor were they instructed to "Go to Question 43", it was assumed that once they responded to the place of work/address write-in question that they would, by default, continue with the next question (mode of transportation). Table 5 illustrates that 98.9% of persons having a usual place of work also provided a single mode of transportation response, where as, an additional 0.6% provided multiple responses to the mode of transportation question, resulting in a non-response rate of only 0.5%.

The response rate, and cleanliness of responses, to the mode of transportation question was impressive.

External Data Sources

In addition to reviewing mode of transportation responses internal to the NCT, these were also contrasted with somewhat similar data collected by the U.S. Bureau of the Census, the General Social Survey and the Angus Reid Group. Caution should be exercised in comparing the data collected by these sources, each survey differs in its objectives, target populations, sample sizes and question design. Nonetheless, taken together, these data do provide a general indication of the modes of transportation utilized by persons commuting to work.

Table 6 Mode of Transportation:

NCT No Fixed Workplace Address, NCT Usual Place of Work, US Census, GSS and Angus Reid

	No Fixed	Usual	US Census	GSS	Angus Reid
Mode of transportation	100%	100%	100%	100%	100%
Non-response					
All mode of transportation fields blank	0.9	0.5	excluded	1.0	2.4
Single mode responses					
Car, truck, van as driver	77.0	75.8	75.5	73.0	67.0
Car, truck, van as passenger	10.9	7.9	13.8	20.0	
Public transit	2.8	5.0	5.3	7.0	22.4
Taxi cab	0.4	0.4	0.2		
Motorcycle	0.0	0.1	other mode		
Bicycle	0.4	0.9	other mode	2.0	
Walked	3.4	8.0	4.0	21.0	8.4
Other	3.0	0.7	1.3	2.0	
Multiple mode responses					
Car, truck, van as driver and one subsequent mode	0.8	0.3			
Car, truck, van as driver and two subsequent modes	0.0	0.0			
Car, truck, van as driver and three subsequent modes	0.0	0.0			
Car, truck, van as passenger and one subsequent mode	0.2	0.1			
Car, truck, van as passenger and two subsequent modes	0.1	<0.01			
Public transit and one subsequent mode	0.1	0.04			
Taxi cab and one subsequent mode	0.0	<0.01			
Motorcycle and one subsequent mode	0.0	0.02			
Bicycle and one subsequent mode	0.0	0.04			
All fields filled	0.0	0.0			

where;

No Fixed Final NCT labour force sample based records. Place of work universe respondents who report having "no fixed workplace address", these persons were instructed to "Go to" the mode of transportation question. N=1466/15108

Usual Final NCT labour force sample based records. Place of work universe respondents who have a "usual" place of work (work at the address specified below), these persons were assumed to continue with the mode of transportation question. N=10418/15108

US Census The 1990 United States Census of Population and Housing had a question on usual means of transportation to work for workers 16 years old and over. US Census data were classified into the following categories: Drove alone; Carpooled; Public transportation, Taxi cab; Walked; Other means (includes motorcycle and bicycle). Only for convenience, these data have been re-classified above as: Car, Truck, Van as Driver; Car, Truck, Van as Passenger; Public Transit; Taxi cab; Walked; Other.

GSS The 1992 General Social Survey (GSS) collected time use data over a 12 month period from a random sample of approximately 9,000 respondents aged 15 and older. Commuting data were derived for people who lived in metropolitan areas. The GSS data reported here pertain to "employed" persons (employed persons comprise over 85% of the place of work universe). GSS data were classified into the following categories: Car as driver and Car as passenger; Foot; Bus/Subway, Bicycle; Other. Only for convenience, the data pertaining to these categories have been re-classified above as: Car, Truck, Van as Driver; Car, Truck, Van as Passenger; Walked; Public Transit; Bicycle; Other. Multiple responses were permitted, therefore the cumulative response rate exceeds 100%.

Angus Reid In June 1991 The Angus Reid Group launched a Urban Canada survey which involved 4,000 telephone interviews with a random sample of residents living within one of Canada's eight largest urban centres (Halifax to Vancouver). The Angus Reid Group classified their "mode of transportation to work" responses using three categories: Car; Public Transit; Walk/Cycle. For convenience, the data pertaining to these three categories have been re-classified above as: Car, Truck, Van as Driver; Public Transit; Walked. The documentation which we received for analysis does not indicate whether or not The Angus Reid Group permitted "multiple" responses, though, given that the cumulative responses rate does not exceed 100% we suspect that only single responses were permitted.

The third, fourth and fifth columns of data summarize findings of the U.S. Census, the General Social Survey (GSS) and The Angus Reid Group surveys. Although the distributions of mode of transportation utilization are very similar, caution should be exercised in drawing conclusions derived through comparisons of these data. The GSS universe was selected from persons living within metropolitan areas, and does not equal the place of work universe, which also includes small urban and rural areas. The objective of the GSS was to measure time use, not modes of transportation to work specifically. As a result, respondents were asked to identify all modes of transportation taken during the day. The Angus Reid Urban Canada study was compiled by The Angus Reid Group who sampled only eight large central cities, and the data available to us was collapsed into only three different modes.

Observation of the distributions outlined by each data source indicates a fairly high level of consistency, thus suggesting that the NCT mode of transportation question worked well in capturing usual mode of transportation responses. The most substantial differences in these data exists between the Angus Reid data and all other sources. Discrepancies between Angus Reid and NCT data can largely be explained by the nature of the samples (persons) surveyed. The Angus Reid data indicates that a much smaller proportion of persons commute by car, truck or van, and a far larger proportion of commuters travel by public transit, than is observed within Final NCT data. Table 7 was designed to place NCT and Angus Reid mode of transportation data on a more comparable level.

Table 7 Mode of Transportation:

All NCT, NCT No Fixed Workplace Address, NCT Usual Place of Work,

Total Sample and Large Urban Centres Only

	Entire NCT LFSample			Large Urban Centres Only		
	Final NCT	No Fixed	Usual POW	Final NCT	No Fixed	Usual POW
Mode of transportation	100%	100%	100%	100%	100%	100%
Non-response						
All mode of transportation fields blank	8.5	0.9	0.5	6.8%	0.5	0.5
Single mode responses						
Car, truck, van as driver	69.0	77.0	75.8	62.8	73.4	66.2
Car, truck, van as passenger	7.6	10.9	7.9	7.9	9.0	8.6
Public transit	4.2	2.8	5.0	14.9	10.5	17.1
Taxi cab	0.3	0.4	0.4	0.3	1.5	0.2
Motorcycle	0.1	0.0	0.1	0.08	0.00	0.06
Bicycle	0.7	0.4	0.9	0.9	0.00	1.1
Walked	7.6	3.4	8.0	5.1	2.5	5.5
Other	1.4	3.0	0.7	0.8	1.0	0.5
Multiple mode responses						
Car, truck, van as driver and one subsequent mode	0.3	0.8	0.3	0.2	0.5	0.1
Car, truck, van as driver and two subsequent modes	0.04	0.0	0.0	0.00	0.00	0.00
Car, truck, van as driver and three subsequent modes	<0.01	0.0	0.0	0.00	0.00	0.00
Car, truck, van as passenger and one subsequent mode	0.1	0.2	0.1	0.08	0.00	0.1
Car, truck, van as passenger and two subsequent modes	0.02	0.1	<0.01	0.04	0.5	0.00
Public transit and one subsequent mode	0.05	0.1	0.04	0.1	0.5	0.00
Taxi cab and one subsequent mode	<0.01	0.0	<0.01	0.00	0.00	0.00
Motorcycle and one subsequent mode	0.01	0.0	0.02	0.04	0.00	0.1
Bicycle and one subsequent mode	0.03	0.0	0.04	0.00	0.00	0.00
All fields filled	0.00	0.0	0.00	0.00	0.00	0.00

The large percent difference between the NCT and the Angus Reid results for public transit usage (Table 6) can be explained by the fact that the NCT sampled large urban, small urban and rural respondents, while Angus Reid sampled a small number of respondents living in one of eight large central cities in Canada (Halifax, Montreal, Ottawa, Toronto, Winnipeg, Edmonton, Calgary and Vancouver) which have well developed public transit networks. When the NCT sample was narrowed to concentrate on these same 8 urban centres (Table 7), public transit usage increased from 2.8%/5.0% to 10.5%/17.1% compared to the Angus Reid 22.4% figure.

4.0 STEP 10

A) Question B: Did you find any of the test questions difficult?

According to "NCT Report 25: Respondent's Comments on the NCT Questionnaire: Preliminary Analysis", the place of work question was identified 62 times (out of 2225) as a difficult test question, the mode of transportation question was identified 14 times (out of 2225) as a difficult test question. Respondent provided comments were analyzed by subject matter.

Question 42 - Place of Work

Of the 2225 responses, 62, or 2.8%, identified place of work as being a difficult question to answer. Forty (40) comments were provided by respondents and subjected to analysis.

Consistently, across the country, the number one difficulty with the place of work question was that respondents did not know their complete workplace address, a typical response being -

"I don't know the address by heart. I gave what I remembered".

These comments supported what subject matter observed in focus group testing. Some respondents could not remember details of their workplace address, particularly if their workplace was located in a large business building. However, in most instances, the name of the building or an employer's name was provided so that a cross-check could determine the correct address.

Question 43 - Mode of Transportation

Of the 2225 responses, 14, or 0.6%, identified mode of transportation as being a difficult question to answer. Ten (10) comments were provided by respondents and subjected to analysis.

Comments identified a confusion for respondents who take their work vehicles home with them. Typical responses included -

"It is hard to explain that we don't use transportation to work as we leave our home in the vehicles we use for work. My husband is a truck driver and I am a school bus driver".

"Person I does not commute to work as his taxi cab is his place of work. I marked off "walked to work" as person I does walk out to the street where his taxi is parked".

Some respondents were frustrated by not being permitted to mark more than one mode of transportation. Again, typical comments included -

"Different means of transportation are used equally. Yet I had to choose one method".

"I commute 50% car, 25% bus, 25% bike - where is this represented".

Car poolers, particularly those who rotate driving responsibilities on a weekly basis, did not feel that they could properly answer a "single" mode of transportation question, as illustrated by the following comments -

"You don't have a space for car pooling. Some weeks I drive, another week some else does.".

"We carpool to work and take public transit home. It's 50/50."

B) Question C: Did you use the guide?

According to "NCT Report 25: Respondent's Comments on the NCT Questionnaire: Preliminary Analysis", the Guide was used 44 times (out of 2173 uses) to assist in answering the place of work question, the Guide was used 7 times (out of 2173 uses) to assist in answering the mode of transportation question.

C) Question D: Was the Guide helpful?

According to "NCT Report 25: Respondent's Comments on the NCT Questionnaire: Preliminary Analysis", one respondent indicated that the Guide was not helpful in answering the place of work question, no respondents indicated that the Guide was not helpful in answering the mode of transportation question.

D) Question F: Are there any test questions to which you have objections?

According to "NCT Report 25: Respondent's Comments on the NCT Questionnaire: Preliminary Analysis", 99 objections (out of 3462) were directed against the place of work question, 7 objections (out of 3462) were directed against the mode of transportation question. Respondent provided comments were analyzed by subject matter.

Question 42 - Place of Work

Of the 3462 "objections", the place of work question was objected to 99 times, 2.8%. Fifty-nine (59) comments were provided by respondents and subjected to analysis.

A number of respondents inadvertently wrote down question 42, and a comment/complaint, which was not applicable to the place of work question. They wrote down question 42 - Place of Work, but specifically stated their objection to question 46 - Income.

It was generally found that respondents who objected to the place of work question lived in rural areas and generally complained about the employment related questions found in questions 34 through to 43. Most respondents felt that these census questions were intrusive and beyond the role of a "head count" census, as evidenced by the following comments -

"None of your business",

"Personal information",

"Don't feel comfortable answering any question related to where or how I earn my pay",

"Waste of time and money for all questions in general"

Comments/complaints which were specific to the place of work question were related as to why the question was being asked in the first place, or the respondents' inability to take the time to give a complete response. Actual responses included -

"What difference does it make what street I work on?",

"Why the address - too specific?",

"My workplace postal code is unknown and I don't have the time to look it up",

"Occupation address, why do you need to know that?"

Question 43 - Mode of Transportation

Of the 3462 "objections", the mode of transportation question was objected to 7 times, 0.2%. Three (3) comments were provided by respondents for analysis.

Comments indicated concern over government intrusion into peoples lives -

"Too personal";

"Not sure the purpose of asking this question on the census",

"Why is it the government's business to know how a person gets to work?".

5.0 SUMMARY

Question 42 - Place of work has been asked in roughly the same format, each decennial census since 1971. The question has a tendency to suffer from incompleteness of response, as many people do not know the full address of their workplace. The following comment, although an extreme example, states the problem, *"I know the building and how to get there but not the name of the street or the address of the building"*. As a result, this question requires an imputation rate higher than other census questions. Place of work data users have indicated their willingness to accept a higher imputation rate in order to get the large census sample that the data is drawn from. The 1993 NCT test did not reveal any problems with this question which were not expected, already known or accounted for in the 1996 place of work autocoding system presently under development.

Question 43 - Mode of transportation was tested for the first time on the 1993 NCT (although historical documentation shows that mode of transportation also appeared on the test censuses of Ottawa (1966), London (1967) and Toronto (1968). It is apparent that this question is considered by respondents to be a simple, quick and non-contentious question to answer, although a few respondents asked why multiple modes of transportation were not asked for. Several respondents commented that the question was beyond the scope of a basic census, but they represented less than 0.6% of all respondents.

From the comments and an analysis of the results it appears that the question would benefit from slight modification in the order of mode of transportation responses. Specifically, to put "walked to work" in position 4, followed by "bicycle" in position 5, "motorcycle" in position 6, "taxicab" in position 7 and "other method" in position 8. This reordering better represents the actual volume of responses received.

6.0 APPENDICES

- A) **Appendix 2.0A Place of Work Status: Work Outside Canada**
- B) **Appendix 2.0A Place of Work Status: No Fixed Workplace Address**
- C) **Appendix 2.0B Place of Work Status by Place of Work Address Write-in**
- D) **Appendix 3.0B Place of Work Status by Mode of Transportation**
- E) **Appendix 3.0B Mode of Transportation: Other Modes by Place of Work Status**

A) Appendix 2.0A Place of Work Status: Work Outside Canada

Final NCT data indicated that 32 persons provided a single "work outside Canada" response, 5 of these persons also provided a place of work address write-in response. An additional 8 persons responded to the "work outside Canada" and at least one other place of work status category, 4 of these persons provided a place of work address write-in response.

Place of work address and occupation write-ins of nine (9) persons indicating that they "Work Outside Canada"

Address Specified below write-in

Occupation write-in

Marine Drive	Clareville	Nfld	A0E1J0	Supervisor
CFB Chattam N.B.	Chatham	N.B.	E1N2S6	PTE/CPL
201 W Arthur St	Thunder Bay	Ont	P7E5P7	Serving Customer
7089 Torbram Rd Unit 9	Mississauga	Ont, Canada	L4T1G7	Skill Work
2180 Yonge St	Toronto	Ontario	M4T2T1	Senior Cameraman
Amherst	New York	USA		Structural Engineering
2001 W Fort Street	Detroit, Michigan	USA		Typesetting
Zelten/Not a town.				
Spot in the desert	N. Africa			Supervior

Occupation write-ins of remaining 31 persons who indicated that they "Work Outside Canada":

(blank)
 OCCUP
 MEDICAL DOCTOR
 MANAGER
 INGENIEUR EN MECANIQUE
 WAITRESS
 UNIVERSITY PROFESSOR
 TRUCK DRIVER
 CHEMICAL ENGINNEER
 INVENTORY
 TRUCK DRIVER
 FARMING
 NANNY
 RECRUITING
 PHARMACIST LAB ASSISTANT
 DRIVING TRUCK MECHANICAL SALES
 ACCOUNTING
 TRUCK DRIVER
 TEACHING ENGLISH TO CZECHS
 DOING CHORES ON THE FARM
 SALES MAN
 SECRETARY
 AIRLINE PILOT
 INSTRUCTING SCUBA DIVERS
 ACTING IN FILMS
 CARE FOR CONFINED ELDERLY
 TRUCK DRIVER
 CORPORAL
 NURSE
 REGISTERED NURSE

B) Appendix 2.0A Place of Work Status: No Fixed Workplace Address

Occupation write-ins of respondents having "No fixed workplace address"

Rank	Occupation write-in	(f)	(%)
5	child/elderly care	74	3.7%
1	CONSTRUCTION	630	31.5%
1	general labourer	159	8.0%
3	general contractor/renovator	80	4.0%
8	bricklaying/cement work	23	0.1%
2	carpenter	93	4.7%
7	electrician	51	2.5%
9	drywall	21	1.0%
4	heavy equipment operator	67	3.3%
5/6	painter	52	2.6%
10	plumber	17	0.8%
11	roofer	8	0.4%
12	welder	7	0.3%
5/6	installation contractor	52	2.6%
6	house/office cleaning	64	3.2%
4	sales/consultation	82	4.1%
3	SUPPLY TEACHING/SPECIAL EDUCATION	108	5.4%
7	driver (truck, bus, taxi)	55	2.7%
2	DELIVERY	144	7.2%
8	landscaping contractor	51	2.5%
12	farming	21	1.0%
11	maintenance	32	1.6%
14	musician/actor/artist	15	0.7%
16	security officer	12	0.6%
13	supervisor/manager	16	0.8%
10	oil field work	37	1.8%
15	food service/catering	14	0.7%
9	forestry	50	2.5%
	Other categories*	624	31.3%
	TOTAL	1995	100.0%

* Includes occupation responses which are not clear enough for inclusion within the "no fixed workplace address" category or fall within the category but are single responses - snow ploughing, highway paving, odd jobs.

Place of Work Status by Place of Work Address Write-In

Final NCT Data	Non-Response	Single Address Field Responses				Single
Place of work status/address write-in	All Fields Blank	Street	Municipality	Province	Postal Code	Sub-Total
Non-response						
All fields blank	28.41 %	2.5	0.0	0.0	0.0	2.49 %
Single place of work status						
At home	94.43 %	0.5	0.0	0.0	0.0	0.52 %
Outside Canada	84.38 %	3.1	0.0	0.0	0.0	3.13 %
No fixed workplace	94.82 %	1.1	0.0	0.0	0.0	1.09 %
Usual POW	0.36 %	1.5	0.0	0.0	0.0	1.52 %
Two place of work statuses						
At home, Outside Canada	100.00 %	0.0	0.0	0.0	0.0	0.00 %
At home, no fixed workplace	83.33 %	8.3	0.0	0.0	0.0	8.33 %
At home, usual place of work	0.00 %	6.1	0.0	0.0	0.0	6.06 %
Outside Canada, no fixed workplace	100.00 %	0.0	0.0	0.0	0.0	0.00 %
Outside Canada, usual POW	0.00 %	0.0	0.0	0.0	0.0	0.00 %
No fixed workplace, usual POW	3.13 %	15.6	0.0	0.0	0.0	15.63 %
Four place of work statuses						
All fields filled	66.67 %	0.0	0.0	0.0	0.0	0.00 %

table continues on the following page...

Place of Work Status by Place of Work Address Write-In continued...

Place of Work Status/Address Write-In	Multiple Address Field Responses							Multiple Response	GRAND TOTAL
	Street Municipality	Street Province	Street Postal Code	Street Municipality Province	Street Municipality Postal Code	Street Province Postal Code	All Four Write-ins		
Non-response									
All fields blank	3.5	0.6	0.4	26.3	0.2	1.3	36.9	69.10%	100%
Single place of work status									
At home	0.2	0.0	0.0	0.6	0.0	0.4	3.9	5.05%	100%
Outside Canada	3.1	0.0	0.0	3.1	0.0	0.0	6.3	12.49%	100%
No fixed workplace	1.5	0.2	0.0	1.2	0.0	0.0	1.2	4.09%	100%
Usual POW	3.1	0.6	0.3	36.6	0.2	1.1	56.3	98.12%	100%
Two place of work statuses									
At home, Outside Canada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%	100%
At home, no fixed workplace	0.0	0.0	0.0	0.0	0.0	0.0	8.3	8.33%	100%
At home, usual POW	3.0	0.0	0.0	9.1	0.0	6.1	75.8	93.94%	100%
Outside Canada, no fixed workplace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%	100%
Outside Canada, usual POW	0.0	0.0	0.0	33.3	0.0	0.0	66.7	100.0%	100%
No fixed workplace, usual POW	6.3	0.0	0.0	31.3	0.0	0.0	43.8	81.24%	100%
Four place of work statuses									
All fields filled	0.0	0.0	0.0	0.0	0.0	0.0	33.3	33.33%	100%

Place of Work Status by Mode of Transportation

Final NCT Data	Non-Response	Single Mode of Transportation Responses								Single
Place of Work Status/Mode	All Modes Blank	Car, Truck, Van as Driver	Car, Truck, Van as Passenger	Public Transit	Taxi	Motorcycle	Bicycle	Walked	Other	Sub-Total
Non-Response										
All Fields Blank	20.78%	60.13	7.87	3.41	0.23	0.12	0.29	6.19	0.41	78.65%
Single Place of Work Status										
At Home	62.41%	19.99	1.56	0.22	0.00	0.00	0.00	10.33	5.20	37.30%
Outside Canada	46.88%	34.38	0.00	0.00	0.00	0.00	0.00	15.63	0.00	50.00%
No Fixed Workplace	0.95%	77.01	10.91	2.80	0.41	0.00	0.41	3.41	3.00	97.95%
Usual POW	0.47%	75.85	7.90	5.05	0.38	0.10	0.90	8.01	0.74	98.93%
Two Place of Work Statuses										
At Home, Outside Canada	0.00%	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00%
At Home, No Fixed Workplace	0.00%	75.00	0.00	0.00	0.00	0.00	0.00	16.67	8.33	100.00%
At Home, Usual POW	18.18%	51.52	1.52	0.00	0.00	0.00	0.00	18.18	9.09	80.30%
Outside Canada, No Fixed Workplace	0.00%	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00%
Outside Canada, Usual POW	0.00%	33.33	0.00	0.00	0.00	0.00	0.00	66.67	0.00	100.00%
No Fixed Workplace, Usual POW	0.00%	84.38	9.38	0.00	0.00	0.00	0.00	3.13	0.00	96.88%
Four Place of Work Statuses										
All Fields Filled	66.67%	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33%

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Place of Work Status by Mode of Transportation continued...[illegible]

E) Appendix 3.0B Mode of Transportation: Other Modes by Place of Work Status

Place of work status "non response":

Final NCT data indicated that 1728 persons failed to respond to the place of work question, however, 1369 of these non-respondents did respond to the mode of transportation question, of whom 13 specified an "other" mode of transportation and provided the following write-ins. $13/1728 = 0.75\%$

"other" modes of transportation, <i>specified...</i>	frequency
--	-----------

AIRCRAFT
 AIRPLANE
 LIVED HERE
 BATEAU
 BOAT
 BUS
 BUS PROVIDED
 COMPANY BUS
 MINE BUS
 SCHOOL BUS

2
 2
 2

Persons who "Work At Home":

Final NCT data indicated that 1428 persons indicated that they work at home (single & multiple statuses). Persons who work at home were instructed to "skip" the mode of transportation question, however, 574 of these persons did respond to the mode of transportation question, of whom 90 specified an "other" mode of transportation and provided the following write-ins. $90/1428 = 6.30\%$

"other" modes of transportation, <i>specified...</i>	frequency
--	-----------

blank
 (KIVE HERE)
 A LA MAISON
 AT HOME
 AT HOME STUDIO
 A DOMICILE
 AUCUN
 AUCUN A LA MAISON
 AU SOUS SOL
 CHEZ MOI
 DOMICILE
 EITHER TO HOME OR FL
 GRADER
 HERE (LIVE)
 HOME
 LIVE HERE
 LIVE-IN
 LIVED AT HOME
 LIVED AT JOB
 LIVED AT PL OF WRK
 LIVE IN APT ABOVE RE
 LIVES ON FARM
 MEME ADRESSE4
 N/A
 OFFICE IN HOME
 PAS DE DEPLACEMENT
 PICKED UP
 SALON A DOMICILE

2
 12
 4
 2
 2
 2
 8
 2
 2
 2

SAUF POUR LE TRAVAIL	
SELF EMPLOYED	
STAY HOME	
STAYED AT HOME	5
SURPLACE	
TAKE WORK HOME	
TRAVAILLE DANS LE ME	
WALK TO BASEMENT	
WALKS	2
WORK AT HOME	24

Persons who "Work Outside Canada":

Final NCT data indicated that 40 persons indicated that they work outside Canada (single & multiple statuses). Persons who work outside Canada were instructed to "skip" the mode of transportation question, however, 21 of these persons did respond to the mode of transportation question, of whom 2 specified an "other" mode of transportation and provided the following write-ins. $2/40 = 5.00\%$

"other" modes of transportation, <i>specified...</i>	frequency
--	-----------

BUS	
LIVED AT CAMP FOR SU	

Persons having "No Fixed Workplace Address":

Final NCT data indicated that 1514 persons claimed to have no fixed workplace address (single & multiple statuses). Persons with no fixed workplace address were to "continue" with the mode of transportation question, 1498 of these persons did respond to the mode of transportation question, of whom 55 specified an "other" mode of transportation and provided the following write-ins. $55/1514 = 3.63\%$

"other" modes of transportation, <i>specified...</i>	frequency
--	-----------

AIRPLANE	
AMBULANCE	
AT WORK DAILY	
BATEAU	
BOAT	16
BUS	
BUS AT HOME	
BUS USED IN WORK	
CAMION DE L'ECARGUYE	
CAR POOL	
CO VOITURAGE	
DROVE BUS	
DUMP TRUCK	
FISHING BOAT	4
HORSE BACK	
LIVED IN WORKCAMP	
LIVED ON BOAT	
PAPERS ARE DELIVERED	
PASSENGER ON BUS FRO	
PICKED UP	
PLANE	
RUN	
SCHOOL BUS	3

SERVICE VEHICLE
SHIP FISHING BOAT LO
SNOWPLOWH
STAYED HOME
SUR UN NAVIRE
TOUR BUS
TRANSPORT AUTOCAR
TRANSPORT PARKED HOM
TRUCK USED IN WORK

Persons with a "Usual Place of Work":

Final NCT data indicated that 10,522 persons have a usual place of work (single & multiple statuses). Persons with a usual place of work were to "continue" with the mode of transportation question, 10,458 of these persons did respond to the mode of transportation question, of whom 114 specified an "other" mode of transportation and provided the following write-ins. $114/10522 = 1.08\%$

"other" modes of transportation, <i>specified...</i>	frequency
4 ROUES	
A LA MAISON	3
A PIED	2
A.T.V.	
AUCUN	2
AUTOBUS	
AUTOBUS DU CAMP	
AVION	2
BASED ON CAMP	
BOAT	7
BUS	5
BUS HOME	
BUS TO SCHOOL	
BUS TRANSPORTATION	
CAMION MINICIPAL	
CANOT	
CAR	2
CAR FRIENDS	
CAR POOL	12
CHARTERED PLANE	
COMPANY BUS	8
COMPANY TRUCK AT HOM	
DE SA MERE	
HABITAIT SUR PLACE	
HELICOPTERE	
HIRE AT LOCATION	
HORSE	
JE TRAVAILLE CHEZ MO	
JOG	
LIVED THERE	2
LIVE AT LOCATION	
LIVE IN	4
MINE BUS	3
MY OWN BUS	
MOTHER	
NOT APPLICABLE	2
OFFICE IN HOUSE	3
PARATRANSIT	

PARENTS	2
PENSION SUR PLACE	
PICKED UP	
PLANE	6
RESTAIT SUR LA BASE	
ROAD CRUISER BUS	
SCHOOL BUS	5
STAYED AT RANCH	2
STUDENT	
SUBWAY	
TAXI DROPPED	
TRANSPEC	
TRANSPORT ADAPTE	
TRAVAILLE A SON ADRE	
UNEMPLOYED	
VOYAGE A 3 TOUR DE R	
WITH FRIEND	
WORKED AT HOME	3

7.0 FOOTNOTES

1. Respondents who specify the address of their workplace, but fail to indicate their place of work status, are considered to have a usual place of work.
2. 1990 Census of Population and Housing, Content Determination Reports, Place of Work and Journey to Work, U.S. Department of Commerce, Bureau of the Census, Report 1990 CDR-4, page 12.

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