

NON-RESPONSE IN THE CANADIAN LABOUR FORCE
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This paper includes a description of interviewer techniques and procedures used to minimize non-response, an outline of methods used to monitor and control non-response, and a discussion of how non-respondents are treated in the data processing and estimation stages of the Canadian Labour Force Survey. Recent non-response rates as well as data on the characteristics of non-respondents are also given. It is concluded that a yearly non-response rate of approximately 5 percent is probably the best that can be achieved in the Labour Force Survey.

1. INTRODUCTION

The Labour Force Survey (LFS) is carried out as a monthly probability sample of dwellings. Households within the selected dwellings are interviewed once a month for six consecutive months. After six months these dwellings are replaced by another group of dwellings in such a way that every month one-sixth of the sample is replaced or, in other words, rotated [1].

In one particular week (called survey week) each month about 62,000 dwellings throughout Canada are contacted by approximately 1,100 interviewers. Information is collected by the interviewers on the demographic characteristics and labour force activities of the civilian, non-institutional population 15 years of age and over who are members of households belonging to these dwellings.

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For various reasons interviewers are not able to obtain an interview at every selected dwelling. These non-interviews occur from the following sources:

- (a) household non-response - including reasons such as refusal, no one at home and temporarily absent;
- (b) vacant dwellings - including unoccupied dwellings, vacant seasonal dwellings, dwellings under construction, and dwellings occupied by persons not eligible to be interviewed; and
- (c) "non-existent" dwellings - including dwellings which were demolished, moved or listed in error.

More precise definitions of the reasons for non-interviews are given in Appendix A, together with a definition of the non-response rate.

It is essential that household non-response be kept at a minimum level since a high non-response rate leads to a high sampling variability for labour force population estimates and may increase the mean square error as a result of non-response bias. Although adjustments for non-response are made in the data processing and estimation stages of the survey, it is very important that every effort be made in the field to interview all households.

Vacant and "non-existent" dwellings do not contribute any bias to the sample but do result in a higher sampling variance because of a smaller household count. It should be noted that vacant dwellings are visited every month in order to interview any which may have become occupied by persons eligible to be interviewed. After "non-existent" dwellings have been detected, they are not visited again and are excluded from the sample.

The focus of this paper is on household non-response in the LFS with emphasis on the methodology which has resulted in non-response rates of approximately 5 percent. This very low non-response rate has been

achieved through effective interviewing techniques and procedures which are described in Section 2 as well as regular monitoring and controls which are described in Section 3. A summary of recent non-response rates is given in Section 4. The treatment of non-respondents in the data processing and estimation stages of the survey is discussed in Section 5, while demographic and labour force characteristics of non-respondents are presented in Section 6. Concluding remarks are given in Section 7.

2. INTERVIEWING TECHNIQUES AND PROCEDURES TO CONTROL NON-RESPONSE

2.1 Assignment Planning

Interviewers are instructed to enumerate all dwellings in their assignments while keeping expenditure and travel to a minimum. Their assignments must be completed before the end of the six-day survey week. Interviewers work only on the LFS during this time and, although supplementary surveys are occasionally carried out simultaneously with the LFS, priority is given to completing the LFS within the specified time limits.

Generally speaking an interviewer's workload depends on the type of area enumerated and whether telephone interviews are permitted. Usually rural assignments consist of approximately 40 to 50 dwellings. Urban assignments are larger: 70 to 80 dwellings in the case of telephone assignments. It is suggested that interviewers make up to three or four calls to every dwelling and at least one call before the fourth day of survey week. Interviewers usually complete first month interviews and non-responses from the previous month as early as possible during survey week. During subsequent visits interviewers attempt to contact households at the "best time to call" (determined at the time of the first contact with a household). If unsuccessful, they make calls at different times on different days.

Interviewers are encouraged to plan their schedules and routes in order to make efficient use of time. For instance, areas close to the interviewer's own home are visited first, so that call-backs can be made on the way home. In telephone assignments interviewers telephone frequently at different times and follow-up unsuccessful attempts to telephone with a personal visit. Interviewers determine from relatives, neighbours or superintendents when a household is most likely to be at home so that call-backs can be scheduled accordingly. If the household is not at home on the first visit, the interviewer leaves a brochure describing the survey with a note requesting an appointment [2].

2.2 First Contact

Through improved training methods and policies such as "doorstep diplomacy" [3] interviewers are becoming more knowledgeable on how to gain respondent cooperation and conduct interviews effectively. During training interviewing techniques such as appearance, introduction, asking the questions, handling delicate situations and ending the interview are emphasized. Very important in this training is the interviewer's introduction and presentation of the survey.

It is very important that the respondent be informed about the nature and purpose of the survey. For this reason, in cases where a mailing address is known, an introductory letter together with a brochure describing the LFS is sent to the household prior to the first interview. When the interviewer visits the respondent already knows something about the survey; this helps the interviewer with her introduction. If mailing is not possible, then the interviewer presents the letter at the time of her first visit. In all cases, interviewers must ensure that every household has material explaining the survey.

Every interviewer must carry a Statistics Canada identification card and present it to the respondent at the beginning of the interview. This helps gain the respondent's confidence and ensures that the respondent clearly

understands who the interviewer is and whom she represents. The interviewer gives a short explanation of the survey, and assures the respondent that the information which is being collected is confidential. In subsequent interviews the interviewer tries to contact the person who was interviewed last month (particularly important in the case of telephone interviews), but if this is not possible then another responsible member of the household is interviewed.

2.3 Proxy Interviews

Because of time and cost constraints it is virtually impossible to obtain non-proxy responses from every individual. For this reason proxy interviews are accepted in the LFS. Generally only one member of a household is interviewed, and this member responds on behalf of all other members. Occasionally, separate interviews are required for household members such as roomers or boarders. On the average it has been found that proxy interviews account for approximately 50 percent of all respondents [4]. Furthermore, because proxy interviews are accepted, it is possible to obtain complete responses for all household members in virtually 100 percent of all responding households. In fact, there are less than 0.2 percent of all households where interviews (proxy or non-proxy) are obtained for some, but not all, members of the household. The acceptance of suitable proxy respondents is, therefore, an effective means of reducing non-response.

2.4 Refusal Follow-Ups

Refusal households are followed up whenever feasible. In most cases this involves a personal visit by a senior interviewer or a regional office representative. In areas where this type of follow-up is not possible, a letter may be sent. Households are usually provided with additional information about the survey and how the data will be used. The importance of the survey and the co-operation of the respondent are emphasized. The result is that many of these refusal households can be successfully

interviewed the following month. In the case of households which cannot be persuaded to respond, interviewers are told not to visit them again unless there is a complete change in household composition.

2.5 Post Survey Week Follow-Ups

During the summer months when the number of temporarily absent and no one at home non-responses are higher than usual, follow-up interviews are carried out during the week following survey week. Although this post survey week follow-up program is carried out only in July and August on a regular basis, it may occasionally be used in other months if non-response rates are higher than usual.

In the post survey week follow-up program interviews are carried out on the Monday and Tuesday of the week following survey week by a team consisting of at least one regional office staff member and a few interviewers who make post survey follow-ups to all types of non-response households except refusals and those which are not suitable for follow-up action due to location, respondent availability or other special circumstances. The team carries out the post survey week follow-ups either by telephone from the regional office or by personal visit. When a respondent is contacted, the follow-up interviewer identifies herself, explains why she is calling or visiting, and refers to the name of the original interviewer. In the case of a first month visit the follow-up interviewer completes the interview in the usual way and tells the respondent that a different interviewer (i.e. the regular interviewer) will be contacting the household next month. It is very important to explain to the respondent the week (two weeks ago!) to which all survey questions refer and to ensure that the respondent understands this time frame. The interviewer then is very careful to ask all questions referring to reference week.

Indications are that the post survey week follow-up program has resulted in a decrease in non-response during the months of July and August (refer

to section 4 of this paper). Data collected for one regional office showed that the total non-response rate was reduced by approximately 2.0 and that 25 percent of the non-responses during survey week were successfully followed-up. Many of these households required only one telephone call to complete an interview, while others required up to three calls. Households contacted four times or more usually remained non-responses. Interviewers found that their most productive time appeared to be Monday afternoon and early Monday evening, and that by later Monday evening and Tuesday they were making many calls to a household without success [5].

2.6 Telephone Interviewing

The telephone interviewing procedure which is used in the LFS involves a combination of personal visits and telephone calls and is carried out only in large urban areas. Interviewers must conduct all first month interviews in person, and telephone interviews can only be carried out in subsequent months if the respondent agrees to be interviewed by telephone. Experience has shown that approximately 75 percent of households are interviewed by telephone in assignments where the telephone interviewing procedure is allowed.

Although the primary reason for using telephone interviewing in the LFS is to reduce enumeration costs, telephone interviewing seems worthwhile from the point of view of non-response since (a) it allows interviewing to be completed on time regardless of weather conditions, (b) it is especially ideal for single persons, small family households and apartment dwellers who are difficult to find at home and who can often be reached only during the evening (it is easier for an interviewer to phone at night than to make a personal visit), (c) it allows interviewing to be conducted more readily at the convenience of the respondent (if one time is not suitable, then another can be easily arranged), and (d) it has the potential of reducing non-response by allowing more opportunity and time for call-backs.

However, the telephone interviewing procedure does not appear to have a direct impact on the reduction of non-response rates. This was indicated by the results of a telephone interviewing experiment carried out during 1972 and 1973 [6]. The experiment showed that respondents who agree to be interviewed by telephone are very unlikely to be non-respondents during subsequent interviews. Those households which do not agree to telephone interviewing or which cannot be telephoned (for reasons such as no telephone available, party line telephone, unlisted telephone number, complete change in household composition, language or hearing problems, etc.) can be expected to contribute nearly 50 per cent of all non-responses, even though this group of households accounts for only 10 to 20 percent of all households in telephone assignments. Therefore, if more effort is directed towards these households, then presumably the non-response rate can be reduced. According to the present interviewing procedures, interviewers are instructed to complete as many telephone interviews as possible during the first day or two of survey week and to try to contact rotate-in households and non-responses from last month as early as possible during survey week. In this way, least priority is given to contacting the households which cannot be interviewed by telephone for reasons other than first month interviews. This suggests that non-response may be reduced among those households which can be interviewed by telephone, but that more non-response may be occurring among those households which are not telephoned.

2.7 Response Incentives

Respondent participation in the LFS is compulsory under the Statistics Act, but no monetary incentive or any other form of incentive is offered. However, a response incentives experiment was carried out in the LFS during 1975 and 1976 in order to determine the effectiveness of a response incentive on improving respondent relations and interviewer performance [7]. The response incentive used in the experiment was the "Canada Handbook", an annual Statistics Canada publication. In half of the LFS sample interviews gave "Canada Handbooks" to all households being visited for the

first time, while all other households received no response incentive.

Households which received the "Canada Handbook" had a marginally lower refusal rate than households which did not receive it. Indications were that the distribution of the "Canada Handbook" had very little effect on converting a refusal to a response at the time of the interviewer's first contact with a household, but respondents who received the "Canada Handbook" were less likely to refuse at some later time than respondents who were not given a response incentive. Although the majority of interviewers indicated that they feel response incentives such as the "Canada Handbook" are useful in establishing a good rapport with respondents, most interviewers believe that materials such as the introductory letter and identification card are actually more effective than gifts.

The response incentives experiment showed that there is real need to provide the respondent with more information on the purposes of the survey and the uses of the data. It is very important, therefore, that interviewers be equipped to provide this information since they have the main responsibility in gaining the co-operation of the respondent. Interviewers can acquire this knowledge through training which emphasizes the purposes and importance of the survey and by having support material available such as an introductory letter or explanatory brochure which illustrates these points.

3. MONITORING NON-RESPONSE

For dwellings where no contact can be made interviewers identify the precise reason for the non-interview and record this reason on the Household Record Docket.² Interviewers also complete a non-interview report

² The Household Record Docket provides a record of all persons (i.e. household members) found in a selected dwelling for the period that the dwelling is in the Labour Force Survey and contains information which helps interviewers plan their assignments and conduct interviews.

explaining the circumstances for no interview as fully as possible. Following the interviewer's coding of the non-interview the regional office decides what action should be taken the next month. This action is then pre-printed on next month's Household Record Docket indicating whether the interviewer should attempt to interview the household again or whether she should not conduct an interview unless there is a complete change in household composition.

Information on the Household Record Dockets is transmitted from the regional offices to Head Office where a non-response file is created which summarizes relevant information related to the response status of every selected dwelling in the LFS sample. This non-response file enables a series of comprehensive reports on non-response to be produced every month within five or six days following the end of survey week. The reports include detailed breakdowns of sample sizes, non-response rates and vacancy rates for interviewers, regional offices, provinces as well as every type of area (SRU, NSRU and special areas)³ They help Head Office personnel identify areas where non-response is a problem and, if necessary, regional offices can be contacted to take remedial steps to reduce non-response rates in these areas. Using the non-response file various other analyses of non-response rates can be made including breakdowns for specified sampling units, apartment and non-apartment samples, rotation groups as well as telephone and personal visit assignments. This type of information is very useful when investigating the behaviour of non-response rates over a period of time and isolating where high non-response rates may be occurring.

The performance of interviewers is continually monitored and reviewed.

³SRU's (self-representing units) are areas whose population exceeds 15,000 or whose unique characteristics demand their establishment as SRU's. NSRU (non-self representing units) are those areas outside SRU's and are comprised of rural areas and small urban centres. Special areas include military establishments, remote areas, and institutions such as hospitals, schools and hotels.

Regional offices have a monthly report on non-response rates at the interviewer level. This report can be produced in each region as soon as survey week has been completed, and it allows supervisors to take immediate action in specific circumstances when interviewers have unusually high non-response rates. The objective is to remedy these situations in time for the next survey and to maintain non-response rates at a satisfactory level.

In the LFS there are also regular programs of observation and re-interview. The observation program [8] is carried out for the purpose of evaluating and improving the performance of interviewers. Every month about one-tenth of the interviewers are selected for observation including interviewers scheduled for systematic observation as well as new interviewers and interviewers whose performances suggest they need observation. The observer, usually a senior interviewer, accompanies the interviewer into the field during survey week and evaluates the interviewer in nearly all aspects of her work. This observation provides an excellent opportunity to train or re-train interviewers in the use of proper interviewing procedures. Among specific areas evaluated are the interviewer's knowledge of non-interview procedures and her ability to minimize the number of non-responses in her assignment.

The re-interview program [9] is conducted in the week immediately following survey week by a senior interviewer or supervisor. Households which were enumerated during survey week are contacted again, and re-interviews proceed with the re-interviewer repeating the same questions previously asked by the interviewer. Any observed differences between the two sets of responses are attributable to several sources including the respondent, the interviewer, the re-interviewer, shortcomings in the instructions or training provided to interviewers, and the wording and sequence of the questions. Although the primary purpose of the re-interview program is to measure response errors, it also allows the opportunity to check the quality of an interviewer's work including her handling of non-interviews. Checking with the respondent, for example, indicates whether or not the interviewer varied the time of her calls and made several call-backs. The re-interview program, therefore, is a complement to the observation

program since it helps identify interviewer weaknesses and needs for further training. On the basis of re-interview findings a special observation or re-training may be recommended .

4. NON-RESPONSE RATES

In the LFS it has been possible to maintain low non-response rates through effective training programs, regular monitoring and controls as well as interviewing techniques and procedures which help reduce non-response. With this approach it seems that the total non-response rate cannot be brought lower than 4.0 in any one month and that, due to seasonal variations, a realistic objective is an annual average of 5.0. In 1977 and 1978 the average non-response rate was 5.4 each year. During this time the refusal rate remained at approximately 1.3 to 1.5: these refusals are likely the "hard core" refusals, and it may be very difficult, if not impossible, to convert any more of this group to interviews. An optimum value for the no one at home rate appears to be 1.0, given the constraints of cost and the length of the survey week. Over the last two years this component averaged 1.5 with only slight fluctuations occurring from month to month. The temporarily absent rate fluctuated considerably from month to month each year but was usually at least 1.5 in any one month. Other reasons for non-response contributed about 0.5 to the total non-response rate.

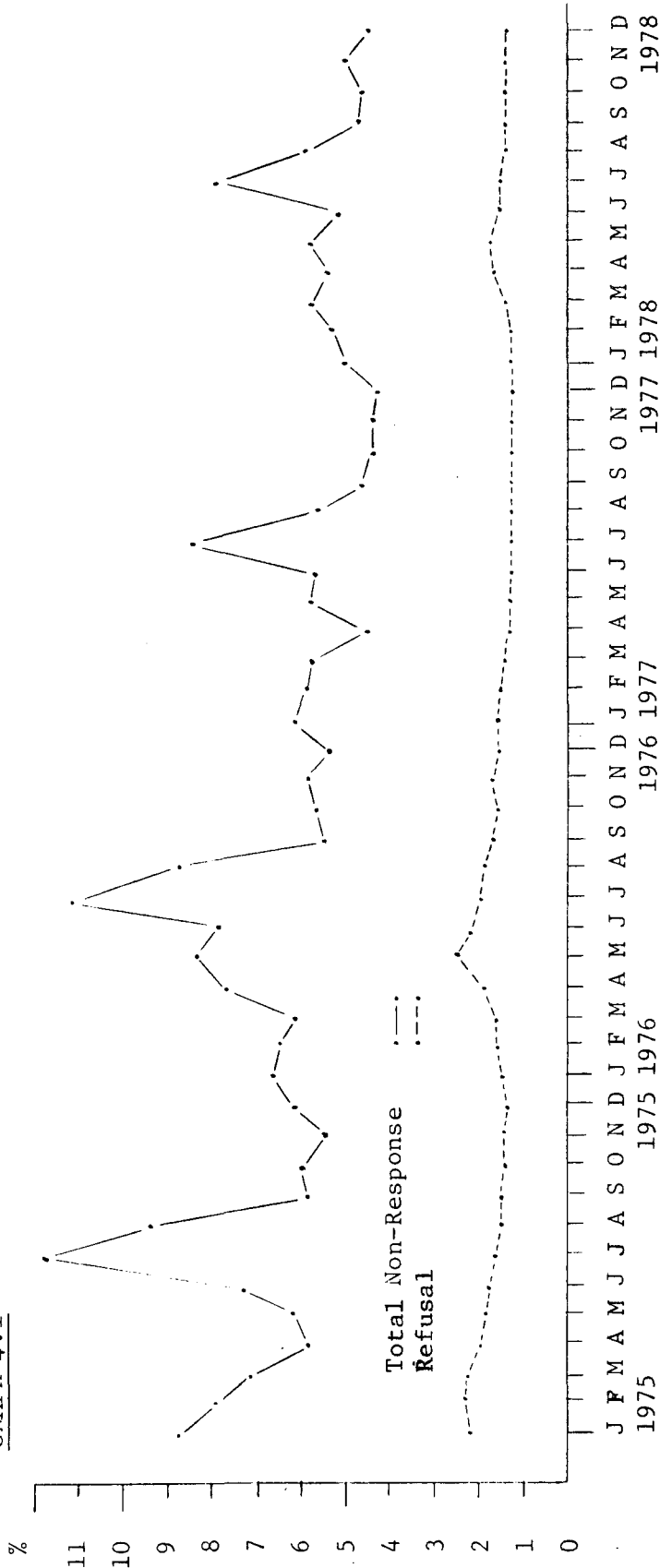
Graphs 4.1 and 4.2 show the total non-response, refusal, no one at home and temporarily absent rates over the four year period from 1975 to 1978. Highlights of these graphs include the following points.

- (a) The level of non-response generally decreased over the four years (when corresponding months are compared).
- (b) The total non-response rate showed a tendency to decrease through the months of January to April each year (with the exception of April 1976 and January to April 1978). It increased from April to May, usually decreased a little during June, and increased from June to

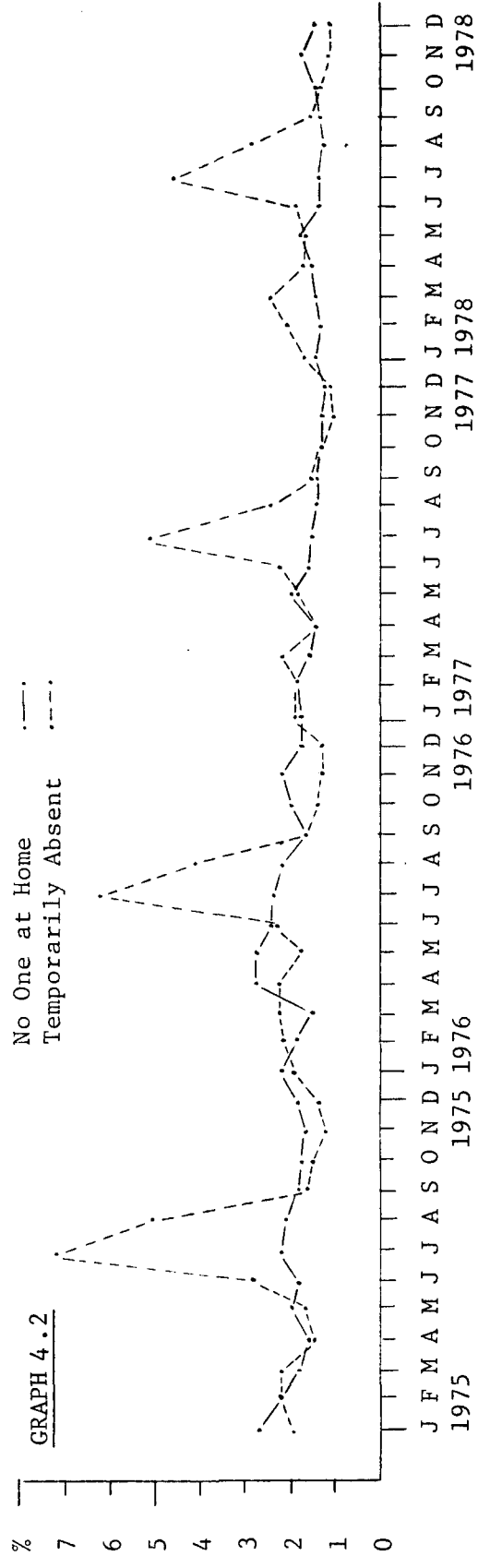
Non-Response Rates in the LFS

1975 - 1978

GRAPH 4.1



GRAPH 4.2



July reaching a peak in July. Once the non-response rate had peaked in July, it decreased rapidly during August and September. The non-response rate remained reasonably stable during October, November and December, while an increase occurred from December to January each year.

- (c) The total non-response rate peaked each year during the July survey due to a very high temporarily absent rate. However, the total non-response and temporarily absent rates were substantially lower in July 1977 and 1978 than in July 1975 and 1976. This was probably due to the implementation of the post survey week follow-up program during the July and August surveys in 1977 and 1978.
- (d) In addition to the June, July and August surveys the temporarily absent rate had a tendency to increase during the winter months of February and March. This probably reflects the fact that more people are taking winter vacations.
- (e) Improvements occurred in the no one at home rate over the four years, and it is now approximately 1.5.
- (f) Except for the first few months of 1975 the refusal rate remained fairly stable. The increases which occurred in April 1976 and April 1978 and continued into the May survey those two years apparently were the result of the Survey of Consumer Finances which was conducted as a supplement to the LFS during April. Over the last two years the refusal rate has remained at approximately 1.3 to 1.5 with the exceptions already noted, compared to 2.5 in May 1976.

Table 4.1 summarizes non-response rates according to the number of times (one to six) that households were enumerated. The rates shown on the table represent averages over twelve rotation groups⁴ which entered the survey for the first time from July 1977 to June 1978 and remained in the survey for a period

⁴The LFS sample consists of six rotation groups, each of approximately equal size. Every selected dwelling belongs to one of these rotation groups and remains in the survey for six consecutive months. In any one month approximately one-sixth of the sample rotates out and is replaced by dwellings rotating into the sample for the first time (for example, a dwelling which rotates into the survey in January is enumerated each month from January to June and is replaced by another dwelling in July).

of six months (rotating out from December 1977 to November 1978). The results are considered typical for any consecutive twelve month period.

TABLE 4.1

Non-Response Rates (%) According to Tenure of Households in the LFS
(Averaged over 12 rotation groups, entering survey from July 1977 to June 1978)

Number of months in survey	Non-response rates (%)			
	Total non- response	Refusal	No one at home	Temporarily absent
1	8.04	1.43	2.96	2.94
2	5.09	1.21	1.44	1.99
3	4.71	1.32	1.10	1.90
4	4.65	1.46	1.09	1.79
5	4.62	1.51	0.99	1.77
6	4.45	1.52	0.78	1.73

On the basis of the results shown on Table 4.1 the following comments can be made:

- (a) The total non-response rate was highest during the first month, presumably because interviewers had more difficulty finding people at home having not yet determined the best time to call. The rate then decreased sharply in the second month and continued to decrease through the third and fourth months. A very slight decrease occurred from the fourth month to the fifth month, while a larger decrease occurred in the sixth month.
- (b) The refusal rate decreased in the second month, increased gradually through the third, fourth and fifth months and levelled off in the

sixth month. It should be noted that refusal rates tend to be cumulative since a refusal one month will likely remain a refusal the next month. In this way any sharp increase in the refusal rate for one month can be expected to result in higher refusal rates during subsequent months, with the rate gradually decreasing as the respondents who refused rotate out of the sample. The decrease in the refusal rate observed in the second month was concentrated within SRU's where the rate decreased from 1.9 to 1.4, while in NSRU's the refusal rate remained steady at about 1.0 during the first two months. The decrease in the SRU refusal rates reflects the success of refusal follow-ups in these areas. This decrease was not observed in NSRU's, probably because no refusal follow-ups are carried out due to the remote nature of NSRU's.

- (c) The no one at home rate decreased sharply from the first month to the second month by roughly 50 percent. It continued to decrease from the second month to the third month but decreased very gradually through the fourth and fifth months. A larger decrease then occurred in the sixth month. The behaviour of the no one at home rate over the six month tenure of households in the survey was most probably due to the fact that the longer a household is in the survey the more familiar the interviewer becomes with knowing when the respondent is most likely to be at home.
- (d) The temporarily absent rate decreased through all six months, particularly from the first to second month. It is difficult to explain this phenomenon since the temporarily absent rate should not be expected to depend on how long a household remains in the survey. One can hypothesize that interviewers may have confused no one at home and temporarily absent types of non-response.

Whereas the total non-response rate at the Canada level averaged 5.4 during 1977 and 1978, non-response varied from region to region due to many reasons such as geography, respondent characteristics and attitudes in each area, weather conditions and regional office procedures. Table 4.2 illustrates this variation for 1978.

TABLE 4.2

Non-Response Rates (%) by Regional Office
(Monthly average:1978)

<u>Regional office</u>	<u>Number of households</u>	<u>Total non-response</u>	<u>Refusal</u>	<u>No one at home</u>	<u>Temporarily absent</u>
St. John's	3,024	4.7	0.8	1.2	2.1
Halifax	9,632	5.5	1.3	1.7	1.8
Montreal	7,865	4.9	1.3	1.7	1.7
Ottawa	2,729	5.1	1.4	1.4	1.9
Toronto	8,428	6.3	1.8	1.7	2.3
Winnipeg	9,242	4.9	1.4	1.3	2.1
Edmonton	9,302	4.9	1.4	1.2	2.0
Vancouver	6,132	6.4	2.0	1.5	2.3
Canada	<u>55,354</u>	<u>5.4</u>	<u>1.4</u>	<u>1.5</u>	<u>2.0</u>

Non-response rates also depend upon the type of area being enumerated. Depending upon the distribution of areas within a region, this can affect the level of non-response in a regional office. At the Canada level non-response rates according to type of area are shown on Table 4.3.

These results show that the total non-response rate was higher in SRU's than in NSRU's. Averaged over twelve months temporarily absent rates were the same in both areas. However, temporarily absent rates were higher (by as much as 30 percent) in SRU's than in NSRU's during the months of May, June, July, August and September, while NSRU temporarily absent rates were higher (by as much as 35 percent) during the remaining months of the year. This phenomenon may have been due to the fact that people in rural areas

move to larger centres during the winter and that families living in cities usually take summer vacations. Although the temporarily absent rates averaged over the year were the same for SRU's and NSRU's, the no one at home rate in SRU's was almost 25 percent higher than the corresponding rate in NSRU's. The refusal rate was approximately 40 percent higher in SRU's than in NSRU's.

TABLE 4.3

Non-Response Rates (%) by Type of Area
(Monthly average:1978)

Type of Area	Approximate proportion of sample	Total response	Refusal	No one at home	Temporarily absent
NSRU	0.48	5.0	1.2	1.3	2.0
- urban ⁵	0.18	5.3	1.0	1.4	2.4
- rural ⁵	0.30	4.9	1.3	1.3	1.8
SRU ⁶	0.51	5.7	1.7	1.6	2.0
- built-up ⁶	0.37	5.5	1.6	1.5	2.0
- fringe ⁶	0.10	4.8	1.6	1.2	1.8
- apartment ⁷	0.04	9.8	2.7	3.6	3.0
Special Areas..	0.01	6.4	0.4	0.9	2.8

⁵ Every primary sampling unit in an NSRU is divided into an urban and a rural portion.

⁶ SRU's are stratified into sub-units, and sub-units are classified as "built-up" or "fringe" on the basis of their potential for future growth. Generally speaking, SRU fringe households belong to the fringe or sub-urban areas.

⁷ In seventeen large cities across Canada there is a separate frame of apartments having at least five storeys and thirty or more units.

Special areas, on the other hand, had a higher total non-response rate than either SRU's or NSRU's, mainly due to the temporarily absent and "other reasons" components of non-response. These relatively high non-response rates likely resulted from the remote nature and composition (including hospitals, schools, and hotels) of many special areas. The attention on non-response is usually directed toward SRU's and NSRU's since these areas account for 99 percent of the LFS sample, while special areas contribute only 1 percent of the sample.

Within NSRU's the total non-response rate was higher in the urban portion due to higher temporarily absent rates among NSRU urban households. The no one at home rates in the urban and rural portions were roughly the same, but the refusal rates were 30 percent higher in NSRU rural areas than in NSRU urban areas.

Within SRU's built-up areas had a higher total non-response rate than fringe areas due to higher no one at home and temporarily absent components. Thus, it appears that people living in the core areas of cities tend to be more difficult to contact than people living in the fringe areas; the differences, however, were not large.

SRU apartments had a higher total non-response rate than any other area shown on Table 4.3. In fact, the total non-response rate in the SRU apartment sample was almost twice the rate in the SRU non-apartment sample (consisting of both built-up and fringe areas). The refusal, no one at home and temporarily absent components were also highest among apartments.

The no one at home rate was almost three times higher in the apartment sample than in the non-apartment sample. This large difference may be due to the different lifestyles of apartment and non-apartment dwellers. Apartment households usually consist of single persons or very small families who tend to be more mobile and difficult to find at home, while non-apartment households are more likely to contain larger families with children. Another problem with apartments is that interviewers often find

it difficult to gain entrance into apartment buildings.

Whereas the temporarily absent rate was usually twice as high for apartments as non-apartments, the difference was less noticeable during July and August than in the other ten months. This probably resulted from the fact that it is easier for single persons and families without children to take their vacations during the fall, winter and spring than it is for families with school-age children.

The refusal rate was almost always higher in the apartment sample than in the non-apartment sample, although the difference in the refusal rates between the two samples was not as great as the differences observed for the no one at home and temporarily absent rates. Recent results, however, indicate that the gap in the level of refusal rates between apartments and non-apartments is gradually widening, to the extent that the refusal rate in the apartment sample is now almost double the corresponding rate in the non-apartment sample.

The significance of examining non-response rates according to breakdowns such as SRU and NSRU is that this approach helps establish relationships among the various types of area in terms of the behaviour of non-response rates. For instance, the overall non-response rate is always expected to be higher in SRU's than in NSRU's, and any deviation from this relationship is considered unusual. The same holds true for the no one at home and refusal rates in SRU's and NSRU's. Another example is the two-to-one ratio of the total non-response rate in the apartment sample to the corresponding rate in the non-apartment sample. If non-response rates ever increase beyond average or expected levels, then knowledge of these relationships is very useful for the purpose of analyzing the situation and taking remedial action.

The average non-response rate at the Canada level was 5.4 in 1978. As already indicated, fluctuations occurred from month to month, from region to region and from one type of area to another type of area. It would also be expected, of course, that non-response rates varied among interviewers.

Many interviewers, in fact, achieved 100 percent response rates, while a few interviewers did no better than 75 percent. It is interesting to look at the distribution of interviewers according to the level of their total non-response rates as shown on Table 4.4.

TABLE 4.4

Distribution of Interviewers According to Their Total Non-Response Rates
(Monthly average:1978)

<u>Total non-response rate (%)</u>	<u>Number of interviewers</u>	<u>Percentage of total interviewers</u>
0.0	159	15.0
0.1 to 5.0	434	40.8
5.1 to 10.0	333	31.3
10.1 to 15.0	98	9.2
15.1 to 20.0	29	2.7
over 20.0	10	1.0
TOTAL	<u>1063</u>	<u>100.0</u>

The data on Table 4.4 are based on all interviewers who enumerated assignments with at least 20 households and represent an average over the twelve months of 1978. The table indicates that 56 percent of interviewers achieved non-response rates of 5.0 or better.

The 13 percent of interviewers with non-response rates higher than 10.0 accounted for 31 percent or almost one-third of all non-responses. Therefore, it is clear that the majority of interviewers have been very successful in maintaining excellent non-response rates, and a large percentage of the total number of non-responses have actually resulted from a small group of interviewers. It is also interesting to observe that 59 percent

of interviewers did not record any "no one at home" non-responses and that 54 percent encountered no refusals. Furthermore, 71 percent and 70 percent of interviewers achieved no one at home rates and refusal rates respectively of 2.0 or better. These percentages are certainly impressive and reflect the success of the on-going training programs, monitoring and controls as well as interviewing techniques and procedures which are all aimed at maximizing response levels in the LFS.

5. TREATMENT OF NON-RESPONDENTS IN THE DATA PROCESSING AND ESTIMATION STAGES

A very important consideration is how non-respondents are treated in the data processing and estimation stages of the LFS. In order to reflect the entire population more adequately it is necessary to impute missing information for non-respondents or to adjust the weights of the interviewed portion of the sample. Imputation and adjustment procedures are carried out in the following way [1,10].

In the case of refusal, no one at home and temporarily absent non-responses which responded in the previous month, records for these households are copied from the previous month with suitable transformations applied to certain items (for example, if a person in the previous month had been looking for a job for 6 weeks, then this information would be updated to 10 weeks for the current month). For estimation purposes these households are treated in the same way as responding households. Records are not carried forward for more than one consecutive month. In 1978, on the average, this method of imputation was carried out for approximately 31 percent of all non-respondents. This percentage ranged from 22 percent in December to 45 percent in July. Most other months about 30 percent of records for non-respondents were copied from the previous month. Throughout the year an average of 11 percent of refusal records, 33 percent of no one at home records and 52 percent of temporarily absent records were carried forward.

The remaining non-respondents for whom records cannot be carried forward from the previous month include non-responses due to road or weather conditions, circumstances within the household, no interviewer available, "no shows", rotate-in households which are non-responses, and households which have been non-responses for more than one month. The adjustment procedure used to compensate for these non-respondents increases the weight of the interviewed households when sample observations are inflated to produce the labour force estimates. Specifically, the weight of an interviewed household is increased by a balancing factor which is determined in the following manner. In NSRU's every sampled primary sampling unit (PSU) is divided into two balancing units (a rural part and an urban part), while every sub-unit in SRU's is treated as a balancing unit. For each balancing unit the balancing factor is calculated by dividing (a) the number of households which should have been interviewed by (b) the number of households which were interviewed or whose records were carried forward from the previous month. In special areas the balancing unit is the stratum and the balancing factors are calculated in the same way as they are in SRU's.

6. CHARACTERISTICS OF NON-RESPONDENTS

Although imputation and adjustment procedures are carried out in the data processing and estimation stages of the LFS in order to compensate for non-response and minimize non-response bias, very little is actually known regarding the composition and characteristics of non-response households. For non-respondents whose records cannot be carried forward from the previous month, the assumption is made that their characteristics are the same as those of respondents. Recent studies, however, indicate that non-response households differ from interviewed households in characteristics such as household size and labour force status [11].

Table 6.1 summarizes demographic and labour force characteristics of responding and non-responding households in the LFS during the period from

January to December 1978. Results were obtained for 70 percent of all non-response households, 33 percent of refusal households, 79 percent of no one at home households and 88 percent of temporarily absent households using information collected for these households in months when they responded. The characteristics were averaged over all interviewed households and non-respondents for whom data were available. They were also averaged over the refusal, no one at home and temporarily absent components of non-response. All averages were weighted by using the inverse sampling rate according to province and type of area. Only civilian household members 15 years of age and over were included in the tabulations; members of the armed forces and individuals under 15 years old were excluded. Changes in household composition from one month to another (estimated to affect less than 2 percent of non-respondents) were not taken into consideration.

The results shown on Table 6.1 provide very interesting information on the influence and character of non-respondents in the LFS. Differences are indicated in the demographic and labour force characteristics between respondents and non-respondents, especially in the case of no one at home and temporarily absent non-respondents, while refusal households appear to be very similar to interviewed households.

Because nearly 90 percent of temporarily absent households and 80 percent of no one at home households are represented in the tabulations, the results seem to be a very good characterization of these non-respondents. Compared to respondents, no one at home non-respondents belonged to smaller households, were younger, had higher unemployment rates and had substantially higher participation rates. It would seem, therefore, that their lifestyle made it difficult for interviewers to find them at home during survey week.

While the characteristics of interviewed households were very stable and only small variations occurred from month to month in the characteristics of no one at home households, the characteristics of temporarily absent households varied considerably throughout the year. Temporarily absent

households, like no one at home households, were much smaller than interviewed households. Further, temporarily absent non-respondents had lower participation rates and were older than both respondents and other types of non-respondents. During the summer months when more temporarily absent non-responses were encountered because families with school-age children were on vacation, it is not surprising that temporarily absent non-residents belonged to larger households, were younger, had lower unemployment rates and had higher participation rates than at other times of the year.

TABLE 6.1
Demographic and Labour Force Characteristics
of Interviewed and Non-Respondent Households
(Monthly average:1978)

<u>Characteristic</u>	<u>Interviewed households</u>	<u>Total non- response</u>	<u>Refusal</u>	<u>No one at home</u>	<u>Temporarily absent</u>
(1) Size of Household	2.24	1.80	2.19	1.64	1.75
(2) Number of persons "employed"	1.29	1.05	1.26	1.10	0.90
(3) Number of persons "unemployed"	0.12	0.10	0.13	0.12	0.08
(4) Number of persons "not in labour force"	0.83	0.66	0.79	0.42	0.77
(5) Unemployment Rate (%)	8.3	8.9	9.5	9.7	8.5
(6) Participation rate (%)	62.5	63.6	63.7	74.2	55.8
(7) Age of head of household (years)	45.3	44.6	45.7	38.6	48.4
(8) Age of household members (years)	39.4	41.1	39.9	36.3	45.2

Note that the sum of characteristics (2), (3) and (4) equals characteristic (1).

The results for refusal households indicate that their demographic and labour force characteristics were very similar to those of respondents. However, these results should be interpreted with caution since only one-third of all refusals are represented. The tabulations only include refusals who responded at least once during the six months while they were in the LFS, while refusals who were non-respondents every month were not included.

7. CONCLUSION

Indications are that non-respondents differ from respondents in terms of characteristics such as household size and labour force status. It is clear, therefore, that the presence of non-response in the LFS leads to a bias in the final survey estimates and that this non-response bias can be expected to increase with higher non-response rates. Although imputation and adjustment procedures are carried out in the data processing and estimation stages of the survey to compensate for the non-response which does occur, the bias due to non-response is never completely eliminated. Consequently, it is very important that every effort must always be made in the field to maximize response levels.

In the LFS every reasonable effort is made to minimize non-response, and during 1977 and 1978 an average non-response rate of 5.4 was achieved. Interviewer training programs and procedures emphasize how to gain the respondent's co-operation and conduct interviews in the most effective manner. Regular monitoring and controls help maintain non-response rates at satisfactory levels in all areas and ensure that interviewers are following correct and efficient procedures. In addition, programs such as refusal and post survey week follow-ups have been introduced to reduce non-response, and experimental studies directed toward the non-response problem are undertaken from time to time. With these procedures and programs it seems that the non-response rate cannot be brought lower than 4.0 in any one month and, due to seasonal fluctuations, a realistic objective is a yearly average of 5.0. This 5.0 non-response rate includes

a refusal rate of approximately 1.5, a no one at home rate of 1.5, a temporarily absent rate between 1.5 and 2.0, and up to 0.5 for other reasons.

RESUME

Cet article comprend une description des techniques de l'interviewer et des méthodes utilisées pour minimiser la non-réponse, une brève description des méthodes de surveillance et de contrôle de la non-réponse et un examen de la façon dont on s'occupe des non-répondants lors du traitement et de l'estimation des données de l'enquête canadienne sur la population active. Il donne également les taux de non-réponse récents ainsi que des données sur les caractéristiques des non-répondants. L'auteur conclut qu'un taux de non-réponse annuel de 5% approximativement est probablement le meilleur que l'on puisse réaliser dans le cadre de l'enquête sur la population active.

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APPENDIX A

Non-Interview Classifications

- I. Non-response households are classified according to the following types:
 - (a) refusal - a responsible household member refused to provide any information about the household;
 - (b) no one at home when the interviewer called - the occupancy of the dwelling could not be contacted after several attempts, or someone was inside the dwelling but no one answered the door;
 - (c) temporarily absent - the household was absent for the entire survey week;
 - (d) no interviewer due to circumstances within the household such as sickness, death, language problems or other unusual situations.
 - (e) no interview due to road or weather conditions;
 - (f) no interviewer was available; and
 - (g) survey forms arrived too late for processing (usually called "no shows").
- II. Vacant (or vacant-type) dwellings are classified according to:
 - (a) vacant dwellings - includes unoccupied dwellings, newly constructed dwellings ready for occupancy, and vacant trailer stalls in commercial trailer parks;
 - (b) vacant seasonal dwellings - includes seasonal dwellings such as summer cottages, ski chalets, and fishing or hunting lodges which were not occupied when the interviewer visited;
 - (c) dwellings under construction - includes any unoccupied dwelling which had a roof but was not ready for occupancy; and
 - (d) dwellings occupied by persons not eligible to be interviewed - includes dwellings where all household members were (i) full-time members of the Canadian Armed Forces, (ii) embassy, consular or armed forces personnel (including families) of foreign

countries, (iii) residents of foreign countries on vacation or business in Canada, (iv) occupants of a seasonal dwelling during survey week with their usual place of residence elsewhere, or (v) inmates of religious or penal institutions, hospitals or nursing homes.

- III. "Non-existent" dwellings include dwellings which were demolished, converted into business premises, moved (such as a mobile home), abandoned (unfit for habitation), or listed in error.

Definition of Non-Response Rates

The (total)non-response rate is defined as the total number of non-response households expressed as a percentage of the total number of sampled households (including both interviews and non-responses).

The refusal rate is defined as the number of refusal households expressed as a percentage of the total number of sampled households. The definitions are similar for the no one at home rate and the temporarily absent rate.