

CHARACTERISTICS OF RESPONDENT AND NON-RESPONDENT HOUSEHOLDS IN THE CANADIAN LABOUR FORCE SURVEY

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This article presents findings from a study to characterize responding and non-responding households in the LFS. This study was motivated by two projects associated with the LFS Redesign, namely, the family estimation project and evaluation of non-response compensation procedures. However, the results of the study are of general interest in the assessment of the quality of data emanating from the LFS.

1. INTRODUCTION

Non-response is the lack of complete information for all selected units in a sample or census. The occurrence of non-response poses special problems for the producers and users of survey data. Non-response affects the quality of survey data in two basic ways. First, it reduces the effective sample size, resulting in loss of precision of the survey estimates. Second, to the extent that differences in the characteristics of respondent and non-respondent units are not properly accounted for in the estimation strategies, it may introduce a bias into the survey estimates. This paper focuses on the latter aspect of quality, specifically the characterization of respondent and non-respondent units in the Canadian Labour Force Survey (LFS). This information will provide some insight into the potential effect of non-response on the survey estimates and will suggest some variables which should be considered when compensating for non-response. Units were characterized by the variables size of household, economic family type, length of time in the survey, location, age of household members and labour force status of household members. This study is based on data derived from the LFS longitudinal data files. A statement of

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major findings from this analysis is found in Section 2 followed by a brief description of the LFS, of the longitudinal files and the methodology used to characterize non-respondent households in Section 3. Section 4 then presents the derived data and resulting analysis. The final section briefly discusses the impact of the findings of this study on the quality of LFS data at the individual, family and household levels and suggests potential methods of dealing with non-response to alleviate or minimize deficiencies in the survey data arising due to non-response.

2. STATEMENT OF MAJOR FINDINGS

Within the LFS, non-response compensation procedures are based on the assumption that the characteristics of non-respondent households are similar to the characteristics of respondent households. Should this assumption prove incorrect, the non-response adjustment procedure will contribute to a bias in the survey estimates. It is impossible to determine the exact extent of this non-response bias. However, by examining longitudinal data on the survey life of a household, a profile of respondent and non-respondent households may be determined and the extent of differences evaluated.

Of the many variables examined in the characterization of respondent and non-respondent households, the variables month in sample, household size and labour force status of household members exhibited a definite trend in relation to response status. With respect to month in sample, the levels of non-response decreased as month in sample increased. Between months one and two the percentage of non-respondent households decreased sharply, and then gradually continued to decrease until month six, implying survey tenure is a critical factor in the determination of survey response. Thus any estimates by rotation number based on a non-response adjustment across all rotation groups may impart a slight bias to estimates on a rotation number basis.

Regarding household size, non-response decreased as household size increased. On a distributional basis there were almost twice as many households of size one for non-respondent households as for respondent households; and conversely, for households of size 5 and over, there were over twice as many

households for respondent households. The implication is that a non-response adjustment which does not take household size into consideration will, on average, represent non-respondent households by households which contain more household members than the non-respondent households.

The response patterns exhibited by household size and month in sample remained unchanged when the two characteristics were jointly examined. Since the analysis of these two variables, household size and month in sample, has shown a strong functional relationship with non-response, a non-response adjustment incorporating household size and month in sample should do much to alleviate discrepancies by rotation number in sample survey estimates of household and economic family units, and of characteristics dependent on these variables.

In addition to household size and month in sample, a relationship between non-response and labour force status was also exhibited, with particular reference to unemployment. For non-respondent households, the percentage of individuals classified as unemployed increased as month in sample increased, while the percentage for respondent households remained relatively stable. When the added dimension of household size was examined, a definite relationship was exhibited for households of size one with a slightly more variable pattern being exhibited for households of size two or more. For households of size one, the percentages of individuals classified as employed and unemployed were substantially greater for non-respondent households than for respondent. Also, the percentage of employed individuals decreased as month in sample increased; however, the percentage of unemployed increased. For households of size two or greater, the differences in the labour force distributions for respondent and non-respondent households were less pronounced than those for size one households, but the percentage of unemployed individuals in non-respondent households of size two or more did generally increase as month in sample increased.

Although there may be advantages in utilizing some variables relating to labour force activities in addition to household size and month in sample in the non-response adjustment process, and thus improving the labour force estimates; the desire for a general weight adjustment, the small sample size

at this level of aggregation, and the relatively low level of non-response currently experienced in the LFS may preclude the implementation of a non-response adjustment based on labour force status related variables. However, a non-response adjustment on the basis of household size and month in survey should have some benefits for the labour force estimates. Consequently, it may be feasible to consider adjustments for two groups of households, namely size one and size two or more, and for two survey tenures, namely one month and two months or more, in evaluating any improvements to the current LFS non-response adjustment process.

3. DATA SOURCE

3.1 The Labour Force Survey

The LFS is a multi-stage stratified random sample with stratification occurring within the economic region level for each province. The final unit of sample selection is the dwelling. Each selected dwelling remains in the survey sample for six months. At the end of that time, these dwellings are replaced by another group of dwellings in such a manner that every month one-sixth of the sample is replaced or rotated. This implies that in any given month, there are six panels of dwellings in the LFS with each panel at various stages of aging. That is, one panel is in the survey for the first occasion (i.e., the birth rotation group), one panel for the second occasion,..., and one panel for the sixth occasion.

During one week each month, Survey Week¹, LFS interviewers contact selected dwellings to obtain information on the composition, demographic variables and labour market activities of household members who are part of the survey universe². For various reasons, interviewers are unable to obtain information from all selected dwellings. These dwellings where no interview is conducted are classified as vacant dwellings or non-respondent households³, depending on their occupancy status. For vacant dwellings, no response is obtainable or expected; whereas, for non-respondent households, survey information is missing. An adjustment⁴ for non-response to compensate for this missing information is made at the data processing stage based on the assumption that

households which have been interviewed, i.e., respondent households, typify households which should have interviewed, i.e., non-respondent households. Should this assumption be false, then a bias is introduced into the survey estimates by this adjustment for non-response. This bias will increase as the rate of non-response increases. For this reason, it is important that the characteristics of non-respondent and respondent households be similar, and for this reason much effort is expended (successfully) in minimizing non-response.

3.2 Longitudinal Data File

Estimates based on monthly cross-sectional LFS data provide a static snapshot of the population and labour market for each month; however, by linking respondent information over the survey lifetime, a dynamic view of labour market activities is observed. In any given month, dwellings in one of the six rotation panels complete their six-month tenure in the survey. For dwellings in this panel, it is possible to trace the household composition and response pattern over the previous five months. This tracing is done by means of the Longitudinal Data File. The Longitudinal Data File is formed by concatenating the information on a given household over its six months of survey life.

In the LFS, dwellings and individuals are assigned unique identification codes. This affords a method of linking individual, household, and dwelling information over the six months a dwelling is in the survey, thus creating the Longitudinal Data File.

Initially, longitudinal records containing the six monthly response status codes are created for each dwelling. If a dwelling is respondent for one or more months, then individual records containing information on the household members who were living in the household at the time it was respondent are also included on the longitudinal file. However, if no response is indicated over the six months, only basic dwelling information is available for the dwelling. Thus, every individual who was a household member at some time over the six-month survey period is associated with a Longitudinal Data File

record. From this record, labour market activity and demographic information can be obtained for the months the individual was a responding household member. Based on this formulation of longitudinal data, examination of responding and non-responding households can occur and the characteristics of each response type evaluated.

3.3 Methodology for Deriving Estimates

In examining the characteristics of responding and non-responding households, the type of household response for each month was required. On a monthly basis, there are three types of dwelling responses: respondent, non-respondent, and vacant. Responding households are those where the LFS questionnaire is completed for all or some eligible household members. Non-respondent households are occupied by individuals who should be included in the survey but, for some reason, choose not to participate or are unable to participate due to existing circumstances. Vacant dwellings, on the other hand, are not occupied, or are occupied by individuals not included in the survey universe.

Thus, in determining the characteristics of responding and non-responding households, dwellings labelled as vacant were ignored.

To obtain the characteristics of responding households, the characteristics of individual household members who responded in the survey were examined; however, to obtain the characteristics of non-responding households, an imputation strategy was implemented. The characteristics of a non-responding household should be identical to or closely approximated by characteristics of individuals in that household in a month of response.

For those households who did respond at least once during the six months the household was in the survey, the months of response were the information donors for any months of non-response during the six months. In this manner, the characteristics of non-responding households were estimated. To impute for non-response by this method, it was imperative that a given household be respondent for at least one month; however, the household could have been

respondent for more than one month. If this latter situation occurred, the month of response closest to the month of non-response provided the donor information. If two months of response were equally close to a month of non-response, the month prior to the month of non-response was chosen as the donor month. The following algorithm summarizes this technique.

<u>Month of Non-Response</u>	<u>Ordering of months to check for donor information</u>
1	2, 3, 4, 5, 6
2	1, 3, 4, 5, 6
3	2, 4, 1, 5, 6
4	3, 5, 2, 6, 1
5	4, 6, 3, 2, 1
6	5, 4, 3, 2, 1

If there was no month of response available, then no imputation was performed and this household was excluded from this study.

3.4 Cautionary Note

If non-response rates based on this study are compared to non-response rates by rotation groups from the monthly LFS, they will differ in magnitude. The main source of difference is the exclusion of certain non-respondent households from this study of longitudinal data. As previously indicated, the ability to characterize a household in a month of non-response depended on the availability of respondent data in an alternative month for that household. That is, there had to be at least one month of response for a non-respondent household to be characterized. This implies that a household which was non-respondent, or a combination of non-respondent and vacant, for each of the six months it was part of the survey sample was excluded from this study. Thus, some non-respondent households which contributed to the monthly LFS measurement of non-response did not contribute to this longitudinal study of non-

response. Approximately 1.4% of the total sampled households were excluded on this basis.

Exclusion of some non-respondent households is the main reason for differences in data from this study and any other study on non-response which is based on the monthly LFS data. In addition to this source of discrepancy, the weighting technique applied may cause estimates to vary. For this report records were weighted by a product of the inverse sampling ratio, the sub-sampled cluster weight, and the stabilization weight⁵. In examining and interpreting the results in Section 4, or comparing these results to any other study on non-response, it is necessary to remember that the data source was the Longitudinal Data File, only records with at least one month of response contribute to the estimates, and the weighting structure was based on sample design weights only.

4. ANALYSIS

The methodology in the previous section documented the procedures used to derive estimates of characteristic totals from the longitudinal file. In this section a number of variables (separately and jointly) are examined with respect to their characterizations between respondents and non-respondents. A particular variable or cross-classification of variables is dealt with in each of the following subsections. The motivation for examining the variables, tables containing relevant tabulations and a summary of the essential results are presented for the various subsections.

4.1 Month in Sample

As noted in the introduction the LFS is based on a rotating panel design with each panel of dwellings remaining in the sample for a period of six months. At the sample design stage, considerable effort is taken to ensure that the sample associated with each rotation number (i.e. dwellings by panel) is a representative one-sixth subsample of the full LFS sample. In the past a number of references have been made to the phenomenon of rotation group bias, i.e. that the expected value of estimates based on a single panel differs

depending on number of months in the sample. For this reason the composition of the sample by month in sample and by response status were examined. Weighted estimates of the number of households at the Canada level by month in sample and by response status were obtained based on averages over 1980 and 1981 and are presented in Table 1. Due to design efforts to ensure representativeness of the sample by rotation number, it was expected that the total weighted counts would be equally distributed by month in sample. Examination of the data revealed that very close to one-sixth (or 16.67%) of the total households fall into each month in sample class. In all cases the differences in percentage distribution for a cell were within one-half of 1%.

When distributions of households by month in sample were examined by response status, deviations from a uniform distribution were observed, particularly for non-respondent units. The non-response rates by month in sample exemplified this fact. As illustrated in Table 1, the rate of non-response decreased as the number of months in the survey increased. The largest decrease occurred between the first and second months in the sample when the rate in the second month was approximately one-half of the rate in the first month. Further reductions in the non-response rates were observed as the number of months in the sample increased. Decreases in the rates between the second and sixth months were 21.1% and 34.2% for 1980 and 1981 respectively.

The percentage distribution of non-respondent households exhibited a similar decreasing trend as number of months in the sample increased. On a distributional basis, there are substantially more non-respondent households in the first month in sample than there were respondent households; however, this number decreased with increasing tenure in the survey. Thus any estimates by rotation number based on a non-response adjustment across all rotation numbers may impart a slight bias to estimates on a rotation number basis.

4.2 Household Size

In the LFS, non-response generally occurs at the household level, i.e. the rate of partial non-response within households is very low. The household is the unit at which non-response occurs. Thus the characterization of house-

holds is necessary for the determination of the effects of non-response on estimates from the survey - be they at the level of household, family, or individual units. Perhaps the most basic household attribute, in relation to deriving demographic/socio-economic estimates from the survey, is household size. From a data collection point of view it is reasonable to assume that difficulties of contacting households decrease with increasing household size.

To evaluate the potential effect of household size on the non-response rate, Table 2 presents the percentage distribution of households by size and response status based on averages over the calendar years 1980 and 1981. For both years the non-response rate decreased dramatically as household size increased. Non-response rates by household size ranged from a high of 7.48% for households of size 1 to a low of 1.89% for households of size 5 or more in 1980 and correspondingly from 6.58% to 1.69% in 1981 for households of sizes 1 and 5 or more, respectively. An examination of the distribution of responding and non-responding households by size of household revealed a substantial difference in the distribution of households by size depending on the response status. On a distributional basis there were almost twice as many households of size one for non-respondent households as for respondent households. For respondent households there were slightly more than 50% which were of size 3 or more, whereas for non-respondent households only about 30% were of size 3 or more. The distributional differences in household size between respondent and non-respondent households was also reflected in the average household size for each response type. For 1980 the average household size for respondent and non-respondent households was 2.93 and 2.26, respectively; while for 1981 the corresponding sizes were 2.88 and 2.19. The implication is that with the adjustment for non-response at the LFS data processing stage, non-respondent households are represented by households which, on average, contain more household members than the non-respondent household. This leads one to question the assumption that respondent households typify non-respondent households, at least with respect to household size.

4.3 Household Size by Month in Sample

In the previous two subsections substantial variations in the response rates were noted depending on the number of months in sample and also depending on the size of household. The next table was obtained to determine whether the noted variations in non-response rates were also observed when either household size or month in sample was held constant. Based on annual averages for 1980 and 1981, Table 3 presents percentage distributions of respondent and non-respondent households by household size and month in sample as well as the corresponding non-response rates for 1980 and 1981, respectively.

These tables show that the decreasing trends in non-response rates observed in Tables 1 and 2 for the full populations also hold true when the rates are examined holding one of the variables constant and letting the other vary. For example, in Table 1 non-response rates for all household sizes combined were shown to decrease as month in sample increased. Table 3 generally shows the same phenomenon when one examines the pattern of response rates by month in sample for each of the household size groupings separately. As when months in the survey alone were examined, the non-response rate decreased sharply from month one to month two. Similarly, the non-response rate decreased from month one to month two by approximately one half for each given household size. For households of size one and two the non-response rate continued to decrease in subsequent months in the survey; however, for households of size 3 and greater the non-response rate tended to stabilize during the second month in the survey.

Holding the number of months in the survey constant and examining the non-response rate as the household size varied, revealed a pattern similar to that exhibited in Table 2, where household size alone was considered. The non-response rate decreased with increasing household size. Table 3 likewise shows that for a given number of months in the survey (from one to six), there is a decreasing trend in the non-response rate as household size increases.

Combining these two trends, there was an expectation that the highest non-response rate would be observed in households of size one during the first

month in the survey. Similarly, there was an expectation that the lowest non-response rate would be observed in households with five or more members during the final month in the survey (i.e., in month six). Based on annual averages for 1980 and 1981, this expectation was verified. In 1980 and 1981 the non-response rates of highest magnitude were 13.39% and 12.81% respectively. Each of these rates applied to households of size one during the initial survey month. The non-response rate of least magnitude in 1980 was 1.54%. This applied to households containing five or more members during the third month in the survey; however, a non-response rate of 1.59% also applied to households containing five or more members for month 6. In 1981, the non-response rate of least magnitude was 1.37%. This occurred in households having five or more members during month 3, while the non-response rate for month 6 was 1.39%. Thus, although the lowest non-response rate did not uniquely occur in households containing five or more members during the final survey month, the non-response rate for households in this cell was not significantly different.

The distributions of household size by survey duration by response status indicated the potential for non-response bias in survey estimates. A non-response adjustment which does not take into account household size, will implicitly compensate for non-respondent households on the basis of the distribution of respondents, i.e., underestimating households of size 1 and 2 and over-estimating households of size 3 or more. It can be seen on a distributional basis that there were substantially more households of sizes 1 and 2 among non-responding households than there were among responding households and, of course, conversely fewer households of larger sizes (3, 4 and 5+) among the non-responding households than among the responding households. This discrepancy in distributions became more exaggerated when months in sample, or rotation groups, were considered, particularly for months one and two. After month two, the non-response rate tended to stabilize for households of size greater than two, whereas for households of size 1 or 2, the non-response rate continued to vary over the survey lifetime. This suggested that household size and rotation number are important characteristics to consider when methods for non-response adjustment are being evaluated.

4.4 Family Composition of Household

In Section 4.2 there were substantial differences in the distribution of households by size between respondent and non-respondent households. To further evaluate household size discrepancies between respondent and non-respondent households, tabulations of households in terms of their composition of family types were obtained. The family type compositions were based on the number of economic families in the household, the size of the family units, the presence of children, and the marital status and age of the head of the family unit. The specific variables are indicated in Table 4a with corresponding percentage distributions and non-response rates by type by response status in Table 4b.

The higher non-response rates for households of size one were again evident from these tabulations. The rates were particularly high for households containing only an unattached individual aged less than 65 years of age. Households containing a married couple with other members present in the household (children or non-children) i.e., codes 6, 7 and 8 had low non-response rates relative to other types of households. In other words, there were proportionately more of these types of households among the responding than among the non-responding households. Households containing only unattached individuals (either one or more) and households containing a married couple only formed a higher percentage of non-responding households than of responding households. Thus in addition to household size, the composition of the household in terms of family types appeared to have some influence on the rate of non-response. Thus certain types of family units may not be properly compensated for in various weight adjustment strategies for non-response. This is particularly a crucial issue in the production of family estimates.

4.5 Age of Individuals

Although the unit of potential response is generally the household, Table 5 presents percentage distributions by age group and response status at the individual level. Also presented are the distributions of the non-respondents

as percentages of the total population, or these could be referred to as individual level non-response rates.

The rate of non-response for all individuals combined were 3.13% and 2.63% for 1980 and 1981 respectively. These rates corresponded to household level non-response rates of 4.02% and 3.43% respectively for 1980 and 1981. The lower rates at the individual level were indicative of the inverse relationship between the size of household and the level of non-response as pointed out in Section 4.2. Since larger households had lower non-response rates, a greater proportion of individuals fell into the responding category. The relationships on a distributional basis between individual respondents and non-respondents bore out the results of the previous section with respect to the generally lower household non-response rates in households which contained children. For the age groups 0-14 and 15-19, the non-response rates in 1980 were 2.50% and 2.42% respectively, while in 1981 they were 2.12% and 1.92%. The highest non-response rates were observed in the age groups 65+ and 20-24. This again reflected the inverse relationship between household size and the non-response rate. Households of size 1 and 2 had the highest non-response rates. Individuals within the age groups 65+ and 20-24 were more likely to live alone or as a couple; hence, the non-response rates for these individuals were expected to be high. The variation in non-response rates by individual age groups indicates a potential effect on the quality of survey based estimates. In particular, age groups with a lower non-response rate than the over-all individual non-response rate will be over-estimated by a weight adjustment factor which does not take into account age variables. The opposite occurs when the non-response rate for the age group is greater than the overall individual non-response rate. To some extent any distortions introduced at the provincial level are corrected by the application of the ratio adjustment procedure.

4.6 Age of Individuals by Size of Households

Continuing from the previous section the distributions of individuals by age groupings and response status were obtained within various household size breakdowns. These distributions as well as non-response rates, are presented

in Table 6a based on 1980 annual averages and Table 6b based on 1981 annual averages.

The distributions of individuals by age group were relatively similar by household size between respondents and non-respondents in households of sizes 2, 3, 4 and 5+; however, for households of size 1 there were substantial differences in the distributions. Within size 1 households the primary differences were for age group 25-44 in which there were substantially more individuals (on a distributional basis) in non-responding than responding households (39.6% compared with 28.8% for 1981 and 35.5% compared with 27.9% for 1980) and for age group 65+ in which there were substantially fewer individuals in non-responding households than in responding households (22.3% compared with 34.3% for 1981 and 22.4% compared with 34.3% for 1980). This latter observation is particularly important as about 28% of the population 65+ reside in households of size 1 whereas less than 5% of individuals in the age group 25-44 reside in households of size 1. Thus, it is differences in the distributions by age groups between respondents and non-respondents which merit special attention in any procedures to compensate for non-response in households of size 1.

The non-response rates in Tables 6a and 6b show that individual non-response rates within age groups exhibit the same pattern across household size measures as was observed in Section 4.2, namely that non-response rates decrease as household size increases. Within a particular size of household the relationships of non-response rates by age group were very different than non-response rates by age groups for all household sizes combined. Perhaps most notable was the fact that for each household size group separately (except size 4 in 1980), individuals 65+ exhibited the lowest level of non-response whereas the non-response rate for individuals 65+ in all households combined was the largest of any age group. This phenomenon resulted from the fact (mentioned earlier in this section) that the majority of individuals of age 65+ live in households of size 1 or 2, where the non-response rate was the greatest.

These tables indicate that non-response is very much dependent on household size and that age is not an important factor apart from the fact that there is a relationship between household size and the age of individuals residing in the household.

4.7 Age of Individuals by Month in Survey

The distribution of individuals by age group for varying numbers of months in the survey, separately for respondents and non-respondents, are presented in Tables 7a and 7b for 1980 and 1981 respectively, as well as the corresponding non-response rates.

From Tables 7a and 7b it can be noted that distributions by age group for respondents were virtually identical regardless of the number of months in sample. Although the distributions for non-respondents showed a higher degree of variability for differing months in sample, there remained a degree of stability in the distributions. The pattern between distributions for respondents and for non-respondents was similar for each month in sample breakdown as it was for totals across months in sample.

A study of individual non-response rates again indicated in general a decreasing trend as number of months in sample increased. This occurred for individual age groups as well as for the total population. As expected the pattern over time was not as pronounced for individuals as it was on a household basis. This can be attributed to changes in the response pattern for various sized households; that is, there is a tendency for larger sized households to become non-respondents in the later survey months while smaller sized households tend to become respondent (refer to Table 3).

4.8 Labour Force Status

In this subsection attention is turned from the basic demographic characteristics of households by response status to the characteristics of labour force activity. This evaluation was motivated by the desire to assess potential non-response bias in the survey estimates of these characteristics.

Section 4.2 presented substantial differences in the distributions of respondent and non-respondent households by household size, while Section 4.1 presented similar findings for month in sample. For this reason, the distributions of individuals by labour force status within each category defined by household size, month in sample, and response status were examined. They are presented in Table 8a.

Examination of these distributions by labour force status for all individuals regardless of size of household, showed that the distributions for respondent households differ in some important ways from the distributions of non-respondents and the pattern of differences was not consistent over time. The percentages of individuals unemployed showed perhaps the most interesting changes. For respondents, this percentage was relatively constant for each number of months in the sample; whereas, for non-respondent households, there was an increase in the percentage of individuals unemployed as the number of months in sample increased. The percentage of the population (aged 15 and over) unemployed for respondent households ranged from a low of 4.7% in months 3 to 6 to a high of 5.0% in month 1 for 1980, and a low of 4.6% in months 4 and 5 to a high of 4.9% in month 1 for 1981. For non-respondent households, the corresponding range of percentages was 4.5% in month 1 to 6.4% in month 6 for 1980, and a low of 4.0% in month 1 to a high of 6.2% in month 5 for 1981. A comparison of the percentage unemployed for each response status over time shows that there were fewer unemployed persons among non-respondent than respondent households for households in the sample for the first occasion and more unemployed persons among non-respondent than respondent households for households in the sample for four to six months. The relationship was variable for months two and three. A comparison of the percentage distribution patterns of labour force activities for respondent households over time indicated a relatively stationary distribution; however, the pattern for non-respondent households varied. For non-respondent households there were greater fluctuations in the percentage distributions for each labour force status across months. No distinct pattern of change was exhibited except with unemployment where representation increased with survey duration. This variation among non-respondents was at least partly attributable to small sample sizes of non-respondents relative to sample sizes for respondents.

Since unemployment is more sensitive to sample fluctuations than the other labour force statuses and exhibits a definite trend over time, compensating for non-response over rotation groups would distort this characteristic. Adjusting over rotation groups would result in an overestimation of unemployment in month 1, and an underestimation of unemployment in months 4 to 6. Since the divergence between responding and non-responding households in the percentage distribution of unemployment was more pronounced in the later survey months, the overall effect would be an underestimation of unemployment. Since the non-response adjustment occurs at the household level, not at the individual level, and the size of the household has proven to be an important response determinant (see Section 4.2), it is essential to consider household size as an additional component for the evaluation of non-response with respect to the labour force status.

When distributions by labour force status and month in sample were examined by household size breakdowns, the patterns or relationships noted above did not hold. For households of size 1, the proportions of individuals employed and unemployed were substantially higher for non-respondents than for respondents. For respondents the proportion of individuals employed and the proportion unemployed were relatively constant for varying number of months in the sample. For non-responding households, there was a general decrease in the proportion of individuals employed as the duration in sample increased; whereas, there was a substantial increase in the proportion of unemployed as the number of months in sample increased.

For households of other sizes (2,3,4 and 5+), the differences between labour force status distributions for respondent and non-respondent households were much smaller. Also patterns between distributions for respondents and non-respondents were not nearly as strong or consistent as for the case of household of size 1. On a distributional basis, there were generally fewer unemployed individuals in non-respondent households for the first survey occasion and more unemployed individuals in non-respondent households for the fourth and subsequent months in the sample, than for responding households. For households in the survey for two or three months the pattern was variable.

The percentage of individuals "not in the labour force" differed between responding and non-responding households by household size. In households of size 1 and 2 there were fewer individuals "not in the labour force" in non-responding households than in responding; whereas, no definite pattern existed for households of size 3 or more. As the employed constituted the majority of the group "in labour force", generally the relationship on a distributional basis between respondent and non-respondent households was the complement of that noted for the characteristic "not in the labour force".

Table 8b presents unemployment rates by household size and month in sample by response status for 1980 and 1981 respectively. These results are related to those in the previous tables and observations may be similar in that the relationship between unemployment rates for respondents and non-respondents are the result of the relationships between proportions employed and unemployed between respondent and non-respondent units.

For all individuals (i.e., regardless of household size) the rate of unemployment for non-respondents was less than the rate for respondents for the first month and greater than the rate for respondents in months 4 to 6. The relationship between the rates for months 2 and 3 varied by year. For non-responding households, there was a substantial increase in the unemployment rate as the number of months in the survey increased. This phenomenon was not observed for respondents where the first month in sample had the highest rate but the pattern for subsequent months was somewhat variable.

For households of sizes 2, 3, 4, and 5+ the same general relationship in unemployment rates between respondent and non-respondent households was observed as for the full set of individuals (i.e., regardless of household size). There was no definite pattern in unemployment rates over time for non-respondent households when various household sizes were considered. For households of size 1 the unemployment rate for non-respondents was generally higher than the rate for respondents.

4.9 Type of Area

Results presented in Section 4.3 showed that there were substantial differences in distributions of households by size and month in sample between responding and non-responding households. This section further examines these results within broad types of area determined generally on the basis of population concentration and density; namely, self-representing areas (SRU), non-self representing urban areas (NSRU urban), and non-self-representing rural areas (NSRU rural). Although a more precise definition of area types is available, for this study it is sufficient to note that SRU's consist of the larger cities in the country, NSRU urban areas consist of smaller cities and towns, and NSRU rural areas are composed of the more sparsely populated portions of the country, including small villages and farm land. Due to the very small sample sizes, special areas were not considered. In very general terms, the patterns observed in Section 4.3 for all area types combined, were similar to those observed for the three broad area types; however, there were different distributions by household size for respondents depending on type of area. In SRU areas, on a distributional basis, most households were smaller sized whereas there were fewer smaller sized households in NSRU rural areas. The opposite was observed for larger sized households. The relationship between respondent and non-respondent households, however, was relatively the same regardless of type of area. From Tables 9a and 9b it can be noticed that there were approximately twice as many households of size 1 in non-responding households as in responding households and approximately one-half as many larger sized households (5+) in non-responding as in responding households.

Non-response rates, although levels differ by type of area, showed the same pattern of decreases by number of months in sample as was observed for all units combined (i.e., as compared with results presented in Section 4.3). Again there were substantial decreases in levels of non-response between the first and second months with decreases of lesser magnitude occurring in subsequent months.

The rates of non-response for all households (i.e., regardless of household size) were the highest for SRU areas, followed by NSRU urban areas and were

the lowest for NSRU rural areas. These differences were a function of the distributions of households by size across area types. Within specific size of household groupings, the patterns between respondent and non-respondent households are generally the same as when examined for comparable size groupings for all area types combined. The type of area variable is an important factor in compensation procedures as it differentiates between areas with different levels of non-response. However, in addition to size of households and month in sample variables the type of area variable does not provide much additional information in the characterization of survey units by response status.

5. SUMMARY

The previous section presented characterizations of responding and non-responding households with respect to a wide range of variables. The households and/or individuals displayed somewhat different characterizations depending on their response status. On the assumption that responding and non-responding households exhibit similar characteristics, it would seem to be important to incorporate some of the variables examined in Section 4 into non-response compensation procedures for the survey.

The method of compensating for non-respondent households in the LFS is carried out within small geographic areas (balancing units) by an inflation of the design weight by the inverse of the household response rate. These adjustments are made on the basis of household counts independent of any characteristics of the household. Unless there is a high degree of correlation among households within balancing units, one would expect very little reduction in non-response bias by the present adjustment procedure.

An indication of the magnitude of non-response bias under the current procedure for compensation for non-response would be desirable. An explicit imputation of missing information due to non-response on the LFS file can be obtained using procedures similar to those used in this study. After adjustments for complete non-response (i.e., non-response for all six months) survey estimates based on these comprehensive imputation strategies can be obtained.

Comparison of these resulting estimates with official survey estimates would provide added support to assessments of response bias which have been alluded to in this report.

This report has provided justifications for considering various additional variables in the adjustment for non-response: month in sample, household size and labour force status. As there are substantial variations in the response rate by rotation number (month in sample) it is advisable to adjust for non-response within each rotation number separately. As the pattern of labour force characteristics for non-respondents exhibits a degree of variation over months in sample, an adjustment on the basis of rotation number should have some benefits for labour force estimates as well. As the greatest differences are between the first month and subsequent months in sample, an adjustment for these two classes may be sufficient.

Among the non-responding households there are substantially more households of size one (and to a lesser extent for size two) than in responding households. Thus, household size is an important variable to be incorporated in any adjustment procedures for non-response. The analysis has shown that discrepancies are the greatest for households of size one. It may thus be feasible to consider adjustments for two groups of households only, namely households of size one and households of size two or more. Incorporation of household size into compensation procedures for household non-response necessitates having some information available about the size of non-responding households. This may be explicit, as for example the household size on a previous survey occasion, or implicit, as for example a distribution of non-responding households by size from previous surveys, or a distribution by household size from an independent source such as the Census. In either situation, adjustments incorporating considerations of household size in conjunction with adjustments by rotation number, should do much to alleviate discrepancies by rotation number in sample survey estimates of household and economic family units.

As noted in Subsection 4.9, even within household size and month in sample, there are differences in the distributions of respondents and non-respondents

by labour force status. For the LFS there may be advantages in utilizing some variables relating to labour force activities in the adjustment process. There are two factors which tend to preclude this as being viable in practice. Namely, there is a desire for a general weight adjustment, not only for the LFS but also for the various supplementary surveys, and secondly, information at this level of disaggregation would be very unstable and necessitate adjustments at higher levels of aggregation. This new level of adjustment would negate any advantages which may currently be experienced due to local labour market phenomenon. Any compensation procedures must bear in mind the relatively low level of non-response currently experienced for the LFS. This has implications on the level of sophistication warranted, the potential for impact on the estimates, and the reliability of non-response information which would form a key part of the procedure.

There are a range of possible alternatives to the present method of compensating for non-response. Further work in the development of other feasible compensation strategies is a two-staged process. The first stage is the simulation and evaluation of monthly labour force estimates based on the imputation strategy suggested in this report. The second stage is the development of other non-response adjustment strategies followed by their empirical evaluation. Such work is in fact under way.

FOOTNOTES

[1] The estimates provided by the Labour Force Survey refer to the specific week covered by the survey each month, Reference Week, normally the week containing the 15th day. Survey Week, when all interviews are conducted, is the week immediately following Reference Week.

[2] The survey universe for the Labour Force Survey is all persons in the population aged 15 years of age or over residing in Canada, with the exception of the following: residents of the Yukon and the Northwest Territories, persons living on Indian Reserves, inmates of institutions and full-time members of the Armed Forces.

- [3] Each month the interviewer is required to indicate whether a complete interview was obtained, that is, a complete Labour Force Survey questionnaire was completed for each eligible household member; a partial interview was obtained, that is a questionnaire was completed for some but not all eligible household members; or no interview was obtained. When no interview occurs, the interviewer must indicate the reason for this. Non-respondent households include those where no one was home (after several calls), the household refused to respond, the household was temporarily absent, or the interview was prevented by weather conditions, death, sickness, a language problem or other unusual circumstances in the household. Vacant dwellings include unoccupied dwellings, seasonal dwellings, dwellings under construction, dwellings occupied by persons not to be interviewed, and dwellings demolished, converted to business premises, moved, abandoned (unfit for habitation), or listed in error.
- [4] For further detail on the LFS non-response adjustment see "Methodology of the Canadian Labour Force Survey, (1976)", Statistics Canada, Catalogue 71-526 Occasional, October 1977, pp. 67-68.
- [5] For further detail on the LFS weighting process see "Methodology of the Canadian Labour Force Survey, (1976)", Statistics Canada, Catalogue 71-526 Occasional, October 1977, pp. 65-74.

TABLE 1. Percentage Distributions for Respondent and Non-respondent Households by Month in Sample for 1980 and 1981, Canada

Month in sample	Total	Respondent	Non-respondent	Non-response rate
<u>1980</u>				
1	16.6	16.1	28.6	6.94
2	16.6	16.7	15.9	3.84
3	16.7	16.8	14.4	3.47
4	16.7	16.8	14.3	3.45
5	16.7	16.8	14.2	3.42
6	16.8	16.9	12.6	3.03
Total	100	100	100	4.02
<u>1981</u>				
1	16.6	16.0	32.1	6.66
2	16.7	16.7	16.6	3.42
3	16.7	16.8	14.4	2.96
4	16.7	16.8	13.9	2.83
5	16.7	16.9	12.1	2.48
6	16.7	16.9	11.0	2.25
Total	100	100	100	3.43

TABLE 2. Percentage Distributions of Respondent and Non-respondent Households and Non-Response Rates by Household Size for 1980 and 1981 Annual Averages, Canada

	1980				1981			
	Total	Respondent	Non-respondent	Non-response rate	Total	Respondent	Non-respondent	Non-response rate
<u>Size of household</u>								
1	19.0	18.3	35.4	7.48	19.9	19.2	38.1	6.58
2	29.3	29.2	32.8	4.50	29.8	29.7	32.6	3.76
3	17.8	18.2	13.4	3.00	17.6	17.8	11.9	2.33
4	18.8	19.1	11.4	2.44	18.8	19.1	10.4	1.90
5+	14.9	15.2	7.0	1.89	14.0	14.2	6.9	1.69
Total	100	100	100	4.02	100	100	100	3.43
Average household size	2.91	2.93	2.26		2.86	2.88	2.19	

TABLE 3. Percentage Distributions of Respondent and Non-respondent Households by Household Size for Month in Sample for 1980 and 1981 Annual Averages, Canada

Month in sample	Household size 1980						1981					
	1	2	3	4	5+	Total	1	2	3	4	5+	Total
<u>Respondent households</u>												
1	17.4	29.1	18.3	19.5	15.7	100.0	18.3	29.6	17.9	19.5	14.7	100.0
2	18.1	29.2	18.2	19.1	15.4	100.0	19.0	29.8	17.7	19.2	14.3	100.0
3	18.4	29.2	18.1	19.1	15.2	100.0	19.2	29.7	17.8	19.0	14.3	100.0
4	18.5	29.1	18.2	19.1	15.1	100.0	19.5	29.7	17.8	18.9	14.2	100.0
5	18.7	29.1	18.1	19.0	15.0	100.0	19.7	29.7	17.7	18.9	14.0	100.0
6	18.9	29.2	18.1	19.0	14.9	100.0	19.8	29.8	17.7	18.8	13.9	100.0
<u>Non-respondent households</u>												
1	36.1	32.3	13.2	11.2	7.2	100.0	37.7	32.9	12.8	10.3	6.3	100.0
2	38.9	32.7	12.1	9.6	6.7	100.0	40.5	32.7	11.5	9.1	6.2	100.0
3	35.9	32.2	13.5	11.8	6.6	100.0	41.5	33.0	9.6	9.4	6.5	100.0
4	34.9	33.2	13.4	11.7	6.9	100.0	37.6	31.7	12.5	11.0	7.1	100.0
5	32.9	33.9	13.8	12.5	6.9	100.0	36.5	32.6	12.0	10.9	8.0	100.0
6	32.1	33.0	14.9	12.4	7.7	100.0	34.1	32.4	12.3	12.7	8.5	100.0
<u>Non-response rates</u>												
1	13.39	7.64	5.10	4.10	3.30	6.94	12.81	7.34	4.85	3.63	2.97	6.66
2	7.90	4.28	2.59	1.97	1.71	3.84	7.03	3.74	2.25	1.65	1.51	3.42
3	6.56	3.81	2.61	2.17	1.54	3.47	6.19	3.28	1.62	1.49	1.37	2.96
4	6.32	3.92	2.56	2.15	1.61	3.45	5.32	3.02	2.01	1.67	1.44	2.83
5	5.87	3.97	2.63	2.28	1.61	3.42	4.50	2.72	1.70	1.45	1.43	2.48
6	5.05	3.41	2.51	2.00	1.59	3.03	3.82	2.45	1.58	1.53	1.39	2.25
Total	7.48	4.50	3.00	2.44	1.89	4.02	6.58	3.76	2.33	1.90	1.69	3.43

TABLE 4a. Determination of Family Type Composition Variable

Code	Number of economic family units in the household	Size of economic family unit	Age of head of family unit	Presence of children in the household	Head is a member of a married couple
1	1	1	25		
2	1	1	25-64		
3	1	1	65+		
4	1	2	45	No	Yes
5	1	2	45	No	Yes
6	1	2+	45	Yes	Yes
7	1	2+	45	Yes	Yes
8	1	2+		No	Yes
9	1	2+		No	No
10	1	2+		Yes	No
11	2+	all of size 1			
12	2+	all of size 2+			
13	2+	mixed			

TABLE 4b. Percentage Distribution of Respondent and Non-respondent Households by Economic Family Type for 1980 and 1981 Annual Average, Canada

Economic family type	1980			1981		
	Non-respondent households	Respondent households	Non-response rate	Non-respondent households	Respondent households	Non-response rate
1	5.8	2.3	9.80	5.7	2.4	7.82
2	21.0	9.5	8.51	23.4	9.9	7.71
3	8.6	6.6	5.14	9.1	7.0	4.47
4	9.5	8.0	4.72	9.5	8.0	4.05
5	15.5	13.6	4.57	14.4	13.8	3.57
6	18.4	28.1	2.67	16.3	27.0	2.10
7	4.9	9.9	2.04	4.7	9.0	1.83
8	4.6	8.2	2.32	4.1	8.6	1.65
9	3.1	4.3	2.99	3.1	4.3	2.45
10	3.9	4.8	3.30	5.0	4.9	3.47
11	3.4	2.7	5.05	3.5	2.8	4.25
12	0.0	0.1	1.25	0.1	0.1	2.29
13	1.2	2.1	2.47	1.2	2.1	2.06
Total	100.0	100.0		100.0	100.0	

TABLE 5. Percentage Distributions of Individuals by Age Groups by Response Status for 1980 and 1981 Annual Averages, Canada

Age group	1980				1981			
	Respondent	Non-respondent	Non-response rate		Respondent	Non-respondent	Non-response rate	
0-14	24.3	19.4	2.50		23.6	18.9	2.12	
15-19	9.7	7.5	2.42		9.5	6.9	1.92	
20-24	9.1	10.4	3.54		9.4	10.9	3.04	
25-44	29.2	31.6	3.38		29.6	33.0	2.91	
45-64	18.9	20.9	3.45		19.1	19.9	2.74	
65+	8.7	10.2	3.65		8.9	10.5	3.08	
Total	100.0	100.0	3.13		100.0	100.0	2.63	

TABLE 6a. Percentage Distribution of Individuals by Age Group and Non-response Rates for Household Size and Response Status for 1980 Annual Averages, Canada

Age group	Household size					
	1	2	3	4	5+	Total
<u>Respondent</u>						
0-14	0.0	2.6	20.5	35.1	37.1	24.3
15-19	1.9	3.5	8.2	9.7	16.7	9.7
20-24	10.5	14.2	11.4	6.0	6.7	9.1
25-44	27.9	25.3	31.3	35.4	25.2	29.2
45-64	25.4	31.6	23.5	12.4	11.8	18.9
65+	34.3	22.8	5.2	1.3	2.6	8.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
<u>Non-respondent</u>						
0-14	0.3	2.6	22.6	37.0	40.8	19.4
15-19	3.0	3.8	8.1	8.8	15.7	7.5
20-24	13.6	14.4	12.0	4.8	5.7	10.4
25-44	35.5	27.3	33.5	37.4	26.6	31.6
45-64	25.2	33.0	19.6	10.7	10.2	20.9
65+	22.4	19.1	4.1	1.4	1.1	10.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
<u>Non-response rates</u>						
0-14	-	4.52	3.30	2.57	2.05	2.50
15-19	11.07	4.83	2.93	2.22	1.76	2.42
20-24	9.49	7.94	3.16	1.95	1.60	3.54
25-44	9.33	4.83	3.21	2.58	1.98	3.38
45-64	7.45	4.68	2.52	2.11	1.62	3.45
65+	5.01	3.80	2.41	2.47	0.85	3.65
Total	7.48	4.50	3.00	2.44	1.87	3.13

TABLE 6b. Percentage Distribution of Individuals and Non-response Rates by Age Group for Household Size and Response Status for 1981 Annual Averages, Canada

Age group	Household size					Total
	1	2	3	4	5+	
<u>Respondent</u>						
0-14	0.0	2.7	19.8	34.4	36.9	23.6
15-19	1.8	3.4	8.6	9.9	16.1	9.5
20-24	10.6	14.1	11.4	6.4	7.1	9.4
25-44	28.8	25.9	31.8	35.2	25.8	29.6
45-64	24.4	31.7	23.5	12.6	11.6	19.1
65+	34.3	22.2	5.0	1.5	2.5	8.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
<u>Non-respondent</u>						
0-14	0.1	3.8	23.6	37.2	39.4	18.9
15-19	2.0	3.1	7.5	8.8	15.6	6.9
20-24	13.0	15.1	12.0	5.9	5.8	10.9
25-44	39.6	28.6	34.3	37.2	27.7	33.0
45-64	22.9	30.1	19.8	10.1	10.2	19.9
65+	22.3	19.3	2.8	0.9	1.2	10.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
<u>Non-response rates</u>						
0-14	-	5.16	2.77	2.05	1.77	2.12
15-19	7.15	3.47	2.03	1.69	1.61	1.92
20-24	7.94	4.02	2.47	1.77	1.37	3.04
25-44	8.85	4.14	2.51	2.01	1.78	2.91
45-64	6.20	3.57	1.97	1.53	1.46	2.74
65+	4.38	3.27	1.31	1.15	0.83	3.08
Total	6.58	3.76	2.33	1.90	1.66	2.63

TABLE 7a. Percentage Distribution of Individuals and Non-response Rates by Age Group for Month in Sample and Response Status for 1980 Annual Averages, Canada

Age group	Month in sample						Total
	1	2	3	4	5	6	
<u>Respondent</u>							
0-14	24.2	24.1	24.3	24.4	24.5	24.5	24.3
15-19	9.9	9.8	9.7	9.7	9.7	9.6	9.7
20-24	9.2	9.2	9.2	9.1	9.1	9.0	9.1
25-44	29.1	29.1	29.2	29.3	29.2	29.1	29.2
45-64	18.9	18.9	18.9	18.9	18.9	19.0	18.9
65+	8.7	8.8	8.7	8.7	8.7	8.7	8.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Non-respondent</u>							
0-14	18.9	19.0	19.6	19.5	20.0	19.9	19.4
15-19	7.6	6.3	7.8	7.7	7.6	7.9	7.5
20-24	10.6	10.3	10.1	10.3	10.5	10.3	10.4
25-44	31.9	33.1	30.8	30.6	31.4	31.5	31.6
45-64	20.4	20.6	21.8	21.5	20.9	21.0	20.9
65+	10.6	10.8	10.0	10.4	9.6	9.5	10.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Non-response rates</u>							
0-14	4.22	2.25	2.18	2.16	2.24	2.00	2.50
15-19	4.12	1.84	2.15	2.16	2.17	2.03	2.42
20-24	6.12	3.16	2.94	3.04	3.16	2.78	3.54
25-44	5.83	3.21	2.83	2.81	2.93	2.65	3.38
45-64	5.74	3.08	3.09	3.06	3.00	2.71	3.45
65+	6.40	3.50	3.06	3.22	3.01	2.69	3.65
Total	5.34	2.84	2.69	2.70	2.73	2.46	3.13

TABLE 7b. Percentage Distribution of Individuals and Non-response Rates by Age Group for Month in Sample and Response Status for 1981 Annual Averages, Canada

Age group	Month in sample						Total
	1	2	3	4	5	6	
<u>Respondent</u>							
0-14	23.4	23.4	23.5	23.6	23.7	23.8	23.6
15-19	9.7	9.6	9.5	9.5	9.4	9.3	9.5
20-24	9.4	9.4	9.4	9.4	9.4	9.3	9.4
25-44	29.5	29.7	29.7	29.6	29.6	29.6	29.6
45-64	19.1	19.1	19.0	19.1	19.1	19.1	19.1
65+	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Non-respondent</u>							
0-14	18.1	18.7	18.3	19.8	19.8	20.1	18.9
15-19	6.9	6.2	6.8	6.6	7.3	7.6	6.9
20-24	10.9	10.5	11.1	11.0	11.2	10.7	10.9
25-44	33.5	33.2	32.0	32.6	33.1	32.6	33.0
45-64	20.2	20.5	20.8	19.2	18.9	19.3	19.9
65+	10.4	11.0	11.0	10.8	9.8	9.7	10.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Non-response rates</u>							
0-14	3.96	2.03	1.71	1.85	1.64	1.57	2.12
15-19	3.67	1.66	1.57	1.55	1.54	1.50	1.92
20-24	5.83	2.80	2.55	2.58	2.34	2.12	3.04
25-44	5.67	2.82	2.35	2.42	2.20	2.03	2.91
45-64	5.32	2.71	2.38	2.21	1.94	1.86	2.74
65+	5.88	3.10	2.68	2.66	2.15	2.01	3.08
Total	5.05	2.53	2.18	2.20	1.96	1.85	2.63

TABLE 8a. Percentage Distribution of Individuals by Labour Force Status for Month in Sample, Household Size and Response Status for 1980 and 1981
Annual Average, Canada

Month in Sample																			
Size of Household		1			2			3			4			5			6		
		E	U	N	E	U	N	E	U	N	E	U	N	E	U	N	E	U	N
<u>1980</u>																			
1	Respondent	51.0	3.2	45.8	52.3	3.2	44.5	52.2	3.2	44.6	52.2	3.2	44.5	52.4	3.3	44.5	52.2	3.2	44.6
	Non-respondent	65.0	4.4	30.6	62.8	4.9	32.3	60.2	6.8	33.0	60.0	6.3	33.8	60.9	6.2	32.9	57.0	8.1	34.9
2	Respondent	55.5	4.1	40.3	55.7	4.2	40.2	56.1	3.9	40.1	56.0	3.9	40.0	55.6	4.0	40.4	55.5	4.0	40.5
	Non-respondent	58.0	4.0	38.0	56.0	4.1	39.8	56.3	4.6	39.1	55.2	5.3	39.5	58.4	5.1	36.5	60.3	4.9	34.8
3	Respondent	61.7	5.5	32.9	61.9	5.2	32.9	61.9	5.2	33.0	61.9	5.2	32.9	61.6	5.4	33.0	61.9	5.2	33.0
	Non-respondent	62.4	4.5	33.1	57.9	6.7	35.4	59.5	5.0	35.5	58.4	5.3	36.3	61.6	5.9	32.4	58.7	6.3	35.0
4	Respondent	64.1	5.2	30.7	64.2	5.0	30.8	65.0	4.6	30.5	64.8	4.8	30.5	65.1	4.7	30.2	65.1	4.6	30.3
	Non-respondent	64.6	4.6	30.8	64.1	5.1	30.7	57.8	6.5	35.7	63.3	4.9	31.8	62.0	6.2	31.8	61.7	8.1	30.2
5+	Respondent	58.0	5.9	36.1	58.0	5.8	36.2	58.1	5.7	36.3	58.4	5.5	36.2	58.6	5.5	36.0	58.4	5.7	35.9
	Non-respondent	56.8	5.6	37.6	57.9	4.7	37.4	57.1	4.0	39.0	58.4	5.9	35.7	56.6	8.4	35.1	60.1	6.2	33.7
Total	Respondent	58.9	5.0	36.1	59.1	4.9	36.0	59.3	4.7	36.0	59.4	4.7	36.0	59.3	4.7	36.0	59.3	4.7	36.0
	Non-respondent	61.0	4.5	34.6	59.2	4.9	36.0	58.0	5.3	36.7	58.4	5.5	36.1	59.8	6.0	34.2	59.7	6.4	33.9
<u>1981</u>																			
1	Respondent	50.5	3.6	46.0	51.9	3.2	44.8	52.1	3.5	44.5	52.2	3.3	44.6	51.9	3.4	44.7	51.7	3.5	44.8
	Non-respondent	63.7	3.7	32.5	63.4	4.1	32.5	62.3	3.5	34.2	60.8	6.4	32.8	59.0	4.8	36.2	60.8	5.6	33.7
2	Respondent	55.7	3.9	40.4	56.1	3.8	40.1	56.1	3.7	40.3	56.0	3.7	40.3	55.8	3.8	40.4	55.7	3.9	40.4
	Non-respondent	60.4	3.5	36.1	56.9	4.2	38.9	58.4	4.5	37.0	56.4	4.7	38.9	59.2	5.9	35.0	56.5	5.0	38.5
3	Respondent	63.3	5.3	31.4	63.4	5.2	31.4	63.9	5.1	31.1	63.6	5.0	31.4	63.3	5.2	31.5	63.2	5.2	31.6
	Non-respondent	66.6	4.8	28.6	65.5	5.3	29.2	63.8	6.5	29.8	65.9	5.8	28.3	61.5	7.1	31.4	66.1	6.7	27.2
4	Respondent	64.8	5.1	30.1	65.1	4.9	30.0	65.1	5.1	29.8	65.4	4.9	29.6	65.5	4.8	29.6	65.6	5.0	29.4
	Non-respondent	63.4	4.2	32.4	66.4	4.3	29.3	61.6	3.9	34.6	63.3	5.6	31.2	62.3	6.8	30.9	63.2	6.9	30.0
5+	Respondent	59.5	6.1	34.4	59.6	5.8	34.6	59.8	5.8	34.5	60.2	5.6	34.2	60.4	5.4	34.2	60.2	5.9	34.0
	Non-respondent	62.3	4.8	32.9	60.1	5.6	34.3	60.2	5.4	34.3	58.5	5.3	36.2	61.6	7.5	31.0	61.8	6.7	31.5
Total	Respondent	59.7	4.9	35.3	60.0	4.8	35.3	60.1	4.7	35.1	60.2	4.6	35.2	60.1	4.6	35.2	60.0	4.8	35.2
	Non-respondent	62.8	4.0	33.2	61.3	4.5	34.2	60.7	4.5	34.8	60.2	5.5	34.4	60.3	6.2	33.5	60.7	5.9	33.4

TABLE 8b. Unemployment Rates by Household Size, for Month in Sample and Response Status for 1980 and 1981 Annual Averages, Canada

Household size	Response status	Month in sample					
		1	2	3	4	5	6
<u>1980</u>							
1	Respondent	5.88	5.74	5.77	5.83	5.99	5.79
	Non-respondent	6.36	7.16	10.16	9.44	9.29	12.45
2	Respondent	6.94	6.95	6.46	6.54	7.01	6.75
	Non-respondent	6.39	6.81	7.58	8.77	7.97	7.56
3	Respondent	8.14	7.76	7.71	7.71	8.04	7.69
	Non-respondent	6.75	10.37	7.74	8.27	8.79	9.65
4	Respondent	7.54	7.24	6.55	6.84	6.71	6.60
	Non-respondent	6.71	7.42	10.09	7.22	9.05	11.58
5+	Respondent	9.21	9.10	8.88	8.54	8.57	8.92
	Non-respondent	8.92	7.49	6.50	9.19	12.85	9.36
Total	Respondent	7.83	7.63	7.27	7.28	7.37	7.35
	Non-respondent	6.82	7.63	8.43	8.60	9.13	9.72
<u>1981</u>							
1	Respondent	6.56	5.86	6.22	5.87	6.16	6.38
	Non-respondent	5.52	6.07	5.29	9.46	7.53	8.39
2	Respondent	6.57	6.38	6.11	6.13	6.37	6.53
	Non-respondent	5.51	6.93	7.18	7.69	9.06	8.09
3	Respondent	7.77	7.59	7.35	7.31	7.57	7.60
	Non-respondent	6.76	7.46	9.19	8.12	10.33	9.25
4	Respondent	7.30	7.02	7.28	7.02	6.87	7.12
	Non-respondent	6.28	6.05	5.88	8.07	9.77	9.80
5+	Respondent	9.24	8.90	8.78	8.57	8.26	8.89
	Non-respondent	7.16	8.58	8.27	8.35	10.84	9.76
Total	Respondent	7.64	7.33	7.28	7.14	7.16	7.42
	Non-respondent	6.05	6.89	6.95	8.30	9.36	8.91

TABLE 9a. Percentage Distribution of Households by Size for Response Type, Type of Area, and Number of Months in Sample for 1980 Annual Averages, Canada

[illegible]

TABLE 9b. Percentage Distribution of Households by Size for Response Type, Type of Area, and Number of Months in Sample for 1981 Annual Averages, Canada

Month in sample	Household size	SRU	SRU Respondent		NSRU urban Respondent		NSRU rural Respondent		Total Respondent	Non-Respondent
			Respondent	Non-respondent	Respondent	Non-respondent	Respondent	Non-respondent		
1	1	20.1	20.1	40.4	17.5	34.1	11.2	22.2	18.3	37.7
	2	29.9	29.9	33.2	30.3	32.5	28.1	33.8	29.6	32.9
	3	17.7	17.7	11.8	17.6	15.2	18.2	18.5	17.9	12.8
	4	19.1	19.1	9.1	19.5	11.1	21.4	14.7	18.5	10.3
	5+	13.2	5.6	100.0	15.2	7.1	21.0	10.8	14.7	6.3
	Total	100.0			100.0	100.0	100.0	100.0	100.0	100.0
2	1	20.9	20.9	43.2	18.3	34.1	11.4	25.7	19.0	40.5
	2	30.2	33.6	33.6	30.3	32.8	28.1	32.5	29.8	32.7
	3	17.4	10.7	17.5	17.5	11.1	18.4	16.4	17.7	11.5
	4	18.7	7.2	19.1	19.1	13.9	21.3	16.3	19.2	9.1
	5+	12.8	5.4	100.0	14.7	8.2	20.8	9.2	14.3	6.2
	Total	100.0			100.0	100.0	100.0	100.0	100.0	100.0
3	1	21.1	21.1	44.2	18.5	38.2	11.5	26.0	19.2	41.5
	2	30.1	33.3	33.3	30.1	34.5	28.2	31.5	29.7	33.0
	3	17.5	8.7	17.5	17.7	8.2	18.4	15.2	17.8	9.6
	4	18.5	8.5	19.3	19.3	8.2	21.4	16.2	19.0	9.4
	5+	12.8	5.4	100.0	14.4	11.0	20.6	11.1	14.3	6.5
	Total	100.0			100.0	100.0	100.0	100.0	100.0	100.0
4	1	21.4	21.4	40.4	18.7	35.5	11.7	25.1	19.5	37.6
	2	30.2	31.0	31.0	30.1	33.1	28.1	34.3	29.7	31.7
	3	17.4	11.8	17.4	17.7	12.3	18.4	14.3	17.8	12.5
	4	18.3	10.5	18.3	19.2	11.1	21.4	15.9	18.9	11.0
	5+	12.7	6.3	100.0	14.4	8.6	20.5	10.4	14.2	7.1
	Total	100.0			100.0	100.0	100.0	100.0	100.0	100.0
5	1	21.6	21.6	39.2	18.8	31.1	11.7	24.7	19.7	36.5
	2	30.2	32.6	32.6	30.2	34.7	28.2	33.8	29.7	32.6
	3	17.4	10.7	17.4	17.5	13.8	18.3	15.9	17.7	12.0
	4	18.2	9.7	18.2	19.0	14.4	21.6	15.2	18.9	10.9
	5+	12.6	7.9	100.0	14.4	6.0	20.3	10.5	14.0	8.0
	Total	100.0			100.0	100.0	100.0	100.0	100.0	100.0
6	1	21.7	21.7	37.0	18.9	28.7	11.9	23.6	19.8	34.1
	2	30.2	31.4	31.4	30.1	40.0	28.2	33.6	29.8	32.4
	3	17.5	11.7	17.5	17.6	11.1	18.3	13.6	17.7	12.3
	4	18.2	11.7	18.2	19.2	12.9	21.5	18.2	18.8	12.7
	5+	12.4	8.2	100.0	14.3	7.3	20.1	11.0	13.9	8.5
	Total	100.0			100.0	100.0	100.0	100.0	100.0	100.0

TABLE 9c. Household Non-response Rates by Type of Area, Household Size, and Month in Sample for 1980 and 1981 Annual Averages, Canada

Month in sample	Household size	Type of area					
		1980			1981		
		SRU	NSRU urban	NSRU rural	SRU	NSRU urban	NSRU rural
1	1	13.99	11.02	11.62	13.57	11.79	9.37
	2	7.82	7.31	7.05	7.98	6.84	5.90
	3	4.98	6.05	5.03	4.93	5.62	5.02
	4	4.03	4.48	4.15	3.59	3.76	3.45
	5+	3.13	4.01	3.45	3.21	3.10	2.61
	Total	5.32	6.65	5.79	7.25	6.42	4.95
2	1	8.21	6.79	7.20	6.30	6.32	6.56
	2	4.30	4.41	4.13	3.96	3.77	3.47
	3	2.44	3.12	2.82	2.24	2.24	2.69
	4	1.90	2.48	1.96	1.41	2.56	2.31
	5+	1.63	2.23	1.71	1.53	1.97	1.36
	Total	3.98	3.93	3.26	3.59	3.50	3.01
3	1	6.68	6.33	6.50	6.33	5.61	5.52
	2	3.83	3.67	3.88	3.44	3.20	2.81
	3	2.48	3.18	2.78	1.58	1.32	2.10
	4	2.08	2.60	2.27	1.46	1.21	1.93
	5+	1.35	1.81	1.87	1.35	2.16	1.37
	Total	3.53	3.60	3.20	3.13	2.81	2.52
4	1	6.41	6.58	6.04	5.50	5.26	5.02
	2	4.00	3.63	3.77	3.06	3.11	2.90
	3	2.44	2.71	2.91	2.05	1.99	1.87
	4	2.05	2.82	2.07	1.74	1.66	1.79
	5+	1.47	1.85	1.90	1.51	1.59	1.23
	Total	3.53	3.61	3.11	2.99	2.83	2.39
5	1	6.04	5.94	5.51	4.59	4.47	4.39
	2	4.05	3.81	3.81	2.79	3.15	2.55
	3	2.51	2.79	2.99	1.60	2.18	1.86
	4	2.22	2.56	2.34	1.40	2.10	1.52
	5+	1.41	1.75	1.94	1.64	1.17	1.12
	Total	3.51	3.50	3.14	2.59	2.75	2.14
6	1	5.12	5.54	5.30	3.92	3.48	4.24
	2	3.43	4.08	3.25	2.42	3.06	2.60
	3	2.45	2.51	2.95	1.58	1.48	1.63
	4	1.99	1.93	2.07	1.52	1.58	1.86
	5+	1.61	1.28	1.68	1.55	1.19	1.21
	Total	3.11	3.26	2.85	2.34	2.32	2.19