

# REDESIGNING THE CANADIAN LABOUR FORCE SURVEY QUESTIONNAIRE: DEVELOPMENT AND TESTING

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**Key Words:** cognitive testing, user consultation, computer assisted interviewing (CAI)

## 1. Introduction

All long-standing surveys must undergo periodic reviews of their objectives, and their success in meeting those objectives. Economic and social change gives rise to gaps between survey outputs and information needs. Long-term use also tends to reveal conceptual and measurement problems. Moreover, new collection technology encourages structural change to the questionnaire.

Recognizing the need for change does not mean that it will be easy. In fact, there are legitimate reasons to resist change. Much of the value of regular, long-standing surveys comes from presentation of estimates in a time series format, which facilitates analysis of cyclical, seasonal and trend effects. The underlying time series may be sensitive to even minor differences in question wording, and major changes such as restructuring, or revising the question meaning, will introduce complete breaks in some series. In addition, questionnaire change often implies both extensive and costly revisions to processing systems such as editing, imputation, estimation, and tabulation.

The Canadian Labour Force Survey (LFS) is undergoing major revisions to its questionnaire, sample design, collection technology and processing systems. In 1991 work began on the redesign of the questionnaire, with an intended implementation date of January 1997. The initiative to redesign the questionnaire arises from three concerns: the need to address data gaps in the current LFS that have emerged as a result of significant changes in Canadian society, the importance of improving data quality through changes in question wording and sequence, and the ability to further increase data quality by fully exploiting the capacity of computer assisted interviewing (CAI) which allows a full array of on-line edits and complex branching beyond that possible with a paper questionnaire. Thus, the task facing the LFS is very similar to that faced by the designers of the new United States Current Population Survey (CPS), implemented in January of this year. Just as they found, all three motives for change are inextricably

bound together in the redesign solution.

Although the LFS redesign is still a "work in progress", this paper outlines the questionnaire redevelopment process: the identification of new information needs and conceptual and measurement problems, preliminary test results, and strategies proposed to facilitate implementation and resolve the conflict between the need for both change and continuity.

## 2. Content Relevance

The LFS has a fifty year history, but the current questionnaire is somewhat younger, having been implemented in 1976 following the last major revision of the survey. Since then, the questionnaire has done its job rather well in measuring both monthly levels and trends in labour force activity by classifying the non-institutional, civilian population aged 15 and over as either employed, unemployed or not in the labour force. Those involved with the 1976 redesign were remarkably sensitive to emerging labour market changes, and the current questionnaire gathers useful but limited information on issues such as underemployment, and marginal labour force attachment. But 20 years have elapsed since the last questionnaire redesign, and the labour market has changed beyond what could have been foreseen in 1976.

Since 1976, employment has become increasingly polarized in terms of work hours, wages, benefits and job security. Much of this change has occurred since 1982. The hard lessons of that recession, and rising competitiveness as markets become more global, appear to have encouraged employers to deal with uncertainty and fluctuations in demand through flexible labour strategies. The incidence of on-call, part-time, shift, contract and temporary employment has grown sharply. Today, a national labour force survey must not only identify labour force status, but also characterize degrees of employment, underemployment, and marginal labour force attachment.

In order to specify precisely what new data elements were needed, major LFS data users were consulted early in the questionnaire planning phase. As well, the practices and experiences of a number of other countries that conduct labour force surveys were

thoroughly studied. These consultations confirmed the need for new questions that would enable analysis of the quality as well as quantity of job formation or loss.

Proposed content additions were arrived at after careful consideration of several important factors: the relative value of the additions for analysis and policy formulation; the appropriateness of the LFS as a vehicle for collecting the information; the possible effects on response burden and non-response; and, finally, the cost of the additions. A further assessment was made concerning the appropriate frequency of the new questions. Questions identifying important turning points or subject to high seasonal fluctuation were considered suitable for the monthly questionnaire; questions for which trend data is sufficient or which add considerably to response burden were considered best left to annual modules.

### Proposed monthly additions

#### Job characteristics and quality (employees)

- measures of average weekly and hourly earnings
- union membership
- permanence of job

#### Labour turnover

- identification of new hires and new permanent separations
- detailed reasons for job loss

#### Behaviour

- reason for job search while employed
- reason for absence from work: separate response categories for maternity leave, and care of children

### Proposed annual additions

#### Training (employees)

- extent of job-related training
- sponsorship of training

#### Work arrangements (employees)

- schedules (shift, weekends, flexibility)
- paid home-based work

#### Job quality (employees)

- pension, health and dental coverage
- vacation and sick leave
- firm size

#### Persons not in the labour force

- retirement decisions

### 3. Improving Data Quality

In addition to enhanced content, a major goal of the questionnaire redesign is to improve data quality by addressing known questionnaire deficiencies, especially where they impact on estimates of labour force status. For some problems of this type, the solution is a simple rewording. However, in some cases, rewording a key question gives rise to the need for a number of other changes in wording and structure.

Problems of validity can arise because questions are not understood by interviewers or respondents, leading to response error, or because the reality they are meant to measure has changed. Several techniques were used to identify problems with validity in the current LFS.

Interviews were observed, and separate follow-focus groups involving respondents and interviewers were conducted to explore interviewer/respondent reactions to, and interpretation of, the current questions. This technique uncovered a number of problem questions, some of them likely to affect labour force classification. The most notable problem areas included the series of questions used to list all household members eligible for the LFS, and the question used to identify job attachment for those who did not work during the LFS reference week.

The problem of **household membership identification** was considered serious, as systematic failure to identify certain types of members could bias labour force survey estimates. The proposed solution is a set of shorter, clearer questions. A further enhancement to the demographic component of the survey under consideration is the replacement of the current practice of identifying family relationships in terms of each person's relationship to the "head of family" with direct questions on the relationship of every household member to every other household member. This method greatly improves the precision with which one can identify different family types.

The problem of correct identification of job attachment was also considered very serious in terms of possible effect on labour force survey estimates. In particular, it appears many persons on **temporary layoff** fail to identify themselves as having job attachment because the question is confusing in this regard. Since most persons on temporary layoff do not search for another job, the result is an overestimation of persons not in the labour force, and underestimation of unemployment. This problem was pursued, using various analytical techniques.

Where possible, comparisons were made between estimates from the LFS and those from other sources such as other surveys and administrative data (for

example, see Robertson, 1989). These comparisons provided evidence of under-reporting of temporary layoffs in the LFS.

Longitudinal analysis of survey results also identified the presence of response inconsistencies associated with the measurement of temporary layoffs. The longitudinal structure of the sample design was useful in the study of this problem (Kinack, 1991a). The LFS uses a rotating panel design in which dwellings remain in the survey for 6 consecutive months. Analysis of individual records over the 6 months permits the identification of logical inconsistencies and recurring code changes at the respondent level, both indicators of misunderstood questions or misapplied concepts. These studies found that a high proportion of non-employed respondents who were permanent layoffs from their last job later returned to work at that same job sometime during their subsequent months in the LFS.

A small follow-up survey was conducted in March 1992 to further assess this problem. A sample of LFS respondents who were classified as either temporary layoffs or permanent layoffs in the regular LFS were reinterviewed one week after the regular LFS using a short test questionnaire that incorporated a different approach for identifying job attachment. The results showed a substantial increase in the number of persons classified as temporary layoffs using the alternative questioning strategy.

In addition, longitudinal analysis indicated there were high levels of movement in and out of the **involuntary part-time** category among those who were part-time workers at the same job during all months they were in the LFS (Kinack, 1991b). In fact, the movement was often between the opposing categories "Could only find part-time work" and "Did not want full-time work". Given the importance of this item as an indicator of underemployment, two questions were added to improve measurement: the first a direct question on the desire for full-time employment, the second on availability for full-time hours.

Finally, the series of questions used to identify **discouraged workers** (those interested in work but not searching because of the belief that no suitable work is available) was found to be too restrictive. Currently, only those who have job-searched at some time in the preceding 6 months are eligible for questions that determine discouragement. Analysis showed that this restriction introduced an artificial truncation in the stock measure, with the result that trends in discouragement were poorly correlated with those of unemployment, clearly a counter-intuitive finding. The proposed solution removes the job-search screen, but includes a direct question on the desire to have a job and the

reason for failure to search, as well as maintaining the availability criteria.

Resolution of these problems led to an extensive restructuring of the questionnaire, rewording of key questions on labour force attachment, and direct questions on expectation of recall for those who had lost their last job due to business conditions, whether or not they identified themselves as having job attachment. Part-timers are asked direct questions on their preference and availability for full-time work. In addition, questions regarding class of worker and job description have been placed early in the interview, so that subsequent question flow and edits are optimally controlled. Most of these changes would not have been possible without computer assisted interviewing.

#### 4. Computer Assisted Interviewing (CAI)

The LFS converted its method of data collection from paper and pencil to CAI, using a phased approach, between November 1993 and March 1994. The questionnaire was programmed for CAI in a manner which replicated as closely as possible its predecessor, the paper questionnaire, to minimize the risk of a mode of collection effect on the data. This direct mapping of the current questionnaire to CAI neither addressed the recognized data gaps and deficiencies with the current questionnaire, nor took full advantage of the opportunities presented by CAI.

The redesigned questionnaire exploits the power of CAI by using a more complex branching strategy that more efficiently selects the questions to be asked, and better customizes the question wording to the respondent's own situation. These changes help to make the LFS interview more understandable, and in so doing reduce interviewing time and minimize respondent burden.

The computer assisted questionnaire also includes a more complete set of on-line consistency edits which should lead to a substantial improvement in data quality and result in faster processing at Head Office with less need for correction.

#### 5. Highlights of Preliminary Test Results

In 1994 a draft version of the redesigned questionnaire was programmed for computer assisted interviewing. This draft contained the full set of structural changes and monthly and annual additions. The first phase of intensive field testing was strictly qualitative. Results are being incorporated in an updated version for a second phase of testing. Thus,

testing and revision are iterative, until a finalized version is determined.

In Phase I, approximately 100 household interviews consisting of about 200 completed cases were conducted by regular LFS interviewers under conditions that approximate the current survey. Personal interviews were conducted in two major cities, while telephone interviewing extended the testing to rural areas. Each interview was directly observed by a member of the questionnaire development team, who made detailed notes on both interviewer and respondent behaviour. This information served as a guide during the respondent debriefing that took place immediately after the interview. Debriefings focused on resolving apparent response inconsistencies, probing the cognitive processes behind particular responses, and exploring areas of misunderstanding, hesitation, or resistance.

Interviews were conducted over six days, with observers rotating between interviewers. Once interviewing was complete, extensive debriefings were held with the interviewers to explore difficulties with question wording or meaning, response categories, questionnaire flow, etc. Preliminary results suggest most proposed content changes and additions are feasible. Structural changes to the flow of the questionnaire were well received, and appeared to facilitate the correct classification of respondents and improve the flow of the interview. Some questions require minor rewording, while very few appear unworkable. These revisions will be incorporated into the computer assisted environment and retested in Phase II under conditions similar to Phase I.

Phase I testing provided several lessons concerning the presentation of the questionnaire on computer. First, questionnaire designers must weigh the costs and benefits of highly detailed response lists. Where lists are too detailed, interviewers find it hard to discriminate between appropriate choices and resort to unstructured and time-consuming probing. The frequency with which one code is chosen over another may be subject to interviewer bias, distorting the validity of response distributions. In addition, in computer assisted interviewing, long code lists require scrolling from screen to screen and are never viewed by the interviewer in their entirety. In preparation for Phase II testing, response lists will be scrutinized for redundancy, fuzzy boundaries, and length.

Second, interviewers are almost always "ahead of their computers". That is, they are ready to ask the next question well before it appears on the screen. This can break their concentration and disrupt the "conversational" flow of the interview. Some of the slowdowns are easily avoided, by removing any unnecessary key strokes, or substituting numeric date

entries for textual lists of months that require scrolling before selection. However, some delays are integral to data quality control, such as requiring verification of the wage rate just entered, to reduce data entry error.

While crucial to a full understanding of the labour market, questions on earnings have generally been included with great caution, or not at all, by those designing labour force survey questionnaires. For example, the US and the UK confine such questions to respondents in their last month in survey, while Sweden and Canada do not currently ask earnings questions. The redesigned LFS includes a series of questions, modelled closely, but not exactly, on those in the new CPS, that permit the estimation of both **weekly earnings, and hourly wage rates** for all employees. Unlike the US and the UK, these questions are included in the first (birth) interview, and updated only for job changers during the subsequent five months. Most first interviews are conducted in person, and it is anticipated that this personal contact will ease the questioning process and assure the respondent that the information will be kept confidential. Updating the information during subsequent interviews is thought to be too invasive, especially when previously acquired information may be fed back to a different household member for verification. Asking earnings questions in the first month allows publication of data for the full sample size making more detailed breakdowns possible, but does have the disadvantage of lagging any changes in wages due to periodic raises and increments.

The series of earnings questions were asked frequently during Phase I testing, since all respondents were considered "births". The reaction was very favourable, with virtually no non-response. Hourly workers appeared to have no problem with recall or precision, and many of those who responded for a longer time period such as a month or a year voluntarily consulted their pay stubs in order to give an accurate response. These results support the contention that personal contact facilitates the collection of this type of information.

Questions on **union membership and establishment and firm size** were also asked of employees. While union membership presented little difficulty, establishment and firm size were clearly problematic. Respondents were asked to estimate the number of people employed at the location where they work. Determining the boundaries of the "location" was often difficult. For example, nurses may estimate the number of other registered nurses working in their unit, rather than all employees in the hospital. Once the concept of "location" was explained, respondents frequently had difficulty estimating a number, especially in proxy situations. The question on firm size (number

of employees at all locations) was even more prone to misunderstanding. It appears doubtful that refinements to question wording can solve these problems.

Since job security is a prominent labour market issue, and there is growing concern that employers are increasingly turning to contingent workers to gain flexibility and reduce long-term costs, the proposed questionnaire also includes questions designed to **distinguish temporary from permanent work**, and characterize the nature of the temporary work (casual, seasonal, term, etc.). Swedish and UK questionnaires were consulted for approach and wording on this topic. Concerns that respondents would misunderstand the question and report in terms of their own intentions regarding job permanency were dealt with carefully during interviewer training. As it happens, there was no evidence that this mistake occurred.

Most of the annual additions have been used in previous Statistics Canada surveys, and have proved their analytical use. For the most part, these questions performed well in Phase I testing, and require only minor wording adjustments.

## 6. Testing and Linkage

An operations test will be conducted during the summer of 1995 to ensure that all redesigned survey systems are fully functional and operate properly, prior to the start of a parallel run. Included are the computer assisted application itself, systems for data receipt and turnaround, editing and imputation, weighting, estimation and tabulation.

Once all systems are functional, a 15-month parallel run will be conducted to assess the effect of the redesigned questionnaire on major survey estimates. If the difference is significant, factors necessary for historical adjustment will be determined. The proposed design is interpenetrating, with a randomly selected sub-sample of approximately one-fifth of each interviewer's assignment allocated to the new questionnaire. It is recognized that this design is subject to problems of contamination, as interviewers deal with old and new question wording and concepts during the course of their assignments. However, this is considered preferable to the effects of interviewer variance that would exist in a design where interviewers are designated strictly to either the old or the new questionnaire. The interpenetrating design also increases the efficiency of the estimates of difference between the old and new survey data. Consideration is being given to making a portion of the sample non-interpenetrating in order to measure the contamination effect.

## 7. Summary

The LFS questionnaire redesign required the resolution of the conflict between the benefits of maintaining historical continuity, while improving the validity and usefulness of the data. Ultimately, relevance and validity were considered most important. However, the implementation of the new questionnaire will be designed in such a way that meaningful links with historical data can be determined.

Extensive consultation with both the user community and similar surveys in other countries provided a valuable source of information on emerging trends and unmet data needs. Intensive observation of interviews, followed by both respondent and interviewer debriefings, provided the opportunity to evaluate the efficacy and validity of both new and unchanged items. In the qualitative testing phase, an iterative approach enabled designers to isolate problems and test solutions incrementally. The finalized questionnaire will balance issues of relevance and validity with concerns for on-going costs, respondent burden and historical continuity.

## Acknowledgements

The questionnaire redesign is a team effort and we would like to acknowledge the on-going contributions of Ernest Akyeamong and Dan Charrette. We would also like to thank Doug Drew for helpful comments on an earlier version of this paper.

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