

INTERVIEWER BURDEN: EXPERIENCES WITH THE CULTURAL LABOUR FORCE SURVEY AT STATISTICS CANADA

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ABSTRACT

Frequently surveys at Statistics Canada are conducted over the telephone. CAI systems (Computer Assisted Interviewing) have made great strides in recent years. Elaborate questionnaires, previously unthinkable, are now used because the technology makes it possible. Skip patterns are more common because they are managed by a computer. Where once this technology was used to meet the simpler requirements of existing surveys, new surveys are developed capitalizing on the full capabilities of this new technology. Complex skip patterns, complex editing and cross-referencing of data, and more in-depth survey questions can be implemented easily by these CAI systems. With this trend of integrating many different subject matters into the same survey, the complexity of subject matter contents and the technology used require a greater flexibility and increased skills from our interviewers. In the Survey of the Cultural Labour Force many disciplines and sectors of employment in the fields of arts and culture are brought together in one survey. Based on the responses given, many discipline-specific questions are asked of the respondent. The length of the questionnaire and the types of questions asked are dependant on the work habits of the individual. With the advances in CAI interviewing, interviewers are being affected in both a positive and negative fashion. The negative effects are considered interviewer burden and need to be addressed in developing a survey. A discussion of interviewer burden and the steps taken to reduce it is the focus of this paper.

RÉSUMÉ

Les enquêtes à Statistique Canada sont souvent effectuées par téléphone. Les systèmes IAO (interview assistée par ordinateur) se sont grandement améliorés au cours des dernières années. Des questionnaires élaborés, qui autrefois auraient été inconcevables, sont maintenant utilisés, grâce à la technologie. On a recours de plus en plus aux méthodes d'enchaînement des questions, puisque leur gestion est assurée par ordinateur. Alors que déjà on utilisait cette technologie pour répondre aux besoins plus simples des enquêtes existantes, les nouvelles enquêtes sont élaborés en tirant pleinement parti des capacités de cette nouvelle technologie. Les systèmes IAO permettent de répondre aisément aux besoins qu'entraînent les enchaînements complexes de questions, les opérations complexes de vérification et de concordance des données et les questions d'enquête plus détaillées. Puisqu'on a tendance à regrouper de nombreuses activités spécialisées dans la même enquête, la complexité des activités spécialisées et la technologie employée exigent une plus grande souplesse et des compétences accrues de la part des intervieweurs. La complexité des activités spécialisées et la technologie utilisée exigent que nos intervieweurs fassent preuve d'une plus grande flexibilité et disposent de compétences accrues. L'Enquête sur la population active du secteur culturel regroupe, dans une même enquête, un bon nombre de disciplines et de secteurs d'emploi du domaine des arts et de la culture. Selon les réponses données, on pose de nombreuses questions au répondant qui touchent explicitement à une discipline. La longueur du questionnaire et le genre de questions posées sont fonction des habitudes de travail de l'individu. Grâce aux progrès réalisés en matière d'interviews téléphoniques assistées par ordinateur, les intervieweurs sont touchés de façon positive et négative. Les effets négatifs sont considérés comme un fardeau pour l'intervieweur et doivent être pris en compte lors de l'élaboration d'une enquête. Dans cette étude, on examine le fardeau de l'intervieweur et les mesures qui sont prises pour le réduire.

1. CAI AND SURVEY DEVELOPMENT

In fulfilling its mandate, Statistics Canada conducts many surveys on an increasingly varied subject matter. Over the last two decades, more and more of these surveys are conducted with telephone interviews, and more recently assisted by a computer. These surveys are sometimes called CATI surveys (Computer Assisted Telephone Interviews), or more generally CAI surveys (Computer Assisted Interviews).

The benefits of CAI surveys are well documented (e.g., see Weeks 1992). Efficiency, timeliness, cost reduction,

and versatility are a few of the benefits that have made CAI systems so desirable. New surveys, such as the Cultural Labour Force Survey, take full advantage of CAI technology. Options, only available in a CAI environment, are essential to meet the goals of these surveys.

In the early periods of CAI development, computer assisted interviewing was implemented on existing surveys, that is, surveys that had worked successfully with pen and paper questionnaires in the past. Changing only the collection/capture methodology allowed direct comparison in efficiency, cost and the effect on data quality. More recently, however, surveys are developed taking full

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advantage of the CAI technology, to the extent that some of these surveys would be near impossible in a pen and paper environment. For these new surveys the capabilities of CAI have influenced the design, the definition of survey objectives, the survey content instrument design and survey methods. The impact of these capabilities affects how, what and how much information can be collected.

Computer assisted interviewing has opened many doors and offers many more efficient possibilities to survey developers. Questionnaires can be more sophisticated (e.g., more tailoring can be done based on responses given, and sub-populations can be sub-surveyed more easily). For repeated surveys, historical data can be used during the interviewing process to ensure consistency in response. On-line editing ensures consistency and a greater accuracy in the responses given. By addressing edit failures, inconsistencies and response errors during the first interview, CAI reduced the burden on the respondents, since fewer call-backs are required. In addition CAI technology can give the appearance of a customized questionnaire for each respondent.

2. THE CULTURAL LABOUR FORCE SURVEY

The Cultural Labour Force Survey (CLFS) was a challenging survey conducted by Statistics Canada between the months of May and August 1994. This survey was conducted on behalf of Human Resources Canada with participation from the cultural community. The population covered by this survey was quite diverse, from starving artists to multi-million selling performers, from librarians to writers, from dancers to museum workers. The survey had to obtain information from these very different populations in order to understand how the cultural labour force works and survives in the workforce. In addition the standard occupation concepts did not apply easily to these workers. For some cultural workers the survey was not addressing "work" but a "vocation". The 1991 Canadian Census of Population estimates that 350,000 individuals are primarily employed in Canada in a cultural occupation. This represents about 2.5% of the total Canadian labour force. The goal of CLFS was to obtain information about some of these workers and other workers who were not primarily employed in cultural occupations but had an involvement in the area of culture.

Interest in this survey shown by the various sectors of the cultural community resulted in a large amount of data sought to satisfy their needs. More so, the types of data and concepts to be addressed were different from traditional labour market and training information usually collected. The population included multiple job holders and a larger than average number of self-employed individuals. A complicated questionnaire was designed to address the varying jobs and the labour market information collected on each of them. Furthermore, the

very diverse training background of a highly educated population necessitated an equally complicated survey questionnaire and survey procedure for collecting data on training. For example, the possible combinations of cultural job and training types were so numerous that it would not be feasible to collect detailed data for all of them. Instead only a random selection of these combinations was surveyed so as to maintain a reasonable interview length. A survey with such requirements had been considered in the past, but was deemed too complex to be administered as one survey. CAI technology has now made the CLFS possible and feasible.

The CLFS surveyed 13,814 individuals randomly selected to represent workers in all provinces and territories for twenty domains of interest. It achieved a response rate of 78%, despite a lengthy questionnaire that could have been burdensome to the respondents. The CAI instrument (questionnaire) had over a thousand different screens. The average interview length was 45 minutes, ranging from five minutes to as long as three hours.

Some of the challenges in surveying cultural workers stemmed from the nature of the survey population, frame lists and the type of data that was to be collected. The survey population was known to be mobile, multi-disciplinary and busy, and to have a certain resentment towards government representatives. The survey frames were created based on lists of individuals from unions, councils and grant applications, or based on a sample of employers who provided lists of their employees. The possibility of duplication, of erroneous or out-of-date information were all factors that could affect the burden on an interviewer.

The use of CAI technology also offered CLFS some challenges. New software had to be modified to meet the specific survey needs. In addition, the system was fine tuned through stages of testing. Because of the size of the sample, the tight time schedule and the large volume of data being collected, the tasks for the interviewers were difficult but challenging. A sophisticated CAI instrument, the specialized survey topics and the varying concepts triggered CLFS to pay particular attention to interviewer training. Our successful experience with CLFS strengthened the belief that training is the first remedy for interviewer burden. The primary reason for training is to improve the knowledge of CAI interviewers for both the CAI instrument and the subject matter of the survey.

Overall, the CLFS gave us a good opportunity to investigate the issue of interviewer burden and to try out effective solutions. The testing and planning for this survey were comprehensive and addressed the issues of the complex nature of the survey, the varying populations and the subject matter. This prepared us to deal with interviewer burden, and avoided any significant effect on data quality.

3. INTERVIEWER BURDEN

Interviewer burden can become a cause of what has been traditionally referred to as the **interviewer effect** or bias due to the interviewer. "Dramatic differences are sometimes found in the mean values obtained by different interviewers who are sampling comparable parts of the same population (Cochran, 1977)." This bias can be felt in non-response (both complete non-response and partial non-response on a questionnaire) and with the responses given during the interview (sometimes referred to as interaction between interviewer and respondents).

Interviewer burden is becoming more important with surveys wishing to use the CAI technology. With complex surveys (questionnaires), the increase and changes in duties for interviewers (data collection, capturing, editing and correcting) and dealing with many different populations with varying issues, this overall demand is far beyond the normal expectations of an interviewer's skills. The underlying point is: *if it's affecting the interviewer, then it's affecting the quality of the data.*

Interviewer burden, as referred to in this paper, focuses on the increase and sometimes overload of responsibilities of an interviewer in administering a complex and lengthy questionnaire, to a varying and difficult population, on concepts or issues that require specialized knowledge, causing stress for the interviewers. Burden on the interviewers surfaces when they feel insufficiently prepared with the subject matter, with the CAI instrument or with the population they will be surveying.

The routine duties like editing and ensuring questionnaire paths are followed, once performed by the interviewers, are now done by the computer. On the other hand, different duties, skills and responsibilities are now expected of interviewers. The ability to keyboard information at the same rate as a conversation can be stressful, especially if there are many open-ended questions, justifications or clarifications that need to be entered. In addition, interviewers may feel unable to perform all the required duties without jeopardizing the relationship with the respondents. Performing many duties simultaneously, like interviewing, keyboarding, handling computer problems as well as the respondents can cause much stress.

Statistics Canada is fortunate to have a pool of highly educated, fully bilingual and experienced interviewers to draw on for its surveys. Added focus is given to training and ensuring that the CAI interviewers are rehearsed with the instrument, the potential pitfalls of working with this technology and the potential issues that may surface with the subject matter or the respondents.

4. EFFECT ON TRAINING

As mentioned earlier, many new surveys (e.g., the Cultural Labour Force Survey) require special training for interviewers. Since the complexities of administering a difficult survey are handled by the computer, (e.g., using previous answers to personalize and customize subsequent questions, ensuring consistency in responses through on-line edits), we have reduced the burden on respondents, improved data quality and indeed reduced some burden on the interviewer. So it is reasonable to say that in effect the CAI technology has removed some traditional burden from the interviewer. However, the CAI technology has given survey developers new options and new possibilities and now the rules of what can be done through a survey have been rewritten.

In surveys with a variety of discipline-specific questions and varying populations, training needs to be more extensive. The subject matter may be very specialized and varied, going beyond the scope of expected knowledge for an interviewer. Questionnaires that are tailored to the complexities of the answers given by a respondent, often implies that the length of an interview will vary from one respondent to another. This makes the scheduling of rest breaks difficult. Open-ended response to questions or replies that are exceptions to predefined response categories involve greater interviewer skills. Interviewers must synthesize the information given, enter the information and try to maintain a reasonable conversation flow with the respondent. This gives rise to new burdens on interviewers and highlights further the importance of extensive interviewer training.

In the case of the CLFS, great efforts were made in preparing the interviewers. Interviewers were recruited with special considerations given to their knowledge of the cultural sector. Training included a significant component about the different sub-populations and on the issues of the survey. Mock interviews during training focused on the varying types of response scenarios (e.g., complex working profiles and complex training profiles of respondents and varying types of possible professions of the respondents). Interviewers were aware that the length of an interview could vary greatly. For particularly long interviews, an interviewer could reschedule the end of an interview to a later time. The CAI instrument was designed so that an interview could be done over a number of telephone conversations. At the end of all training exercises, debriefing sessions with the interviewers and the senior interviewers were used to assess each component of the training.

5. IMPACT ON DATA QUALITY EVALUATION

The traditional role of interviewers and the traditional methods of data quality evaluation have changed greatly with the arrival of CAI systems. Traditionally, interviewers were responsible for asking the questions, recording the information manually and applying manual edit rules. Now they still ask the questions, but record the information via a computer, react to edit failures and then correct or confirm the information with the help of the respondents. On-line editing not only identifies reporting errors from the respondents but also the errors from interviewers. Because of the ease of these systems in identifying even complicated edits, a greater number of these errors or discrepancies are now screened by the CAI system. Complicated skip patterns, multiple events and repeated questions are transparent to the interviewer with the CAI technology. The results are a greater flexibility in designing the questionnaires and closer control of data quality in survey responses. On the side of caution, the survey needs to address the potential impact of interviewer burden in responding to the computer messages and maintaining the interview simultaneously.

In the traditional pen-and-paper surveys many collection/capture operations were separated into a sequence of survey steps. Different types of data verification and editing were done at different stages involving different players. As a result, one could identify more easily the errors and data modifications from different sources and stages of operations, collection, capturing or processing. Post-collection editing was usually done on the paper questionnaire and then again on the electronically captured data, with both the original and corrected data still accessible. Data capturing procedures often included a measurement of capture errors involving reentry of data. Post-editing of electronic data was performed using more complex editing rules resulting in data modification and/or respondent call-back. Some surveys had the benefit of re-interviews to help measure the response bias and some components of the interviewer effect. These data verification procedures were often costly and time consuming. While some of the data quality measurements are defunct in CAI systems, others are still available and new ones are being developed.

Without the traditional data quality evaluation paper trail that exists in the pen-and-paper questionnaire, new safeguards have to be in place to ensure the quality of data. Typically, monitoring and observation of interviews by a senior interviewer or manager is the standard practice. These procedures need to be designed scientifically (e.g., by sampling the time of observation and monitoring, by standardized recording of errors in capture, collection procedures). Re-interviews with various methodologies should be used when a more accurate measurement of data quality is required,

especially for ongoing surveys. However, re-interviews are usually costly and burdensome on the respondent. Because of this, more effort and attention have been placed on grooming better interviewers. Continuous feedback to interviewers on their performance is fundamental to their improvement and improved data quality.

6. SYMPTOMS AND EFFECTS OF INTERVIEWER BURDEN

It is difficult to generalize the effects of interviewer burden from one individual to another. What can be motivational or challenging for one could be stressful or overwhelming for another. The following is a list of possible effects or behaviour resulting from interviewer burden. Although these effects and behaviour can have other causes and are not necessarily due to interviewer burden, they can easily result from it.

- *Interviewer burnout.* Turnover of interviewers is always expected. A large or rapid turnover might be an indication that the survey is too complex for interviewers to feel at ease with. This in turn has an effect on costs and planning.
- *Interviewer fatigue.* CAI Questionnaires, especially with open-ended responses, require a greater skill at keyboarding. Interviewers with insufficient keyboarding skills may cause spelling and data capture errors, or a tendency to change or omit responses and create difficulties in subsequent data coding. Lengthy interviews can cause fatigue to both the interviewer and respondent. In particular, long interviews of varying lengths make it difficult for interviewers to schedule rest breaks, appointments with respondents, and so on.
- *Interviewer bias.* This occurs when the interviewer, willingly or unwillingly, changes the response given. Some examples are:
 - Interviewers direct respondents to avoid long responses by suggesting answers.
 - Interviewers misinterpret or do not understand the answers.
 - Interviewers change the answers given to shorten the responses.
 - Interviewers code "refusal" or "don't know" instead of entering a long response.

7. REDUCING INTERVIEWER BURDEN IN THE CULTURAL LABOUR FORCE SURVEY

As mentioned previously, interviewer burden did not result in a significant effect on the quality of the data in the Cultural Labour Force Survey, due to the efforts made in advance to address the issues of the complex nature of the survey, the varying populations and the subject matter.

Statistics Canada makes great efforts to ensure the quality of its data. In the case of the CLFS, focus groups to verify the content of the survey were organized across the country. Additional focus groups and a first pre-test, using a pen and paper version of the questionnaire, were also carried out. In addition, in the first pretest, the interviews were taped to help the survey developers gain a better understanding of what was going on during the interview.

Testing, including a large scale pre-test of the survey, resulted in enhancements to the survey and the instrument. Improvements to the questionnaire, the on-line instructions and procedures to ensure consistency in capturing/coding were some of the improvements resulting from these steps. We also performed respondent behaviour coding to determine where the respondents were having problems with the questionnaire (i.e., which specific questions were causing problems).

The training of interviewers was intensive to address the issues of this survey with particular attention to mock interviews. Interviewer feed-back was instrumental in developing and improving the CAI questionnaire and the training for the interviewers. During the survey, the interviewers were monitored on a continuous basis and errors were recorded in a standard fashion. CLFS did not implement statistical methods in selecting the interviewers to be monitored. Efforts were also concentrated in seeking at all stages input from the interviewers.

8. SIMPLE SOLUTIONS TO REDUCING INTERVIEWER BURDEN

In comparison with a traditional pen-and-paper survey, CAI systems have clearly moved a larger portion of cost and time required to do a survey to the front end of survey development. The up-front costs are essential to ensure data quality. The payoffs are less post-collection processing and a faster release of survey results, thus increasing the usefulness of survey to the data users.

Because of the interest in and the success of previous CAI applications and the advancement in computers, continued improvements to the software and hardware in CAI technology are still happening. These improvements included better on-line help and the incorporation of interviewer manuals in the CAI instrument. New survey features are being developed to meet the needs of survey developers. Quicker, more powerful and more flexible

systems are also on the horizon. So part of the answer to interviewer burden is addressed by the user friendliness and ever changing technology of CAI systems.

In survey development, the first line of defence against interviewer burden is the better grooming of interviewers. Training has a greater importance in planning a CAI survey as compared to a pen-and-paper survey, especially when the survey deals with a complex subject matter and a lengthy questionnaire. Continuous feedback to and from interviewers on their performance is fundamental to their improvement and improves data quality.

The next solutions are with the traditional tools available to survey developers. Survey and system testings and interviewer debriefings now take on an even greater importance with CAI surveys. Since so many operations and tasks are done simultaneously, different pretests may be required to test different aspects of CAI systems. Re-interviews can also be used to assess the entire interview process, especially for repeated surveys.

Another component to reducing interviewer burden is in limiting survey developers' expectations regarding the options available through CAI. A recent trend in surveys has been to get many sponsors for one survey in order to increase funding possibilities. This often results in data demands far greater than what short interviews can provide. The temptation then is to make the survey very complicated and to increase tremendously the burden on the interviewers. Therefore, it is essential to balance what is possible with today's technology and what is reasonable for the interviewers.

Statistics Canada's experiences with the Cultural Labour Force Survey demonstrate that interviewer burden does not have to be a problem in CAI surveys. With the rapid advancements in the technology, many problems that survey developers once faced are lessened or gone. The new technology brings new challenges, and as long as we are ready to meet these challenges, the future remains bright.

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