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In response to a direct recommendation made in 1981 by the Special Parliamentary Committee on the Disabled and the Handicapped, Statistics Canada is developing a data base on disabled persons in Canada. As a first phase of this development project, Statistics Canada will collect data through its monthly Labour Force Survey. More particularly, information on topics such as employment, education and use of aids and assistance will be collected by supplements to the Labour Force Survey in October 1983 and May 1984.

This information will be gathered using a follow-up questionnaire to be administered to persons identified as belonging to the target population. For the October 1983 and May 1984 surveys these people will be identified using the screening questions discussed in Section 1 of this paper. To test the appropriateness of various types of screening questions, two pilot tests were conducted using the Labour Force Survey in November 1982 and January 1983. Section 2 presents the screening questions tested. Section 3 briefly describes the Labour Force Survey. Section 4 gives a discussion of the major findings of the tests.

The target population for the January 1983 test was all persons currently having one or more physical (non-behavioural) disabilities, or knowledge acquisition or other educational disabilities (arising from impairments in intelligence, attention, psychomotor functions and language), whose duration has been or is expected to be at least 6 months; also persons suffering from diseases of a chronic degenerative nature, and which have a high probability of producing impairments which are physically disabling. Since the follow-up survey will provide additional detail on the nature of disability, some limited over-coverage of this target population by the screening questionnaire will be allowable.

Although the target population includes persons of all ages, this paper discusses the screening of only persons age 15 years or older. Since the normal activities and ability for independent living of children differ from that of adults, screening of children will be done using questions different from those presented here. For example, young children are not normally expected to be able to dress and undress themselves, whereas adults are.

### 1. Screening Questions for October 1983

This is a summary of the approach to be used for screening. Section 2 describes the tests used to arrive at these recommendations.

There will be nineteen screening questions. The first seventeen consider the respondent's ability to do certain Activities of Daily Living (ADL's). The seventeen ADL's are listed in the appendix. Respondents are asked to report only those long term difficulties which are expected to last more than six months. For each ADL, the respondent will be asked "Does ... have any trouble {activity from ADL list}?" If asked about a special aid (such as a wheelchair, medically prescribed shoes or hearing aid) used to facilitate

performance of an ADL, the interviewer is to tell the respondent to consider his/her ability to do the ADL even when using the special aid.

The eighteenth screening question considers whether the respondent is limited in his/her major activity. The question to be asked is "Is ... limited in the kind or amount of activity he/she can do at home, at work, or going to school because of a long-term physical condition or health problem?"

The nineteenth screening item will be mental handicap. The question to be asked is "Does ... have a mental handicap?" Because of the sensitivity of the question, it is only to be asked in the case of proxy interviews.

Persons responding "yes" to at least one of the nineteen questions will be screened in. Based on the results from the January 1983 test, it is estimated that about 19% of persons age 15 years or more will be screened in.

The follow-up questionnaire will collect some data items directly related to the Activities of Daily Living on the screening questionnaire. Data items to be collected include: whether the respondents are completely unable to do any activity of daily living with which he/she has trouble, the date of onset and cause of trouble for each activity of daily living with which he/she has trouble.

### 2. Screening Questions Tested

In the November 1983 Labour Force Survey, each respondent was asked "Does ... now have any disability or handicap which has lasted or is expected to last six months or more?" This is called Test 1. Persons screened in by this question, are those responding "yes".

A number of other approaches to screening were tested using two different questionnaires each administered in the January 1983 Labour Force Survey. These questionnaires are called Test 2 and Test 3.

Test 2 included the following sections: the list of special aids shown in the appendix, the list of ADL's shown in the appendix, and the activity limitation question "Are there any (other) conditions or health problems that now prevent or limit ... when carrying out his/her normal daily activities at a job, in school, or in the home? Please report only difficulties which are expected to last more than six months". Persons who reported using at least one of the special aids or having trouble doing at least one of the ADL's or who answered yes to the above question were screened in.

Test 3 included the list of ADL's shown in the appendix, the list of chronic conditions shown in the appendix, and the following two work disability questions: "Is ... limited in the kind or amount of work he/she can do at his/her job or business because of a long-term physical condition or health problem?" (asked only to employed persons) and "Is ... prevented or limited in the kind or amount of work he/she could do at any job or business because of a long-term physical condition or health problem?" Persons who reported having trouble doing at least one of the ADL's or who had at least one

of the chronic conditions or who replied yes to either of the above two questions were screened in.

Test 1 was administered to all persons in households in the November 1982 Labour Force Survey. In January 1983, two rotation groups were used for each of Test 2 and Test 3. These rotation groups were chosen so that each in-sample household had also been in-sample in November 1982. This facilitated the comparison of the results of Test 1 with those of Test 2 and Test 3.

### 3. The Canadian Labour Force Survey

Since the tests of screening methods were conducted on the Labour Force Survey a very brief description of it is presented here. More detailed information on the Labour Force Survey is available from [2] and [3].

The Labour Force Survey is a monthly household survey carried out in approximately 55,000 households throughout the country. The survey covers the civilian, non-institutional population of 15 years of age and over from the ten provinces of Canada. It excludes the Yukon and the Northwest Territories, persons living on Indian Reserves and Crown lands, long-term inmates/residents of institutions, and members of the Canadian Armed Forces. The population in excluded areas accounts for about 2% of the total population of Canada.

The Labour Force Survey employs a stratified multi-stage probability design. The final sampling unit in all areas is the dwelling. Each dwelling is retained in the LFS sample for six consecutive months and no substitution of dwellings takes place in the event of non-response. Further, the entire sample is divided into six representative parts or rotation groups. The rotation of dwellings is carried out so that one-sixth of the dwellings, having completed the six-month stay in the sample, are replaced by new dwellings in the same or similar area.

Interviewing for the Labour Force Survey is done either through a personal visit interview or by telephone. Labour Force information is collected for all individuals 15 years of age and over living in the dwelling.

### 4. Major Findings of the Pilot Tests

The major goal in the analysis of the tests was to determine the set of questions that would be most effective in screening in those persons who belong to the target population. Another important factor was to determine an effective screen that would also not unduly increase respondent burden or cost. In addition, sources of non-sampling errors that became evident during the analysis were noted so that, for example, survey procedures or questionnaire design could be changed appropriately. The following discussion presents the major findings of the analysis.

The sample size for Test 1 was about 115,000 persons. For each of Test 2 and Test 3 the sample size was almost 38,000 persons. For all three tests the samples were about 49% male and 51% female.

Table 1 shows by sex the percentage of the sample screened in by Test 1, Test 2, Test 3 and by each section of Test 2 and Test 3. Most notable in this table is that Test 1 screened in only 5.6% of the sample as compared to about 16% of the sample for either of the ADL questions. Given that functional limitation as measured by the activities of daily living is a key indicator of disability, this

shows that the single question asked in Test 1 is not effective for screening in the entire target population.

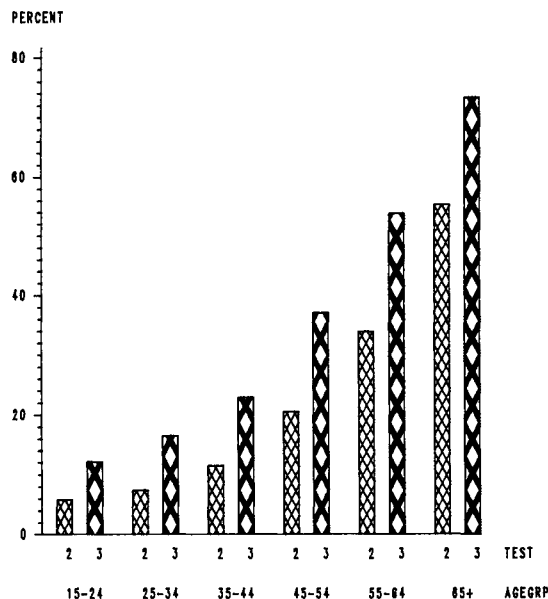
Table 1: Percent Screened in by each Section of each Questionnaire, by Sex

Section	Percent Screened In	
	Male	Female
Test 1: .....	5.5	5.7
Test 2: ADL .....	14.7	16.2
Test 2: Aids .....	3.2	2.9
Test 2: Activity Limitation .....	5.9	6.1
Test 2: .....	18.3	19.4
Test 3: ADL .....	15.4	16.7
Test 3: Work Disability ...	13.0	13.1
Test 3: Chronic Conditions.	25.6	27.4
Test 3: .....	29.8	31.2

In general, Test 1 screens in the more disabled members of the adult population. However, some of the most severely disabled persons screened in by Test 3 responded no to Test 1. On the other hand, of 2165 persons screened in by Test 1 who also responded to Test 3 only 2011 (92.9%) were screened in by Test 3.

Percentages of the sample screened in by Test 2 and by Test 3 are shown by age in Figure 1. For both tests, the probability of being screened in is highly related to age. The probability of being screened in is an increasing function of age. Although the degree varies, the same relationship holds for each of the Sections of Test 2 and Test 3, for each of the seventeen ADL's and for most of the chronic conditions (multiple sclerosis, epilepsy, cerebral palsy, cystic fibrosis and muscular dystrophy are exceptions).

FIGURE 1  
PERCENT SCREENED IN BY TEST 2 AND TEST 3



The set of ADL's as used in this survey are a modification of the set of ADL's suggested in [1] for measurement of function-based disability. Since functional limitation is a good indicator of

disability the question for the analysis became how to include ADL's on the screen rather than whether to include them. On Test 2, respondents were asked about trouble doing each ADL with the use of a special aid, if used. On Test 3, respondents were asked about trouble doing each ADL without the use of any special aid. The with special aid approach (Test 2) selected 15.5% of the sample while the without special aid approach (Test 3) selected 16.0% of the sample. The difference between these figures is not statistically significant. The difference in percentage replying "yes, has trouble" is not significant for any single ADL. For both respondents and interviewers the "even when using a special aid" concept seemed to be more easily understood. Thus, this is the recommended concept to be used. In addition to this, even the concept of a special aid was not well understood by respondents. For this reason, the finalized ADL question does not mention "even when using a special aid".

The ADL sections, in addition to asking if the respondent had trouble with the activity, also asked if the respondent was completely unable to perform the activity. On Test 3, using "completely unable" as the criterion 5.2% of the sample would be screened in instead of 16.0% with "yes, has trouble" as the criterion. Although having trouble is less limiting than completely unable and thus screens in about three times as many respondents, it does imply functional limitation and thus disability. Thus "yes, has trouble" is the criterion by which respondents will be screened in on the ADL's.

It was found that, for the most part, the seventeen activities of daily living screened in differing subpopulations of the disabled. In addition, the complete set of activities can be used to obtain a measure of degree of disability. Thus all seventeen activities of daily living are included in the ADL question.

The special aids section in Test 2 screened in 3.0% of the sample. Of these, 84.2% were screened in by the ADL section. This percentage was over 80% for each of the listed aids except orthopedic shoes (76%), artificial limbs (67%) and guide dog (40%). (The guide dog figure is almost certainly the result of a non-sampling error since 6 of 10 persons with guide dogs interviewed had no trouble with either of the two vision ADL's.) Thus although this type of data is of interest for the disability database, the aids section is not an efficient screening mechanism, especially in combination with the ADL section. Consequently, questions on aids are not included on the finalized screen.

In addition to activities of daily living, major activity limitation is also an important aspect of disability. The Test 3 questionnaire addressed this by the two questions noted in Section 2. These questions, however, considered it only from the point of view of work disability. Of the persons in the Test 3 sample, 13.1% were screened in by these questions.

Once past the age of 20, persons not in the labour force were much more likely to be screened in by the work disability questions than persons in the labour force. Over all ages the percentages of persons selected were: 6.8% of employed persons, 6.6% of unemployed persons and 22.7% of persons not in the labour force.

In the analysis of the data, there were no obvious problems with the data from the work disability questions. Nevertheless, there were some operational difficulties. The questions sometimes seemed irrelevant to retired persons or other persons not in the labour force who have no intention of getting a job. The concept of difficulty at any job, was difficult to understand for some respondents. In particular, respondents had trouble interpreting the breadth of reference of "any job" as being any job they would normally consider. Thus the major activity question given in Section 1 was adopted in order to better suit the question to persons not in the labour force.

The chronic conditions section on Test 3 screened in 23.9% of the Test 3 sample. Of these 37.9% were not otherwise screened in.

The percentage of the sample screened in by the chronic conditions section was very high. It was considered whether there were chronic conditions included in the chronic condition list that might be omitted. Persons having one or more of the chronic conditions to be omitted and not otherwise selected would thus not be screened in.

"Arthritis or rheumatism of a serious nature" and "high blood pressure" were considered as good candidates to omit. It was debatable whether persons having one or both of these conditions and not otherwise screened in should actually be screened in. About 3.9% of the Test 3 sample had one or both of these conditions and was not otherwise screened in.

An examination of the conditions specified under any other long-term condition or health problem found many examples of heart, kidney and lung diseases where the corresponding chronic condition had not been checked off. This indicates that respondents had some trouble in knowing whether certain conditions were actually heart, kidney or lung disease. This question also found a variety of chronic conditions, not on the list, many of them of doubtful interest to this survey.

Another difficulty is that the data sought on the follow-up questionnaire, is generally, more pertinent to persons who are currently disabled, especially those who are more severely disabled. Thus persons screened in by a chronic condition, but not currently having a functional limitation or a major activity limitation would be interviewed for the follow-up and probably provide little useful data. Such persons accounted for about 10% of the Test 3 sample.

Given the problems explained in the previous four paragraphs, chronic conditions are not used as screening criteria on the finalized screen.

One exception to this is, mental handicap. This one condition is retained as a screening item since there may be persons with mental handicaps who are not screened in by the ADL's, or even by the major activity limitation question.

Persons 65 years old or more are a very important population in the context of disability. They are much more likely to be screened in than younger persons. The Test 3 questionnaire screened in 73.7% of the sampled persons 65 years old or more. Of the sampled persons aged 16-65, 24.7% were screened in. For screening three alternate treatments of this population were considered: screen all of them in, screen all of them out, no special treatment.

The first alternative, screening in all persons 65 years old or more, could significantly increase the cost of the survey. A very thorough treatment of disability in this population, such as this alternative implies, might be better left to a comprehensive survey of the aged including disability concerns. Despite the possible cost saving, it is doubtful whether it is advisable to exclude all persons aged 65 years or more, given their importance in the disability context. Thus for the supplement to the LFS in October 1983, persons aged 65 years or more will be given no special treatment and hence will be screened in using the same criteria as the rest of the adult population.

The probability of being screened in differs considerably depending on whether the response was by proxy or not. For Test 2, 20.8% of non-proxy respondents were screened in, while 14.8% of proxy responses were screened in. For Test 3, 33.6% of non-proxy respondents were screened in, while only 23.9% of proxy respondents were screened in. Even when considering only persons aged 25 to 64, for whom the probability of proxy response is approximately constant, a large difference still exists.

The facts that a higher percentage of females than males were screened in and that 79.3% of responses for females were non-proxy (compared with 57.8% for males) may account for part of the difference in probabilities of selection. In addition, two other reasons can be suggested as to why the probabilities of selection differ. First, people who are unavailable and for whom proxy responses were provided are not at home and hence may be less likely to be disabled. Second, proxy respondents may be less likely to state that a person has trouble doing an ADL or a major activity than the person himself/herself.

To increase non-proxy response, interviewers were instructed that whenever possible the questionnaire was to be completed by interviewing the individual to whom it applied. If a knowledgeable household member insisted upon responding for other household members, then this response was to be accepted; although the practice was to be avoided.

Although the level of proxy response obtained using the proxy control is considered to be fairly low, it may still be a problem because of the differing probabilities of selection of proxy and non-proxy respondents. Thus, in screening for disabled persons it is very important to seek a non-proxy response as frequently as possible.

#### REFERENCES

- [1] McWhinnie, J.R. (1980). "Disability Indicators for Measuring Well-being", Paris, O.E.C.D. Social Indicators Programme Technical Report Series.
- [2] "The Guide to Labour Force Survey Data", Statistics Canada catalogue 71-528, occasional.
- [3] "Methodology of the Canadian Labour Force Survey", Statistics Canada catalogue 71-526.

#### Special Aids

Does ... now use

- a wheelchair?
- crutches or other walking aids?
- any kind of brace excluding braces for teeth?
- medically prescribed orthopedic shoes?
- artificial limb(s)?
- a hearing aid?
- a guide dog?
- a white cane?
- any other kind of special aid?

#### Activities of Daily Living

Does ... now have any trouble

- walking 400 meters without resting (about 3 city blocks)?
- walking up and down a flight of stairs?
- carrying an object of 5 kg. 10 meters (e.g. carrying a 12 lb. bag of groceries 30 ft.)?
- moving from one room to another?
- standing for long periods of time (e.g. more than 20 minutes)?
- when standing, bending down and picking up an object from the floor (e.g. a shoe)?
- dressing and undressing himself/herself?
- getting in and out of bed?
- cutting own toenails?
- using fingers to grasp or handle?
- reading?
- cutting own food?
- reading ordinary newsprint (with glasses if normally worn)?
- seeing clearly the face of someone from 4 meters (e.g. across a room) (with glasses if normally worn)?
- hearing what is said in a normal conversation with one other person?
- hearing what is said in a normal conversation with at least two other persons?
- speaking and being understood?

#### Chronic Conditions

Which, if any, of these long term conditions or health problems does ... presently have?

- heart disease
- kidney disease
- lung disease
- cancer
- diabetes
- epilepsy
- cerebral palsy
- multiple sclerosis
- cystic fibrosis
- muscular dystrophy
- paralysis of any kind
- arthritis or rheumatism of a serious nature
- high blood pressure
- hearing trouble (uncorrected by aid)
- vision trouble (uncorrected by aid)
- mental handicap
- any missing limb(s) including finger(s) and toe(s)
- any other long-term condition or health problem (please specify)