Microdata User Guide

NATIONAL LONGITUDINAL SURVEY OF CHILDREN AND YOUTH - NORTH

Cycle 4

October 2000 to May 2001

Statistics Canada Statistique Canada

Canada

Table of Contents

1.0 Introduction

The National Longitudinal Survey of Children and Youth – North (NLSCY) Cycle 4 was conducted from October 2000 to May 2001 by Statistics Canada in partnership with Human Resources Development Canada.

This manual has been produced to facilitate the manipulation of the microdata file of the survey results and to document data quality and other analytical issues regarding the NLSCY.

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2.0 Background

The National Longitudinal Survey of Children and Youth (NLSCY) is a long-term study of Canadian children that follows their development and well-being from birth to early adulthood. The NLSCY began in 1994 and is jointly conducted by Statistics Canada and Human Resources Development Canada.

The study is designed to collect information about factors influencing a child's social, emotional and behavioural development and to monitor the impact of these factors on the child's development over time.

The survey covers a comprehensive range of topics including the health of children, information on their physical development, learning and behaviour as well as data on their social environment (family, friends, schools and communities). Information from the NLSCY is being used by a variety of people at all levels of government, in universities, and policy-making organizations.

In previous cycles the North portion of the NLSCY was collected along with the National Population Health Survey (NPHS). However, Cycle 4 marks the first time the North portion of the survey was collected and processed jointly with the Main portion of the survey. The same interviewing components were used as the Main survey with a few exceptions that were not used in the North (See "Chapter 8 – Content" for a list). The results of these changes are better harmonization and analysis between the Main and North portions of the survey.

It must be noted that data from the territories is only available for two of the territories, the Yukon and Western Territory. The data for Nunavut is unavailable due to a low response rate. Please refer to "Chapter 11 – Data Quality" for the response rates from all three territories.

Survey Population

In Cycle 4, a representative sample of Canadian children aged 2 to 17 years was followed for longitudinal and cross sectional purposes.

Target population

The NLSCY objectives are to produce longitudinal and cross sectional estimates as well. Therefore, several populations are targeted in the cycle 4 sample.

- Cross-sectionally, the Cycle 4 sample represents all children from 2 to 17 years old on January 1st, 2001.
- Longitudinally, we have 3 cohorts:
  - The first cohort represents all 0-11 year old children in 1994-1995. Those children are now 6-17 years old in Cycle 4.
  - The second cohort represents all 0-1 year old children in 1996-1997. Those children are now 4-5 years old in Cycle 4.
  - The third cohort represents all 0-15 year old children in 1998-1999. Those children are now 2-3 years old in Cycle 4.

Collection Cycles

Data collection occurs at two-year intervals.

Cycle	Collection Start	Collection End
1	December 1994	April 1995
2	December 1996	April 1997
3	October 1998	June 1999
4	October 2000	May 2001

3.0 Objectives

The objectives of the NLSCY are:

- To determine the prevalence of various risk and protective factors for children and youth.
- To understand how these factors, as well as life events, influence children's development.
- To make this information available for developing policies and programs that will help children and youth.
- Collect information on a wide variety of topics – biological, social, economic.
- Collect information about the environment in which the child is growing up – family, peers, school, community

4.0 NLSCY Concepts and Definitions

There are many variables and concepts which are critical to the analysis of the NLSCY data. In this section there is a brief discussion regarding the types of analyses that are possible with the NLSCY data. This is followed by a description of key variables which have been derived to explain the living arrangements of the child and the socio-economic conditions under which the child lives.

The content for each section of the various questionnaires used in the NLSCY is presented in Chapter 8.

The unit of analysis for the NLSCY is the child or youth. See Chapter 5 for information on the survey design.

4.1 Cross-sectional and Longitudinal Estimates

The NLSCY design and sample has been constructed so that it will be possible to produce both **cross-sectional** and **longitudinal** estimates.

The allocation of the Cycle 1, 2 and 3 sample was such that it will be possible to produce estimates at the territorial levels for aggregated age groups. This is true for cross-sectional data as well as longitudinal data. This also applies to Cycle 4, as it used the same sample as Cycle 3. However, no estimates can be produced for Nunavut using the Cycle 4 data. The cross-sectional sample has been at risk for coverage inadequacies since a significant portion of the sample should have been devoted to the larger than usual influx of migrants to the North from one cycle period to the next. In Cycle 3 a small cross-sectional top-up was added to compensate for this. However, because of the non-probabilistic method used to top-up the sample and the limited size of this sample, correction for this coverage problem has been uneven across the territories.

There are two longitudinal cohorts, those who were in the sample beginning with Cycle 1 (aged 0-11 years at cycle 1) and those who were in the sample beginning in Cycle 2 (0-1 year olds). The Cycle 1 longitudinal sample is comprised of all children sampled for Cycle 1 of the survey in responding households (excluding those from the integrated sample (NPHS) and the 3rd and 4th child of each family). The plan was to follow these children over time, and revisit them every two years. Due to the transient nature of the population in the North, which is more noticeable there than anywhere else in Canada, estimations from a sample are particularly vulnerable. In a longitudinal context, this can cause serious reliability problems since children who no longer reside in the North are no longer part of the sample for the North, effectively reducing the sample size significantly over the number of panels in the series. Analyses of these children should allow researchers the opportunity to perform in-depth studies of the long-term impact of risk factors (such as divorce or the onset of a health condition) and protective factors (such as positive interactions with parents or academic success at school) on these children. If a child moves out of the household where he or she was sampled at Cycle 1, that child will be traced to wherever he or she resides during future cycles of the survey, provided that they do not move out of the North. From a longitudinal perspective, the child, not the household, is the statistical unit of analysis.

It should be noted that some children who were participants in Cycle 1 of the NLSCY did not participate in the second cycle or may not participate in subsequent cycles due to a variety of reasons. This is usually referred to as attrition. The numbers of these children is being carefully monitored and we are making every effort to keep these numbers at a minimum. Due to the

nature of the population and the data collection in the north the response rates have been lower than expected for the Territories. This negatively affects the reliability of the longitudinal estimates. The future response rates and any further attrition of the sample will determine if the sample will still permit longitudinal research by age cohort at the current levels.

Due to the problem of attrition over the four cycles of the NLSCY in the north, it was decided that the longitudinal survey in the north will end after Cycle 4. In Cycle 4 the attrition in Nunavut has already been so large that the data from Nunavut will not be released. The attrition in the two other territories is also at risk of becoming this way.

In Cycles 2 and 3, the NLSCY added children belonging to age groups no longer covered in the longitudinal sample. In Cycle 2 a panel of children 0 and 1 years of age was added to the Cycle 2 sample. In Cycle 3 a top-up of children of all ages (0 to 15 years old) was also added. This augmented sample allows for ongoing cross-sectional analyses to supplement the primary longitudinal research. As such, at each cycle it is possible to get a snapshot of children and youth of all ages.

4.2 Definitions

Components
The NLSCY is made up of various components; these are generated by the computer application based on the child's age. The main components are: Adult, Child and Youth. These components are described in Chapter 6, Data Collection.

Effective Age
The age of the child determines, in most cases, the questions that will be asked about him or her. Instead of using the child's actual age, the NLSCY uses a calculated age called effective age (DMMCQ01). This is done to ensure the child stays in the age group to which he/she is assigned regardless of whether collection takes place before or after the child's birthday. For cycle 4, the effective age is calculated as reference year 2000 minus year of birth.

The variables DMMPQ01 and DMMSQ01, for the age of the PMK and spouse are also calculated using this method. (Please note that the variables DDMPD06D and DDMSD06E, for the age group of the PMK and the spouse are based on real age and will not always be consistent with the effective age variables.)

This new definition of effective age was introduced in Cycle 4 and is different from the definition used in previous cycles.

4.3 Family Derived Variables

Using NLSCY data, a child's family may be described in several different ways. Many of the family variables that have been used to describe the NLSCY children were derived from what is known as the relationship grid. As part of the household roster some basic demographic information was collected for all members of the child's household. As part of this questionnaire, the relationship of everyone in the household to the PMK was asked. Using this information it was possible to create an extensive set of variables to describe the child's family situation.

The following are some of the family derived variables. The names of the derived variable are given in brackets.

Single-parent family

There are two ways of describing the parental situation of children using NLSCY data.

Using the relationship grid, a child's single-parent status was derived. In Cycle 4, there were 70.87% of children living with two parents, 26.71% with one parent, 2.42% without a parent (DDMCD04).

The second method of describing a child's parent status can be defined in terms of the PMK (DDMPD06A). However, the two ways of describing the child's family are very similar. The reason for the small difference between the two methods would involve those few cases where a child lived with a parent, but the parent was not selected to be the PMK.

Step, Blended and Intact Families

Children living with two parents are classified as being members of intact, step and/or blended families based on the relationship of these children to the parents.

Intact family

An intact family consists of a married or common-law couple where **all** children are the natural and/or adopted offspring of both members of the couple.

For the NLSCY children, 58.29% were members of an intact family (DDMCD16).

Step family

A step family consists of a married or common-law couple residing in the same household, with at least one step child living with them who is the biological or adopted child of one parent but not the other parent. It should be noted that a child who is the biological child of both parents is said to belong to a step family if at least one of these parents has a step child residing in the household.

For the NLSCY children, 7.56% were step children themselves (DDMCD03) and 12.58% lived in a step family (DDMCD15).

Blended family

Blended families combine children who have different relationships with their parents. A blended family consists of a married or common-law couple living with at least two children, one of whom does not share the same natural and/or adoptive parents as the other child(ren). The following are examples of blended families:

- a couple with biological children of the female partner as well as biological children of the male partner (i.e., hers and his)
- a couple with biological children of the female partner as well as children out of the new union (i.e., hers and theirs).

The blended family is a sub-set of the step family. For the Cycle 4 NLSCY children, 7.52% were members of a blended family (DDMCD14).

Note: *Foster children and children living with only one parent are not included in step, blended or intact families. In the derivation of blended, intact and step families, if a child was the adoptive child of one parent and the biological child of the other parent, then this child was treated like a step child, and thus the family labelled as a step family. In other Statistics Canada publications children of this type are treated as if they were biological children of both parents.*

Economic Family

For the NLSCY, an economic family (DDMCD01) is defined as all family members related by blood, marriage, common-law relationship or adoption; foster children are considered to be part of the economic family. For example, if a woman lives in a household with her spouse and two children as well as her sister and her sister's child then all of these individuals would be part of one economic family. If a boarder also resided in the household with her child then this would constitute a second economic family.

Siblings

For the NLSCY data, siblings include full, half, step, adopted and foster siblings. Only siblings residing in the household have been included in the calculation of the sibling derived variables included on the master file. In the case of common-law relationships, if both members have brought their own children into the relationship then these children are considered as siblings. It should be noted that the classification of siblings was age independent. If an NLSCY child had an adult sibling (for example, 21 years of age) living in the household then this sibling was included in the calculation of the sibling derived variables. The sibling derived variables include total siblings, as well as number of older siblings, younger siblings and siblings of exactly the same date of birth; i.e., twins (DDMCD08, 09, 10 and 11).

4.4 Person Most Knowledgeable and Spouse

4.4.1 Person Most Knowledgeable (PMK)

In each NLSCY household, one child was selected at random and a question was asked to determine who in the household was the **p**erson **m**ost **k**nowledgeable about this child. This person was labelled as the **PMK**. The intention was that the PMK would provide the information for all selected children in the household and also provide socio-demographic information about her/him and his/her spouse/partner. In some rare cases it might have been appropriate to label two different people in a household as PMKs. For example, in the case of a step family, it may have been appropriate to label the mother as the PMK for one child and the father for another. However, in order to simplify the interview procedures, only one PMK was selected per household.

In some households, there is no PMK. In cases where the selected child is 16 and over and is no longer living with a parent or guardian, there is no PMK selected in the household.

The following is the breakdown of the relationship of the PMK to the NLSCY children (DDMCD06) in the territories for Cycle 4 (using unweighted data).

- for 81.32% of responding children, the PMK was the mother
(78.37% the biological mother and 2.95% the step, adoptive or foster mother)
- for 16.50% of the children the PMK was the father
(biological, step, adoptive or foster father)
- for 2.18% of children the PMK was not a parent.

4.4.2 Spouse

If the PMK had a partner residing in the household at the time of the interview, this person was labelled as the **spouse**. Spouses included both married and common-law partners. Detailed socio-economic information was collected about the spouse/partner in order to describe the family situation of the child.

The following is the breakdown of the relationship of the spouse/partner to the NLSCY children (DDMCD06B) in the territories for Cycle 4 (using unweighted data).

- for 25.42% of the children, the PMK did not have a spouse/partner residing in the household
- for 61.1% of children the spouse/partner was the father (52.88% the biological father and 8.22% the step, adoptive or foster father)
- for 12.29% of children the spouse/partner was the mother (biological, step, adoptive or foster)
- for 1.19% of children, the spouse/partner was not a parent.

Change in PMK between cycles

For several reasons, the PMK and his/her spouse could be different people than those designated in the previous cycle. For this reason, analysts should use caution when comparing PMK information from one cycle to the next.

4.5 Respondent

A cross-sectional respondent is a child from whom the Adult, Child or Youth component was completed. Even though the survey was conducted in 2000-2001 these children represent the population as of January 1999 due to the sample used. See the section on sample selection for more details.

A longitudinal respondent is a child introduced in a previous cycle for whom the Adult, Child or Youth component was completed. The children introduced in a previous cycle who have died or moved outside of one of the two Canadian territories are also longitudinal respondents. They represent children in the reference population who have the same life course (i.e. have died or moved).

A respondent household is a household where an Adult component or a Child or Youth component has been completed.

A respondent child is a child for whom an Adult component or his/her Child or Youth component has been completed. A respondent household without a complete Adult component can have one respondent child and one non-respondent child.

Please see "Chapter 5 - Survey methodology" for more information about the definition of a respondent.

4.6 Socio-economic status

In past cycles of NLSCY, a measure of socio-economic status (SES) was included. This measure will not be available for Cycle 4. The former definition used information about the respondent employment as classified by the Standard Occupational Classification (SOC 1980). There is now a new coding structure, SOC 1991, and a definition of SES has not been developed using this new classification.

5.0 Survey Methodology

The requirement for the NLSCY design was to select a representative sample of children in Canada and to follow and monitor these children over time into adulthood.

5.1 Definition of the NLSCY Population

The target population of the NLSCY for Cycle 1 consisted of Canadian children aged newborn to 11 years of age. In Cycle 2, the sample was topped up for newborns and one year-olds, increasing the target population from newborns to 13 years of age.

In the territories in Cycle 3 there was a top-up of children aged up to 15 years, not only newborns and one year-olds as in Cycle 2. This increased the target population from newborns to 15 years of age.

In Cycle 4, no sample top-up was done. The sample consisted of all children who responded to the survey in Cycle 3. These children and youth were between the ages of 2 and 17 years old at the time of the survey.

5.2 NLSCY Sample Design

In terms of sampling, the starting point for the NLSCY design in Cycle 1 was the household. Sampled households actually came from three possible sources, which have been labelled as the Main Component, the Integrated Component and the Territories Component.

The Territories Component

The initial sample design of the NLSCY in the North was integrated with the National Population Health Survey (NPHS) in order to help alleviate response burden. The target population of the integrated sample included household residents living in private occupied dwellings located in the two territories, with the exclusion of populations on Indian reserves, Canadian Forces Bases and in institutions. Also, persons living in unorganized areas were excluded from the target population

The split of the Northwest Territories into two new territories, Nunavut and Western, which took place in 1999, also had to be considered.

5.2.1 Sample Selection of Households

A simple random sample of dwellings was selected from a list frame of addresses in each community with the exception of two strata in the Yukon where random digit dialling was used and provided essentially a simple random sample of residential telephone lines.

A selected household was included in the NLSCY if there was at least one child aged 0 to 11 in the household for Cycle 1.

For Cycle 2 of the survey, new households were added if there was a child between the ages of 0 and 1 living in the selected household. The collection of both the longitudinal

panel and the top-up was delegated to the statistical agencies in both the Yukon and Northwest Territories.

In Cycle 3 local statistical agencies in each territory were given the responsibility of interviewing the longitudinal cohorts and for sampling the children for the top-up. In Cycle 3 new households were added again with the goal of representing new children aged 0 and 1, but top-ups were also added in the other age cohorts between 2 to 15. These households were selected using a non-probabilistic method such as quota or snowball sampling. It is not certain what sampling method was used and if and whether the Yukon and the Northwest Territories used the same method. The absence of this information poses a problem for estimating population totals or averages using the common Horvitz-Thompson estimator since it requires knowledge of inclusion probabilities. By choosing the alternate ratio estimator, the values of the inclusion probabilities are not essential. What is required is auxiliary information known for all population units. The census and demographic update of population estimates are used as this auxiliary information.

In Cycle 4, no new households were added to the sample. Only the children who responded to the survey in Cycle 3 were included in the sample.

5.2.2 Sample Selection of Families and Children

Where a household contained more than one economic family with children of the targeted age, only one family was chosen for inclusion in the NLSCY.

In Cycle 1, within each selected family, the survey was administered for all children aged 0 to 11 up to a maximum of three children. Where there were four or more eligible children, three were selected randomly for inclusion in the survey.

5.3 Sample Allocation

The NLSCY sample for Cycle 1 was constructed taking two important requirements into consideration. A sufficient sample was required in each of the 10 provinces and 2 territories to allow for the production of reliable estimates for all children 0 to 11 years of age. The sample allocation was derived such that the smaller provinces and the territories had sufficient sample to meet this requirement.

Unlike the main survey in the provinces it was not necessary to have a large enough sample to produce estimates at the territorial level by seven key age groupings or cohorts. The allocation of the sample in the territories was done in such a way that it would only be possible to produce estimates for aggregated age groups.

5.3.1 Yukon Territory

5.3.1.1 Longitudinal Sample Selection Cycle 1

For the longitudinal cohort introduced in Cycle 1, the Yukon Territory was divided into five strata as shown in Table 1. The first two strata used Random Digit Dialling to select the sample for the interview. Random samples were selected from lists of dwellings in the other strata. The sample of 1,500 households was allocated proportional to the population size in each stratum. The expected number of households is given in Table 1. Only some of the selected households would contain children in the required age range and be usable in the NLSCY.

Table 1: Allocated Sample Sizes by Stratum for the Yukon, for cycle 1

NPHS/NLSCY Stratum	Household Sample Size
Whitehorse Medium Sized Communities	1,084 177
Aboriginal Communities	69
Mixed Communities	82
Non-Aboriginal Communities	88
TOTAL	1,500

5.3.1.2 Sample Selection Cycles 2, 3 and 4

The longitudinal sample for the Yukon was reduced for Cycle 2 by eliminating a number of households that were shared with NPHS. Of the remaining sample of households the number of children selected was also reduced to a maximum of 2 per household. In total, 170 households were dropped from the sample and a further 135 households had the number of children interviewed reduced.

A new sample of children aged 0 and 1 were introduced for the longitudinal cohort in Cycles 2 and 3. A cross-sectional top-up of children aged 2 to 15 was also introduced in Cycle 3. The Yukon Territory was divided into five strata as shown in Table 1 and a target number of children by age were prescribed for the local agency to interview. In most cases Random Digit Dialling was likely used to select the sample for the interview. Information about the sampling methods, number of contacts, refusals and other non-response in ratio to the number of interviews was not provided to Statistics Canada by the Territorial agency. There were 64 new households added to the response file in Cycle 2. In Cycle 3, 257 new households were added and new members from 41 existing longitudinal households were also added.

There was no new sample selection done in Cycle 4. The sample consisted of all children who responded to the survey in Cycle 3.

5.3.2 Northwest Territories and Nunavut

5.3.2.1 Longitudinal Sample Selection Cycle 1

At the time of sample selection in Cycle 1 both territories were part of the Northwest Territories and both of the new territories needed to be represented well in the sample. They were treated as strata in the sample design and the sample of 1,500 households was allocated to these two strata to meet the requirements of both surveys to release estimates for both new territories. This was done using Kish allocation, a well-known allocation method, that balances the reliability requirements at the territory and stratum levels. Using this method, the sample was allocated proportional to (Wh2 + 1/22), where Wh is the 1991 Census proportion of households in stratum, h, h=1,2. This allocation produced sample sizes of 652 households for Nunavut and 848 for the Western Territory.

Within Nunavut and Western, the sample was allocated to each in-scope community proportional to its population size. Any community with a resulting sample size less than 10 households had its sample size increased to 10. A sample of 10 households was deemed the minimum to justify the cost of surveying in a community. Table 2 shows the expected sample sizes aggregated by six regions.

Table 2: Allocated Sample Sizes by Region for the NWT, for cycle 1

REGION		Household Sample Size
Nunavut	Baffin	322
	Keewatin	204
	Kitikmeot	126
	Total	652
Western	Inuvik	205
	Fort Smith	282
	Yellowknife	361
	Total	848
TOTAL		**1,500**

5.3.2.2 Sample Selection Cycles 2, 3 and 4

Children aged 0 and 1 were introduced for the longitudinal cohort in Cycles 2 and 3. A cross-sectional top-up of children aged 2 to 15 was also introduced in Cycle 3. The Northwest Territory and Nunavut Territory were divided into three strata each as shown in Table 2 and a target number of children by age were prescribed for the local agencies to interview. In most cases a non-probabilistic method was likely used to select the sample for the interview. Information about the sampling methods, the number of contacts, refusals and other non-response in ratio to the number of interviews was not provided to Statistics Canada by the Territorial agencies. There were 17 new households added to the response file in Cycle 2, and new members were also added from 130 existing longitudinal households. In Cycle 3, 208 new households were added and new members from 4 existing longitudinal households were added as well.

There was no new sample selection done in Cycle 4. The sample consisted of all children who responded to the survey in Cycle 3.

5.4 Sample Size

For Cycle 1, in both the Yukon and Northwest Territories, the initial NLSCY sample requirement was 1,500 households in order to obtain a sufficient sample of children 0 to 11 years old. As the NPHS required only 1,200 households to achieve its required sample of persons 12 years old and over, the NLSCY requirement determined the overall sample size. For subsequent cycles - 2 and 3 - the sample requirements were not defined by a prescribed number of households, but instead by a required number of respondents.

Actual Sample Sizes

Table 3 shows the responding sample sizes obtained by territory, for cycles 1, 2 and 3. Tables 4 to 7 provide the respondent distribution by age, for cycles 1, 2, 3 and 4.

Table 3: Responding Longitudinal Sample Sizes by Territory, cycles 1, 2, 3 and 4

	Cycle 1		Cycle 2		Cycle 3		Cycle 4	
Territory / Region	Number of Households	Number of Children	Number of Households	Number of Children	Number of Households	Number of Children	Number of Households	Number of Children
Yukon								
Whitehorse	481	765	274	430	260	404	239	373
Medium Sized Communities	82	126	42	69	38	55	37	53
Native Communities	19	36	3	6	3	5	3	5
Mixed Communities	38	65	15	25	16	26	12	19
Non-Native Communities	37	67	13	24	11	21	11	21
Total	**657**	**1,059**	**347**	**554**	**328**	**511**	**302**	**471**
Nunavut								
Baffin	181	358	154	303	139	263	N/A	N/A
Keewatin	127	244	116	227	106	185	N/A	N/A
Kitikmeot	91	170	82	152	72	124	N/A	N/A
Total	**399**	**772**	**352**	**682**	**317**	**572**	**N/A**	**N/A**
Western								
Inuvik	74	139	59	105	48	83	41	74
Fort Smith	123	224	100	175	84	146	64	111
Yellowknife	131	210	98	158	83	132	68	109
Total	**331**	**573**	**257**	**438**	**215**	**361**	**173**	**294**
Northwest Territories								
Total	**724**	**1,345**	**609**	**1,120**	**532**	**933**	**183**	**307**
Total	**1,384**	**2,404**	**956**	**1,674**	**860**	**1444**	**485**	**778**

Note: *Nunavut is not included in the release file for Cycle 4; therefore the counts are marked not applicable in the table. There are 13 children in 10 households who were part of the Nunavut sample in Cycle 1, but the Western territory sample in Cycle 4. This is why the total for Western and the total for the whole Northwest Territories are not equal.*

Table 4: Responding Sample Sizes by Age, Cycle 1

Age	Yukon Territory	Western	Nunavut
0	72	43	90
1	79	42	61
2	78	53	73
3	81	64	61
4	90	54	67
5	93	46	70
6	95	54	65
7	84	45	51
8	82	48	66
9	96	43	54
10	111	41	51
11	98	53	50
Total	1,059	586	759

Table 5: Responding Sample Sizes by Age, Cycle 2

For cycle 2, 214 cross-sectional children between 0 and 1 year old were introduced into the sample for the Yukon and the Northwest Territories in order to be able to produce cross-sectional estimates of children aged 0 to 13 years. This includes 61 children in the Yukon and 152 children in the North West Territories (77 in Western, 75 in Nunavut).

Age	Yukon Territory	Western	Nunavut
0	18	38	33
1	43	38	44
2	40	43	56
3	39	40	58
4	31	54	50
5	50	50	48
6	48	58	49
7	56	50	57
8	55	54	54
9	45	38	40
10	53	57	44
11	53	51	27
12	41	39	24
13	46	34	40
Total	618	644	624

Table 6: Responding Sample Sizes by Age, Cycle 3

For cycle 3, 134 cross-sectional 0 and 1 year old children were introduced into the sample for Yukon and 69 for the North West Territories (32 in Western, 37 in Nunavut) to be able to produce cross-sectional estimates of children aged 0 to 15 years. There were also 250 cross-sectional children ages 2-15 introduced into the sample from the Yukon and 288 from the Northwest Territories (263 in Western, 25 in Nunavut) that helped to offset the declining sample for the older age cohorts due to attrition.

Age	Yukon Territory	Western	Nunavut
	Total	Total	Total
0	79	13	14
1	55	19	23
2	54	40	46
3	76	44	53
4	48	43	55
5	57	42	64
6	53	67	49
7	58	63	53
8	64	65	51
9	54	48	61
10	64	48	46
11	59	44	51
12	54	53	41
13	57	36	27
14	55	47	26
15	56	42	38
Total	943	714	698

Table 7: Responding Sample Sizes by Age, Cycle 4

For Cycle 4, no new children or youth were introduced to the sample. In Cycle 4 the concept of effective age was introduced. This age is equal to the year of the survey (2000) minus the birth year. In previous cycles the age was just taken to be the age of the child at the time of the interview. As a result the totals from Tables 6 and 7 might not be consistent. For example in Table 6 there were 48 four year old respondents in the Yukon. In Table 7 there are more, a total of 52, six year old respondents in the Yukon.

Age	Yukon Territory	Western
	Total	Total
0	0	0
1	0	0
2	59	9
3	58	14
4	43	29
5	62	39
6	52	27
7	45	40
8	49	60
9	52	49
10	59	47
11	51	42
12	58	41
13	54	35
14	46	43
15	53	31
16	47	41
17	48	39
Total	836	586

6.0 Data Collection

Introduction

Data collection for Cycle 1 of the NLSCY took place between 1994 and 1995. Cycle 2 data were collected between 1996 and 1997, and Cycle 3 collection took place between the fall of 1998 and the spring of 1999. Collection for Cycle 4 took place between November 2000 and May 2001.

In Cycle 1, every selected household with children newborn to 11 years of age had information collected on up to three of those children in a family. In Cycle 2, these respondents were re-contacted and additions of children aged 0 to 1 years were selected in order that each age group (from 0 to 13 years) would be represented. All these respondents were re-contacted in Cycle 3 with additional children from all age groups (aged 0 to 15) added to the sample. In Cycle 4, the same respondents from Cycle 3 were re-contacted. There were no additional children added.

Collection Method

For Cycles 1, 2 and 3, interviews were conducted by interviewers hired and trained by the Yukon and NWT Bureaus of Statistics. Households were contacted in person or by telephone; depending on their location and interviews were done using a paper and pencil questionnaire. Collection in the Yukon and the Northwest Territories used a shortened version of the NLSCY and NPHS survey instruments. Typically, households in more urban areas were contacted by phone while rural and remote communities required visits.

For Cycle 4, the collection was done in Statistics Canada's regional offices at the same time as the collection for the main survey in the provinces. The regional offices involved were: the Quebec Regional Office, the Prairies and Northwest Territories Regional Office and the Pacific and Yukon Regional Office. Since the collection was done from the regional offices, all data collection was done over the telephone using computer assisted telephone interviewing (CATI).

6.1 The Household Collection

The questionnaire for the territories in Cycle 4 was based on the questionnaire used for the main survey. This simplified the collection since the same Computer Assisted Interview (CAI) application was used with certain modules removed for the North.

Overall, the Cycle 4 North application was the same as for the rest of the country with the exception of the modules listed below, which were removed. Since all collection was done by telephone using a CATI application, direct measures and paper questionnaires used in the Main survey in the provinces were not part of the interview for the North collection. The following are sections or modules that were not used for the Cycle 4 North application:

- Neighbourhood Safety
- Work after Birth
- Temperament
- Sleep
- Child Care
- PPVT
- All self-completes
- Ages and Stages
- Who am I?
- Number Knowledge

Below is a description of each type of questionnaire used during collection in the household:

The Household Roster

The household questionnaire lists each member of the household and asks for basic demographic information (e.g., age, gender, and martial status) for each household member as well as some questions on dwelling conditions. A question was asked so as to determine which household member was the **P**erson **M**ost **K**nowledgeable about the child. This person was labelled as the **PMK** for the household. In most cases the PMK was the mother of the child. The relationship grid is also completed as part of this questionnaire, i.e., the relationship of everyone in the household to the PMK. Using this information, it was possible to create an extensive set of variables to describe the child's family situation.

The PMK was then asked to complete a set of two additional questionnaires: the Parent questionnaire and the Child questionnaire.

The Parent Questionnaire

A Parent module is created for each PMK and for the spouse or partner. Only the PMK or the spouse or partner can answer the questions in this module. There will never be more than one Parent component per household even when there is more than one child selected from the household. The purpose of the Parent Questionnaire was to gather general health information about the PMK and his/her spouse/partner and to obtain some general information about the child's social environment. Topic areas included are:

- Education
- Labour force
- Income
- Health
- Social support

Note: For households in which the only child selected was in the 16-17 sub-group and was living with his/her parents, only three subjects were covered: Education, Labour force and Income. If the child was no longer living with his/her parents, the component was not created.

The Child Questionnaire

A child component was created for each selected child between 2 and 17 years of age. The Person Most Knowledgeable (PMK) about the children and youths answered the child component questions. The PMK was usually the child's mother, but it could also be the father, a step-parent or an adoptive parent who lived in the same dwelling. Only the PMK or his/her spouse was permitted to answer the questions in this component.

At the end of this component, the respondent was asked to provide the name, address and telephone number of two people (friends, relatives) who would be able to help us trace the family in two years, when the survey will be repeated. Topic areas included are:

- Education
- Health
- Medical and biological information
- Child's development
- Literacy
- Communication
- Activities
- Behaviour
- Positive behaviour
- Motor and social development

- Relationships
- Parenting
- Expectations (Aspirations)

Note: For households in which the only child selected was in the 16-17 sub-group and was living with his/her parents, only the Expectations (Aspirations) was covered. If the child was no longer living with his/her parents, the component was not created.

Youth Questionnaire
This component was added to the interview in Cycle 4. It was used only for 16- and 17-year-olds. The adolescent was the only person permitted to answer the questions in this component, whether he/she was living in the family home or not. Topic areas included are:

- Education
- Labour force
- Income
- Health
- Activities

Direct Assessments and Self-Complete Questionnaires
The collection in the territories does not include the Peabody Picture Vocabulary Test, Number Knowledge, Who Am I?, Ages and Stages, Math test, Cognitive measure, the self-complete questionnaire for 10-11,12-13, 14-15 and 16-17 year olds and the Teachers' and Principal's Questionnaires.

6.2 Non-Response follow-up

Interviewers were instructed to make all reasonable attempts to obtain NLSCY interviews with members of eligible households. Individuals who at first refused to participate were re-contacted by a senior interviewer who stressed the importance of the survey and the household's co-operation. This was followed by a second call from the interviewer. For cases where the timing of the interviewer's call was inconvenient, a more convenient time was arranged to call back. For cases where there was no answer, numerous attempts were made to contact the respondent. Despite the best efforts of interviewers, a number of non-responding households typically remain at the end of a survey collection period.

Collection Personnel (training, supervision and control)

The NLSCY was conducted by Labour Force Survey (LFS) interviewers. A number of them had worked on one or more previous cycles of the NLSCY. All LFS interviewers report to a staff of senior interviewers who are responsible for ensuring that interviewers are familiar with the survey's concepts and procedures. The senior interviewers ensure that prompt follow-up action is taken for refusal and other non-response cases. If necessary, non-response cases are transferred to a senior interviewer and reassigned. The senior interviewers in turn report to the LFS program managers, located at Statistics Canada's regional offices.

For the NLSCY, a combination of classroom training and self-study materials was used to ensure that interviewers and supervisors had a proper understanding of the survey concepts. In the self-study portion, which preceded the classroom training, the program managers, senior interviewers and interviewers read the Interviewer's Manual prepared for the survey and completed a case study exercise. The classroom training was a two-day course given by a program manager or senior interviewer. In all, each interviewer received nearly 20 hours of training.

7.0 Data Processing

7.1 Minimum Completion Requirements

Defining Requirements
One of the first steps in the NLSCY processing was to define the requirements for a responding household.

No Information Collected
In some cases, no NLSCY information was collected for a sampled household. This happened, for example, when an interviewer was unable to make contact with a selected household for the entire collection period, in other cases the household refused to participate in the survey, special circumstances such as an illness or death in a family or extreme weather conditions sometimes prevented an interview from taking place.

For cases where no information was collected for a household, the household was dropped from the NLSCY file and the sampling weights for responding households were inflated to account for these "dropped" households

Partial Information
In other cases, it was possible to carry out some of the interview, but a complete interview was not obtained for a variety of reasons. Some respondents were willing to give only a certain amount of time to the completion of the survey. In some cases an interviewer completed a portion of the survey with the respondent and made an appointment to continue at another time but was unable to re-contact the respondent.

Criteria for Partial Response
It was necessary to come up with criteria for deciding what to do with these partial interviews. If the majority of the survey had been completed, the preference was to keep the case and label it as a responding household. However, if only very minimal information was collected the decision was made to drop the household and treat it as a non-responding household. In order to make this assessment, the data collected for each selected child in the household were examined. This was done by looking at certain key questions across the Child Questionnaire. An assessment was made as to whether or not there was an adequate amount of information collected for at least one child in each household. If there was, the household was maintained in the responding sample.

Missing Variables
All missing variables for households were set to not-stated or imputed. If there was not adequate information for at least one child then the household was dropped from the responding sample and treated as a non-response.

7.2 Editing

Introduction

The main output of the NLSCY is a "clean" master data file. This section presents a brief summary of some of the processing steps involved in producing this file.

7.2.1 Computer Generated Edits

As discussed earlier, all of the information for the household collection was collected in a telephone interview using computer-assisted interviewing (CATI). As such, it was possible to build various edits and checks into the questionnaire for the various household CAI components, in order to ensure high quality of the information collected.

Types of Computer Edits
Various types of computer generated edits were used to check data while the interviewer was completing the interview.

The NLSCY computer generated survey used the following:

- Review Screens
- Range Edits
- Flow Patterns Edits
- Consistency Edits

Review Screens
Review screens were created for important and complex information.

Example:
The selection procedures for the PMK, a critical element of the survey, were based on the household roster. The household roster screen showed the demographic information for each household member and his/her relationship to every other household member. The collected information was displayed on the screen for the interviewer to confirm with the respondent before continuing the interview.

Range Edits and Flow Pattern Edits
Range edits were used for continuous variables, to confirm or correct unusual answers during collection. All flow patterns were automatically built into the CAI system.

Example:
For the question regarding the weight of a child at birth, if a weight entered into the computer was either significantly high or low, a pop-up message would appear asking the interviewer to confirm the answer with the respondent.

General Consistency Edits
Some consistency edits were included as part of the CAI system, and interviewers were able to "slide back" to previous questions to correct for inconsistencies. Instructions were displayed to interviewers for handling or correcting problems such as incomplete or incorrect data.

Example:
In the collection of the Labour Force Section, the number of weeks working, not working, and looking for work should not total more than 52 weeks. If this was the case, the system generated a pop-up window which stated the error and instructed the interviewer to return back to the appropriate question to confirm the data and make corrections as required.

Consistency Edits between Cycles
For this cycle of the NLSCY edits were also performed to ensure consistency between cycles for data that was not expected to change. Data from the previous cycle (feedback variables) were included in the CAI system for the current cycle. When inconsistencies were identified, the interviewer was asked by the system to confirm the Cycle 3 data with the respondent through a series of questions.

Example:
For the Chronic Conditions questions, if a chronic condition such as asthma was reported in the previous cycle but not indicated as being present in the current cycle, the system prompted the interviewer to ask questions to determine if the current data was in fact correct, or if the condition had changed since the previous cycle.

7.2.2 Head Office Editing

Stages of Editing
For CAI questionnaires for the NLSCY, two stages of editing were conducted.

- Pre-edit
- Consistency Editing

7.2.2.1 Pre-edit

The purpose of the Pre-edit was to carry out some basic formatting and preliminary editing.

Action	Done to the:
• Non-response values from the CAI system were recoded to standard non-response codes for refusals, don't know and not-stated. • "Mark All That Apply" questions were destrung and values converted to Yes (1) or No (2) responses. • Databases files were created for each section of the Adult and Child, and Youth questionnaires.	Complete Adult and Child file and Youth file
• Small data base files were created for each section of each questionnaire • Within several sections, different wording was used for different age groups. For example, in the Activities section, Question 3 asks "In the past 12 months, outside of school hours, how often has (the child) taken part in any clubs, groups or community programs with leadership....". The wording for 4 to 5 year-olds (ACTQ3D1) was "such as Beavers, Sparks or church groups?". The wording for 6 to 9 year olds (ACTQ3D2) was "such as Brownies, Clubs or church groups?" Initially these questions were stored as separate variables. As part of the pre-edit the two variables were collapsed into one output variable DAACQ3D. • The flow patterns for each section were processed and valid skips were assigned 'not applicable' codes (6, 96, 996…).	Separate DBF files from Step 1

7.2.2.2 Consistency Editing for Cycle 4 and between Cycles

After the pre-edit is a stage called consistency editing. Consistency editing was carried out to verify the relationship between two or more variables. Editing was also performed to ensure consistency between cycles.

Example: The responding child's height in Cycle 4 should not be less than the height reported in Cycle 3.

Flags were set for inconsistencies between cycles. For PMK and Spouse variables, the data was linked using a unique person identifier, allowing the comparison to be made if the PMK was the same in both cycles or if the PMK was the spouse in the previous cycle and vice versa.

7.3 Naming Convention and Coding Structure for Variables

The NLSCY microdata file documentation system has employed certain standards to label variable names and values. The intent is to make data interpretation more straight-forward for the user.

7.3.1 Naming Convention for Variables

A naming convention has been used for each variable on the NLSCY data file in order to give users specific information about the variable. All variable names are at most eight characters long so that these names can easily be used with analytical software packages such as SAS or SPSS.

Format for Variable Names

D SE C Q nnx or D SE C d Q nnx

D refers to the NLSCY Cycle
“A” indicates the first cycle,
"B" the second cycle,
"C" the third etc...

SE - refers to the section of the questionnaire where the question was asked or the section from which the variable was derived.

C - refers to the collection unit or the unit to which the variable refers.

There are five possibilities:
“C” is the variable that refers to the child,
“P” is the PMK.
“S” is the spouse/partner
“H” is the household
“Y” is the variable that refers to the youth,

d - the lower case letter refers to the NLSCY Cycle in which the variable first appeared on the file or cycle in which changes to a previously asked question were made.

Example: "d" indicates the variable was new in Cycle 4. In subsequent cycles, new variables will also be identified using the lowercase letter representing the cycle. New variables in Cycle 2 contained a "b", in Cycle 3 a "c", etc. Some revisions were made to the content of the questionnaire between cycles. If the revision resulted in a change to the meaning or the values of a question, the variable was treated as new and contains a "d" for Cycle 4.

“Q” refers to the variable for a question that was asked directly on one of the NLSCY questionnaires

“S” refers to a score calculated for one of the scales used on the questionnaire

"D" means the variable was derived from other questions that were asked on the questionnaire

"I" means the variable is a flag created to indicate that an item has been imputed

"Z" means the variable is a flag created to indicate an inconsistency in reported data between the current and previous cycles

"nnx" refers to the question or variable identification. Generally nn is a sequential number assigned to the variable; and x is a sequential alphabetic indicator for a series of variables of a similar type

7.3.2 Acronym Names for Questionnaire Sections

The following table gives the acronym names that were used for each section of the various NLSCY questionnaires. This acronym is embedded in the variable name for all variables on the NLSCY data file. The acronym is the second and third characters of the variable name.

	Variable	Collected or Derived from the:
GE	Geographic	Sample information
HH	Household	Dwelling characteristics
MM	Variables collected as part of the household roster. .	Basic demographic variables for each household member. These variables are included on the NLSCY data file for the child, the PMK and the spouse/partner
DM	Demographic- derived to explain the living arrangements of the child	Information of the household roster and relationship grid
SD	Socio-demographic	Child on the Child's Questionnaire and for the PMK and spouse/partner on the Adult Questionnaire.
HL	Health	PMK and Spouse on the Adult questionnaire, and for the Child on the Child questionnaire, and for the Youth on the Youth questionnaire
CH	Adult Chronic Conditions	PMK and Spouse in the Health section of the Adult questionnaire
RS	Restriction of Activities	PMK and Spouse in the Health section of the Adult questionnaire
DP	Depression scale	Parent Questionnaire (this scale was administered to the PMK)
ED	Education	Children 4 to 15 years old on the Child's Questionnaire and about the PMK and spouse/partner on the Adult Questionnaire and for the Youth on the Youth questionnaire
LF	Labour force	PMK and spouse/partner on the Adult Questionnaire and for the Youth on the Youth questionnaire
IN	Income	Household income and personal income of the PMK, collected on the Adult Questionnaire and for the Youth on the Youth questionnaire
FN	Family functioning	Adult Questionnaire (section asked to the PMK or spouse)
MD	Medical/biological .	Child's Questionnaire (2 to 3 years of age)

LT	Literacy	Child's Questionnaire (2 to 9 years)
AA	Activities	Child's Questionnaire (2 to 15 years) and for the Youth on the Youth questionnaire
BE	Behaviour	Child's Questionnaire (2 to 11 years)
MS	Motor and social development	Child's Questionnaire (Up to 47 months)
RL	Social relationship	Child's Questionnaire (4 to 9 years)
PR	Parenting style	Child's Questionnaire (2 to 15 years)
SP	Social Support	Adult Questionnaire (section asked to the PMK or spouse)
PB	Positive Behaviour	Child's Questionnaire (3 to 5years)
AS	Aspirations	Child's Questionnaire (16 to 17 years)

Examples of Variables Names

In order to illustrate the naming convention used for variables included on the NLSCY data file the following examples are given.

Variable Name	Refers to:
DLFSQ2	Q2 in the Labour Force Section for the spouse/partner
D	a Cycle 4 variable
LF	the Labour Force Section
S	the spouse/partner
Q	an item asked directly on the questionnaire
2	the ID of the item.
DPRCS03	a positive interaction score on the parent scale for a 2 - 15 year old child
D	a Cycle 4 variable
PR	the Parenting Section
C	the child.
S	a score
3	ID of the variable

7.3.3 Coding Structure for NLSCY Variables

Some standards have been developed for the coding structure of NLSCY variables in order to explain certain situations in a consistent fashion across all variables. The following describes these various situations and the code used to describe the situation.

Refusal
During a CAI interview, the respondent may choose to refuse to provide an answer for a particular item. The CAI system has a specific function key that the interviewer presses to indicate a refusal. This information is recorded for the specific item refused and transmitted back to Head Office.

On the NLSCY data file an item which was refused is indicated by a code "8".

For a variable that is one digit long the code will be "8", for a 2 digit variable "98" for a three digit variable "998" etc…

Don't Know

The respondent may not know the answer to a particular item. Again the CAI system has a specific function key to describe this situation.

On the NLSCY data file, the code used to indicate that the respondent did not know the answer to an item is "7". For a variable that is one digit long the code will be "7", for a two-digit variable "97" for a three-digit variable "997" etc…

Not Applicable

In some cases a question was not applicable to the survey respondent. A code "6", "96" "996" ... has been used on the data file to indicate that a question or derived variable is not applicable.

In some cases a single question or series of questions was not applicable. For example, the question on number of hours per week the child is cared for in a daycare centre (DCRCQ1G1) is only applicable for children for whom this type of care is used (DCRCQ1G = 1). Otherwise there will be a code 996 for this question.

In other cases an entire section of the questionnaire was not applicable or even an entire questionnaire. For example, the Motor and Social Development Section was applicable only to children up to 3 years old. For all children outside of this age group (i.e., 4 years and older) the motor and social development variables have been set to not-applicable ("6", "96", "996" etc…).

For cases where the PMK did not have a spouse or common-law partner residing in the household, all "spouse" variables (e.g., the Labour Force Section and the Education Section for the spouse) have been set to not applicable.

Not-Stated

In some cases, as part of Head Office processing the answer to an item has been set to not-stated. The not-stated code indicates that the answer to the question is unknown. Not-stated codes were assigned for three main reasons.

1. As part of the CAI interview, the interviewer was permitted to enter a refusal or don't know code, as described above. When this happened the CAI system was often programmed to skip out of this particular section of the questionnaire. In the case of refusal, it was assumed that the line of questioning was sensitive and it was likely that the respondent would not answer any more questions on this particular topic area. In the case of a don't know it was assumed that the respondent was not well enough informed to answer further questions. As part of the NLSCY processing system, it was decided that all of these subsequent questions should be assigned a not-stated code. A not-stated code means that the question was not asked to the respondent. In some cases it is not even known if the question was applicable to the respondent.

2. In some cases a specific questionnaire was not started or it was started but ended prematurely. For example, there may have been some kind of an interruption, or the respondent decided that she/he wished to terminate the interview. If there was enough information collected to establish this household as a responding household, then all remaining items on the questionnaire (and on questionnaires that had not yet been started) were set to not-stated. The one exception was that if it was known that a certain section or a certain questionnaire was not applicable, then these questions were set to not applicable.

3. The third situation in which not-stated codes were used was as a result of consistency edits. When the relationship between groups of variables was checked for consistency, if there was an error, often one or more of the variables was set to not-stated.

For derived variables if one or more of the input variables to the derived variable had a refusal, don't know or not-stated code, then the derived variable was set to not-stated.

7.3.4 Coding of Open-ended Questions

Open-ended Format

A few data items on the NLSCY questionnaire were recorded by interviewers in an open-ended format. For example, in the Labour Force Section, a PMK who had worked in the previous 12 months was asked a series of open-ended questions about the current or most recent job:

- What kind of business, service or industry is/was this?
- What kind of work are/were you doing?
- At this work, what are/were your most important duties or activities?

How they are recorded

The interviewer recorded in words the answer provided by the PMK. At Head Office, these written descriptions were coded into industry and occupation codes to describe the nature of the work of the PMK. Similar information was collected for the spouse/partner and codes assigned to describe the nature of the work.

How they are coded

The coding systems used were the 1991 Standard Occupational Classification codes (SOC) and the North American Industrial Classification System (NAICS). Grouped versions of these codes are available on the data file (DLFPcD7A and DLFPcD8A for the PMK, and DLFScD7A and DLFScD8A for the spouse/partner).

7.3.5 Naming Imputation

Missing Variables

For various reasons there are certain variables that may be missing for responding households on the NLSCY file. This is usually referred to as item non-response. Earlier in the chapter the various codes that have been used to describe the reason for the item non-response ("refusal", "don't know", "not stated") are described.

7.3.6 Derived Variables

Combining Items

A number of data items on the data file have been derived by combining items on the questionnaire in order to facilitate data analysis. For example, in the Labour Force section, one of the questions is on the "Number of Weeks Worked" but in the Adult Education section, the question is "Whether They Are Presently Going to School". The combination of these two questions forms a variable that is based on the "Actual Situation of Work and Study".

Longitudinal derived variables

Longitudinal derived variables were created to indicate changes between data reported in the current and previous cycles for family structure and PMK and Spouse changes.

Derived Variable Name

All derived variables on the NLSCY data file have a "D" as the fifth character of the variable name. For example, the name of the variable for the primary care arrangement is DLFPD51.

8.0 Content of the NLSCY

The NLSCY was designed to follow an ecological or holistic approach to measuring child development. The survey captures the diversity and dynamics of the factors affecting children. To ensure that all relevant topic areas affecting child development were adequately addressed by the survey, a multidisciplinary consultation was carried out at the inception of the survey. The selection of specific subject areas, priorities and survey questions was very much a group effort with input and advice from:

- the NLSCY expert advisory group that consists of researchers in the area of child development and the social sciences;
- federal departments;
- representatives from the provinces and territories responsible for child development programs.

It was recommended that the NLSCY cover a broad range of characteristics and factors affecting child growth and development. Extensive information was gathered about the child, as well as the child's parent(s), characteristics of the family and the neighbourhood. This section provides an outline of the content for each section of the questionnaire included in the NLSCY data.

8.1 NLSCY Processing System

As part of the NLSCY processing system, there are some basic quality checks performed for each section of the questionnaire. Any items for which there was a high level of non-response or that were frequently involved in edit failures were looked at in detail. Where appropriate, comparisons were made to external data sources and analyses were carried out to investigate possible reasons for differences from these other sources. Any concerns about potential data quality problems for any items in a particular section of the questionnaire are discussed in this section of the documentation.

For a discussion on the description of the scale scores, please see “Chapter 9 - Description of NLSCY Scales”.

8.2 NLSCY components

The NLSCY is divided into several components; these were described in Chapter 6 - Data Collection. Below is a summary of each component.

Household This is the first part of the interview. The household roster asks for basic demographic information for each household member and their relationship to everyone else in the household.

Adult Questions asked about the PMK and spouse. For children aged 16 and up, not all the sections in the adult component are asked. The adult component is completed once even if there are two children in the household.

Child Questions about the selected child asked to the PMK. A child component is completed for each selected child. The only section of the Child Questionnaire asked about youth aged 16 and over is the Aspirations and Expectations section.

Youth Questions asked about the selected child, if he/she is 16 years or older. In this section, the youth answers the questions about him or herself.

A number of components were not used in the North survey. For a description of this components please see "Chapter 6, Data Collection" of the Cycle 4 Main Data Users Guide. The following components were not used in the North survey:

- Ages and Stages
- All self-completes
- Direct assessments
- Teacher and Principal Questionnaires

8.3 Demographic Variables

The demographic variables are collected on the household roster. As part of the household roster some basic demographic information (e.g., age, gender, and marital status) is collected for all members of the child's household. The relationship grid is also completed as part of this questionnaire i.e., the relationship of everyone in the household to the PMK. Using this information it was possible to create an extensive set of variables to describe the child's family situation. Most of these derived variables are critical to the analyses of NLSCY data and are described in Chapter 4 – NLSCY Concepts and Definitions.

It was necessary to perform an extensive series of edits on the data that were collected. The following are some examples of the types of editing that are carried out.

- a birth parent should be at least 12 years older (and not more than 55 years older) than a birth child
- the difference in age between a husband and wife should be less than 29 years.

8.4 Adult Questionnaire

Education
The Education Section is completed for both the PMK and spouse/partner. The objective is to gather information on the years of school completed, educational attainment, and current attendance at an educational institution.

Research (for example, the Ontario Child Health Study and the National Longitudinal Survey of Youth in the United States) has indicated a link between maternal educational attainment, the home environment and child development. The questions on full-time and part-time school attendance provide an indicator of the main activities of the PMK and the spouse/partner.

Labour Force
Employment stability impacts the home environment, both in terms of income and stress levels. Research, conducted for the Ontario Child Health Study, indicates that parental unemployment can adversely impact child mental health.

The Labour Force Section is completed for both the PMK and spouse/partner. The main objective of the section was to determine employment stability as an indicator of the continuity of employment income. Questions include, periods of absence from work, reason for the most recent absence, hours worked, and work arrangements (e.g. shifts) during the previous year. A series of questions were asked about the PMK and spouse/partner's current or most recent job held.

A complete description is recorded for the current or most recent job. Industry and occupation coding was carried out using North American Industry Classification System (NAICS) 1997 and 1991 Standard Occupational Classification codes.

Labour Force Derived Variables

Several labour force derived variables have been created for the PMK and spouse/partner of the PMK. They include:

DLFPcD5A/DLFScD5A:	NAICS code for PMK's /Spouse's current job
DLFPcD6A/DLFScD6A:	SOC91 for PMK's /Spouse's main job
DLFPcD7A/DLFScD7A:	Standard industry code for current job – grouped
DLFPcD8A/DLFScD8A:	Standard occupation code for current job – grouped

Income

In the Income section of the survey, the sources of income and the income are collected for each household. Income range is also collected for the PMK income and for the income of the PMK's spouse. This information provides an indicator of the family's economic situation, an essential component of the child's environment.

Two derived variables (DINHD04A and DINHD05A) have been created to compare the household income to the low income cut-offs (LICOs). LICOs are used to distinguish "low income" family units from "other" family units. A family unit is considered "low income" when its income is below the cut-off for its family size and its community. A family at or above the cut-off falls into the "other" category7. The variable DINHD03A gives the value of the LICO by geographic area.

Also included in the income variables are two questions (DINHDdQ06 and DINHDdQ07) that ask the respondent about how they feel about their family's income security. These questions were suggested by Dr. Harvey Krahn of the University of Alberta. They are similar to questions used by the Population Research Laboratory, Department of Sociology, University of Alberta to measure aspects of quality of life.

Adult Health

This section asks the PMKs and their spouses about general health, chronic conditions, and restriction of activities as well as questions on smoking and drinking. The smoking questions have been included because research has indicated that parental smoking behaviours may be predictive of the use of cigarettes by children. Alcohol consumption is covered because of potential impacts on the adult's physical or mental health, the family's economic situation, and family relationships.

Chronic Conditions

PMKs and their spouses are asked whether or not they have any long-term conditions (e.g. allergies, asthma, and high blood pressure). A derived variable (DCHPD01 or DCHSD01) indicates that the respondent answered "yes", they have at least one of the long-term conditions.

Restriction of Activities

PMKs and their spouses are asked a series of questions about whether or not their activities are restricted at home, work, school etc… A derived variable (DRSPdD01 or DRSSdD01) is also created stating whether or not the PMK or spouse reported an activity restriction.

In Cycle 4, an answer category was added: "Yes, sometimes". This change matches the activity restriction questions asked on the 2001 Census.

Maternal History
This section is asked to determine the pregnancy history of mothers of children less than two years of age. These questions on pregnancy and birth were provided by Dr. J.-F. Saucier, Ste. Justine Hospital, Montreal, and later modified by the Project Team.

Depression Scale
A Depression scale (DDPPS01) was administered to the PMK as part of the Adult Questionnaire; see Chapter 7 for information about this scale.

Socio-demographic Characteristics
The objective of the Socio-demographic Section is to gather information on immigration, ethnic background and the language profile of household members. These questions are asked of PMK, spouse and the child.

This section is only asked of new respondents to the survey. In Cycle 4 – North, there were no new respondents added to the sample. Therefore, the section on social-demographic characteristics was not asked to the respondents for Cycle 4 – North. Please note, the social demographic characteristics information from previous cycles were not available to be copied into the Cycle 4 – North release file due to the integration of the North survey with the Main survey and further associated technical problems that were found with linking variables.

Note: The following section was used in the Main survey adult component but was not used in Cycle 4 of the North survey adult component.

- Neighbourhood Safety

8.5 Child Questionnaire

Education
The objective of this section is to get some basic information about the child's educational experiences. The amount and type of information collected varied depending upon the age of the child, with more information being collected for the older children who have had greater school experience.

Basic information is collected for all age groups, such as: the child's grade level, type of school and language of instruction, whether the child looks forward to school, absenteeism, number of school changes and residential moves. For children in grade 1 or higher, additional questions are asked concerning other aspects such as skipping and repeating grades, achievement and special education.

Health
The objective of this section is to provide information on the child's physical health – general health, injuries, limitations and chronic conditions – and use of health services and medications.

For children four and five years old who report having a chronic condition, health status information on topics such as hearing, sight, speech and overall mental well-being is also collected. From this information a Health Status Index (HUI3) is calculated (DHLCcD2A). The HUI3 is a generic health status index that is able to synthesize both quantitative and qualitative aspects of health. The index, developed at McMaster University's Centre for Health Economics and Policy Analysis, is based on the Comprehensive Health Status Measurement System (CHSMS). It provides a description of an individual's overall functional health, based on eight

attributes: vision, hearing, speech, mobility (ability to get around), dexterity (use of hands and fingers), cognition (memory and thinking), emotion (feelings), and pain and discomfort.

The scores of the HUI3 embody the views of society concerning health status. Perfect health is rated as 1.00 and death is rated as 0.00. This index is also used by the National Population Health Survey.

Medical/Biological

The Medical /Biological Section were completed for children in the two to three age groups. The major objective is to collect information on factors such as gestational age and birth weight. These factors have been shown to have a direct impact on a child's growth and development. For example, in the long term, underweight babies face higher risks of poor health as well as longer-lasting developmental difficulties.

Milestones

These questions were added in Cycle 4 to provide a better measure of early child development. Taken as a package, developmental milestones, such as when the child first said words or took first steps, provide a general sense of a child's development. Dr. P Silva, principal investigator for the Dunedin study in New Zealand recommended to the Project Team that developmental milestones be used as a measure of development. The items are from the draft questionnaires for the Early Childhood Longitudinal Study Program of the National Center for Education Statistics in the United States.

Literacy

This section measures children's exposure to books and their interest in reading and learning-related activities that parents do with their children. The focus of this section is the stimulation young children receive at home.

For children aged two, several questions were added to measure how often the children do certain activities with their parents, such as tell stories, sing songs and teach new words. These questions are adapted from the Early Childhood Longitudinal Study in the United States.

Similar questions are asked about children aged three to five, with changes to reflect age appropriate activities. A question about number activities has been added on the suggestion of Sharon Griffin from the Jacob Hiatt Center for Urban Education, Clark University, who states that numeracy is a crucial factor when it comes to learning and literacy.

Communications

The items are from the New Zealand Competent Children Study. They cover a child's ability to understand oral messages and to pass a message on to someone else, as well as to communicate verbally. The team modified the first item to refer to a situation when the child is paying attention. The final question, about speech being easily understood, is only asked of three year olds. Four and five year olds are asked a similar question as part of the Health Status Index in the Health section.

Activities

This section measures the child's participation in various non-school activities and the amount of household responsibility taken on by 10 and 11 years olds at home. These questions are used to create the Home Responsibilities Score (DACCS6), indicating the degree of home responsibilities. The section will give some sense of how the child spends his/her time, of personal interests, as well as the degree of interaction with peers.

In Cycle 4, several questions were added to determine how often parents get to do certain activities with their children, such as eating a meal, playing a game, doing chores together. When there is a spouse/partner in the household, these questions are asked about both the PMK and his/her spouse/partner.

Behaviour
The objective of this section is to assess aspects of the behaviour of children two years of age and older and of feeding patterns for two to three year olds.

The questions in this section are used to measure the prevalence of behaviours such as hyperactivity and physical aggression. The scales derived from these questions are described in detail in Chapter 9.

Positive Behaviour
The objective of this section is to assess positive behaviour of children aged three to five, including perseverance and independence. The New Zealand's Competent Children's Study has found that perseverance and independence were among a cluster of competencies that are good indicators of a child's overall performance.

Questions have been adapted from the New Zealand study and the behaviour questions used for other ages in the NLSCY.

Motor Social Development
The Motor and Social Development (MSD) Scale measures dimensions of the motor, social and cognitive development of children from birth to three years; the questions vary by the age of the child. Two scores (DMSCS01 and DMSCS02) are derived from these questions; the scores are explained in Chapter 9.

Relationships
The objective of this section is to provide information about the child's relationships with others. Positive relationships with other children and adults may help to counteract other factors that place a child at risk.

Questions about doing things with friends and getting along with parents, teachers and friends are based on those in Ontario Child Health Survey.

Parenting
Parenting style is considered to have an important influence on child behaviour and development. The objective of this section is to measure certain parenting behaviours. Scales are created from the questions in this section. For more information about these scales, see chapter 9.

In Cycle 4, a question was added to asking PMKs, who have a spouse/partner in the house, how often the PMK and spouse/partner agree with each other about parenting decisions. This question was developed by the Project Team and is similar to questions in the Strayhorn and Weidham scale, from which the other parenting questions have been adapted.

Note: The following sections used in the Main survey child component were not used in Cycle 4 of the North survey child component.

- Work after Birth
- Temperament
- Sleep
- Child Care

8.6 Youth Questionnaire

Aspirations and Expectations

These questions were added in Cycle 4 to assess parental aspirations and expectations for their youth, and parental views on their youth's school experiences. Providing help with school work, discussing school experiences and future educational plans has been linked to school success.

These questions were developed by the Centre for Education Statistics at Statistics Canada, using NLSCY questions and questions from other education surveys, such as, the Youth in Transition Survey and the School Leavers Survey.

Youth Education

This new section looks at the youth's education experience. This section is divided into four parts: school leavers (those who are not in school and have not graduated from high school), school finishers (those who are not in school and have graduated), currently in school (for youth still in high school), and post-secondary (for youth who are attending post-secondary education). The questions were developed by the Centre for Education Statistics at Statistics Canada using NSLCY questions and questions from other education surveys, such as, the Youth in Transition Survey and the School Leavers Survey.

One of the objectives of this section is to help determine the factors involved in youth choosing to continue their schooling or leaving school.

Youth Labour Force

The youth Labour Force section is intended to measure youth experience in the labour market. Some youth may be working part-time while attending school, while others may have made the transition to the workforce. These questions are a mix of NLSCY questions from the youth self-completes and of the adult labour force questions.

Youth are asked to report about current work, work during the current school year and work last summer.

Youth Income

The youth Income section asks the youth about their income from various sources in the last 12 months. These questions are similar to those asked of the parents. Income information can measure how much spending money youths have to make autonomous decisions.

Youth Health

This section asks about youth's general health, injuries, chronic conditions and restriction of activities. These questions are similar to the child and adult health questions. New questions have been added about exercise and sleep.

Exercise and sleep are important indicators of the youth's attitude toward their body and how they take care of themselves. The amount of sleep reported can be used to help understand if youth are successfully balancing the demands of work, school, volunteering, sports, etc.

Youth Activities

Adolescence can be a time of high involvement in a variety of activities that are not school related. It is important to measure these activities to understand how this involvement can contribute to good outcomes. This section includes questions about physical activities, literacy activities, T.V. watching, computer use and community involvement. These questions have been adapted from the questions asked about the younger children.

Questions were also added about youths' access to a vehicle and whether or not they have a driver's license. Driving is an important 'coming of age' activity for this age group.

Neighbourhood

Neighbourhood factors have been shown to influence child and adolescent outcomes in a variety domains (school achievement, behaviour, emotional and social functioning, motor and social development). These effects increase as children move through the life course, increasing their interactions and exposure to extra-familial environments. This has been evidenced in the academic literature, as well as by research conducted using NLSCY data (Boyle and Lipman, Kohen et. al, Offord and Lipman). In Cycle 4, youth are asked about their perceptions of their neighbourhood. Others questions, about people in the neighbourhood, come from the UCLA Survey of Adolescent Experience.

The Neighbourhood Structure (DACYDS01) is calculated using these questions. A high score indicates a high degree of neighbourhood structure and a low score indicates a low degree of neighbourhood structure.

9.0 Description of NLSCY Scales

9.1 Definition of scale data

Scale Definition
For some of the concepts deemed important to measure in the NLSCY it was decided that the concept would most appropriately be measured through the use of a scale. A scale is simply a group of questions or items that measure a certain concept when the answers to the items are put together.

For example, on the child's questionnaire it was determined that it was important to have an assessment of certain parenting behaviours. The scale is intended to measure three different constructs or factors related to parenting; positive interaction, ineffective parenting and consistent parenting.

Scales and Calculations
For each factor measured by a scale, a score is calculated. The score for a particular factor can be used to give an ordering of individuals. For example, for the Parenting Scales, for children with higher scores for the "positive interaction" factor, the PMK reported having more positive encounters with the child (e.g., laughed with them more, praised them more etc.). The score for a particular factor is usually based on a series of items, since one single item usually cannot measure the factor or construct with adequate precision.

During the development of the NLSCY, when consideration was being given to what scales should be used to measure a particular concept, an attempt was made to select scales that had been used in other studies. In this way, the psychometric properties of the measures produced by each scale were available with complete references.

9.2 Parent-reported and child-reported scales

The remainder of this chapter provides and in-depth description of the sources of the NLSCY scales. Changes made to the scales across cycles are also described. For convenience, the scales are listed in alphabetical order.

The next sections provide a brief summary of the NLSCY scales followed by individual descriptions of each scale. At the end of this chapter you will find a helpful table (Table 1: Cycle 4 North Scales - Universe and Items Used) with all the scales names, variable names, target population and questions used in the creation of the scales.

9.2.1 Parent-reported scales

Behaviour Scale
The objective of the behaviour scale is to assess aspects of the behaviour of children two years of age and older.

Sources for Behaviour Questions
Some of the behaviour questions are taken from other surveys and sources. Below you will find a list of the specific behaviour questions and the corresponding source from which the questions were taken.

Separation anxiety (2 and 3 year olds)
Items include DBEC6CC1, 6DD1, 6LL1, 6PP1 and Q6TT1 from Achenbach's Child Behaviour Checklist (CBCL).

Opposition (2 and 3 year olds)
Items include DBECQ8E1, Q6G1, Q6R1 and Q8T1 also drawn from Achenbach's CBCL.

Conduct disorder (2 - 11 year olds)
Includes NLSCY items DBECQ6G, Q6X, Q6AA, Q6FF, Q6JJ and Q6PP from the Ontario Child Health Study (OCHS).

Hyperactivity (2 - 11 year olds)
Includes NLSCY items DBECQ6B, Q6I, Q6P, Q6S and Q6W from the OCHS and Q8HH and DBEC6QQ from the Montreal Longitudinal Survey.

Emotional disorder (2 - 11 year olds)
Includes NLSCY items DBECQ6F, Q6K, Q6Q, Q6V, Q6CC, Q6MM and Q6RR from the OCHS. Anxiety Includes NLSCY items taken from OCHS emotional disorder items (DBECQ6F, Q6Q, Q6V and Q6CC).

Indirect aggression (2 - 11 year olds)
Includes NLSCY items DBECQ6J, Q6R, Q8Z1, Q6LL and Q6TT from Lagerspetz, Bjorngvist and Peltonen of Finland.

Physical aggression (2 - 3 year olds and 8 - 11 year olds)
Includes NLSCY items DBECQ6X from the Montreal Longitudinal Survey and DBECQ6G, Q6AA and Q6NN from the OCHS.

Inattention (2 - 11 year olds)
Includes NLSCY items DBECQ6P from the OCHS and DBECQ6QQ from the Montreal Longitudinal Survey.

Prosocial behaviour (6 - 11 year olds)
Includes NLSCY items DBECQ6A, Q6H, Q6M, Q6GG and Q6OO from the OCHS and DBECQ6D, Q6U, Q6BB, Q6SS and Q6UU from the Montreal Longitudinal Survey; the last four items are from a scale devised by K. Weir and G. Duveen.

9.2.2 Depression scale (PMK)

Objectives & Overview
The depression scale was administered to the PMK as part of the Parent Questionnaire. Questions for this scale (DDPPQ12A to DDPPQ12L) are a shorter version of the depression rating scale (CES-D), comprising 20 questions, developed by L. S. Radloff of the Epidemiology Study Center of the National Institute of Mental Health in the United States. This rating scale is used to measure the frequency of symptoms in the public at large. The occurrence and severity of symptoms associated with depression during the previous week are measured. The rating scale was reduced to 12 questions by Dr. M. Boyle of the Chedoke-McMaster Hospital of McMaster University.

This rating scale is aimed at gathering information about the mental health of respondents, with particular emphasis on symptoms of depression. Several members of the NLSCY advisory group of experts pointed out that the best way of proceeding was to measure one particular aspect of the PMK's mental health instead of trying to measure overall mental health. It was proposed that this section focus on depression for the following reasons: depression is a prevalent condition; it has been demonstrated that depression in a parent affects the children; present research on this subject is generally based on demonstration groups and not on population samples; and it is felt that introducing policies in this area could make a difference.

Items Included in the Depression Rating Scale
The depression rating scale includes twelve questions, each of which contains four response categories. In order for the lowest score value to be 0, the value for each question was reduced by 1 in calculating the score. As well, the answer categories were reversed for questions having a negative loading (DDPPQ12F, Q12H, and Q12J). The total score (DDPPS01) may therefore vary between 0 and 36, a high score indicating the presence of depression symptoms.

9.2.3 Family functioning scale

Objectives & Overview
Questions related to family functioning, i.e., DFNHQ01A to DFNHQ01L, were developed by researchers at the Chedoke-McMaster Hospital of McMaster University and have been used widely both in Canada and abroad. This scale is used to measure various aspects of family functioning, (e.g. problem solving, communications, roles, affective involvement, affective responsiveness and behaviour control).

Question DFNHQ01M, drawn from the Follow-up to the Ontario Child Health Study, was added to the original scale to determine whether alcohol consumption had an effect on global family dynamics

This scale is aimed at providing a global assessment of family functioning and an indication of the quality of the relationships between parents or partners.

Other surveys have shown that the relationship between family members has a considerable effect on children. The results of the Ontario Child Health Study have shown, for example, that there is an important link between family dysfunction and certain mental conditions in children.

Administering the Family Functioning Scale
The family functioning scale was administered to either the PMK or the spouse/partner as part of the Parent Questionnaire. The scale includes twelve questions, each of which contains four response categories. In order for the lowest score value to be 0, the value of the categories was reduced by 1 in calculating the score. The order of the categories was reversed for questions having a negative loading (DFNHQ01A, Q01C, Q01E, Q01G, Q01I, and Q01K). The total score (DFNHS01) may therefore vary between 0 and 36, a high score indicating family dysfunction.

9.2.4 Home responsibilities scale

Objectives & Overview
The object of the activities scale is to measure the child's participation in home responsibilities.

This set of questions about responsibilities is from the Home Observation for Measurement of the Environment-Short Form questionnaire in the National Longitudinal Survey of Youth, Ohio State University.

Scale Score
To produce the score, 1 was subtracted from each item so that the lowest score would be 0. The values for each item were reversed so that a high score would indicate a high degree of home responsibilities. The final score was derived by totalling the values of all items with non-missing values. The score ranges from 0 to 15. A score of 0 indicates the respondent does not participate in home responsibilities.

9.2.5 Motor and social development scale

Objectives and Overview for Motor and Social Development Section
The Motor and Social Development Scale was used to measure the motor, social and cognitive development of young children. This section of the survey was completed by the PMK and targeted children ages 2 to 3. This scale was developed by Dr. Gail Poe of the US National Centre for Health Statistics. The MSD has been used in collections of the National Longitudinal Survey of Youth in the United States and in recent versions of the National Child Development Survey in England.

The Motor and Social Development Scale questions have remained unchanged throughout the four cycles of the National Longitudinal Survey of Children and Youth.

Standardized Scores
For each age group there was a series of 15 questions to assess motor and social skills. The raw score (DMSCS01) was the sum of the number of 'yes' answers. The raw score was standardized (DMSCS02) using weighted means and standard deviations for each age group (each month of age), in order to produce a score with a mean of 100 and a standard deviation of 15. This score was calculated using norms derived from Cycle 1 of the Main, and then applied to the Cycle 4 North data.

9.2.6 Parenting scales

Objectives & Overview
The objective of this scale is to measure certain parenting practices. Specifically, two scales were used. The first was designed to measure the positive interaction, hostility/ ineffectiveness and consistency of the parenting of the child. The second scale was designed to measure parental practices that may or may not provoke aversion.

The questions from the Child's Questionnaire used to measure these aspects of parenting are identified in the following paragraphs.

Questions DPRCQ01 to DPRCQ18 on positive interaction, hostility or ineffectiveness and on coherence were provided by Dr. M. Boyle of the Chedoke-McMaster Hospital, based on the work of Dr. Ken Dodge (Vanderbilt University) and an adaptation of the Parent Practices Scale of Strayhorn and Weidman.

Questions DPRCQ19 to DPRCQ25 which measure parental practices which may or may not cause aversion, these were provided by Dr. M. Boyle.

Calculation of Parenting Scores
To produce the scores, 1 was subtracted from each item so that the lowest possible score value would be 0. For each of the four factors, a score of 0 indicates:

- the absence of positive interaction for the positive interaction scale;
- the absence of ineffective interaction for the ineffective scale;
- the absence of consistent parenting for the consistency scale;
- the existence of punitive interaction or aversion producing practices for the hostility/ineffective parenting scale.
- a low degree of parent-child conflict (12-15 years only)

9.2.7 Social support

Objectives & Overview
The original scale contains 24 items from Robert Weiss's Social Provisions Model that describes six different social functions or 'provisions' that may be acquired from relationships with others. Due to the length of the scale, and on the advice of Dr. M. Boyle at Chedoke-McMaster Hospital, the survey uses the shortened version (containing 6 items) that was derived for the Government of Ontario's Better Beginnings, Better Futures Project. This shortened version measures guidance (2 questions), reliable alliance (2 questions), and attachment (2 questions). Furthermore, in Cycle 1, 4 additional questions on different types of social support (i.e. religious, community services) were added as suggested by Dr. Tom Hay. Questions similar to those suggested by Dr. Hay were taken from F-COPES (Family Crisis Oriented Personal Evaluation Scales) and included in Cycle 4. F-COPES draws upon the coping dimensions of the Resiliency Model of Family Adjustment and Adaptation (McCubbin, Olson & Larsen: 1981). The total social support measurement includes 6 questions and not only focuses on the quantity of social support but on the quality of social supports as well.

In Cycle 4, this section is asked of all PMK's with children/youth less than 16 years of age and includes the following items: DSPHQ01A, DSPHQ01B , DSPHQ01C, DSPHQ01D, DSPHQ01E, DSPHQ01F, DSPHQ01H, and DSPHQ01I.

9.3 Youth scales

9.3.1 Neighbourhood structure scale

Objectives & Overview
To gather information on the respondent's satisfaction with his/her neighbourhood as a place to raise children, including perception of the extent of danger and problems, and of social cohesion or "neighbourliness". Recent research by Dr. Jacqueline Barnes at the Judge Baker Children's Centre, Harvard University in Boston has found that parents' fear of danger and perception of social disorder in the neighbourhood affected their sense of attachment to the neighbourhood and their disciplinary strategies. The information on the parent's perception of the neighbourhood is supplemented by the interviewer's observation of several aspects of the block where the respondent lives.

DACYd13A to DACYd13D, DACYd13F to DACYd13G: These questions cover satisfaction with the neighbourhood as a place to bring up children, safety, social cohesion and neighbourhood problems. They represent a revised version of specific sections of the Simcha-Fagan Neighbourhood Questionnaire used by Dr. Jacqueline Barnes in her studies of neighbourhoods in Boston and Chicago.

Scale Score

If too many values were missing the final score was set to missing. To produce the final scores, 1 was subtracted from each item so that the lowest score would be 0. All the score values were reversed. The final score was derived by totalling the values of all items with non-missing values. A score of 0 indicates a low degree of neighbourhood structure.

Table 1: Cycle 4 North Scales - Universe and Items Used

Parent - Reported Scales

Variable Name	Scale Name	Universe	Items Used
DDPPS01	Depression Score (refers to PMK)	PMK of children 2 to 15 years	DDPPQ12A to DDPPQ12L
DFNHS01	Family Functioning Score	PMK **or** Spouse of children 2 to 15 years	DFNHQ01A to DFNHQ01M
DSPHS01	Social Support Score	PMK **or** Spouse of children 2 to 15 years	DSPHQ01A to DSPHQ01F, DSPHQ01H to DSPHQ01I
DACCS6	Home Responsibilities Score	PMK of children 10 to 13 years	DACCQ6A to DACCQ6E
Behaviour			
DBECDS01	Hyperactivity – Inattention Score	PMK of children 2 to 3 years	DBECQ6B, 6I, 6P, 6S, 6HH, 6QQ
DBECDS03	Emotional Disorder – Anxiety Score	PMK of children 2 to 3 years	DBEQC6F, 6K, 6Q, 6V, 6CC, 6MM, 6RR
DBECS04	Physical Aggression and Opposition Score	PMK of children 2 to 3 years	DBECQ6G, 6W, 6X, 8E1, 6R1, 8T1, 6Z1, 6NN
DBECS05	Separation Anxiety Score	PMK of children 2 to 3 years	DBECQ6CC, 6DD1, 6PP1, 6LL1, 6TT1
DBECDS06	Hyperactivity – Inattention Score	PMK of children 4 to 11 years	DBECQ6B, 6I, 6P, 6S, 6W, 8HH, 6QQ
DBECDS07	Prosocial Behaviour Score	PMK of children 6 to 11 years	DBECQ6A, 6D, 6H, 6M, 6U, 6BB,6GG, 6OO, 6SS, 6UU
DBECDS08	Emotional Disorder – Anxiety Score	PMK of children 4 to 11 years	DBECQ6F, 6K, 6Q, 6V, 6CC, 6MM,6RR
DBECDS09	Conduct Disorder – Physical Aggression Score	PMK of children 4 to 11 years	DBECQ6G, 6X, 6AA, 6FF, 6JJ, 6PP
DBECS10	Indirect Aggression Score	PMK of children 4 to 11 years	DBECQ6J, 6R, 8Z1, 6LL, 6TT
DBECDS11	Property Offences Score	PMK of children 8 to 11 years	DBECQ6C, 6E, 6L, 6T, 6DD, 6PP
MSD			
DMSCS01	Raw Score for Motor and Social Development	PMK of children up to 47 months	DMSCQ34 TO DMSCQ48
DMSCS02	Standardized Score for Motor and Social Development – based on cycle 1 norms from the Main survey	PMK of children up to 47 months	DMSCQ34 TO DMSCQ48

Parent - Reported Scales - continued

Variable Name	Scale Name	Universe	Items Used
Parenting			
DPRCS03	Positive Interaction	PMK of children 2 to 11 years	DPRCQ1, 2, 3, 6, 7
DPRCS04	Ineffective Parenting Style	PMK of children 2 to 11 years	DPRCQ4, 8*, 9, 13, 14, 15, 18
DPRCS05	Consistency	PMK of children 2 to 11 years	DPRCQ10, 11, 12*, 16*, 17*
DPRCS06	Rational Parenting Style	PMK of children 2 to 11 years	DPRCQ21, 22*, 23, 24*
DPRCBS09	Conflict Resolution Scale	PMK of children 12 to 15 years	DPRCb30A to DPRCb30H

(*) - Indicates that the item value was reversed when computing the score

Youth - Reported Scales

Variable Name	Scale Name	Universe	Items Used
DACYDS01	Neighbourhood Structure Score	Youth 16 to 17 years	DACYd13A to DACYd13D, DACYd13F to DACYd13G

10.0 Weighting of the Sample

Introduction to Weights

The principle behind estimation in a probability sample such as the NLSCY is that each person in the sample "represents", besides himself or herself, several other persons not in the sample. For example, in a 2% simple random sample of the population, each person in the sample represents 50 persons in the population.

The weighting phase is a step that calculates, for each record, what this number is (i.e., the number of individuals in the population represented by this record). As the target population is not the same for the cross-sectional sample and the longitudinal sample, the number of persons each child represents is not the same. Consequently, two series of weights must be calculated: one for the cross-sectional sample, and one for the longitudinal sample. These weights appear on the master files (DWTCW01C - cross-sectional and DWTCW01L - longitudinal). In Cycle 4 there was no top-up of 0-1 year olds, or any other age children. Also, since the sample in Cycle 4 was made up the respondents in Cycle 3, it was decided that the weighting would be done using the same definitions of types of children as in Cycle 3. The sample does not represent the population from Cycle 4; it represents the population from Cycle 3. Therefore longitudinal children were considered to be children who were in the survey in either Cycle 1 or Cycle 2, but not children who started with the survey in Cycle 3.

Cross-sectional weights were calculated for all children who responded to the survey in Cycle 4, but these weights were meant to represent the population in Cycle 3, not the population in Cycle 4. These weights represent children aged 0-15 in 1998, not children aged 2-17 in 2000.

The weights must be used to derive meaningful estimates of the characteristics measured by the survey. For example, if the number of children living in single-parent families in 1998 is to be estimated, it is done by selecting the records in the cross-sectional sample of Cycle 4 with that characteristic and summing the cross-sectional weights found on those records.

As well, because of the very low response rate in Nunavut in Cycle 4 which was 33.1%, it was felt that no reliable estimates could be produced for this territory. As a result, no weights were calculated for Nunavut.

10.1 Longitudinal Sample or Cross-sectional Sample?

The choice of which sample to use depends on the type of analysis to be done. The longitudinal sample pertains to the child population at the time the sample was selected (i.e., 1994-95 or 1996-1997). The sum of the longitudinal weights is equal to the available demographic estimates for July 1994 for the sample from Cycle 1 and July 1996 for the sample from Cycle 2. Only the longitudinal children, i.e., those selected in cycles 1 or 2, are given a longitudinal weight other than 0. For each cycle, the longitudinal weight of the panel is recalculated to take into account the further erosion (non-response) that occurs between the two cycles of the survey, i.e., about two years. It is this one that is usually better suited to longitudinal analysis based on a comparison of the data for more than one year, as it allows for the life courses of the children to be quantified over time.

The cross-sectional sample makes it possible to do estimates based on data from a single cycle. A separate cross-sectional weight is calculated for each cycle. For Cycle 1, the longitudinal sample and the cross-sectional sample have the same target population. As the target populations are identical, only one series of weights was needed for this cycle. Also, the

cross-sectional sample in Cycle 3 and Cycle 4, are the same sample, as no top-up was added in Cycle 4.

Fluctuations may be calculated using cross-sectional estimates produced for two cycles. However, the fluctuations thus measured are net fluctuations. They are calculated based on a snapshot taken for each reference period. As a result, they mask all transitions that cancel each other out.

The first step involved with assigning the weights for Cycle 4 was to identify which children receive a longitudinal weight and/or cross-sectional weight. The different types of children identified are as follows:

- Longitudinal children from the Cycle 1 sample.
- Longitudinal children from the Cycle 2 top-up.
- Children new to the survey in Cycle 3.

10.2 Longitudinal Weight

An initial longitudinal weight was assigned to longitudinal children based on the Cycle 1 weight or the Cycle 2 longitudinal weight. This weight is determined from the probability of selection first measured when the sample was drawn in Cycle 1. For children new to the survey in Cycle 2, their probability of selection was unknown and was estimated from an external source for benchmark totals. Their probability of selection was estimated as the ratio of children interviewed over the estimated population of children from adjusted census counts provided at the time.

Non-Response Adjustment

A non-response adjustment was then done to adjust the weights of the respondents to account for the selected children that did not respond. This adjustment uses the characteristics from Cycle 3 of the respondents and the non-respondents.

Using variables from Cycle 3, homogeneous response groups (HRG) were created. The HRG method consists of regrouping individuals who have the same likelihood of responding. Next, an adjustment factor is calculated for each HRG. This factor is as follows:

$$\textit{Non-response adjustment} = \frac{\sum_{respondents+non-respondents} \textit{adjusted weights in the HRG}}{\sum_{respondents} \textit{adjusted weights in the HRG}}$$

Post-Stratification

The longitudinal weights were adjusted to conform to known population totals. For the children who were part of the survey in 1994, post-stratification adjusts the weights so that the sum of the weights is equal to known demographic estimates for July 1994. For the children who were part of the cycle 2 top-up, post-stratification adjusts the weights so that the sum of the weights is equal to know demographic estimates for July 1996. Post-stratification was done by age, sex and territory.

Table 1: Population Estimates - July 1, 1994

Territory	Sex	Age Group	Population
Yukon	Male	0-4 5-9	1,309 1,290
		10-11	530
	Female	0-4	1,209
		5-9	1,134
		10-11	489
Western	Male	0-4	2,146
		5-9	2,028
		10-11	750
	Female	0-4	2,084
		5-9	1,904
		10-11	686

Table 2: Population Estimates - July 1, 1996

Territory	Sex	Age Group	Population
Yukon	Male	0-4	1,252
		5-9	1,364
		10-13	1,060
	Female	0-4	1,168
		5-9	1,166
		10-13	1,027
Western	Male	0-4	2,140
		5-9	2,036
		10-13	1,494
	Female	0-4	2,056
		5-9	2,041
		10-13	1,309

10.3 Cross-sectional Weight

An initial cross-sectional weight was assigned to all responding children based on the Cycle 3 cross-sectional weight. The Cycle 3 cross-sectional weights were calculated in a non-standard, non-scientific way. This is because the sample design used to select the top-up of children in Cycle 3 was unknown. Since the initial cross-sectional weights were taken from Cycle 3, this means that the cross-sectional weights in Cycle 4 are no more reliable than the weights in Cycle 3 even thought the weighting in Cycle 4 was done in a standard way. All data users and analysts must be aware that this will affect the quality of their estimates.

Non-Response Adjustment

A non-response adjustment was then done to adjust the weights of the respondents to account for the selected children that did not respond. This adjustment uses the characteristics from Cycle 3 of the respondents and the non-respondents.

Using variables from Cycle 3, homogeneous response groups (HRG) were created. The HRG method consists of regrouping individuals who have the same likelihood of responding. Next, an adjustment factor is calculated for each HRG. This factor is as follows:

$$\text{Non-response adjustment} = \frac{\sum_{\text{respondents+non-respondents}} \text{adjusted weights in the HRG}}{\sum_{\text{respondents}} \text{adjusted weights in the HRG}}$$

Post-Stratification

The cross-sectional weights were adjusted to conform to known population totals. Post-stratification adjusts the weights so that the sum of the weights is equal to known demographic estimates for July 1998. Post-stratification was done by age, sex and territory.

Table 3: Population Estimates - July 1, 1998

Territory	Sex	Age Group	Population
Yukon	Male	0-4	1,133
		5-9	1,267
		10-15	1,571
	Female	0-4	1,033
		5-9	1,160
		10-15	1,470
Western	Male	0-4	1,876
		5-9	2,017
		10-15	2,214
	Female	0-4	1,778
		5-9	2,141
		10-15	1,944

11.0 Data Quality

Introduction

The estimates derived from this survey are based on a sample of children. Somewhat different figures might have been obtained if a complete census had been taken using the same questionnaire, interviewers, supervisors, processing methods, etc. as those actually used. The difference between the estimates obtained from the sample and the results from a complete count taken under similar conditions is called the **sampling error** of the estimate. Sample estimations in the North are particularly vulnerable due to the transient nature of the population which is more noticeable there than anywhere else in Canada. Put in a longitudinal context, this can cause serious coverage issues since children who no longer reside in the North are no longer part of the sample for the North. Moreover, the cross-sectional sample is also at risk for coverage inadequacies since a significant portion of the sample should be devoted to the larger than usual influx of migrants to the North from one cycle period to the next.

Errors that are not related to sampling may occur at almost every phase of a survey operation. Interviewers may misunderstand instructions, respondents may make errors in answering questions, the answers may be incorrectly entered on the questionnaires and errors may be introduced in the processing and tabulation of the data. These are examples of **non-sampling errors**.

In this section some of the non-sampling errors that occurred in the survey are discussed.

11.1 Overall Response Rates

In Cycle 4, a respondent is defined as a child who has at least one of the following complete components: adult component, his child or youth component (depending on the age of the respondent).

Of the children and youth from who participated in the survey in Cycle 3, excluding those in Nunavut, 87% of them responded in Cycle 4. This rate is slightly higher than rates from previous cycles, due to the fact that Nunavut is not included.

Table 1: Cross-sectional Response Rates

Territory	Number of Children in Sample	Number of Respondents	Cross-sectional Response Rate
Yukon	932	836	89.7 %
Western Territory	702	586	83.5 %
Nunavut	694	230	33.1 %
Total	2328	1652	71.0 %

Response rates were also calculated for the longitudinal households from Cycle 1, based on the number of responding households from Cycle 1 minus the 170 households that were dropped from the sample in the Yukon. The overall response rate is 59% (49% including Nunavut) which is a very low rate, and indicated that many respondents have been lost over the 4 cycles due to attrition.

Table 2: Cycle 1 Longitudinal Response Rates

Territory	Cycle 1 Households	Responding Longitudinal Households in Cycle 4	Response Rate
Yukon	487	302	62.0%
Western	337	181	53.7%
Nunavut	390	108	27.7%
Total	1,214	591	48.7%

There are many reasons why some households did not respond to the survey. In some cases the interviewer was unable to make contact with a selected household for the entire collection period. In other cases the household refused to participate in the survey.

It is worth noting that because of the small populations in the Territories, the probability of being selected in any sample survey is much higher than in the provinces. Due to the integration of the NPHS and the NLSCY in the past cycles, a significant number of households were asked to participate in both surveys. This may have caused burden on the respondents and could have adversely affected the participation rate among our longitudinal respondents.

11.2 Partial Response Rates

Within responding households, the information on some children was incomplete. According to the definition given above, a respondent need only have one component completed. In Cycle 4, 3.3% of the respondents in the Yukon and 5.6% of the respondents in the Western Territory only responded to one component.

Territory	Number of Respondents	Both Components Completed	Only Child / Youth Component Completed	Only Adult Component Completed
Yukon	836	808	5	23
Western	586	553	15	18
Total	1422	1361	20	31

12.0 Guidelines for Tabulation, Analysis and Release

This section of the documentation outlines the guidelines to be adhered to by users tabulating, analysing, publishing or otherwise releasing any data derived from the survey master file. With the aid of these guidelines, users of the master file should be able to produce the same figures as those produced by Statistics Canada and, at the same time, will be able to develop currently unpublished figures in a manner consistent with these established guidelines.

12.1 Rounding Guidelines

In order that estimates for publication or other release derived from the NLSCY master file correspond to those produced by Statistics Canada, users are urged to adhere to the following guidelines regarding the rounding of such estimates:

a) Estimates in the main body of a statistical table are to be rounded to the nearest hundred units using the normal rounding technique. In normal rounding, if the first or only digit to be dropped is 0 to 4, the last digit to be retained is not changed. If the first or only digit to be dropped is 5 to 9, the last digit to be retained is raised by one. For example, in normal rounding to the nearest 100, if the last two digits are between 00 and 49, they are changed to 00 and the preceding digit (the hundreds digit) is left unchanged. If the last digits are between 50 and 99 they are changed to 00 and the preceding digit is incremented by 1.

b) Marginal sub-totals and totals in statistical tables are to be derived from their corresponding unrounded components and then are to be rounded themselves to the nearest 100 units using normal rounding.

c) Averages, proportions, rates and percentages are to be computed from unrounded components (i.e. numerators and/or denominators) and then are to be rounded themselves to one decimal using normal rounding.

d) Sums and differences of aggregates (or ratios) are to be derived from their corresponding unrounded components and then are to be rounded themselves to the nearest 100 units (or the nearest one decimal) using normal rounding.

e) In instances where, due to technical or other limitations, a rounding technique other than normal rounding is used resulting in estimates to be published or otherwise released which differ from corresponding estimates published by Statistics Canada, users are urged to note the reason for such differences in the publication or release document(s).

f) Under no circumstances are unrounded estimates to be published or otherwise released by users. Unrounded estimates imply greater precision than actually exists.

12.2 Sample Weighting Guidelines for Tabulation

The sample design used for the NLSCY was not self-weighting. When producing simple estimates, including the production of ordinary statistical tables, users must apply the proper sampling weights. (DWTCW01C - cross sectional weight and/or DWTCW01L - longitudinal weight). For the longitudinal children, the longitudinal weight inflates the estimates produced by 778 respondents to the total population of children aged 0-11 in the Yukon and the Western

Territory in 1994 (15,559). The cross-sectional weight inflates the estimates produced by 1,422 respondents to the total population of children aged 0-15 in the Yukon and the Northwest Territories in 1998 (19,604).

If proper weights are not used, the estimates derived from the master file cannot be considered to be representative of the survey population, and will not correspond to those produced by Statistics Canada. In effect, the weights assigned to each child reflect the number of children represented by a particular respondent. For any analysis dealing with correlation analysis or any other statistics where a significance measure is required, it is recommended that an "analytical" weight be used, which is the original weights rescaled to produce sample counts in lieu of population counts. This weight is obtained by multiplying the population weight (DWTCW01C and/or DWTCW01L) by the number of respondents and dividing this total by the total population that we are estimating for. This produces a mean weight of 1 and a sum of weights equal to the number of respondents.

For example if we were estimating for the Yukon and the Northwest Territories using Cycle 1 data, the number of respondents would be 1,632 and the total population would be 15,559 so the sum of the sample weights would be 1,632. The benefit of this adjusted weight is that an over estimation of the significance (which is very sensitive to sample) is avoided while maintaining the same distributions as those obtained when using the population weight. The disadvantage is that the numerator is not weighted up to the target population and the Approximate Coefficient of Variance Tables described in section 12 are no longer useful as a measure of data quality.

We need to point out that this re-scaling of weights for sub-domains resulting from the exclusion of units with partial non-response will not be adjusted for that missing data. This weight re-scaling does not re-distribute the demographic load of the units excluded for having missing data unless you assume that it is truly random.

Users should also note that some software packages may not allow the generation of estimates that exactly match those available from Statistics Canada, because of their treatment of the weight field.

12.2.1 Definitions of Types of Estimates: Categorical vs. Quantitative

It should be pointed out that the NLSCY file has been set up so that the child is the unit of analysis. The weights that can be found on each record (DWTCW01C/DWTCW01L) are "child" weights. Estimates of parents or families cannot be made from the NLSCY master file. A further discussion of units of analyses can be found in Section 4.1 of this document.

Before discussing how the NLSCY data can be tabulated and analysed, it is useful to describe the two main types of point estimates of population characteristics which can be generated from the master file for the NLSCY.

Categorical Estimates

Categorical estimates are estimates of the number, or percentage of the surveyed population possessing certain characteristics or falling into some defined category. The number of children who were born before the due date or the proportion of children who were in excellent health at birth are examples of such estimates. An estimate of the number of persons possessing a certain characteristic may also be referred to as an estimate of an aggregate.

Examples of Categorical Questions:

Q: Was (the child) born before, after or on the due date?
R: Before
After
On due date
Q: Compared to other babies in general, would you say the (the child's) health at birth was:
R: Excellent
Very good
Good
Fair
Poor

Quantitative Estimates
Quantitative estimates are estimates of totals or of means, medians and other measures of central tendency of quantities based upon some or all of the members of the surveyed population. They also specifically involve estimates of the form X mean over Y mean where X mean is an estimate of the surveyed population quantity total and Y mean is an estimate of the number of persons in the surveyed population contributing to that total quantity.

An example of a quantitative estimate is the average number of days of care received by babies who required special medical care following birth. The numerator is an estimate of the total number of days for which babies' required special care. The denominator is the number of babies who required special care at birth.

Examples of Quantitative Questions:

Q: For how many days, in total, was this care received?

R: |_|_|_| Days

Q: What was the child's weight at birth in pounds and ounces?

R: |_|_| Pounds |_|_| Ounces

12.2.2 Tabulation of Categorical Estimates

Estimates of the number of children with a certain characteristic can be obtained from the master file by summing the final weights of all records possessing the characteristic(s) of interest.

Proportions and ratios of the form estimated mean of X over the estimated mean of Y are obtained by:

(a) summing the final weights of records having the characteristic of interest for the numerator X mean (estimated)

(b) summing the final weights of records having the characteristic of interest for the denominator Y mean (estimated)

then

(c) dividing the numerator estimate by the denominator estimate.

12.2.3 Tabulation of Quantitative Estimates

Estimates of quantities can be obtained from the master file by multiplying the value of the variable of interest by the final weight for each record, then summing this quantity over all records of interest.

For example, to obtain an estimate of the total number of days of special care received by infants who were born prematurely
- multiply the number of days for which special care was received by the final weight,
- then sum this value over all records for which the child was born prematurely

To obtain a weighted average of the form estimated X mean over estimated Y mean, the numerator is calculated as for a quantitative estimate and the denominator is calculated as for a categorical estimate. For example, to estimate the average number of days spent in special care by premature babies,

(a) estimate the total number of days as described above,
(b) estimate the number of children in this category by summing the final weights of all records for the babies which were premature, then
(c) divide estimate (a) by estimate (b)

12.3 Guidelines for Statistical Analysis

In Cycle 1, the NLSCY is based upon a sample design with stratification and multiple stages of selection. In Cycles 2, 3 and 4 the survey is based upon a non-probabilistic sample design. Using data from such complex surveys presents problems to analysts because the survey design and the selection probabilities affect the estimation and approximate variance procedures that should be used. In order for survey estimates and analyses to be closer to the population characteristics, the survey weights must be used.

While many analysis procedures found in statistical packages allow weights to be used, the meaning or definition of the weight in these procedures differ from that which is appropriate in a sample survey framework, with the result that while in many cases the estimates produced by the packages are correct, the variance estimates that are calculated are not adequate. Approximate variances for simple estimates such as totals, proportions and ratios (for qualitative variables) are provided in the accompanying approximate Sampling Variability Tables.

For other analysis techniques (for example linear regression, logistic regression and analysis of variance), a method exists which can make the approximate variances calculated by the standard packages more meaningful, by incorporating the unequal probabilities of selection. The method rescales the weights so that there is an average weight of 1.

For example, suppose that analysis of all male children is required. The steps to rescale the weights are as follows:

- Select all respondents from the file with SEX=male
- Calculate the AVERAGE weight for these records by summing the original person weights from the master file for these records and then dividing by the number of records with SEX=male
- For each of these records, calculate a RESCALED weight equal to the original person weight divided by the AVERAGE weight
- Perform the analysis for these respondents using the RESCALED weight.

However, because the stratification and clustering of the sample's design are still not taken into account, the variances calculated in this way are likely to be under-estimated.

12.4 Coefficient of Variation Release Guidelines (C.V.)

Before releasing and/or publishing any estimate from the NLSCY, users should first determine the quality level of the estimate. The quality levels are *acceptable*, *marginal* and *unacceptable*. Data quality is affected by both sampling and non-sampling errors as. However for this purpose, the quality level of an estimate will be determined only on the basis of sampling error as reflected by the coefficient of variation as shown in the table below. Nonetheless users should be sure to read Section 10 to be more fully aware of the quality characteristics of these data.

First, the number of children who contribute to the calculation of the estimate should be determined. If this number is less than 30, the weighted estimate should be considered to be of unacceptable quality.

For weighted estimates based on sample sizes of 30 or more, users should determine the coefficient of variation of the estimate and follow the guidelines below. These quality level guidelines should be applied to weighted rounded estimates.

All estimates can be considered releasable. However, those of marginal or unacceptable quality level must be accompanied by a warning to caution subsequent users.

Quality Level Guidelines

Quality Level of Estimate	Guidelines
1. Acceptable	Estimates have: a sample size of 30 or more **and** low coefficients of variation in the range 0.0% to 16.5%. No warning is required
2. Marginal	Estimates have: a sample size of 30 or more **and** high coefficients of variation in the range 16.6% to 33.3%. Estimates should be flagged with the letter M (or some similar identifier).They should be accompanied by a warning to caution subsequent users about the high levels of error, associated with the estimates.
3. Unacceptable	Estimates have: a sample size of less than 30, **or** very high coefficients of variation in excess of 33.3%. Statistics Canada recommends not to release estimates of unacceptable quality. However, if the user chooses to do so then estimates should be flagged with the letter U (or some similar identifier) and the following warning should accompany the estimates: "The user is advised that . . . (specify the data) . . . do not meet Statistics Canada's quality standards for this statistical program. Conclusions based on these data will be unreliable, and most likely invalid. These data and any consequent findings should not be published. If the user chooses to publish these data or findings, then this disclaimer must be published with the data."

13.0 Approximate Sampling Variability Tables

Introduction

In order to supply coefficients of variation which would be applicable to a wide variety of categorical estimates produced from this file and which could be readily accessed by the user, a set of Approximate Sampling Variability Tables has been produced. These "look-up" tables allow the user to obtain an approximate coefficient of variation based on the size of the estimate calculated from the survey data.

The coefficients of variation (C.V) for Cycle 1 are derived using the variance formula for simple random sampling and incorporate a factor which reflects the actual nature of the sample design. This factor, known as the design effect, was determined by first calculating design effects for a wide range of characteristics and then choosing from among these a conservative value to be used in the look-up tables which would then apply to the entire set of characteristics.

For the NLSCY in the Territories, the sample was constructed in order to have a sufficient sample size in each territory, including the new territories of Nunavut and Western, to allow for the production of reliable estimates for all children 0 to 15 years of age in 1998. However, the sample was not intended to be large enough to ensure reliable estimates for age groups.

The tables below show the design effects, sample sizes and population counts for Cycle 1, first by territory and then by age groupings which were used to produce the Approximate Sampling Variability Tables.

TERRITORY	DESIGN EFFECT	SAMPLE SIZE	POPULATION *
Yukon	2.8	1,059	5,961
Northwest Territories	2.5	1,345	17,547

TERRITORY	CYCLE 1 AGE GROUP	DESIGN EFFECT	SAMPLE SIZE	POPULATION *
Yukon	0-3 years	1.7	310	2,013
	4-7 years	1.9	362	1,936
	8-11 years	1.9	387	2,012
Northwest Territories	0-3 years	1.7	487	6,587
	4-7 years	1.7	452	6,079
	8-11 years	1.8	406	5,237

** These population counts do not match the population counts found in the Cycle 1 and 2 user's guide as the counts have been revised recently.*

All coefficients of variation in the Approximate Sampling Variability Tables are approximate and, therefore, unofficial.

Remember: If the number of observations on which an estimate is based is less than 30, the weighted estimate should be classified as "unacceptable" regardless of the value of the coefficient of variation for this estimate. This is because the formulas used for estimating the variance do not hold true for small sample sizes.

13.1 How to use the C.V. tables for Categorical Estimates

The following rules should enable the user to determine the approximate coefficients of variation from the Approximate Sampling Variability Tables for estimates of the number, proportion or percentage of the surveyed population possessing a certain characteristic and for ratios and differences between such estimates. The Approximate Sampling Variability Tables were calculated in Cycle 1, so they only apply to the original longitudinal population. Since the sampling of the top-ups in Cycles 2 and 3 was non-probabilistic, the coefficient of variations could not be calculated for Cycles 2, 3 and 4.

Rule 1: Estimates of Numbers Possessing a Characteristic (Aggregates)

The coefficient of variation depends only on the size of the estimate itself. On the Approximate Sampling Variability Table for the appropriate geographic area or age group, locate the estimated number in the left-most column of the table (headed "Numerator of Percentage") and follow the asterisks (if any) across to the first figure encountered. This figure is the approximate coefficient of variation.

Rule 2: Estimates of Proportions or Percentages Possessing a Characteristic

The coefficient of variation of an estimated proportion or percentage depends on both the size of the proportion or percentage and the size of the total upon which the proportion or percentage is based. Estimated proportions or percentages are relatively more reliable than the corresponding estimates of the numerator of the proportion or percentage, when the proportion or percentage is based upon a sub-group of the population. For example, the proportion of babies who were of low birth weight (i.e., less than 2500 grams) is more reliable than the estimated number of "babies who were of low birth weight". Note that in the tables the cv's decline in value reading from left to right.

When the proportion or percentage is based upon the total population of the geographic area or age group covered by the table, the cv of the proportion or percentage is the same as the cv of the numerator of the proportion or percentage. In this case, Rule 1 can be used.

When the proportion or percentage is based upon a subset of the total population (e.g. those in a particular sex or age group within province or territory), reference should be made to the proportion or percentage (across the top of the table) and to the numerator of the proportion or percentage (down the left side of the table). The intersection of the appropriate row and column gives the coefficient of variation.

Rule 3: Estimates of Differences between Aggregates or Percentages

The standard error of a difference between two estimates is approximately equal to the square root of the sum of squares of each standard error considered separately. That is, the standard error of a difference $(\hat{d} = \hat{X}_1 - \hat{X}_2)$ is

$$\sigma_{\hat{d}} = \sqrt{(\hat{X}_1 \alpha_1)^2 + (\hat{X}_2 \alpha_2)^2}$$

where $\hat{X}_1$ is estimate 1, $\hat{X}_2$ is estimate 2, and alpha 1 and alpha 2 are the coefficients of variation of $\hat{X}_1$ $\hat{X}_2$ respectively.

The coefficient of variation of $\hat{d}$ is given by $\sigma_{\hat{d}}/\hat{d}$. This formula is accurate for the difference between separate and uncorrelated characteristics, but is only approximate otherwise.

Rule 4: Estimates of Ratios

In the case where the numerator is a subset of the denominator, the ratio should be treated as a percentage and Rule 2 applied. This would apply, for example, to the case where the denominator is the number of low birth weight babies and the numerator is the number of low birth weight babies who were born prematurely (gestational age 258 days or less).

In the case where the numerator is not a subset of the denominator, the standard deviation of the ratio of the estimates is approximately equal to the square root of the sum of squares of each coefficient of variation considered separately multiplied by the ratio itself. For example, this would apply to an estimate such as, the ratio of the number of female babies who were of low birth weight as compared to the number

of male babies who were of low birth weight. The standard error of such a ratio $(\hat{R}=\hat{X}_1/\hat{X}_2)$ is:

$$\sigma_{\hat{R}} = \hat{R}\sqrt{\alpha_1^2 + \alpha_2^2}$$

where α_1 and α_2 are the coefficients of variation of X_1 (the number of low birth weight female babies) and X_2 (the number of low birth weight male babies) respectively.

The coefficient of variation of $\hat{R}$ is given by $\sigma_{\hat{R}}/\hat{R}$

.The formula will tend to overstate the error, if X_1 and X_2 are positively correlated and understate the error if X_1 and X_2 are negatively correlated.

Rule 5: Estimates of Differences of Ratios

In this case, Rules 3 and 4 are combined. The cv's for the two ratios are first determined using Rule 4, and then the cv of their difference is found using Rule 3.

13.1.1 Examples of using the C.V. tables for Categorical Estimates

The following are examples using actual NLSCY data (from the provincial survey) to illustrate how to apply the foregoing rules.

Example 1: Estimates of Numbers Possessing a Characteristic (Aggregates)

Using Cycle 1 NLSCY (provincial) data, 84,085 babies were estimated to be of low birth weight (i.e., less than 2500 grams). How does the user determine the coefficient of variation of this estimate?

(1) Refer to the cv table for children in 0-3 age group. Note that the question on birth weight was applicable only to children in the 0-3 age group and therefore this is the table that should be used to determine the cv for this estimate.

(2) The estimated aggregate (84,085) does not appear in the left-hand column (the 'Numerator of Percentage' column), so it is necessary to use the figure closest to it, namely 85,000.

(3) The coefficient of variation for an estimated aggregate is found by referring to the first non-asterisk entry on that row, namely, 7.3%.

(4) The approximate coefficient of variation of the number of low birth weight babies is estimated to be 7.3%. The finding that there were 84,085 babies that were of low birth weight is "acceptable" and no warning message is required to produce this estimate since the cv for the estimate is in the 0.0%-16.5% range.

Example 2: Estimates of Proportions or Percentages Possessing a Characteristic

Using Cycle 1 NLSCY provincial data, it is estimated that 70.8% (59,567/84085) of low birth weight babies were born prematurely (gestational age 258 days or less). How does the user determine the coefficient of variation of this estimate?

(1) Refer to the cv table for children in 0-3 age group. Note that the questions on birth weight and delivery time were applicable only to children in the 0-3 age group and therefore this is the table that should be used to determine the cv for this estimate.

(2) Because the estimate is a percentage which is based on a subset of the total population (i.e., low birth weight babies who were born prematurely), it is necessary to use both the percentage (70.8%) and the numerator portion of the percentage (59,567) in determining the coefficient of variation.

(3) The numerator, 59,567, does not appear in the left-hand column (the 'Numerator of Percentage' column) so it is necessary to use the figure closet to it, namely 60,000. Similarly, the percentage estimate does not appear as any of the column headings, so it is necessary to use the figure closest to it, 70.0%.

(4) The figure at the intersection of the row and column used, namely 5.0% is the coefficient of variation to be used.

(5) The approximate coefficient of variation of the percentage of low birth weight babies who were prematurely is estimated to be 5.0%. The finding that 70.8% of low birth weight babies were born prematurely is "acceptable" and no warning message is required to produce this estimate since the cv for the estimate is in the 0.0%-16.5% range.

Example 3: Estimates of Differences between Aggregates or Percentages

Using Cycle 1 NLSCY provincial data, it is estimated that 6.1% (45,690/753,203) of female babies were born prematurely, while 4.9% (38,395/791,149) of male babies were born prematurely. How does the user determine the coefficient of variation of the difference between these two estimates?

(1) Using the cv table for the 0-3 age group in the same manner as described in example 2 gives the cv of the estimate for female babies as 10.3%, and the cv of the estimate for male babies as 10.9%.

(2) Using rule 3, the standard error of a difference $(\hat{d} = X_1 - X_2)$ is:

$$\sigma_{\hat{d}} = \sqrt{(\hat{X}_1 \alpha_1)^2 + (\hat{X}_2 \alpha_2)^2}$$

where X_1 is estimate 1 (the percent of low birth weight female babies), X_2 is estimate 2 (the percent o low birth

weight male babies), and α_1 and α_2 are the coefficients of variation of X_1 and X_2 respectively

That is, the standard error of the difference $\hat{d}$ = (.061-.049) = .012

(3) The coefficient of variation of $\hat{d}$ is given by

$$\sigma_{\hat{d}}/\hat{d} = 0{,}008/0{,}012 = 0{,}667$$

(4) So the approximate coefficient of variation of the difference between the estimates is 66.7%. This estimate is "unacceptable" since the coefficient of variation is over 33.3%. Statistics Canada recommends not to release estimates of unacceptable quality.

Example 4: Estimates of Ratios

Suppose now a user wants to compare the number of low birth weight female babies to the number of low birth weight male babies. The user is interested in comparing these estimates in the form of a ratio. How does the user determine the coefficient of variation of this estimate?

(1) First of all, this estimate is a ratio estimate, where the numerator of the estimate (= $\hat{X}_1$) is the number of low birth weight female babies and denominator (= $\hat{X}_2$) of the estimate is the number of low birth weight male babies.

(2) Refer to the table for the 0-3 age group. The questions on birth weight were applicable only to children in the 0-3 age group.

(3) The numerator of this ratio estimate is 45,690. The figure closest to it is 45,000. The coefficient of variation for this estimate is found by referring to the first non-asterisk entry on that row, namely, 10.3%.

(4) The denominator of this ratio estimate is 38,395. The figure closest to it is 40,000. The coefficient of variation for this estimate is found by referring to the first non-asterisk entry on that row, namely, 10.9%.

(5) So the approximate coefficient of variation of the ratio estimate is given by rule 4, which is,

$\alpha_{\hat{R}} = \sqrt{\alpha_1^2 + \alpha_2^2}$ where α_1 and α_2 are the coefficients of variation of $\hat{X}_1$ and $\hat{X}_2$ respectively.

That is:

$$\alpha_{\hat{R}} = \sqrt{(0{,}103)^2 + (0{,}109)^2} = 0{,}150$$

The obtained ratio of female babies who were of low birth weight versus male babies who were of low birth weight is 45,690/38,395 which is 1.19: 1. The approximate coefficient of variation of this estimate is 15.0%, which is "acceptable" and no warning message is required to produce this estimate since the cv for the estimate is in the 0.0%-16.5% range.

13.2 How to use the C.V. tables to obtain Confidence Limits

Although coefficients of variation are widely used, a more intuitively meaningful measure of sampling error is the confidence interval of an estimate. A confidence interval constitutes a statement on the level of confidence that the true value for the population lies within a specified range of values. For example a 95% confidence interval can be described as follows:

If sampling of the population is repeated indefinitely, each sample leading to a new confidence interval for an estimate, then in 95% of the samples the interval will cover the true population value.

Using the standard error of an estimate, confidence intervals for estimates may be obtained under the assumption that under repeated sampling of the population, the various estimates obtained for a population characteristic are normally distributed about the true population value. Under this assumption, the chances are about 68 out of 100 that the difference between a sample estimate and the true population value would be less than one standard error, about 95 out of 100 that the difference would be less than two standard errors, and about 99 out 100 that the differences would be less than three standard errors. These different degrees of confidence are referred to as the confidence levels.

Confidence intervals for an estimate, X, are generally expressed as two numbers, one below the estimate and one above the estimate, as where k is determined depending upon the level of confidence desired and the sampling error of the estimate.

Confidence intervals for an estimate can be calculated directly from the Approximate Sampling Variability Tables by first determining from the appropriate table the coefficient of variation of the estimate X
and then using the following formula to convert to a confidence interval CI:

$$IC_X = [X - tX\alpha_X), X + tX\alpha_X]$$

where α_X is the determined coefficient of variation X and
t = 1 if a 68% confidence interval is desired
t = 1.6 if a 90% confidence interval is desired
t = 2 if a 95% confidence interval is desired
t = 3 if a 99% confidence interval is desired.

Note: Release guidelines which apply to the estimate also apply to the confidence interval. For example, if the estimate is "marginal", then the confidence interval is marginal and should be accompanied by a warning note to caution subsequent users about the high levels of error.

13.2.1 Example of using the C.V. tables to obtain confidence limits

A 95% confidence interval for the estimated proportion of babies who were of low birth weight would be calculated as follows.

estimate of X=5.5%
t=2
alpha estimate of X =7.3% (.073 expressed as a proportion)
is the coefficient of variation of this estimate

With 95% confidence it can be said that between approximately 4.7% and 6.3% of babies who were 0-3 years old at the time of the survey were of low birth weight.

13.3 How to use the C.V. tables to do a t-test

Standard errors may also be used to perform hypothesis testing, a procedure for distinguishing between population parameters using sample estimates. The sample estimates can be numbers, averages, percentages, ratios, etc. Tests may be performed at various levels of significance, where a level of significance is the probability of concluding that the characteristics are different when, in fact, they are identical.

Let X_1 and X_2, be sample estimates for two characteristics of interest. Let the standard error on the difference $X_1 - X_2$ be σ_d.

If $t = \frac{X_1 - X_2}{\sigma_d}$ is between -2 and 2, then no conclusion about the difference between the characteristics is justified at the 5% level of significance. If however, this ratio is smaller than -2 or larger than +2, the observed difference is significant at the 0.05 level. That is to say that the characteristics are significantly different.

13.3.1 Example of using the C.V. tables to do a t-test

Let us suppose we wish to test, at 5% level of significance, the hypothesis that there is no difference between the proportion of female babies who were of low birth weight and the proportion of male babies who were of low birth weight. From Example 3 (Section 13.1.1), the standard error of the difference between these two estimates was found to be = .008. Hence,

$$t = \frac{\hat{X}_1 - \hat{X}_2}{\sigma_d} = \frac{0{,}061 - 0{,}049}{0{,}008} = \frac{0{,}012}{0{,}008} = 1{,}5.$$

Since t = 1.5 is between -2 and 2, no conclusion at the 0.05 level of significance can be made regarding the difference in proportions of male of female babies who were of low birth weight.

13.4 Coefficients of Variation for Quantitative Estimates

For quantitative estimates, special tables would have to be produced to determine their sampling error. Since most of the variables for the NLSCY are categorical in nature, this has not been done.

As a general rule, however, the coefficient of variation of a quantitative total will be larger than the coefficient of variation of the corresponding category estimate (i.e., the estimate of the number of persons contributing to the quantitative estimate). If the corresponding category estimate is not releasable, the quantitative estimate will not be either. For example, the coefficient of variation of the total number of days of special medical care received for low birth weight babies would be greater than the coefficient of variation of the corresponding proportion of babies who were of low birth weight. Hence if the coefficient of variation of the proportion is not releasable, then the coefficient of variation of the corresponding quantitative estimate will also not be releasable.

Coefficients of variation of such estimates can be derived as required for a specific estimate using a technique known as pseudo replication. This involves dividing the records on the master files into subgroups (or replicates) and determining the variation in the estimate from replicate to replicate. Users wishing to derive coefficients of variation for quantitative estimates may contact Statistics Canada for advice on the allocation of records to appropriate replicates and the formulae to be used in these calculations.

13.5 Release cut-off's for the NLSCY

In the tables that follow, cut-off numbers are given for NLSCY estimates in order for them to be of "acceptable", "marginal" or "unacceptable" quality. Users are encouraged to use these cut-offs when publishing data from the NLSCY. First a table is given to show the cut-offs at the territory level. Then a table is given to show the cut-offs for the various age groups. An interpretation of what is meant by the various cut-off levels can be found in Section 12.4.

For example, an estimate for Yukon of 350 would fall into the "marginal" range. This would mean that the estimate should be flagged and a warning note attached to caution subsequent users about the high level of error associated with the estimate.

Table 3: Geographical Release Cut-Offs

Territory	Acceptable - estimates at or above:	Marginal - estimates between:	Unacceptable - estimates at or below
Yukon	400	200 & 400	100
Northwest Territories	1,100	500 & 1,100	300

Table 4: Age Group Release Cut-Offs

Territory	Cycle 1 Age Group	Acceptable - estimates at or above:	Marginal - estimates between:	Unacceptable - estimates at or below
Yukon	0-3 years	300	100 & 300	100
	4-7 years	300	100 & 300	100
	8-11 years	200	100 & 200	100
Northwest Territories	0-3 years	600	300 & 600	200
	4-7 years	700	300 & 700	200
	8-11 years	700	300 & 700	200

14.0 Record Layout

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