

**1996 Family Expenditure Survey
Users' Guide**

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HOW TO USE THE STATISTICAL TABLES

This section explains the calculations used most frequently to manipulate data from the Family Expenditure Survey. Users are strongly advised to refer to this section before doing their own data analysis. **Table numbers and examples refer to the publication *Family Expenditure in Canada, 1996*, catalogue number 62-555-XPB.**

Expenditure data given in the following tables are estimates based on the total sample, that is, on households that reported buying an item **and** those that did not. Data on percentage reporting are provided in the tables so that users can derive estimates of both the number of households reporting a purchase and the average expenditure of households that reported buying an item.

1. How to Calculate the Number of Households Reporting a Purchase

To estimate the number of households reporting a purchase, multiply the estimated number of households at the top of the column by the percentage of households reporting and then divide by 100. For example, to find the number of households in the lowest income group that had pet expenditures (Table 7):

$$\frac{\text{\# of households}^* \times \text{Percentage reporting for pet expenditures}}{100}$$
$$= \frac{463,590 \times 29.4}{100} = 136,295$$

* estimated number

2. How to Calculate the Average Expenditure per Household Reporting a Purchase

To calculate the average expenditure per household reporting the purchase of an item, divide the average household expenditure on that item by the corresponding percentage reporting and then multiply by 100. For example, to find the average expenditure on pets by households that actually had pet expenses (Table 17, or Table 7 - all classes):

$$\frac{\text{Average household expenditure on pet expense}}{\text{Percentage reporting}} \times 100$$
$$= \frac{\$239 \times 100}{47.6} = \$502$$

3. How to Calculate Average Expenditure per Person

To calculate the average expenditure per person on an item, divide the average expenditure per household for that item by the household size found near the top of the column. For example, to find the average expenditure per person for food by those households in the lowest income group (Table 7):

Average expenditure per household for food
Household size

$$= \frac{\$2,474}{1.29}$$

$$= \$1,918$$

When comparing estimates of per person expenditure, note that family composition (number of children and adults) is also a factor in many expenditure patterns.

4. How to Calculate Percentage of Total Average Expenditure per Household (Budget Share)

To calculate the percentage of total average household expenditure represented by an item (budget share), divide the average expenditure per household for an item by total expenditure for all items and multiply by 100. For example, to find the percentage of total expenditures represented by food purchases for households in the lowest income group (Table 7):

Average expenditure per household for food x 100
Total average expenditure per household

$$= \frac{\$2,474 \times 100}{\$12,311}$$

$$= 20.1\%$$

5. How to Combine Expenditure Items into your own Groupings

The average expenditure per household for different items in a column can be added together to make new subtotals. (But do not add the "percentage reporting" values for different items.) For example, to find the average expenditure per household in the lowest income group on food, shelter and clothing (Table 7):

Average expenditure on food + clothing + shelter (lowest income group)

$$= \$2,474 + \$427 + \$4,426 = \$7,327$$

6. How to Combine Columns of Data

Columns are combined by using the estimated number of households at the top of each column to calculate the weighted average of the values in the columns. To calculate the average expenditure across several columns, multiply the estimated number of households by the average expenditure for an item for each of the columns being combined. Sum the results. Then divide this total by the sum of the estimated number of households. For example, to find the average expenditure on food for households in the lowest three income groups (Table 7):

$$\frac{(\# \text{ of households}^* \text{ in lowest income group} \times \text{average expenditure on food}) + (\# \text{ of households}^* \text{ in next income group} \times \text{average expenditure on food}) + (\# \text{ of households}^* \text{ in next income group} \times \text{average expenditure on food})}{\# \text{ of households}^* \text{ in lowest income group} + \# \text{ of households}^* \text{ in next income group} + \# \text{ of households}^* \text{ in next income group}}$$

$$= \frac{(463,590 \times \$2,474) + (882,370 \times \$2,881) + (797,740 \times \$3,518)}{463,590 + 882,370 + 797,740}$$

$$= \$3,030$$

* Estimated number

7. How to Calculate Total Expenditure on an Item for All Households (10 Provinces) or a Sub-group of Households

To calculate how much was spent on average on an item for all households or households in a particular sub-group (e.g., households in the lowest income group), multiply average expenditure per household for an item by the estimated number of households at the top of the column. For example, to find how much was spent on food by all households in the lowest income group (Table 7):

Average expenditure per lowest income household for food x estimated number of households

$$= \$2,474 \times 463,590$$

$$= \$1,146,921,660$$

Note that this aggregate is based on a sample that excludes part-year households and other people ineligible for the survey. (See *Survey Methodology*)

8. How to Calculate Percentage of Total Expenditure for All Households (Market Share)

Expenditure share, or market share, is the percentage of the total expenditure for an item that can be attributed to a particular sub-group of households, e.g., the percentage of all clothing expenditures made by households in the lowest income group.

It is calculated by dividing the total expenditure on an item for a given sub-group of households (to calculate, see above) by the total expenditure on the item for all households and then multiplying by 100. For example, to find the percentage of all expenditures on food made by households in the lowest income group (Table 7):

$$\frac{\text{Average expenditure per lowest income households on food} \times \# \text{ of households}^* \text{ in lowest income group}}{\text{Average expenditure for all households on food} \times \# \text{ of households}^* \text{ for all classes}} \times 100$$

$$= \frac{\$2,474 \times 463,590}{\$5,960 \times 10,900,500} \times 100$$

$$= 1.77\%$$

* Estimated number

Notes and Definitions

This section contains definitions of terms and concepts. They are grouped under the following headings: *General Concepts*, *Selected Expenditure Terms*, *Selected Household Characteristics*, and *Classification Categories*. *Classification Categories* includes terms relating to: *Income*, *Household Characteristics*, and *Geography*.

General Concepts

1. The *reference year* for the survey is calendar year 1996.
2. *Reimbursed expenditures* are excluded from the tabulations (e.g., work-related expenses or expenditures covered by insurance).
3. *Expenses attributable to a business* are excluded from the tabulations.
4. With some minor exceptions, the survey includes spending on all goods and services *received* in 1996 whether paid for before or after 1996 (such as on an installment plan).
5. All expenditures include the Goods and Services Tax, provincial retail sales taxes, tips, customs duties and any other additional charges or taxes.
6. All expenditure items exclude gifts received from outside the household or given to persons outside the household.
7. Where an insurance settlement was used to repair or replace property, the survey includes only the deductible amount paid for an item.
8. Where a trade-in is used to lower the price of an item, most commonly a vehicle, the expenditure amount is the total cost after the trade-in. Real estate transactions are excepted.

Selected Expenditure Terms

Average household expenditure (Av. exp. per hhd): The average household expenditure is equal to the estimated total expenditures of all households divided by the estimated number of households. The average is based on all households in a column, including households that reported a zero value. To calculate the **average expenditure per household reporting a purchase**, see *How to use the Statistical Tables*.

Change in principal of mortgage on home: The sum of payments on the principal of a mortgage less all amounts added to the principal during 1996. Payments on the principal include both regular payments and any lump-sum payments such as those made at anniversary dates, when refinancing, or at time of sale. The amounts added to the principal include increases to the principal at the time of purchase of a home, when refinancing an existing mortgage, or when taking out a second mortgage. "Change in principal of mortgage on home" is part of "Net change in assets and liabilities".

Food purchased from stores: Stores include frozen food provisioners, outdoor farmers' markets and stands, and all other non-service establishments. ("Food prepared at home" was the term used in the 1978 and earlier publications.)

Food purchased from restaurants: Restaurants include refreshment stands, snack bars, vending machines, mobile canteens, caterers, and coffee wagons. ("Food in eating places" was the term used in the 1978 and earlier publications.)

Gifts, money, and contributions to persons outside household: Includes money, goods, and services given as gifts to people outside the household or to charitable organizations. Purchases of infants' wear by household members expecting a child who was not yet born at December 31, 1996 are also included in this category.

Interest on personal loans: Except for mortgages, interest payments on loans are included in "Interest on personal loans", and are not attributed to the specific item or service for which the loan was taken out.

Item numbers: The statistical tables in this publication include four-digit codes for each category of expenditure or characteristic shown. Where two or more basic classes have been aggregated (as in the summary tables and in various levels of subtotals in the detailed table), the content of these aggregates is defined by the code range shown. Note that these numbers are not necessarily the same from year to year.

Loans: See "Net change in assets and liabilities".

Maintenance, repairs and replacements (owned living quarters): Expenditures on the total of contracts, labour, and materials for all types of maintenance, repairs and replacements. Includes all expenditures on the dwelling such as those for built-in appliances and other equipment and fixtures. Prior to the 1996 survey, expenditures on contracts and labour were available separately. Costs of additions, renovations, and new installations are considered increases in assets and are included in "Net change in assets and liabilities".

An annual data series showing household expenditures on repairs and renovations is available from the Homeowner Repair and Renovation Survey. See *Homeowner Repair and Renovation Expenditures in Canada*, Catalogue No. 62-201.

Household appliances: Net purchase price after deducting trade-in allowance and any discount. Excludes appliances included in the purchase of a home and built-in appliances. Expenditures on

household fixtures (e.g., built-in appliances and wall-to-wall carpeting) can be reported under the appropriate expenditure item or, if they were part of a larger job, under "Additions, renovations etc. to a home", or "Maintenance, repairs and replacements".

Mortgage interest (owned living quarters): The interest on mortgages and other loans used to pay for or repair owned living quarters. Of the total mortgage payment made by a household, only the interest portion is included in a household's shelter costs. Repayments of mortgage principal are considered payments for an investment and are included in "Net change in assets and liabilities", but not in "Shelter" and "Total expenditure".

Net change in assets and liabilities: Net changes during the survey year (calendar year 1996) in bank balances; money on hand; money owed to the household; money owed by the household; purchase and sale of stocks and bonds, personal property, and real estate; expenditures on home additions, renovations and new installations; and contributions to and withdrawals from registered retirement savings plans.

"Selected items in net change in assets" is listed in Table 17, but does not form part of "Total expenditure". "Average net change in assets and liabilities" is found at the beginning of each table in the household characteristics section.

Package travel tours: Package trips that included at least transportation and accommodation. Meals may be included.

Personal insurance payments and pension contributions: Payments for life insurance, annuities, employment insurance, public and private pension plans, and similar items. For certain uses of the data, some of these items might be regarded as savings, although the relationship between the expenditure and any increase in savings may not be easily determined. This category of expenditure was called "Security" prior to the 1996 survey. (Registered retirement savings plan contributions are included in "Net change in assets and liabilities".)

Percentage reporting (% rptg): The percentage of households that reported purchasing an item. These percentages cannot be added together to form sub-totals.

Percentage of total expenditure (% of total exp.): The percentage of total expenditure spent on an item.

Personal taxes: Personal taxes are income taxes paid in 1996 on 1996 and previous years' incomes plus other personal taxes (gift taxes, Newfoundland school tax, etc.) minus income tax refunds received in 1996, except for federal Child Tax Benefits, Goods and Services Tax credits and provincial tax credits. These tax credits are included in "average household income before taxes".

Property sales: See "Net change in assets and liabilities".

Property taxes: This is the amount billed, excluding any rebates. Special service charges (i.e., garbage, sewage, etc.), local improvements, and water charges are included if these are part of the property tax bill. Property taxes that are included in condominium charges are excluded.

Purchase of automobiles and trucks: Net purchase price, including extra equipment, accessories, and warranties bought when the vehicle was purchased, after deducting any trade-in allowance or separate sales. (Separate sales occur when a vehicle is sold independently by the owner, e.g., not traded-in when purchasing or leasing another vehicle.)

Rent: The net household expense for rent after adjusting for rebates and for any use of the dwelling for business. No adjustment for partial subletting to non-household members is made. Receipts from this activity are considered part of household income.

Security: See "Personal insurance payments and pension contributions".

Tenants' and homeowners' insurance: Premiums paid in 1996 for fire and comprehensive policies. Premiums covering more than the survey year were not prorated.

Total current consumption: Expenses incurred during the survey year for food, shelter, household operations, household furnishings and equipment, clothing, transportation, health care, personal care, recreation, reading materials, education, tobacco products and alcoholic beverages, and a miscellaneous group of items. For a comparison of total current consumption with the Consumer Price Index, see "Trends in Household Spending", 1969-96 in *Family Expenditure in Canada, 1996*, catalogue number 62-555-XPB.

Total expenditure: The expenditures included in "total current consumption" *plus* personal taxes, personal insurance payments and pension contributions, and gifts and contributions to persons outside the household.

Traveller accommodation: Traveller accommodation excludes accommodation that was part of a travel tour (which are included in "Package travel tours"). It includes meals when they were included in the cost of the accommodation. (In these cases, the meals would not be included under "Food".)

Unpaid bills: See "Net change in assets and liabilities".

Selected Household Characteristics

Selected household characteristics are presented at the beginning of each table to describe the expenditure data. Other characteristics are collected and tabulated and are available as a custom request. Contact the Dissemination Unit at 1-888-297-7355 or 613-951-7355 for more information or contact your closest regional office¹.

Average age of reference person: This variable acts as a general age indicator for the household and uses the reference person's age in years as of December 31st. Prior to 1996, the age of the husband was used for married-couple households and the age of the reference person for all other households.

Average difference between receipts and disbursements: The average difference between reported household receipts and disbursements. A negative value indicates that average disbursements were greater than average receipts. *Receipts* include total income and other money receipts. *Disbursements* include total expenditure plus the average net change in assets and liabilities. This variable was formerly called "Average account balancing difference".

Average household income before tax: This variable includes total household income received in calendar year 1996, including gross income from wages and salaries, net income from self-employment, receipts from military pay and allowances, gross receipts from roomers and boarders not related to the reference person, net rentals, interest and dividends, all pensions, workers' compensation and employment insurance benefits, social assistance and income supplements, child tax benefits, Goods and Services Tax credits, provincial tax credits, and miscellaneous regular income receipts.

Average household size: The average number of people in a household. In this context, household size is defined as the number of year-equivalent persons. The number of year-equivalent persons is calculated by dividing the number of weeks that members were part of the household by fifty-two. In this way, part-year members are counted as fractions of a year-equivalent person. (Not to be confused with "Household size", defined in *Classification Categories*.)

Average net change in assets and liabilities: See "Net change in assets and liabilities" in *Selected Expenditure Terms*.

¹ Halifax (902) 426-5331, Montréal (514) 283-5725, Ottawa (613) 951-8116, Toronto (416) 973-6586, Winnipeg (204) 983-4020, Regina (306) 780-5405, Edmonton (403) 495-3027, Calgary (403) 292-6717, Vancouver (604) 666-3691.

Dwelling: The FAMEX survey covers only private dwellings. The FAMEX definition of a dwelling is as defined for the 1996 Census: "a separate set of living quarters with a private entrance either from outside or from a common hall, lobby, vestibule or stairway inside the building. The entrance to the dwelling must be one that can be used without passing through the living quarters of someone else."

Estimated number of households: The estimated number of private households on December 31, 1996.

Household: A person or group of persons occupying one dwelling unit is defined as a "household". The number of households, therefore, equals the number of occupied dwellings. A full-year household has at least one full-year member; a part-year household is composed entirely of part-year members. Starting with the 1990 survey, "household" replaced "spending unit" as the FAMEX collection unit.

Household member: A full-year member was a member of the household for the entire year. A part-year member was a member of the household for less than fifty-two weeks. Expenditure and income information for part-year members is collected for the portion of the year during which they were members of the household.

Number of households in sample: This refers to the number of households used for data estimation, which includes the number of households sampled, minus vacant dwellings, ineligible households, households that were unable to be contacted, households that refused to be interviewed, and households whose questionnaires did not pass editing procedures.

Percentage homeowners (December 31, 1996): Percentage of households living in a dwelling owned (with or without a mortgage) by a member of the household at December 31st of the reference year.

Reference person: The household member being interviewed chooses which household member should be listed as the reference person after hearing the following definition. "The household reference person is the member of the household mainly responsible for its financial maintenance (i.e., pays the rent, mortgage, property taxes, electricity, etc.). This person can be either male or female. When all members of the household share equally, any member may be shown as the reference person." The reference person must have been a member of the household on December 31, 1996.

Classification Categories

The following classification categories are found as column headings for the data tables. Included here are definitions for categories under the following headings: *Income*, *Household Characteristics*, and *Geography*.

Income

Income groups and quintiles are used as classifiers in the data tables. In addition, "average household income before tax" is a descriptive household characteristic found at the beginning of each table (see definition above). Household income is also an important component in the "Average difference between receipts and disbursements". Readers requiring official income statistics are directed to the publication, *Income Distributions by Size in Canada*, catalogue number 13-207.²

Household Income Groups:

	All households	One-person households	Two or more person households
Under \$10,000	x	x	
Under \$15,000			x
\$10,000 - \$14,999	x	x	
\$15,000 - \$19,999	x	x	x
\$20,000 - \$24,999	x		x
\$25,000 - \$29,999	x		x
\$20,000 - \$29,999		x	
\$30,000 - \$34,999	x		x
\$35,000 - \$39,999	x		x
\$30,000 - \$39,999		x	
\$40,000 - \$49,999	x		x
\$40,000 and over		x	
\$50,000 - \$59,999	x		x
\$60,000 - \$69,999	x		x
\$70,000 - \$89,999	x		x
\$90,000 and over	x		x

Household income quintiles: Income groupings obtained by ranking households in ascending order of total household income and partitioning the households into five groups such that the estimated number of households in each group is the same.

²

Traditionally, the Survey of Consumer Finances (SCF) has been the source of Statistics Canada's annual income estimates. In the near future, the Survey of Labour and Income Dynamics (SLID) will produce the annual cross-sectional income estimates, in addition to producing longitudinal income data.

Household Characteristics

Employment status: Whether the person was employed or not employed during the reference year.

Employed: Refers to those who indicated that they were employed either full-time or part-time for at least part of the reference year (calendar year 1996).

Not employed: Refers to those who indicated that they did not work for pay, either full-time or part-time, during the reference year (calendar year 1996). Retired persons, students, and homemakers are included in this category.

Employed full-year, full-time: A person was employed full-year, full-time in 1996 if he or she worked at least forty-nine weeks, more than twenty-four of which were full time.

Employed part-year and/or part-time: A person was employed part-year and/or part-time in 1996 if he or she was employed but did not meet the requirements for full-year full-time employment status.

Household composition: Refers to whether household members were over/under selected ages. Using ages eliminates any confusion that may be caused by the terms "children", "youths", "adults", and "seniors".

Household size: The number of persons who were full- or part-year household members during the reference year. This term differs from "Average household size" in *Selected Household Characteristics* in that it does not use year-equivalent persons.

Housing tenure: Refers to whether a household member owned or rented the dwelling in which the household lived.

Owners: Homeowners are people who lived for the full survey year in a dwelling owned (with or without mortgage) by a household member. See also "Percentage Homeowners (December 31st)" in *Selected Household Characteristics*.

Owned with mortgage: Owned dwelling for the full survey year and with a mortgage on December 31, 1996.

Mortgage: Includes mortgages, home equity loans, and personal loans used for home purchase or home repair and renovation for dwellings owned and occupied by household members during 1996.

Renters (full year): Renters are those who rented a dwelling for the full survey year (as a regular tenant, rent free, or with reduced rent).

Reduced rent: Rent can be reduced because of a government subsidy, services to the landlord, company-owned housing, or other reasons.

Mixed tenure: Includes those households that both owned and rented during the reference year (calendar year 1996).

Household Type: Households are divided into the following types:

Husband-wife households: Households where the married or common-law spouse of the reference person was a member of the household on December 31, 1996. This household type may be further broken down into husband-wife households without children (without additional persons), with children (without additional persons), and with additional persons.

"Children" are never-married sons, daughters, or foster children of the reference person and may be any age. "Additional persons" include sons, daughters and foster children whose marital status is other than "single, never married", other relatives by birth or marriage, and unrelated persons.

Lone-parent households: Households where no spouse of the reference person is present and there is at least one child (never-married son, daughter, or foster child of the reference person). The lone-parent households for which data are presented in this publication do not include any additional persons.

Other households: May be broken down into households composed of relatives only and households having at least one unrelated person. Relatives may include:

- C sons, daughters and foster children of the reference person whose marital status is other than "single, never married",
- C relatives of the reference person by birth or marriage (not spouse, son, daughter, or foster child),
- C spouse of the reference person who was not present in the household on December 31, 1996.

Other households having at least one unrelated person have at least one household member who is unrelated to the reference person (e.g., lodger, roommate, employee).

Geography

Metropolitan Areas: The overall concept for delineating metropolitan areas is one of a large urban area together with adjacent urban and rural areas that have a high degree of social and economic integration with this urban area. (See the *1996 Census Dictionary*, p. 181, Catalogue no. 92-351-XPE.)

For the Family Expenditure Survey, data are tabulated based on the 1996 census metropolitan area (CMA) boundaries. In the Family Expenditure Survey, only data for the Ottawa, Ontario part of the Ottawa-Hull CMA, are tabulated for the metropolitan area. The data for Hull, Quebec part, are included in the data tabulated for the province of Quebec and Canada (10 provinces). Also, the municipality of Selkirk is included in the Family Expenditure Survey metropolitan area of Winnipeg, whereas it is not included in the CMA of Winnipeg.

The metropolitan areas for which Family Expenditure data are tabulated are: St. John's, Charlottetown - Summerside, Halifax, Saint John, Québec, Montréal, Ottawa, Toronto, Thunder Bay, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Vancouver, Victoria, Whitehorse, and Yellowknife.

Province: Refers to the major political divisions of Canada. The Family Expenditure Survey does not cover the two Territories, except for the metropolitan areas of Whitehorse and Yellowknife.

Region: Refers to groups of provinces as follows: Atlantic (Newfoundland, Prince Edward Island, Nova Scotia, and New Brunswick); Quebec; Ontario; Prairies (Manitoba, Saskatchewan, and Alberta); and British Columbia.

Rural area: All territory outside urban areas is considered rural. Taken together, urban and rural areas cover all of Canada (10 Provinces).

Size of area of residence: Sampled dwellings are assigned to the following groups depending on the 1996 population size (according to the 1996 census boundaries) of the metropolitan area, municipality, or urban area in which they are located.

Households are assigned as follows:

Urban areas: 1,000,000 and over
500,000 - 999,999
250,000 - 499,999
100,000 - 249,999
30,000 - 99,999
under 30,000

Rural area

Urban area: For the Family Expenditure Survey (based on the LFS sampling frame), urban areas include:

- < all larger metropolitan areas (even though they do contain some rural areas);
- < most smaller metropolitan areas (also called census agglomerations). In some cases, where a census agglomeration contains a large rural population, only the urban portion is considered urban.
- < urban areas based on the census definition: Urban areas have minimum population concentrations of 1,000 and a population density of at least 400 per square kilometre, based on the previous census population counts.

Survey Methodology

The Survey Universe

The 1996 Family Expenditures Survey was carried out in the 10 provinces as well as in Whitehorse and Yellowknife. Those living on Indian reserves and official representatives of foreign countries living in Canada and their families were excluded from the survey. Members of religious and other communal colonies were excluded, as were people living full time in institutions, for example, inmates of penal institutions and chronic care patients living in hospitals and nursing homes.

Information was not gathered from persons temporarily living away from their families (for example, students at university), because it would be gathered from their families if selected. In this way, double counting of such individuals was avoided.

Data from part-year households were excluded from the estimates in this publication, although they are required in the calculation of weights for the Consumer Price Index and as input into Statistics Canada's System of National Accounts. They are also included in the calculation of the Family Expenditure Survey response rate. Part-year households are comprised entirely of persons who were members of other households for part of the survey year. They also include immigrant households that arrived during the survey year and Canadian households that returned from living abroad during the survey year. There were 445 part-year households in the sample in 1996.

Data Collection

As in other years, the 1996 Family Expenditures Survey was an interviewer assisted survey. A copy of the paper questionnaire is available on request. Questionnaires were data captured at Statistics Canada's regional offices and the data edited before being sent to head office for further processing and tabulation.

Survey Content

Detailed information was collected about expenditures for consumer goods and services, types of cars and other vehicles owned by households, dwelling characteristics, changes in assets, mortgages and other loans, and annual income. In 1996, the survey did not collect information about quantities of household appliances and equipment owned or types of stores where items were bought. Content will change again for the 1997 survey when the Family Expenditures Survey becomes an annual survey named the Survey of Household Spending.

Because the Family Expenditures Survey is designed principally to provide detailed information on non-food expenditures, only an aggregate estimate of food expenditures is recorded. Detailed information on food expenditures is provided by the Food Expenditure Survey, which was conducted monthly throughout 1996. The results of the food survey are published in *Family Food Expenditure in Canada, 1996*, catalogue number 62-554-XPB.

The Sample

The sample size for the 1996 Family Expenditures Survey was 14,765 households.

The sample for the 1996 Family Expenditures Survey was a stratified, random sample selected from the Labour Force Survey (LFS) sampling frame. Sample selection comprised two main steps: the selection of clusters (small geographic areas) from Labour Force Survey rotation groups within each area and the selection of dwellings within these selected clusters. Since the last Family Expenditures Survey in 1992, the LFS has undergone the extensive sample redesign that takes place after every decennial Census of Population. The 1981 Census geography and corresponding population counts used for stratification were replaced with 1996 Census geography (some preliminary boundaries were used so there may be slight variations from final 1996 geographic boundaries) and 1991 population counts.³

Weighting

The estimation of population characteristics from a sample survey is based on the premise that each sampled unit represents a certain number of units in the population. A basic survey weight was attached to each record in the sample to reflect this representation. These basic weights were adjusted for non-response for each of the 17 selected metropolitan areas required to calculate the Consumer Price Index and for each of 40 additional geographical areas. These additional areas comprise remaining metropolitan areas, and urban and rural areas based on census definitions (see the 1996 Census Dictionary, catalogue number 92-351-XPE) but do not necessarily correspond exactly.

To increase the reliability of the estimates, weights were adjusted to ensure that estimates on relevant characteristics for the population would respect population totals from sources other than the survey. The first set of totals, for one-person households and multi-person households, was based on projections using the 1991 Census of Population (adjusted for net undercoverage) and the Labour Force Survey, calculated at the provincial level. The second set of totals, based on population projections for December, 1996 from Statistics Canada's Demography Division, were the number of persons under 15, the number of persons between 15 and 64, and the number of persons over 64 for each of the 17 selected metropolitan areas, and for each province. For the metropolitan areas of Yellowknife and Whitehorse, only two age groups were used, number of persons under 15 and number of persons 15 and over.

³ A detailed description of the Labour Force Survey sampling frame can be found in "Methodology of the Canadian Labour Force Survey", Statistics Canada, catalogue No. 71-526. The document will be published in 1998.

Data Quality

Sampling Error

Sampling errors occur because inferences about the entire population are based on information obtained from only a sample of the population. The sample design, the variability of the data, and the sample size determine the size of the sampling error. In addition, for a given sample design, different methods of estimation will result in different sampling errors.

Sample Design The design for the 1996 Family Expenditure Survey was a stratified multi-stage sampling scheme. The sampling errors for multi-stage sampling are usually higher than those for a simple random sample of the same size. However, the operational advantages outweigh this disadvantage and the fact that the sample is also stratified improves the precision of estimates.

Data Variability In general, the greater the differences between members of the population with respect to spending on a specific item, the larger the sampling error will be.

Method of Estimation of Variance A common measure of sampling error is the Standard Error (SE). Standard error is the degree of variation in the estimates as a result of selecting one particular sample rather than another of the same size and design. It has been shown that the "true" value of the characteristic of interest lies within a range of +/- 1 standard error of the estimate for 68% of all samples, and +/- 2 standard errors for 95% of all samples.

The coefficient of variation (CV) is the standard error expressed as a percentage of the estimate. It is used to indicate the degree of uncertainty associated with an estimate. For example, if the estimate of an average expenditure for a given category is \$75, and the corresponding CV is 5%, then the "true" value is between \$71.25 and \$78.75, 68% of the time and between \$67.50 and \$82.50, 95% of the time.

Standard errors for the 1996 Family Expenditure Survey were estimated using the jackknife technique which leads to a slight over-estimation and is, thus, conservative. For more information, refer to the Statistics Canada publication (Catalogue 71-526), *Methodology of the Canadian Labour Force Survey* to be published in 1998.

Coefficients of variation for summary and selected expenditure estimates by household income group are presented in Technical Table 1.

Sample Size Generally, the larger the sample size, the smaller the sampling error. Studies have shown that there is a relationship between the coefficient of variation of an item and the number of households in the sample that reported spending on the item. The CV of an item tends to decrease in proportion to the square root of the number of households reporting expenditures on the item.

It is possible to use this relationship to estimate the CV of any expenditure item not represented in Technical Table 1. According to Technical Table 1, the estimated CV for the average household expenditure on rented living quarters for all households is 2.23%. To estimate the CV for the

average household expenditure on rented living quarters for one person households from publication⁴ Table 10, use the following equation. Note that this method of estimating the CV provides only an approximation of the CVs as calculated in Technical Table 1):

$$\begin{aligned} &\text{CV for expenditures on rented living quarters by one person households} \\ &= \text{CV (for all households)} \times \text{SQUARE ROOT} \left(\frac{\text{\# of hhlds reporting}}{\text{\# of one person hhlds reporting}} \right) \\ &= 2.23\% \times \text{SQRT}(3927 / 1504) \\ &= 2.23\% \times 1.62 \\ &= 3.61\% \end{aligned}$$

$$\begin{aligned} &\text{where \# hhlds reporting} \\ &= \frac{\text{\# of hhlds} \times \text{percentage reporting}}{100} \\ &= \frac{10,417 \times 37.7}{100} \\ &= 3927 \end{aligned}$$

$$\begin{aligned} &\text{and where \# of one person hhlds reporting} \\ &= \frac{\text{\# of one person hhlds reporting} \times \text{percentage of one person hhlds reporting}}{100} \\ &= \frac{2439 \times 61.7}{100} \\ &= 1504 \end{aligned}$$

For reliability reasons, data with estimated CVs greater than 33% have been suppressed. CVs reach this level when the number of households reporting an item drops to about 30⁵. Because of operational difficulties, data suppression for the Family Expenditure Survey has been based on this relationship between the CV and the number of households reporting expenditure on an item. Therefore, average household expenditure and percentage reporting have been suppressed for items reported by fewer than 30 households.

However, data on suppressed items do contribute to summary level variables. For example, the expenditure for a particular item of clothing might be suppressed but this amount forms part of the aggregate expenditure estimate for clothing.

Non-sampling Error

⁴ *Family Expenditure in Canada, 1996*, catalogue number 62-555-XPB

⁵ The relationship was examined using data from the 1996 survey by plotting the coefficients of variation against the number of households reporting an expenditure. This relationship was consistent with previous surveys. Some results of this relationship for the 1992 survey were published in *Family Expenditure in Canada, 1992*, page 185.

Non-sampling errors occur because certain factors make it difficult to obtain accurate responses or responses that retain their accuracy throughout processing. Unlike sampling error, non-sampling error is not readily quantified. Four sources of non-sampling error can be identified: coverage error, response error, non-response error, and processing error.

Coverage error results from inadequate representation of the intended population. This error may occur during sample design or selection, or during data collection and processing. There is no evidence of significant coverage error in the 1996 Family Expenditure Survey.

Response error may be due to many factors, including faulty design of the questionnaire, interviewers' or respondents' misinterpretation of questions, or respondents' faulty reporting. In the Family Expenditure Survey, the difference between receipts and disbursements (see the section on notes and definitions) is calculated as a check on respondents' recall. This important quality control tool involves the balancing of receipts (income and other money received by the household) and disbursements (expenditure plus the net change in assets and liabilities) for each questionnaire. If the difference was greater than 10% of the larger of receipts or disbursements, respondents were contacted again for additional information. This ensures that expenditures, at least at the aggregate level, are commensurate with household income and other sources of funds.

Several features of the survey help respondents recall their expenditures as accurately as possible. First, the survey period is the calendar year because it is probably more clearly defined in people's minds than any other period of similar length. Secondly, expenditure on food (about one-eighth of the average budget in 1996) can be estimated as either weekly or monthly expenses depending on the respondent's habits. Thirdly, expenses on smaller items purchased at regular intervals are usually estimated on the basis of amount and frequency of purchase. Purchases of large items (automobiles, for example) are recalled fairly readily, as are expenditures on rent, property taxes, and monthly payments on mortgages. However, even with these items, the accuracy of data depends on the respondent's ability to remember and willingness to consult records.

The overall response rate was 77.3%. In Technical Table 2, the sample response is summarized by province.

Non-response error Because not all potential respondents cooperate fully, non-response error occurs in sample surveys. This error is significant when a group of people with particular characteristics in common refuse to cooperate and where those characteristics are important determinants of survey results.

Processing errors may also occur during the processing of the data, for example, during coding, data entry, editing, weighting, and tabulation. In this survey, procedures for quality control were used during the processing of data to keep such errors to a minimum.

Only a few questions required coding and this was done by the interviewer, was checked by the senior interviewer, and, in many cases, was checked for consistency with the rest of the information on the questionnaire by the automated batch edit system.

Data entry and automated editing for the 1996 Family Expenditure Survey took place in the Statistics Canada regional offices instead of at head office as in previous surveys. This allowed respondents

to be contacted in the event that more information was required to resolve an inconsistency on their questionnaires.

After data entry, an automated physical edit system checked for data entry errors. Then data had to pass a two-tier edit system consisting of "must-pass" edits that checked questionnaires for logic and consistency, and "warnings" that indicated that a particular situation was unusual and could require correction. The invocation of either type of edit resulted in the intervention of a member of one of the specially trained edit resolution teams. Further editing of the data set took place in head office where invalid responses were corrected.

Missing responses were imputed in two ways. For some variables, missing values were replaced by averages for a group of households reporting the purchase of that item. When appropriate, only households in the same province or with the same type of dwelling or household size were used to calculate the average. For other variables, Statistics Canada's Generalized Edit and Imputation System (GEIS) was used to insert values from donor records having similar characteristics, chosen specifically to fit the variable. For example, total household income was used for most variables; dwelling type, household size and province were also frequently used.

In order to compensate for households that did not provide any information, basic survey weights were adjusted for non-response. See the section on Survey Methodology.

The mainframe based tabulation system from earlier surveys was replaced by a PC/client server-based system for the 1996 Family Expenditure Survey. The new tabulation system provided additional and more flexible tools (database querying, searching, and viewing capabilities) for spotting systematic errors.