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CANADIAN SOCIAL TRENDS

FEATURES

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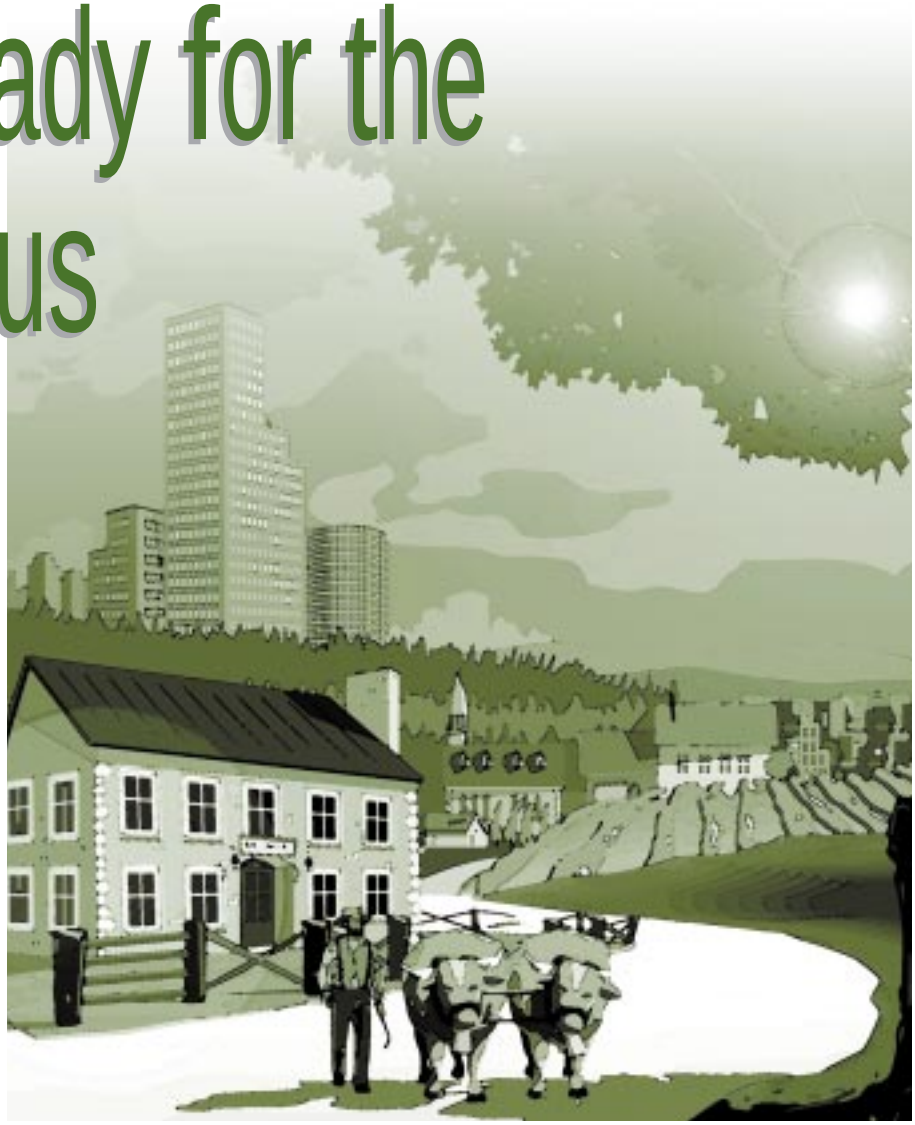
Getting ready for the 2001 Census

by John Flanders



When Jean Talon set out to conduct the first census for the colony of New France more than 300 years ago, he did it the best way he knew how. He went knocking on doors.

Talon, an energetic and imaginative man, arrived in the new colony in 1665 on a mission from King Louis XIV. Louis wanted to stimulate employment, trade and industry. As intendant of justice, police and finance, Talon began his administrative appointment by taking stock. He wanted to know exactly how many people had settled in New France, which towns they lived in, how many young men and women there were of marriageable age, what trades were practised and so on. Over the winter of 1665-66, he initiated a door-to-door enumeration of the colony's inhabitants.

Talon counted 3,215 people of European descent — 2,034 men and 1,181 women. Among these were three notaries, three schoolmasters, three locksmiths, four bailiffs, five surgeons, five bakers, 27 joiners and 36 carpenters. The colony consisted of three major settlements, inhabited by 528 families. Québec had a population of more than 2,100 people, Montréal had 635 and Trois-Rivières had 455.

Then Talon put his statistics to work. His figures showed that men outnumbered women nearly two to one in the male-dominated fur-trading and missionary outpost. So he arranged for "strong and healthy" single women aged 15 to 30 to come from France. From 1665 to 1673, more than 900 "filles du roi" arrived at Québec. Talon imposed penalties on bachelors and rewarded early marriage and large families.

Canada had thus become the first country in the modern world to use a census as a source of economic and social information. Today, on the eve of the 19th national census scheduled for May 15, 2001, Talon would likely be thunderstruck by the extent to which his rudimentary efforts at profiling the population have grown.

Census data will help determine how public services such as transportation, fire and police protection, housing, day-care and health care will be carried out in your neighbourhood

CST New questions meet changing needs

Canadians will see some important changes when they sit down to fill in their census questionnaires on May 15, 2001. The 2001 short questionnaire contains seven questions, the same number as in the 1996 Census, but two fewer than in 1991. However, the long questionnaire contains three questions that were not asked in 1996.

Religion: Information on religion measures cultural diversity, and is used in combination with other characteristics to trace fundamental changes in Canadian society. For example, religious groups use data on religion to measure potential strengths and trends of various denominations. School boards use the data for planning purposes.

The 2001 Census will contain an open-ended question on religion. Respondents can fill in the denomination or religion of their choice, with an option of checking a "no religion" response, or marking in other responses such as "atheist" or "agnostic". This allows respondents total freedom on the questionnaire to indicate what they feel best describes their beliefs, including writing down "no religion".

Birthplace of parents: There is growing interest in how children of immigrants are integrating into Canadian society, given the fact that an increasing number of immigrants are visible minorities. Data from this question will also be used to assess the labour market outcomes of "second generation Canadians" compared to those of other Canadian-born and foreign-born individuals.

Language of work: The information from this new question will help assess the use of mother tongue at work by official language minorities and the linguistic integration of non-official language minorities in the labour market.

In addition to the new questions, there are two changes to existing questions.

Home language: The question has been expanded to include all languages regularly spoken at home, not just the language spoken most often. This question will provide more detail on language retention and language transfer.

Same-sex partners: In light of growing legal and societal recognition of same-sex unions, many organizations and governments have expressed a need for this information. For example, some provincial and municipal legislation, as well as some private sector insurance plans, now extend rights and benefits to same-sex partners. The "relationship to Person 1" question and the "common-law status" question now include categories for "common-law partner (opposite-sex) of Person 1" and "common-law partner (same-sex) of Person 1."

Ethnic origin: An introduction has been added to the question to help clarify the intent. "Canadian" is now listed as the first rather than the fifth example out of 25 examples of possible ethnic origins.

during the next few years. Parks, municipal boundaries and future economic development are all planned using the information provided on census forms.

Census a valuable planning tool

During the past 350 years, the census, like the country, has changed dramatically. But the goal remains the same — a statistical portrait of Canada's people. The census provides detailed, accurate and comparable data on the social, economic and cultural characteristics of the population. These data are used to help run the country at all levels because they are the only source of data on conditions in small geographic areas, and on very specific or unique groups of people. As such, they are essential to the welfare and efficiency of people's neighbourhoods, municipalities and provinces.

A special staff of 45,000 is poised to carry out a meticulously refined plan. Instead of canvassing 3,200 households, as did Jean Talon, the 2001 Census of Population will canvass about 12 million households and a total population estimated at more than 30 million. The Census of Agriculture, which will be conducted simultaneously, will enumerate some 276,000 agricultural operations.

The 10-year, or decennial, census has been conducted every 10 years since 1871 as a constitutional requirement under the *Constitution Act* and is used to determine representation in the House of Commons. The five-year census, mandated by the *Statistics Act*, has been conducted nationally since 1956. It was introduced to monitor the rapid economic growth and urbanization during the post-war years and it remains the backbone of many social programs, such as the population estimates program, which helps determine federal-provincial transfer payments.

Four out of five households get a short questionnaire

In 2001, 80% of Canadian households will receive a short questionnaire which contains seven questions, and requires about 10 minutes to complete. The remaining 20% of households will receive the long form, which will take about 30 to 35 minutes to complete. The long

CST Milestones in the history of the census in Canada

1605: Roman Catholic missionaries in New France take the colony's first population count at Port Royal, in what is today Nova Scotia.

1665 to 1739: During the French regime, 36 censuses are conducted in New France, the last in 1739. Jean Talon conducts the first systematic census of the colony. Talon's census records age, occupation, marital status, and relationship to the head of the family. It also measures the wealth of industry and agriculture, the value of local timber and mineral resources, and the number of domestic animals, seigneuries, government buildings and churches. Over the years, new questions are added on topics such as buildings and dwellings, agricultural and industrial output, as well as armaments.

1765 to 1790: Under the British administration, censuses are held in 1765, 1784 and 1790. As the need arises, questions are added on livestock, crops, buildings, churches, gristmills and firearms, as well as questions on race, religion and ethnic origin.

1847: Statistics-gathering is legislated in the United Provinces of Upper and Lower Canada through the *Statistics Act*. The legislation calls for a decennial census, which is first taken in 1851.

1851: Nova Scotia, New Brunswick and Prince Edward Island — then separate colonies — also take censuses. This year marks the start of regular decennial enumerations of the population of what is to become the Dominion of Canada.

1867: The *British North America Act* lists "The Census and Statistics" as falling under the exclusive jurisdiction of the federal government. The *Act* also calls for "a general census of the population of Canada" to be taken in 1871 and every tenth year thereafter.

1870: The first census taken under Dominion auspices is conducted in Manitoba to divide the province into its four original electoral districts.

1871: Canada's Census is the most comprehensive ever conducted in North America. The nine schedules and 211 questions are designed to be the instrument of collecting data nationwide and are the basis of Canada's present-day statistical system. The 1871 Census count begins two traditions still with the census today. First, the questionnaire is available in English and French; secondly, information on the ancestral origins of all Canadians, including Aboriginal people, is recorded.

1881: All census takers are required to take an oath of secrecy, which is still required today. The census is also extended to include British Columbia, Manitoba and Prince Edward Island.

1896: For the first time, the Census of Agriculture and Census of Population are conducted separately.

1905: The census bureau becomes a permanent government agency.

1906: The first mid-decade censuses of agriculture and of population for the Prairie provinces take place.

1911: The census date is changed from April to June to avoid bad weather and road conditions, and the difficulty of determining crop acreage in early spring.

1918: The first *Statistics Act* creates the Dominion Bureau of Statistics and provides for the Censuses of Population and of Agriculture, for the whole of Canada, in 1921 and every 10 years thereafter.

1921: The population questions no longer include those on "insanity and idiocy" and fertility.

1931: Questions are added to gauge the extent and severity of unemployment, and to analyze its causes.

1956: The first five-year national census is conducted. It is introduced to monitor the rapid economic growth and urbanization that took place during the postwar years.

1971: The majority of respondents now complete the census questionnaire themselves, a process called self-enumeration. Under the new *Statistics Act*, it becomes a statutory requirement to hold censuses of population and of agriculture every five years.

1986: The Census of Population contains a question on disability, which is also used to establish a sample of respondents for the first post-censal survey on activity limitation. Also for the first time, the Census of Agriculture asks a question on computer use for farm management.

1991: For the first time, the census asks a question on common-law relationships.

1996: A question on unpaid work is included in the census.

2001: The definition of "common-law" is expanded to include both opposite-sex and same-sex partners. Also, the Census of Agriculture asks about production of certified organic products.

questionnaire contains the seven questions from the short form as well as 52 additional questions on topics such as ethnicity, mobility, income and employment.

Sampling by distributing the long questionnaire to only one-fifth of households provides detailed data on the entire population without imposing an unreasonable burden on all respondents.

No new questions were added to the short questionnaire for the 2001 Census. However, there are three new questions on the long questionnaire that were not asked in 1996, concerning religion, birthplace of parents and language of work. There are also important changes to some existing questions, including one that will collect information on same-sex partners.

While for most Canadians, the census will be collected in the same way as in 1996, Statistics Canada will conduct an Internet test where people living in two locations (London, Ont., and Crowfoot, Alta.) will have the option of answering the questionnaires using the Internet or on paper. This test will be in preparation for the 2006 Census, which will offer all respondents this choice.

The first data from the 2001 Census, which will be population counts, are scheduled for release in April 2002. Successive releases will run from July 2002 through May 2003. The Census of Agriculture releases its first data in May 2002.

Technology will be the buzzword as well for disseminating data from the census. Statistics Canada's web site will be put to greater use to provide the public with the data they require.

Census of agriculture: basic inventory of farming

The first Censuses of Agriculture were taken in the late 19th and early 20th century in the Prairies when farming was a common way of life. Even in 1931, 1 in 3 Canadians lived on a farm compared with 1 in 30 in 1996. The Census of Agriculture is the basic inventory of Canadian agriculture taken every five years. It asks 184 questions on a variety of topics, including land use, crops, livestock, paid agricultural labour, and land management practices.

This census identifies trends and issues within the agricultural community, and has become the backbone of Canada's agricultural statistics program. It provides comprehensive information on the industry, from the township and rural municipality level to the national level. The questions are designed to shed light on new developments in agriculture; to build a picture of farming over time; to provide information on the human side of agriculture, such as the age and sex of operators; and to understand the business of farming, such as the use of computers.

Farm organizations, government departments, agriculture service providers and academics all use census data to understand and respond to changes in the industry. For example, some groups use Census of Agriculture data to help determine whether there are enough farms using the Internet for business to warrant the development of web sites to deliver information.

In 2001, the Census of Agriculture will ask farmers not just to indicate if they use a computer, but specifically what they use it for. In addition, for the first time they will be asked whether their operation produces any certified organic products for sale, and if so, what these products are.

Privacy and confidentiality: the law protects what you tell us

Each person living in Canada is required by law to provide the information requested in the census. That same law requires that Statistics Canada keeps all personal information absolutely confidential. Only Statistics Canada employees who work with census data and have taken an oath of secrecy see the forms. Personal census information cannot be disclosed to anyone outside Statistics Canada.

Employees must follow specific instructions and procedures to ensure that confidentiality is maintained. One of the most important measures taken to ensure the confidentiality of information is that names, addresses and telephone numbers are not entered into the census database. Statistics Canada controls access to its premises to keep them secure, and there are no public communication lines connected to its database to avoid attacks from hackers. Only a small number of employees have access to completed questionnaires.

The *Statistics Act* contains penalties in the form of a fine of up to $1,000 and/or a jail term of up to six months if an employee releases personal census information. In his annual report to Parliament in May 2000, Canada's privacy commissioner, Bruce Phillips, held Statistics Canada as a model for all government departments to follow in the management of information and protection of privacy.

He wrote: "Only Statistics Canada gathers comprehensive information about individuals, but does so only for statistical purposes, not to make decisions about them. And Statistics Canada's data are stringently protected; abusers can be fined or jailed."

John Flanders is senior media advisor with Communications Division, Statistics Canada.

Net shopping

by Jonathan Ellison and Warren Clark

The Internet has changed the way many people obtain information for making purchasing decisions. It has opened up the relationship between buyers and sellers, providing buyers with the potential to easily comparison-shop and to learn much more about products before buying.[1]

This article is adapted from "Internet Shopping in Canada, 1999" by J. Ellison, L. Earl and S. Ogg, *Connectedness Series*, Statistics Canada Catalogue no. 56F0004, no. 3. 2001.

Net shopping is much more than purchasing goods and services directly on-line. Businesses that allow consumers to view product information on-line are also part of the Internet shopping boom, providing potential customers with descriptions, pricing, availability and customer support and education, that can lead to sales.

Convenience is one of the many advantages of shopping on-line: shoppers can save time and effort by shopping from their home or office at Web sites from around the world at any hour of the day or night. On-line shopping opens up a global marketplace with a much wider range of goods and services.

There are also disadvantages to shopping on-line. As with catalogue shopping, shoppers are unable to feel, smell, taste or try products. And, as with any form of shopping, the on-line product description and photo may not live up to expectations. The shopping experience may boost frustration if the Internet connection suffers from long delays, as a result of slow modem speeds, heavy Internet traffic, system crashes or if shoppers must wade through numerous computer screens to find the product. Those new to shopping on-line may be unfamiliar with search engines, shopping bots,[2] and other ways of finding products. On-line shopping also requires customers to remember account passwords for security purposes, something not required at the local mall. Like mail-order shopping, Internet shopping also has the problem of providing convenient delivery options and hassle-free product returns.

This article focuses on Internet shopping (purchases and window-shopping) done by Canadian households accessing the Internet from home. It quantifies how much on-line shopping is done, what is most popular among shoppers, and what types of households do the buying.

According to the Household Internet Use Survey, in 1999, 1.8 million households (that is, 15% of all Canadian households) shopped from home on the Internet.[3] While about 800,000 households placed orders over the Internet (e-commerce households), slightly more (1 million) only window-shopped — they compared products, looked up product descriptions or specifications, checked product availability, and obtained price quotes — but did not follow through with an Internet order. Although these window-shoppers did not make purchases on-line, the information they received via the Internet may have influenced subsequent purchase decisions made off-line.

One of the concerns of Internet users has been the security of credit card information transmitted on the Net. For this reason, about one-quarter of households who placed orders made alternative arrangements (for example, they used a 1-800 number to complete the transaction).

While Internet shoppers still are a minority, Canadian households spent $417 million in 1999 on Internet purchases from home, an average of $517 per e-commerce household. People are concerned that many Canadian Internet purchases are made to American dot.com companies. According to the

1. Carroll, Jim and Rick Broadhead. 1999. *Canadian Internet Handbook 2000 — Lightbulbs to Yottabits.* Toronto: Stoddart Publishing Co. Limited. p. 106.
2. A bot (short for robot) is a software tool for digging through data. You give it directions and it brings back answers. Shopping bots facilitate comparison shopping by combing the Internet to find the lowest price for a product.
3. Includes those who placed orders for goods and services over the Internet as well as those who only window-shopped, looking for goods and services without purchasing.

CST What you should know about this study

The data for this article are from the Household Internet Use Survey (HIUS) conducted in November 1999. About 36,200 households responded to the survey. The HIUS collected information on household Internet use and business-to-household electronic commerce for households that typically accessed the Internet from home. Electronic commerce information was collected from November 1998 to November 1999. The HIUS collected information on the household as a whole from a designated member of the household who was asked about the level of on-line orders made by all members of the household in the last 12 months. This may lead to an underestimate of the extent of business to household e-commerce because the respondent may not have been aware of purchases or the value of purchases made by other household members.

Excluded is the value of the consumer orders placed over the Internet from locations other than the home. For example, an employee who purchases a book over the Internet from work is not included in the on-line shopping numbers presented here. This study also focuses on Internet users who typically access the Internet and excludes those who rarely access it. Orders placed over the telephone, on ATMs or through other electronic networks other than the Internet are not included.

The HUIS surveyed households in Canada of which some used the Internet during a typical month. Some of these Internet households accessed the Internet from home. Of households who used the Internet from home, some did not shop on the Internet, some placed orders for goods and services (e-commerce households) and others only window-shopped (window-shopper households). Households that did shop online from home are called "Internet shoppers" and include both the e-commerce and window-shopper households.

1999 Household Internet Use Survey (HIUS), about 60% of the dollar value of purchases from Canadian homes ($250 million) were to Canadian businesses.[4] This is miniscule compared with the $559 billion personal expenditures on consumer goods and services in 1999.[5] Although there are many more American Web sites, Canadians may choose Canadian sites when purchasing goods and services to avoid currency exchange rates, customs duties, and possibly, slower, more expensive delivery.

Internet households very concerned about security and privacy on the Internet

Convenience is one of the key reasons why people shop on the Net. However, consumers are still uneasy with making electronic transactions on the Internet due to security concerns. Several recent events involving cyber theft of credit card numbers, denial of service attacks[6] and theft of e-mail addresses may have contributed to the public's concerns of Internet security. Accumulation and selling of personal information about visitors to Web sites, often without consent or knowledge, have raised privacy concerns. To help consumers have an enjoyable on-line shopping experience, e-commerce companies have been storing shipping addresses, credit card numbers and shopping preferences to eliminate re-entry of this information when revisiting. Although these features improve the on-line experience, this information may not be stored very securely.

And home users of the Internet are concerned: nearly half (46%) were very concerned about the security of purchasing over the Internet while about one-third (33%) were very concerned about Internet privacy. These issues may be why Internet window-shoppers and non-shoppers did not place orders on-line. Indeed, almost 53% of the Internet window-shoppers were very concerned about Internet security while only 33% of households who paid for orders over the Internet were that concerned.

To overcome these perceptions, Internet companies are adopting new encryption and authentication technologies, posting privacy and security policies and launching consumer reassurance campaigns. Governments are also acting with new legislation to ensure confidentiality of information.[7] If consumer confidence is compromised by a breach in security or by the distribution of personal information, it is very difficult to win that trust back.

4. Statistics Canada. August 10, 2000. *The Daily* (http://www.statcan.ca/Daily/English/000810/d000810a.htm). Canadian businesses reported $4.2 billion in orders over the Internet in 1999, according to the Information and Communications Technologies and Electronic Commerce Survey. About $611 million of Internet sales were made by Canadian retailers. These sales figures included orders from other Canadian businesses, from businesses and consumers outside Canada, and from Canadian householders who access the Internet from home or other locations. Only Internet purchases of Canadian households accessing the Internet from the home are included in the $417 million total, $250 million of which was purchased from Canadian businesses, as reported in the Household Internet Use Survey.
5. *National income and expenditure accounts — Quarterly estimates.* Statistics Canada Catalogue no. 13-001-XPB, Vol. 48, no. 1 (1st quarter 2000). p. 19.
6. Attackers flood Web sites with so many requests that other Internet users find it difficult to communicate with that service. Service to other visitors is blocked because the server is so busy responding to the flood of requests from attackers that it has no time left to handle requests of legitimate customers.

Books, software, music and travel were the most popular on-line buys

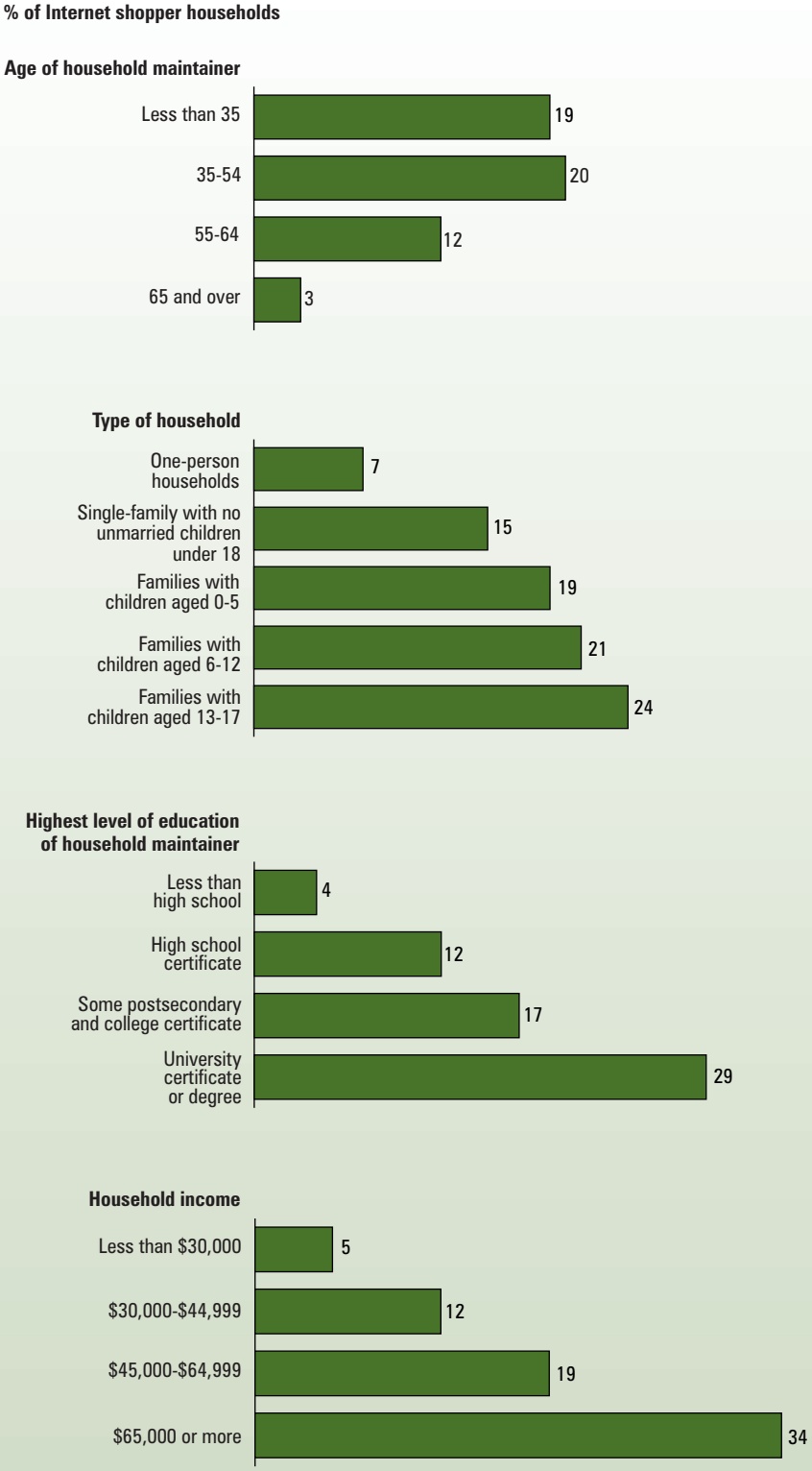
Buying books (48%), software (36%), music (30%) and travel (29%) were the most popular purchases among households buying on the Net. These items can be easily purchased by providing a credit card number to the merchant over the Internet. Because their cost is usually small, a purchase of these items has few long-term financial implications on a household, unlike buying or leasing a car. Automotive product purchases ranked 7th in popularity at 21% among e-commerce households.

Travel and automotive products popular among window-shoppers

The Internet has become an essential research tool for consumers, enabling educated purchase decisions. Among window-shoppers automotive products (30%) were 2nd in popularity behind travel (32%). Purchasing or leasing a car requires considerable research, something that many Canadians have used the Web for. Yet most consumers still buy or lease cars off-line. This may be because many auto Web sites channel consumers back to a dealership to complete the sale. Consumers may still want to take a test drive and negotiate trade-in values, pricing and financing options face to face. The Internet

7. The *Personal Information Protection and Electronic Documents Act* that came into force on January 1, 2001 protects the personal information of individuals when it enters the commercial sphere in Canada. It will help to build trust in electronic commerce with the assurance of protection of digital information. In general, the *Act* requires organizations to obtain an individual's consent when they collect, use or disclose the individual's information. The individual has a right to access their personal information that is held by an organization and to have it corrected, if need be. Personal information can only be used for the purposes for which it was collected. Individuals should also be given the assurance that their information will be protected by safeguards such as locked cabinets, passwords or encryption.

CST Highly educated, high income households and those with teenagers are most likely to be Internet shoppers



Note: Includes households that only window-shop and households that order goods or service over the Internet.
Source: Statistics Canada, Household Internet Use Survey, 1999.

helps consumers to reduce some of the legwork involved in making large purchases.

Who's shopping?

Previous research has shown that home Internet use was more common among households with high income, the highest levels of education, teenaged children and where the household maintainer was aged 35 to 54.[8] Households with the highest education and income were also the most likely to shop on-line.[9] Households with an income of $65,000 or higher were about 7 times as likely to be Internet shoppers (34%) as were households with less than $30,000 income (5%). About 60% of household Internet shoppers had a household maintainer in their mid-30s to mid-50s. Internet shopping rates were highest among households where the maintainer was in their mid-30s to mid-50s (20%), followed closely by those under age 35 (19%).

Summary

Although household Internet shopping in 1999 represented only a small part of retail commerce, e-commerce is growing rapidly. More and more households are becoming connected, and many are beginning to shape their purchasing decisions based on information they obtain on the Internet. Businesses increasingly use the Internet to disseminate information about their products and to develop relationships with their customers. This has lead to growth in on-line transactions. In 1999, 1.8 million Canadian households shopped on the Internet. Books, computer software and hardware, music and travel were among the most popular on-line purchases. Canadians are still concerned about privacy and security issues related to making purchases over the Web; however, with stronger security measures, clearly articulated privacy policies and government regulations, these fears may abate in the future.

Books and computer software are the biggest sellers on the Net

Product or service type	E-commerce households		Window-shopper households	
	Rank	%	Rank	%
Books, magazines and newspapers	1	48	3	30
Computer software	2	36	4	24
Music (CDs, tapes, MP3)	3	30	7	21
Travel arrangements	4	29	1	32
Clothing, jewelry and accessories	5	24	5	23
Computer hardware	6	24	6	21
Automotive products	7	21	2	30
Consumer electronics	8	19	8	19
Other entertainment	9	17	10	14
Other	10	16	13	7
Banking and financial	11	16	9	14
Housewares (furniture and appliances)	12	13	11	13
Videos, digital video discs	13	12	12	9
Hobbies	14	9	14	6
Food, condiments and beverages	15	6	15	5
Toys and games	16	4	16	3

Source: Statistics Canada, Household Internet Use Survey, 1999.

Internet Use

In 1999, 4.9 million Canadian households (or 42% of households) regularly used the Internet from their home, work, school or other locations.[1] This was up from 36% in 1998 and 29% in 1997. The home has emerged as the most popular place for household Internet access (29% of households), while work ranked second at 22%.

1. In August 2000, 41.5% of American households had access to the Internet at home. U.S. Department of Commerce. October 2000. *Falling through the Net: Toward Digital Inclusion* (http://search.ntia.doc.gov/pdf/fttn00.pdf). p.1.

8. Dickinson, Paul and Jonathan Ellison. Winter 1999. "Plugged into the Internet", *Canadian Social Trends*.
9. Place orders or window-shop over the Internet.

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You snooze, you lose? — Sleep patterns in Canada

by Cara Williams

We live in a society that moves at a rapid pace and we face conflicting pressures at every turn. Many people juggle families and jobs, trying to be everything to everyone. The fast pace of our lives and the stress associated with this pace can contribute to sleep disorders such as insomnia. Ironically, some Canadians are finding that one of the few ways to squeeze more time out of a day is to cut back on sleep.

Sleeplessness can cause irritability and affect our performance of physical tasks such as driving or operating machinery, or of mental tasks requiring high levels of concentration. Studies show that chronic sleep loss may pose serious health problems such as increased risk of heart disease and depression. It can also make us much more irritable, upsetting our relations with family, friends and co-workers.

A number of factors can affect our sleep. Some — such as age, health status, stress and the presence of children — are personal; others — such as shift work — are societal. This article investigates certain aspects of Canadians' sleep patterns: whether they are cutting down on their sleep to meet other demands and, if so, which groups are doing this; how their sleeping patterns changed between 1992 and 1998; and which groups are having problems falling and staying asleep.

CST What you should know about this study

This article is based on questions asked about sleep in Statistics Canada's 1992 and 1998 General Social Survey (GSS) of Canadians aged 15 and over. The following two questions were examined:

- Do you regularly have trouble going to sleep or staying asleep? (yes or no)
- When you need more time, do you tend to cut back on your sleep? (yes or no)

The GSS also asked respondents to provide a diary of their time use over a 24-hour period. This diary provided information on how Canadians allocated their time, including night sleep and incidental sleep (naps).

This article examines the responses to the two questions above and also looks at the average duration of night sleep and incidental sleep based on the information respondents supplied in their time-use diaries.

While you were sleeping...

Many researchers believe that adults generally require an average of 8 hours of uninterrupted sleep. However, some recent research indicates that if able to follow their own natural rhythms, adults would sleep about 10 hours each night, challenging the belief that 8 hours is adequate for peak performance and alertness.[1] While the fast pace of our lives may not allow us this amount of sleep, the 1998 General Social Survey (GSS) found that Canadians slept an average

1. Research shows that, in the absence of clocks and scheduled routines, both children and adults sleep between 10 and 12 hours and are able to perform better on a number of psychological tasks requiring participants to focus on details for an extended period of time. Coren, Stanley. 1996. *Sleep Thieves.* New York: The Free Press. p. 255.

of 8.1 hours a night, up slightly from the 1992 average of 8.0 hours. And while the percentage of Canadians that slept less than 6.5 hours a night remained constant at 15% in 1998, 47% of Canadians stated that they cut down on sleep in an attempt to squeeze more time out of the day, up from 44% in 1992.

Sleep — for some an elusive dream

One of the physical requirements of our bodies is the need for sleep. Insomnia, defined as too little sleep, is a disorder of initiating and maintaining sleep. Experts refer to three types of insomnia: transient, short-term and long-term. Studies suggest that prolonged insomnia may interfere with the body's growth and repair functions. Most people periodically experience an occasional night of sleeplessness, but for some a deep, restful sleep can be elusive. The 1992 GSS found that 20% of adults regularly had problems going to sleep or staying asleep. By 1998, this had risen to 25% of adults.

Stress can also greatly affect sleep patterns. Time-stressed individuals are more likely to have problems going to sleep or staying asleep. In 1998, over 40% of individuals who were severely time stressed[2] had problems sleeping.

Men, women and sleep

On average, women get more sleep than men (8.2 versus 8.0 hours a night). This is similar to 1992 GSS results for women and men (8.2 and 7.9 hours respectively). However, in 1998, 29% of women, compared with 21% of men, reported having trouble going to sleep or staying asleep. Individuals that regularly had trouble sleeping were also more likely to cut down on sleep when pressed for time — 62% of men and 56% of women, compared with 48% and 45%, respectively, in the general adult population.

Parenting also changes sleep patterns for both men and women. During their early years, children require a large amount of parental time for personal care, such as washing, feeding and dressing, as well as for playing. The responsibilities of parents for school-aged children change to helping with teaching, reading, talking and travel. Many Canadians juggle the demands of parenting and jobs. Consequently, in order to meet all these demands, many parents cut down on sleep. The 1998 GSS found that both men and women sleep less when children are in the home. The average amount of sleep for women aged 25 to 54, with children living in the home, is 7.9 hours a night (compared with 8.1 hours for women of the same age without children in the home). Men between the ages of 25 and 54 with children at home sleep 7.7 hours a night, while men the same age without children at home average 7.8 hours a night.

Over half of these mothers and fathers (52% and 56% respectively) will cut down on sleep when pressed for time, compared with 51% of adults of the same age without children. While parents sleep less on average than those without children in the household, a lower proportion of parents regularly have trouble going to sleep or staying asleep. Less than 20% of fathers, versus 25% of men without children, had trouble initiating or sustaining sleep, and one quarter of mothers, compared with 33% of women without children, had lower-quality sleep.

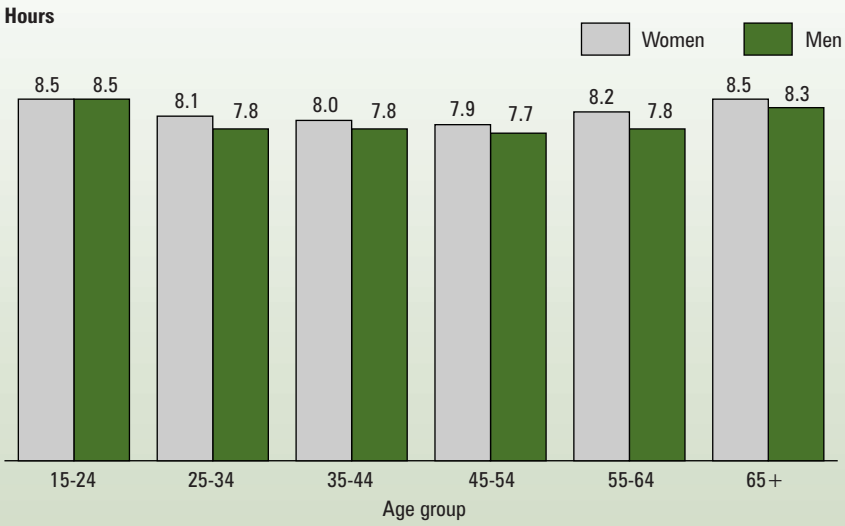
CST Women generally sleep longer than men and are somewhat less likely to cut down on sleep when pressed for time

	Average hours of sleep/night	Sleep less than 6.5 hours	Cut down on sleep
	Hours	%	
Total population (15+)			
Men	8.0	17	48
Women	8.2	13	45
Parents			
Men	7.7	19	53
Women	8.0	14	51
Shiftwork			
Men	7.7	25	62
Women	7.9	19	61
Nappers			
Men	7.8	19	40
Women	8.2	17	38
Trouble sleeping			
Men	7.7	22	62
Women	8.1	16	56

Source: Statistics Canada, General Social Survey, 1998.

2. Respondents were asked a series of 10 questions about time. If they answered yes to seven or more of these questions, these individuals were considered severely time stressed.

CST **Of all the age groups, those aged 15 to 24 and those 65 and over average the most sleep per night**



Source: Statistics Canada, General Social Survey, 1998.

Aging and sleep

Sleep patterns vary across ages. Men and women between the ages of 15 and 24 sleep an average of 8.5 hours a night. During the prime working and child-rearing years, the amount of sleep decreases and is at a low for both men and women between the ages of 45 and 54. The average time spent in sleep begins increasing again after age 55.

A substantial amount of research documenting the issue of aging and sleep shows that aging can be one of the causes of sleep disturbance, as many of us experience difficulty with our internal clocks. Additionally, as people age, they may experience health problems and the associated aches and pains that can affect sleep. The 1998 GSS shows that seniors sleep more than their 15- to 64-year-old counterparts (8.4 hours compared with 8.0 hours a night). However, while the average time spent in night sleep for seniors is considered healthy, 9% of seniors sleep 6.5 hours a night or less. Slightly more than 40% of those who sleep 6.5 hours or less a night have an activity limitation such as circulatory or respiratory disease, arthritis, or heart disease, compared to only 30% of seniors who sleep more than 6.5 hours each night. This finding supports the notion that health problems affect sleep patterns. Finally, quality of sleep in seniors differs for men and women. One-third of senior women reported regular problems initiating or sustaining sleep compared with just one-fifth of senior men.

Shift work and struggling to stay awake

Our bodies require sleep in order to function optimally. While we are asleep our bodies both rest and restore our physical functioning. Everyone has a daily sleep–wakefulness cycle, or circadian rhythm, which reflects the physiological variations in his or her body during the day. These variations include changes in blood pressure and body temperature. While sleep requirements vary by age and individual, everyone experiences two peak periods of sleepiness during the sleep–wakefulness cycle. The first peak occurs between 1 and 4 a.m. and the second, 12 hours later, between 1 and 4 p.m. — a time that coincides with the 'siesta' in warmer climates. Although our North American culture does not officially acknowledge daytime sleepiness by closing stores and businesses in the afternoon, until World War II very few were open during the first peak period of sleepiness, between 1 and 4 a.m. However, since the war, our demand for goods and services has required more around-the-clock production: shift work and night work have become more common and can be very disruptive of the body's natural rhythm. Numerous studies have shown that commercial truck drivers, night workers and shift workers do not get adequate sleep and build up a large sleep debt over their shift cycles.[3] In 1998, one-third (32%) of working Canadians worked something other than a regular daytime schedule or shift.[4] Of these shift workers, the average duration of night sleep was 7.8 hours, the same as that of day workers. However, regular night-shift and split-shift workers slept the least of all the shift worker groups at 7.7 hours a night, and over one-quarter of night-shift workers slept less than 6.5 hours a night — thereby accumulating a large sleep debt.

The quality of sleep for shift workers differs from that of regular daytime workers. About 30% of shift workers (versus 23% for regular daytime workers) had trouble going to sleep or staying asleep and 62% (versus 55% of regular daytime workers) cut down on sleep when pressed for time.

3. A number of studies documenting the effects of shift work and extended working hours can be found on the Transport Canada Web site at www.tc.gc.ca.

4. This includes regular evening and night shifts, rotating shifts, split shifts and on-call or casual shifts, or an irregular schedule.

Playing catch-up on the weekend

Weekdays can be very hectic for many adult Canadians. Between work and school, leisure activities and child-care, we race around trying to get everything done. Before we know it, we have cut into the time we hoped to spend sleeping. For many, weekends provide a much-needed reprieve from the weekday rat race, and many people play "catch-up" by sleeping more on the weekends. Indeed, the 1998 GSS time-use diaries show that adult Canadians sleep, on average, 48 minutes more on Friday and Saturday nights, for a total of 8.6 hours each night.

Caught snoozing

The afternoon snooze is not common in Canada and is much maligned as a practice of the lazy. The pace of our lives and the structure of society prevent many from taking naps. Daytime sleepiness is natural and usually occurs between 1 and 4 p.m. as our bodies go through the second ebb in their biological rhythms. We may try to fight this urge to rest by drinking coffee, getting fresh air or just trying to ignore it. However, research at the Stanford Sleep Disorders Clinic[5] indicates that a well-timed nap during this period can improve performance and alertness for hours after the nap: a 45-minute nap is said to improve alertness for the next six hours.[6] While on an average day, only 13% of Canadians 15 and older take naps, those that do nap sleep for an average of 1.7 hours. Certain groups are more likely to nap than others. For example, 26% of seniors, 16% of those keeping house and 13% of those looking for paid work — people more likely to be at home — take naps. Students and paid workers are the least likely to nap.

Naps can be a very effective way of reducing sleep debt and improving alertness. This can be especially important for shift workers or for those who work long hours, such as truck drivers and pilots. However, in 1998, only 8% of shift workers took naps.

Summary

Thomas Edison believed that sleep was wasteful, unproductive time and that the continuous daylight that his light bulb provided would revolutionize the world. Indeed it has, but while we produce goods and provide services 24 hours a day, our physiology

5. The Stanford sleep laboratory was created in 1970 as the world's first sleep disorder center.

6. Dement, William A. 1999. *The Promise of Sleep.* New York: Delacorte Press.

CST Circadian roulette

Not surprisingly, chronic lack of sleep results in sleep debt and can have serious consequences, such as illness and accidents resulting from impaired judgement. Recent studies suggest that even moderate sleep deprivation (being awake more than 18 hours daily) results in reaction times that are slower than for those who are legally impaired from alcohol.[1]

Nearly every major industrial accident in recent decades has occurred after midnight: both the Chernobyl and Three Mile Island nuclear disasters occurred between 1 and 4 a.m. Indeed, some of the world's most horrific accidents have been attributed to sleep debt: for example, the oil spill from the Exxon Valdez and the explosion of the Challenger space shuttle both have been attributed to sleep deprivation and sleep debt.[2]

Many commercial transportation accidents have been attributed to driver fatigue. The risk of a single-vehicle truck crash is four times as high between the hours of 3 and 5 a.m.[3] Current regulations in Canada allow commercial truck drivers to legally work more than 100 hours a week. Proposed legislation will cap the allowable work time to 84 hours a week (an average of 14 hours in a six-day workweek).

Because shift work and other jobs with variable work hours can wreak havoc with our circadian rhythms, a number of studies have been conducted on the effect of fatigue on commercial truck drivers, pilots, flight crews, air traffic controllers and doctors — all professions that can require extended hours or variable shifts, or both. The general conclusion of these studies is the same: individuals working extended hours or variable shifts suffer from sleep deprivation and have significant sleep debt, and this in turn results in a decrease in their ability to concentrate, a deterioration in their performance, and a high variability in their moods.[4]

1. *The Globe and Mail.* Sept. 19, 2000. p. A8.

2. Dement, William A. 1999. *The Promise of Sleep.* New York: Delacorte Press. p. 51 and 53.

3. *The Windsor Star.* July 14, 2000. p. A7.

4. See Transport Canada's Web site at www.tc.gc.ca for a list of studies.

CST The largest creditor — sleep debt

Sleep debt is calculated by subtracting the amount of sleep an individual gets from the amount of sleep that an individual needs.[1] Not getting enough sleep over an extended period results in considerable sleep debt. Scientists believe that the effects of prolonged sleep loss may affect a person's health since the effect of sleep loss accumulates over time. Even a small sleep debt of seven to eight hours has direct effects on mental performance, memory and reaction times.[2] Periodically, many people may have one or two nights when they don't get enough sleep, but they usually make up for missed sleep somewhere down the road (for example, sleeping in on a Saturday morning, or taking a nap during the day). Using the 1998 GSS data, on an average day, 15% of Canadians 15 and older sleep less than 6.5 hours a night. Certain groups are more likely than others to do so. For example, 19% of fathers and 25% of male shift workers sleep less than 6.5 hours a night. Not surprisingly, individuals with lower-quality sleep (not being able to initiate or sustain sleep) accumulate substantial sleep debt because they not only have trouble initiating sleep, but about 18% of these individuals sleep less than 6.5 hours a night.

1. The amount of sleep an individual needs varies based on body chemistry, age and activity levels, but for an adult it is thought that between 8.0 and 8.5 hours a night is healthy.

2. Coren, Stanley. 1996. *Sleep Thieves*. New York: The Free Press.

has not kept up with the technological advances society has made. Sleep remains a vital component in a healthy life. Without adequate sleep we are more likely to be moody and less able to concentrate. Over the long run, a chronic lack of sleep can affect our health. Our bodies run on a clock. As the skies darken at the end of the day, our brains signal that it is time to get ready for sleep. The 1998 General Social Survey indicated that the average amount of time spent in night sleep for adult Canadians was up slightly from the 1992 figures. However, when push came to shove, the 1998 GSS showed that almost half of Canadians cut back on their sleep when they need more time.

Not surprisingly, certain groups slept less than others; overall men slept less than women, and Canadians with children in the household slept less than those without children. Seniors and individuals aged 15 to 24 slept more than any other group — an average of 8.4 and 8.5 hours a night, respectively.

Finally, perhaps as a result of our frantic pace, the quality of our sleep comes into question. One-quarter of the general adult population, 40% of severely time-stressed people and about 30% of shift workers regularly had problems going to sleep or staying asleep.

CST

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The evolution of communication

by Cara Williams

The 20th century has seen enormous changes but probably none as rapid and all-encompassing as the revolution in communication technologies. The changes seen over the last 100 years have transformed the way we perceive things, the speed with which we do things, and our expectations. In the early part of the century, long-distance communications and the broadcasting of events could take weeks. Today, we are able to view images or correspond with someone from virtually anywhere in the world instantly.

As communication technologies evolve, they overlap as each succeeds (or supplements) the other. For example, while the telephone was introduced in Canada over 100 years ago and the newspaper over 200 years ago, they remain vital components of the communications array used today. Conversely, the telegraph, which is the ancestor of many of the current communication technologies, is obsolete.

Communication technologies can be divided into two distinct types. The first is the one-way broadcast of information (as found in newspapers, radio and television), which generally occurs in a very public forum. The second type of communication is two-way or interactive communication, which occurs in a quasi-public or personal forum. These media include the post, the telegraph, and the telephone. The Internet and e-mail act as one-way and two-way communications allowing for interaction as well as the broadcast of information.[1] This article discusses how the communication technologies used by Canadians have evolved and changed over the 20th century.[2]

And that's the news from here

Broadcast communications involve relaying information — there is no immediate interaction. Nevertheless, the information and the images beamed to us play a role in how we define ourselves as individuals and as a society. Undoubtedly, one of the major accomplishments of the 20th century has been the advancement in broadcast technologies. Through radio, television and newspapers, we have been told about events happening thousands of miles away. Canada has become part of a global society and Canadians have changed their way of thinking about themselves, their country and the world.

Stop the press! The newspaper stands the test of time

The first newspaper in Canada was the *Halifax Gazette*, which produced its first issue in 1752. Since then, hundreds of newspapers and periodicals have come and gone. Until Confederation, most newspapers were published only once a week, but, as Canada moved towards the 20th century, daily newspapers began to appear. By 1900, the country boasted about 112 daily newspapers.

Competition was fierce as each paper sought to expand circulation and capture much-needed advertising dollars. The number of dailies peaked in 1913 at 138, but by 1945 only 87 remained. This decline is largely attributed to the rise of radio and television as well as intra-industry competition. In the 1920s, newspapers jostled amongst themselves for advertising dollars, but with the advent of radio (and later of television), advertising revenue fragmented still further. Perhaps more important than this, though, is that the Canadian public could now turn to other media to get the news.

One of the single most important features of a newspaper is that a significant portion of it is dedicated to local and community news. In addition to their comprehensiveness and portability, undoubtedly this is one of the reasons that the "old technology" newspaper remains popular. In fact, the newspaper industry saw a revival of sorts in the 1980s. The number of dailies grew to 110 in 1986, with a daily circulation of 5.7 million. At the same time, circulation of weekly community newspapers increased to 9.7 million in 1986. By 1999, the Canadian Newspaper Association reported that there were 104 daily general interest newspapers in Canada, with a daily circulation of more than 5.1 million. Interest in community newspapers remains strong, as indicated by the 1999 results of the Print Measurement Bureau study on Canadians' print media habits, which found that there were over 10.6 million weekly readers.

Radio signs on

Today's radio stations offer Canadians numerous choices, from "all news" to "easy listening", in an effort to find and keep a steady audience. But to Canadians living on a homestead in

1. For the purposes of this article, the Internet and e-mail are included in interactive communications.
2. This article draws on numerous data sources. A full bibliography is available on the *Canadian Social Trends* Web site at www.statcan.ca/english/ads/11-008-XIE/index.htm

Saskatchewan or northern Quebec at the beginning of the 1920s, radio was an exciting new phenomenon. The first Canadian radio broadcast was transmitted by the Canadian Marconi Company in Montréal in 1919; regular programming commenced in 1920. At this time, stations were only on the air a few hours a day and many urban centers had two or more stations sharing a single frequency. This enabled broadcasting licence holders to lease time on existing stations. "Phantom stations", as they were known, began to emerge.

In 1922, broadcasting became regulated when the government granted 52 private commercial and amateur broadcasting licenses. Surprisingly, news content was minimal in these early years and radio stations did not challenge the dominance of the newspapers.

During the early years, radio programming was basically regional. The first national broadcast was not carried until 1927, with the coverage of the celebration of the Diamond Jubilee of Confederation and the dedication of the Peace Tower on Parliament Hill. In 1936, the government created the Canadian Broadcasting Corporation (CBC), making it responsible for providing national radio service in Canada; by the following year public radio reached 76% of the Canadian population.

The 1940s were the golden age of radio. Significant developments were made in radio during the Second World War, including the introduction of hourly news broadcasts and the development of mobile transmitters which allowed news stories to be broadcast on location, rather than just from the radio studio. During the 1940s, the radio was also an important source of entertainment. But by the early 1950s, television began to make significant inroads in the communications and entertainment industry, and evening radio programming, which consisted of variety shows and drama, lost much of its audience.

Radio was able to reinvent itself with the help of the car radio and the increasing number of people commuting to work. Additionally, the development of portable radios (beginning with the transistor radio) has helped to sustain some of the radio's appeal. Today's radio provides us with a variety of stations from music and news to "talk" radio, that we can listen to throughout our day. Indeed, in the fall of 1999, Canadians listened to the radio for an average of 20.5 hours per week, with adult contemporary as the most popular listening format.

The era of channel surfing

Television has played a profound role in changing our national and worldviews. Beyond entertainment value, television brings images from around the world into our living rooms. These images have enabled us to witness events almost as they happened, making us not only instantly aware of world events, but also letting us discover how they affected peoples' lives. Television broadened Canadians' understanding of the world by expanding their scope of knowledge.

The first television broadcast in Canada did not occur until September 1952, but by then there were already 225,000 television sets in Canadian homes: people living close to the U.S. border were able to receive broadcasts from American stations and so purchased TVs. Canadian television broadcasting was launched with the debut of the CBC's television arm. The first private station (located in Sudbury, Ontario) followed about one year later in October 1953. In 1961, Canada's second privately-owned national network, CTV, made its debut. A strong base for another network certainly existed, since 83% of households (4 million homes) boasted a TV set by then. By 1972, over 88% of all Canadian households had at least one television and 20% of households had a colour set.

Cable television was first introduced in London, Ontario in 1952 with the aim of improving signal reception in rural areas. It had a relatively slow start, but companies decided that the solution was to enter large urban markets, and by 1975, 40% of households had cable.

The purpose of cable today is no longer simply to improve the reception of local channels but to increase the number of stations available to consumers. This has also entailed competing with the direct-to-home satellite and wireless cable services that are now available. The development of specialty channels and pay-TV, initiated in 1983 and supplemented by more channels in 1989 and 1995, has both led and followed the expansion of cable. In 1998, 73% of households (over 8 million) were cable[3] subscribers receiving some level of cablevision. With the growth in the number and types of channels, the viewing audience has become increasingly fragmented as both conventional broadcasters and the specialty channels compete for the same audience.

With so many choices available, it is not surprising that Canadians watch a variety of programming. However, throughout the 1990s Canadians spent the lion's share of their viewing time watching drama and news programming (more than 50% over the decade).

Today, virtually all Canadians have at least one television in their home. Not surprisingly, the largest proportion of our leisure time is spent watching television — about 2.2 hours each day in 1998 — illustrating the central role that television has in our lives.

Hello… we're waiting for your response

Interactive communications allow us to stay in touch with each other — to talk

3. This includes the direct-to-home and wireless cable.

and listen, to send and receive. Two-way communication technologies have been developed for discourse. This type of communication has evolved to allow, and perhaps demand, almost instantaneous reaction. Included in two-way communications are the mail, telegraph, telephone and Internet.

Neither rain nor snow…
The first pony express rider in North America

Before Confederation, the Post Office had links to both the United States and British postal services. Contrary to legend, the first pony express riders in North America did not gallop across the open plains of the American West, but rather traversed the rolling landscape from Halifax to Digby, Nova Scotia.[4] The parcel of letters and news dispatches was then transferred to a boat bound for Maine, where the U.S. postal system took over delivery.

The Post Office Act of 1867 created the Canada Post Office, making the federal government responsible for both domestic and international mail. Service was limited, though, and it was not until October 1908 that rural mail delivery began. Even then, it was restricted to existing stagecoach routes, where mail was both picked up and delivered. Delivery was expanded in April of 1912, and the number of rural routes increased five-fold from 900 in 1912 to over 4,300 in 1933.

Given Canada's vast landmass, it was only a matter of time before the Post Office experimented with transporting mail by air and, in 1939, daily cross-country airmail service began. In 1948, Canada became the first country in the world to transport all first-class domestic mail by air.

After World War II, the volume of mail grew enormously, from approximately 2 billion pieces in 1945 to 4.8 billion in 1970. Because of the increase in volume, "next day delivery for the price of a stamp" became impossible. Private courier companies eager to tap into this market began to compete with the post office's premium services, such as special delivery and courier services, challenging the government's monopoly on mail delivery.

By the beginning of the 1980s, the Post Office was running deficits of about $600 million every year. In an effort to turn this situation around, postal services were taken out of the government department and made the responsibility of a Crown Corporation in 1981. By 1989, Canada Post Corporation had recorded its first profit.

In the 1990s, Canada Post faced competition not only from courier companies but also from electronic communications such as facsimile machines and e-mail, which provide almost instantaneous delivery of letters and documents. As these technologies became more widely accessible, the volume of mail processed by Canada Post and its affiliate courier services decreased from 10.4 billion in 1993, to 9.6 billion pieces in 1998.

Send money!

"Time continues to indicate that the transmission of the written word by telegraph is indispensable to trade, industry and social life. Its reliability, coupled with its accuracy and speed, undoubtedly will continue to retain for it a popularity over all other forms of written communication." – CPR Facts and Figures, 1937

As with so many predictions, this one was sadly incorrect. Nevertheless, it illustrates the important role that the telegraph played in the early part of the 20th century.

The first telegraph line in Canada was installed in 1846 between Toronto and Hamilton. At the beginning of the telegraph age, numerous companies sprang up, but, as services were consolidated, most small companies were bought out by larger ones. The federal government also operated a telegraph service. The Dominion Government Telegraph Service was designed to furnish rapid communication for sparsely populated areas that private companies had no incentive to serve, such as the coast of Vancouver Island, the Peace River area of northern Alberta, and the coast of Cape Breton.

In 1912, over 10 million telegraph messages were transmitted over more than 182,000 miles of wire and almost 39,000 miles of telegraph lines. The telegraph remained a vital communications link during the Depression years and throughout the 1940s. In 1946 alone, over 18.4 million telegraph messages were transmitted.[5] But the technology underlying the telegraph aided in the development of the telephone, since the telephone initially utilized existing telegraph lines. Gradually, the importance of the telegraph as the primary means of long distance communication began to fade. From a high of 21.8 million telegrams transmitted in 1951, the industry reported transmission of only 4.4 million in 1975. And while the telegraph no longer plays a central role in communications strategies, it laid the foundation for other technologies we use today.

At the beep, please leave a message

The telephone was introduced in Canada in March 1876 and the first long-distance phone call was made that August, between Brantford and Paris, Ontario — a distance of 8 miles. Ten years later, there were 13,000 telephones in Canada. We've been talking non-stop ever since.

The telephone was adopted so quickly that, by 1911, there were 537 telephone companies in the country. Within another two decades, the

4. The Canadian Railway Telegraph History Web site. http://web.idirect.com/~rburnet/trivia.html

5. "Transmitted" includes messages sent in Canada or received in Canada. This does not include cablegrams or money transferred.

number had grown to over 2,400 companies, including three large provincial telephone systems in Manitoba, Saskatchewan and Alberta. In 1933, Canadians made an estimated 2.2 billion local and over 24 million long-distance calls.

In 1911, there were 4.2 telephones for every 100 people; by 1930, it was 14.1 telephones. In 1942, Canada ranked third in the world in telephone access behind the United States and Sweden. Although not every household has a telephone (99% of households do), there were more access lines than households in Canada in 1997 (107.3 per 100 households). These extra lines are mostly attributed to the growth in Internet access lines, facsimile and second voice lines.

The telephone has undergone its own profound evolution. A myriad of services such as call waiting, call forwarding, and call display can be added to individual lines. Additionally, the technology attached to our telephones has changed. When voice mail, modems and facsimile machines are connected to our phone line, the rotary phone is no longer adequate (indeed, it is virtually impossible to obtain a rotary or pulse line anymore). With the speed at which communications technology is changing, some people are getting left behind. The 1994 General Social Survey (GSS) indicated that income, education, and age play important roles in determining who uses everyday technology such as the answering machine. For example, only 37% of seniors had used an answering machine in the previous 12 months.

In 1985, the cellular phone was introduced to the communications market. Cellular telephones use wireless transmission technology to provide access through the public switch telephone network, thus making the phone handset mobile and their users accessible at all times. Canadians quickly embraced the cell phone; between 1994 and 1996, the number of cell phone subscribers almost doubled to over 3.4 million. In 1997, 19% of Canadian households had a cell phone for personal use, up from 14% the previous year. It is estimated that by 2005, 11.7 million Canadians will be cell phone subscribers.[6]

Information overload

When a computer connects to a communications network to access the Internet, to use an e-mail account, to use electronic banking services or buy something from a Web site, computer communications occur. The Internet and e-mail have changed the speed at which we communicate and the volume of information we can send and receive. Where we once complained that information was scarce, many Canadians find that today the amount of information available is overwhelming.

The Internet had its inception in the mid-1970s with ARPANET. This precursor was successfully used by a small group of academics and scientists who shared information, accessed remote computers and routinely used e-mail. University researchers adopted the Internet early on, but in 1990 it was still an alien concept to the average person. Today, use of the Internet and the World Wide Web is standard in public schools and places of work, as well as universities. And because so many school children use the Internet to research their projects, it is fast becoming commonplace in many Canadian homes.

In 1999, 42% of all Canadian households used the Internet (either from home, work, school or the public library), up from 29% in 1997. The younger generation is more connected — Internet use in 1998 was highest (47%) among households headed by a 35- to 54-year-old, the households most likely to have children living in the home.

Computer communications in the home is also accelerating. In 1997, 16% of households regularly used computer communications from home; by 1998, the figure was 23% (2.7 million households), and by 1999 this had increased to 29% of all households.

Not surprisingly, the most popular use of the Internet at home is e-mail. Fully 86% of those households that were "plugged in" used e-mail. General browsing, looking for information, getting medical information, and electronic banking are some of the other things for which households used the Internet in 1998.

Summary

Communication in a country as large as Canada is difficult, but crucial to a sense of well-being and social connectedness. Rural and remote regions require communication systems to hear what is happening in other parts of the country and the world. Early in the 20th century, the telegraph and the post office were the primary means of communications. As time progressed, new communication technologies bridged the distances faster. Today, we are able to speak with friends, relatives or conduct business across the country or around the world instantaneously. In fact, many contend that today we are too connected, and would just like to get away from it all into the vast open spaces our grandparents knew.

6. This assumes an S-curve pattern of product penetration rates. For more information, see Chodorowicz, D. August, 1998. "The cellular telephone industry: Birth, evolution, and prospects," *Canadian Economic Observer.*

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Learning on your own

by Cynthia Silver, Cara Williams and Trish McOrmond

In the 1990s, the concept of life-long learning became widely recognized as being an important social and personal goal. This term is often used to describe a strategy whereby workers aim to increase their "human capital"[1] by improving their current skills or expanding the range of skills they can offer both current and prospective employers. But the value of life-long learning extends far beyond the workplace. People have embraced learning to enrich their ability to function within their communities and homes, to deal with family issues and to enjoy their leisure time. Increasingly, people are also being encouraged to view life-long learning as a means of combatting the mental deterioration associated with aging.

As an alternative to traditional courses in a classroom setting, many Canadians choose to develop their skills through informal training on their own time. Indeed, for many subjects and skills, this is the only practical option. This approach is sometimes called informal or self-directed learning. Participants can make the activity as structured as they wish, invest as much or as little money as they want, and fit it into their schedule when it best suits them. Informal learning, however, is not accounted for by most statistics on education and training. This article uses new data from the 1998 General Social Survey (GSS) on time use to provide information about people who increase their human capital by learning informally.

A popular alternative to formal learning

The 1998 GSS shows that informal learning is a popular alternative to formal learning. While 15% of Canadians aged 25 and over (3.1 million) reported that they took a course or training session in the last month, almost double that number (about 6 million) reported that they had engaged in an informal learning activity during the previous month. Most of those who learn informally (89%) pursued only one subject. And while the subject matter studied informally by Canadians is diverse, seven broad thematic categories are evident: computer and Internet technologies; trade-related subjects; business and finance; arts and sciences; hobbies and personal development; health and child care; and "other subjects" that fall outside the broad themes.

The 1990s were witness to the widespread adoption of the Internet and the personal computer. Not surprisingly, almost one-third of single-topic self-learners were studying computer and Internet technologies. Another 15% were studying subjects in the arts and sciences category, while over 11% were following business and financial topics. Hobbies and personal development commanded the attention of more than 16% of single-subject learners. An additional 10% were pursuing health and child care studies.

Trade-related subjects were also popular. Over 8% of single-topic self-learners were interested in construction and trades, carpentry and woodworking, or vehicle maintenance and operation.

Men and women share interest in some subjects but not all

Gender had little effect on whether someone is likely to study informally: 52% of self-learners were men and 48% were women. And several major subject areas — computer skills (including Internet), business and financial services, and arts and sciences — ranked high among both men and women. There is no question, however, that some subject matter areas were more appealing to men and others to women.

To some degree, the areas studied by women and men reflected traditional divisions of labour. For example, 17% of female single-topic self-learners studied health and child care, compared with just 3% of men. On the other hand, male learners dominated the study of trade-related subjects with 14% participation, compared with less than 2% for women.

An equal percentage (15%) of male and female self-learners studied subjects in the arts and sciences; however, within this category, more men than women studied natural sciences and the environment, while a larger percentage of women studied education and teaching. This pattern is consistent with the gender differences observed in both university enrolments and the workplace. The study choices of self-learners may indicate an intrinsic interest in these topics, or reflect membership in particular professions, or both.

1. Human capital is defined as the skills, capacities or abilities possessed by an individual, which permit him or her to earn income.

CST What you should know about this study

This article is based on data from the 1998 General Social Survey (GSS) on time use. The survey interviewed almost 11,000 Canadians aged 15 and over in the 10 provinces and provided information about how people spent their time during one day. In addition to information about time use, the GSS also collected data about learning activities conducted during the month preceding the survey.

Respondents were classified as self-learners if they answered "yes" to the following question:

"Many people improve their knowledge of a subject or upgrade their skills on their own instead of taking a course. They read books, watch television programs, use a computer, or talk to someone with the necessary expertise. Have you undertaken any of these activities during the past month?"

Self-learners were then asked to specify what they were learning (up to a maximum of four topics), their method of learning (for example, book, computer, or human interaction), and how much time they had devoted to this learning activity in the past month. Twenty-seven topics were defined as areas of study, ranging from child care to natural sciences and work-related issues. Because of sample size limitations, these subjects have been grouped into seven categories. Discussion of categories is based on responses of those adults who reported informal learning in only one subject.

Self-learning falls into seven broad categories

1. Computer and Internet technologies;
2. Trade-related subjects: includes construction and trades; carpentry and woodworking; and vehicle maintenance;
3. Business and finance: includes business skills, accounting, taxation, investment and other financial subjects;
4. Arts and sciences: includes environment and nature; natural sciences; social sciences; education and teaching; languages and literacy skills; history; current affairs and politics; fine arts; and music;
5. Hobbies and personal development: includes personal development; spirituality and religion; crafts and hobbies; cooking, food and beverages; sports; gardening; general knowledge and work-related subjects;
6. Health and child care;
7. Other: includes the study of agriculture and other subjects not elsewhere specified.

The definition of self-learning used in this study differs from some of the more formal definitions of self-directed study in which individuals in a course are working at their own speed but their work is monitored and evaluated by an outside party.

CST Men and women self-learners have diverse interests

	% of single-topic learners		
Subject area	**Women**	**Men**	**Total**
Child care and health	17	3*	10
Arts and sciences	15	15	15
Hobbies and personal development	19	15	16
Computers and Internet	28	33	31
Trade-related subjects	2*	14	8
Business and finance	9	13	11
Other	4*	4*	4

* High sampling variability.

Source: Statistics Canada, General Social Survey, 1998.

Books are still the key teaching tool

People can use a variety of methods to teach themselves, and many use a combination of tools. By far the most popular means of learning was with books, a method chosen by 68% of all informal learners. Books were most popular with the arts and sciences self-learners, with 81% using them. Even though people teaching themselves about computers were the least reliant on books, over half (55%) still used them.

About one-half of learners acquired their information the old-fashioned way — directly from other people. This approach to learning is the oldest way of transferring knowledge and skills. Human interaction was particularly important for hobbies, leisure and personal development topics and business and financial skills, with about 55% of those studying these subjects using this method.

Not surprisingly, the computer was used by most (78%) of the people who studied computers or Internet technologies. But the Internet also opened up a broad range of subjects to other learners, especially people teaching themselves about arts and sciences. It is interesting to note that men were more likely to use electronic tools as

at least part of their strategy for self-learning[2] — over 46% of male self-learners used a computer, compared to 35% of females. Women relied more on the traditional method of reading books (71% of women versus 65% of men) as part of their learning strategy.

Self-learners invest time in their subjects

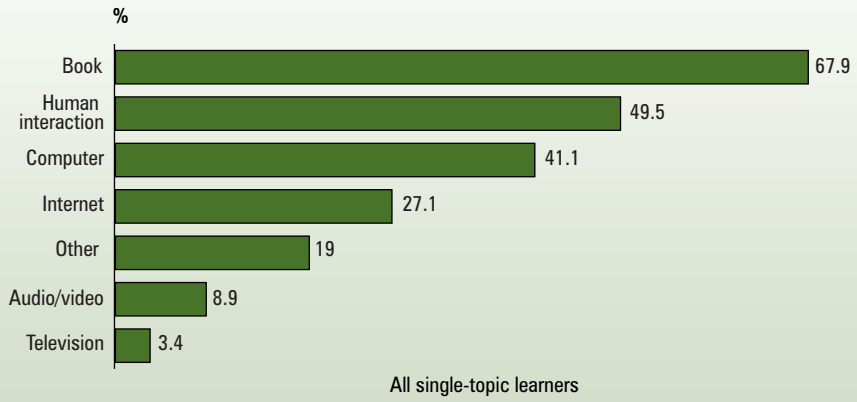
The intensity of interest in a subject might be measured by the amount of time learners devoted to its study. Informal learners committed an overall average of 18 hours during the reference month.[3] Men spent slightly more time on self-learning activities (19 hours) than women, who spent about 17 hours on their subject. This average, however, varied considerably across topics; for instance, while women and men studying business and financial services averaged 22 hours a month, they only spent 15 hours on child care and health. Women and men also reported considerable difference in hours committed to self-learning, even if they were studying the same topic: men spent 7 hours more than women learning computer or Internet technologies, for example, while women dedicated a whopping 12 more hours than men on business and financial services.

Summary

Canadian adults seem to be sold on the importance of life-long learning. Learning is not confined to the classroom or to a period in a person's life. Even when adults don't enroll in formal classes or workshops, they are more than happy to study on their own. The 1998 General Social Survey found that about one-third of Canadians aged 25 and over engaged in some type of informal-learning activity in 1998. These individuals are committed to their studies, averaging 18 hours of study each month.

In today's information age, it is not surprising that computer and Internet studies were the most popular topics for self-learners; however, there is great diversity in the type of subjects self-learners investigate. Men and women share some interest in topics such as hobbies and personal development, computers and the Internet, but many of the gender differences found in formal studies persist in informal learning. In terms of methods used to learn subjects, books remain the most popular means for acquiring new skills and information, but there is no doubt that computers and the Internet have opened doors for many self-learners, allowing for access to unprecedented volumes of information.

Books most popular learning tool



Source: Statistics Canada, General Survey, 1998.

Cynthia Silver is a senior analyst, **Cara Williams** is an analyst and **Trish McOrmond** was a co-op student with Housing, Family and Social Statistics Division, Statistics Canada.

2. It was possible for respondents to report more than one method to aid in learning. For example, respondents could use both the computer and human interaction to learn a topic.

3. Excludes respondents who reported studying multiple subjects.

Homicide rate lowest since 1967

The national homicide rate has declined to its lowest since 1967 at 1.76 per 100,000 population. Nearly one in three homicides involved firearms. Almost 90% of persons accused of homicide and 67% of homicide victims were male. Approximately 80% of spousal homicide victims were female.

The number of youths (aged 12 to 17) accused of homicide were down from 57 in 1998 to 45 in 1999, a drop of 21%. Despite annual fluctuations, the rate of youths accused of homicide has remained relatively stable over the past decade.

Thirty-six children under the age of 12 were killed in 1999, down 35% from 55 in 1998. Parents were found responsible in almost 80% of such murder cases solved by police.

Canadian Centre for Justice Statistics
Juristat
Vol. 19, no. 10
Statistics Canada Catalogue no. 85-002-XPE
(Internet 85-002-XIE)

Happily ever after?

Divorce rates increased more than 2% in 1998, at a rate of 228 per 100,000 population. This was the first increase in four years. Based on these rates, over 1/3 of marriages are expected to end in divorce. Rates of divorce are the highest in the Yukon and lowest in the Northwest Territories.

The average age for a divorce rose for both men and women by 3 years between 1989 and 1999 to 42 and 39 respectively. Average length of a marriage ending in divorce increased from 13 to 14 years in the same time period.

Custody orders of children were an issue in 31% of divorces in 1998. Custody was granted to the mother 60% of time, to the father 10% and joint custody 30%.

Health Statistics Division
Divorces - Shelf tables
Statistics Canada Catalogue no. 84F0213XPB
CANSIM matrix 7

All for one... Unionization

During the first half of 2000, union membership increased to 3.7 million, up 100,000 from a year earlier, with most of the increase in the private sector. Newfoundland (39%) was the most unionized province, with Alberta (21%) being the least. The chances of not belonging to a union were highest among the young, workers with short job tenure, persons with more education and those in the managerial and professional positions.

In 1999, the average hourly wage of full-time unionized workers was $19.43 while that of their non-unionized counterparts was $15.99. Full-time female unionized workers' hourly wage was 90% of that of their male peers, but part-time female unionized workers made 9% more than their male counterparts.

Perspectives on Labour and Income
Vol. 12, no. 3
Statistics Canada Catalogue no. 75-001-XPE

University tuition fees on the rise

Average university tuition fees across the country increased 3% for undergraduate arts students in 2000-01. Saskatchewan and Nova Scotia undergraduate arts students faced the biggest increase (8%) while students at public institutions in Manitoba were the only ones to see a reduction in their tuition fees (due to a 10% rebate from the provincial government). Over the past decade, the average cost per undergraduate arts student in Canada increased 126%. Provincially, Alberta had the greatest increase (209%), and British Columbia, the smallest (46%) over the 10-year period. All tuition costs are reported in current dollars.

The most dramatic undergraduate tuition increases in 2000-01 were in the law and music programs, at 18% and 11% respectively. However, tuition fees in the most expensive programs, dentistry ($7,678) and medicine ($5,975), increased by 6%.

At the graduate student level, fees increased almost 13% in that same year.

Culture, Tourism and the Centre for Education Statistics
(613) 951-1503

Dollars and cents

Median total income in Canada increased an average of 3% to $20,100 (after inflation) between 1997 and 1998. The largest increase in median total income in census metropolitan areas (CMAs) was over 4% in Calgary. The highest median incomes were in Oshawa and Ottawa–Hull at $25,900 and $25,200 (2% and 3% change), with the lowest in Trois-Rivières and Chicoutimi–Jonquière, at $17,100 and $18,200 (3% and 4% change).

Small Area and Administrative Data Division
Neighbourhood income and demographics profiles
Statistics Canada Catalogue no. 13C0015
Labour force income profile
Statistics Canada Catalogue no. 71C0018 and
Economic dependency profile
Statistics Canada Catalogue no. 13C0017

SOCIAL INDICATORS

	1991	1992	1993	1994	1995	1996	1997	1998	1999
INCOME[1]									
Average market income									
Economic families	51,258	50,565	49,329	50,445	50,641	51,307	52,766	55,224	--
Unattached individuals	20,205	20,416	19,828	19,805	20,097	19,863	19,861	20,758	--
Average total income (includes transfer payments)									
Families	58,131	57,791	56,615	57,657	57,585	58,415	59,659	62,116	--
Unattached individuals	25,165	25,497	25,073	25,284	25,193	24,979	24,970	25,784	--
Average income tax									
Families	11,531	11,143	10,887	11,358	11,425	11,500	11,821	12,489	--
Unattached individuals	4,547	4,536	4,503	4,613	4,588	4,490	4,388	4,718	--
Average after-tax income									
Families	146,600	46,648	45,728	46,300	46,159	46,915	47,838	49,626	--
Unattached individuals	20,618	20,960	20,570	20,671	20,605	20,488	20,582	21,067	--
Average after-tax income by quintiles for families									
Lowest quintile	17,797	17,505	17,416	17,816	17,785	17,267	17,198	17,662	--
2nd	31,064	31,198	30,217	31,068	30,660	30,596	30,789	31,754	--
3rd	42,215	42,588	41,392	42,309	41,594	42,415	42,737	44,019	--
4th	55,179	55,654	54,561	55,047	54,624	55,783	56,689	58,533	--
Highest quintile	86,758	86,303	85,068	85,273	86,146	88,528	91,802	96,175	--
Earnings ratios									
Dual-earners as % of husband-wife families	61.6	61.3	60.3	60.4	60.5	61.5	63.4	63.6	--
Women's earnings as % of men's (full-time full-year workers)	69.7	71.9	72.3	69.8	73.1	73.0	69.6	72.2	--
Prevalence (%) of Low Income After Tax (1992 Low Income Cut-offs)									
Families with head aged 65 and over	2.6	2.6	4.0	2.5	2.1	3.0	3.7	3.6	--
Families with head less than 65	10.4	10.4	11.2	10.8	11.4	12.2	11.4	9.9	--
Two-parent families with children	7.8	7.2	8.8	8.4	9.8	10.1	9.5	7.3	--
Lone-parent families	45.3	41.1	41.3	42.2	42.4	45.8	42.3	38.1	--
Unattached individuals aged 65 and over	26.9	24.3	26.3	20.7	21.1	23.7	21.6	20.8	--
Unattached individuals less than 65	32.2	32.7	32.7	34.0	34.0	36.0	36.1	33.9	--
FAMILIES[2]									
Marriage rate (per 1,000 population)	6.1	5.8	5.5	5.5	5.4	5.3	5.1	--	--
Crude divorce rate (per 1,000 population)	2.7	2.8	2.7	2.7	2.6	2.4	2.2	2.3	--
Total number of families ('000)	7,482	7,581	7,679	7,778	7,876	7,975	8,047	8,117	8,142
% of all families									
Husband-wife families	87.0	86.7	86.4	86.1	85.8	85.5	85.2	84.9	84.6
with children	51.9	51.7	51.4	51.1	50.9	50.6	50.4	50.1	49.9
without children	35.1	35.1	35.0	35.0	34.9	34.9	34.8	34.7	34.7
Lone-parent families	13.0	13.3	13.6	13.9	14.2	14.5	14.8	15.1	15.4
% of husband-wife families									
with children	59.7	59.6	59.5	60.2	60.2	59.2	59.1	60.2	59.0
all children under 18	67.4	67.0	66.6	66.2	65.8	65.4	65.0	64.6	64.2
Females as % of lone parents	82.4	82.6	82.7	82.8	83.0	83.1	83.2	83.3	83.4

1. All incomes are 1998 constant dollars. An economic family consists of two or more people who live in the same dwelling and are related by blood, marriage, common-law or adoption.
2. A census family is referred to as immediate or nuclear family consisting of married or common-law couples with or without children, lone-parents and their children, whereas a child does not have his or her own spouse residing in the household.

Sources: *Income in Canada* (Catalogue no. 75-202-XPE), *Income Trends in Canada* (Catalogue no. 13F0022XCB), *Annual Demographic Statistics* (Catalogue no. 91-213-XPB), and *Divorces* (Catalogue no. 84F0213XPB).

EDUCATORS' NOTEBOOK

Suggestions for using Canadian Social Trends *in the classroom*

Lesson plan for **"You snooze, you lose? — Sleep patterns in Canada"**

Objective

- ❑ To understand the need and importance of sleep for Canadians

Method

1. Calculate the average length of sleep for the class last night. Compare it with the results in the article. Do girls in the class get the same amount of sleep as boys?
2. What was the average length of time it took to fall asleep? How many in the class woke up without the use of an alarm clock or someone waking them up? How many in the class sleep longer on the weekends?
3. The article discussed major industrial accidents that have occurred as a result of sleep deprivation, but there are less severe effects that may happen as a result of lack of sleep. Think of your own experiences of when you have not had enough sleep. Discuss the incident and how you felt. Did you have the energy you needed? Were you alert?
4. Discuss the importance of sleep to your health. Survey students to find out how many cut back on sleep when they need more time. Does the fast pace of our lives contribute to sleep problems?
5. Our bodies go through a biological rhythm called circadian rhythm. There are two low periods in this cycle. The first low occurs between 1 and 4 a.m. and the second occurs 12 hours later between 1 and 4 p.m. Keep track of any daytime sleepiness that you have. After lunch do you often feel sleepy? What can you do to feel more alert during this time?
6. Keep track of the number of hours you sleep over three nights. Do you often wake up in the middle of the night? Did you calculate a sleep debt for these nights?

Using other resources

- ❑ For other lesson plans for Social Studies or Health and Physical Education courses, check out the Statistics Canada web-site, http://www.statcan.ca under Education Resources. Select Teaching resources, then Lesson plans. There are more than 120 lessons available, listed by level and subject, including over 30 lessons for health and physical education courses. E-STAT, now free to Canadian education institutions at http://estat.statcan.ca, contains a wealth of data from the World Health Organization survey on the health behaviour of school-aged children, including children having difficulty getting to sleep, by age and country. You can find these data on E-STAT under the Topic 'Health' in the CANSIM database, matrices 18037-18039.

Share your ideas!

Would you like to share your lessons using *CST* with other educators? Send us your ideas and we will send you lessons using *CST* received from other educators. For further information, contact your regional Statistics Canada education representative at 1 800 263-1136 or Joel Yan, Education Resources Team, Statistics Canada, Ottawa ON K1A 0T6, 1 800 465-1222 fax: (613) 951-4513 or Internet e-mail yanjoel@statcan.ca. Details on regional education support are available at http://www.statcan.ca/english/edu/reps-tea.htm

Educators

You may photocopy "Educators' Notebook" and any item or article in *Canadian Social Trends* for use in your classroom.

Economic Gender Equality Indicators 2000

By Warren Clark

Gender equality has been identified as a priority for countries around the world. Women are making gains, but persistent disparities exist between women and men. The gender equality indicators presented here were developed in conjunction with Status of Women Canada to measure the balance of the experiences of Canadian women and men in three domains: income, work and learning. This is the second edition of the indicators. The first was released by the Federal-Provincial/Territorial Ministers Responsible for the Status of Women in October 1997.[1]

The gender equality indexes use ratios of women to men to show the differences between the sexes for a given measure of equality. A ratio of 1.0 means women and men are equal. An index above or below 1.0 indicates inequality or imbalance for that measure: below 1.0, women have less than men; above 1.0, they have more. A gap that is closing over time, converging on 1.0, may result from changes in women's situation, or in men's situation, or both.

1. More information on why these indicators were selected and the conceptual and data issues faced in developing them and how they are intended to stimulate public policy discussion can be found in the original 1997 publication, *Economic Gender Equality Indicators*, available at http://www.swc-cfc.gc.ca/publish/egei/layoute.pdf. The historical data in the original publication may differ due to small changes in definitions and revisions to the raw data.

DOMAIN: INCOME

Traditionally, gender imbalances in income have been measured by comparing the full-time full-year earnings of women and men. This is a limited approach because women more often work part-time or part-year than men, making their sources of income more varied and less concentrated on earnings. The income indexes used here recognize all income and earnings of women and men, regardless of their employment status.

DOMAIN: WORK

The decisions people make about dividing their time among work, family and leisure have numerous implications. Work performed by women is often invisible to current measures of economic progress because only goods and services exchanged for pay are included. Unpaid work—the vast majority of which is still performed by women—is not counted. As everyone has the same amount of time every day, time spent doing paid and unpaid work provides another measure of equality.

Paid work is work performed for remuneration, whether in a separate workplace or at home, and includes wages, salaries and income from self-employment. Unpaid activities are classified as *unpaid work* when the goods or services produced could have been purchased in the market. For example, unpaid work includes meal preparation, since a meal could be bought at a restaurant; likewise, childcare or eldercare are included, because these services could be purchased from daycare centres or retirement homes. In contrast, someone else cannot sleep, learn and travel to and from work for another person, so these activities are not classified as unpaid work.[2]

DOMAIN: LEARNING

Education has been and continues to be a critical element in economic well-being. Not only must people be well-educated when they first enter the labour market, they continually need to learn new skills to take advantage of new opportunities as they arise. These indicators assess the gender balance in university education and work-related training as well as women's return on their investment in education.

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2. The General Social Survey (GSS) estimates of total work include education and related activities and commuting. See *Overview of the Time Use of Canadians in 1998*. Statistics Canada Catalogue no. 12F0080XIE.

INCOME

Total income index

The total income index compares the average total income of women and men.[3] In recent years, the total income index has increased, indicating that the gap in total income between genders is narrowing. In 1997, the average total income for Canadian women aged 15 or over was about $18,000 compared with $30,900 for men. The total income equality index for that year was 0.58, meaning that overall women received about 58% as much income as men (see Figure 1).

Total after-tax income index

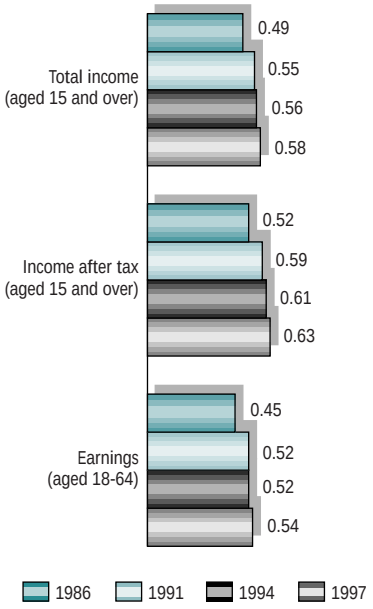
The Canadian income tax system is a progressive one, allowing those with less income to keep proportionately more of their money.[4] Because women's income is lower than men's, the total after-tax income index is higher than the total income index. In 1997, the after-tax income index stood at 0.63, up from 0.61 in 1994 (see Figure 1).

Total earnings index

This index compares the earnings of women and men aged 18 to 64 and includes those who have no earnings for various reasons (for example, unemployment, disability or full-time childrearing at home). The index includes earnings from part-time work, where women predominate. For this reason, it is lower than the full-time, full-year wage ratio that is often used to measure the wage gap. In 1997, women earned $16,300 compared with $29,900 for men, resulting in a total earnings index of 0.54. Like the other income indexes, the imbalance in earnings between women and men has declined since 1986 (see Figure 1).

FIGURE 1

Gender equality indexes for total income, total after-tax income and total earnings



Source: Statistics Canada, Survey of Consumer Finances.

3. Total income includes all income received by an individual during a calendar year from sources such as wages, salaries, self-employment income, investment income, net rental income, pensions, employment insurance, child and spousal support payments and government transfers. Money received from irregular sources, such as windfall gambling gains, inheritances, realized capital gains, or income-in-kind is excluded.
4. Other taxes—such as sales or property taxes—also affect disposable income but are not factored into this index.

Analysing the gender gaps

Gender differences in income and earnings may be accounted for in part by women's concentration in part-time work and low-paying occupations; women's overrepresentation among lone parents; and women's overrepresentation among seniors who have low earnings. Calculations were made to account for these and other socio-demographic differences.[5] In 1997, these adjustments reduced the gender gap by seven percentage points in after-tax income and eight percentage points in earnings (see Figure 2).[6]

FIGURE 2

Gender equality indexes for income after-tax and earnings, before and after accounting for socio-demographic factors, 1997

Source: Statistics Canada, Survey of Consumer Finances.

WORK

Total workload index

The concept of total workload encompasses both paid work and unpaid work of economic value. In 1998, Canadian women aged 15 and over spent 7.8 hours per day working at paid or unpaid work while men spent 7.5 hours working. The total workload index was 1.04 in 1998, down from 1.08 in 1986. While the gap is shrinking, women work an average of about 15 minutes more per day than men. This imbalance in total work seems to be greatest for young

TABLE 1

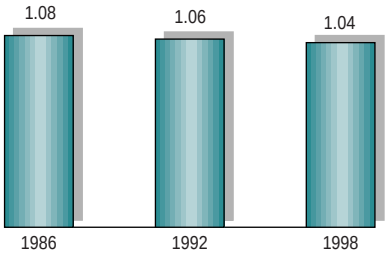
Gender equality index for workload, by age group, 1998

Age of respondent	Total workload index	Paid work index	Unpaid work index
15 and over	1.04	0.62	1.56
15–24	1.18	0.80	1.74
25–34	1.03	0.63	1.75
35–44	1.02	0.60	1.67
45–54	1.01	0.65	1.56
55–64	1.06	0.59	1.42
65+	1.11	0.39	1.19

Source: Statistics Canada, General Social Survey.

FIGURE 3

Gender equality index for total workload

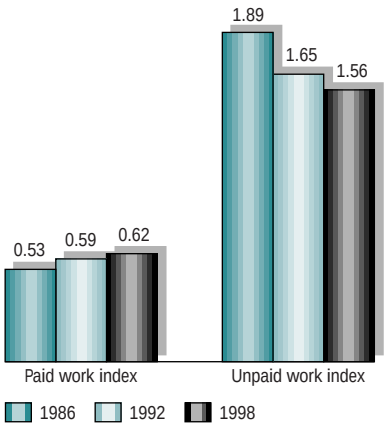


Source: Statistics Canada, General Social Survey.

5. To eliminate the impact of age, occupation, education, types of employment and family status, average after-tax income and earnings were standardized to show what the pattern would look like if women and men were equally represented in four age groups (15 to 29, 30 to 49, 50 to 64, 65 and over); in 16 occupational categories; in four education groups (less than grade 10, grade 11 to 13, some postsecondary including postsecondary diploma or university degree); in three types of employment (full-time, part-time and no employment); and in two types of family status (a child under 6, no child under 6).

FIGURE 4

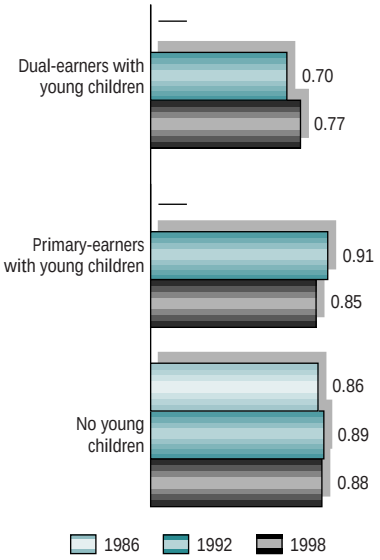
Gender equality index for paid and unpaid work



Source: Statistics Canada, General Social Survey.

FIGURE 5

Paid work index for women and men aged 20-44, employed full-time



Source: Statistics Canada, General Social Survey.

women aged 15 to 24 (1.18) and for senior women (1.11), while women aged 45 to 54 experience near equity (1.01) (see Figure 3 and Table 1).

Paid work and unpaid work indexes

Men still spend much more time than women in paid work activities while women spend more time in unpaid work activities. While the gender gap in both paid and unpaid work remains substantial, it declined between 1986 and 1998 (see Figure 4).

Paid and unpaid work ratios by household structure

The distribution of paid and unpaid work between women and men varies with the presence of young children and multiple earners in a household. Separate work indexes were calculated for women and men aged 20 to 44 who are employed full-time. Three household categories of individuals were examined: dual-earners (both spouses employed full-time) with young children (children under age six); primary-earners (two-parent households, other spouse not working full-time) with young children; and earners without young children.

In both 1992 and 1998, women devoted less time to paid and more time to unpaid work, regardless of the household structure. For dual-earners with young children, the differences in paid work between women and men declined. In contrast, the index fell from 0.91 to 0.85 for primary-earners, suggesting that the imbalance is increasing. The change to the imbalance for earners with no young children was very slight. However, because few women are primary-earners with young children, the estimates have high sampling variability. This in turn results in no statistically significant change in the paid work index (see Figure 5).

The unpaid work index shows that, over time, the imbalance between women and men has declined for both dual- and

6. For an analysis of gender differences in wages in Canada and the United States in the late 1980s, see Baker, Michael and Nicole Fortin. 2000. *Gender composition and wages: why is Canada different from the United States?* (Statistics Canada Catalogue no. 11F0019MPE, no.140)

primary-earners with young children. The index for earners without young children was about the same in 1998 as in 1992 (see Figure 6).

Beneficiaries of work

Unpaid work by women and men benefits many people both inside and outside the household. Some unpaid activities such as child care and volunteer work have obvious beneficiaries while other activities such as housekeeping, or shopping for goods and services or cooking and cleaning may benefit the entire household or individual members of the household. For the purposes of this comparison, and because work related to children is one of the most important factors affecting women's economic situation when compared with men's, only child care is examined here.

In 1998, women dual-earners aged 20 to 44 with young children spent more time than men caring for their children on an average day—147 versus 85 minutes. This resulted in an index of 1.72, indicating that women dual-earners spent an estimated 72% more time on child care than men dual-earners. Though women still spend more time on child care, the imbalance between mothers and fathers declined between 1992 and 1998. The index for primary-earners in particular declined, from 1.71 to 1.27, which reflects a drop in time spent on child care activities for women and an increase for men. In 1998, primary-earner women with young children spent 107 minutes on child care during an average day, compared with 85 minutes for primary-earner men (see Figure 7).

LEARNING

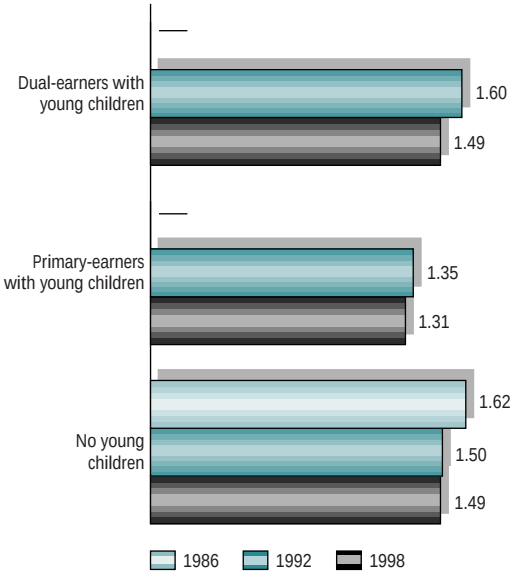
University degrees granted indexes

The university degrees granted index compares the concentration of women in female-dominated, gender-neutral and male-dominated fields[7] of study for university degrees.

7. Male-dominated fields include those where more than 60% of degrees were granted to men. Female-dominated fields include those where more than 60% of degrees were granted to women. In all other cases, the fields are classified as 'gender neutral'.

FIGURE 6

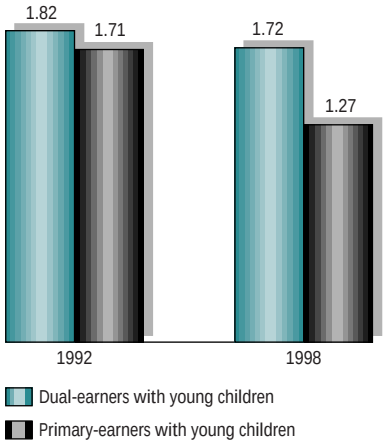
Unpaid work index for women and men aged 20-44, employed full-time



Source: Statistics Canada, General Social Survey.

FIGURE 7

Child care index for women and men aged 20-44, employed full-time

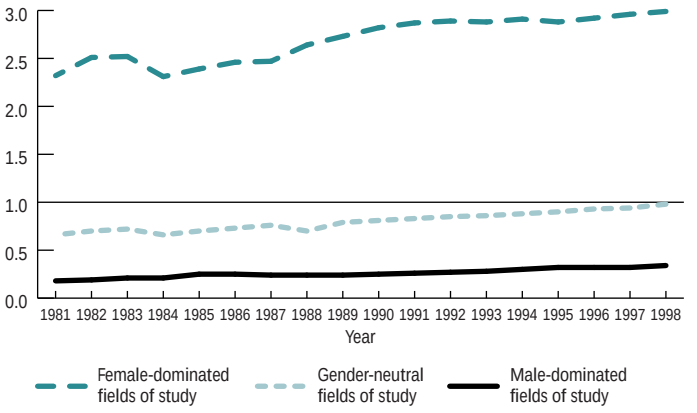


Source: Statistics Canada, General Social Survey.

Between 1981 and 1998, more women entered traditionally male-dominated and gender-neutral fields. As a result, the index shows that women's share of degrees granted has increased in all three categories of fields of study, even in female-dominated fields. Although more women are graduating from male-dominated and gender neutral fields (creating greater gender balance in those fields), more are also graduating from female fields, which accentuates the imbalance in those fields (see Figure 8).

FIGURE 8

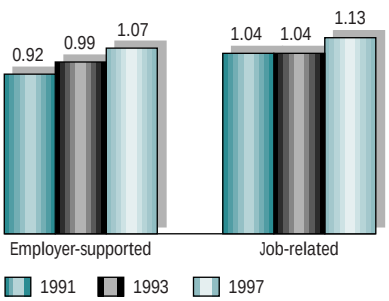
Gender equality indexes for university degrees granted



Source: Statistics Canada, University Student Information System (USIS).

FIGURE 9

Gender equality indexes for training participation in Canada



Source: Statistics Canada, General Social Survey.

Training indexes

The training participation index shows the extent of employed women's participation in employer-supported training or job-related training.[8] In 1997, employed women were more likely than men to participate in training designed to develop new skills and knowledge (see Figure 9). However, the training time index, which compares the actual time spent in training, shows that, although women received less employer-supported training than men in 1997, they received more job-related training. This suggests that women compensate for less employer-sponsored training by paying

8. The training participation index is calculated based on the ratio of the percentage of employed women aged 25 to 49 who took training in the previous 12 months related to the percentage of employed men aged 25 to 49 who did. Separate indexes were calculated for employer-supported training (training paid for or supported by the employer) and job-related training. Job-related training includes both employer-supported training and job-related training paid for by employees themselves.

for job-related training themselves and by taking it on their own time (see Figure 10).

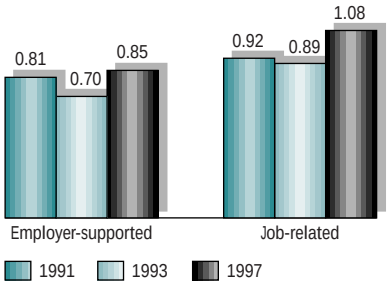
Occupational return on education index

This index examines the gender imbalance in the return on investment on university education in terms working in a high-level job.[9] In 1986, 51% of women university graduates worked in high-level jobs compared with 74% of men, and the occupational return index was 0.69. By 1998, 49% of women and 62% of men university graduates aged 25 to 64 were working in high-level jobs, resulting in an index of 0.78. While both men and women university graduates were less likely to be in high-level jobs in 1998, the gap between women's and men's in return on a university education had narrowed (see Figure 11). ■

9. The index is based on the percentage of university degree holders aged 25 to 64 who work in a high-level job. High-level jobs are defined as the three highest categories of the Pineo socio-economic classification of occupations (i.e., self-employed professionals, employed professionals and high-level managers). This classification is based on job income and other characteristics that are related to societal status or prestige. These groups include occupations in health diagnosing, architecture and engineering, social sciences, physical sciences, elementary, secondary and university teaching and government administration. This scale was originally developed in the 1970s and was updated using 1981 census data. Further efforts are needed to design a scale using more recent job evaluations.

FIGURE 10

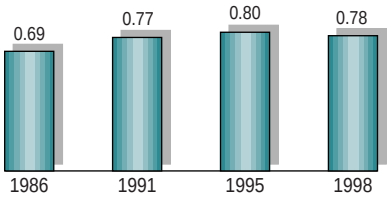
Gender equality indexes for training hours



Source: Human Resources Development Canada and Statistics Canada, Adult Education and Training Survey.

FIGURE 11

Gender equality index for occupational return on education



Source: Statistics Canada, Survey of Consumer Finances.

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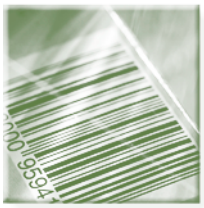

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