Information and communications technology

19

Overview

Information and communications technologies (ICTs) play a major role in Canadians' daily lives. Technologies such as wireless networks, software and the Internet have transformed the way we communicate and access information at home, work, school and on our daily commutes.

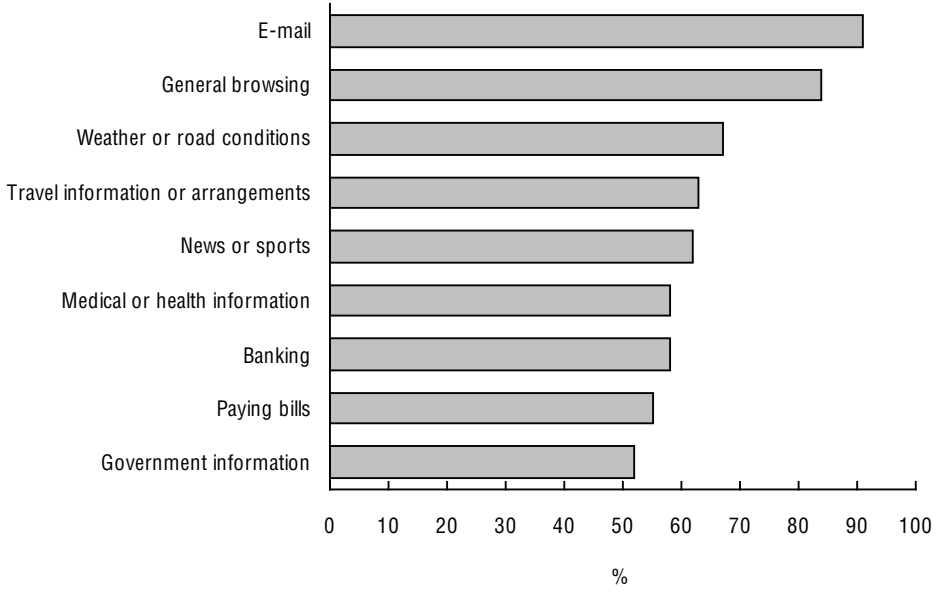
In 2005, almost 17 million adult Canadians, or 68% of the population age 18 and older, used the Internet for personal, non-business reasons. About 90% of them, 15 million, accessed it from home.

The vast majority of home users, 91%, went online to send and receive e-mail, and 84% used the Internet for general browsing. Gathering information and conducting personal business took precedence over entertainment, such as playing games or listening to the radio online. Roughly 6 out of 10 adult Internet users accessed weather or road reports, viewed news and sports, searched for medical or health-related information, obtained travel information and made bookings, and did personal banking.

About 50% of those using the Internet from home in 2005 did so via a cable connection; 44% used a telephone line. Over 80% of all home Internet users had a high-speed connection. Internet use is concentrated in urban areas, among adults under 45, people with postsecondary education, in households with children and in high-income households.

Businesses also use the Internet to their advantage. Private sector businesses' online sales surged 42% in 2006 from the year before to $46.5 billion. Most of these transactions, $31.4 billion worth, were business-to-business sales. In 2006, 45% of Canadian firms made purchases online. The

Chart 19.1
Selected Internet activities of adult home users, 2005



Source: Statistics Canada, CANSIM table 358-0130.

principal benefits of conducting business over the Internet were reaching new customers (36% of firms) and better coordination with suppliers, customers or partners (35%). Only 27% reported that conducting business over the Internet lowered costs.

Households spending more on technologies

Canadians spent more on Internet access, cell phone and other wireless services, computer hardware, and satellite and cable television subscriptions in 2005 than in 2004. In contrast, household spending on telephone land-line, or wireline, services continued to decline.

Annual spending on cell phone and other wireless services reached an average $410 per household in 2005, up more than 21% from 2004, whereas annual spending on wireline telephone service fell 3% to an average $680. Households spent 8% more on computer hardware in 2005, averaging $290 and almost matching the peak set in 2000.

Households also upped their spending on Internet access 15% in 2005, from 2004, to an average $240. The proportion of households having high-speed Internet access grew to 50% in 2005, compared with 43% in 2004.

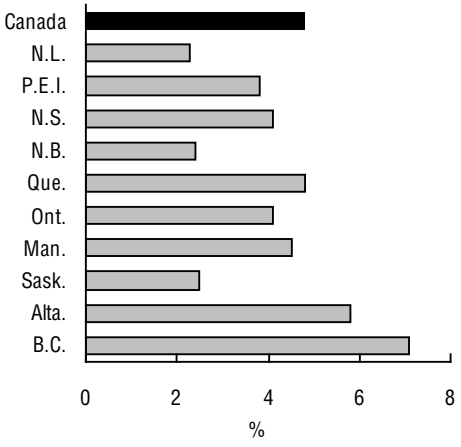
One in five households owned a satellite television receiver in 2005, about the same proportion as in 2004. However, in 2005 average annual household spending on satellite subscriptions rose 17% from the year before to $138. More than three in five households subscribed to cable television in 2005: spending on these services rose only 1% from 2004, to $348.

Table 19.a
Internet users, by sex and age group, 2005

	Men	Women
	%	
18 to 34	88.2	89.7
35 to 54	72.6	77.4
55 to 64	52.0	55.6
65 and older	28.7	19.8

Source: Statistics Canada, CANSIM table 358-0124.

Chart 19.2
Households with only a cell phone, December 2005



Source: Statistics Canada, Catalogue no. 56M0001XCB.

Wireless is winning

Wireless communications technology again gained market share in 2006, and was the telecommunications industry's most profitable segment, with operating profit margins of almost 32%. The wireline providers' profit margins were half that, 16%.

Wireless telephone subscriptions rose above the 18-million mark in 2006, whereas the number of residential telephone wirelines fell to just over 11 million. The loss of residential telephone customers lowered the operating profits for providers of traditional wireline systems by 14% in 2006 to $3.5 billion.

Not only has the wireless industry continued to attract more subscribers, but it has also persuaded subscribers to make greater use of their devices and to spend more on services. At the end of 2006, operating revenue per subscriber had risen 7.2% to $190 per subscriber, compared with $177 in 2005.

But the most striking change in the wireless market is the convergence in usage rates with traditional phone services. At the end of 2006, Canada had 55.1 mobile subscribers per 100 inhabitants and 55.3 traditional wireline access lines per 100 inhabitants. That compares with 18.7 wireless subscribers per 100 inhabitants and 64.4 traditional wireline access lines per 100 inhabitants at the end of the first quarter of 1999. Clearly, more and more Canadians are adopting the technology as their principal telephone.

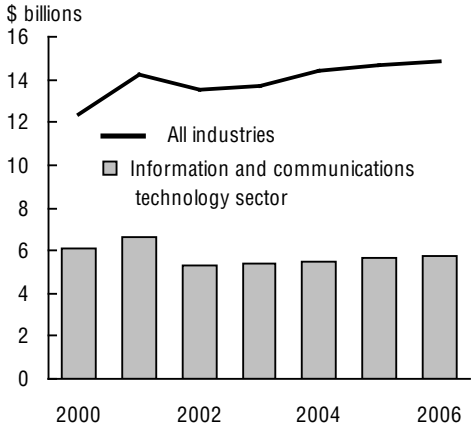
Sector maintains strength

The ICT sector contributed $65.0 billion in 2006 to Canada's gross domestic product (GDP), accounting for 6% of total GDP—the same proportion as the year before. ICT services account for the majority of this sector's revenues, 82% in 2006. ICT manufacturing accounted for 31% of this sector's GDP at its peak in 2000. However, their contribution was halved to 16% by 2002, a level ICT manufacturing still held in 2006.

Research and development (R&D) investment by the ICT sector in 2006 was over $5.7 billion, about the same as in 2005. Annual R&D expenditures reached a high of $6.6 billion in 2001, but dropped to $5.3 billion in 2002 as the high-tech downturn took hold. Investment in R&D by the ICT sector accounted for 39% of total private sector R&D expenditures in 2006.

ICT manufacturing industries are among the most innovative in the manufacturing sector. Eighty percent of ICT manufacturing plants introduced a new or significantly improved product or production process to the market from 2002 to 2004. The top two ICT manufacturing industries were computer and peripheral equipment manufacturing, and radio and television broadcasting and wireless communications equipment manufacturing, in which 89% of plants were innovative.

Chart 19.3
Research and development expenditures



Source: Statistics Canada, CANSIM table 358-0024.

Selected sources

Statistics Canada

- *Broadcasting and Telecommunications.* Irregular. 56-001-XIE
- *Canadian Internet Use Survey - Public Use Microdata File.* Biennial. 56M0003XCB
- *Connectedness Series.* Occasional. 56F0004MIE
- *The Digital Divide in Canada.* Occasional. 56F0009XIE
- *Innovation Analysis Bulletin.* Irregular. 88-003-XIE
- *Quarterly Telecommunications Statistics.* Quarterly. 56-002-XIE
- *Residential Telephone Service Survey.* Semi-annual. 56M0001XCB

Who's using open-source software?

Just 14% of Canada's private sector firms reported using open-source software in 2006. 'Open source' means that the software's source code—the instructions that make the application run—is in the public domain. Anyone can view, modify and redistribute the software without paying royalties or licensing fees; the code evolves through collaboration. Open-source software can be updated much more quickly than conventional commercial software, whose source code is proprietary, meaning it is not released to the public for use or modification.

The public sector adopts new ICTs more rapidly than the private sector does, and open-source software is no exception: 51% of public sector firms were using this software in 2006.

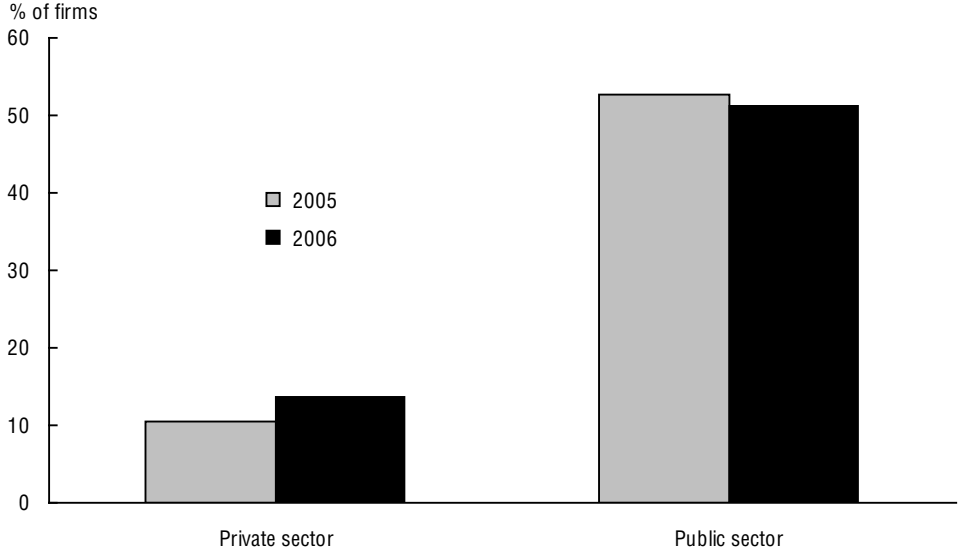
The private sector's reluctance to adopt open-source software contrasts with its stronger connections to the Internet. In 2006, 45% of private firms purchased goods and services online, and 40% had a website.

Large private firms are more likely to use and be early adopters of advanced and innovative technologies: 34% of large firms used open-source software in 2006; only 13% of small firms did.

Firms using open-source software are seeing its benefits. In the past, concerns about stability and features prevented its widespread adoption. Today, open-source software enables firms to adapt quickly to their changing ICT needs.

Firms in information and cultural industries are most likely to use open-source software: 43% of them did so in 2006, as did 25% of utilities and educational services firms and 25% of professional, scientific and technical services firms.

Chart 19.4
Use of open-source software, by sector



Source: Statistics Canada, CANSIM table 358-0121.

Who's shopping on the Internet?

Over 9 million Canadians aged 18 and older window-shopped on the Internet in 2005. Nearly 7 million of us—about 41% of all adults who used the Internet that year—bought something online.

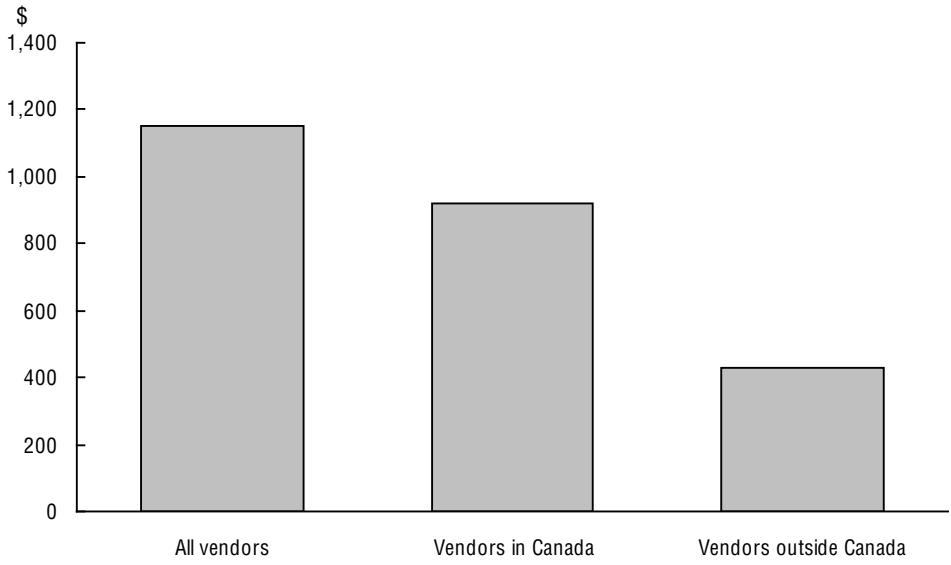
Whether browsing an online bookshop, comparing new car specifications and pricing at various dealers, or ordering new furniture, it is all called Internet shopping. Canadians might choose to shop online for the 24-hour convenience, the ease of comparing vendors' prices or access to merchants regardless of distance.

Canadian adults used the Internet to order $7.9 billion worth of goods and services for personal and household consumption in 2005. They placed almost 50 million orders online. However, e-commerce—the value of orders placed on the Internet—is still a small fraction of the $761 billion in personal expenditures on goods and services that Canadians made in 2005.

The most popular online purchases Canadians made were travel services, such as hotel reservations and car rentals, followed closely by books and magazines. Entertainment items, such as concert tickets, as well as clothing, jewellery and accessories are also commonly bought online. The most popular items for window shopping are consumer electronics, housewares such as appliances and furniture, clothing, accessories and jewellery, and travel services.

About three-quarters of adults who placed an Internet order in 2005 paid directly online with a credit or debit card. However, security concerns may hinder e-commerce growth: 48% of Internet window shoppers who made purchases after searching online said they were very concerned about credit card security on the Internet..

Chart 19.5
Internet orders, average value per person, by vendor location, 2005



Note: Electronic orders for personal or household consumption.
Source: Statistics Canada, CANSIM table 358-0137.

Convergence and the cable industry

ICTs are not only changing the lives of people, they are also changing the way businesses operate. The transformation of the cable television industry is a good example.

In the late 1990s and early 2000s, the cable television industry invested heavily in ICTs to modernize its networks. These investments enabled the industry to offer Internet and telephone services and to provide digital television services comparable with those offered by satellite television operators. These investments drastically changed the industry.

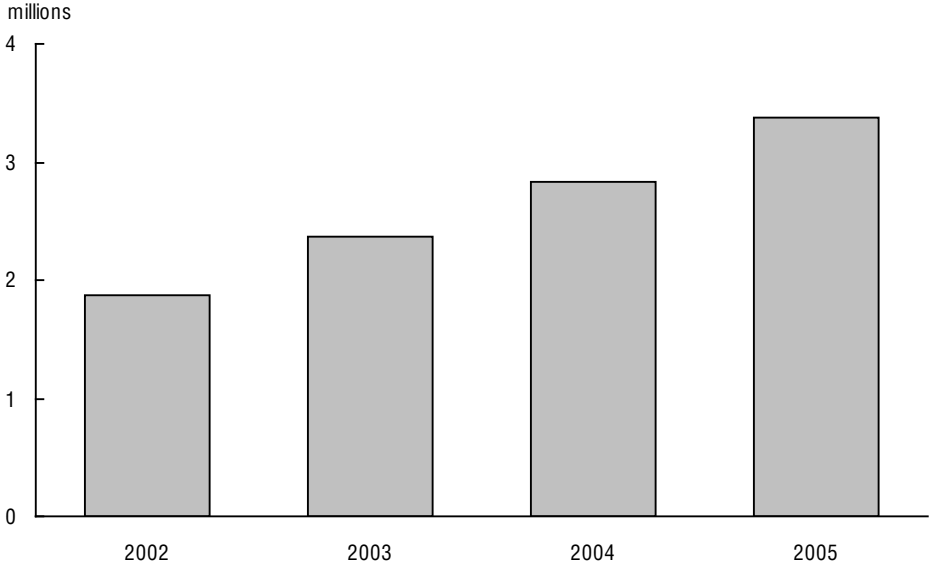
Less than 10 years after introducing Internet services by cable in a few test markets, the cable television industry signed up its three-millionth Internet customer in 2005. At the end of August 2005, it had close to one Internet subscriber for every two television subscribers.

Cable companies were slower to launch telephone service, but a few major cable operators entered that market in 2005. Together they had slightly more than 200,000 clients as of August 31 of that year.

Consequently, the industry relies less and less on revenues from its traditional television services. Internet and telephony generated $1.4 billion in revenue in 2005, or just over 28% of the industry's total subscription revenues. Five years earlier, non-traditional services accounted for less than 8% of their revenues.

Digital technology has also enabled traditional telephone companies to offer television services via telephone land lines, pushing convergence of the telephone and cable television industries to another level.

Chart 19.6
Subscribers to Internet through cable companies



Source: Statistics Canada, Catalogue no. 56-001-XIE.

Life in digital times

The introduction of digital technology brought predictions of a paperless society and the end of traditional mail. Neither of these predictions has yet come true, but the widespread use of ICTs have brought about some interesting shifts in behaviour.

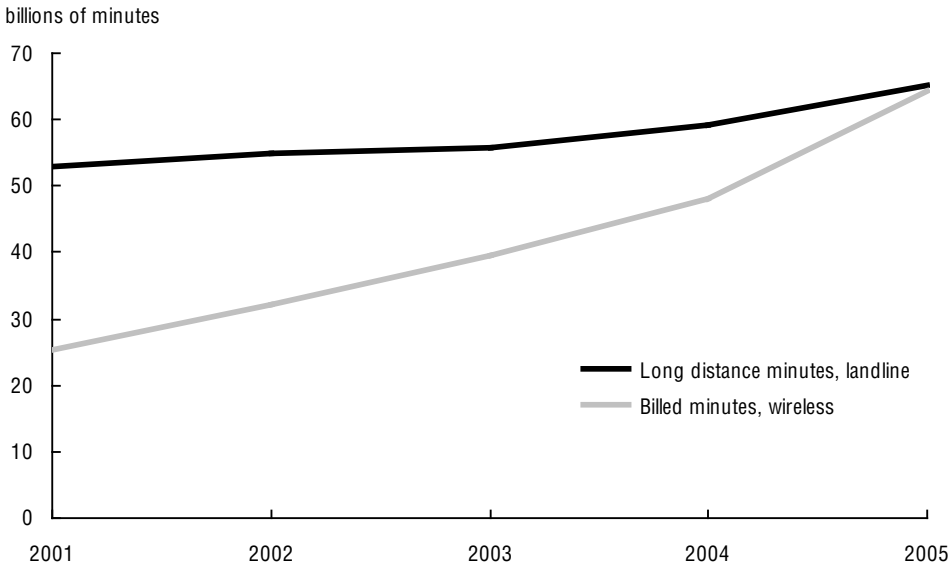
The arrival of the personal computer was supposed to lead to the paperless office. However, from 1985 to 2005, estimated consumption of printing and writing paper in Canada increased 73%, and most of that growth occurred from 1985 to 1995.

The volume of postal mail has also been rising. In 2006, Canada Post delivered 11.6 billion pieces of mail and parcels, including about 9 million Census forms for Statistics Canada. Couriers and local messengers are proliferating, even with the high usage of Internet and e-mail.

One extremely visible outcome of ICTs is that the information society is a talkative society. Canadians have never spoken on the telephone more, despite also sending and receiving massive amounts of e-mail and other electronic communications. As people communicate more and in different ways, they are choosing to expand their associations, moving from geographically defined communities to communities of interest.

They are also willing to pay for their choices, as consumer spending patterns show. From 1997 to 2005, average annual spending by households on Internet services rose from $30 to $241. In the same period, spending on wireline telephone services dropped from $725 to $640.

Chart 19.7
Telephone use indicators



1. Data include local and long distance calls.
Sources: Statistics Canada, Catalogue no. 56-002-XIE; CRTC Telecommunications Monitoring Report, July 2006.

Table 19.1 Gross domestic product at basic prices, information and cultural industries, 1992 to 2006

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	$ millions 1997 constant														
Information and cultural industries	**22,206**	**22,269**	**22,985**	**23,786**	**24,130**	**27,979**	**29,866**	**33,658**	**36,356**	**39,232**	**41,017**	**41,924**	**42,534**	**44,258**	**45,311**
Publishing industries, information services and data processing services	4,406	4,214	4,284	4,366	4,364	7,748	8,534	9,420	9,716	10,568	10,679	10,908	10,802	11,296	11,628
Publishing industries	..	..	..	..	..	6,211	7,011	7,674	7,828	8,463	8,404	8,470	8,303	8,767	9,020
Information services and data processing services	..	..	..	..	..	1,537	1,523	1,746	1,888	2,105	2,275	2,438	2,499	2,529	2,608
Motion picture and sound recording industries	1,201	1,411	1,460	1,595	1,671	1,718	1,915	2,072	2,114	2,204	2,315	2,168	2,118	2,135	2,051
Broadcasting and telecommunications	16,585	16,628	17,215	17,800	18,067	18,513	19,417	22,166	24,526	26,460	28,023	28,848	29,614	30,827	31,632
Special aggregations															
All information and communication technology industries	..	..	..	..	..	32,707	37,744	48,037	56,811	53,404	53,492	57,085	59,076	62,343	65,354
Manufacturing of information and communication technology	..	..	..	..	..	8,233	9,788	13,678	18,101	11,255	9,291	10,294	10,783	11,665	12,156
Services in information and communication technology	..	..	..	..	..	24,474	27,956	34,359	38,710	42,149	44,201	46,791	48,293	50,678	53,198

Note: North American Industry Classification System (NAICS), 2002.
Source: Statistics Canada, CANSIM tables 379-0017 and 379-0020.

Table 19.2 Employment, information and cultural industries, 1993 to 2006

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	number													
Information and cultural industries	**279,504**	**279,777**	**284,566**	**283,051**	**288,372**	**297,503**	**304,067**	**318,783**	**328,509**	**329,770**	**335,202**	**335,136**	**341,786**	**349,519**
Publishing industries	71,566	68,555	68,679	69,542	72,250	75,475	76,656	83,152	85,653	86,087	x	82,512	85,371	85,787
Newspaper, periodical, book and database publishers	64,382	60,559	59,939	59,531	60,229	61,348	59,589	62,964	63,030	62,694	x	59,546	60,252	58,638
Software publishers	7,184	7,996	8,740	10,010	12,021	14,127	17,066	20,188	22,623	23,393	22,526	22,966	25,119	27,148
Motion picture and sound recording industries	24,456	25,210	25,234	26,895	29,912	32,735	34,306	36,622	38,228	38,694	37,872	35,549	36,065	34,037
Motion picture and video industries	22,778	23,552	23,488	24,944	27,791	30,430	31,954	34,213	35,872	36,260	35,256	32,659	33,023	31,346
Sound recording industries	1,678	1,657	1,746	1,950	2,121	2,305	2,351	2,409	2,356	2,434	2,616	2,890	3,041	2,691
Broadcasting (excluding Internet)	36,318	36,051	36,381	37,064	37,008	37,837	37,453	37,634	37,436	37,822	39,006	39,888	39,103	42,369
Radio and television broadcasting	35,378	35,071	35,429	36,098	36,074	36,897	36,550	36,764	35,975	36,125	37,005	37,775	37,035	40,122
Pay and specialty television	940	980	953	966	934	941	902	870	1,460	1,698	2,000	2,113	2,068	2,247
Internet publishing and broadcasting	..	..	..	..	..	..	..	..	0	x	x	434	1,006	1,583
Telecommunications	114,896	116,554	120,488	114,248	113,820	115,881	116,265	118,426	119,036	119,764	125,999	130,441	134,758	139,228
Wired telecommunications carriers	70,704	71,542	73,418	68,960	68,789	70,457	70,740	72,257	71,344	72,297	76,811	78,991	80,415	80,788
Wireless telecommunications carriers (excluding satellite)	22,089	22,734	23,567	22,339	22,355	22,367	22,257	22,837	23,176	22,661	23,206	23,142	23,351	24,689
Telecommunications resellers	5,788	6,188	6,614	5,743	5,423	5,527	5,457	5,562	6,294	6,072	5,266	5,732	6,276	7,041
Satellite telecommunications	2,504	2,560	2,606	2,425	2,502	2,574	2,571	2,641	3,300	3,759	4,883	5,731	6,202	6,792
Cable and other program distribution	13,403	13,121	13,857	14,343	14,316	14,545	14,863	14,734	14,616	14,720	15,614	16,580	18,251	19,516
Other telecommunications	407	409	427	438	435	410	377	395	306	256	218	264	264	401
Internet service providers, web search portals, and data processing services	x	x	x	x	x	x	x	x	x	x	x	19,860	19,125	19,368
Internet service providers, web search portals	x	x	x	x	x	x	x	x	x	x	x	6,146	5,969	5,635
Data processing, hosting, and related services	4,186	4,728	5,304	5,905	7,033	8,248	10,233	11,939	14,344	13,963	13,628	13,715	13,156	13,733
Other information services	x	x	x	x	x	x	x	x	x	x	x	26,452	26,358	27,148

Note: North American Industry Classification System (NAICS), 2002.
Source: Statistics Canada, CANSIM table 281-0024.

Table 19.3 Time spent watching television, by selected age groups and by province, 2004

	Population aged 2 and older	Children aged 2 to 11	Adolescents aged 12 to 17	Population aged 18 and older	
				Men	Women
	average hours per week				
Canada	**21.4**	**14.1**	**12.9**	**20.9**	**25.6**
Newfoundland and Labrador	22.7	18.9	12.3	21.3	26.8
Prince Edward Island	20.0	14.5	12.3	19.8	23.5
Nova Scotia	22.7	12.9	13.8	22.4	27.2
New Brunswick	23.7	14.7	12.6	23.2	28.4
Quebec[1]	23.3	14.3	13.5	22.4	28.5
Anglophones	20.6	14.2	13.4	19.8	24.2
Francophones	23.8	14.3	13.7	22.9	29.2
Ontario	20.6	13.5	13.2	20.1	24.7
Manitoba	22.1	15.5	13.0	22.0	26.4
Saskatchewan	21.2	15.2	12.7	20.5	25.7
Alberta	19.4	14.1	12.4	18.2	23.9
British Columbia	20.7	14.4	11.7	21.5	23.4

Note: Data are collected over the fall period (four weeks of November).

1. For Quebec, the language classification is based on the language spoken at home. For Quebec as a total, respondents who did not reply to this question or who indicated a language other than English or French are included.

Source: Statistics Canada, CANSIM tables 502-0002 and 502-0003.

Table 19.4 Time spent watching television, by type of program, 2004

	Canadian and foreign programs	Canadian programs	Foreign programs
	% of hours		
All program types	**100.0**	**37.2**	**62.8**
News and public affairs	**24.4**	18.4	6.0
Documentary	**3.2**	1.3	1.9
Academic instruction	**3.2**	1.7	1.5
Social and/or recreational instruction	**1.1**	0.4	0.6
Religion	**0.3**	0.2	0.1
Sports	**6.5**	2.9	3.6
Variety and games	**15.2**	4.6	10.7
Music and dance	**1.0**	0.8	0.2
Comedy	**10.0**	1.6	8.4
Drama	**27.3**	5.3	22.1
Recorded program (VCR/DVD)	**4.9**	0.0	4.9
Other television programs	**2.9**	0.0	2.9

Notes: Data are collected over the fall period (four weeks of November).
Population aged 2 and older.

Source: Statistics Canada, CANSIM table 502-0004.

Table 19.5 Internet use at home by individuals, by type of activity, 2005

	All Canadians[1]	Internet users at home[2]
	%	
E-mail	55.6	91.3
Participating in chat groups or using a messenger	23.1	37.9
Searching for information on Canadian municipal, provincial or federal government	31.7	52.0
Communicating with Canadian municipal, provincial or federal government	13.8	22.6
Searching for medical or health related information	35.3	57.9
Education, training or school work	26.1	42.9
Travel information or making travel arrangements	38.5	63.1
Paying bills	33.5	55.0
Electronic banking	35.2	57.8
Researching investments	16.0	26.2
Playing games	23.5	38.7
Obtaining or saving music	22.3	36.6
Obtaining or saving software	19.4	31.8
Viewing the news or sports	37.6	61.7
Obtaining weather reports or road conditions	40.5	66.6
Listening to the radio over the Internet	15.9	26.1
Downloading or watching television	5.2	8.5
Downloading or watching a movie	5.0	8.3
Researching community events	25.8	42.3
General browsing (surfing)	51.2	84.0
Other Internet activity	6.7	10.9

1. Percentage of all individuals aged 18 and older.
2. Percentage of all individuals aged 18 and older who responded that they had used the Internet in the previous 12 months for personal non-business use from home.

Source: Statistics Canada, CANSIM table 358-0130.

Table 19.6 Internet use by individuals, by location of access, 2005

	%[1]
All locations[2]	**67.9**
Home	60.9
Work	26.3
School	11.7
Public library	10.2
Other location	20.3

1. Percentage of all individuals aged 18 and older who responded that they had used the Internet in the previous 12 months for personal non-business use from any location.
2. Includes use from home, school, work, public library or other location, and counts an individual only once, regardless of use from multiple locations.

Source: Statistics Canada, CANSIM table 358-0122.

Table 19.7 Cable and other program distribution industries, financial and operating statistics, 2001 to 2005

	2001	2002	2003	2004	2005
			$ millions		
Operating revenue	**4,606.0**	**5,215.7**	**5,818.8**	**6,350.4**	**6,818.0**
Cable television	3,926.6	4,268.9	4,615.2	4,995.8	5,347.8
Satellite and other wireless television[1]	679.4	946.8	1,203.6	1,354.7	1,470.2
Operating expenses	**4,268.9**	**4,728.8**	**5,066.8**	**5,245.2**	**5,445.7**
Cable television	3,279.1	3,536.1	3,753.1	3,797.6	4,018.1
Satellite and other wireless television[1]	989.8	1,192.7	1,313.8	1,447.5	1,427.6
Salaries and other staff benefits	**726.6**	**743.8**	**717.7**	**768.5**	**868.0**
Cable television	625.7	631.4	612.9	657.4	729.8
Satellite and other wireless television[1]	100.9	112.4	104.7	111.1	138.1
			thousands		
Subscribers to television programming services	**9,457**	**9,644**	**9,779**	**9,935**	**10,106**
Cable television	7,848	7,626	7,574	7,611	7,612
Satellite and other wireless television[1]	1,609	2,019	2,205	2,325	2,495

Note: North American Industry Classification System (NAICS), 2002.

1. Paid services similar to cable services but provided with wireless technologies. Does not include free television.

Source: Statistics Canada, CANSIM table 353-0003.

Table 19.8 Private radio and private conventional television, financial and operating statistics, 2001 to 2005

	2001	2002	2003	2004	2005
			$ millions		
Private radio					
Operating revenue	1,074.8	1,105.8	1,196.5	1,234.7	1,345.7
Advertising revenues	1,051.5	1,084.1	1,175.0	1,214.2	1,319.4
Operating expenses	902.9	932.8	969.2	1,011.8	1,068.5
Salaries and benefits	468.2	485.8	509.8	535.2	559.1
Profit before interest and taxes	171.9	173.1	227.3	222.9	277.3
Private conventional television					
Operating revenue	1,910.9	1,900.9	2,102.8	2,122.1	2,207.1
Advertising revenues	1,790.1	1,760.7	1,932.6	1,943.0	2,017.8
Operating expenses	1,669.2	1,722.2	1,802.5	1,889.6	1,964.4
Salaries and benefits	495.3	521.3	542.4	559.0	569.9
Profit before interest and taxes	241.6	178.6	300.3	232.5	242.7

Notes: North American Industry Classification System (NAICS), 2002.

Excludes television channels dedicated to sports, news or movies that are only available to those who subscribe to cable or satellite television.

Excludes channels largely financed by public funds or fund-raising activities.

Source: Statistics Canada, CANSIM table 357-0001.

Abbreviations and symbols

Provinces and territories	
Newfoundland and Labrador	N.L.
Prince Edward Island	P.E.I.
Nova Scotia	N.S.
New Brunswick	N.B.
Quebec	Que.
Ontario	Ont.
Manitoba	Man.
Saskatchewan	Sask.
Alberta	Alta.
British Columbia	B.C.
Yukon	Y.T.
Northwest Territories	N.W.T.
Nunavut	Nvt.

Measurements	
centimetre	cm
metre	m
kilometre	km
gram	g
kilogram	kg
litre	L
millilitre	mL
hour	h
watt	W
kilowatt	kW
degrees Celsius	°C

The symbols described in this document apply to all data published by Statistics Canada from all origins, including surveys, censuses and administrative sources, as well as straight tabulations and all estimations.

.	not available for any reference period
..	not available for a specific reference period
…	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to zero where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
^{F}	too unreliable to be published

Note: In some tables, figures may not add to totals because of rounding.

When the figure is not accompanied by a data quality symbol, it means that the quality of the data was assessed to be 'acceptable or better' according to the policies and standards of Statistics Canada.

The statistics in this edition are the most up-to-date available at the time of its preparation. For more recent data, visit Canadian Statistics at www.statcan.ca