

Catalogue no. 88-202-X

Industrial Research and Development: Intentions



2009



Statistics
Canada

Statistique
Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website at www.statcan.gc.ca, e-mail us at infostats@statcan.gc.ca, or telephone us, Monday to Friday from 8:30 a.m. to 4:30 p.m., at the following numbers:

Statistics Canada's National Contact Centre

Toll-free telephone (Canada and the United States):

Inquiries line	1-800-263-1136
National telecommunications device for the hearing impaired	1-800-363-7629
Fax line	1-877-287-4369

Local or international calls:

Inquiries line	1-613-951-8116
Fax line	1-613-951-0581

Depository Services Program

Inquiries line	1-800-635-7943
Fax line	1-800-565-7757

To access this product

This product, Catalogue no. 88-202-X, is available free in electronic format. To obtain a single issue, visit our website at www.statcan.gc.ca and select "Publications."

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed *standards of service* that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "About us" > "Providing services to Canadians."

Industrial Research and Development: Intentions

2009

Published by authority of the Minister responsible for Statistics Canada

© Minister of Industry, 2010

All rights reserved. The content of this electronic publication may be reproduced, in whole or in part, and by any means, without further permission from Statistics Canada, subject to the following conditions: that it be done solely for the purposes of private study, research, criticism, review or newspaper summary, and/or for non-commercial purposes; and that Statistics Canada be fully acknowledged as follows: Source (or "Adapted from", if appropriate): Statistics Canada, year of publication, name of product, catalogue number, volume and issue numbers, reference period and page(s). Otherwise, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, by any means—electronic, mechanical or photocopy—or for any purposes without prior written permission of Licensing Services, Client Services Division, Statistics Canada, Ottawa, Ontario, Canada K1A 0T6.

January 2010

Catalogue no. 88-202-X

ISSN 1495-706X

Frequency: Annual

Ottawa

Cette publication est également disponible en français.

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

User information

Symbols

The following standard symbols are used in Statistics Canada publications:

- . 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 0 (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

Table of contents

Highlights	5
Analysis	6
Statistical tables	
1 Industrial research and development expenditures in current and 2002 constant dollars	12
2 International comparison of business enterprise expenditures on research and development as a percentage of Gross domestic product, by selected OECD countries	12
3 Business expenditures on research and development compared to gross domestic expenditures on research and development and gross domestic product	13
4 Concentration of total intramural research and development expenditures by companies size	14
5 Total intramural research and development expenditures	15
5-1 by industry	15
5-2 by province	16
5-3 by province, by industry, 2007 ^P	17
5-4 by country of control	18
5-5 of Canadian-controlled companies compared to all intramural research and development expenditures, by industry	19
5-6 by expenditures size	20
6 Total intramural research and development	20
6-1 by sources of funds	20
6-2 by sources of funds and by industry, 2007 ^P	21
6-3 by sources of funds and by size of expenditures, 2007 ^P	22
6-4 by sources of funds and by country of control of performer, 2007 ^P	22
7 Current intramural research and development expenditures	23
7-1 by industry	23
7-2 by industry and by type of expenditures, 2007 ^P	24
7-3 by province	25
7-4 as a percentage of performing company revenues, by company revenue size	25
7-5 as a percentage of performing company revenues, by country of control	25
7-6 as a percentage of performing company revenues, by industry and by country of control, 2007 ^P	26
8 Average total intramural research and development expenditures, by performing company revenue size, 2006	27
9 Intramural research and development expenditures, by province, 2007 ^P	27

Table of contents – continued

10	Capital intramural research and development expenditures, by industry	28
11	Total research and development personnel, by selected industries	29
12	Personnel engaged in research and development	29
12-1	by industry group and by region, 2007 ^p	29
12-2	by province and by occupational category, 2007 ^p	29
12-3	by industry and by occupational category, 2007 ^p	30
12-4	by occupational category	31
13	Professional personnel engaged in research and development, by degree level	31
14	Total extramural payments for research and development, by industry	32
14-1	and by year	32
14-2	and by location of recipient, 2007 ^p	33
15	Research and development by area of specialization	34
15-1	biotechnology	34
15-2	pollution abatement and control	34
15-3	software	34
16	Foreign receipts and payments for technological services	35
16-1	by selected industries, 2007 ^p	35
16-2	by research and development and other	35
17	Energy research and development expenditures, by area of technology and by source of funds, 2007 ^p	35
18	Research and development performers	36
18-1	by industry and by country of control, 2006	36
18-2	by province, 2001 to 2006	37
18-3	as a percentage of enterprises with one or more employees, 2001 to 2006	38
18-4	by the North American industry classification system (NAICS) 2007, in 2006	39
19	Enterprises with one or more employee, by industry, with percentage change from 2001 to 2006 and percentage distribution, 2006	54
20	Research and development in Canadian Industry, 2007 survey response	55

Data quality, concepts and methodology

The 2007 survey	56
-----------------	----

Appendix

I North American industry classification system 2007 by Industry group	65
--	----

Highlights

Spending on industrial research and development 2009 (intentions)

- In total, businesses anticipated their spending (in current dollars) on industrial research and development (R&D) to reach \$16.1 billion in 2009, essentially unchanged from the previous two years.
- Firms in the information and communications technologies sector anticipated total R&D expenditures of \$6.2 billion, or 38.5% of the total in 2009. Businesses performing R&D related to pharmaceuticals and medicine anticipated investments of \$1.7 billion, or 10.3% of the total. Both proportions are in line with historical levels.

Note: Spending intentions for 2008 and 2009 are preliminary indications of the direction of R&D investment intentions. They do not represent absolute values of R&D spending, and should therefore be used with caution. In response to the global economic downturn, survey respondents may have adjusted their R&D spending for the last two quarters of 2008 and for all of 2009 after providing their intentions.

In addition, estimates of R&D spending for 2007 represent the latest year of actual spending data in the time series. However, these data will be revised when Statistics Canada has received processed tax credit forms for scientific research and experimental development outstanding at the time these estimates were finalized or revised after audit by the Canada Revenue Agency.

Analysis

Research and development (R&D) performing firms anticipate that their spending (in current dollars) on R&D will be \$16.1 billion in 2009 (table 1), essentially unchanged over the previous two years. The data collection of R&D spending intentions for 2008 and 2009 began in August 2008, prior to the onset of the current global financial downturn, and continued until March 2009. It is anticipated that firms will adjust their R&D spending according to their individual responses to the global financial crisis.

In constant 2002 dollars, industrial R&D spending has yet to recover from the technology downturn of the start of the millennium which became more apparent with the 2002 industrial R&D spending (table 1).

The number of R&D performing firms continues to increase, up 66.7% from 12,087 in 2001 to 20,154 in 2006 the most recent year for which are available (table 18-2). In constant 2002 dollars, industrial R&D expenditures peaked at \$14,425 million in 2001 consequently the average R&D expenditure for firms performing R&D in 2006 of \$704 thousand is much lower than the average of \$1.2 million for 2001.

Information and cultural industries became the most important industrial group performing R&D in Canada in 2005 taking over from communications equipment. The main components of information and cultural industries are software publishing including computer games, motion picture and sound recording, broadcasting, telecommunications including voice over Internet protocol, Internet access, publishing, broadcasting and web search portals and data processing.

The business enterprise expenditures on R&D (BERD) ratio, a ratio of total intramural business enterprise R&D expenditures divided by gross domestic product (GDP), enables countries to be compared without reference to exchange rates and other comparative valuations of currency such as purchasing power parity (PPP) dollars. The measure can also be used across time without concern for calculations of constant value versus current value dollars (table 2).

In 2007, the four OECD countries leading in the BERD/GDP ratio in ranked order were Japan (2.68), Sweden (2.66), Finland (2.51) and Korea (2.18) all well above the OECD average of 1.59. Canada's BERD/GDP ratio was 1.05 in 2007, down from 1.19 in 2004. This ratio for the United States hit 1.93 in 2007 up from 1.79 in 2004 (table 2).

The share of R&D conducted by Canada's business enterprise sector as a percentage of the national total gross domestic expenditures on research and development (GERD) continues to decline to 54.9% in 2008 from its peak of 61.7% in 2001 (table 3). Canada's share of total R&D performed by this sector is, and has consistently been, lower than the OECD average (69.6% in 2007).

Research and development (R&D) concentration measures

In the late 1980s, industrial R&D performance was concentrated in a few firms – 25 firms accounted for almost half of Canada's industrial R&D expenditures. This concentration in a few firms continues, but is weakening. In 2009, 75 firms accounted for almost half of the national industrial R&D expenditures.

Over the past decade, the share of industrial R&D performed by the manufacturing sector has declined from 68% in 2000 to 52% in 2009. Between 2000 and 2002, the R&D performance by the manufacturing sector fell from 68% to 61% of total industrial R&D performance. Since 2004 when the manufacturing sector's share of industrial R&D performance was 54%, the rate of loss of share has slowed (table 5-1 and CANSIM table 358-0024).

When viewed by R&D expenditure size groups, industrial R&D expenditures are concentrated in firms performing at least \$1 million of R&D – four-fifths of R&D expenditures fall into this group (table 5-6). Industrial R&D performed in

Canada is mostly performed by Canadian-controlled companies however recently there has been a slight increase in the proportion of R&D expenditures by firms under foreign ownership outside of United States-controlled companies (table 5-4). The R&D expenditures of foreign-controlled firms are most important to industries such as mining, and pharmaceutical and medicine manufacturing (table 5-5).

Sources of funds for research and development (R&D) performance

Industrial R&D can be funded from a variety of sources, both public and private. Public sources include federal grants and contracts and provincial government sources. Private sources include the performing companies, related companies and research contracts for other companies. Other Canadian sources include private non-profit organizations, universities and individuals. Finally, industrial R&D can be financed from foreign sources, both public and private. The business enterprise sector (81%), in particular the Canadian R&D performing companies (77%), provide the majority of industrial R&D funding (tables 6-1 and 6-3).

Industrial R&D performers received 16% of their funding from foreign sources. Funds from the federal government accounted for 2% of R&D financing while the remainder came from “other” sources (table 6-3).

Industrial sectors rely in varying degrees upon different sources of funds for financing their R&D performance. Firms performing R&D in utilities (89%), and mining and oil and gas extraction (88%) depend heavily upon self-financing for their R&D performance (table 6-2).

While manufacturing (79%) and services (73%) self-finance the majority of their R&D performance, foreign sources are the second most important source of funds for these sectors (table 6-2).

Capital and current intramural expenditures on research and development (R&D)

Capital expenditures related to industrial intramural R&D expenditures generally represent about 7% of total expenditures; however extraordinary situations including starting or completing construction of new research and development facilities or test plants (table 10) will impact the share of capital expenditures over total expenditures.

Current intramural expenditures for industrial R&D include wages and salaries and other current expenditures. In recent years, on average wages and salaries represent 60% of current intramural industrial R&D expenditures (table 7-2).

Other current expenditures include supplies and materials consumed in the process of conducting R&D as well as contracts for services to carry out R&D such as drilling needed for heavy oil R&D. For example, in 2007 wages and salaries comprise one-quarter or less of current intramural expenditures in two industries: petroleum and coal products and mining and oil and gas extraction which indicates the importance of other current expenditures to these industries (table 7-2). Contracts related to conducting R&D are part of extramural R&D payments and are not included in current intramural expenditures.

Industrial research and development (R&D) personnel

In 2007, the most recent year for which counts of R&D personnel are available, 147,599 full-time equivalents (FTE) were performing tasks related to industrial R&D, a 16% increase in research effort over 2003 (127, 205) (table 11).

Professionals, researchers and managers with university degrees continue to represent six out of every ten FTE performing R&D while technicians account for three out of every ten and support staff the remaining full-time equivalent (table 12-4). The majority of R&D personnel employed in communications equipment (80.8%) and semiconductor and other electronic components (80.3%) were professionals – scientists and engineers or senior R&D administrators – indicating the requirement for highly qualified personnel in the information communication technologies sector. On the other hand, printing (60%), textiles (50.6%), furniture and related products (50.5%) and fabricated metal products (49.4%) depend upon technicians to perform their R&D (table 12-3).

Extramural research and development (R&D) expenditures

Firms can perform R&D in-house and/or they can pay another organization to undertake this specialized work. R&D payments directed outside the firm are known as extramural R&D expenditures and these payments can be attributed to firms that do not perform their own R&D. The R&D performed for these payments can be performed by other firms or in other sectors, for example the higher education sector, federal or provincial laboratories or private non-profit organizations can undertake R&D for businesses. There has been a decline of \$89 million of extramural payments for R&D reported by the business enterprise sector down to an estimated \$3.7 billion for 2009 (table 14-1).

Within the services sector, information and cultural industries and scientific research and development services are the two industries most involved in paying other organizations to perform their R&D. For manufacturing, the industries contracting out the most on R&D are pharmaceutical and medicine and communications equipment (table 14-1). Canadian-controlled firms were responsible for \$2.7 billion or 70% of extramural R&D expenditures (table 14-2).

Industrial research and development (R&D) expenditures by province - 2007^p

Industrial R&D expenditures (in current dollars) remain concentrated in Canada's most populous provinces: Ontario (\$7.6 billion), Quebec (\$4.7 billion), British Columbia (\$1.7 billion) and Alberta (\$1.1 billion). Together the firms performing R&D in the four Atlantic provinces spent \$310 million or 2% of the national industrial R&D expenditures in current dollars (table 5-3).

In 2007, Alberta and British Columbia were the only provinces in which industrial R&D performance in the services sector exceeded the R&D performance of the manufacturing firms. The majority of industrial R&D in British Columbia (62%) was performed by the service sector in 2007. In Alberta the service sector represented one-third (33%) of industrial R&D performance just edging out mining and oil and gas extraction (30%) and manufacturing (29%) as the most important provincial industrial R&D performing sector (table 5-3).

The distribution of industrial R&D by performing sector in the Atlantic provinces, Ontario and Manitoba were similar in 2007. In Ontario, manufacturing represented 61% of the industrial R&D effort while services accounted for 37%. In Manitoba manufacturing represented two-thirds (65%) with services one-third (33%) of industrial R&D performance. For Atlantic Canada the shares of industrial R&D performance were 57% in the manufacturing sector and 35% in the services sector (table 5-3).

In Quebec, the manufacturing sector represented 49% of industrial R&D performance closely followed by the services sector at 46% (table 5-3).

Technological objectives of the research and development (R&D) expenditures

Over \$1 billion of industrial R&D was related to biotechnology in 2005 through 2007. The vast majority of this R&D was undertaken by firms in the service sector, followed by those in manufacturing and lastly by firms in the agriculture sector (table 15-1).

The manufacturing sector performed (\$179 million) the majority of the industrial R&D expenditure of \$326 million undertaken for purposes of pollution abatement and control in 2007 (table 15-2).

R&D expenditures for software amounted to \$4.2 billion in 2007 with firms in services industries performing \$2.4 billion, the majority of this work (58%). Manufacturing firms contributed \$1.7 billion of R&D expenditures (41%) dedicated to software (table 15-3).

In 2007, Canadian firms dedicated \$1.2 billion towards energy R&D, with particular emphasis on fossil fuels (\$659 million). Energy conservation R&D followed at \$188 million and transportation and transmission at \$122 million (table 17).

Canadian technological balance of payments

For Canadian technological balance of payments (TBP), the estimates are taken only from firms performing or funding at least \$1.5 million of research and development starting with 2006, for earlier years, the TBP represented firms performing or funding at least \$1 million of R&D. The statistics which appear in tables 16-1 and 16-2 are taken from the survey of industrial R&D rather than from balance of payments surveys. The payments and receipts for technology, other than R&D are therefore incomplete since data from firms not included in the industrial R&D survey are not available.

Technological services are composed of R&D and “other” technological services. These services are typically performed intramurally, but they can be purchased also from a source within or outside of Canada. Similarly, Canadian firms can perform technological services for firms outside of Canada. In 2007, firms operating in Canada received \$3.3 billion for technological services and paid \$1.4 billion for these services from firms outside Canada for a positive net balance of \$1.9 billion (table 16-1).

Throughout the period 1998 to 2007, the Canadian TBP was positive, as was the balance for R&D activities. Starting in 2000 the balance for “other” technological services turned positive (table 16-2).

Counts of research and development (R&D) performing firms

The number of firms performing R&D continues to post annual increases, reaching 20,154 in 2006 up by 3.2% from 19,515 in 2005 and more than double the count of 9,648 for 1997. Measured in constant dollars, the average R&D expenditure by performing firm declined from \$977 thousand in 1997 to \$704 thousand in 2006 (tables 1 and 18-2).

R&D firms may choose to perform their R&D activities in multiple locations and therefore performance may be counted in more than one province. For 2006, the count of R&D performers including those making expenditures in more than one province was 20,489. Based on location of the R&D performance, the majority of R&D performers are located in the two central provinces, Quebec, 8,078 (39%) and Ontario, 8,057 (39%). There were 680 (3%) R&D performers in the Atlantic Canada; 375 (2%) in Manitoba; 199 (1%) in Saskatchewan; 1,188 (6%) in Alberta; and 1,912 (9%) in British Columbia and the Territories (table 18-2).

R&D is a business strategy. Business strategies are employed by firms in attempts to position themselves in the most advantageous way relative to the competition in the market. The decision to perform R&D therefore represents a wager of sorts, that the expenditures incurred to perform the activity will generate some knowledge that will enable the firm to strengthen, or at least maintain, its position relative to the competition. Propensity data provides a snapshot of all of the firms which were performing R&D in a given period as a proportion of all firms in operation at that time. It is therefore interesting to note that the propensity to perform R&D has increased rapidly from 2001 to 2006 (table 18-3). This may represent a response to an increasingly competitive, global marketplace whose pressures cannot be avoided in protected areas.

Overall, R&D performers represent a very small proportion of all business in Canada, only 2.1%. This varies by sector, with only 0.5% of all construction firms performing R&D versus 16.9% in manufacturing. Propensities varied significantly by industries within each sector as well (table 18-3).

In some industries, R&D is almost a “price of admission”, with just over half of all firms in communications equipment (54.7%) and almost half of pharmaceutical and medicine firms (48.3%) reporting that they performed R&D in 2006. Other manufacturing sector industries with high propensities to perform R&D are navigational, measuring, medical and control instruments (43.2%) and semiconductor and other electronic components (40.8%). Industries least likely to perform R&D within the manufacturing sector are printing (6.2%); and furniture and related products (7.8%) (table 18-3).

In the services sector, the overall propensity to perform R&D was 1.3% in 2006. Not unexpectedly, the leading industry for performing R&D was scientific research and development services at 36.1%. One-tenth of firms in computer system design and related services were R&D performers while one-twentieth of firms in information and cultural industries and architectural, engineering and related services also engaged in R&D in 2006 (table 18-3).

Statistical tables

Table 1
Industrial research and development expenditures in current and 2002 constant dollars

	Current dollars			Gross domestic product implicit price index (2002)	2002 constant dollars		
	Current intramural expenditures	Capital expenditures	Total intramural expenditures		Current intramural expenditures	Capital expenditures	Total intramural expenditures
	millions of dollars				millions of dollars		
				index = 2002			
2009 ^p	14,856 ^E	1,290 ^E	16,146^E	..	..	..	..
2008 ^p	15,075	906	15,980	121.1	12,448	748	13,196
2007 ^p	14,888	994	15,882	116.5	12,779	853	13,633
2006 ^r	14,876	1,145	16,021	112.9	13,176	1,014	14,190
2005 ^r	14,678	1,096	15,774	110.1	13,332	995	14,327
2004 ^r	14,170	1,078	15,249	106.6	13,293	1,011	14,305
2003 ^r	13,110	985	14,095	103.3	12,691	954	13,645
2002 ^r	12,493	1,052	13,545	100.0	12,493	1,052	13,545
2001	12,767	1,499	14,266	98.9	12,909	1,516	14,425
2000	11,201	1,194	12,395	97.8	11,453	1,221	12,674
1999	9,360	1,039	10,399	93.9	9,968	1,106	11,075
1998	8,727	955	9,682	92.3	9,455	1,035	10,490
1997	7,874	865	8,739	92.8	8,485	932	9,417
1996	7,159	838	7,997	91.6	7,816	915	8,730
1995	7,286	705	7,991	90.2	8,078	782	8,859
1994	6,938	629	7,567	88.2	7,866	713	8,579
1993	5,878	546	6,424	87.2	6,741	626	7,367
1992	5,286	457	5,742	85.9	6,154	532	6,685
1991	4,812	543	5,355	84.8	5,675	640	6,315
1990	4,541	628	5,169	82.4	5,511	762	6,273
1989	4,155	624	4,779	79.8	5,207	782	5,989
1988	3,980	643	4,623	76.4	5,209	842	6,051
1987	3,691	649	4,340	73.1	5,049	888	5,937
1986	3,447	575	4,022	69.9	4,931	823	5,754
1985	3,054	579	3,633	67.8	4,504	854	5,358

Note(s): Components may not add to totals due to rounding.

Source(s): CANSIM tables 358-0024 and 380-0056.

Table 2
International comparison of business enterprise expenditures on research and development as a percentage of Gross domestic product, by selected OECD countries

	2007 ^p	2006 ^r	2005 ^r	2004 ^r	1995
	percent				
Japan	2.68	2.63	2.54	2.38	1.90
Sweden	2.66	2.79	2.62	2.67	2.43
Finland	2.51	2.46	2.47	2.42	1.43
Korea	2.18	2.29	2.49	2.65	1.75
United States	1.93	1.89	1.83	1.79	1.77
Austria	1.81	1.73	1.70	1.53	..
Germany	1.77	1.77	1.72	1.74	1.45
Denmark	1.66	1.66	1.68	1.69	1.04
Iceland	1.50	1.59	1.43	..	0.49
Luxembourg	1.36	1.43	1.35	1.43	..
France	1.31	1.32	1.30	1.36	1.39
Belgium	1.29	1.30	1.25	1.29	1.19
Australia	..	1.15	1.07	0.97	0.84
United Kingdom	1.15	1.08	1.06	1.06	1.24
Canada	1.05	1.11	1.15	1.19	0.99
Netherlands	1.03	1.01	1.01	1.03	1.03
Czech Republic	0.98	1.03	0.91	0.79	0.62
Ireland	0.88	0.88	0.82	0.81	0.89
Norway	0.88	0.82	0.82	0.87	0.96
Switzerland	..	..	..	2.14	..
Total OECD	1.59	1.56	1.51	1.48	1.37

Note(s): Countries are presented in descending order of Business expenditures on research and development as a percentage of GDP based on their information for the most recent year reported on the table.

Source(s): OECD, Main Science and Technology Indicators. Volume 2009/1.

Table 3
Business expenditures on research and development compared to gross domestic expenditures on research and development and gross domestic product

	Business expenditures on research and development	Gross domestic expenditures on research and development	Gross domestic product	Business expenditures on research and development / Gross domestic expenditures on research and development	Business expenditures on research and development / Gross domestic product
	millions of dollars			percent	
2009 ^p	16,146 ^E	..	..	..	..
2008 ^p	15,980	29,071	1,600,081	54.97	1.00
2007 ^p	15,882	28,881	1,532,944	54.99	1.04
2006 ^r	16,021	28,715	1,449,215	55.79	1.11
2005 ^r	15,774	28,142	1,373,845	56.05	1.15
2004 ^r	15,249	26,833	1,290,906	56.83	1.18
2003 ^r	14,095	24,719	1,213,175	57.02	1.16
2002 ^r	13,545	23,531	1,152,905	57.56	1.17
2001	14,266	23,132	1,108,048	61.67	1.29
2000	12,395	20,556	1,076,577	60.30	1.15
1999	10,399	17,638	982,441	58.96	1.06
1998	9,682	16,088	914,973	60.18	1.06
1997	8,739	14,635	882,733	59.71	0.99
1996	7,997	13,817	836,864	57.88	0.96
1995	7,991	13,754	810,426	58.10	0.99
1994	7,567	13,341	770,873	56.72	0.98
1993	6,424	12,184	727,184	52.72	0.88
1992	5,742	11,338	700,480	50.64	0.82
1991	5,355	10,767	685,367	49.74	0.78
1990	5,169	10,260	679,921	50.38	0.76
1989	4,779	9,517	657,728	50.22	0.73
1988	4,623	9,045	613,094	51.11	0.75
1987	4,340	7,950	558,949	54.59	0.78
1986	4,022	7,546	512,541	53.30	0.78
1985	3,633	6,985	485,714	52.01	0.75
1984	3,022	6,273	449,582	48.17	0.67
1983	2,602	5,517	411,386	47.16	0.63
1982	2,489	5,198	379,859	47.88	0.66

Source(s): CANSIM tables 358-0001 and 380-0017.

Table 4
Concentration of total intramural research and development expenditures by companies size

	Top 25	Top 50	Top 75	Top 100	Total intramural expenditures
	percent				millions of dollars
2009 p	33	42	49	53	16,146 E
2008 p	32	41	47	52	15,980
2007 p	31	41	48	52	15,882
2006 r	32	43	49	53	16,021
2005 r	33	43	49	53	15,774
2004 r	33	44	50	54	15,249
2003 r	34	44	50	54	14,095
2002 r	34	44	50	54	13,545
2001	41	49	55	59	14,266
2000	46	54	60	64	12,395
1999	44	54	59	63	10,399
1998	46	55	60	64	9,682
1997	44	53	59	63	8,739
1996	41	50	56	61	7,997
1995	39	48	54	58	7,991
1994	39	49	54	58	7,567
1993	43	54	60	64	6,424
1992	45	55	60	64	5,742
1991	47	57	63	67	5,355
1990	47	58	64	68	5,169
1989	48	59	64	68	4,779
1988	49	59	64	68	4,623
1987	49	58	64	67	4,340
1986	47	57	63	67	4,022
1985	48	58	64	68	3,633

Table 5-1
Total intramural research and development expenditures by industry

	2005 ^r	2006 ^r	2007 ^p	2008 ^p	2009 ^p
	millions of dollars				
Total	15,774	16,021	15,882	15,980	16,146^E
Agriculture, forestry, fishing and hunting	111	111	114	118^E	115^E
Agriculture	81	87	80	x	82 ^E
Forestry and logging	19	20	x	F	x
Fishing, hunting and trapping	10	4	x	x	x
Mining and oil and gas extraction	481	588	547	449	459
Oil and gas extraction	440	525	476	376	385
Mining	41	63	71	73 ^E	74 ^E
Utilities	270	308	x	x	x
Electric power	257	292	x	x	x
Other utilities	13	16	21	F	F
Construction	72	80	x	x	x
Manufacturing	8,367	8,504	8,211	8,496	8,437
Food	141	141	145	150 ^E	157 ^E
Beverage and tobacco	19	18	x	x	x
Textile	57	56	43	38 ^E	37 ^E
Wood products	135	x	102	x	87 ^E
Paper	314	359	259 ^E	257 ^E	F
Printing	40	38	38	F	F
Petroleum and coal products	214	209	258	263	246 ^E
Pharmaceutical and medicine	1,065	1,048	1,046	1,072	1,057
Other chemicals	165	183	224	241	203
Plastic products	133	136	116	F	x
Rubber products	32	31	24	21 ^E	18 ^E
Non-metallic mineral products	73	69	65	64 ^E	62 ^E
Primary metal (ferrous)	x	x	x	x	51 ^E
Primary metal (non-ferrous)	257	261	x	195	201
Fabricated metal products	211	222	218	F	F
Machinery	561	544	530	605 ^E	618 ^E
Computer and peripheral equipment	156	110	104	x	x
Communications equipment	1,405	1,501	1,485	1,606	x
Semiconductor and other electronic components	849	844	847	931	829
Navigational, measuring, medical and control instruments	482	450	380	435	434
Other computer and electronic products	19	15	24	23 ^E	21 ^E
Electrical equipment, appliance and components	173	207	247	F	F
Motor vehicle and parts	631	612	495	447	432
Aerospace products and parts	860	x	942	x	x
All other transportation equipment	x	67	x	x	61 ^E
Furniture and related products	33	x	35	F	F
Other manufacturing industries	x	212	190	188	184 ^E
Services	6,474	6,429	6,670	6,559^E	6,772^E
Wholesale trade	816	792	851	871	844 ^E
Retail trade	40	33	50	55 ^E	F
Transportation and warehousing	59	69	67	57	59
Information and cultural industries	1,566	1,637	1,571	1,502	1,734
Finance, insurance and real estate	412	435	408	391 ^E	F
Architectural, engineering and related services	454	439	454	455	463
Computer system design and related services	1,152	1,188	1,240	1,232 ^E	1,150 ^E
Management, scientific and technical consulting services	66	55	62	F	F
Scientific research and development services	1,230	1,153	1,261	1,365	1,413 ^E
Health care and social assistance	400	339	341	284	290
All other services	280	289	365	295 ^E	288 ^E

Note(s): Components may not add to totals due to rounding.

Table 5-2
Total intramural research and development expenditures by province

	2005 ^r	2006 ^r	2007 ^p
millions of dollars			
Total	15,774	16,021	15,882
Newfoundland and Labrador	86	96	90
Prince Edward Island	11	11	11
Nova Scotia	97	92	98
New Brunswick	99	104	112
Quebec	4,168	4,570	4,714
Ontario	8,205	7,968	7,648
Manitoba	200	175	193
Saskatchewan	153	168	136
Alberta	1,210	1,226	1,142
British Columbia ¹	1,547	1,611	1,738

1. Includes Yukon, Northwest Territories and Nunavut.

Note(s): Components may not add to totals due to rounding.

Table 5-3
Total intramural research and development expenditures by province, by industry, 2007^p

	Atlantic Canada	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia ¹	Total
	millions of dollars							
Total	310	4,714	7,648	193	136	1,142	1,738	15,882
Agriculture, forestry, fishing, hunting	13	42	x	x	x	x	x	114
Agriculture	x	32	33	x	x	x	5	80
Forestry and logging	x	10	x	0	0	x	7	30
Fishing, hunting and trapping	x	0 ^s	0 ^s	0	0	0	x	4
Mining and oil and gas extraction	x	35	x	x	38	345	103	547
Oil and gas extraction	x	x	x	0	x	x	x	476
Mining	x	x	x	x	x	x	x	71
Utilities	x	119	x	x	x	x	x	256
Electric power	0	x	x	x	0	x	x	235
Other utilities	x	x	7	0	x	x	x	21
Construction	x	30	42	x	x	x	x	83
Manufacturing	178	2,323	4,666	125	60	332	527	8,211
Food	11	49	68	x	x	3	8	145
Beverage and tobacco	x	x	7	0	x	0	0 ^s	22
Textile	0 ^s	23	18	x	x	x	1	43
Wood products	2	45	8	x	x	x	39	102
Paper	5	177	44	x	x	x	29	259
Printing	0	20	15	1	0	x	x	38
Petroleum and coal products	x	2	35	x	x	160	x	258
Pharmaceutical and medicine	17	376	542	x	x	x	36	1,046
Other chemicals	1	34	129	2	17	38	3	224
Plastic products	2	31	70	5	0	2	7	116
Rubber products	0	6	18	x	x	x	x	24
Non-metallic mineral products	1	16	36	x	0	x	10	65
Primary metal (ferrous)	0	25	x	x	x	0	x	48
Primary metal (non-ferrous)	x	145	x	x	0	x	x	256
Fabricated metal products	8	71	120	3	2	8	7	218
Machinery	5	121	331	12	19	16	26	530
Computer and peripheral equipment	x	10	49	x	0	11	x	104
Communications equipment	2	73	1,340	0 ^s	x	x	16	1,485
Semiconductor and other electronic components	x	86	660	1	x	x	89	847
Navigational, measuring, medical and control instruments	5	123	205	10	1	8	28	380
Other computer and electronic products	x	15	4	x	0	x	4	24
Electrical equipment, appliance and components	2	49	63	2	x	x	129	247
Motor vehicle and parts	1	31	443	x	x	1	3	495
Aerospace products and parts	x	x	310	x	0	x	3	942
All other transportation equipment	1	50	14	x	0	x	1	67
Furniture and related products	0 ^s	17	17	x	x	x	1	35
Other manufacturing industries	x	95	52	x	1	x	17	190
Services	107	2,165	2,853	63	34	377	1,071	6,670
Wholesale trade	15	279	384	14	7	52	100	851
Retail trade	1	20	22	x	x	1	5	50
Transportation and warehousing	1	27	21	x	x	15	2	67
Information and cultural industries	42	339	736	3	3	33	415	1,571
Finance, insurance, and real estate	1	90	291	x	x	7	10	408
Architectural, engineering and related services	9	206	120	3	10	56	50	454
Computer system design and related services	18	301	713	9	3	76	120	1,240
Management, scientific and technical consulting	0 ^s	16	25	x	x	7	12	62
Scientific research and development services	13	478	396	19	2	53	300	1,261
Health care and social assistance	x	282	17	x	x	1	36	341
All other services	7	127	128	x	x	74	20	365

1. Includes Yukon, Northwest Territories and Nunavut.

Note(s): Components may not add to totals due to rounding.

Table 5-4
Total intramural research and development expenditures by country of control

	2005 ^r	2006 ^r	2007 ^p
	millions of dollars		
Total	15,774	16,021	15,882
Canada	10,635	10,710	10,259
United States	3,365	3,389	3,386
Other foreign	1,775	1,921	2,236

Note(s): Components may not add to totals due to rounding.

Table 5-5

Total intramural research and development expenditures of Canadian-controlled companies compared to all intramural research and development expenditures, by industry

	2005 ^r	2006 ^r	2007 ^p
	percent		
Total	67	67	65
Agriculture, forestry, fishing and hunting	75	67	63
Agriculture	x	58	x
Forestry and logging	100	100	x
Fishing, hunting and trapping	x	100	x
Mining and oil and gas extraction	55	53	47
Oil and gas extraction	52	55	49
Mining	81	42	33
Utilities	x	x	x
Electric power	x	x	x
Other utilities	x	x	x
Construction	x	x	x
Manufacturing	64	64	62
Food	84	82	77
Beverage and tobacco	57	43	x
Textile	72	72	76
Wood products	x	x	71
Paper	89	91	80
Printing	92	x	97
Petroleum and coal products	x	x	x
Pharmaceutical and medicine	34	31	34
Other chemicals	56	57	64
Plastic products	87	82	85
Rubber products	51	45	56
Non-metallic mineral products	62	49	46
Primary metal (ferrous)	x	x	x
Primary metal (non-ferrous)	88	93	x
Fabricated metal products	95	96	93
Machinery	85	84	79
Computer and peripheral equipment	32	34	37
Communications equipment	88	88	91
Semiconductor and other electronic components	x	x	x
Navigational, measuring, medical and control instruments	68	66	70
Other computer and electronic products	x	x	x
Electrical equipment, appliance and components	64	73	79
Motor vehicle and parts	35	34	35
Aerospace products and parts	x	x	41
All other transportation equipment	x	x	x
Furniture and related products	x	x	x
Other manufacturing industries	x	94	91
Services	71	70	67
Wholesale trade	36	37	41
Retail trade	x	x	x
Transportation and warehousing	x	x	94
Information and cultural industries	83	66	63
Finance, insurance and real estate	97	96	96
Architectural, engineering and related services	x	x	64
Computer system design and related services	69	78	73
Management, scientific and technical consulting services	100	95	98
Scientific research and development services	75	78	75
Health care and social assistance	x	x	x
All other services	83	84	77

Note(s): Components may not add to totals due to rounding.

Table 5-6
Total intramural research and development expenditures by expenditures size¹

	2003 ^r	2004 ^r	2005 ^r	2006 ^r	2007 ^p
millions of dollars					
Total	14,095	15,249	15,774	16,021	15,882
Less than \$50,000	134	155	170	179	191
\$50,000 to \$99,999	241	283	312	324	329
\$100,000 to \$199,999	421	481	526	532	539
\$200,000 to \$399,999	580	654	688	704	727
\$400,000 to \$999,999	862	957	1,037	1,021	1,061
\$1,000,000 or greater	11,856	12,719	13,040	13,260	13,033

1. Research and development program size is based on current intramural expenditures.

Note(s): Components may not add to totals due to rounding.

Table 6-1
Total intramural research and development by sources of funds

	Canadian business enterprises			Federal sources		Provincial sources	Other Canadian sources	Foreign sources	Total
	Performing companies	Related companies	Research and development contracts for other companies	Grants	Contracts				
millions of dollars									
2007 ^p	12,279	453	126	225	38	84	57	2,619	15,882
2006 ^r	12,591	431	175	218	40	110	28	2,429	16,021
2005 ^r	12,346	401	131	287	35	90	24	2,460	15,774
2004 ^r	12,012	350	149	228	43	59	18	2,390	15,249
2003 ^r	11,102	379	153	256	44	70	17	2,073	14,095
2002 ^r	10,757	426	170	231	69	53	17	1,822	13,545
2001 ^r	10,438	301	177	345	112	51	14	2,828	14,266
2000	8,129	269	181	165	74	45	8	3,524	12,395
1999	6,967	201	213	241	68	57	8	2,642	10,399
1998	6,396	294	167	179	84	56	8	2,499	9,682
1997	6,124	268	156	253	103	77	8	1,750	8,739
1996	5,450	297	186	185	107	102	8	1,662	7,997
1995	5,383	286	259	259	152	87	10	1,555	7,991
1994	4,922	337	266	267	200	99	10	1,466	7,567
1993	4,073	347	242	266	250	105	7	1,134	6,424
1992	3,639	266	188	261	271	86	12	1,019	5,742
1991	3,388	275	162	204	212	114	11	988	5,355
1990	3,280	304	167	215	176	93	13	923	5,169
1989	2,981	325	164	239	177	69	6	819	4,779
1988	2,855	285	123	272	181	63	5	840	4,623
1987	2,714	255	125	287	155	60	9	734	4,340
1986	2,610	257	112	251	160	63	18	551	4,022
1985	2,323	241	97	215	168	60	12	518	3,633
1984	1,829	212	71	183	152	52	7	516	3,022
1983	1,608	158	76	175	106	46	3	431	2,602
1982	1,698	142	69	177	89	44	4	266	2,489
1981	1,543	123	70	132	58	37	3	158	2,124

Note(s): Components may not add to totals due to rounding.

Table 6-2
Total intramural research and development by sources of funds and by industry, 2007^p

	Canadian performing companies	Federal government and other Canadian sources	Foreign sources	Total
	millions of dollars			
Total	12,279	983	2,619	15,882
Agriculture, forestry, fishing and hunting	x	x	x	114
Agriculture	x	2	x	80
Forestry and logging	x	x	0	x
Fishing, hunting and trapping	x	x	x	x
Mining and oil and gas extraction	480	x	x	547
Oil and gas extraction	x	x	x	476
Mining	x	0 ^s	x	71
Utilities	227	x	x	x
Electric power	207	x	x	x
Other utilities	20	1	0	21
Construction	x	x	0	x
Manufacturing	6,527	558	1,125	8,211
Food	142	3	0	145
Beverage and tobacco	22	0 ^s	0	x
Textile	x	0 ^s	x	43
Wood products	x	x	0	102
Paper	x	x	x	259 ^E
Printing	x	0 ^s	x	38
Petroleum and coal products	x	x	x	258
Pharmaceutical and medicine	466	119	461	1,046
Other chemicals	154	x	x	224
Plastic products	115	x	x	116
Rubber products	x	x	0	24
Non-metallic mineral products	65	0 ^s	0	65
Primary metal (ferrous)	x	x	0	x
Primary metal (non-ferrous)	x	x	x	x
Fabricated metal products	216	x	x	218
Machinery	490	10	31	530
Computer and peripheral equipment	x	x	x	104
Communications equipment	1,396	x	x	1,485
Semiconductor and other electronic components	560	x	x	847
Navigational, measuring, medical and control instruments	270	39	71	380
Other computer and electronic products	x	x	x	24
Electrical equipment, appliance and components	221	12	14	247
Motor vehicle and parts	474	x	x	495
Aerospace products and parts	745	x	x	942
All other transportation equipment	61	x	x	x
Furniture and related products	x	x	0	35
Other manufacturing industries	148	x	x	190
Services	4,901	303	1,467	6,670
Wholesale trade	607	12	232	851
Retail trade	43	x	x	50
Transportation and warehousing	x	x	x	67
Information and cultural industries	1,121	10	440	1,571
Finance, insurance and real estate	407	0 ^s	0	408
Architectural, engineering and related services	381	51	22	454
Computer system design and related services	969	37	234	1,240
Management, scientific and technical consulting services	x	x	3	62
Scientific research and development services	812	109	340	1,261
Health care and social assistance	x	x	x	341
All other services	319	x	x	365

Note(s): Components may not add to totals due to rounding.

Table 6-3
Total intramural research and development by sources of funds and by size of expenditures¹, 2007^p

	Performing company	Federal government	Provincial government	Other Canadian sources	Foreign sources	Total
	percent					
Total	77	2	1	4	16	100
Less than \$50,000	91	3	0	6	0	100
\$50,000 to \$99,999	98	1	0	1	0	100
\$100,000 to \$199,999	97	1	0	1	1	100
\$200,000 to \$399,999	96	1	0	1	1	100
\$400,000 to \$999,999	94	1	0	2	3	100
\$1,000,000 or greater	73	2	1	4	20	100

1. Research and development size is based on current intramural expenditures.

Note(s): Components may not add to totals due to rounding.

Table 6-4
Total intramural research and development by sources of funds and by country of control of performer, 2007^p

	Canadian performing companies	Federal government	Provincial government	Other Canadian sources	Foreign sources	Total
	millions of dollars					
Total	12,279	263	84	636	2,619	15,882
Canada	9,038	143	50	435	592	10,259
United States	1,855	x	x	x	1,234	3,386
Other foreign	1,387	x	x	x	793	2,236

Note(s): Components may not add to totals due to rounding.

Table 7-1
Current intramural research and development expenditures by industry

	2005 ^r	2006 ^r	2007 ^p	2008 ^p	2009 ^p
	millions of dollars				
Total	14,678	14,876	14,888	15,075	14,856^E
Agriculture, forestry, fishing and hunting	x	107	110	114^E	112^E
Agriculture	x	83	77	78	79 ^E
Forestry and logging	19	20	29	x	F
Fishing, hunting and trapping	x	4	4	x	F
Mining and oil and gas extraction	x	x	455	366	381
Oil and gas extraction	331	x	389	296	310
Mining	x	61	66	70 ^E	71 ^E
Utilities	x	x	187	188	198^E
Electric power	x	x	166	170	180 ^E
Other utilities	12	16	21	F	F
Construction	71	80	70	F	F
Manufacturing	7,898	8,066	7,846	8,106	7,974
Food	136	137	140	147 ^E	155 ^E
Beverage and tobacco	19	18	22	19 ^E	20 ^E
Textile	56	56	43	38 ^E	36 ^E
Wood products	133	122	101	90	86 ^E
Paper	308	357	256 ^E	253 ^E	F
Printing	40	38	37	F	F
Petroleum and coal products	174	192	205	211	208 ^E
Pharmaceutical and medicine	1,008	1,005	1,004	1,019	988
Other chemicals	159	176	217	234	188
Plastic products	129	130	112	F	F
Rubber products	32	31	24	21 ^E	18 ^E
Non-metallic mineral products	73	67	64	63 ^E	62 ^E
Primary metal (ferrous)	41	41	47	52	50 ^E
Primary metal (non-ferrous)	176	175	221	185	190
Fabricated metal products	209	219	215	F	F
Machinery	553	536	522	593 ^E	605 ^E
Computer and peripheral equipment	150	107	100	100 ^E	102 ^E
Communications equipment	1,331	1,399	1,396	1,518	1,563
Semiconductor and other electronic components	800	798	814	877	782
Navigational, measuring, medical and control instruments	472	439	369	423	421
Other computer and electronic products	18	14	23	22 ^E	20 ^E
Electrical equipment, appliance and components	168	198	236	F	F
Motor vehicle and parts	611	586	477	434	420
Aerospace products and parts	820	925	921	946	982
All other transportation equipment	58	66	62	61 ^E	59 ^E
Furniture and related products	32	33	35	F	F
Other manufacturing industries	193	204	182	182 ^E	176 ^E
Services	6,075	6,000	6,220	6,228^E	6,122^E
Wholesale trade	787	746	790	833	813 ^E
Retail trade	39	32	49	54 ^E	F
Transportation and warehousing	58	61	67	56	59
Information and cultural industries	1,433	1,452	1,379	1,364	1,282 ^E
Finance, insurance and real estate	396	423	401	387 ^E	F
Architectural, engineering and related services	417	419	426	438	442
Computer system design and related services	1,102	1,130	1,187	1,186 ^E	1,107 ^E
Management, scientific and technical consulting services	64	53	60	F	F
Scientific research and development services	1,147	1,085	1,186	1,295	1,343 ^E
Health care and social assistance	375	324	329	279	272
All other services	257	275	346	286 ^E	281 ^E

Note(s): Components may not add to totals due to rounding.

Table 7-2
Current intramural research and development expenditures by industry and by type of expenditures, 2007^P

	Wages and salaries	Other costs	Total
millions of dollars			
Total	9,030	5,858	14,888
Agriculture, forestry, fishing and hunting	66	44	110
Agriculture	47	29	77
Forestry and logging	16	14	29
Fishing, hunting and trapping	3	1	4
Mining and oil and gas extraction	93	362	455
Oil and gas extraction	77	312	389
Mining	16	50	66
Utilities	111	76	187
Electric power	99	67	166
Other utilities	12	9	21
Construction	53	16	70
Manufacturing	4,443	3,403	7,846
Food	93	47	140
Beverage and tobacco	9	13	22
Textile	31	12	43
Wood products	51	50	101
Paper	83	174	256 ^E
Printing	31	6	37
Petroleum and coal products	38	167	205
Pharmaceutical and medicine	380	624	1,004
Other chemicals	105	112	217
Plastic products	79	33	112
Rubber products	13	11	24
Non-metallic mineral products	40	25	64
Primary metal (ferrous)	19	27	47
Primary metal (non-ferrous)	110	111	221
Fabricated metal products	173	42	215
Machinery	381	141	522
Computer and peripheral equipment	88	13	100
Communications equipment	841	555	1,396
Semiconductor and other electronic components	531	283	814
Navigational, measuring, medical and control instruments	281	88	369
Other computer and electronic products	19	4	23
Electrical equipment, appliance and components	170	66	236
Motor vehicle and parts	279	197	477
Aerospace products and parts	405	516	921
All other transportation equipment	34	28	62
Furniture and related products	30	5	35
Other manufacturing industries	129	53	182
Services	4,263	1,957	6,220
Wholesale trade	480	309	790
Retail trade	42	7	49
Transportation and warehousing	45	22	67
Information and cultural industries	915	464	1,379
Finance, insurance and real estate	239	163	401
Architectural, engineering and related services	350	76	426
Computer system design and related services	1,006	181	1,187
Management, scientific and technical consulting services	53	7	60
Scientific research and development services	697	489	1,186
Health care and social assistance	173	157	329
All other services	264	82	346

Note(s): Components may not add to totals due to rounding.

Table 7-3
Current intramural research and development expenditures by province

	2005 ^r	2006 ^r	2007 ^p
	millions of dollars		
Total	14,678	14,876	14,888
Newfoundland and Labrador	x	x	x
Prince Edward Island	x	x	x
Nova Scotia	93	89	x
New Brunswick	95	x	x
Quebec	3,942	4,344	4,527
Ontario	7,772	7,534	7,222
Manitoba	x	169	185
Saskatchewan	x	120	123
Alberta	960	980	967
British Columbia ¹	1,454	1,464	1,589

1. Includes Yukon, Northwest Territories and Nunavut.

Note(s): Components may not add to totals due to rounding.

Table 7-4
Current intramural research and development expenditures as a percentage of performing company revenues, by company revenue size

	2003 ^r	2004 ^r	2005 ^r	2006 ^r	2007 ^p
	percent				
Total	1.8	1.7	1.7	1.7	1.8
Less than \$1,000,000	45.4	48.7	39.2	37.0	39.7
\$1,000,000 to \$9,999,999	8.8	7.5	7.6	7.1	6.9
\$10,000,000 to \$49,999,999	3.5	3.6	3.2	3.6	3.6
\$50,000,000 to \$99,999,999	2.7	2.7	2.9	2.8	3.1
\$100,000,000 to \$399,999,999	2.6	2.9	2.5	2.5	2.7
\$400,000,000 or greater	1.0	1.0	0.9	1.0	1.0

Table 7-5
Current intramural research and development expenditures as a percentage of performing company revenues, by country of control

	2003	2004 ^r	2005 ^r	2006 ^r	2007 ^p
	percent				
Total	1.8	1.7	1.7	1.7	1.8
Canada	1.9	1.8	1.8	1.8	2.0
Foreign	1.6	1.6	1.4	1.4	1.5
United States	1.6	1.6	1.5	1.5	1.4
Other foreign	1.5	1.4	1.2	1.3	1.5

Table 7-6
Current intramural research and development expenditures as a percentage of performing company revenues, by industry and by country of control, 2007^P

	Canada	Foreign	Total
	percent		
Total	2.0	1.5	1.8
Agriculture, forestry, fishing and hunting	x	x	2.4
Agriculture	x	x	2.4
Forestry and logging	x	x	2.3
Fishing, hunting and trapping	2.3	0.0	2.3
Mining and oil and gas extraction	0.4	0.8	0.5
Oil and gas extraction	0.4	0.8	0.5
Mining	0.3	1.3	0.7
Utilities	x	x	0.4
Electric power	x	x	0.4
Other utilities	x	x	0.4
Construction	x	x	1.1
Manufacturing	2.9	1.2	1.8
Food	0.5	0.2	0.4
Beverage and tobacco	1.4	0.7	0.8
Textile	2.0	1.7	1.9
Wood products	0.8	0.5	0.6
Paper	1.8	0.9	1.4
Printing	1.4	0.6	1.4
Petroleum and coal products	x	x	0.3
Pharmaceutical and medicine	7.7	6.2	6.6
Other chemicals	1.2	0.5	0.8
Plastic products	1.5	0.5	1.1
Rubber products	1.8	1.4	1.6
Non-metallic mineral products	1.7	0.8	1.0
Primary metal (ferrous)	0.9	0.5	0.6
Primary metal (non-ferrous)	0.6	0.8	0.8
Fabricated metal products	2.0	0.7	1.8
Machinery	3.5	1.9	3.0
Computer and peripheral equipment	7.7	3.7	4.5
Communications equipment	21.0	4.5	15.6
Semiconductor and other electronic components	x	x	7.7
Navigational, measuring, medical and control instruments	8.5	10.6	9.0
Other computer and electronic products	x	x	8.2
Electrical equipment, appliance and components	7.1	0.8	2.7
Motor vehicle and parts	1.1	0.4	0.5
Aerospace products and parts	x	x	6.2
All other transportation equipment	x	x	1.5
Furniture and related products	x	x	1.1
Other manufacturing industries	3.1	1.6	2.9
Services	1.9	2.9	2.2
Wholesale trade	1.1	1.3	1.2
Retail trade	x	x	0.5
Transportation and warehousing	x	x	0.2
Information and cultural industries	3.4	29.7	5.1
Finance, insurance and real estate	0.4	0.2	0.4
Architectural, engineering and related services	4.7	5.7	5.0
Computer system design and related services	14.4	9.7	12.8
Management, scientific and technical consulting services	x	x	10.8
Scientific research and development services	32.8	10.9	21.7
Health care and social assistance	x	x	24.6
All other services	2.3	1.0	1.7

Table 8
Average total intramural research and development expenditures, by performing company revenue size, 2006

	Firms	Expenditures	Average expenditures
	number	millions of dollars	
Total	20,154	16,021	0.8
Non-commercial firms	17	216	12.7
Less than \$1,000,000	7,710	1,106	0.1
\$1,000,000 to \$9,999,999	8,764	2,349	0.3
\$10,000,000 to \$49,999,999	2,525	2,028	0.8
\$50,000,000 to \$99,999,999	470	929	2.0
\$100,000,000 to \$399,999,999	419	2,214	5.3
\$400,000,000 or greater	249	7,179	28.8

Table 9
Intramural research and development expenditures, by province, 2007^p

	Current expenditures	Capital expenditures	Total expenditures
	millions of dollars		
Total	14,888	994	15,882
Newfoundland and Labrador	x	x	90
Prince Edward Island	x	x	11
Nova Scotia	x	x	98
New Brunswick	x	x	112
Quebec	4,527	187	4,714
Ontario	7,222	426	7,648
Manitoba	185	7	193
Saskatchewan	123	14	136
Alberta	967	176	1,142
British Columbia ¹	1,589	149	1,738

1. Includes Yukon, Northwest Territories and Nunavut

Note(s): Components may not add to totals due to rounding.

Table 10
Capital intramural research and development expenditures, by industry

	2005 ^r	2006 ^r	2007 ^p	2008 ^p	2009 ^p
	millions of dollars				
Total	1,096	1,145	994	906	1,290^E
Agriculture, forestry, fishing and hunting	x	4	4	4^E	3^E
Agriculture	x	4	4	x	3 ^E
Forestry and logging	0 ^s	0 ^s	x	x	x
Fishing, hunting and trapping	x	0 ^s	x	x	x
Mining and oil and gas extraction	x	x	92	83	78
Oil and gas extraction	109	x	88	80	75
Mining	x	1	4	3 ^E	3 ^E
Utilities	x	x	x	x	x
Electric power	x	x	x	x	x
Other utilities	1	1	1	F	F
Construction	1	1	x	x	x
Manufacturing	469	438	365	390	463
Food	5	4	4	3 ^E	2 ^E
Beverage and tobacco	0 ^s	0 ^s	x	x	x
Textile	2	0 ^s	0 ^s	0 ^E	0 ^E
Wood products	2	x	1	x	1 ^E
Paper	6	3	3 ^E	4	F
Printing	0 ^s	0 ^s	0 ^s	F	F
Petroleum and coal products	40	17	53	52	38 ^E
Pharmaceutical and medicine	57	43	42	53	69
Other chemicals	6	7	8	8	15
Plastic products	4	6	3	F	x
Rubber products	0 ^s	0 ^s	0 ^s	0 ^E	0 ^E
Non-metallic mineral products	1	2	1	1 ^E	1 ^E
Primary metal (ferrous)	x	x	x	x	2 ^E
Primary metal (non-ferrous)	81	86	x	10	11
Fabricated metal products	3	4	3	F	F
Machinery	8	9	8	12 ^E	13 ^E
Computer and peripheral equipment	6	3	3	x	x
Communications equipment	74	101	88	88	x
Semiconductor and other electronic components	49	46	33	54	46
Navigational, measuring, medical and control instruments	11	11	10	12	13
Other computer and electronic products	1	1	1	1 ^E	1 ^E
Electrical equipment, appliance and components	5	9	11	F	F
Motor vehicle and parts	20	26	19	13	12
Aerospace products and parts	39	x	21	x	x
All other transportation equipment	x	1	x	x	2 ^E
Furniture and related products	0 ^s	x	0 ^s	F	F
Other manufacturing industries	x	8	8	7	8 ^E
Services	398	429	450	331^E	650^E
Wholesale trade	29	46	61	38	31 ^E
Retail trade	1	1	1	1	F
Transportation and warehousing	1	8	1	1	1
Information and cultural industries	132	185	192	137	452
Finance, insurance and real estate	16	12	6	5 ^E	F
Architectural, engineering and related services	37	21	28	17	20
Computer system design and related services	49	58	53	46 ^E	43 ^E
Management, scientific and technical consulting services	2	2	2	F	F
Scientific research and development services	83	68	75	70	70 ^E
Health care and social assistance	24	15	12	5	18
All other services	22	14	19	10 ^E	7 ^E

Note(s): Components may not add to totals due to rounding.

Table 11
Total research and development personnel, by selected industries

	2003 ^r	2004 ^r	2005 ^r	2006 ^r	2007 ^p
	number				
Total research and development personnel	127,205	138,177	142,032	146,666	147,599
	percent				
Computer system design and related services	13	13	12	12	13
Information and cultural industries	8	7	8	8	8
Scientific research and development	7	7	7	7	8
Communications equipment	8	7	7	7	6
Wholesale trade	5	5	5	5	6
Pharmaceutical and medicine	4	4	4	4	4
Aerospace products and parts	4	3	3	4	3
Other industries	52	54	53	53	52

Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 12-1
Personnel engaged in research and development by industry group and by region, 2007^p

	Atlantic Canada	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia ¹	Total
	number							
Total	3,173	49,112	69,558	1,907	1,235	7,175	15,439	147,599
Agriculture, forestry, fishing and hunting	79	753	507	14	34	37	218	1,642
Mining and oil and gas extraction	30	145	127	x	x	856	147	1,343
Utilities	x	744	417	x	x	85	55	1,332
Construction	x	634	475	x	x	86	70	1,306
Manufacturing	1,499	21,821	38,834	875	638	1,915	4,653	70,235
Services	1,536	25,015	29,198	978	522	4,196	10,296	71,741

1. Includes Yukon, Northwest Territories and Nunavut.

Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 12-2
Personnel engaged in research and development by province and by occupational category, 2007^p

	Professionals	Other personnel ²	Total
	number		
Total	86,368	61,231	147,599
Newfoundland and Labrador	228	356	584
Prince Edward Island	86	62	148
Nova Scotia	771	527	1,298
New Brunswick	618	525	1,143
Quebec	26,130	22,982	49,112
Ontario	41,916	27,642	69,558
Manitoba	952	955	1,907
Saskatchewan	640	595	1,235
Alberta	4,692	2,483	7,175
British Columbia ¹	10,335	5,104	15,439

1. Includes Yukon, Northwest Territories and Nunavut.

2. Includes technicians and other.

Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 12-3
Personnel engaged in research and development by industry and by occupational category, 2007^p

	Professionals	Technicians	Other	Total
	number			
Total	86,368	44,057	17,174	147,599
Agriculture, forestry, fishing and hunting	508	707	427	1,642
Agriculture	358	582	380	1,320
Forestry and logging	125	95	29	249
Fishing, hunting and trapping	25	30	18	73
Mining and oil and gas extraction	790	381	172	1,343
Oil and gas extraction	618	287	122	1,027
Mining	172	94	50	316
Utilities	770	367	195	1,332
Electric power	628	253	141	1,022
Other utilities	142	114	54	310
Construction	532	593	181	1,306
Manufacturing	39,305	21,583	9,347	70,235
Food	841	882	436	2,159
Beverage and tobacco	51	67	28	146
Textile	185	355	162	702
Wood products	366	427	169	962
Paper	575	512	289	1,376
Printing	247	459	59	765
Petroleum and coal products	260	163	25	448
Pharmaceutical and medicine	3,138	1,622	995	5,755
Other chemicals	1,109	712	257	2,078
Plastic products	702	828	292	1,822
Rubber products	111	85	47	243
Non-metallic mineral products	419	348	114	881
Primary metal (ferrous)	166	101	35	302
Primary metal (non-ferrous)	620	527	149	1,296
Fabricated metal products	1,444	1,933	533	3,910
Machinery	3,533	3,611	1,040	8,184
Computer and peripheral equipment	1,289	328	145	1,762
Communications equipment	7,593	957	852	9,402
Semiconductor and other electronic components	5,106	911	339	6,356
Navigational, measuring, medical and control instruments	3,739	1,309	347	5,395
Other computer and electronic products	264	155	78	497
Electrical equipment, appliance and components	1,482	822	238	2,542
Motor vehicle and parts	2,168	1,480	691	4,339
Aerospace products and parts	2,221	1,154	1,356	4,731
All other transportation equipment	249	263	149	661
Furniture and related products	235	389	146	770
Other manufacturing industries	1,192	1,183	376	2,751
Services	44,463	20,426	6,852	71,741
Wholesale trade	4,729	2,426	970	8,125
Retail trade	499	457	92	1,048
Transportation and warehousing	419	218	68	705
Information and cultural industries	8,492	2,267	1,556	12,315
Finance, insurance and real estate	1,659	1,103	184	2,946
Architectural, engineering and related services	3,929	1,451	381	5,761
Computer system design and related services	12,315	5,334	946	18,595
Management, scientific and technical consulting services	763	358	51	1,172
Scientific research and development services	7,541	3,449	1,139	12,129
Health care and social assistance	1,282	1,349	800	3,431
All other services	2,835	2,014	665	5,514

Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 12-4
Personnel engaged in research and development by occupational category

	2003 ^r	2004 ^r	2005 ^r	2006 ^r	2007 ^p
	number				
Total	127,205	138,177	142,032	146,666	147,599
Professionals	76,601	81,333	84,399	86,581	86,368
Technicians	34,567	39,852	40,421	42,206	44,057
Other	16,037	16,992	17,212	17,879	17,174

Note(s): Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 13
Professional personnel engaged in research and development, by degree level

	Bachelors	Masters	Doctorates	Total
	number			
2007 ^p	67,105	13,727	5,536	86,368
2006 ^r	66,547	14,289	5,745	86,581
2005 ^r	64,283	14,315	5,801	84,399
2004 ^r	61,455	14,101	5,777	81,333
2003 ^r	58,370	12,589	5,642	76,601
2002 ^r	58,932	9,728	4,632	73,292

Note(s): Data are estimated for all performers not surveyed directly, i.e. performers for whom data were obtained through the Canada Revenue Agency's SR&ED program (see Survey Methodology). Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 14-1
Total extramural payments for research and development, by industry and by year

	2005 ^r	2006 ^r	2007 ^p	2008 ^p	2009 ^p
	millions of dollars				
Total	4,027	4,029	3,838	3,749	3,664
Agriculture, forestry, fishing and hunting	13	14	10	F	F
Agriculture	11	12	8	F	F
Forestry and logging	1	2	1	F	F
Fishing, hunting and trapping	1	1	1	1 ^E	1 ^E
Mining and oil and gas extraction	55	68	48	48	56
Oil and gas extraction	32	50	34	35	41
Mining	23	17	14 ^E	13	15
Utilities	43	84	100	85	94
Electric power	41	77	90	76	83
Other utilities	3	7	10	10 ^E	11 ^E
Construction	15	12	12	F	F
Manufacturing	1,868	2,070	1,710	1,538	1,561
Food	22	22	18	17 ^E	16 ^E
Beverage and tobacco	7	3	7	3	3
Textile	6	4	2	3 ^E	2 ^E
Wood products	32	19	17	14	14
Paper	32	28	20 ^E	18	17
Printing	x	2	2	F	F
Petroleum and coal products	42	68	70	64	84
Pharmaceutical and medicine	510	636	544	552	561
Other chemicals	40	54	68	69	70
Plastic products	12	11	8	F	F
Rubber products	x	2	2	2	2
Non-metallic mineral products	x	4	4	F	F
Primary metal (ferrous)	6	8	2	2	2
Primary metal (non-ferrous)	56	71	46	36	34
Fabricated metal products	23	21	19	F	F
Machinery	54	56	52	52 ^E	55 ^E
Computer and peripheral equipment	9	15	7	7	8
Communications equipment	142	209	119	92	107
Semiconductor and other electronic components	x	x	x	x	x
Navigational, measuring, medical and control instruments	34	30	29	34	32
Other computer and electronic products	x	2	2	F	F
Electrical equipment, appliance and components	13	11	14	13 ^E	15
Motor vehicle and parts	496	x	x	x	x
Aerospace products and parts	15	22	30	25	27
All other transportation equipment	x	3	7	6	6
Furniture and related products	x	4	3	F	F
Other manufacturing industries	20	22	17	F	F
Services	2,033	1,781	1,959	2,060	1,933
Wholesale trade	217	246	290	298	298
Retail trade	29	15	x	14	14
Transportation and warehousing	19	27	41	38	39
Information and cultural industries	867	704	700	681	690
Finance, insurance and real estate	98	82	81	63	55
Architectural, engineering and related services	40	58	59	66	64
Computer system design and related services	128	139	161	129	113
Management, scientific and technical consulting services	17	17	x	F	F
Scientific research and development services	416	382	469	663	570
Health care and social assistance	114	64	69	48	34
All other services	86	48	60	x	x

Note(s): Components may not add to totals due to rounding.

Table 14-2
Total extramural payments for research and development, by industry and by location of recipient, 2007^p

	Canada	Foreign	Total
millions of dollars			
Total	2,698	1,140	3,838
Agriculture, forestry, fishing and hunting	10	0	10
Agriculture	8	0	8
Forestry and logging	1	0	1
Fishing, hunting and trapping	1	0	1
Mining and oil and gas extraction	x	F	48
Oil and gas extraction	x	F	34
Mining	13 ^E	0 ^s	14
Utilities	96		100
Electric power	x	x	90
Other utilities	x	x	10
Construction	12	0	12
Manufacturing	1,047	663	1,710
Food	9	9	18
Beverage and tobacco	7	0	7
Textile	2	1	2
Wood products	17	0	17
Paper	x	x	20
Printing	2	0	2
Petroleum and coal products	x	x	70
Pharmaceutical and medicine	527	17	544
Other chemicals	67	1	68
Plastic products	8	0	8
Rubber products	2	0	2
Non-metallic mineral products	4	0	4
Primary metal (ferrous)	1	0 ^s	2
Primary metal (non-ferrous)	45	2	46
Fabricated metal products	18	1	19
Machinery	46	5	52
Computer and peripheral equipment	5	2	7
Communications equipment	x	x	119
Semiconductor and other electronic components	12	x	x
Navigational, measuring, medical and control instruments	21	9	29
Other computer and electronic products	2	0 ^s	2
Electrical equipment, appliance and components	6	8	14
Motor vehicle and parts	23	x	x
Aerospace products and parts	x	x	30
All other transportation equipment	4	2	7
Furniture and related products	3	0	3
Other manufacturing industries	15	2	17
Services	1,487	472	1,959
Wholesale trade	268	23	290
Retail trade	x	x	x
Transportation and warehousing	39	2	41
Information and cultural industries	x	x	700
Finance, insurance and real estate	81	0	81
Architectural, engineering and related services	x	x	59
Computer system design and related services	148	13	161
Management, scientific and technical consulting services	x	0	x
Scientific research and development services	211	258	469
Health care and social assistance	23	46	69
All other services	41	19	60

Note(s): Components may not add to totals due to rounding.

Table 15-1
Research and development by area of specialization biotechnology

	2005 ^r	2006 ^r	2007 ^p
millions of dollars			
Total	1,283	1,117	1,142
Agriculture, forestry, fishing and hunting	25	x	22
Mining and oil and gas extraction	x	x	0
Utilities	1	x	0 ^s
Construction	x	x	0
Manufacturing	331	337	202
Services	917	747	918

Note(s): Data is based on total intramural research and development expenditures. Components may not add to totals due to rounding.

Table 15-2
Research and development by area of specialization pollution abatement and control

	2005 ^r	2006 ^r	2007 ^p
millions of dollars			
Total	327	350	326
Agriculture, forestry, fishing and hunting	1	3	2
Mining and oil and gas extraction	20	28	20
Utilities	19	20	36
Construction	5	5	1
Manufacturing	188	213	179
Services	94	81	87

Note(s): Data is based on total intramural research and development expenditures. Components may not add to totals due to rounding.

Table 15-3
Research and development by area of specialization software

	2005 ^r	2006 ^r	2007 ^p
millions of dollars			
Total	4,011	4,172	4,174
Agriculture, forestry, fishing and hunting	0 ^s	0 ^s	0 ^s
Mining and oil and gas extraction	2	11	11
Utilities	32	38	40
Construction	5	5	2
Manufacturing	1,674	1,743	1,707
Services	2,298	2,375	2,415

Note(s): Data is based on total intramural research and development expenditures. Components may not add to totals due to rounding.

Table 16-1
Foreign receipts and payments for technological services by selected industries, 2007^p

	Receipts	Payments	Balance
millions of dollars			
Total	3,294	1,413	1,881
Mining and oil and gas extraction	x	x	2
Manufacturing	x	x	492
Petroleum and coal products	x	x	-24
Chemical products	x	x	40
Computer and peripheral equipment	x	x	40
Communications equipment	x	x	37
All other manufacturing industries	1,078	678	400
Other industries	2,009	622	1,387

Note(s): Data are only for firms engaged in research and development over \$1.5 million. Components may not add to totals due to rounding.

Table 16-2
Foreign receipts and payments for technological services by research and development and other

	Receipts		Total	Payments		Total	Balance		Total
	Research and development	Other		Research and development	Other		Research and development	Other	
millions of dollars									
2007 ^p	2,619	675	3,294	1,140	273	1,413	1,479	402	1,881
2006 ^r	2,429	721	3,150	1,275	336	1,611	1,154	385	1,540
2005 ^r	2,460	754	3,214	1,146	317	1,463	1,314	438	1,751
2004 ^r	2,390	1,260	3,650	1,127	401	1,528	1,264	859	2,122
2003 ^r	2,073	1,509	3,582	1,149	443	1,592	925	1,066	1,991
2002 ^r	1,822	1,619	3,441	1,076	684	1,759	747	935	1,682
2001 ^r	2,828	1,426	4,255	1,283	364	1,648	1,545	1,062	2,607
2000 ^r	3,524	1,144	4,668	1,374	527	1,901	2,150	617	2,767
1999	2,642	320	2,962	1,490	523	2,012	1,152	-202	950
1998	2,499	296	2,795	1,045	694	1,739	1,453	-398	1,056

Note(s): Data are only for firms engaged in research and development over \$1.5 million. Components may not add to totals due to rounding.

Table 17
Energy research and development expenditures, by area of technology and by source of funds, 2007^p

	Intramural research and development expenditures			Payments outside Canada	Total
	Self-funded	Government funded and other sources	Total		
millions of dollars					
Total	1,055	120	1,175	23	1,198
Renewable resources	x	x	72	0 ^s	72
Transportation and transmission	109	13	122	x	x
Conservation	161	27	188	x	x
Fossil fuels	615	44	659	x	x
Nuclear	x	x	34	x	x
Other	92	9	101	x	x

Note(s): Components may not add to totals due to rounding.

Table 18-1
Research and development performers by industry and by country of control, 2006

	Canada	Foreign	Total
	number		
Total	19,449	705	20,154
Agriculture, forestry, fishing and hunting	795	4	799
Agriculture	681	4	685
Forestry and logging	73	0	73
Fishing, hunting and trapping	41	0	41
Mining and oil and gas extraction	147	22	169
Oil and gas extraction	98	17	115
Mining	49	5	54
Utilities	124	5	129
Electric power	18	2	20
Other utilities	106	3	109
Construction	614	3	617
Manufacturing	8,561	426	8,987
Food	658	18	676
Beverage and tobacco	68	6	74
Textile	184	13	197
Wood products	331	7	338
Paper	108	18	126
Printing	278	2	280
Petroleum and coal products	37	7	44
Pharmaceutical and medicine	104	25	129
Other chemicals	432	45	477
Plastic products	523	22	545
Rubber products	54	10	64
Non-metallic mineral products	212	14	226
Primary metal (ferrous)	50	13	63
Primary metal (non-ferrous)	91	9	100
Fabricated metal products	1,279	23	1,302
Machinery	1,484	38	1,522
Computer and peripheral equipment	81	11	92
Communications equipment	145	17	162
Semiconductor and other electronic components	163	16	179
Navigational, measuring, medical and control instruments	310	22	332
Other computer and electronic products	52	1	53
Electrical equipment, appliance and components	275	25	300
Motor vehicle and parts	278	33	311
Aerospace products and parts	66	11	77
All other transportation equipment	114	2	116
Furniture and related products	337	1	338
Other manufacturing industries	847	17	864
Services	9,208	245	9,453
Wholesale trade	1,657	76	1,733
Retail trade	437	1	438
Transportation and warehousing	133	1	134
Information and cultural industries	648	32	680
Finance, insurance and real estate	263	6	269
Architectural, engineering and related services	853	18	871
Computer system design and related services	2,391	47	2,438
Management, scientific and technical consulting services	399	3	402
Scientific research and development services	834	41	875
Health care and social assistance	177	3	180
All other services	1,416	17	1,433

Table 18-2
Research and development performers by province, 2001 to 2006

	2001 ¹	2002 ¹	2003 ¹	2004 ¹	2005 ¹	2006	Absolute change from 2006 to 2001	Change from 2001 to 2006
	number						percent	
Canada - total	12,087	13,363	15,728	17,951	19,515	20,154	8,067	66.7
Total - Multi-province	12,435	13,699	16,050	18,275	19,853	20,489	8,054	64.8
Newfoundland and Labrador	66	82	104	118	134	132	66	100.0
Prince Edward Island	26	28	34	37	50	46	20	76.9
Nova Scotia	214	218	227	241	255	275	61	28.5
New Brunswick	167	173	200	212	215	227	60	35.9
Quebec	5,100	5,663	6,444	7,215	7,858	8,078	2,978	58.4
Ontario	4,396	4,928	5,936	6,938	7,675	8,057	3,661	83.3
Manitoba	276	320	368	401	409	375	99	35.9
Saskatchewan	167	176	190	211	232	199	32	19.2
Alberta	855	835	1,002	1,172	1,196	1,188	333	38.9
British Columbia ¹	1,168	1,276	1,545	1,730	1,829	1,912	744	63.7

1. Includes Yukon, Northwest Territories and Nunavut.

Table 18-3
Research and development performers as a percentage of enterprises with one or more employees, 2001 to 2006

	2001 ^r	2002 ^r	2003 ^r	2004 ^r	2005 ^r	2006
	percent					
Total	1.2	1.4	1.6	1.9	2.0	2.1
Agriculture, forestry, fishing and hunting	0.5	0.7	0.9	1.2	1.3	1.5
Agriculture	0.6	0.7	1.0	1.3	1.6	1.8
Forestry and logging	0.3	0.4	0.5	0.7	0.7	0.8
Fishing, hunting and trapping	0.6	0.6	0.8	0.8	0.7	0.7
Mining and oil and gas extraction	1.6	1.5	1.9	2.1	2.2	2.0
Oil and gas extraction	1.1	1.1	1.3	1.5	1.7	1.7
Mining	3.3	3.3	4.3	4.5	4.3	3.5
Utilities	2.1	1.9	2.3	3.0	3.5	3.8
Electric power	2.7	3.2	2.8	3.5	4.1	4.4
Other utilities	2.0	1.7	2.3	2.9	3.4	3.7
Construction	0.3	0.3	0.4	0.5	0.5	0.5
Manufacturing	8.9	10.2	12.4	14.7	16.3	16.9
Food	5.1	6.9	9.0	11.0	12.4	12.9
Beverage and tobacco	5.3	5.4	5.9	7.6	10.0	11.7
Textile	7.2	8.5	10.3	11.2	11.8	13.3
Wood products	4.2	5.1	6.6	7.8	8.3	9.1
Paper	16.4	15.9	20.0	22.8	22.7	21.4
Printing	1.8	2.4	3.6	5.0	5.7	6.2
Petroleum and coal products	14.9	15.7	21.1	35.9	35.9	29.9
Pharmaceutical and medicine	38.0	40.6	43.5	50.0	50.0	48.3
Other chemicals	21.2	22.0	24.5	27.6	30.3	31.7
Plastic products	16.5	17.9	22.7	26.7	29.0	32.9
Rubber products	18.7	16.8	17.9	20.8	24.7	22.8
Non-metallic mineral products	6.4	6.7	8.5	10.0	11.8	12.2
Primary metal (ferrous)	15.6	16.8	23.1	23.9	26.1	20.1
Primary metal (non-ferrous)	16.7	19.6	25.2	26.5	31.3	35.6
Fabricated metal products	7.6	9.1	11.6	14.5	16.1	16.3
Machinery	17.5	20.4	23.5	27.5	29.8	29.8
Computer and peripheral equipment	27.4	31.5	31.4	32.6	34.5	35.8
Communications equipment	40.1	47.7	51.8	56.9	56.2	54.7
Semiconductor and other electronic components	27.8	31.2	33.5	38.9	38.4	40.8
Navigational, measuring, medical and control instruments	29.8	32.0	36.1	38.0	42.6	43.2
Other computer and electronic products	17.9	17.6	21.8	26.2	26.2	27.7
Electrical equipment, appliance and components	18.2	20.2	21.7	25.1	28.3	27.6
Motor vehicle and parts	14.0	14.6	17.8	20.6	23.3	23.8
Aerospace products and parts	26.0	26.3	34.4	40.1	34.9	34.8
All other transportation equipment	8.9	10.4	14.2	16.0	17.7	19.3
Furniture and related products	3.1	4.0	5.2	6.4	7.3	7.8
Other manufacturing industries	3.9	4.9	6.5	8.1	9.7	10.6
Services	0.8	0.9	1.0	1.2	1.3	1.3
Wholesale trade	1.7	1.9	2.2	2.8	3.0	3.3
Retail trade	0.2	0.2	0.3	0.3	0.4	0.4
Transportation and warehousing	0.2	0.2	0.3	0.3	0.3	0.3
Information and cultural industries	3.7	4.1	4.8	5.2	5.9	5.9
Finance, insurance and real estate	0.2	0.2	0.3	0.4	0.4	0.4
Architectural, engineering and related services	3.8	3.9	4.6	5.3	5.1	4.7
Computer system design and related services	8.5	9.1	10.2	11.0	11.0	10.5
Management, scientific and technical consulting services	1.4	1.6	1.6	1.6	1.7	1.5
Scientific research and development services	27.0	27.2	31.6	38.4	37.4	36.1
Health care and social assistance	0.1	0.1	0.2	0.2	0.2	0.2
All other services	0.3	0.3	0.3	0.4	0.4	0.5

Note(s): Components may not add to totals due to rounding.

Table 18-4
Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Total, all industries		20,153
Agriculture, Forestry, Fishing and Hunting		799
Agriculture		685
Soybean Farming	111110	2
Oilseed (except Soybean) Farming	111120	0
Dry Pea and Bean Farming	111130	3
Wheat Farming	111140	5
Corn Farming	111150	7
Rice Farming	111160	0
Other Grain Farming	111190	13
Potato Farming	111211	31
Other Vegetable (except Potato) and Melon Farming	111219	61
Orange Groves	111310	0
Citrus (except Orange) Groves	111320	0
Non-Citrus Fruit and Tree Nut Farming	111330	52
Mushroom Production	111411	11
Other Food Crops Grown Under Cover	111419	35
Nursery and Tree Production	111421	43
Floriculture Production	111422	95
Tobacco Farming	111910	12
Cotton Farming	111920	0
Sugar-Cane Farming	111930	0
Hay Farming	111940	3
Fruit and Vegetable Combination Farming	111993	14
Mayle Syrup and Products Production	111994	0
All Other Miscellaneous Crop Farming	111999	37
Beef Cattle Ranching and Farming, including Feedlots	112110	12
Dairy Cattle and Milk Production	112120	71
Hog and Pig Farming	112210	48
Chicken Egg Production	112310	3
Broiler and Other Meat-Type Chicken Production	112320	14
Turkey Production	112330	2
Poultry Hatcheries	112340	1
Combination Poultry and Egg Production	112391	3
All Other Poultry Production	112399	2
Sheep Farming	112410	3
Goat Farming	112420	0
Apiculture	112910	7
Horse and Other Equine Production	112920	0
Fur-Bearing Animal and Rabbit Production	112930	3
Livestock Combination Farming	112991	34
All Other Miscellaneous Animal Production	112999	4
Support Activities for Crop Production	115110	33
Support Activities for Animal Production	115210	21
Forestry and Logging		73
Timber Tract Operations	113110	4
Forest Nurseries and Gathering of Forest Products	113210	4
Logging (except Contract)	113311	18
Contract Logging	113312	20
Support Activities for Forestry	115310	27
Fishing, Hunting and Trapping		41
Aquaculture	112510	26
Salt Water Fishing	114113	15
Inland Fishing	114114	0
Hunting and Trapping	114210	0
Mining and Oil and Gas Extraction		169
Oil and Gas Extraction		115
Conventional Oil and Gas Extraction	211113	41
Non-Conventional Oil Extraction	211114	5
Oil and Gas Contract Drilling	213111	10
Services to Oil and Gas Extraction	213118	59
Mining		54
Bituminous Coal Mining	212114	0
Subbituminous Coal Mining	212115	0
Lignite Coal Mining	212116	0

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Iron Ore Mining	212210	4
Gold and Silver Ore Mining	212220	5
Lead-Zinc Ore Mining	212231	0
Nickel-Copper Ore Mining	212232	0
Copper-Zinc Ore Mining	212233	0
Uranium Ore Mining	212291	1
All Other Metal Ore Mining	212299	1
Granite Mining and Quarrying	212314	4
Limestone Mining and Quarrying	212315	4
Marble Mining and Quarrying	212316	1
Sandstone Mining and Quarrying	212317	0
Sand and Gravel Mining and Quarrying	212323	7
Shale, Clay and Refractory Mineral Mining and Quarrying	212326	0
Diamond Mines	212392	1
Salt Mines	212393	1
Asbestos Mining	212394	0
Gypsum Mining	212395	0
Potash Mining	212396	3
Peat Extraction	212397	9
All Other Non-Metallic Mineral Mining and Quarrying	212398	2
Contract Drilling (except Oil and Gas)	213117	3
Other Support Activities for Mining	213119	8
Utilities		129
Electric Power		20
Hydro-Electric Power Generation	221111	9
Fossil-Fuel Electric Power Generation	221112	3
Nuclear Electric Power Generation	221113	0
Other Electric Power Generation	221119	5
Electric Bulk Power Transmission and Control	221121	1
Electric Power Distribution	221122	2
Other Utilities		109
Natural Gas Distribution	221210	7
Water Supply and Irrigation Systems	221310	19
Sewage Treatment Facilities	221320	2
Steam and Air-Conditioning Supply	221330	0
Waste Collection	562110	15
Waste Treatment and Disposal	562210	24
Remediation Services	562910	28
Material Recovery Facilities	562920	6
All Other Waste Management Services	562990	8
Construction		617
Residential Building Construction	236110	67
Industrial Building and Structure Construction	236210	18
Commercial and Institutional Building Construction	236220	20
Water and Sewer Line and Related Structures Construction	237110	20
Oil and Gas Pipeline and Related Structures Construction	237120	9
Power and Communication Line and Related Structures Construction	237130	9
Land Subdivision	237210	7
Highway, Street and Bridge Construction	237310	39
Other Heavy and Civil Engineering Construction	237990	10
Poured Concrete Foundation and Structure Contractors	238110	10
Structural Steel and Precast Concrete Contractors	238120	13
Framing Contractors	238130	4
Masonry Contractors	238140	10
Glass and Glazing Contractors	238150	10
Roofing Contractors	238160	8
Siding Contractors	238170	8
Other Foundation, Structure and Building Exterior Contractors	238190	12
Electrical Contractors and Other Wiring Installation Contractors	238210	73
Plumbing, Heating and Air-Conditioning Contractors	238220	82
Elevator and Escalator Installation Contractors	238291	4
All Other Building Equipment Contractors	238299	32
Drywall and Insulation Contractors	238310	5
Painting and Wall Covering Contractors	238320	15
Flooring Contractors	238330	18
Tile and Terrazzo Contractors	238340	5
Finish Carpentry Contractors	238350	31
Other Building Finishing Contractors	238390	10
Site Preparation Contractors	238910	35

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
All Other Specialty Trade Contractors	238990	33
Manufacturing		8,987
Food		676
Dog and Cat Food Manufacturing	311111	5
Other Animal Food Manufacturing	311119	55
Flour Milling	311211	11
Rice Milling and Malt Manufacturing	311214	3
Wet Corn Milling	311221	1
Oilseed Processing	311224	6
Fat and Oil Refining and Blending	311225	3
Breakfast Cereal Manufacturing	311230	6
Sugar Manufacturing	311310	4
Chocolate and Confectionery Manufacturing from Cacao Beans	311320	3
Confectionery Manufacturing from Purchased Chocolate	311330	6
Non-Chocolate Confectionery Manufacturing	311340	15
Frozen Food Manufacturing	311410	27
Fruit and Vegetable Canning, Pickling and Drying	311420	54
Fluid Milk Manufacturing	311511	12
Butter, Cheese, and Dry and Condensed Dairy Product Manufacturing	311515	55
Ice Cream and Frozen Dessert Manufacturing	311520	6
Animal (except Poultry) Slaughtering	311611	14
Rendering and Meat Processing from Carcasses	311614	50
Poultry Processing	311615	23
Seafood Product Preparation and Packaging	311710	40
Retail Bakeries	311811	27
Commercial Bakeries and Frozen Bakery Product Manufacturing	311814	89
Cookie and Cracker Manufacturing	311821	13
Flour Mixes and Dough Manufacturing from Purchased Flour	311822	13
Dry Pasta Manufacturing	311823	9
Tortilla Manufacturing	311830	1
Roasted Nut and Peanut Butter Manufacturing	311911	4
Other Snack Food Manufacturing	311919	6
Coffee and Tea Manufacturing	311920	18
Flavouring Syrup and Concentrate Manufacturing	311930	6
Seasoning and Dressing Manufacturing	311940	19
All Other Food Manufacturing	311990	72
Beverages and Tobacco		74
Soft Drink and Ice Manufacturing	312110	9
Breweries	312120	25
Wineries	312130	33
Distilleries	312140	3
Tobacco Stemming and Redrying	312210	0
Tobacco Product Manufacturing	312220	4
Textile		197
Fibre, Yarn and Thread Mills	313110	14
Broad-Woven Fabric Mills	313210	24
Narrow Fabric Mills and Schiffii Machine Embroidery	313220	8
Nonwoven Fabric Mills	313230	12
Knit Fabric Mills	313240	28
Textile and Fabric Finishing	313310	31
Fabric Coating	313320	8
Carpet and Rug Mills	314110	12
Curtain and Linen Mills	314120	15
Textile Bag and Canvas Mills	314910	24
All Other Textile Product Mills	314990	21
Wood Products		338
Sawmills (except Shingle and Shake Mills)	321111	66
Shingle and Shake Mills	321112	7
Wood Preservation	321114	12
Hardwood Veneer and Plywood Mills	321211	15
Softwood Veneer and Plywood Mills	321212	3
Structural Wood Product Manufacturing	321215	19
Particle Board and Fibreboard Mills	321216	7
Waferboard Mills	321217	7
Wood Window and Door Manufacturing	321911	47
Other Millwork	321919	70
Wood Container and Pallet Manufacturing	321920	23
Manufactured (Mobile) Home Manufacturing	321991	3

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Prefabricated Wood Building Manufacturing	321992	19
All Other Miscellaneous Wood Product Manufacturing	321999	40
Paper		126
Mechanical Pulp Mills	322111	1
Chemical Pulp Mills	322112	8
Paper (except Newsprint) Mills	322121	14
Newsprint Mills	322122	6
Paperboard Mills	322130	5
Corrugated and Solid Fibre Box Manufacturing	322211	18
Folding Paperboard Box Manufacturing	322212	12
Other Paperboard Container Manufacturing	322219	11
Paper Bag and Coated and Treated Paper Manufacturing	322220	29
Stationery Product Manufacturing	322230	4
Sanitary Paper Product Manufacturing	322291	4
All Other Converted Paper Product Manufacturing	322299	14
Printing		280
Commercial Screen Printing	323113	36
Quick Printing	323114	3
Digital Printing	323115	7
Manifold Business Forms Printing	323116	17
Other Printing	323119	176
Support Activities for Printing	323120	41
Petroleum and Coal Products		44
Petroleum Refineries	324110	13
Asphalt Paving Mixture and Block Manufacturing	324121	6
Asphalt Shingle and Coating Material Manufacturing	324122	4
Other Petroleum and Coal Product Manufacturing	324190	21
Pharmaceutical and Medicine		129
Pharmaceutical and Medicine Manufacturing	325410	129
Other Chemical		477
Petrochemical Manufacturing	325110	4
Industrial Gas Manufacturing	325120	4
Synthetic Dye and Pigment Manufacturing	325130	13
Alkali and Chlorine Manufacturing	325181	0
All Other Basic Inorganic Chemical Manufacturing	325189	21
Other Basic Organic Chemical Manufacturing	325190	18
Resin and Synthetic Rubber Manufacturing	325210	38
Artificial and Synthetic Fibres and Filaments Manufacturing	325220	8
Chemical Fertilizer (except Potash) Manufacturing	325313	13
Mixed Fertilizer Manufacturing	325314	20
Pesticide and Other Agricultural Chemical Manufacturing	325320	7
Paint and Coating Manufacturing	325510	70
Adhesive Manufacturing	325520	20
Soap and Cleaning Compound Manufacturing	325610	59
Toilet Preparation Manufacturing	325620	65
Printing Ink Manufacturing	325910	17
Explosives Manufacturing	325920	2
Custom Compounding of Purchased Resins	325991	11
All Other Miscellaneous Chemical Product Manufacturing	325999	87
Plastic Product		545
Plastic Bag and Pouch Manufacturing	326111	36
Plastic Film and Sheet Manufacturing	326114	35
Unlaminated Plastic Profile Shape Manufacturing	326121	29
Plastic Pipe and Pipe Fitting Manufacturing	326122	22
Laminated Plastic Plate, Sheet (except Packaging) and Shape Manufacturing	326130	12
Polystyrene Foam Product Manufacturing	326140	16
Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	22
Plastic Bottle Manufacturing	326160	12
Plastic Plumbing Fixture Manufacturing	326191	17
Motor Vehicle Plastic Parts Manufacturing	326193	58
Plastic Window and Door Manufacturing	326196	6
All Other Plastic Product Manufacturing	326198	280
Rubber Product		64
Tire Manufacturing	326210	7
Rubber and Plastic Hose and Belting Manufacturing	326220	10
Other Rubber Product Manufacturing	326290	47

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Non-Metallic Mineral Products		226
Pottery, Ceramics and Plumbing Fixture Manufacturing	327110	5
Clay Building Material and Refractory Manufacturing	327120	11
Glass Manufacturing	327214	17
Glass Product Manufacturing from Purchased Glass	327215	31
Cement Manufacturing	327310	3
Ready-Mix Concrete Manufacturing	327320	17
Concrete Pipe, Brick and Block Manufacturing	327330	30
Other Concrete Product Manufacturing	327390	34
Lime Manufacturing	327410	3
Gypsum Product Manufacturing	327420	11
Abrasive Product Manufacturing	327910	10
All Other Non-Metallic Mineral Product Manufacturing	327990	54
Primary Metal (Ferrous)		63
Iron and Steel Mills and Ferro-Alloy Manufacturing	331110	11
Iron and Steel Pipes and Tubes Manufacturing from Purchased Steel	331210	12
Cold-Rolled Steel Shape Manufacturing	331221	3
Steel Wire Drawing	331222	6
Iron Foundries	331511	26
Steel Foundries	331514	5
Primary Metal (Non-Ferrous)		100
Primary Production of Alumina and Aluminum	331313	9
Aluminum Rolling, Drawing, Extruding and Alloying	331317	19
Non-Ferrous Metal (except Aluminum) Smelting and Refining	331410	14
Copper Rolling, Drawing, Extruding and Alloying	331420	6
Non-Ferrous Metal (except Copper and Aluminum) Rolling, Drawing, Extruding and Alloying	331490	14
Non-Ferrous Die-Casting Foundries	331523	20
Non-Ferrous Foundries (except Die-Casting)	331529	18
Fabricated Metal Product		1,302
Forging	332113	27
Stamping	332118	59
Cutlery and Hand Tool Manufacturing	332210	57
Prefabricated Metal Building and Component Manufacturing	332311	28
Concrete Reinforcing Bar Manufacturing	332314	0
Other Plate Work and Fabricated Structural Product Manufacturing	332319	91
Metal Window and Door Manufacturing	332321	67
Other Ornamental and Architectural Metal Product Manufacturing	332329	86
Power Boiler and Heat Exchanger Manufacturing	332410	21
Metal Tank (Heavy Gauge) Manufacturing	332420	36
Metal Can Manufacturing	332431	2
Other Metal Container Manufacturing	332439	20
Hardware Manufacturing	332510	34
Spring (Heavy Gauge) Manufacturing	332611	6
Other Fabricated Wire Product Manufacturing	332619	35
Machine Shops	332710	439
Turned Product and Screw, Nut and Bolt Manufacturing	332720	39
Coating, Engraving, Heat Treating and Allied Activities	332810	123
Metal Valve Manufacturing	332910	28
Ball and Roller Bearing Manufacturing	332991	6
All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	98
Machinery		1,522
Agricultural Implement Manufacturing	333110	106
Construction Machinery Manufacturing	333120	45
Mining and Oil and Gas Field Machinery Manufacturing	333130	57
Sawmill and Woodworking Machinery Manufacturing	333210	36
Rubber and Plastics Industry Machinery Manufacturing	333220	34
Paper Industry Machinery Manufacturing	333291	15
All Other Industrial Machinery Manufacturing	333299	123
Commercial and Service Industry Machinery Manufacturing	333310	123
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	333413	43
Heating Equipment and Commercial Refrigeration Equipment Manufacturing	333416	81
Industrial Mould Manufacturing	333511	148
Other Metalworking Machinery Manufacturing	333519	302
Turbine and Turbine Generator Set Unit Manufacturing	333611	17
Other Engine and Power Transmission Equipment Manufacturing	333619	31
Pump and Compressor Manufacturing	333910	34

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Material Handling Equipment Manufacturing	333920	134
All Other General-Purpose Machinery Manufacturing	333990	193
Computer and Peripheral Equipment		92
Computer and Peripheral Equipment Manufacturing	334110	92
Communications Equipment		162
Telephone Apparatus Manufacturing	334210	36
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	79
Other Communications Equipment Manufacturing	334290	47
Semiconductor and Other Electronic Component		179
Semiconductor and Other Electronic Component Manufacturing	334410	179
Navigational, Measuring, Medical and Control Instruments		332
Navigational and Guidance Instruments Manufacturing	334511	47
Measuring, Medical and Controlling Devices Manufacturing	334512	285
Other Computer and Electronic Product		53
Audio and Video Equipment Manufacturing	334310	39
Manufacturing and Reproducing Magnetic and Optical Media	334610	14
Electrical Equipment, Appliance and Component		300
Electric Lamp Bulb and Parts Manufacturing	335110	4
Lighting Fixture Manufacturing	335120	47
Small Electrical Appliance Manufacturing	335210	20
Major Kitchen Appliance Manufacturing	335223	9
Other Major Appliance Manufacturing	335229	6
Power, Distribution and Specialty Transformers Manufacturing	335311	25
Motor and Generator Manufacturing	335312	14
Switchgear and Switchboard, and Relay and Industrial Control Apparatus Manufacturing	335315	66
Battery Manufacturing	335910	5
Communication and Energy Wire and Cable Manufacturing	335920	25
Wiring Device Manufacturing	335930	19
All Other Electrical Equipment and Component Manufacturing	335990	60
Motor Vehicle and Parts		311
Automobile and Light-Duty Motor Vehicle Manufacturing	336110	12
Heavy-Duty Truck Manufacturing	336120	12
Motor Vehicle Body Manufacturing	336211	32
Truck Trailer Manufacturing	336212	30
Motor Home, Travel Trailer and Camper Manufacturing	336215	11
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	23
Motor Vehicle Electrical and Electronic Equipment Manufacturing	336320	30
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	9
Motor Vehicle Brake System Manufacturing	336340	17
Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	13
Motor Vehicle Seating and Interior Trim Manufacturing	336360	19
Motor Vehicle Metal Stamping	336370	31
Other Motor Vehicle Parts Manufacturing	336390	72
Aerospace Product and Parts		77
Aerospace Product and Parts Manufacturing	336410	77
All Other Transportation Equipment		116
Railroad Rolling Stock Manufacturing	336510	8
Ship Building and Repairing	336611	8
Boat Building	336612	54
Other Transportation Equipment Manufacturing	336990	46
Furniture and Related Product		338
Wood Kitchen Cabinet and Counter Top Manufacturing	337110	54
Upholstered Household Furniture Manufacturing	337121	24
Other Wood Household Furniture Manufacturing	337123	79
Household Furniture (except Wood and Upholstered) Manufacturing	337126	21
Institutional Furniture Manufacturing	337127	32
Wood Office Furniture, including Custom Architectural Woodwork, Manufacturing	337213	28
Office Furniture (except Wood) Manufacturing	337214	24
Showcase, Partition, Shelving and Locker Manufacturing	337215	56
Mattress Manufacturing	337910	13
Blind and Shade Manufacturing	337920	7
Other Manufacturing Industries		864
Hosiery and Sock Mills	315110	10

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Other Clothing Knitting Mills	315190	15
Cut and Sew Clothing Contracting	315210	17
Men's and Boys' Cut and Sew Underwear and Nightwear Manufacturing	315221	3
Men's and Boys' Cut and Sew Suit, Coat and Overcoat Manufacturing	315222	10
Men's and Boys' Cut and Sew Shirt Manufacturing	315226	9
Men's and Boys' Cut and Sew Trouser, Slack and Jean Manufacturing	315227	4
Other Men's and Boys' Cut and Sew Clothing Manufacturing	315229	19
Women's and Girls' Cut and Sew Lingerie, Loungewear and Nightwear Manufacturing	315231	14
Women's and Girls' Cut and Sew Blouse and Shirt Manufacturing	315232	7
Women's and Girls' Cut and Sew Dress Manufacturing	315233	16
Women's and Girls' Cut and Sew Suit, Coat, Tailored Jacket and Skirt Manufacturing	315234	13
Other Women's and Girls' Cut and Sew Clothing Manufacturing	315239	28
Infants' Cut and Sew Clothing Manufacturing	315291	2
Fur and Leather Clothing Manufacturing	315292	31
All Other Cut and Sew Clothing Manufacturing	315299	5
Clothing Accessories and Other Clothing Manufacturing	315990	23
Leather and Hide Tanning and Finishing	316110	6
Footwear Manufacturing	316210	16
Other Leather and Allied Product Manufacturing	316990	16
Medical Equipment and Supplies Manufacturing	339110	176
Jewellery and Silverware Manufacturing	339910	27
Sporting and Athletic Goods Manufacturing	339920	83
Doll, Toy and Game Manufacturing	339930	26
Office Supplies (except Paper) Manufacturing	339940	16
Sign Manufacturing	339950	44
All Other Miscellaneous Manufacturing	339990	228
Services		9,452
Wholesale Trade		1,733
Live Animal Wholesaler-Distributors	411110	7
Oilseed and Grain Wholesaler-Distributors	411120	6
Nursery Stock and Plant Wholesaler-Distributors	411130	17
Other Farm Product Wholesaler-Distributors	411190	4
Petroleum Product Wholesaler-Distributors	412110	13
General-Line Food Wholesaler-Distributors	413110	18
Dairy and Milk Products Wholesaler-Distributors	413120	3
Poultry and Egg Wholesaler-Distributors	413130	4
Fish and Seafood Product Wholesaler-Distributors	413140	11
Fresh Fruit and Vegetable Wholesaler-Distributors	413150	29
Red Meat and Meat Product Wholesaler-Distributors	413160	30
Other Specialty-Line Food Wholesaler-Distributors	413190	80
Non-Alcoholic Beverage Wholesaler-Distributors	413210	6
Alcoholic Beverage Wholesaler-Distributors	413220	0
Cigarette and Tobacco Product Wholesaler-Distributors	413310	0
Clothing and Clothing Accessories Wholesaler-Distributors	414110	55
Footwear Wholesaler-Distributors	414120	5
Piece Goods, Notions and Other Dry Goods Wholesaler-Distributors	414130	21
Home Entertainment Equipment Wholesaler-Distributors	414210	6
Household Appliance Wholesaler-Distributors	414220	9
China, Glassware, Crockery and Pottery Wholesaler-Distributors	414310	3
Floor Covering Wholesaler-Distributors	414320	4
Linen, Drapery and Other Textile Furnishings Wholesaler-Distributors	414330	3
Other Home Furnishings Wholesaler-Distributors	414390	15
Jewellery and Watch Wholesaler-Distributors	414410	4
Book, Periodical and Newspaper Wholesaler-Distributors	414420	5
Photographic Equipment and Supplies Wholesaler-Distributors	414430	4
Sound Recording Wholesalers	414440	0
Video Cassette Wholesalers	414450	0
Toy and Hobby Goods Wholesaler-Distributors	414460	11
Amusement and Sporting Goods Wholesaler-Distributors	414470	16
Pharmaceuticals and Pharmacy Supplies Wholesaler-Distributors	414510	56
Toiletries, Cosmetics and Sundries Wholesaler-Distributors	414520	35
New and Used Automobile and Light-Duty Truck Wholesaler-Distributors	415110	4
Truck, Truck Tractor and Bus Wholesaler-Distributors	415120	8
Recreational and Other Motor Vehicles Wholesaler-Distributors	415190	5

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Tire Wholesaler-Distributors	415210	1
Other New Motor Vehicle Parts and Accessories Wholesaler-Distributors	415290	33
Used Motor Vehicle Parts and Accessories Wholesaler-Distributors	415310	6
Electrical Wiring and Construction Supplies Wholesaler-Distributors	416110	34
Plumbing, Heating and Air-Conditioning Equipment and Supplies Wholesaler-Distributors	416120	53
Metal Service Centres	416210	42
General-Line Building Supplies Wholesaler-Distributors	416310	6
Lumber, Plywood and Millwork Wholesaler-Distributors	416320	26
Hardware Wholesaler-Distributors	416330	24
Paint, Glass and Wallpaper Wholesaler-Distributors	416340	15
Other Specialty-Line Building Supplies Wholesaler-Distributors	416390	28
Farm, Lawn and Garden Machinery and Equipment Wholesaler-Distributors	417110	42
Construction and Forestry Machinery, Equipment and Supplies Wholesaler-Distributors	417210	18
Mining and Oil and Gas Well Machinery, Equipment and Supplies Wholesaler-Distributors	417220	7
Industrial Machinery, Equipment and Supplies Wholesaler-Distributors	417230	165
Computer, Computer Peripheral and Pre-Packaged Software Wholesaler-Distributors	417310	115
Electronic Components, Navigational and Communications Equipment and Supplies Wholesaler-Distributors	417320	76
Office and Store Machinery and Equipment Wholesaler-Distributors	417910	31
Service Establishment Machinery, Equipment and Supplies Wholesaler-Distributors	417920	22
Professional Machinery, Equipment and Supplies Wholesaler-Distributors	417930	79
All Other Machinery, Equipment and Supplies Wholesaler-Distributors	417990	43
Recyclable Metal Wholesaler-Distributors	418110	12
Recyclable Paper and Paperboard Wholesaler-Distributors	418120	2
Other Recyclable Material Wholesaler-Distributors	418190	34
Stationery and Office Supplies Wholesaler-Distributors	418210	1
Other Paper and Disposable Plastic Product Wholesaler-Distributors	418220	13
Agricultural Feed Wholesaler-Distributors	418310	24
Seed Wholesaler-Distributors	418320	14
Agricultural Chemical and Other Farm Supplies Wholesaler-Distributors	418390	15
Chemical (except Agricultural) and Allied Product Wholesaler-Distributors	418410	63
Log and Wood Chip Wholesaler-Distributors	418910	5
Mineral, Ore and Precious Metal Wholesaler-Distributors	418920	0
Second-Hand Goods (except Machinery and Automotive) Wholesaler-Distributors	418930	1
All Other Wholesaler-Distributors	418990	112
Business-to-Business Electronic Markets	419110	1
Wholesale Trade Agents and Brokers	419120	73
Retail Trade		438
New Car Dealers	441110	1
Used Car Dealers	441120	7
Recreational Vehicle Dealers	441210	1
Motorcycle, Boat and Other Motor Vehicle Dealers	441220	18
Automotive Parts and Accessories Stores	441310	14
Tire Dealers	441320	2
Furniture Stores	442110	5
Floor Covering Stores	442210	3
Window Treatment Stores	442291	3
Print and Picture Frame Stores	442292	3
All Other Home Furnishings Stores	442298	7
Appliance, Television and Other Electronics Stores	443110	26
Computer and Software Stores	443120	60
Camera and Photographic Supplies Stores	443130	2
Home Centres	444110	4
Paint and Wallpaper Stores	444120	4

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Hardware Stores	444130	4
Other Building Material Dealers	444190	17
Outdoor Power Equipment Stores	444210	1
Nursery and Garden Centres	444220	16
Supermarkets and Other Grocery (except Convenience) Stores	445110	6
Convenience Stores	445120	1
Meat Markets	445210	23
Fish and Seafood Markets	445220	2
Fruit and Vegetable Markets	445230	4
Baked Goods Stores	445291	23
Confectionery and Nut Stores	445292	3
All Other Specialty Food Stores	445299	12
Beer, Wine and Liquor Stores	445310	1
Pharmacies and Drug Stores	446110	8
Cosmetics, Beauty Supplies and Perfume Stores	446120	7
Optical Goods Stores	446130	1
Food (Health) Supplement Stores	446191	9
All Other Health and Personal Care Stores	446199	15
Gasoline Stations with Convenience Stores	447110	0
Other Gasoline Stations	447190	2
Men's Clothing Stores	448110	1
Women's Clothing Stores	448120	3
Children's and Infants' Clothing Stores	448130	1
Family Clothing Stores	448140	3
Clothing Accessories Stores	448150	0
Fur Stores	448191	1
All Other Clothing Stores	448199	8
Shoe Stores	448210	3
Jewellery Stores	448310	6
Luggage and Leather Goods Stores	448320	1
Sporting Goods Stores	451110	16
Hobby, Toy and Game Stores	451120	1
Sewing, Needlework and Piece Goods Stores	451130	0
Musical Instrument and Supplies Stores	451140	1
Book Stores and News Dealers	451210	1
Pre-Recorded Tape, Compact Disc and Record Stores	451220	1
Department Stores	452110	1
Warehouse Clubs and Superstores	452910	0
Home and Auto Supplies Stores	452991	0
All Other Miscellaneous General Merchandise Stores	452999	6
Florists	453110	3
Office Supplies and Stationery Stores	453210	0
Gift, Novelty and Souvenir Stores	453220	3
Used Merchandise Stores	453310	1
Pet and Pet Supplies Stores	453910	9
Art Dealers	453920	0
Manufactured (Mobile) Home Dealers	453930	0
Beer and Wine-Making Supplies Stores	453992	4
All Other Miscellaneous Store Retailers (except Beer and Wine-Making Supplies Stores)	453999	21
Internet Shopping	454111	10
Electronic Auctions	454112	0
Mail-Order Houses	454113	7
Vending Machine Operators	454210	2
Heating Oil Dealers	454311	0
Liquefied Petroleum Gas (Bottled Gas) Dealers	454312	0
Other Fuel Dealers	454319	1
Other Direct Selling Establishments	454390	8
Transportation and Warehousing		134
Scheduled Air Transportation	481110	4
Non-Scheduled Chartered Air Transportation	481214	5
Non-Scheduled Specialty Flying Services	481215	5
Short-Haul Freight Rail Transportation	482112	1
Mainline Freight Rail Transportation	482113	1
Passenger Rail Transportation	482114	0
Deep Sea, Coastal and Great Lakes Water Transportation (except by Ferries)	483115	2
Deep Sea, Coastal and Great Lakes Water Transportation by Ferries	483116	0

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Inland Water Transportation (except by Ferries)	483213	0
Inland Water Transportation by Ferries	483214	0
General Freight Trucking, Local	484110	9
General Freight Trucking, Long Distance, Truck-Load	484121	11
General Freight Trucking, Long Distance, Less Than Truck-Load	484122	0
Used Household and Office Goods Moving	484210	2
Bulk Liquids Trucking, Local	484221	0
Dry Bulk Materials Trucking, Local	484222	4
Forest Products Trucking, Local	484223	4
Other Specialized Freight (except Used Goods) Trucking, Local	484229	0
Bulk Liquids Trucking, Long Distance	484231	1
Dry Bulk Materials Trucking, Long Distance	484232	3
Forest Products Trucking, Long Distance	484233	2
Other Specialized Freight (except Used Goods) Trucking, Long Distance	484239	2
Urban Transit Systems	485110	0
Interurban and Rural Bus Transportation	485210	0
Taxi Service	485310	0
Limousine Service	485320	0
School and Employee Bus Transportation	485410	1
Charter Bus Industry	485510	1
Other Transit and Ground Passenger Transportation	485990	0
Pipeline Transportation of Crude Oil	486110	0
Pipeline Transportation of Natural Gas	486210	1
Pipeline Transportation of Refined Petroleum Products	486910	0
All Other Pipeline Transportation	486990	0
Scenic and Sightseeing Transportation, Land	487110	0
Scenic and Sightseeing Transportation, Water	487210	0
Scenic and Sightseeing Transportation, Other	487990	0
Air Traffic Control	488111	0
Other Airport Operations	488119	2
Other Support Activities for Air Transportation	488190	21
Support Activities for Rail Transportation	488210	4
Port and Harbour Operations	488310	1
Marine Cargo Handling	488320	1
Marine Salvage Services	488331	0
Ship Piloting Services	488332	0
Other Navigational Services to Shipping	488339	0
Other Support Activities for Water Transportation	488390	2
Motor Vehicle Towing	488410	2
Other Support Activities for Road Transportation	488490	5
Marine Shipping Agencies	488511	0
Other Freight Transportation Arrangement	488519	10
Other Support Activities for Transportation	488990	2
Postal Service	491110	1
Couriers	492110	2
Local Messengers and Local Delivery	492210	1
General Warehousing and Storage	493110	10
Refrigerated Warehousing and Storage	493120	3
Farm Product Warehousing and Storage	493130	3
Other Warehousing and Storage	493190	5
Information and Cultural Industries		680
Newspaper Publishers	511110	5
Periodical Publishers	511120	3
Book Publishers	511130	9
Database and Directory Publishers	511140	8
Other Publishers	511190	3
Software Publishers	511210	379
Motion Picture and Video Production	512110	25
Motion Picture and Video Distribution	512120	2
Motion Picture and Video Exhibition	512130	0
Post-Production and Other Motion Picture and Video Industries	512190	19
Record Production	512210	0
Integrated Record Production/Distribution	512220	2
Music Publishers	512230	1
Sound Recording Studios	512240	2
Other Sound Recording Industries	512290	0
Radio Broadcasting	515110	2
Television Broadcasting	515120	5

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Pay and Specialty Television	515210	0
Wired Telecommunications Carriers (except Cable)	517111	21
Cable and Other Program Distribution	517112	7
Wireless Telecommunications Carriers (except Satellite)	517210	15
Satellite Telecommunications	517410	14
Other Telecommunications	517910	53
Data Processing, Hosting, and Related Services	518210	58
News Syndicates	519110	2
Libraries	519121	0
Archives	519122	0
Internet Publishing and Broadcasting, and Web Search Portals	519130	28
All Other Information Services	519190	17
Finance, Insurance and Real Estate		268
Monetary Authorities - Central Bank	521110	0
Personal and Commercial Banking Industry	522111	10
Corporate and Institutional Banking Industry	522112	0
Local Credit Unions	522130	2
Other Depository Credit Intermediation	522190	0
Credit Card Issuing	522210	0
Sales Financing	522220	3
Consumer Lending	522291	0
All Other Non-Depository Credit Intermediation	522299	11
Mortgage and Non-mortgage Loan Brokers	522310	0
Central Credit Unions	522321	2
Other Financial Transactions Processing and Clearing House Activities	522329	9
Other Activities Related to Credit Intermediation	522390	0
Investment Banking and Securities Dealing	523110	2
Securities Brokerage	523120	5
Commodity Contracts Dealing	523130	4
Commodity Contracts Brokerage	523140	1
Securities and Commodity Exchanges	523210	2
Miscellaneous Intermediation	523910	34
Portfolio Management	523920	35
Investment Advice	523930	5
All Other Financial Investment Activities	523990	4
Direct Individual Life, Health and Medical Insurance Carriers	524111	7
Direct Group Life, Health and Medical Insurance Carriers	524112	4
Direct General Property and Casualty Insurance Carriers	524121	6
Direct, Private, Automobile Insurance Carriers	524122	0
Direct, Public, Automobile Insurance Carriers	524123	0
Direct Property Insurance Carriers	524124	0
Direct Liability Insurance Carriers	524125	0
Other Direct Insurance (except Life, Health and Medical) Carriers	524129	1
Life Reinsurance Carriers	524131	0
Accident and Sickness Reinsurance Carriers	524132	0
Automobile Reinsurance Carriers	524133	0
Property Reinsurance Carriers	524134	0
Liability Reinsurance Carriers	524135	0
General and Other Reinsurance Carriers	524139	0
Insurance Agencies and Brokerages	524210	8
Claims Adjusters	524291	4
All Other Insurance Related Activities	524299	3
Trusteed Pension Funds	526111	0
Non-Trusteed Pension Funds	526112	0
Equity Funds - Canadian	526911	0
Equity Funds - Foreign	526912	0
Mortgage Funds	526913	0
Money Market Funds	526914	0
Bond and Income / Dividend Funds - Canadian	526915	0
Bond and Income / Dividend Funds - Foreign	526916	0
Balanced Funds / Asset Allocation Funds	526917	0
Other Open-Ended Funds	526919	0
Segregated (except Pension) Funds	526930	0
Securitization Vehicles	526981	0
All Other Miscellaneous Funds and Financial Vehicles	526989	2
Lessors of Residential Buildings and Dwellings (except Social Housing Projects)	531111	1

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Lessors of Social Housing Projects	531112	0
Lessors of Non-Residential Buildings (except Mini-Warehouses)	531120	10
Self-Storage Mini-Warehouses	531130	0
Lessors of Other Real Estate Property	531190	2
Real Estate Agents	531211	0
Offices of Real Estate Brokers	531212	7
Real Estate Property Managers	531310	6
Offices of Real Estate Appraisers	531320	2
Other Activities Related to Real Estate	531390	3
Passenger Car Rental	532111	0
Passenger Car Leasing	532112	1
Truck, Utility Trailer and RV (Recreational Vehicle) Rental and Leasing	532120	2
Consumer Electronics and Appliance Rental	532210	0
Formal Wear and Costume Rental	532220	0
Video Tape and Disc Rental	532230	1
Other Consumer Goods Rental	532290	6
General Rental Centres	532310	2
Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing	532410	24
Office Machinery and Equipment Rental and Leasing	532420	3
Other Commercial and Industrial Machinery and Equipment Rental and Leasing	532490	16
Lessors of Non-Financial Intangible Assets (Except Copyrighted Works)	533110	18
Architectural, Engineering and Related Services		871
Architectural Services	541310	18
Landscape Architectural Services	541320	4
Engineering Services	541330	670
Drafting Services	541340	17
Building Inspection Services	541350	4
Geophysical Surveying and Mapping Services	541360	30
Surveying and Mapping (except Geophysical) Services	541370	31
Testing Laboratories	541380	97
Computer System Design and Related		2,438
Computer Systems Design and Related Services	541510	2,438
Management, Scientific and Technical Consulting		402
Administrative Management and General Management Consulting Services	541611	137
Human Resources Consulting Services	541612	9
Other Management Consulting Services	541619	72
Environmental Consulting Services	541620	62
Other Scientific and Technical Consulting Services	541690	122
Scientific Research and Development		875
Scientific Research and Development Services	5417	875
Health Care and Social Assistance		180
Offices of Physicians	621110	39
Offices of Dentists	621210	11
Offices of Chiropractors	621310	2
Offices of Optometrists	621320	3
Offices of Mental Health Practitioners (except Physicians)	621330	11
Offices of Physical, Occupational, and Speech Therapists and Audiologists	621340	5
Offices of All Other Health Practitioners	621390	8
Family Planning Centres	621410	4
Out-Patient Mental Health and Substance Abuse Centres	621420	1
Community Health Centres	621494	2
All Other Out-Patient Care Centres	621499	2
Medical and Diagnostic Laboratories	621510	73
Home Health Care Services	621610	3
Ambulance (except Air Ambulance) Services	621911	0
Air Ambulance Services	621912	0
All Other Ambulatory Health Care Services	621990	3
General (except Paediatric) Hospitals	622111	0
Paediatric Hospitals	622112	0
Psychiatric and Substance Abuse Hospitals	622210	0
Specialty (except Psychiatric and Substance Abuse) Hospitals	622310	3

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Nursing Care Facilities	623110	0
Residential Developmental Handicap Facilities	623210	0
Residential Substance Abuse Facilities	623221	0
Homes for the Psychiatrically Disabled	623222	0
Community Care Facilities for the Elderly	623310	0
Transition Homes for Women	623991	0
Homes for Emotionally Disturbed Children	623992	0
Homes for the Physically Handicapped or Disabled	623993	0
All Other Residential Care Facilities	623999	0
Child and Youth Services	624110	0
Services for the Elderly and Persons with Disabilities	624120	3
Other Individual and Family Services	624190	3
Community Food Services	624210	0
Community Housing Services	624220	0
Emergency and Other Relief Services	624230	2
Vocational Rehabilitation Services	624310	1
Child Day-Care Services	624410	1
All Other Services		1,433
Offices of Lawyers	541110	2
Offices of Notaries	541120	0
Other Legal Services	541190	10
Offices of Accountants	541212	9
Tax Preparation Services	541213	0
Bookkeeping, Payroll and Related Services	541215	13
Interior Design Services	541410	3
Industrial Design Services	541420	79
Graphic Design Services	541430	34
Other Specialized Design Services	541490	7
Advertising Agencies	541810	56
Public Relations Services	541820	1
Media Buying Agencies	541830	0
Media Representatives	541840	5
Display Advertising	541850	13
Direct Mail Advertising	541860	7
Advertising Material Distribution Services	541870	1
Specialty Advertising Distributors	541891	3
All Other Services Related to Advertising	541899	15
Marketing Research and Public Opinion Polling	541910	22
Photographic Services	541920	9
Translation and Interpretation Services	541930	1
Veterinary Services	541940	8
All Other Professional, Scientific and Technical Services	541990	61
Holding Companies	551113	173
Head Offices	551114	0
Office Administrative Services	561110	75
Facilities Support Services	561210	0
Employment Placement Agencies and Executive Search Services	561310	7
Temporary Help Services	561320	12
Employee Leasing Services	561330	1
Document Preparation Services	561410	11
Telephone Call Centres	561420	13
Business Service Centres	561430	8
Collection Agencies	561440	4
Credit Bureaus	561450	3
Other Business Support Services	561490	8
Travel Agencies	561510	10
Tour Operators	561520	5
Other Travel Arrangement and Reservation Services	561590	2
Investigation Services	561611	5
Security Guard and Patrol Services	561612	2
Armoured Car Services	561613	0
Security Systems Services (except Locksmiths)	561621	33
Locksmiths	561622	3
Exterminating and Pest Control Services	561710	3
Window Cleaning Services	561721	0
Janitorial Services (except Window Cleaning)	561722	11
Landscaping Services	561730	18
Carpet and Upholstery Cleaning Services	561740	2
Duct and Chimney Cleaning Services	561791	3
All Other Services to Buildings and Dwellings	561799	1

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Packaging and Labelling Services	561910	27
Convention and Trade Show Organizers	561920	5
All Other Support Services	561990	74
Elementary and Secondary Schools	611110	0
Community Colleges and C.E.G.E.P.s	611210	2
Universities	611310	0
Business and Secretarial Schools	611410	2
Computer Training	611420	12
Professional and Management Development Training	611430	13
Technical and Trade Schools	611510	7
Fine Arts Schools	611610	0
Athletic Instruction	611620	5
Language Schools	611630	1
All Other Schools and Instruction	611690	14
Educational Support Services	611710	7
Theatre (except Musical) Companies	711111	2
Musical Theatre and Opera Companies	711112	0
Dance Companies	711120	0
Musical Groups and Artists	711130	0
Other Performing Arts Companies	711190	0
Sports Teams and Clubs	711211	1
Horse Race Tracks	711213	0
Other Spectator Sports	711218	1
Live Theatres and Other Performing Arts Presenters with Facilities	711311	1
Sports Stadiums and Other Presenters with Facilities	711319	1
Performing Arts Promoters (Presenters) without Facilities	711321	2
Festivals without Facilities	711322	0
Sports Presenters and Other Presenters without Facilities	711329	1
Agents and Managers for Artists, Athletes, Entertainers and Other Public Figures	711410	0
Independent Artists, Visual Arts	711511	12
Independent Actors, Comedians and Performers	711512	0
Independent Writers and Authors	711513	0
Non-Commercial Art Museums and Galleries	712111	0
History and Science Museums	712115	1
Other Museums	712119	0
Historic and Heritage Sites	712120	0
Zoos and Botanical Gardens	712130	2
Nature Parks and Other Similar Institutions	712190	1
Amusement and Theme Parks	713110	1
Amusement Arcades	713120	1
Casinos (except Casino Hotels)	713210	0
Lotteries	713291	1
All Other Gambling Industries	713299	1
Golf Courses and Country Clubs	713910	1
Skiing Facilities	713920	3
Marinas	713930	2
Fitness and Recreational Sports Centres	713940	5
Bowling Centres	713950	0
All Other Amusement and Recreation Industries	713990	2
Hotels	721111	0
Motor Hotels	721112	0
Resorts	721113	2
Motels	721114	0
Casino Hotels	721120	0
Bed and Breakfast	721191	0
Housekeeping Cottages and Cabins	721192	1
All Other Traveller Accommodation	721198	0
RV (Recreational Vehicle) Parks and Campgrounds	721211	0
Hunting and Fishing Camps	721212	0
Recreational (except Hunting and Fishing) and Vacation Camps	721213	0
Rooming and Boarding Houses	721310	1
Full-Service Restaurants	722110	13
Limited-Service Eating Places	722210	19
Food Service Contractors	722310	2
Caterers	722320	9
Mobile Food Services	722330	0
Drinking Places (Alcoholic Beverages)	722410	5
General Automotive Repair	811111	30

Table 18-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2007, in 2006

	NAICS Code	Performers number
Automotive Exhaust System Repair	811112	2
Other Automotive Mechanical and Electrical Repair and Maintenance	811119	16
Automotive Body, Paint and Interior Repair and Maintenance	811121	28
Automotive Glass Replacement Shops	811122	2
Car Washes	811192	3
All Other Automotive Repair and Maintenance	811199	2
Electronic and Precision Equipment Repair and Maintenance	811210	43
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	811310	183
Home and Garden Equipment Repair and Maintenance	811411	6
Appliance Repair and Maintenance	811412	7
Reupholstery and Furniture Repair	811420	7
Footwear and Leather Goods Repair	811430	0
Other Personal and Household Goods Repair and Maintenance	811490	19
Barber Shops	812114	1
Beauty Salons	812115	4
Unisex Hair Salons	812116	1
Other Personal Care Services	812190	11
Funeral Homes	812210	0
Cemeteries and Crematoria	812220	0
Coin-Operated Laundries and Dry Cleaners	812310	0
Dry Cleaning and Laundry Services (except Coin-Operated)	812320	3
Linen and Uniform Supply	812330	1
Pet Care (except Veterinary) Services	812910	1
Photo Finishing Laboratories (except One-Hour)	812921	6
One-Hour Photo Finishing	812922	0
Parking Lots and Garages	812930	0
All Other Personal Services	812990	4
Religious Organizations	813110	0
Grant-Making and Giving Services	813210	0
Social Advocacy Organizations	813310	4
Civic and Social Organizations	813410	4
Business Associations	813910	7
Professional Organizations	813920	2
Labour Organizations	813930	0
Political Organizations	813940	0
Other Membership Organizations	813990	0
Private Households	814110	0
Defence Services	911110	0
Federal Courts of Law	911210	0
Federal Correctional Services	911220	0
Federal Police Services	911230	0
Federal Regulatory Services	911240	0
Other Federal Protective Services	911290	0
Federal Labour and Employment Services	911310	0
Immigration Services	911320	0
Other Federal Labour, Employment and Immigration Services	911390	0
Foreign Affairs	911410	0
International Assistance	911420	1
Other Federal Government Public Administration	911910	0
Provincial Courts of Law	912110	0
Provincial Correctional Services	912120	0
Provincial Police Services	912130	0
Provincial Fire-Fighting Services	912140	0
Provincial Regulatory Services	912150	0
Other Provincial Protective Services	912190	0
Provincial Labour and Employment Services	912210	0
Other Provincial and Territorial Public Administration	912910	0
Municipal Courts of Law	913110	0
Municipal Correctional Services	913120	0
Municipal Police Services	913130	0
Municipal Fire-Fighting Services	913140	0
Municipal Regulatory Services	913150	0
Other Municipal Protective Services	913190	0
Other Local, Municipal and Regional Public Administration	913910	0
Aboriginal Public Administration	914110	0
International and Other Extra-Territorial Public Administration	919110	0

Table 19
Enterprises with one or more employee, by industry, with percentage change from 2001 to 2006 and percentage distribution, 2006

	2001	2002	2003	2004	2005	2006	Change from 2001 to 2006	2006 distribution
	number						percent	
Total	970,261	966,766	962,987	952,985	959,856	961,947	-0.9	100
Agriculture, forestry, fishing and hunting	62,661	60,777	58,896	57,048	56,254	54,437	-13.1	5.7
Agriculture	44,883	43,498	42,150	40,870	40,393	39,055	-13.0	4.1
Forestry and logging	11,300	10,906	10,399	9,971	9,722	9,414	-16.7	1.0
Fishing, hunting and trapping	6,478	6,373	6,347	6,207	6,139	5,968	-7.9	0.6
Mining and oil and gas extraction	7,005	7,045	7,059	7,315	7,639	8,332	18.9	0.9
Oil and gas extraction	5,282	5,487	5,639	5,911	6,190	6,780	28.4	0.7
Mining	1,723	1,558	1,420	1,404	1,449	1,552	-9.9	0.2
Utilities	3,244	3,227	3,215	3,162	3,248	3,423	5.5	0.4
Electric power	445	436	430	433	435	457	2.7	0.0
Other utilities	2,799	2,791	2,785	2,729	2,813	2,966	6.0	0.3
Construction	108,433	108,627	110,070	110,213	113,733	118,278	9.1	12.3
Manufacturing	59,249	57,708	56,331	54,669	53,885	53,273	-10.1	5.5
Food	6,287	6,021	5,815	5,575	5,404	5,254	-16.4	0.5
Beverage and tobacco	584	577	573	580	578	630	7.9	0.1
Textile	1,884	1,774	1,712	1,625	1,563	1,477	-21.6	0.2
Wood products	4,270	4,168	3,907	3,702	3,745	3,729	-12.7	0.4
Paper	695	679	670	635	617	590	-15.1	0.1
Printing	5,149	5,012	4,851	4,697	4,655	4,535	-11.9	0.5
Petroleum and coal products	202	191	161	128	131	147	-27.2	0.0
Pharmaceutical and medicine	266	266	262	262	268	267	0.4	0.0
Other chemicals	1,612	1,555	1,573	1,520	1,511	1,507	-6.5	0.2
Plastic products	1,943	1,908	1,888	1,857	1,846	1,655	-14.8	0.2
Rubber products	332	327	319	303	288	281	-15.4	0.0
Non-metallic mineral products	2,045	1,987	1,946	1,916	1,854	1,857	-9.2	0.2
Primary metal (ferrous)	326	333	290	284	303	314	-3.7	0.0
Primary metal (non-ferrous)	323	317	298	294	294	281	-13.0	0.0
Fabricated metal products	8,472	8,361	8,224	8,000	7,947	7,974	-5.9	0.8
Machinery	5,370	5,274	5,172	5,071	5,091	5,109	-4.9	0.5
Computer and peripheral equipment	321	279	258	258	261	257	-19.9	0.0
Communications equipment	304	287	282	290	297	296	-2.6	0.0
Semiconductor and other electronic components	518	490	483	473	443	439	-15.3	0.0
Navigational, measuring, medical and control instruments	916	854	825	808	766	769	-16.0	0.1
Other computer and electronic products	235	210	211	191	183	191	-18.7	0.0
Electrical equipment, appliance and components	1,195	1,150	1,100	1,078	1,085	1,085	-9.2	0.1
Motor vehicle and parts	1,342	1,345	1,325	1,301	1,298	1,308	-2.5	0.1
Aerospace products and parts	292	285	224	212	218	221	-24.3	0.0
All other transportation equipment	740	694	656	636	617	602	-18.6	0.1
Furniture and related products	4,363	4,380	4,382	4,349	4,269	4,350	-0.3	0.5
Other manufacturing industries	9,263	8,984	8,924	8,624	8,353	8,148	-12.0	0.8
Services	729,669	729,382	727,416	720,578	725,097	724,204	-0.7	75.3
Wholesale trade	54,684	54,451	53,663	51,951	51,789	52,281	-4.4	5.4
Retail trade	110,670	109,648	108,105	107,511	106,531	104,737	-5.4	10.9
Transportation and warehousing	42,913	42,689	42,601	42,481	43,157	44,528	3.8	4.6
Information and cultural industries	11,947	11,600	11,451	11,224	11,263	11,450	-4.2	1.2
Finance, insurance and real estate	65,616	65,746	64,889	64,095	69,398	63,414	-3.4	6.6
Architectural, engineering and related services	17,682	17,435	17,271	17,228	17,675	18,576	5.1	1.9
Computer system design and related services	20,665	20,754	20,822	20,709	21,610	23,174	12.1	2.4
Management, scientific and technical consulting services	25,336	26,471	27,036	27,019	27,483	27,045	6.7	2.8
Scientific research and development services	2,196	2,241	2,276	2,267	2,298	2,422	10.3	0.3
Health care and social assistance	76,675	77,074	78,127	77,765	77,959	79,256	3.4	8.2
All other services	301,285	301,273	301,175	298,328	295,934	297,321	-1.3	30.9

Note(s): Components may not add to totals due to rounding.

Source(s): Statistics Canada, Business Register, enterprises with one or more employees, December 2000-2005.

Table 20
Research and development in Canadian Industry, 2007 survey response

	Responded research and development	No research and development	Deleted ¹	Did not respond ²	Total
	number				
Total	16,421	30	34	365	16,850
Long form	850 ³	30	34	365	1,279
Administrative data ⁴	15,571	...	...	...	15,571

1. Inactive, out of business and unallocated.

2. Includes estimates made for 363 long form delinquents.

3. Includes 157 companies added from T661 and 74 which were captured and changed to short form.

4. Data from Canada Revenue Agency, does not include records projected.

The 2007 survey

The 2007 survey collected data on four years. The four years were: 2006 for which the data are expected to be final; 2007, for which the data are expected to be close to final, 2008 for which the data are planned expenditures, and 2009 for which the data are a forecast of spending intentions.

Data from the surveyed firms in 2007 represent approximately 78% of the total expenditures. Estimates are not available for administrative data for 2008 and 2009. Therefore, based on the percentage increase or decrease by industry reported by the surveyed firms, forecasts are made for planned expenditures and spending intentions based on the administrative data.

The 2007 survey was mailed out in August 2008. All companies believed to be performing or funding one and a half million dollars or more in R&D were sent a questionnaire. The mailing list of companies was made up of firms which had reported R&D in the previous survey, of firms claiming an R&D income tax incentive for 2007, of firms reported by government respondents as R&D contractors or grantees for 2007 to 2008, of firms reported by other companies as funders or performers of R&D, and of firms indicated in some other way, such as newspaper or journal articles or provincial directories. These larger performers and funders received "questionnaires", covering four years, 2006, 2007, 2008 and 2009.

Recent changes to survey methodology

To relieve respondent burden, the survey threshold was raised from one million dollars to one and one half million dollars in the survey year 2006, thereby reducing the number of surveyed firms. These firms continue to be included in our tabulations as their R&D data is imputed using CRA administrative data from the SR&ED program.

To improve data quality for two of the survey's classification variables - Revenues in Canada and Number of Employees in Canada - administrative sources were used to replace missing or inconsistent data.

Revenue figures for the SR&ED tax filers were adjusted to reflect corporate income tax data for the corresponding filer. These tax data are from T2 corporate income tax data mapped to the Statistics Canada Chart of Accounts (COA) classification, by firm, from Tax Data Division. The variable COA4 comprises (Total) Revenue for firms. COA4 values were used to improve data quality for missing total revenues data from reference year 1997 through the current year. Inconsistent reported total revenue data were also examined by subject matter experts with reference to COA4 data. Within the publication, the revisions have impacted the revenue size groups. It is believed the revisions have substantially improved the quality of the revenue variable.

Canada Revenue Agency (CRA) Payroll Deductions total employment data (PD7) was used to improve the quality of missing or inconsistent total employment data for survey years 2001 through the current survey year. Payroll Deduction data are monthly data, therefore an annual average is calculated from CRA monthly Payroll Deduction data for all business enterprises that reported having one or more employees in at least one of the twelve months of the tax year.

2008 Canada Revenue Agency (CRA) changes to the Scientific Research and Experimental Development (SR&ED) tax forms

In 2008, the Canada Revenue Agency (CRA) introduced new tax forms for applicants to the Scientific Research and Experimental Development (SR&ED) investment tax credit program. These changes will impact the data produced from the Research and Development in Canadian Industry (RDCI) survey. The new forms went into effect in November 2008. SR&ED applicants have been given the opportunity to use either the new or the old forms

for their financial years ending in 2008. Please see the CRA's web-site for copies of the new and old SR&ED tax forms (<http://www.cra-arc.gc.ca/E/pbg/tf/t661/README.html>).

The CRA changes that impact data continuity include:

- February 25, 2008, the federal budget provided for a change in the SR&ED tax qualified expenditures for wages and salaries of R&D activities performed outside of Canada that was directly performed by employee(s) of the applicant; "the employee who performed the SR&ED work was a resident of Canada at the time the expense was incurred; the SR&ED work carried on by the employees outside Canada was an integral part and solely in support of the SR&ED work for a project carried on in Canada; and salary or wages paid were not subject to income or profits tax from another country." (Guide to Form T661 – Scientific Research and Experimental Development (SR&ED) Expenditures Claim, <http://www.cra-arc.gc.ca/E/pub/tg/t4088/t4088-e.html>, accessed December 09, 2008).
- The nature of R&D activities are no longer available.
- The area of specialization of R&D activities (biotechnology, software development, and environmental protection, found in 88-202 in tables 15-1, 15-2 and 15-3) are no longer available.
- R&D personnel are requested by number (head count) on the Form T661 although full-time equivalent is requested in the Guide to Form T661, this may impact tables 12 & 13.

Other changes to the SR&ED forms which may impact data processing for 2008 reference year are:

- R&D expenditures are by project rather than program.
- Selected type of R&D activity by project is included.
- Science type has been added.
- Type of location used for R&D has been added.

For the 2008 R&D expenditures, SR&ED tax data will be processed from two forms, therefore, data availability for 2008 will be limited.

The survey's history

Data on R&D in the business enterprise sector, covering commercially oriented enterprises (privately or publicly owned), industrial non-profit organizations and trade associations, have been collected since 1955. Until 1969, the survey was biennial. From 1970 to 1981, all known performers or funders of industrial R&D were surveyed for odd-numbered years and a sample, including the leading performers, were surveyed for even-numbered years. From 1982 to 1991, a full survey was conducted annually.

Because of reductions in the science and technology program, only the top 100 R&D performers (accounting for 64% of all industrial R&D) were surveyed for the 1992 and 1994 reference years. However, as a result of a cost-sharing agreement with the province of Quebec, the 1992 and 1994 industrial R&D survey results also included small firms having R&D activities in the province of Quebec.

Prior to 1997, Statistics Canada surveyed all firms that performed or funded R&D in Canada. Virtually all of these firms also provided information to CRA in order to claim tax benefits under the Scientific Research and Experimental Development (SR&ED) program. In an effort to reduce respondent burden, Statistics Canada stopped surveying the small performers and funders (those with less than \$1 million of R&D in Canada) and instead, uses their R&D data from CRA administrative data from the SR&ED program. In the 2006 survey year this threshold was raised to \$1.5 million thereby further reducing respondent burden.

When first implemented, this initiative resulted in an understatement of the total value of intramural expenditure and of the total number of R&D personnel. Under the current tax regulations, firms must file their application to the SR&ED program within 18 months of expenditure. Once claims are submitted, they are processed and only final assessed/reassessed claims are forwarded to Statistics Canada. As a result, data may not arrive for up to two years after the incurrence of expenditures. To remedy the situation, an estimation system was subsequently put into place to impute values for outstanding administrative data. This estimation system confirms the company is active using Statistics Canada's extensive Business Register, and then applies an estimate based on industry trends.

Recent developments in R&D spending are important economic signals, desired promptly by a variety of users. Because the small estimation of outstanding CRA data does not seriously influence overall trends, the R&D data are published as soon as possible after the survey is conducted, and revised in subsequent publications.

Data quality

One of the problems in a survey of this type is to ensure that the quality of the data is satisfactory. It cannot be expected that all firms funding R&D will be surveyed, will respond and will report correctly. There are sources of information such as federal government grant and contract lists to aid in identifying firms and editing returns. In addition, complete coverage cannot be assured. This is especially true for the smaller companies in the service industries. The term, R&D, in spite of survey guidelines, can be misinterpreted.

Different interpretations of the definition of R&D also result in discrepancies between federal government reporting of funds to industry (the business enterprise sector) for R&D and industry's reporting of such funds. For example, a federal government department may regard a contract to industry for the building of a prototype (e.g., communications satellite) as R&D. The contractors and subcontractors, however, may only use a portion of the R&D contract and even that portion may not be reported because the contract is considered as part of the firm's "routine" contract work. Differences may also arise for contracts awarded to industry for services or equipment required for a government in-house project which are reported by the federal sponsor as industrial R&D contracts. Therefore, the totals for R&D grants and contracts from the federal government to industry shown in this publication do not agree with those reported in Federal Science Activities, 2008/2009, (Catalogue no. 88-204-X-).

Other notes

The business enterprise sector is the only sector in which data are not collected on R&D in the social sciences and humanities.

In this survey, the reporting unit is generally the company or enterprise. This unit has been used because a company, which may have several establishments or subsidiaries, will often have a centralized research unit. In the case of a company with decentralized research units, the reporting unit may be the division, if the accounting system enables divisions to supply the required data. This procedure creates a problem when classifying data by industry. A company can only be assigned to one industry although that company may have establishments in several industries. The assignment is based on the activity from which the firm derived the greatest portion of its income. Thus, comparisons between R&D data collected at the company level and other data collected at the establishment level, such as "census value added", may be misleading. Since industrial R&D is highly concentrated, the use of the company/enterprise as the main reporting unit also means that classification cannot be very detailed, to avoid disclosing individual company data.

The survey response

The response for the 2007 "base year" survey is shown below.

For 2007, the response rate was 68 %. Survey questionnaires were mailed to 1,122 firms: 759 were returned; 621 were data captured as long forms, 74 were data captured and changed to short forms, 30 indicated

no research and development activity; 29 were out of business; 5 were included with another respondent; and 363 were estimated.

An additional 157 firms were added to the survey universe from the 2007 Scientific Research & Experimental Development tax file.

Interpretation of R&D

Generally speaking, industrial R&D is intended to result in an invention which may subsequently become a technological innovation. An essential requirement is that the outcome of the work is uncertain, i.e., that the possibility of obtaining a given technical objective cannot be known in advance on the basis of current knowledge or experience. Hence much of the work done by scientists and engineers is not R&D, since they are primarily engaged in “routine” production, engineering, quality control or testing. Although they apply scientific or engineering principles their work is not directed towards the discovery of new knowledge or the development of new products and processes. However, work elements which are not considered R&D by themselves but which directly support R&D projects, should be included with R&D in these cases. Examples of such work elements are design and engineering, shop work, computer programming, and secretarial work.

If the primary objective is to make further technical improvements to the product or process, then the work comes within the definition of R&D. If however, the product, process or approach is substantially set and the primary objective is to develop markets, to do pre-production planning or to get a production or control system working smoothly, then the activity can no longer be considered as part of R&D even though it could be regarded as an important part of the total innovation process. Thus, the design, construction and testing of prototypes, models and pilot plants are part of R&D. But, when necessary modifications have been made and testing has been satisfactorily completed, the boundary of R&D has been reached. Hence, the costs of tooling (design and try-out), construction drawings and manufacturing blueprints, and production start-up are not included in development costs.

Pilot plants may be included in development only if the main purpose is to acquire experience and compile data. As soon as they begin operating as normal production units, their costs can no longer be attributed to R&D. Similarly, once the original prototype has been found satisfactory, the cost of other “prototypes” built to meet a special need or fill a very small order are not to be considered as part of R&D.

Text table 1
Specific cases and their treatment

Activity	Treatment	Remarks
Economic research, market research, and management studies	Exclude	All activities in the social sciences
Quality control, routine testing, style changes, minor adaptation of a product to meet a customer's specific requirements	Exclude	Even if carried out by staff normally engaged in R&D
Prospecting, exploratory drilling, development of mines, oil or gas wells	Exclude	Except for R&D projects concerned with new equipment or techniques in these activities, such as in-situ and tertiary recovery research
Engineering	Exclude	Engineering unless it is in direct support of R&D
Design and drawing	Exclude	Design and drawing unless it is in direct support of R&D
Prototypes, pilot plants	Include	As long as the primary objective is to make further improvements
Contracts for R&D	Include	All contracts for R&D. For contracts which include other work, report only the R&D costs
Tooling up, trial production, trouble shooting	Exclude	Although R&D may be required as a result of these steps
Patent and licence work	Exclude	All administrative and legal work connected with patents and licenses

Reliability of the data

All the possible sources of error are examined below.

Coverage

“Coverage errors are introduced whenever the sampling frame...does not adequately represent the target population at the time of the survey.”¹

Coverage is a minor source of error. Surveys are of all known and suspected, large R&D performers and funders i.e., those believed to have R&D expenditures of at least \$1,500,000.

Administrative data are used for the small R&D performers or funders. Companies have up to 18 months after their fiscal year end to claim a tax credit for their R&D expenditures. Underreporting due to this time lag is estimated to be less than 8%, and is largely corrected by imputing estimates based on industry trends for all known performers who have not yet submitted their claim.

Response

“A response error occurs whenever a characteristic is misreported in a census or a survey.”²

As a result of a reconciliation of federal and industrial accounts of government grants and contracts, we think that industrial R&D performance estimates may be slightly low. This is caused by the non-reporting of industrial R&D funded by contract. Such work is sometimes not distinguishable from non-R&D contract work.

The accuracy of the company’s estimates of future expenditures has also been a problem in the past, particularly in the wells and petroleum products industries.

Non-response

“Non-response occurs when information required for a survey unit is missing. This could happen because the unit cannot be contacted, because the unit is unable to provide the information requested, or because the unit refuses to cooperate in the survey.”³

Non-response is a potential problem in four areas. One is the estimate of R&D expenditures two years past the base year. If no estimate is made, editing rules are applied based on the expenditure of the preceding year or a slight increase in expenditures.

The second involves the administrative data used for the smaller R&D performers. These represent 20% of all R&D performed by businesses. Certain information is not asked of them. However, the missing data are imputed from the replies of the larger performers in the same industry.

The third concerns companies inadvertently not included in the survey. A number of sources are used to create the mailing lists and it is unlikely that major performers would be overlooked.

Failure of surveyed companies to reply is the fourth type of non-response. We believe non-response error to be minor and may result in a minor under-estimation of R&D expenditures.

Coding

“A coding operation in a survey or census is defined as the operation where data on questionnaires or source documents are transformed into a format which is suitable for input to the data capture operation. This often involves the assignment of codes for ‘write-in’ entries but may also be a fairly straightforward transcription operation.”⁴

Uncorrected coding errors are unlikely because of the examination of numerous tables and listings prepared for data analysis before publication tables are created.

1. “A compendium of methods of error evaluation in censuses and surveys.” Statistics Canada, Statistical Services Field, November 1978, Catalogue No. 13-564E.
2. “A compendium of methods of error evaluation in censuses and surveys.” Statistics Canada, Statistical Services Field, November 1978, Catalogue No. 13-564E.
3. “A compendium of methods of error evaluation in censuses and surveys.” Statistics Canada, Statistical Services Field, November 1978, Catalogue No. 13-564E.
4. “A compendium of methods of error evaluation in censuses and surveys.” Statistics Canada, Statistical Services Field, November 1978, Catalogue No. 13-564E.

Data capture

“The data capture operation in a census or survey consists of converting the data received on questionnaires (e.g., respondent answers) to a machine readable format.”⁵

All data capture for science statistics is through manual intervention: data are captured into a database system.

Significant uncorrected data capture errors are unlikely because of the examination of numerous tables and listings prepared for data analysis before publication tables are created.

Edit and imputation

“The edit procedure usually consists of: (i) checking each field of every record to ascertain whether it contains a valid code or entry; (ii) checking codes or entries in certain predetermined combinations of fields to ascertain whether codes or entries are consistent with one another... The imputation procedure consists of changing values in some of the fields in records which failed the edit rules with a view to ensuring that the resultant data records satisfy all edit rules.”⁶

Although there are a number of edits, all cases of failed edit checks are corrected after consideration by editors. Automatic imputations are made for the administrative SR&ED tax data portion of the universe as well as for non-response and invalid response within the questionnaire portion of the universe.

Sampling

“Sampling error occurs whenever survey results are based on a sample of units from a survey frame... there is no sampling error in complete enumeration surveys.”⁷

Although a complete enumeration is carried out of known and suspected R&D performers and funders, records received from the administrative data do not provide as much information as do those completing the long form. Certain data are imputed for records from the administrative file based on the patterns of long form respondents in the same industry. Thus, as a result of the 2007 survey, the 2007 business enterprise sector R&D expenditures would be based on full enumeration but about 19% of the expenditures for 2008 and 2009 would have been imputed.

Technical notes

Statistics for even years

Data for the reference year 2007 are available for all tables with the exception of counts of companies. However, in the even years prior to 1982 and for 1992 and 1994, the estimation procedures did not permit the preparation of tables based on revenue size, employment size, sources of funds and country of control of companies.

Regional data on research and development (R&D) expenditures and personnel are only available for 1977, 1979 and 1981 to 2007.

Terminology

The following terminology is used within the publication:

Performing company: The organization which carried out the R&D and submitted the return. In the case of a consolidated return, performing company could include several companies. It also includes divisions of an enterprise which send separate returns or organizations such as industrial non-profit organizations.

5. “A compendium of methods of error evaluation in censuses and surveys.” Statistics Canada, Statistical Services Field, November 1978, Catalogue No. 13-564E.

6. “A compendium of methods of error evaluation in censuses and surveys.” Statistics Canada, Statistical Services Field, November 1978, Catalogue No. 13-564E.

7. “A compendium of methods of error evaluation in censuses and surveys.” Statistics Canada, Statistical Services Field, November 1978, Catalogue No. 13-564E.

Related companies: Includes parent, subsidiary and other affiliated companies. In the case where a consolidated return is submitted, “related companies” would exclude companies included in the consolidation.

R&D contracts for other companies: R&D contract work performed by the reporting company for other companies.

Federal grants: Federal R&D grants and the R&D portion of any other federal grants; it excludes funds or tax credits for R&D tax incentives.

Federal contracts: Federal R&D contracts and the R&D portion of any other federal contracts.

Provincial sources: Provincial R&D grants and contracts, and the R&D portion of any provincial grants and contracts; it excludes funds or tax credits for R&D tax incentives.

Other Canadian sources: Includes funds from universities and from levels of government other than federal and provincial.

Intramural expenditures: Expenditures for R&D work performed within the reporting company, including work financed by others.

Current intramural expenditures: Labour costs, fringe benefits and other current costs for R&D, including non-capital purchases of materials, supplies and equipment but excluding capital depreciation. Current intramural expenditures also include contracts for services required to carry out R&D (e.g. contracts awarded for drilling needed for heavy oil R&D).

Capital expenditures: Expenditures on fixed assets used in the R&D program, classified into land, buildings, and equipment.

Revenues: Revenues resulting from the sale of products and services (after deducting sales and excise taxes), and other revenues such as those generated from investment and rentals.

Non-commercial firms: R&D performers without a directly affiliated Canadian commercial base. Includes industrial non-profit organizations and trade associations, R&D establishments set up by consortia, and R&D establishments set up by non-residents without associated commercial establishments and funded principally from abroad.

Country of control: In most cases of foreign control, the country of control is the country of residence of the ultimate foreign controlling parent corporation, family, trust, estate or related group. Each subsidiary within the global enterprise is assigned the same country of control as its parent. A company whose voting rights are equally owned by Canadian-controlled and foreign-controlled corporations is Canadian-controlled. If two foreign-controlled corporations jointly own an equal amount of the voting rights of a Canadian resident company, the country of control is assigned according to an order of precedence based on their aggregate level of foreign control in Canada. For example, United States takes precedence over all other foreign countries because it has the highest level of aggregate foreign control in Canada.

R&D personnel: Calculated in full-time equivalent (FTE). R&D may be carried out by persons who work solely on R&D projects or by persons who devote only part of their time to R&D, and the balance to other activities such as testing, quality control and production engineering. To arrive at the total effort devoted to R&D in terms of person-years, it is necessary to estimate the full-time equivalent of these persons working only part-time in R&D.

FTE = number of persons who work solely on R&D projects + estimate of time of persons working only part of their time on R&D.

Example calculation:

If out of five scientists engaged in R&D work, one works solely on R&D projects and the remaining four devote only one quarter of their working time to R&D, then: $FTE = 1 + 1/4 + 1/4 + 1/4 + 1/4 = 2$ scientists.

Federal government funds for industrial R&D: Federal support consists of grants and contracts for R&D to be performed by business enterprises. Taxes foregone as a result of income tax incentives for R&D are not considered direct government support and are not attributed to the federal government.

Industrial classification

The natural classification to use within the business enterprise sector is the North American Industry Classification System (NAICS). There are, however, problems with its use. A major problem is caused by companies with establishments in more than one industry (e.g., companies which both refine petroleum and extract oil). Another is caused by the concentration of the R&D activity among a few companies. In order to prevent disclosure of individual respondents many industries must be grouped together to provide sufficient observations for publication.

A third problem is that the classification, chosen to represent general industrial activity, may not be entirely suitable for identifying companies chosen only for their involvement in R&D.

There are some restrictions on the application of the NAICS, for example, industrial non-profit organizations will be assigned to the industry they support.

The R&D activities of other sectors such as the federal government, provincial governments, higher education, and private non-profit organizations are covered in other reports.

Definitions

Research and development

Research and development (R&D) is systematic investigation carried out in the natural and engineering sciences by means of experiment or analysis to achieve a scientific or commercial advance.

Research is original investigation undertaken on a systematic basis to gain new knowledge.

Development is the application of research findings or other scientific knowledge for the creation of new or significantly improved products or processes. If successful, development will usually result in devices or processes which represent an improvement in the “state of the art” and are likely to be patentable.

Example:

The investigation of electrical conduction in crystals was research. The application of this knowledge to the creation of a new amplifying device - the transistor - was development. The application of the device to the construction of new electrical circuits for television receivers was development. The formulation of new plastic cases for a television receiver is design, not development.

Research and development may be carried out either by a permanent R&D unit (e.g., R&D division) or by a unit generally engaged in any non-R&D activity such as engineering or production. In the first case, the R&D unit may spend part of its time on routine testing or trouble shooting or on some other activities which should not be included in R&D. In the second, only the R&D portion of such units' total activity should be considered.

Research and development should be considered to be “Scientific Research and Experimental Development” as defined in Section 37, Regulation 2900 of the *Income Tax Act*; this section specifically excludes the following:

- i. market research, sales promotion,
- ii. quality control or routine analysis and testing of materials, devices or products,
- iii. research in the social sciences or the humanities,
- iv. prospecting, exploring or drilling for or producing minerals, petroleum or natural gas,
- v. the commercial production of a new or improved material, device or product or the commercial use of a new or improved process,
- vi. style changes, or routine data collection.

Note: Although the definition of “Scientific Research and Experimental Development” is considered to be the same as R&D, certain expenditures for scientific research cannot be claimed for income tax purposes (e.g., land, building). All expenditures attributable to R&D are included in this report.

Appendix I

North American industry classification system 2007 by Industry group

Agriculture, forestry, fishing and hunting

Agriculture	111110, 111120, 111130, 111140, 111150, 111160, 111190, 111211, 111219, 111310, 111320, 111330, 111411, 111419, 111421, 111422, 111910, 111920, 111930, 111940, 111993, 111994, 111999, 112110, 112120, 112210, 112310, 112320, 112330, 112340, 112391, 112399, 112410, 112420, 112910, 112920, 112930, 112991, 112999, 115110, 115210, 115212
Forestry and logging	113110, 113210, 113311, 113312, 115310
Fishing, hunting and trapping	114113, 114114, 114210, 112510

Mining and oil and gas extraction

Oil and gas extraction	211113, 211114, 213111, 213118
Mining	212114-212116, 212210, 212220, 212231-212233, 212291, 212299, 212314-212317, 212323, 212326, 212392-212398, 213117, 213119

Utilities

Electric power	221111-221113, 221119, 221121, 221122
Other utilities	221210, 221310, 221320, 221330, 562110, 562210, 562910, 562920, 562990

Construction

	236110, 236210, 236220, 237110, 237120, 237130, 237210, 237310, 237990, 238110, 238120, 238130, 238140, 238150, 238160, 238170, 238190, 238210, 238220, 238291, 238299, 238310, 238320, 238330, 238340, 238350, 238390, 238910, 238990
--	--

Manufacturing

Food	311111, 311119, 311211, 311214, 311221, 311224, 311225, 311230, 311310, 311320, 311330, 311340, 311410, 311420, 311511, 311515, 311520, 311611, 311614, 311615, 311710, 311811, 311814, 311821-311823, 311830, 311911, 311919, 311920, 311930, 311940, 311990
Beverage and tobacco	312110, 312120, 312130, 312140, 312210, 312220
Textile	313110, 313210, 313220, 313230, 313240, 313310, 313320, 314110, 314120, 314910, 314990
Wood products	321111, 321112, 321114, 321211, 321212, 321215-321217, 321911, 321919, 321920, 321991, 321992, 321999
Paper	322111, 322112, 322121, 322122, 322130, 322211, 322212, 322219, 322220, 322230, 322291, 322299
Printing	323113-323116, 323119, 323120
Petroleum and coal products	324110, 324121, 324122, 324190
Pharmaceutical and medicine	325410
Other chemical	325110, 325120, 325130, 325181, 325189, 325190, 325210, 325220, 325313, 325314, 325320, 325510, 325520, 325610, 325620, 325910, 325920, 325991, 325999
Plastic products	326111, 326114, 326121, 326122, 326130, 326140, 326150, 326160, 326191, 326193, 326196, 326198
Rubber products	326210, 326220, 326290

Non-metallic mineral products	327110, 327120, 327214, 327215, 327310, 327320, 327330, 327390, 327410, 327420, 327910, 327990
Primary metal (ferrous)	331110, 331210, 331221, 331222, 331511, 331514
Primary metal (non-ferrous)	331313, 331317, 331410, 331420, 331490, 331523, 331529
Fabricated metal products	332113, 332118, 332210, 332311, 332314, 332319, 332321, 332329, 332410, 332420, 332431, 332439, 332510, 332611, 332619, 332710, 332720, 332810, 332910, 332991, 332999
Machinery	333110, 333120, 333130, 333210, 333220, 333291, 333299, 333310, 333413, 333416, 333511, 333519, 333611, 333619, 333910, 333920, 333990
Computer and peripheral equipment	334110
Communications equipment	334210, 334220, 334290
Semiconductor and other electronic components	334410
Navigational, measuring, medical and control instruments	334511, 334512
Other computer and electronic products	334310, 334610
Electrical equipment, appliance and components	335110, 335120, 335210, 335223, 335229, 335311, 335312, 335315, 335910, 335920, 335930, 335990
Motor Vehicle and parts	336110, 336120, 336211, 336212, 336215, 336310, 336320, 336330, 336340, 336350, 336360, 336370, 336390
Aerospace products and parts	336410
All Other Transportation Equipment	336510, 336611, 336612, 336990
Furniture and related products	337110, 337121, 337123, 337126, 337127, 337213-337215, 337910, 337920
Other manufacturing industries	315110, 315190, 315210, 315221, 315222, 315226, 315227, 315229, 315231-315234, 315239, 315291, 315292, 315299, 315990, 316110, 316210, 316990, 339110, 339910, 339920, 339930, 339940, 339950, 339990
Services	
Wholesale trade	411110, 411120, 411130, 411190, 412110, 413110, 413120, 413130, 413140, 413150, 413160, 413190, 413210, 413220, 413310, 414110, 414120, 414130, 414210, 414220, 414310, 414320, 414330, 414390, 414410, 414420, 414430, 414440, 414450, 414460, 414470, 414510, 414520, 415110, 415120, 415190, 415210, 415290, 415310, 416110, 416120, 416210, 416310, 416320, 416330, 416340, 416390, 417110, 417210, 417220, 417230, 417310, 417320, 417910, 417920, 417930, 417990, 418110, 418120, 418190, 418210, 418220, 418310, 418320, 418390, 418410, 418910, 418920, 418930, 418990, 419110, 419120
Retail trade	441110, 441120, 441210, 441220, 441310, 441320, 442110, 442210, 442291, 442292, 442298, 443110, 443120, 443130, 444110, 444120, 444130, 444190, 444210, 444220, 445110, 445120, 445210, 445220, 445230, 445291, 445292, 445299, 445310, 446110, 446120, 446130, 446191, 446199, 447110, 447190, 448110, 448120, 448130, 448140, 448150, 448191, 448199, 448210, 448310, 448320, 451110, 451120, 451130, 451140, 451210, 451220, 452110, 452910, 452991, 452999, 453110, 453210, 453220, 453310, 453910, 453920, 453930, 453992, 453999, 454111, 454112, 454113, 454210, 454311, 454312, 454319, 454390

Transportation and warehousing	481110, 481214, 481215, 482112-482114, 483115, 483116, 483213, 483214, 484110, 484121, 484122, 484210, 484221-484223, 484229, 484231-484233, 484239, 485110, 485210, 485310, 485320, 485410, 485510, 485990, 486110, 486210, 486910, 486990, 487110, 487210, 487990, 488111, 488119, 488190, 488210, 488310, 488320, 488331, 488332, 488339, 488390, 488410, 488490, 488511, 488519, 488990, 491110, 492110, 492210, 493110, 493120, 493130, 493190
Information and cultural industries	511110, 511120, 511130, 511140, 511190, 511210, 512110, 512120, 512130, 512190, 512210, 512220, 512230, 512240, 512290, 515110, 515120, 515210, 517111, 517112, 517210, 517410, 517910, 518210, 519110, 519121, 519122, 519130, 519190
Finance, insurance and real estate	521110, 522111, 522112, 522130, 522190, 522210, 522220, 522291, 522299, 522310, 522321, 522329, 522390, 523110, 523120, 523130, 523140, 523210, 523910, 523920, 523930, 523990, 524111, 524112, 524121-524125, 524129, 524131-524135, 524139, 524210, 524291, 524299, 526111, 526112, 526911-529917, 526919, 526930, 526981, 526989, 531111, 531112, 531120, 531130, 531190, 531211, 531212, 531310, 531320, 531390, 532111, 532112, 532120, 532210, 532220, 532230, 532290, 532310, 532410, 532420, 532490, 533110
Architectural, engineering and related services	541310, 541320, 541330, 541340, 541350, 541360, 541370, 541380
Computer system design and related services	541510
Management, scientific and technical consulting services	541611, 541612, 541619, 541620, 541690
Scientific research and development services	541710, 541720
Health care and social assistance	621110, 621210, 621310, 621320, 621330, 621340, 621390, 621410, 621420, 621494, 621499, 621510, 621610, 621911, 621912, 621990, 622111, 622112, 622210, 622310, 623110, 623210, 623221, 623222, 623310, 623991-623993, 623999, 624110, 624120, 624190, 624210, 624220, 624230, 624310, 624410

All other services

541110, 541120, 541190, 541212, 541213, 541215, 541410, 541420,
541430, 541490, 541810, 541820, 541830, 541840, 541850, 541860,
541870, 541891, 541899, 541910, 541920, 541930, 541940, 541990,
551113, 551114, 561110, 561210, 561310, 561320, 561330, 561410,
561420, 561430, 561440, 561450, 561490, 561510, 561520, 561590,
561611-561613, 561621, 561622, 561710, 561721, 561722, 561730,
561740, 561791, 561799, 561910, 561920, 561990, 611110, 611210,
611310, 611410, 611420, 611430, 611510, 611610, 611620, 611630,
611690, 611710, 711111, 711112, 711120, 711130, 711190, 711211,
711213, 711218, 711311, 711319, 711321, 711322, 711329, 711410,
711511, 711512, 711513, 712111, 712115, 712119, 712120, 712130,
712190, 713110, 713120, 713210, 713291, 713299, 713910, 713920,
713930, 713940, 713950, 713990, 721111-721114, 721120, 721191,
721192, 721198, 721211-721213, 721310, 722110, 722210, 722310,
722320, 722330, 722410, 811111, 811112, 811119, 811121, 811122,
811192, 811199, 811210, 811310, 811411, 811412, 811420, 811430,
811490, 812114-812116, 812190, 812210, 812220, 812310, 812320,
812330, 812910, 812921, 812922, 812930, 812990, 813110, 813210,
813310, 813410, 813910, 813920, 813930, 813940, 813990, 814110,
911110, 911210, 911220, 911230, 911240, 911290, 911310, 911320,
911390, 911410, 911420, 911910, 912110, 912120, 912130, 912140,
912150, 912190, 912210, 912910, 913110, 913120, 913130, 913140,
913150, 913190, 913910, 914110, 919110