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Industrial Research and Development: Intentions

2013

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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
0s	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
*	significantly different from reference category ($p < 0.05$)

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Highlights

Spending on industrial research and development (R&D) is anticipated to be $15.6 billion in 2013, down 2.8% from $16.1 billion in 2012. Industrial R&D spending increased from 2010 to 2012 but remains below its pre-recession peak of $16.8 billion in 2007 (table 1 and CANSIM 358-0024).

Manufacturing remains the leading R&D-performing sector, accounting for 47% of the total in 2013, or $7.3 billion. However, manufacturing's share of total industrial R&D has declined from 68% in 2000 to 50% in 2007, and since 2008 has accounted for less than 50% of industrial R&D (CANSIM 358-0024). Total R&D expenditures by the manufacturing sector peaked in 2001 at $9.2 billion.

The service sector follows closely behind manufacturing, accounting for 45% of R&D expenditures, valued at $7.1 billion in 2013. In 2013, R&D performance in the service sector is concentrated in four industry groups. Scientific research and development services industry holds the largest share of anticipated R&D expenditures, $1.9 billion. Three other service industry groups each intend to spend more than $1 billion on R&D: computer systems design and related services, $1.3 billion; wholesale trade, $1.3 billion; and information and cultural industries, $1.2 billion (CANSIM 358-0024).

Over the past 25 years, the share of total industrial R&D performed by the firms with the largest R&D expenditures has declined. The share of the top 25 R&D performers has declined from 48% in 1989 to 33% in 2013 (table 4).

Among the provinces, Ontario accounted the greatest share of total intramural expenditures, 48% or $7.7 billion, in 2011, the most recent year for which provincial data are available. Businesses in Ontario also increased their R&D performance compared with 2010. Quebec had the second highest share of R&D performed, 29%, with almost no change in the dollar amounts, $4.7 billion in both 2010 and 2011. In 2011, the Atlantic provinces, except Prince Edward Island, had lower industrial R&D expenditures. In Western Canada, Manitoba and Saskatchewan posted small increases in industrial R&D spending while Alberta and British Columbia had small declines (table 5-2 and CANSIM 358-0161).

The number of personnel performing R&D was 140,423 in 2011, an increase of 0.1% from 2010 (table 8-4 and CANSIM 358-0024).

The engineering and technology major field of science or technology accounted for the largest share of R&D spending in 2011, at 76% (or $12.1 billion) of industrial R&D spending intentions. The other three major fields of science or technology comprised natural and formal sciences with R&D expenditures of $1.9 billion, medical and health sciences at $1.7 billion and agricultural sciences at $290 million (table 5-20 and CANSIM 358-0140).

The four detailed fields of biotechnology—medical biotechnology, environmental biotechnology, industrial biotechnology and agricultural biotechnology — performed $429 million worth of R&D in 2011. More than three-quarters of the biotechnology total, $335 million, was spent in medical biotechnology (table 5-20 and CANSIM 358-0140).

Energy-related R&D rose 15.2% from 2010 to 2011, from $1.5 billion to $1.7 billion. Fossil fuels R&D continued as the largest share of energy-related R&D, $1.2 billion in 2011, up 17.5% from $995 million in 2010 (table 13 and CANSIM 358-0214).

Analysis

Industrial R&D spending intentions

Spending on industrial research and development (R&D) is anticipated to be $15.6 billion in 2013, down 2.8% from $16.1 billion in 2012. Industrial R&D spending increased from 2010 to 2012 but remains below its pre-recession peak of $16.8 billion in 2007 and above the previous peak of $14.3 billion in 2001 during the “tech bubble” (table 1 and CANSIM 358-0024).

Industrial R&D spending has been slow to rebound from the 2008-2009 financial crisis. In particular, it has taken large firms with 1,000 or more employees performing R&D until 2011 to return to levels of R&D performance similar to 2007. R&D spending data by size measures such as employment (table 5-19), revenue (table 5-18) and R&D expenditure groups (table 5-14) are available to 2011, the survey reference year.

Medium-sized R&D performing firms, with 100 to 999 employees, had not regained their 2007 R&D peak by 2011. While R&D spending by large R&D performing firms contracted by $1 billion dollars or 13.4% between 2008 and 2009, the R&D spending by small R&D performing firms with less than 100 employees increased their R&D performance by 8.0% or $378 million.

Industrial distribution of R&D spending

Manufacturing remains the leading R&D-performing sector, accounting for 47% of the total in 2013, or $7.3 billion. However, manufacturing’s share of total industrial R&D has declined from 68% in 2000 to 50% in 2007, and since 2008 has accounted for less than 50% of industrial R&D (CANSIM 358-0024). Total R&D expenditures by the manufacturing sector peaked in 2001 at $9.2 billion.

Two manufacturing industries intend to spend more than $1 billion on R&D in 2013: communication equipment, $1.4 billion, and aerospace products and parts, also $1.4 billion. These two industries have long been significant R&D performers, but their relative share of R&D has shifted. In 2001, communications equipment accounted for 22% of total industrial R&D performed at $3.2 billion; aerospace products and parts at $949 million accounted for 7%.

The next largest R&D performing industry groups within the manufacturing sector are machinery manufacturing, with spending intentions of $618 million in 2013, and pharmaceutical and medicine manufacturing, $508 million (CANSIM 358-0024).

The service sector follows closely behind manufacturing, accounting for 45% of R&D expenditures, valued at $7.1 billion in 2013. Expenditures for R&D in the service sector increased rapidly from $2.9 billion in 1999 to $6.1 billion in 2004, peaking at $7.5 billion in 2008. The growth between 1999 and 2004 was primarily due to rapid increases in R&D expenditures in three industry groups: scientific research and development services, which increased from $264 million to $1.2 billion during that interval, information and cultural industries whose R&D expenditures increased from $257 million to $1.3 billion and computer systems design and related services, which increased from $593 million to $1.2 billion. The later peak in 2008 was due to an increase in R&D expenditures in wholesale trade, which increased from $976 million in 2007 to $1.4 billion in 2008 (CANSIM 358-0024).

In 2013, R&D performance in the service sector is concentrated in four industry groups. Scientific research and development services industry holds the largest share of anticipated R&D expenditures, $1.9 billion. Three other service industry groups each intend to spend more than $1 billion on R&D: computer systems design and related services, $1.3 billion; wholesale trade, $1.3 billion; and information and cultural industries, $1.2 billion. Those four industry groups account for 81% of R&D spending intentions by businesses in the service sector in 2013 (CANSIM 358-0024).

R&D expenditures for mining and oil and gas extraction accounted for 6% of total R&D spending each year from 2008 to 2012; in 2013, this sector is expected to account for 5%. For 2013, the agriculture, forestry, fishing and hunting, utilities and construction sectors account for the remaining 3% of industrial R&D expenditures.

The overall distribution of industrial R&D spending was stable from 2008 to 2012: only the mining and oil and gas extraction sector saw volatility in R&D spending (table 5-1 and CANSIM 358-0024). Since 2000, the share of industrial R&D performed by mining, oil and gas has tripled; the share for construction has doubled. In the service sector, the share of total industrial R&D has increased from 28% to 45%. The shares of industrial R&D spending by the remaining two sectors, agriculture, forestry, fishing and hunting and utilities have remained stable over this period.

Current and capital R&D expenditures

Total R&D expenditures are composed of two components: current and capital expenditures.

R&D capital expenditures can change from year to year. These expenditures comprise the purchase of land and buildings for R&D, as well as regular expenditures for machinery and equipment. R&D capital expenditures have declined as a share of total R&D expenditures in recent years, from a high of 11% in 2001 to 6% in 2013 (table 7 and CANSIM 358-0024).

Current intramural expenditures for R&D comprise wages and salaries and other current costs. In 2013, wages and salaries constitute the largest component of current intramural expenditures (64%), or 60% of total R&D expenditures (CANSIM 358-0024).

Other current costs for R&D can include non-capital purchases of materials required to support R&D activities; security costs; and the costs of on-site consultants, who were not employees of the firm but were performing R&D at the performing firm's facilities. Materials include reference materials, such as books, journals and subscriptions to libraries, scientific societies, costs of developing prototypes or models made outside the reporting firm, materials for laboratories as well as administrative and other overhead costs. Other current costs comprise the remaining 34% of total R&D expenditures in 2013.

In 2013, the share of the components of total R&D expenditures varies by sector. Wages and salaries are expected to comprise 56% of total R&D expenditures in the manufacturing sector but 69% in the service sector. In the mining and oil and gas extraction sector, wages and salaries are anticipated to account for 20% of total expenditures.

The share of other current costs — current intramural expenditures aside from wages and salaries — ranged from 49% in mining and oil and gas extraction to 17% in construction. Other current costs accounted for just over 40% for manufacturing and 25% in services, the two key sectors (CANSIM 358-0024).

Capital expenditures as share of total R&D varied significantly by industry sector. In the mining and oil and gas extraction sector, capital expenditures will account for 31% of total R&D expenditures. In manufacturing, the share will be 3%, the lowest of all sectors, and in the service sector, 5% (CANSIM 358-0024).

Concentration of R&D expenditures

Over the past 25 years, the share of total industrial R&D performed by the firms with the largest R&D expenditures has declined. The share of the top 25 R&D performers has declined from 48% in 1989 to 33% in 2013. The share of the top 100 has declined similarly, reflecting the changes seen with the top 25 R&D performers (table 4).

Among the provinces, Ontario accounted the greatest share of total intramural expenditures, 48% or $7.7 billion, in 2011, the most recent year for which provincial data are available. Businesses in Ontario also increased their R&D performance compared with 2010. Quebec had the second highest share of R&D performed, 29%, with almost no change in the dollar amounts, $4.7 billion in both 2010 and 2011. In 2011, the Atlantic provinces, except Prince Edward Island, had lower industrial R&D expenditures. In Western Canada, Manitoba and Saskatchewan posted small increases in industrial R&D spending while Alberta and British Columbia had small declines (table 5-2 and CANSIM 358-0161).

Since 2000, the share of R&D performed in Central Canada — Quebec and Ontario — has declined from 85% to 78%. The Atlantic and the Prairie provinces saw strong increases in their shares of R&D from 2005 to 2009. British Columbia's share of industrial R&D increased from 2007 to 2010 (CANSIM 358-0161).

R&D personnel

The number of personnel performing R&D was 140,423 in 2011, an increase of 0.1% from 2010 (table 8-4 and CANSIM 358-0024).

R&D personnel are classified into three categories: professional, technicians and other. 'Professionals' are researchers such as scientists and engineers or R&D administrators. 'Technicians' includes technicians and technologists, trained personnel who assist scientists and engineers in R&D. 'Other' R&D personnel consist of administrative support staff who are directly engaged in the R&D activities. Of the R&D personnel in 2011, 93,443 were classified as professionals, 37,912 as technicians and 9,067 as other R&D personnel.

The number of R&D personnel increased steadily from 104,707 in 2000 to a peak of 172,744 in 2008, dropping from 2008 to 2010 and then remaining nearly unchanged in 2011. Professionals (scientists, engineers and R&D administrators) have seen little change in their numbers. Technical support staff numbers declined from 52,075 in 2008 to 37,912 in 2011; other support staff numbers declined more than 50%, from 22,282 in 2008 to 9,067 in 2011 (table 8-4 and CANSIM 358-0024).

In 2011, 54% of total R&D personnel worked in the service sector. Manufacturing was the second largest employer of R&D personnel, with 41% of the total. Each of the remaining sectors (agriculture, forestry, fishing and hunting; mining and oil and gas extraction; utilities; and construction) represented 1% of all R&D personnel (table 8-1 and CANSIM 358-0024).

Within the service sector, the industry groups with the largest shares of R&D personnel were computer systems design and related services, 13%; and scientific research and development services, 11%. R&D personnel levels were highest in the following manufacturing industry groups: communications equipment, 6%; machinery, 5%; and aerospace products and parts, 4% (table 8-3 and CANSIM 358-0024).

The highest share of professional R&D personnel was found in communications equipment (91%) and petroleum and coal products (90%). Technicians made up the largest portion of R&D personnel in printing (50%) and mining (49%). Pharmaceutical and medicine manufacturing, at 22%, had the highest share of other support staff to total R&D personnel (table 8-3 and CANSIM 358-0024).

Since 2000, the number of R&D personnel has declined in the manufacturing sector, from 61,160 to 58,164 in 2011. Meanwhile, R&D employment has grown in the service sector, from 40,277 to 75,583 over the same period.

From 2000 to 2011, five manufacturing industry groups had declining shares of R&D personnel: communications equipment, from 15% in 2000 to 6% in 2011; aerospace products and parts, from 6% to 4%; semiconductors and electronic components as well as navigational, measuring, medical and control instruments, each from 5% to 3%; and pharmaceutical and medicine manufacturing, from 4% to 2%.

Shares of R&D personnel increased in the major R&D-performing industry groups in the service sector. Wholesale trade accounted for 4% of total personnel in 2000 and 7% in 2011; information and cultural industries, 4% in 2000 and 9% in 2011; scientific research and development services, 4% and 11%. The largest R&D performing industry group in terms of personnel, computer systems design and related services accounted for 13% in both 2000 and 2011.

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 comprise federal grants and contracts and provincial government sources. Private sources comprise the performing companies, related companies and research contracts for other companies or private non-profit organizations. Sources of funds such as bank loans or venture capital investment are included in the reporting company's funds. Other Canadian sources include universities and individuals. As well, industrial R&D can be financed from foreign sources, both public and private.

The business enterprise sector (86%) provided the majority of industrial R&D funding in 2011 (table 5-15). For 2011, industrial R&D performers received 10% of their funding from foreign sources. Funds from the federal government accounted for 3% of R&D financing; provincial governments, 1%. The remainder came from 'other' sources (table 5-16).

While manufacturing (85%) and services (77%) self-financed the majority of their R&D performance in 2011, foreign sources are these sectors' second most important source of funds (table 5-16).

Field of science or technology

Data on field of science and technology are now available for total R&D expenditures and personnel from 2009 to 2011.The four major fields of science or technology are natural and formal sciences; engineering and technology; medical and health sciences; and agricultural sciences. Data on detailed fields of science or technology within the major fields are also available. (Table 5-20 and CANSIM 358-0140)

The field of science or technology information is coded according to classifications provided in the *Frascati Manual* (Table 3.2) and following directions provided by the Canada Revenue Agency (CRA) in the *Guide to Form T661* (Appendix 1), T4088 (E) Rev. 12. For full definitions, please refer to the CRA's website *www.cra-arc.gc.ca/E/pub/tg/t4088/README.html*.

Respondents to the RDCI are asked to indicate in which field of science or technology they performed R&D. There is no restriction to the number of fields of science or technology for which respondents can provide R&D expenditures and personnel information. For the CRA purposes, only the main field of science or technology for each R&D project is assigned.

The engineering and technology major field of science or technology accounted for the largest share of R&D spending in 2011, at 76% (or $12.1 billion) of industrial R&D spending intentions. Within three detailed fields of science or technology more than $2 billion worth of R&D was performed: electrical engineering, electronic engineering and information technology, $3.2 billion; mechanical engineering, $2.7 billion; and software engineering, $2.5 billion. The other three major fields of science or technology comprised natural and formal sciences with R&D expenditures of $1.9 billion, medical and health sciences at $1.7 billion and agricultural sciences at $290 million.

The four detailed fields of biotechnology—medical biotechnology, environmental biotechnology, industrial biotechnology and agricultural biotechnology — performed $429 million worth of R&D in 2011. More than three-quarters of the biotechnology total, $335 million, was spent in medical biotechnology (table 5-20 and CANSIM 358-0140).

Field of science or technology by industry group

Some industry groups performed R&D in fields of science or technology that are closely associated with their industrial classification. For example, pharmaceutical and medicine manufacturing ($517 million) firms performed R&D that was mostly in medical and health sciences ($394 million), followed by biological sciences at $91 million. Similarly, the agriculture industry group performed $112 million worth of R&D that was largely related to agricultural sciences ($89 million) (CANSIM 358-0140).

However, the detailed fields of science or technology also illustrate the diversity of R&D activities performed within industry groups. For instance, in 2011, the oil and gas extraction industry group ($839 million) led with environmental engineering as its largest field of science or technology, at $403 million (CANSIM 358-0140).

The field of science or technology data enable a profile of the R&D activities within scientific research and development services. Within this industry group's $2.0 billion R&D expenditures in 2011, $753 million were in electrical and electronic engineering and information technology; $195 million in software engineering; and $190 million in other engineering and technologies. This industry group also performed $514 million of R&D in the medical and health sciences major field in 2011.

Another of the leading R&D performing industry groups, wholesale trade ($1.4 billion) in 2011, directed $538 million to R&D in the medical and health sciences and $674 million engineering and technology major fields; in the latter, the largest shares were devoted to electrical, electronic engineering and information technology and mechanical engineering.

Energy R&D

Energy-related R&D rose 15.2% from 2010 to 2011, from $1.5 billion to $1.7 billion. Fossil fuels R&D continued as the largest share of energy-related R&D, $1.2 billion in 2011, up 17.5% from $995 million in 2010 (table 13 and CANSIM 358-0214).

Other technologies at 8% or $132 million surpassed renewable energy (6% or $106 million) as the second most significant area of energy-related R&D in 2011. Other energy-related technologies include R&D in carbon capture, energy systems analysis and other technologies. The amount spent on these energy-related R&D technologies was up 48.3% from 2010 (table 13 and CANSIM 358-0214).

R&D expenditures on energy efficiency also rose, from $58 million in 2010 to $85 million in 2011; renewable energy R&D declined from $117 million to $106 million. Nuclear fission and fusion R&D increased slightly from $62 million to $68 million. Hydrogen and fuel cells R&D decreased from $64 million to $35 million. Research on technologies related to electric power increased from $76 million to $91 million (table 13 and CANSIM 358-0214).

Technology payments

Research and development is an intellectual property product. Intellectual property is a form of creative endeavour that can be protected through a patent, trademark, copyright, industrial design or integrated circuit topography. Also included in technology payments are technical assistance, industrial processes and know-how. Intellectual property can be accessed by paying for permission from those who hold recognized claims, mostly patents, copyrights and trademarks. Expenditures for use of intellectual property totalled $751 million in 2011, of which expenditures for patents represented the largest share, $439 million. Most of the remaining expenditures were for technical assistance, industrial processes and know-how, $284 million (table 12 and CANSIM 358-0212).

Payments received were substantially greater than expenditures, amounting to $1.3 billion. Payments received for patents and technical assistance, industrial processes and know-how accounted for the vast majority of the total (table 12 and CANSIM 358-0212).

Technology expenditures and payments

The technology expenditures and payments estimates are taken only from firms that respond to the Research and Development in Canadian Industry survey. The statistics are not available from Scientific Research and Experimental Development tax incentive program data and estimates do not include imputation for administrative data.

Intellectual property rights related to previously performed R&D are included in these technology expenditures and payments. These statistics are not intended to represent all trade in intellectual property rights or informal technology assistance services. For instance, the Research and Development in Canadian Industry survey may not include all firms dedicated to the licensing, buying or selling of patents or firms deriving some of their revenues from these activities which have never previously performed or funded R&D

Related products

Selected publications from Statistics Canada

88-001-X	Science Statistics
88-221-X	Gross Domestic Expenditures on Research and Development in Canada (GERD), and the Provinces
88-522-X	Science and Technology Activities and Impacts: A Framework for a Statistical Information
88F0006X	BSSTSD, Working Papers

Selected CANSIM tables from Statistics Canada

358-0001	Gross domestic expenditures on research and development, by science type and by funder and performer sector, annual
358-0024	Business enterprise research and development (BERD) characteristics, by industry group based on the North American Industry Classification System (NAICS), annual
358-0140	Business enterprise research and development (R&D) characteristics, by field of science or technology and North American Industry Classification System (NAICS)
358-0161	Business enterprise research and development (BERD) characteristics, by industry group based on the North American Industry Classification System (NAICS), provinces and Territories, annual
358-0205	Business enterprise intramural research and development expenditures, by country of control and North American Industry Classification System (NAICS)
358-0206	Business enterprise extramural payments for research and development, by location of recipient and North American Industry Classification System (NAICS)
358-0207	Business enterprise intramural research and development expenditures, by sources of funds
358-0208	Business enterprise intramural research and development expenditures, by performing research and development company employment size
358-0209	Business enterprise intramural research and development expenditures, by performing research and development company revenue size
358-0210	Business enterprise intramural research and development expenditures, by research and development expenditure size
358-0211	Business enterprise current intramural research and development expenditures as a percentage of performing research and development company revenues, by country of control and North American Industry Classification System (NAICS)

358-0212	Business enterprise expenditures made and payments received for intellectual property and other technology assistance
358-0213	Business enterprise foreign receipts and payments for technological services
358-0214	Industrial energy research and development expenditures and extramural payments outside Canada, by area of technology

Selected surveys from Statistics Canada

4201	Research and Development in Canadian Industry
4205	Energy Research and Development Expenditures by Area of Technology

Selected summary tables from Statistics Canada

- *Domestic spending on research and development (GERD), funding sector, by province*
- *Domestic spending on research and development (GERD), performing sector, by province*
- *Domestic spending on research and development (GERD)*
- *Research and development performed by the business enterprise sector*

Statistical tables

Table 1
Industrial research and development expenditures in current and 2007 constant dollars

	Current dollars			Gross domestic product implicit price index (2007)	2007 constant dollars		
	Current intramural expenditures	Capital expenditures	Total intramural expenditures		Current intramural expenditures	Capital expenditures	Total intramural expenditures
	millions of dollars			index = 2007	millions of dollars		
2013 p	14,702 A	919 B	**15,621** A	..	..	..	..
2012 p	15,026 A	1,037 B	**16,063** A	109.5	13,722 A	947 B	**14,669** A
2011 p	14,974 A	986 A	**15,960** A	107.7	13,903 A	916 A	**14,819** A
2010 r	14,548 A	919 A	**15,467** A	104.4	13,935 A	880 A	**14,815** A
2009 r	15,043 A	995 A	**16,038** A	101.7	14,792 A	978 A	**15,770** A
2008	15,569 A	1,075 A	**16,644** A	103.9	14,985 A	1,035 A	**16,019** A
2007	15,651	1,105	**16,756**	100.0	15,651	1,105	**16,756**
2006	15,318	1,155	**16,474**	96.9	15,808	1,192	**17,001**
2005	14,572	1,067	**15,638**	94.3	15,453	1,131	**16,583**
2004	14,095	1,049	**15,144**	91.4	15,421	1,148	**16,569**
2003	13,110	985	**14,094**	88.5	14,814	1,113	**15,925**
2002	12,492	1,052	**13,545**	85.6	14,593	1,229	**15,824**
2001	12,767	1,499	**14,266**	84.6	15,091	1,772	**16,863**
2000	11,201	1,194	**12,395**	83.2	13,463	1,435	**14,898**
1999	9,360	1,039	**10,399**	79.8	11,729	1,302	**13,031**
1998	8,727	955	**9,682**	78.4	11,131	1,218	**12,349**
1997	7,874	865	**8,739**	78.5	10,031	1,102	**11,132**
1996	7,159	838	**7,997**	77.6	9,226	1,080	**10,305**
1995	7,286	705	**7,991**	76.3	9,549	924	**10,473**
1994	6,938	629	**7,567**	74.6	9,300	843	**10,143**
1993	5,878	546	**6,424**	73.6	7,986	742	**8,728**
1992	5,286	457	**5,742**	72.6	7,281	629	**7,909**
1991	4,812	543	**5,355**	71.5	6,730	759	**7,490**
1990	4,541	628	**5,169**	69.4	6,543	905	**7,448**
1989	4,155	624	**4,779**	67.1	6,192	930	**7,122**

Note(s): Components may not add to totals due to rounding.
Source(s): CANSIM tables 358-0024 and 380-0102.

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

	2011 [p]	2010 [r]	2009 [r]	2008	2000
	percent				
Israel	3.51	3.44	3.58	3.80	3.30
Korea	..	2.80	2.64	2.53	1.70
Finland	2.67	2.72	2.81	2.75	2.37
Japan	..	2.49	2.54	2.72	2.13
Sweden	2.34	2.33	2.53	2.74	..
Switzerland	..	..	..	2.11	1.82
Denmark	2.09	2.09	2.21	1.99	..
Germany	1.90	1.88	1.91	1.86	1.74
United States	1.89	1.93	2.03	2.04	2.02
Austria	1.87	1.90	1.84	1.85	..
Slovenia	1.83	1.42	1.19	1.07	0.78
France	1.43	1.41	1.40	1.33	1.34
Belgium	1.37	1.33	1.34	1.34	1.42
Australia	..	1.28	1.30	1.38	0.70
Ireland	1.17	1.17	1.16	0.94	0.80
Czech Republic	1.11	0.96	0.88	0.87	0.70
United Kingdom	1.09	1.10	1.11	1.10	1.18
Netherlands	1.07	0.89	0.85	0.89	1.07
Luxembourg	0.98	1.00	1.31	1.29	1.53
Canada	**0.89**	**0.93**	**1.02**	**1.04**	**1.15**
Norway	0.85	0.86	0.91	0.84	..
Spain	0.70	0.72	0.72	0.74	0.49
Italy	0.68	0.68	0.67	0.65	0.52
OECD total	**..**	**1.58**	**1.62**	**1.63**	**1.53**

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 2013/1.

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	
2013 p	15,621 A	..	..	..	..
2012 p	16,063 A	30,043	1,819,967	53.47	0.88
2011 p	15,960 A	29,950	1,760,011	53.29	0.91
2010 r	15,467 A	30,048	1,662,757	51.47	0.93
2009 r	16,038 A	29,660	1,567,007	54.07	1.02
2008	16,644 A	30,751	1,645,974	54.13	1.01
2007	16,756	30,032	1,565,900	55.79	1.07
2006	16,474	29,079	1,486,918	56.65	1.11
2005	15,638	28,022	1,410,710	55.81	1.11
2004	15,144	26,679	1,324,940	56.76	1.14
2003	14,094	24,690	1,243,829	57.08	1.13
2002	13,545	23,536	1,180,948	57.55	1.15
2001	14,266	23,133	1,134,832	61.67	1.26
2000	12,395	20,556	1,098,166	60.30	1.13
1999	10,399	17,638	1,001,845	58.96	1.04
1998	9,682	16,088	936,730	60.18	1.03
1997	8,739	14,635	901,376	59.71	0.97
1996	7,997	13,817	854,847	57.88	0.94
1995	7,991	13,754	826,214	58.10	0.97
1994	7,567	13,341	786,584	56.72	0.96
1993	6,424	12,184	741,593	52.72	0.87
1992	5,742	11,338	713,312	50.64	0.80
1991	5,355	10,767	696,882	49.74	0.77
1990	5,169	10,260	690,763	50.38	0.75
1989	4,779	9,517	667,349	50.22	0.72

Note(s): Gross domestic product (GDP) is now reported in CANSIM table 380-0064 as CANSIM table 380-0017 has been terminated. All GDP data points were revised based on the new CANSIM table

Source(s): CANSIM tables 358-0001 and 380-0064.

Table 4
Concentration of total intramural research and development expenditures by top performing company

	Top 25	Top 50	Top 75	Top 100	Total intramural expenditures
	percent				millions of dollars
2013 p	33	41	46	50	**15,621** A
2012 p	34	42	47	51	**16,063** A
2011 p	34	42	47	51	**15,960** A
2010 r	31	39	45	49	**15,467** A
2009 r	29	38	43	47	**16,038** A
2008	28	38	44	48	**16,644** A
2007	29	38	44	48	**16,756**
2006	31	42	48	51	**16,474**
2005	32	42	49	52	**15,638**
2004	33	43	49	53	**15,144**
2003	34	44	50	54	**14,094**
2002	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**

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

	2009 [r]	2010 [r]	2011 [p]	2012 [p]	2013 [p]
	millions of dollars				
Total all industries	**16,038** A	**15,467** A	**15,960** A	**16,063** A	**15,621** A
Agriculture, forestry, fishing and hunting	**127** A	**126** A	**112** A	**110** B	**109** C
Agriculture	108 A	105 A	90 A	90 B	87 C
Forestry, logging and support activities for forestry	7 A	10 D	15 A	12 B	F
Fishing, hunting, trapping and animal aquaculture	12 A	11 A	7 A	8 D	8 D
Mining and oil and gas extraction	**929** B	**959** D	**966** A	**885** A	**757** B
Oil and gas extraction, contract drilling and related services	821 B	862 C	839 A	720 A	637 B
Mining and related support activities	108 A	F	126 A	165 B	120 D
Total utilities	**187** A	**187** A	**191** B	**201** B	**225** A
Electric power generation, transmission and distribution	147 A	156 A	165 B	177 A	201 A
Other utilities	40 A	31 A	25 A	F	24 C
Construction	**135** A	**108** A	**129** A	**132** C	**130** C
Manufacturing	**7,764** A	**7,222** A	**7,368** A	**7,560** A	**7,349** A
Food manufacturing	182 A	170 A	145 A	143 B	144 B
Beverage and tobacco product manufacturing	19 A	15 A	x	x	x
Textiles	45 A	40 A	40 A	41 B	41 D
Wood product manufacturing	103 A	86 A	85 A	90 B	91 D
Paper manufacturing	79 A	145 A	117 A	103 D	90 E
Printing and related support activities	65 A	51 A	45 B	47 D	F
Petroleum and coal products manufacturing	299 A	333 A	x	x	x
Pharmaceutical and medicine manufacturing	671 A	669 A	517 B	545 A	508 A
Other chemicals	295 C	336 C	299 C	322 B	298 B
Plastic product manufacturing	146 A	127 A	126 A	124 B	125 C
Rubber product manufacturing	30 B	20 A	18 C	21 B	19 C
Non-metallic mineral product manufacturing	83 A	77 A	74 C	72 B	73 C
Primary metal (ferrous)	63 A	F	41 A	42 A	42 B
Primary metal (non-ferrous)	202 A	150 A	163 A	158 A	165 A
Fabricated metal product manufacturing	285 A	222 A	194 A	201 B	206 D
Machinery manufacturing	658 B	540 A	615 C	623 A	618 C
Computer and peripheral equipment manufacturing	63 A	52 A	49 A	53 A	57 B
Communications equipment manufacturing	1,526 A	1,078 A	1,462 A	1,541 A	1,399 A
Semiconductor and other electronic component manufacturing	511 A	523 A	505 A	497 A	512 A
Navigational, measuring, medical and control instrument manufacturing	427 A	436 C	354 A	347 A	334 B
Other computer and electronic products	21 A	26 A	24 A	27 C	25 C
Electrical equipment, appliance and component manufacturing	163 B	154 A	143 A	155 B	153 B
Motor vehicle and parts	310 A	312 A	259 A	266 B	267 C
Aerospace products and parts manufacturing	1,107 A	1,226 D	1,306 D	1,327 B	1,373 C
All other transportation equipment	155 D	145 A	123 A	143 A	143 C
Furniture and related product manufacturing	50 A	41 A	38 A	36 C	37 B
Other manufacturing industries	204 A	207 A	198 A	221 A	224 B
Services	**6,896** A	**6,864** A	**7,194** A	**7,174** A	**7,051** A
Wholesale trade	1,279 B	1,270 A	1,350 A	1,367 A	1,252 A
Retail trade	63 A	58 A	64 A	F	73 C
Transportation and warehousing	168 A	58 A	52 A	54 D	55 B
Information and cultural industries	1,170 A	1,179 A	1,143 A	1,161 B	1,195 A
Finance, insurance and real estate	372 A	266 A	234 C	227 C	238 E
Architectural, engineering and related services	404 A	387 A	424 A	401 A	416 B
Computer systems design and related services	1,178 A	1,292 A	1,383 A	1,391 A	1,333 B
Management, scientific and technical consulting services	68 A	80 A	87 A	F	91 D
Scientific research and development services	1,677 A	1,811 A	1,980 A	1,933 A	1,925 A
Health care and social assistance	115 A	94 B	85 A	81 B	80 D
All other services	402 A	370 A	392 A	395 D	393 C

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

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

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Total	**16,756**	**16,644** A	**16,038** A	**15,467** A	**15,960** A
Atlantic Canada	329	330 A	337 A	265 A	252 A
Newfoundland and Labrador	89	90 A	87 B	72 B	66 B
Prince Edward Island	13	15 C	13 D	10 D	13 D
Nova Scotia	106	105 A	110 B	85 B	78 B
New Brunswick	122	121 B	127 B	98 B	95 B
Quebec	4,881	4,794 A	4,757 B	4,691 B	4,669 B
Ontario	8,065	7,883 A	7,384 A	7,039 A	7,713 A
Manitoba	207	182 A	209 C	212 C	219 C
Saskatchewan	194	146 B	155 B	150 B	179 B
Alberta	1,449	1,618 A	1,571 A	1,474 A	1,340 A
British Columbia and Territories [1]	1,632	1,691 A	1,626 A	1,636 A	1,588 A

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 and by type of expenditures, 2011p

	Total business enterprise research and development current expenditures	Total business enterprise research and development capital expenditures	Total business enterprise research and development intramural expenditures
	millions of dollars		
Total	**14,974** A	**986** A	**15,960** A
Atlantic Canada	233 A	19 A	252 A
Newfoundland and Labrador	x	x	66 B
Prince Edward Island	x	x	13 D
Nova Scotia	75 B	3 C	78 B
New Brunswick	85 B	11 B	95 B
Quebec	4,429 B	241 A	4,669 B
Ontario	7,328 A	385 A	7,713 A
Manitoba	204 C	15 C	219 C
Saskatchewan	171 B	8 B	179 B
Alberta	1,105 A	235 A	1,340 A
British Columbia and Territories [1]	1,505 A	83 A	1,588 A

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 industry, by region, 2011[p]

	Atlantic Canada	Quebec	Ontario	Manitoba	Saskat-chewan	Alberta	British Columbia and Territories [1]	Total
	millions of dollars							
Total all industries	**252** A	**4,669** B	**7,713** A	**219** C	**179** B	**1,340** A	**1,588** A	**15,960** A
Agriculture, forestry, fishing and hunting	**7** A	**36** A	**36** A	**7** A	**3** A	**3** B	**21** A	**112** A
Agriculture	3 B	33 A	35 A	7 A	x	x	8 A	90 A
Forestry, logging and support activities for forestry	2 A	x	x	0 A	x	x	8 A	15 A
Fishing, hunting, trapping and animal aquaculture	2 A	x	x	0 A	0 A	0 A	5 A	7 A
Mining and oil and gas extraction	**10** A	**x**	**81** A	**0** A	**15** A	**571** A	**x**	**966** A
Oil and gas extraction, contract drilling and related services	6 A	x	x	x	6 A	x	x	839 A
Mining and related support activities	4 B	20 B	x	x	9 B	x	x	126 A
Utilities	**5** B	**x**	**69** A	**1** D	**x**	**4** D	**x**	**191** B
Electric power generation, transmission and distribution	4 B	x	x	x	x	F	F	165 B
Other utilities	0 E	10 B	x	x	x	2 D	x	25 A
Construction	**2** A	**x**	**67** A	**1** A	**x**	**16** A	**8** A	**129** A
Manufacturing	**78** A	**2,391** D	**4,066** B	**80** D	**86** B	**288** A	**379** B	**7,368** A
Food manufacturing	7 A	55 A	58 A	2 A	8 A	5 A	11 A	145 A
Beverage and tobacco product manufacturing	x	3 A	x	0 A	0 A	0 A	1 A	x
Textiles	x	25 A	x	0 A	x	x	1 A	40 A
Wood product manufacturing	1 A	37 A	x	x	x	x	14 A	85 A
Paper manufacturing	10 A	77 A	26 A	1 A	0 A	2 A	1 A	117 A
Printing and related support activities	F	20 A	x	1 C	0 A	F	x	45 B
Petroleum and coal products manufacturing	x	x	x	x	x	x	0 A	x
Pharmaceutical and medicine manufacturing	x	139 C	308 B	x	x	F	34 E	517 B
Other chemicals	F	34 B	140 A	F	13 A	103 A	6 E	299 C
Plastic product manufacturing	1 B	29 A	82 A	3 A	x	8 A	x	126 A
Rubber product manufacturing	x	x	x	x	x	F	x	18 C
Non-metallic mineral product manufacturing	F	26 A	x	x	1 E	7 A	15 A	74 C
Primary metal (ferrous)	x	x	32 A	x	x	x	0 A	41 A
Primary metal (non-ferrous)	0 A	114 A	28 A	x	x	3 A	x	163 A
Fabricated metal product manufacturing	4 A	60 A	107 A	3 A	4 A	9 A	7 A	194 A
Machinery manufacturing	8 A	248 B	274 C	F	20 D	25 D	F	615 C
Computer and peripheral equipment manufacturing	x	x	x	x	0 A	2 A	15 A	49 A
Communications equipment manufacturing	x	90 A	1,315 A	0 A	x	4 A	15 A	1,462 A
Semiconductor and other electronic component manufacturing	x	74 C	308 A	F	x	22 C	97 B	505 A
Navigational, measuring, medical and control instrument manufacturing	6 D	59 A	234 A	x	x	18 B	37 B	354 A
Other computer and electronic products	x	x	x	0 A	0 A	x	6 A	24 A
Electrical equipment, appliance and component manufacturing	1 A	31 A	70 A	1 A	2 A	2 A	35 A	143 A
Motor vehicle and parts	1 A	22 B	226 A	4 C	1 A	1 D	4 C	259 A
Aerospace products and parts manufacturing	x	F	F	x	0 A	x	0 A	1,306 D
All other transportation equipment	1 A	82 A	34 A	x	0 A	2 A	x	123 A
Furniture and related product manufacturing	x	13 B	x	0 A	x	F	F	38 A
Other manufacturing industries	F	96 A	69 B	6 D	0 A	F	21 C	198 A
Services	**150** B	**2,076** A	**3,394** A	**130** B	**70** D	**458** B	**916** A	**7,194** A
Wholesale trade	12 B	414 A	744 A	20 A	10 C	71 A	78 A	1,350 A
Retail trade	0 C	21 A	30 A	1 A	1 D	3 B	7 A	64 A
Transportation and warehousing	2 A	11 A	15 A	x	x	19 A	4 A	52 A
Information and cultural industries	34 B	236 A	541 A	56 A	F	104 B	165 A	1,143 A
Finance, insurance and real estate	1 D	35 A	134 A	4 A	2 D	34 A	22 A	234 C
Architectural, engineering and related services	9 B	89 A	203 A	3 D	10 C	55 A	57 A	424 A
Computer systems design and related services	34 D	455 C	605 B	22 D	6 E	F	200 C	1,383 A
Management, scientific and technical consulting services	2 D	21 B	33 B	x	x	15 B	15 C	87 A
Scientific research and development services	35 B	665 A	893 A	11 B	20 B	64 B	292 A	1,980 A
Health care and social assistance	2 A	37 A	30 A	x	x	2 A	12 A	85 A
All other services	17 E	93 D	165 C	F	F	30 E	64 D	392 A

1. Includes Yukon, Northwest Territories and Nunavut.
Note(s): Components may not add to totals due to rounding.

Table 5-5
Total intramural research and development expenditures by major industrial sectors, Atlantic Canada

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Atlantic Canada	**329**	**330** A	**337** A	**265** A	**252** A
Agriculture, forestry, fishing and hunting	16	x	12 A	9 A	7 A
Mining and oil and gas extraction	x	x	40 A	x	10 A
Utilities	2	x	10 B	x	5 B
Construction	x	2 A	3 A	2 A	2 A
Manufacturing	173	185 B	149 A	110 A	78 A
Services	122	124 A	122 B	112 B	150 B

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

Table 5-6
Total intramural research and development expenditures by major industrial sectors, Quebec

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Quebec	**4,881**	**4,794** A	**4,757** B	**4,691** B	**4,669** B
Agriculture, forestry, fishing and hunting	44	48 A	40 A	34 A	36 A
Mining and oil and gas extraction	16	x	x	x	x
Utilities	121	x	x	x	x
Construction	33	x	43 A	x	x
Manufacturing	2,374	2,231 A	2,357 D	2,414 D	2,391 D
Services	2,293	2,353 A	2,195 A	2,098 A	2,076 A

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

Table 5-7
Total intramural research and development expenditures by major industrial sectors, Ontario

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Ontario	**8,065**	**7,883** A	**7,384** A	**7,039** A	**7,713** A
Agriculture, forestry, fishing and hunting	80	48 A	46 A	50 A	36 A
Mining and oil and gas extraction	27	13 A	61 A	55 A	81 A
Utilities	59	74 A	46 A	59 A	69 A
Construction	40	53 A	57 A	52 A	67 A
Manufacturing	4,797	4,270 A	4,227 B	3,630 B	4,066 B
Services	3,061	3,425 A	2,947 A	3,192 A	3,394 A

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

Table 5-8
Total intramural research and development expenditures by major industrial sectors, Manitoba

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Manitoba	**207**	**182** A	**209** C	**212** C	**219** C
Agriculture, forestry, fishing and hunting	2	4 A	4 A	7 A	7 A
Mining and oil and gas extraction	x	x	2 A	1 A	0 A
Utilities	x	x	1 D	1 D	1 D
Construction	x	x	1 A	1 A	1 A
Manufacturing	118	108 A	80 D	81 D	80 D
Services	84	63 A	121 B	121 B	130 B

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

Table 5-9
Total intramural research and development expenditures by major industrial sectors, Saskatchewan

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Saskatchewan	**194**	**146** B	**155** B	**150** B	**179** B
Agriculture, forestry, fishing and hunting	5	5 A	5 A	6 A	3 A
Mining and oil and gas extraction	38	34 A	x	15 A	15 A
Utilities	x	1 C	x	2 C	x
Construction	x	1 A	x	2 A	x
Manufacturing	111	53 E	69 B	65 B	86 B
Services	39	51 A	62 D	62 D	70 D

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

Table 5-10
Total intramural research and development expenditures by major industrial sectors, Alberta

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Alberta	**1,449**	**1,618** A	**1,571** A	**1,474** A	**1,340** A
Agriculture, forestry, fishing and hunting	10	x	3 B	4 B	3 B
Mining and oil and gas extraction	578	592 A	480 A	469 A	571 A
Utilities	85	x	14 D	x	4 D
Construction	15	18 A	19 A	x	16 A
Manufacturing	309	485 B	488 A	560 A	288 A
Services	451	489 A	567 B	421 B	458 B

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

Table 5-11
Total intramural research and development expenditures by major industrial sectors, British Columbia

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
British Columbia and Territories [1]	**1,632**	**1,691** A	**1,626** A	**1,636** A	**1,588** A
Agriculture, forestry, fishing and hunting	23	15 A	16 A	16 A	21 A
Mining and oil and gas extraction	106	312 A	309 A	377 A	x
Utilities	x	x	x	x	x
Construction	x	x	x	x	8 A
Manufacturing	545	392 C	395 B	363 B	379 B
Services	934	962 A	882 A	858 A	916 A

1. Includes Yukon, Northwest Territories and Nunavut.
Note(s): Components may not add to totals due to rounding.

Table 5-12
Total intramural research and development expenditures by country of control

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Total country of control	**16,756**	**16,644**	**16,038** A	**15,467** A	**15,960** A
Canada	11,100	10,505	10,720 A	10,002 A	10,482 A
Foreign	5,657	6,139	5,318 A	5,465 B	5,478 A
United States	3,397	3,857	3,017 A	3,037 A	3,194 A
Other foreign	2,260	2,282	2,301 A	2,428 C	2,284 A

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

Table 5-13

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

	2007	2008	2009 r	2010 r	2011 P
	percent				
Total	**66**	**63**	**67**	**65**	**66**
Agriculture, forestry, fishing and hunting	**76**	**x**	**x**	**x**	**72**
Agriculture	x	x	x	x	x
Forestry and logging	x	x	100	100	100
Fishing, hunting and trapping	x	x	x	x	x
Mining and oil and gas extraction	**62**	**55**	**41**	**52**	**64**
Oil and gas extraction	64	56	43	54	70
Mining	43	54	28	31	25
Utilities	**x**	**99**	**99**	**99**	**100**
Electric power	x	x	x	x	x
Other utilities	99	x	x	x	x
Construction	**x**	**x**	**x**	**x**	**89**
Manufacturing	**63**	**62**	**66**	**62**	**65**
Food	77	72	83	81	82
Beverage and tobacco	31	59	61	64	x
Textile	76	74	77	80	85
Wood products	72	87	79	81	78
Paper	86	47	40	45	58
Printing	96	93	x	x	x
Petroleum and coal products	45	x	x	x	x
Pharmaceutical and medicine	38	52	41	41	39
Other chemicals	55	57	58	36	35
Plastic products	86	83	82	85	79
Rubber products	x	47	42	47	51
Non-metallic mineral products	42	59	57	53	42
Primary metal (ferrous)	18	15	17	22	19
Primary metal (non-ferrous)	19	16	78	21	21
Fabricated metal products	90	85	91	92	89
Machinery	80	80	80	89	83
Computer and peripheral equipment	36	49	52	51	52
Communications equipment	90	87	86	88	86
Semiconductor and other electronic components	x	x	x	x	x
Navigational, measuring, medical and control instruments	70	52	39	39	46
Other computer and electronic products	x	x	x	x	x
Electrical equipment, appliance and components	78	63	46	51	57
Motor vehicle and parts	37	41	50	64	63
Aerospace products and parts	x	x	x	x	x
All other transportation equipment	x	x	x	x	87
Furniture and related products	x	97	98	97	x
Other manufacturing industries	93	93	83	76	85
Services	**69**	**63**	**69**	**68**	**65**
Wholesale trade	41	26	36	46	43
Retail trade	x	x	x	x	x
Transportation and warehousing	93	x	98	x	99
Information and cultural industries	71	69	78	82	81
Finance, insurance and real estate	92	56	51	89	87
Architectural, engineering and related services	65	91	85	84	83
Computer system design and related services	76	74	86	78	76
Management, scientific and technical consulting services	98	96	99	98	98
Scientific research and development services	74	70	66	53	48
Health care and social assistance	x	43	x	x	x
All other services	77	88	91	79	89

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

Table 5-14
Total intramural research and development expenditures by expenditures size [1]

	2007	2008	2009 [r]	2010 [r]	2011 [p]
	millions of dollars				
Total research and development expenditure size	**16,756**	**16,644**	**16,038** [A]	**15,467** [A]	**15,960** [A]
Less than $50,000	207	225	244 [E]	227 [A]	201 [A]
$50,000 to $99,999	383	409	434 [C]	405 [A]	367 [A]
$100,000 to $199,999	623	688	720 [A]	673 [B]	611 [A]
$200,000 to $399,999	827	862	946 [A]	865 [C]	825 [A]
$400,000 to $999,999	1,174	1,304	1,364 [A]	1,256 [A]	1,247 [A]
$1,000,000 or greater	13,542	13,157	12,329 [A]	12,041 [A]	12,709 [A]

1. Research and development expenditures size is based on current intramural expenditures.
Note(s): Components may not add to totals due to rounding.

Table 5-15
Total intramural research and development expenditures by sources of funds

	Canadian business enterprises			Federal sources		Provincial	Other Canadian sources	Foreign	**Total sources of funds**
	Performing Research and development companies	Related companies	Research and development contracts for other companies	Federal grants	Federal contracts				
	millions of dollars								
2011 [p]	13,032 [A]	468 [A]	168 [C]	377 [A]	67 [A]	153 [C]	32 [A]	1,663 [C]	**15,960** [A]
2010 [r]	12,112 [A]	799 [A]	119 [A]	325 [A]	101 [A]	166 [A]	18 [B]	1,827 [A]	**15,467** [A]
2009 [r]	12,987 [A]	431 [A]	149 [A]	266 [A]	38 [A]	148 [A]	15 [B]	2,003 [A]	**16,038** [A]
2008	13,175	789	165	284	35	71	44	2,082	**16,644**
2007	13,013	520	145	216	37	97	65	2,663	**16,756**
2006	13,283	463	173	221	38	155	28	2,113	**16,474**
2005	12,342	401	131	289	34	90	25	2,327	**15,638**
2004	12,018	350	149	228	43	59	18	2,280	**15,144**
2003	11,102	379	153	256	44	70	17	2,073	**14,094**
2002	10,757	426	170	231	69	53	17	1,822	**13,545**
2001	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**

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

Table 5-16
Total intramural research and development expenditures by sources of funds and by industry, 2011[p]

	Canadian performing companies	Federal government and other Canadian sources	Foreign sources	Total
	millions of dollars			
Total	**13,032** A	**1,265** C	**1,663** C	**15,960** A
Agriculture, forestry, fishing and hunting	**105** A	**x**	**x**	**112** A
Agriculture	x	x	x	90 A
Forestry and logging	x	x	0 A	15 A
Fishing, hunting and trapping	x	x	0 A	7 A
Mining and oil and gas extraction	**834** A	**x**	**x**	**966** A
Oil and gas extraction	x	x	x	839 A
Mining	x	4 E	x	126 A
Utilities	**178** A	**x**	**x**	**191** B
Electric power	159 A	x	x	165 B
Other utilities	20 A	x	x	25 A
Construction	**126** A	**3** A	**0** A	**129** A
Manufacturing	**6,255** A	F	**681** E	**7,368** A
Food	140 A	x	x	145 A
Beverage and tobacco	x	0 A	0 A	x
Textile	x	x	x	40 A
Wood products	83 A	2 A	0 A	85 A
Paper	x	x	0 A	117 A
Printing	x	x	0 A	45 B
Petroleum and coal products	x	x	0 A	x
Pharmaceutical and medicine	382 A	23 C	112 C	517 B
Other chemicals	252 A	x	x	299 C
Plastic products	123 A	x	x	126 A
Rubber products	x	x	0 A	18 C
Non-metallic mineral products	x	1 C	x	74 C
Primary metal (ferrous)	x	x	0 A	41 A
Primary metal (non-ferrous)	x	0 B	x	163 A
Fabricated metal products	188 A	2 A	5 A	194 A
Machinery	579 A	x	x	615 C
Computer and peripheral equipment	x	x	0 A	49 A
Communications equipment	1,304 A	2 D	156 A	1,462 A
Semiconductor and other electronic components	x	x	x	505 A
Navigational, measuring, medical and control instruments	287 A	x	x	354 A
Other computer and electronic products	x	x	x	24 A
Electrical equipment, appliance and components	125 A	x	x	143 A
Motor vehicle and parts	x	x	x	259 A
Aerospace products and parts	1,059 C	x	x	1,306 D
All other transportation equipment	x	x	x	123 A
Furniture and related products	38 A	0 A	0 A	38 A
Other manufacturing industries	172 A	21 B	4 D	198 A
Services	**5,534** A	**697** B	**963** A	**7,194** A
Wholesale trade	939 A	85 A	326 A	1,350 A
Retail trade	63 A	1 C	0 A	64 A
Transportation and warehousing	48 A	x	x	52 A
Information and cultural industries	964 A	50 B	129 A	1,143 A
Finance, insurance and real estate	230 A	x	x	234 C
Architectural, engineering and related services	339 A	59 A	27 B	424 A
Computer system design and related services	1,261 A	F	F	1,383 A
Management, scientific and technical consulting services	75 A	5 D	7 C	87 A
Scientific research and development services	1,170 A	400 A	409 A	1,980 A
Health care and social assistance	78 A	3 A	4 A	85 A
All other services	367 A	F	F	392 A

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

Table 5-17
Total intramural research and development expenditures by sources of funds and by country of control of performer, 2011[p]

	Canadian performing companies	Federal government	Provincial government	Other Canadian sources	Foreign sources	Total
	millions of dollars					
Total	**13,032** [A]	**444** [A]	**153** [C]	**668** [B]	**1,663** [C]	**15,960** [A]
Canada	9,303 [A]	357 [A]	98 [C]	413 [C]	F	10,482 [A]
United States	2,061 [A]	x	x	192 [C]	827 [A]	3,194 [A]
Other foreign	1,668 [A]	x	x	63 [B]	525 [A]	2,284 [A]

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

Table 5-18
Total intramural research and development expenditures by performing company revenue size

	2006	2007	2008	2009 [r]	2010 [r]	2011 [p]
	millions of dollars					
Total revenue size	**16,474**	**16,756**	**16,644**	**16,038** [A]	**15,467** [A]	**15,960** [A]
Industrial Non-profit organizations	226	194	227	200	193 [A]	209 [A]
Less than $1,000,000	1,217	1,425	1,303	1,387 [B]	1,400 [B]	1,130 [B]
$1,000,000 to $9,999,999	2,466	2,639	2,758	2,917 [A]	2,449 [A]	2,526 [A]
$10,000,000 to $49,999,999	2,064	2,309	2,341	2,223 [A]	2,177 [A]	2,178 [A]
$50,000,000 to $99,999,999	1,018	1,101	878	948 [A]	799 [B]	857 [B]
$100,000,000 to $399,999,999	2,018	2,155	2,098	1,746 [A]	1,541 [D]	1,952 [A]
$400,000,000 or greater	7,465	6,933	7,039	6,617 [A]	6,907 [A]	7,109 [A]

Table 5-19
Total intramural research and development expenditures by performing company employment size

	2007	2008	2009 [r]	2010 [r]	2011 [p]
	millions of dollars				
Total employment size	**16,756**	**16,644**	**16,038** [A]	**15,467** [A]	**15,960** [A]
Industrial non-profit organizations	194	227	200 [A]	193 [A]	209 [A]
1 to 49 employees	3,080	3,405	3,701 [A]	3,382 [A]	3,188 [A]
50 to 99 employees	1,410	1,336	1,418 [B]	1,246 [B]	1,300 [A]
100 to 199 employees	1,338	1,247	1,278 [A]	1,073 [A]	1,157 [B]
200 to 499 employees	1,869	1,614	1,661 [A]	1,460 [B]	1,604 [A]
500 to 999 employees	1,484	1,628	1,557 [A]	1,642 [A]	1,255 [A]
1,000 to 1,999 employees	2,003	1,688	1,575 [A]	1,793 [D]	1,548 [A]
Greater than 1,999 employees	5,379	5,499	4,647 [A]	4,677 [A]	5,699 [A]

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

Table 5-20
Total intramural research and development expenditures by field of science or technology

	2010	2011 [p]
	millions of dollars	
Total	**15,467** [A]	**15,960** [A]
Natural and formal sciences	**1,632** [A]	**1,905** [A]
Mathematics	42 [A]	61 [B]
Computer and information sciences	737 [A]	810 [A]
Physical sciences	107 [A]	83 [B]
Chemical sciences	326 [A]	282 [A]
Earth and related environmental sciences	213 [A]	485 [A]
Biological sciences	196 [A]	166 [B]
Other natural sciences	11 [A]	17 [A]
Engineering and technology	**11,783** [A]	**12,081** [A]
Civil engineering	157 [A]	142 [B]
Software engineering	1,259 [A]	2,543 [A]
Electrical engineering, electronic engineering and information technology	4,352 [A]	3,222 [A]
Mechanical engineering	2,652 [A]	2,698 [A]
Chemical engineering	333 [A]	389 [A]
Materials engineering	814 [A]	762 [A]
Medical engineering	71 [A]	76 [A]
Environmental engineering	957 [A]	689 [A]
Environmental biotechnology	15 [A]	14 [D]
Industrial biotechnology	77 [A]	26 [C]
Nano-technology	15 [A]	15 [B]
Other engineering and technologies	1,082 [A]	1,505 [A]
Medical and health sciences	**1,755** [A]	**1,684** [A]
Basic medicine	663 [A]	504 [A]
Clinical medicine	529 [A]	508 [A]
Health sciences	74 [A]	92 [A]
Medical biotechnology	201 [A]	335 [A]
Other medical sciences	288 [A]	245 [A]
Agricultural sciences	**296** [A]	**290** [A]
Agriculture, forestry, and fisheries	167 [A]	135 [B]
Animal and dairy science	60 [A]	53 [B]
Veterinary science	6 [A]	4 [B]
Agricultural biotechnology	34 [A]	54 [B]
Other agricultural sciences	30 [A]	44 [A]

Table 5-21
Total intramural research and development expenditures by major fields of science or technology and industry, 2011[p]

	Natural and formal sciences	Engineering and technology	Medical and health sciences	Agricultural sciences	Total all industries
	millions of dollars				
Total all industries	**1,905** A	**12,081** A	**1,684** A	**290** A	**15,960** A
Agriculture, forestry, fishing and hunting	**x**	**14** A	**x**	**89** A	**112** A
Agriculture	x	11 A	x	74 A	90 A
Forestry, logging and support activities for forestry	x	x	x	x	15 A
Fishing, hunting, trapping and animal aquaculture	1 A	x	x	x	7 A
Mining and oil and gas extraction	**83** A	**874** A	**0** A	**8** A	**966** A
Oil and gas extraction, contract drilling and related services	82 A	751 A	0 A	7 B	839 A
Mining and related support activities	F	124 A	0 A	1 A	126 A
Utilities	**x**	**163** A	**x**	**1** E	**191** B
Electric power generation, transmission and distribution	x	x	0 A	x	165 B
Other utilities	x	x	x	x	25 A
Construction	**6** A	**123** A	**0** A	**0** C	**129** A
Manufacturing	**675** A	**6,149** A	**454** A	**90** A	**7,368** A
Food manufacturing	x	x	x	x	145 A
Beverage and tobacco product manufacturing	x	x	0 A	x	x
Textiles	x	x	0 A	0 A	40 A
Wood product manufacturing	x	x	0 A	4 A	85 A
Paper manufacturing	x	x	x	x	117 A
Printing and related support activities	x	x	x	0 A	45 B
Petroleum and coal products manufacturing	x	x	0 A	x	x
Pharmaceutical and medicine manufacturing	x	x	394 A	x	517 B
Other chemicals	58 A	x	x	31 A	299 C
Plastic product manufacturing	x	x	0 A	0 A	126 A
Rubber product manufacturing	x	x	0 A	0 A	18 C
Non-metallic mineral product manufacturing	x	x	0 A	0 A	74 C
Primary metal (ferrous)	x	x	0 A	0 A	41 A
Primary metal (non-ferrous)	x	x	0 A	0 A	163 A
Fabricated metal product manufacturing	x	190 A	x	0 A	194 A
Machinery manufacturing	x	589 A	0 A	x	615 C
Computer and peripheral equipment manufacturing	x	x	0 A	x	49 A
Communications equipment manufacturing	6 A	1,456 A	0 A	0 A	1,462 A
Semiconductor and other electronic component manufacturing	x	495 A	0 A	x	505 A
Navigational, measuring, medical and control instrument manufacturing	x	303 A	x	x	354 A
Other computer and electronic products	x	x	0 A	0 A	24 A
Electrical equipment, appliance and component manufacturing	x	x	x	F	143 A
Motor vehicle and parts	1 B	258 A	0 A	0 A	259 A
Aerospace products and parts manufacturing	x	x	x	0 A	1,306 D
All other transportation equipment	x	x	0 A	x	123 A
Furniture and related product manufacturing	x	x	x	x	38 A
Other manufacturing industries	x	x	35 A	0 D	198 A
Services	**1,106** A	**4,759** A	**1,227** A	**103** C	**7,194** A
Wholesale trade	82 A	674 A	538 A	56 A	1,350 A
Retail trade	x	49 A	x	x	64 A
Transportation and warehousing	8 A	43 A	x	x	52 A
Information and cultural industries	x	919 A	x	x	1,143 A
Finance, insurance and real estate	91 A	139 A	x	x	234 C
Architectural, engineering and related services	68 A	347 A	6 C	3 D	424 A
Computer systems design and related services	406 A	945 A	31 A	1 B	1,383 A
Management, scientific and technical consulting services	28 B	53 A	x	x	87 A
Scientific research and development services	164 B	1,280 A	514 A	22 B	1,980 A
Health care and social assistance	x	11 A	68 A	x	85 A
All other services	58 D	299 B	F	F	392 A

Table 6-1
Current intramural research and development expenditures by industry

	2009 r	2010 r	2011 p	2012 p	2013 p
	millions of dollars				
Total all industries	**15,043** A	**14,548** A	**14,974** A	**15,026** A	**14,702** A
Agriculture, forestry, fishing and hunting	**120** A	**118** A	**104** A	**103** B	**103** C
Agriculture	103 A	98 A	83 A	84 B	82 C
Forestry, logging and support activities for forestry	7 A	9 A	15 A	12 B	F
Fishing, hunting, trapping and animal aquaculture	11 A	10 A	7 A	8 D	8 D
Mining and oil and gas extraction	**823** A	**849** A	**766** A	**658** B	**523** B
Oil and gas extraction, contract drilling and related services	x	x	641 A	494 B	x
Mining and related support activities	x	x	125 A	164 C	x
Total utilities	**162** A	**171** A	**x**	**x**	**x**
Electric power generation, transmission and distribution	x	x	x	x	x
Other utilities	x	x	24 A	F	23 D
Construction	**125** A	**104** B	**x**	**x**	**x**
Manufacturing	**7,308** A	**6,773** A	**6,987** A	**7,223** A	**7,101** A
Food manufacturing	169 A	162 A	141 A	136 B	139 B
Beverage and tobacco product manufacturing	18 A	15 A	x	x	x
Textiles	44 A	39 A	x	x	x
Wood product manufacturing	101 A	86 A	84 A	89 B	89 B
Paper manufacturing	77 A	139 A	115 A	96 D	89 E
Printing and related support activities	64 A	49 A	44 A	47 E	F
Petroleum and coal products manufacturing	x	x	x	x	x
Pharmaceutical and medicine manufacturing	608 A	629 A	495 A	505 A	496 A
Other chemicals	275 A	324 A	279 A	310 B	286 B
Plastic product manufacturing	139 A	115 A	116 A	118 B	119 C
Rubber product manufacturing	30 A	19 A	17 B	19 B	18 C
Non-metallic mineral product manufacturing	78 A	63 A	72 A	69 B	70 C
Primary metal (ferrous)	63 A	40 A	39 A	42 A	42 B
Primary metal (non-ferrous)	199 A	145 A	162 A	158 A	x
Fabricated metal product manufacturing	252 A	212 A	188 A	194 B	200 D
Machinery manufacturing	624 A	527 A	589 A	601 B	594 C
Computer and peripheral equipment manufacturing	63 A	48 A	46 A	50 B	53 B
Communications equipment manufacturing	1,416 A	x	1,316 A	1,457 A	1,351 A
Semiconductor and other electronic component manufacturing	497 A	507 A	488 A	481 A	497 A
Navigational, measuring, medical and control instrument manufacturing	416 A	425 A	340 A	332 A	319 B
Other computer and electronic products	21 A	26 A	24 A	26 C	25 D
Electrical equipment, appliance and component manufacturing	158 A	148 A	135 A	145 B	145 B
Motor vehicle and parts	296 A	286 A	252 A	256 B	258 C
Aerospace products and parts manufacturing	x	x	x	x	x
All other transportation equipment	x	141 A	119 A	139 A	139 C
Furniture and related product manufacturing	49 A	40 A	37 A	x	36 B
Other manufacturing industries	194 A	193 A	183 A	206 A	206 B
Services	**6,505** A	**6,533** A	**6,832** A	**6,756** A	**6,674** A
Wholesale trade	1,204 A	1,216 A	1,302 A	1,312 A	1,203 A
Retail trade	61 A	56 A	62 A	F	71 C
Transportation and warehousing	167 A	52 A	49 A	53 B	54 A
Information and cultural industries	1,076 A	1,108 A	1,063 A	1,081 B	1,108 A
Finance, insurance and real estate	315 A	242 A	217 A	213 C	222 D
Architectural, engineering and related services	394 A	377 A	411 A	386 A	395 B
Computer systems design and related services	1,139 A	1,255 A	1,324 A	1,339 A	1,278 B
Management, scientific and technical consulting services	66 A	74 A	81 A	F	84 C
Scientific research and development services	1,596 A	1,717 A	1,893 A	1,795 A	1,831 A
Health care and social assistance	107 A	90 A	82 A	78 B	77 D
All other services	381 A	346 A	348 B	344 B	352 C

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

Table 6-2
Current intramural research and development expenditures by industry and by type of expenditures, 2011[p]

	Wages and salaries	Other current expenditures	Total business enterprise research and development current expenditures
	millions of dollars		
Total all industries	**9,259** [A]	**5,714** [A]	**14,974** [A]
Agriculture, forestry, fishing and hunting	**65** [A]	**40** [A]	**104** [A]
Agriculture	50 [A]	33 [A]	83 [A]
Forestry, logging and support activities for forestry	10 [A]	5 [A]	15 [A]
Fishing, hunting, trapping and animal aquaculture	4 [A]	2 [A]	7 [A]
Mining and oil and gas extraction	**140** [A]	**626** [A]	**766** [A]
Oil and gas extraction, contract drilling and related services	107 [A]	533 [A]	641 [A]
Mining and related support activities	33 [A]	92 [A]	125 [A]
Total utilities	**111** [A]	**x**	**x**
Electric power generation, transmission and distribution	94 [A]	x	x
Other utilities	17 [A]	7 [A]	24 [A]
Construction	**79** [A]	**x**	**x**
Manufacturing	**3,965** [A]	**3,023** [A]	**6,987** [A]
Food manufacturing	96 [A]	45 [A]	141 [A]
Beverage and tobacco product manufacturing	x	x	x
Textiles	24 [A]	x	x
Wood product manufacturing	37 [A]	47 [A]	84 [A]
Paper manufacturing	43 [A]	72 [A]	115 [A]
Printing and related support activities	38 [A]	7 [A]	44 [A]
Petroleum and coal products manufacturing	x	x	x
Pharmaceutical and medicine manufacturing	224 [A]	271 [A]	495 [A]
Other chemicals	145 [A]	134 [A]	279 [A]
Plastic product manufacturing	84 [A]	31 [A]	116 [A]
Rubber product manufacturing	x	x	17 [B]
Non-metallic mineral product manufacturing	35 [A]	37 [A]	72 [A]
Primary metal (ferrous)	17 [A]	22 [A]	39 [A]
Primary metal (non-ferrous)	55 [A]	108 [A]	162 [A]
Fabricated metal product manufacturing	156 [A]	32 [A]	188 [A]
Machinery manufacturing	442 [A]	147 [B]	589 [A]
Computer and peripheral equipment manufacturing	37 [A]	9 [A]	46 [A]
Communications equipment manufacturing	803 [A]	512 [A]	1,316 [A]
Semiconductor and other electronic component manufacturing	378 [A]	110 [A]	488 [A]
Navigational, measuring, medical and control instrument manufacturing	244 [A]	96 [A]	340 [A]
Other computer and electronic products	x	x	24 [A]
Electrical equipment, appliance and component manufacturing	103 [A]	32 [A]	135 [A]
Motor vehicle and parts	173 [A]	79 [A]	252 [A]
Aerospace products and parts manufacturing	x	746 [D]	x
All other transportation equipment	81 [A]	38 [A]	119 [A]
Furniture and related product manufacturing	31 [A]	6 [B]	37 [A]
Other manufacturing industries	145 [A]	38 [A]	183 [A]
Services	**4,900** [A]	**1,933** [A]	**6,832** [A]
Wholesale trade	742 [A]	559 [A]	1,302 [A]
Retail trade	52 [A]	10 [A]	62 [A]
Transportation and warehousing	30 [A]	19 [A]	49 [A]
Information and cultural industries	898 [A]	166 [A]	1,063 [A]
Finance, insurance and real estate	153 [A]	64 [A]	217 [A]
Architectural, engineering and related services	342 [A]	69 [A]	411 [A]
Computer systems design and related services	1,221 [A]	103 [D]	1,324 [A]
Management, scientific and technical consulting services	69 [A]	13 [B]	81 [A]
Scientific research and development services	1,046 [A]	847 [A]	1,893 [A]
Health care and social assistance	63 [A]	20 [A]	82 [A]
All other services	285 [A]	63 [D]	348 [B]

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

Table 6-3
Current intramural research and development expenditures by province

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Total	**15,651**	**15,569** A	**15,043** A	**14,548** A	**14,974** A
Atlantic Canada	301	300 B	313 A	249 A	233 A
Newfoundland and Labrador	x	x	80 B	64 B	x
Prince Edward Island	x	x	11 D	10 D	x
Nova Scotia	x	x	100 B	83 B	75 B
New Brunswick	119	116 A	122 B	92 B	85 B
Quebec	4,665	4,597 A	4,530 B	4,459 B	4,429 B
Ontario	7,572	7,433 A	6,903 A	6,639 A	7,328 A
Manitoba	199	171 A	184 C	204 C	204 C
Saskatchewan	180	136 D	142 B	140 B	171 B
Alberta	1,223	1,372 A	1,407 A	1,344 A	1,105 A
British Columbia and Territories [1]	1,511	1,560 A	1,564 A	1,513 A	1,505 A

1. Includes Yukon, Northwest Territories and Nunavut.
Note(s): Components may not add to totals due to rounding.

Table 6-4
Current intramural research and development expenditures as a percentage of performing company revenues, by company revenue size

	2007	2008	2009 r	2010 r	2011 p
	percent				
Total	**1.7**	**1.7**	**1.6**	**1.8**	**1.7**
Less than $1,000,000	39.7	33.8	34.3	40.4	31.3
$1,000,000 to $9,999,999	6.9	6.6	6.7	6.9	6.9
$10,000,000 to $49,999,999	3.4	3.3	3.1	3.8	3.5
$50,000,000 to $99,999,999	2.8	2.2	2.3	2.4	2.3
$100,000,000 to $399,999,999	2.1	2.0	1.8	1.8	2.2
$400,000,000 or greater	0.9	1.0	0.9	1.0	1.0

Note(s): Revenue size is calculated for the year in which R&D expenditures occurred.

Table 6-5
Current intramural research and development expenditures as a percentage performing company revenues, by country of control

	2007	2008	2009 r	2010 r	2011 p
	percent				
Total country of control	**1.7**	**1.7**	**1.6**	**1.8**	**1.7**
Canada	1.9	2.0	1.8	1.9	1.8
Foreign	**1.4**	**1.4**	**1.4**	**1.6**	**1.5**
United States	1.4	1.6	1.5	1.5	1.5
Other foreign	1.5	1.0	1.2	1.7	1.6

Table 6-6
Current intramural research and development expenditures as a percentage of performing company revenues, by industry and by country of control, 2011[p]

	Canada	Foreign	Total country of control
	percent		
Total all industries	**1.8**	**1.5**	**1.7**
Agriculture, forestry, fishing and hunting	**0.8**	**9.3**	**1.0**
Agriculture	x	x	1.1
Forestry, logging and support activities for forestry	0.8	0.0	0.8
Fishing, hunting, trapping and animal aquaculture	x	x	2.4
Mining and oil and gas extraction	**0.8**	**0.5**	**0.7**
Oil and gas extraction, contract drilling and related services	0.8	0.6	0.7
Mining and related support activities	0.7	0.5	0.5
Utilities	**0.7**	**x**	**x**
Electric power generation, transmission and distribution	x	x	x
Other utilities	x	x	0.6
Construction	**1.2**	**x**	**x**
Manufacturing	**2.1**	**1.2**	**1.7**
Food manufacturing	0.4	0.1	0.3
Beverage and tobacco product manufacturing	1.5	x	x
Textiles	2.2	x	x
Wood product manufacturing	1.0	0.6	0.9
Paper manufacturing	1.4	0.6	0.9
Printing and related support activities	1.6	0.5	1.5
Petroleum and coal products manufacturing	x	x	x
Pharmaceutical and medicine manufacturing	4.9	6.5	5.8
Other chemicals	1.8	0.8	1.0
Plastic product manufacturing	0.8	0.5	0.7
Rubber product manufacturing	1.3	0.2	0.3
Non-metallic mineral product manufacturing	1.5	0.7	0.9
Primary metal (ferrous)	1.1	0.3	0.3
Primary metal (non-ferrous)	0.4	1.8	1.0
Fabricated metal product manufacturing	1.6	0.9	1.5
Machinery manufacturing	3.1	2.2	2.9
Computer and peripheral equipment manufacturing	4.8	5.2	5.0
Communications equipment manufacturing	18.6	11.8	17.1
Semiconductor and other electronic component manufacturing	x	x	5.3
Navigational, measuring, medical and control instrument manufacturing	8.5	9.1	8.8
Other computer and electronic products	x	x	7.2
Electrical equipment, appliance and component manufacturing	1.8	1.2	1.5
Motor vehicle and parts	0.6	0.2	0.3
Aerospace products and parts manufacturing	x	x	x
All other transportation equipment	x	x	2.0
Furniture and related product manufacturing	x	x	1.2
Other manufacturing industries	2.3	2.0	2.2
Services	**1.8**	**3.0**	**2.1**
Wholesale trade	1.7	1.7	1.7
Retail trade	x	x	0.5
Transportation and warehousing	x	x	0.2
Information and cultural industries	2.4	5.4	2.7
Finance, insurance and real estate	0.2	0.4	0.2
Architectural, engineering and related services	1.8	2.7	1.9
Computer systems design and related services	7.9	9.8	8.3
Management, scientific and technical consulting services	6.1	0.8	5.5
Scientific research and development services	23.5	25.7	24.6
Health care and social assistance	x	x	6.6
All other services	1.4	0.9	1.3

Table 7
Capital intramural research and development expenditures - by industry

	2009 r	2010 r	2011 p	2012 p	2013 p
	millions of dollars				
Total all industries	**995** A	**919** A	**986** A	**1,037** B	**919** B
Agriculture, forestry, fishing and hunting	**7** A	**8** A	**8** A	**7** B	**6** E
Agriculture	5 A	7 A	7 A	7 A	6 B
Forestry, logging and support activities for forestry	1 A	0 B	1 A	F	F
Fishing, hunting, trapping and animal aquaculture	1 A	0 A	0 A	0 E	0 B
Mining and oil and gas extraction	**106** A	**110** A	**200** A	**227** B	**234** C
Oil and gas extraction, contract drilling and related services	x	x	199 A	226 B	x
Mining and related support activities	x	x	F	F	x
Total utilities	**25** A	**16** A	**x**	**x**	**x**
Electric power generation, transmission and distribution	x	x	x	x	x
Other utilities	x	x	1 D	1 D	1 E
Construction	**10** E	**4** D	**x**	**x**	**x**
Manufacturing	**457** A	**449** A	**381** B	**337** C	**248** D
Food manufacturing	14 A	7 A	5 A	7 A	5 B
Beverage and tobacco product manufacturing	1 A	0 A	0 A	0 E	0 D
Textiles	1 A	0 A	x	x	x
Wood product manufacturing	2 B	1 D	1 A	1 A	2 A
Paper manufacturing	2 A	7 A	2 A	7 A	1 A
Printing and related support activities	2 C	2 A	1 D	1 B	1 A
Petroleum and coal products manufacturing	x	x	x	x	x
Pharmaceutical and medicine manufacturing	63 A	40 A	21 C	39 C	12 C
Other chemicals	20 D	12 B	20 A	12 C	12 D
Plastic product manufacturing	8 C	12 A	11 A	6 A	6 C
Rubber product manufacturing	F	1 A	F	F	1 C
Non-metallic mineral product manufacturing	5 A	14 A	2 B	2 C	2 D
Primary metal (ferrous)	1 C	2 C	1 A	1 A	1 A
Primary metal (non-ferrous)	2 A	5 A	1 A	0 A	x
Fabricated metal product manufacturing	33 A	10 A	6 A	6 A	6 B
Machinery manufacturing	34 B	13 A	26 B	22 B	24 B
Computer and peripheral equipment manufacturing	1 A	3 A	3 A	3 B	4 A
Communications equipment manufacturing	110 A	x	147 A	84 A	48 A
Semiconductor and other electronic component manufacturing	14 A	17 C	17 A	15 A	15 A
Navigational, measuring, medical and control instrument manufacturing	11 A	12 B	14 A	15 A	16 A
Other computer and electronic products	0 A	0 A	0 A	F	F
Electrical equipment, appliance and component manufacturing	5 B	6 B	9 A	10 B	8 C
Motor vehicle and parts	14 A	25 A	7 A	10 B	9 D
Aerospace products and parts manufacturing	x	x	x	x	x
All other transportation equipment	x	4 A	5 A	4 A	5 D
Furniture and related product manufacturing	1 A	1 A	1 E	x	F
Other manufacturing industries	10 A	14 A	15 B	15 C	18 A
Services	**391** A	**331** A	**362** B	**418** C	**377** A
Wholesale trade	74 A	54 A	48 A	54 A	49 A
Retail trade	1 A	2 A	2 A	3 B	2 B
Transportation and warehousing	1 A	6 A	3 A	F	1 C
Information and cultural industries	95 A	70 A	80 A	81 A	87 C
Finance, insurance and real estate	57 D	23 A	17 A	14 A	17 A
Architectural, engineering and related services	10 A	11 B	13 A	15 B	21 B
Computer systems design and related services	39 A	37 A	59 D	52 E	55 D
Management, scientific and technical consulting services	3 B	6 A	6 B	7 E	7 D
Scientific research and development services	81 A	94 A	87 A	138 A	94 A
Health care and social assistance	8 B	3 B	3 A	3 B	4 A
All other services	21 A	25 A	F	F	41 B

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

Table 8-1
Personnel engaged in research and development by industry group and by region, 2011[p]

	Atlantic Canada	Quebec	Ontario	Manitoba	Saskat-chewan	Alberta	British Columbia and Territories [1]	Total
	number							
Total all industries	**3,242** A	**45,872** A	**64,739** A	**2,090** A	**1,575** A	**7,850** A	**15,054** A	**140,423** A
Agriculture, forestry, fishing and hunting	126 A	599 A	533 A	92 A	79 A	29 B	280 A	1,738 A
Mining and oil and gas extraction	105 A	167 A	201 A	2 A	78 A	1,207 A	53 C	1,814 A
Utilities	21 D	631 A	538 A	F	14 D	43 D	46 D	1,303 B
Construction	F	549 C	813 B	F	F	201 E	145 E	1,821 A
Manufacturing	929 A	20,011 A	30,292 A	667 A	539 A	1,794 A	3,932 A	58,164 A
Services	2,041 A	23,915 A	32,362 A	1,297 A	795 B	4,576 A	10,597 A	75,583 A

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 8-2
Personnel engaged in research and development by province and by occupational category, 2011[p]

	Research and development professionals	Research and development technical and administrative support staff [1]	Total research and development personnel
	number		
Total	**93,443** A	**46,979**	**140,423** A
Atlantic Canada	2,018 A	1,224 A	3,242 A
Newfoundland and Labrador	470 A	255 A	726 A
Prince Edward Island	111 B	91 A	202 B
Nova Scotia	817 A	367 A	1,184 A
New Brunswick	620 A	511 A	1,131 A
Quebec	27,727 A	18,145 A	45,872 A
Ontario	45,897 A	18,843 A	64,739 A
Manitoba	1,213 A	877 A	2,090 A
Saskatchewan	892 A	684 A	1,575 A
Alberta	5,137 A	2,713 A	7,850 A
British Columbia and Territories [2]	10,559 A	4,495 A	15,054 A

1. Includes technicians and other.
2. 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 8-3
Personnel engaged in research and development by industry and by occupationnal category, 2011[p]

	Research and development professionals	Research and development technicians and technologists	Research and development other support staff	Total research and development personnel
	number			
Total all industries	**93,443** A	**37,912** A	**9,067** A	**140,423** A
Agriculture, forestry, fishing and hunting	**805** A	**732** A	**201** A	**1,738** A
Agriculture	589 A	659 A	176 A	1,424 A
Forestry, logging and support activities for forestry	154 A	36 A	18 A	208 A
Fishing, hunting, trapping and animal aquaculture	62 A	37 A	7 A	106 A
Mining and oil and gas extraction	**1,165** A	**560** B	**90** D	**1,814** A
Oil and gas extraction, contract drilling and related services	939 A	328 A	77 A	1,344 A
Mining and related support activities	226 C	232 C	F	470 C
Total utilities	**772** D	**447** C	**F**	**1,303** B
Electric power generation, transmission and distribution	574 D	x	x	975 B
Other utilities	198 B	x	x	328 B
Construction	**928** B	**753** B	**140** E	**1,821** A
Manufacturing	**37,525** A	**16,168** A	**4,472** A	**58,164** A
Food manufacturing	1,019 A	725 A	198 A	1,942 A
Beverage and tobacco product manufacturing	82 A	41 A	18 A	141 A
Textiles	221 A	210 A	54 A	485 A
Wood product manufacturing	300 A	320 A	77 A	697 A
Paper manufacturing	477 A	348 A	60 A	885 A
Printing and related support activities	351 A	411 A	68 B	830 B
Petroleum and coal products manufacturing	257 A	26 A	3 B	286 A
Pharmaceutical and medicine manufacturing	1,645 A	770 A	692 A	3,108 A
Other chemicals	1,343 A	817 A	179 A	2,338 A
Plastic product manufacturing	847 A	696 A	189 A	1,732 A
Rubber product manufacturing	156 A	55 A	18 A	229 A
Non-metallic mineral product manufacturing	420 A	230 A	45 A	696 B
Primary metal (ferrous)	160 A	90 A	11 A	261 A
Primary metal (non-ferrous)	395 A	186 A	103 A	684 A
Fabricated metal product manufacturing	1,711 A	1,427 A	313 A	3,451 A
Machinery manufacturing	4,274 A	2,476 A	467 A	7,217 A
Computer and peripheral equipment manufacturing	413 A	98 A	21 A	531 A
Communications equipment manufacturing	8,133 A	537 A	262 A	8,932 A
Semiconductor and other electronic component manufacturing	3,267 A	799 A	229 A	4,295 A
Navigational, measuring, medical and control instrument manufacturing	2,722 A	767 A	164 A	3,652 A
Other computer and electronic products	285 A	54 A	18 A	357 A
Electrical equipment, appliance and component manufacturing	1,308 B	492 A	147 A	1,947 D
Motor vehicle and parts	1,241 A	810 A	250 A	2,301 A
Aerospace products and parts manufacturing	3,938 A	1,756 A	473 A	6,167 A
All other transportation equipment	727 A	584 A	61 A	1,372 A
Furniture and related product manufacturing	323 A	290 A	111 A	724 A
Other manufacturing industries	1,511 A	1,152 A	241 A	2,904 A
Services	**52,249** A	**19,253** A	**4,081** A	**75,583** A
Wholesale trade	7,022 A	2,338 A	689 A	10,049 A
Retail trade	631 A	377 A	67 A	1,075 A
Transportation and warehousing	307 A	179 A	53 A	539 A
Information and cultural industries	7,965 A	3,654 A	912 A	12,531 A
Finance, insurance and real estate	1,765 A	1,139 A	114 A	3,018 A
Architectural, engineering and related services	4,952 A	1,484 A	230 A	6,666 A
Computer systems design and related services	13,648 A	4,395 A	651 B	18,694 A
Management, scientific and technical consulting services	1,030 A	301 A	64 A	1,395 C
Scientific research and development services	10,813 A	3,374 A	976 C	15,163 A
Health care and social assistance	896 A	412 A	78 A	1,387 A
All other services	3,220 A	1,598 A	248 A	F

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

Table 8-4
Personnel engaged in research and development by occupational category

	2007	2008	2009 r	2010 r	2011 p
	number				
Total research and development personnel	**167,692**	**172,744** D	**155,172** A	**140,324** A	**140,423** A
Research and development professionals	94,761	98,387 A	93,357 A	92,156 A	93,443 A
Research and development technicians and technologists	52,117	52,075 A	47,187 A	37,237 A	37,912 A
Research and development other support staff	20,814	22,282 A	14,628 A	10,931 A	9,067 A

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

Table 8-5
Personnel engaged in research and development by field of science or technology

	2010	2011 p
	number	
Total	**15,467** A	**15,960** A
Natural and formal sciences	**19,367** A	**19,391** A
Mathematics	**594** A	**514** A
Computer and information sciences	11,724 A	11,761 A
Physical sciences	1,418 A	1,154 B
Chemical sciences	2,829 A	2,643 A
Earth and related environmental sciences	1,192 A	1,583 A
Biological sciences	1,479 A	1,595 A
Other natural sciences	132 A	141 A
Engineering and technology	**106,532** A	**106,497** A
Civil engineering	1,740 A	1,736 A
Software engineering	16,378 A	26,451 A
Electrical engineering, electronic engineering and information technology	36,298 A	27,849 A
Mechanical engineering	25,783 A	24,062 A
Chemical engineering	2,483 A	2,820 A
Materials engineering	8,602 A	7,536 A
Medical engineering	896 A	951 A
Environmental engineering	2,921 A	2,919 A
Environmental biotechnology	200 A	175 B
Industrial biotechnology	691 A	393 A
Nano-technology	129 A	147 A
Other engineering and technologies	10,410 A	11,457 A
Medical and health sciences	**11,108** A	**11,335** A
Basic medicine	4,265 A	3,404 A
Clinical medicine	2,378 A	2,310 A
Health sciences	658 A	933 A
Medical biotechnology	1,693 A	2,340 A
Other medical sciences	2,113 A	2,348 A
Agricultural sciences	**3,316** A	**3,200** A
Agriculture, forestry, and fisheries	1,899 A	1,779 A
Animal and dairy science	579 A	508 A
Veterinary science	77 A	76 A
Agricultural biotechnology	427 A	492 A
Other agricultural sciences	335 A	344 A

Table 8-6
Personnel engaged in research and development by major fields of science or technology and industry, 2011[p]

	Natural and formal sciences	Engineering and technology	Medical and health sciences	Agricultural sciences	Total
	number				
Total all industries	**19,391** A	**106,497** A	**11,335** A	**3,200** A	**15,960** A
Agriculture, forestry, fishing and hunting	**x**	**236** A	**x**	**1,342** A	**112** A
Agriculture	89 A	191 A	5 E	1,139 A	90 A
Forestry, logging and support activities for forestry	x	x	x	x	15 A
Fishing, hunting, trapping and animal aquaculture	15 A	x	x	x	7 A
Mining and oil and gas extraction	**170** C	**1,619** A	**0** A	**25** B	**966** A
Oil and gas extraction, contract drilling and related services	148 A	1,189 A	0 A	7 D	839 A
Mining and related support activities	F	430 B	0 A	18 A	126 A
Utilities	**x**	**1,150** A	**x**	**F**	**191** B
Electric power generation, transmission and distribution	x	x	0 A	x	165 B
Other utilities	x	x	x	x	25 A
Construction	**102** A	**1,711** A	**0** A	**8** C	**129** A
Manufacturing	**3,287** A	**51,050** A	**3,045** A	**783** A	**7,368** A
Food manufacturing	83 A	1,411 A	18 A	430 A	145 A
Beverage and tobacco product manufacturing	x	x	0 A	23 A	x
Textiles	27 A	458 A	0 A	0 A	40 A
Wood product manufacturing	9 A	660 A	0 A	28 A	85 A
Paper manufacturing	x	844 A	x	x	117 A
Printing and related support activities	x	688 A	x	0 A	45 B
Petroleum and coal products manufacturing	x	241 A	0 A	x	x
Pharmaceutical and medicine manufacturing	603 A	121 A	2,374 A	11 A	517 B
Other chemicals	600 A	1,533 A	29 B	177 A	299 C
Plastic product manufacturing	123 A	1,609 A	0 A	0 A	126 A
Rubber product manufacturing	29 A	199 A	0 A	0 A	18 C
Non-metallic mineral product manufacturing	33 B	663 A	0 A	0 A	74 C
Primary metal (ferrous)	3 A	258 A	0 A	0 A	41 A
Primary metal (non-ferrous)	x	x	0 A	0 A	163 A
Fabricated metal product manufacturing	77 A	3,369 A	x	x	194 A
Machinery manufacturing	275 A	6,850 A	6 A	86 A	615 C
Computer and peripheral equipment manufacturing	x	467 A	0 A	x	49 A
Communications equipment manufacturing	92 A	8,840 A	0 A	0 A	1,462 A
Semiconductor and other electronic component manufacturing	x	4,152 A	0 A	x	505 A
Navigational, measuring, medical and control instrument manufacturing	429 A	3,063 A	x	x	354 A
Other computer and electronic products	44 A	313 A	0 A	0 A	24 A
Electrical equipment, appliance and component manufacturing	F	1,788 A	x	x	143 A
Motor vehicle and parts	14 B	2,287 A	0 A	0 A	259 A
Aerospace products and parts manufacturing	x	x	x	0 A	1,306 D
All other transportation equipment	x	1,364 A	0 A	x	123 A
Furniture and related product manufacturing	13 A	702 A	x	x	38 A
Other manufacturing industries	178 A	2,280 A	444 A	3 C	198 A
Services	**15,548** A	**50,732** A	**8,267** A	**1,037** A	**7,194** A
Wholesale trade	1,077 A	6,767 A	1,795 A	409 A	1,350 A
Retail trade	170 A	815 A	45 B	45 B	64 A
Transportation and warehousing	x	440 A	x	x	52 A
Information and cultural industries	2,425 A	9,806 A	x	x	1,143 A
Finance, insurance and real estate	1,535 A	1,431 A	x	x	234 C
Architectural, engineering and related services	1,565 A	4,992 A	50 B	59 A	424 A
Computer systems design and related services	5,512 A	12,917 A	248 A	16 B	1,383 A
Management, scientific and technical consulting services	464 B	795 A	86 C	50 E	87 A
Scientific research and development services	1,681 A	8,855 A	4,352 A	275 A	1,980 A
Health care and social assistance	x	170 A	1,100 A	x	85 A
All other services	948 A	3,745 A	265 B	110 D	392 A

Table 9
Professional personnel engaged in research and development, by degree level

	Bachelors	Masters	Doctorates	College	None	Total
	number					
2011 p	54,550 A	17,155 A	8,558 A	7,203 A	5,978 A	**93,443** A
2010 r	55,032 A	16,609 A	7,912 A	7,703 B	4,899 A	**92,156** A
2009 r	57,503 A	13,989 A	6,924 A	10,174 A	4,767 A	**93,357** A
2008	69,774 C	18,319 D	10,294 D	…	…	**98,387** A
2007	73,512	14,832	6,417	…	…	**94,761**

Note(s): Data are estimated for all performing companies not surveyed directly, i.e. all data points taken from performers for whom data were obtained through the tax data (see Survey Methodology). Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 10-1
Total extramural payments for research and development, by industry and by year

	2007	2008	2009 r	2010 r	2011 p
	millions of dollars				
Total all industries	**4,424**	**3,817**	**3,681** A	**2,898** A	**2,792** A
Agriculture, forestry, fishing and hunting	**26**	**16**	**21** A	**17** A	**F**
Agriculture	9	9	13 A	11 A	F
Forestry, logging and support activities for forestry	x	6	4 A	2 A	4 A
Fishing, hunting, trapping and animal aquaculture	x	2	3 A	3 A	2 A
Mining and oil and gas extraction	**54**	**86**	**98** A	**145** B	**132** D
Oil and gas extraction, contract drilling and related services	40	66	65 A	118 B	99 E
Mining and related support activities	14	19	33 A	27 D	34 A
Utilities	**101**	**104**	**106** A	**98** D	**F**
Electric power generation, transmission and distribution	91	97	100 A	91 D	F
Other utilities	10	6	7 A	7 A	5 A
Construction	**13**	**14**	**25** D	**17** A	**38** A
Manufacturing	**1,910**	**1,256**	**1,193** A	**806** A	**904** A
Food manufacturing	20	115	26 A	24 A	16 D
Beverage and tobacco product manufacturing	8	3	4 A	3 A	2 A
Textiles	3	2	3 A	2 A	2 A
Wood product manufacturing	21	21	21 A	11 A	12 A
Paper manufacturing	19	16	15 A	13 A	12 A
Printing and related support activities	x	x	3 A	2 A	6 A
Petroleum and coal products manufacturing	60	x	12 A	12 A	94 D
Pharmaceutical and medicine manufacturing	557	394	457 A	170 A	104 A
Other chemicals	70	61	107 B	86 A	49 A
Plastic product manufacturing	11	13	19 C	15 A	14 A
Rubber product manufacturing	10	5	3 A	2 A	1 A
Non-metallic mineral product manufacturing	7	5	7 E	9 A	6 A
Primary metal (ferrous)	x	4	5 B	2 A	3 A
Primary metal (non-ferrous)	53	35	17 A	20 A	18 A
Fabricated metal product manufacturing	21	22	26 A	22 A	16 A
Machinery manufacturing	56	55	59 A	47 A	56 D
Computer and peripheral equipment manufacturing	6	8	4 A	3 A	4 A
Communications equipment manufacturing	127	162	144 A	86 A	102 A
Semiconductor and other electronic component manufacturing	x	17	14 A	15 A	15 A
Navigational, measuring, medical and control instrument manufacturing	45	48	32 A	42 A	81 A
Other computer and electronic products	x	x	2 E	2 A	2 A
Electrical equipment, appliance and component manufacturing	21	16	21 A	15 A	10 A
Motor vehicle and parts	372	100	79 C	68 C	84 A
Aerospace products and parts manufacturing	97	59	70 B	97 A	159 A
All other transportation equipment	x	11	13 D	11 A	8 A
Furniture and related product manufacturing	3	4	5 A	5 A	3 A
Other manufacturing industries	17	21	25 A	21 A	26 A
Services	**2,320**	**2,342**	**2,238** A	**1,816** A	**1,593** A
Wholesale trade	301	579	611 A	402 A	300 A
Retail trade	17	18	15 A	16 A	14 A
Transportation and warehousing	63	54	49 A	27 A	18 A
Information and cultural industries	706	585	553 B	532 A	467 A
Finance, insurance and real estate	127	111	123 A	91 A	64 E
Architectural, engineering and related services	64	58	84 A	139 A	58 A
Computer systems design and related services	175	141	154 C	145 A	212 A
Management, scientific and technical consulting services	19	14	21 A	26 A	23 A
Scientific research and development services	709	666	511 A	345 A	317 A
Health care and social assistance	72	44	36 A	27 A	32 A
All other services	66	71	81 A	68 A	87 A

Note(s): Extramural payments are expenditures made for R&D performed by other organizations in Canada and/or in other countries. Other organizations include parent or affiliated companies, other non-related companies, private non-profit organizations, universities, hospitals, industrial and provincial research organizations, and other organizations including governments and individuals. Extramural R&D payments include expenditures by companies that performed R&D and companies that only made payments for R&D to other organizations. Components may not add to totals due to rounding.

Table 10-2
Total extramural payments for research and development, by industry and by location of recipient, 2011p

	Canada	Foreign	Total location of recipient
	millions of dollars		
Total all industries	**2,379** A	**412** A	**2,792** A
Agriculture, forestry, fishing and hunting	**x**	**x**	**F**
Agriculture	x	x	**F**
Forestry, logging and support activities for forestry	4 A	0 A	**4** A
Fishing, hunting, trapping and animal aquaculture	x	x	**2** A
Mining and oil and gas extraction	**x**	**x**	**132** D
Oil and gas extraction, contract drilling and related services	96 E	3 B	**99** E
Mining and related support activities	x	x	**34** A
Utilities	**x**	**x**	**F**
Electric power generation, transmission and distribution	F	2 A	**F**
Other utilities	x	x	**5** A
Construction	**x**	**x**	**38** A
Manufacturing	**725** A	**179** A	**904** A
Food manufacturing	x	x	**16** D
Beverage and tobacco product manufacturing	2 A	0 A	**2** A
Textiles	x	x	**2** A
Wood product manufacturing	x	x	**12** A
Paper manufacturing	12 A	0 A	**12** A
Printing and related support activities	6 A	0 A	**6** A
Petroleum and coal products manufacturing	x	x	**94** D
Pharmaceutical and medicine manufacturing	84 A	20 A	**104** A
Other chemicals	x	x	**49** A
Plastic product manufacturing	14 A	0 A	**14** A
Rubber product manufacturing	1 A	0 A	**1** A
Non-metallic mineral product manufacturing	6 A	0 A	**6** A
Primary metal (ferrous)	x	x	**3** A
Primary metal (non-ferrous)	x	x	**18** A
Fabricated metal product manufacturing	x	x	**16** A
Machinery manufacturing	x	x	**56** D
Computer and peripheral equipment manufacturing	x	x	**4** A
Communications equipment manufacturing	x	x	**102** A
Semiconductor and other electronic component manufacturing	x	x	**15** A
Navigational, measuring, medical and control instrument manufacturing	x	x	**81** A
Other computer and electronic products	2 A	0 A	**2** A
Electrical equipment, appliance and component manufacturing	x	x	**10** A
Motor vehicle and parts	x	x	**84** A
Aerospace products and parts manufacturing	x	x	**159** A
All other transportation equipment	x	x	**8** A
Furniture and related product manufacturing	3 A	0 A	**3** A
Other manufacturing industries	22 A	4 A	**26** A
Services	**1,368** A	**225** B	**1,593** A
Wholesale trade	290 A	10 A	**300** A
Retail trade	x	x	**14** A
Transportation and warehousing	x	x	**18** A
Information and cultural industries	388 A	79 A	**467** A
Finance, insurance and real estate	x	x	**64** E
Architectural, engineering and related services	x	x	**58** A
Computer systems design and related services	160 A	51 D	**212** A
Management, scientific and technical consulting services	x	x	**23** A
Scientific research and development services	249 A	67 A	**317** A
Health care and social assistance	x	x	**32** A
All other services	x	x	**87** A

Note(s): Extramural payments are expenditures made for R&D performed by other organizations in Canada and/or in other countries. Other organizations include parent or affiliated companies, other non-related companies, private non-profit organizations, universities, hospitals, industrial and provincial research organizations, and other organizations including governments and individuals. Extramural R&D payments include expenditures by companies that performed R&D and companies that only made payments for R&D to other organizations. Components may not add to totals due to rounding. Tax data include extramural payments for R&D in Canada only; extramural payments for R&D outside of Canada were imputed for these records (see Survey Methodology).

Table 11
Foreign receipts and payments for technological services by research and development and other

	Receipts			Payments			Balance		
	Research and development, foreign receipts	Other foreign receipts	Total foreign receipts	Research and development, foreign payments	Other foreign payments	Total foreign payments	Research and development, balance	Other balance	Total balance
	millions of dollars								
2011 p	1,663	867	2,530	412	339	751	1,251	528	1,779
2010 r	1,827	1,239	3,066	375	207	582	1,452	1,032	2,484
2009 r	2,003	634	2,637	627	315	941	1,376	320	1,696
2008 r	2,082	857	2,939	873	239	1,112	1,209	619	1,827
2007	2,663	709	3,372	1,302	339	1,641	1,361	370	1,731
2006	2,113	721	2,834	1,054	336	1,390	1,059	385	1,444
2005	2,327	754	3,081	1,146	317	1,463	1,181	438	1,618
2004	2,280	1,260	3,539	1,127	401	1,528	1,153	859	2,012
2003	2,073	1,509	3,582	1,149	443	1,592	925	1,066	1,991
2002	1,822	1,619	3,441	1,076	684	1,759	747	935	1,682

Note(s): Data are from the Research and Development in Canadian Industry respondents only. Components may not add to totals due to rounding.

Table 12
Expenditures made and payments received for intellectual property and other technology related services, 2011p

	Expenditures made	Payments received
	millions of dollars	
Total intellectual property and other technology assistance	**751**	**1,266**
Patents	439	736
Copyrights	1	x
Trademarks	20	x
Industrial designs and intergrated circuit topography designs	7	14
Technical assistance, industrial processes and know-how	284	514

Note(s): Data are from the Research and Development in Canadian Industry respondents only. Components may not add to totals due to rounding. Personnel counts are reported as full-time equivalent.

Table 13
Energy research and development expenditures and extramural payments made outside of Canada, 2011[p]

	Total intramural research and development	Total extramural payments outside of Canada
	millions of dollars	
Total energy	**1,708**	**16**
Fossil fuels	**1,191**	**12**
Crude oils and natural gas	553	2
Oil sands and heavy crude oil	577	x
Refining, processing and upgrading	53	x
Coal production, preparation and processing	x	0
Transportation of fossil fuels	x	x
Renewable energy resources	**106**	**0**
Solar	4	x
Wind-energy	4	x
Bio-energy	54	x
Hydro	35	x
Other renewable energy	9	x
Nuclear fission and fusion	**68**	**x**
Electric Power	**91**	**x**
Generation in utility sector	x	x
Combine heat and power in industry, buildings	x	x
Electricity transmission, distribution and storage	75	x
Hydrogen and fuel cells	**35**	**x**
Hydrogen	12	0
Fuel cells	23	x
Energy efficiency	**85**	**1**
Industry	47	x
Residential, institutional and commercial	11	x
Transportation of fossil fuels	13	x
Other energy efficiency	13	0
Other related technologies	**132**	**1**

Note(s): Data are from the Energy Research and Development expenditures by Area of Technology survey. Components may not add to totals due to rounding.

Table 14-1
Research and development performers by industry and by country of control, 2010

	Canada	Foreign	Total
	number		
Total	**23,415**	**1,050**	**24,465**
Agriculture, forestry, fishing and hunting	**x**	**x**	**976**
Agriculture	x	x	**844**
Forestry and logging	x	x	**82**
Fishing, hunting and trapping	x	x	**50**
Mining and oil and gas extraction	**231**	**45**	**276**
Oil and gas extraction	156	25	**181**
Mining	75	20	**95**
Utilities	**x**	**x**	**157**
Electric power	x	x	**37**
Other utilities	x	x	**120**
Construction	**x**	**x**	**888**
Manufacturing	**8,994**	**555**	**9,549**
Food	701	33	**734**
Beverage and tobacco	x	x	**97**
Textile	x	x	**173**
Wood products	x	x	**326**
Paper	120	25	**145**
Printing	x	x	**395**
Petroleum and coal products	x	x	**47**
Pharmaceutical and medicine	92	23	**115**
Other chemicals	427	60	**487**
Plastic products	510	44	**554**
Rubber products	x	x	**71**
Non-metallic mineral products	217	26	**243**
Primary metal (ferrous)	x	x	**79**
Primary metal (non-ferrous)	71	16	**87**
Fabricated metal products	1,367	33	**1,400**
Machinery	1,491	56	**1,547**
Computer and peripheral equipment	x	x	**85**
Communications equipment	135	15	**150**
Semiconductor and other electronic components	x	x	**182**
Navigational, measuring, medical and control instruments	326	29	**355**
Other computer and electronic products	x	x	**57**
Electrical equipment, appliance and components	305	25	**330**
Motor vehicle and parts	302	33	**335**
Aerospace products and parts	77	15	**92**
All other transportation equipment	x	x	**101**
Furniture and related products	x	x	**378**
Other manufacturing industries	964	20	**984**
Services	**12,197**	**422**	**12,619**
Wholesale trade	2,024	119	**2,143**
Retail trade	x	x	**610**
Transportation and warehousing	x	x	**210**
Information and cultural industries	965	52	**1,017**
Finance, insurance and real estate	x	x	**412**
Architectural, engineering and related services	1,008	40	**1,048**
Computer system design and related services	3,156	85	**3,241**
Management, scientific and technical consulting services	x	x	**561**
Scientific research and development services	931	53	**984**
Health care and social assistance	x	x	**397**
All other services	1,955	41	**1,996**

Table 14-2
Research and development performers by province, 2006 to 2010

	2006 r	2007 r	2008 r	2009 r	2010	Absolute change from 2010 to 2006	Change from 2006 to 2010
	number						percent
Canada - total	**21,142**	**23,172**	**24,753**	**25,915**	**24,465**	**3,323**	**15.7**
Total - Multi-province	**22,483**	**24,628**	**26,440**	**27,353**	**25,642**	**3,159**	**14.1**
Atlantic Canada	755	879	1,097	1,150	905	150	19.9
Newfoundland and Labrador	142	148	178	180	145	3	2.1
Prince Edward Island	55	67	96	102	77	22	40.0
Nova Scotia	304	387	480	508	396	92	30.3
New Brunswick	254	277	343	360	287	33	13.0
Quebec	8,825	9,202	9,114	9,136	7,979	-846	-9.6
Ontario	8,987	9,979	10,694	10,820	11,617	2,630	29.3
Manitoba	397	440	531	592	464	67	16.9
Saskatchewan	225	287	369	446	358	133	59.1
Alberta	1,279	1,446	1,740	1,963	1,627	348	27.2
British Columbia [1]	2,015	2,395	2,895	3,246	2,692	677	33.6

1. Includes Yukon, Northwest Territories and Nunavut.

Note(s): A new imputation system was implemented for reference year 2008. This imputation system incorporated information on firm structure obtained from Statistics Canada's Business Register for all records which were obtained through administrative sources. This change does not impact national totals, but had the effect of increasing the number of units reporting R&D within provinces. Caution should be used when making any comparison of counts of provincial firm with R&D activities.

Table 14-3
Research and development performers as a percentage of enterprises with one or more employees, 2006 to 2010

	2006	2007	2008	2009 r	2010 p
	percent				
Total	**2.2**	**2.4**	**2.5**	**2.6**	**2.4**
Agriculture, forestry, fishing and hunting	**1.6**	**2.0**	**2.2**	**2.2**	**2.0**
Agriculture	1.9	2.5	2.6	2.6	2.3
Forestry and logging	0.8	1.1	1.2	1.3	1.2
Fishing, hunting and trapping	0.8	0.9	1.0	1.1	0.9
Mining and oil and gas extraction	**2.3**	**2.5**	**2.6**	**2.8**	**3.3**
Oil and gas extraction	1.9	2.0	2.0	2.3	2.8
Mining	4.0	4.5	5.0	4.9	5.3
Utilities	**4.2**	**4.6**	**5.0**	**5.3**	**4.8**
Electric power	5.3	7.9	9.6	10.9	12.1
Other utilities	4.0	4.0	4.5	4.7	4.0
Construction	**0.5**	**0.7**	**0.7**	**0.8**	**0.7**
Manufacturing	**17.5**	**18.6**	**19.7**	**20.3**	**19.4**
Food	13.8	14.5	15.6	16.0	15.1
Beverage and tobacco	12.7	12.9	14.7	15.8	14.9
Textile	13.7	13.0	13.9	13.9	14.2
Wood products	9.4	9.7	10.7	10.8	9.7
Paper	22.9	25.5	28.3	26.8	28.5
Printing	6.4	8.2	9.4	10.4	9.7
Petroleum and coal products	33.3	33.3	30.2	38.8	34.6
Pharmaceutical and medicine	50.6	50.6	46.7	44.4	44.1
Other chemicals	32.8	33.2	36.0	35.1	33.7
Plastic products	32.5	32.0	34.2	34.7	33.3
Rubber products	24.6	24.7	26.4	25.9	28.2
Non-metallic mineral products	12.7	13.7	14.0	14.6	13.8
Primary metal (ferrous)	21.0	22.8	29.4	26.6	24.8
Primary metal (non-ferrous)	36.7	35.6	35.5	37.7	34.5
Fabricated metal products	17.2	18.6	19.2	20.0	18.5
Machinery	30.8	32.6	33.5	34.4	33.2
Computer and peripheral equipment	37.0	38.5	39.0	37.3	37.9
Communications equipment	55.7	58.3	57.3	52.9	54.0
Semiconductor and other electronic components	41.9	43.4	47.7	47.1	47.0
Navigational, measuring, medical and control instruments	44.2	46.3	49.9	51.6	51.5
Other computer and electronic products	28.3	27.8	30.7	28.0	31.8
Electrical equipment, appliance and components	28.8	30.6	33.9	34.3	32.5
Motor vehicle and parts	25.5	28.3	30.0	29.8	28.4
Aerospace products and parts	38.5	38.6	40.4	41.0	43.4
All other transportation equipment	19.9	21.5	19.6	23.1	20.6
Furniture and related products	8.2	9.3	10.0	10.5	9.1
Other manufacturing industries	10.7	11.5	12.3	13.2	13.3
Services	**1.3**	**1.5**	**1.6**	**1.7**	**1.7**
Wholesale trade	3.5	4.1	4.3	4.6	4.4
Retail trade	0.4	0.5	0.6	0.6	0.6
Transportation and warehousing	0.3	0.5	0.5	0.5	0.5
Information and cultural industries	6.3	7.6	8.5	9.3	9.2
Finance, insurance and real estate	0.4	0.6	0.6	0.7	0.6
Architectural, engineering and related services	4.9	5.4	6.0	6.1	6.0
Computer system design and related services	10.9	12.6	13.0	13.2	13.2
Management, scientific and technical consulting services	1.5	1.9	2.2	2.3	2.2
Scientific research and development services	37.2	41.4	40.2	41.9	40.2
Health care and social assistance	0.2	0.3	0.4	0.4	0.5
All other services	0.5	0.5	0.6	0.7	0.6

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

Table 14-4
Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Total, all industries		**24,465**
Agriculture, Forestry, Fishing and Hunting		**976**
Agriculture		**844**
Soybean Farming	111110	0
Oilseed (except Soybean) Farming	111120	4
Dry Pea and Bean Farming	111130	4
Wheat Farming	111140	4
Corn Farming	111150	12
Rice Farming	111160	0
Other Grain Farming	111190	23
Potato Farming	111211	48
Other Vegetable (except Potato) and Melon Farming	111219	78
Orange Groves	111310	0
Citrus (except Orange) Groves	111320	0
Non0Citrus Fruit and Tree Nut Farming	111330	77
Mushroom Production	111411	16
Other Food Crops Grown Under Cover	111419	41
Nursery and Tree Production	111421	61
Floriculture Production	111422	85
Tobacco Farming	111910	11
Cotton Farming	111920	0
Sugar0Cane Farming	111930	0
Hay Farming	111940	5
Fruit and Vegetable Combination Farming	111993	24
Mayle Syrup and Products Production	111994	5
All Other Miscellaneous Crop Farming	111999	41
Beef Cattle Ranching and Farming, including Feedlots	112110	16
Dairy Cattle and Milk Production	112120	82
Hog and Pig Farming	112210	54
Chicken Egg Production	112310	6
Broiler and Other Meat0Type Chicken Production	112320	18
Turkey Production	112330	2
Poultry Hatcheries	112340	4
Combination Poultry and Egg Production	112391	5
All Other Poultry Production	112399	2
Sheep Farming	112410	1
Goat Farming	112420	1
Apiculture	112910	9
Horse and Other Equine Production	112920	0
Fur0Bearing Animal and Rabbit Production	112930	14
Livestock Combination Farming	112991	30
All Other Miscellaneous Animal Production	112999	4
Support Activities for Crop Production	115110	35
Support Activities for Animal Production	115210	22
Forestry and Logging		**82**
Timber Tract Operations	113110	2
Forest Nurseries and Gathering of Forest Products	113210	6
Logging (except Contract)	113311	17
Contract Logging	113312	26
Support Activities for Forestry	115310	31
Fishing, Hunting and Trapping		**50**
Aquaculture	112510	40
Salt Water Fishing	114113	9
Inland Fishing	114114	0
Hunting and Trapping	114210	1
Mining and Oil and Gas Extraction		**276**
Oil and Gas Extraction		**181**
Conventional Oil and Gas Extraction	211113	53
Non0Conventional Oil Extraction	211114	10
Oil and Gas Contract Drilling	213111	18
Services to Oil and Gas Extraction	213118	100
Mining		**95**
Bituminous Coal Mining	212114	0
Subbituminous Coal Mining	212115	0
Lignite Coal Mining	212116	0

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Iron Ore Mining	212210	3
Gold and Silver Ore Mining	212220	6
Lead-Zinc Ore Mining	212231	1
Nickel-Copper Ore Mining	212232	1
Copper-Zinc Ore Mining	212233	1
Uranium Ore Mining	212291	1
All Other Metal Ore Mining	212299	1
Granite Mining and Quarrying	212314	5
Limestone Mining and Quarrying	212315	5
Marble Mining and Quarrying	212316	2
Sandstone Mining and Quarrying	212317	2
Sand and Gravel Mining and Quarrying	212323	16
Shale, Clay and Refractory Mineral Mining and Quarrying	212326	0
Diamond Mines	212392	2
Salt Mines	212393	1
Asbestos Mining	212394	0
Gypsum Mining	212395	0
Potash Mining	212396	2
Peat Extraction	212397	6
All Other Non-Metallic Mineral Mining and Quarrying	212398	4
Contract Drilling (except Oil and Gas)	213117	8
Other Support Activities for Mining	213119	28
Utilities		**157**
Electric Power		**37**
Hydro-Electric Power Generation	221111	6
Fossil-Fuel Electric Power Generation	221112	7
Nuclear Electric Power Generation	221113	1
Other Electric Power Generation	221119	14
Electric Bulk Power Transmission and Control	221121	2
Electric Power Distribution	221122	7
Other Utilities		**120**
Natural Gas Distribution	221210	6
Water Supply and Irrigation Systems	221310	20
Sewage Treatment Facilities	221320	1
Steam and Air-Conditioning Supply	221330	0
Waste Collection	562110	17
Waste Treatment and Disposal	562210	31
Remediation Services	562910	26
Material Recovery Facilities	562920	8
All Other Waste Management Services	562990	11
Construction		**888**
Residential Building Construction	236110	70
Industrial Building and Structure Construction	236210	17
Commercial and Institutional Building Construction	236220	37
Water and Sewer Line and Related Structures Construction	237110	24
Oil and Gas Pipeline and Related Structures Construction	237120	21
Power and Communication Line and Related Structures Construction	237130	24
Land Subdivision	237210	13
Highway, Street and Bridge Construction	237310	49
Other Heavy and Civil Engineering Construction	237990	17
Poured Concrete Foundation and Structure Contractors	238110	20
Structural Steel and Precast Concrete Contractors	238120	9
Framing Contractors	238130	4
Masonry Contractors	238140	9
Glass and Glazing Contractors	238150	20
Roofing Contractors	238160	16
Siding Contractors	238170	7
Other Foundation, Structure and Building Exterior Contractors	238190	23
Electrical Contractors and Other Wiring Installation Contractors	238210	116
Plumbing, Heating and Air-Conditioning Contractors	238220	121
Elevator and Escalator Installation Contractors	238291	6
All Other Building Equipment Contractors	238299	37
Drywall and Insulation Contractors	238310	7
Painting and Wall Covering Contractors	238320	30
Flooring Contractors	238330	17
Tile and Terrazzo Contractors	238340	6
Finish Carpentry Contractors	238350	55
Other Building Finishing Contractors	238390	17
Site Preparation Contractors	238910	65

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
All Other Specialty Trade Contractors	238990	31
Manufacturing		**9,549**
Food		**734**
Dog and Cat Food Manufacturing	311111	4
Other Animal Food Manufacturing	311119	45
Flour Milling	311211	6
Rice Milling and Malt Manufacturing	311214	6
Wet Corn Milling	311221	3
Oilseed Processing	311224	7
Fat and Oil Refining and Blending	311225	2
Breakfast Cereal Manufacturing	311230	3
Sugar Manufacturing	311310	4
Chocolate and Confectionery Manufacturing from Cacao Beans	311320	6
Confectionery Manufacturing from Purchased Chocolate	311330	16
Non-Chocolate Confectionery Manufacturing	311340	19
Frozen Food Manufacturing	311410	31
Fruit and Vegetable Canning, Pickling and Drying	311420	52
Fluid Milk Manufacturing	311511	13
Butter, Cheese, and Dry and Condensed Dairy Product Manufacturing	311515	41
Ice Cream and Frozen Dessert Manufacturing	311520	11
Animal (except Poultry) Slaughtering	311611	19
Rendering and Meat Processing from Carcasses	311614	48
Poultry Processing	311615	31
Seafood Product Preparation and Packaging	311710	41
Retail Bakeries	311811	36
Commercial Bakeries and Frozen Bakery Product Manufacturing	311814	101
Cookie and Cracker Manufacturing	311821	18
Flour Mixes and Dough Manufacturing from Purchased Flour	311822	10
Dry Pasta Manufacturing	311823	7
Tortilla Manufacturing	311830	1
Roasted Nut and Peanut Butter Manufacturing	311911	4
Other Snack Food Manufacturing	311919	12
Coffee and Tea Manufacturing	311920	15
Flavouring Syrup and Concentrate Manufacturing	311930	10
Seasoning and Dressing Manufacturing	311940	30
All Other Food Manufacturing	311990	82
Beverages and Tobacco		**97**
Soft Drink and Ice Manufacturing	312110	8
Breweries	312120	38
Wineries	312130	45
Distilleries	312140	5
Tobacco Stemming and Redrying	312210	0
Tobacco Product Manufacturing	312220	1
Textile		**173**
Fibre, Yarn and Thread Mills	313110	12
Broad-Woven Fabric Mills	313210	20
Narrow Fabric Mills and Schiffli Machine Embroidery	313220	10
Nonwoven Fabric Mills	313230	9
Knit Fabric Mills	313240	17
Textile and Fabric Finishing	313310	26
Fabric Coating	313320	6
Carpet and Rug Mills	314110	9
Curtain and Linen Mills	314120	13
Textile Bag and Canvas Mills	314910	24
All Other Textile Product Mills	314990	27
Wood Products		**326**
Sawmills (except Shingle and Shake Mills)	321111	50
Shingle and Shake Mills	321112	4
Wood Preservation	321114	8
Hardwood Veneer and Plywood Mills	321211	15
Softwood Veneer and Plywood Mills	321212	6
Structural Wood Product Manufacturing	321215	17
Particle Board and Fibreboard Mills	321216	7
Waferboard Mills	321217	3
Wood Window and Door Manufacturing	321911	47
Other Millwork	321919	84
Wood Container and Pallet Manufacturing	321920	15
Manufactured (Mobile) Home Manufacturing	321991	6

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Prefabricated Wood Building Manufacturing	321992	15
All Other Miscellaneous Wood Product Manufacturing	321999	49
Paper		**145**
Mechanical Pulp Mills	322111	3
Chemical Pulp Mills	322112	7
Paper (except Newsprint) Mills	322121	11
Newsprint Mills	322122	5
Paperboard Mills	322130	6
Corrugated and Solid Fibre Box Manufacturing	322211	27
Folding Paperboard Box Manufacturing	322212	22
Other Paperboard Container Manufacturing	322219	8
Paper Bag and Coated and Treated Paper Manufacturing	322220	25
Stationery Product Manufacturing	322230	9
Sanitary Paper Product Manufacturing	322291	7
All Other Converted Paper Product Manufacturing	322299	15
Printing		**395**
Commercial Screen Printing	323113	49
Quick Printing	323114	10
Digital Printing	323115	27
Manifold Business Forms Printing	323116	21
Other Printing	323119	234
Support Activities for Printing	323120	54
Petroleum and Coal Products		**47**
Petroleum Refineries	324110	8
Asphalt Paving Mixture and Block Manufacturing	324121	8
Asphalt Shingle and Coating Material Manufacturing	324122	5
Other Petroleum and Coal Product Manufacturing	324190	26
Pharmaceutical and Medicine		**115**
Pharmaceutical and Medicine Manufacturing	325410	115
Other Chemical		**487**
Petrochemical Manufacturing	325110	5
Industrial Gas Manufacturing	325120	6
Synthetic Dye and Pigment Manufacturing	325130	14
Alkali and Chlorine Manufacturing	325181	0
All Other Basic Inorganic Chemical Manufacturing	325189	19
Other Basic Organic Chemical Manufacturing	325190	39
Resin and Synthetic Rubber Manufacturing	325210	34
Artificial and Synthetic Fibres and Filaments Manufacturing	325220	5
Chemical Fertilizer (except Potash) Manufacturing	325313	14
Mixed Fertilizer Manufacturing	325314	17
Pesticide and Other Agricultural Chemical Manufacturing	325320	7
Paint and Coating Manufacturing	325510	71
Adhesive Manufacturing	325520	22
Soap and Cleaning Compound Manufacturing	325610	59
Toilet Preparation Manufacturing	325620	63
Printing Ink Manufacturing	325910	17
Explosives Manufacturing	325920	3
Custom Compounding of Purchased Resins	325991	7
All Other Miscellaneous Chemical Product Manufacturing	325999	85
Plastic Product		**554**
Plastic Bag and Pouch Manufacturing	326111	33
Plastic Film and Sheet Manufacturing	326114	36
Unlaminated Plastic Profile Shape Manufacturing	326121	36
Plastic Pipe and Pipe Fitting Manufacturing	326122	22
Laminated Plastic Plate, Sheet (except Packaging) and Shape Manufacturing	326130	8
Polystyrene Foam Product Manufacturing	326140	20
Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150	21
Plastic Bottle Manufacturing	326160	16
Plastic Plumbing Fixture Manufacturing	326191	19
Motor Vehicle Plastic Parts Manufacturing	326193	48
Plastic Window and Door Manufacturing	326196	42
All Other Plastic Product Manufacturing	326198	253
Rubber Product		**71**
Tire Manufacturing	326210	5
Rubber and Plastic Hose and Belting Manufacturing	326220	10
Other Rubber Product Manufacturing	326290	56

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Non-Metallic Mineral Products		**243**
Pottery, Ceramics and Plumbing Fixture Manufacturing	327110	6
Clay Building Material and Refractory Manufacturing	327120	16
Glass Manufacturing	327214	16
Glass Product Manufacturing from Purchased Glass	327215	32
Cement Manufacturing	327310	4
Ready-Mix Concrete Manufacturing	327320	24
Concrete Pipe, Brick and Block Manufacturing	327330	36
Other Concrete Product Manufacturing	327390	35
Lime Manufacturing	327410	2
Gypsum Product Manufacturing	327420	10
Abrasive Product Manufacturing	327910	9
All Other Non-Metallic Mineral Product Manufacturing	327990	53
Primary Metal (Ferrous)		**79**
Iron and Steel Mills and Ferro-Alloy Manufacturing	331110	17
Iron and Steel Pipes and Tubes Manufacturing from Purchased Steel	331210	18
Cold-Rolled Steel Shape Manufacturing	331221	6
Steel Wire Drawing	331222	3
Iron Foundries	331511	21
Steel Foundries	331514	14
Primary Metal (Non-Ferrous)		**87**
Primary Production of Alumina and Aluminum	331313	7
Aluminum Rolling, Drawing, Extruding and Alloying	331317	14
Non-Ferrous Metal (except Aluminum) Smelting and Refining	331410	13
Copper Rolling, Drawing, Extruding and Alloying	331420	5
Non-Ferrous Metal (except Copper and Aluminum) Rolling, Drawing, Extruding and Alloying	331490	14
Non-Ferrous Die-Casting Foundries	331523	16
Non-Ferrous Foundries (except Die-Casting)	331529	18
Fabricated Metal Product		**1,400**
Forging	332113	21
Stamping	332118	66
Cutlery and Hand Tool Manufacturing	332210	45
Prefabricated Metal Building and Component Manufacturing	332311	23
Concrete Reinforcing Bar Manufacturing	332314	1
Other Plate Work and Fabricated Structural Product Manufacturing	332319	93
Metal Window and Door Manufacturing	332321	79
Other Ornamental and Architectural Metal Product Manufacturing	332329	104
Power Boiler and Heat Exchanger Manufacturing	332410	16
Metal Tank (Heavy Gauge) Manufacturing	332420	38
Metal Can Manufacturing	332431	2
Other Metal Container Manufacturing	332439	24
Hardware Manufacturing	332510	22
Spring (Heavy Gauge) Manufacturing	332611	3
Other Fabricated Wire Product Manufacturing	332619	29
Machine Shops	332710	520
Turned Product and Screw, Nut and Bolt Manufacturing	332720	33
Coating, Engraving, Heat Treating and Allied Activities	332810	124
Metal Valve Manufacturing	332910	33
Ball and Roller Bearing Manufacturing	332991	7
All Other Miscellaneous Fabricated Metal Product Manufacturing	332999	117
Machinery		**1,547**
Agricultural Implement Manufacturing	333110	129
Construction Machinery Manufacturing	333120	49
Mining and Oil and Gas Field Machinery Manufacturing	333130	91
Sawmill and Woodworking Machinery Manufacturing	333210	30
Rubber and Plastics Industry Machinery Manufacturing	333220	36
Paper Industry Machinery Manufacturing	333291	8
All Other Industrial Machinery Manufacturing	333299	126
Commercial and Service Industry Machinery Manufacturing	333310	125
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	333413	45
Heating Equipment and Commercial Refrigeration Equipment Manufacturing	333416	125
Industrial Mould Manufacturing	333511	120
Other Metalworking Machinery Manufacturing	333519	261
Turbine and Turbine Generator Set Unit Manufacturing	333611	22
Other Engine and Power Transmission Equipment Manufacturing	333619	27
Pump and Compressor Manufacturing	333910	36

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Material Handling Equipment Manufacturing	333920	114
All Other General-Purpose Machinery Manufacturing	333990	203
Computer and Peripheral Equipment		**85**
Computer and Peripheral Equipment Manufacturing	334110	85
Communications Equipment		**150**
Telephone Apparatus Manufacturing	334210	26
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	78
Other Communications Equipment Manufacturing	334290	46
Semiconductor and Other Electronic Component		**182**
Semiconductor and Other Electronic Component Manufacturing	334410	182
Navigational, Measuring, Medical and Control Instruments		**355**
Navigational and Guidance Instruments Manufacturing	334511	50
Measuring, Medical and Controlling Devices Manufacturing	334512	305
Other Computer and Electronic Product		**57**
Audio and Video Equipment Manufacturing	334310	34
Manufacturing and Reproducing Magnetic and Optical Media	334610	23
Electrical Equipment, Appliance and Component		**330**
Electric Lamp Bulb and Parts Manufacturing	335110	5
Lighting Fixture Manufacturing	335120	52
Small Electrical Appliance Manufacturing	335210	15
Major Kitchen Appliance Manufacturing	335223	8
Other Major Appliance Manufacturing	335229	9
Power, Distribution and Specialty Transformers Manufacturing	335311	30
Motor and Generator Manufacturing	335312	18
Switchgear and Switchboard, and Relay and Industrial Control Apparatus Manufacturing	335315	81
Battery Manufacturing	335910	7
Communication and Energy Wire and Cable Manufacturing	335920	23
Wiring Device Manufacturing	335930	19
All Other Electrical Equipment and Component Manufacturing	335990	63
Motor Vehicle and Parts		**335**
Automobile and Light-Duty Motor Vehicle Manufacturing	336110	10
Heavy-Duty Truck Manufacturing	336120	12
Motor Vehicle Body Manufacturing	336211	39
Truck Trailer Manufacturing	336212	43
Motor Home, Travel Trailer and Camper Manufacturing	336215	11
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	336310	24
Motor Vehicle Electrical and Electronic Equipment Manufacturing	336320	27
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	336330	9
Motor Vehicle Brake System Manufacturing	336340	12
Motor Vehicle Transmission and Power Train Parts Manufacturing	336350	15
Motor Vehicle Seating and Interior Trim Manufacturing	336360	15
Motor Vehicle Metal Stamping	336370	33
Other Motor Vehicle Parts Manufacturing	336390	85
Aerospace Product and Parts		**92**
Aerospace Product and Parts Manufacturing	336410	92
All Other Transportation Equipment		**101**
Railroad Rolling Stock Manufacturing	336510	8
Ship Building and Repairing	336611	7
Boat Building	336612	39
Other Transportation Equipment Manufacturing	336990	47
Furniture and Related Product		**378**
Wood Kitchen Cabinet and Counter Top Manufacturing	337110	78
Upholstered Household Furniture Manufacturing	337121	30
Other Wood Household Furniture Manufacturing	337123	73
Household Furniture (except Wood and Upholstered) Manufacturing	337126	15
Institutional Furniture Manufacturing	337127	37
Wood Office Furniture, including Custom Architectural Woodwork, Manufacturing	337213	25
Office Furniture (except Wood) Manufacturing	337214	29
Showcase, Partition, Shelving and Locker Manufacturing	337215	66
Mattress Manufacturing	337910	14
Blind and Shade Manufacturing	337920	11
Other Manufacturing Industries		**984**
Hosiery and Sock Mills	315110	8

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Other Clothing Knitting Mills	315190	15
Cut and Sew Clothing Contracting	315210	32
Men's and Boys' Cut and Sew Underwear and Nightwear Manufacturing	315221	2
Men's and Boys' Cut and Sew Suit, Coat and Overcoat Manufacturing	315222	7
Men's and Boys' Cut and Sew Shirt Manufacturing	315226	4
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	17
Women's and Girls' Cut and Sew Lingerie, Loungewear and Nightwear Manufacturing	315231	12
Women's and Girls' Cut and Sew Blouse and Shirt Manufacturing	315232	6
Women's and Girls' Cut and Sew Dress Manufacturing	315233	14
Women's and Girls' Cut and Sew Suit, Coat, Tailored Jacket and Skirt Manufacturing	315234	6
Other Women's and Girls' Cut and Sew Clothing Manufacturing	315239	23
Infants' Cut and Sew Clothing Manufacturing	315291	0
Fur and Leather Clothing Manufacturing	315292	23
All Other Cut and Sew Clothing Manufacturing	315299	14
Clothing Accessories and Other Clothing Manufacturing	315990	19
Leather and Hide Tanning and Finishing	316110	9
Footwear Manufacturing	316210	19
Other Leather and Allied Product Manufacturing	316990	10
Medical Equipment and Supplies Manufacturing	339110	212
Jewellery and Silverware Manufacturing	339910	30
Sporting and Athletic Goods Manufacturing	339920	74
Doll, Toy and Game Manufacturing	339930	27
Office Supplies (except Paper) Manufacturing	339940	20
Sign Manufacturing	339950	65
All Other Miscellaneous Manufacturing	339990	312
Services		**12,619**
Wholesale Trade		**2,143**
Live Animal Wholesaler-Distributors	411110	6
Oilseed and Grain Wholesaler-Distributors	411120	10
Nursery Stock and Plant Wholesaler-Distributors	411130	21
Other Farm Product Wholesaler-Distributors	411190	6
Petroleum Product Wholesaler-Distributors	412110	9
General-Line Food Wholesaler-Distributors	413110	22
Dairy and Milk Products Wholesaler-Distributors	413120	6
Poultry and Egg Wholesaler-Distributors	413130	7
Fish and Seafood Product Wholesaler-Distributors	413140	14
Fresh Fruit and Vegetable Wholesaler-Distributors	413150	26
Red Meat and Meat Product Wholesaler-Distributors	413160	28
Other Specialty-Line Food Wholesaler-Distributors	413190	131
Non-Alcoholic Beverage Wholesaler-Distributors	413210	7
Alcoholic Beverage Wholesaler-Distributors	413220	2
Cigarette and Tobacco Product Wholesaler-Distributors	413310	1
Clothing and Clothing Accessories Wholesaler-Distributors	414110	84
Footwear Wholesaler-Distributors	414120	4
Piece Goods, Notions and Other Dry Goods Wholesaler-Distributors	414130	28
Home Entertainment Equipment Wholesaler-Distributors	414210	6
Household Appliance Wholesaler-Distributors	414220	7
China, Glassware, Crockery and Pottery Wholesaler-Distributors	414310	1
Floor Covering Wholesaler-Distributors	414320	4
Linen, Drapery and Other Textile Furnishings Wholesaler-Distributors	414330	9
Other Home Furnishings Wholesaler-Distributors	414390	18
Jewellery and Watch Wholesaler-Distributors	414410	8
Book, Periodical and Newspaper Wholesaler-Distributors	414420	6
Photographic Equipment and Supplies Wholesaler-Distributors	414430	6
Sound Recording Wholesalers	414440	0
Video Cassette Wholesalers	414450	0
Toy and Hobby Goods Wholesaler-Distributors	414460	7
Amusement and Sporting Goods Wholesaler-Distributors	414470	20
Pharmaceuticals and Pharmacy Supplies Wholesaler-Distributors	414510	50
Toiletries, Cosmetics and Sundries Wholesaler-Distributors	414520	35
New and Used Automobile and Light-Duty Truck Wholesaler-Distributors	415110	0
Truck, Truck Tractor and Bus Wholesaler-Distributors	415120	4
Recreational and Other Motor Vehicles Wholesaler-Distributors	415190	4

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Tire Wholesaler-Distributors	415210	1
Other New Motor Vehicle Parts and Accessories Wholesaler-Distributors	415290	53
Used Motor Vehicle Parts and Accessories Wholesaler-Distributors	415310	3
Electrical Wiring and Construction Supplies Wholesaler-Distributors	416110	68
Plumbing, Heating and Air-Conditioning Equipment and Supplies Wholesaler-Distributors	416120	70
Metal Service Centres	416210	46
General-Line Building Supplies Wholesaler-Distributors	416310	12
Lumber, Plywood and Millwork Wholesaler-Distributors	416320	24
Hardware Wholesaler-Distributors	416330	31
Paint, Glass and Wallpaper Wholesaler-Distributors	416340	7
Other Specialty-Line Building Supplies Wholesaler-Distributors	416390	43
Farm, Lawn and Garden Machinery and Equipment Wholesaler-Distributors	417110	40
Construction and Forestry Machinery, Equipment and Supplies Wholesaler-Distributors	417210	17
Mining and Oil and Gas Well Machinery, Equipment and Supplies Wholesaler-Distributors	417220	27
Industrial Machinery, Equipment and Supplies Wholesaler-Distributors	417230	232
Computer, Computer Peripheral and Pre-Packaged Software Wholesaler-Distributors	417310	124
Electronic Components, Navigational and Communications Equipment and Supplies Wholesaler-Distributors	417320	102
Office and Store Machinery and Equipment Wholesaler-Distributors	417910	27
Service Establishment Machinery, Equipment and Supplies Wholesaler-Distributors	417920	27
Professional Machinery, Equipment and Supplies Wholesaler-Distributors	417930	117
All Other Machinery, Equipment and Supplies Wholesaler-Distributors	417990	45
Recyclable Metal Wholesaler-Distributors	418110	14
Recyclable Paper and Paperboard Wholesaler-Distributors	418120	3
Other Recyclable Material Wholesaler-Distributors	418190	39
Stationery and Office Supplies Wholesaler-Distributors	418210	6
Other Paper and Disposable Plastic Product Wholesaler-Distributors	418220	21
Agricultural Feed Wholesaler-Distributors	418310	21
Seed Wholesaler-Distributors	418320	10
Agricultural Chemical and Other Farm Supplies Wholesaler-Distributors	418390	27
Chemical (except Agricultural) and Allied Product Wholesaler-Distributors	418410	72
Log and Wood Chip Wholesaler-Distributors	418910	2
Mineral, Ore and Precious Metal Wholesaler-Distributors	418920	2
Second-Hand Goods (except Machinery and Automotive) Wholesaler-Distributors	418930	4
All Other Wholesaler-Distributors	418990	105
Business-to-Business Electronic Markets	419110	4
Wholesale Trade Agents and Brokers	419120	100
Retail Trade		**610**
New Car Dealers	441110	1
Used Car Dealers	441120	8
Recreational Vehicle Dealers	441210	1
Motorcycle, Boat and Other Motor Vehicle Dealers	441220	14
Automotive Parts and Accessories Stores	441310	27
Tire Dealers	441320	1
Furniture Stores	442110	7
Floor Covering Stores	442210	1
Window Treatment Stores	442291	2
Print and Picture Frame Stores	442292	1
All Other Home Furnishings Stores	442298	5
Appliance, Television and Other Electronics Stores	443110	31
Computer and Software Stores	443120	74

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Camera and Photographic Supplies Stores	443130	2
Home Centres	444110	6
Paint and Wallpaper Stores	444120	9
Hardware Stores	444130	8
Other Building Material Dealers	444190	31
Outdoor Power Equipment Stores	444210	2
Nursery and Garden Centres	444220	17
Supermarkets and Other Grocery (except Convenience) Stores	445110	15
Convenience Stores	445120	1
Meat Markets	445210	30
Fish and Seafood Markets	445220	8
Fruit and Vegetable Markets	445230	3
Baked Goods Stores	445291	40
Confectionery and Nut Stores	445292	6
All Other Specialty Food Stores	445299	12
Beer, Wine and Liquor Stores	445310	2
Pharmacies and Drug Stores	446110	16
Cosmetics, Beauty Supplies and Perfume Stores	446120	11
Optical Goods Stores	446130	5
Food (Health) Supplement Stores	446191	11
All Other Health and Personal Care Stores	446199	17
Gasoline Stations with Convenience Stores	447110	2
Other Gasoline Stations	447190	2
Men's Clothing Stores	448110	2
Women's Clothing Stores	448120	5
Children's and Infants' Clothing Stores	448130	3
Family Clothing Stores	448140	9
Clothing Accessories Stores	448150	2
Fur Stores	448191	1
All Other Clothing Stores	448199	8
Shoe Stores	448210	3
Jewellery Stores	448310	5
Luggage and Leather Goods Stores	448320	1
Sporting Goods Stores	451110	21
Hobby, Toy and Game Stores	451120	2
Sewing, Needlework and Piece Goods Stores	451130	5
Musical Instrument and Supplies Stores	451140	2
Book Stores and News Dealers	451210	3
Pre-Recorded Tape, Compact Disc and Record Stores	451220	1
Department Stores	452110	2
Warehouse Clubs and Superstores	452910	0
Home and Auto Supplies Stores	452991	0
All Other Miscellaneous General Merchandise Stores	452999	5
Florists	453110	0
Office Supplies and Stationery Stores	453210	2
Gift, Novelty and Souvenir Stores	453220	5
Used Merchandise Stores	453310	1
Pet and Pet Supplies Stores	453910	6
Art Dealers	453920	1
Manufactured (Mobile) Home Dealers	453930	0
Beer and Wine-Making Supplies Stores	453992	2
All Other Miscellaneous Store Retailers (except Beer and Wine-Making Supplies Stores)	453999	30
Internet Shopping	454111	30
Electronic Auctions	454112	0
Mail-Order Houses	454113	15
Vending Machine Operators	454210	0
Heating Oil Dealers	454311	0
Liquefied Petroleum Gas (Bottled Gas) Dealers	454312	3
Other Fuel Dealers	454319	1
Other Direct Selling Establishments	454390	5
Transportation and Warehousing		**210**
Scheduled Air Transportation	481110	1
Non-Scheduled Chartered Air Transportation	481214	3
Non-Scheduled Specialty Flying Services	481215	5
Short-Haul Freight Rail Transportation	482112	0
Mainline Freight Rail Transportation	482113	2

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
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
Inland Water Transportation (except by Ferries)	483213	1
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	5
Used Household and Office Goods Moving	484210	3
Bulk Liquids Trucking, Local	484221	1
Dry Bulk Materials Trucking, Local	484222	7
Forest Products Trucking, Local	484223	3
Other Specialized Freight (except Used Goods) Trucking, Local	484229	3
Bulk Liquids Trucking, Long Distance	484231	0
Dry Bulk Materials Trucking, Long Distance	484232	5
Forest Products Trucking, Long Distance	484233	2
Other Specialized Freight (except Used Goods) Trucking, Long Distance	484239	11
Urban Transit Systems	485110	1
Interurban and Rural Bus Transportation	485210	0
Taxi Service	485310	1
Limousine Service	485320	1
School and Employee Bus Transportation	485410	4
Charter Bus Industry	485510	1
Other Transit and Ground Passenger Transportation	485990	3
Pipeline Transportation of Crude Oil	486110	1
Pipeline Transportation of Natural Gas	486210	3
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	2
Scenic and Sightseeing Transportation, Other	487990	1
Air Traffic Control	488111	0
Other Airport Operations	488119	3
Other Support Activities for Air Transportation	488190	29
Support Activities for Rail Transportation	488210	3
Port and Harbour Operations	488310	1
Marine Cargo Handling	488320	0
Marine Salvage Services	488331	0
Ship Piloting Services	488332	0
Other Navigational Services to Shipping	488339	3
Other Support Activities for Water Transportation	488390	5
Motor Vehicle Towing	488410	2
Other Support Activities for Road Transportation	488490	11
Marine Shipping Agencies	488511	0
Other Freight Transportation Arrangement	488519	21
Other Support Activities for Transportation	488990	7
Postal Service	491110	2
Couriers	492110	2
Local Messengers and Local Delivery	492210	2
General Warehousing and Storage	493110	11
Refrigerated Warehousing and Storage	493120	5
Farm Product Warehousing and Storage	493130	5
Other Warehousing and Storage	493190	6
Information and Cultural Industries		**1,017**
Newspaper Publishers	511110	8
Periodical Publishers	511120	20
Book Publishers	511130	15
Database and Directory Publishers	511140	10
Other Publishers	511190	4
Software Publishers	511210	484
Motion Picture and Video Production	512110	41
Motion Picture and Video Distribution	512120	1
Motion Picture and Video Exhibition	512130	0
Post-Production and Other Motion Picture and Video Industries	512190	23
Record Production	512210	0
Integrated Record Production/Distribution	512220	0
Music Publishers	512230	1
Sound Recording Studios	512240	3
Other Sound Recording Industries	512290	0
Radio Broadcasting	515110	1

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Television Broadcasting	515120	7
Pay and Specialty Television	515210	1
Wired Telecommunications Carriers (except Cable)	517111	28
Cable and Other Program Distribution	517112	15
Wireless Telecommunications Carriers (except Satellite)	517210	23
Satellite Telecommunications	517410	10
Other Telecommunications	517910	77
Data Processing, Hosting, and Related Services	518210	123
News Syndicates	519110	7
Libraries	519121	0
Archives	519122	0
Internet Publishing and Broadcasting, and Web Search Portals	519130	99
All Other Information Services	519190	16
Finance, Insurance and Real Estate		**412**
Monetary Authorities - Central Bank	521110	0
Personal and Commercial Banking Industry	522111	7
Corporate and Institutional Banking Industry	522112	2
Local Credit Unions	522130	11
Other Depository Credit Intermediation	522190	0
Credit Card Issuing	522210	2
Sales Financing	522220	4
Consumer Lending	522291	3
All Other Non-Depository Credit Intermediation	522299	7
Mortgage and Non-mortgage Loan Brokers	522310	3
Central Credit Unions	522321	1
Other Financial Transactions Processing and Clearing House Activities	522329	13
Other Activities Related to Credit Intermediation	522390	1
Investment Banking and Securities Dealing	523110	8
Securities Brokerage	523120	6
Commodity Contracts Dealing	523130	2
Commodity Contracts Brokerage	523140	4
Securities and Commodity Exchanges	523210	2
Miscellaneous Intermediation	523910	42
Portfolio Management	523920	35
Investment Advice	523930	15
All Other Financial Investment Activities	523990	10
Direct Individual Life, Health and Medical Insurance Carriers	524111	5
Direct Group Life, Health and Medical Insurance Carriers	524112	3
Direct General Property and Casualty Insurance Carriers	524121	7
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	1
Liability Reinsurance Carriers	524135	0
General and Other Reinsurance Carriers	524139	0
Insurance Agencies and Brokerages	524210	19
Claims Adjusters	524291	1
All Other Insurance Related Activities	524299	5
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	1
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	7
Lessors of Social Housing Projects	531112	0
Lessors of Non-Residential Buildings (except Mini-Warehouses)	531120	23
Self-Storage Mini-Warehouses	531130	1

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Lessors of Other Real Estate Property	531190	2
Real Estate Agents	531211	1
Offices of Real Estate Brokers	531212	5
Real Estate Property Managers	531310	20
Offices of Real Estate Appraisers	531320	4
Other Activities Related to Real Estate	531390	4
Passenger Car Rental	532111	2
Passenger Car Leasing	532112	2
Truck, Utility Trailer and RV (Recreational Vehicle) Rental and Leasing	532120	6
Consumer Electronics and Appliance Rental	532210	1
Formal Wear and Costume Rental	532220	0
Video Tape and Disc Rental	532230	1
Other Consumer Goods Rental	532290	7
General Rental Centres	532310	2
Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing	532410	41
Office Machinery and Equipment Rental and Leasing	532420	1
Other Commercial and Industrial Machinery and Equipment Rental and Leasing	532490	26
Lessors of Non-Financial Intangible Assets (Except Copyrighted Works)	533110	33
Architectural, Engineering and Related Services		**1,048**
Architectural Services	541310	20
Landscape Architectural Services	541320	5
Engineering Services	541330	785
Drafting Services	541340	15
Building Inspection Services	541350	11
Geophysical Surveying and Mapping Services	541360	31
Surveying and Mapping (except Geophysical) Services	541370	43
Testing Laboratories	541380	138
Computer System Design and Related		**3,241**
Computer Systems Design and Related Services	541510	3,241
Management, Scientific and Technical Consulting		**561**
Administrative Management and General Management Consulting Services	541611	164
Human Resources Consulting Services	541612	10
Other Management Consulting Services	541619	123
Environmental Consulting Services	541620	96
Other Scientific and Technical Consulting Services	541690	168
Scientific Research and Development		**984**
Scientific Research and Development Services	5417	984
Health Care and Social Assistance		**397**
Offices of Physicians	621110	191
Offices of Dentists	621210	51
Offices of Chiropractors	621310	3
Offices of Optometrists	621320	8
Offices of Mental Health Practitioners (except Physicians)	621330	5
Offices of Physical, Occupational, and Speech Therapists and Audiologists	621340	12
Offices of All Other Health Practitioners	621390	15
Family Planning Centres	621410	5
Out-Patient Mental Health and Substance Abuse Centres	621420	3
Community Health Centres	621494	3
All Other Out-Patient Care Centres	621499	5
Medical and Diagnostic Laboratories	621510	73
Home Health Care Services	621610	5
Ambulance (except Air Ambulance) Services	621911	1
Air Ambulance Services	621912	0
All Other Ambulatory Health Care Services	621990	2
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
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	1
Services for the Elderly and Persons with Disabilities	624120	3

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Other Individual and Family Services	624190	1
Community Food Services	624210	1
Community Housing Services	624220	0
Emergency and Other Relief Services	624230	2
Vocational Rehabilitation Services	624310	3
Child Day-Care Services	624410	1
All Other Services		**1,996**
Offices of Lawyers	541110	2
Offices of Notaries	541120	0
Other Legal Services	541190	12
Offices of Accountants	541212	18
Tax Preparation Services	541213	0
Bookkeeping, Payroll and Related Services	541215	19
Interior Design Services	541410	7
Industrial Design Services	541420	72
Graphic Design Services	541430	58
Other Specialized Design Services	541490	15
Advertising Agencies	541810	85
Public Relations Services	541820	2
Media Buying Agencies	541830	5
Media Representatives	541840	7
Display Advertising	541850	24
Direct Mail Advertising	541860	4
Advertising Material Distribution Services	541870	4
Specialty Advertising Distributors	541891	17
All Other Services Related to Advertising	541899	23
Marketing Research and Public Opinion Polling	541910	44
Photographic Services	541920	11
Translation and Interpretation Services	541930	3
Veterinary Services	541940	13
All Other Professional, Scientific and Technical Services	541990	83
Holding Companies	551113	233
Head Offices	551114	3
Office Administrative Services	561110	122
Facilities Support Services	561210	0
Employment Placement Agencies and Exectutive Search Services	561310	14
Temporary Help Services	561320	13
Employee Leasing Services	561330	1
Document Preparation Services	561410	6
Telephone Call Centres	561420	14
Business Service Centres	561430	18
Collection Agencies	561440	5
Credit Bureaus	561450	3
Other Business Support Services	561490	10
Travel Agencies	561510	8
Tour Operators	561520	6
Other Travel Arrangement and Reservation Services	561590	6
Investigation Services	561611	5
Security Guard and Patrol Services	561612	5
Armoured Car Services	561613	0
Security Systems Services (except Locksmiths)	561621	42
Locksmiths	561622	3
Exterminating and Pest Control Services	561710	7
Window Cleaning Services	561721	0
Janitorial Services (except Window Cleaning)	561722	16
Landscaping Services	561730	37
Carpet and Upholstery Cleaning Services	561740	2
Duct and Chimney Cleaning Services	561791	4
All Other Services to Buildings and Dwellings	561799	6
Packaging and Labelling Services	561910	26
Convention and Trade Show Organizers	561920	16
All Other Support Services	561990	77
Elementary and Secondary Schools	611110	1
Community Colleges and C.E.G.E.P.s	611210	3
Universities	611310	0
Business and Secretarial Schools	611410	1
Computer Training	611420	9
Professional and Management Development Training	611430	14
Technical and Trade Schools	611510	10
Fine Arts Schools	611610	1

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Athletic Instruction	611620	2
Language Schools	611630	1
All Other Schools and Instruction	611690	14
Educational Support Services	611710	10
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	2
Sports Teams and Clubs	711211	0
Horse Race Tracks	711213	0
Other Spectator Sports	711218	1
Live Theatres and Other Performing Arts Presenters with Facilities	711311	0
Sports Stadiums and Other Presenters with Facilities	711319	1
Performing Arts Promoters (Presenters) without Facilities	711321	5
Festivals without Facilities	711322	1
Sports Presenters and Other Presenters without Facilities	711329	2
Agents and Managers for Artists, Athletes, Entertainers and Other Public Figures	711410	0
Independent Artists, Visual Arts	711511	4
Independent Actors, Comedians and Performers	711512	3
Independent Writers and Authors	711513	2
Non-Commercial Art Museums and Galleries	712111	0
History and Science Museums	712115	0
Other Museums	712119	0
Historic and Heritage Sites	712120	0
Zoos and Botanical Gardens	712130	1
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	2
Golf Courses and Country Clubs	713910	4
Skiing Facilities	713920	2
Marinas	713930	1
Fitness and Recreational Sports Centres	713940	7
Bowling Centres	713950	0
All Other Amusement and Recreation Industries	713990	7
Hotels	721111	3
Motor Hotels	721112	0
Resorts	721113	2
Motels	721114	1
Casino Hotels	721120	0
Bed and Breakfast	721191	2
Housekeeping Cottages and Cabins	721192	0
All Other Traveller Accommodation	721198	2
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	32
Limited-Service Eating Places	722210	34
Food Service Contractors	722310	3
Caterers	722320	17
Mobile Food Services	722330	1
Drinking Places (Alcoholic Beverages)	722410	5
General Automotive Repair	811111	35
Automotive Exhaust System Repair	811112	3
Other Automotive Mechanical and Electrical Repair and Maintenance	811119	10
Automotive Body, Paint and Interior Repair and Maintenance	811121	34
Automotive Glass Replacement Shops	811122	3
Car Washes	811192	3
All Other Automotive Repair and Maintenance	811199	2
Electronic and Precision Equipment Repair and Maintenance	811210	52
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	811310	280
Home and Garden Equipment Repair and Maintenance	811411	10
Appliance Repair and Maintenance	811412	3
Reupholstery and Furniture Repair	811420	10
Footwear and Leather Goods Repair	811430	0
Other Personal and Household Goods Repair and Maintenance	811490	18

Table 14-4 – continued

Research and development performers by the North American industry classification system (NAICS) 2008, in 2010

	NAICS Code	Performers
		number
Barber Shops	812114	1
Beauty Salons	812115	6
Unisex Hair Salons	812116	1
Other Personal Care Services	812190	11
Funeral Homes	812210	1
Cemeteries and Crematoria	812220	0
Coin-Operated Laundries and Dry Cleaners	812310	0
Dry Cleaning and Laundry Services (except Coin-Operated)	812320	8
Linen and Uniform Supply	812330	3
Pet Care (except Veterinary) Services	812910	1
Photo Finishing Laboratories (except One-Hour)	812921	7
One-Hour Photo Finishing	812922	0
Parking Lots and Garages	812930	1
All Other Personal Services	812990	12
Religious Organizations	813110	0
Grant-Making and Giving Services	813210	2
Social Advocacy Organizations	813310	4
Civic and Social Organizations	813410	2
Business Associations	813910	11
Professional Organizations	813920	3
Labour Organizations	813930	0
Political Organizations	813940	0
Other Membership Organizations	813990	0
Private Households	814110	1
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	0
Other Federal Government Public Administration	911910	1
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	1
Other Local, Municipal and Regional Public Administration	913910	0
Aboriginal Public Administration	914110	0
International and Other Extra-Territorial Public Administration	919110	0

Note(s): Empty cells under the NAICS column appear where there is a subtotal of the number of industry performers.

Table 15
Enterprises with one or more employee, by industry, with percentage change from 2006 to 2010 and percentage distribution, 2010

	2006	2007	2008	2009 [r]	2010	Change from 2006 to 2010	2010 distribution
	number					percent	
Total	**973,485**	**974,910**	**985,283**	**998,810**	**999,693**	**2.6**	**100.0**
Agriculture, forestry, fishing and hunting	**54,926**	**49,119**	**49,270**	**49,642**	**49,727**	**-10.5**	**5.0**
Agriculture	39,544	35,201	35,935	36,789	37,339	-5.9	3.7
Forestry and logging	9,414	8,410	7,881	7,449	7,036	-33.8	0.7
Fishing, hunting and trapping	5,968	5,508	5,454	5,404	5,352	-11.5	0.5
Mining and oil and gas extraction	**8,332**	**8,326**	**8,418**	**8,671**	**8,282**	**-0.6**	**0.8**
Oil and gas extraction	6,780	6,684	6,755	6,879	6,500	-4.3	0.7
Mining	1,552	1,642	1,663	1,792	1,782	12.9	0.2
Utilities	**3,423**	**3,485**	**3,220**	**3,274**	**3,283**	**-4.3**	**0.3**
Electric power	457	469	323	321	306	-49.3	0.0
Other utilities	2,966	3,016	2,897	2,953	2,977	0.4	0.3
Construction	**118,278**	**116,165**	**120,539**	**123,242**	**124,773**	**5.2**	**12.5**
Manufacturing	**53,580**	**52,553**	**51,483**	**50,755**	**49,202**	**-8.9**	**4.9**
Food	5,254	5,226	5,083	4,987	4,856	-8.2	0.5
Beverage and tobacco	630	618	627	660	652	3.4	0.1
Textile	1,477	1,410	1,355	1,284	1,217	-21.4	0.1
Wood products	3,729	3,675	3,582	3,468	3,376	-10.5	0.3
Paper	590	588	555	545	509	-15.9	0.1
Printing	4,535	4,357	4,233	4,202	4,062	-11.6	0.4
Petroleum and coal products	147	153	139	129	136	-8.1	0.0
Pharmaceutical and medicine	267	265	261	266	261	-2.3	0.0
Other chemicals	1,507	1,487	1,439	1,454	1,447	-4.1	0.1
Plastic products	1,775	1,739	1,711	1,724	1,662	-6.8	0.2
Rubber products	281	275	265	266	252	-11.5	0.0
Non-metallic mineral products	1,857	1,870	1,837	1,818	1,764	-5.3	0.2
Primary metal (ferrous)	314	325	293	319	318	1.3	0.0
Primary metal (non-ferrous)	281	278	265	247	252	-11.5	0.0
Fabricated metal products	7,974	7,907	7,893	7,824	7,581	-5.2	0.8
Machinery	5,109	5,041	4,963	4,853	4,664	-9.5	0.5
Computer and peripheral equipment	257	247	246	244	224	-14.7	0.0
Communications equipment	296	283	274	291	278	-6.5	0.0
Semiconductor and other electronic components	439	422	396	399	387	-13.4	0.0
Navigational, measuring, medical and control instruments	769	750	727	717	689	-11.6	0.1
Other computer and electronic products	191	187	179	186	179	-6.7	0.0
Electrical equipment, appliance and components	1,085	1,073	1,049	1,034	1,015	-6.9	0.1
Motor vehicle and parts	1,308	1,295	1,263	1,234	1,178	-11.0	0.1
Aerospace products and parts	221	233	223	227	212	-4.2	0.0
All other transportation equipment	602	558	520	515	491	-22.6	0.0
Furniture and related products	4,350	4,268	4,289	4,237	4,139	-5.1	0.4
Other manufacturing industries	8,335	8,023	7,816	7,625	7,401	-12.6	0.7
Services	**734,946**	**745,262**	**752,353**	**763,226**	**764,426**	**3.9**	**76.5**
Wholesale trade	52,281	51,184	50,731	50,449	48,924	-6.9	4.9
Retail trade	105,893	104,288	104,281	102,161	100,942	-4.9	10.1
Transportation and warehousing	44,528	43,666	45,396	46,400	46,054	3.3	4.6
Information and cultural industries	11,450	10,934	10,781	10,934	10,998	-4.1	1.1
Finance, insurance and real estate	70,740	62,436	63,200	64,170	66,591	-6.2	6.7
Architectural, engineering and related services	18,576	17,643	17,664	17,839	17,479	-6.3	1.7
Computer system design and related services	23,174	21,865	23,154	24,312	24,583	5.7	2.5
Management, scientific and technical consulting services	27,045	24,258	24,471	25,305	25,193	-7.4	2.5
Scientific research and development services	2,422	2,403	2,432	2,468	2,447	1.0	0.2
Health care and social assistance	79,256	81,031	81,599	83,246	85,545	7.4	8.6
All other services	299,581	325,554	328,644	335,942	335,670	10.8	33.6

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.

Survey methodology

The 2013 industrial R&D intentions survey

The 2011 Research and Development in Canadian Industry (RDCI) survey collected data for four years to provide estimates of final research and development (R&D) expenditures for 2010, actual R&D expenditures for 2011, planned R&D expenditures for 2012 and R&D spending intentions for 2013. The 2011 RDCI questionnaire was sent in December 2012 and collection closed in May 2013. The RDCI survey mail-out included the supplement survey, Energy Research and Development Expenditures by Area of Technology, 2011.

Population and sample

The survey population comprised:

- all firms that had reported R&D expenditures in 2008, 2009, or 2010 reference year surveys;
- firms with an approved claim for a federal R&D income tax incentive for 2008, 2009, 2010 or 2011;
- firms that were identified by respondents in surveys of government science and technology activities as R&D contractors or grantees for 2011 to 2012;
- firms that were reported by other firms as funding or performing R&D in the prior collection cycle; and
- firms identified as funding or performing R&D in 2011 or 2012 through newspaper, journal articles or publicly available directories.

The population of R&D performers and funders comprising 20,203 enterprises in 2011 was then stratified into a frame composed of 55 industry groups that covered the entire business sector. Industrial non-profit associations and business joint ventures are included in the business enterprise sector. Entities in the household, government, higher education and private non-profit sectors are excluded.

Text table 1
RDCI frame and sample

	Enterprises
Frame	**20,203**
Available for sampling	13,025
Take none (smallest)	7,178
Available for sampling	**13,025**
Not selected	11,153
Sample	1,872
Must take	454
Take all (large)	637
Take some (medium)	421
Take some (small)	360

For reference year 2011, higher thresholds of R&D spending were applied to reduce the numbers of firms reporting R&D only in prior years, but not the reference year. This was done to reduce the number of respondents surveyed who no longer perform or fund R&D (i.e. out of scope).

Sample for reference year 2011

A sample of 1,872 enterprises, which was converted into 1,981 responding units, was selected from the frame consisting of the following groups:

1. A "must take" stratum consisting of special entities such as industrial non-profit organizations, technology purchasers or vendors, and known R&D performers that do not file scientific research and experimental development (SR&ED) tax incentive applications. These special entities were all selected to be included in the sample because there are no other sources of data available for them. Industrial non-profit organizations are not eligible for tax incentives while some commercial firms opt not to make a claim.

2. The "take all" stratum comprises the largest R&D performers in each of the industrial groups. These large R&D performers represented about two-thirds of R&D expenditures in each of the specified industry groups for the previous reference year. All units in this stratum were included in the sample.

3. The "take some" stratum is composed of mid-size R&D performers in each of the specified industry group. A sample of units from this stratum was included in the sample.

4. A coverage study stratum containing 50 firms with R&D expenditures reported to the Canada Revenue Agency (CRA) (GIFI L9282), but not otherwise part of RDCI frame, was added to the sample. Units that were in scope contributed to the estimate and will be included in the survey frame for future collection cycles.

5. A "take none" stratum comprised of the smallest R&D performers, those firms whose total R&D expenditures comprised the bottom 5% of all R&D expenditures in each industrial group, was created to reduce response burden. Firms in the "take none" stratum were excluded from the sample.

Of the 1,981 units sampled, there were 42 industrial non-profit organizations.

Collection

Collection in reference year 2011 continued the use of two features introduced in 2010. Firstly, a failed-edit follow-up platform enabled follow-up for records that had missing or inconsistent data. Secondly, respondents were given the option of completing internet-based electronic questionnaires. These questionnaires contained some interactive edits, but all of these records received the same treatment as the data received through paper questionnaires.

Survey response

For reference year 2011 RDCI the survey response rate was 69%, (respondents / (total survey population – out-of-scope respondents)). These units accounted for 61% of the overall estimate. For the industrial non-profit component of the sample the response rate was 60% with the responding units accounting for 92% of the overall estimate.

Following data collection, survey responses are processed for tabulation and data analysis.

Processing

The RDCI database is comprised of two sources of data: questionnaire data and administrative data from Canada Revenue Agency (CRA). These administrative data consist of approved Scientific Research and Experimental Development (SR&ED) tax claims, which are also known as "T661" or "Schedule 32" claims. The SR&ED tax data are received for unique Business Numbers (BNs). The questionnaires are also collected at the same level. The Business Register, a list of all known active businesses in Canada, provides a link between these BNs and the establishments, companies and enterprises to which they relate.

Where data are available from both questionnaires and SR&ED tax records for a given company (BN) the questionnaire data are used. This is because firms need not disclose all R&D expenditures in their T661 application. They may choose to report only selected R&D projects. There are also certain capital expenditures (land and buildings for R&D) which are included in the survey questionnaire, but are excluded from the SR&ED tax incentive program. Generally, the values reported through the survey response should be greater than or equal to the SR&ED tax data. Conceptually, there should be no cases where the reverse occurs.

Data from the RDCI questionnaires, the SR&ED tax data and the Energy R&D questionnaires were reviewed for consistency and completeness. The data editing process is presented according to sequence of activities followed.

Pre-grooming of data

In the pre-grooming stage of processing, edit checks are performed to identify missing and invalid entries that would point to data records that are in error. Extreme errors resulting from processing were identified in the tax and questionnaire data. An example of an error in the tax data is an extremely high R&D expenditure value that could be the result of data capture error. Very few such errors were identified. Any record identified was corrected manually.

Missing classification information (completeness)

For the 2011 survey cycle, over one thousand SR&ED approved tax records were not classified to a North American Industry Classification System (NAICS) group. These records were manually assigned a NAICS code.

All RDCI and Energy R&D records were verified to ensure they had a postal code in order to assign them to a province.

Data editing

Editing is a process to ensure that survey data are acceptable, complete, consistent and correct. There are three main categories of edits: validity, consistency and distribution edits. Validity and consistency edits are done one record or questionnaire at a time. However, distribution edits are performed by looking at data across questionnaires.

Validity edits

Validity edits identify incoherence in the data. Examples of validity edits include:

- Respondents reporting intramural R&D performance with no R&D personnel;
- Wages and salaries for R&D which are greater than the firms total wages and salaries;
- Units of measure issues (U.S. vs. Canadian dollars, dollars vs. thousands of dollars)

Consistency edits

Consistency edits verify the relationships between questions. Consistency edits may also be applied to the logical flow of the questionnaire, or may involve the use of administrative data or historical data. These types of edits typically verify relationship between questions.

For the RDCI, some examples of consistency edits are:

- Wages and salaries and other current costs on R&D performed should equal total current costs;
- Total current costs at Canada level should equal the total current expenditures reported for provinces and territories;
- The total R&D expenditures reported for Canada should equal the total sources of funds for R&D performed;

- Total R&D expenditures should match the total for all fields of science;
- Total R&D personnel should likewise be the same across all questions.

Distribution edits

A question on the RDCI allows for the distribution of values for expenditures and personnel across provinces, while another new question allocates expenditures and personnel across science types. Expenditures are also allocated across sources of funding. These distribution questions are edited to identify outliers which are then validated.

Imputation methods employed in RDCI survey

It is not usually possible to resolve all records in error during the pre-grooming stage. Imputation replaces items that fail the edit rules to fix partial non-response or total non-response.

Imputation for RDCI uses the following data sequence:

- Actual respondent estimates from the prior year for planned expenditures;
- SR&ED tax data;
- Random ratio donors anchored to historical data.

Deterministic imputation

Deterministic imputation is done as part of the editing process. It is generally specified as action items to be performed using logic decision tables. In deterministic imputation only one value is deemed possible. Deterministic imputation is generally of the form A+B=C. An example would be 'total professionals + total technical and administrative staff = total R&D personnel.

Imputation by substitution

Imputation by substitution involves the use of an external data source. An auxiliary data source such as historical data or administrative data is used for missing data. For the RDCI, COA4 (explained below) and PD7 (explained below) files were used to impute revenues and employment data. The T661 (Scientific Research and Experimental Development) tax credit applications were used as an alternate data source that was treated as respondent data.

For SR&ED tax filers, revenue figures were adjusted to reflect corporate income tax data for the corresponding filer. The tax data are from T2 corporate income tax files which are mapped to the *Statistics Canada's Chart of Accounts (COA)* classification by firm. The variable COA4 relating to (Total) Revenues of a firm was used to improve data quality for missing or inconsistent total revenues.

The Payroll Deductions total employment data (PD7) file was also used to improve the quality of missing or inconsistent total employment data. Payroll Deduction data are monthly data, and therefore, an annual average was calculated from the Canada Revenue Agency (CRA) monthly Payroll Deduction file for all firms that reported having one or more employees in at least one of the twelve months of the tax year.

Imputation method based on estimators

Imputation method based on estimators generally refers to the use of ratios based on historical data or other variables on the questionnaire. To estimate R&D expenditures two years past the base year, editing rules were applied using donor ratios and a response was imputed based on the response of a similar firm in the same industry group. Data are modeled using mathematical formulae.

Donor records for imputation were determined by imputation class, which were defined by population subgroups, NAICS group and size. Size was determined by total R&D expenditure (total intramural and extramural expenditures) which was used to group enterprises. For the suite of RDCI surveys, the following imputation methods were employed: deterministic imputation, substitution, and use of estimators.

For example, a firm reported $1 million for total intramural R&D expenditures for the reference year (RY) and did not report expenditures for RY+1 and RY+2. To impute for RY+1 and RY+2 periods, a donor is found within the industry group and size category. If the donor reported a 5% increase in the first year and no change from that estimate in the second year, the missing record would be imputed the following values:

RY	1,000,000 anchor
RY+1	1,050,000 imputed value
RY+2	1,000,000 imputed value

Limits on the expenditure ratio from the donor are applied such that the maximum shift between RY and RY +1 and RY and RY +2 does not exceed 20%.

Also, during the data processing stage, there is a need to create projected records to account for tax data which have not been received to date. 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, approved and the final approved claims are forwarded to Statistics Canada. As a result, data may not arrive for up to two years after the expenditures were incurred and occasionally longer. To address the situation, the imputation system projects existing records forward in time. As the actual administrative data arrive, these imputed records are removed from the database and replaced with the actual tax data. This imputation system confirms the firm is active using Statistics Canada's Business Register, and then applies an imputation based on industry trends. Since the imputation does not seriously influence overall trends, the R&D data are published as soon as possible after the survey is conducted, and are subject to minor revisions in subsequent publications.

The SR&ED tax data records do not have all of the detail that is found on the questionnaire. For certain portions of the questionnaire, the detail for the tax records is imputed. This is principally in the regard to planned and forecast expenditures, the level of education of the R&D personnel and the provincial distribution of R&D expenditures. For the expenditures and personnel imputation, ratios from respondents are applied to anchor variables that are available from the SR&ED tax data to impute detail. For provincial distribution, information about the structure of the enterprise is obtained from the Business Register. For simple records, the expenditures are assigned to the province from which the claim was filed. For more complex enterprises, the current R&D expenditures and personnel are allocated based on the ratios of revenues by province within the enterprise's establishments across Canada. Capital R&D expenditures are allocated to the province with the largest amount of current expenditures.

Data verification

Following the completion of the edit and imputation process, data are verified and are compared against previous years' estimates.

A general verification of components to totals and totals across the RDCI questionnaire is conducted as a first step after imputation. Values are confirmed to add up correctly and to confirm that the classification variables (NAICS, employment and revenue) exist for each record and are found reasonable, a review of the R&D micro data follows.

For the Reference Year (RY), an industry by province table is compared to the results with the published data from the previous years. Extra scrutiny is paid to the largest contributors.

For RY+1 and RY+2, patterns in the imputation of the SR&ED tax records and incomplete questionnaires are reviewed.

At this stage, verification of data is to examine and understand the underlying data and to be able to account for changes. Records are again verified for the main R&D variables by industry group and by province. The largest records for each province and industry group are reviewed to understand what underlies changes to the estimates.

Sources of errors

Coverage

Coverage errors consist of omissions, erroneous inclusions, and duplication in the frame used to conduct the survey. Survey questionnaires were sent to all known large R&D performing and/or funding firms i.e., those believed to have the largest R&D expenditures within their industry group. If a firm has never responded to the survey and does not apply for T661 tax credits, it can only be identified for the survey by mention in the media or through reporting as a recipient or source of funds from an R&D survey for other sectors (examples: government, private non-profit). Firms are added to the frame based on such a review of other sources.

Administrative data are used for the remaining R&D performing or funding firms which are not included in the questionnaire coverage. Firms have up to 18 months after their fiscal year end to file a Scientific Research& Experimental Development tax incentive program claim for their R&D expenditures.

Errors in classification, notably industrial and geographical, are also possible and would have coverage impacts within their specified categories.

Non-response

Non-response errors occur when there is no response to one or all of the survey questions. Non-response leads to an increase in variance as a result of a reduction in the actual size of the sample. Imputing for non-response may produce a bias if the non-respondents have characteristics of interest that are different from those of the respondents.

Non-response is a concern in a couple of areas. One is the estimate of R&D expenditures two years past the base year (planned and forecast R&D expenditures). Non-response is an issue for this question as some firms are hesitant to estimate likely expenditures. If no response is provided, editing rules are applied and a response is imputed based on the response of a similar firm in the same industry group. Mitigation of non-response for this question consists of specific training of data collection staff to understand the importance of these data and to be able to explain their importance to respondents.

The second issue involves the use of SR&ED tax data for the remaining R&D performers. These data represent approximately one-third of all R&D performed by businesses by value. The SR&ED tax records do not contain as much information as those from the questionnaire. The data not contained on the tax form are imputed based the respondent data from questionnaires, based on the imputation criteria specified previously.

Non-response is generally addressed through imputation. Automatic imputations are made for the SR&ED tax data population as well as for non-response and invalid response within the questionnaire portion of the sampled population.

Response errors

Response errors occur when the response provided differs from the real value; such errors may be attributable to the respondent, the interviewer, the questionnaire, the collection method or the respondent's record-keeping system.

Processing and data capture

Processing errors occur at subsequent stages of the process, when checking, coding, entering, imputing, and tabulating data.

Processing errors are monitored and controlled using quality control techniques. Detailed examination is performed on numerous tables and listings as part of data validation and analysis before publication tables are created.

Sampling

Sampling errors occur when the sample is not representative of the population. As the RDCI is a census there are no sampling errors.

Comparisons with other data sources

Discrepancies between federal government reporting of funds to industry (the business enterprise sector) for R&D and industry's reporting of such funds may exist as a result of different interpretations of the character of R&D. 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. It may even be reported in a different fiscal period. This activity may not be reported at all 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 may not agree with those reported in *Federal Science Activities, 2010/2011, (Catalogue no. 88-204-X*).

Industrial Classification

The RDCI survey is designed to reflect respondents as they are classified on the Business Register and the structure of the firm as it reports its R&D activities (including reporting R&D expenditures for the SR&ED tax incentive program). As a result, a firm can only be assigned to one industry although that firm may be engaged in activities in several industries. The assignment is based on the activity from which the firm derived the greatest portion of its value added.

Research and Development in Canadian Industry (RDCI) surveys enterprises. An enterprise is defined as a business unit that directs and controls the allocation of resources relating to its operations, and for which consolidated financial and balance sheet accounts are maintained. The activity with the most economic weight or importance determines the NAICS code that Statistics Canada assigns to the enterprise.

The unit of measure for most economic production surveys is the establishment. In the case of the RDCI, the unit of measure is the enterprise, which may include a number of establishments. Differences in the unit of measure, therefore, may make comparison between the RDCI and economic production surveys difficult.

The economic importance of activities undertaken by enterprises can vary from year to year due to changes in market conditions, for instance, in the relative importance of wholesaling, manufacturing and scientific research and development services undertaken by the enterprise. Industries illustrating movements between NAICS codes due to changes in the influence of activities include pharmaceuticals. From year to year, the most important economic activity of these enterprises can move among pharmaceutical and pharmacy supplies wholesaler-distributors (NAICS 414510), pharmaceutical and medicine manufacturing (NAICS 325410) and scientific research and development services in the physical, engineering and life sciences (NAICS 541710). Enterprises can shift between natural resources and manufacturing industries.

Those enterprises with economic activities related to fossil fuels, specifically oil and gas and their refined products also often show movement between NAICS codes. For example, enterprises performing R&D can move between oil and gas extraction (NAICS 2111) and petroleum and coal product manufacturing (NAICS 3241).

Industrial R&D personnel estimates

There are two sources of data for the industrial R&D personnel estimates: questionnaire estimates for firms covered by the Research and Development in Canadian Industry (RDCI) survey; and administrative data taken from final approved Scientific Research and Experimental Development (SR&ED) tax incentive program claims. Where data are available from both sources, respondent data from the questionnaire are used.

Users are advised that there are differences in the data collected from the two sources of industrial R&D personnel data. The two most important differences are outlined below.

First, the SR&ED tax incentive program claims for R&D personnel are not revised through the review cycle of the claims. Therefore, the final approved claims, which may have had projects denied, will contain the estimated number of R&D personnel from the original claim. Statistics Canada performs data coherence exercises on the supplied SR&ED R&D personnel data using relationships between wages and salaries to estimated number of R&D personnel, reviewing other current costs combined with wages and salaries to estimated number of R&D personnel and relationship of number of R&D personnel to total employment of the claimant.

Second, the SR&ED tax incentive program claims do not collect R&D personnel by level of education. Therefore, for the total universe data are imputed based upon response to the RDCI survey. The data quality for imputation of industrial R&D personnel by level of education for all industries is acceptable. Users are cautioned that industrial R&D personnel data by level of education, by industrial detail, and/or by provincial distribution are subject to suppression for quality reasons.

Estimates

Quality indicators are provided based on the impact of imputation on the estimate. These indicators are as follows:

Text table 2
Quality indicators

Symbol	Meaning	Coefficient of variation
A	Excellent	0 to 4.9%
B	Very good	5.0% to 9.9%
C	Good	10.0% to 14.9%
D	Acceptable	15.0% to 24.9%
E	Use with caution	25.0% to 34.9%
F	Too unreliable to be published	> 35.0%

Confidentiality programs are also applied to ensure that the release of data conforms to Statistics Canada policy on confidentiality.

Technical notes

Data availability

Data for the reference year 2011 are available for all tables with the exception of counts of firms.

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 firms.

Regional data on research and development (R&D) expenditures and personnel are only available for 1977, 1979 and 1981 to 2011.

Terminology

The following terminology is used within the publication:

Performing company: is the organization which carried out the R&D. 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.

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 from 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 from 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. Included are industrial non-profit organizations and trade associations, R&D performed by consortia, and R&D performed by non-residents without associated commercial enterprises 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 corporation 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 corporation, 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.

Professional personnel: are researchers or R&D managers. They can be either scientists or engineers. Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned. Managers and administrators engaged in the planning and management of the scientific and technical aspects of a researcher's work also fall into this category.

Scientists and engineers: Are professionally trained to conduct investigations or enquiries to acquire a theoretical, abstract or practical knowledge of physical and natural phenomena, improve or develop concepts, theories and operational methods, or apply scientific and technological knowledge relating to fields such as physics, astronomy, meteorology, chemistry, geophysics, geology, mathematics, statistics, computing, architecture, engineering and technology.

Senior administrators and managers: Managers and administrators engaged in the planning and management of the scientific and technical aspects of a researcher's work also fall into this category.

Technical and administrative support personnel: Technicians and equivalent staff are persons whose main tasks require technical knowledge and experience in one or more fields of engineering, physical and life sciences. Other supporting staff includes skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects or directly associated with such projects. Both technical and administrative support personnel work to directly support the activities of researchers.

Technicians and technologists: Technically trained personnel who assist scientists and engineers in R&D, e.g. chemical technicians, draftspersons. They may be certified by either provincial educational authorities or by provincial or national scientific or engineering associations.

Other administrative support: Personnel directly engaged in the R&D program, e.g. machinists and electricians in construction of prototypes, or clerks, typists, accountants and storekeepers engaged in the administration or clerical support of R&D firms.

Full-time equivalent (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 four scientists engaged in R&D work, one works solely on R&D projects and the remaining three devote only one quarter of their working time to R&D, then: FTE = 1 + 1/4 + 1/4 + 1/4 = 1.75 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

North American Industry Classification System (NAICS) is the standard industrial classification system used for presenting R&D expenditures data for the business enterprise sector. There are limitations to its use. One important limitation is due to firms with activities in more than one industry (e.g., firms which both refine petroleum and extract oil). Another is caused by the concentration of the R&D activity among a few firms. In order to prevent disclosure of individual respondents NAICS codes may be combined 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 firms chosen only for their involvement in R&D.

There are some restrictions on the application of the NAICS, for example, large R&D performing firms that are classified as "holding companies" are assigned to the principle industrial activity of the firm.

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

For the purpose of this survey, 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 technological 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

Text table 1
North American industry classification system (NAICS) 2007 by Industry group

	NAICS code
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

Text table 1 – continued

North American industry classification system (NAICS) 2007 by Industry group

	NAICS code
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