

Science Statistics

Scientific and Technological
Activities of Provincial
Governments and
Provincial Research
Organizations, 2003/2004 to 2007/2008



November 2009 Edition



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Symbols

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

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Highlights

Scientific and technological activities of provincial governments and provincial research organizations, 2003/2004 to 2007/2008

This report includes scientific and technological (S&T) activities involving the generation, dissemination and application of new scientific and technological knowledge for the six provinces of Newfoundland and Labrador, New Brunswick, Ontario, Manitoba, Alberta and British Columbia. The main S&T activity is research and development (R&D). Related scientific activities (RSA) are also included. Scientific expenditures for Newfoundland and Labrador are based on last year's survey and therefore their data for 2007/2008 are indicated as preliminary. The provincial government of Quebec conducts a survey of its R&D activities, the results of which it shares with Statistics Canada.

- The leading provinces for total R&D expenditures in 2007/2008 continued to be Ontario (\$595.3 million); Quebec (\$498.1 million) and Alberta (\$374.9 million) (table 3-1).
- In 2007/2008, total expenditures on scientific activities by the six provinces varied by socio-economic objectives. For all six provinces, protection and improvement of human health was ranked as one of the top five S&T expenditure objectives as determined by the amount spent. (table 5)
- Of the six provinces, British Columbia had the largest S&T expenditure increase at over 41% (table 3-1). This increase reflects higher S&T spending in both the natural sciences up by 59% (table 3-3) and the social sciences, up 7.5% over the previous year (table 3-7).
- In 2007/2008 the distribution of S&T expenditures varied by province. Intramural S&T expenditures predominated in Manitoba (55%), New Brunswick (51%), Newfoundland and Labrador (42%) and Alberta (41%). (table 3-2)
- For 2007/2008 Ontario allocated 41% of its total S&T expenditures to the higher education sector and 25% on intramural spending. For British Columbia, about 28% of S&T expenditures went to intramural spending and 26% to the higher education sector. (table 3-2)
- In 2007/2008, British Columbia dedicated 73% of S&T expenditures to R&D followed by, Alberta and Ontario, both at 63%, New Brunswick at 43%, Manitoba at 33% and Newfoundland and Labrador at 14% (table 3-2).
- In 2007/2008 total expenditures of provincial research organizations on scientific activities reached approximately \$112 million, an increase of 48% over the previous year. The majority of this increase was due to the Aurora Research Institute having a three year R&D contract of \$34 million which ended in early 2009. (table 14)

Analysis

Scientific and technological activities of provincial governments and provincial research organizations, 2003/2004 to 2007/2008

The 2007/2008 S&T expenditures for the provincial governments of Ontario, Alberta and British Columbia reported increases in S&T spending while Manitoba indicated a slight decrease from the previous year (table 3-1).

The leading provinces for total R&D expenditures in 2007/2008 continued to be Ontario (\$595.3 million); Quebec (\$498.1 million) and Alberta (\$374.9 million) (table 3-1).

Provincial government research and development expenditures in the natural sciences and engineering are available for Newfoundland and Labrador, New Brunswick, Quebec, Ontario, Manitoba, Alberta and British Columbia. In 2007/2008, the Alberta government led in the amount spent on intramural R&D in the natural sciences and engineering at \$138.6 million. (table 3-5)

For 2007/2008 in the natural sciences and engineering, the Alberta government funded the highest amount of R&D in the business enterprise sector, \$62.5 million (table 3-5).

The provincial government of Ontario indicated that \$303.0 million was intended for R&D expenditures on natural sciences and engineering in the higher education sector in 2007/2008. The Quebec provincial government funded \$205.5 million of natural science and engineering R&D to the higher education sector. The third largest amount of funding in the natural sciences and engineering to the higher education sector for R&D activities came from the Alberta provincial government at \$129.4 million. (table 3-5)

The provinces allocate their S&T expenditures by socio-economic objectives. These objectives are:

1. Exploration and exploitation of the earth
2. Infrastructure and general planning of land use
3. Control and care of the environment
4. Protection and improvement of human health
5. Production, distribution and rational utilization of energy
6. Agriculture production and technology
7. Fishing
8. Forestry
9. Industrial production and technology
10. Social structures and relationships
11. Exploration and exploitation of space
12. Basic research
13. Other civil research

In 2007/2008, total expenditures on scientific activities varied by objective. Protection and improvement of human health was ranked as one of the top five S&T expenditure objectives as determined by amount spent. (table 5)

Newfoundland and Labrador's top three priorities for total S&T activities by objective in 2007/2008 were social structures and relationships, infrastructure and general planning of land use and industrial production and technology (table 5).

New Brunswick's primary focus for total S&T expenditures in 2007/2008 by objective were on infrastructure and general planning for land use, followed by social structures and relationships and basic research (table 5).

In 2007/2008 Ontario's priorities for total S&T activities in 2007/2008 by objective were concentrated in protection and improvement of human health, control and care of the environment and basic research (table 5).

For Manitoba, in 2007/2008 the primary objectives for total S&T expenditures were in social structures and relationships, infrastructure and general planning for land use, and protection and improvement of human health (table 5).

Alberta's top three objectives of total S&T expenditures in 2007/2008 were protection and improvement of human health; production, distribution and rational utilization of energy and control and care of the environment (table 5).

British Columbia's priorities for total S&T activities in 2007/2008 by objective were concentrated in basic research, protection and improvement of human health and control and care of the environment (table 5).

In 2007/2008, the provincial government of Alberta dedicated 840 full-time equivalents to its R&D activities of which 389 were in the scientific and professional category. Quebec's provincial government followed with 775 full-time equivalents working on R&D activities. Quebec with 438 had more full-time equivalent scientists and professionals engaged in research and development than any other Canadian province. Ontario's provincial government dedicated 616 full-time equivalents to R&D activities of which 378 were in the scientific and professional category. (table 12-2)

This report also presents the results of the S&T activities of provincial research organizations (PROs).

In 2007/2008 total expenditures of the PROs on scientific activities reached approximately \$112 million, an increase of 48% over the previous year. The majority of this increase was due to the Aurora Research Institute having a three year R&D contract of \$34 million which ended in early 2009. (table 14)

Almost 89% of Canada's \$112 million in S&T expenditures by the PROs occurred in the Northwest Territories, Saskatchewan and Quebec. The PRO in the Northwest Territories accounted for \$35.8 million, the PRO in Saskatchewan accounted for \$33.3 million, while the Quebec PRO spent \$30.1 million. (table 14)

Related products

Selected publications from Statistics Canada

88-202-X	Industrial Research and Development: Intentions
88-204-X	Federal Scientific Activities
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	Business Special Surveys and Technology Statistics Division Working Papers
88F0017M	Science, Innovation and Electronic Information Division Research 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
358-0026	Intellectual property management, by federal departments and agencies indicators, annual

Selected surveys from Statistics Canada

4201	Research and Development in Canadian Industry
4204	Research and Development of Canadian Private Non-Profit Organizations
4208	Provincial Research Organizations (PRO)
4209	Provincial Government Activities in the Natural Sciences
4210	Provincial Government Activities in the Social Sciences
4212	Federal Science Expenditures and Personnel, Activities in the Social Sciences and Natural Sciences
5109	Higher Education Research and Development Estimates

Selected summary tables from Statistics Canada

- *Research and development performed by the business enterprise sector*
- *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)*

Statistical tables

Table 1
Provincial indicators, 2006

	Population ¹	Provincial ² Gross Domestic Product	Gross ³ Domestic Expenditures on Research and Development	Gross ³ Domestic Expenditures on Research and Development over Provincial Gross Domestic Product	Gross Domestic Expenditures on Research and Development over Capita
	thousands	millions of dollars		ratio	dollars
Canada ⁴	32,692	1,450,490	28,715	2.0	878
Newfoundland and Labrador	509	25,994	262	1.0	515
Prince Edward Island	138	4,321	70	1.6	507
Nova Scotia	937	31,737	502	1.6	536
New Brunswick	745	25,825	271	1.0	364
Quebec ⁵	7,651	281,521	7,595	2.7	993
Ontario ⁵	12,709	559,778	12,685	2.3	998
Manitoba	1,185	44,911	558	1.2	471
Saskatchewan	993	46,494	465	1.0	468
Alberta	3,453	239,584	2,412	1.0	699
British Columbia	4,264	182,743	2,644	1.4	620

1. CANSIM, table 051-0005

2. CANSIM, table 384-0002

3. Gross domestic expenditures on research and development in Canada and the provinces, national estimates 1997 to 2008, provincial estimates 2002 to 2006.

4. Includes the Yukon, Northwest Territories and Nunavut, and the National Capital Region.

5. Quebec and Ontario Gross Domestic Expenditures on Research and Development figures exclude federal government expenditures of \$1,098 million performed in the National Capital Region.

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

Source(s): CANSIM, table 051-0005 and table 384-0002 relate to Provincial Gross Domestic Product.

Table 2
Provincial distribution of gross expenditures on research and development by performing and funding sectors, 2006/2007

	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia	Subtotal ¹ Canada	National Capital Region	Total ¹ Canada
	millions of dollars												
Performing Sector	262	70	502	271	7,595	12,685	558	465	2,412	2,644	27,492	1,098	28,715
Federal government	27	26	73	30	371	494	81	67	133	91	1,398	1,098	2,496
Provincial governments	4	0	6	2	77	70	6	4	125	18	312	0	312
Provincial Research Organizations	...	...	...	2	8	...	0	12	...	...	22	0	22
Business enterprise	99	13	106	102	4,598	8,033	184	167	1,236	1,576	16,137	0	16,137
Higher Education	132	31	317	135	2,541	4,088	287	215	919	959	9,624	0	9,624
Private non-profit organizations	...	...	...	...	...	...	...	...	...	...	...	...	125
Funding Sector	262	70	502	271	7,595	12,685	558	465	2,412	2,644	27,492	1,098	28,715
Federal government	75	35	158	65	1,146	1,563	150	122	372	419	4,109	1,080	5,225
Provincial governments	8	2	12	8	378	525	26	38	264	134	1,395	1	1,407
Provincial Research Organizations	...	...	...	0	0	...	0	0	...	...	0	0	0
Business enterprise	102	12	117	104	4,199	7,035	192	168	1,220	1,034	14,201	18	14,234
Higher Education	68	18	171	84	1,200	1,864	136	113	383	398	4,434	0	4,434
Private non-profit organizations	3	2	22	7	179	357	38	12	57	99	776	0	830
Foreign	7	0	22	4	493	1,342	16	11	117	560	2,578	0	2,585

1. Includes the Yukon Territory, Northwest Territories and Nunavut.

Note(s): Quebec and Ontario figures exclude federal government expenditures on research and development performed in the National Capital Region. The private non-profit (PNP) sector appears in both the performing and funding sector for the gross domestic expenditure on research and development (GERD) for Canada. Commencing with reference year 2000 the data for the PNP sector performing research and development are not distributed by provinces, territories or the National Capital Region. The national totals of research and development by performing sector include the PNP sector. The data for the PNP sector funding research and development continue to be distributed by provinces, territories and the National Capital Region. Components may not add to total due to rounding.

Table 3-1
Total expenditures of provincial governments on scientific activities — By activity

	2003/2004	2004/2005	2005/2006	2006/2007 ^f	2007/2008
	thousands of dollars				
Science and technology					
Newfoundland and Labrador	..	..	..	46,548	64,173 ^p
New Brunswick	..	..	..	..	63,158
Ontario	721,773	757,963	826,197	866,647	948,825
Manitoba	79,869	78,721	85,635	94,542	92,609
Alberta	313,546	362,633	381,769	455,926	592,173
British Columbia	260,153	230,163	327,791	306,369	432,896
Research and development					
Newfoundland and Labrador	..	..	..	7,474	9,284 ^p
New Brunswick	..	..	..	..	27,181
Quebec ¹	559,537	415,774	423,949	462,147	498,134
Ontario	473,871	444,830	555,643	548,865	595,272
Manitoba	23,495	26,133	27,372	29,902	30,578
Alberta	241,407	263,370	274,501	318,022	374,913
British Columbia	163,386	130,198	225,411	144,525	316,329
Related scientific activities					
Newfoundland and Labrador	..	..	..	39,074	54,889 ^p
New Brunswick	..	..	..	..	35,977
Ontario	247,902	313,133	270,554	317,782	353,553
Manitoba	56,374	52,588	58,263	64,640	62,031
Alberta	72,139	99,263	107,268	137,904	217,260
British Columbia	96,767	99,965	102,380	161,844	116,567

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

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

Table 3-2
Total expenditures of provincial governments on scientific activities — By activity, and by sector of performance, 2007/2008

	Intramural	Business enterprise	Higher education	Hospitals and health organizations	Provincial research organizations	Other	Total
thousands of dollars							
Science and technology							
Newfoundland and Labrador p	27,201	31,999	999	340	...	3,634	64,173
New Brunswick	32,133	14,085	5,398	570	1,412	9,560	63,158
Ontario	238,451	50,244	384,612	173,189	0	102,329	948,825
Manitoba	51,054	15,390	18,075	3,791	779	3,520	92,609
Alberta	242,640	124,476	131,513	56,380	0	37,164	592,173
British Columbia	119,033	55,853	112,511	62,539	0	82,960	432,896
Research and development							
Newfoundland and Labrador p	4,832	3,570	517	0	...	365	9,284
New Brunswick	9,931	9,080	693	42	969	6,466	27,181
Quebec 1	81,276	30,172	267,493	59,133	1,458	58,602	498,134
Ontario	56,636	13,535	343,518	143,539	0	38,044	595,272
Manitoba	5,821	218	17,764	3,791	750	2,234	30,578
Alberta	140,693	63,411	130,297	19,872	0	20,640	374,913
British Columbia	30,479	45,712	108,152	60,987	0	70,999	316,329
Related scientific activities							
Newfoundland and Labrador p	22,369	28,429	482	340	...	3,269	54,889
New Brunswick	22,202	5,005	4,705	528	443	3,094	35,977
Ontario	181,815	36,709	41,094	29,650	0	64,285	353,553
Manitoba	45,233	15,172	311	0	29	1,286	62,031
Alberta	101,947	61,065	1,216	36,508	0	16,524	217,260
British Columbia	88,554	10,141	4,359	1,552	0	11,961	116,567

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

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

Table 3-3
Total expenditures of provincial governments on scientific activities — In the natural sciences and engineering, by activity

	2003/2004	2004/2005	2005/2006	2006/2007 ^r	2007/2008
	thousands of dollars				
Science and technology					
Newfoundland and Labrador	..	..	..	10,532	14,050 ^p
New Brunswick	..	..	..	..	40,138
Ontario	569,547	616,994	684,520	699,765	798,627
Manitoba	50,813	53,814	57,197	66,222	65,988
Alberta	291,865	330,023	356,834	424,710	508,739
British Columbia	199,528	155,933	199,860	199,399	317,905
Research and development					
Newfoundland and Labrador	..	..	..	6,724	8,821 ^p
New Brunswick	..	..	..	..	19,041
Quebec ¹	436,550	323,202	306,544	346,429	369,861
Ontario	412,136	394,068	490,848	464,544	531,956
Manitoba	19,804	22,278	22,951	26,315	26,321
Alberta	235,564	251,888	266,386	307,283	360,136
British Columbia	117,570	73,069	136,630	84,125	223,524
Related scientific activities					
Newfoundland and Labrador	..	..	..	3,808	5,229 ^p
New Brunswick	..	..	..	..	21,097
Ontario	157,412	222,926	193,672	235,221	266,671
Manitoba	31,009	31,536	34,246	39,907	39,667
Alberta	56,301	78,135	90,448	117,427	148,603
British Columbia	81,958	82,864	63,230	115,274	94,381

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

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

Table 3-4
Total expenditures of provincial governments on scientific activities — In the natural sciences and engineering, by activity, 2007/2008

	Newfoundland and Labrador ^P	New Brunswick	Quebec ¹	Ontario	Manitoba	Alberta	British Columbia
	thousands of dollars						
Total science and technology	14,050	40,138	..	798,627	65,988	508,739	317,905
Total research and development	8,821	19,041	369,861	531,956	26,321	360,136	223,524
Current expenditures							
In-house	4,213	7,923	40,090	40,403	3,900	63,258	27,973
Contracts	135	7,207	4,517	77,892	308	74,280	10,852
Grants	4,292	3,776	264,756	386,389	20,362	194,292	183,037
Research fellowships	0	0	42,590	15,776	1,145	816	54
Administration of extramural research and development programs	6	135	16,010	10,022	606	19,063	779
Sub-total	8,646	19,041	367,962	530,482	26,321	351,709	222,695
Capital expenditures	175	0	1,899	1,474	0	8,427	829
Total related scientific activities	5,229	21,097	..	266,671	39,667	148,603	94,381
Current expenditures							
Education support	1,289	2,727	..	13,896	74	980	1,163
Technical surveys	195	8,008	..	90,798	14,708	80,342	51,225
Information services	2,691	2,774	..	24,705	1,554	24,090	20,799
Special services and studies	1,052	6,002	..	64,357	22,252	32,299	11,927
Museum services	0	0	..	49,002	704	2,825	598
Administration of extramural related scientific activities programs	0	149	..	4,771	22	3,698	577
Sub-total	5,227	19,660	..	247,529	39,314	144,234	86,289
Capital expenditures	2	1,437	..	19,142	353	4,369	8,092

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

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

Table 3-5
Total expenditures of provincial governments on scientific activities — In natural sciences and engineering, by activity and sector of performance, 2007/2008

	Intramural	Business enterprise	Higher education	Hospitals and health organizations	Provincial research organizations	Other	Total
thousands of dollars							
Science and technology							
Newfoundland and Labrador ^p	8,279	4,645	761	0	...	365	14,050
New Brunswick	21,142	13,422	2,450	187	927	2,010	40,138
Ontario	193,926	41,530	334,491	150,660	...	78,020	798,627
Manitoba	29,497	13,741	14,912	3,731	779	3,328	65,988
Alberta	215,319	118,663	130,046	18,181	...	26,530	508,739
British Columbia	105,268	53,113	79,299	0	...	80,225	317,905
Research and development							
Newfoundland and Labrador ^p	4,394	3,570	492	0	...	365	8,821
New Brunswick	8,058	8,850	575	42	927	589	19,041
Quebec ¹	59,081	29,836	205,510	26,637	1161	47,637	369,861
Ontario	51,899	12,900	302,968	140,868	...	23,321	531,956
Manitoba	4,506	218	14,882	3,731	750	2,234	26,321
Alberta	138,568	62,545	129,395	13,311	...	16,317	360,136
British Columbia	29,635	45,615	77,855	0	...	70,419	223,524
Related scientific activities							
Newfoundland and Labrador ^p	3,885	1,075	269	0	...	0	5,229
New Brunswick	13,084	4,572	1,875	145	0	1,421	21,097
Ontario	142,027	28,630	31,523	9,792	...	54,699	266,671
Manitoba	24,991	13,523	30	0	29	1,094	39,667
Alberta	76,751	56,118	651	4870	...	10,213	148,603
British Columbia	75,633	7,498	1,444	0	...	9,806	94,381

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

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

Table 3-6
Total expenditures of provincial governments on scientific activities — In natural sciences and engineering, by objective, 2007/2008

	Newfoundland and Labrador ^p	New Brunswick	Ontario	Manitoba	Alberta	British Columbia
thousands of dollars						
Total	14,050	40,138	798,627	65,988	508,739	317,905
Exploration and exploitation of the earth	5,000	1,729	40,546	8,403	13,127	6,941
Infrastructure and general planning of land use	1,062	22,992	59,767	20,483	21,988	43,487
Control and care of the environment	603	6,267	138,535	6,367	71,500	50,994
Protection and improvement of human health	0	3,737	219,617	10,823	95,091	90
Production, distribution and rational utilization of energy	0	0	29,127	118	99,026	30,022
Agriculture production and technology	0	1,934	51,626	4,001	54,067	16,234
Fishing	1,263	159	4,029	1,525	0	341
Forestry	543	2,155	25,968	2,960	46,365	29,524
Industrial production and technology	3,827	52	89,586	2,675	32,251	5,672
Social structures and relationships	0	30	49,239	1,158	3,410	0
Exploration and exploitation of space	0	0	473	0	1,650	0
Basic research	1,752	1,083	88,447	7,473	67,451	134,600
Other civil research	0	0	1,667	2	2,813	0

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

Table 3-7
Total expenditures of provincial governments on scientific activities — In the social sciences and humanities, by activity

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
	thousands of dollars				
Science and technology					
Newfoundland and Labrador	..	..	..	36,016	50,123 P
New Brunswick	..	..	..	..	23,020
Ontario	152,226	140,969	141,677	166,882	150,198
Manitoba	29,056	24,907	28,438	28,320	26,621
Alberta	21,681	32,610	24,935	31,216	83,434
British Columbia	60,625	74,230	127,931	106,970	114,991
Research and development					
Newfoundland and Labrador	..	..	..	750	463 P
New Brunswick	..	..	..	..	8,140
Quebec ¹	122,986	92,572	117,405	115,718	128,273
Ontario	61,735	50,762	64,795	84,321	63,316
Manitoba	3,691	3,855	4,421	3,587	4,257
Alberta	5,843	11,482	8,115	10,739	14,777
British Columbia	45,816	57,129	88,781	60,400	92,805
Related scientific activities					
Newfoundland and Labrador	..	..	..	35,266	49,660 P
New Brunswick	..	..	..	..	14,880
Ontario	90,491	90,207	76,882	82,561	86,882
Manitoba	25,365	21,052	24,017	24,733	22,364
Alberta	15,838	21,128	16,820	20,477	68,657
British Columbia	14,809	17,101	39,150	46,570	22,186

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

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

Table 3-8
Total expenditures of provincial governments on scientific activities — In the social sciences and humanities, by activity, 2007/2008

	Newfoundland and Labrador ^P	New Brunswick	Quebec ¹	Ontario	Manitoba	Alberta	British Columbia
	thousands of dollars						
Total science and technology	50,123	23,020	..	150,198	26,621	83,434	114,991
Total research and development	463	8,140	128,273	63,316	4,257	14,777	92,805
Current expenditures							
In-house	341	1,702	15,539	3,925	950	1,121	684
Contracts	0	348	2,159	2,015	295	1,461	25,812
Grants	25	5,919	91,180	46,835	2,640	11,663	66,149
Research fellowships	0	0	13,796	9,759	302	0	75
Administration of extramural research and development programs	96	156	5,144	782	70	531	85
Sub-total	462	8,125	127,819	63,316	4,257	14,776	92,805
Capital expenditures	1	15	454	0	0	1	0
Total related scientific activities	49,660	14,880	..	86,882	22,364	68,657	22,186
Current expenditures	49,660	14,405	..	85,582	22,286	66,946	22,050
Administration of extramural related scientific activities programs	0	475	..	1,200	45	1,690	136
Sub-total	49,660	14,880	..	86,782	22,331	68,636	22,186
Capital expenditures	0	0	..	100	33	21	0

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

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

Table 3-9
Total expenditures of provincial governments on scientific activities — In the social sciences and humanities, by activity and by sector of performance, 2007/2008

	Intramural	Business enterprise	Higher education	Hospitals and health organizations	Provincial research organizations	Other	Total
thousands of dollars							
Science and technology							
Newfoundland and Labrador ^p	18,922	27,354	238	340	...	3,269	50,123
New Brunswick	10,991	663	2,948	383	485	7,550	23,020
Ontario	44,525	8,714	50,121	22,529	...	24,309	150,198
Manitoba	21,557	1,649	3,163	60	0	192	26,621
Alberta	27,321	5,813	1,467	38,199	...	10,634	83,434
British Columbia	13,765	2,740	33,212	62,539	...	2,735	114,991
Research and development							
Newfoundland and Labrador ^p	438	0	25	0	...	0	463
New Brunswick	1,873	230	118	0	42	5,877	8,140
Quebec ¹	22,196	336	61,983	32,496	298	10,965	128,273
Ontario	4,737	635	40,550	2,671	...	14,723	63,316
Manitoba	1,315	0	2,882	60	0	0	4,257
Alberta	2,125	866	902	6,561	...	4,323	14,777
British Columbia	844	97	30,297	60,987	...	580	92,805
Related scientific activities							
Newfoundland and Labrador ^p	18,484	27,354	213	340	...	3,269	49,660
New Brunswick	9,118	433	2,830	383	443	1,673	14,880
Ontario	39,788	8,079	9,571	19,858	...	9,586	86,882
Manitoba	20,242	1,649	281	0	0	192	22,364
Alberta	25,196	4,947	565	31,638	...	6,311	68,657
British Columbia	12,921	2,643	2,915	1,552	...	2,155	22,186

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

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

Table 3-10
Total expenditures of provincial governments on scientific activities — In the social sciences and humanities, by objective, 2007/2008

	Newfoundland and Labrador ^p	New Brunswick	Ontario	Manitoba	Alberta	British Columbia
thousands of dollars						
Total	50,123	23,020	150,198	26,621	83,434	114,991
Exploration and exploitation of the earth	0	0	0	0	0	0
Infrastructure and general planning of land use	6,581	0	7,241	0	64	0
Control and care of the environment	0	0	48	160	4,111	0
Protection and improvement of human health	3,376	1,065	60,814	3,013	40,178	93,615
Production, distribution and rational utilization of energy	0	2	465	38	0	0
Agriculture production and technology	0	0	73	0	0	0
Fishing	0	0	0	0	0	0
Forestry	0	0	220	0	0	0
Industrial production and technology	3,762	0	495	955	0	559
Social structures and relationships	36,264	16,353	30,533	21,260	37,077	15,803
Exploration and exploitation of space	0	0	0	0	0	0
Basic research	44	5,600	35,337	1,113	660	1,378
Other civil research	96	0	14,972	82	1,344	3,636

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

Table 4-1
Total expenditures of provincial governments on research and development — In the natural sciences and engineering, by objective, 2007/2008

	Newfoundland and Labrador ^p	New Brunswick	Ontario	Manitoba	Alberta	British Columbia
thousands of dollars						
Total	8,821	19,041	531,956	26,321	360,136	223,524
Exploration and exploitation of the earth	3,000	1,255	5,352	226	47	0
Infrastructure and general planning of land use	0	13,042	46,687	1,780	7,603	75
Control and care of the environment	383	388	46,435	1,195	19,016	37,278
Protection and improvement of human health	0	1,080	198,882	10,434	85,035	0
Production, distribution and rational utilization of energy	0	0	25,384	0	94,637	25,000
Agriculture production and technology	0	1,934	32,709	2,182	33,571	1,228
Fishing	1,085	130	1,031	0	0	341
Forestry	0	104	11,336	816	16,534	27,178
Industrial production and technology	3,707	52	75,783	2,675	32,251	2,315
Social structures and relationships	0	30	6,674	417	0	0
Exploration and exploitation of space	0	0	473	0	1,650	0
Basic research	646	1,026	80,123	6,596	67,426	130,109
Other civil research	0	0	1,087	0	2,366	0

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

Table 4-2
Total expenditures of provincial governments on research and development — In the social sciences and humanities, by objective, 2007/2008

	Newfoundland and Labrador ^p	New Brunswick	Ontario	Manitoba	Alberta	British Columbia
thousands of dollars						
Total	463	8,140	63,316	4,257	14,777	92,805
Exploration and exploitation of the earth	0	0	0	0	0	0
Infrastructure and general planning of land use	0	0	418	0	64	0
Control and care of the environment	0	0	48	50	112	0
Protection and improvement of human health	44	130	27,245	2,672	7,682	87,356
Production, distribution and rational utilization of energy	0	2	372	0	0	0
Agriculture production and technology	0	0	73	0	0	0
Fishing	0	0	0	0	0	0
Forestry	0	0	180	0	0	0
Industrial production and technology	0	0	495	0	0	0
Social structures and relationships	323	7,828	5,194	622	6,919	5,449
Exploration and exploitation of space	0	0	0	0	0	0
Basic research	0	180	29,250	913	0	0
Other civil research	96	0	41	0	0	0

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

Table 5
Total expenditures on scientific activities, by objective, and by province, 2007/2008

	Newfoundland and Labrador ^P	New Brunswick	Ontario	Manitoba	Alberta	British Columbia
thousands of dollars						
Total	64,173	63,158	948,825	92,609	592,173	432,896
Exploration and exploitation of the earth	5,000	1,729	40,546	8,403	13,127	6,941
Infrastructure and general planning of land use	7,643	22,992	67,008	20,483	22,052	43,487
Control and care of the environment	603	6,267	138,583	6,527	75,611	50,994
Protection and improvement of human health	3,376	4,802	280,431	13,836	135,269	93,705
Production, distribution and rational utilization of energy	0	2	29,592	156	99,026	30,022
Agriculture production and technology	0	1,934	51,699	4,001	54,067	16,234
Fishing	1,263	159	4,029	1,525	0	341
Forestry	543	2,155	26,188	2,960	46,365	29,524
Industrial production and technology	7,589	52	90,081	3,630	32,251	6,231
Social structures and relationships	36,264	16,383	79,772	22,418	40,487	15,803
Exploration and exploitation of space	0	0	473	0	1,650	0
Basic research	1,796	6,683	123,784	8,586	68,111	135,978
Other civil research	96	0	16,639	84	4,157	3,636

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

Table 6
Total expenditures on research and development, by objective and by province, 2007/2008

	Newfoundland and Labrador ^P	New Brunswick	Ontario	Manitoba	Alberta	British Columbia
thousands of dollars						
Total	9,284	27,181	595,272	30,578	374,913	316,329
Exploration and exploitation of the earth	3,000	1,255	5,352	226	47	0
Infrastructure and general planning of land use	0	13,042	47,105	1,780	7,667	75
Control and care of the environment	383	388	46,483	1,245	19,128	37,278
Protection and improvement of human health	44	1,210	226,127	13,106	92,717	87,356
Production, distribution and rational utilization of energy	0	2	25,756	0	94,637	25,000
Agriculture production and technology	0	1,934	32,782	2,182	33,571	1,228
Fishing	1,085	130	1,031	0	0	341
Forestry	0	104	11,516	816	16,534	27,178
Industrial production and technology	3,707	52	76,278	2,675	32,251	2,315
Social structures and relationships	323	7,858	11,868	1,039	6,919	5,449
Exploration and exploitation of space	0	0	473	0	1,650	0
Basic research	646	1,206	109,373	7,509	67,426	130,109
Other civil research	96	0	1,128	0	2,366	0

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

Table 7-1
Intramural expenditures of provincial governments on scientific activities — In the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007 [†]	2007/2008
thousands of dollars					
Newfoundland and Labrador	..	..	..	6,704	8,279 ^P
New Brunswick	..	..	..	..	21,142
Ontario	152,539	188,728	162,694	196,258	193,926
Manitoba	31,994	33,595	36,425	29,019	29,497
Alberta	142,742	173,523	190,588	203,564	215,319
British Columbia	92,873	81,840	72,773	84,065	105,268

Table 7-2
Intramural expenditures of provincial governments on scientific activities — In the social sciences and humanities

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
	thousands of dollars				
Newfoundland and Labrador	..	..	..	15,899	18,922 p
New Brunswick	..	..	..	..	10,991
Ontario	35,573	33,911	38,237	40,566	44,525
Manitoba	24,717	20,103	22,998	24,689	21,557
Alberta	5,241	6,914	6,418	8,275	27,321
British Columbia	12,942	14,848	21,279	20,544	13,765

Table 8
Intramural expenditures of provincial governments on research and development - In the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007 ^r	2007/2008
	thousands of dollars				
Newfoundland and Labrador	..	..	..	3,693	4,394 p
New Brunswick	..	..	..	..	8,058
Quebec	50,489	50,403	53,935	54,455	59,081
Ontario	44,216	41,889	40,639	65,672	51,899
Manitoba	2,761	3,054	3,511	4,915	4,506
Alberta	101,140	113,700	121,827	123,970	138,568
British Columbia	14,134	14,766	15,424	15,200	29,635

Table 9-1
Payments to business enterprises by provincial governments — On scientific activities in the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
	thousands of dollars				
Newfoundland and Labrador	..	..	..	3,005	4,645 p
New Brunswick	..	..	..	..	13,422
Ontario	7,016	23,023	12,628	18,147	41,530
Manitoba	391	654	619	14,371	13,741
Alberta	17,768	21,330	26,014	51,080	118,663
British Columbia	29,548	15,218	6,997	19,096	53,113

Table 9-2
Payments to business enterprises by provincial governments — On research and development in the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
	thousands of dollars				
Newfoundland and Labrador	..	..	..	2,591	3,570 P
New Brunswick	..	..	..	..	8,850
Quebec	65,606	28,264	25,146	33,528	29,837
Ontario	2,431	20,058	173	891	12,900
Manitoba	391	521	486	996	218
Alberta	8,328	7,469	11,354	21,808	62,545
British Columbia	28,109	7,630	5,437	14,202	45,615

Table 10-1
Payments to the higher education sector, by provincial governments — On scientific activities in the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007 ^r	2007/2008
	thousands of dollars				
Newfoundland and Labrador	..	..	..	773	761 P
New Brunswick	..	..	..	..	2,450
Ontario	310,955	287,186	380,689	293,156	334,491
Manitoba	11,483	13,180	13,535	15,857	14,912
Alberta	116,525	125,836	128,275	125,180	130,046
British Columbia	55,396	38,821	52,409	47,290	79,299

Table 10-2
Payments to the higher education sector, by provincial governments — On research and development in the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007 ^r	2007/2008
	thousands of dollars				
Newfoundland and Labrador	..	..	..	390	492 P
New Brunswick	..	..	..	..	575
Quebec	267,307	187,423	183,294	186,620	205,510
Ontario	280,805	244,334	352,256	262,584	302,968
Manitoba	11,476	13,139	13,494	14,490	14,882
Alberta	116,256	125,040	126,611	123,922	129,395
British Columbia	54,741	36,206	50,610	39,044	77,855

Table 11-1
Payments to other performers, by provincial governments — On scientific activities in the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
	thousands of dollars				
Newfoundland and Labrador	..	..	..	50	365 P
New Brunswick	..	..	..	..	2,010
Ontario	39,749	42,302	37,208	88,244	78,020
Manitoba	2,545	1,884	2,297	3,291	3,328
Alberta	13,034	8,769	11,757	27,344	26,530
British Columbia	7,543	13,307	48,631	48,948	80,225

Note(s): Other performers include the federal government, municipal governments, individuals, institutions not identified with any other sector and foreign performers.

Table 11-2
Payments to other performers, by provincial governments — On research and development in the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
	thousands of dollars				
Newfoundland and Labrador	..	..	..	50	365 P
New Brunswick	..	..	..	..	589
Quebec ¹	35,464	44,856	33,959	46,507	47,637
Ontario	30,691	30,871	10,322	34,452	23,321
Manitoba	786	1,073	1,157	2,240	2,234
Alberta	8,044	5,114	6,394	20,641	16,317
British Columbia	6,418	7,720	46,109	15,679	70,419

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

Note(s): Other performers include the federal government, municipal governments, individuals, institutions not included with any other sector, and foreign performers.

Table 12-1
Personnel of provincial governments engaged in scientific activities — By activity and by province

	2003/2004	2004/2005	2005/2006	2006/2007 ^r	2007/2008
	number				
Science and technology					
Newfoundland and Labrador	..	..	..	306	350 ^p
New Brunswick	..	..	..	..	396
Ontario	1,872	1,887	2,117	2,172	2,285
Manitoba	604	578	575	628	601
Alberta	1,198	1,258	1,329	1,480	1,580
British Columbia	933	836	736	824	821
Research and development					
Newfoundland and Labrador	..	..	..	52	53 ^p
New Brunswick	..	..	..	..	134
Quebec ¹	721	729	781	790	775
Ontario	460	428	539	558	617
Manitoba	57	62	55	77	66
Alberta	656	665	675	731	840
British Columbia	166	157	196	181	196
Related scientific activities					
Newfoundland and Labrador	..	..	..	254	297 ^p
New Brunswick	..	..	..	..	262
Ontario	1,412	1,459	1,578	1,614	1,669
Manitoba	547	517	519	551	535
Alberta	542	593	654	749	740
British Columbia	767	679	540	643	625

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

Note(s): Full-time equivalent. Components may not add to total due to rounding.

Table 12-2
Personnel of provincial governments engaged in scientific activities — By activity and category, 2007/2008

	Newfoundland and Labrador ^p	New Brunswick	Quebec ¹	Ontario	Manitoba	Alberta	British Columbia
	number						
Total scientific activities	350	396	..	2,285	601	1,580	821
Scientific and professional	290	171	..	1,275	382	762	477
Technical	52	158	..	559	154	506	245
Other	8	68	..	452	65	312	99
Research and development	52	129	587	529	60	726	184
Scientific and professional	42	37	340	330	33	338	132
Technical	9	59	198	147	19	244	48
Other	1	33	49	52	8	144	4
Administration of extramural programs for research and development	1	5	188	87	6	115	12
Scientific and professional	1	4	98	48	4	51	5
Technical	0	1	62	4	0	16	0
Other	0	0	28	35	2	47	7
Related scientific activities	297	252	..	1,601	535	689	616
Scientific and professional	248	126	..	877	344	343	337
Technical	43	98	..	370	135	239	197
Other	7	28	..	353	55	107	82
Administration of extramural programs for related scientific activities	0	11	..	68	1	51	9
Scientific and professional	0	4	..	20	1	30	4
Technical	0 ^s	0	..	37	0	7	0
Other	0 ^s	7	..	11	0	14	5

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

Note(s): Full-time equivalent. Components may not add to total due to rounding.

Table 12-3
Personnel of provincial governments engaged in scientific activities — By activity, in the natural sciences and engineering

	2003/2004	2004/2005	2005/2006	2006/2007 ^r	2007/2008
	number				
Science and technology					
Newfoundland and Labrador	..	..	..	85	86 p
New Brunswick	..	..	..	..	285
Ontario	1,469	1,491	1,709	1,739	1,820
Manitoba	289	287	287	334	304
Alberta	1,120	1,186	1,256	1,375	1,403
British Columbia	767	654	562	638	663
Research and development					
Newfoundland and Labrador	..	..	..	44	44 p
New Brunswick	..	..	..	..	111
Quebec ¹	510	501	540	529	513
Ontario	394	372	489	504	553
Manitoba	39	44	43	56	47
Alberta	642	665	674	723	822
British Columbia	157	145	152	157	186
Related scientific activities					
Newfoundland and Labrador	..	..	..	41	42 p
New Brunswick	..	..	..	..	174
Ontario	1,075	1,119	1,220	1,235	1,268
Manitoba	250	243	244	278	258
Alberta	478	521	583	652	581
British Columbia	610	509	410	482	477

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

Note(s): Full-time equivalent. Components may not add to total due to rounding.

**Table 12-4
Personnel of provincial governments engaged in scientific activities — In the natural sciences and engineering, by activity and category, 2007/2008**

	Newfoundland and Labrador ^P	New Brunswick	Quebec ¹	Ontario	Manitoba	Alberta	British Columbia
	number						
Total scientific activities	86	285	..	1,820	304	1,403	663
Scientific and professional	75	71	..	969	139	663	341
Technical	9	151	..	522	129	492	227
Other	2	63	..	330	37	248	94
Research and development	43	109	377	474	42	713	175
Scientific and professional	34	23	178	278	22	330	123
Technical	9	53	169	146	14	240	48
Other	1	33	30	51	5	143	4
Administration of extramural programs for research and development	1	2	136	78	5	109	11
Scientific and professional	1	1	71	41	4	46	4
Technical	0	1	45	3	0	16	0
Other	0	0	20	34	1	47	7
Related scientific activities	42	171	..	1,214	257	550	470
Scientific and professional	41	46	..	640	112	271	213
Technical	0	97	..	336	114	232	179
Other	1	28	..	239	31	47	78
Administration of extramural programs for related scientific activities	0	3	..	53	0	31	8
Scientific and professional	0	1	..	10	0	16	2
Technical	0	0	..	37	0	4	0
Other	0	2	..	7	0	11	5

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

Note(s): Full-time equivalent. Components may not add to total due to rounding.

**Table 12-5
Personnel of provincial governments engaged in scientific activities — In the social sciences and humanities**

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
	number				
Newfoundland and Labrador	..	..	..	222	264 ^P
New Brunswick	..	..	..	..	111
Ontario	403	397	408	433	465
Manitoba	315	291	288	293	297
Alberta	78	72	73	105	177
British Columbia	166	183	174	186	158

Note(s): Full-time equivalent.

Table 12-6
Personnel of provincial governments engaged in scientific activities — In the social sciences and humanities, by activity and category, 2007/2008

	Newfoundland and Labrador ^P	New Brunswick	Quebec ¹	Ontario	Manitoba	Alberta	British Columbia
	number						
Total scientific activities	264	111	..	465	297	177	158
Scientific and professional	216	100	..	306	244	99	136
Technical	43	7	..	37	25	14	18
Other	6	5	..	122	28	64	5
Research and development	9	20	211	55	19	13	10
Scientific and professional	9	14	162	52	11	8	9
Technical	0	6	29	1	5	4	0
Other	0	0	19	1	3	1	0
Administration of extramural programs for research and development	0	3	52	9	1	5	1
Scientific and professional	0	3	27	7	0	5	1
Technical	0	0	17	1	0	0	0
Other	0	0	8	2	1	0	0
Related scientific activities	256	80	..	387	277	139	146
Scientific and professional	207	80	..	238	232	72	124
Technical	43	1	..	35	21	7	18
Other	6	0	..	114	24	60	5
Administration of extramural programs for related scientific activities	0^s	8	..	15	1	20	1
Scientific and professional	0	4	..	10	1	14	1
Technical	0	0	..	0	0	3	0
Other	0 ^s	5	..	5	0	3	0

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

Note(s): Full-time equivalent. Components may not add to total due to rounding.

Table 13
Provincial governments scientists and professionals engaged in scientific activities, by activity and by province

	2003/2004	2004/2005	2005/2006	2006/2007 [†]	2007/2008
	number				
Science and technology					
Newfoundland and Labrador	..	..	..	252	290 ^p
New Brunswick	..	..	..	..	396
Ontario	1,098	1,086	1,038	1,043	1,275
Manitoba	379	359	357	385	382
Alberta	553	616	668	762	762
British Columbia	474	456	397	483	477
Research and development					
Newfoundland and Labrador	..	..	..	41	43 ^p
New Brunswick	..	..	..	..	134
Quebec ¹	385	401	441	438	438
Ontario	272	276	263	257	378
Manitoba	38	41	38	45	37
Alberta	241	230	253	386	389
British Columbia	102	102	122	120	137
Related scientific activities					
Newfoundland and Labrador	..	..	..	211	248 ^p
New Brunswick	..	..	..	..	262
Ontario	825	810	774	786	897
Manitoba	341	317	319	340	345
Alberta	312	386	415	376	373
British Columbia	372	355	275	363	341

1. Since 1994/1995, the Quebec provincial government collects only research and development activities.

Note(s): Full-time equivalent. Components may not add to total due to rounding.

Table 14
Total expenditures of provincial research organizations on scientific activities, by activity and by institute

	2003	2004	2005	2006	2007
	thousands of dollars				
Total science and technology	71,571	70,810	72,025	75,638	111,890
New Brunswick Research and Productivity Council	8,393	8,258	8,649	8,791	9,070
Centre de recherche industrielle du Québec	37,243	34,651	32,093	31,945	30,358
Industrial Technology Centre (Manitoba)	1,993	2,155	2,607	2,419	2,519
Saskatchewan Research Council	21,472	23,313	26,166	29,859	33,300
Northern Research Institute	850	785	984	888	809
Nunavut Research Institute	0	0	0	0	0
Aurora Research Institute (Northwest Territories)	1,620	1,648	1,526	1,736	35,834
Total research and development	24,724	25,062	23,026	21,812	56,910
New Brunswick Research and Productivity Council	1,813	1,734	1,989	2,021	2,268
Centre de recherche industrielle du Québec	13,743	13,838	10,360	7,820	8,882
Industrial Technology Centre (Manitoba)	0	0	0	0	0
Saskatchewan Research Council	8,847	9,325	10,467	11,646	11,322
Northern Research Institute	321	165	210	325	248
Nunavut Research Institute	0	0	0	0	0
Aurora Research Institute (Northwest Territories)	0	0	0	0	34,190
Total related scientific activities	46,847	45,748	48,999	53,826	54,980
New Brunswick Research and Productivity Council	6,580	6,524	6,660	6,770	6,802
Centre de recherche industrielle du Québec	23,500	20,813	21,733	24,125	21,476
Industrial Technology Centre (Manitoba)	1,993	2,155	2,607	2,419	2,519
Saskatchewan Research Council	12,625	13,988	15,699	18,213	21,978
Northern Research Institute	529	620	774	563	561
Nunavut Research Institute	0	0	0	0	0
Aurora Research Institute (Northwest Territories)	1,620	1,648	1,526	1,736	1,644

Note(s): Components may not add to total due to rounding. As of 2006 the Yukon Research Institute is known as the Northern Research Institute.

Table 15
Distribution of provincial research organization personnel, by institute, 2007

	Research and development			Science and technology		
	Scientific and professional	Technical	Other	Scientific and professional	Technical	Other
	number					
New Brunswick Research and Productivity Council	15	8	4	45	35	17
Centre de recherche industrielle du Québec	50	39	23	104	60	78
Industrial Technology Centre (Manitoba)	0	0	0	7	10	3
Saskatchewan Research Council	73	182	12	87	183	55
Northern Research Institute	6	0	1	6	0	1
NUNAVUT Research Institute	0	0	0	0	0	0
Aurora Research Institute (Northwest Territories)	5	1	14	5	1	14

Note(s): Full-time equivalent. Components may not add to total due to rounding. As of 2006 the Yukon Research Institute is known as the Northern Research Institute.

Data quality, concepts and methodology

Survey methodology

Foreword

The information in this document is intended primarily to be used by scientific and technological (S&T) policy makers, both federal and provincial, largely as a basis for interprovincial and intersectoral comparisons. The surveys which generate these statistics also provide input for the development of a national aggregate Research and Development (R&D) series. These national R&D estimates are used to complete international questionnaires for the Organization for Economic Co-operation and Development (OECD) and the United Nations Education, Scientific and Cultural Organization (UNESCO).

The statistics are aggregates of the provincial government science surveys conducted by Statistics Canada under contract with the provinces, and cover the period 2003/2004 to 2007/2008. The provincial government sector consists of all provincial government departments, ministries, agencies and provincial research organizations (PRO). The PRO are surveyed separately and included in this paper.

In the past, surveys have been conducted in as many as nine provinces, the exception being Prince Edward Island. Currently, surveys are being done in Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. The following ministries or departments sponsor the scientific surveys: Ontario Ministry of Research & Innovation; Manitoba Department of Science, Technology, Energy & Mines; Saskatchewan Advanced Education, Employment and Labour; Alberta Advanced Education and Technology; and British Columbia Ministry of Advanced Education and Labour Market Development (previously the Ministry of Advanced Education). The Institut de la Statistique du Québec conducts a similar survey collecting only research and development (R&D) data instead of total S&T activities for the province of Quebec.

Science surveys, like other surveys, depend on respondents' interpretation of definitions and methods of calculation. Accounting records are rarely available which use a science-based classification. Recognizing the fact that the data are estimates, they are still a good representation of science expenditures for the provinces. As in any ongoing statistical exercise, revisions will be necessary as definitions and procedures become clarified. It is also important to note that the same standards have been applied to the data of each province as are applied to data of the federal government.

For the national R&D statistics (GERD), no estimates are made for provinces for which there is not a corresponding survey. Gross Domestic Expenditures on Research and Development in Canada and the Provinces, National Estimates 1998 to 2009 Provincial Estimates 2003 to 2007 will be published in Catalogue no. 88-221, volume 2, no. 1 in December 2009.

We want to thank those who responded to each of the provincial and PRO surveys. Without their invaluable help and cooperation, the production of this report would not have been possible.

History of provincial government science and technology surveys

Prior to 1974, estimates were made for provincial government S&T expenditures using provincial estimates and Public Accounts.

In 1974, Ontario, Alberta and Nova Scotia sought the assistance of Statistics Canada in conducting surveys of S&T spending by their respective governments. In 1975, Saskatchewan joined this group, followed by British Columbia in 1977, Manitoba and New Brunswick in 1984, Newfoundland and Labrador in 1986 and Quebec in 1989.

In 1993/1994, three provinces, Newfoundland and Labrador, New Brunswick and Nova Scotia, did not contract with Statistics Canada for a survey due to budget constraints. In 1994/1995, the province of Quebec began collecting only R&D expenditures instead of total S&T. In 2001/2002 Saskatchewan did not contract with Statistics Canada for a survey.

In 2004/2005, British Columbia did not contract Statistics Canada to conduct a survey however in 2005/2006 they returned to the survey activity. In 2006/2007, the province of Newfoundland and Labrador participated in the survey. We are pleased to announce the participation of the province of Prince Edward Island although data are not yet available. In 2008-2009, New Brunswick successfully completed collection for three fiscal years 2007/2008, 2008/2009 and 2009/2010. The data for the province of Saskatchewan has been compiled and is scheduled to be released next year. We are pleased to announce the participation of British Columbia, Alberta, Saskatchewan, Manitoba and Ontario for the 2009-2010 reference years.

Provincial research organizations

All of these organizations have been established by their respective provincial and territorial governments, with a variety of enabling legislation and powers, to provide technical support to primary and secondary industries, to assist in the exploitation of provincial and territorial natural resources and to enhance the economy of their provinces and territories. Small and medium-sized companies with limited in-house technical capability use the services of the provincial research organizations.

In the historical tables you will see other organizations listed that are no longer included in our survey.

As of 2001, the Alberta Research Council Inc. (ARC) is included as an agency under the department of Innovation and Science of the Alberta Provincial Government. Previously, ARC was included in the Provincial Research Organization Survey.

Federal / provincial workshops on S&T statistics

In the fall of 1977, the first federal-provincial meeting was held in Ottawa. Representatives from British Columbia, Alberta, Saskatchewan, Ontario and Nova Scotia attended; as well as Statistics Canada and members of the Ministry of State for Science and Technology (MOSST).

The next meeting was held in 1984 with representatives from British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec and New Brunswick attending. Statistics Canada sponsored the meeting and invited representatives from MOSST, Energy, Mines and Resources (EMR) and the Science Council. The objectives of the conference were to:

- Provide provincial science policy and statistical users with an overview of products and services of the Science and Technology Statistics Division (STSD);
- Provide a forum to allow discussion between STSD and provincial representatives to exchange views on science statistics; and
- Achieve consensus on how to proceed with future provincial surveys.

In 1999, Ontario proposed that Statistics Canada renew federal/provincial conferences and make them an annual event. Statistics Canada agreed and co-hosted the 1999 conference in Toronto. The agenda included topics such as innovation surveys, biotechnology surveys, intellectual properties in higher education, e-commerce and provincial needs and proposals.

Quebec and Statistics Canada co-hosted the 2000 conference held in Québec City. Discussions included economic indicators, an innovation study for Ontario, and biotechnology measurement.

In the fall of 2001, British Columbia and Statistics Canada co-hosted the conference in Victoria. Provincial representatives discussed high technology indicators, innovation index, and user needs and challenges. Statistics Canada presented an overview of current program developments and future plans.

Alberta and Statistics Canada co-hosted the 2002 conference held in Edmonton. Discussions included provincial indicators and an overview of current program developments and future plans.

In the fall of 2003, Statistics Canada was supposed to host the 5th annual conference in Ottawa. Due to budget constraints of many provincial governments, the conference was postponed and has not yet been re-instated.

Definitions

This report covers those scientific and technological activities which involve the generation, dissemination and application of new scientific and technological knowledge. The central activity is research and experimental development (R&D). In addition, there are a number of activities closely related to R&D; these are termed related scientific activities (RSA).

R&D is creative work undertaken on a systematic basis in order to increase the stock of scientific and technical knowledge, including knowledge of humans, culture and society and the use of this stock of knowledge to devise new applications.

It requires the acquisition of knowledge and not just information. New knowledge involves the integration of newly acquired information into existing hypotheses or the re-evaluation of existing observations.

The major related scientific activities are education support, technical surveys, statistical surveys, information services, special services and studies, and museum services. Education support and museum services are largely self-explanatory.

Technical surveys are activities directed towards exploration and systematic description of the earth and its natural resources. The activities include gathering, processing, collating and analyzing of data on natural phenomena except when part of a research project or a museum service. The preparation of maps and survey reports, their printing and cataloguing, are also included.

Statistical surveys are activities directed toward the collecting, processing and disseminating of statistics on humankind, their economic and social activities. Included are the development of technical methodology, statistical analysis and vital statistics.

Information services are all work directed to recording, classifying, translating, and disseminating information resulting from R&D in the social sciences or required in support of such R&D. Included are the operations of specialized libraries and archives, the publication of scholarly journals and bibliographies, and the organizing of scientific conferences. Grants for the publication of scholarly works are also included.

Special services and studies in the natural sciences are activities directed towards the establishment of national and provincial standards for materials, devices, products and processes; the calibration of secondary standards; non-routine quality testing; feasibility studies and demonstration projects.

In the social sciences, special services and studies are systematic investigations carried out in order to provide information needed for planning or policy formulation, including feasibility studies and demonstration projects.

Scientific and technological activities take place in both natural sciences and engineering and the social sciences and humanities. The natural sciences and engineering consist of disciplines concerned with understanding, exploring, developing or utilizing the natural world. The social sciences and humanities embrace all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans.

Six performing sectors are identified.

Intramural refers to the provincial ministry, department or agency performing a scientific activity.

Business enterprise denotes largely private corporations but also includes crown corporations with a commercial function (e.g., power utilities) and industrial research institutes not controlled by another institution.

The higher education sector covers post secondary educational institutions and affiliated teaching and research facilities.

Hospitals and health organizations – Canadian hospitals and health organizations which are not part of university medical schools, as well as private non-profit organizations.

Provincial research organizations include: New Brunswick Research and Productivity Council, Centre de recherche industriel du Québec, Industrial Technology Centre (Manitoba), Saskatchewan Research Council, Northern Research Institute, Nunavut Research Institute, Aurora Research Institute (Aurora College N.W.T.)

Other includes the federal government, municipal governments, individuals, institutions not identified with any other sector, and foreign performers.

Departmental personnel are classified into three major categories. Scientific and professional includes persons in a job requiring at least one academic degree or nationally recognized professional qualification. The Technical category includes people in jobs requiring specialized vocational or technical training beyond the secondary level. Other includes clerical, secretarial, administrative, operational and other support personnel. Personnel data are reported in full-time equivalent which is simply the portion of a person's time spent on S&T activities.

The objectives listed in this survey do not represent the total range of possible objectives; however, they are intended to cover the major areas of current technological interest. Respondents are asked to report expenditures under the objective which is primary to that expenditure.