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User information

Symbols

The following standard symbols are used in Statistics Canada publications:

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

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Highlights

Estimation of research and development expenditures in the higher education sector, 2005/2006

- Spending on research and development in the higher education sector, which includes all affiliated research hospitals, experimental stations and clinics, increased 5.1% from 2004/2005 to reach \$9.5 billion in the fiscal year 2005/2006 (table 1-1).
- Higher education institutions, the largest contributors to research and development in this sector, increased their spending 5.1% from 2004/2005 to reach \$4.4 billion (table 1-1).
- All fields of study saw increases in funding, with allocation of spending remaining stable among social sciences and humanities, health sciences and other natural sciences and engineering in 2005/2006 from the previous year (table 1-2).
- The Alberta government funded 19.0% of research and development performed by the province's higher education institutions, the highest share of any province (table 1-3).
- The most aggressive increases in spending occurred in Newfoundland and Labrador (+ 28.4%) and New Brunswick (+13.7%) (table 1-3).

Analysis

Estimation of research and development expenditures in the higher education sector, 2005/2006

In 2005/2006, expenditures on research and development (R&D) in the higher education sector (HERD) increased \$459.5 million to reach \$9.5 billion, an increase of 5.1% over 2004/2005 (table 1-1). The health sciences and other natural sciences, combined for 345.0 million or 75.1% of the HERD increase for 2005/2006 (table 1-2).

In the previous years, expenditures increased by 11.2% and 9.2% in 2004/2005 and 2003/2004 respectively (table 1-1).

In 2005/2006, the largest contributor to the HERD were the higher education institutions at \$4.4 billion an increase of 5.1% from 2004/2005. Additionally, federal government funding of R&D in the higher education sector increased 8.9% to \$2.5 billion over the same period. These sources of R&D funding in the higher education sector were the two largest contributors providing 73% of the total (table 1-1).

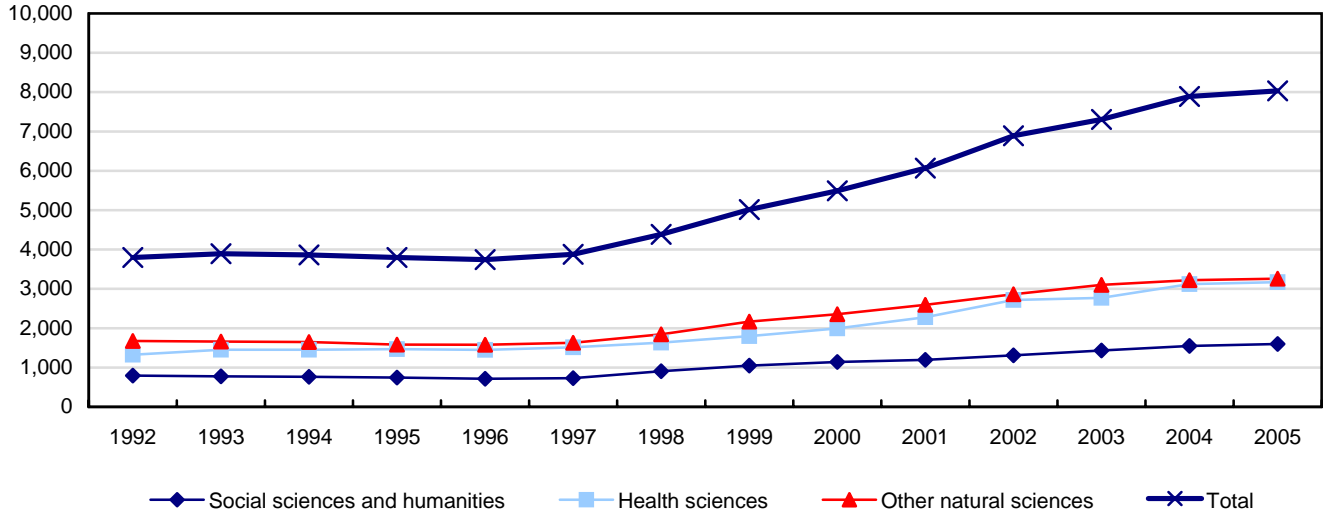
Allocation of total R&D expenditures among social sciences and humanities, health sciences and other natural sciences and engineering remained stable in 2005/2006 from the previous year with social sciences and humanities accounting for 20%, health sciences 39% and other natural sciences and engineering at 41% (table 1-2).

In 2005/2006, the provincial government of Alberta funded 19.0% of R&D expenditures in its own higher education institutions, the highest rate in any Canadian province. The Québec and Ontario provincial governments followed with each providing one-tenth respectively, of the R&D fundings from all sources for their higher education sectors (table 1-3).

In 2005/2006 Newfoundland and Labrador led all provinces with an increase of 28.4% in R&D expenditures in the higher education sector over the previous year, followed by New Brunswick at 13.7%, and Manitoba at 13.0%. Amongst the other provinces that showed strong increases in R&D expenditures in the higher education sector over the previous year, were British Columbia at 8.7% and Alberta at 7.1%. (table 1-4).

Chart 1
Higher education research and development (HERD) expenditures by major field of science

millions of 1997
constant dollars



Related products

Selected publications from Statistics Canada

88-202-X	Industrial Research and Development...intentions
88-204-X	Federal Scientific Activities
88-522-X	Science and Technology Activities and Impacts: A Framework for a Statistical Information
88F0006X	Science, Innovation and Electronic Information Division Working Papers
88F0006X2001005	Provincial Distribution of Federal Expenditures and Personnel on Science and Technology 1990-91 to 1998-99
88F0006X2002008	Provincial Distribution of Federal Expenditures and Personnel on Science and Technology, 1991-92 to 1999-2000
88F0006X2003008	Provincial Distribution of Federal Expenditures and Personnel on Science and Technology, 1994-95 to 2000-2001
88F0006X2004005	Provincial Distribution of Federal Expenditures and Personnel on Science and Technology 1995-1996 to 2001-2002
88F0006X2005002	Provincial Distribution of Federal Expenditures and Personnel on Science and Technology, 1996-1997 to 2002-2003
88F0006X2005019	Estimation of Research and Development Expenditures in the Higher Education Sector, 2003-2004
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Selected technical and analytical products from Statistics Canada

88F0017M1999006	Diffusion of Biotechnologies in Canada: Results from the Survey of Biotechnology Use in Canadian Industries
88F0017M2000008	Explaining Rapid Growth in Canadian Biotechnology Firms
88F0017M2001009	Internationally Comparable Indicators on Biotechnology: A Stocktaking, a Proposal for Work and Supporting Material
88F0017M2001010	Analysis of the Survey on Innovation, Advanced Technologies and Practices in the Construction and Related Industries, 1999

88F0017M2001011	Capacity to Innovate, Innovation and Impact: The Canadian Engineering Services Industry
88F0017M2001012	Patterns of Advanced Manufacturing Technology (AMT) Use in Canadian Manufacturing: 1998 AMT Survey Results

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
4212	Federal Science Expenditures and Personnel, Activities in the Social Sciences and Natural Sciences

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 1-1
Estimates of research and development (R&D) expenditures in the higher education sector — Source of funds

	Federal government	Provincial government	Business enterprise	Higher education	Private non-profit organizations	Foreign	Total
millions of dollars							
1992/1993	848.7	294.2	293.1	1,867.2	196.2	20.1	3,519.5
1993/1994	872.7	312.4	313.9	1,892.1	248.3	20.3	3,659.7
1994/1995	869.8	314.7	296.1	1,913.8	259.2	21.3	3,674.9
1995/1996	854.8	323.2	296.7	1,926.6	265.7	24.2	3,691.2
1996/1997	809.0	297.6	335.6	1,905.5	312.7	36.4	3,696.8
1997/1998	792.7	369.9	381.0	1,971.5	324.5	39.5	3,879.1
1998/1999	862.9	371.6	411.0	2,339.4	335.1	49.5	4,369.5
1999/2000	1,084.6	482.2	460.3	2,648.8	349.2	56.6	5,081.7
2000/2001	1,292.8	587.2	553.4	2,892.1	418.2	49.6	5,793.3
2001/2002	1,586.8	712.0	603.3	2,928.9	509.1	84.1	6,424.2
2002/2003	1,816.7	828.6	643.2	3,461.8	604.5	100.5	7,455.3
2003/2004	2,181.7	1,018.1	679.1	3,589.3	599.4	75.8	8,143.3
2004/2005 †	2,336.9	1,039.0	754.7	4,146.7	684.9	95.7	9,057.9
2005/2006	2,542.4	973.3	803.3	4,340.2	742.0	116.3	9,517.5

Table 1-2
Estimates of research and development (R&D) expenditures in the higher education sector — Source of funds and by major field of science, 2005/2006

	Social sciences and humanities ¹		Health sciences ²		Other natural sciences ³		Total	
	1997 dollars ⁴	Current dollars	1997 dollars ⁴	Current dollars	1997 dollars ⁴	Current dollars	1997 dollars ⁴	Current dollars
millions of dollars								
Total	1,593.8	1,888.6	3,182.0	3,770.7	3,255.9	3,858.2	8,031.7	9,517.5
Federal government	351.5	416.5	835.5	990.1	958.5	1,135.8	2,145.5	2,542.4
Provincial governments	164.3	194.7	246.4	292.0	410.7	486.7	821.4	973.4
Business enterprise	24.7	29.3	293.9	348.3	359.2	425.7	677.8	803.3
Higher education	935.9	1,109.1	1,375.0	1,629.4	1,351.6	1,601.7	3,662.6	4,340.2
Private non-profit organizations	117.3	139.0	391.9	464.4	117.0	138.6	626.2	742.0
Foreign	0.0	0.0	39.4	46.5	58.8	69.8	98.2	116.3

1. Social sciences and humanities embrace all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, business administration and commerce, communications, criminology, demography, economics, geography, history, languages, literature and linguistics, law, library science, philosophy, political sciences, psychology, religious studies, social work, sociology, and urban and regional studies.
2. Health sciences consist of programmes directed towards the protection and improvement of human health.
3. Other natural sciences consist of disciplines, other than health sciences, concerned with understanding, exploring, developing or utilizing the natural world. Included are engineering, mathematical and physical sciences.
4. CANSIM, table 384-0036.

Table 1-3
Estimates of research and development (R&D) expenditures in the higher education sector — Source of funds and by province, 2005/2006

	Federal government	Provincial governments	Business enterprise	Higher education	Private non-profit organizations	Foreign	Total
millions of dollars							
Canada	2,542.4	973.3	803.3	4,340.2	742.0	116.3	9,517.5
Newfoundland and Labrador	45.0	1.2	23.1	75.7	1.8	1.7	148.5
Prince Edward Island	9.4	0.4	0.4	16.3	0.8	0.0	27.4
Nova Scotia	80.3	6.0	30.8	158.1	22.3	0.0	297.5
New Brunswick	35.1	3.7	5.0	79.5	6.7	0.1	130.1
Quebec	703.1	260.2	227.2	1,179.9	157.6	28.2	2,556.2
Ontario	997.0	402.5	377.8	1,793.5	342.4	66.9	3,980.1
Manitoba	71.8	15.4	19.1	148.6	37.8	1.9	294.6
Saskatchewan	54.0	19.9	13.3	115.4	14.2	0.4	217.2
Alberta	252.4	182.7	63.1	396.2	60.6	7.2	962.2
British Columbia	294.4	81.4	43.6	376.9	97.8	9.9	904.0

Table 1-4
Estimates of research and development (R&D) expenditures in the higher education sector — Province

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
millions of dollars											
1992/1993	3,519.5	60.5	4.8	121.2	53.2	1,150.4	1,280.1	116.8	103.3	294.7	334.5
1993/1994	3,659.7	60.9	4.4	119.0	52.5	1,163.0	1,422.6	110.7	106.2	296.8	323.6
1994/1995	3,674.9	58.5	3.8	113.2	53.8	1,136.1	1,441.3	114.8	108.2	309.0	336.2
1995/1996	3,691.2	58.4	3.7	117.0	56.2	1,111.5	1,432.7	113.5	113.9	327.8	356.5
1996/1997	3,696.8	56.6	4.2	117.6	56.3	1,099.3	1,456.1	111.3	113.6	328.8	353.0
1997/1998	3,879.1	61.2	5.9	125.0	57.4	1,131.6	1,554.2	108.3	118.9	357.7	358.9
1998/1999	4,369.5	72.0	11.4	164.1	80.4	1,273.8	1,699.7	130.8	138.4	408.1	390.8
1999/2000	5,081.7	78.6	11.4	199.6	89.0	1,532.9	1,908.0	157.6	176.1	490.9	437.6
2000/2001	5,793.3	83.4	15.7	199.9	88.2	1,628.6	2,316.2	189.6	228.2	546.0	497.5
2001/2002	6,424.2	89.4	15.7	208.6	88.2	1,778.5	2,575.9	205.9	235.6	664.9	561.5
2002/2003	7,455.3	94.4	18.7	225.5	98.9	2,074.3	2,995.5	224.5	258.8	727.5	737.2
2003/2004	8,143.3	114.1	25.2	259.1	117.5	2,345.0	3,187.4	238.7	244.8	826.8	784.6
2004/2005r	9,057.9	115.6	24.2	266.0	114.3	2,467.7	3,835.1	260.6	244.7	898.2	831.5
2005/2006	9,517.5	148.5	27.4	297.5	130.1	2,556.2	3,980.1	294.6	217.2	962.2	904.0

Table 1-5
Estimates of research and development (R&D) expenditures in the higher education sector — Social sciences and humanities

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
millions of dollars											
1992/1993	738.6	15.9	1.3	27.6	13.2	211.3	287.5	25.5	21.2	60.3	74.8
1993/1994	730.5	15.6	1.1	25.1	14.2	216.6	282.6	23.8	21.1	61.3	69.1
1994/1995	725.5	15.6	0.9	23.5	13.9	217.5	278.9	24.2	21.9	58.7	70.4
1995/1996	724.7	15.4	0.9	23.0	13.8	213.5	269.1	24.7	23.8	64.5	76.0
1996/1997	705.2	15.2	1.1	21.3	13.2	204.9	259.6	24.5	23.9	61.1	80.4
1997/1998	731.7	14.7	1.5	21.9	12.8	203.6	285.6	23.8	26.9	62.2	78.7
1998/1999	903.8	16.5	3.5	40.9	25.4	243.9	341.9	33.6	32.6	71.6	93.9
1999/2000	1,062.5	20.5	3.7	48.1	27.8	296.4	401.0	40.4	36.8	86.2	101.6
2000/2001	1,202.4	19.2	4.5	51.9	29.8	323.6	473.5	43.1	47.6	95.5	113.7
2001/2002	1,274.5	23.8	4.3	48.9	29.7	331.4	515.0	44.7	48.5	107.3	120.9
2002/2003	1,414.1	21.7	5.6	51.3	32.2	396.3	535.1	48.7	51.5	120.7	151.0
2003/2004	1,598.8	29.3	6.7	58.0	38.0	453.8	603.2	54.0	48.0	143.2	164.6
2004/2005 †	1,778.3	27.0	6.8	63.7	40.2	486.2	696.4	59.8	46.1	168.9	183.2
2005/2006	1,888.6	31.5	7.3	71.8	45.9	488.7	760.9	66.9	42.6	176.2	196.7

Table 1-6
Estimates of research and development (R&D) expenditures in the higher education sector — Health sciences

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
millions of dollars											
1992/1993	1,229.0	13.8	0.5	34.7	3.1	443.6	448.6	46.4	27.3	115.7	95.3
1993/1994	1,366.9	15.3	0.5	39.1	3.6	460.4	561.8	44.2	28.0	120.0	94.0
1994/1995	1,382.1	15.6	0.3	38.8	3.6	458.6	571.4	44.9	27.8	123.7	97.4
1995/1996	1,428.4	15.3	0.3	45.7	4.7	452.5	606.1	43.8	30.4	126.8	102.8
1996/1997	1,430.4	15.0	0.3	46.3	4.6	449.0	614.1	42.7	27.3	130.0	101.1
1997/1998	1,516.1	17.3	0.6	52.8	4.8	457.4	661.6	40.8	31.1	147.3	102.4
1998/1999	1,627.8	21.6	0.6	62.2	6.8	507.8	671.1	45.6	36.1	166.5	109.5
1999/2000	1,822.5	20.1	0.6	71.8	7.1	597.5	706.1	53.8	43.5	199.5	122.5
2000/2001	2,103.9	23.9	1.4	72.6	7.5	633.9	875.6	62.0	57.9	225.0	144.1
2001/2002	2,382.6	25.4	1.3	83.4	7.7	700.2	977.1	74.1	67.6	274.5	171.3
2002/2003	2,955.6	29.7	2.1	88.1	9.2	813.5	1,296.6	81.2	76.4	306.1	252.7
2003/2004	3,086.8	35.9	3.6	107.3	10.5	877.1	1,314.8	83.1	65.3	330.0	259.2
2004/2005 †	3,584.6	39.0	3.7	102.9	9.6	921.2	1,692.0	91.6	64.8	351.1	308.8
2005/2006	3,770.7	54.6	4.8	112.0	10.9	973.1	1,740.8	106.2	62.1	387.2	319.0

Table 1-7

Estimates of research and development (R&D) expenditures in the higher education sector — Other natural sciences

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia
	millions of dollars										
1992/1993	1,551.9	30.8	3.1	58.9	36.8	495.4	544.0	44.9	54.9	118.7	164.4
1993/1994	1,562.3	30.0	2.8	54.8	34.7	486.0	578.2	42.7	57.1	115.5	160.5
1994/1995	1,567.2	27.3	2.7	50.9	36.2	460.0	591.1	45.6	58.5	126.6	168.3
1995/1996	1,538.1	27.7	2.5	48.3	37.6	445.5	557.6	45.0	59.7	136.5	177.7
1996/1997	1,561.2	26.4	2.8	50.0	38.4	445.4	582.5	44.1	62.4	137.7	171.5
1997/1998	1,631.4	29.2	3.7	50.3	39.7	470.7	607.0	43.7	61.0	148.2	177.8
1998/1999	1,837.9	33.9	7.3	61.0	48.2	522.0	686.7	51.6	69.8	170.0	187.4
1999/2000	2,196.8	38.0	7.2	79.6	54.2	639.0	800.9	63.4	95.8	205.1	213.6
2000/2001	2,487.0	40.2	9.8	75.5	50.9	671.2	967.1	84.5	122.7	225.5	239.6
2001/2002	2,767.1	40.2	10.1	76.2	50.8	746.7	1,083.8	87.0	119.5	283.2	269.6
2002/2003	3,085.6	43.0	11.0	86.1	57.5	864.5	1,163.8	94.6	130.9	300.7	333.5
2003/2004	3,457.7	48.9	14.9	93.9	69.0	1,014.2	1,269.4	101.5	131.5	353.6	360.8
2004/2005 ^r	3,695.1	49.6	13.7	99.4	64.5	1,060.3	1,446.8	109.2	133.8	378.1	339.6
2005/2006	3,858.2	62.3	15.2	113.7	73.4	1,094.5	1,478.4	121.4	112.4	398.7	388.3

Estimation of research and development expenditures in the higher education sector, 2005/2006

Definitions

Natural sciences and engineering

The natural sciences and engineering (NSE) field embraces the disciplines of study concerned with understanding, exploring, developing or utilizing the natural world. Included are the engineering, mathematical, life and physical sciences.

Social sciences and humanities

The social sciences and humanities (SSH) field embraces all disciplines involved in studying human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, demography, economics, geography, history, languages, literature and linguistics, law, library science, philosophy, political science, psychology, religious studies, social work, sociology, and urban and regional studies.

Scientific research and experimental development (R&D)

Creative work undertaken on a systematic basis in order to increase the stock of scientific and technical knowledge and to use this knowledge in new applications.

The central characteristic of R&D is an appreciable element of novelty and of uncertainty. New knowledge, products or processes are sought. The work is normally performed by, or under the supervision of, persons with postgraduate degrees in the natural sciences or engineering.

An R&D project generally has three characteristics:

- a substantial element of uncertainty, novelty and innovation;
- a well-defined project design;
- a report on the procedures and results of the projects.

Canadian business enterprises

This sector is composed of business and government enterprises, including public utilities and government owned firms and frequently referred to as the industry sector. Incorporated consultants providing scientific and engineering services are also included. Industrial research institutes located at Canadian universities are considered to be in the university sector.

Higher education

The higher education sector is composed of all universities, colleges of technology and other institute of post-secondary education, whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of, or administered by, or associated with, the higher education establishments.

Canadian private non-profit institutions

Charitable foundations, voluntary health organizations, scientific and professional societies, and other organizations not established to earn profits comprise this sector. Private non-profit institutions primarily serving or controlled by another sector should be included in that sector (e.g., the Pulp and Paper Research Institute is in Canadian business enterprises).

Canadian provincial and municipal governments

Departments and agencies of these governments form this sector. Government enterprises, such as provincial utilities are included in the Canadian business enterprises sector, and hospitals in the Canadian non-profit institutions or university sector.

Other Canadian performers

This sector includes all individuals or organizations not belonging to any of the above sectors. In particular, it includes provincial research councils and foundations.

Foreign performers

All foreign governments, foreign companies (including foreign subsidiaries of Canadian firms), international organizations, non resident foreign nationals and Canadians studying or teaching abroad, are included in this sector.