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Industrial R&D Statistics by Region 1994 to 2003

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F too unreliable to be published

Note
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Note of appreciation

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Highlights

► Business enterprise R&D expenditures as a percentage in Canada rose from .99% in 1994 to 1.10% 2003 see table below.

Business enterprise R&D (BERD), by region, 1994 -2003

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	millions of dollars									
Atlantic Canada	125	131	133	107	121	122	132	162	157	147
Quebec	2,056	2,277	2,393	2,519	2,764	3,047	3,642	4,155	4,057	4,115
Ontario	4,112	4,320	4,256	4,833	5,394	5,799	6,903	7,944	7,048	7,066
Manitoba and Saskatchewan	172	169	152	171	176	227	208	260	251	209
Alberta	509	491	524	546	618	491	591	718	767	779
British Columbia	591	602	538	564	608	714	973	1,080	1,086	1,075
Total	**7,564**	**7,990**	**7,996**	**8,739**	**9,681**	**10,398**	**12,449**	**14,319**	**13,366**	**13,390**

BERD to Gross Domestic Product[1] ratio, by region, 1994-2003

	percentage									
Atlantic Canada	0.27	0.27	0.27	0.21	0.23	0.21	0.21	0.25	0.23	0.20
Quebec	1.21	1.28	1.33	1.34	1.41	1.45	1.62	1.80	1.66	1.62
Ontario	1.32	1.31	1.26	1.34	1.43	1.42	1.57	1.75	1.47	1.43
Manitoba and Saskatchewan	0.34	0.32	0.26	0.29	0.29	0.36	0.31	0.38	0.35	0.28
Alberta	0.58	0.53	0.53	0.51	0.58	0.42	0.41	0.47	0.51	0.46
British Columbia	0.59	0.57	0.49	0.49	0.53	0.59	0.74	0.81	0.79	0.74
Total	**0.99**	**0.99**	**0.96**	**0.99**	**1.06**	**1.06**	**1.16**	**1.30**	**1.16**	**1.10**

1. GDP Source: CANSIM table 384-0002

► Each province or region experienced growth in R&D spending during the ten year period. Quebec led by doubling its R&D expenditures from two billion to four billion. British Columbia recorded an 82.1% increase and Ontario, the largest R&D performer, showed a 71.8% increase. Manitoba and Saskatchewan, shown together in this report, grew by 21.4% while the Atlantic region increased by 17.3%. Despite increased industrial R&D spending over the period the BERD to GDP ratio declined in Atlantic Canada and Manitoba and Saskatchewan.

► Two regions, Quebec and British Columbia, increased their share of total industrial R&D spending. Industrial R&D performed in Quebec and British Columbia represented 27.2% and 7.8% respectively in 1994, compared to 31% and 8.0% in 2003. All other regions decreased, Atlantic Canada from 1.7% in 1994 to 1.1% in 2003, from 54.3% to 52.8% for Ontario, from 2.3% to 1.6% for Manitoba and Saskatchewan and from 6.7% to 5.8% in Alberta.

► Growth of full-time R&D personnel in Canada was 47.4% during the period 1994-2003. Quebec once again led this growth with a 73.8% increase, followed by Ontario at 43.6% and British Columbia at 29.4%. Both Manitoba and Saskatchewan and the Atlantic Region recorded declines in their R&D personnel of -5.6% and -1.5% respectively. Ontario accounted for almost half (49%) of all full-time-equivalent R&D personnel in both 1994 and 2003.

► Despite consistent increases in R&D spending and personnel, the number of companies performing R&D fell between 1994 and 1997. In February 1994, a change was made to the income Tax Act which set an 18 month time limit for claiming a deduction under the Scientific Research and Experimental Development program (SR&ED)[1]. As a consequence, an increased flow of SR&ED claims were submitted in 1994 and 1995. The decline observed is mainly explained by a return to levels of claims existing prior to 1994. A continuous growth can be observed since 1997. Overall growth between 1994 and 2002 was 10%, but was not spread equally among the provinces or regions. Only Quebec, at 44%, and Ontario with 8%, recorded increases in the nine year period. In fact, Quebec was the only province which showed consistent growth over the entire period. Counts for companies with less than 200 employees increased from 1994 to 2002 while counts declined in companies with 200 or more employees. Only companies spending less than twenty five thousand dollars a year on R&D saw a decline in the number of performers between 1994 and 2002.

► Counts for 2003 are excluded in Tables 1 through 16 because SR&ED tax credit applications continue to be processed by CRA at the time of printing. Although data values were projected for these outstanding firms, estimations of the number of R&D performers are especially sensitive when allocated to the provinces. Expenditures and personnel data, while also projected, should not be influenced to the same degree as the counts. Nevertheless this data should be considered preliminary.

1. " Before February 22, 1994, a taxpayer had to file a T661 form with the return of income for a taxation year in order to make a deduction under subsection 37(1) for that year in respect of SR&ED expenditures incurred at any time. Therefore, a capital expenditure that met certain requirements could be deducted under the subsection 37(1) pool even if it was acquired several years before the deduction was made." (Canada Revenue Agency, Application Policy number SR&ED 95-05).

Foreword

The purpose of this working paper is to provide regional data on business enterprise research and development (R&D) activity. The degree of details is strictly limited due to confidentiality restraints imposed by the Statistics Act. Data are presented on R&D expenditures and personnel, by country of control, data source, employment size and R&D size.

Innovation is essential to economic progress. Properly applied in developing new products and services, innovation may also conserve resources, preserve the environment, and add to our quality of life. The innovation process involves a number of elements concerned with the generation, dissemination and application of new knowledge: R&D to provide new ideas; education and information services to develop the required personnel; and design, engineering and marketing services to incorporate the new ideas into the production and distribution systems.

R&D statistics, therefore, measure only part of the effort necessary for innovation. However, R&D is at the heart of the innovation process.

While R&D is also carried out by other sectors, such as governments and universities, industrial R&D is most clearly linked to technological innovation and, hence, economic growth. Canada does not, of course, rely only on domestic R&D for new ideas and innovation. A great deal of information comes from abroad in the form of information embodied in new machinery and equipment, in the minds of scientists and engineers, in scientific and technical journals, and in designs, drawings, tooling and manufacturing specifications. Some data are presented on the acquisition of R&D from abroad, but much of the flow of technological information cannot be measured.

In many ways it is more efficient to acquire the results of R&D performed by others since the cost of securing such information is usually less than the cost of duplicating it. However, some domestic R&D is necessary not only to ensure that new inventions are appropriate to Canadian production and marketing conditions, but also to ensure that foreign R&D can be properly assimilated, i.e., understood and adapted. It also provides Canadian firms with a better bargaining position for exchanges of technological information. Domestic performance of R&D is therefore necessary, even if we wish only to be effective imitators and adapters.

Statistics Canada has collected data on R&D in Canadian industry for 49 years. Maintaining the continuity and comparability of these data over time is of considerable importance. This working paper is a summary of provincial industrial R&D activities. It presents historical and current statistical information on industrial research and development activities for the years 1994 to 2003.

In 1999 a new methodology was introduced for estimating R&D expenditures for the smaller companies in the business sector. The new approach substitutes the use of administrative data from the Canada Revenue Agency (CRA), in place of survey data, for any firm funding or performing less than $1 million worth of R&D. This enabled the elimination of over 10,000 survey form mail-outs, thus reducing survey reporting burden.

Firms that perform or fund R&D in Canada apply for a tax credit to the CRA, under the Scientific Research and Experimental Development (SR&ED) program. Under the current regulations, the filing must take place within 18 months of the expenditure. Once the claims are submitted, they are processed and forwarded to Statistics Canada. This means that data can arrive up to two years after the expenditure was made.

For this reason, modifications were made for our estimation system beginning with the 2003 survey. Data for outstanding administrative records have been estimated thereby reducing the previous understatement of R&D and in particular R&D employment counts. The new estimation system has projected data for more than 2,000 firms. The estimation of these records is also reflected in the 2004 planned expenditures and the 2005 spending intentions. Counts are not presented for the 2003 year, as they will be highly affected by future revisions.

This report was prepared by Robert Schellings, Subject Matter Manager of Science, Innovation and Electronic Information Division.

Counts of industrial R&D performers, by region

Table 1. Counts of industrial R&D performers by data source, Canada and the regions

Region / Data source		1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]
Canada[1]	Survey	1,147	1,260	977	938	915	982	1,118	1,269	1,253
	CRA	9,985	9,511	8,828	8,711	8,869	8,985	9,731	10,818	11,019
	Total	**11,132**	**10,771**	**9,805**	**9,649**	**9,784**	**9,967**	**10,849**	**12,087**	**12,272**
Atlantic Canada	Survey	76	81	65	71	78	87	106	103	91
	CRA	387	437	475	444	458	417	396	371	354
	Total	**463**	**518**	**540**	**515**	**536**	**504**	**502**	**474**	**445**
Quebec	Survey	364	390	328	308	322	343	399	435	438
	CRA	3,354	3,420	3,536	3,540	3,694	3,819	4,194	4,665	4,906
	Total	**3,718**	**3,810**	**3,864**	**3,848**	**4,016**	**4,162**	**4,593**	**5,100**	**5,344**
Ontario	Survey	608	665	523	522	519	545	615	701	698
	CRA	3,484	3,210	2,845	2,889	2,926	2,950	3,197	3,694	3,741
	Total	**4,092**	**3,875**	**3,368**	**3,411**	**3,445**	**3,495**	**3,812**	**4,395**	**4,439**
Manitoba and Saskatchewan	Survey	102	100	87	89	87	90	96	100	96
	CRA	441	382	318	312	310	309	336	343	346
	Total	**543**	**482**	**405**	**401**	**397**	**399**	**432**	**443**	**442**
Alberta	Survey	118	126	109	99	92	101	98	113	113
	CRA	875	808	702	656	660	665	711	741	630
	Total	**993**	**934**	**811**	**755**	**752**	**766**	**809**	**854**	**743**
British Columbia	Survey	170	163	120	123	126	143	164	163	156
	CRA	1,403	1,231	945	865	814	821	894	1,001	1,041
	Total	**1,573**	**1,394**	**1,065**	**988**	**940**	**964**	**1,058**	**1,164**	**1,197**

1. Canada totals include the Yukon, Northwest and NunavutTerritories.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Table 2. Counts of industrial R&D performers by country of control, Canada and the regions

Region	Country of control	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]
Canada[1]	Canada	10,573	10,208	9,272	9,109	9,316	9,542	10,414	11,644	11,884
	Foreign	559	563	533	540	468	425	435	443	388
	Total	**11,132**	**10,771**	**9,805**	**9,649**	**9,784**	**9,967**	**10,849**	**12,087**	**12,272**
Atlantic Canada	Canada	433	483	507	470	482	445	429	404	384
	Foreign	30	35	33	45	54	59	73	70	61
	Total	**463**	**518**	**540**	**515**	**536**	**504**	**502**	**474**	**445**
Quebec	Canada	3,551	3,641	3,671	3,662	3,848	4,009	4,412	4,915	5,196
	Foreign	167	169	193	186	168	153	181	185	148
	Total	**3,718**	**3,810**	**3,864**	**3,848**	**4,016**	**4,162**	**4,593**	**5,100**	**5,344**
Ontario	Canada	3,739	3,535	3,081	3,102	3,187	3,249	3,573	4,159	4,205
	Foreign	353	340	287	309	258	246	239	236	234
	Total	**4,092**	**3,875**	**3,368**	**3,411**	**3,445**	**3,495**	**3,812**	**4,395**	**4,439**
Manitoba and Saskatchewan	Canada	488	428	354	352	351	347	378	386	387
	Foreign	55	54	51	49	46	52	54	57	55
	Total	**543**	**482**	**405**	**401**	**397**	**399**	**432**	**443**	**442**
Alberta	Canada	945	881	757	700	694	712	759	806	695
	Foreign	48	53	54	55	58	54	50	48	48
	Total	**993**	**934**	**811**	**755**	**752**	**766**	**809**	**854**	**743**
British Columbia	Canada	1,497	1,328	1,006	934	882	910	996	1,106	1,152
	Foreign	76	66	59	54	58	54	62	58	45
	Total	**1,573**	**1,394**	**1,065**	**988**	**940**	**964**	**1,058**	**1,164**	**1,197**

1. Canada totals include the Yukon, Northwest and Nunavut Territories.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Table 3. Counts of industrial R&D performers by employment size – Canada[1]

Employment size[2]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]
person-years	number of enterprises								
0 – 9	4,812	4,472	4,133	3,937	3,816	3,802	4,185	4,782	5,177
10 – 19	1,857	1,799	1,594	1,577	1,643	1,717	1,842	2,106	2,168
20 – 49	1,915	1,909	1,776	1,724	1,835	1,949	2,109	2,337	2,281
50 – 99	970	993	882	962	1,031	977	1,076	1,196	1,125
100 – 199	644	644	570	586	581	663	738	773	708
200 – 499	445	466	429	453	471	464	482	475	441
500 – 999	222	204	158	171	157	158	177	176	155
1,000 – 1,999	124	135	132	121	122	121	127	131	114
2,000 – 4,999	93	101	88	75	80	73	72	70	60
> 4,999	50	48	43	43	48	43	41	41	43
Total	**11,132**	**10,771**	**9,805**	**9,649**	**9,784**	**9,967**	**10,849**	**12,087**	**12,272**

1. Canada totals include the Yukon, Northwest and Nunavut Territories.
2. Employment size is based on total employment in Canada.

Table 4. Counts of industrial R&D performers by employment size – Atlantic Canada

Employment size[1]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]
person-years	number of establishments								
0 – 9	209	241	277	240	232	205	192	192	191
10 – 19	66	72	72	73	71	80	71	54	53
20 – 49	63	71	74	72	83	67	72	61	55
50 – 99	33	45	37	51	50	39	37	41	36
100 – 199	24	20	25	20	25	35	39	30	28
200 – 499	19	26	21	29	29	26	19	24	25
500 – 999	22	15	9	12	18	24	38	37	24
1,000 – 1,999	11	9	11	10	11	10	16	14	14
2,000 – 4,999	15	17	12	6	12	15	15	18	11
> 4,999	1	2	2	2	5	3	3	3	8
Total	**463**	**518**	**540**	**515**	**536**	**504**	**502**	**474**	**445**

1. Employment size is based on total employment in Canada.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Table 5. Counts of industrial R&D performers by employment size – Quebec

Employment size[1]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]
person-years	number of establishments								
0 – 9	1,381	1,443	1,492	1,490	1,444	1,435	1,620	1,817	2,070
10 – 19	663	680	672	668	731	749	812	975	1,029
20 – 49	710	722	753	708	783	904	974	1,048	1,085
50 – 99	374	381	380	403	455	439	487	544	510
100 – 199	243	245	244	239	249	291	325	339	324
200 – 499	165	166	165	177	187	182	194	194	163
500 – 999	79	73	56	65	59	61	74	77	65
1,000 – 1,999	49	48	50	49	47	46	47	44	43
2,000 – 4,999	26	28	30	23	29	23	30	36	27
> 4,999	28	24	22	26	32	32	30	26	28
Total	**3,718**	**3,810**	**3,864**	**3,848**	**4,016**	**4,162**	**4,593**	**5,100**	**5,344**

1. Employment size is based on total employment in Canada.

Table 6. Counts of industrial R&D performers by employment size – Ontario

Employment size[1]	1994	1995	1996	1997	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]
person-years	number of establishments								
0 – 9	1,616	1,426	1,290	1,251	1,249	1,232	1,376	1,651	1,803
10 – 19	672	648	539	536	506	563	588	714	712
20 – 49	681	673	589	604	648	647	694	838	790
50 – 99	377	370	297	356	368	362	407	418	416
100 – 199	274	272	232	240	234	267	299	324	273
200 – 499	202	213	192	198	203	192	211	201	209
500 – 999	103	98	77	90	79	81	92	91	87
1,000 – 1,999	68	74	68	58	63	63	66	77	69
2,000 – 4,999	51	57	45	41	50	47	41	40	39
> 4,999	48	44	39	37	45	41	38	41	41
Total	**4,092**	**3,875**	**3,368**	**3,411**	**3,445**	**3,495**	**3,812**	**4,395**	**4,439**

1. Employment size is based on total employment in Canada.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Table 7. Counts of industrial R&D performers by employment size – Manitoba & Saskatchewan

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]
person-years	number of establishments								
0 – 9	217	177	144	122	122	115	135	140	154
10 – 19	78	64	46	48	58	49	56	57	57
20 – 49	86	88	76	78	64	72	74	83	72
50 – 99	45	42	43	53	41	39	39	44	45
100 – 199	31	29	27	24	35	44	43	35	36
200 – 499	27	32	28	34	30	27	26	23	16
500 – 999	22	15	13	17	18	20	26	24	27
1,000 – 1,999	22	19	14	14	15	14	16	21	19
2,000 – 4,999	12	14	11	9	12	14	14	14	13
> 4,999	3	2	3	2	2	5	3	2	3
Total	**543**	**482**	**405**	**401**	**397**	**399**	**432**	**443**	**442**

1. Employment size is based on total employment in Canada.

Table 8. Counts of industrial R&D performers by employment size – Alberta

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]
person-years	number of establishments								
0 – 9	535	467	415	365	335	379	391	437	380
10 – 19	133	132	102	100	122	113	125	126	115
20 – 49	140	130	115	115	109	110	124	107	99
50 – 99	57	68	56	60	57	39	49	64	40
100 – 199	42	40	36	41	44	40	39	40	35
200 – 499	27	38	29	31	35	31	33	30	28
500 – 999	19	14	22	15	17	19	20	21	14
1,000 – 1,999	19	22	14	14	16	20	12	12	14
2,000 – 4,999	14	17	15	9	12	10	11	11	12
> 4,999	7	6	7	5	5	5	5	6	6
Total	**993**	**934**	**811**	**755**	**752**	**766**	**809**	**854**	**743**

1. Employment size is based on total employment in Canada.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Table 9. Counts of industrial R&D performers by employment size – British Columbia

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]
person-years	number of establishments								
0 – 9	843	716	532	486	438	442	477	550	587
10 – 19	248	203	161	151	152	161	189	180	207
20 – 49	235	231	171	155	154	154	174	203	186
50 – 99	95	98	81	82	86	77	86	100	92
100 – 199	62	59	44	42	32	46	52	52	51
200 – 499	38	41	37	35	35	36	29	32	30
500 – 999	20	11	7	9	13	14	18	15	15
1,000 – 1,999	13	16	13	10	10	13	14	11	12
2,000 – 4,999	10	12	9	11	10	11	12	14	9
> 4,999	9	7	10	7	10	10	7	7	8
Total	**1,573**	**1,394**	**1,065**	**988**	**940**	**964**	**1,058**	**1,164**	**1,197**

1. Employment size is based on total employment in Canada.

Table 10. Counts of industrial R&D performers by size of R&D expenditures – Canada[1]

Size of R&D[2]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]
in thousands of $	number of enterprises								
0 – 24	2,787	2,603	2,446	2,387	2,131	2,031	1,982	2,047	2,094
25 – 49	1,818	1,728	1,690	1,599	1,699	1,659	1,694	1,866	1,948
50 – 99	1,956	1,893	1,753	1,765	1,814	1,808	2,037	2,277	2,389
100 – 199	1,766	1,670	1,454	1,483	1,565	1,625	1,885	2,115	2,182
200 – 399	1,195	1,190	1,015	964	1,044	1,163	1,272	1,492	1,411
400 – 999	853	871	630	639	708	791	975	1,107	1,077
1,000 – 1,999	331	364	357	337	326	366	402	467	456
2,000 – 9,999	322	342	343	354	374	394	453	524	510
> 9,999	104	110	117	121	123	130	149	192	205
Total	**11,132**	**10,771**	**9,805**	**9,649**	**9,784**	**9,967**	**10,849**	**12,087**	**12,272**

1. Canada totals include the Yukon, Northwest and Nunavut Territories.
2. Size of R&D is based on total R&D expenditures in Canada.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Table 11. Counts of industrial R&D performers by size of R&D expenditures – Atlantic Canada

Size of R&D[1]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]
in thousands of $	number of establishments								
0 – 24	123	137	165	146	137	117	96	89	88
25 – 49	63	93	96	80	97	88	72	61	69
50 – 99	85	86	91	93	83	83	91	82	83
100 – 199	66	59	66	61	69	63	66	64	58
200 – 399	44	54	43	47	47	50	44	47	35
400 – 999	30	34	23	22	29	22	34	33	24
1,000 – 1,999	16	18	17	16	18	19	20	14	11
2,000 – 9,999	19	14	17	23	26	24	36	40	34
> 9,999	17	23	22	27	30	38	43	44	43
Total	**463**	**518**	**540**	**515**	**536**	**504**	**502**	**474**	**445**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 12. Counts of industrial R&D performers by size of R&D expenditures – Quebec

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000	2001[r]	2002[r]
in thousands of $	number of establishments								
0 – 24	947	940	901	1,029	1,011	946	920	975	1,040
25 – 49	676	648	721	705	749	757	806	912	999
50 – 99	654	698	706	764	761	792	923	1,054	1,133
100 – 199	591	595	589	550	592	648	780	846	888
200 – 399	353	402	410	327	351	429	463	551	525
400 – 999	252	268	262	215	265	281	344	355	350
1,000 – 1,999	100	109	118	102	104	119	132	141	141
2,000 – 9,999	89	97	101	99	122	124	148	174	175
> 9,999	56	53	56	57	61	66	77	92	93
Total	**3,718**	**3,810**	**3,864**	**3,848**	**4,016**	**4,162**	**4,593**	**5,100**	**5,344**

1. Size of R&D is based on total R&D expenditures in Canada.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Table 13. Counts of industrial R&D performers by size of R&D expenditures – Ontario

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]
in thousands of $	number of establishments								
0 – 24	846	762	694	652	503	518	503	550	525
25 – 49	575	545	511	473	504	464	493	525	536
50 – 99	689	653	593	567	607	578	628	724	786
100 – 199	674	593	497	572	585	616	679	803	819
200 – 399	484	459	363	387	447	456	515	628	603
400 – 999	377	391	251	289	319	361	435	501	513
1,000 – 1,999	156	173	157	162	159	170	197	237	224
2,000 – 9,999	209	212	214	217	220	219	240	274	279
> 9,999	82	87	88	92	101	113	122	153	154
Total	**4,092**	**3,875**	**3,368**	**3,411**	**3,445**	**3,495**	**3,812**	**4,395**	**4,439**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 14. Counts of industrial R&D performers by size of R&D expenditures – Manitoba and Saskatchewan

Size of R&D[1]	1994	1995	1996	1997[r]	1998[r]	1999	2000[r]	2001[r]	2002[r]
in thousands of $	number of establishments								
0 – 24	151	133	136	102	94	90	90	80	79
25 – 49	81	74	50	67	62	63	52	66	61
50 – 99	81	66	49	46	64	59	81	63	72
100 – 199	63	56	47	62	52	48	59	66	73
200 – 399	54	47	31	23	31	38	38	44	32
400 – 999	36	26	14	19	15	17	23	32	32
1,000 – 1,999	18	24	21	22	16	13	15	18	17
2,000 – 9,999	42	36	33	35	40	38	39	38	36
> 9,999	17	20	24	25	23	33	35	36	40
Total	**543**	**482**	**405**	**401**	**397**	**399**	**432**	**443**	**442**

1. Size of R&D is based on total R&D expenditures in Canada.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Table 15. Counts of industrial R&D performers by size of R&D expenditures – Alberta

Size of R&D[1]	1994	1995	1996	1997	1998	1999[r]	2000[r]	2001[r]	2002[r]
in thousands of $	number of establishments								
0 – 24	286	261	239	190	179	168	160	153	152
25 – 49	156	153	127	128	117	131	124	145	87
50 – 99	166	138	123	128	124	126	142	134	130
100 – 199	133	142	119	103	120	103	132	149	127
200 – 399	102	90	74	75	87	96	98	92	82
400 – 999	63	59	33	40	40	51	64	75	57
1,000 – 1,999	29	35	36	28	24	28	18	30	29
2,000 – 9,999	39	32	32	38	35	35	43	42	40
> 9,999	19	24	28	25	26	28	28	34	39
Total	**993**	**934**	**811**	**755**	**752**	**766**	**809**	**854**	**743**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 16. Counts of industrial R&D performers by size of R&D expenditures – British Columbia

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]
in thousands of $	number of establishments								
0 – 24	413	355	308	267	207	192	213	200	209
25 – 49	258	212	184	145	169	156	146	156	196
50 – 99	278	249	188	167	173	168	173	220	185
100 – 199	239	225	136	133	144	147	169	187	218
200 – 399	165	150	97	106	80	96	117	130	136
400 – 999	115	106	48	59	50	73	87	117	104
1,000 – 1,999	38	33	38	33	34	42	44	41	42
2,000 – 9,999	44	39	37	46	51	56	73	71	60
> 9,999	23	25	29	32	32	34	36	42	47
Total	**1,573**	**1,394**	**1,065**	**988**	**940**	**964**	**1,058**	**1,164**	**1,197**

1. Size of R&D is based on total R&D expenditures in Canada.

❖ *Companies with multi-establishments are included in each applicable region. Therefore regional components will not add to Canada total.*

Business enterprise R&D activities (BERD), by region

Table 17. BERD by data source – Canada and the regions

Region / Data source		1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
		in millions of $									
Canada[1]	Survey	6,345.8	6,838.7	6,986.2	7,723.0	8,570.5	9,199.2	11,058.6	12,700.3	11,763.4	11,652.4
	CRA	1,221.4	1,151.8	1,009.7	1,016.4	1,111.6	1,200.4	1,391.0	1,619.9	1,603.1	1,738.8
	Total	**7,567.2**	**7,990.5**	**7,996.0**	**8,739.5**	**9,682.1**	**10,399.7**	**12,449.6**	**14,320.2**	**13,366.5**	**13,391.1**
Atlantic Canada	Survey	84.5	82.9	88.4	62.1	71.9	77.7	82.5	112.9	114.9	102.7
	CRA	40.8	48.3	44.4	44.6	49.1	44.0	49.6	49.5	41.8	44.2
	Total	**125.2**	**131.2**	**132.8**	**106.7**	**121.0**	**121.6**	**132.1**	**162.4**	**156.7**	**146.9**
Quebec	Survey	1,678.7	1,886.0	1,975.9	2,156.5	2,351.1	2,595.0	3,109.7	3,553.2	3,459,5	3,433.6
	CRA	377.5	390.6	417.6	362.2	412.9	451.8	532.3	601.5	597.2	681.2
	Total	**2,056.2**	**2,276.6**	**2,393.4**	**2,518.7**	**2,764.0**	**3,046.8**	**3,641.9**	**4,154.7**	**4,056.7**	**4,114.8**
Ontario	Survey	3,618.8	3,873.0	3,894.1	4,422.4	4,946.1	5,323.9	6,353.2	7,279.3	6,373.3	6,352.6
	CRA	492.8	446.8	361.8	410.4	448.1	474.9	550.0	665.1	674.3	713.1
	Total	**4,111.6**	**4,319.8**	**4,255.9**	**4,832.8**	**5,394.2**	**5,798.9**	**6,903.2**	**7,944.4**	**7,047.6**	**7,065.7**
Manitoba and Saskatchewan	Survey	125.8	130.1	123.9	139.7	142.7	190.3	169.8	214.5	203.1	167.1
	CRA	46.3	39.2	27.6	31.7	33.1	36.3	38.5	45.3	48.3	41.8
	Total	**172.1**	**169.3**	**151.6**	**171.4**	**175.8**	**226.5**	**208.3**	**259.8**	**251.4**	**209.0**
Alberta	Survey	409.1	401.3	457.2	475.8	539.9	406.0	493.3	612.6	679.5	693.7
	CRA	99.7	89.3	66.6	69.7	78.2	84.6	97.4	105.8	87.8	84.9
	Total	**508.8**	**490.6**	**523.8**	**545.5**	**618.1**	**490.5**	**590.8**	**718.4**	**767.3**	**778.6**
British Columbia	Survey	428.9	465.4	446.7	466.6	518.9	605.6	850.1	927.4	932.7	902.2
	CRA	161.7	136.8	91.4	97.2	89.5	108.1	122.7	152.4	153.7	173.2
	Total	**590.6**	**602.3**	**538.1**	**563.9**	**608.3**	**713.7**	**972.8**	**1,079.7**	**1,086.4**	**1,075.4**

1. Canada totals include the Yukon, Northwest and Nunavut Territories.

Table 18. BERD by country of control – Canada and the regions

Region	Country of control	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
		in millions of $									
Canada[1]	Canada	5,319.9	5,613.2	5,452.4	5,711.0	6,466.4	7,070.4	8,781.8	10,095.0	9,010.5	8,886.7
	Foreign	2,247.3	2,377.3	2,543.6	3,028.4	3,215.7	3,329.3	3,667.8	4,225.2	4,356.0	4,504.4
	Total	**7,567.2**	**7,990.5**	**7,996.0**	**8,739.5**	**9,682.1**	**10,399.7**	**12,449.6**	**14,320.2**	**13,366.5**	**13,391.1**
Atlantic Canada	Canada	112.1	116.8	118.7	87.9	93.9	96.2	97.7	97.7	104.1	96.4
	Foreign	13.2	14.4	14.1	18.8	27.0	25.5	34.3	64.7	52.6	50.5
	Total	**125.2**	**131.2**	**132.8**	**106.7**	**121.0**	**121.6**	**132.1**	**162.4**	**156.7**	**146.9**
Quebec	Canada	1,465.7	1,599.5	1,538.1	1,524.1	1,730.1	2,006.2	2,399.3	2,743.9	2,578.3	2,607.2
	Foreign	590.5	677.1	855.4	994.7	1,033.9	1,040.6	1,242.6	1,410.8	1,478.4	1,507.6
	Total	**2,056.2**	**2,276.6**	**2,393.4**	**2,518.7**	**2,764.0**	**3,046.8**	**3,641.9**	**4,154.7**	**4,056.7**	**4,114.8**
Ontario	Canada	2,755.5	3,007.2	2,919.7	3,187.9	3,588.5	3,809.6	4,845.9	5,660.3	4,757.5	4,723.1
	Foreign	1,356.1	1,312.6	1,336.2	1,644.8	1,805.6	1,989.3	2,057.4	2,284.1	2,290.1	2,342.6
	Total	**4,111.6**	**4,319.8**	**4,255.9**	**4,832.8**	**5,394.2**	**5,798.9**	**6,903.2**	**7,944.4**	**7,047.6**	**7,065.7**
Manitoba and Saskatchewan	Canada	132.4	128.0	123.6	125.5	134.5	178.3	161.0	198.3	184.7	156.7
	Foreign	39.7	41.3	28.0	45.9	41.3	48.3	47.3	61.5	66.7	52.3
	Total	**172.1**	**169.3**	**151.6**	**171.4**	**175.8**	**226.5**	**208.3**	**259.8**	**251.4**	**209.0**
Alberta	Canada	411.7	401.5	402.9	364.1	445.8	374.6	456.6	537.2	520.3	497.0
	Foreign	97.1	89.1	120.9	181.4	172.2	115.9	134.1	181.2	247.0	281.6
	Total	**508.8**	**490.6**	**523.8**	**545.5**	**618.1**	**490.5**	**590.8**	**718.4**	**767.3**	**778.6**
British Columbia	Canada	439.8	359.4	349.0	420.9	472.7	604.7	820.9	857.2	865.5	806.1
	Foreign	150.7	242.8	189.0	142.9	135.6	108.9	152.0	222.5	220.8	269.3
	Total	**590.6**	**602.3**	**538.1**	**563.9**	**608.3**	**713.7**	**972.8**	**1,079.7**	**1,086.4**	**1,075.4**

1. Canada totals include the Yukon, Northwest and Nunavut Territories.

Table 19. BERD by employment size – Canada[1]

Employment size[2]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
person-years	in millions of $									
0 – 9	485.9	449.8	431.4	391.2	402.6	411.1	476.5	568.5	581.6	631.9
10 – 19	362.0	346.8	272.7	265.8	270.3	310.9	331.0	409.1	419.5	485.7
20 – 49	541.2	545.6	508.8	522.3	589.3	631.8	772.5	953.9	975.5	1,010.3
50 – 99	474.9	494.4	473.3	493.4	599.9	587.2	780.8	1,144.9	1,144.9	1,041.6
100 – 199	517.1	606.9	617.1	677.6	688.4	779.1	1,082.5	1,307.6	1,183.3	1,033.9
200 – 499	561.8	679.1	760.7	880.6	883.7	1,081.9	1,025.1	1,252.7	1,235.2	1,233.8
500 – 999	673.6	754.6	783.3	838.9	921.7	775.2	1,136.5	1,270.2	1,258.6	1,314.4
1,000 – 1,999	780.1	865.0	914.3	908.4	1,089.4	1,471.5	1,488.0	1,610.3	1,862.1	1,933.1
2,000 – 4,999	723.6	704.5	599.8	668.0	802.2	879.0	1,135.0	1,262.7	1,299.6	2,645.0
> 4,999	2,447.1	2,543.8	2,634.7	3,093.1	3,434.6	3,472.0	4,221.9	4,540.5	3,406.3	2,061.6
Total	**7,567.2**	**7,990.5**	**7,996.0**	**8,739.5**	**9,682.1**	**10,399.7**	**12,449.6**	**14,320.2**	**13,366.5**	**13,391.1**

1. Canada totals include the Yukon, Northwest and Nunavut territories.
2. Employment size is based on total employment in Canada.

Table 20. BERD by employment size – Atlantic Canada

Employment size[1]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
person-years	in millions of $									
0 – 9	17.0	15.5	18.0	13.0	13.9	13.0	13.4	14.2	13.1	13.3
10 – 19	12.2	13.0	10.1	9.7	8.0	11.2	12.0	8.7	6.7	9.3
20 – 49	23.1	21.5	22.3	31.4	30.7	28.2	34.2	30.4	30.8	13.9
50 – 99	10.6	15.1	13.9	14.0	18.8	11.7	14.5	26.2	20.8	35.0
100 – 199	5.0	7.9	8.0	12.8	11.2	16.7	16.1	15.1	22.4	10.7
200 – 499	8.8	7.3	3.4	3.9	5.8	12.1	7.9	14.6	26.7	22.2
500 – 999	4.2	2.7	8.8	7.2	12.0	4.2	10.7	17.2	7.0	12.0
> 999	44.4	48.1	48.4	14.5	20.7	24.6	23.2	35.9	29.2	30.5
Total	**125.2**	**131.2**	**132.8**	**106.7**	**121.0**	**121.6**	**132.1**	**162.4**	**156.7**	**146.9**

1. Employment size is based on total employment in Canada.

Table 21. BERD by employment size – Quebec

Employment size[1]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
person-years	in millions of $									
0 – 9	161.9	165.2	177.5	156.1	175.1	165.8	199.9	224.1	240.3	265.0
10 – 19	103.6	108.6	110.5	97.2	111.0	110.9	115.8	150.7	149.2	175.8
20 – 49	137.5	160.1	173.0	165.1	209.4	235.3	265.9	322.6	344.2	354.5
50 – 99	111.0	126.0	129.3	121.4	155.9	141.8	210.2	299.3	333.3	312.0
100 – 199	150.2	177.5	166.2	163.5	215.7	205.8	446.5	364.2	288.2	288.6
200 – 499	192.7	172.4	195.0	223.2	211.5	279.4	315.6	351.4	314.1	379.3
500 – 999	212.7	293.2	298.3	277.6	309.0	262.0	377.0	470.7	442.5	380.8
1,000-1,999	233.9	235.8	315.5	386.1	433.5	634.5	477.4	499.9	688.1	677.7
2,000-4,999	226.1	208.6	176.6	148.8	152.4	150.4	339.7	501.4	338.8	407.9
> 4,999	526.6	629.1	651.5	779.8	790.4	860.8	893.9	970.3	917.9	873.3
Total	**2,056.2**	**2,276.6**	**2,393.4**	**2,518.7**	**2,764.0**	**3,046.8**	**3,641.9**	**4,154.7**	**4,056.7**	**4,114.8**

1. Employment size is based on total employment in Canada.

Table 22. BERD by employment size – Ontario

Employment size[1]	1994	1995	1996	1997	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
person-years	in millions of $									
0 – 9	139.6	121.9	112.1	108.1	109.6	112.6	129.6	170.0	187.0	194.0
10 – 19	156.1	154.2	106.0	109.4	103.0	122.6	123.8	161.7	171.0	200.8
20 – 49	237.4	237.8	208.9	211.6	241.3	239.3	299.1	429.9	426.4	483.4
50 – 99	219.0	221.7	182.8	230.7	292.7	307.1	403.9	586.3	546.4	459.1
100 – 199	287.4	312.1	339.1	358.4	333.9	403.4	463.1	724.2	615.0	552.2
200 – 499	292.6	367.2	410.0	442.3	451.1	507.8	531.4	626.0	644.2	645.2
500 – 999	266.8	336.5	370.8	396.8	433.9	431.7	513.5	463.1	592.1	657.2
1,000 – 1,999	434.7	481.7	486.1	459.9	536.6	659.8	697.3	818.2	880.0	876.8
2,000 – 4,999	323.7	331.5	224.7	391.8	472.6	593.2	594.0	576.4	712.7	1,941.1
> 4,999	1,754.3	1,755.2	1,815.4	2,123.9	2,419.5	2,421.5	3,147.6	3,388.6	2,272.8	1,056.0
Total	**4,111.6**	**4,319.8**	**4,255.9**	**4,832.8**	**5,394.2**	**5,798.9**	**6,903.2**	**7,944.4**	**7,047.6**	**7,065.7**

1. Employment size is based on total employment in Canada.

Table 23. BERD by employment size – Manitoba and Saskatchewan

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
person-years	in millions of $									
0 – 9	24.2	20.5	19.9	17.3	20.1	22.4	26.2	28.9	26.1	26.5
10 – 19	11.3	9.4	6.0	4.9	5.2	7.0	11.1	14.9	16.2	13.2
20 – 49	22.1	24.1	19.3	18.8	9.0	11.0	12.8	17.0	20.2	17.8
50 – 99	23.4	25.9	34.1	27.0	31.1	17.8	22.2	15.8	25.6	16.6
100 – 199	16.6	16.4	16.7	30.7	40.9	30.2	23.9	16.1	16.5	19.2
200 – 499	28.3	19.0	17.2	16.5	15.1	39.3	25.3	84.4	34.5	33.1
500 – 999	15.4	17.8	10.3	29.1	19.4	31.0	33.1	31.2	39.1	33.6
1,000 – 1,999	20.3	25.4	17.1	17.4	14.3	9.2	25.6	37.0	27.5	26.7
> 1,999	10.6	10.9	10.9	9.8	20.7	58.5	28.1	14.4	45.8	22.4
Total	**172.1**	**169.3**	**151.6**	**171.4**	**175.8**	**226.5**	**208.3**	**259.8**	**251.4**	**209.0**

1. Employment size is based on total employment in Canada.

Table 24. BERD by employment size – Alberta

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
person-years	in millions of $									
0 – 9	51.6	47.9	42.9	39.3	31.5	40.5	44.6	57.1	40.5	48.0
10 – 19	32.2	26.6	17.7	17.9	21.0	24.8	24.1	27.4	26.1	25.0
20 – 49	41.0	34.0	31.0	33.3	37.6	37.1	46.1	41.0	47.5	39.7
50 – 99	29.0	32.4	29.8	31.5	23.3	19.3	23.4	44.1	31.8	51.4
100 – 199	26.8	30.9	51.4	44.2	50.8	55.0	59.4	76.3	99.5	51.6
200 – 499	12.6	16.6	21.4	53.7	48.0	51.4	45.8	52.9	63.1	67.6
500 – 999	25.7	15.7	29.0	73.9	66.6	33.0	51.4	80.9	40.1	15.4
1,000 – 1,999	60.7	81.8	57.5	34.5	40.0	31.4	15.2	86.5	107.9	165.0
> 1,999	229.3	204.7	243.0	217.2	299.3	197.9	280.8	252.3	310.8	315.0
Total	**508.8**	**490.6**	**523.8**	**545.5**	**618.1**	**490.5**	**590.8**	**718.4**	**767.3**	**778.6**

1. Employment size is based on total employment in Canada.

Table 25. BERD by employment size – British Columbia

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
person-years	in millions of $									
0 – 9	91.0	78.4	60.8	57.1	51.9	56.3	62.7	74.1	74.6	85.0
10 – 19	45.2	34.8	22.3	26.7	21.7	34.0	43.9	45.4	50.3	61.7
20 – 49	79.5	68.0	54.2	62.2	61.3	80.8	114.5	113.0	106.4	101.0
50 – 99	81.8	73.2	83.4	68.7	78.1	89.6	106.5	173.1	187.1	167.6
100 – 199	31.1	62.2	35.6	68.1	35.8	67.9	73.4	111.6	141.6	111.5
200 – 499	26.6	96.5	113.7	141.0	152.3	191.9	99.1	123.3	152.7	86.4
500 – 999	148.9	88.7	66.0	54.0	80.9	13.3	150.7	207.1	137.7	215.2
1,000 – 1,999	25.3	34.9	31.1	6.2	59.0	126.5	262.8	156.0	149.6	176.0
2,000 – 4,999	23.7	25.5	15.9	36.1	34.1	29.6	25.5	43.7	35.3	9.5
> 4,999	37.4	40.1	55.1	43.7	33.2	23.7	33.7	32.4	51.0	61.4
Total	**590.6**	**602.3**	**538.1**	**563.9**	**608.3**	**713.7**	**972.8**	**1,079.7**	**1,086.4**	**1,075.4**

1. Employment size is based on total employment in Canada.

Table 26. BERD by size of R&D expenditures – Canada[1]

Size of R&D[2]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $	in millions of $									
0 – 24	33.4	31.7	29.6	29.1	26.7	25.2	25.4	26.4	28.0	27.3
25 – 49	64.9	61.8	60.8	57.7	61.2	60.0	61.1	67.9	70.8	73.0
50 – 99	139.3	135.9	124.7	125.8	129.8	129.5	146.5	163.6	172.6	188.1
100 – 199	248.0	236.1	203.7	208.9	220.8	230.9	267.1	300.2	310.8	328.9
200 – 399	333.6	333.6	286.0	271.0	291.3	325.7	357.7	421.1	396.5	473.4
400 – 999	527.6	543.3	392.6	391.7	429.7	478.6	600.6	687.5	659.8	702.4
1,000 – 1,999	448.5	503.2	505.2	480.3	463.6	514.8	560.9	653.2	635.6	652.2
2,000 – 9,999	1,314.6	1,370.5	1,342.6	1,436.5	1,599.6	1,686.3	1,882.4	2,204.3	2,147.5	2,039.3
> 9,999	4,457.3	4,774.6	5,050.7	5,738.5	6,459.5	6,948.7	8,547.9	9,795.9	8,944.9	8,906.4
Total	**7,567.2**	**7,990.5**	**7,996.0**	**8,739.5**	**9,682.1**	**10,399.7**	**12,449.6**	**14,320.2**	**13,366.5**	**13,391.1**

1. Canada totals include the Yukon, Northwest and Nunavut territories.
2. Size of R&D is based on total R&D expenditures in Canada.

Table 27. BERD by size of R&D expenditures – Atlantic Canada

Size of R&D[1]	1994[r]	1995[r]	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $					in millions of $					
0 – 24	1.4	1.5	2.1	1.8	1.6	1.4	1.2	1.0	1.2	1.1
25 – 49	2.2	3.3	3.4	2.9	3.4	3.0	2.6	2.2	2.5	2.4
50 – 99	6.1	6.1	6.4	6.8	5.7	5.6	6.5	5.8	6.0	6.6
100 – 199	9.2	8.4	9.5	8.0	9.6	8.9	9.5	9.0	8.5	8.0
200 – 399	11.8	14.5	11.6	13.2	12.5	13.7	11.5	12.9	9.3	11.0
400 – 999	17.4	18.3	15.1	14.8	18.4	13.1	19.5	19.8	15.3	14.7
1,000 – 1,999	19.0	23.0	21.7	19.6	21.5	21.4	19.9	14.5	8.7	14.3
2,000 – 9,999	36.0	34.7	22.6	32.8	33.6	38.5	37.1	69.7	72.0	40.7
> 9,999	22.1	21.4	40.4	7.0	14.6	15.9	24.4	27.4	33.3	48.4
Total	**125.2**	**131.2**	**132.8**	**106.7**	**121.0**	**121.6**	**132.1**	**162.4**	**156.7**	**146.9**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 28. BERD by size of R&D expenditures – Quebec

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $					in millions of $					
0 – 24	11.7	11.9	11.3	12.9	13.1	11.9	12.1	13.0	13.9	14.8
25 – 49	24.2	22.9	25.9	25.2	26.8	27.2	28.8	33.0	36.2	39.5
50 – 99	46.5	49.9	50.5	54.1	54.1	56.1	66.5	75.2	81.6	92.4
100 – 199	82.8	83.1	81.9	77.3	83.4	90.8	108.8	119.4	124.9	144.6
200 – 399	97.2	111.8	115.2	91.2	98.8	121.0	128.6	155.3	146.4	180.9
400 – 999	155.2	164.4	162.7	129.0	155.7	161.5	210.4	219.2	210.9	225.6
1,000 – 1,999	122.3	137.9	156.1	140.7	143.7	162.8	173.2	197.6	196.6	228.8
2,000 – 9,999	267.3	310.4	297.0	302.9	378.6	419.5	486.3	618.6	607.0	549.1
> 9,999	1,248.9	1,384.2	1,492.9	1,685.3	1,809.7	1,996.1	2,427.2	2,723.4	2,639.3	2,639.1
Total	**2,056.2**	**2,276.6**	**2,393.4**	**2,518.7**	**2,764.0**	**3,046.8**	**3,641.9**	**4,154.7**	**4,056.7**	**4,114.8**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 29. BERD by size of R&D expenditures – Ontario

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $					in millions of $					
0 – 24	10.0	9.3	8.2	8.1	6.4	6.6	6.7	7.1	7.1	6.5
25 – 49	20.5	19.8	18.5	17.2	18.5	17.1	18.1	19.7	19.7	18.5
50 – 99	49.2	47.1	42.4	41.0	44.2	42.2	44.9	52.1	57.4	60.0
100 – 199	94.7	84.7	69.2	81.1	82.7	88.0	97.2	115.2	116.6	115.7
200 – 399	135.6	127.6	102.7	110.4	124.1	126.8	145.4	177.7	168.9	202.1
400 – 999	229.1	247.8	155.4	179.0	193.1	218.5	269.0	313.5	318.1	336.6
1,000 – 1,999	203.0	223.1	210.6	217.3	207.1	226.0	270.7	328.4	306.4	310.8
2,000 – 9,999	740.5	770.1	753.3	778.7	839.0	821.3	892.3	1,062.1	1,066.4	1,069.8
> 9,999	2,629.0	2,790.5	2,895.8	3,399.9	3,879.2	4,252.4	5,159.1	5,868.6	4,986.9	4,945.6
Total	**4,111.6**	**4,319.8**	**4,255.9**	**4,832.8**	**5,394.2**	**5,798.9**	**6,903.2**	**7,944.4**	**7,047.6**	**7,065.7**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 30. BERD by size of R&D expenditures – Manitoba and Saskatchewan

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000	2001[r]	2002[r]	2003[p]
in thousands of $					in millions of $					
0 – 24	1.8	1.6	1.7	1.2	1.1	1.2	1.1	1.1	1.1	0.8
25 – 49	2.9	2.6	1.8	2.4	2.2	2.2	1.8	2.4	2.2	2.3
50 – 99	5.7	4.7	3.5	3.3	4.5	4.2	5.8	4.7	5.2	4.7
100 – 199	8.5	7.9	6.5	8.8	7.3	7.0	8.4	9.4	10.4	8.8
200 – 399	14.8	12.8	9.0	6.7	8.7	10.2	10.2	12.7	9.5	10.3
400 – 999	22.3	16.2	10.2	10.8	7.4	10.1	14.1	18.9	19.6	16.4
1,000 – 1,999	22.1	30.8	26.3	26.4	19.3	14.9	17.8	21.2	25.3	23.9
2,000 – 9,999	65.7	64.3	63.8	62.9	91.1	101.9	90.5	86.3	84.2	70.9
> 9,999	28.3	28.3	28.8	48.9	34.2	74.8	58.6	103.1	93.9	71.0
Total	**172.1**	**169.3**	**151.6**	**171.4**	**175.8**	**226.5**	**208.3**	**259.8**	**251.4**	**209.0**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 31. BERD by size of R&D expenditures – Alberta

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $					in millions of $					
0 – 24	3.3	3.0	2.9	2.0	2.1	1.9	1.8	1.8	1.8	1.4
25 – 49	5.6	5.6	4.4	4.7	4.1	4.7	4.5	5.1	3.1	3.2
50 – 99	11.6	9.9	8.6	9.0	8.8	9.1	10.0	9.9	9.1	7.2
100 – 199	19.4	20.1	17.5	14.3	16.9	15.0	19.2	20.7	18.5	19.7
200 – 399	28.7	25.5	20.0	20.3	24.0	26.7	28.0	26.0	23.7	24.0
400 – 999	38.4	35.0	19.9	22.9	25.9	31.4	38.7	45.2	33.9	34.3
1,000 – 1,999	33.1	44.5	43.2	31.3	29.0	35.0	22.4	37.2	40.9	26.9
2,000 – 9,999	100.7	78.6	96.3	120.5	124.7	121.1	131.5	129.9	116.3	121.8
> 9,999	268.0	268.4	311.0	320.5	382.6	245.6	334.6	442.5	520.0	540.2
Total	**508.8**	**490.6**	**523.8**	**545.5**	**618.1**	**490.5**	**590.8**	**718.4**	**767.3**	**778.6**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 32. BERD by size of R&D expenditures – British Columbia

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $					in millions of $					
0 – 24	4.9	4.2	3.5	3.1	2.5	2.2	2.5	2.4	2.8	2.7
25 – 49	9.2	7.5	6.7	5.2	6.2	5.7	5.3	5.5	7.1	7.1
50 – 99	19.8	17.8	13.1	11.6	12.3	12.2	12.8	16.0	13.3	17.3
100 – 199	33.1	31.5	19.1	19.1	20.6	21.3	24.0	26.4	32.0	32.1
200 – 399	44.6	41.4	27.6	29.1	22.9	27.1	33.7	36.2	38.5	45.1
400 – 999	64.7	61.6	29.3	35.2	29.1	43.5	48.9	71.0	62.1	74.8
1,000 – 1,999	48.9	43.9	47.3	45.0	42.9	54.8	57.0	54.1	57.8	47.6
2,000 – 9,999	104.4	112.5	109.7	138.7	132.5	183.9	244.7	237.6	201.7	187.0
> 9,999	261.0	281.8	281.7	276.8	339.2	363.0	544.0	630.5	671.2	661.7
Total	**590.6**	**602.3**	**538.1**	**563.9**	**608.3**	**713.7**	**972.8**	**1,079.7**	**1,086.4**	**1,075.4**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 33. BERD concentration – Canada

Enterprises	1994		1995		1996		1997[r]		1998[r]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	1,651.4	21.8	1,912.0	23.9	2,055.7	25.7	2,457.8	28.1	2,878.9	29.7
Top 10	2,110.8	27.9	2,359.5	29.5	2,512.9	31.4	2,950.4	33.8	3,480.8	36.0
Top 25	2,966.3	39.2	3,123.9	39.1	3,279.9	41.0	3,845.5	44.0	4,415.3	45.6
Top 50	3,673.8	48.5	3,854.0	48.2	4,012.2	50.2	4,658.9	53.3	5,281.6	54.6
Top 75	4,106.6	54.3	4,331.0	54.2	4,513.7	56.4	5,156.0	59.0	5,801.6	59.9
Top 100	4,416.2	58.4	4,668.3	58.4	4,863.8	60.8	5,511.1	63.1	6,180.9	63.8
Total	**7,567.2**	**100.0**	**7,990.5**	**100.0**	**7,996.0**	**100.0**	**8,739.5**	**100.0**	**9,682.1**	**100.0**

Table 33. (continued) BERD concentration – Canada

Enterprises	1999[r]		2000[r]		2001[r]		2002[r]		2003[p]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	2,887.7	27.8	3,778.4	30.3	3,794.0	26.5	2,567.6	19.2	2,317.5	17.3
Top 10	3,544.4	34.1	4,513.4	36.3	4,503.4	31.4	3,248.7	24.3	3,083.9	23.0
Top 25	4,620.3	44.4	5,695.7	45.8	5,795.0	40.5	4,680.9	35.0	4,529.8	33.8
Top 50	5,566.8	53.5	6,747.2	54.2	7,012.6	49.0	6,029.8	45.1	6,036.2	45.1
Top 75	6,157.3	59.2	7,428.1	59.7	7,846.8	54.8	6,875.5	51.4	6,900.3	51.5
Top 100	6,584.0	63.3	7,918.5	63.6	8,455.9	59.0	7,466.0	55.9	7,511.3	56.1
Total	**10,399.7**	**100.0**	**12,449.6**	**100.0**	**14,320.2**	**100.0**	**13,366.5**	**100.0**	**13,391.1**	**100.0**

Table 34. BERD concentration – Atlantic Canada

Establishments	1994		1995		1996		1997[r]		1998[r]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	36.5	29.2	38.3	29.2	46.2	34.8	26.5	24.8	27.8	22.9
Top 10	52.8	42.1	50.9	38.8	58.7	44.2	37.0	34.7	41.0	33.9
Top 25	72.9	58.2	72.1	55.0	81.3	61.2	55.2	51.8	62.1	51.3
Top 50	90.8	72.5	89.8	68.5	97.7	73.6	71.6	67.1	80.3	66.4
Top 75	99.2	79.2	99.6	75.9	105.6	79.5	79.6	74.7	90.2	74.6
Top 100	105.1	83.9	106.9	81.5	111.3	83.8	85.8	80.4	96.7	79.9
Total	**125.2**	**100.0**	**131.2**	**100.0**	**132.8**	**100.0**	**106.7**	**100.0**	**121.0**	**100.0**

Table 34. (continued) BERD concentration – Atlantic Canada

Establishments	1999[r]		2000[r]		2001[r]		2002[r]		2003[p]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	29.9	24.6	25.9	19.6	35.5	21.9	38.6	24.6	37.9	25.8
Top 10	41.6	34.2	39.0	29.5	54.1	33.3	58.8	37.5	52.1	35.5
Top 25	63.9	52.6	63.1	47.8	86.9	53.5	93.8	59.9	84.2	57.3
Top 50	83.2	68.4	85.7	64.9	115.0	70.8	119.5	76.3	107.9	73.4
Top 75	92.6	76.1	97.8	74.1	128.3	79.0	131.0	83.6	119.7	81.4
Top 100	99.3	81.7	105.5	79.9	136.6	84.1	137.1	87.5	126.9	86.3
Total	**121.6**	**100.0**	**132.1**	**100.0**	**162.4**	**100.0**	**156.7**	**100.0**	**146.9**	**100.0**

Table 35. BERD concentration – Quebec

Establishments	1994		1995		1996		1997		1998	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	545.1	26.5	637.9	28.0	647.1	27.0	768.2	30.5	790.3	28.6
Top 10	770.3	37.5	900.8	39.6	930.2	38.9	1,092.9	43.4	1,160.6	42.0
Top 25	1,098.8	53.5	1,255.0	55.1	1,312.1	54.8	1,483.5	58.9	1,587.9	57.4
Top 50	1,314.6	64.0	1,461.6	64.2	1,552.3	64.9	1,737.2	69.0	1,849.3	66.9
Top 75	1,410.2	68.6	1,565.9	68.8	1,653.8	69.1	1,847.2	73.3	1,974.9	71.4
Top 100	1,476.8	71.9	1,633.2	71.7	1,723.3	72.0	1,920.8	76.3	2,063.6	74.7
Total	**2,056.2**	**100.0**	**2,276.6**	**100.0**	**2,393.4**	**100.0**	**2,518.7**	**100.0**	**2,764.0**	**100.0**

Table 35. (continued) BERD concentration – Quebec

Establishments	1999		2000[r]		2001[r]		2002[r]		2003[p]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	893.2	29.3	1,011.3	27.8	1,025.5	24.7	964.8	23.8	940.1	22.8
Top 10	1,306.0	42.9	1,493.8	41.0	1,435.9	34.6	1,355.4	33.4	1,334.8	32.4
Top 25	1,732.9	56.9	1,989.5	54.6	2,046.7	49.3	1,951.8	48.1	1,969.9	47.9
Top 50	2,030.0	66.6	2,381.8	65.4	2,566.4	61.8	2,433.1	60.0	2,445.5	59.4
Top 75	2,168.9	71.2	2,552.3	70.1	2,797.9	67.3	2,691.1	66.3	2,687.5	65.3
Top 100	2,263.0	74.3	2,665.3	73.2	2,947.4	70.9	2,853.7	70.3	2,839.2	69.0
Total	**3,046.8**	**100.0**	**3,641.9**	**100.0**	**4,154.7**	**100.0**	**4,056.7**	**100.0**	**4,114.8**	**100.0**

Table 36. BERD concentration – Ontario

Establishments	1994		1995		1996		1997		1998	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	1,354.8	33.0	1,500.5	34.7	1,611.7	37.9	1,892.9	39.2	2,317.4	43.0
Top 10	1,657.7	40.3	1,774.2	41.1	1,880.1	44.2	2,215.2	45.8	2,654.7	49.2
Top 25	2,125.8	51.7	2,213.7	51.2	2,323.5	54.6	2,727.7	56.4	3,146.6	58.3
Top 50	2,524.5	61.4	2,636.2	61.0	2,738.0	64.3	3,176.4	65.7	3,594.1	66.6
Top 75	2,744.6	66.8	2,873.8	66.5	2,972.2	69.8	3,437.8	71.1	3,873.3	71.8
Top 100	2,903.6	70.6	3,036.3	70.3	3,132.4	73.6	3,611.9	74.7	4,056.7	75.2
Total	**4,111.6**	**100.0**	**4,319.8**	**100.0**	**4,255.9**	**100.0**	**4,832.8**	**100.0**	**5,394.2**	**100.0**

Table 36. (continued) BERD concentration – Ontario

Establishments	1999		2000[r]		2001[r]		2002[r]		2003[p]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	2,265.0	39.1	3,013.1	43.6	3,004.5	37.8	1,915.5	27.2	1,725.3	24.4
Top 10	2,668.8	46.0	3,376.2	48.9	3,483.5	43.8	2,418.8	34.3	2,280.2	32.3
Top 25	3,275.2	56.5	4,033.8	58.4	4,190.7	52.8	3,272.6	46.4	3,247.2	46.0
Top 50	3,806.6	65.6	4,607.0	66.7	4,870.0	61.3	3,980.9	56.5	3,957.8	56.0
Top 75	4,149.1	71.5	4,978.4	72.1	5,340.4	67.2	4,439.2	63.0	4,435.8	62.8
Top 100	4,369.8	75.4	5,226.4	75.7	5,679.9	71.5	4,757.2	67.5	4,783.9	67.7
Total	**5,798.9**	**100.0**	**6,903.2**	**100.0**	**7,944.4**	**100.0**	**7,047.6**	**100.0**	**7,065.7**	**100.0**

Table 37. BERD concentration – Manitoba and Saskatchewan

Establishments	1994		1995		1996		1997		1998	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	35.1	20.4	35.3	20.9	38.3	25.3	52.6	30.7	47.8	27.2
Top 10	56.7	32.9	55.7	32.9	57.3	37.8	75.7	44.2	74.3	42.3
Top 25	90.9	52.8	90.5	53.4	90.4	59.6	111.1	64.9	118.3	67.3
Top 50	117.9	68.5	121.3	71.6	118.8	78.4	139.1	81.1	145.8	82.9
Top 75	133.2	77.4	136.4	80.6	130.6	86.2	150.3	87.7	155.7	88.6
Top 100	142.3	82.7	145.0	85.6	137.4	90.7	156.2	91.2	161.3	91.7
Total	**172.1**	**100.0**	**169.3**	**100.0**	**151.6**	**100.0**	**171.4**	**100.0**	**175.8**	**100.0**

Table 37. (continued) BERD concentration – Manitoba and Saskatchewan

Establishments	1999		2000		2001[r]		2002[r]		2003[p]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	72.3	31.9	48.1	23.1	90.1	34.7	64.1	25.5	48.5	23.2
Top 10	103.6	45.7	77.0	37.0	118.4	45.6	97.9	38.9	72.0	34.5
Top 25	157.6	69.6	131.0	62.9	167.6	64.5	153.0	60.8	118.3	56.6
Top 50	189.6	83.7	164.8	79.1	202.5	78.0	193.1	76.8	157.3	75.3
Top 75	202.4	89.3	178.8	85.9	220.7	84.9	213.5	84.9	176.0	84.2
Top 100	209.3	92.4	186.4	89.5	231.5	89.1	224.6	89.3	185.9	88.9
Total	**226.5**	**100.0**	**208.3**	**100.0**	**259.8**	**100.0**	**251.4**	**100.0**	**209.0**	**100.0**

Table 38. BERD concentration – Alberta

Establishments	1994		1995		1996		1997		1998	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	186.1	36.6	174.4	35.6	165.6	31.6	216.7	39.7	261.4	42.3
Top 10	255.7	50.2	246.9	50.3	254.4	48.6	282.3	51.8	343.9	55.6
Top 25	332.6	65.4	318.1	64.9	351.2	67.0	370.8	68.0	446.1	72.2
Top 50	379.1	74.5	362.7	73.9	412.1	78.7	437.5	80.2	510.3	82.6
Top 75	404.5	79.5	390.4	79.6	443.6	84.7	468.2	85.8	538.2	87.1
Top 100	421.7	82.9	408.5	83.3	461.7	88.1	484.7	88.8	554.5	89.7
Total	**508.8**	**100.0**	**490.6**	**100.0**	**523.8**	**100.0**	**545.5**	**100.0**	**618.1**	**100.0**

Table 38. (continued) BERD concentration – Alberta

Establishments	1999		2000[r]		2001[r]		2002[r]		2003[p]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	192.1	39.2	254.4	43.1	264.4	36.8	254.7	33.2	276.0	35.4
Top 10	232.0	47.3	301.7	51.1	345.3	48.1	371.0	48.4	407.2	52.3
Top 25	307.3	62.6	385.0	65.2	466.1	64.9	524.5	68.4	548.7	70.5
Top 50	367.5	74.9	450.6	76.3	545.3	75.9	611.7	79.7	635.8	81.7
Top 75	398.0	81.1	485.3	82.1	586.2	81.6	653.1	85.1	675.1	86.7
Top 100	416.5	84.9	504.3	85.4	611.7	85.1	679.2	88.5	697.5	89.6
Total	**490.5**	**100.0**	**590.8**	**100.0**	**718.4**	**100.0**	**767.3**	**100.0**	**778.6**	**100.0**

Table 39. BERD concentration – British Columbia

Establishments	1994		1995		1996		1997		1998	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	174.9	29.6	181.6	30.1	149.3	27.8	143.7	25.5	199.3	32.8
Top 10	227.4	38.5	247.1	41.0	228.4	42.5	219.0	38.8	266.6	43.8
Top 25	312.9	53.0	339.0	56.3	329.4	61.2	323.1	57.3	367.2	60.4
Top 50	368.6	62.4	396.0	65.8	389.5	72.4	392.2	69.6	444.1	73.0
Top 75	401.0	67.9	430.7	71.5	425.7	79.1	436.4	77.4	486.6	80.0
Top 100	423.0	71.6	452.1	75.1	447.8	83.2	462.9	82.1	513.5	84.4
Total	**590.6**	**100.0**	**602.3**	**100.0**	**538.1**	**100.0**	**563.9**	**100.0**	**608.3**	**100.0**

Table 39. (continued) BERD concentration – British Columbia

Establishments	1999		2000[r]		2001[r]		2002[r]		2003[p]	
	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%	in millions of $	%
Top 5	239.9	33.6	355.2	36.5	306.8	28.4	276.6	25.5	320.1	29.8
Top 10	305.6	42.8	451.9	46.5	427.6	39.6	403.7	37.2	431.8	40.2
Top 25	413.1	57.9	586.2	60.3	625.4	57.9	618.1	56.9	628.2	58.4
Top 50	500.1	70.1	694.5	71.4	749.9	69.5	731.5	69.2	731.5	69.7
Top 75	550.1	77.1	762.5	78.4	819.5	75.9	798.7	76.1	798.7	75.9
Top 100	583.7	81.8	805.2	82.8	869.1	80.5	839.5	80.6	839.5	80.3
Total	**713.7**	**100.0**	**972.8**	**100.0**	**1,079.7**	**100.0**	**1,086.4**	**100.0**	**1,075.4**	**100.0**

Table 40. BERD by major NAICS[1] industry – Canada[2]

Industry	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
	in millions of $									
Agriculture, forestry, fishing and hunting	55.9	58.1	62.9	60.5	52.5	69.5	76.8	92.2	101.3	89.4
Mining and oil and gas extraction	191.8	201.6	197.1	189.3	153.7	134.1	182.2	214.4	222.7	227.1
Utilities	224.4	206.4	233.6	185.4	217.6	196.3	187.2	171.4	129.2	121.4
Construction	27.2	24.3	23.5	37.3	25.6	35.1	44.7	51.4	44.1	40.1
Manufacturing	4,528.5	4,976.5	5,116.7	5,788.6	6,504.9	7,077.1	8,563.6	9,282.7	8,155.4	7,992.1
Services	2,539.3	2,523.7	2,362.3	2,478.4	2,727.8	2,887.5	3,395.2	4,508.0	4,713.8	4,921.0
Total	**7,567.2**	**7,990.5**	**7,996.0**	**8,739.5**	**9,682.1**	**10,399.7**	**12,449.6**	**14,320.2**	**13,366.5**	**13,391.1**

1. North American Industry Classification System.
2. Canada totals include the Yukon, Northwest and NunavutTerritories.

Table 41. BERD by major NAICS[1] industry – Atlantic Canada

Industry	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
	in millions of $									
Agriculture, forestry, fishing and hunting	5.1	5.0	5.1	3.2	2.2	2.0	3.1	2.0	2.3	2.1
Mining and oil and gas extraction	X	2.2	X	X	1.4	X	X	X	1.9	X
Utilities	X	X	X	X	X	0.7	3.9	3.8	X	1.7
Construction	0.7	X	X	X	X	X	X	X	X	X
Manufacturing	52.7	56.7	57.0	55.2	70.1	68.5	60.5	83.8	69.7	76.5
Services	62.5	66.5	65.3	47.3	46.4	48.3	60.7	69.3	77.2	64.5
Total	**125.2**	**131.2**	**132.8**	**106.7**	**121.0**	**121.6**	**132.1**	**162.4**	**156.7**	**146.9**

1. North American Industry Classification System.

Table 42. BERD by major NAICS[1] industry – Quebec

Industry	1994	1995	1996	1997	1998	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
					in millions of $					
Agriculture, forestry, fishing and hunting	8.8	10.6	12.8	12.1	12.6	16.8	22.7	26.6	35.9	37.3
Mining and oil and gas extraction	16.6	19.2	10.8	X	2.8	X	2.3	X	X	X
Utilities	X	X	X	X	X	X	X	X	X	X
Construction	X	X	X	X	X	X	X	X	X	X
Manufacturing	1,200.2	1,371.3	1,434.1	1,551.0	1,639.7	1,810.6	2,136.4	2,452.7	2,386.6	2,408.5
Services	683.4	724.2	810.2	825.1	962.5	1,086.3	1,357.6	1,542.5	1,508.3	1,545.1
Total	**2,056.2**	**2,276.6**	**2,393.4**	**2,518.7**	**2,764.0**	**3,046.8**	**3,641.9**	**4,154.7**	**4,056.7**	**4,114.8**

1. North American Industry Classification System.

Table 43. BERD by major NAICS[1] industry – Ontario

Industry	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
					in millions of $					
Agriculture, forestry, fishing and hunting	22.4	20.3	26.4	20.8	19.0	23.2	18.0	25.2	25.3	25.0
Mining and oil and gas extraction	X	21.6	18.1	30.0	29.1	24.8	26.6	19.9	12.1	27.2
Utilities	X	X	X	X	X	X	X	51.8	11.9	9.1
Construction	X	X	X	X	X	X	X	19.8	17.5	14.4
Manufacturing	2,801.6	3,041.3	3,085.4	3,581.2	4,097.8	4,452.6	5,418.0	5,698.6	4,862.9	4,711.1
Services	1,179.7	1,170.8	1,008.6	1,115.1	1,166.9	1,215.2	1,361.2	2,129.1	2,117.9	2,278.9
Total	**4,111.6**	**4,319.8**	**4,255.9**	**4,832.8**	**5,394.2**	**5,798.9**	**6,903.2**	**7,944.4**	**7,047.6**	**7,065.7**

1. North American Industry Classification System.

Table 44. BERD by major NAICS[1] industry – Manitoba and Saskatchewan

Industry	1994	1995	1996	1997	1998[r]	1999	2000[r]	2001[r]	2002[r]	2003[p]
					in millions of $					
Agriculture, forestry, fishing and hunting	2.8	6.2	4.3	6.9	3.6	3.1	5.6	8.1	9.1	4.0
Mining and oil and gas extraction	4.2	5.2	3.4	21.9	X	9.5	6.0	12.4	32.7	15.6
Utilities	X	X	X	X	X	X	X	X	X	X
Construction	X	X	X	X	0.2	X	X	X	X	X
Manufacturing	78.8	88.1	70.0	61.1	76.5	117.7	108.5	160.8	116.4	111.1
Services	83.9	67.3	72.0	79.8	87.3	94.3	80.5	76.2	90.0	75.2
Total	**172.1**	**169.3**	**151.6**	**171.4**	**175.8**	**226.5**	**208.3**	**259.8**	**251.4**	**209.0**

1. North American Industry Classification System.

Table 45. BERD by major NAICS[1] industry – Alberta

Industry	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
	in millions of $									
Agriculture, forestry, fishing and hunting	3.9	4.5	3.7	2.4	4.0	9.4	7.6	6.6	7.3	6.0
Mining and oil and gas extraction	137.6	137.8	155.0	117.8	101.4	84.3	128.5	160.5	155.6	172.5
Utilities	2.2	X	X	X	X	X	X	0.5	0.6	X
Construction	1.9	X	X	X	X	X	X	1.8	1.9	X
Manufacturing	157.9	157.2	202.9	259.1	298.0	219.1	265.7	309.3	288.6	282.4
Services	205.4	188.2	159.7	163.0	212.5	177.1	187.1	239.6	313.3	315.4
Total	**508.8**	**490.6**	**523.8**	**545.5**	**618.1**	**490.5**	**590.8**	**718.4**	**767.3**	**778.6**

1. North American Industry Classification System.

Table 46. BERD by major NAICS[1] industry – British Columbia

Industry	1994	1995	1996	1997	1998	1999	2000[r]	2001	2002[r]	2003[p]
	in millions of $									
Agriculture, forestry, fishing and hunting	12.9	11.5	10.6	15.1	11.0	14.9	19.7	23.4	21.4	14.8
Mining and oil and gas extraction	10.9	15.6	X	12.8	12.4	10.8	X	17.5	17.8	X
Utilities	X	X	5.5	5.3	X	X	X	5.6	5.0	X
Construction	X	X	X	2.1	X	X	9.1	5.1	4.2	4.3
Manufacturing	236.7	261.2	267.2	280.7	322.5	407.0	574.1	576.9	430.8	402.1
Services	322.4	306.7	246.4	247.7	251.8	266.3	348.0	451.2	607.1	641.7
Total	**590.6**	**602.3**	**538.1**	**563.9**	**608.3**	**713.7**	**972.8**	**1,079.7**	**1,086.4**	**1,075.4**

1. North American Industry Classification System.

R&D personnel by industry and by region

Table 47. Total R&D personnel by industry – Canada[1], total and professional

Industry	1994		1995		1996		1997[r]		1998[r]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	721	309	782	321	729	287	732	316	655	285
Mining and oil and gas extraction	1,187	661	1,304	723	1,184	641	886	507	802	444
Utilities	1,351	740	1,331	748	1,404	765	1,178	687	954	583
Construction	563	317	514	272	466	261	404	245	419	236
Manufacturing	43,040	25,897	45,181	27,405	46,010	28,442	49,445	31,555	51,273	32,855
Services	32,021	18,935	32,900	19,506	29,551	18,103	30,003	18,656	31,834	20,285
Total	**78,883**	**46,859**	**82,012**	**48,975**	**79,344**	**48,499**	**82,648**	**51,966**	**85,937**	**54,688**

1. Canada totals include the Yukon, Northwest and Nunavut Territories.

Table 47. (continued) Total R&D personnel by industry – Canada[1], total and professional

Industry	1999[r]		2000[r]		2001[r]		2002[r]		2003[p]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	754	320	807	359	951	423	1,005	419	1,070	443
Mining and oil and gas extraction	775	403	730	385	850	398	681	355	661	354
Utilities	961	588	1,005	582	982	575	918	522	946	562
Construction	545	302	727	456	968	579	778	355	754	362
Manufacturing	53,383	34,245	60,790	39,574	61,569	38,927	58,668	36,248	59,253	35,381
Services	34,421	22,136	40,257	25,914	50,318	32,607	51,358	32,790	53,609	33,694
Total	**90,839**	**57,994**	**104,316**	**67,270**	**115,638**	**73,509**	**113,408**	**70,689**	**116,293**	**70,796**

1. Canada totals include the Yukon, Northwest and NunavutTerritories.

Table 48. R&D personnel by industry – Atlantic Canada, total and professional

Industry	1994		1995		1996		1997[r]		1998[r]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	62	30	76	23	79	29	64	34	51	22
Mining and oil and gas extraction	19	9	25	13	11	8	6	4	18	13
Utilities	2	2	2	2	2	2	2	2	12	7
Construction	9	6	15	6	7	6	8	4	10	4
Manufacturing	634	284	688	307	720	339	678	340	922	448
Services	904	575	1,037	631	887	484	816	479	791	433
Total	**1,630**	**906**	**1,843**	**982**	**1,706**	**868**	**1,574**	**863**	**1,804**	**927**

Table 48. (continued) R&D personnel by industry – Atlantic Canada, total and professional

Industry	1999[r]		2000[r]		2001[r]		2002[r]		2003[p]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	44	19	55	19	40	14	41	17	41	14
Mining and oil and gas extraction	11	10	20	12	15	11	18	13	13	12
Utilities	13	6	77	29	45	18	21	9	11	5
Construction	11	3	35	12	47	15	46	15	6	1
Manufacturing	792	386	783	404	795	356	709	339	753	368
Services	863	514	1,011	604	1,160	768	1,190	803	1,084	766
Total	**1,734**	**938**	**1,981**	**1,080**	**2,102**	**1,182**	**2,025**	**1,196**	**1,908**	**1,166**

Table 49. R&D personnel by industry – Quebec, total and professional

Industry	1994		1995		1996		1997		1998	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	155	70	170	82	195	83	207	95	241	120
Mining and oil and gas extraction	158	72	188	94	116	73	79	59	42	23
Utilities	847	485	871	501	850	488	744	437	695	432
Construction	210	119	166	86	180	88	168	100	184	103
Manufacturing	13,153	7,384	13,832	7,501	14,398	8,081	14,790	8,344	15,368	8,710
Services	9,208	5,345	10,086	5,940	10,653	6,335	10,596	6,335	11,462	7,115
Total	**23,731**	**13,475**	**25,313**	**14,204**	**26,392**	**15,148**	**26,584**	**15,370**	**27,992**	**16,503**

Table 49. (continued) R&D personnel by industry – Quebec, total and professional

Industry	1999		2000[r]		2001[r]		2002[r]		2003[p]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	244	108	322	142	386	168	451	190	520	242
Mining and oil and gas extraction	46	25	29	16	30	14	49	28	51	24
Utilities	675	416	673	417	726	423	698	395	726	430
Construction	255	129	283	134	362	210	354	157	423	186
Manufacturing	16,255	9,060	18,856	10,747	18,679	9,831	18,597	9,930	19,561	9,961
Services	13,019	8,150	14,904	9,330	18,306	11,200	18,932	11,404	19,946	11,652
Total	**30,494**	**17,888**	**35,067**	**20,786**	**38,489**	**21,846**	**39,081**	**22,104**	**41,227**	**22,495**

Table 50. R&D personnel by industry – Ontario, total and professional

Industry	1994		1995		1996[r]		1997		1998	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	260	93	233	87	227	59	195	65	163	52
Mining and oil and gas extraction	162	68	177	94	196	80	174	86	201	105
Utilities	440	215	382	207	451	217	345	186	156	80
Construction	199	111	207	107	155	92	150	91	116	72
Manufacturing	24,056	15,367	25,112	16,427	25,396	16,786	28,330	19,590	29,013	20,069
Services	13,709	8,320	14,142	8,319	11,996	7,609	12,710	8,268	13,273	9,000
Total	**38,826**	**24,174**	**40,253**	**25,241**	**38,421**	**24,843**	**41,904**	**28,286**	**42,922**	**29,378**

Table 50. (continued) R&D personnel by industry – Ontario, total and professional

Industry	1999		2000[r]		2001[r]		2002[r]		2003[p]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	189	70	145	73	236	100	237	73	271	74
Mining and oil and gas extraction	172	86	175	97	212	131	87	51	143	91
Utilities	174	94	140	60	143	92	114	68	138	84
Construction	157	110	267	228	418	295	236	111	207	103
Manufacturing	30,219	20,851	34,066	23,838	34,441	23,959	33,519	22,418	33,216	21,707
Services	13,877	9,330	16,574	11,205	21,701	14,989	21,318	14,504	22,538	14,839
Total	**44,788**	**30,541**	**51,367**	**35,501**	**57,151**	**39,566**	**55,511**	**37,225**	**56,513**	**36,898**

Table 51. R&D personnel by industry – Manitoba and Saskatchewan, total and professional

Industry	1994		1995		1996		1997		1998	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	38	12	64	15	49	23	56	28	43	21
Mining and oil and gas extraction	42	24	42	25	37	18	53	32	27	15
Utilities	19	13	26	11	27	12	20	17	22	19
Construction	22	12	16	8	13	7	10	6	6	2
Manufacturing	1,063	505	1,189	575	930	426	867	413	947	459
Services	1,099	550	995	526	908	437	909	439	894	433
Total	**2,283**	**1,116**	**2,332**	**1,160**	**1,964**	**923**	**1,915**	**935**	**1,939**	**949**

Table 51. (continued) R&D personnel by industry – Manitoba and Saskatchewan, total and professional

Industry	1999		2000		2001[r]		2002[r]		2003[p]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	36	14	53	26	43	21	38	16	32	14
Mining and oil and gas extraction	31	16	26	16	44	19	28	12	28	13
Utilities	19	16	28	23	19	16	26	18	19	16
Construction	5	2	16	5	7	3	25	16	20	15
Manufacturing	1,190	682	1,264	653	1,465	610	1,133	548	1,108	553
Services	962	494	962	492	902	484	1,020	558	948	516
Total	**2,243**	**1,224**	**2,349**	**1,215**	**2,480**	**1,153**	**2,270**	**1,168**	**2,155**	**1,127**

Table 52. R&D personnel by industry – Alberta, total and professional

Industry	1994		1995		1996		1997		1998	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	45	23	61	23	41	22	30	15	25	12
Mining and oil and gas extraction	675	421	725	429	789	445	467	280	423	244
Utilities	12	11	9	8	9	8	7	6	4	4
Construction	36	18	31	18	30	19	33	22	50	19
Manufacturing	1,459	741	1,511	877	1,613	938	1,928	1,149	1,974	1,221
Services	2,588	1,634	2,447	1,536	2,074	1,282	1,902	1,133	2,228	1,326
Total	**4,815**	**2,848**	**4,784**	**2,891**	**4,556**	**2,714**	**4,367**	**2,605**	**4,704**	**2,826**

Table 52. (continued) R&D personnel by industry – Alberta, total and professional

Industry	1999		2000[r]		2001[r]		2002[r]		2003[p]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	50	21	45	23	48	33	45	23	31	21
Mining and oil and gas extraction	423	220	372	177	458	177	434	223	383	197
Utilities	4	2	5	2	7	3	9	6	8	3
Construction	13	5	26	13	33	20	34	19	26	14
Manufacturing	1,570	1,107	1,641	1,120	1,835	1,185	1,551	1,096	1,455	1,020
Services	2,247	1,421	2,434	1,493	2,933	1,742	3,079	1,924	2,843	1,805
Total	**4,307**	**2,776**	**4,523**	**2,828**	**5,314**	**3,160**	**5,152**	**3,291**	**4,746**	**3,060**

Table 53. R&D personnel by industry – British Columbia, total and professional

Industry	1994		1995		1996		1997		1998	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	158	80	177	91	138	71	180	79	132	58
Mining and oil and gas extraction	131	67	147	68	35	17	107	46	91	44
Utilities	31	14	41	19	65	38	60	39	65	41
Construction	86	51	78	47	81	49	35	22	53	36
Manufacturing	2,657	1,608	2,830	1,711	2,948	1,870	2,850	1,719	3,041	1,942
Services	4,463	2,485	4,185	2,550	3,030	1,954	3,062	1,998	3,178	1,974
Total	**7,526**	**4,305**	**7,458**	**4,486**	**6,297**	**3,999**	**6,294**	**3,903**	**6,560**	**4,095**

Table 53. (continued) R&D personnel by industry – British Columbia, total and professional

Industry	1999		2000[r]		2001[r]		2002[r]		2003[p]	
	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.	Total	Prof.
	full time equivalents									
Agriculture, forestry, fishing and hunting	191	88	187	76	197	87	193	100	174	78
Mining and oil and gas extraction	92	46	108	67	91	46	65	28	43	17
Utilities	76	54	82	51	42	23	50	26	44	24
Construction	104	53	100	64	101	36	83	37	72	43
Manufacturing	3,350	2,154	4,175	2,809	4,350	2,986	3,159	1,917	3,160	1,772
Services	3,452	2,226	4,372	2,790	5,315	3,423	5,818	3,597	6,249	4,116
Total	**7,265**	**4,621**	**9,024**	**5,857**	**10,096**	**6,601**	**9,368**	**5,705**	**9,742**	**6,050**

Table 54. Total R&D personnel by country of control

Region / Country of control		1994	1995	1996[r]	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
		full time equivalents									
Canada[1]	Canada	61,427	63,779	60,886	62,605	64,840	68,865	80,325	90,186	87,852	89,066
	Foreign	17,456	18,233	18,458	20,043	21,097	21,974	23,991	25,452	25,556	27,227
	Total	**78,883**	**82,012**	**79,344**	**82,648**	**85,937**	**90,839**	**104,316**	**115,638**	**113,408**	**116,293**
Atlantic Canada	Canada	1,523	1,690	1,586	1,409	1,560	1,578	1,747	1,777	1,702	1,567
	Foreign	107	153	120	165	244	156	234	325	323	341
	Total	**1,630**	**1,843**	**1,706**	**1,574**	**1,804**	**1,734**	**1,981**	**2,102**	**2,025**	**1,908**
Quebec	Canada	19,476	20,737	20,710	20,328	21,459	23,899	26,903	29,928	30,678	32,780
	Foreign	4,255	4,576	5,682	6,256	6,533	6,595	8,164	8,561	8,403	8,447
	Total	**23,731**	**25,313**	**26,392**	**26,584**	**27,992**	**30,494**	**35,067**	**38,489**	**39,081**	**41,227**
Ontario	Canada	28,207	29,917	28,546	30,510	30,942	31,709	38,289	43,946	41,229	41,156
	Foreign	10,619	10,336	9,875	11,394	11,980	13,079	13,078	13,205	14,282	15,357
	Total	**38,826**	**40,253**	**38,421**	**41,904**	**42,922**	**44,788**	**51,367**	**57,151**	**55,511**	**56,513**
Manitoba and Saskatchewan	Canada	1,935	1,879	1,665	1,641	1,700	1,940	1,955	2,081	2,011	1,872
	Foreign	348	453	299	274	239	303	394	399	259	283
	Total	**2,283**	**2,332**	**1,964**	**1,915**	**1,939**	**2,243**	**2,349**	**2,480**	**2,270**	**2,155**
Alberta	Canada	4,268	4,277	3,955	3,755	3,919	3,605	3,841	4,557	4,382	3,899
	Foreign	547	507	601	612	785	702	682	757	770	847
	Total	**4,815**	**4,784**	**4,556**	**4,367**	**4,704**	**4,307**	**4,523**	**5,314**	**5,152**	**4,746**
British Columbia	Canada	5,946	5,250	4,416	4,952	5,244	6,126	7,585	7,891	7,849	7,790
	Foreign	1,580	2,208	1,881	1,342	1,316	1,139	1,439	2,205	1,519	1,952
	Total	**7,526**	**7,458**	**6,297**	**6,294**	**6,560**	**7,265**	**9,024**	**10,096**	**9,368**	**9,742**

1. Canada totals include the Yukon, Northwest and Nunavut Territories.

Table 55. Total R&D personnel, by employment size – Canada[1]

Employment size[2]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
person-years	full time equivalents									
0 – 9	9,107	8,593	7,747	7,235	7,173	7,281	8,283	9,732	10,612	11,314
10 – 19	5,988	5,929	4,924	4,793	4,978	5,550	6,116	7,712	7,974	8,836
20 – 49	8,479	8,936	8,129	8,129	9,071	10,121	11,994	14,198	14,384	15,135
50 – 99	6,296	6,865	6,617	7,034	7,977	7,856	10,108	12,663	11,913	11,680
100 – 199	6,306	6,869	7,084	8,059	7,668	8,709	10,353	12,530	11,604	10,146
200 – 499	6,652	6,993	7,294	7,766	8,474	10,184	10,408	12,135	11,275	11,724
500 – 999	5,713	7,251	7,133	6,994	7,208	5,485	8,933	9,862	9,358	9,634
1,000 – 1,999	6,121	5,993	6,717	6,609	7,745	9,869	9,563	9,505	11,616	11,761
2,000 – 4,999	5,761	5,991	5,709	5,915	6,538	8,248	8,271	8,079	8,310	13,624
> 4,999	18,460	18,592	17,990	20,114	19,105	17,536	20,287	19,222	16,362	12,439
Total	**78,883**	**82,012**	**79,344**	**82,648**	**85,937**	**90,839**	**104,316**	**115,638**	**113,408**	**116,293**

1. *Canada totals include the Yukon, Northwest and Nunavut Territories.*
2. *Employment size is based on total employment in Canada.*

Table 56. Total R&D personnel, by employment size – Atlantic Canada

Employment size[1]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
person-years	full time equivalents									
0 – 9	337	392	398	346	358	348	328	359	309	320
10 – 19	186	237	191	169	182	249	254	199	169	203
20 – 49	332	334	349	390	435	339	458	397	406	295
50 – 99	142	253	229	239	305	194	238	389	312	410
100 – 199	99	91	135	204	168	275	295	223	294	205
200 – 499	100	92	48	42	78	157	105	219	345	233
500 – 999	33	26	55	69	100	16	119	90	22	48
1,000 – 1,999	51	41	22	42	53	39	94	60	29	35
> 1,999	350	377	279	73	125	117	90	166	139	159
Total	**1,630**	**1,843**	**1,706**	**1,574**	**1,804**	**1,734**	**1,981**	**2,102**	**2,025**	**1,908**

1. *Employment size is based on total employment in Canada.*

Table 57. Total R&D personnel, by employment size – Quebec

Employment size[1]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
person-years	full time equivalents									
0 – 9	2,882	3,005	2,993	2,794	2,735	2,747	3,174	3,542	4,127	4,541
10 – 19	2,014	2,121	2,054	1,902	2,119	2,118	2,154	2,895	2,996	3,413
20 – 49	2,561	2,895	3,038	2,932	3,483	4,060	4,471	5,145	5,404	6,089
50 – 99	1,770	2,065	2,230	2,029	2,483	2,396	3,130	4,272	4,366	4,127
100 – 199	1,793	1,991	2,079	2,285	2,248	2,705	3,046	3,657	3,542	3,775
200 – 499	2,758	1,975	2,098	2,111	2,084	2,996	3,552	3,830	3,305	3,782
500 – 999	1,718	3,258	2,854	2,928	3,312	2,378	3,766	4,348	3,973	3,800
1,000 – 1,999	1,873	1,537	2,160	2,562	2,767	4,306	2,545	2,467	4,379	3,989
2,000 – 4,999	2,263	2,243	2,534	2,308	2,194	2,389	3,899	3,322	1,874	2,009
> 4,999	4,099	4,223	4,352	4,733	4,567	4,399	5,330	5,011	5,115	5,702
Total	**23,731**	**25,313**	**26,392**	**26,584**	**27,992**	**30,494**	**35,067**	**38,489**	**39,081**	**41,227**

1. Employment size is based on total employment in Canada.

Table 58. Total R&D personnel, by employment size – Ontario

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
person-years	full time equivalents									
0 – 9	2,831	2,401	2,126	2,096	2,153	2,158	2,561	3,310	3,643	3,800
10 – 19	2,368	2,277	1,852	1,813	1,709	2,099	2,322	3,109	3,170	3,541
20 – 49	3,232	3,526	3,079	3,158	3,552	3,857	4,847	6,110	6,101	6,386
50 – 99	2,805	2,770	2,405	3,103	3,741	3,748	4,771	5,797	5,239	4,933
100 – 199	3,411	3,550	3,664	3,931	3,725	4,079	5,155	6,543	5,620	4,551
200 – 499	2,863	3,540	3,772	4,013	4,513	4,959	5,314	6,061	5,543	5,945
500 – 999	2,387	3,017	3,160	3,238	2,691	2,437	3,532	3,376	4,020	4,224
1,000 – 1,999	3,388	3,399	3,614	3,572	4,275	4,430	5,126	5,611	6,057	6,267
2,000 – 4,999	2,381	2,535	2,121	2,724	3,242	4,890	3,525	3,713	5,538	10,541
> 4,999	13,160	13,238	12,626	14,256	13,321	12,131	14,214	13,521	10,580	6,325
Total	**38,826**	**40,253**	**38,419**	**41,904**	**42,922**	**44,788**	**51,367**	**57,151**	**55,511**	**56,513**

1. Employment size is based on total employment in Canada.

Table 59. Total R&D personnel, by employment size – Manitoba and Saskatchewan

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
person-years	full time equivalents									
0 – 9	467	423	368	326	356	371	423	445	477	475
10 – 19	184	195	98	107	116	126	202	209	225	172
20 – 49	343	414	298	254	172	250	239	280	291	261
50 – 99	255	250	297	265	246	154	209	198	223	239
100 – 199	193	220	289	334	321	291	278	171	203	232
200 – 499	371	249	152	193	176	273	200	514	260	251
500 – 999	179	178	131	122	138	314	332	357	305	297
1,000 – 1,999	163	233	203	217	160	57	272	196	124	137
2,000 – 4,999	105	160	115	92	243	194	158	100	152	7
> 4,999	23	10	13	5	11	213	36	10	10	84
Total	**2,283**	**2,332**	**1,964**	**1,915**	**1,939**	**2,243**	**2,349**	**2,480**	**2,270**	**2,155**

1. Employment size is based on total employment in Canada.

Table 60. Total R&D personnel, by employment size – Alberta

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
person-years	full time equivalents									
0 – 9	952	907	822	698	636	718	775	904	774	727
10 – 19	420	418	309	316	428	420	479	512	492	527
20 – 49	677	631	492	520	511	539	675	656	681	532
50 – 99	401	456	445	471	271	243	361	549	306	430
100 – 199	343	462	453	549	605	582	554	729	886	490
200 – 499	242	186	243	339	404	332	367	499	593	633
500 – 999	184	120	262	130	182	251	231	317	156	85
1,000 – 1,999	372	373	339	151	160	124	66	171	265	281
2,000 – 4,999	401	440	480	374	549	488	518	518	531	913
> 4,999	823	791	711	819	958	610	497	459	468	128
Total	**4,815**	**4,784**	**4,556**	**4,367**	**4,704**	**4,307**	**4,523**	**5,314**	**5,152**	**4,746**

1. Employment size is based on total employment in Canada.

Table 61. Total R&D personnel, by employment size – British Columbia

Employment size[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
person-years	full time equivalents									
0 – 9	1,614	1,452	1,037	970	926	935	1,020	1,170	1,281	1,449
10 – 19	787	671	418	485	417	534	702	784	922	980
20 – 49	1,320	1,134	870	875	918	1,076	1,304	1,610	1,501	1,572
50 – 99	920	1,070	1,011	927	931	1,121	1,399	1,458	1,467	1,541
100 – 199	467	554	464	756	601	777	1,025	1,207	1,059	893
200 – 499	316	949	981	1,068	1,219	1,467	870	1,012	1,229	880
500 – 999	1,212	652	671	503	785	89	953	1,374	882	1,180
1,000 – 1,999	274	410	379	65	330	913	1,460	1,000	762	1,052
2,000 – 4,999	262	263	189	345	213	191	98	308	132	39
> 4,999	354	303	277	300	220	162	193	173	133	156
Total	**7,526**	**7,458**	**6,297**	**6,294**	**6,560**	**7,265**	**9,024**	**10,096**	**9,368**	**9,742**

1. Employment size is based on total employment in Canada.

Table 62. Total R&D personnel by size of R&D expenditures – Canada[1]

Size of R&D[2]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001	2002[r]	2003[p]
in thousands of $	full time equivalents									
0 – 24	2,785	2,577	2,443	2,386	2,131	2,031	1,980	2,046	2,093	2,062
25 – 49	1,888	1,855	1,758	1,643	1,742	1,697	1,741	1,918	2,012	2,069
50 – 99	3,073	3,137	2,817	2,694	2,752	2,738	3,111	3,534	3,702	4,105
100 – 199	4,808	4,776	4,138	4,143	4,384	4,688	5,424	6,131	6,338	6,696
200 – 399	5,784	5,993	5,342	5,283	5,554	6,228	6,888	8,146	7,801	9,053
400 – 999	7,753	8,087	6,274	6,598	7,362	8,146	10,552	12,078	11,660	12,413
1,000 – 1,999	5,778	6,429	6,601	6,509	6,534	7,496	8,421	10,111	9,609	9,509
2,000 – 9,999	12,784	13,681	13,317	14,356	16,277	16,288	18,924	21,865	21,292	20,390
> 9,999	34,230	35,477	36,654	39,036	39,201	41,527	47,275	49,809	48,901	49,996
Total	**78,883**	**82,012**	**79,344**	**82,648**	**85,937**	**90,839**	**104,316**	**115,638**	**113,408**	**116,293**

1. Canada totals include the Yukon, Northwest and Nunavut Territories.
2. Size of R&D is based on total R&D expenditures in Canada.

Table 63. Total R&D personnel by size of R&D expenditures – Atlantic Canada

Size of R&D[1]	1994	1995	1996	1997[r]	1998[r]	1999[r]	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $	full time equivalents									
0 – 24	122	137	165	146	137	117	96	89	88	82
25 – 49	65	96	99	82	97	91	75	61	72	68
50 – 99	126	154	131	142	120	123	139	138	129	141
100 – 199	167	147	184	145	200	196	218	192	171	176
200 – 399	194	265	212	238	236	282	221	287	207	229
400 – 999	224	252	183	268	336	249	390	328	324	304
1,000 – 1,999	224	310	314	279	347	304	283	216	162	141
2,000 – 9,999	374	364	225	265	293	357	444	719	768	545
> 9,999	134	118	193	9	38	15	115	72	104	222
Total	**1,630**	**1,843**	**1,706**	**1,574**	**1,804**	**1,734**	**1,981**	**2,102**	**2,025**	**1,908**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 64. Total R&D personnel by size of R&D expenditures – Quebec

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $	full time equivalents									
0 – 24	949	933	897	1,028	1,011	946	919	975	1,040	1,100
25 – 49	707	694	763	724	768	772	831	943	1,031	1,129
50 – 99	1,133	1,229	1,215	1,184	1,177	1,228	1,426	1,604	1,763	2,033
100 – 199	1,740	1,827	1,683	1,656	1,714	1,834	2,220	2,429	2,579	2,971
200 – 399	1,875	2,146	2,187	1,918	1,956	2,360	2,476	2,979	2,845	3,450
400 – 999	2,471	2,637	2,647	2,359	2,633	2,918	3,583	3,829	3,734	4,056
1,000 – 1,999	1,623	1,743	2,158	1,969	2,080	2,548	2,573	3,153	3,177	3,629
2,000 – 9,999	2,843	3,148	3,014	3,431	4,153	4,625	5,269	6,400	6,960	6,347
> 9,999	10,390	10,956	11,828	12,315	12,500	13,263	15,770	16,177	15,952	16,512
Total	**23,731**	**25,313**	**26,392**	**26,584**	**27,992**	**30,494**	**35,067**	**38,489**	**39,081**	**41,227**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 65. Total R&D personnel by size of R&D expenditures – Ontario

Size of R&D[1]	1994	1995	1996[r]	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $	full time equivalents									
0 – 24	844	751	694	652	503	518	502	549	524	493
25 – 49	589	584	525	486	515	474	509	539	551	513
50 – 99	1,049	1,020	915	883	921	867	943	1,118	1,237	1,320
100 – 199	1,791	1,637	1,417	1,546	1,589	1,811	1,976	2,377	2,349	2,362
200 – 399	2,232	2,151	1,903	2,093	2,305	2,373	2,797	3,543	3,351	3,852
400 – 999	3,229	3,539	2,510	2,877	3,321	3,612	4,943	5,614	5,534	5,840
1,000 – 1,999	2,568	2,653	2,504	2,759	2,772	3,323	3,992	5,269	4,509	4,391
2,000 – 9,999	6,840	7,474	7,345	7,770	8,696	8,023	9,199	10,568	10,166	10,052
> 9,999	19,684	20,444	20,608	22,838	22,300	23,787	26,506	27,574	27,290	27,690
Total	**38,826**	**40,253**	**38,421**	**41,904**	**42,922**	**44,788**	**51,367**	**57,151**	**55,511**	**56,513**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 66. Total R&D personnel by size of R&D expenditures – Manitoba and Saskatchewan

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000	2001[r]	2002[r]	2003[p]
in thousands of $	full time equivalents									
0 – 24	152	132	136	102	94	90	90	80	79	63
25 – 49	83	88	50	67	64	65	53	66	63	65
50 – 99	131	107	68	69	99	89	121	108	107	94
100 – 199	162	160	131	183	147	133	168	199	235	165
200 – 399	239	227	164	109	152	169	217	232	177	188
400 – 999	360	258	178	189	122	193	217	292	293	265
1,000 – 1,999	229	438	328	320	262	164	206	219	342	321
2,000 – 9,999	677	755	774	696	874	824	873	779	605	632
> 9,999	250	167	135	180	125	516	404	505	369	362
Total	**2,283**	**2,332**	**1,964**	**1,915**	**1,939**	**2,243**	**2,349**	**2,480**	**2,270**	**2,155**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 67. Total R&D personnel by size of R&D expenditures – Alberta

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $	full time equivalents									
0 – 24	285	251	239	190	179	168	160	153	152	113
25 – 49	166	160	131	133	122	133	126	147	90	90
50 – 99	236	218	183	176	178	183	209	221	192	157
100 – 199	328	381	343	246	323	287	370	403	344	361
200 – 399	467	453	356	381	461	514	541	446	438	476
400 – 999	571	517	297	360	404	422	602	704	567	527
1,000 – 1,999	368	586	559	450	402	326	277	491	607	392
2,000 – 9,999	798	612	788	856	839	828	918	977	964	937
> 9,999	1,596	1,606	1,660	1,575	1,796	1,446	1,320	1,772	1,798	1,693
Total	**4,815**	**4,784**	**4,556**	**4,367**	**4,704**	**4,307**	**4,523**	**5,314**	**5,152**	**4,746**

1. Size of R&D is based on total R&D expenditures in Canada.

Table 68. Total R&D personnel by size of R&D expenditures – British Columbia

Size of R&D[1]	1994	1995	1996	1997	1998	1999	2000[r]	2001[r]	2002[r]	2003[p]
in thousands of $	full time equivalents									
0 – 24	412	358	309	267	207	192	213	200	209	211
25 – 49	268	230	189	150	175	162	146	161	205	203
50 – 99	392	400	301	240	252	246	272	345	274	360
100 – 199	615	622	380	363	404	427	472	530	660	660
200 – 399	756	751	520	540	441	527	633	655	783	858
400 – 999	889	884	459	545	546	749	817	1,311	1,208	1,421
1,000 – 1,999	766	699	738	732	671	831	1,090	763	812	635
2,000 – 9,999	1,252	1,328	1,171	1,338	1,422	1,631	2,221	2,422	1,829	1,877
> 9,999	2,176	2,186	2,230	2,119	2,442	2,500	3,160	3,709	3,388	3,517
Total	**7,526**	**7,458**	**6,297**	**6,294**	**6,560**	**7,265**	**9,024**	**10,096**	**9,368**	**9,742**

1. Size of R&D is based on total R&D expenditures in Canada.

Technical notes

Definitions

R&D personnel: calculated in full-time equivalent (FTE's). 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 (FTE's) of these persons working only part-time in R&D.

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

Example Calculation:

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

Research and Development

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

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

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

Example:

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

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

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

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

Note:

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

Industrial classification

The natural classification to use within the business enterprise sector is the North American Industry Classification System (NAICS). There are, however, problems with its use. A major problem is caused by companies with establishments in more than one industry (e.g., companies which both refine petroleum and extract oil). Another is caused by the concentration of the R&D activity among a few companies. In order to prevent disclosure of individual respondents many industries must be grouped together to provide sufficient observations for publication. A third problem is that the classification, chosen to represent general industrial activity, may not be entirely suitable for identifying companies chosen only for their involvement in R&D.

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

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

Interpretation of R&D

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

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

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

Specific cases and their treatment

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

Reliability of the data

All the possible sources of error are examined below. Definitions have been taken from **A Compendium of Methods of Error Evaluation in Censuses and Surveys**, Statistics Canada, Catalogue No. 13-564.

Coverage

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

Coverage is a minor source of error. Surveys are of all known and suspected, large R&D establishments and funders (R&D ≥ $1,000,000).

Administrative data are used for the small R&D establishments or funders. Companies have up to 18 months after their fiscal year end to claim a tax credit for their R&D expenditures; however, we estimate under reporting to be less than 6%.

Response

"A response error occurs whenever a characteristic is misreported in a census or a survey."

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

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

Non-Response

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

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

The second involves the administrative data used for the smaller R&D establishments. These represent less than 9% of all R&D performed by businesses. Certain information is not asked of them. However, the missing data are imputed from the replies of the larger establishments in the same industry.

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

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

Coding

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

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

Data Capture

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

All data capture for science statistics is through manual intervention: key-edit or typed entry at a computer terminal.

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

Edit and Imputation

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

Although there are a number of edits, all cases of failed edit checks are corrected after consideration by editors. Automatic imputations are made only for the smaller R&D establishments and funders.

Sampling

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

Although a complete enumeration is carried out of known and suspected R&D establishments and funders, records received from the administrative data do not provide as much information as do those completing the long form. Certain data are imputed for records from the administrative file based on the patterns of long form respondents in the same industry. Thus, as a result of the 2003 survey, the 2003 business enterprise sector R&D expenditures would be based on full enumeration but about 10% of the expenditures for 2004 and 2005 would have been imputed.

Catalogued publications

Statistical Publications

88-001-XIE Science Statistics (monthly)

88-202-XIE Industrial Research and Development Intentions (with 2003 preliminary estimates and 2002 actual expenditures) (annual)

88-204-XIE Federal Scientific Activities (annual)

Volume 29

No. 1 Distribution of federal expenditures on science and technology by province and territories, 2002-2003 (January 2005)

No. 2 Research and development (R&D) personnel in Canada, 1993 to 2002 (May 2005)

No. 3 Biotechnology scientific activities in federal government departments and agencies, 2003-2004, (May 2005)

No. 4 Industrial Research and Development, 2001 to 2005 (June 2005)

No. 5 Estimates of total spending on research and development in the health field in Canada, 1988 to 2004 (July 2005)

Volume 28

No. 1 Estimation of research and development expenditures in the higher education sector, 2001-2002 HERD (January 2004)

No. 2 Total spending on research and development in Canada, 1990 to 2003 and provinces, 1990 to 2001 GERD (January 2004)

No. 3 Distribution of federal expenditures on science and technology, by province and territories, 2001-2002 (February 2004)

No. 4 Research and development (R&D) expenditures of private non-profit (PNP) organizations, 2002 (April 2004)

No. 5 The provincial research organizations, 2001 (May 2004)

No. 6 Scientific and technological (S&T) activities of provincial governments, 1994-95 to 2002-03 (June 2004)

No. 7 Biotechnology scientific activities in selected federal government departments and agencies, 2002-2003 (July 2004)

No. 8 Estimates of total spending on research and development in the health field in Canada, 1988 to 2003 (July 2004)

No. 9 Industrial research and development, 2000 to 2004 (August 2004)

No. 10 Estimation of research and development expenditures in the higher education sector, 2002-2003 (November 2004)

No. 11 Federal government expenditures on scientific activities, 2004-2005^{p} (November 2004)

No. 12 Total spending on research and development in Canada, 1990 to 2004^{p}, and provinces, 1990 to 2002 (December 2004)

Working papers – 2005

ST-05-01E Federal government expenditures and personnel in the natural and social sciences 1995-96 to 2004-05, (January 2005)

ST-05-02E Provincial distribution of federal expenditures and personnel on science and technology, 1996-97 to 2002-2003 (January 2005)

ST-05-03E Industrial R&D statistics by region, 1994 to 2002 (January 2005)

ST-05-04E Knowledge sharing succeeds: how selected service industries rated the importance of using knowledge management practices to their success (February 2005)

ST-05-05E Characteristics of firms that grow from small to medium size: Industrial and geographic distribution of small high-growth firms (February 2005)

ST-05-06E Summary: Joint Statistics Canada – University of Windsor Workshop on Intellectual Property Commercialization Indicators, Windsor (March 2005)

ST-05-07E Summary: Meeting on Commercialization Measurement, Indicators, Gaps and Frameworks, Ottawa (March 2005)

ST-05-08E Estimates of research and development, personnel in Canada, 1979 to 2002 (May 2005)

ST-05-09E Overview of the Biotechnology Use and Development Survey – 2003, (April 2005)

ST-05-10E Access to Financing Capital by Canadian Innovative Biotechnology Firms, (April 2005)

ST-05-11E Scientific and technological (S&T) activities of provincial governments and provincial research organizations, 1995-96 to 2003-04 (September 2005)

ST-05-12E Innovation in the Information and Communications Technology (ICT) services sector industries: Results from the Survey of Innovation 2003 (October 2005)

ST-05-13E Innovation in Selected Professional, Scientific and Technical Services: Results from the Survey of Innovation 2003 (October 2005)

ST-05-14E Innovation in Selected Transportation Industries: Results from the Survey of Innovation 2003 (November 2005)

ST-05-15E Innovation in Selected Industries Serving the Mining and Forestry Sectors: Results from the Survey of Innovation 2003 (November 2005)

ST-05-16E Functional Foods and Nutraceuticals:The Development of Value-added Food by Canadian Firms (November 2005)

Working papers – 2004

ST-04-01E Starting the new century: technological change in the Canadian private sector, 2000-2002, (January 2004)

ST-04-02E Estimation of research and development expenditures in the higher education sector, 2001-2002 (January 2004)

ST-04-03E Estimates of Canadian research and development expenditures (GERD), Canada, 1992 to 2003^{p}, and by province, 1992 to 2001 (January 2004)

ST-04-04E The Many Guises of Innovation: What we have learnt and where we are heading (January 2004)

ST-04-05E Provincial distribution of federal expenditures and personnel on science and technology, 1995-1996 to 2001-2002 (February 2004)

ST-04-06E Biotechnology Use and development Survey: methodology, issues and responses (February 2004)

ST-04-07E An historical comparison of technological change, 1998-2000 and 2000-2002, in the private and public sectors (March 2004)

ST-04-08E Technological change in the public sector, 2000-2002 (March 2004)

ST-04-09E Regional disparities of research and development in the business services sector (April 2004)

ST-04-10-E Innovative firms: A look at small firms (May 2004)

ST-04-11-E Scientific and technological activities of provincial governments, 1994-95 to 2002-03 (June 2004)

ST-04-12-E Federal government payments to industry, 1997-1998 to 2001-2002 (July 2004**)**

ST-04-13-E Community innovation: Industrial specialization in Canadian cities (July 2004)

ST-04-14-E Estimates of total expenditures on research and development in the health field in Canada, 1988 to 2003 (July 2004)

ST-04-15-E Community innovation: innovation performance of manufacturing firms in Canadian communities (September 2004)

ST-04-16-E List of papers published by Kluwer Academic Publishers, in the Economics of Science, Technology and Innovation Series (October 2004)

ST-04-17-E Trends in Canadian biotechnology activity: 1997 to 2001 (October 2004)

ST-04-18-E Public sector technology transfer in Canada, 2003 (November 2004)

ST-04-19-E Estimation of research and development expenditures in the higher education sector, 2002-2003 (November 2004)

ST-04-20-E Estimates of Canadian research and development expenditures (GERD), Canada, 1993 to 2004^{p}, and by province 1993 to 2002 (December 2004)

ST-04-21-E Characteristics of firms that grow from small to medium size: growth factors--interviews and measurability, 1999 (December 2004)

ST-04-22-E Characteristics of firms that grow from small to medium size: innovation and growth in small manufacturing firms, 1997 to 1999 (December 2004)

Research papers

No. 1 The state of science and technology indicators in the OECD countries, by Benoit Godin (August 1996)

No. 2 Knowledge as a capacity for action, by Nico Stehr (June 1996)

No. 3 Linking outcomes for workers to changes in workplace practices: an experimental Canadian workplace and employee survey, by Garnett Picot and Ted Wannell (June 1996)

No. 4 Are the costs and benefits of health research measurable? by M.B. Wilk (February 1997)

No. 5 Technology and economic growth: a survey, by Peter Hanel and Jorge Niosi (April 1998)

No. 6 Diffusion of biotechnologies in Canada, by Anthony Arundel (February 1999)

No. 7 Barriers to innovation in services industries in Canada, by Pierre Mohnen and Julio Rosa (November 1999)

No. 8 Explaining rapid growth in Canadian biotechnology firms, by Jorge Niosi (August 2000)

No. 9 Internationally comparable indicators on biotechnology: a stocktaking, a proposal for work and supporting material, by W. Pattinson, B. Van Beuzekom and A. Wyckoff (January 2001)

No. 10 Analysis of the survey on innovation, advanced technologies and practices in the construction and related industries, 1999, by George Seaden, Michael Guolla, Jérôme Doutriaux and John Nash (January 2001)

No. 11 Capacity to innovate, innovation and impact: the Canadian engineering services industry, by Daood Hamdani (March 2001)

No. 12 Patterns of advanced manufacturing technology (AMT) use in Canadian manufacturing: 1998 AMT survey results, by Anthony Arundel and Viki Sonntag (November 2001)