

**Federal expenditures on  
scientific activities in  
Canadian universities :  
(with special reference  
to regional aspects)**

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2 L FEDERAL EXPENDITURES ON SCIENTIFIC  
ACTIVITIES IN CANADIAN UNIVERSITIES  
(With Special Reference to Regional Aspects) 72

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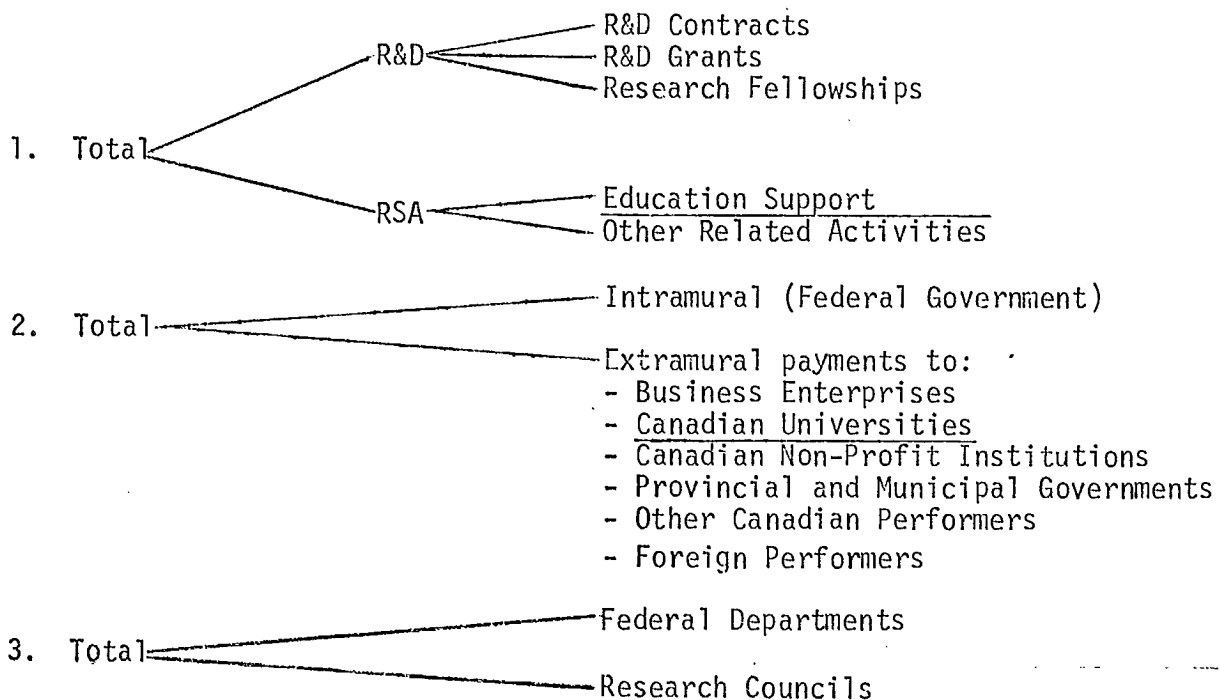
## 1. General Overview

This review is concerned with the various aspects of federal support of research and training in Canadian universities. The analysis of the area of financial support is of particular interest to the University Branch of the Ministry, since it constitutes an essential starting point for policy determination.

There exists a wealth of statistical data on the various aspects of federal financial involvement in scientific activities. For the benefit of those readers who have not yet had the opportunity to study this financing structure, this analysis begins by setting out a simplified schematic presentation of the major data categories and their relationships:

FIGURE I

FEDERAL FINANCING OF SCIENTIFIC ACTIVITIES  
(Overview of Available Data)



The total amount of funds spent federally are available, from the Statistics Canada Survey<sup>1</sup>, on the basis of several concepts: 1. research vs related scientific activities, such as scholarships and information; current vs capital; and by type of performer, for example universities vs other performers. Numerous other cross-classifications provide information on regional aspects; applications (federal policy concerns); and field of research. However, it should be noted that relatively less detail can be obtained for the years prior to 1974-75. In fact, the historical survey relating to the Human Sciences does not begin until 1970-71.

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1. All expenditure data in this review, with the exception of some earlier regional CAUBO data, come from the same source, and are internally consistent. This source is the various volumes of Statistics Canada, "Federal Government Activities in the Human Sciences"
  - Fiscal Years 1970-71 to 1976-77 (Historical Series).
  - Fiscal Years 1974-75, 1975-76, 1976-77 (1976 Survey Results).
  - Principal Applications; Fiscal Years 1974-75, 1975-76, 1976-77.
  - Applications of Expenditures on Intramural R&D in the Human Sciences (1974-75, 1975-76, 1976-77).
  - Regional Distribution (1974-75, 1975-76).
  - Intramural R&D Expenditures (Fiscal Years 1974-75, 1975-76, 1976-77).

Similarly, the following volumes of "Federal Government Activities in the Natural Sciences" are used:

- Fiscal Years 1963-64 to 1976-77 (Historical Series).
- Fiscal Years (1974-75, 1975-76, 1976-77 (1976 Survey Results).
- Principal Application Tables (1974-75, 1975-76, 1976-77).
- Intramural R&D in the Natural Sciences (1974-75, 1975-76, 1976-77).
- Regional Distribution (1974-75, 1975-76).

These are the main sources for expenditure data used in this review. It should also be noted that, while those are the most recent and up-to-date figures available, they are not, alas, final. Data for 1976-77 particularly should be considered preliminary.

The following tables (Tables 1 to 4) provide a brief overview of the general magnitudes of the expenditures, and of their changes since the beginning of the decade.

TABLE 1.

FEDERAL EXPENDITURES ON SCIENTIFIC ACTIVITIES:

TOTAL, R&D, AND RSA

	<u>1970-71</u>	<u>1974-75</u>	<u>1976-77</u>
	(\$ Million)		
Total	915.7	1,352.4	1,724.2
R&D	631.3	859.3	1,045.2
RSA	284.4	493.1	679.0
	(Percentage Distribution)		
Total	100.0	100.0	100.0
R&D	68.9	63.5	60.6
RSA	31.1	36.5	39.4

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

Table 1 indicates that total expenditures have risen from some \$915.7 million in 1970-71 to an estimated \$1,724.2 million in the current fiscal year (1976-77). This represents a compound annual growth rate of 11.1 percent<sup>1</sup>.

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1. Including inflation. The GNE implicit price index rose at a rate of 8.5 percent over the same period of time, suggesting that the real growth rate was in the neighbourhood of 2.5 percent

The financing of Related Scientific Activities rose significantly faster than the financing of Research and Development, with the consequence that since the beginning of the current decade the proportion of R and D dropped from 68.9 percent in 1970-71 to 60.6 percent in 1976-77.

Recent trends in the federal support to Human vs Natural science activities are illustrated in Table 2. The Support to the Human sciences has grown more rapidly, rising from 15.3 percent of the total in 1970-71 to 25.2 percent in 1976-77.

TABLE 2

FEDERAL FINANCING OF SCIENTIFIC ACTIVITIES,  
BY HUMAN AND NATURAL SCIENCES

	<u>1970-71</u>	<u>1974-75</u>	<u>1976-77</u>
	(\$ Million)		
Total	915.7	1,352.4	1,724.2
Human Sciences	140.4	298.8	433.7
Natural Sciences	775.2	1,053.7	1,290.6
	(Percentage Distribution)		
Total	100.0	100.0	100.0
Human Sciences	15.3	22.1	25.2
Natural Sciences	84.7	77.9	74.8

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

(A list summarizing the fields of study in the two general areas is given in the Appendix (Figure A-1). Expenditures going to the various fields of research are not analysed in this review.)

Still at the level of total scientific activity, the proportion of such activities carried out by various classes of "performers" have changed considerably during the past several years. Table 3 summarizes these shifts since the beginning of the 1970's.



TABLE 3  
FEDERAL FINANCING OF SCIENTIFIC ACTIVITIES  
BY PERFORMER

	<u>1970-71</u>	<u>1974-75</u>	<u>1976-77</u>
	(\$ Million)		
Total	915.7	1,352.4	1,724.2
Intramural	589.5	907.1	1,180.6
Extramural	326.2	445.4	543.6
Business Enterprises	151.2	179.5	213.2
<u>Canadian Universities</u>	142.4	175.7	206.5
Canadian Non-Profit Institutions	15.6	13.2	16.9
Provincial and Municipal Governments	1.2	8.5	9.2
Other Canadian Performers	1.9	8.3	11.0
Foreign Performers	13.8	60.1	86.9
	(Percentage Distribution)		
Total	100.0	100.0	100.0
Intramural	64.4	67.1	68.5
Extramural	35.6	32.9	31.5
Business Enterprises	16.5	13.3	12.4
<u>Canadian Universities</u>	15.6	13.0	12.0
Canadian Non-Profit Institutions	1.7	1.0	1.0
Provincial and Municipal Governments	0.1	0.6	0.5
Other Canadian Performers	0.2	0.6	0.6
Foreign Performers	1.5	4.4	5.0

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

This table (Table 3) shows that, first, there has been a significant shift towards Intramural expenditures on scientific activities since the beginning of the decade. The intramural share rose from 64.4 percent in 1970-71 to 68.5 percent, considering all federally financed scientific activities. The "losing" performers were Canadian business enterprises (down from 16.5 percent to 12.4 percent), and Canadian universities (15.6 to 12.0). Some of the losses in the extramural share were offset by a sharp rise to Foreign performers who increased their share from 1.5 to 5.0 percent over this period.

The sources of federal science support appear to have retained their relative importance in total contribution since the beginning 1970's. Table 4 provides total expenditures by contributing source. According to this table, the Federal Departments are responsible for roughly four-fifths of the total, and this proportion has fluctuated, in both directions, only slightly over the past few years. The share of the Councils went down somewhat, but has now begun to rise again, due to the rising share of the NRC. The share of the MRC has dropped from 3.8 percent in 1970-71 to 2.9 percent in 1976-77. The Canada Council share seems to have levelled off at just below 2 percent (note that this applies only to funds provided by the Federal Government).

	N S	S S	Total	To
1. Total	1,053,650	298,757	1,352,407	
Debt.	776,879	266,864	1,043,743	} Current
Conts.	206,697	25,091	231,788	
Pay.	67,226	6,802	74,028	
Conts.	2,848	0	2,848	} Capital
Debt.	8.7	2.5	7.1	
Conts.	1.4	0	1.2	
	10.1	2.5	8.3	Total
MRC	0	0		
O.G.S	0	0		

Grading Commts have no capital expenditures.

TABLE 4

FEDERAL EXPENDITURES ON SCIENTIFIC ACTIVITIES,  
FINANCED BY FEDERAL DEPARTMENTS AND COUNCILS

	<u>1970-71</u>	<u>1974-75</u>	<u>1976-77</u>
		(\$ Million)	
Total <sup>1</sup>	915.7	1,352.4	1,724.2
Federal Departments	729.1	1,117.8	1,405.9
Research Councils	186.6	234.6	318.3
Canada Council	20.1	25.1	32.4
NRC	132.0	165.7	235.6
MRC	34.5	43.8	50.2
	(Percentage Distribution)		
Total	100.0	100.0	100.0
Federal Departments	79.6	82.6	81.5
Research Councils	20.4	17.4	18.5
Canada Council	2.2	1.9	1.9
NRC	14.4	12.3	13.7
MRC	3.8	3.2	2.9

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

← 1. Includes capital expenditures which, in 1974-75, represented 7.1% of total expenditures, 8.7% of total exp. by dept. and 1.4% of total exp. by councils, this last figure applying to NRC labs. The Granting Councils have no capital expend.

2.

2. Universities

Total federal expenditures on scientific activities to universities have increased from \$142.4 million in 1970-71 to an estimated \$206.5 million in 1976-77. This represents a compound annual growth rate of 6.4 percent, compared with the rate on all federal science expenditures of 11.1 percent. As noted above, the share of expenditures going to the universities has significantly declined (see Table 3 above). If inflation is taken into account, the increase in current dollars did not match the increase in the GNE implicit price index over that period.

The composition of the expenditures has changed since the beginning of the decade. The various components of spending on the universities are given in Table 5.

TABLE 5

FEDERAL EXPENDITURES ON SCIENTIFIC ACTIVITIES IN CANADIAN  
UNIVERSITIES - HUMAN AND NAUTRAL SCIENCES

	<u>1970-71</u>	<u>1974-75</u>	<u>1976-77</u>
		(\$ Million)	
Total	142.4	175.5	206.5
R&D	123.5	150.8	174.2
Contracts	n.a.	7.6	10.3
Grants	n.a.	135.6	155.3
Fellowships	n.a.	7.6	8.6
RSA	18.9	24.9	32.2
Education Support	17.7	19.4	25.5
Other RSA	1.3	5.4	6.7

NOTE: Line 1 of this table (Table 5) is equal to line 5 of Table 3 above.  
Table 5 is broken down into Human (Table A-1) and Natural (Table A-2), in Appendix A.

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

It is evident that expenditures on R&D have grown even less than the total for universities. The compound growth rate for R&D over the period amounts to only 5.9 percent. This is accounted for by the small increases in R&D for Natural Sciences. (Reference was made earlier to the overall drop in the share going to the Natural Sciences, and to the diminution of the relative importance of the MRC, for example). The data in Table 5 are split into Human, and Natural Science portions, and displayed in Appendix A (Tables A-1 and A-2).

Ultimately, it will have to be determined if the level and the composition of the funds provided for scientific activities have been consistent with the underlying requirements. This question must also be posed in relation to expenditures on scientific activity by the universities. The analysis presented here has a more limited scope than attempting to provide answers to such fundamental questions. Initially, the growth and composition of university science expenditures is related to more immediate (and partial) indicators such as the relative importance of the university establishment. For this purpose, the expenditures are related to enrollments and faculty. Later, a regional analysis is also presented, as well as a more detailed review of the activities of the various sponsoring agencies.

As noted above, university expenditures on science have risen by some 6.4 percent per year since the beginning of the decade. This occurred at a time when there was a retrenchment in the growth rate at the graduate levels of enrollment (although the growth of faculty over this period does



not appear to have been impaired)<sup>1</sup>. Table 6 relates expenditures to some university-related factors, such as enrollment and faculty, for the years 1970-71 to 1975-76.

The data indicate that for the period 1970-71 to 1974-75, expenditures to the universities for research and related activities rose by about 5.5 percent per year, or substantially less than the rate of inflation (the increase for the year 1975-76, however, was over 10 percent, bringing the 6-year growth rate to 6.4 percent). Over this 5-year period, undergraduate enrollment rose between 12 and 13 percent, graduate enrollment changed very little, but faculty increased by almost 23 percent. Thus there was some decline in the undergraduate student/professor ratio, and a significant decline in the graduate student/professor ratio. Federal science support per graduate student rose in nominal terms, by about 24 percent, but fell in terms of purchasing power. Such support for faculty remained constant in nominal terms (at around \$6,000 per professor), but declined significantly in terms of purchasing power.

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1. It should be noted that the data regarding faculty and enrollment trends is not quite as up-to-date as the data regarding the federal expenditures, thanks to the 1976 Survey.



TABLE 6

UNIVERSITIES: FEDERALLY SUPPORTED SCIENCE EXPENDITURES,  
GRADUATE ENROLLMENT, AND FACULTY

	<u>1970-71</u>	<u>1971-72</u>	<u>1972-73</u>	<u>1973-74</u>	<u>1974-75</u>	<u>1975-76</u>
Expenditures (\$ Million)	142.4	151.4	156.1	166.5	175.7	194.6
Undergraduate Enrollment (FT)	274,963	286,821	285,158	295,553	309,575	329,550
Graduate Enrollment (FT)	30,686	30,923	28,862	29,281	30,441	-
Graduate Enrollment (FTE)	34,946	36,027	34,654	35,885	37,282	-
Faculty	23,830	26,286	26,854	27,731	29,214	-
Expenditure per Graduate (FT) (\$)	4,641	4,896	5,408	5,686	5,772	-
Expenditure per Graduate (FTE) (\$)	4,075	4,202	4,505	4,640	4,713	-
Expenditure per Faculty (\$)	5,976	5,760	5,813	6,004	6,014	-
Undergraduate per Faculty	11.54	10.91	10.63	10.66	10.60	-
Graduate per Faculty (FT)	1.29	1.18	1.07	1.06	1.04	-
Graduate per Faculty (FTE)	1.47	1.37	1.29	1.29	1.28	-

SOURCE: Expenditure data based on 1976 Survey. Enrollment data: Statistics Canada, Education Division.

NOTE: The average expenditures per person in this table do not exactly match those in Tables B-2 and B-4, since they include data at the national level that cannot be allocated by region.

### 3. Regional Aspects

Of all the influences that shape the regional importance of university life, very few can be cited in statistical form. Nevertheless, in view of the analytical importance of the regional dimension of expenditures to universities by the federal government, an attempt is made to portray at least a partial picture, in the hope that this will provide some insight.

To get some idea regarding the relative impact of the university establishment in the various regions, a few relevant factors are summarized in Table 7.

TABLE 7  
REGIONAL DISTRIBUTIONS OF FEDERAL EXPENDITURES  
ON SCIENTIFIC ACTIVITIES TO UNIVERSITIES,  
AND RELATED FACTORS (1974-75)

	<u>Canada</u>	<u>Atl</u>	<u>Que</u>	<u>Ont</u>	<u>West</u>
	(Percentage Distribution)				
Expenditures (St. C. Survey)	100.0	6.9	25.7	37.0	30.4
Expenditures (CAUBO)	100.0	6.0	26.2	40.0	27.8
Population - Total (1974)	100.0	9.7	27.3	35.5	28.2
Population - 20-24 (1974)	100.0	10.3	28.7	33.5	28.4
Total Enrollment (FT) <sup>1)</sup>	100.0	10.1	20.3	43.1	26.5
Graduate Enrollment (FT)	100.0	6.3	27.3	44.4	22.0
Graduate Enrollment (FTE)	100.0	4.0	33.0	44.7	18.3
Faculty (FT) (1973-74)	100.0	11.3	22.1	39.2	27.5

1) Undergraduate and Graduate, FT

SOURCE: Expenditures - Tables B-7 and B-8  
Population - St. C., Intercensal Estimates  
Enrollment and Faculty - St. C., Education Division; Tables B-9,  
B-10, and B-11.

The table shows that while most elements in this regional array appear to be in some proportionate balance, there are some interesting exceptions. Reading the columns vertically, the Atlantic Provinces' share of expenditures and graduate enrollment seems to be "disproportionately"<sup>1</sup> low, whereas the opposite holds for Ontario. The disproportionately low share for total university enrollment in Quebec is probably influenced by the institutional structure of that province, in that the CGEP provide more or less the first two years of undergraduate training.

The attempt to analyse the regional distribution of the expenditures is soon frustrated by the realization that the "Federal Survey" does not provide suitably-detailed disaggregations prior to 1973-74<sup>2</sup>. For analysis of earlier years, it is necessary to resort to CAUBO data, which, unlike the Federal Survey do not contain financial grants to individuals. A comparison for two overlapping years of the two sets of regional expenditure data is given in Table 8.

- 
1. Admittedly, this is a subjective statement, because there is no absolute standard of what would constitute a perfect regional balance.
  2. While there is a regional breakdown for 1972-73 for the three councils, as shown in Table A-4, there is no regional information on the departments and agencies.

TABLE 8

REGIONAL DISTRIBUTION OF FEDERAL EXPENDITURES ON  
SCIENTIFIC ACTIVITIES TO UNIVERSITIES

	<u>Atl</u>	<u>Que</u>	<u>Ont</u>	<u>West</u>	<u>Canada</u>
	(Percentage Distribution)				
<u>CAUBO Data</u>					
1971-72	5.2	25.5	39.0	30.2	100.0
1972-73	5.5	27.1	38.2	29.2	100.0
1973-74	5.8	26.9	38.4	28.8	100.0
1974-75	6.0	26.2	40.0	27.8	100.0
<u>Federal Survey</u>					
1971-72	n.a.	n.a.	n.a.	n.a.	n.a.
1972-73	n.a.	n.a.	n.a.	n.a.	n.a.
1973-74	7.0	27.2	39.1	26.7	100.0
1974-75	6.9	25.7	37.0	30.4	100.0

SOURCE: Tables B-7 and B-8.

Superficially, the two sets of data appear to have a similar regional pattern, at least at the aggregate level. But this is probably not too useful, since detailed differences may be offsetting each other, thereby hiding some interesting insights. (For example, a comparison for the Canada Council indicates very poor similarity in the regional pattern for the two sources--see Tables B-7 and B-8. The omitted expenditures, namely education support to individuals, appear to be subject to a different regional pattern, yet they are a much larger proportion of the Canada Council's disbursements to universities than is the case for the other councils and agencies). For reasons such as these, the comparisons based on CAUBO data must be used with caution.

An attempt has been made to relate the expenditures to various university-related indicators. The summary of this analysis is shown in Table 9 which pertains to various average dollar expenditures per person enrolled (graduate), teaching, and graduating. The comparisons are made with the CAUBO and with the Federal Survey data, but the latter does not begin to provide regional information until 1973-74. (The comparisons are also provided for each year, and by council, in Appendix B below.

TABLE 9

REGIONAL DISTRIBUTION OF FEDERAL EXPENDITURES ON  
SCIENTIFIC ACTIVITIES TO UNIVERSITIES:  
RELATIONSHIP TO VARIOUS ENROLLMENT  
AND FACULTY TOTALS

(\$ Per Person)

A. Based on CAUBO Data

	<u>Per Graduate Enrollment*</u> (4 Yrs End 1974-75)		<u>Per Faculty</u> (3 Yrs End 1973-74)	<u>Per Degree</u> (2 Yrs End 1972-73)
	<u>FT</u>	<u>FTE</u>		
Atl	3993	3539	2183	9339
Que	4462	3462	5354	12491
Ont	3727	3081	4313	6933
West	4649	4117	4670	11834
Canada	4163	3459	4402	9294

B. Based on Federal Survey Data

	<u>Per Graduate Enrollment</u> (2 Years Ending 1974-75)	
	<u>FT</u>	<u>FTE</u>
Atl	6184	5349
Que	5669	4359
Ont	4796	3907
West	6441	5556
Canada	5509	4497

\* MA and PhD Programs

SOURCE: Based on Tables A-3, A-4, A-5, A-6, A-7, and A-8.

While firm conclusions should not be drawn from such ratios, it appears that there tend to be considerable differences in the regional per capita figures. First, in all comparisons shown in Table 9, Ontario ranks lowest, with the exception of dollars per faculty, where Ontario is second-lowest. The West, on the other hand, seems to rank near the top in dollars per graduate student enrolled, and is second-highest per faculty and degree granted. It should be noted that these are averages for several years, for all councils and agencies, designed to minimize yearly irregularities in the data. Nevertheless, each case has its own explanation. Some of these become apparent in the discussion of the regional aspects of each council.

#### 4. The Councils and Agencies - Overview

The three Granting Councils, the National Research Council, through its Office of Grants and Scholarships, the Medical Research and the Canada Council, through its Advisory Academic Panel, are the main agents of the Federal Government for the funding of university research. Other departments and agencies also contribute within the limits of their statutory responsibilities.

Table 4 given earlier in this review provides an overview of the relative contributions of the councils and agencies to total federal expenditures on scientific activities. A closer look at the councils' and agencies' involvement with the University sector is provided in the subsequent discussion.

The following aspects will be examined:

- the relative importance of the various sources of support to universities for Human and for Natural Sciences;
- the relative importance of support, by source, to the universities for R&D and for education support.

Table 10 indicates that support to the Human Sciences in the universities has risen from 13.5 percent in 1970-71 to 21.1 percent in 1976-77. The increase is accounted for in almost equal measure by the federal departments and agencies on the one hand, and the Canada Council on the other. The decline in the share going to the Natural Sciences over this time period is also evident in the falling shares by the federal departments and the NRC.





The share of the federal departments' contributions to the Natural Sciences fell from 19.2 to 13.6 percent, and that of the NRC from 45.2 to 42.9 percent (although it should be noted that the NRC share is higher in 1976-77 than it was a couple of years ago).

TABLE 10

FEDERAL EXPENDITURES ON SCIENTIFIC ACTIVITIES TO UNIVERSITIES,

BY COUNCILS AND DEPARTMENTS

HUMAN VS NATURAL SCIENCES

	<u>1970-71</u>	<u>1974-75</u>	<u>1976-77</u>
	(\$ Million)		
Total	142.4	175.7	206.5
Human Sciences	19.2	32.8	43.6
Natural Sciences	123.2	142.9	162.9
Federal Departments	37.0 <del>32.9</del>	50.2	46.2
Human Sciences	5.5 <del>5.5</del>	13.9	18.1
Natural Sciences	31.5 <del>27.4</del>	36.3	28.1
Councils	105.4 <del>109.5</del>	125.5	160.3
Canada Council	13.7 <del>13.7</del>	18.9	25.5
NRC	61.7 <del>64.4</del>	66.2	88.5
MRC	30.0 <del>31.4</del>	40.4	46.3

(Percentage Distribution)

Total	100.0	100.0	100.0
Human Sciences	13.5	18.7	21.1
Natural Sciences	86.5	81.3	78.9
Federal Departments	26.1 <del>23.7</del>	28.6	22.4
Human Sciences	3.9 <del>3.9</del>	7.9	8.8
Natural Sciences	22.2 <del>19.2</del>	20.7	13.6
Councils	74.0 <del>76.9</del>	71.4	77.6
Canada Council	9.6 <del>9.6</del>	10.8	12.3
NRC	43.3 <del>45.2</del>	37.7	42.9
MRC	21.1 <del>22.1</del>	23.0	22.4

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

The Federal Survey (1976) also provides some details on the R&D and Education Support to Universities, by source. This information is available starting with the fiscal year 1974-75. The main features of this information are summarized in Table 11.

TABLE 11

FEDERAL EXPENDITURES ON SCIENTIFIC ACTIVITIES TO UNIVERSITIES  
BY COUNCILS AND DEPARTMENTS  
R&D, AND EDUCATION SUPPORT

	<u>1974-75</u>	<u>1976-77</u>
	(\$ Million)	
Total	175.7	206.5
R&D	150.8	174.2
RSA	24.9	32.3
Education Support	19.4	25.5
Federal Departments	50.2	46.2
R&D	41.7	34.2
RSA	8.5	12.0
Education Support	5.3	7.5
Councils	125.5	160.3
R&D	109.1	140.0
RSA	16.4	20.3
Education Support	14.1	18.0

According to this information, the Councils allocate about 11 percent of their funds that go to universities for the purpose of education support, and most of the remainder to R&D. As will be seen below this split varies by council. The departments allocate about the same proportion to R&D and Education Support as do the Councils taken together.

A further breakdown of the information in Table 11, relating to the Councils, is provided in Table 12.

TABLE 12

FEDERAL EXPENDITURES ON SCIENTIFIC  
ACTIVITIES IN CANADIAN UNIVERSITIES  
R&D AND EDUCATION SUPPORT BY SOURCE

	<u>1974-75</u>	<u>1976-77</u>
	(\$ Million)	
Canada Council - Total	18.9	25.5
R&D	10.5	15.4
Education Support	6.4	8.1
NRC - Total	66.2	88.2
R&D	59.5	79.6
Education Support	6.7	9.0
MRC - Total	40.4	46.3
R&D	39.0	45.1
Education Support	1.1	1.0

Note: The two items shown do not add to the total since the "other RSA" is not included.

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

According to this table, the largest contributor is the NRC (with 37.7 percent in 1974-75). The Federal Departments, the MRC, and the Canada Council rank in that order. The same ranking applies to the support for R&D.

Education support varies considerably in importance within each agencies' expenditures. For example, this item constitutes as much as one-third of the Canada Council expenditures to the universities, but only about 10 percent of the budget of the NRC, and slightly less of the Departments' total. Education support is an item of relatively minor quantitative importance in the expenditures of the MRC.

A special tabulation by the NRC, attached in Appendix C, presents an analysis of the NRC expenditures paid to projects and to training, over the period 1970-71 to 1975-76. This material indicates that while the overall proportion of expenditures going to HQM training has remained fairly stable, the share for post-graduates has been declining, and the share for post-doctoral recipients has been rising sharply. For example, since 1970-71, the share of funds going to post-doctorates has risen from 1.8 percent to 4.1 percent in 1975-76, and that for post-graduates has declined from 12.7 to 10.8 percent (see Table C-1). The rise in the share of funds to post-doctorates is the result of a combination of rising numbers (from 205 to 245 annual awards over this period) and rising stipends per award (from \$5512 to \$9796, a rise of 78 percent). By comparison, the

number of post-graduate awards has declined from 2337 to 1760 per year, while the size of the stipend per post-graduate award has risen only 38 percent (from \$3522 to \$4847). (See Table C-4 in Appendix C.)

5. The Councils and Agencies - Regional Aspects

i) The National Research Council

In an earlier analysis<sup>1</sup> of its regional spending, the Council notes that in its attempt to provide a regional balance in its program, it has to bear two factors in mind: "1) NRC can award grants only if they are applied for; and 2) it would be injurious in the long run to support poor research, and so standards of excellence must be independent of regional, linguistic or cultural considerations". Undoubtedly, considerations of this nature will affect the regional distribution of the program. In this analysis, the NRC relate expenditures to the regional distribution of population, enrollment, applicants, and faculty. The following is a brief summary of these findings for the year 1971-72 (Table 13):

TABLE 13

DISTRIBUTION OF NRC FUNDS AND  
VARIOUS REGIONAL INDICATORS

	<u>Population</u> (Percent)	<u>Applicants</u> (Percent)	<u>Share of</u> <u>NRC Funds</u> (Percent)	<u>Applic. Per</u> <u>Population</u> (Per 10,000)	<u>Faculty</u> (Percent)	<u>Graduate</u> <u>Students</u> (Percent)
Canada	100.0	100.0	100.0		100.0	100.0
Atl	9.6	8.9	7.1	2.39	8.97	6.21
Que	28.0	18.3	19.5	1.68	21.27	23.68
Ont	35.8	41.6	41.0	2.99	38.95	43.81
West	26.6	31.2	29.4	3.02	30.81	26.30

SOURCE: NRC, op. cit., Tables C-8, C-9, and C-10.

1. NRC, "Analysis of Some Aspects of the Program of Scholarships and Grants-in-Aid of Research", (mimeo.), Ottawa, August 31, 1973.

S. Peitchinis, (Financing Post-Secondary Education in Canada, Calgary, 1971) also has a regional analysis of the councils, but it is very brief, with no more than general conclusions about the regional aspects.

According to the NRC analysis, it appears that the regional pattern of the NRC funds resembles more closely the patterns of the applicants and of the faculty staff, than that of population and graduate students. Thus it is shown that Quebec has the lowest ratio of applicants and faculty to population. In a further analysis, the authors find that the Quebec ratios are even less favourable if only the francophone population is taken into account.



TABLE 14

NRC'S REGIONAL DISTRIBUTION OF FUNDS AND  
VARIOUS REGIONAL INDICATORS, 1973-74

	<u>NRC Funds</u>	<u>Population</u>	<u>Faculty</u>		<u>Total</u>		<u>Natural Sciences</u>	
			<u>Total</u>	<u>Natural Sciences</u>	<u>Grad. Enrollment</u>		<u>Grad. Enrollment</u>	
					<u>FT</u>	<u>FTE</u>	<u>FT</u>	<u>FTE</u>
	(1)	(2)	(Percentage Distribution)					
			(3)	(4)	(5)	(6)	(7)	(8)
Atlantic	7.1	7.7	11.3	10.9	5.9	6.3	6.5	5.7
Que	20.8	27.3	22.1	24.8	24.2	22.6	21.2	26.3
Ont	43.1	35.5	39.2	36.2	44.3	42.3	41.9	44.1
West	29.0	28.2	27.5	28.1	25.6	28.8	30.4	23.9
Canada	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

- SOURCE: (1) Table B-8 (Based on Statistics Canada 1976 Survey; Expenditures to universities cover R&D and RSA, including Education Support)
- (2) Statistics Canada, Intercensal Statistics
- (3) to (8) Tables B-9 to B-11

The more up-to-date analysis presented here comes to a similar conclusion with regard to Quebec. According to Table 14, Quebec still appears to have a disproportionately low share of NRC funds for universities, if judged by population, by faculty (especially Natural Sciences faculty), and by graduate enrollment. The relationships between NRC funds and some of the university-related influences are not quite as clear for the Atlantic Region, where funds are low in relation to faculty but high in relation to graduate enrollment. A different aspect of the same phenomenon is reflected in the low graduate student/professor ratio for the Atlantic Provinces, as shown in Table B-14, and the ratios of students and faculty per 10,000 population in Table B-13 (both in Appendix B).

NRC funds per graduate student and per professor are shown in Table 15, relating to the year 1973-74. This comparison tells the same story as Table 14, from a different viewpoint. The high dollar value per student, and the low dollar value per professor, in the Atlantic Region are a reflection of the above-cited factors. The comparisons in this table are made with Statistics Canada 1976 Survey data. Similar comparisons, as well as comparisons for other years both with 1976 Survey data and CAUBO data, are given in much greater detail in Appendix Tables B-1, to B-5.

TABLE 15

NRC FUNDS PER GRADUATE STUDENT AND  
PER FACULTY IN THE NATURAL SCIENCES, 1973-74

	<u>Atl</u>	<u>Que</u>	<u>Ont</u>	<u>West</u>	<u>Can</u>
	(\$ Per Person)				
Per Grad. Student (FT)	7562	6847	7162	6639	6962
Per Grad. Student (FTE)	6934	5714	6322	6225	6195
Per Faculty Staff (FT)	4999	6505	9248	8008	7754

Note: Enrollment and Faculty in the Natural Sciences

SOURCE: Tables B-2, B-3, A-4 and A-7. Based on Statistics Canada  
1976 Survey expenditure data.

ii) The Canada Council

The Canada Council spends a relatively small but growing proportion of federal funds to universities. As noted earlier (in Table 10 above), its share in spending has risen from 9.6 percent in 1970-71 to 12.3 percent in 1976-77. It spends a comparatively larger amount out of its funds than the other Councils on education support (about one-third).

The Council spends almost one-half of its funds in Ontario (based on the year 1973-74 - see Table 16). Certainly, there appears to be a disproportionate concentration of funds on Ontario and Quebec, when related to faculty and population. The distribution seems to be in somewhat closer balance with regard to graduate enrollment in the Humanities and Social Sciences, which undoubtedly is a reflection of the relatively large proportion of this Council's funds given out in the form of education support.

TABLE 16

CANADA COUNCIL'S REGIONAL DISTRIBUTION OF FUNDS,  
AND VARIOUS REGIONAL INDICATORS, 1973-74

	<u>Canada Council Funds</u>	<u>Population</u>	<u>Faculty</u>		<u>Total Grad. Enrollment</u>		<u>Humanities; Soc. Sci. Grad. Enrollment</u>		
			<u>Total</u>	<u>Soc. Sci</u>	<u>FT</u>	<u>FTE</u>	<u>FT</u>	<u>FTE</u>	
			(Percentage Distribution)						
Atl	5.4	9.7	11.3	12.1	5.9	6.3	5.9	5.6	
Que	26.4	27.3	22.1	20.3	24.2	22.6	25.1	27.4	
Ont	48.5	35.5	39.2	40.9	44.3	42.3	45.7	45.2	
West	19.7	28.2	27.5	26.8	25.6	28.8	23.3	21.8	
Canada	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

SOURCE: See Table 14

Since the regional distribution of the funds is similar to that of the graduate enrollment, the expenditures per enrolled student across the four regions are very close. In 1973-74, they range between \$726 in the West to \$913 in Ontario (see Table 17). The expenditure per professional staff varies considerably across the regions, from \$464 in the Atlantic Region to \$1344 in Quebec. It should be noted that those comparisons are made with faculty and enrollment in the Humanities and Social Sciences, and that the funds include spending on R&D as well as on education support.

TABLE 17

CANADA COUNCIL FUNDS PER GRADUATE STUDENT AND PER FACULTY  
IN THE HUMANITIES AND SOCIAL SCIENCES, 1973-74

	<u>Atl</u>	<u>Que</u>	<u>Ont</u>	<u>West</u>	<u>Can</u>
	(\$ Per Person)				
Per Grad. Student (FT)	795	901	913	726	860
Per Grad. Student (FTE)	650	646	720	608	671
Per Faculty (FT)	464	1344	1226	760	1033

Note: Enrollment and Faculty in the Humanities and Social Sciences.

SOURCE: Table 15. Expenditures are based on Statistics Canada, Federal Survey Data.

iii) The Medical Research Council

In recent years this Council was responsible for roughly 22 percent of Federal Expenditures on scientific activities. This share has remained relatively stable. Virtually all of the MRC funds are allocated to R&D. The idea of an "equitable" or balanced regional distribution for this field of research is particularly difficult to conceive. The medical research and training institutions have developed for many reasons other than regional equality. Nevertheless, for whatever they are worth, regional comparisons for the expenditures of this Council are also included here. Table 18 shows a particularly heavy concentration of MRC expenditures and graduate enrollment in the health field in Quebec. Also, the enrollment in medical schools for MD degrees is "disproportionately" high for Quebec.

It can be argued that one of the appropriate standards for comparing medical research expenditure by region should be medical school enrollments. For this purpose, the regional distribution of combined medical school (MD) and graduate health enrollments are shown in Table 18 (last column). Even with this standard, large regional imbalances are evident, particularly concerning the share of the funds to the Atlantic Region.

It appears that the proportion of funds spent in the Atlantic Region has been growing significantly. Based on information obtained directly from

the MRC, the share of MRC funds for that region is now approaching five percent (see Appendix Table D-1, Appendix D)<sup>1</sup>.

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1. Due to differences in source, the dollar values for the MRC shown in Table D-1 are not strictly comparable with those from the Statistics Canada 1976 Survey that is used generally in this review. The general regional tendencies shown in the MRC-based data are, however, valid. (A reconciliation of the two MRC data bases has not been attempted in this context.)



TABLE 18

MEDICAL RESEARCH COUNCIL'S REGIONAL DISTRIBUTION OF FUNDS  
AND VARIOUS REGIONAL INDICATORS, 1973-74

	<u>MRC Funds</u>	<u>Population</u>	<u>Faculty</u>		<u>Graduate Enrollment</u>				<u>Enrollment For MD's</u>	<u>MD&amp;Grad. Health Enrollment</u>
			<u>Total</u>	<u>Health</u>	<u>Total</u>		<u>Health</u>			
					<u>FT</u>	<u>FTE</u>	<u>FT</u>	<u>FTE</u>		
(Percentage Distribution)										
Atl.	2.7	9.7	11.3	8.8	5.9	5.7	1.6	1.7	9.8	8.6
Que	37.2	27.3	22.1	23.9	24.2	26.3	33.0	35.1	35.4	35.0
Ont	35.6	35.5	39.2	38.4	44.3	44.1	39.9	38.9	31.4	32.6
West	24.4	28.2	27.5	28.9	25.6	23.9	25.4	24.3	23.5	23.8
Canada	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: See Table 14. Information on MD col.: Appendix Table B-15  
 MD & Grad. Health Enrollment col.: Based on data in Appendix Tables A-5 and A-9.

iv) Departments and Agencies

This is too heterogeneous a collection of agencies, with too wide a range of interests, to be lumped together into one group. However, to round out the picture on the regional expenditures to the universities, a brief survey of the regional aspects of the spending pattern of this group in toto is presented here.

The expenditure share of this group in total funds flowing to universities has fluctuated considerably in recent years, from 23.1 percent in 1970-71 to 28.6 percent in 1974-75 to an estimated 22.4 percent in 1976-77. An increasing proportion of the funds are spent in the support of the human as opposed to the natural sciences (see Table 10 above). Three-quarters are spent on R&D, while some 16 percent are spent on education support (1976-77 estimate - see Table 11 above).

In terms of regional criteria, the Departments' funds are distributed across the regions somewhat along the pattern of the population. The correspondence is less close for faculty, and absent for graduate enrollment. For example, in the year 1973-74, the Atlantic Region and Quebec were "overfunded".

TABLE 19

FEDERAL DEPARTMENTS' AND AGENCIES' REGIONAL DISTRIBUTION

OF FUNDS, AND VARIOUS REGIONAL INDICATORS, 1973-74

	<u>Departments' and Agencies' Funds</u>	<u>Population</u>	<u>Faculty</u>	<u>Total Grad. Enrol't</u>	
		(Percentage Distribution)		FT	FTE
Atl	11.7	9.7	11.3	5.9	6.3
Que	28.0	27.3	22.1	24.2	22.6
Ont	32.3	35.5	39.2	44.3	42.3
West	28.0	28.2	27.5	25.6	28.8
Canada	100.0	100.0	100.0	100.0	100.0

SOURCE: See Table 13

6. Summary of Findings

The foregoing statistical review found that:

- federal expenditures on scientific activities have been rising at an annual compound rate of about 11 percent since the beginning of the 1970's. After accounting for inflation, the real growth rate was in the neighbourhood of 2.5 percent per annum (which is about the same as the rate of productivity growth, but less than the growth in real GNP). 6.1
- The support of Related Scientific Activities rose significantly faster than the financing of R&D, with the consequence that since the beginning of the current decade the proportion of R&D dropped from 68.9 percent in 1970-71 to 60.6 percent in 1976-77. 6.2
- The Support to the Human Sciences has grown more rapidly, rising from 15.3 percent of the total in 1970-71 to 25.2 percent in 1976-77. This occurred at the "expense" of support to the Natural Sciences. 6.3
- There has been a significant shift towards intramural expenditures on scientific activities since the beginning of the decade. The intramural share rose from 64.4 percent in 1970-71 to 68.5 percent in 1976-77. 6.4
- The extramural performers losing their share in the total were Canadian business enterprises (dropping from 16.5 to 12.4 percent of the total) and Canadian Universities (15.6 to 12.0 percent). 6.5

Some of the losses in the overall extramural share were offset by a sharp rise to Foreign performers whose share increased from 1.5 to 5.0 percent.

- The shares of total expenditures contributed by the various sponsors have remained fairly stable. The Federal Departments are responsible for roughly four-fifths of the total, with some minor fluctuations in both directions over the years. The Councils account for the remainder, with minor fluctuations for the shares of the Canada Council and NRC. The share of the MRC declined from 3.8 to 2.9 percent of the total. C. 6
- Federal expenditures on scientific activities to the universities rose by 6.4 percent over this 5-year period, from \$142.2 million to \$206.5 million. In terms of purchasing power, the total has declined over this period (if the GNE implicit price change is used, the total to universities declined by about 2 percent per annum). C. 7
- Of the funds going to the Universities, the portion designated for R&D has grown less rapidly than spending on RSA. In particular, the share of R&D in the Natural Sciences has been declining. C. 8
- Some elements of the university system continued to grow over this period: there was some growth in undergraduate enrollments, and considerable growth in faculty. However, graduate enrollment has remained unchanged. C. 9

- Federal expenditures as a whole for scientific activities in the universities have risen in nominal terms in relation to graduate enrollment, but declined somewhat when expressed in real terms. In relation to faculty, such expenditures has remained constant in nominal terms, but declined considerably in real terms. 6.10
  
- When comparing such per person expenditures regionally, the evidence is not clear-cut, but it appears that Ontario ranks lowest in dollars per graduate student, both with CAUBO and Federal Survey data, and in dollars per MA and PhD granted, except for dollars per faculty, where it ranks second lowest. The West seems to rank near the top in dollars per graduate student, and second per faculty and per degree granted. This is based on data that were pooled for several years. 6.11
  
- The increase in the Human Sciences support to the universities was accounted for in almost equal measure by the Federal Departments and the Canada Council. The decline in the share going to the Natural Sciences is mostly due to relatively less growth in support from the Federal Departments. 6.12
  
- In the most recent period, the Councils taken together allocated about 11 percent of their university expenditures to education support, and the remainder on R&D. The breakdown for the Federal Departments is quite similar. 6.13

- The Canada Council, in the most recent period allocated roughly one-third of its expenditures in universities to education support. The NRC allocated roughly 10 percent, and the MRC about 1 percent to education support. 6.14
  
- An examination of education support by the NRC showed that from 1970-71 to 1975-76, while the overall proportion of funds going to HQM training was fairly stable, the share going to postdoctorates rose very sharply, and the share going to graduates declined commensurately. In actual numbers, annual post-doctoral awards rose from 205 to 245, and graduate awards declined from 2337 to 1760. 6.15
  
- Quebec receives a disproportionately low share of NRC expenditures, compared to the distribution of population, faculty (especially Natural Science faculty), and graduate enrollment. (An earlier NRC analysis showed that the picture for francophone Quebec is even less advantageous, and that other ~~the~~ expenditure distribution was closely related to the regional distribution of applicants for NRC funds.) 6.16  
- 5
  
- The Canada Council spends almost one-half of its funds in Ontario (1973-74). There is a disproportionate concentration of funds in Ontario and Quebec, when related to faculty and population. The distribution is in closer balance in relation to graduate enrollment in the Humanities and Social Sciences, which reflects the fact that 6.17

the Canada Council distributes a large portion of its funds in the form of education support.

- There is a particularly heavy concentration of MRC expenditures in Quebec. This is matched by a similar concentration in Quebec in graduate health-related enrollment, and in enrollment in medical schools for MD degrees. MRC spending in the Atlantic Region is relatively low, but according to recent MRC information, the share going to that region has been growing in recent years. 6.28
  
- The funds sponsored by the Federal Departments appear to be distributed across the country in relation to the regional pattern of the population. 6.19



## APPENDICES

### Data Notes

1. The CAUBO data on federal expenditures for science in universities (Table A-3) are incomplete in that they do not cover all financial awards to individuals enrolled at a university. The proportion of such funds is particularly large within the Canada Council budget, so that the CAUBO data relating to this council should be interpreted with particular care. Analytical tables affected by this factor are Tables B-1, B-3, B-5, B-6, and B-7.

2. In the enrollment data, there is evidence of some "curiosities". In Table A-5, based on Statistics Canada sources, the graduate health-related enrollment in the Atlantic Region is shown as 36, 27, 19 and 42 for the four years ending in 1974-75. These numbers are, by necessity, an integral part of the analytical background calculations in Appendix B. However, when interpreting the calculations in those table cells that are affected by the above-mentioned data problem, a great deal of judgment must be applied by the reader. Health-related post-graduate enrollments for the Atlantic Region affect the relevant cells in Tables B-1 to B-4, B-9 and B-10. A similar problem is found for the year 1971-72 where the health-related graduate enrollment for Quebec is shown as 943, as compared with 486 in Ontario, and 330 in Quebec the following year. This is obviously a very suspicious number, and should be ignored, despite the fact that it emanates from the official record. It affects the particular cell in each of the Appendix B tables using enrollment.

3. In theory, the CAUBO data in each of the cells of Table A-3 should be lower than the Federal Survey data in Table A-4. In one case, however, this is not so: for Ontario in 1974-75, the "other federal" expenditures are \$14,919,000 in the CAUBO records, and only \$12,175,000 in the Statistics Canada 1976 Survey. These are the numbers shown in the official records, and there is little that can be done other than to treat them as mistakes. As far as the analytical background material is concerned, the Ontario (1974-75) OTHFED cell is affected in the following tables: Table B-1 to B-8. It should be noted that the 1976 Survey data by Statistics Canada are subject to revision, in the course of their semi-annual updating of this body of information. In the meantime, however, this is the most up-to-date information.

A Technical Note

Each table in Appendices A and B contains a set of annual regional matrices. For a given year t,

$$M_{nk} = \begin{bmatrix} M_{11} & \dots & M_{1j} \\ \vdots & & \vdots \\ M_{ij} & \dots & M_{ij} \end{bmatrix}$$

where n represents the regions: Atl., Que., Ont., West, and Canada; and k represents either sponsor or field of study:

<u>Sponsor</u>	<u>Field</u>
Canada Council	Humanities & Social Sciences
NRC	Natural Sciences
MRC	Health Sciences
OTHFED	All Sciences
Total	All Sciences

Appendix B tables B-1 to B-6 are the result of simple cell-by-cell matrix divisions, using the table matrices indicated in the source of each table. Thus, in the dollars-per-graduate student table, the funds and enrollment are related by sponsor and field of study.

APPENDIX A

BASIC DATA

Note: The basic expenditure data used in this study have been taken from the Statistics Canada 1976 Survey. With the exception of Tables A-1, A-2 and A-4, these expenditure data are not contained in this Appendix, in view of the ready availability of the Survey. Table A-4 is given here because it is the result of a special regional tabulation from the 1976 Survey. Tables A-1 and A-2 are a further breakdown of data in Table 5. The sources of all other basic data in this Appendix are indicated on each table.

FIGURE A-1FIELDS OF RESEARCH USED IN STATISTICS CANADA SURVEYI. Human Sciences

Anthropology  
Business Administration and Commerce  
Communications  
Criminology  
Demography  
Economics  
Geography  
History  
Languages, Literature, Linguistics  
Law  
Library Science  
Philosophy  
Political Science  
Psychology  
Religious Studies  
Social Work  
Sociology  
Urban and Regional Studies  
Other

II. Natural Sciences

Life Sciences  
Biological  
Clinical Medical  
Other

Physical & Mathematical Sciences  
Astronomy & Astrophysics  
Chemistry  
Mathematics  
Physics  
Other

Environmental Sciences  
Atmospheric  
Geological  
Biological Oceanography  
Physical Oceanography  
Other

cont'd

FIGURE A-1 (cont'd)

II. Natural Sciences cont'd

- Engineering Sciences
  - Aeronautical & Astronautical
  - Agricultural & Forestry
  - Architectural
  - Bioengineering
  - Chemical
  - Civil & Surveying
  - Electrical (not communications)
  - Engineering Physics
  - Industrial
  - Materials
  - Mechanical
  - Mining
  - Ocean Engineering
  - Other

TABLE A-1FEDERAL EXPENDITURES ON SCIENTIFIC ACTIVITIES IN  
CANADIAN UNIVERSITIES - HUMAN SCIENCES

	<u>1970-71</u>	<u>1974-75</u>	<u>1976-77</u>
	(\$ Million)		
Total	19.2	32.8	43.6
R&D	9.8	18.0	25.0
Contracts	n.a.	1.9	2.5
Grants	n.a.	11.8	17.1
Fellowships	n.a.	4.3	5.3
RSA	9.4	14.8	18.6
Education Support	8.3	10.7	13.9
Other RSA	1.1	4.1	4.7

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

TABLE A-2FEDERAL EXPENDITURES ON SCIENTIFIC ACTIVITIES IN  
CANADIAN UNIVERSITIES - NATURAL SCIENCES

	<u>1970-71</u>	<u>1974-75</u>	<u>1976-77</u>
	(\$ Million)		
Total	123.2	142.9	162.9
R&D	113.7	132.8	149.2
Contracts	4.5	5.8	7.7
Grants	106.6	123.8	138.2
Fellowships	2.6	3.2	3.3
RSA	9.5	10.1	13.6
Education Support	9.3	8.7	11.6
Other RSA	0.2	1.4	2.1

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

TAB A-3

## FEDERAL RESEARCH GRANTS TO UNIVERSITIES (CAUBO)

(\$ 000)

AGENCY	ATL	QUE	ONT	WEST	CAN
1971/1972					
CC	230.	728.	1336.	728.	3022.
NRC	2961.	8134.	22943.	18433.	52471.
MRC	1318.	9241.	9964.	7522.	28045.
OTHFED	1287.	10157.	9055.	6849.	27348.
TOTAL	5796.	28260.	43298.	33532.	110886.
1972/1973					
CC	330.	745.	1504.	640.	3219.
NRC	3727.	11034.	22799.	17678.	55238.
MRC	1245.	11524.	10108.	7910.	30787.
OTHFED	1127.	8468.	10336.	8014.	27945.
TOTAL	6429.	31771.	44747.	34242.	117189.
1973/1974					
CC	342.	1839.	1794.	1025.	5000.
NRC	4324.	11235.	21999.	18150.	55708.
MRC	1355.	11588.	11178.	8214.	32335.
OTHFED	1422.	9759.	14202.	9484.	34867.
TOTAL	7443.	34421.	49173.	36873.	127910.
1974/1975					
CC	423.	2609.	2230.	1122.	6384.
NRC	4519.	13390.	27442.	18542.	63893.
MRC	1672.	13110.	12024.	9186.	35992.
OTHFED	1935.	7989.	14919.	10437.	35280.
TOTAL	8549.	37098.	56615.	39287.	141549.

SOURCE: CAUBO



FEDERAL RESEARCH PAYMENTS TO UNIVERSITIES (FEDSURV)  
(\$000)

AGENCY	ATL	QUE	ONT	WEST	CAN *	NOT ALLOCATED	CAN
1971/1972							
CC	0.	0.	0.	0.	0.	0.	13,819
NRC	0.	0.	0.	0.	0.	0.	64,449
MRC	0.	0.	0.	0.	0.	0.	31,416
OTHFED	0.	0.	0.	0.	0.	0.	41,723
TOTAL	0.	0.	0.	0.	0.	0.	151,407
1972/1973							
CC	622.	3693.	6828.	3011.	14154.	849	15,003
NRC	4193.	12745.	27639.	18224.	62801.	965	63,766
MRC	1223.	10824.	11399.	8367.	31813.	3,449	35,262
OTHFED	0.	0.	0.	0.	0.	0.	42,109
TOTAL	0.	0.	0.	0.	0.	0.	156,140
1973/1974							
CC	887.	4318.	7945.	3232.	16382.	2,448	18,830
NRC	4454.	13146.	27236.	18298.	63134.	1,483	66,617
MRC	1036.	14228.	13615.	9333.	36212.	0.	38,212
OTHFED	4829.	11579.	13387.	11599.	41394.	11,128	52,522
TOTAL	11206.	43271.	62183.	42462.	159122.	15,059	174,181
1974/1975							
CC	802.	4686.	8035.	3613.	17136.	1,715	18,852
NRC	4705.	13762.	28484.	19217.	66168.	43	66,211
MRC	1681.	14323.	14137.	10276.	40417.	0	40,417
OTHFED	4581.	10845.	12175.	18562.	46163.	4,080	50,243
TOTAL	11769.	43616.	62831.	51668.	169884.	5,838	175,723

\* Excludes data that cannot be allocated on a regional basis.  
0. means data not available.

SOURCE: Statistics Canada, Federal Survey (for details, see footnote 1, page 2).

## UNIVERSITY GRADUATE ENROLLMENT (FULL TIME)

SUBJECT	ATL	QUE	ONT	WEST	CAN
1971/1972					
HUM SC	984.	4546.	8526.	4746.	18802.
NAT SC	590.	1747.	4592.	3379.	10308.
HLTH S	36.	943.	486.	348.	1813.
TOTAL	1610.	7236.	13604.	8473.	30923.
1972/1973					
HUM SC	1085.	4781.	8041.	4537.	16444.
NAT SC	632.	1809.	3849.	3036.	9326.
HLTH S	27.	330.	442.	296.	1095.
TOTAL	1741.	6920.	12332.	7869.	28862.
1973/1974					
HUM SC	1116.	4792.	8701.	4450.	19059.
NAT SC	589.	1920.	3803.	2756.	9068.
HLTH S	19.	381.	461.	293.	1154.
TOTAL	1724.	7093.	12965.	7499.	29281.
1974/1975					
HUM SC	1354.	5638.	8995.	4118.	20105.
NAT SC	595.	2139.	3627.	2674.	9035.
HLTH S	42.	456.	479.	324.	1301.
TOTAL	1991.	8233.	13101.	7116.	30441.

SOURCE: Statistics Canada, Education Division

## UNIVERSITY GRADUATE ENROLLMENT (FULL TIME EQUIVALENT)

SUBJECT	ATL	QUE	ONT	WEST	CAN
1971/1972					
HUM SC	1102.	5927.	10494.	5403.	22927.
NAT SC	614.	2083.	4951.	3535.	11182.
HLTH S	36.	1003.	516.	363.	1918.
TOTAL	1752.	9013.	15960.	9302.	36027.
1972/1973					
HUM SC	1227.	6498.	10200.	5211.	23137.
NAT SC	673.	2158.	4282.	3192.	10305.
HLTH S	29.	395.	482.	309.	1215.
TOTAL	1926.	9051.	14964.	8713.	34654.
1973/1974					
HUM SC	1365.	6687.	11028.	5319.	24399.
NAT SC	642.	2301.	4308.	2940.	10191.
HLTH S	22.	455.	504.	314.	1295.
TOTAL	2029.	9443.	15640.	8573.	35885.
1974/1975					
HUM SC	1574.	7463.	11449.	5147.	25633.
NAT SC	645.	2516.	4188.	2882.	10231.
HLTH S	47.	512.	518.	340.	1418.
TOTAL	2266.	10490.	16156.	8370.	37282.

SOURCE: Statistics Canada, Education Division  
See Table A-5



Expenditures 1974-75  
(8 million)

	Scientific Activities			Current Expenditures				Payments to Can. Universities				Total
	Total	Capital	Current	R&D	R.S.A.	(Ed. Supp.)	(% R&D)	R&D*	R.S.A.	(Ed. Supp.)	(% R&D)	
Whole Govt	1,352.4	76.9 (5.7) <sup>1</sup>	1,275.5	808.6	466.9	(29.7)	(6.4) <sup>2</sup>	150.8 (85.9) <sup>3</sup>	24.8 (14.1) <sup>3</sup>	(19.4) (11.0)	175.6	
Depts	1,117.8	74.1 (6.6)	1,043.7	618.6	425.1	(12.0)	(2.8)	41.8 (83.3)	8.4 (16.7)	(5.2) (10.4)	50.2	
Res. Councils	234.6	2.8 (1.2)	231.8	190.0	41.8	(17.7)	(42.3)	109.0 (86.9)	16.4 (13.1)	(14.2) (11.3)	125.4	
C.C.	25.1	0 (0)	25.1	11.3	13.8	(9.6)	(69.6)	10.5 (55.8)	8.3 (44.2)	(6.4) (34.0)	18.8	
M.R.C.	43.8	0 (0)	43.8	42.2	1.6	(1.2)	(68.7)	39.0 (96.5)	1.4 (3.5)	(1.1) (2.7)	40.4	
N.R.C.	165.7	2.8 (1.7)	162.9	136.5	26.4	(7.0)	(26.5)	59.5 (89.9)	6.7 (10.1)	(6.7) (10.1)	66.2	
(O.G.S.)	70.6	0	70.6	62.7	7.8	(7.0)	(89.7)	59.3 (89.8)	6.7 (10.2)	(6.7) (10.2)	66.0	
* Grants, Contract + Fellowships												
Depts	82.6	96.4	81.8	76.5	91.0	(2.6)		27.7	33.9	(21.0)		
Res. Councils	17.3	3.6	18.2	23.5	9.0	(3.8)		72.3	66.1	(57.3)		
C.C.	1.9	0	2.0	1.4	3.0	(2.1)		7.0	33.5	(25.8)		
M.R.C.	3.2	0	3.4	5.2	0.3	(0.2)		25.9	5.6	(4.4)		
N.R.C.	12.2	3.6	12.8	16.9	5.7	(1.5)		39.4	27.0	(27.0)		
(O.G.S.)	5.2	0	5.5	7.8	1.8	(1.5)		39.3	27.0	(27.0)		

1. % on Capital Expenditures
2. % Ed. Supp. over R.S.A.
3. % of Losses on Total.

\* % Payments



↓

Payments to other Extram. Perform.

R & D	R.S.A.	(Sd. Supp.)	Total
220.2 (81.6) <sup>3</sup>	49.6 (18.4) <sup>3</sup>	(8.5)(3.1) <sup>3</sup>	269.8
196.8 (81.8)	43.7 (18.2)	(5.0)(2.1)	240.5
23.4 (79.9)	5.9 (20.1)	(3.5)(11.9)	29.3
⊕ (⊕)	4.5 (100.0)	(3.2)(71.1)	4.5
2.4 (100.0)	⊕ (⊕)	⊕ (⊕)	2.4
21.0 (93.7)	1.4 (6.3)	0.3 (1.3)	22.4
2.6 (74.3)	0.9 (25.7)	0.3 (8.6)	3.5

↓

Total Payments to Extram. Perform.

R & D	R.S.A.	(Sd. Supp.)	Total
371.0	74.4	(27.9)	445.4
228.6	52.1	(10.2)	290.7
132.4	22.3	(17.7)	154.7
10.5	12.8	(9.6)	23.3
41.4	1.4	(1.1)	42.8
80.5	8.1	(7.0)	88.6
61.9	17.6	(7.0)	69.5

89.4	88.1	(10.1)
10.6	11.9	(7.1)
⊕	9.1	(6.5)
1.1	⊕	(⊕)
9.5	2.8	(0.6)
1.2	1.8	(0.6)

40.6	33.3	(26.1)
17.5	16.1	(10.0)
70.4	73.5	(63.7)
100.0	64.8	(50.0)
94.2	160.0	(78.6)
73.9	82.7	(82.7)
95.8	88.1	(88.1)

to Canadian Universities

↑

## UNIVERSITY FACULTY

SUBJECT	ATL	QUE	ONT	WEST	CAN
1971/1972					
HUM SC	1745.	3071.	6096.	4251.	15163.
NAT SC	837.	1782.	2875.	2231.	7725.
HLTH S	281.	886.	1293.	938.	3398.
TOTAL	2863.	5739.	10264.	7420.	26286.
1972/1973					
HUM SC	1831.	3065.	6373.	4204.	15473.
NAT SC	864.	1887.	2944.	2235.	7930.
HLTH S	316.	827.	1376.	932.	3451.
TOTAL	3011.	5779.	10693.	7371.	26854.
1973/1974					
HUM SC	1913.	3213.	6479.	4253.	15858.
NAT SC	891.	2021.	2945.	2285.	8142.
HLTH S	330.	891.	1433.	1077.	3731.
TOTAL	3134.	6125.	10857.	7615.	27731.
1974/1975					
HUM SC	1976.	3426.	7059.	4270.	16731.
NAT SC	948.	2058.	3265.	2254.	8525.
HLTH S	378.	942.	1543.	1095.	3958.
TOTAL	3302.	6426.	11867.	7619.	29214.

SOURCE: See Table A-5

## MASTERS AND PHD GRADUATES

SUBJECT	ATL	QUE	ONT	WEST	CAN
1971/1972					
HUM SC	369.	1451.	4418.	1749.	7987.
NAT SC	233.	564.	1745.	1010.	3552.
HLTH S	11.	144.	176.	112.	443.
TOTAL	613.	2159.	6339.	2871.	11982.
1972/1973					
HUM SC	469.	1765.	4600.	1712.	8546.
NAT SC	208.	684.	1581.	1042.	3515.
HLTH S	19.	198.	179.	102.	498.
TOTAL	696.	2647.	6360.	2856.	12559.
1973/1974					
HUM SC	0.	0.	0.	0.	0.
NAT SC	0.	0.	0.	0.	0.
HLTH S	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.
1974/1975					
HUM SC	0.	0.	0.	0.	0.
NAT SC	0.	0.	0.	0.	0.
HLTH S	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.

SOURCE: Statistics Canada, Education Division  
See Table A-5

TABLE A-9

FULL-TIME ENROLLMENT, MEDICINE, BACHELOR AND  
FIRST PROFESSIONAL DEGREE, BY REGION

	<u>Atl</u>	<u>Que</u>	<u>Ont</u>	<u>West</u>	<u>Can</u>
1970-71	370	2045	1720	1194	5329
1971-72	371	1737	1883	1308	5299
1972-73	838	2280	2107	1577	6802
1973-74	689	2497	2218	1660	7064
1974-75	487	2688	2254	1809	7238

SOURCE: Statistics Canada, Education Division  
1970-71 and 1971-72; published in Cat. No.  
81-204. Later years: from computer printouts.



APPENDIX B  
ANALYTICAL DATA

## RESEARCH GRANTS (CAUBO) PER GRAD STUDENT [FT]

AGENCY	ATL	QUE	ONT	WEST	CAN
1971/1972					
CC	234.	160.	157.	153.	161.
NRC	5019.	4656.	4996.	5455.	5090.
MRC	36611.	9800.	20502.	21615.	15469.
OTHFED	799.	1404.	666.	808.	884.
TOTAL	3600.	3905.	3183.	3958.	3586.
1972/1973					
CC	304.	156.	187.	141.	175.
NRC	5897.	6100.	5923.	5823.	5923.
MRC	46111.	34921.	22869.	26723.	28116.
OTHFED	647.	1224.	838.	1018.	968.
TOTAL	3693.	4591.	3629.	4352.	4060.
1973/1974					
CC	306.	384.	206.	230.	262.
NRC	7341.	5852.	5785.	6586.	6143.
MRC	71316.	30415.	24247.	28034.	28020.
OTHFED	825.	1376.	1095.	1265.	1191.
TOTAL	4317.	4853.	3793.	4917.	4368.
1974/1975					
CC	312.	463.	248.	272.	318.
NRC	7595.	6260.	7566.	6934.	7072.
MRC	39810.	28750.	25102.	28352.	27665.
OTHFED	972.	970.	1139.	1467.	1159.
TOTAL	4294.	4506.	4321.	5521.	4650.

SOURCE: TABLE A-3 and TABLE A-5

## RESEARCH GRANTS (FEDSURV) PER GRAD STUDENT (FT)

AGENCY	ATL	QUE	ONT	WEST	CAN*
1971/1972					
CC	0.	0.	0.	0.	0.
NRC	0.	0.	0.	0.	0.
MRC	0.	0.	0.	0.	0.
OTHFED	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.
1972/1973					
CC	573.	772.	849.	664.	767.
NRC	6634.	7045.	7181.	6003.	6734.
MRC	45296.	32800.	25790.	28267.	29053.
OTHFED	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.
1973/1974					
CC	795.	901.	913.	726.	860.
NRC	7562.	6847.	7162.	6639.	6962.
MRC	54526.	37344.	29534.	31853.	33113.
OTHFED	2801.	1632.	1033.	1547.	1414.
TOTAL	6500.	6101.	4796.	5662.	5434.
1974/1975					
CC	592.	831.	893.	877.	852.
NRC	7908.	6434.	7853.	7187.	7324.
MRC	40024.	31410.	29514.	31716.	31066.
OTHFED	2301.	1317.	929.	2608.	1516.
TOTAL	5911.	5298.	4796.	7261.	5581.

\* Weighted average of four regions, excluding funds that cannot be allocated on a regional basis.

SOURCE: Table A-4 and Table A-5

## RESEARCH GRANTS (CAUBD) PER GRAD STUDENT (FTE)

AGENCY	ATL	QUE	ONT	WEST	CAN
1971/1972					
CC	209.	123.	127.	135.	132.
NRC	4825.	3906.	4634.	5214.	4692.
MRC	36275.	9213.	19323.	20703.	14619.
OTHFED	734.	1127.	567.	736.	759.
TOTAL	3308.	3135.	2713.	3605.	3078.
1972/1973					
CC	269.	115.	147.	123.	139.
NRC	5535.	5114.	5324.	5538.	5360.
MRC	43430.	29199.	20971.	25571.	25346.
OTHFED	585.	936.	691.	920.	806.
TOTAL	3338.	3510.	2990.	3930.	3382.
1973/1974					
CC	251.	275.	163.	193.	205.
NRC	6732.	4883.	5107.	6174.	5467.
MRC	62538.	25468.	22164.	26131.	24963.
OTHFED	701.	1034.	897.	1106.	972.
TOTAL	3668.	3645.	3104.	4301.	3564.
1974/1975					
CC	269.	350.	195.	218.	249.
NRC	7003.	5323.	6552.	6434.	6245.
MRC	35574.	25605.	23197.	26991.	25388.
OTHFED	854.	762.	923.	1247.	946.
TOTAL	3772.	3536.	3504.	4594.	3797.

SOURCE: TABLE A-3 and TABLE A-6

## RESEARCH GRANTS (FEDSURV) PER GRAD STUDENT (FTE)

AGENCY	ATL	QUE	DNT	WEST	CAN*
1971/1972					
CC	0.	0.	0.	0.	0.
NRC	0.	0.	0.	0.	0.
MRC	0.	0.	0.	0.	0.
OTHFED	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.
1972/1973					
CC	507.	568.	669.	578.	612.
NRC	6227.	5907.	6454.	5709.	6094.
MRC	42663.	27426.	23549.	27048.	26191.
OTHFED	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.
1973/1974					
CC	650.	646.	720.	608.	671.
NRC	6934.	5714.	6322.	6225.	6195.
MRC	47815.	31270.	26996.	29691.	29500.
OTHFED	2380.	1226.	845.	1353.	1154.
TOTAL	5523.	4582.	3926.	4953.	4434.
1974/1975					
CC	510.	628.	702.	702.	669.
NRC	7291.	5471.	6801.	6668.	6467.
MRC	35766.	27975.	27274.	30194.	28510.
OTHFED	2021.	1034.	754.	2218.	1238.
TOTAL	5193.	4158.	3889.	6173.	4557.

\* See Table B-2

SOURCE: Table A-4 and Table A-6

TABLE F (1)

## RESEARCH GRANTS (CAUBO) PER PROFESSOR

AGENCY	ATL	QUE	ONT	WEST	CAN
1971/1972					
CC	132.	237.	219.	171.	199.
NRC	3538.	4565.	7980.	8262.	6792.
MRC	4690.	10430.	7706.	8019.	8253.
OTHFED	450.	1770.	882.	923.	1040.
TOTAL	2024.	4924.	4218.	4519.	4218.
1972/1973					
CC	180.	243.	236.	152.	208.
NRC	4314.	5847.	7744.	7910.	6966.
MRC	3940.	13935.	7346.	8487.	8921.
OTHFED	374.	1465.	967.	1087.	1041.
TOTAL	2135.	5498.	4185.	4646.	4364.
1973/1974					
CC	179.	572.	277.	241.	315.
NRC	4853.	5559.	7470.	7943.	6842.
MRC	4106.	13006.	7800.	7627.	8667.
OTHFED	454.	1593.	1308.	1245.	1257.
TOTAL	2375.	5620.	4529.	4842.	4613.
1974/1975					
CC	214.	762.	316.	263.	382.
NRC	4767.	6506.	8405.	8226.	7495.
MRC	4423.	13917.	7793.	8389.	9093.
OTHFED	586.	1243.	1257.	1370.	1208.
TOTAL	2589.	5773.	4771.	5156.	4845.

SOURCE: Tables A-3 and A-7

TABLE B- (II)

## RESEARCH GRANTS (FEDSURV) PER PROFESSOR

AGENCY	ATL	QUE	ONT	WEST	CAN
1971/1972					
CC	0.	0.	0.	0.	0.
NRC	0.	0.	0.	0.	0.
MRC	0.	0.	0.	0.	0.
OTHFED	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.
1972/1973					
CC	340.	1205.	1071.	716.	915.
NRC	4853.	6754.	9388.	8154.	7919.
MRC	3870.	13088.	8284.	8977.	9218.
OTHFED	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.
1973/1974					
CC	464.	1344.	1226.	760.	1033.
NRC	4999.	6505.	9248.	8008.	7754.
MRC	3139.	15969.	9501.	8666.	10242.
OTHFED	1541.	1890.	1233.	1523.	1493.
TOTAL	3576.	7065.	5727.	5576.	5738.
1974/1975					
CC	406.	1368.	1138.	846.	1024.
NRC	4963.	6687.	8724.	8526.	7762.
MRC	4447.	15205.	9162.	9384.	10211.
OTHFED	1387.	1688.	1026.	2436.	1580.
TOTAL	3564.	6787.	5295.	6781.	5815.

SOURCE: Table A-4 and Table A-8

RESEARCH GRANTS (CAUBO) PER MASTERS AND PHD GRAD

AGENCY	ATL	QUE	ONT	WEST	CAN
1971/1972					
CC	623.	502.	302.	416.	378.
NRC	12708.	14422.	13148.	18250.	14772.
MRC	119818.	64174.	56614.	67161.	63307.
OTHFED	2100.	4704.	1428.	2386.	2282.
TOTAL	9455.	13089.	6830.	11680.	9254.
1972/1973					
CC	704.	422.	327.	374.	377.
NRC	17918.	16132.	14421.	16965.	15715.
MRC	65526.	58202.	56469.	77549.	61821.
OTHFED	1619.	3199.	1625.	2806.	2225.
TOTAL	9237.	12003.	7036.	11989.	9331.
1973/1974					
CC	0.	0.	0.	0.	0.
NRC	0.	0.	0.	0.	0.
MRC	0.	0.	0.	0.	0.
OTHFED	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.
1974/1975					
CC	0.	0.	0.	0.	0.
NRC	0.	0.	0.	0.	0.
MRC	0.	0.	0.	0.	0.
OTHFED	0.	0.	0.	0.	0.
TOTAL	0.	0.	0.	0.	0.

SOURCE: Table A-3 and Table A-8



## PERCENT DISTRIBUTION OF GRANTS (CAUSD)

AGENCY	ATL	QUE	ONT	WEST	CAN
1971/1972					
CC	7.6	24.1	44.2	24.1	100.0
NRC	5.6	15.5	43.7	35.1	100.0
MRC	4.7	33.0	35.5	26.8	100.0
OTHFED	4.7	37.1	33.1	25.0	100.0
TOTAL	5.2	25.5	39.0	30.2	100.0
1972/1973					
CC	10.3	23.1	46.7	19.9	100.0
NRC	6.7	20.0	41.3	32.0	100.0
MRC	4.0	37.4	32.8	25.7	100.0
OTHFED	4.0	30.3	37.0	28.7	100.0
TOTAL	5.5	27.1	38.2	29.2	100.0
1973/1974					
CC	6.8	36.8	35.9	20.5	100.0
NRC	7.8	20.2	39.5	32.6	100.0
MRC	4.2	35.8	34.6	25.4	100.0
OTHFED	4.1	28.0	40.7	27.2	100.0
TOTAL	5.8	26.9	38.4	28.8	100.0
1974/1975					
CC	6.6	40.9	34.9	17.6	100.0
NRC	7.1	21.0	42.9	29.0	100.0
MRC	4.6	36.4	33.4	25.5	100.0
OTHFED	5.5	22.6	42.3	29.6	100.0
TOTAL	6.0	26.2	40.0	27.8	100.0

SOURCE: TABLE A-3

TABLE B-8

## PERCENT DISTRIBUTION OF GRANTS (FEDSURU)

AGENCY	ATL	QUE	ONT	WEST	CAN
1971/1972					
CC	0.0	0.0	0.0	0.0	0.0
NRC	0.0	0.0	0.0	0.0	0.0
MRC	0.0	0.0	0.0	0.0	0.0
OTHFED	0.0	0.0	0.0	0.0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0
1972/1973					
CC	4.4	26.1	48.2	21.3	100.0
NRC	6.7	20.3	44.0	29.0	100.0
MRC	3.8	34.0	35.8	26.3	100.0
OTHFED	0.0	0.0	0.0	0.0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0
1973/1974					
CC	5.4	26.4	48.5	19.7	100.0
NRC	7.1	20.8	43.1	29.0	100.0
MRC	2.7	37.2	35.6	24.4	100.0
OTHFED	11.7	28.0	32.3	28.0	100.0
TOTAL	7.0	27.2	39.1	26.7	100.0
1974/1975					
CC	4.7	27.3	46.9	21.1	100.0
NRC	7.1	20.8	43.0	29.0	100.0
MRC	4.2	35.4	35.0	25.4	100.0
OTHFED	9.9	23.5	26.4	40.2	100.0
TOTAL	6.9	25.7	37.0	30.4	100.0

SOURCE: Table A-4

## PERCENT DISTRIBUTION OF GRADUATE ENROLLMENT [FT]

SUBJECT	ATL	QUE	ONT	NEST	CAN
1971/1972					
HUM SC	5.2	24.2	45.3	25.2	100.0
NAT SC	5.7	16.9	44.5	32.8	100.0
HLTH S	2.0	52.0	26.8	19.2	100.0
TOTAL	5.2	23.4	44.0	27.4	100.0
1972/1973					
HUM SC	5.9	25.9	43.6	24.6	100.0
NAT SC	6.8	19.4	41.3	32.6	100.0
HLTH S	2.5	30.1	40.4	27.0	100.0
TOTAL	6.0	24.0	42.7	27.3	100.0
1973/1974					
HUM SC	5.9	25.1	45.7	23.3	100.0
NAT SC	6.5	21.2	41.9	30.4	100.0
HLTH S	1.6	33.0	39.9	25.4	100.0
TOTAL	5.9	24.2	44.3	25.6	100.0
1974/1975					
HUM SC	6.7	28.0	44.7	20.5	100.0
NAT SC	6.6	23.7	40.1	29.6	100.0
HLTH S	3.2	35.0	36.8	24.9	100.0
TOTAL	6.5	27.0	43.0	23.4	100.0

SOURCE: Table A-5

TABLE B-10

## PERCENT DISTRIBUTION OF GRADUATE ENROLLMENT[FTE]

SUBJECT	ATL	QUE	ONT	WEST	CAN
1971/1972					
HUM SC	4.8	25.9	45.8	23.6	100.0
NAT SC	5.5	16.6	44.3	31.6	100.0
HLTH S	1.9	52.3	26.9	18.9	100.0
TOTAL	4.9	25.0	44.3	25.8	100.0
1972/1973					
HUM SC	5.3	28.1	44.1	22.5	100.0
NAT SC	6.5	20.9	41.6	31.0	100.0
HLTH S	2.4	32.5	39.7	25.5	100.0
TOTAL	5.6	26.1	43.2	25.1	100.0
1973/1974					
HUM SC	5.6	27.4	45.2	21.8	100.0
NAT SC	6.3	22.6	42.3	28.8	100.0
HLTH S	1.7	35.1	38.9	24.3	100.0
TOTAL	5.7	26.3	44.1	23.9	100.0
1974/1975					
HUM SC	6.1	29.1	44.7	20.1	100.0
NAT SC	6.3	24.6	40.9	28.2	100.0
HLTH S	3.3	36.1	36.6	24.0	100.0
TOTAL	6.1	28.1	43.3	22.4	100.0

SOURCE: Table A-6

## PERCENT DISTRIBUTION OF PROFESSORS

SUBJECT	ATL	QUE	ONT	WEST	CAN
1971/1972					
HUM SC	11.5	20.3	40.2	28.0	100.0
NAT SC	10.8	23.1	37.2	28.9	100.0
HLTH S	8.3	26.1	38.1	27.6	100.0
TOTAL	10.9	21.8	39.0	28.2	100.0
1972/1973					
HUM SC	11.8	19.8	41.2	27.2	100.0
NAT SC	10.9	23.8	37.1	28.2	100.0
HLTH S	9.2	24.0	39.9	27.0	100.0
TOTAL	11.2	21.5	39.8	27.4	100.0
1973/1974					
HUM SC	12.1	20.3	40.9	26.8	100.0
NAT SC	10.9	24.8	36.2	28.1	100.0
HLTH S	8.8	23.9	38.4	28.9	100.0
TOTAL	11.3	22.1	39.2	27.5	100.0
1974/1975					
HUM SC	11.8	20.5	42.2	25.5	100.0
NAT SC	11.1	24.1	38.3	26.4	100.0
HLTH S	9.6	23.8	39.0	27.7	100.0
TOTAL	11.3	22.0	40.6	26.1	100.0

SOURCE: Table A-11

## PERCENT DISTRIBUTION OF MASTERS AND PHD GRADS

SUBJECT	ATL	QUE	ONT	WEST	CAN
1971/1972					
HUM SC	4.6	18.2	55.3	21.9	100.0
NAT SC	6.6	15.9	49.1	28.4	100.0
HLTH S	2.5	32.5	39.7	25.3	100.0
TOTAL	5.1	18.0	52.9	24.0	100.0
1972/1973					
HUM SC	5.5	20.7	53.8	20.0	100.0
NAT SC	5.9	19.5	45.0	29.6	100.0
HLTH S	3.8	39.8	35.9	20.5	100.0
TOTAL	5.5	21.1	50.6	22.7	100.0
1973/1974					
HUM SC	0.0	0.0	0.0	0.0	0.0
NAT SC	0.0	0.0	0.0	0.0	0.0
HLTH S	0.0	0.0	0.0	0.0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0
1974/1975					
HUM SC	0.0	0.0	0.0	0.0	0.0
NAT SC	0.0	0.0	0.0	0.0	0.0
HLTH S	0.0	0.0	0.0	0.0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.0

SOURCE: Table A-8

TABLE B-13

FACULTY AND GRADUATE ENROLLMENT PER  
10,000 POPULATION, BY REGION, 1973-74

	<u>Atl.</u>	<u>Que</u>	<u>Ont</u>	<u>West</u>	<u>Can</u>
	(Per 10,000 Population)				
<u>Faculty</u>					
Hum. & Soc. Sci.	9.0	5.2	8.0	7.0	7.1
Nat. Sci.	4.2	3.3	3.6	3.8	3.6
Health Sci.	1.6	1.5	1.8	1.8	1.7
TOTAL	14.7	11.9	13.4	12.5	12.4
<u>Grad. Enrollment (FT)</u>					
Hum. & Soc. Sci.	5.2	7.8	10.8	7.3	8.5
Nat. Sci.	2.8	3.1	4.7	4.5	4.0
Health Sci.	0.1	0.6	0.6	0.5	0.5
TOTAL	8.1	11.6	16.0	12.3	13.0
<u>Grad. Enrollment (FTE)</u>					
Hum. & Soc. Sci.	6.4	10.9	13.7	8.7	10.9
Nat. Sci.	3.0	3.8	5.3	4.8	4.5
Health Sci.	0.1	0.7	0.6	0.5	0.6
TOTAL	9.5	15.4	19.6	14.1	16.0

SOURCE: Tables A-5, A-6 and A-7; and Population intercensal estimates

TABLE B-14

REGIONAL RATIOS OF GRADUATE STUDENTS TO  
FACULTY, BY FIELD OF STUDY, 1973-74

	<u>Atl</u>	<u>Que</u>	<u>Ont</u>	<u>West</u>	<u>Can</u>
	(Students Per Prof.)				
<u>Full-Time Enrollment</u>					
Hum. & Soc. Sci.	.58	1.49	1.34	1.05	1.20
Nat. Sci.	.66	.95	1.29	1.21	1.11
Health Sci.	*	.43	.32	.27	.31
TOTAL	.55	1.15	1.19	.98	1.06
<u>Full-Time Equivalent Enrl't</u>					
Hum. & Soc. Sci.	.71	2.08	1.70	1.25	1.54
Nat. Sci.	.72	1.14	1.46	1.29	1.25
Health Sci.	*	.51	.35	.29	.35
TOTAL	.65	1.54	1.46	1.12	1.29

\*Too volatile because of small numbers involved

SOURCE: Based on data in Tables A-5, A-6, and A-7



TABLE B-15

DISTRIBUTION OF FULL-TIME ENROLLMENT, MEDICINE, BACHELOR  
AND FIRST PROFESSIONAL DEGREE, BY REGION

	<u>Atl</u>	<u>Que</u>	<u>Ont</u>	<u>West</u>	<u>Can</u>
	(Percentage Distribution)				
1970-71	6.9	38.4	32.3	22.4	100.0
1971-72	7.0	32.8	35.5	24.7	100.0
1972-73	12.3	33.5	31.0	23.2	100.0
1973-74	9.8	35.4	31.4	23.5	100.0
1974-75	6.7	37.1	31.1	25.0	100.0

SOURCE: Table A-9

APPENDIX C

Analytical Tables Based on NRC Records

TABLE C-1

THE CHANGE IN THE RELATIVE IMPORTANCE OF POSTGRADUATE  
AND POSTDOCTORAL ASSISTANCE BY NRC

		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76 P
Total Expenditures from NRC Vote	\$M	64.79	67.54	66.54	68.59	69.29	78.99
HQM Training and Development:							
Postgraduates	\$M	8.23	8.10	7.10	6.90	7.02	8.53
Postdoctoral (1)	\$M	1.19	1.59	1.91	2.39	2.73	3.27
TOTAL	\$M	9.42	9.69	9.01	9.29	9.75	11.80
Funds to Postgraduates as Percent of Vote	(Percent)	12.7	12.0	10.7	10.1	10.1	10.8
Funds to Postdoctoral as Percent of Vote	(Percent)	1.8	2.3	2.8	3.4	3.9	4.1
Combined as Percent of Vote	(Percent)	14.5	14.3	13.5	13.5	14.0	14.9

(1) Including senior level awards.

P Preliminary

SOURCE: Based on NRC special tabulations

Note: The data in these tables, while approximately corresponding to data provided in the Statistics Canada Survey, have not been reconciled. The analytical points remain valid.

TABLE C-2

THE CHANGE IN THE RELATIVE IMPORTANCE OF  
"PEER ADJUDICATED GRANTS" BY NRC

		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76 P
Total Expenditures from NRC Vote	\$M	64.79	67.54	66.54	68.59	69.29	78.99
Total Peer Adjudicated Grants	\$M	48.42	49.16	48.78	50.98	50.88	59.09
of which to							
Postgraduate Assistants	\$M	9.07	8.89	8.03	8.05	7.85	9.07
Postdoctoral Assistants	\$M	4.26	4.98	5.42	5.73	5.84	6.72
Peer Adjudicated Grants as Percent of Vote	(Percent)	74.7	72.8	73.3	74.3	73.4	74.8
of which							
Postgraduate Assistants	(Percent)	14.0	13.2	12.1	11.7	11.3	11.5
Postdoctoral Assistants	(Percent)	6.6	7.4	8.1	8.4	8.4	8.5

P Preliminary

SOURCE: See Table C-1

TABLE C-3

SUMMARY OF CHANGES IN THE RELATIVE IMPORTANCE OF  
PEER ADJUDICATED AND HQM GRANTS

		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76 P
		(As Percentage of NRC Parliamentary Vote)					
HQM Training and Development	(Percent)	14.5	14.3	13.5	13.5	14.1	14.9
Peer Adjudicated Grants	(Percent)	74.7	72.8	73.3	74.3	73.4	74.8
All Other Grants	(Percent)	10.8	7.5	13.2	12.2	12.5	10.3
Total NRC Vote	(Percent)	100.0	100.0	100.0	100.0	100.0	100.0
Direct and Indirect Postgraduate (1)	(Percent)	26.7	25.2	22.8	21.8	21.4	22.3
Direct and Indirect Postdoctoral	(Percent)	8.4	9.7	10.9	11.8	12.4	12.6
Combined Postgraduate and Postdoctoral	(Percent)	35.1	34.9	33.7	33.6	33.8	34.9

(1) Includes HQM training and development awards, and that portion of peer adjudicated grants that is paid to postgraduate and postdoctoral assistants in the form of salaries.

P Preliminary

SOURCE: See Table C-1

TABLE C-4

HQM GRANTS, AND SALARY PORTION OF PEER ADJUDICATED GRANTS,  
PER POSTGRADUATE AND PER POSTDOCTORATE

		1970-71	1971-72	1972-73	1973-74	1974-75	1975-75P
HQM Grants to Postgraduates	\$M	8.23	8.10	7.10	6.90	7.02	8.53
No. of Postgraduates		2337	2122	2015	1724	1698	1760
Average Award per Postgraduate	\$	3522	3817	3523	4002	4134	4847
HQM Grants to Postdoctorates	\$M	1.13	1.27	1.57	1.94	2.15	2.40
No. of Postdoctorates		205	217	248	256	279	245
Average Award per Postdoctorate	\$	5512	5853	6361	7578	7706	9796
Salaries (1) to Postgraduates	\$M	9.07	8.89	8.03	8.05	7.85	9.07
No. of Postgraduates		3110	2960	2685	2550	2491	2122
Average Salary per Postgraduate	\$	2916	3003	2991	3157	3151	4274
Salaries (1) to Postdoctorates	\$M	4.25	4.98	5.42	5.73	5.84	6.72
No. of Postdoctorates		692	786	751	737	729	748
Average Salary per Postdoctorate	\$	6156	6336	7217	7775	8011	8984

(1) Paid out of peer adjudicated and developmental grants.

P Preliminary estimates

SOURCE: See Table C-1

APPENDIX D

SUMMARY OF MRC EXPENDITURES BY REGION,

BASED ON MRC RECORDS

TABLE D-1

MRC, REGIONAL DISTRIBUTION OF EXPENDITURES ON SCIENTIFIC  
ACTIVITIES IN CANADIAN UNIVERSITIES

	<u>Atlantic</u>		<u>Quebec</u>		<u>Ontario</u>		<u>West</u>		<u>Canada</u>
	(\$000)	%	(\$000)	%	(\$000)	%	(\$000)	%	(\$000)
1968-69	840	3.2	10,132	38.9	8,971	34.5	6,074	23.3	26,016
1969-70	1,129	3.8	11,413	38.7	9,813	33.3	7,109	24.9	29,463
1970-71	1,160	3.6	11,532	35.9	10,728	33.3	8,745	27.1	32,165
1971-72	1,357	4.0	12,297	36.7	11,703	34.9	8,181	24.4	33,538
1972-73	1,227	3.5	12,932	36.8	12,551	35.7	8,470	24.1	35,179
1973-74	1,422	3.7	13,961	36.7	13,470	35.4	9,235	24.2	38,087
1974-75	1,673	4.2	14,208	35.3	14,117	35.1	10,248	25.5	40,246
1975-76	2,122	4.7	15,914	35.5	16,092	35.9	10,732	23.9	44,860

Note: Excludes "non-institutional", and "outside Canada"

SOURCE: Medical Research Council Tabulations, based on MRC records and definition



