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UNIVERSITY ENROLMENT PROJECTIONS
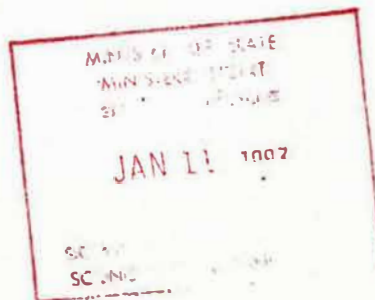to 1985-86

working paper

document de travail

UNIVERSITY ENROLMENT PROJECTIONS
to 1985-86

MOSST,
Forecasting Division,.
June, 1978

(This paper is based on the Education Block of the MOSST HQM
Data Base and Demand Model)

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Summary and Conclusions

1. The purpose of the paper is to delineate the possible dimensions of changes in university enrolments to 1985-86, as an essential factor in determining the demand for university teachers. The demand implications for the latter will be reported in another paper.

2. A new method of projection has been developed to serve the purposes of the MOSST HQM demand model. Projections available from other studies could not be adapted, because they were either designed for a different purpose and, did not have therefore, the coverage of enrolment required, or tended to rely too closely on the movement of a single demographic age group that is not representative of the demographic trends affecting future enrolments.

3. The enrolment projection methodology developed in connection with the MOSST HQM demand model is based on the recognition of the fact that there are various categories of enrolment, distinguished by sex, and by status as to type of degree sought and concentration of time devoted, that differ significantly in participation rate characteristics. :

4. It is also based on the explicit recognition of the fact that significant proportions of the enrolment are not within

the 18-24 age group. The extent of the proportion over 24 varies by category of enrolment. Traditional practice has been to use an age cohort, such as the number of births lagged by 18 years, or the 18-24 age group, as the basic demographic determinant in projections.

5. Three scenarios are developed: the first is based on the assumption that male 1976-77 participation rates remain constant to 1985-86; the second assumes that, based on preliminary actual indications, most of the male participation rates will decline for a couple of years, and then remain constant at that level to 1985-86; the third assumes that the male rates will continue to decline from 1976-77 to 1985-86. In all three scenarios, female participation rates are assumed to have ceased to increase and will remain constant to 1985-86.

6. The detailed projections show that there is, relatively, the least growth, or the greatest decline, in the enrolment of undergraduates, because of the underlying demographic factors. Nevertheless, for any given participation rate assumption, the implied changes to 1985-86 would be biased downward in all cases if the projections were to be based on the 18-24 population.

7.   Under Scenario III, incorporating the lowest participation
rate assumptions, full-time equivalent university-level
enrolment would decline from 500,000 in 1976-77 to 465,000 in
1985-86. The implied average annual rate of decline over the nine-year period
is less than one percent, which is attained only by assuming
substantial declines in male participation rates (almost 30
percent in the case of full-time undergraduates), and no
further growth in female rates.

8.   One of the findings is that, given the composition of
enrolment as it has been evolving since the beginning of the
1970s, projections to 1985 using any assumption regarding
participation rates would result in a downward bias if they
relied on a restrictive age cohort, such as the 18-24 population,
rather than using the entire relevant demographic age ranges.

9.   The main conclusions are that over the years to 1985-86,
there appears to remain a considerable amount of demographic
pressure on enrolments that should not be ignored or under-
estimated; that this arises mainly from enrolment changes for
females; and that the proportion of females in total enrolment,
therefore, will continue to rise.

Introduction

The Canadian R&D capacity, especially in the area of basic research, has largely been a function of the stock of university teachers. In the past, the increases in the stock of teachers have resulted from increases in student enrolment. The current slowdown in enrolments, and the anticipated declines in the traditional university-age population, raise the question of the impact of such changes on the demand for university teachers, and thus on an important segment of Canada's research capacity. In order to develop measures to maintain this capacity, it is necessary to quantify the dimensions of the task. An important step in this is the estimation of the changes in the demand for university teachers as a consequence of changes in the number of students. It is the object of this paper to provide estimates of trends in student enrolments, for the purpose of assessing the possible trends in the demand for teachers. The implications regarding the demand for teachers will be reported in another paper.

To carry out the work on this part of the HQM demand model, it was necessary to develop a methodology that was consistent with the underlying requirements of the model. For this reason, the approach described here is an innovative one. Existing forecasts, and traditional projection approaches

were found to have been designed for purposes other than the present one, and could not be readily adapted[1].

The projections presented here are neither predictions nor forecasts, but model simulations that are conditional on specific assumptions. Their main use is in measuring the implications of various eventualities in a more systematic and internally-consistent fashion.

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[1]See the Technical Notes in the Appendix for further discussion.

Since the beginning of the 1970s, university enrolments have undergone a number of significant changes:

- a considerable slowdown in the growth of male undergraduate full-time enrolment;

- an expansion in female full-time undergraduate enrolment;

- continued expansion of part-time undergraduate and graduate enrolment, both male and female;

- in full-time graduate enrolment, a decline for males but a sharp rise for females.

Also, community colleges became a significant institutional alternative to offer university-level education, especially in Quebec. University-level "transfer" students currently amount to some 15 percent of total university-level enrolment. Table 1 summarizes the recent levels and composition of university and community college enrolments (on a full-time equivalent basis). Further details on the recent and current enrolment picture are provided in Appendix Table B-1.

TABLE 1

SUMMARY OF UNIVERSITY-LEVEL ENROLMENT(FTE)(a)
1972-73 TO 1976-77

	UNIVERSITY UNDERGRAD (FTE)(a)	UNIVERSITY GRADUATE (FTE)(a)	TOTAL UNIVERSITY (FTE)(a)	UNIVERSITY TRANSFER (FT)(b)	TOTAL UNIVERSITY LEVEL (FTE)(a)
1972-73	307,737	45,699	353,436	63,219	416,655
1973-74	323,297	46,552	369,849	68,523	438,372
1974-75	342,657	43,626	386,283	72,387	458,670
1975-76	369,047	46,660	415,707	74,476	490,183
1976-77	375,687	47,659	423,346	76,519	499,865

SOURCE: APPENDIX TABLE A-1

(a)   FOR A DEFINITION OF FULL-TIME EQUIVALENT(FTE), SEE NOTE TO TABLE 9 BELOW

(b)   ENROLLED AT COMMUNITY COLLEGES

The main reasons for the recent changes in student enrolments are well known. A brief summary of the underlying causal factors is provided here, in order to establish a better understanding of the starting point for the projections.

The main factor in the slowdown of male full-time undergraduate enrolment has been a fall in participation rates, rather than the underlying demographic evolution. In the case of male full-time graduate students, the drop in participation rates was extensive enough to more than offset the growth in the underlying population cohort, resulting in an absolute decline in enrolments. In all other categories of enrolment (all female, and male part-time), enrolments rose due to a combination of population and participation rate growth. Table 2 quantifies the contribution to total enrolment due to population and participation changes over the period 1972-73 to 1976-77.

The Basis for the Projections

The first characteristic in the composition of current enrolment is the fact that its subcategories do not behave in a homogeneous manner. There are distinct differences in response between the male and female, between the undergraduate

TABLE 2

UNIVERSITY FULL-TIME EQUIVALENT ENROLMENT
HISTORICAL PERIOD(1972-73 TO 1976-77)

| | MALES | | | | | FEMALES | | | | | TOTAL |
	FULL-TIME UNDER-GRAD(b)	PART-TIME UNDER-GRAD(a)	FULL-TIME GRAD-UATE	PART-TIME GRAD-UATE(a)	TOTAL	FULL-TIME UNDER-GRAD(b)	PART-TIME UNDER-GRAD(a)	FULL-TIME GRAD-UATE	PART-TIME GRAD-UATE(a)	TOTAL	TOTAL
ACTUAL 1972-73	206,852	15,773	28,441	6,104	257,170	130,517	17,814	9,066	2,088	159,485	416,655
ACTUAL 1976-77	229,337	18,717	25,066	7,470	280,590	179,870	24,232	11,519	3,604	219,275	499,865
TOTAL GROWTH	22,485	2,944	-3,375	1,366	23,420	49,353	6,468	2,453	1,516	59,790	83,210
HYPOTHETICAL 1976-77(c)	232,037	17,848	32,691	6,896	289,472	142,836	19,897	10,126	2,353	175,212	464,684
GROWTH DUE TO POPULATION CHANGE	25,185	2,075	4,250	792	32,302	12,319	2,083	1,060	265	15,727	48,029
GROWTH DUE TO BEHAVIOURAL CHANGE	-2,700	869	-7,625	574	-8,882	37,034	4,385	1,393	1,251	44,063	35,181

SOURCE: STATISTICS CANADA;AND MOSST,FORECASTING DIVISION

(a)   IN FULL-TIME EQUIVALENT

(b)   INCLUDES UNIVERSITY TRANSFER STUDENTS FROM COMMUNITY COLLEGES

(c)   1976-77 AGE COHORTS AND 1972-73 PARTICIPATION RATES

and the graduate, and between the full-time and part-time groups. It is useful, therefore, to divide university enrolment into categories with more or less homogeneous behaviour, demographically as well as behaviourally. This facilitates the application of the appropriate projection assumptions to the individual groups. For purposes of the calculations described in this paper, the following sub-categories of enrolment are identified and treated separately:

1. Full-time undergraduate, male
2. Full-time post-graduate, male
3. Part-time undergraduate, male
4. Part-time post-graduate, male
5. Full-time undergraduate, female
6. Full-time post-graduate, female
7. Part-time undergraduate, female
8. Part-time post-graduate, female
9. Transfer students in Community Colleges, male
10. Transfer students in Community Colleges, female

Another interesting feature of current enrolment is the fact that a significant proportion of the students are outside the age range of 18-24, the latter being traditionally related to university enrolment. Past projections have used demographic

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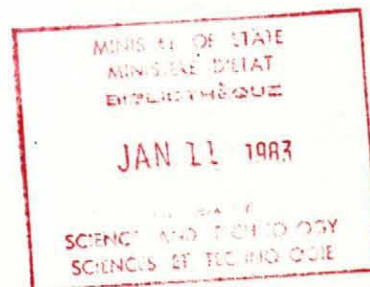
projections of the 18-24 age group, together with assumptions about the ratio of enrolment to 18-24 population. Given the current compositions of enrolment, such estimates are biased due to the fact that sizeable number of students are older than 24, and that the demographic changes are not the same for all age groups. To demonstrate this point, the index of the 18-24 population to the year 2000 is compared to an index of enrolment based on constant participation rates for all subcategories and individual ages in Chart 1.

CHART 1
COMPARISON OF 18 TO 24 POPULATION INDEX
WITH WEIGHTED ENROLMENT INDEX

LEGEND
——————— 1 POPULATION (18-24) INDEX
------------- 2 ENROLMENT INDEX

YEARS
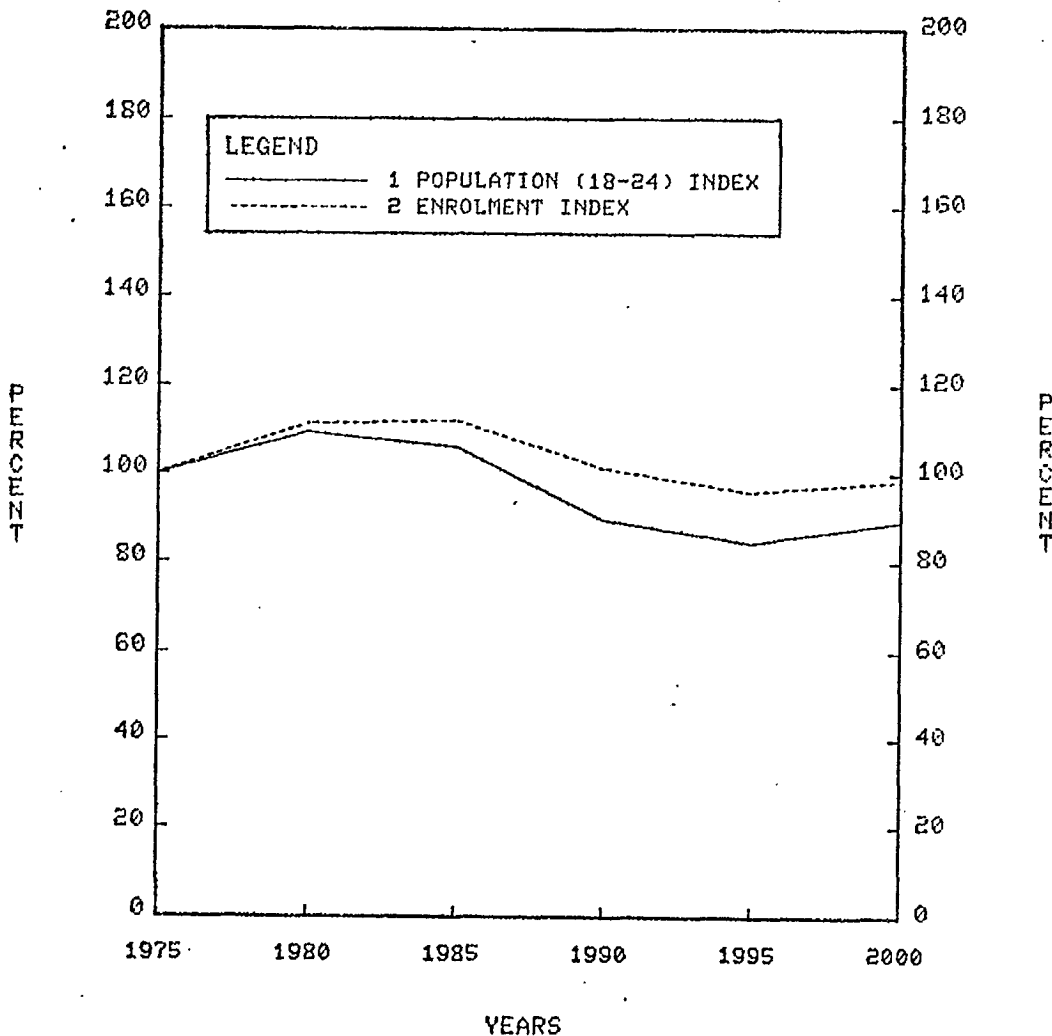
SOURCE : FORECASTING DIVISION

NOTE:CALCULATIONS BASED ON POPULATION PROJECTION "C",
AND AGE DISTRIBUTIONS UNDERLYING APPENDIX CHARTS
2-9 BELOW

If all demographic age groups cohorts were growing at the same rate, **an** enrolment projection with constant participation rate assumptions would have, by definition, the same index as the 18-24 population. In actual fact, Chart 1 indicates that the enrolment index weighted by the current participation rates of all the individual age-sex groups remains considerably above the 18-24 population index, mainly because the age groups above 24 have different growth patterns than the 18-24 group.

Furthermore, any enrolment projection using any other assumption about participation rates, would be affected by the same type of downward bias in the growth rate if the projection were based on the 18-24 population rather than on the extended demographic range used here.

This points to the need for revising the standard projection methodology, in order to avoid biased projections, especially when there are substantial demographic changes that affect the various subcomponents of enrolment in different ways.

The projection methodology used here is based, therefore, on the use of:

- subcomponents of enrolment that have more or less homogeneous
  behaviour

- participation rates for persons both within and outside the
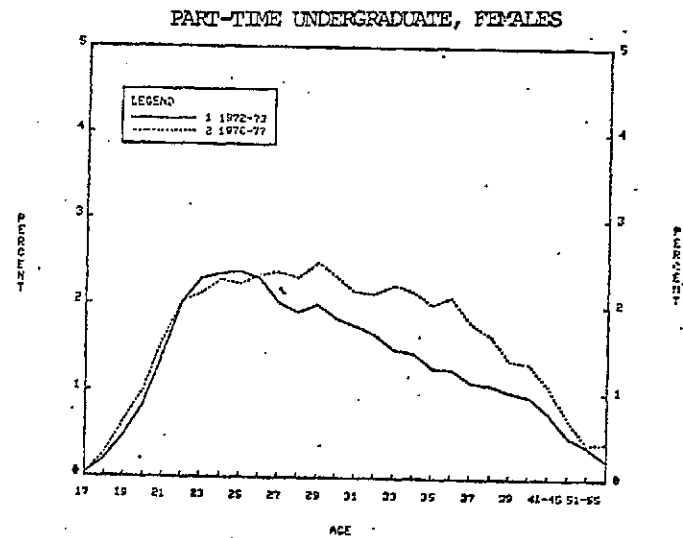 18-24 age groups.

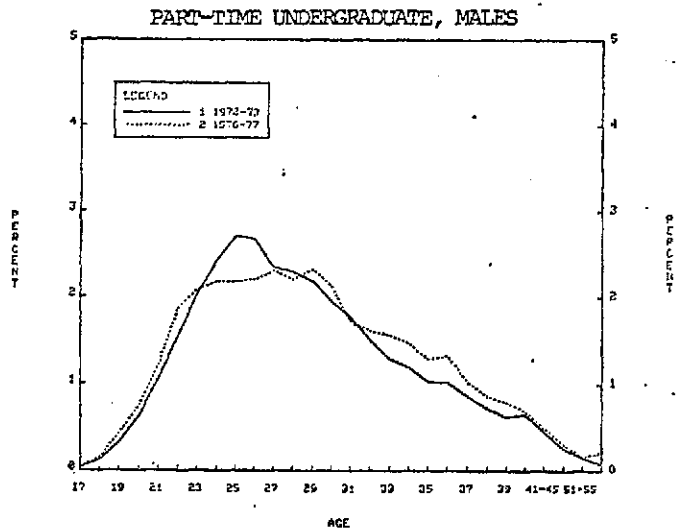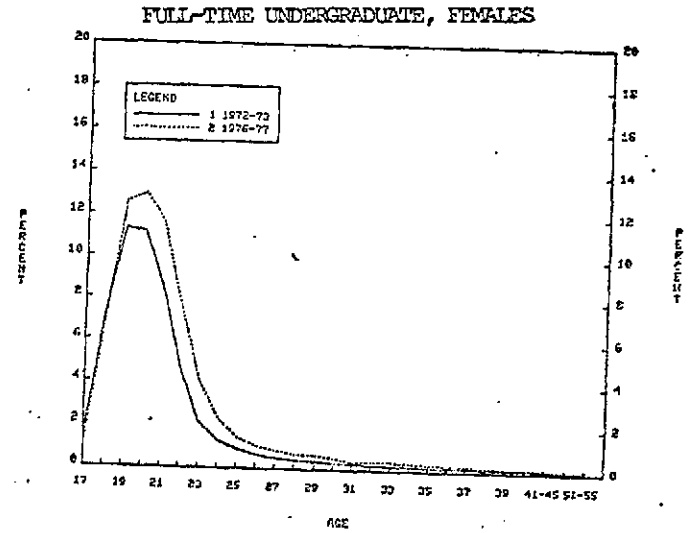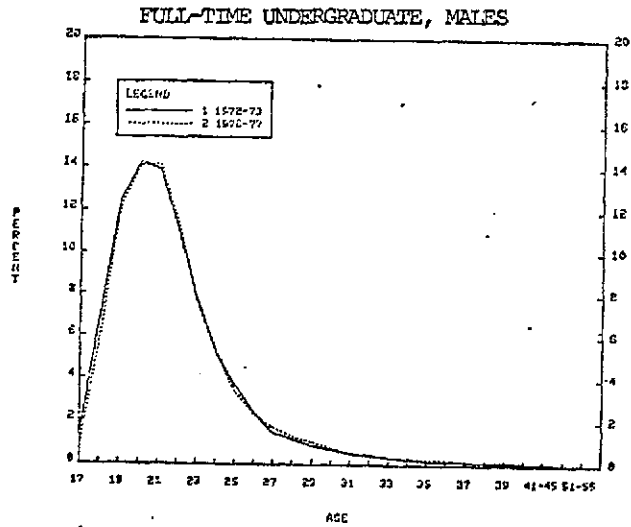## A New View of Participation Rates

Statistics Canada has begun to maintain computerized records
on Canadian university students by sex, single year of age,
category of enrolment and many other characteristics. For
purposes of the projections described here, an analysis was
carried out to determine the differences in the age
distributions in the various subcategories of enrolment,
by sex and by single year of age. The analysis was carried
out for two recent years (1972-73 and 1976-77). The
distributions are shown in Chart 2.

Analysis shows that:

- in none of the eight subcategories is the enrolment restricted
  to the 18-24 ages. In fact, in several, the largest
  portion is outside this age range (e.g., male and female
  undergraduate part-time; male graduate full-time; and male
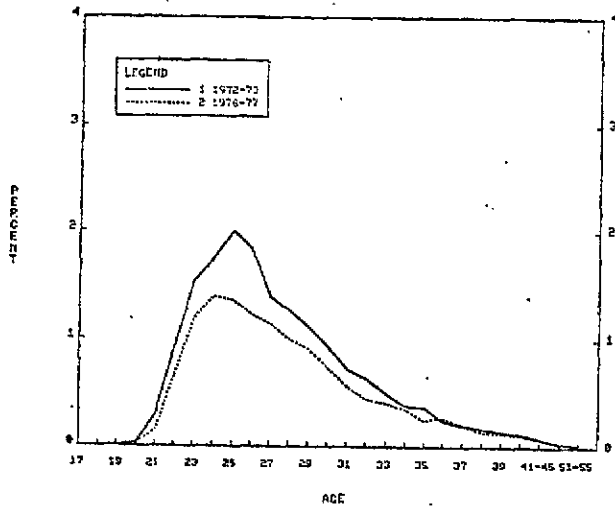 and female graduate part-time). In the others (male under-

CHART   2

UNIVERSITY PARTICIPATION RATES BY SINGLE YEAR OF AGE

FULL-TIME UNDERGRADUATE, MALES

FULL-TIME UNDERGRADUATE, FEMALES

PART-TIME UNDERGRADUATE, MALES

PART-TIME UNDERGRADUATE, FEMALES
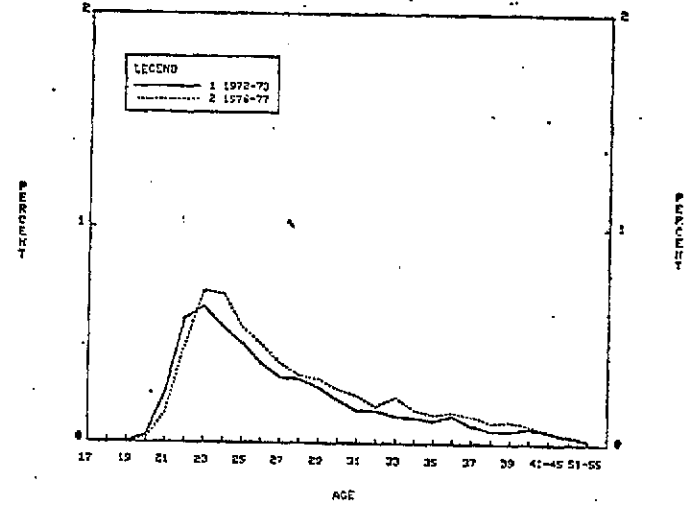
CHART 2 (concl'd)

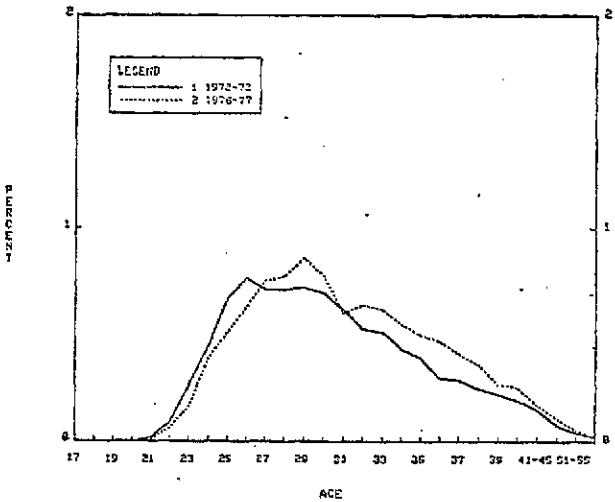UNIVERSITY PARTICIPATION RATES BY SINGLE YEAR OF AGE
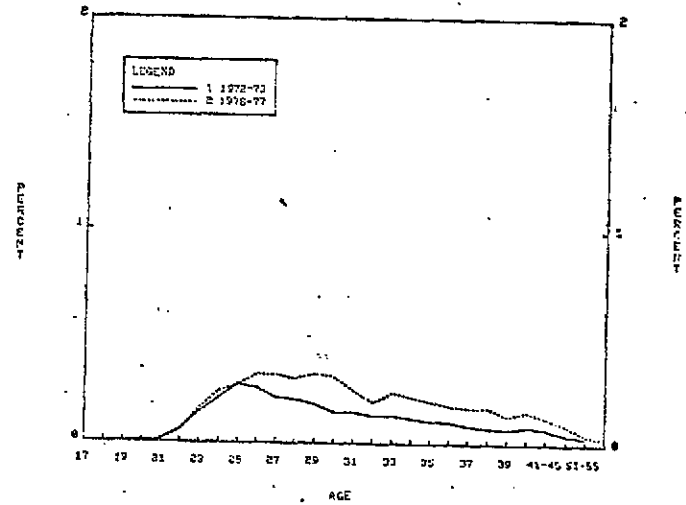
FULL-TIME GRADUATE, MALES

FULL-TIME GRADUATE, FEMALES

PART-TIME GRADUATE, MALES

PART-TIME GRADUATE, FEMALES

SOURCE: See Appendix E

graduate full-time, and female graduate full-time) the
proportions older than 24 are not insignificant;

- with the exception of some of the groups, the nature of
  the skew of the distribution appears to be relatively
  stable over time;

- in the case of the female categories, participation rates
  have risen, either over the entire distribution span, or
  in some cases in the older age-groups;

- male undergraduate full-time and part-time rates have not
  changed over this period anywhere along the distribution;

- male graduate full-time rates have fallen, but they have
  fallen relatively more for the younger than for the older
  age groups;

- male graduate part-time rates have risen, especially in
  the older age ranges.

Assumptions

Apart from the traditional factors affecting the growth and composition of enrolment, such as the relative increase in female participation rates, there are currently several influences that tend to render projection excercises more uncertain than was the case in the past:

- The starting salaries of new university graduates have fallen in relation to other salaries and wages. This has been interpreted as a falling rate of return to educational investment by university graduates, and this interpretation is thought to reduce the number of persons desiring to attend university compared with the situation when a university education was considered a profitable investment. Whether it is correct to infer a falling rate of return from changes in starting salaries is questionable, and needs to be further analysed. In particular, for this inference to be valid, there would have to be proof that the life-time earnings profiles have also changed. However, regardless of this, it appears that there is a pervasive perception that the rate of return has fallen, and that this may very well discourage participation in further schooling.

- A tight labour market for young graduates is interpreted has having the effect of encouraging people to remain in school longer.

- In order to maintain a high level of capacity utilization, the university system is expected to attempt to draw in a larger number of part-time students. There exists, indeed, a considerable potential for the upgrading of the skills of persons who have been in the labour force for some time. This type of factor would tend to raise participation rates of some age groups.

- Over the past ten years in Ontario, elementary school teachers without a university degree have been encouraged, through salary inducements, to obtain a bachelor's degree. This factor has helped raise part-time participation in the past, especially for women, but this process of upgrading has now been largely completed. Because Ontario represents over one-third of total enrolment in Canada, this could offset the above-noted underlying trend for rising part-time enrolment.

Rather than attempting to quantify each of these factors, a task that would be impossible anyhow, the approach in the projections has instead been to work with three separate scenarios that encompass the possible effects of the various factors on participation rates. The following are the specific assumptions underlying the three scenarios:

Scenario I: The 1976-77 rates for all university categories remain constant up to 1985.

Scenario II: University participation rates for most male categories decline to 1978-79 (as indicated by preliminary and incomplete data), and remain constant from then on to 1985; female rates are assumed to stop increasing, and remain constant to 1985 at the current level.

Scenario III: University participation rates for the four male categories continue to decline, by assuming that the 1976-77 to 1978-79 trends will continue into the future; female rates are assumed to stop increasing, and remain constant at the levels of 1976-77.

For projecting community college transfer and career enrolments, the same three sets of assumptions were applied. Here, too, the basic data are in terms of sex, single-year age groups, and participation rates over the entire age-span (see Appendix Chart C-1).

The single-year of age-specific participation rates are projected on the assumption that if there are changes, such changes would affect each age class over the entire range to the same extent. This is an assumption that is not inconsistent

with the evidence on participation rates presented earlier.
The participation rate assumptions are provided in Appendix
A-1 to A-4. However, rather than showing all the historical
and projected detailed single-year of age participation
rates for the entire 17-60 year age-span for each of the eight
university categories and four community college categories,
only the projected indexes relating to each of the categories
are listed in the Appendix A. These indexes show the
changes that are assumed for all of the individual partici-
pation rates in the three scenarios, and are an adequate
general indication of the underlying assumptions. The
calculations were, of course, carried out at a much greater
level of detail.

Projection Method

Each of the above-listed ten enrolment categories is
projected separately. The projections are the product of
the number of males or females projected by single year of
age for the entire potential age range supplying university
students (17 to 60 years); and assumptions about age-sex
specific participation rates for single years of age and for
each of the programs. (The distribution of the recent

participation rates over the age range is shown in Chart 2 above).

An algebraic formulation of the method is provided in Appendix D.

Projections by Category

1. Full-time undergraduate males.

This is the largest single group, but it has fallen in relative importance, from 41 percent of total enrolment (FTE) in 1972-73 to 37 percent in 1976-77. As is well-known, this shift has been caused by the levelling in participation rates for this category, while the rates for all others have risen over the same period.

The levelling is accounted for, to a certain extent, by the emergence during the 60s of the community college alternative (i.e. the transfer program), which has attracted large numbers of students, especially in Quebec. Since the beginning of the 70s, however, the substitution process appears to have stabilized, and the growth rate for male full-time university undergraduate students and community college transfer program students has

been the same.   In 1976-77, the numbers in the two programs
were 187,000 and 43,000, respectively.

If 1976-77 participation rates are held constant to 1985,
the number of students in this category rises by about
another 10 percent to 1983, and then begins to decline.
In scenario I, the number of students in this category rises
to 199,000 in 1985-86 (see Table 3).   The rise is accounted
for by the underlying population expansion, especially in
the over 24 age ranges, and the constant-rate projection,
for this reason, shows a higher rate of growth than the 18-24
population.

A constant rate assumption is, however, not warranted, because
there are preliminary indications that the participation rate
has declined in 1977-78 and might still be declining in the
1978-79.   Scenario II uses such declining rates to 1978-79,
and constant rates thereafter to 1985-86.   The results of the
projection are parallel to those in Scenario I, but at a
slightly lower level because of the drop in the first two
projection years.   The 1985-86 projection is 178,000 students
(see Table 3).

Table 3

UNIVERSITY ENROLMENT TRENDS FOR FULL-TIME UNDERGRADUATE MALES

	Scenario I	Scenario II	Scenario III
		('000)	
1976-77	187	187	187
1977-78	191	181	181
1978-79	195	174	174
1979-80	199	177	168
1980-81	202	179	163
1981-82	203	181	157
1982-83	204	182	153
1983-84	204	182	148
1984-85	203	180	147
1985-86	199	178	145

SOURCE: Appendix B

In Scenario III, the factors tending to decrease participation rates outweigh those tending to increase enrolments. The assumption is for the rates to continue declining, producing a level of enrolment that shows a monotonic decline over the projection period. The number of full-time male undergraduates is projected at 145,000 in 1985-86 in this scenario (see Table 3).

2. Part-time undergraduate males

The current enrolment amounts to some 70,000 students. This number is projected to increase to 1985-86, with the lowest increase shown under Scenario III (see Table 4). This is the only male enrolment category showing participation rate growth in the preliminary 1977-78 data. In scenario III the assumption is made that the rate will level off in 1978-79, and decline from then on to 1985.

Table 4

UNIVERSITY ENROLMENT TRENDS FOR PART-TIME UNDERGRADUATE MALES

	Scenario I	Scenario II	Scenario III
		('000)	
1976-77	70	70	70
1977-78	72	75	75
1978-79	74	77	77
1979-80	77	79	77
1980-81	79	81	78
1981-82	81	83	78
1982-83	83	85	79
1983-84	84	87	79
1984-85	86	89	81
1985-86	87	90	82

SOURCE: Appendix B

3. Full-time graduate males

There are now some 25,000 students in this category, and the number appears to remain at this level over the short-term future. Because of the age structure of the students, however, this implies a declining participation rate, due to the fact that the age groups in which such enrolment is concentrated are expanding. It is assumed that, in Scenario III, the participation rates for this group will continue to decline gradually to 1985-86, when they reach a level that is 87.5 percent of the current level. In terms of enrolment change, this still implies a slight increase in the number (27,000 by 1985-86; see Table 5). The strength of the underlying demographic expansion of this group is illustrated by the projection of Scenario I, where constant participation rates are used. With those assumptions, the number of students would rise to 31,000 in 1985-86, implying a 24 percent increase. This compares with a 3.8 percent increase of the 18-24 population.

4. Part-time graduate males

Participation rates for this group have been fluctuating up and down since the beginning of the 70s. The preliminary

Table 5

UNIVERSITY ENROLMENT TRENDS FOR FULL-TIME GRADUATE MALES

	Scenario I	Scenario II	Scenario III
		('000)	
1976-77	25	25	25
1977-78	26	25	25
1978-79	27	25	25
1979-80	28	26	26
1980-81	28	27	26
1981-82	29	28	26
1982-83	30	28	26
1983-84	30	29	27
1984-85	31	29	27
1985-86	31	30	27

SOURCE: Appendix B

data since 1976-77 indicate a slight decline. The assumption
for Scenario III is a continuing decline, to reach 90 percent
of the current levels. Even with this decline, the underlying
age-distributions and demographic changes are such that there
would be an increase in the number of students, from 19,000
in 1976-77 to 22,000 in 1985-86. The projection for scenario I,
using constant 1976-77 participation rates, is 24,000 students
by 1985. This is a 26 percent increase, compared with a 3.8

percent growth for the 18-24 population over the same period.
The projections for this category are shown in Table 6.

Table 6

UNIVERSITY ENROLMENT TRENDS FOR PART-TIME GRADUATE MALES

	Scenario I	Scenario II	Scenario III
		('000)	
1976-77	19	19	19
1977-78	19	19	19
1978-79	20	19	19
1979-80	21	20	19
1980-81	21	20	20
1981-82	22	21	20
1982-83	22	22	20
1983-84	23	22	21
1984-85	24	23	21
1985-86	24	23	22

SOURCE: Appendix B

5. Community College Transfer Enrolment, Males

The participation rates for this category appear to have been
at a fairly stable level since the beginning of the 70s.

In Scenario III, the declines have been projected to 1985-86, when the rates for this category would reach 88 percent of the 1976-77 levels. The age-composition and population growth rates for this cohort are such that this implies a considerable decline in the 1985-86 enrolment level. In this scenario, the number of students would fall from 43,000 in 1976-77 to 34,000 in 1985-86. Even with constant rate assumptions under Scenario I, there would be a decline (to 39,000 in 1985-86), because of the underlying demographic trends.

Table 7

COMMUNITY COLLEGE ENROLMENT OF FULL-TIME TRANSFER[1] STUDENTS, MALE

	Scenario I	Scenario II	Scenario III
		('000)	
1976-77	43	43	43
1977-78	43	42	42
1978-79	44	42	42
1979-80	44	42	41
1980-81	44	42	41
1981-82	44	42	40
1982-83	43	41	39
1983-84	42	41	38
1984-85	41	39	36
1985-86	39	37	34

SOURCE: Appendix B

[1]University Level

6. Enrolments of all Categories of Females

Participation rates for all female categories have risen
substantially since the beginning 70s. For full-time under-
graduates, the rise was about 20 percent, and was distributed
over virtually the entire age range (see Chart 2 above, and
Appendix Table A-1). A similar increase was recorded for
part-time undergraduate rates. Graduate full-time rates rose
by over 10 percent, and part-time rates rose by over 30
percent. While it is not likely that the catching-up process
that is reflected in these rate increases is fully completed,
it was nevertheless assumed, for all three scenarios, that
female rates would rise no further, but remain constant at
their 1976-77 levels to 1985. This assumption is made to
accommodate the suggestion that certain institutional factors
that have induced female enrolments, such as the upgrading of
Ontario elementary teachers' qualifications, have largely run
their course. It is readily admitted, however, that this
assumption may prove to be too restrictive.

Table 7 indicates that all university categories of female
enrolment would continue to increase under this assumption.
This is largely due to the fact that much of the enrolment is

concentrated in age-groups that are expected to grow, i.e. ages over 24. The projected growth of the various categories is, therefore, a function of the age composition within the category. The transfer enrolment in the community colleges, however, would decline, since the enrolment is largely concentrated in the younger ages. The university categories would expand at a higher rate than the 18-24 population.

Table 8

ENROLMENT OF FEMALE STUDENTS, ALL CATEGORIES

	University				Community College
	Undergraduate		Graduate		
	Full-time	Part-time	Full-time	Part-time	Transfer
			('000)		
1976-77	146	91	12	9	34
1977-78	149	94	12	9	34
1978-79	152	96	12	10	35
1979-80	154	99	12	10	35
1980-81	156	101	13	10	35
1981-82	157	104	13	10	35
1982-83	157	106	13	11	34
1983-84	156	108	14	11	33
1984-85	155	110	14	11	32
1985-86	152	112	14	11	31

SOURCE: Appendix B

Total University-Level Enrolments to 1985-86.

Total university-level enrolment is obtained by combining the various full-time categories with the part-time categories on a full-time equivalent (FTE)[1] basis. Assuming constant participation rates for the projection period (Scenario I), FTE enrolment would rise to 533,000 in 1985-86, from the 500,000 in 1976-77. The level would rise over the interval to 545,000 by 1983-84, and then decline. The implied growth over the nine year period to 1985-86 is 7 percent under this scenario, compared with 3.8 percent for the 18-24 population. The contribution of the age groups above 24 is reflected by this difference.

Scenario II is parallel to scenario I, but at a slightly lower level.

The most interesting of the scenarios is the third combining Scenario III projections for all the individual categories (which is probably not justifiable for at least some of the categories). The implied level of enrolment falls to 468,000, or by an annual average rate of less than 1 percent. To achieve this decline would require some rather substantial,

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[1] Combined on the basis of 3.75 undergraduate part-time=1 full-time; and 2.5 graduate part-time=1 full-time.

if not unprecendented, declines in male participation rates, especially for full-time undergraduates whose rates would need to decline by almost 30 percent. It would also require no further increases in any of the female rates. This finding underlines the relative demographic pressures that can still be expected to affect enrolment trends over the years to 1985-86, and the fact that reliance on the trend in the traditional 18-24 age population would bias enrolment estimates downward.

Table 9 summarizes the projection of total enrolments. Further details are provided in Appendix B.

The catching-up by females is shown in Table 10. Since 1972-73, the share of women in total university-level enrolment has risen from 39 percent to 44 percent. This was largely due to the faster rise of full-time undergraduate rates. The rates assumed under Scenario III, and the underlying demographic relationships, imply that the proportion of women would rise to 49 percent of the total by 1985-86.

Table 9

PROJECTIONS OF UNIVERSITY-LEVEL ENROLMENTS, FTE[1]

	Scenario I	Scenario II	Scenario III
		('000)	
1976-77	500	500	500
1977-78	512	500	500
1978-79	522	497	497
1979-80	531	506	495
1980-81	538	512	492
1981-82	542	517	488
1982-83	545	519	484
1983-84	545	520	478
1984-85	542	516	475
1985-86	533	508	468

SOURCE: MOSST, Forecasting Division

[1] Includes community college transfer students. University part-time enrolment has been converted to full-time equivalent basis, by equating one full-time undergraduate student with 3.75 part-time, and one graduate student with 2.5 part-time students.

Table 10

COMPOSITION OF ENROLMENT[1]

(per cent)

	1972-73	1976-77	1985-86[2]
1. Male			
Full-time Undergraduate	41	37	31
Full-time Graduate	7	5	6
Part-time Undergraduate	4	4	5
Part-time Graduate	1	1	2
Community College transfer	9	9	7
Total Male	61	56	51
2. Female			
Full-time Undergraduate	26	29	32
Full-time Graduate	2	2	3
Part-time Undergraduate	4	5	6
Part-time Graduate	1	1	1
Community College transfer	6	7	7
Total Female	39	44	49
3. Total, both Sexes	100	100	100

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[1]FTE

[2]Scenario III

APPENDIX   A

Indexes of Participation Rates

APPENDIX TABLE A-1

RATIOS OF PART. RATES TO BASE YEAR(a,b)
1972-73 TO 1976-77

	COMMUNITY COLLEGE (FULL-TIME)				UNIVERSITY (UNDERGRADUATE)				UNIVERSITY (GRADUATE)			
	MALE TRANSFER	FEMALE TRANSFER	MALE CAREER	FEMALE CAREER	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME
1972-73	98.4	83.7	102.6	73.7	101.7	79.3	95.2	81.8	130.3	23.9	92.3	65.1
1973-74	103.3	89.1	104.1	91.8	101.5	84.3	90.6	86.2	122.1	90.4	100.3	77.9
1974-75	100.0	100.0	100.0	100.0	101.2	90.9	92.6	91.9	103.4	88.4	99.6	82.2
1975-76	98.6	103.1	106.1	101.4	102.9	98.3	101.4	99.1	104.0	95.9	103.1	92.2
1976-77	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: STATISTICS CANADA;AND MOSST,FORECASTING DIVISION

(a)   DUE TO SOME NON-RESPONSE THE DIVISION BETWEEN MALES AND FEMALES WAS ESTIMATED

(b)   BASE YEAR IS 1976-77 FOR UNIVERSITIES AND 1974-75 FOR COMMUNITY COLLEGES

APPENDIX TABLE A-2

RATIOS OF PART. RATES TO BASE YEAR(a)
SCENARIO 1

	COMMUNITY COLLEGE (FULL-TIME)				UNIVERSITY (UNDERGRADUATE)				UNIVERSITY (GRADUATE)			
	MALE TRANSFER	FEMALE TRANSFER	MALE CAREER	FEMALE CAREER	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME
1976-77	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1977-78	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978-79	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1979-80	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1980-81	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981-82	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1982-83	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1983-84	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1984-85	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1985-86	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: MOSST,FORECASTING DIVISION

(a)   BASE YEAR=1976-77 FOR UNIVERSITIES AND 1974-75 FOR COMMUNITY COLLEGES

APPENDIX TABLE A-3

RATIOS OF PART. RATES TO BASE YEAR(a)
SCENARIO 2

	COMMUNITY COLLEGE (FULL-TIME)				UNIVERSITY (UNDERGRADUATE)				UNIVERSITY (GRADUATE)			
	MALE TRANSFER	FEMALE TRANSFER	MALE CAREER	FEMALE CAREER	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME
1976-77	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1977-78	97.2	103.8	103.3	104.9	94.5	100.0	103.0	100.0	97.5	100.0	98.0	100.0
1978-79	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0
1979-80	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0
1980-81	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0
1981-82	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0
1982-83	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0
1983-84	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0
1984-85	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0
1985-86	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0

SOURCE: MOSST,FORECASTING DIVISION

(a)   BASE YEAR=1976-77 FOR UNIVERSITIES AND 1974-75 FOR COMMUNITY COLLEGES

RATIOS OF PART. RATES TO BASE YEAR(a)
SCENARIO 3

	COMMUNITY COLLEGE (FULL-TIME)				UNIVERSITY (UNDERGRADUATE)				UNIVERSITY (GRADUATE)			
	MALE TRANSFER	FEMALE TRANSFER	MALE CAREER	FEMALE CAREER	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME
1976-77	99.4	103.8	104.7	104.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1977-78	97.2	103.8	103.3	104.9	94.5	100.0	103.0	100.0	97.5	100.0	93.0	100.0
1978-79	95.0	103.8	102.0	104.9	89.0	100.0	103.0	100.0	95.0	100.0	96.0	100.0
1979-80	93.2	103.8	100.9	104.9	84.6	100.0	100.6	100.0	93.0	100.0	94.4	100.0
1980-81	91.7	103.8	100.0	104.9	80.8	100.0	98.5	100.0	91.3	100.0	93.0	100.0
1981-82	90.3	103.8	99.2	104.9	77.5	100.0	96.7	100.0	89.8	100.0	91.8	100.0
1982-83	89.2	103.8	98.5	104.9	74.7	100.0	95.2	100.0	88.5	100.0	90.8	100.0
1983-84	88.3	103.8	98.0	104.9	72.5	100.0	94.0	100.0	87.5	100.0	90.0	100.0
1984-85	88.3	103.8	98.0	104.9	72.5	100.0	94.0	100.0	87.5	100.0	90.0	100.0
1985-86	88.3	103.8	98.0	104.9	72.5	100.0	94.0	100.0	87.5	100.0	90.0	100.0

SOURCE: MOSST, FORECASTING DIVISION

(a)   BASE YEAR=1976-77 FOR UNIVERSITIES AND 1974-75 FOR COMMUNITY COLLEGES

APPENDIX   B

Details of Post-Secondary Enrolments

APPENDIX TABLE B-1

POST-SECONDARY ENROLMENT(a)
1972-73 TO 1976-77

	COMMUNITY COLLEGE (FULL-TIME)				UNIVERSITY (UNDERGRADUATE)				UNIVERSITY (GRADUATE)			
	MALE TRANSFER	FEMALE TRANSFER	MALE CAREER	FEMALE CAREER	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME
1972-73	38,286	24,933	62,931	47,089	168,566	105,584	59,149	66,804	28,441	9,066	15,261	5,220
1973-74	41,323	27,200	65,810	60,011	173,689	114,833	58,025	72,382	27,608	9,540	17,080	6,430
1974-75	41,102	31,285	65,023	66,945	178,510	126,721	61,134	79,214	24,221	9,621	17,470	6,990
1975-76	41,499	32,977	70,895	69,501	186,954	140,266	69,015	87,835	25,232	10,746	18,655	8,076
1976-77	42,722	33,797	71,662	73,497	186,615	146,073	70,138	91,058	25,066	11,519	18,676	9,009

SOURCE: STATISTICS CANADA; AND MOSST, FORECASTING DIVISION

(a)   DUE TO SOME NON-RESPONSE THE DIVISION BETWEEN MALES AND FEMALES WAS ESTIMATED

PROJECTION OF POST-SECONDARY ENROLMENT
SCENARIO 1

	COMMUNITY COLLEGE (FULL-TIME)				UNIVERSITY (UNDERGRADUATE)				UNIVERSITY (GRADUATE)			
	MALE TRANSFER	FEMALE TRANSFER	MALE CAREER	FEMALE CAREER	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME
1976-77	42,722	33,797	71,662	73,497	186,615	146,073	70,188	91,058	25,066	11,519	13,676	9,009
1977-78	43,389	34,264	73,206	74,824	191,269	149,216	72,333	93,576	25,886	11,829	19,282	9,264
1978-79	43,832	34,570	74,472	75,855	195,418	151,960	74,496	96,138	26,702	12,145	19,905	9,521
1979-80	44,045	34,716	75,418	76,563	198,892	154,157	76,649	98,706	27,502	12,462	20,539	9,780
1980-81	44,034	34,703	76,011	76,943	201,558	155,729	78,752	101,245	28,293	12,773	21,177	10,040
1981-82	43,790	34,520	76,240	76,985	203,332	156,636	80,769	103,716	29,041	13,069	21,813	10,299
1982-83	43,292	34,149	76,087	76,657	204,153	156,838	82,665	106,081	29,735	13,341	22,441	10,556
1983-34	42,483	33,496	75,523	75,916	203,968	156,290	84,417	108,308	30,360	13,583	23,054	10,807
1984-85	40,981	32,231	74,324	74,381	202,600	154,773	85,992	110,359	30,901	13,789	23,646	11,049
1985-86	38,821	30,507	72,123	71,557	199,442	151,554	87,349	112,176	31,345	13,957	24,205	11,278

SOURCE: MOSST,FORECASTING DIVISION

APPENDIX TABLE B-3

PROJECTION OF POST-SECONDARY ENROLMENT
SCENARIO 2

	COMMUNITY COLLEGE (FULL-TIME)				UNIVERSITY (UNDERGRADUATE)				UNIVERSITY (GRADUATE)			
	MALE TRANSFER	FEMALE TRANSFER	MALE CAREER	FEMALE CAREER	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME
1976-77	42,722	33,797	71,662	73,497	186,615	146,073	70,188	91,058	25,066	11,519	18,676	9,009
1977-78	42,421	34,264	72,273	74,824	180,749	149,216	74,503	93,576	25,239	11,829	18,896	9,264
1978-79	41,875	34,570	72,573	75,855	173,922	151,960	76,731	96,138	25,367	12,145	19,109	9,521
1979-80	42,079	34,716	73,494	76,563	177,013	154,157	78,948	98,706	26,133	12,462	19,717	9,780
1980-81	42,068	34,703	74,073	76,943	179,386	155,729	81,115	101,245	26,878	12,773	20,330	10,040
1981-82	41,834	34,520	74,296	76,985	180,965	156,636	83,192	103,716	27,589	13,069	20,941	10,299
1982-83	41,359	34,149	74,147	76,657	181,696	156,838	85,145	106,081	28,249	13,341	21,543	10,556
1983-84	40,536	33,496	73,597	75,916	181,532	156,290	86,949	108,308	28,842	13,583	22,132	10,807
1984-85	39,151	32,231	72,429	74,381	180,314	154,773	88,572	110,359	29,356	13,789	22,700	11,049
1985-86	37,088	30,507	70,284	71,557	177,503	151,554	89,970	112,176	29,778	13,957	23,237	11,278

SOURCE: MOSST, FORECASTING DIVISION

APPENDIX TABLE B-4

PROJECTION OF POST-SECONDARY ENROLMENT
SCENARIO 3

|	COMMUNITY COLLEGE (FULL-TIME)				UNIVERSITY (UNDERGRADUATE)				UNIVERSITY (GRADUATE)			
	MALE TRANSFER	FEMALE TRANSFER	MALE CAREER	FEMALE CAREER	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME	MALE FULL-TIME	FEMALE FULL-TIME	MALE PART-TIME	FEMALE PART-TIME
1976-77	42,722	33,797	71,662	73,497	186,615	146,073	70,188	91,058	25,066	11,519	18,676	9,009
1977-78	42,421	34,264	72,273	74,824	180,749	149,216	74,503	93,576	25,239	11,829	18,896	9,264
1978-79	41,875	34,570	72,573	75,855	173,922	151,960	76,731	96,138	25,367	12,145	19,109	9,521
1979-80	41,292	34,716	72,725	76,563	168,262	154,157	77,108	98,706	25,583	12,462	19,389	9,780
1980-81	40,593	34,703	72,619	76,943	162,758	155,729	77,571	101,245	25,817	12,773	19,695	10,040
1981-82	39,781	34,520	72,254	76,985	157,481	156,636	78,104	103,716	26,065	13,069	20,024	10,299
1982-83	38,846	34,149	71,624	76,657	152,502	156,838	78,697	106,081	26,316	13,341	20,376	10,556
1983-84	37,741	33,496	70,708	75,916	147,877	156,290	79,352	108,308	26,565	13,583	20,749	10,807
1984-85	36,406	32,231	69,585	74,381	146,885	154,773	80,832	110,359	27,038	13,789	21,281	11,049
1985-86	34,488	30,507	67,525	71,557	144,595	151,554	82,108	112,176	27,427	13,957	21,785	11,278

SOURCE: MOSST,FORECASTING DIVISION

APPENDIX   C

Community College Participation Rates

APPENDIX CHART C-1

COMPARISON OF TOTAL COMMUNITY COLLEGE PART. RATES

AGE
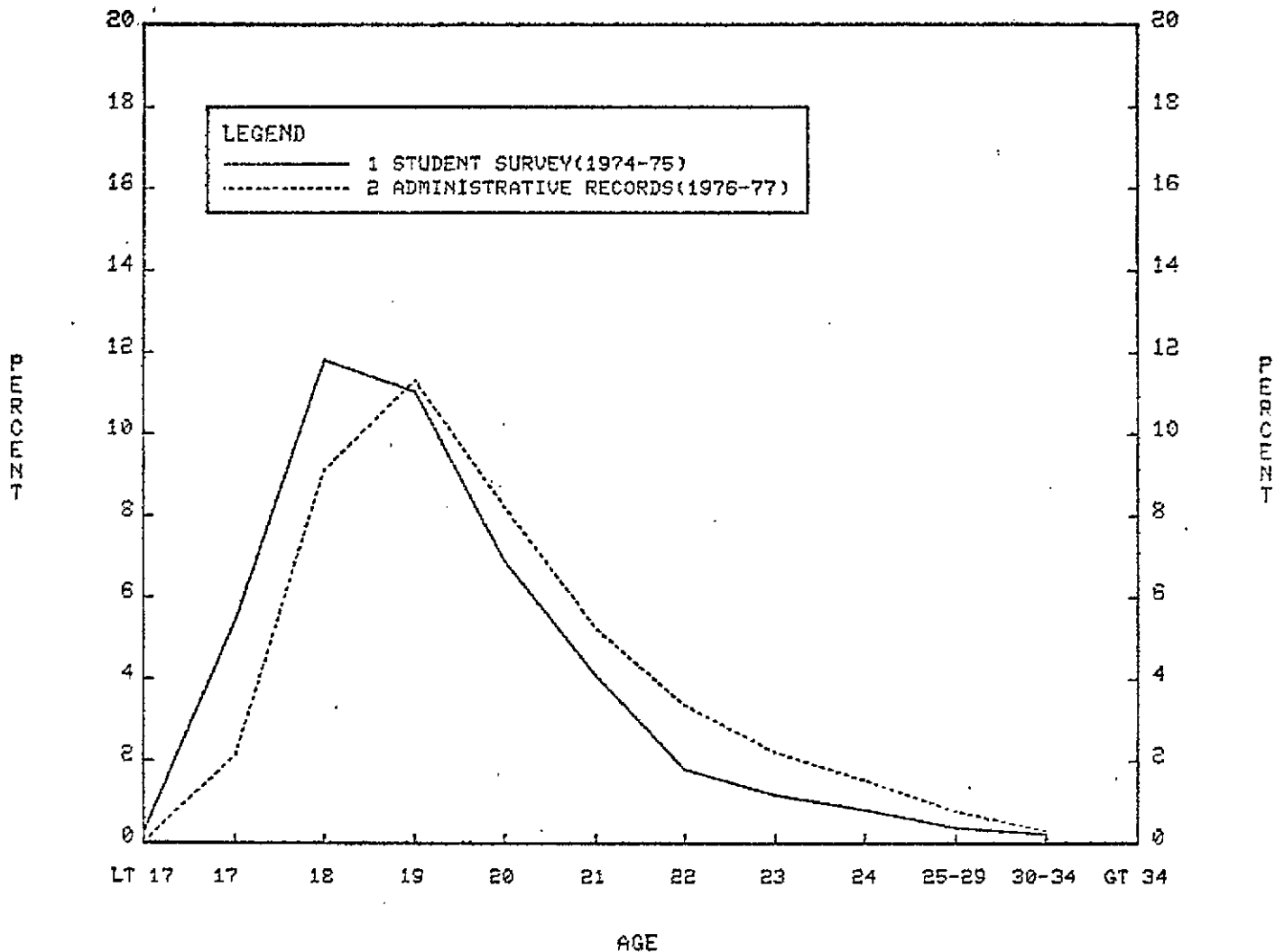
SOURCE : STATISTICS CANADA;AND MOSST,FORECASTING DIVISION

APPENDIX   D

Algebraic Formulation of the Projection Procedure

Algebraic Formulation of the Projection Procedure

Total enrolment in each category[1] is the sum over all ages of enrolment by age:

$$E_t = \sum E_{it} \qquad (1)$$

where E_t is the enrolment·in the category at time t

and E_{it} is the enrolment in the program of the ith age group

The E_{it} are defined as follows:

$$E_{it} = r_{it} \, P_{it} \qquad (2)$$

where E_{it} is the participation rate of the ith age group in the category at time t

and P_{it} is the population of the ith age group at time t

The general assumption is made that:

$$r_{it} = k_t \, r_i \qquad (3)$$

where k_t is the general participation ratio for the category at time t

and r_i is the participation rate of the ith age group in the category during the base year.

Substituting (2) and (3) into (1):

$$E_t = k_t \sum r_i \, P_t \qquad (4)$$

which is the algebraic formulation of the projection procedure for the total number of students of a particular enrolment category.

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[1] The university enrolment categories are listed on above. ·In addition, there are four community college enrolment categories.

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APPENDIX   E

Data Sources

Data Sources

Historical data concerning university enrolment are based on
Statistics Canada publications (Catalogue No. 81-204, except
for the year 1976-77, which is from a manuscript version of the
forthcoming publication, and the year 1977-78, which is from
special tabulations by the Education Division).   Data
concerning community college enrolment for the years 1972-73
and 1973-74 are from Statistics Canada Catalogue No. 81-229
while data for the years 1974-75, 1975-76, 1976-77 are from
special tabulations prepared by the Education Division. Age,
sex and program specific data on community college students
are from the 1974-75 Post-Secondary Student Survey conducted
by Statistics Canada.

Population projections are based on Population Projection C.

For projections of community college enrolment, the age groups
used were single years of age from 15 to 50. For university
enrolment, the age group are 17-60 (with the "under 18" group
assumed to be all 17, and the over 40 groups combined into
five-year age spans).

APPENDIX   F

Technical Notes

I - Methods used in other recent projections

II - Macro vs provincial approach

I. Methods used in other recent projections

An interesting projection method has been developed by the
Education Division of Statistics Canada. A recent study[1] has
been published that uses this method, and another recent set
of projections[2] is presumably based on the same method. Before
elaborating the method, it should be noted that the projections
were used for the purpose of deriving estimates of school
leavers and potential labour market entrants, and did not
include part-time enrolment.

The hypothesis in this particular method is the notion that
it should be possible to trace a particular age cohort, say
the six-year-old population, throughout its entire schooling
career, by using estimates for retention (from one grade to
the next), repeaters of grades, over-ages and under-ages, deaths,
immigration, and other factors likely to intervene when a
new school year starts[3]. This method has been successful in
predicting enrolment, especially at the elementary and
secondary levels, and in the short-term. To use this method
for longer-term university-level enrolment projections, the
following steps are necessary:

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[1] "Future Trends in Enrolment and Manpower Supply in Ontario",
Z. Zsigmond, G. Picot, M.S. Devereaux, W. Clark, Statistics
Canada, April 1977.

[2] "Out of School - Into the Labour Force", Z. Zsigmond, G. Picot,
W. Clark, M.S. Devereaux, Statistics Canada, June 1978.

[3] Ideally these retention rates should be estimated using longi-
tudinal data. However, only time series of cross-sectional
data are available and, therefore, quasi-longitudinal methods
must be used.

1. A pool of potential entrants to university from the secondary schools is calculated as the result of the elementary-secondary projection process.

2. The number of people in this pool is multiplied by a percentage factor to get full-time undergraduate first-year university students whose last previous activity was secondary school student.

3. This number is then divided by the percent of full-time undergraduate first-year university students whose last previous activity was secondary student. The result is total full-time first-year university enrolment from all sources (e.g. foreign students, people returning from the labour force, etc.). It should be noted that, in the actual calculation procedure, steps 2 and 3 are combined.

4. First year enrolment (full-time) at time (t-1) is multiplied by a percentage factor (transition ratio) to obtain second year enrolment at time t. The rest of full-time undergraduate enrolment (3rd, 4th and 5th year) is obtained similarly.

5. Full-time Master's level enrolment is a percentage of a two-year moving average of third, fourth and fifth year full-time undergraduate enrolment.

6. PhD full-time enrolment is a percentage of a two-year moving average of full-time Master's level enrolment.

7. These calculations are done by sex and by province.

In this methodology, assumptions have to be made about quite a large number of ratios and relationships. When close to 100 percent of the age groups is attending school, as is the case for elementary and most of secondary enrolment groups, the assumptions introduce relatively little potential for variation. At the university level, however, participation rates are much less than 100 percent, and extend up to ages 60 or more. In the Statistics Canada method, therefore, there are several sources that might introduce variability at that level of schooling;

- The pool of potential new entrants from secondary school may vary according to the parameters used in the elementary-secondary projection submodel.

- The percent of people in the secondary school pool who go
on to full-time university education is an assumption as is
the percent of first-year enrolment coming directly from
secondary schools.

- The transition ratios may vary according to assumption, as
do the percentage factors applied to the two-year moving
average of third, fourth and fifth year full-time undergraduate
enrolment to obtain full-time Master's enrolment and to the
two-year moving average of Master's enrolment to get PhD
enrolment.

- While the whole model is supposed to be based on demographic
projections, except for the immigration assumption, no
demographic assumption can affect the university level
enrolment projections to 1985-86.

It is acknowledged in that method that there is more than one
way of entering the university system, but taking this into
account is a complex procedure. The calculations are based
on the size of the modal age group, and the propensities of
people older than this group to return to university are not
explicitly taken into account.

The best example of this is the step where the number of first-year students from sources other than secondary schools (the source of the great majority of older students) is implicitly calculated. This number is a function of the number of first-year students who do come directly from secondary schools, all other things being equal. The same reasoning applies to the transition ratios in the next steps, relating to the following grades, and the percentage factor used for calculating graduate enrolment.

In the Statistics Canada methodology, age-participation rates are not used because it is believed that timing differences between birth and enrolment data could affect the projections. This is claimed to be especially serious at demographic turning points (i.e. when a cohort peaks or bottoms). However, such turning points are not common. Births peaked in 1960 and bottomed in 1973. As well, any inaccuracies are partially made up in the next year and only result in minor short-term aberrations which do not affect the trend. Since the trend is the most important feature of education projections, this argument must be rejected. On the other hand, the ageing of the Canadian population is a long-term phenomenon which will

affect the trend of university education projections. This
argues for the use of the age-participation rate approach.
Indeed the problem cited in the Statistics Canada method
could be solved by taking a weighted two-year moving average
of the projections from an age-participation rate model. Of
course, the accuracy obtained would be spurious since no
projection of this type is ever that accurate anyhow.

The Statistics Canada model derives a national projection by
adding together estimates for the various provinces. The
pros and cons of such an approach are discussed in the
following section of this Appendix.

II. Macro vs provincial approach

It is conceptually possible to derive national projections
either on a "macro" basis, or by building it up through
provincial projections. The latter is complicated by the
need for an additional set of assumptions regarding inter-
provincial migration and the effect of foreign migration
(in the population as well as in the school enrolments).
The advantage of the macro approach is that the domestic and
foreign migration flows net out to zero by definition, thereby
avoiding an additional source of possible error. The
advantage of the provincial approach is that provincial
peculiarities and institutional differences can be taken
explicitly into account. The quality of a provincial projection
depends ultimately, however, on the confidence one has in the
underlying migration estimates.

This is quite distinct from the question regarding the use-
fulness of provincial vs national projections. Obviously,
provincial education departments prefer projections that
are specific to their area of jurisdiction. Provincial
projections are possible either by direct process, or by
estimating the share-trend within a national projection.
Which of the two is to be preferred by a province appears to
be an empirical matter.