

PROJECTING ENROLMENT AT THE UNIVERSITY OF TORONTO

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1.1 The report on expansion problems in the University of Toronto, June 5, 1956, was based on a projection of University enrolment made by Prof. B.A. Griffith. It is the purpose of the present Study to bring these statistics up to date and to refine them so far as the Faculty of Arts is concerned. The writer would express his thanks to Prof. J.H. Chung for his able assistance, and to Professor N. Keyfitz and Professor D.B. DeLury for their advice in deciding various matters of procedure. Thanks are also due to Prof. R.W.B. Jackson of the Ontario College of Education for providing statistics of school populations, and to the Registrar's Office for statistics relative to the University.

1.2 The Griffith Projections. In Professor Griffith's study five distinct projections were made each based on different assumptions. It is interesting to note how closely subsequent enrolment figures for the University of Toronto have followed the projection E(T) based on the total population of Ontario, assuming a linearly increasing percentage of the age group 18-21 attending university. The projection E'(T) based on a fixed percentage was unrealistic while E''(T) based on the York County population was calculated under the disadvantage that 1956 was a census year and the author could not predict the large local increase in population then taking place. If the proper statistics had been available, E''(T) would have been almost identical with E(T) in the period 1956-1960.

Prof. Chung has brought up to date the projection E(T), using the same method of calculation, and his results are as follows:

Projected Enrolment E(T) Based on Linearly Increasing Percentages
1960 - 1970

Academic Year	E(T)
1960-61	16,500
1961-62	17,800
1962-63	19,100
1963-64	20,500
1964-65	22,000
1965-66	23,500
1966-67	25,000
1967-68	26,700
1968-69	28,300
1969-70	30,100

1.3 A new projection for the Faculty of Arts. In projecting the enrolment of the University of Toronto on the basis of the population of Ontario in the age group 18-21, we are dealing with a large number of people who would not be eligible to darken its doors. If we restrict our attention to those who would be eligible, i.e. to students in Grade 13, our estimates will be dependent on educational policy and practice in an explicit manner and changes in these will have predictable effects. In order to arrive at such figures the total enrolment in each grade of all the schools in Ontario in 1958 was taken from the Report of the Minister of Education for that year. By comparison with the corresponding figures of the preceding years, 'passing' percentages were computed between grades. Assuming these percentages to remain constant, Prof. Jackson projected the school populations in Grade 13 up to 1965. Of course such an assumption implies that immigration into the area will also remain constant and that there will be no change in educational policy or practice. We have extended his projection to 1970, basing the results on the known school population for 1958.

If we insert the school populations in the various grades from the Minister's Report for 1959 we note some decreases which lead to a slight lowering of the 'passing' percentage. Such lowerings reflect the known decrease of immigration into the Province as reported in D.B.S. interim statistics. Though insignificant when applied to one year only, such decreases become important when compounded by projection to subsequent years. In view of this sensitivity of the method it seems worth considering past enrolments in Grades 8-13 as far back as 1947. During this whole post-war period we can see the gradual rise of these percentages (e.g. for Grade 8-9 from 78 percent in 1948 to 94 percent in 1958) and, assuming a uniform educational policy and practice, we may attribute this to the high birth rate in the post-war years and to immigration. In view of the noted drop in 1959, one might ask whether a prediction for the future should not return to the percentages of the past as immigration diminishes. On the other hand, according to the Gordon Commission Report a permanently higher level of immigration is to be expected and indeed encouraged. Also, the presence of greatly enlarged classes

at a lower grade will tend to prevent a decrease in the passing percentages. Balancing these considerations it seems worth while to introduce a slight decrease of at most 2 percent in the 1959 rate in any one grade over the years in question. These two figures might be taken as maximum and minimum figures for a grade in any one year.

In order to extend these calculations to the University of Toronto, the numbers of full-time Ontario students in each of the four years of the Faculty of Arts were obtained for 1957, 1958 and 1959 and the passing percentages calculated. It is of interest to note that the passing percentages from Grade 13 into the First Year are almost constant, certainly not increasing. The anomaly is easily resolved by comparing the numbers of students in Grade 13 with totals for the age groups in Ontario in two successive census years.

	Total Ontario population aged 18-21	Grade 13 population	Percent
1951	271,500	8,827	3.3
1956	288,143	11,487	4.1

Thus it appears that the increase in percentage of the age group 18-21 attending university arises in Grade 13, and the implication may be drawn that this is partly due to the demand of employers for this badge of attainment. If employers could be persuaded to accept a Grade 12 examination in lieu of Grade 13, the latter might return to its status of 20 years ago as primarily a preparation for the university.

Since it was impossible to obtain data for years prior to 1957 without undue labour, and on the assumption that University policy and procedure is less subject to pressures of immigration than that in the schools, the passing percentages have been taken as constant. In fact, the assumed percentages coincide for the second and third years with the overall percentages in the Faculty of Arts in 1959. On this basis, two figures have been obtained for the total population of the Faculty from Ontario based on those of Grade 13. An average of these two is given in column (1) of Table I.

If we denote an entry in column (1) by x , we may subdivide the total enrolment t in the Faculty as follows:

x = no. of full-time students from Ontario
 y = no. of full-time students from elsewhere along with special students not in the General Course (Extension)
 z = no. of part-time students in the General Course (Extension)

so that

$$x + y + z = t.$$

In column (3) of Table I we enter the known value of t for the years 1957, 1958, 1959 and calculate the percentage t is of x in column (2). From the regularity of increase of these percentages we infer their future behaviour and obtain a prediction for t from that for x .

It could be argued that the three years 1957-1959 provides a slim basis for this projection, but the Registrar was able to supply the information contained in Table II, which relates z to t in the period 1950-1959. Since we know that y is small and not likely to increase very rapidly, we may compare the conclusions of Tables I and II by plotting the percentages in column (5) of Table I along with a linear projection of those in column (3) of Table II. That the line from Table I is almost parallel to that from Table II, the difference in position and slope being due to y , provides a check on the validity of the projection in each case.

1.4 Comparison of projections. Comparing the results obtained in §1.3 with the projection $E(T)$ of §1.2 we have:

	Faculty of Arts			Univ. of Toronto	
Year	x	y	z	t	$E(T)$
1957	3589	475	1732	5,796	13,574
1958	3913	531	2153	6,597	14,402
1959	4128	662	2460	7,250	15,400
1960	4680	780	3140	8,600	16,500
1961	5320	840	3940	10,100	17,800
1962	6040	860	5000	11,900	19,100
1963	6600	900	5900	13,400	20,500
1964	7010	960	6830	14,800	22,000
1965	7630	1010	7960	16,600	23,500
1966	8360	1040	9400	18,800	25,000
1967	8970	1030	10800	20,800	26,700
1968	9360	1040	12000	22,400	28,300
1969	9550	950	13000	23,500	30,100

It will be observed that the difference $E(T) - t$ remains approximately

constant. The reason for this is that the rapid growth in the Metropolitan Area is influencing more than $E(T)$, which is based on the province as a whole. Thus the projection for the Faculty of Arts may be high if this growth is not maintained or that for the University as a whole may be low if the Metropolitan Area continues to expand as at present. The other Faculties in the University, however, will likely continue to select and restrict much as they do now, so no great deviation from these predictions is to be expected.

1.5 Expansion at Ontario Universities
In this final section I record observations made on visits to the major Ontario universities and the implications of their expansion plans for us in Toronto. The chief question to which I sought an answer from each institution was: to what extent did they expect to expand, when and in what manner.

In Table III these predictions are used to estimate the number of full-time students which will have to be accommodated by Toronto, York or other new foundations. Columns (2) and (3)

of Table III are taken from DBS statistics. Note that in enumerating full-time students at Ontario universities several small institutions are included which raise the total for 1959 from 26,448 (major universities + Toronto) to 29,200. The basis of calculating columns (5) and (8) is similar to that used in §1.2, but we concentrate attention here on full-time students.

Since $E(T) - z$ of §1.4 is approximately equal to $E_F(T)$ and $E'_F(T)$ up to 1965, it follows that the expansion planned at other Ontario universities will accommodate their share of the general increase up till then, but thereafter this will no longer be the case and Toronto, York or other new foundations will have to shoulder the burden of at least 10,000 full-time students over and above the number contemplated in §1.3 and §1.4. ($E'_F(T) - (E(T) - z) = 11,070$ in 1970).

If our facilities for higher education in Ontario are to provide for these full-time students, and also for part-time students, the number of whom is rapidly increasing, heroic measures will have to be taken.

TABLE I

Year	(1) Ont. enrolment in Fac. of Arts x	(2) 100t/x	(3) Total enrolment in Fac. of Arts t	(4) t-x = y+z	(5) 100(y+z)/t %
1957	3589	162	5796	2207	38
1958	3913	169	6597	2684	41
1959	4128	176	7250	3122	43
1960	4680	183	8600	3920	46
1961	5320	190	10100	4780	47
1962	6040	197	11900	5860	49
1963	6600	204	13400	6800	51
1964	7010	211	14800	7790	53
1965	7630	218	16600	8970	54
1966	8360	225	18800	10440	56
1967	8970	232	20800	11830	57
1968	9360	239	22400	13040	58
1969	9550	246	23500	13950	59

TABLE II

Year	(1) Total enrolment in Faculty of Arts t	(2) General Course (Extension) s	(3) 100s/t %
1950	5043	771	15
1951	5044	897	18
1952	4763	987	21
1953	3987	836	21
1954	4384	1060	24
1955	4819	1352	28
1956	5226	1523	29
1957	5796	1732	30
1958	6597	2153	33
1959	7250	2460	34

TABLE III

Full-Time Enrolment at University of Toronto in Relationship to other Ontario Universities

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Academic Year	P_o	$E(U_o, T)$	$\frac{E(U_o, T)}{P_o}$	$E_F(T)$	$\frac{E_F(T)}{P_o}$	$E(U_o)$	$E'_F(T)$
1953-54	273,600	19,563	.0715	10,240	.0374		
1954-55	274,000	20,470	.0747	10,660	.0389		
1955-56	273,100	21,489	.0787	10,840	.0397		
1956-57	288,143	22,869	.0794	11,350	.0394		
1957-58	296,800	25,000	.0842	11,840	.0399		
1958-59	306,700	26,964	.0879	12,250	.0399		
1959-60	322,700	29,200	.0905	12,940	.0401		

1960-61	338,000	31,670	.0937	13,520	.0400	18,560	13,110
1961-62	353,600	34,260	.0969	14,140	.0400	20,690	13,570
1962-63	369,400	36,940	.1000	14,780	.0400	22,640	14,300
1963-64	385,400	39,770	.1032	15,420	.0400	24,410	15,360
1964-65	401,600	42,730	.1064	16,060	.0400	26,000	16,730
1965-66	418,100	45,820	.1096	16,720	.0400	27,420	18,400
1966-67	434,800	49,050	.1128	17,390	.0400	28,650	20,400
1967-68	451,700	52,350	.1159	18,070	.0400	29,700	22,650
1968-69	468,800	55,830	.1191	18,750	.0400	30,580	25,250
1969-70	486,200	59,460	.1223	19,450	.0400	31,290	28,170

Note: The dotted line separates the experienced data from 1953-60 from the projected figures for 1960-70.

P_o = the population of Ontario in the age group 18 to 21 years.

$E(U_o, T)$ = the full-time enrolment at all Ontario universities (including Toronto). (Basis for projection from 1960-70 : Linearly increasing proportions in Col. 4).

$E_F(T)$ = the full-time enrolment at Toronto. (Basis for projection from 1960-70 : Approximately constant proportions in Col. 6).

$E(U_o)$ = the projected full-time enrolment at all Ontario universities excluding Toronto, obtained on the basis of estimates provided by seven of the largest universities.

$E'_F(T)$ = $E(U_o, T) - E(U_o)$.