

Chapter Two

Higher Education Trends in Virginia

This chapter focuses on higher education in Virginia. The chapter consists of 9 sections. Section 2.1 discusses the importance of higher education. Section 2.2 focuses on educational attainment and incomes in Virginia counties. Section 2.3 describes the higher education system of Virginia. Section 2.4 discusses student enrolment trends. Section 2.5 discusses enrolment trends by gender and race, while Section 2.6 discusses enrolment trends by age. Section 2.7 discusses trends in the number of degrees conferred. Section 2.8 focuses on tuition rates and trends in public support for higher education. Section 2.9 summarizes the key issues related to higher education in the state.

2.1 Background

The importance of an educated population has been emphasized for a long time in this country. The forefathers of this country envisioned a future of prosperity based on an enlightened citizenry that would preserve their hard-earned ideals of democracy and freedom. Milestone legislations (Morill Acts, 1862 and 1890, G I Bill, National Defense Student Loans Program) have been passed to ensure widespread access to higher education among citizens.

Education has been a priority for a long time in the state of Virginia. The Virginia system of higher education is based on a plan of Thomas Jefferson. Virginia's first Blue Ribbon Commission (Rockfish Gap Commission, 1818) has left a legacy for higher education in the state. Over the years, the system has become one of the best in the country. The higher education system has met the challenges produced by far-reaching changes in social and economic conditions. The Virginia system of higher education has helped the state to keep pace with the increasingly complex world.

In the technology-driven economy of today, a college education has assumed extreme importance. The knowledge and skills that are imparted to students in college not only

improve their job prospects and earnings, but also lead to several benefits to society. Due to several reasons (discussed later) private investments in education may not be optimal. Public financing of education thus assumes importance for ensuring an equitable distribution of education and income in the population. A college degree is a passport to a better life for many individuals, especially individuals from low-income groups. For example, in Virginia, a student from a low-income family had only a 36.7 percent chance of attending college in 1997 (State Council for Higher Education of Virginia Report – Advancing the system of higher education in Virginia). Public financing of education assumes a great importance in ensuring access to education across social classes.

This chapter focuses on three important aspects of higher education in Virginia – a. the relationship between higher education and income in Virginia counties; b. the demand for higher education as reflected by student enrolment trends; and, c. the extent of public intervention in the higher education system of Virginia. The role of Virginia Tech in the higher education system of Virginia is also analyzed in view of the above.

2.2 Educational attainment and income across the counties

There exists considerable variation in educational levels and incomes across counties in Virginia. Analysis of data reveals a close relationship between the two variables. Higher incomes are associated with higher educational attainments (Table 2.1). In 1990, 24.5 per cent of the Virginia population above 25 years was college graduates. Only 4.2 percent of the population above 25 years had a college degree in Grayson county, while the figure was 52.8 percent for Falls Church city. Out of the 136 counties/cities of Virginia only 11 counties/cities had a more than 30 per cent college degree attainment level for the population, 41 counties/cities had attainment levels between 15 and 30 per cent, and the rest 84 counties/cities had a less than 15 per cent college degree attainment level for the population. The counties/cities in northern Virginia are far more educated than their counterparts in the southern and south-western regions. However, higher educational institutions are more or less evenly scattered all over the state, with a slightly higher concentration in the northern and eastern regions. Per capita income for Virginia was \$

19,537 (1990). Lee county had the lowest per capita income (\$10,920), while the figure was the highest (\$ 30,442) for Alexandria city. The correlation coefficient between per capita income and percent of population above 25 with college degree was found to be 0.84. A simple regression between the two variables gives an R square of 0.71, implying that a college degree does explain income variation.

Table 2.1: Higher education and income in Virginia counties

County/city	Per capita income (\$) (1990)	Percent of population above
	Top Five	25 years with college degree (1990)
Alexandria	30,442	48.5
Arlington	30,255	52.3
Fairfax	28,891	49.0
Loudoun	24,575	32.7
Goochland	23,093	19.3
	Bottom Five	
Lee	10,920	6.5
Brunswick	11,789	7.0
Grayson	11,920	4.2
Bland	11,930	4.6
Dickenson	12,146	6.0

Source: US Census

A college degree thus leads to higher levels of economic well-being for citizens of the state.

2.3 The Higher Education System

Virginia has the 11th largest higher education system in the US, with 15 public four-year colleges and universities, 23 community colleges, 1 two-year institution, 40 not-for-profit institutions, 12 private for profit institutions and 30 out-of-state institutions

(institutions that have campuses in the state but are not Virginia institutions), as of the year 2000. Two thirds of Virginia high school graduates go for some form of post secondary education. The number of high school graduates is expected to increase from 65,000 (1999-00) to 73,000 (2011-12), suggesting that the demand for higher education will continue to increase in the state.

2.4 Student Enrolments

As of Fall 1990, the total student population in the higher education institutions of Virginia was 352,015 (Table 2.2). There were 307,518 on-campus and 44,497 off-campus students. The number of instate students was 277,118 while the number of out-of-state students was. The number of full-time students was 194,939, and the number of part-time students was 157,076. In the Fall of 1998 (Table 2.3), the total student population was 362,079 (2.9 percent increase). There were 322,870 on-campus (4.9 percent increase), and 39,209 off-campus (11.8 percent decrease) students. The number of instate students was 292,497 (5.5 percent increase), while the number of out-of-state students was 69,582 (7 percent decrease). There were 208,361 full-time (6.8 percent increase), and 153,718 part-time (2.1 percent decrease) students.

Public schools accounted for 82.7 percent of the total student enrolment in the state in 1990, while private schools accounted for the remaining 17.3 percent (Fig.2.1). The share of public schools increased to 84.4 percent in 1998.

Four year public institutions accounted for the largest share of the total student enrolment in the state, followed by community colleges. In 1990, four year public institutions accounted for 45.5 percent of the total student population in the state, while community colleges accounted for 36.9 percent of the total student population. In 1998, four year public institutions accounted for 47.8 percent of the total student population, while the figure was 36.2 percent for community colleges. Enrolments in four year public schools increased by 7.9 percent between 1990 and 1998.

In 1990, the total student enrolment in Virginia Tech was 25,568 (Table 2.2). There were 23,365 on-campus and 2,203 off-campus students. The number of instate students was 18,383, while the number of out-of-state students was 7,185. There were 21,884 full-time and 3,684 part-time students enrolled in VT in 1990. The total student enrolment (Table 2.3) increased to 27,663 (8.1 percent increase) in 1998. There were 25,608 on-campus (9.6 percent increase) and 2,055 off-campus (6.7 percent decrease) students. The number of instate students was 20,415, while the number of out-of-state students was 7,248 (0.009 percent increase). There were 24,550 full-time (12.1 percent increase) and 3,113 part-time (15.5 percent decrease) students at Tech in the same year. Virginia Tech accounted for 16 percent of the student enrolment in four year public institutions in both 1990 and 1998.

**Table 2.2: Student enrolments in higher education institutions in Virginia
(Fall 1990)**

	On-campus	Off-campus	Instate	Out-of-state	Full-time	Part-time	Total
Community Colleges	109,162	20,719	123,274	6,607	34,735	95,146	129,881
Two Year Publics	110,261	20,825	124,446	6,640	35,549	95,537	131,086
Four Year Publics	150,857	9,343	125,891	34,309	118,834	41,366	160,200
Total Public	261,118	30,168	250,337	40,949	154,383	136,903	291,286
Total Private	46,400	14,329	26,781	33,948	40,556	20,173	60,729
Virginia	307,518	44,497	277,118	74,897	194,939	157,076	352,015
Virginia Tech	23,365	2,203	18,383	7,185	21,884	3,684	25,568

Source: State Council for Higher Education of Virginia (SCHEV)

**Table 2.3: Student enrolments in higher education institutions in Virginia
(Fall, 1998)**

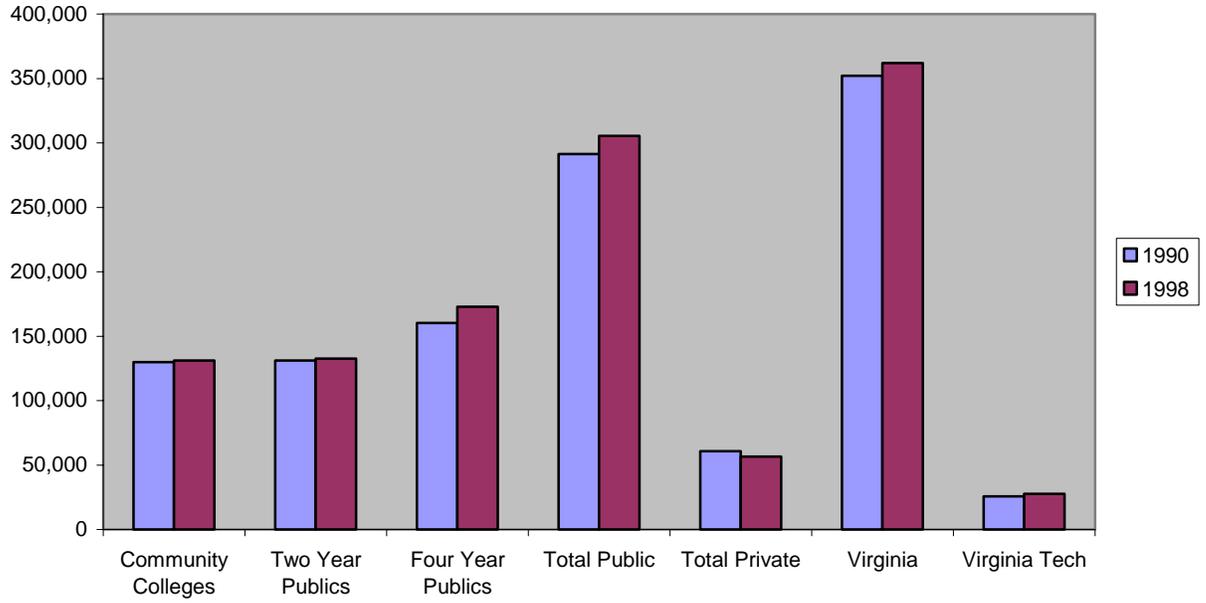
	On-campus	Off-campus	Instate	Out-of-state	Full-time	Part-time	Total
Community Colleges	114,163	17,046	123,221	7,988	36,448	94,761	131,209
Two Year Publics	115,236	17,295	124,523	8,008	37,258	95,273	132,531
Four Year Publics	156,580	16,344	137,214	35,710	127,656	45,268	172,924
Total Public	271,816	33,639	261,737	43,718	164,914	140,541	305,455
Total Private	51,054	5,570	30,760	25,864	43,447	13,177	56,624
Virginia	322,870	39,209	292,497	69,582	208,361	153,718	362,079
Virginia Tech	25,608	2,055	20,415	7,248	24,550	3,113	27,663

Source: SCHEV

The demand for higher education in the state has increased between 1990 and 1998 as seen by the increase in the student population. On campus enrolments have increased, while off-campus enrolments have decreased. The share of out-of-state students has decreased in the student population in Virginia, while increasing slightly for Virginia Tech. There has been an increase in the number of full-time students and a decrease in the number of part-time students between 1990 and 1998.

The majority of the students are enrolled in public schools. The share of public school enrolment increased between 1990 and 1998. Four year public institutions and community colleges account for most of the student enrolment in the state.

Fig 2.1 : Student enrolments in higher education institutions in Virginia



2.5 Enrolments by Gender and Race

Females outnumber males in the student population in Virginia. In 1990 (Table 2.4 and Fig. 2.2), females accounted for 55.3 percent of the total student population in the higher education institutions of Virginia. In the same year, 54 percent of the students in four year public institutions were females. In 1998 (Table 2.5 and Fig.2.3), females accounted for a still larger share of the student population. While 57 percent of the student population in Virginia was females in 1998, the percentage of females in four year public institutions was 55.2. Female enrolments were higher for all races except Asians and individuals from foreign countries, in both Virginia schools and four year public institutions in the state, in 1990. In 1998, female enrolments were higher for all races except individuals from foreign countries.

The increasing number of females in the higher education institutions is likely to have a positive impact on current gender disparities in incomes in the state. The other positive effects associated with female education, like lower fertility levels and cognitive development of children, are also likely to occur.

In Virginia Tech, however, males outnumber females. Both in 1990 and 1998, 41 percent of the students in Virginia Tech were females, while males represented 59 percent of the student population. It is interesting to note that males outnumber females for all races in both 1990 and 1998.

There has been an increasing diversity in the student population in the higher education institutions of Virginia. In 1990 (Table 2.4 and Fig.2.4), whites represented 80 percent of the student population. However, in 1998, the share of whites in the student population was 72.8 percent. The same trend is also seen in four year public schools and Virginia Tech. In four year public schools the share of whites fell from 78.4 percent in 1990 (Table 2.4 and Fig.2.5) to 73.2 percent in 1998 (Table 2.5 and Fig.2.5). In case of Virginia Tech, the share of whites showed a smaller decrease from 84 percent in 1990 to 82.2 percent in 1998 (Fig.2.6).

Table 2.4: Student enrolments in Virginia higher education institutions by race and sex (1990)

Race	Gender	Four Year Public schools	Virginia	Virginia Tech
Foreign	Male	2,844	3,694	1,080
	Female	1,484	2,337	327
	All	4,328 (2.7)*	6,031 (1.7)	1,407 (5.5)
African-American	Male	8,176	17,889	562
	Female	13,640	30,974	518
	All	21,816 (13.6)	48,863 (13.9)	1,080 (4.2)
American-Indian	Male	191	367	16
	Female	244	492	10
	All	435 (0.003)	859 (0.002)	26 (0.001)
Asian	Male	3,139	5,816	803
	Female	2,927	5,577	475
	All	6,066 (3.8)	11,393 (3.2)	1,278 (5.0)
Hispanic	Male	947	2,168	137
	Female	1,067	2,632	129
	All	2,014 (1.3)	4,800 (1.4)	266 (1.0)
White	Male	58,927	127,686	12,546
	Female	66,614	152,938	8,965
	All	125,541 (78.4)	280,624 (80.0)	21,511 (84.0)
Total	Male	74,224	157,620	15,144
	Female	85,976	194,950	10,424
	All	160,200	352,570	25,568

*

Source:SCHEV (*Figures in parentheses are the percentages of the total)

African Americans represented the largest minority group, for Virginia and for four year public institutions in the state, in both 1990 and 1998. At Virginia Tech, however, foreigners represented the largest minority group in 1990, and Asians represented the

largest minority group in 1998. African Americans showed almost no increase as a share of the student population between 1990 and 1998.

Table 2.5: Student enrolments in Virginia higher education institutions by race and sex (1998)

Race	Gender	Four Year Public schools	Virginia	Virginia Tech
Foreign	Male	3,491	4,677	1,101
	Female	2,181	3,640	406
	All	5,672 (3.3)*	8,317 (2.3)	1,507 (5.4)
African-American	Male	9,272	21,557	624
	Female	16,506	39,085	567
	All	25,778 (14.9)	60,642 (16.7)	1,191 (4.3)
American-Indian	Male	360	926	48
	Female	373	1,032	23
	All	733 (0.004)	1,958 (0.005)	71 (0.003)
Asian	Male	5,088	8,753	1,032
	Female	5,245	9,398	600
	All	10,333 (6.0)	18,151 (5.0)	1,632 (6.0)
Hispanic	Male	1,821	4,229	297
	Female	2,079	5,076	213
	All	3,900 (2.3)	9,305 (2.6)	510 (1.8)
White	Male	57,479	116,027	13,212
	Female	69,029	147,679	9,540
	All	126,508 (73.2)	263,706 (72.8)	22,752 (82.2)
Total	Male	77,511	156,169	16,314
	Female	95,413	205,910	11,349
	All	172,924	362,079	27,663

Source: SCHEV (* Figures in parentheses are the percentages of the total)

Fig 2.2 :Student enrolment in Virginia higher education institutions by gender (1990)

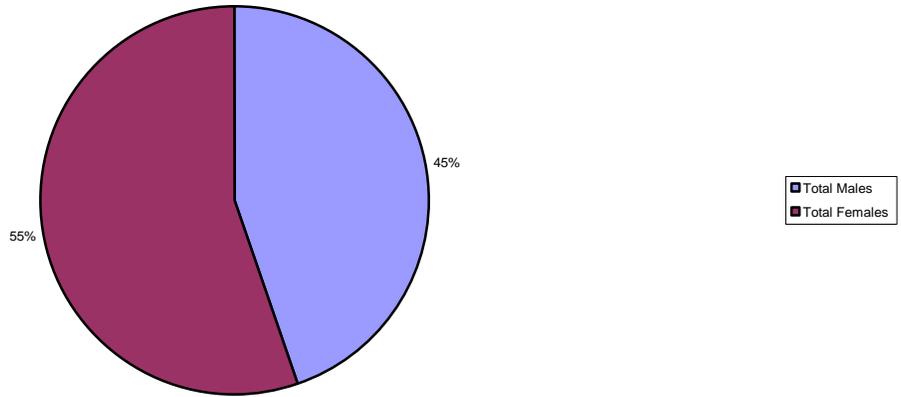


Fig 2.3 : Student enrolment in Virginia higher education institutions by gender (1998)

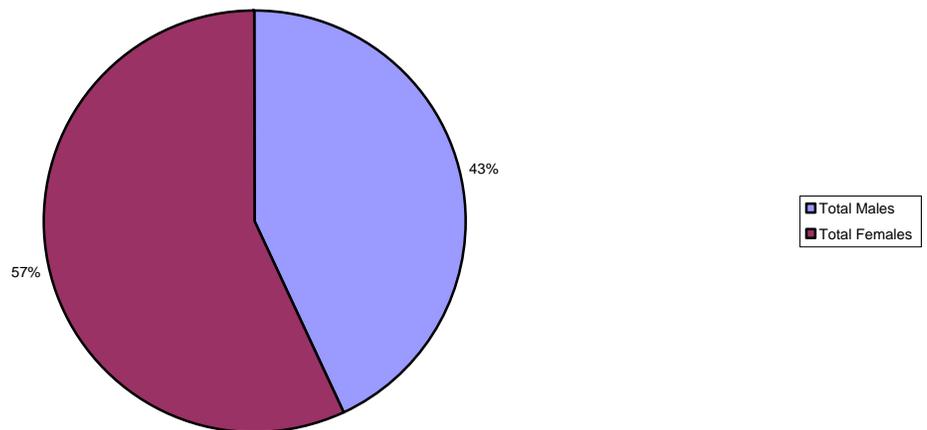


Fig 2.4 : Student enrolments in Virginia schools by race

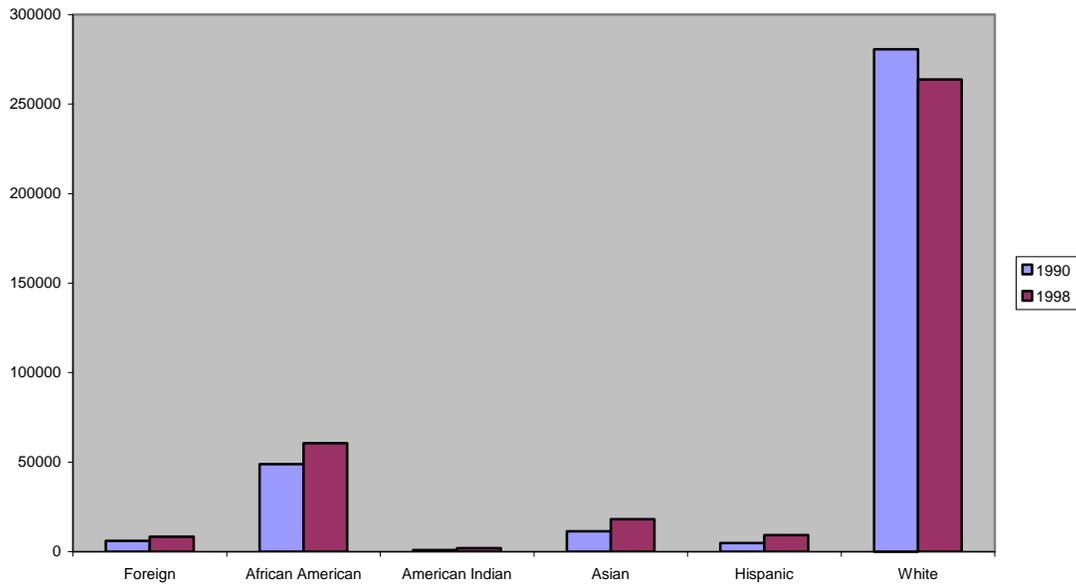


Fig 2.5 : Student enrolments in four year public schools in Virginia by race

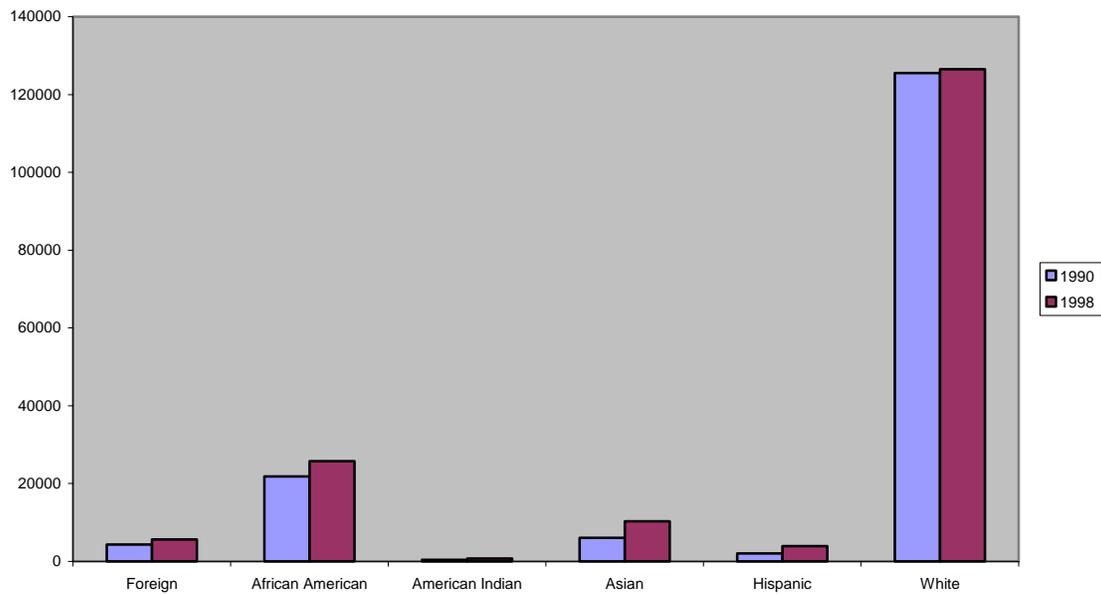
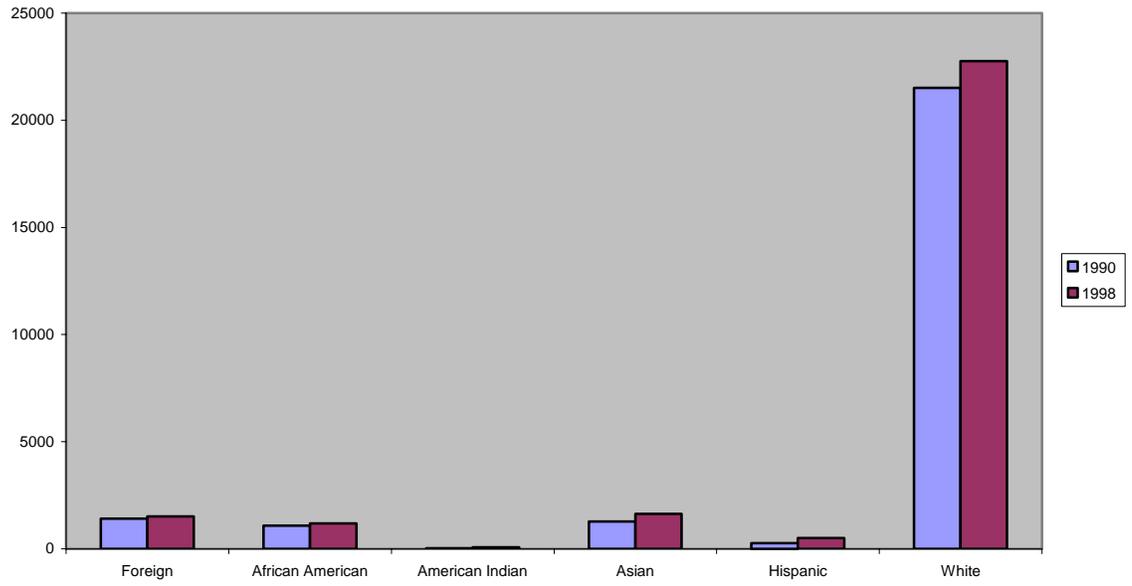


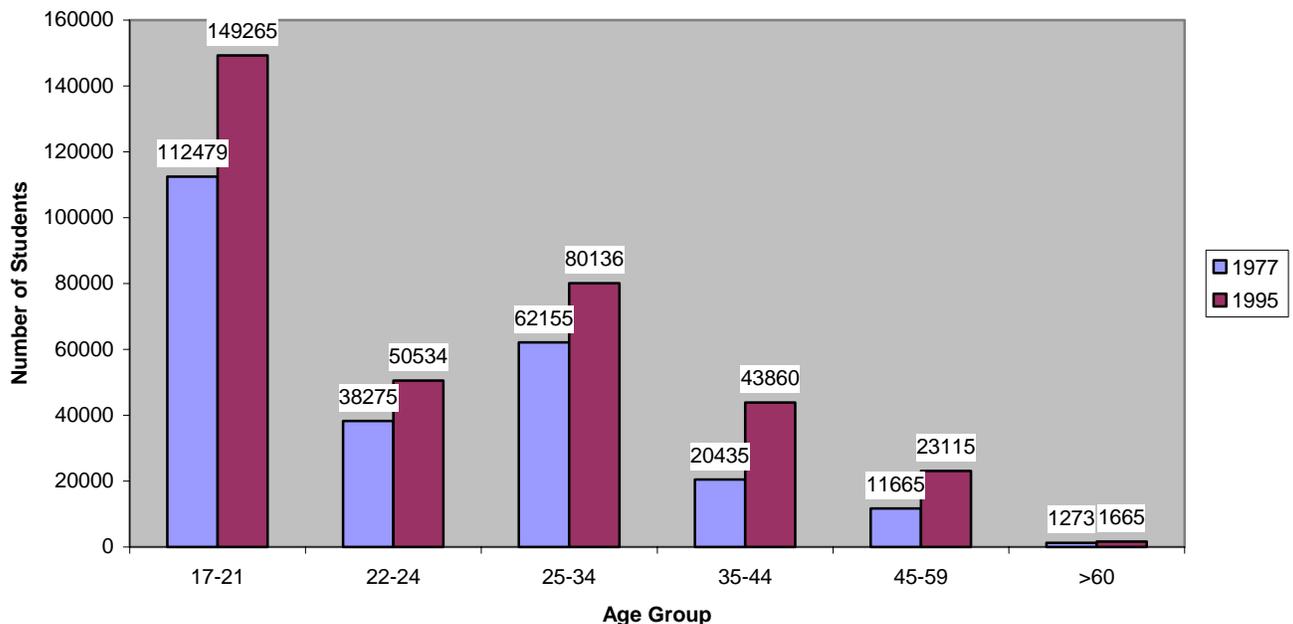
Fig 2.6 : Student enrolments in Virginia Tech by race



2.6 Higher Education and Age

To keep pace with job market requirements, and to update knowledge, an increasing number of people are returning to school or enrolling in other forms of training. There has been a significant increase in the share of students in the age groups 35-44 and 45-59. While the age-groups 35-44 and 45-59 accounted for 8.08 percent and 4.61 percent of the total student population in 1977, respectively, the figures have jumped to 12.55 percent (35-44) and 6.62 percent (45-59) in 1995 (Fig.2.7).

Fig 2.7: Age Distribution in Higher Education Institutions in Virginia



2.7 Degrees Conferred

The number of degrees conferred by four year public institutions increased from 30,474 in 1990-91 to 35,682 in 1998-99, an increase by 17 percent (Table 2.6 and Fig.2.8). The number of degrees conferred by Virginia Tech increased from 5,364 in 1990-91 to 6,166 in 1998-99, an increase by 15 percent (Table 2.6 and Fig.2.9). The number of degrees

conferred by Virginia Tech in 1990-91 was 17.6 percent of the number of degrees conferred by four year public institutions in the state. However, the share of Virginia Tech in the number of degrees conferred by four year public institutions in the state reduced to 17.3 percent in 1998-99.

Table 2.6: Degrees conferred by four year public institutions in Virginia and Virginia Tech

Degree	Year	Four year public institutions	Virginia Tech
Associates	1990-91	87	24
	1998-99	95	43
Bachelors	1990-91	21,784	3,781
	1998-99	23,942	4,251
Post Baccalaureate	1990-91	17	0
	1998-99	326	0
First Professional	1990-91	1,167	79
	1998-99	1,303	79
Masters	1990-91	6,355	1,099
	1998-99	8,876	1,413
Post Masters	1990-91	162	49
	1998-99	110	46
Doctoral	1990-91	846	332
	1998-99	1,030	334
Total	1990-91	30,474	5,364
	1998-99	35,682	6,166

Source: SCHEV

Fig 2.8 : Degrees conferred by four year public institutions in Virginia

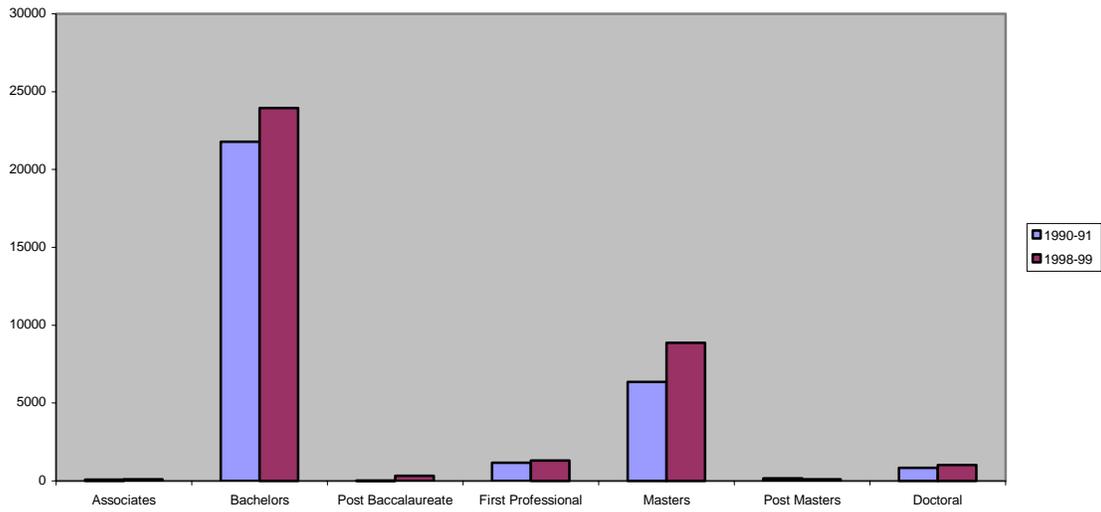
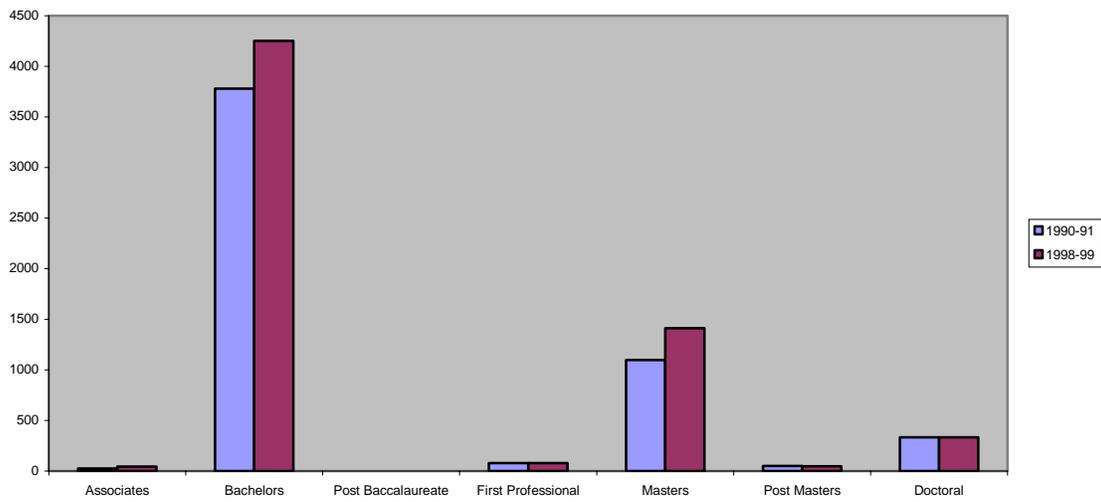


Fig 2.9 : Degrees conferred by Virginia Tech



2.8 Educational investments

Education is an investment for both individuals and the state. At the individual level, expected future earnings and abilities determine the level of resources (time, money) an individual spends on a college degree. The costs of a college education not only include tuition and fees, but also the earnings foregone while the individual is attending college. It is important to note that tuition and fees do not cover the full cost of a degree, in most cases. The amount that is not covered by tuition and fees is borne by society.

Average undergraduate instate tuition and fees in four year public institutions in Virginia decreased (although it increased between 1996-97 and 1998-99) from \$4,018 in 1996-97 to \$3,821 in 2000-01, approximately a 12 percent decrease in real terms. However, out-of-state tuition and fees increased during the same period. In general, out-of-state tuition and fees are much higher than instate tuition and fees.

As mentioned earlier tuition and fees do not cover the full cost of a degree. A measure of the full cost of a degree is given by the 'E & G appropriation' (Employment and General) per student. The 'E & G appropriation' includes appropriations from the state government, federal government, individuals, and tuition and fees. The difference between the 'E & G appropriation' per student, and tuition and fees, is the cost borne by society. For example, the 'E & G appropriation' per student in four year public institutions was \$9,266 in 1996-97 (Table 2.7), while the average undergraduate instate tuition and fees was \$4,018, implying that \$5,248 per student (\$9,266-\$4,018) from Virginia, was borne by society. Since a considerable amount of public resources is spent on educating individuals, the returns to society from an educated population assume importance.

For four year public institutions, tuition and fees contributed 21 percent of the total revenue (total revenue includes 'E & G appropriation', sponsored programs, student aid and auxiliary enterprises), state appropriations 49 percent, federal contracts and grants 13 percent, other contracts and grants 2 percent, and all other sources 15 percent, in 1985-86.

Table 2.7: Public financing of education

Institution	Source of financing	1996-97	1997-98	1998-99
Four year public institutions	E & G appropriation per FTE student (\$)	9,266	9,617	10,448
	Undergraduate instate tuition and fees (\$)	4,018	4,101	4,240
Virginia Tech	E & G appropriation per FTE student (\$)	10,141	10,375	11,292
	Undergraduate instate tuition and fees (\$)	4,131	4,147	4,305

Source: SCHEV

The figures are 33 percent (tuition and fees), 33 percent (state appropriations), 15 percent (federal contracts and grants), 4 percent (other contracts and grants), and 15 percent (all other sources), for 1995-96. Institutions increasingly depended on tuition and fees as state support declined, between the two periods. However, there seems to be a reversal in this trend, as seen by decreasing tuition rates in recent years.

Four year public colleges and universities spent about 42 percent of their funds on instruction, 14 percent on research, 5 percent public service, 25 percent on academic and administrative support, 8 percent on plant operation and maintenance, and 6 percent on scholarships and fellowships, in 1985-86. The figures for 1995-96 were 40 percent (instruction), 15 percent (research), 4 percent (public service), 23 percent (academic and administrative support), 6 percent (plant operation and maintenance) and 10 percent (scholarships and fellowships). While the institutions reduced spending on instruction, public service, academic and administrative support, and plant operation, they spent relatively more on research and scholarships, between the two periods.

2.9 Conclusions

The above discussion brings out the importance of higher education in determining incomes in the state. The figures reveal that there will be higher demand in the future not only from the increase in the number of high school graduates, but also from the increasing number of students in older age-groups, who need to update their skills. Higher female and minority enrolments could have a positive impact on disparities in incomes and well-being in the state. If present trends continue, the role of the public schools in providing higher education will become increasingly important. Public investments in higher education are important. Proper assessment of the benefits of public higher education is necessary for determining the optimal level of public investments. A college degree will be a key factor in determining living standards and economic growth in the future.