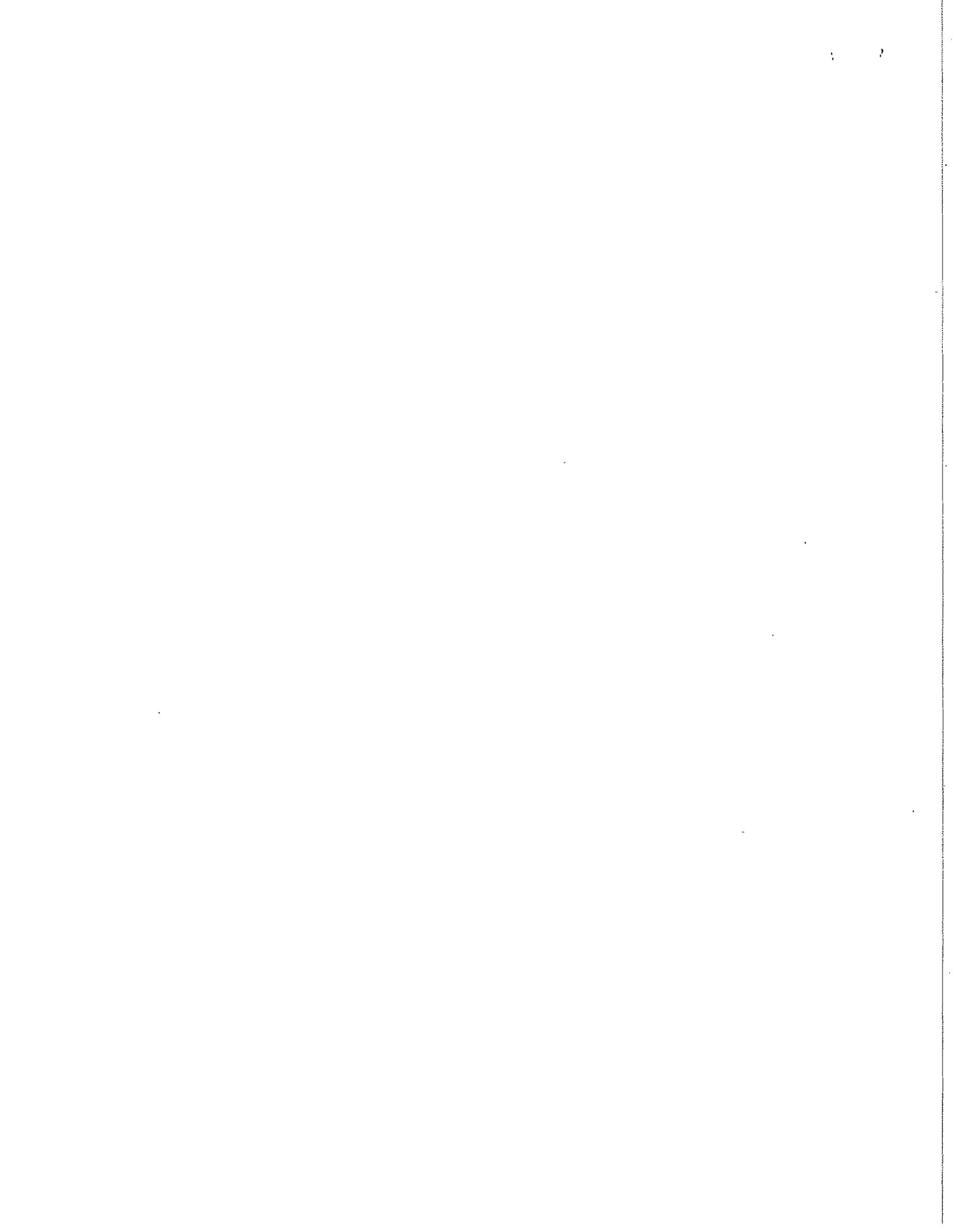


FACULTY OUTPUT AND SALARY COSTS
OF STATE-RELATED AND STATE-OWNED
COLLEGES AND UNIVERSITIES

ANALYSIS OF DATA SUBMITTED UNDER
REPORTING REQUIREMENTS OF 1978 APPROPRIATION ACTS

Staff Report of the
Joint State Government Commission of the
General Assembly of the Commonwealth of Pennsylvania
Harrisburg, Pennsylvania
March 1980



FOREWORD

This is the seventh annual Commission staff report analyzing data submitted by the public institutions of higher education in Pennsylvania pursuant to the reporting requirements in their appropriation acts.

Prepared for the committees on appropriations and education of the Senate and House of Representatives, this staff report--the most comprehensive to date--is the first to present extensive data for each year since 1972 and to analyze the discernible trends.

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In these annual reports, the staff utilizes a variety of measurements that enable comparisons within and among the colleges and universities. The measurements are defined in the glossary, pp. 67-69.

Attention is focused on exemplary instances of cost efficiency, on areas where significant economies might be achieved through changes in administrative policies and on possible standards and limitations that would result in significant savings if they were required.

The reporting requirement was first introduced into the appropriation acts for the State-related universities by Senator Richard A. Snyder for the 1972-1973 academic year. The House of Representatives added a similar reporting requirement in 1976 to the appropriation act for the State-owned colleges and university.

The most recent data included in this report were submitted under the reporting provisions of the 1978 appropriation acts.

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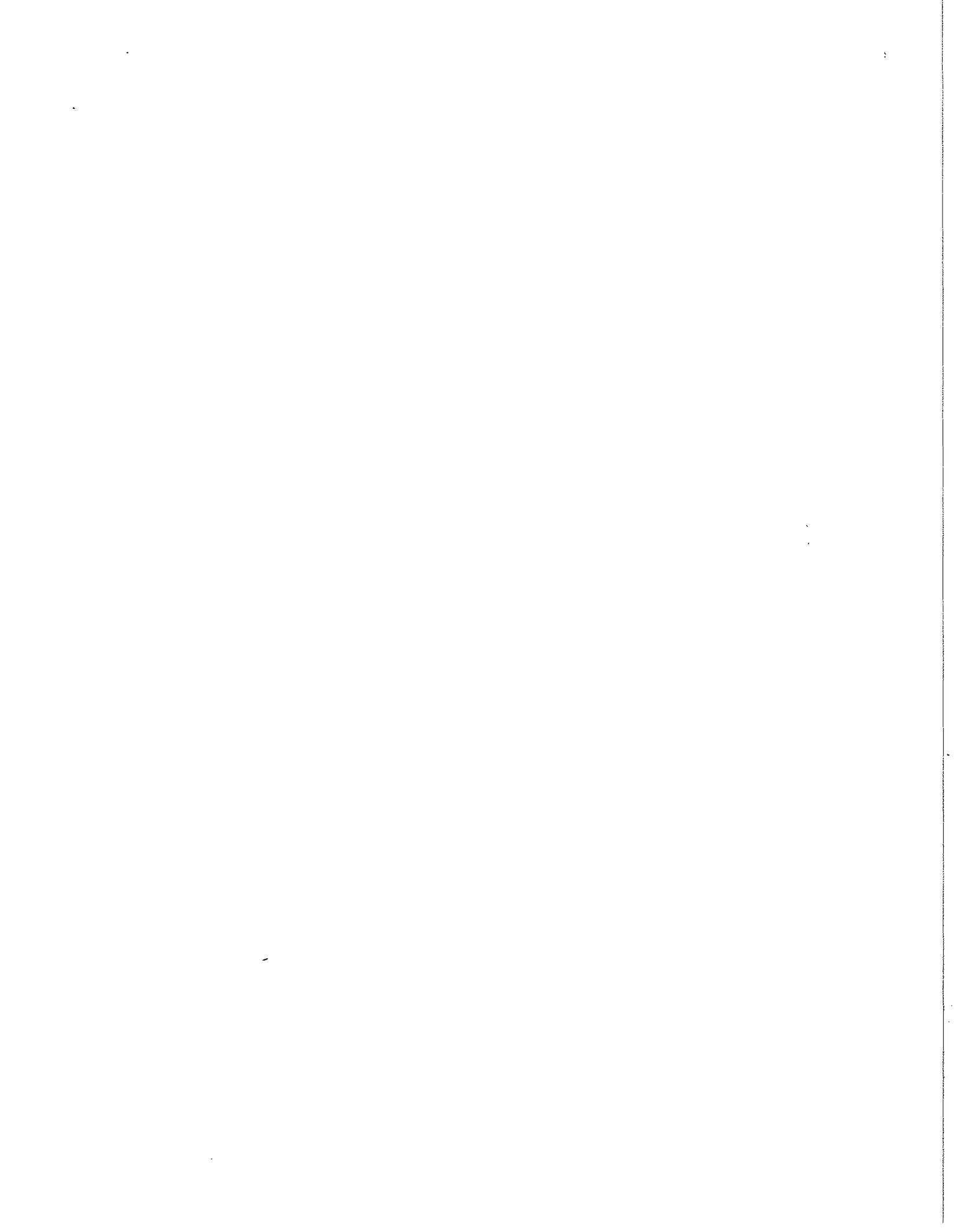
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SUMMARY OF FINDINGS

1. Decreasing student demand--(a) The student credit-hour production of Pennsylvania public colleges and universities decreased in 1978-1979 and, reflecting the declining college-age population in Pennsylvania, can be expected to fall throughout the 1980s (appendix tables 1A, 2A, 3A and 4A).
(b) The number of full-time equivalent students decreased by more than 10 percent from 1976 to 1978--at Temple by 3,300 students, Edinboro by 710, California by 480 and Mansfield by 450. (table 1)

2. Number of full-time equivalent faculty--Despite the projected decline in student demand in Pennsylvania, half of the 18 institutions expanded their faculties in 1978-1979. West Chester reported an increase of 38 full-time equivalent faculty members. (table 3)

3. Faculty workweek--Full-time faculty members at the State-owned schools averaged 17 hours per week in administrative and other university service as compared with 12 hours in the classroom in fall 1978. (table 4)

4. Average class size--At the State-owned institutions, the smallest average class sizes in the history of these reports were reported for:

Edinboro	-	19.2	at the lower-division level
Mansfield	-	11.0	at the upper-division level
Cheyney	-	6.1	at the master's level (table 5)

5. Size distribution of lower-division classes--Sixty-one percent of the lower-division undergraduate classes at Clarion had 20 or fewer students in academic year 1978-1979. (table 6)

6. Number of courses--Despite a decrease of 3,330 undergraduate student credit hours at West Chester, the number of undergraduate courses increased by 49. (table 7)

7. Average faculty salary--California's teaching faculty had the highest average nine-month salary (\$23,228), and 84 percent of the faculty members held the rank of professor or associate professor. Pitt's teaching faculty had the lowest average salary (\$18,110). (table 9)

8. Professor/associate professor salaries--Temple paid the highest average salary to professors (\$30,802) and associate professors (\$22,977). (table 10)

9. Faculty salary increases--Average salary increases over 1977-1978 at Temple and 11 of the State-owned institutions were 9 percent or more. In contrast, the national average increase in salaries from 1978 to 1979 in the professional, administrative and technical support occupations, as published by the Bureau of Labor Statistics, was 7.7 percent. (text p. 29)

10. Distribution of faculty by rank--(a) Seventy-two percent of the ranked faculty held the rank of professor or associate professor at the State-owned institutions in 1978-1979. The national average for public institutions (1977-1978) is 58 percent. (table 9) (b) A net increase over 1977-1978 of 56 professors was reported--35 at the State-owned institutions and 21 at the State-related universities. (text p. 35)

11. Appropriations--Commonwealth appropriations to the State-related institutions continue to increase at equal percentage rates with no adjustment for changing production patterns. Pitt produced more student credit hours and awarded more degrees than Temple for the two years, 1977-1979, but in each year received

a smaller appropriation than Temple. Of the State-related institutions, the Penn State appropriation per unit produced shows the greatest percentage increase (20.8%) from 1976 to 1979. (tables 1 and 12)

12. Efficiency and appropriations--The institutions demonstrating the poorest cost efficiency and the highest unit appropriations in their size categories were Temple, West Chester, Edinboro, California and Mansfield. (table 11 and chart 1)

13. Tuition and appropriations--Except for Penn State and Pitt, the tuition paid by undergraduate residents is less than the Commonwealth's per student appropriation. At the graduate level, except for the tuition paid by Penn State and Pitt nonresident students, the appropriation per student is greater than the student fee. The average cost to the Commonwealth in 1980-1981 for each graduate student at the State-owned institutions, as proposed, is more than four times the amount of the tuition and fees to be paid by the student. (chart 2)

ANALYSIS OF FACULTY OUTPUT AND SALARY COSTS

During the 1960s and early 1970s the demand for higher education in Pennsylvania intensified primarily because of the increasing number of high school graduates and a larger proportion of graduates seeking education beyond high school. As a result, institutions of higher education expanded their faculties and enlarged and diversified their programs of study.

By the mid-1970s a slowdown in college enrollment became evident. During 1978-1979 each State-related and State-owned institution of higher education in Pennsylvania experienced a decline from the previous year in undergraduate student credit-hour production except Indiana, Clarion and Shippensburg, which reported slight increases. Appendix table 1A shows the student credit hours by level of instruction reported by the 18 public institutions from the time of the first Snyder report (1972-1973 for State-related and 1976-1977 for State-owned institutions).

As indicated in appendix table 2A, the percentage of Pennsylvania high school graduates continuing formal study in a college or university

peaked in 1971 at 45 percent and the total number of graduates peaked in 1976 at 190,000. Projections for the early 1980s show all institutions of higher learning in Pennsylvania, except community colleges, to have declining production trends similar to those of the State-related and State-owned schools. This is illustrated by the Department of Education enrollment data in appendix table 3A--full-time and part-time by institutional category for 1969-1978 and projected for 1979-1988. Although the enrollment data, in nonequivalent form, are not so precise a measure as student credit hours, the trends are similar.

The decline in the total demand for higher education underscores the necessity for colleges and universities to reassess their administrative policies. This report analyzes the success of the individual Pennsylvania public institutions in adjusting schedules and staff to the decreasing student population and to the changing interests of students today.

The problem for the educational institutions is complicated by the fact that despite a net decrease in demand, in certain areas demand has actually increased. Some departments do, in fact, need to expand their faculties and course offerings while other departments find themselves with large faculties and little student interest. For this reason, a more detailed departmental analysis will be issued in a subsequent report which will identify the impact of the decreasing

demand on levels of instruction, geographic areas and fields of study. The specific areas which sustain decreases will affect the rate and degree of future changes in institutional needs.

In this report only overall institutional aggregates will be considered in discussing instructional output, administrative scheduling policies, faculty salaries, Commonwealth appropriations and tuition.

INSTRUCTIONAL OUTPUT

Student Body and Degrees

As a uniform measure of the magnitude of the student body, the number of full-time equivalent students appears in table 1 (one full-time equivalent student is equal to 30 undergraduate student credit hours or 24 graduate student credit hours). The table shows the total full-time equivalent students from September 1976 to September 1979 for each State-related and State-owned institution and the total number of bachelor's, master's and first professional degrees awarded during this period. Appendix table 1A also indicates the doctoral level degrees produced at Penn State, Pitt, Temple and Indiana.

The aggregate totals at the bottom of table 1 verify the decline in the number of students and indicate a lag in the effect of the decreasing high school population on the number of degrees being granted. For the State-related institutions, the full-time equivalent student enrollment declined by 5,000 students since 1976-1977 while

Table 1

FULL-TIME EQUIVALENT STUDENTS¹ AND
BACHELOR'S, MASTER'S AND FIRST PROFESSIONAL DEGREES
1976-1979

Year	Students	Degrees	Students	Degrees	Students	Degrees	Students	Degrees	Students	Degrees	
	<u>Penn State</u>		<u>Pittsburgh</u>		<u>Temple</u>		<u>Lincoln</u>		<u>Total State-related</u>		
1976-1977	54,800	9,840	28,900	5,590	30,300	5,420	1,110	155	115,000	21,000	
1977-1978	54,400	9,610	28,000	6,010	27,900	5,470	1,220	183	112,000	21,270	
1978-1979	53,600	9,950	28,100	5,740	27,000	5,350	1,220	215	110,000	21,260	
	<u>Bloomsburg</u>		<u>California</u>		<u>Cheyney</u>		<u>Clarion</u>		<u>East Stroudsburg</u>		
1976-1977	6,110	1,170	4,670	1,030	2,580	451	5,060	1,040	4,390	883	
1977-1978	6,270	1,260	4,370	958	2,660	428	5,180	1,050	4,200	838	
1978-1979	6,250	1,370	4,190	926	2,390	359	5,170	1,120	4,060	770	
	<u>Edinboro²</u>		<u>Indiana University</u>		<u>Kutztown</u>		<u>Lock Haven</u>		<u>Mansfield</u>		
1976-1977	6,190	1,360	11,300	2,740	4,700	1,050	2,480	419	2,860	607	
1977-1978	5,760	1,250	12,100	2,510	4,550	921	2,320	460	2,570	562	
1978-1979	5,480	1,170	12,200	2,590	4,470	919	2,240	390	2,410	548	
	<u>Millersville</u>		<u>Shippensburg</u>		<u>Slippery Rock</u>		<u>West Chester</u>		<u>Total State-owned</u>		
1976-1977	5,700	1,250	5,560	1,360	6,090	1,210	7,990	1,580	75,700	16,100	
1977-1978	5,590	1,180	5,470	1,320	5,740	1,210	8,190	1,560	75,000	15,500	
1978-1979	5,510	1,190	5,470	1,270	5,490	1,040	8,030	1,530	73,400	15,200	
	<u>Grand total</u>										
	<u>Year</u>	<u>Students</u>	<u>Degrees</u>								
	1976-1977	191,000	36,800								
	1977-1978	187,000	36,770								
	1978-1979	183,000	36,500								

1. Full-time equivalent students calculated by dividing undergraduate student credit hours by 30 and graduate student credit hours by 24.

2. Edinboro student credit-hour data from "State College and University Budgeting System Common Cost Accounting Reports," fiscal years 1976-1977, 1977-1978 and 1978-1979.

SOURCE: Student credit-hour and degree reports provided by the individual institutions, 1977, 1978 and 1979.

the number of degrees increased slightly in that time period. Enrollment decreases at Temple University accounted for over 60 percent of the 5,000 decline. Full-time equivalent enrollment at the State-owned colleges and university declined by 2,300 students. Due to the time lag, the overall decrease in full-time equivalent students is approximately 25 times that in degrees.

Projections of the high school population shown in appendix table 4A indicate that decreases in student demand can be expected to continue in the next decade. Some institutions are attempting to offset the decreases by introducing different programs and expanding continuing education for adults. Only credit courses are included in the statistics in this report.

Changes in Student Credit-Hour Production

Undergraduate Level--Table 2 provides a closer scrutiny of the change in production by level of instruction with the first column showing the overall changes at the undergraduate level. The lower- and upper-division undergraduate student credit hours have been combined due to the fact that changes in allocation of student credit hours between lower- and upper-division levels at several of the State-owned schools result in misleading data for these individual schools. Some of these differences may be attributable to changes in administrative assignment of levels for courses. However, it is to be expected that the decreasing high school population would affect

Table 2
NET CHANGE IN STUDENT CREDIT-HOUR PRODUCTION
BY LEVEL OF INSTRUCTION
1977-1979

Institution	Undergraduate	Master's and first pro- fessional	Doctoral
State-related universities			
Penn State	-23,500	+187	-1,430
Pittsburgh	-1,680	-325	+4,500
Temple	-35,800	+11,300	-3,790
Lincoln	-1,540	+1,390	n.a.
Net change	-62,500	+12,600	-720
State-owned colleges			
Bloomsburg	-960	+144	n.a.
California	-4,320	-880	n.a.
Cheyney	-8,260	-54	n.a.
Clarion	+1,060	-974	n.a.
East Stroudsburg	-3,360	-765	n.a.
Edinboro ¹	-6,980	-1,040	n.a.
Indiana University	+7,050	-1,270	0
Kutztown	-1,780	-585	n.a.
Lock Haven	-2,560	n.a.	n.a.
Mansfield	-4,930	+37	n.a.
Millersville	-1,560	-661	n.a.
Shippensburg	+1,290	-849	n.a.
Slippery Rock	-7,010	-302	n.a.
West Chester	-3,900	-705	n.a.
Net change	-36,200	-7,900	n.a.
Total net change for all State-owned and State-related institutions			
	-98,700	+4,700	-720

1. See table 1, footnote 2.
n.a. - Not applicable.

SOURCE: Student credit-hour reports provided by the individual institutions, 1978 and 1979.

the lower-division production first and that further decreases will become evident at all levels. Table 1A in the appendix shows the data for each level as reported by each of the institutions.

The State-related institutions show a decline in undergraduate production of 62,500 student credit hours since 1977-1978. The decrease in Temple's production accounts for over one-half of this decrease. As table 2 indicates, the only large increase in student credit-hour production over the previous year occurred at Indiana, with a 7,050 student credit hour gain at the undergraduate level.

Overall, the State-owned institutions' undergraduate student credit-hour production declined by 36,200 in one year's time. In fact, 8 of the 14 State-owned schools have shown steadily declining production over the three-year period from 1976-1977 to 1978-1979 at the undergraduate level equal to 81,900 student credit hours or 8 percent of their 1976-1977 production--representing a loss of 2,730 full-time equivalent students.

<u>Institution</u>	<u>Total decline in undergraduate student credit-hour production 1976-1977 to 1978-1979</u>	
California	11,700	9.2%
East Stroudsburg	7,430	6.2
Edinboro	17,700	10.5
Kutztown	5,060	3.9
Lock Haven	7,380	9.9
Man'sfield	12,800	15.7
Millersville	3,050	2.1
Slippery Rock	<u>16,800</u>	<u>9.8</u>
Total	81,900	8.0

Graduate Level--Apparently, the decrease in graduate work at the State-owned schools, shown in the second column of table 2, may be largely attributable to the decreasing demand for teachers in Pennsylvania, as reflected in projected enrollments in Pennsylvania secondary schools through 1988 (see appendix table 4A). While Temple and Penn State experienced production decreases at the doctoral level of 30 percent and 3 percent, respectively (table 2, third column), Pitt's production at this level climbed by 16 percent. Temple's overall graduate production increased due to an additional 11,300 student credit hours at the master's and first professional level.

ADMINISTRATIVE SCHEDULING POLICIES

To varying degrees the institutions have attempted to reduce instructional expenditures in areas where the demand has diminished. Reductions have been made in the number of full-time equivalent faculty members (table 3), in the number holding the rank of professor (appendix table 7A) and in the number of classes taught for 10 or fewer students (table 6). Some teaching faculty members have been transferred to assignments other than teaching or have been treated as part-time teaching faculty. The specific data presented in the following tables indicate the degree to which these efforts have been applied and the institutions which have followed some of these procedures.

Faculty Count

Table 3 shows the number of full-time equivalent faculty members for the two years 1977-1978 and 1978-1979 and presents a comparison of the percentage change in full-time equivalent faculty with the percentage change in full-time equivalent students.¹ Although FTE students decreased by 2 percent at the State-owned institutions, the schools reported overall a net increase in FTE faculty members of slightly more than 1 percent. In other words, there has been a general decrease in the average faculty production. Notable changes were reported by Lincoln, where the FTE faculty increased by 6.93 percent and the FTE students increased by less than 1 percent, and West Chester where the FTE faculty increased by 6.95 percent and the FTE students decreased by 1.95 percent. Expansions in faculties are in striking contrast to the policies of many private institutions, which are today reducing their faculties and sharing faculty members on a part-time basis with other institutions.

Full-Time Faculty Credit-Hour Output

The decline in faculty production is shown in table 4, which presents for fall 1977 and fall 1978 the average undergraduate equivalent student credit hours per full-time faculty member and the

1. The number of "full-time equivalent faculty" is the sum of full-time faculty and full-time equivalent part-time faculty members for each term during the year divided by the number of terms comprising an academic year. For Penn State, the reported "full-time equivalent faculty in resident instruction" were used. FTEs for Pitt were provided for 1978-1979 but could not be used for comparison with the previous year.

Table 3

FULL-TIME EQUIVALENT FACULTY COUNT AND PERCENTAGE CHANGE IN
FTE FACULTY AND FTE STUDENTS¹
1977-1979

	<u>Penn State University</u>	<u>University of Pittsburgh</u>	<u>Temple University</u>	<u>Lincoln University</u>	
1977-1978	3,066	2,899	2,083	101	
1978-1979	3,058	2,808	2,052	108	
Percentage change in fte faculty	-0.26	-3.14	-1.49	+6.93	
Percentage change in fte students	-1.54	+0.42	-3.16	+0.53	
	<u>Bloomsburg</u>	<u>California</u>	<u>Cheyney</u>	<u>Clarion²</u>	<u>East Stroudsburg</u>
1977-1978	377	365	201	318	281
1978-1979	397	372	202	319	276
Percentage change in fte faculty	+5.31	+1.92	+1.50	+1.31	-1.78
Percentage change in fte students	-.41	-4.13	-10.42	+1.76	-3.42
	<u>Edinboro</u>	<u>Indiana University</u>	<u>Kutztown</u>	<u>Lock Haven</u>	<u>Mansfield</u>
1977-1978	424	696	336	187	214
1978-1979	425	717	328	182	205
Percentage change in fte faculty	+.24	+3.02	-2.38	-2.67	-4.21
Percentage change in fte students	-4.80	+1.51	-1.84	-3.67	-6.34
	<u>Millersville</u>	<u>Shippensburg</u>	<u>Slippery Rock</u>	<u>West Chester</u>	
1977-1978	392	350	374	547	
1978-1979	374	365	377	585	
Percentage change in fte faculty	-4.59	+4.29	+.80	+6.95	
Percentage change in fte students	-1.42	+.14	-4.29	-1.95	
		<u>Total State-related universities</u>		<u>Total State-owned colleges</u>	
1977-1978		8,149		5,062	
1978-1979		8,026		5,124	
Percentage change in fte faculty		-1.51		+1.22	
Percentage change in fte students		-1.43		-2.01	

1. See table 1, footnote 1.

2. Academic year faculty and students only used in calculation.

SOURCE: Summary tables of numbers of faculty members provided by the individual institutions, 1978 and 1979.

Table 4

AVERAGE WEEKLY HOURS SPENT IN SPECIFIED ACTIVITIES AS REPORTED BY
FULL-TIME FACULTY AND EQUIVALENT STUDENT CREDIT-HOUR PRODUCTION
FALL 1977 AND 1978

Institution	Full-time faculty			Average weekly hours spent in specified activities				
	Total number	Reporting workweeks	Average equivalent student credit-hour production ¹	Undergraduate equivalent contact hours ²	Instructional support	Research	Administrative and other university service	Average workweek
State-related universities								
Penn State								
1977	1,911	100.0%	277 ^a	11.9	24.8	10.4	6.6	53.3
1978	1,928	100.0	275 ^a	11.8	24.3	10.8	6.8	53.3
Pittsburgh								
1977	1,612	100.0	171 ^b	10.8	18.5	14.7	12.0	54.9
1978	1,608	100.0	173 ^b	10.5	17.7	14.7	12.7	54.5
Temple								
1977	1,339	100.0	207	11.2	17.4	11.4	13.6	52.6
1978	1,330	100.0	199	10.9	17.3	11.9	13.4	52.6
Lincoln								
1977	76	86.8	183	11.2	22.5	3.9	21.6	59.2
1978	78	91.0	176	11.9	16.8	8.2	9.6	46.3
State-owned colleges								
Bloomsburg								
1977	291	100.0	289	13.0	17.1	7.6	16.1	53.6
1978	307	100.0	266	12.4	16.8	7.7	16.6	53.5
California								
1977	313	98.4	199	9.9	15.9	6.9	18.4	50.9
1978	307	98.0	187	10.0	16.0	7.4	17.2	50.4
Cheyney								
1977	185	56.2	213	12.8	16.5	6.8	16.9	52.7
1978	181	42.0	184	12.7	16.1	7.4	15.9	51.8
Clarion								
1977	298	98.7	242	11.5	15.9	6.7	17.3	51.2
1978	308	99.7	233	10.2	15.7	6.2	19.2	51.0
East Stroudsburg								
1977	222	100.0	251	11.6	18.4	7.5	19.5	56.9
1978	218	100.0	241	11.5	18.1	8.4	19.3	57.2
Edinboro								
1977	403	95.0	192	13.1	17.7	9.1	15.5	55.2
1978	384	92.4	186	13.3	18.8	8.9	13.5	54.2
Indiana University								
1977	560	75.4	279	12.9	18.5	8.9	16.5	56.5
1978	574	66.4	284	12.9	20.4	8.9	17.1	59.0
Kutztown								
1977	293	100.0	227	12.1	16.3	8.5	16.1	52.9
1978	294	99.3	219	11.8	15.9	8.1	17.2	53.0
Lock Haven								
1977	167	98.8	210	11.9	15.1	6.8	18.5	52.2
1978	159	99.4	205	11.7	16.6	7.4	17.1	52.8
Mansfield								
1977	193	98.4	185	10.9	23.3	6.3	11.6	52.0
1978	191	100.0	176	10.8	19.9	6.8	12.1	49.5
Millersville								
1977	296	100.0	243	11.7	16.5	7.7	17.2	52.8
1978	292	100.0	247	11.5	16.6	7.6	16.8	52.3
Shippensburg								
1977	298	96.3	251	10.2	18.2	9.1	16.3	53.5
1978	298	96.0	248	10.4	17.4	8.4	16.9	52.8
Slippery Rock								
1977	323	99.4	255	14.0	16.7	7.2	15.3	53.0
1978	339	94.4	231	14.4	16.1	7.0	16.6	53.9
West Chester								
1977	449	96.0	246	13.3	14.9	8.7	15.1	51.8
1978	483	97.3	229	12.0	16.5	8.6	16.5	53.1
Total State-owned								
1977	4,291	93.4	239	12.2	17.1	7.9	16.4	53.3
1978	4,335	91.2	230	11.9	17.3	7.9	16.6	53.4

1. Average equivalent student credit-hour production equals undergraduate student credit hours plus 1.25 times graduate student credit hours divided by total number of full-time faculty.

2. Undergraduate equivalent contact hours equal undergraduate contact hours plus 1.25 times graduate contact hours.

a. Average production of faculty who are full-time in resident instruction adjusted to reflect one-half of academic year student credit-hour production.

b. Average production of full-time faculty. Average production of the full-time faculty equivalent in the instructional function for fall 1978 equals 341. No comparable production figure for fall 1977.

SOURCE: Student credit-hour production reports and full-time faculty member reports of average weekly hours of work-related activities provided by the individual institutions, 1978 and 1979.

average faculty hours per week spent in various university-related activities. The table discloses a wide range in the average student credit-hour production for fall 1978--from 173 (Pitt) to 275 (Penn State) and 284 (Indiana). Some of the variance is due to the methods of assigning faculty members to teaching or nonteaching categories. For example, at Penn State a faculty member who spends half his time in administration and the other half in teaching is reported as part-time and therefore not included in the full-time data. The range in average production suggests that other institutions have followed this procedure to varying degrees.²

The changes in average production in the fall indicates the success a school has achieved in balancing students and faculty during the term having the largest student body and the heaviest faculty workload. The variations in fall production are in general similar to those for the academic year, shown in table 3. In addition to Pitt, only two State-owned schools--Indiana and Millersville--indicate increases in average production over fall 1977. The other institutions either expanded their faculties or did not reduce them sufficiently to balance the diminishing student demand. Despite the fact that

2. Penn State's full-time faculty members have only instructional functions. Many of Pitt's full-time faculty members have dual functions in instruction and noninstruction areas. If FTEs (provided for the first time in the 1978-1979 report) were used for Pitt's fall full-time faculty, the average equivalent production would be 341 student credit hours.

Cheyney decreased its full-time faculty by four, the average equivalent student credit-hour production (213 hours in fall 1977) declined to 184 hours in fall 1978--the greatest numerical decrease for all institutions. The increase of 34 full-time faculty members at West Chester resulted in a decline in average production, even though the total credit hours increased slightly.

Fall Full-Time Faculty Workweek

One might expect that decreases in average production would be reflected in the average workweek reported by full-time faculty members (table 4) or in class sizes, to be discussed later. In general, there were only slight changes in average contact hours. Clarion and West Chester, each with decreases in average production, experienced the greatest decline in undergraduate equivalent average contact hours (1.3 hours).

Table 4 also provides insight into the administrative and research characteristics of the "full-time" faculty members reporting at the different schools. Wide variations in the data are indicative of the differences in the definitions of "full-time" faculty. For example, the average weekly hours spent by faculty members at Penn State in administrative and other university service is roughly one-half or less of that reported by the staff of other institutions. Faculty members at Pitt report a notably larger number of average hours spent in research. Lincoln's data appear to be inconsistent for the two years.

Overall, the State-owned "full-time" faculty members reported spending 40 percent more of their time in fall 1978 performing administrative and other university service than in contact with students.

It should be noted that both Cheyney and Indiana had a poor reporting record of workweek activities by their full-time faculty (42% and 66%, respectively).

Class Size

As has been demonstrated in previous reports, one of the most effective means of reducing unit costs is to increase the average class size. When the number of students decreases and the number of faculty members does not, the average class size will, in all likelihood, decrease if there have not been any administrative steps to maintain the class sizes. Administrative limitations which could be applied are

- Requiring a minimum number of students in a class.
- Limiting the number of different courses taught in a given field.
- Limiting the number of sections scheduled for any one course on the basis of student enrollment.

Table 5 shows the average class sizes in the last three academic years of lower-division, upper-division and master's level courses.

Lower-Division--The State-related universities in general maintained their average class size at the lower-division level over

Table 5
 AVERAGE CLASS SIZE BY LEVEL¹
 ACADEMIC YEARS 1976-1979

Institution	Lower division			Upper division			Master's		
	1976-1977	1977-1978	1978-1979	1976-1977	1977-1978	1978-1979	1976-1977	1977-1978	1978-1979
State-related universities									
Penn State	27.9	30.0	29.9 ^a (27.8) ^b	23.7	22.4	27.8 ^a (10.6) ^b	10.8	10.0	12.3 ^a (5.8) ^b
Pittsburgh	28.6	27.7	30.4 ^a (28.5) ^b	13.3	11.5	22.3 ^a (9.5) ^b	5.5	7.0	15.8 ^a (5.1) ^b
Temple	29.1	26.1	24.0	22.0	21.1	19.7	15.7	13.6	13.2
Lincoln	21.8	22.6	22.0	13.1	13.6	15.6	9.4	10.3	17.6
Total	28.3	28.5	--	20.4	18.8	--	8.8	9.1	--
State-owned colleges									
Bloomsburg	30.0	29.4	28.0	16.9	18.5	17.7	12.7	13.7	11.7
California	23.9	22.8	23.2	17.2	16.3	17.1	11.1	9.3	8.6
Cheyney	25.5	24.2	21.6	14.2	12.2	11.4	9.7	8.6	6.1
Clarion	32.4	30.5	28.8	20.4	17.0	17.2	9.4	8.9	8.8
East Stroudsburg	p.d.	31.9	31.6	18.4	18.6	17.8	14.8	14.0	13.7
Edinboro	n.d.	20.1	19.2	n.d.	12.9	11.5	n.d.	7.3	6.4
Indiana University	30.7	30.8	31.3	17.4	16.9	16.2	9.1	7.4	7.2
Kutztown	26.1	26.5	26.4	17.8	17.3	16.5	14.0	12.9	13.8
Lock Haven	27.5	24.7	25.1	17.0	14.9	13.4	n.a.	n.a.	n.a.
Mansfield	26.3	23.4	21.4	12.7	11.9	11.0	8.1	9.2	10.0
Millersville	27.8	27.0	28.1	19.8	18.7	19.2	18.8	17.7	16.4
Shippensburg	28.8	28.1	28.9	22.1	22.6	21.4	12.2	11.8	11.1
Slippery Rock	30.8	29.5	28.4	17.6	15.7	15.2	11.3	9.6	9.4
West Chester	27.6	27.2	27.1	18.9	20.3	18.7	11.7	10.5	10.2
Total	28.4	27.0	26.7	17.7	16.8	16.0	11.6	10.1	9.6

1. Average class sizes calculated for each level by division of student credit hours by assigned credits.

a. Class size for classroom instruction only.

b. Class size for all instruction includes individual instruction by assuming one assigned credit hour per individual instruction student credit hour produced.

p.d. - Poor data.

n.d. - No data.

n.a. - Not applicable.

SOURCE: Student credit-hour production reports provided by the individual institutions, 1977, 1978 and 1979.

the 3 years with the exception of Temple's lower-division classes, which decreased by an average of 5 students from 1976 to 1979.

A more pertinent observation might be that at the lower-division level the large universities have smaller average class sizes than either East Stroudsburg (31.6) or Indiana (31.3), indicating that the relatively small classes at the lower level, especially at the larger institutions, are an administrative decision not dictated by lack of students.

The overall average class size at the lower-division level for the State-owned schools has declined from 28.4 students in 1976-1977 to 26.7 students in 1978-1979, a reduction of almost 2 students. Cheyney, Clarion and Mansfield have all experienced decreases of 3 or more students in their average class sizes in this time period. Cheyney, Edinboro and Mansfield report the smallest classes at the lower-division level for 1978-1979: 21.6, 19.2 and 21.4, respectively.

Since the student credit-hour production decreased at most of the institutions, it would be expected that the average class size would fall if there were no compensating action. The slight decreases in numbers of faculty members have already been observed in table 3. Table 6 shows the distribution for two years of the lower-division undergraduate classes by size for the State-owned institutions. These data provide an indication of whether any of the schools may be limiting the number of classes with less than 10 students.

Table 6

PERCENTAGE DISTRIBUTION OF CLASSES BY SIZE
 UNDERGRADUATE LOWER DIVISION
 ACADEMIC YEARS 1977-1979

Institution	Cumulative percentage of total classes with:								Percentage of total classes with:			
	1-5 students		1-10 students		1-20 students		1-30 students		31-40 students		More than 40 students	
	1977-1978	1978-1979	1977-1978	1978-1979	1977-1978	1978-1979	1977-1978	1978-1979	1977-1978	1978-1979	1977-1978	1978-1979
State-owned colleges												
Bloomsburg	4%	5%	9%	11%	27%	30%	66%	68%	22%	22%	12%	10%
California	6	6	20	18	49	52	76	77	12	11	12	12
Cheyney	8	4	19	14	46	47	68	69	15	15	17	16
Clarion	7	8	26	28	53	61	74	77	14	12	12	11
East Stroudsburg	1	2	7	6	36	35	64	64	18	17	18	19
Edinboro	12	8	24	21	55	56	84	84	13	13	3	3
Indiana University	7	7	12	11	30	28	64	62	15	16	21	22
Kutztown	7	10	15	18	34	35	64	68	19	18	17	14
Lock Haven	2	3	12	11	44	41	74	76	18	18	8	6
Mansfield	8	11	23	28	53	57	81	84	12	9	7	7
Millersville	1	1	5	4	29	30	70	69	23	23	7	8
Shippensburg	1	1	6	6	27	26	58	56	35	35	7	9
Slippery Rock	3	3	10	9	28	30	62	67	25	21	13	12
West Chester	3	3	9	9	38	36	70	71	17	19	13	10

SOURCE: Lower-division undergraduate distributions of classes by size provided by the State-owned institutions, 1978 and 1979.

Bloomsburg, Clarion, Kutztown and Mansfield all report increases in the percentage of classes having 1 to 10 students. This is to be expected if no limits are applied and the student credit-hour production is falling or the number of courses or sections is increasing.

The table further discloses that over one-half of the lower-division classes at California (52%), Clarion (61%), Edinboro (56%) and Mansfield (57%) are made up of 20 or fewer students but only 12 percent or less of their classes have 40 or more students. At Edinboro only 1 in every 33 lower-division classes has 40 or more students.

Upper Division--The average upper-division class sizes at the three large State-related universities exceed all of the averages at the State-owned colleges except Shippensburg, with an average of 21.4. Shippensburg has consistently maintained a high average class size. The small and declining class sizes at the State-owned institutions may be due to insufficient student demand for upper-division courses. The overall upper-division average class size for the State-owned institutions slipped from 17.7 to 16.0 students from 1976-1977 to 1978-1979. At Clarion and Lock Haven, the upper-division undergraduate average class size dropped by 3.2 students and 3.6 students, respectively, from 1976-1977 to 1978-1979. The average class sizes reported by Mansfield (11.0), Cheyney (11.4) and Edinboro (11.5) are the smallest averages at this level.

Graduate Level--The master's level average class sizes reported by the large State-related universities are in the same range as those reported by several small State-owned schools--East Stroudsburg (13.7), Kutztown (13.8) and Millersville (16.4). The State-owned colleges have an overall average master's-level class size of 9.6--a decline of 2 students since 1976-1977. At Cheyney, during this time period the average number of students per class has declined from 9.7 to 6.1.

If the average class size falls much below 10 as at Cheyney, Edinboro (6.4) and Indiana (7.2), an evaluation of the advantages of continued graduate work is essential. These low class sizes, however, may result from the method of assigning credits for individual work. To present a more accurate picture, for 1978-1979 the State-related universities included in their requirements separate reporting of student credit hours for individual instruction.³ It is hoped the State-owned schools will adopt the same assignment procedure as the State-related universities for the next reporting period to facilitate comparison.

Number of Courses

Table 7 shows the average number of courses at the undergraduate and master's levels for the 1977-1978 and 1978-1979 academic years.

3. Two different averages are shown for Penn State and Pitt: one to reflect a classroom average class size and one to reflect individual as well as classroom instruction (one assigned credit hour was counted for each individual student credit hour produced).

Table 7

CHANGES IN AVERAGE NUMBER OF COURSES TAUGHT AND STUDENT CREDIT HOURS PRODUCED
ACADEMIC YEARS 1977-1979

Institution	Undergraduate level				Master's level			
	Number of courses		Change in number of courses	Change in student credit-hour production	Number of courses		Change in number of courses	Change in student credit-hour production
	1977-1978	1978-1979			1977-1978	1978-1979		
State-related universities								
Penn State	1,679	1,703	+24	-16,200	335	328	-7	+425
Pittsburgh	1,965	1,545	-420	+1,690	772	723	-49	-7,130
Temple	1,660	1,693	+33	-35,600	-- ^a	-- ^a	-- ^a	--
Lincoln	163	165	+2	-3,380	8	10	+2	+1,270
Total	5,467	5,106	-361	-53,500	1,115	1,061	-54	-6,290
State-owned colleges								
Bloomsburg	491	503	+12	-1,940	55	59	+4	-402
California	464	474	+10	-4,310	85	98	+13	-493
Cheyney	370	358	-12	-8,650	48	43	-5	-302
Clarion	425	451	+26	+1,990	76	68	-8	-725
East Stroudsburg	423	437	+14	-4,630	37	39	+2	+31
Edinboro	590	582	-8	-6,980 ^b	96	97	+1	-1,040 ^b
Indiana University	754	779	+25	+7,300	183	200	+17	-1,130
Kutztown	430	450	+20	-1,310	50	47	-3	+105
Lock Haven	283	295	+12	-2,160	n.a.	n.a.	n.a.	n.a.
Mansfield	411	425	+14	-5,080	30	27	-3	-42
Millersville	448	456	+8	-937	67	65	-2	-794
Shippensburg	390	386	-4	-1,590	78	79	+1	-230
Slippery Rock	530	542	+12	-6,580	79	79	0	-298
West Chester	653	702	+49	-3,330	156	169	+13	+258
Total	6,662	6,840	+178	-38,200	1,040	1,070	+30	-5,060

a. Data furnished only for all graduate-level courses including doctoral level.

b. Change in student credit-hour production for full year. For source, see table 1, footnote 2.

n.a. - Not applicable.

SOURCE: Number of courses taught and student credit-hour reports provided by the individual institutions, 1978 and 1979.

Increases in the average number of courses were reported for 9 of the 12 State-owned schools in spite of their declining undergraduate production. In all but two instances these changes were accompanied by a decrease in the average class size. West Chester reported the largest increase in number of courses--49 additional at the undergraduate level--despite a production decrease of 3,330 student credit hours from the previous academic year. The large decrease in number of undergraduate courses at Pitt reflects, to some extent, refinements in counting from previous years. Although Indiana's graduate production fell by 1,130 student credit hours, 17 courses were added to the graduate curriculum.

Summary of Administrative Adjustments

Table 8 provides insight into the need for adjustment to a decreasing student body and the efforts made by the individual institutions. Including only the eight institutions having a decrease in FTE students of more than 3.0 percent over 1977-1978, the table orders the institutions by the percentage change in students, as shown in the first column. The second column lists the percentage changes in full-time equivalent faculty, while an "E" (for effort) in the following six columns distinguishes the institutions having made an adjustment toward maintaining the level of equivalent student credit-hour production per faculty member. The last column presents the change in average student credit-hour production and provides a measure of the success attained by the institutions.

Table 8

SUMMARY OF EFFORTS AND DEGREE OF SUCCESS FOR INSTITUTIONS HAVING SIGNIFICANT
 PERCENTAGE DECREASES IN FTE STUDENTS
 1977-1979

Institution	Change 1977-1978 to 1978-1979		Checklist of efforts					Change in average equivalent student credit-hour production	
	fte students	fte faculty	Increased student faculty ratio	Decreased number of undergraduate courses	Increased average undergraduate class size	Decreased percentage of lower- division classes with 10 or fewer students	Increased percentage of lower- division classes with 40 or more students		Increased undergraduate equivalent contact hours
Cheyney	-10.42%	+1.50%	-	E	-	EE	-	-	-10.61%
Mansfield	-6.34	-4.21	-	-	-	-	0	0	-2.22
Edinboro	-4.80	+2.24	-	E	-	E	0	E	-5.15
Slippery Rock	-4.29	+1.80	-	-	-	E	-	E	-5.00
California	-4.13	+1.92	-	-	E	E	0	E	-6.11
Lock Haven	-3.67	-2.67	0	-	-	E	-	-	-.80
East Stroudsburg	-3.42	-1.78	-	-	-	E	E	0	-1.79
Temple	-3.16	-1.49	-	-	-	a	a	-	-1.74

a - Data not requested.

0 - Increase or decrease of less than 1 percent.

E - Improvement of 1.00 to 4.99 percent.

EE - Improvement of 5.00 or more percent.

SOURCE: Student credit-hour production reports, summary tables of numbers of faculty, course and section reports and full-time faculty reports of workweeks, 1978 and 1979.

The table indicates that, as a whole, the schools have attempted to make adjustments by limiting the percentage of lower-division classes with ten or fewer students. Although Edinboro and California show adjustments to the diminishing student population in three areas, their average equivalent student credit-hour production declined, as did the average production at each of the other schools.

FACULTY SALARY LEVELS

Teaching costs per unit of production are dependent upon two basic factors: faculty student credit-hour production, which has already been reviewed, and faculty salaries.

Comparison with Other Professionals

The Joint State Government Commission report of March 1979 includes data published in Hawes Comprehensive Guide to Colleges (1978), showing that median salaries of faculty members at the Pennsylvania State-owned institutions were comparable in 1976-1977 to those of the faculty at the highest paying higher educational institutions throughout the United States. No update to the Hawes guide has been published to date.

Appendix table 5A (data prepared by Bureau of Labor Statistics) discloses that the nine-month average salaries of the faculty at the Pennsylvania schools under review are comparable to twelve-month salaries of top-ranking accountants, auditors and buyers. The faculty

salaries fall within the range of 58 percent of the attorneys and two-thirds of the chemists. The levels of the average twelve-month salaries of auditors I, II, III and IV are comparable to the levels of the average salaries of the four ranks of faculty for a nine-month period.

The following increases in national average salaries from 1978 to 1979 for professional, administrative and technical support occupations appear in the Monthly Labor Review.⁴

<u>Employment category</u>	<u>Increase in salary</u>
Accountants	8.0%
Auditors	6.5
Chief accountants	7.7
Attorneys	8.9
Buyers	7.0
Job analysts	8.6
Directors of personnel	7.5
Chemists	7.6
Engineers	8.4
Computer operators	7.2
Engineering technicians	7.6
Average	7.7

The following text table shows the percentage increases between 1977-1978 and 1978-1979 in the average academic year salaries of ranked teaching faculty by descending order of increase.

4. U.S. Department of Labor, Bureau of Labor Statistics (November 1979): 49.

<u>Institution</u>	<u>Increase in average salary</u>
Temple	16.8%
East Stroudsburg	12.5
Edinboro	11.9
Shippensburg	11.5
Mansfield	11.0
Lock Haven	10.7
Slippery Rock	10.3
Cheyney	10.0
California	9.5
Bloomsburg	9.1
Clarion	9.0
Kutztown	9.0
Millersville	7.6
Indiana	6.7
Penn State	5.7
West Chester	4.5
Pittsburgh	4.2
Lincoln	2.0

Temple and all of the State-owned schools except West Chester, Indiana and Millersville reported average salaries which increased at a greater rate than any of those in the professional categories shown in the national survey of the Bureau of Labor Statistics. The Consumer Price Index increased by 9 percent from December 1977 to December 1978. A portion of the faculty increases is attributable to advancement in faculty rank, which appears to have no limit at many of the schools.

Comparisons among Institutions

Faculty salaries for the academic years 1977-1978 and 1978-1979 are detailed in appendix table 6A, which gives the average salaries for

full-time equivalent teaching faculty members, the average salary for the four ranks and the percentage distributions by rank.⁵

As shown in table 9, which orders the 1978-1979 salaries by magnitude, the average overall teaching salaries at the State-owned institutions are greater than those at all the State-related universities except Temple, and the average salary at Temple exceeds that of only four of the State-owned colleges. The high average faculty salaries are partially the result of the unusually large percentages of faculty members who are professors or associate professors (table 9). California, with the highest average salary, also has the highest percentage of faculty members holding the rank of professor or associate professor (84 percent).

Table 10 orders by magnitude the average salaries of professors and associate professors. While Temple and Penn State report the two highest average salaries for professors and Temple the highest average for associate professors, the percentage of the faculty holding the rank of professor or associate professor is 56 percent for Temple and 45 percent for Penn State--less than that of any of the State-owned

5. See glossary for definitions of average academic year salary and full-time equivalent faculty. The full-time equivalent faculty were determined on the basis of the number of full-time faculty and the percentage distribution of part-time faculty reported by each institution, except Penn State in which case the full-time equivalent numbers of faculty were applied as reported.

Table 9

AVERAGE SALARY FOR FULL-TIME EQUIVALENT TEACHING FACULTY AND PROFESSORS AND
ASSOCIATE PROFESSORS AS PERCENTAGE OF TOTAL TEACHING FACULTY
ACADEMIC YEAR 1978-1979

Range of average salary	Institution	Average academic year salary of ranked FTE faculty	Percentage of ranked FTE teaching faculty		
			Professor	Associate professor	Professor and associate professor
\$22,250-\$23,249	California	\$23,228	40%	44%	84%
	Lock Haven	22,676	29	46	75
	Shippensburg	22,636	34	38	72
	Edinboro	22,339	39	35	74
\$21,250-\$22,249	Clarion ¹	22,212	27	41	68
	Cheyney	22,147	31	48	79
	Mansfield	22,094	27	39	66
	Slippery Rock	22,022	33	33	66
	Kutztown	21,966	31	41	72
	Indiana	21,827	38	34	72
	Temple	21,606	26	30	56
	East Stroudsburg	21,590	35	35	70
	Millersville	21,430	32	39	71
	\$20,250-\$21,249	Bloomsburg	21,020	29	41
West Chester		20,730	30	41	71
Less than \$20,250	Penn State	19,278	20	25	45
	Lincoln	18,562	22	24	46
	Pittsburgh	18,110	23	34	57
	All institutions	20,469	27	33	60

1. Full-time faculty only.

SOURCE: Salary reports provided by the individual institutions, 1979.

Table 10

AVERAGE ACADEMIC YEAR SALARIES
FTE TEACHING PROFESSORS AND ASSOCIATE PROFESSORS
1978-1979

Institution	<u>Average salary</u> Professor	Institution	<u>Average salary</u> Associate professor
Temple	\$30,802	Temple	\$22,977
Penn State	28,262	Clarion ¹	22,712
Clarion ¹	27,938	Shippensburg	22,696
Lock Haven	27,475	Mansfield	22,682
Shippensburg	27,321	Kutztown	22,032
Mansfield	27,270	Slippery Rock	22,007
East Stroudsburg	27,136	Lock Haven	22,003
California	26,974	Edinboro	21,846
Slippery Rock	26,928	California	21,772
Kutztown	26,355	Cheyney	21,691
Bloomsburg	26,353	East Stroudsburg	21,537
Indiana	26,260	Millersville	21,437
Millersville	26,159	Indiana	21,346
Edinboro	26,129	Penn State	21,344
Pittsburgh	25,863	Bloomsburg	21,151
Cheyney	25,806	West Chester	21,132
West Chester	25,163	Lincoln	19,384
Lincoln	23,920	Pittsburgh	18,545

1. Full-time faculty only.

SOURCE: Salary reports provided by the individual institutions, 1979.

institutions. For the rank of professor, Pitt has an average salary exceeding only that of Cheyney, West Chester, and Lincoln. Pitt and Lincoln maintain a limited percentage of faculty at the rank of professor or associate professor.

Were the State-owned institutions to establish and enforce limits on the percentage of faculty permitted to hold the ranks of professor and associate professor, average salaries would be more in line with comparable institutions of higher education. A possible limit for the combined ranks of professor or associate professor might be 60 percent. In 1977-1978, the nationwide average for all public institutions was 28.2 percent professors and 29.6 percent associate professors--a total of 57.8 percent in the combined ranks.⁶ In comparison, no State-owned college has less than 66 percent of its ranked teaching faculty in these ranks. The percentages of faculty holding the rank of professor or associate professor at the State-owned colleges have been shown to be consistently high in each of the Joint State Government Commission reports since the inclusion of the State-owned schools in the report for 1976-1977.

6. U.S. National Center for Education Statistics, The Condition of Education, 1978, in U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 100th edition (1979): 165.

The aggregate percentage distributions of faculty members by rank for 1977-1978 and 1978-1979 are shown below. At the State-related schools, 52 percent of the faculty hold the rank of professor or associate professor as compared with 72 percent at the State-owned schools. At the other extreme, there were 16 percent in the rank of instructor at the State-related universities and only 6 percent at the State-owned schools.

	<u>Professor</u>	<u>Associate professor</u>	<u>Assistant professor</u>	<u>Instructor</u>
State-related				
1977-1978	22.7%	29.0%	32.5%	15.8%
1978-1979	22.8	29.1	32.3	15.8
State-owned				
1977-1978	32.2	38.9	22.4	6.5
1978-1979	33.3	38.7	22.1	5.9

The following text table shows the total number of full-time equivalent teaching faculty by rank for two years, and appendix table 7A shows the data for each institution separately. The number of professors increased at 13 of the 18 institutions, with an overall net increase of 56, while the net overall increase in full-time teaching faculty in the four ranks was 33. In particular, the State-owned schools, which consistently have reported high percentages of professors, have in general maintained this distribution. For example, their net change in total full-time teaching equivalent

faculty was a decrease of 41, while their total number of professors increased by 35. Since the number of associate professors decreased by 24, the net increase in the two ranks was 11 faculty members. The State-related universities reported a net overall gain of 74, with an increase of 49 in the two highest ranks.

	<u>Professor</u>	<u>Associate professor</u>	<u>Assistant professor</u>	<u>Instructor</u>	<u>Total four ranks</u>
State-related					
1977-1978	1,326	1,694	1,902	923	5,845
1978-1979	1,347	1,722	1,913	937	5,919
Increase	+21	+28	+11	+14	+74
State-owned					
1977-1978	1,501	1,808	1,044	301	4,654
1978-1979	1,536	1,784	1,020	273	4,613
Increase	+35	-24	-24	-28	-41

COMMONWEALTH APPROPRIATIONS

The allocation of appropriations reflects the goals of the General Assembly for Pennsylvania higher education. Today, with a declining population, the Legislature must make difficult decisions concerning how much it will pay to maintain small public institutions throughout the Commonwealth as well as large research universities and whether it is willing to devise and enforce policies of economy

in order to maintain an availability of basic higher education without steeply rising unit costs. As past Commission reports have indicated, the per unit costs of the smallest institutions are double and triple those of the larger schools.

Cost Efficiency

Specific data regarding factors measuring administrative efficiency have been presented in earlier tables of this report. As a summary, table 11 shows the average academic-year faculty workload, average class size at the lower-division level and the number of courses for each institution. The institutions are ordered by the number of full-time equivalent students and separated into categories by size. Efficiency can be assessed by simple comparisons of the specified data of one institution to the corresponding data of the others in the same size category or to data of an institution in a smaller size category.

Consider, for example, the range in numbers of courses in the smallest size category (5)--from 175 courses at Lincoln to 452 courses at Mansfield. With twice as many students as Lincoln, the Mansfield faculty teaches two and one-half times the number of courses. At Shippensburg (size category 3)--with over twice as many students as Mansfield--the faculty teaches an average of only 465 different courses in the academic year.

Table 11

MEASURES OF EFFICIENCY AS COMPARED TO APPROPRIATIONS PER UNIT
BY SIZE CATEGORY

Size category	Institution	Full-time equivalent students ¹ 1978-1979	Equivalent student credit hours ² per full-time equivalent faculty academic year 1978-1979	Lower-division average class size academic year 1978-1979	Average number of courses academic year 1978-1979	Appropriation per unit of production 1978-1979 1980-1981	
1	Penn State	53,600	526 ^a	27.8	2,183	\$30.65	\$34.76
	Pittsburgh	28,100	599 ^a	28.5	2,499 ^b	35.78	40.58
	Temple	27,000	395	24.1	2,645	43.69	49.56
2	Indiana	12,200	513	31.3	979	40.79	48.80
	West Chester	8,030	412	27.1	871	51.74	58.30
	Bloomsburg	6,250	473	28.0	562	43.65	52.28
3	Millersville	5,510	442	28.1	521	53.19	60.60
	Slippery Rock	5,490	437	28.4	621	59.30	64.73
	Edinboro	5,480	387	19.2	679	62.95	68.02
	Shippensburg	5,470	450	28.9	465	52.39	58.28
	Clarion	5,170	454	28.8	519	58.19	64.86
4	Kutztown	4,470	409	26.4	497	56.21	66.71
	California	4,190	338	23.2	572	73.61	79.98
	East Stroudsburg	4,060	440	31.6	476	53.91	66.66
5	Mansfield	2,410	352	21.4	452	89.78	98.08
	Cheyney	2,390	354	21.6	401	85.64	97.31
	Lock Haven	2,240	370	25.1	295	97.33	133.91
	Lincoln	1,220	341	22.0	175	59.49	67.47

1. Full-time equivalent students calculated by dividing undergraduate student credit hours by 30 and graduate student credit hours by 24.

2. Undergraduate student credit hours plus 1.25 times graduate student credit hours.

a. For Penn State and Pittsburgh production numbers reflect average production for FTE faculty in the instructional function.

b. Not including first professional dental medicine courses.

NOTE: See additional footnotes on tables 1, 4 and 5.

SOURCE: Student credit-hour production reports and number of courses reports provided by the individual institutions, 1979 and Governor's Executive Budget, 1980-1981.

A comparison of the number of courses to the average class size suggests that were the General Assembly to establish standards of efficiency, a limit could be placed on the number of courses relative to the size of the institution, or a minimum average class size could be required. The simpler standard would be a minimum average class size, e.g., 25 or 30 at the lower-division level. Small average class sizes have been indicated repeatedly by the Commission to be an easily quantifiable factor which increases the unit costs.

With other factors remaining constant, a minimum class size of 25 could reduce the costs for academic-year instruction at Edinboro by 30 percent. The costs at Mansfield and Cheyney could be reduced by 16 percent. If a minimum lower-division average class size of 30 were required, even greater reductions could be achieved--over 50 percent at Edinboro, 40 percent at Mansfield and Cheyney and 20 percent at Lock Haven. Except for Edinboro, Temple and West Chester, the institutions in size categories 1, 2 and 3 have reported average academic-year lower-division class sizes of 28 or better. Even in category 4, East Stroudsburg has an average lower-division class size of 32.

In consideration with other data presented in the table, West Chester, Edinboro, California and Mansfield report small faculty workloads as well as small classes in comparison to the other institutions in their size categories; Edinboro, California and Mansfield report the largest number of courses in their size groups.

Although West Chester teaches fewer courses than Indiana, the number of courses is relatively high--90 percent as many courses with roughly two-thirds as many students. With respect to the three large State-related universities, Temple reports the most courses, the smallest average class size and the highest average salary. In other words, the data from table 11 show wide variations in administrative policies affecting unit costs, with the least efficient institutions, adjusting for size, being California, Edinboro, Mansfield, Temple and West Chester.

Appropriations and Production

Regardless of legislative decisions relative to efficiency, each institution is concerned with any allocation of appropriations which does not reflect production. Since there is a wide range in the sizes of the institutions and in the distribution of student credit hours by level of instruction, the cost per student credit hour produced does not alone provide a meaningful basis for comparison. In order to determine an equitable allocation of appropriations, a composite measure of output has been designed as a "unit of production." This measure reflects the increasing costs of higher level instruction as well as additional costs attributable to the granting of degrees at different levels. The appropriations per unit of production, therefore, indicate the amount of the Commonwealth appropriation that can be assigned to one lower-division student credit hour. The method of calculating a unit of production is provided in the appendix, p. 63.

The last two columns of table 11 show the Commonwealth appropriations for 1978-1979 and proposed for 1980-1981 per unit produced in 1978-1979.⁷ The calculation of per unit costs for 1980-1981 in most instances will be an underestimate since the production is expected to have decreased further since 1978-1979. Consider, for example, Lock Haven. On the assumption that Lock Haven's production does not decrease, the 1980-1981 proposed budget provides \$103.91 per unit for next year, or over \$3,000 toward the education of one freshman in 1980-1981. The units of production at Lock Haven decreased by 12 percent over the two years 1976-1978 (see table 12). If they decreased another 12 percent between 1978 and 1980, the cost per unit of production at Lock Haven under the proposed 1980-1981 budget would be \$116--\$3,500 for one freshman student.

Further observation of the last two columns of table 11 indicates that the institutions with the most inefficient administrative policies received the highest appropriations per unit in their size group and, if their production remains the same or changes at the same rate, their appropriations per unit will remain higher than the others in their size group.

7. Footnote in Governor's Executive Budget, 1980-1981 (p. 243): "The distribution of the 1980-1981 budgeted funds [to the State-owned institutions] is based on the allocation formula developed by the Department of Education. Final allocation of 1980-1981 State colleges and university appropriation will be made by the Department of Education based on the updated allocation formula, which may change the distribution of State funds by institution."

In general the changes in appropriations per unit of production have not exceeded the rate of inflation, as measured by the Consumer Price Index. However, those institutions which receive the lowest appropriations per unit in their size group continue to be most adversely affected by the rate of inflation. The faculty salary levels and salary increases at some of the institutions would indicate the appropriations have been sufficient to allow the faculty to keep pace with inflation.

Table 12 shows the units produced, the Commonwealth appropriations and the appropriations per unit over the three-year period, 1976 through 1979. These data indicate that the discrepancies in the unit appropriations have existed since 1976 and in certain instances have increased. These are the result of appropriations that have not reflected changes in production. For example, Penn State's units of production decreased by 7 percent from 1976-1977 to 1978-1979 while the appropriation increased by 12 percent. Consequently, the appropriation per unit of production increased by 20.8 percent. At Pitt over the three-year period, a slight increase in production and a 5 percent increase in the total appropriation resulted in a 4.4 percent increase in the appropriation for each unit produced.

Appropriations and Institutional Size

Proposed appropriations for 1980-1981, the appropriations for the two previous years and the percentage changes are presented in table 13. The State-related universities are given the same proposed

Table 12

UNITS OF PRODUCTION AND COMMONWEALTH APPROPRIATIONS
1976-1979

Institution	Units of production (000's)	Commonwealth appropriation (000's)	Appropriation per unit	
			Amount	Increase
State-related universities				
Penn State				
1976-1977	2,934	\$74,457	\$25.38	--
1977-1978	2,748	79,522	28.94	14.0%
1978-1979	2,725	83,498	30.65	5.9
Pittsburgh				
1976-1977	1,542	52,858	34.28	--
1977-1978	1,520	52,858	34.77	1.4
1978-1979	1,551	55,500	35.78	2.9
Temple				
1976-1977	1,529	56,987	37.26	--
1977-1978	1,424	56,987	40.02	7.4
1978-1979	1,370	59,836	43.69	9.2
Lincoln				
1976-1977	45	2,525	56.85	--
1977-1978	49	3,025	61.34	7.9
1978-1979	53	3,176	59.49	-3.0
Total State-related				
1976-1977	6,050	186,827	30.88	--
1977-1978	5,741	192,392	33.51	8.5
1978-1979	5,699	202,010	35.45	5.8
State-owned colleges				
Bloomsburg				
1976-1977	282	11,557	40.98	--
1977-1978	289	11,926	41.34	0.9
1978-1979	289	12,599	43.65	5.6
California				
1976-1977	206	13,019	63.13	--
1977-1978	192	13,212	68.81	9.0
1978-1979	185	13,643	73.61	7.0
Cheyney				
1976-1977	107	7,815	72.95	--
1977-1978	109	7,986	73.42	0.6
1978-1979	99	8,467	85.64	16.6
Clarion				
1976-1977	217	11,974	55.08	--
1977-1978	222	12,190	54.88	-0.4
1978-1979	220	12,819	58.19	6.0
East Stroudsburg				
1976-1977	199	8,882	44.56	--
1977-1978	187	9,187	49.20	10.4
1978-1979	178	9,567	53.91	9.6

Edinboro				
1976-1977	283	13,970	49.36	--
1977-1978	262	14,300	54.52	10.5
1978-1979	246	15,475	62.95	15.5
Indiana University				
1976-1977	512	20,321	39.70	--
1977-1978	541	21,004	38.79	-2.3
1978-1979	547	22,330	40.79	5.2
Kutztown				
1976-1977	215	11,029	51.37	--
1977-1978	206	11,241	54.55	6.2
1978-1979	199	11,204	56.21	3.0
Lock Haven				
1976-1977	99	6,791	68.71	--
1977-1978	93	7,000	75.27	9.5
1978-1979	87	7,582	87.33	16.0
Mansfield				
1976-1977	124	8,985	72.24	--
1977-1978	111	9,000	80.91	12.0
1978-1979	105	9,431	89.78	11.0
Millersville				
1976-1977	252	12,487	49.58	--
1977-1978	245	12,780	52.23	5.3
1978-1979	239	12,703	53.19	1.8
Shippensburg				
1976-1977	254	11,663	46.02	--
1977-1978	248	11,969	48.31	5.0
1978-1979	243	12,750	52.39	8.4
Slippery Rock				
1976-1977	262	13,366	51.11	--
1977-1978	246	13,344	54.23	6.1
1978-1979	235	13,922	59.30	9.3
West Chester				
1976-1977	371	17,134	46.21	--
1977-1978	373	17,558	47.01	1.7
1978-1979	358	18,543	51.74	10.1
Total State-owned				
1976-1977	3,383	168,993	49.96	--
1977-1978	3,324	172,697	51.95	4.0
1978-1979	3,230	181,035	56.05	7.9
Grand total				
1976-1977	9,433	355,820	37.72	--
1977-1978	9,065	365,089	40.27	6.8
1978-1979	8,929	383,045	42.90	6.5

SOURCE: Student credit-hour production and degree reports of the individual institutions, 1977, 1978 and 1979. Governor's Executive Budget, 1978-1979, 1979-1980 and 1980-1981.

Table 13
COMMONWEALTH APPROPRIATIONS
(000's)
1978-1981

Institution	1978-1979 Actual	Increase over 1977-1978	1979-1980 Available	Increase over 1978-1979	1980-1981 Budgeted	Increase over 1979-1980
State-related universities						
Penn State	\$83,498	5.0%	\$89,343	7.0%	\$94,704	6.0%
Pittsburgh	55,500	5.0	59,385	7.0	62,948	6.0
Temple	59,836	5.0	64,025	7.0	67,867	6.0
Lincoln	3,176	5.0	3,398	7.0	3,602	6.0
State-owned colleges						
Bloomsburg	12,599	5.6	13,894	10.3	15,092	8.6
California	13,643	3.3	14,332	5.1	14,824	3.4
Cheyney	8,467	6.0	9,100	7.5	9,621	5.7
Clarion	12,819	5.2	13,664	6.6	14,287	4.6
East Stroudsburg	9,567	4.1	10,741	12.3	11,830	10.1
Edinboro	15,475	8.2	16,186	4.6	16,723	3.3
Indiana University	22,330	6.3	24,570	10.0	26,715	8.7
Kutztown	11,204	-0.3	12,301	9.8	13,296	8.1
Lock Haven	7,582	8.3	8,343	10.0	9,022	8.1
Mansfield	9,431	4.8	9,941	5.4	10,302	3.6
Millersville	12,703	-0.6	13,655	7.5	14,473	6.0
Shippensburg	12,750	6.5	13,543	6.2	14,184	4.7
Slippery Rock	13,922	4.3	14,679	5.4	15,195	3.5
West Chester	18,543	5.6	19,816	6.9	20,893	5.4

SOURCE: Governor's Executive Budget, 1980-1981.

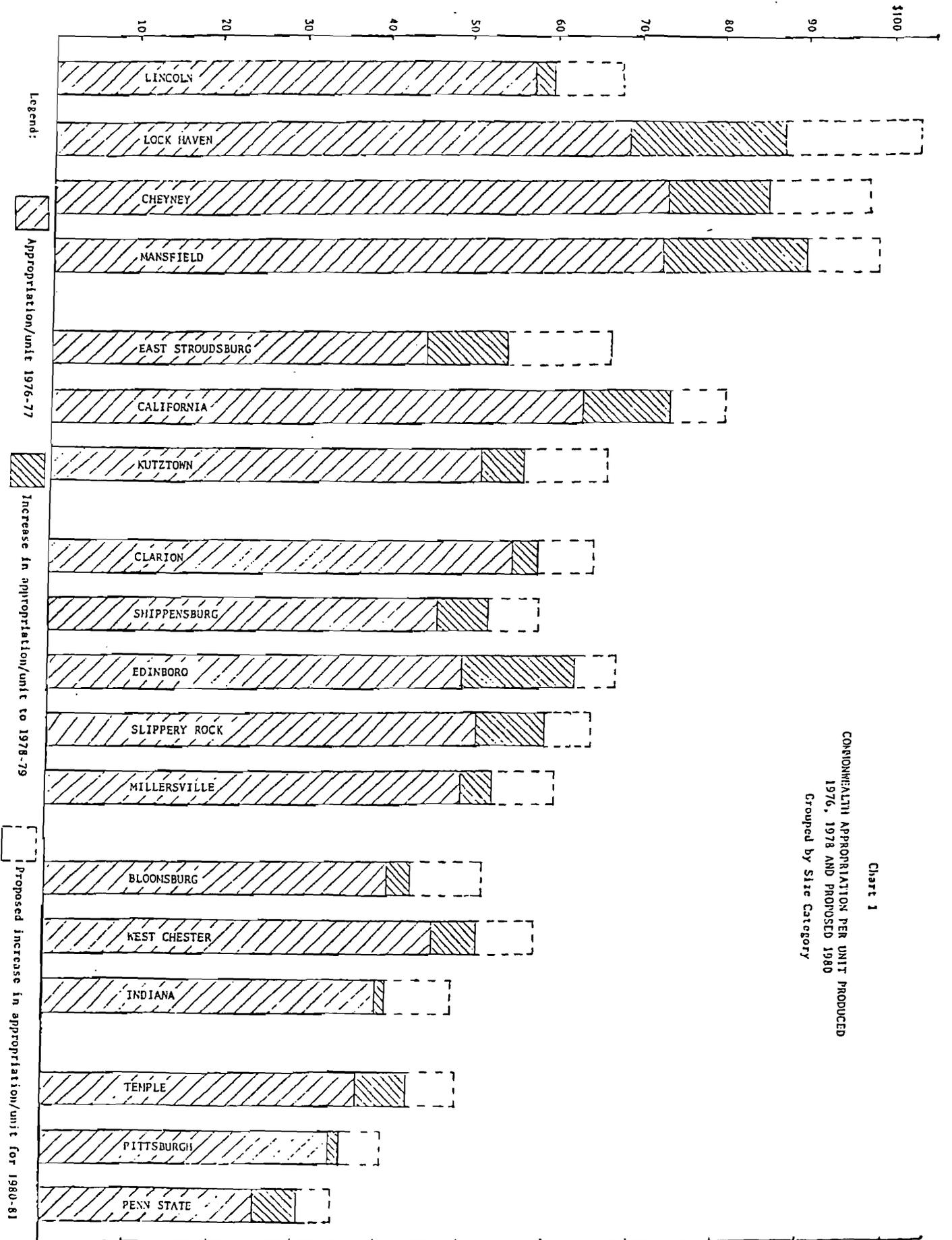
rate of increase (6%) for 1980-1981 in spite of the shifts in production. A certain amount of variation, however, has been proposed in the increases for the State-owned institutions. Of the institutions in their size categories, California, Edinboro and Mansfield receive the smallest percentage increases in appropriations. However, as shown in table 11, the 1980-1981 appropriations per unit for California and Edinboro are still the largest in their categories. In the case of size category 5, which includes Mansfield, the largest appropriation per unit for 1980-1981 is proposed for Lock Haven.

These relative changes are depicted in chart 1, which graphs the Commonwealth appropriations per unit for 1976-1977, 1978-1979 and 1980-1981 (proposed) based on 1978-1979 units, with the institutions ordered by number of full-time equivalent students. The size consideration is important since the unit of production, which reflects differing unit costs by level, does not reflect any difference in costs due to the size of the institution.

The bar graph clearly indicates a relationship between the appropriation per unit and the size of the institution. In the case of small institutions, the cost is affected by administrative scheduling in the areas of class size and range of courses. At the large universities, the costs are increased by the maintenance of large graduate schools and broad-based research programs.

The graph further demonstrates the discrepancies in the 1978-1979 appropriations to the institutions in each size category. The dotted

Chart 1
 CONJUNCTION APPROPRIATION PER UNIT PRODUCED
 1976, 1978 AND PROPOSED 1980
 Grouped by Size Category



extensions of the bars on the basis of budgeted appropriations for 1980-1981 and no change in production indicate the continuation and, in fact, the further exacerbation of the problem.

TUITION

Student tuition and fees are sources of revenue to the institutions that can be examined in relationship to the Commonwealth appropriation for instruction. In this analysis, the unit of production was utilized to allocate appropriations on a per student basis by level of instruction.⁸ Appendix table 8A shows the tuition and required fees for each of the State-related and State-owned schools for four academic years, 1976-1980, for Pennsylvania resident and nonresident undergraduates and graduates.

Undergraduate Level

None of the State-owned or State-related schools distinguish tuition charges between the lower- and upper-divisions--all resident undergraduate students pay the same tuition and fees. All nonresident undergraduates pay a tuition of 1.75 to 2 times that of the resident rate regardless of level. There is some variation

8. The Commonwealth appropriation expressed in terms of an amount per undergraduate student is calculated on the basis of 30 student credit hours. The appropriation attributed to the undergraduate student is an average, weighted in accordance with the lower- and upper-division student credit-hour distribution at the particular school or schools. The master's level graduate work cost is calculated at three times that of lower-division work on the basis of 24 student credit hours per student. At each level there is a small adjustment for appropriation per degree unit produced.

among the campuses of several institutions. Charges are higher at the main campuses of Penn State, Pitt and Clarion where upper-division work would be completed.

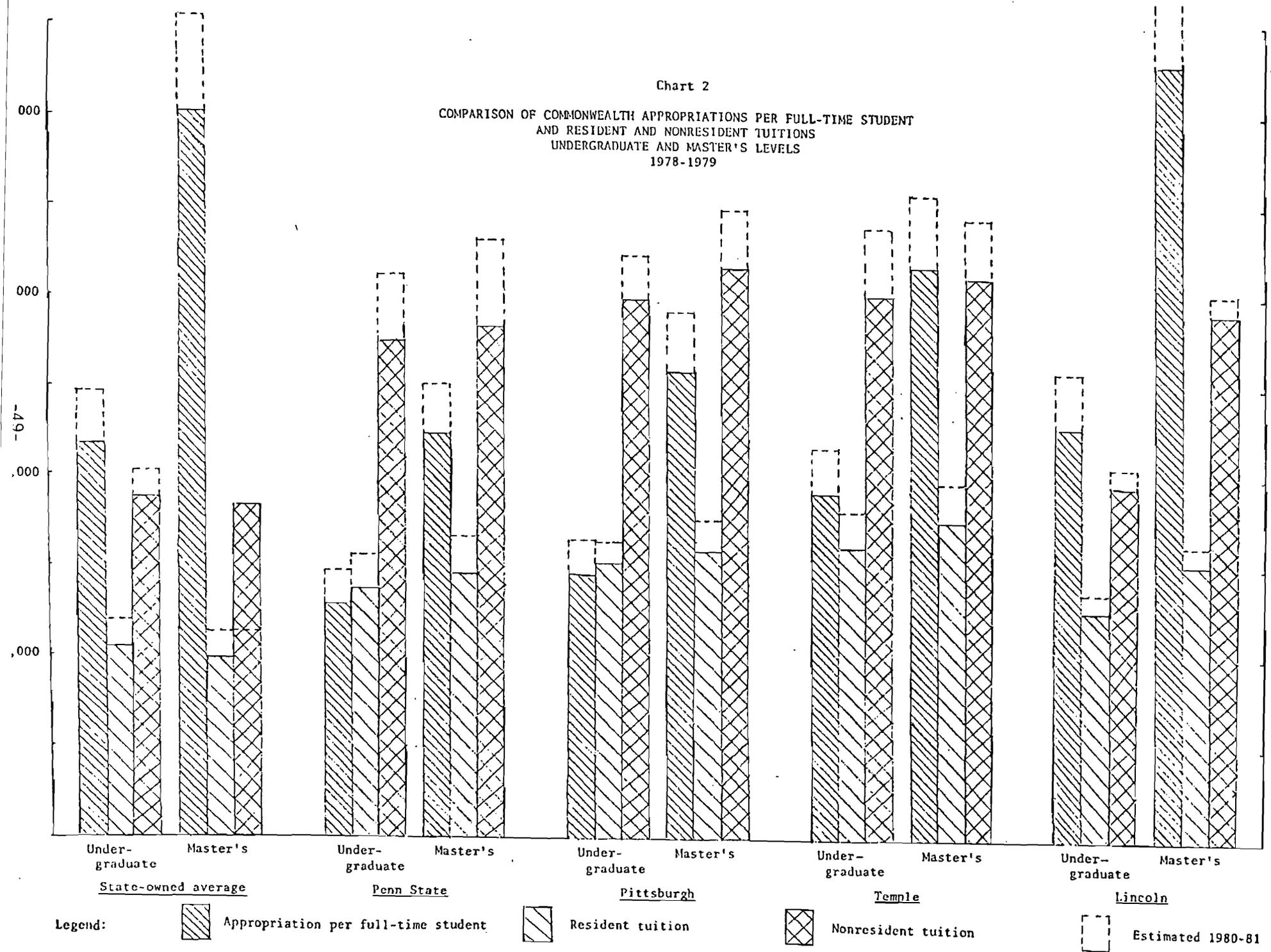
The in-State charges differ only slightly among the State-owned institutions in 1979-1980, ranging from \$1,024 at Indiana to \$1,070 at Clarion. In some cases these rates are identical to prior year charges, as appendix table 8A indicates. At the State-related schools, the 1979-1980 tuition ranges from \$1,268 at Lincoln to \$1,810 at Temple.

Chart 2 relates by level the average 1978-1979 appropriation per student with the corresponding undergraduate 1978-1979 tuition for residents and nonresidents. The chart treats the State-related universities individually and the State-owned institutions in the aggregate. As shown, a resident undergraduate at the State-owned schools pays \$1,049 tuition and a nonresident pays \$1,879, while the Commonwealth appropriation calculated by the Commission staff as allocated to the average undergraduate student is \$2,195. At Lincoln, the resident undergraduate pays \$1,268 and the nonresident \$1,968, while the Commonwealth allocation is \$2,286. At the other extreme, a Penn State resident undergraduate pays \$1,368 and the nonresident \$2,748, with a Commonwealth allocation of \$1,280.

It should be noted that the calculations for the State-owned schools represent the relationship of tuition to Commonwealth appropriations based on the overall distribution of student credit-hour

Chart 2

COMPARISON OF COMMONWEALTH APPROPRIATIONS PER FULL-TIME STUDENT
AND RESIDENT AND NONRESIDENT TUITIONS
UNDERGRADUATE AND MASTER'S LEVELS
1978-1979



Legend:



Appropriation per full-time student



Resident tuition



Nonresident tuition



Estimated 1980-81

production by level of instruction. The relationship in the case of individual schools varies with the size of the school. For example, the Commonwealth appropriation allocated to an upper-division undergraduate at the smallest schools is five times the undergraduate tuition the student pays.

Graduate Level

As shown in Chart 2, discrepancies at the master's level are greater. The Commonwealth appropriation for 24 student credit hours at the master's level at the State-owned schools is calculated at \$4,046, while the resident student pays only \$997--less than the fee charged the resident undergraduate. Beginning in 1979-1980, the State-owned schools have made no additional charge for nonresident graduate students. The appropriation allocated to Penn State is \$2,219, while the graduate resident tuition for 1978-1979 is \$1,452 and the nonresident tuition, \$2,832.

Analysis

Observation of the relationship between the amounts appropriated by the Commonwealth and the amounts paid by resident and nonresident students at the State-related and the State-owned institutions facilitates a realistic evaluation of who is paying the costs at the undergraduate and graduate levels of instruction. Department of Education data concerning the legal residence of full-time students for fall 1978 indicate that overall 10 percent of the students at

State-owned institutions are nonresidents of Pennsylvania. This figure ranges from 2.8 percent at California to 21.5 percent at East Stroudsburg. For the State-related universities, Penn State, Pitt and Temple have nonresident percentages of students of 8.3, 14.1 and 13.1, respectively. Forty-seven percent of Lincoln's student population are nonresidents. Full-time equivalent master's students make up about 10 percent or less of the undergraduate/master's population at each of the institutions except Pitt and Temple, each with 21 percent at the master's level.

Since the greatest portion of the student body consists of resident undergraduates, the most important relationship on the chart is that of the undergraduate appropriation to resident undergraduate tuition. As shown by the dotted lines, Penn State resident undergraduate students would pay slightly more and Pitt resident undergraduates slightly less than the proposed Commonwealth appropriation for 1980-1981. At all other institutions, the undergraduate resident student would pay significantly less than the Commonwealth.

The Commonwealth's contribution to the education of graduate students is significant. Resident graduate students pay at most slightly more than resident undergraduates, with resident graduates at the State-owned institutions actually paying less. Furthermore, beginning in 1979-1980 the nonresident graduate student at the State-owned institutions pays the same tuition and fees as the resident

graduate. In comparison, the proposed 1980-1981 Commonwealth appropriation allocated for master's-level students would be more than 1.5 times the amount allocated per undergraduate student. For the State-owned institutions this means that the proposed appropriation as allocated would be 4.5 times the amount paid by the master's student.

APPENDIX

Appendix Table 1A
STUDENT CREDIT-HOUR AND DEGREE PRODUCTION
FOR STATE-RELATED AND STATE-OWNED COLLEGES AND UNIVERSITIES
1972-1979

Institution	Total student credit-hour production							Number of degrees				
	Lower ¹ division	Upper ¹ division	Total undergraduate	Master's	First pro- fessional	Doctor's	Total graduate	Grand total	Bachelor's	Master's	First pro- fessional	Doctor's
State-related universities												
Penn State												
1972-1973	--	--	1,296,141	--	n.a.	--	128,055	1,424,196	8,121	1,603	n.a.	490
1973-1974	--	--	1,355,104	--	n.a.	--	139,454	1,494,558	7,647	1,582	n.a.	376
1974-1975	--	--	1,437,342	--	n.a.	--	138,836	1,576,178	7,758	1,524	n.a.	404
1975-1976	845,712	621,647	1,467,359	89,999	n.a.	51,750	141,749	1,609,108	8,283	1,416	n.a.	438
1976-1977	807,781	660,766	1,468,547	79,034	n.a.	61,719	140,753	1,609,300	8,353	1,486	n.a.	374
1977-1978	930,866	569,000	1,499,866	49,478	n.a.	57,025	106,503	1,606,369	8,220	1,392	n.a.	354
1978-1979	901,995	574,353	1,476,348	49,665	n.a.	55,593	105,258	1,581,606	8,645	1,307	n.a.	386
Pittsburgh												
1972-1973	--	--	574,775	--	n.a.	--	202,299	777,074	3,917	2,352	473	429
1973-1974	--	--	603,197	--	n.a.	--	200,351	803,548	3,951	2,038	254	411
1974-1975	--	--	618,748	--	n.a.	--	197,038	815,786	3,601	2,026	264	422
1975-1976	420,400	222,804	643,204	127,919	42,135	32,058	202,112	845,316	3,752	2,155	234	376
1976-1977	414,052	215,456	629,508	119,683	42,691	28,095	190,469	819,977	3,484	1,793	310	364
1977-1978	394,954	197,639	592,593	126,306	41,938	28,801	197,045	789,638	3,606	2,061	340	389
1978-1979	379,919	210,992	590,911	123,145	44,774	33,298	201,217	792,128	3,473	1,927	344	362
Temple												
1972-1973	--	--	494,904	--	n.a.	--	185,160	680,064	3,335	2,200	-- ^a	195
1973-1974	--	--	504,905	--	n.a.	--	187,989	692,894	3,301	1,588	595	160
1974-1975	--	--	534,981	--	n.a.	--	211,666	746,647	3,386	1,368	665	250
1975-1976	314,578	248,478	563,056	114,476	102,180	19,788	236,444	799,500	3,090	1,457	685	208
1976-1977	357,028	246,917	603,945	116,394	107,754	18,871	243,019	846,964	3,264	1,516	644	227
1977-1978	323,851	248,244	572,095	111,334	88,496	12,716	212,546	784,641	3,359	1,469	642	272
1978-1979	293,633	242,627	536,260	113,602	97,508	8,925	220,035	756,295	3,139	1,556	656	237
Lincoln												
1973-1974	--	--	33,539	n.a.	n.a.	n.a.	n.a.	33,539	172	n.a.	n.a.	n.a.
1974-1975	--	--	35,431	n.a.	n.a.	n.a.	n.a.	35,431	191	n.a.	n.a.	n.a.
1975-1976	23,760	7,936	31,696	n.a.	n.a.	n.a.	n.a.	31,696	206	n.a.	n.a.	n.a.
1976-1977	23,977	8,741	32,718	470	n.a.	n.a.	470	33,188	155	n.a.	n.a.	n.a.
1977-1978	26,243	8,506	34,749	1,410	n.a.	n.a.	1,410	36,159	183	n.a.	n.a.	n.a.
1978-1979	23,909	9,300	33,209	2,796	n.a.	n.a.	2,796	36,005	181	34	n.a.	n.a.
State-owned colleges												
Bloomsburg												
1976-1977	104,370	63,969	168,339	11,989	n.a.	n.a.	11,989	180,329	974	200	n.a.	n.a.
1977-1978	107,960	66,634	174,594	10,876	n.a.	n.a.	10,876	185,470	1,048	209	n.a.	n.a.
1978-1979	107,764	65,870	173,634	11,020	n.a.	n.a.	11,020	184,654	1,122	244	n.a.	n.a.
California												
1976-1977	91,354	35,527	126,881	10,488	n.a.	n.a.	10,488	137,369	822	207	n.a.	n.a.
1977-1978	86,296	33,218	119,514	9,336	n.a.	n.a.	9,336	128,850	789	169	n.a.	n.a.
1978-1979	81,311	33,879	115,190	8,456	n.a.	n.a.	8,456	123,646	761	165	n.a.	n.a.
Cheyney												
1976-1977	54,416	18,139	72,555	3,788	n.a.	n.a.	3,788	76,343	395	56	n.a.	n.a.
1977-1978	57,036	19,492	76,528	2,699	n.a.	n.a.	2,699	79,227	390	38	n.a.	n.a.
1978-1979	49,619	18,648	68,267	2,645	n.a.	n.a.	2,645	70,912	316	43	n.a.	n.a.

Clarion												
1976-1977	101,503	41,459	142,962	7,021	n.a.	n.a.	7,021	149,983	890	150	n.a.	n.a.
1977-1978	103,912	43,206	147,118	6,558	n.a.	n.a.	6,558	153,676	881	165	n.a.	n.a.
1978-1979	105,212	42,963	148,175	5,584	n.a.	-- ^a	5,584	153,759	997	121	n.a.	n.a.
East Stroudsburg												
1976-1977	78,988	40,995	119,983	9,454	n.a.	n.a.	9,454	129,437	767	116	n.a.	n.a.
1977-1978	78,347	37,564	115,911	8,043	n.a.	n.a.	8,043	123,954	765	73	n.a.	n.a.
1978-1979	77,961	34,594	112,555	7,278	n.a.	n.a.	7,278	119,833	692	78	n.a.	n.a.
Edinboro ²												
1976-1977	111,979	57,139	169,118	13,353	n.a.	n.a.	13,353	182,471	1,053	310	n.a.	n.a.
1977-1978	104,390	53,976	158,366	11,553	n.a.	n.a.	11,553	169,919	975	278	n.a.	n.a.
1978-1979	102,742	48,642	151,384	10,509	n.a.	n.a.	10,509	161,893	911	259	n.a.	n.a.
Indiana University												
1976-1977	208,053	107,179	315,232	18,692	n.a.	-- ^b	18,692	333,924	2,149	594	n.a.	1
1977-1978	223,656	113,094	336,750	19,699	n.a.	510	20,208	356,958	2,143	365	n.a.	4
1978-1979	228,919	114,882	343,801	18,424	n.a.	510	18,934	362,735	2,225	366	n.a.	5
Kutztown												
1976-1977	83,638	47,047	130,685	8,163	n.a.	n.a.	8,163	138,848	842	203	n.a.	n.a.
1977-1978	81,626	45,777	127,403	7,317	n.a.	n.a.	7,317	134,720	747	174	n.a.	n.a.
1978-1979	82,786	42,838	125,624	6,732	n.a.	n.a.	6,732	132,356	773	146	n.a.	n.a.
Lock Haven												
1976-1977	54,401	20,121	74,522	n.a.	n.a.	n.a.	n.a.	74,522	419	n.a.	n.a.	n.a.
1977-1978	51,003	18,698	69,701	n.a.	n.a.	n.a.	n.a.	69,701	460	n.a.	n.a.	n.a.
1978-1979	51,361	15,781	67,142	n.a.	n.a.	n.a.	n.a.	67,142	390	n.a.	n.a.	n.a.
Mansfield												
1976-1977	55,425	26,082	81,507	3,458	n.a.	n.a.	3,458	84,965	572	35	n.a.	n.a.
1977-1978	50,298	23,380	73,678	2,749	n.a.	n.a.	2,749	76,427	531	31	n.a.	n.a.
1978-1979	46,670	22,076	68,746	2,786	n.a.	n.a.	2,786	71,532	510	38	n.a.	n.a.
Millersville												
1976-1977	114,182	34,106	148,288	18,184	n.a.	n.a.	18,184	166,472	1,004	244	n.a.	n.a.
1977-1978	113,039	33,765	146,804	16,642	n.a.	n.a.	16,642	163,446	938	240	n.a.	n.a.
1978-1979	113,512	31,731	145,243	15,981	n.a.	n.a.	15,981	161,224	979	206	n.a.	n.a.
Shippensburg												
1976-1977	107,102	39,613	146,715	16,162	n.a.	n.a.	16,162	162,877	856	504	n.a.	n.a.
1977-1978	105,460	38,867	144,327	15,755	n.a.	n.a.	15,755	160,082	899	416	n.a.	n.a.
1978-1979	109,687	35,926	145,613	14,906	n.a.	n.a.	14,906	160,519	835	439	n.a.	n.a.
Slippery Rock												
1976-1977	121,903	49,791	171,694	8,772	n.a.	n.a.	8,772	180,466	1,059	155	n.a.	n.a.
1977-1978	115,719	46,203	161,922	8,113	n.a.	n.a.	8,113	170,035	1,054	152	n.a.	n.a.
1978-1979	110,265	44,649	154,914	7,811	n.a.	n.a.	7,811	162,725	912	132	n.a.	n.a.
West Chester												
1976-1977	138,652	74,658	213,310	21,118	n.a.	n.a.	21,118	234,428	1,207	369	n.a.	n.a.
1977-1978	145,909	77,453	223,362	17,888	n.a.	n.a.	17,888	241,250	1,213	343	n.a.	n.a.
1978-1979	150,762	68,696	219,458	17,183	n.a.	n.a.	17,183	236,641	1,183	342	n.a.	n.a.

1. Lower-division/upper-division breakdown for State-owned institutions for 1976-1977 based on 1977-1978 distribution.

2. Edinboro student credit-hour data from "State College and University Budgeting System Common Cost Accounting Reports," fiscal years 1976-1977, 1977-1978 and 1978-1979.

a. Included in master's student credit hours.

n.a. - Not applicable.

SOURCE: Student credit-hour and degree reports provided by the individual institutions, 1973 through 1979.

Appendix Table 2A

PENNSYLVANIA'S PUBLIC AND NONPUBLIC HIGH SCHOOL GRADUATES AND THEIR POST-HIGH SCHOOL EDUCATIONAL ACTIVITIES:
ACTUAL 1970--1978 AND PROJECTED 1979--1989^{a/}

Year of High School Graduation	Number of High School Graduates	Total Continuing Formal Study		College or University ^{b/}		Other Schools ^{c/}	
		Number	Percent	Number	Percent	Number	Percent
<u>1970</u>							
All Graduates	182 690	101 366	55.5	80 651	44.2	20 715	11.3
Public	151 014	81 090	53.7	63 355	42.0	17 735	11.7
Nonpublic	31 676	20 276	64.0	17 296	54.6	2 980	9.4
<u>1971</u>							
All Graduates	182 690	99 840	54.7	82 729	45.3	17 111	9.4
Public	153 568	81 063	52.8	66 307	43.2	14 756	9.6
Nonpublic	29 122	18 777	64.5	16 422	56.4	2 355	8.1
<u>1972</u>							
All Graduates	186 569	97 816	52.4	81 906	43.9	15 910	8.5
Public	157 415	79 249	50.3	65 648	41.7	13 601	8.6
Nonpublic	29 154	18 567	63.7	16 258	55.8	2 309	7.9
<u>1973</u>							
All Graduates	181 621	90 451	49.8	76 734	42.2	13 717	7.6
Public	154 045	73 311	47.6	61 574	40.0	11 737	7.6
Nonpublic	27 576	17 140	62.2	15 160	55.0	1 980	7.2
<u>1974</u>							
All Graduates	187 296	90 381	48.3	78 128	41.7	12 253	6.6
Public	159 934	73 549	46.0	63 140	39.5	10 409	6.5
Nonpublic	27 362	16 832	61.5	14 988	54.8	1 844	6.7
<u>1975</u>							
All Graduates	189 955	93 858	49.4	80 860	42.6	12 998	6.8
Public	163 124	76 356	46.8	65 229	40.0	11 127	6.8
Nonpublic	26 831	17 502	65.2	15 631	58.2	1 871	7.0
<u>1976</u>							
All Graduates	190 093	92 213	48.5	79 404	41.8	12 809	6.7
Public	163 812	75 425	46.0	64 354	39.3	11 071	6.7
Nonpublic	26 281	16 788	63.9	15 050	57.3	1 738	6.6
<u>1977</u>							
All Graduates	186 936	90 481	48.4	78 524	42.0	11 957	6.4
Public	160 665	74 214	46.2	63 851	39.7	10 363	6.5
Nonpublic	26 271	16 267	61.9	14 673	55.8	1 594	6.1
<u>1978</u>							
All Graduates	183 132	88 861	48.5	76 900	42.0	11 961	6.5
Public	156 918	72 056	45.9	61 853	39.4	10 203	6.5
Nonpublic	26 214	16 805	64.1	15 047	57.4	1 758	6.7
<u>P R O J E C T E D</u>							
<u>1979</u>							
All Graduates	181 400	87 800	48.4	76 000	41.9	11 800	6.5
Public	155 800	71 500	45.9	61 500	39.5	10 000	6.4
Nonpublic	25 600	16 300	63.7	14 500	56.6	1 800	7.1
<u>1980</u>							
All Graduates	172 800	83 500	48.3	72 400	41.9	11 100	6.4
Public	148 300	67 900	45.8	58 500	39.5	9 400	6.3
Nonpublic	24 500	15 600	63.7	13 900	56.7	1 700	7.0
<u>1981</u>							
All Graduates	171 400	82 600	48.2	71 600	41.8	11 000	6.4
Public	147 200	67 300	45.7	58 000	39.4	9 300	6.3
Nonpublic	24 200	15 300	63.2	13 600	56.2	1 700	7.0
<u>1982</u>							
All Graduates	171 300	82 400	48.1	71 600	41.8	10 800	6.3
Public	147 300	67 200	45.6	58 000	39.4	9 200	6.2
Nonpublic	24 000	15 200	63.4	13 600	56.7	1 600	6.7
<u>1983</u>							
All Graduates	161 500	77 500	48.0	67 300	41.7	10 200	6.3
Public	138 700	63 100	45.5	54 500	39.3	8 600	6.2
Nonpublic	22 800	14 400	63.2	12 800	56.2	1 600	7.0
<u>1984</u>							
All Graduates	153 800	73 700	47.9	64 200	41.7	9 500	6.2
Public	132 000	59 900	45.4	51 900	39.3	8 000	6.1
Nonpublic	21 800	13 800	63.3	12 300	56.4	1 500	6.9
<u>1985</u>							
All Graduates	147 400	70 500	47.8	61 300	41.6	9 200	6.2
Public	126 200	57 200	45.3	49 500	39.2	7 700	6.1
Nonpublic	21 200	13 300	62.7	11 800	55.7	1 500	7.0
<u>1986</u>							
All Graduates	142 200	67 800	47.7	59 100	41.6	8 700	6.1
Public	121 300	54 800	45.2	47 500	39.2	7 300	6.0
Nonpublic	20 900	13 000	62.2	11 600	55.5	1 400	6.7
<u>1987</u>							
All Graduates	141 600	67 400	47.6	58 800	41.5	8 600	6.1
Public	120 700	54 400	45.1	47 200	39.1	7 200	6.0
Nonpublic	20 900	13 000	62.2	11 600	55.5	1 400	6.7
<u>1988</u>							
All Graduates	144 600	68 700	47.5	60 000	41.5	8 700	6.0
Public	123 000	55 400	45.0	48 100	39.1	7 300	5.9
Nonpublic	21 600	13 300	61.6	11 900	55.1	1 400	6.5
<u>1989</u>							
All Graduates	138 600	65 700	47.4	57 400	41.4	8 300	6.0
Public	117 700	52 800	44.9	45 900	39.0	6 900	5.9
Nonpublic	20 900	12 900	61.7	11 500	55.0	1 400	6.7

^{a/} Educational activities are reported as of October 1 following graduation. ^{b/} Includes business or technical schools granting AST or ASB degree. ^{c/} Includes nondegree-granting schools for business, nursing and trades.

SOURCE: Reproduced from Pa. Department of Education, PROJECTIONS: Selected Education Statistics For Pennsylvania

Appendix Table 3A

FALL ENROLLMENT IN INSTITUTIONS OF HIGHER EDUCATION IN PENNSYLVANIA BY INSTITUTIONAL CATEGORY BY ENROLLMENT STATUS:
ACTUAL 1969--1978 AND PROJECTED 1979--1988

	All Institutions	State Colleges and University	State-Related Commonwealth Universities	Community Colleges	Private Institutions	Proprietary Schools and State School of Technology
<u>1969</u>						
Total Enrollment	391 876	70 575	113 403	35 154	172 744	-
Full-time Students	280 063	57 838	69 305	23 149	129 771	-
Part-time Students	111 813	12 737	44 098	12 005	42 973	-
<u>1970</u>						
Total Enrollment	411 053	72 776	119 741	40 890	177 646	-
Full-time Students	291 328	59 988	73 124	25 935	132 281	-
Part-time Students	119 725	12 788	46 617	14 955	45 365	-
<u>1971</u>						
Total Enrollment	432 536	74 863	123 241	48 815	179 837	5 780
Full-time Students	308 803	61 583	77 683	29 376	134 635	5 526
Part-time Students	123 733	13 280	45 558	19 439	45 202	254
<u>1972</u>						
Total Enrollment	437 920	76 214	123 781	50 675	179 372	7 878
Full-time Students	312 920	62 554	79 612	29 069	134 117	7 568
Part-time Students	125 000	13 660	44 169	21 606	45 255	310
<u>1973</u>						
Total Enrollment	448 629	76 899	130 153	54 449	179 263	7 865
Full-time Students	314 460	61 897	82 790	30 615	131 615	7 543
Part-time Students	134 169	15 002	47 363	23 834	47 648	322
<u>1974</u>						
Total Enrollment	455 367	78 172	130 695	59 737	179 114	7 649
Full-time Students	317 307	61 929	85 180	31 860	130 922	7 416
Part-time Students	138 060	16 243	45 515	27 877	48 192	233
<u>1975</u>						
Total Enrollment	480 863	80 065	139 300	68 071	184 177	9 250
Full-time Students	329 408	63 823	88 708	34 485	133 438	8 954
Part-time Students	151 455	16 242	50 592	33 586	50 739	296
<u>1976</u>						
Total Enrollment	488 310	79 807	138 722	69 081	186 096	14 604
Full-time Students	336 814	62 165	90 142	34 054	136 476	13 977
Part-time Students	151 496	17 642	48 580	35 027	49 620	627
<u>1977</u>						
Total Enrollment	489 373	78 538	132 696	73 612	191 705	12 822
Full-time Students	338 890	62 903	90 920	33 250	139 423	12 394
Part-time Students	150 483	15 635	41 776	40 362	52 282	428
<u>1978</u>						
Total Enrollment	487 454	76 597	128 683	74 945	194 726	12 503
Full-time Students	334 423	60 790	88 816	31 136	141 828	11 853
Part-time Students	153 031	15 807	39 867	43 809	52 898	650
<u>P R O J E C T E D</u>						
<u>1979</u>						
Total Enrollments	491 000	76 200	128 500	76 900	196 300	13 100
Full-time Students	333 400	60 000	88 400	30 300	142 400	12 300
Part-time Students	157 600	16 200	40 100	46 600	53 900	800
<u>1980</u>						
Total Enrollments	492 700	76 000	128 400	78 700	196 500	13 100
Full-time Students	330 300	59 300	87 500	30 000	141 200	12 300
Part-time Students	162 400	16 700	40 900	48 700	55 300	800
<u>1981</u>						
Total Enrollments	490 900	75 400	127 400	80 000	195 000	13 100
Full-time Students	325 800	58 500	86 300	29 500	139 300	12 200
Part-time Students	165 100	16 900	41 100	50 500	55 700	900
<u>1982</u>						
Total Enrollments	484 300	74 100	125 000	80 000	192 200	13 000
Full-time Students	318 700	57 100	84 400	28 800	136 400	12 000
Part-time Students	165 600	17 000	40 600	51 200	55 800	1 000
<u>1983</u>						
Total Enrollments	478 300	72 700	122 800	80 700	189 300	12 800
Full-time Students	310 400	55 500	82 200	28 000	133 000	11 700
Part-time Students	167 900	17 200	40 600	52 700	56 300	1 100
<u>1984</u>						
Total Enrollments	470 000	71 100	120 100	80 900	185 300	12 600
Full-time Students	300 600	53 800	79 500	27 100	128 800	11 400
Part-time Students	169 400	17 300	40 600	53 800	56 500	1 200
<u>1985</u>						
Total Enrollments	462 400	69 400	117 500	81 400	181 700	12 400
Full-time Students	290 500	52 000	76 900	26 100	124 800	11 100
Part-time Students	171 500	17 400	40 600	55 300	56 900	1 300
<u>1986</u>						
Total Enrollments	452 200	67 500	114 200	81 300	177 100	12 100
Full-time Students	280 300	50 000	74 100	25 100	120 300	10 800
Part-time Students	171 900	17 500	40 100	56 200	56 800	1 300
<u>1987</u>						
Total Enrollments	444 400	66 000	111 600	81 300	173 600	11 900
Full-time Students	272 800	48 600	72 100	24 400	117 200	10 500
Part-time Students	171 600	17 400	39 500	56 900	56 400	1 400
<u>1988</u>						
Total Enrollments	437 400	64 800	109 300	81 000	170 500	11 800
Full-time Students	267 000	47 500	70 500	23 800	114 800	10 400
Part-time Students	170 400	17 300	38 800	57 200	55 700	1 400

SOURCE: Reproduced from Pa. Department of Education, PROJECTIONS: Selected Education Statistics For Pennsylvania

Appendix Table 4A

 PENNSYLVANIA'S FALL SECONDARY SCHOOL ENROLLMENT IN PUBLIC AND NONPUBLIC SCHOOLS BY GRADE LEVEL:
 ACTUAL 1969--1978 AND PROJECTED 1979--1988

Fall	Total Secondary Pupils	G R A D E						Secondary Exceptional	Post- graduate	Total Kindergarten Through Postgraduate
		7	8	9	10	11	12			
1969										
Total Enrollment	1 211 523	186 332	181 389	217 135	219 823	200 593	187 587	17 253	1 411	2 887 971
Public	1 078 943	184 983	179 949	183 086	187 090	169 782	156 344	16 539	1 170	2 346 002
Nonpublic	132 580	1 349	1 440	34 049	32 733	30 811	31 243	714	241	541 969
1970										
Total Enrollment	1 229 243	186 130	187 191	225 248	217 558	204 133	188 071	19 472	1 440	2 880 968
Public	1 099 570	184 868	185 825	191 398	185 610	173 193	158 647	18 729	1 300	2 363 817
Nonpublic	129 673	1 262	1 366	33 850	31 948	30 940	29 424	743	140	517 151
1971										
Total Enrollment	1 248 100	187 934	187 735	231 678	225 719	201 509	190 915	21 885	725	2 857 492
Public	1 121 826	186 678	186 299	199 527	195 062	172 226	161 513	20 124	397	2 370 665
Nonpublic	126 274	1 256	1 436	32 151	30 657	29 283	29 402	1 761	328	486 827
1972										
Total Enrollment	1 258 263	186 675	187 573	228 913	230 214	207 451	187 271	29 585	581	2 817 387
Public	1 136 326	185 291	185 959	198 617	200 381	179 134	159 150	27 596	198	2 361 285
Nonpublic	121 937	1 384	1 614	30 296	29 833	28 317	28 121	1 989	383	456 102
1973										
Total Enrollment	1 260 599	185 384	185 931	226 311	226 829	210 934	193 060	30 795	1 355	2 765 432
Public	1 137 660	183 767	184 087	195 507	197 857	182 408	165 485	28 119	430	2 321 437
Nonpublic	122 939	1 617	1 844	30 804	28 972	28 526	27 575	2 676	925	443 995
1974										
Total Enrollment	1 250 541	179 104	185 467	224 870	225 184	208 854	195 885	30 230	947	2 710 843
Public	1 127 818	177 188	183 088	193 885	195 724	181 219	168 291	28 052	371	2 277 451
Nonpublic	122 723	1 916	2 379	30 985	29 460	27 635	27 594	2 178	576	433 392
1975										
Total Enrollment	1 238 628	177 336	178 492	224 385	224 053	207 508	194 868	31 332	654	2 674 116
Public	1 116 696	175 131	176 151	193 355	194 475	179 713	168 250	29 233	388	2 246 147
Nonpublic	121 932	2 205	2 341	31 030	29 578	27 795	26 618	2 099	266	427 969
1976										
Total Enrollment	1 221 762	176 027	176 591	215 746	222 058	205 791	192 522	32 468	559	2 617 727
Public	1 100 095	173 723	174 056	186 020	192 617	177 579	165 663	30 179	258	2 193 673
Nonpublic	121 667	2,304	2 535	29 726	29 441	28 212	26 859	2 289	301	424 054
1977										
Total Enrollment	1 194 563	166 729	174 561	213 136	212 046	202 996	189 486	35 081	528	2 545 576
Public	1 074 833	164 295	171 862	183 933	184 147	175 190	162 557	32 502	347	2 128 873
Nonpublic	119 730	2 434	2 699	29 203	27 899	27 806	26 929	2 579	181	416 703
1978										
Total Enrollment	1 154 937	158 129	164 581	210 705	208 346	192 412	187 033	33 277	454	2 453 231
Public	1 038 082	155 817	162 080	181 966	180 793	165 895	160 445	30 794	292	2 046 746
Nonpublic	116 855	2 312	2 501	28 739	27 553	26 517	26 588	2 483	162	406 485
P R O J E C T E D										
1979										
Total Enrollment	1 117 800	151 200	156 600	198 700	208 200	190 800	178 200	33 500	600	2 375 300
Public	1 004 400	149 000	154 200	171 500	180 900	164 700	152 700	31 000	400	1 977 000
Nonpublic	113 400	2 200	2 400	27 200	27 300	26 100	25 500	2 500	200	398 300
1980										
Total Enrollment	1 081 500	145 300	149 800	189 200	196 300	190 700	176 700	33 000	500	2 303 100
Public	971 500	143 200	147 500	163 100	170 400	164 800	151 600	30 600	300	1 913 500
Nonpublic	110 000	2 100	2 300	26 100	25 900	25 900	25 100	2 400	200	389 600
1981										
Total Enrollment	1 046 000	144 600	143 900	181 400	186 900	179 800	176 600	32 300	500	2 232 300
Public	939 400	142 500	141 700	156 000	162 100	155 200	151 700	29 900	300	1 850 800
Nonpublic	106 600	2 100	2 200	25 400	24 800	24 600	24 900	2 400	200	381 500
1982										
Total Enrollment	1 014 700	147 500	143 300	174 900	179 200	171 200	166 500	31 600	500	2 168 000
Public	911 300	145 300	141 000	149 900	155 000	147 600	142 900	29 300	300	1 793 700
Nonpublic	103 400	2 200	2 300	25 000	24 200	23 600	23 600	2 300	200	374 300
1983										
Total Enrollment	988 400	141 100	146 100	174 200	172 800	164 100	158 600	31 000	500	2 113 900
Public	886 800	139 000	143 800	149 100	148 900	141 100	135 900	28 700	300	1 745 200
Nonpublic	101 600	2 100	2 300	25 100	23 900	23 000	22 700	2 300	200	368 700
1984										
Total Enrollment	960 500	129 700	139 700	177 900	172 100	158 300	152 000	30 300	500	2 073 800
Public	859 600	127 700	137 500	152 100	148 200	135 700	130 000	28 100	300	1 709 600
Nonpublic	100 900	2 000	2 200	25 800	23 900	22 600	22 000	2 200	200	364 200
1985										
Total Enrollment	927 800	118 800	128 500	170 600	175 700	157 700	146 600	29 400	500	2 043 400
Public	827 300	116 900	126 400	145 500	151 100	135 000	124 900	27 200	300	1 681 400
Nonpublic	100 500	1 900	2 100	25 100	24 600	22 700	21 700	2 200	200	362 000
1986										
Total Enrollment	896 800	117 100	117 700	157 700	168 500	160 900	146 000	28 500	400	2 019 500
Public	797 800	115 200	115 700	133 700	144 600	137 600	124 300	26 400	300	1 659 100
Nonpublic	99 000	1 900	2 000	24 000	23 900	23 300	21 700	2 100	100	360 400
1987										
Total Enrollment	863 100	115 100	116 000	144 900	155 800	154 300	149 100	27 500	400	1 997 800
Public	766 600	113 200	114 000	122 400	132 900	131 600	126 700	25 500	300	1 637 800
Nonpublic	96 500	1 900	2 000	22 500	22 900	22 700	22 400	2 000	100	360 000
1988										
Total Enrollment	826 900	114 200	114 000	143 200	143 100	142 700	142 900	26 400	400	1 975 300
Public	732 200	112 400	112 000	120 700	120 200	121 000	121 200	24 400	300	1 614 700
Nonpublic	94 700	1 800	2 000	22 500	22 900	21 700	21 700	2 000	100	360 600

SOURCE: Reproduced from Pa. Department of Education, PROJECTIONS: Selected Education Statistics For Pennsylvania To 1988-89 (1979).

Appendix Table 5A

Table 1. Employment and average salaries for selected professional, administrative, technical, and clerical occupations in private industry, United States except Alaska and Hawaii, March 1979

Occupation and level	Number of employees ¹	Annual salaries ²				Occupation and level	Number of employees ¹	Annual salaries ²			
		Mean	Middle range ³					Mean	Middle range ³		
			Median	First quartile ⁴	Third quartile ⁵				Median	First quartile ⁴	Third quartile ⁵
ACCOUNTANTS AND AUDITORS						Engineers II	339,635	\$19,026	\$18,840	\$17,520	\$20,400
Accountants I	10,279	\$13,790	\$13,595	\$12,383	\$14,860	Engineers III	84,991	21,931	21,691	19,872	23,765
Accountants II	18,202	16,706	16,020	14,495	18,444	Engineers IV	125,302	25,989	25,800	23,495	28,339
Accountants III	31,749	19,468	19,127	17,160	21,368	Engineers V	92,602	30,472	30,137	27,757	33,000
Accountants IV	19,512	24,045	23,700	21,561	26,160	Engineers VI	39,388	34,801	34,517	31,620	37,585
Accountants V	6,594	29,744	29,400	26,489	32,437	Engineers VII	14,628	39,340	39,366	35,656	42,494
Auditors I	2,179	13,482	13,200	12,085	14,411	Engineers VIII	3,328	45,221	45,000	40,721	48,594
Auditors II	2,966	16,493	16,200	14,494	18,000	TECHNICAL SUPPORT					
Auditors III	4,757	20,303	20,074	17,993	22,620	Engineering Technicians I	4,555	10,825	10,428	9,385	11,732
Auditors IV	3,356	24,700	24,506	22,491	26,820	Engineering Technicians II	16,784	12,650	12,409	11,100	13,765
Public Accountants I	7,177	13,939	13,994	13,495	14,494	Engineering Technicians III	28,225	15,094	14,860	13,200	16,680
Public Accountants II	6,852	15,817	15,504	14,794	16,505	Engineering Technicians IV	32,545	17,824	17,446	15,840	19,240
Public Accountants III	5,397	19,174	18,792	17,400	20,064	Engineering Technicians V	18,745	20,222	20,148	18,249	21,864
Public Accountants IV	2,721	24,183	22,991	20,496	26,589	Drafters I	3,211	9,395	8,820	7,925	10,382
Chief Accountants I	728	25,457	26,004	22,991	27,024	Drafters II	10,008	10,715	10,428	9,385	11,703
Chief Accountants II	1,052	29,604	29,988	25,990	32,400	Drafters III	21,766	12,835	12,514	10,992	14,286
Chief Accountants III	498	36,561	36,236	33,687	39,584	Drafters IV	30,842	15,307	14,994	13,244	16,998
Chief Accountants IV	165	45,274	44,319	41,983	48,561	Drafters V	26,780	19,269	18,666	16,685	21,204
ATTORNEYS						Computer Operators I	5,713	9,198	8,880	8,290	9,927
Attorneys I	1,305	18,740	18,048	15,594	21,240	Computer Operators II	7,370	10,875	10,500	9,496	12,393
Attorneys II	2,609	23,468	23,496	21,000	25,549	Computer Operators III	26,299	12,013	11,627	10,285	13,452
Attorneys III	3,440	29,644	29,496	25,680	32,587	Computer Operators IV	15,616	14,921	14,340	12,708	16,685
Attorneys IV	2,750	37,807	36,524	33,587	41,376	Computer Operators V	3,712	16,975	16,424	14,455	18,550
Attorneys V	1,875	45,599	44,000	40,584	49,980	CLERICAL					
Attorneys VI	742	56,964	55,992	51,000	63,225	Accounting Clerks I	23,953	8,248	7,821	7,140	8,760
BUYERS						Accounting Clerks II	83,137	9,555	9,072	8,030	10,428
Buyers I	6,959	13,859	13,260	12,000	15,194	Accounting Clerks III	60,838	11,357	10,871	9,506	12,626
Buyers II	17,392	17,107	16,848	15,060	18,530	Accounting Clerks IV	24,304	13,606	13,200	11,400	15,694
Buyers III	15,564	21,200	20,674	18,760	23,256	File Clerks I	25,362	7,063	6,772	6,238	7,500
Buyers IV	5,163	25,508	25,092	22,440	28,250	File Clerks II	16,187	8,265	7,818	6,993	8,919
PERSONNEL MANAGEMENT						File Clerks III	4,358	10,483	10,020	8,794	11,627
Job Analysts I	395	15,333	14,494	13,800	16,607	Key Entry Operators I	74,572	9,094	8,447	7,560	10,044
Job Analysts II	667	20,106	19,792	17,736	22,200	Key Entry Operators II	47,037	10,833	10,261	8,916	12,283
Job Analysts III	484	24,231	23,760	21,600	26,592	Messengers	18,869	8,112	7,487	6,674	8,655
Directors of Personnel I	1,160	22,996	22,439	19,897	26,052	Personnel Clerks I	2,290	8,979	8,655	7,821	9,646
Directors of Personnel II	1,656	27,981	27,489	24,990	30,488	Personnel Clerks II	5,446	10,683	10,219	8,940	11,820
Directors of Personnel III	893	34,285	32,997	30,502	37,765	Personnel Clerks III	3,373	12,050	11,784	10,428	13,713
Directors of Personnel IV	292	43,933	43,798	40,200	47,220	Personnel Clerks IV	1,994	14,298	13,556	12,000	16,378
CHEMISTS AND ENGINEERS						Personnel Clerks V	754	16,518	16,200	13,932	17,580
Chemists I	3,168	14,455	14,225	12,799	15,600	Secretaries I	38,628	10,354	10,011	8,996	11,400
Chemists II	5,588	17,365	17,176	15,642	19,161	Secretaries II	79,328	11,375	10,980	9,646	12,660
Chemists III	11,437	21,025	20,968	18,792	22,560	Secretaries III	92,373	12,861	12,480	10,850	14,411
Chemists IV	10,858	25,459	25,320	23,100	27,489	Secretaries IV	49,983	14,075	13,765	11,971	15,903
Chemists V	8,419	30,828	30,780	28,165	33,420	Secretaries V	17,187	15,693	15,475	13,200	18,000
Chemists VI	4,661	35,232	34,286	31,680	38,280	Stenographers, General	24,495	10,931	10,380	8,820	12,618
Chemists VII	1,291	42,016	39,759	37,080	45,982	Stenographers, Senior	22,316	12,458	12,313	10,428	14,244
Chemists VIII	330	48,961	46,320	41,400	54,278	Typists I	45,988	8,398	7,821	7,147	9,096
Engineers I	21,203	17,345	17,100	16,200	18,562	Typists II	28,346	10,125	9,594	8,342	11,227

¹ Occupational employment estimates relate to the total in all establishments within the scope of the survey and not to the number actually surveyed.

² Salaries reported are standard salaries paid for standard work schedules; i.e., the straight-time salary corresponding to the employee's normal work schedule excluding overtime hours. Nonproduction bonuses are excluded, but cost-of-living payments and incentive earnings are included.

³ The middle range (interquartile) is the central part of the array excluding the upper and lower fourths of the employee distribution—the third quartile minus the first.

⁴ The first-quartile salary is the highest salary paid the first 25 percent of the workers in the distribution at each level.

⁵ The third-quartile salary is the highest salary paid the third quarter of the workers in the distribution at each level.

SOURCE: Reproduced from U.S. Department of Labor, Bureau of Labor Statistics, Monthly Labor Review (November 1979).

Appendix Table 6A

AVERAGE SALARY FOR FULL-TIME EQUIVALENT TEACHING FACULTY
ACADEMIC YEARS 1977-1979

Institution	Average salary-- all ranks (000's)	Professor		Associate professor		Assistant professor		Instructor	
		Average salary (000's)	Percentage of faculty						
State-related universities									
Penn State									
1977-1978	\$18.2	\$26.2	20%	\$20.1	26%	\$15.7	37%	\$11.7	17%
1978-1979	19.3	28.3	20	21.3	25	16.4	38	11.9	17
Pittsburgh ¹									
1977-1978	17.4	24.0	25	17.9	33	14.3	29	10.4	13
1978-1979	18.1	25.9	23	18.5	34	15.0	29	10.7	14
Temple									
1977-1978	18.5	27.2	24	20.0	30	15.0	29	9.7	17
1978-1979	21.6	30.8	26	23.0	30	17.4	28	11.9	16
Lincoln									
1977-1978	18.2	22.6	27	19.1	16	16.0	41	15.7	16
1978-1979	18.6	23.9	22	19.4	24	16.5	37	15.1	17
State-owned colleges									
Bloomsburg									
1977-1978	19.3	23.8	30	19.6	38	15.1	27	11.9	5
1978-1979	21.0	26.4	29	21.2	41	16.4	25	12.6	5
California									
1977-1978	21.2	24.4	40	19.9	45	16.5	14	13.6	1
1978-1979	23.2	27.0	40	21.8	44	18.4	15	13.6	1
Cheyney									
1977-1978	20.1	24.2	29	20.2	46	16.5	15	13.8	10
1978-1979	22.1	25.8	31	21.7	48	18.6	12	16.0	9
Clarion ²									
1977-1978	20.4	25.4	26	21.0	40	16.9	24	13.4	10
1978-1979	22.2	27.9	27	22.7	41	18.1	22	14.1	10
East Stroudsburg									
1977-1978	19.2	24.5	33	20.0	31	15.6	24	9.7	12
1978-1979	21.5	27.1	35	21.5	35	17.1	22	9.6	8

Edinboro									
1977-1978	20.0	23.5	37	19.6	35	16.2	26	10.4	2
1978-1979	22.3	26.1	39	21.8	35	17.7	24	12.4	2
Indiana University									
1977-1978	20.5	24.5	38	20.1	35	15.9	21	12.3	6
1978-1979	21.8	26.3	38	21.3	34	17.1	22	12.9	6
Kutztown									
1977-1978	20.2	24.3	30	20.4	41	16.5	20	12.8	9
1978-1979	22.0	26.4	31	22.0	41	18.1	21	14.0	7
Lock Haven									
1977-1978	20.5	25.1	27	20.1	47	16.9	23	12.6	3
1978-1979	22.7	27.5	29	22.0	46	18.5	22	15.8	3
Mansfield									
1977-1978	20.0	25.6	23	20.3	45	16.0	24	12.5	8
1978-1979	22.1	27.3	27	22.7	39	18.0	28	14.3	6
Millersville									
1977-1978	19.9	24.4	30	20.2	40	15.9	24	12.5	6
1978-1979	21.4	26.2	32	21.4	39	17.3	23	12.2	6
Shippensburg									
1977-1978	20.3	24.7	31	20.1	39	16.6	26	12.5	4
1978-1979	22.6	27.3	34	22.7	38	17.3	24	14.5	4
Slippery Rock									
1977-1978	20.0	24.4	33	19.6	35	16.6	21	14.0	11
1978-1979	22.0	26.9	33	22.0	33	18.0	24	15.3	10
West Chester									
1977-1978	19.8	24.5	29	20.2	40	15.8	24	12.5	7
1978-1979	20.7	25.2	30	21.1	41	16.6	22	12.8	7

1. Excluding School of Dental Medicine.
2. Data provided for full-time faculty only.

SOURCE: Salary reports provided by the individual institutions, 1978 and 1979.

Appendix Table 7A

FTE TEACHING FACULTY
ACADEMIC YEARS 1977-1979

Institution	FTE teaching faculty				Total
	Professor	Associate professor	Assistant professor	Instructor	
State-related universities					
Penn State ¹					
1977-1978	451	581	855	380	2,267
1978-1979	453	570	868	375	2,266
Pittsburgh					
1977-1978	437	590	509	233	1,769
1978-1979	431	617	529	267	1,844
Temple					
1977-1978	417	511	506	298	1,732
1978-1979	445	515	486	281	1,727
Lincoln					
1977-1978	21	12	32	12	77
1978-1979	18	20	30	14	82
State-owned colleges					
Bloomsburg					
1977-1978	102	131	91	17	341
1978-1979	104	143	90	19	356
California					
1977-1978	133	147	46	2	328
1978-1979	129	142	50	4	325
Cheyney					
1977-1978	54	87	28	18	187
1978-1979	58	88	22	16	184
Clarion ²					
1977-1978	69	107	64	27	267
1978-1979	70	110	60	26	266
East Stroudsburg					
1977-1978	82	78	60	30	250
1978-1979	86	87	56	19	248
Edinboro					
1977-1978	154	143	106	10	413
1978-1979	153	140	95	7	395
Indiana University					
1977-1978	253	233	142	37	665
1978-1979	262	229	147	40	678
Kutztown					
1977-1978	88	119	58	25	290
1978-1979	90	116	61	21	288
Lock Haven					
1977-1978	45	77	37	6	165
1978-1979	47	74	34	5	160
Mansfield					
1977-1978	50	95	51	18	214
1978-1979	55	80	57	12	204
Millersville					
1977-1978	104	141	83	22	350
1978-1979	107	132	76	21	336
Shippensburg					
1977-1978	103	126	85	14	328
1978-1979	109	120	79	12	320
Slippery Rock					
1977-1978	116	123	74	38	351
1978-1979	112	112	81	33	338
West Chester					
1977-1978	148	201	119	37	505
1978-1979	154	211	112	38	515

1. Magnitude of Penn State faculty cannot be compared to that of Pittsburgh or Temple because Penn State full-time equivalent faculty is determined on a different basis.

2. Full-time faculty only.

SOURCE: Salary reports provided by the individual institutions, 1978 and 1979.

UNIT OF PRODUCTION

The unit measures in this report have been calculated to reflect that student credit-hour production is occurring at the undergraduate and graduate levels in varying proportions at the 18 institutions. In order to account for this production at different levels, weights have been determined to equalize the student credit hours produced at upper levels to lower-division student credit hours. Faculty teaching salaries, which represent a significant portion of the total instructional cost, were used to establish the weights in the following manner. The teaching salaries for each rank at each institution were distributed among the levels of instruction on the basis of the distribution of assigned credits at each level. In other words, the portion of a faculty member's assigned credits at a given level was used as a measure of the portion of teaching faculty effort at that level.

The sum of the salary dollars distributed in this manner for each of the institutions at each of the instructional levels divided by the student credit hours produced at each level equals the salary costs per student credit hour for 1978-1979 as shown below. The ratio of the costs at the upper levels to the lower-division level cost are the weights which are used in this report to calculate lower-division student credit-hour equivalents.

<u>Level of instruction</u>	<u>Overall salary cost per student credit hour</u>	<u>Ratio to lower- division cost</u>
Undergraduate		
Lower-division	\$28	1
Upper-division	48	2
Graduate		
Master's	81	3
First professional	15	1
Doctor's	206	7

This method of accounting for the different compositions of the student bodies with the widely ranging costs at different levels provides comparable measurements of production only to the extent that the original data furnished by the different institutions are comparable.

. Appendix Table 8A

TUITION AND REQUIRED FEES AT INSTITUTIONS OF HIGHER EDUCATION IN PENNSYLVANIA
ACADEMIC YEARS 1976-1980

Institution	Year	Undergraduate		Graduate	
		In-State	Out-of-State	In-State	Out-of-State
State-related universities					
Penn State Main Campus	1976-1977	\$1,149	\$2,403	\$1,224	\$2,478
	1977-1978	1,263	2,643	1,347	2,727
	1978-1979	1,368	2,748	1,452	2,832
	1979-1980	1,485	2,982	1,581	3,150
Pittsburgh Main Campus ¹	1976-1977	1,266	2,476	1,316	2,596
	1977-1978	1,366	2,676	1,426	2,816
	1978-1979	1,516	2,976	1,596	3,156
	1979-1980	1,646	3,236	1,756	3,476
Temple ¹	1976-1977	1,300	2,500	1,400	2,500
	1977-1978	1,450	2,650	1,550	2,650
	1978-1979	1,610	3,000	1,750	3,100
	1979-1980	1,810	3,374	1,968	3,488
Lincoln	1976-1977	1,078	1,778	n.a.	n.a.
	1977-1978	1,168	1,868	1,518	2,718
	1978-1979	1,268	1,968	1,518	2,918
	1979-1980	1,268	1,968	1,518	2,918
State-owned colleges					
Bloomsburg	1976-1977	880	1,580	800	1,500
	1977-1978	955	1,730	885	1,660
	1978-1979	1,040	1,870	970	1,800
	1979-1980	1,040	1,870	970	970
California	1976-1977	890	1,590	890	1,590
	1977-1978	930	1,705	897	1,672
	1978-1979	1,060	1,890	1,060	1,890
	1979-1980	1,060	1,890	994	994
Cheyney	1976-1977	890	1,590	890	1,590
	1977-1978	965	1,740	945	1,720
	1978-1979	1,060	1,890	1,040	1,870
	1979-1980	1,060	1,890	1,040	1,040
Clarion Main Campus	1976-1977	890	1,590	890	1,590
	1977-1978	975	1,750	975	1,750
	1978-1979	1,050	1,880	1,050 ^a	1,880 ^a
	1979-1980	1,070	1,900	1,040	1,040

East Stroudsburg	1976-1977	894	1,594	820	1,520
	1977-1978	969	1,744	895	1,670
	1978-1979	1,048	1,878	970	1,800
	1979-1980	1,050	1,880	972	972
Edinboro	1976-1977	870	1,570	870	1,570
	1977-1978	955	1,730	955	1,730
	1978-1979	1,030	1,860	1,030	1,860
	1979-1980	1,056	1,886	1,056	1,056
Indiana University	1976-1977	860	1,560	860	1,560
	1977-1978	947	1,722	947	1,722
	1978-1979	1,022	1,852	1,022	1,852
	1979-1980	1,024	1,854	1,022	1,022
Kutztown	1976-1977	880	1,580	800	1,500
	1977-1978	975	1,750	905	1,680
	1978-1979	1,050	1,880	970	1,800
	1979-1980	1,052	1,882	970	970
Lock Haven	1976-1977	900	1,600	n.a.	n.a.
	1977-1978	975	1,750	n.a.	n.a.
	1978-1979	1,062	1,892	n.a.	n.a.
	1979-1980	1,062	1,892	n.a.	n.a.
Mansfield	1976-1977	820	1,520	820	1,520
	1977-1978	969	1,744	899	1,674
	1978-1979	1,056	1,886	974	1,804
	1979-1980	1,056	1,886	974	974
Millersville	1976-1977	884	1,584	884	1,584
	1977-1978	1,003	1,778	885	1,660
	1978-1979	1,080	1,910	970	1,800
	1979-1980	1,042	1,872	970	970
Shippensburg	1976-1977	895	1,595	820	1,520
	1977-1978	970	1,745	895	1,670
	1978-1979	1,045	1,875	970	1,800
	1979-1980	1,054	1,884	970	970
Slippery Rock	1976-1977	890	1,590	820	1,520
	1977-1978	965	1,740	895	1,670
	1978-1979	1,040	1,870	970	1,800
	1979-1980	1,048	1,878	970	970
West Chester	1976-1977	844	1,544	868	1,568
	1977-1978	963	1,738	895	1,670
	1978-1979	1,040	1,870	970	1,800
	1979-1980	1,050	1,880	980	980

1. Average cost for most courses; fees vary with program.

a. Includes an \$80 activity fee paid by full-time graduate students taking 12 or more credits.

SOURCE: Pennsylvania Department of Education, "Tuition and Required Fees and Room and Board Charges at Institutions of Higher Education in Pennsylvania," 1976-1977, 1977-1978, 1978-1979 and 1979-1980.



GLOSSARY OF DEFINITIONS

1. Average academic year salary

The ratio of the total salary to the full-time equivalent faculty

2. Average class size

The ratio of the student credit hours to the assigned credits

3. Average faculty production

The ratio of the equivalent student credit hours produced to the full-time equivalent faculty

4. Equivalent student credit hours

The number of undergraduate student credit hours plus 1.25 times the graduate student credit hours

5. Full-time equivalent faculty count

The sum of the number of full-time faculty plus the full-time equivalent of part-time faculty for each term during the year divided by the number of terms comprising an academic year

6. Full-time equivalent student

One full-time equivalent student is equal to 30 undergraduate student credit hours or 24 graduate student credit hours

7. "Full-time" faculty

Faculty members identified by the institution and required to report a workweek

8. Lower-division student credit hours

Credits earned in introductory courses at the first or second year undergraduate level

9. Undergraduate equivalent contact hours

The sum of undergraduate contact hours and 1.25 times the graduate contact hours

10. Units of production

A weighted sum of credits produced where the following weights are applied:

Undergraduate student credit hours

Lower division	1
Upper division	2

Graduate student credit hours

Master's level	3
First professional	1
Doctoral level	7

Degrees

Bachelor's	10
Master's	20
First professional	20
Doctor's	60

11. Upper-division credit hours

Credits earned in advanced courses at the third or fourth year undergraduate level

