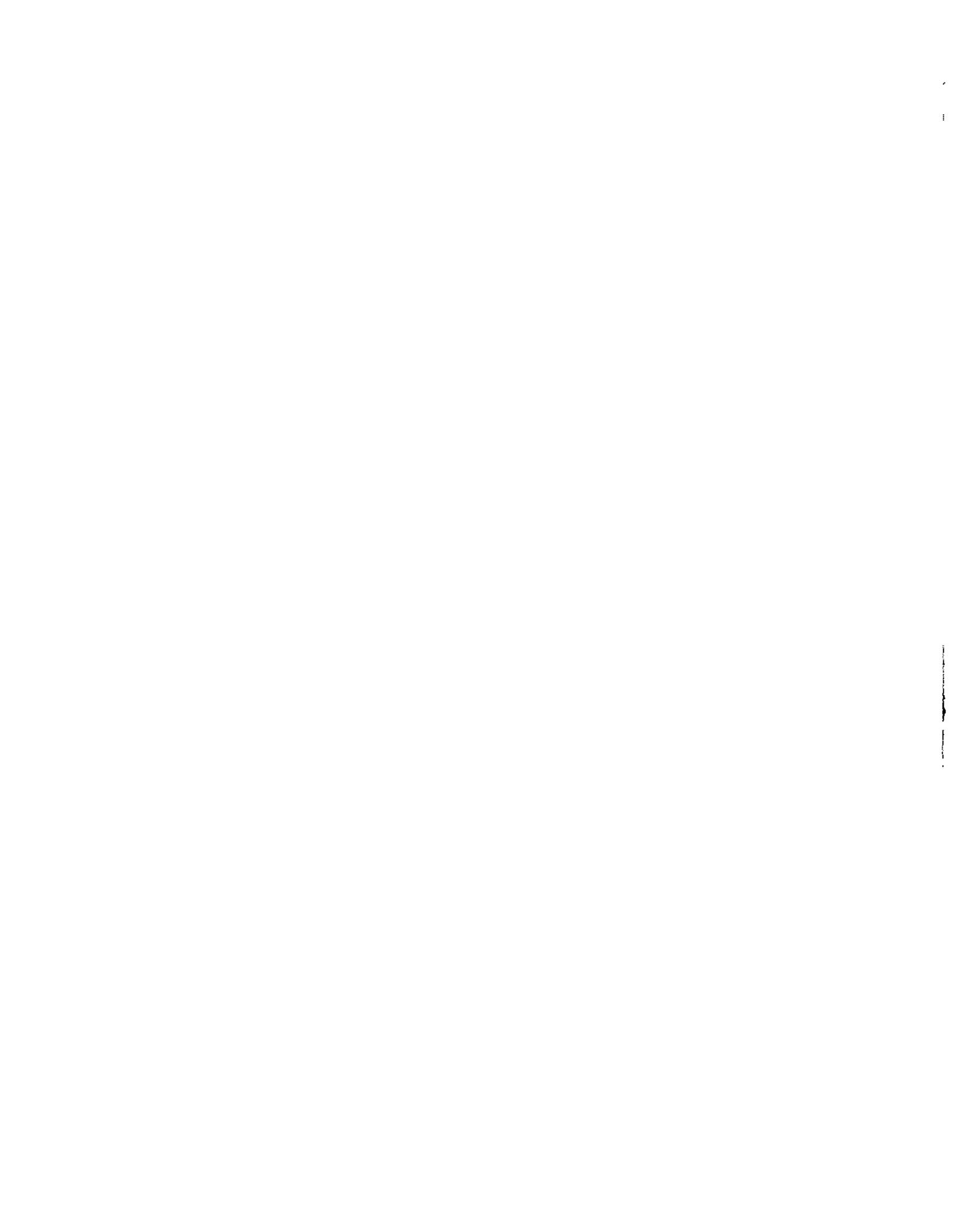


FACULTY OUTPUT AND SALARY COSTS  
OF STATE-RELATED AND STATE-OWNED  
COLLEGES AND UNIVERSITIES

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ANALYSIS OF REPORTS SUBMITTED  
UNDER 1976 ACTS 7A, 156, 157, 158 AND 159

Staff Report of the  
Joint State Government Commission of the  
General Assembly of the Commonwealth of Pennsylvania  
Harrisburg, Pennsylvania  
March 1, 1978



## FOREWORD

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The millions of dollars appropriated each year to the four State-related universities and fourteen State-owned colleges and university confirm the General Assembly's commitment to provide higher education at a reasonable cost to the students of the Commonwealth.

Confirming the Legislature's commitment to cost-efficient and accountable utilization of State funds for higher education are reporting requirements, which were first introduced into the appropriations acts for the State-related universities by Senator Richard A. Snyder in 1972. The House of Representatives added a similar reporting requirement to the State-owned colleges and university appropriation in 1976. These provisions mandate that the institutions submit detailed information on quantifiable faculty output and salary costs--i.e., data on student credit hours produced, courses taught, degrees granted, class sizes, university-related activities of faculty members and faculty workloads and salaries.

Since the inception of the reporting, the staff of the Joint State Government Commission has analyzed the raw data submitted each year and has prepared reports of this analysis for the appropriations and education committees of the Senate and House of Representatives.

This report reviews the data required by 1976 Acts 7A, 156, 157, 158 and 159 for the period from September 1, 1976 through August 31, 1977.

One of the staff's primary objectives has been to apply quantitative measures to an evaluation of the teaching cost in the State-supported institutions of higher learning. The average faculty salary cost per student credit hour, for example, provides a measure of the variation in costs of instruction for different levels of instruction and programs. This report introduces a composite measure of production which includes total student credit hours and degrees by level. This measure is particularly useful in relating the production of each institution to Commonwealth appropriations and provides the Legislature with a basis for a comparison among institutions.

The evaluations in this report bring to light instances of outstanding economy, raise questions concerning whether certain activities justify the high unit costs involved and--when considered together--indicate the degree to which funds are efficiently utilized by the various institutions.

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## SUMMARY OF FINDINGS

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1. In the production of undergraduate student credit hours, Pennsylvania State University leads all institutions with an output almost 20 percent greater than the universities of Pittsburgh and Temple combined and equal to 72 percent of the total output of all 14 State-owned institutions (Table 1).
2. In graduate student credit hours, Penn State's output is exceeded by both Pittsburgh and Temple, with Pittsburgh producing graduate student credit hours at a 35 percent greater rate than Penn State and Temple at a 72 percent greater rate (Table 1). Penn State's graduate output is approximately equal to the total graduate output of all State-owned institutions.
3. The Commonwealth appropriates over \$2,400 annually for a full-time undergraduate student at Mansfield, Lock Haven and Cheyney State colleges and Lincoln University. In comparison, the Commonwealth appropriates less than \$1,000 for each undergraduate student at the three large State-related universities. (Appropriation per student is calculated as 30 times unit appropriation shown on Table 1.)
4. The average undergraduate class size does not necessarily increase with the size of the institution, as might be expected if scale

economies were operating. Practically all of the State-owned institutions have larger average undergraduate class sizes than Penn State. The average undergraduate class sizes at Pittsburgh and Temple are typical of those at the State-owned schools (Table 4).

5. At all institutions, the typical faculty member teaching undergraduate students spends about 30 hours per week in teaching and in instructional support. Research, public and other institutional services make up the remainder of a reported average workweek of 53 hours (Table 5).
6. Branch campuses of both Penn State and Pittsburgh tend to produce regular academic-year undergraduate student credit hours at much lower salary costs than do either main campuses or the State-owned schools. This appears to be due mainly to the use of lower-ranked and lower-paid faculty who carry greater than average teaching assignments (Table 7-A).
7. With relatively low teaching productivity, Penn State's faculty teaching graduate courses only produce graduate credit hours at a cost more than twice that of comparable faculty at Pittsburgh and Temple (Table 7-B).
8. The full-time faculty at Lincoln averaged 344 student credit hours for the entire academic year. This was the lowest output average of all institutions in spite of minimal graduate work and 74 percent

of the credit hours in lower division undergraduate work. At the other extreme, Bloomsburg faculty averaged 605 student credit hours for the academic year with 63 percent lower-division output (Tables 3 and 7-C).

9. Most of the State-owned institutions and Temple achieve economical efficiency during the summer term by paying the faculty on the basis of assigned classes. In contrast, the summer term salary costs per student credit hour at Penn State and Pittsburgh are more than double the comparable costs during the academic year (Table 7-C).



## FACULTY OUTPUT AND SALARY COSTS

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The data on the State-related and State-owned colleges and universities presented in this report allow comparison of institutions with widely varying sizes, resources, goals and needs. In particular, a great deal of light is shed on the relationship of an institution's size to its instructional costs.

The data have been compiled in a manner to present information generally comparable. The various institutions, however, in some instances have reported such information as classroom hours, section sizes, faculty on sabbatical leave and part-time faculty in different ways. Particular problem areas were found in data relating to the arts and schools of education. See Appendix A for a summary of institutional reporting problems.

### Units of Production and Commonwealth Costs

A comparison of costs to the Commonwealth of the State-related and State-owned colleges and universities requires the application of a common measure to each institution's quantifiable instructional production--i.e., student credit hours and degrees. Toward this end, a formula for a "unit of production" has been developed.

In the formula, each undergraduate student credit hour produced in the entire year is valued as 1 basic unit; each graduate student credit

hour as 5; each A.B. degree as 10; each M.A. or M.S. or first professional degree as 15; and each Ph.D. degree as 30. The value accorded each type of output takes into consideration the typical student workloads, class sizes and additional faculty time involved.<sup>1</sup>

Table 1 shows for each institution the factors (rounded to facilitate comparison) which are used to calculate units of production, total units, total Commonwealth appropriation for instruction and appropriation per unit.

In general, the appropriation per unit decreases as the total unit of production increases. The highest unit appropriations were to Lock Haven and Mansfield, with each receiving \$86 per unit produced. Next highest were to Lincoln and Cheyney, receiving \$82 and \$81 per unit, respectively. It is significant that these appropriations per unit are more than two- and one-half times those of the large State-related universities.

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1. The value of 5 applied to graduate student credit hours, for example, reflects both the smaller load carried by graduate students (typically 12 credit hours rather than 15 per semester) and the much smaller class sizes in graduate courses. At the University of Pittsburgh and Pennsylvania State University, graduate class sizes are only one-fifth to one-fourth undergraduate class sizes, while at Temple--due to the large number of students working toward first professional degrees--graduate class sizes are about 70 percent as large as undergraduate. Reflecting the additional faculty time involved in the production of a degree, a bachelor's degree is valued as an additional one-third year of undergraduate credit, a master's degree an additional half year and a doctor's degree as an additional year. It is recognized that none of these outputs are susceptible to precise weighting. For example, the formula would be improved by taking into account the division of both undergraduate and graduate courses into lower and upper levels. This cannot be accomplished with the current data reported.

Table 1

## QUANTIFIABLE OUTPUT AND COMMONWEALTH APPROPRIATIONS, 1976-1977

Institutions	Student credit hours (000's)			Degrees				Number of units <sup>1</sup> produced (000's)	Commonwealth appropriation	
	Under- graduate	Graduate	Total	A.B.	M.A.	1st Prof.	Ph.D.		Total for instruction (000's)	Per unit produced
State-related universities										
Pennsylvania State	1,468	141	1,609	8,353	1,486	N.A.	374	2,289	\$75,500	\$33
Pittsburgh	630	190	820	3,484	1,793	310	364	1,659	53,000	32
Temple	604	243 <sup>a</sup>	847	3,264	1,516	644	227	1,891	57,000	30
Lincoln	33	--	33	180	N.A.	N.A.	N.A.	37	3,000	82
State-owned colleges										
Bloomsburg	168	12	180	976 <sup>b</sup>	201	N.A.	N.A.	241	11,600	48
California	127	10	137	934 <sup>b</sup>	247 <sup>b</sup>	N.A.	N.A.	192	13,000	68
Cheyney	72	4	76	395 <sup>b</sup>	56 <sup>b</sup>	N.A.	N.A.	96	7,800	81
Clarion	143	7	150	890	150	N.A.	N.A.	189	12,000	63
East Stroudsburg	102	6	108	767	116	N.A.	N.A.	141	8,900	63
Edinboro	159	11	170	1,053	310	N.A.	N.A.	231	14,000	60
Indiana University	315	19	334	2,149	594	N.A.	1	439	20,300	46
Kutztown	131	8	139	842	203	N.A.	N.A.	183	11,000	60
Lock Haven	75	N.A.	75	419	N.A.	N.A.	N.A.	79	6,800	86
Mansfield	81	4	85	572	35	N.A.	N.A.	105	9,000	86
Millersville	148	18	166	1,004	244	N.A.	N.A.	253	12,500	49
Shippensburg	147	16	163	856	504	N.A.	N.A.	244	11,700	48
Slippery Rock	172	9	181	1,059	155	N.A.	N.A.	228	13,400	59
West Chester	213	21	234	1,227 <sup>b</sup>	334 <sup>b</sup>	N.A.	N.A.	336	17,100	51

N.A. Not applicable.

1. Total of the number of undergraduate student credit hours, five times the number of graduate student credit hours, ten times the number of baccalaureate degrees, fifteen times the number of master's and first professional degrees and thirty times the number of doctoral degrees.

a. Rounds to less than 1,000 student credit hours.

b. 1975-1976 degrees.

SOURCES: Faculty teaching-load and degree reports provided by the individual institutions, 1977; estimated actual 1976-1977 instruction appropriations for State-related and State-owned colleges and universities, 1978-1979 budget requests.

Based on the unit-appropriation calculations, the Commonwealth appropriation for a lower division undergraduate student earning 30 credit hours per year ranges from less than \$1,000 at the large State-related universities to almost \$2,600 at Mansfield and Lock Haven. It should be kept in mind, however, that the Commonwealth appropriations to the State-owned colleges represent a larger portion of the instructional costs of these schools than those appropriations to the State-related universities and the students at the State-owned colleges pay lower tuition and fees.

For the State-related universities, the Commonwealth appropriation for 1976-1977 ranges from 41.2 percent of instructional cost at Lincoln to 56.7 percent at Temple, while at the State-owned colleges and university it ranges from 57.7 percent at Indiana to 70.4 percent at California. Tuition and mandated fees for in-State undergraduates range from \$820 at Mansfield for 1976-1977 to \$1,300 at Temple.

Except for Lincoln, the institutions charge out-of-State undergraduate students at least 1.75 times the tuition and fees for in-State students. Although graduate instruction costs are higher, the tuition for graduate work at the State-owned colleges is equal to or less than the undergraduate charges, except in the case of West Chester.<sup>2</sup>

Chart 1 relating the Commonwealth appropriation per unit of production to the total units produced facilitates observation of the rapidly falling per-unit appropriation as the size of the institution

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2. See Appendix B for the in-State and out-of-State student charges at the Commonwealth institutions for the academic year 1976-1977.

increases.<sup>3</sup> A comparison of institutions in this respect raises the following questions:

1. In the case of the smallest institutions, could some cooperation and program dovetailing with other institutions reduce the very high unit cost to the Commonwealth?
2. Why is the appropriation per unit to California so high? It is \$5 per unit higher than the appropriation received by Clarion, with only slightly smaller production, and \$20 per unit more than the appropriation received by Bloomsburg.
3. Why is West Chester's appropriation per unit slightly higher than that of Millersville, when West Chester's production is almost a third larger?
4. If the difference between the appropriation per unit for the University of Pittsburgh and for Temple University is attributable to size, why is the appropriation per unit for Pennsylvania State University higher than that for either of the other two universities?

The following sections present detailed data regarding the school output, the faculty workloads and salaries in order to evaluate the variation in production costs at the different institutions.

#### Production of Student Credit Hours

Table 2 shows student credit hours produced in the fall, spring and summer terms. It can be noted that while the fall term production is

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3. The curve shown on the chart is a hyperbolic curve which explains 88 percent of the variance in the per-unit appropriations to the 18 institutions under observation.

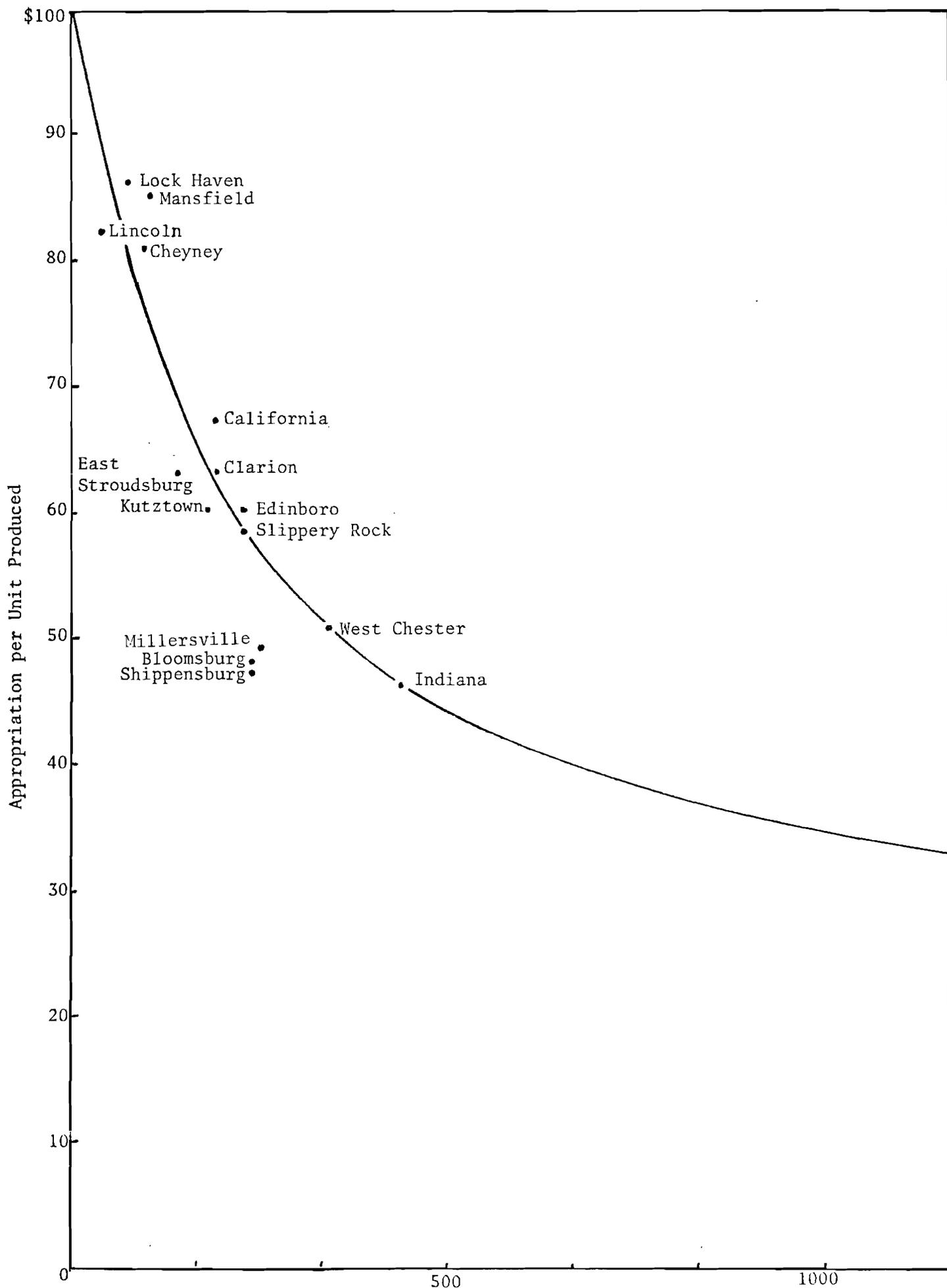


Chart 1

COMMONWEALTH APPROPRIATIONS  
AS RELATED TO PRODUCTION  
STATE-RELATED AND STATE-OWNED  
COLLEGES AND UNIVERSITIES  
1976-1977

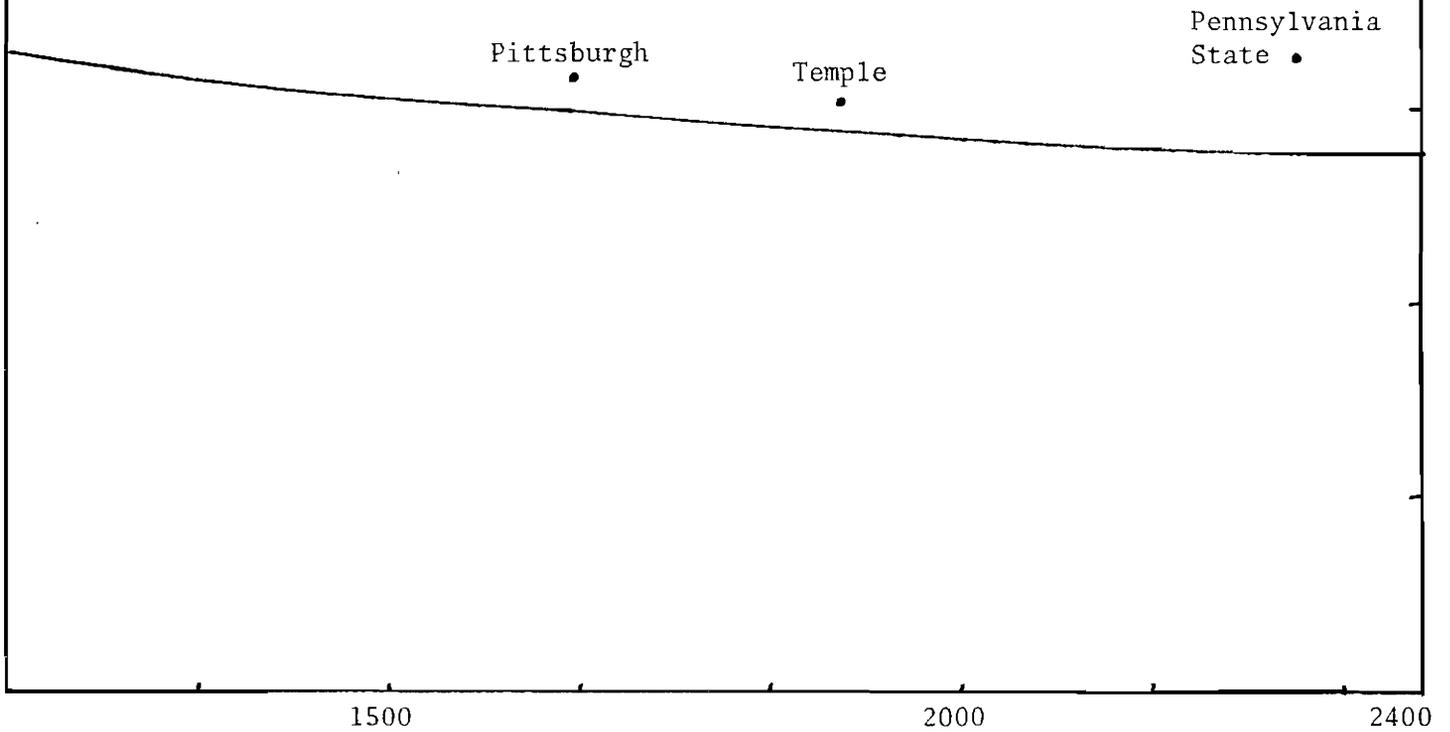


Table 2

## STUDENT CREDIT HOURS BY TERM (000's), 1976-1977

Institutions	Fall			Spring			Summer			Grand total		
	Under-graduate	Graduate	Total									
State-related universities												
Pennsylvania State <sup>1</sup>	724.1	58.6	782.7	673.9	54.4	728.3	70.6	27.7	98.3	1,468.6	140.7	1,609.3
Pittsburgh	282.4	74.1	356.5	267.4	72.1	339.5	79.7	44.3	124.0	629.5	190.5	820.0
Temple	283.1	105.9	389.0	268.6	109.6	378.2	52.2	27.5	79.7	603.9	243.0	846.9
Lincoln	14.7	--	14.7	15.0	0.5	15.5	3.0	--	3.0	32.7	0.5	33.2
State-owned colleges												
Bloomsburg	78.4	2.8	81.2	78.2	2.9	81.1	11.8	6.2	18.0	168.4	11.9	180.3
California	59.7	3.3	63.0	55.6	3.3	58.9	11.6	3.9	15.5	126.9	10.5	137.4
Cheyney	37.0	1.2	38.2	31.1	1.3	32.4	4.5	1.2	5.7	72.6	3.7	76.3
Clarion	70.4	2.6	73.0	66.8	2.3	69.1	5.7	2.1	7.8	142.9	7.0	149.9
East Stroudsburg	48.1	1.6	49.7	46.9	1.9	48.8	7.0	2.3	9.3	102.0	5.8	107.8
Edinboro	77.0	3.2	80.2	71.5	3.4	74.9	10.9	4.7	15.6	159.4	11.3	170.7
Indiana University	146.0	6.0	152.0	144.1	5.8	149.9	25.1	6.9	32.0	315.2	18.7	333.9
Kutztown <sup>2</sup>	63.2	2.5	65.7	61.2	2.3	63.5	6.3	3.3	9.6	130.7	8.1	138.8
Lock Haven	36.2	N.A.	36.2	33.7	N.A.	33.7	4.6	N.A.	4.6	74.5	N.A.	74.5
Mansfield	39.5	1.1	40.6	37.7	0.9	38.6	4.3	1.5	5.8	81.5	3.5	85.0
Millersville	69.1	4.5	73.6	64.7	4.6	69.3	14.5	9.1	23.6	148.3	18.2	166.5
Shippensburg	70.9	4.7	75.6	67.4	4.9	72.3	8.4	6.6	15.0	146.7	16.2	162.9
Slippery Rock	83.3	2.8	86.1	77.5	2.5	80.0	10.9	3.5	14.4	171.7	8.8	180.5
West Chester	99.9	6.9	106.8	96.7	5.7	102.4	16.7	8.5	25.2	213.3	21.1	234.4

N.A. Not applicable.

1. Winter term production is equally divided and included in the fall and spring productions.
2. Winter term student credit hours included in spring production.

SOURCE: Faculty teaching-load reports provided by the individual institutions, 1977.

similar to but slightly greater than the spring term, all institutions, except for Pittsburgh and Millersville, produce less than 12 percent of their annual student credit hours during the summer.

In order to illustrate in more detail the composition of the different institutions, Table 3 presents the percentage distribution of the credit hours by level for fall and summer terms and divides the undergraduate and graduate productions into lower and upper levels. Because of the relative magnitudes of these percentages, it would appear that most of the institutions have assigned student credit hours on the basis of the course level, with the exception of Pennsylvania State University which has assigned the credit hours on the basis of the student's level.

At a few institutions--Lincoln, Cheyney, Clarion and Millersville--the percentage of credit hours reported in the lower division is close to or more than three times the percentage in the upper division of undergraduate work. This might indicate a high drop-out rate in these institutions. During the summer term, the percentage composition differs widely from one institution to another, with the proportion of graduate work increasing significantly. Again, the percentages shown for Pennsylvania State University are not comparable to the other percentages.

#### Number of Courses and Average Class Size

Table 4 enables comparison of numbers of undergraduate courses, sections per course and average section sizes. Except for the

Table 3

## PERCENTAGE DISTRIBUTION OF STUDENT CREDIT HOURS IN FALL AND SUMMER TERMS BY LEVEL OF INSTRUCTION

Institutions	Fall 1976 <sup>a</sup>						Summer 1977					
	Undergraduate			Graduate			Undergraduate			Graduate		
	Lower divi- sion	Upper divi- sion	Total	Master's and 1st Prof.	Ph.D.	Total	Lower divi- sion	Upper divi- sion	Total	Master's and 1st Prof.	Ph.D.	Total
State-related universities												
Pennsylvania State	53%	40%	93%	5%	2%	7%	28%	44%	72%	12%	16%	28%
Pittsburgh	53	26	79	18	3	21	42	22	64	30	6	36
Temple	47	26	73	25	2	27	27	39	66	32	2	34
Lincoln	74	26	100	N.A.	N.A.	N.A.	80	20	100	N.A.	N.A.	N.A.
State-owned colleges												
Bloomsburg	63	34	97	3	N.A.	3	36	29	65	35	N.A.	35
California	70	25	95	5	N.A.	5	44	31	75	25	N.A.	25
Cheyney	72	25	97	3	N.A.	3	56	23	79	21	N.A.	21
Clarion	76	21	97	3	N.A.	3	47	26	73	27	N.A.	27
East Stroudsburg	64	33	97	3	N.A.	3	49	26	75	25	N.A.	25
Edinboro	68	28	96	4	N.A.	4	37	33	70	30	N.A.	30
Indiana University	65	31	96	4	-- <sup>b</sup>	4	54	24	78	22	-- <sup>b</sup>	22
Kutztown	64	32	96	4	N.A.	4	39	26	65	35	N.A.	35
Lock Haven	72	28	100	N.A.	N.A.	N.A.	61	39	100	N.A.	N.A.	N.A.
Mansfield	70	27	97	3	N.A.	3	46	29	75	25	N.A.	25
Millersville	71	23	94	6	N.A.	6	52	10	62	38	N.A.	38
Shippensburg	70	24	94	6	N.A.	6	33	23	56	44	N.A.	44
Slippery Rock	71	26	97	3	N.A.	3	42	34	76	24	N.A.	24
West Chester	63	31	94	6	N.A.	6	38	28	66	34	N.A.	34

N.A. Not applicable.

a. One-third of academic year at Pennsylvania State University; one-half of academic year at the other institutions.

b. No separate accounting of master's and doctoral student credit hours was provided.

SOURCE: Faculty teaching-load reports submitted by institutions, 1977.

University of Pittsburgh and Temple University, the undergraduate student credit hours produced represent more than 90 percent of the production in the fall term.

Analysis of these data raises questions concerning the number of courses that are necessary for an institution to present students with adequate undergraduate course selections. For example, if 180 courses are sufficient for Lincoln, how does Mansfield justify 399 courses? It may be noted that Mansfield in 1976-1977 received an appropriation per unit of \$12 more than the amount that would have been appropriated for its size as indicated by the curve on Chart 1. Was the resulting \$1.25 million appropriation necessary?

Although the three large State-related universities produce two to ten times as many student credit hours as the State-owned institutions, they offer so many more courses that their resulting student credit hours per course are similar to the State-owned colleges. Their number of sections per course is also high, resulting in average section sizes no larger than those at the State-owned colleges.<sup>4</sup> Specifically, all but Edinboro of the State-owned institutions have a larger average undergraduate section size than that of Pennsylvania State University. Half of the State-owned institutions have average undergraduate section sizes greater than the average at the University of Pittsburgh and Temple University. The small average class size could be the result of

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4. The term section size is used to indicate the class size estimated on the basis of section distributions furnished by the institutions.

Table 4

1

 UNDERGRADUATE STUDENT CREDIT HOURS, NUMBER OF COURSES, SECTIONS PER COURSE AND AVERAGE SECTION SIZE

Institutions	Fall 1976					Summer 1977				
	Student credit hours (000's)	Number of courses	Student credit hours per course	Sections per course	Average section size	Student credit hours (000's)	Number of courses	Student credit hours per course	Sections per course	Average section size
State-related universities										
Pennsylvania State	489	3,064	160	3.0	20.3	71	816	87	3.0	10.7
Pittsburgh <sup>2</sup>	282	2,405	117	2.1	23.1	80	1,153	69	1.9	13.4
Temple	283	1,552	182	2.1	25.2	52	743	70	1.4	16.0
Lincoln	15	180	83	1.4	20.1	3	52	58	1.0	15.7
State-owned colleges										
Bloomsburg	78	456	172	2.4	25.3	12	292	40	1.2	13.3
California	60	464	129	2.0	22.7	12	253	46	1.2	13.1
Cheyney	37	356	104	1.7	21.7	4	102	44	1.4	11.9
Clarion	70	401	176	2.2	21.9	6	218	26	1.1	8.3
East Stroudsburg	48	377	128	1.7	29.8	7	200	35	1.1	-- <sup>a</sup>
Edinboro	77	576	134	2.6	18.8	11	304	36	1.1	12.2
Indiana University	146	696	210	3.1	25.7	25	443	57	1.4	14.8
Kutztown	63	466	136	2.2	21.2	6	201	31	1.0	11.2
Lock Haven	36	294	123	1.9	23.2	5	105	44	1.1	14.3
Mansfield	40	399	99	1.8	21.7	4	124	35	1.3	10.5
Millersville	69	412	168	2.1	26.5	15	232	63	1.3	18.1
Shippensburg <sup>3</sup>	71	430	165	2.2	26.1	8	269	31	1.0	11.9
Slippery Rock	83	497	168	2.5	26.6	11	210	52	1.1	14.9
West Chester	100	611	164	2.3	25.9	17	303	55	1.1	17.3

1. Section sizes estimated on the basis of distributions of class size reported by the institutions.
2. Student credit hours, courses and sections of the first professional dental medicine program are excluded.
3. Courses and sections of student teaching are excluded.
- a. Inconsistent data.

SOURCE: Faculty teaching-load reports and course and section distribution reports submitted by the institutions, 1977.

the philosophy of the large universities to offer the student the opportunity to choose from a wider range of courses and more advanced courses.

A large average number of sections per course and resulting smaller section sizes are partially attributable to individual instruction. A certain amount of undergraduate individual instruction may be expected during the senior year of undergraduate work. The data, however, indicate that some institutions provide individual instruction in the lower division of undergraduate work. If this policy were limited, instruction costs could be decreased.

In the summer term the large universities, while producing a few more student credit hours per course than the State-owned colleges, have more sections per course. This results in similar average section sizes between the State-related and State-owned institutions. If a minimum registration of 15 students were required for each course, the average section size would increase and the cost of production would be reduced. Thirteen of the 17 institutions have an average undergraduate section size in the summer term of less than 15 students.

#### School-Related Activities of Full-Time Faculty

The average student credit-hour output of a faculty member is determined principally by two factors--the average class (or section) size and the number of sections he is assigned. Table 5 shows the average hours spent weekly in school-related activities by full-time faculty members in the fall of 1976. The average number of contact hours in undergraduate work and graduate work is shown separately because of large differences in proportions and because the time required

Table 5

## AVERAGE WEEKLY HOURS SPENT IN SPECIFIED ACTIVITIES BY FULL-TIME FACULTY, FALL 1976

Institutions	Contact hours			Instructional support	Support per undergraduate equivalent	Research	Other service	Average work week
	Under-graduate	Graduate	Total undergraduate equivalent <sup>1</sup>					
State-related universities								
Pennsylvania State								
Main Campus	5.9	3.0	9.6	19.0	1.97	15.1	8.8	51.8
Branch campuses	13.0	0.4	13.5	26.6	1.97	8.2	6.4	54.6
Pittsburgh								
Main Campus	4.4	5.1	10.7	16.3	1.52	16.0	12.5	54.3
Branch campuses	13.6	0	13.6	27.6	2.04	2.8	10.9	54.9
Temple	6.3	3.9	11.1	17.0	1.53	11.2	13.8	52.2
Lincoln	11.1	0	11.1	20.2	1.83	9.5	6.5	47.3
State-owned colleges								
Bloomsburg	12.0	0.8	13.0	16.4	1.26	7.7	15.8	52.7
California	9.8	1.0	11.0	16.1	1.46	7.1	16.6	50.6
Cheyney	9.8	0.8	10.9	18.1	1.66	8.0	18.5	55.2
Clarion	10.5	0.8	11.5	17.0	1.48	6.9	16.0	51.2
East Stroudsburg	11.3	0.7	12.1	19.4	1.60	7.0	19.3	57.7
Edinboro	11.8	1.0	13.0	18.0	1.38	10.0	12.9	53.7
Indiana University	11.8	1.1	13.1	18.5	1.41	8.2	15.8	55.4
Kutztown	12.3	0.6	13.0	16.2	1.25	8.3	14.8	52.2
Lock Haven	11.2	0	11.2	16.1	1.45	7.7	18.1	53.1
Mansfield	10.4	0.6	11.1	23.0	2.08	6.6	10.7	51.3
Millersville	11.7	0.7	12.6	15.5	1.24	7.6	16.7	52.2
Shippensburg	9.3	1.0	10.6	18.5	1.74	9.5	16.0	54.3
Slippery Rock	10.3	0.5	10.9	18.0	1.65	7.2	16.4	52.4
West Chester	12.0	1.1	13.4	18.4	1.37	8.9	14.2	54.6

1. Undergraduate equivalent contact hours equals undergraduate contact hours plus 1.25 times graduate contact hours.

SOURCE: Workload analysis of full-time faculty submitted by the institutions, 1977.

by the faculty member is generally greater at the graduate level. In order to compare the total contact hours at the various institutions, weighted numbers of total contact hours are included in Table 5. In these equivalencies, a contact hour in graduate work has been equated as 1.25 undergraduate contact hours. The 1.25 was applied on the basis of the relationship of 30 undergraduate credit hours to 24 graduate credit hours in the definition of full-time students for these levels. The weighted total is not used in the calculation of the total workweek.

The faculty at the branch campuses of Pennsylvania State University and the University of Pittsburgh reported the highest number of weekly classroom contact hours. This may be partially attributable to the fact that faculty at the Main Campus have assumed additional administrative responsibilities. At both universities, the faculty at the Main Campus average roughly two hours more in university and public service ("other service" on Table 5) than the faculty at the branch campuses.

When the suggestion is made that faculty members might average more contact hours per week, the response has been that one additional contact hour results in three additional hours of work--one hour in the classroom and two hours in class preparation, i.e., instructional support. Half of the institutions, however, show an average preparation time of less than 1.52 hours for each undergraduate class meeting.<sup>5</sup>

Preparation time appears to have little relationship to class size. Mansfield, with the highest relative number of hours in preparation

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5. Instructional support ratios were derived by dividing preparation time reported by faculty members by undergraduate equivalent contact hours.

for each class meeting (2.08), reported an average undergraduate section size of 21.7. In comparison, Millersville, with a ratio of 1.24, has an average section size of 26.5. Temple University, with an average undergraduate section size of 25.2, has a ratio approximately equal to the median ratio of 1.52 hours for the 20 main and branch campuses.

The number of hours spent on other service, as shown on Table 5, is significantly higher at the State-owned colleges and university than at the State-related universities, except in the cases of Edinboro and Mansfield. It is possible that some of the public service work indicated by the faculty at the State-owned colleges is the type of work done by nonteaching faculty who were not included in the reports of the State-related universities.

As was noted earlier, there is a wide variance in the goals of the institutions and departments within the institutions, and faculty members assume different responsibilities with regard to the attainment of these goals. Observation of the average number of hours spent in the various activities shown on Table 5 furnishes some clue to the differences. Consider, for example, the average number of hours spent weekly on "research"--the meaning of which differs from school to school. The average number of hours spent per week on research at the Main Campus of the University of Pittsburgh (16) is larger than at any other institution. This fact is consistent with the average of 5 hours in graduate instruction--more than half of the total contact hours. In comparison, the average of graduate contact hours reported by all full-time faculty at the Main Campus of Pennsylvania State University is 3, approximately

one-third of the total contact hours. These faculty report an average of 15 hours in research as compared to Pittsburgh's 16-hour average. Temple University faculty, with more average graduate contact hours than Pennsylvania State University, report only an average of 11 hours per week on research.

Questions concerning the differing types of research arise when one considers that the faculty members at the State-owned colleges have generally averaged 7 or more hours per week on research while the graduate contact hours generally average less than one per week. It may be that in some instances the entire time reported for research was spent in reading professional journals. Since there is a variance in the instructions received by faculty members for reporting research hours, these instructions are included in Appendix C.

Although the time spent in the specific activities varies from institution to institution, the total time spent by a faculty member on institutional activities--based on reports from all institutions--is slightly more than 50 hours per week, whether measured by the mode, median or mean. There are a few notable variations from this overall average: Lincoln, for example, has a mean of 47 and a median of 45 hours per week.

Table 6 shows the high, low and median of average hours per week spent on institutional activities reported by individual faculty members for each institution as well as a percentage distribution of faculty members by the average number of hours reported. The table demonstrates the wide range within each institution. The highest percentage of

Table 6

## AVERAGE WEEKLY HOURS OF WORK-RELATED ACTIVITIES OF FULL-TIME FACULTY, FALL 1976

Institutions	Number of full-time faculty	Percentage distribution of full-time faculty by average hours per week							Hours per week reported by full-time faculty members		
		29 or less	30-39	40-49	50-59	60-69	70-79	80 or more	Low	High	Median
State-related universities											
Pennsylvania State											
Main Campus	1,805	0%	1%	41%	40%	14%	3%	-- <sup>a</sup>	30	92	51
Branch campuses	887	0	3	29	39	21	7	1%	31	87	54
Pittsburgh											
Main Campus	1,390	-- <sup>a</sup>	3	30	39	20	6	2	25	92	54
Branch campuses	189	0	6	25	42	17	8	2	35	95	54
Temple	1,344	3	8	29	35	20	4	1	17	91	52
Lincoln	74	18	16	28	22	4	.3	9	15	109	45
State-owned colleges											
Bloomsburg	282	1	5	32	42	17	2	1	5	98	52
California	317	0	10	38	40	7	3	2	30	122	50
Cheyney	136	4	10	31	19	16	10	10	19	101	52
Clarion	291	0	11	32	42	10	3	2	30	94	51
East Stroudsburg	206	0	3	20	44	17	8	7	35	118	55
Edinboro	382	3	5	33	34	12	8	5	5	111	52
Indiana University	517	1	8	24	34	21	8	4	22	110	54
Kutztown	289	0	10	31	41	13	3	2	31	97	52
Lock Haven	168	0	8	30	39	17	3	3	34	94	53
Mansfield	177	8	11	26	25	21	4	5	17	97	51
Millersville	297	1	5	30	49	12	1	2	7	103	52
Shippensburg	305	7	4	23	33	17	9	7	12	99	55
Slippery Rock	326	1	8	28	43	14	3	3	12	130	52
West Chester	403	1	6	29	37	18	5	4	18	126	53

a. Rounds to less than one percent.

SOURCE: Workload analysis of full-time faculty submitted by the institutions, 1977.

faculty worked 40 to 49 hours on the Main Campus at Pennsylvania State University, at Lincoln University and at Cheyney State College. The highest percentage of faculty reported a workweek in the 50-59-hour interval at the remaining schools.

#### Salary Cost per Student Credit Hour

Tables 7-A, 7-B and 7-C present the full-time teaching faculty salary costs per student credit hour produced during the academic year and during the summer term together with the average number of student credit hours produced by these faculty members. The underlying factors affecting the average production are class sizes and contact hours.

Table A presents production and cost data for faculty teaching undergraduate courses only; Table B for faculty teaching graduate courses only; and Table C for all full-time teaching faculty, including those who teach both undergraduate and graduate courses.

Faculty teaching undergraduate courses only produce the largest average number of student credit hours and have the lowest average salaries. Conversely, faculty teaching graduate courses only have the lowest average student credit-hour production and the highest average salaries.

Faculty Teaching Undergraduate Courses Only--The faculty at the branch campuses of Penn State and University of Pittsburgh carry workloads comparable to the State-owned colleges and university. For example, Indiana has an average production of 583 undergraduate student credit hours per faculty member as compared with Penn State's branch campuses' production of 578. Bloomsburg has the highest average production--

Table 7-A

AVERAGE STUDENT CREDIT-HOUR PRODUCTION AND SALARY COSTS FOR FULL-TIME FACULTY  
TEACHING UNDERGRADUATE COURSES ONLY, 1976-1977

Institutions	Academic year			Average salary	Summer
	Average number of faculty	Average student credit-hour production per faculty member	Salary cost per student credit hour		Salary cost per student credit hour
State-related universities					
Pennsylvania State					
Main Campus	247	425	\$37	\$15,541	\$79
Branch campuses	795	578	25	14,495	52
Pittsburgh					
Main Campus	286	389	37	14,446	70
Branch campuses	185	531	28	14,710	27 <sup>a</sup>
Temple	172	439	37	16,063	-- <sup>b</sup>
Lincoln	76	344	N.P.	N.P.	-- <sup>b</sup>
State-owned colleges					
Bloomsburg	212	621	33	20,560	35 <sup>c</sup>
California	218	412	52 <sup>c</sup>	21,437	58 <sup>c</sup>
Cheyney	143	441	45 <sup>c</sup>	19,803	30 <sup>c</sup>
Clarion	197	566	35 <sup>c</sup>	19,909	39 <sup>c</sup>
East Stroudsburg	162	460	44 <sup>c</sup>	20,367	46 <sup>c</sup>
Edinboro	275	457	44 <sup>c</sup>	20,314	-- <sup>a</sup>
Indiana University	377	583	35	20,576	34
Kutztown	225	483	42	20,362	38
Lock Haven	154	454	46 <sup>c</sup>	20,683	32 <sup>c</sup>
Mansfield	158	412	49	20,114	49
Millersville	219	514	41	21,234	36 <sup>c</sup>
Shippensburg	185	559	37	20,618	34 <sup>c</sup>
Slippery Rock	246	554	36	20,103	28 <sup>c</sup>
West Chester	311	478	42 <sup>c</sup>	20,152	25 <sup>c</sup>

N.P. Not provided.

a. Inconsistent data.

b. Part-time faculty only.

c. Calculated from average salary and average student credit-hour production because of

inconsistencies in data. Average number of faculty shown is average of faculty provided for student credit-hour production data.

SOURCE: Reports of teaching faculty by level of instruction submitted by institutions, 1977..

621 student credit hours. The faculty at Mansfield and California have smaller average productions than have the faculty at any other institution except the Main Campus of the University of Pittsburgh and Lincoln University. Lincoln University faculty teaching undergraduate courses only produced an average of 344 student credit hours for the entire academic year. This is the lowest average in this category of all the colleges and universities under observation. The student credit-hour cost at Lincoln is not shown since the salary information required by Act No. 159 of 1976 was not provided by the school.

The credit-hour costs shown on Table 7-A for Mansfield of \$49 and for California of \$52 are well above the \$37 average at the Main Campus of the University of Pittsburgh, even though Pittsburgh's average production ranked next to that at Lincoln. This is due to the low average salary at the University of Pittsburgh of \$14,446, as compared with \$21,437 and \$20,114 at California and Mansfield, respectively. In fact, the average salary at the Main Campus of the University of Pittsburgh is more than \$1,000 less than that at the Main Campus of Pennsylvania State University. For this reason, the higher average production of 425 student credit hours at Penn State's Main Campus results in the same salary cost per student credit hour as at Pittsburgh, which has an average production of 389 at the Main Campus.

In general, the credit-hour costs in the summer term at the State-owned colleges are comparable to and, in some cases lower than those of the academic year. At the main campuses of Pennsylvania State University and the University of Pittsburgh, the costs roughly double

during the summer term. These differences may reflect administrative salary policies.

Faculty Teaching Graduate Courses Only--Among the high producers were the faculty at Bloomsburg with average production of 351 student credit hours and Temple with 376 (Table 7-B). At the other end of the scale, the average student credit-hour production by the faculty at Pennsylvania State University averaged 101 for the academic year, only slightly more than the average production of 93 by the faculty at California. The average salary of the faculty at California was higher than that at Penn State, resulting in the highest graduate student credit-hour costs in this category (\$256) as compared with Penn State's \$220. At the other extreme is Bloomsburg's \$63 cost per graduate student credit hour.

At the same time, the University of Pittsburgh has a graduate student credit-hour cost of \$92 because of an average production of 195 graduate student credit hours and a low salary. Despite a higher average salary, Clarion's student credit-hour cost of \$82 was lower because of an average production of 267 graduate student credit hours.

In this faculty category as well as in the undergraduate group, the State-owned colleges generally keep the summer credit-hour costs down, while those costs for Pennsylvania State University and the University of Pittsburgh increase roughly 50 percent for faculty teaching graduate courses only. Summer data from Temple were not included on Tables 7-A and 7-B since the breakdown information showed inconsistencies.

Table 7-B

AVERAGE STUDENT CREDIT-HOUR PRODUCTION AND SALARY COST FOR FULL-TIME FACULTY  
TEACHING GRADUATE COURSES ONLY, 1976-1977

Institutions	Academic year			Average salary	Summer Salary cost per student credit hour
	Average number of faculty	Average student credit-hour production per faculty member	Salary cost per student credit hour		
<b>State-related universities</b>					
Pennsylvania State	251	101	\$220	\$22,025	\$305
Pittsburgh	377	195	92	17,892	155 <sup>a</sup>
Temple	352	376	71	23,551	-- <sup>a</sup>
Lincoln	N.A.	N.A.	N.A.	N.A.	N.A.
<b>State-owned colleges</b>					
Bloomsburg	4	351	63 <sup>b</sup>	22,164	50 <sup>b</sup>
California	15	93	256 <sup>b</sup>	23,755	130 <sup>b</sup>
Cheyney	12	163	141 <sup>b</sup>	22,967	38 <sup>b</sup>
Clarion	7 <sup>c</sup>	267	82 <sup>b</sup>	21,822	52 <sup>b</sup>
East Stroudsburg	--	--	--	--	44 <sup>b</sup>
Edinboro	7	204	109 <sup>b</sup>	22,175	-- <sup>a</sup>
Indiana University	11	198	112	22,168	47
Kutztown	9	169	152	25,591	44
Lock Haven	N.A.	N.A.	N.A.	N.A.	N.A.
Mansfield	2	119	198	24,168	52
Millersville	7	244	102	25,907	37 <sup>b</sup>
Shippensburg	15	220	108	23,842	43 <sup>b</sup>
Slippery Rock	4	215	113 <sup>b</sup>	24,463	45 <sup>b</sup>
West Chester	20	206	111 <sup>b</sup>	22,878	33 <sup>b</sup>

N.A. Not applicable.

a. Inconsistent data.

b. Calculated from average salary and average student credit-hour production because of inconsistencies in data. Average number of faculty shown is average of faculty provided for student credit-hour production data.

c. Only one faculty member at this level of teaching.

SOURCE: Reports of teaching faculty by level of instruction submitted by institutions, 1977.

Table 7-C

AVERAGE STUDENT CREDIT-HOUR PRODUCTION AND SALARY COSTS  
FOR FULL-TIME TEACHING FACULTY, 1976-1977

Institutions	Academic year			Average salary	Summer
	Average number of faculty	Average student credit-hour production per faculty member	Salary cost per student credit hour		Salary cost per student credit hour
<b>State-related universities</b>					
Pennsylvania State	2,468	484	\$37	\$17,672	\$115
Pittsburgh	1,396	368	46	17,102	99
Temple	1,312	418	48	20,105	35 <sup>a</sup>
Lincoln	76	344	N.P.	N.P.	-- <sup>a</sup>
<b>State-owned colleges</b>					
Bloomsburg	262	605	35 <sup>b</sup>	20,969	40 <sup>b</sup>
California	305	400	55 <sup>b</sup>	22,123	67 <sup>b</sup>
Cheyney	166	427	47 <sup>b</sup>	20,244	31 <sup>b</sup>
Clarion	254	553	37 <sup>b</sup>	20,418	43 <sup>b</sup>
East Stroudsburg	195	485	43 <sup>b</sup>	20,991	45 <sup>b</sup>
Edinboro	346	445	47 <sup>b</sup>	20,958	45 <sup>b</sup>
Indiana University	532	555	38	21,120	38
Kutztown	273	464	45 <sup>b</sup>	20,912	39 <sup>b</sup>
Lock Haven	154	454	46 <sup>b</sup>	20,683	32 <sup>b</sup>
Mansfield	193	399	51	20,488	49
Millersville	269	520	42	21,871	37 <sup>b</sup>
Shippensburg	271	541	40	21,396	38 <sup>b</sup>
Slippery Rock	301	542	38 <sup>b</sup>	20,586	32 <sup>b</sup>
West Chester	447	452	46 <sup>b</sup>	20,684	28 <sup>b</sup>

N.P. Not provided.

a. Part-time faculty only.

b. Calculated from average salary and average student credit-hour production because of inconsistencies in data. Average number of faculty shown is average of faculty provided for student credit-hour production data.

SOURCE: Reports of teaching faculty by level of instruction submitted by institutions, 1977.

All Full-Time Teaching Faculty--Over all levels (Table 7-C) the faculty salary costs per student credit hour at the universities and colleges range for the academic year from \$35 at Bloomsburg to \$55 per student credit hour at California. Pennsylvania State University, with the smallest percentage of graduate work of the three State-related universities, is at the lower end of the scale with a student credit-hour cost of \$37. Pittsburgh and Temple, with large graduate schools, have student credit-hour costs of \$46 and \$48, respectively. Lock Haven, with no graduate school, has an average cost of \$46 per student credit hour. The only colleges under observation with higher costs are Mansfield and California, with average student credit-hour salary costs of \$51 and \$55, respectively.

Similar cost calculations were determined for individual departments of each of the institutions except Lincoln and Edinboro, which submitted incomplete data. The results shown in Appendix D confirm the importance of student credit-hour production in effecting cost economies and provide a quantification of savings achieved by increases in class size and contact hours.

#### Faculty Salaries

As has been observed, in the case of California a small workload is not the entire cause of higher costs. California teaching faculty have the highest average salary for the academic year for all the institutions.

Table 8 shows the percentage distribution of faculty by rank and the average salary by rank. Pennsylvania State University has the

Table 8

## AVERAGE ACADEMIC YEAR SALARIES OF FULL-TIME TEACHING FACULTY BY RANK, 1976-1977

Institutions	Professor			Associate Professor			Assistant Professor			Instructor		
	Number	Percent	Average academic year salary <sup>1</sup>	Number	Percent	Average academic year salary <sup>1</sup>	Number	Percent	Average academic year salary <sup>1</sup>	Number	Percent	Average academic year salary <sup>1</sup>
State-related universities												
Penn State	481	21.0	\$24,500	596	26.1	\$18,900	852	37.3	\$14,800	357	15.6	\$9,800 <sup>a</sup>
Pittsburgh	320	24.3	23,200 <sup>a</sup>	452	34.3	17,200 <sup>a</sup>	416	31.5	14,000 <sup>a</sup>	131	9.9	10,100
Temple	345	26.1	27,000 <sup>b</sup>	419	31.7	20,900	423	32.1	16,100	133	10.1	11,300
Lincoln	19	26.8	N.P.	12	16.9	N.P.	23	32.4	N.P.	17	23.9	N.P.
State-owned colleges												
Bloomsburg	80	30.2	25,800	109	41.1	21,000	68	25.7	16,500	8	3.0	12,400
California	109	37.2	25,600	129	44.0	21,100	50	17.1	17,200	5	1.7	13,400
Clacycy	35	21.7	26,000	79	49.1	20,800	27	16.8	17,400 <sup>b</sup>	20	12.4	15,100 <sup>b</sup>
Clarion	65	24.5	26,100	116	43.8	21,200	59	22.3	16,800	25	9.4	12,800
East Stroudsburg	62	31.8	25,900	71	36.4	20,700	50	25.6	16,200	12	6.2	13,200
Edinboro	121	37.0	24,700	109	33.4	20,000	92	28.1	16,800	5	1.5	13,000
Indiana University	183	36.0	25,400	194	38.2	20,900	107	21.1	16,500	24	4.7	13,500
Kutztown	74	27.4	25,500	117	43.3	20,800	58	21.5	17,200	21	7.8	13,300
Lock Haven	41	26.8	25,800	67	43.8	21,000	40	26.1	17,300	5	3.3	14,900
Mansfield	44	23.0	26,300	77	40.4	21,400	56	29.3	16,900	14	7.3	13,300
Millersville <sup>2</sup>	69	26.1	26,600	125	47.3	21,400 <sup>b</sup>	58	22.0	16,900	12	4.6	12,100
Shippensburg	80	29.1	25,900	104	37.8	21,100	76	27.6	17,300	15	5.5	12,000
Slippery Rock	95	32.7	26,000	99	34.0	21,000	67	23.0	17,100	30	10.3	12,800
West Chester	119	29.6	25,400	173	43.0	20,800	92	22.9	16,000	18	4.5	12,800

N.P. Not provided.

1. Fall 1976 salary multiplied by number of terms in academic year.
2. Does not include Jenkins School faculty.
- a. Lowest average salary in this rank.
- b. Highest average salary in this rank.

SOURCE: Faculty salary reports and workload analysis of full-time faculty submitted by institutions, 1977.

smallest percentage of faculty (21.0 percent) holding the rank of professor. Cheyney State College is next with 21.7 percent in that rank. The percentages of the remaining universities and colleges are greater, with California and Edinboro each having 37 percent and Indiana having the next largest (36 percent) in the rank of professor.

In addition to having a small portion of faculty holding the rank of professor, the average salaries for the academic year of professors at Pennsylvania State University and at the University of Pittsburgh are well below those of the professors at the State-owned colleges and university. The average salary for the rank of professor at Temple University is the highest average reported. Observation of the salaries shown for the other ranks leads to the conclusion that the average faculty member in the State-owned colleges has a salary higher than the average faculty member in the corresponding rank at both Pennsylvania State University and the University of Pittsburgh.

These differences in salaries may be the result of administrative policy regarding salary contracts. For example, a faculty member at Penn State may have a 12-month teaching contract, but carry a smaller teaching load during the summer term. This policy results in low average academic year salaries and high average summer costs.

A comparison of the salaries with those agreed upon in the Collective Bargaining Agreement between the Association of Pennsylvania State College and University Faculties and the Commonwealth of Pennsylvania demonstrates that the average salary of professors and associate professors in the State-owned colleges and university for the

academic year 1976-1977 was greater than the salary agreed upon for step F, the second highest step in both these categories.<sup>6</sup> This should be compared with average salaries for the faculty at the University of Pittsburgh: \$23,160 for professor--below step E--and \$17,170 for associate professor--below step C. Average salaries at the Pennsylvania State University are \$24,460 for professor--below step F--and \$18,934 for associate professor--below step E.

Comparisons of average salaries in other ranks result in similar relationships, except in the case of the rank of instructor. In the State-owned institutions these faculty members are only a small percent of the four ranks and carry the highest average number of contact hours.

The faculty salaries may also be compared to those in private industry. Job classifications with average salaries in 1977 in the range of the professor's averages are of particular interest:

Accountants V	\$25,042
Chief Accountants II	\$25,320
Attorneys III	\$25,460
Director of Personnel II	\$23,755
Chemists V	\$26,214
Engineers IV	\$22,072
Engineers V	\$25,620

An employee in these categories--with a 35-hour week, a 4-week vacation and 10 holidays--would work 1,610 hours a year. The professor

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6. See table in Appendix E.

working 1,560 hours--52 hours a week for 30 weeks--receives a comparable salary. A Monthly Labor Review table showing private industry white-collar salaries in March 1977 is included in Appendix F.

Where a special curricular offering requires faculty having expertise in an area in demand in private industry, salaries can be expected to reflect this competition. A table showing special curricula of State-owned institutions is included in Appendix G.



## APPENDIXES

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APPENDIX A  
CRITIQUE OF INSTITUTIONAL REPORTS  
1976-1977

Institutions	Date received by Joint State Government Commission (reports due 11/1/77)	Presentation <sup>a</sup>	Compliance with required reporting			Mathematical errors <sup>b</sup>	Internal consistency of report <sup>c</sup>	Faculty reporting of workweek analysis
			Workload	Salary	Workweek			
State-related universities								
Pennsylvania State	11/1/77	good	complete	complete	complete	none	good	good
Pittsburgh	11/1/77	good	complete	complete	complete	one	good	good
Temple	11/1/77	good	complete	complete	complete	-- <sup>d</sup>	good	good
Lincoln	1/24/78	good	complete	no report	complete	seven	poor	good
State-owned colleges								
Bloomsburg	11/14/77	good	complete	complete	complete	20 or more	good	good
California	11/14/77	acceptable	complete	complete	complete	20 or more	poor	good
Cheyney	1/10/78	poor 3, 4	complete	complete	complete	20 or more	poor	43 of at least 179 faculty not reporting
Clarion	11/14/77	acceptable 4	complete	complete	complete	20 or more	partial	good
East Stroudsburg	11/14/77	poor 1, 2	complete	complete	complete	20 or more	poor	good
Edinboro	11/14/77	good	incomplete <sup>g</sup>	incomplete <sup>g</sup>	complete	--	poor	good
Indiana University	11/14/77	good	complete	complete	complete	none	good	43 of 560 faculty not reporting
Kutztown	11/14/77	acceptable 2	complete	complete	complete	20 or more <sup>e</sup>	partial	good
Lock Haven	11/14/77	good	complete	complete	complete	20 or more	partial	good
Mansfield	1/3/78	good 1	complete	complete	incomplete <sup>h</sup>	20 or more	good	15 of 192 faculty not reporting
Millersville	11/14/77	acceptable 3	complete	complete	complete	20 or more	partial	good
Shippensburg	11/14/77	acceptable 2, 3	complete	complete	complete	20 or more	partial	good
Slippery Rock	11/14/77	acceptable	complete	complete	complete	20 or more	partial	good
West Chester	11/14/77	good	complete	incomplete <sup>g</sup>	complete	20 or more	poor	unknown <sup>f</sup>

a. 1-poor readability, 2--irregular placement of teaching levels, 3--unclear lineup of numbers with rank, 4--duplicate or missing pages.

b. Most errors were in subtotals, grand totals and total workweek hours.

c. Most inconsistencies were in number of faculty, their student credit-hour production and their salaries, by rank, by teaching level and by department among the three reports.

d. 30,000 student credit hours incorrectly included.

e. Many of these from not reconciling rounded-off numbers with their totals.

f. Unknown because of inconsistencies.

g. Not reported by department.

h. Not reported for summer.

APPENDIX B

TUITION AND REQUIRED FEES AT INSTITUTIONS OF HIGHER EDUCATION  
IN PENNSYLVANIA FOR THE ACADEMIC YEAR, 1976-1977

	Undergraduate		Graduate	
	In-State	Out-of-State	In-State	Out-of-State
<u>STATE-OWNED INSTITUTIONS</u>				
Bloomsburg State College	\$880	\$1,580	\$800	\$1,500
California State College	890	1,590	890	1,590
Cheyney State College	890	1,590	890	1,590
Clarion State College	890	1,590	890	1,590
East Stroudsburg State College	894	1,594	820	1,520
Edinboro State College	870	1,570	870	1,570
Indiana University of Pennsylvania	860	1,560	860	1,560
Kutztown State College	880	1,580	800	1,500
Lock Haven State College	900	1,600	--	--
Mansfield State College	820	1,520	820	1,520
Millersville State College	884	1,584	884	1,584
Shippensburg State College	895	1,595	820	1,520
Slippery Rock State College	890	1,590	820	1,520
West Chester State College	844	1,544	868	1,568
<u>STATE-RELATED COMMONWEALTH UNIVERSITIES</u>				
Lincoln University	1,078	1,778	--	--
The Pennsylvania State University - Main Campus	1,149	2,403	1,224	2,478
Temple University	1,300	2,500	1,400	2,500
University of Pittsburgh - Main Campus	1,266	2,476	1,316	2,596

SOURCE: Pennsylvania Department of Education, Tuition and Required Fees and Room and Board Charges at Institutions of Higher Education in Pennsylvania, 1976-77.

APPENDIX C

INSTRUCTIONS OF STATE-RELATED  
AND STATE-OWNED COLLEGES AND UNIVERSITIES  
TO FACULTY ON REPORTING OF RESEARCH TIME

STATE-RELATED UNIVERSITIES

PENNSYLVANIA STATE UNIVERSITY

Scholarly Activity and/or Research not Separately Budgeted

Average hours per week spent in all scholarly, research or creative activity supported or paid for by resident instruction (200) budgets and not separately budgeted or funded. Activities include:

- a. General professional development.
- b. Remaining current in one's field.
- c. Work toward advanced degrees.
- d. Attendance or participation in professional or scientific meetings.
- e. Preparation of scholarly or creative results for presentation, including publication, exhibition, performance or public oration.
- f. Service on an editorial board or as editor of a scientific, scholarly or creative publication.

Organized Research (Sponsored and Other Separately Budgeted Research)

Research activity supported or sponsored by external contracts and grants or paid for on University Funds Organized Research (400) budgets.

Hours spent in Organized Research are generally supported or paid for from budgets other than the resident instruction (200) budgets. Also includes supervision of thesis work of research assistants or others who are supported by organized research budgets and not currently registered for 600-level (thesis) courses. . . .

In cases where these students are also registered for thesis work (600-level courses), the faculty member's effort should be appropriately prorated between class contact hours and organized research.

#### UNIVERSITY OF PITTSBURGH

##### Research, Creative and Professional Activities

- a. Include all activities which improve professional competence, e.g., participating in colloquia, seminars, conferences or serving as an officer or committee member of a professional society, as well as research and creative activities.
- b. List each project or activity in which you are involved.
- c. Enter the hours per week spent on each activity in the proper column to indicate the source of funds for your salary.

"HARD" money - University general fund.

"SOFT" money - Gift, grants, endowment or research funds.

Your hours are matched against your salary supplied by the department office, so be accurate in reporting hours under the appropriate source of funds.

- d. TA's, TF's and GSA's should not report research hours for their own dissertations.
- e. You are welcome to attach a list of titles of publications, works of art, compositions; or in the case of the performing arts, works performed and dates of performances.

#### TEMPLE UNIVERSITY

Research--Print the average number of hours you spent each week for research. Include all research activity including that which is funded by Temple, funded by grants, funded by direct contracts, funded by outside sources, or unsponsored. Include applied research and institutional research in addition to basic and theoretical research. Include time spent directing others in research as well as time reading related materials, writing reports, etc. Enter 00 if you did no research this semester. Fill in the appropriate two digits.

LINCOLN UNIVERSITY

Organized Research--Average hours per week spent in research activity supported or sponsored by external contracts and grants.

Departmental Research--Average hours spent per week in all scholarly, research or creative activities not separately budgeted or funded. Includes general professional development, remaining current in one's field, work towards advanced degrees, attendance or participation in professional or scientific meetings.

STATE-OWNED COLLEGES AND UNIVERSITY

Scholarly Activity/Research - average hours per week spent in scholarly, research or creative activity. This includes:

- a. General professional development.
- b. Remaining current in one's field.
- c. Work toward advanced degree.
- d. Preparation for scholarly or creative results for presentation including publication, exhibition, performance or public oration.

APPENDIX D  
REGRESSION ANALYSIS

An estimate of the quantitative effect of class size and faculty contact hours on the salary cost per student credit hour has been obtained by means of a linear regression equation based on 153 observations including individual departmental data in 16 of the 18 institutions included in the analysis. Data from Lincoln and Edinboro were incomplete and could not be included in the calculations.

The salary cost per student credit hour (Y) includes all faculty, teaching and nonteaching, full- and part-time. The following were included as independent variables:

$X_1$  = class size, i.e., full-time student credit hours produced in the fall divided by fall classroom contact hours; adjusted in the case of Penn State to represent one-half of the academic year.

$X_2$  = average weekly classroom contact hours of full-time faculty for the fall term.

$X_3$  = graduate student credit hours as percent of total student credit hours produced for the fall term.

$X_4$  = part-time faculty student credit-hour production as percent of total student credit-hour production for the fall term.

The calculated equation (standard errors shown in parentheses) is:

$$\hat{Y} = \$150 - \$2.20X_1 - \$4.80X_2 - \$0.093X_3 - \$0.52X_4 \quad R^2 = .673$$

(11.5)      (.13)      (.60)      (.11)      (.08)

In spite of the differences in accounting and administrative goals and policies, this equation explains 67 percent of the variance in costs and indicates that an increase in average class size of one student can be expected to reduce the cost per credit hour by over two dollars. An increase in the average contact hours per week by one could be expected to reduce the average student credit-hour cost by almost five dollars.

The percentage of student credit hours at the graduate level was not significant in determining the unit cost except as reflected in the average class size or contact hours.

The equation indicates possible savings of \$.52 in unit cost for each percentage point increase in student credit hours produced by part-time faculty members. This is probably a reflection of the use of graduate assistants at the large State-related universities.

As a matter of information, a similar equation was determined on 34 observations from the three large State-related universities on 1975-1976 data. The resulting equation was:

$$\hat{Y} = \$130 - \$1.40X_1 - \$5.00X_2 + \$0.053X_3 - \$0.46X_4 \quad R^2 = .866$$

(5.4)
(.13)
(.53)
(.08)
(.06)

APPENDIX E

SALARIES FOR FULL-TIME ACADEMIC FACULTY MEMBERS IN ACTIVE PAY STATUS  
STATE-OWNED COLLEGES AND UNIVERSITY  
ACADEMIC YEAR 1976-1977

	Step A	Step B	Step C	Step D	Step E	Step F	Step G
<b>Instructor</b>							
Regular biweekly (20 pay)	545.79	572.74	601.94	631.14	662.58	696.28	731.09
Distributed biweekly (26 pay)	419.84	440.57	463.03	485.49	509.68	535.60	562.38
Academic annual	10,915.80	11,454.80	12,038.80	12,622.80	13,251.60	13,925.60	14,621.80
<b>Assistant Professor</b>							
Regular biweekly (20 pay)	662.58	696.28	731.09	768.15	806.33	846.76	888.32
Distributed biweekly (26 pay)	509.68	535.60	562.38	590.88	620.25	651.35	683.32
Academic annual	13,251.60	13,925.60	14,621.80	15,363.00	16,126.60	16,935.20	17,766.40
<b>Associate Professor</b>							
Regular biweekly (20 pay)	806.33	846.76	888.32	933.23	980.40	1,029.82	1,081.48
Distributed biweekly (26 pay)	620.25	651.35	683.32	717.87	754.15	792.17	831.91
Academic annual	16,126.60	16,935.20	17,766.40	18,664.60	19,608.00	20,596.40	21,629.60
<b>Professor</b>							
Regular biweekly (20 pay)	980.40	1,029.82	1,081.48	1,135.38	1,192.65	1,252.17	1,315.06
Distributed biweekly (26 pay)	754.15	792.17	831.91	873.37	917.42	963.21	1,011.58
Academic annual	19,608.00	20,596.40	21,629.60	22,707.60	23,853.00	25,043.40	26,301.20

SOURCE: Collective Bargaining Agreement between Association of Pennsylvania State College and University Faculties and Commonwealth of Pennsylvania (Harrisburg: APSCUR, 1977), p. 32.

APPENDIX F

AVERAGE SALARIES OF SELECTED WHITE-COLLAR OCCUPATIONS\*

**Table 1. Average salaries of employees in selected white-collar occupations in private establishments, March 1977**

Occupation and class	Number of employees <sup>1</sup>	Average salaries <sup>2</sup>		Occupation and class	Number of employees <sup>1</sup>	Average salaries <sup>2</sup>	
		Monthly	Annual			Monthly	Annual
<b>Accountants and auditors</b>				<b>Chemists and engineers—Cont'd.</b>			
Accountants I .....	8,101	\$1,013	\$12,155	Engineers I .....	15,892	\$1,218	\$14,613
Accountants II .....	15,271	1,219	14,624	Engineers II .....	32,784	1,352	16,221
Accountants III .....	35,169	1,379	16,545	Engineers III .....	92,340	1,558	18,696
Accountants IV .....	22,227	1,697	20,367	Engineers IV .....	125,903	1,839	22,072
Accountants V .....	8,465	2,087	25,042	Engineers V .....	89,094	2,135	25,620
Auditors I .....	1,539	1,047	12,570	Engineers VI .....	46,235	2,448	29,376
Auditors II .....	2,903	1,209	14,503	Engineers VII .....	17,933	2,750	32,999
Auditors III .....	5,612	1,428	17,108	Engineers VIII .....	4,704	3,172	38,063
Auditors IV .....	3,646	1,794	21,526	<b>Technical support</b>			
Chief accountants I .....	568	1,880	22,558	Engineering technicians I .....	3,142	811	9,727
Chief accountants II .....	1,197	2,110	25,320	Engineering technicians II .....	15,033	948	11,355
Chief accountants III .....	782	2,610	31,324	Engineering technicians III .....	25,058	1,096	13,151
Chief accountants IV .....	360	3,066	36,789	Engineering technicians IV .....	28,460	1,268	15,221
<b>Attorneys</b>				Engineering technicians V .....	18,327	1,436	17,237
Attorneys I .....	1,286	1,336	16,033	Drafter-tracers .....	4,090	768	9,214
Attorneys II .....	1,925	1,661	19,938	Drafters I .....	18,140	863	10,354
Attorneys III .....	2,504	2,122	25,460	Drafters II .....	31,418	1,069	12,833
Attorneys IV .....	2,575	2,581	30,973	Drafters III .....	29,568	1,319	15,828
Attorneys V .....	1,801	3,236	38,828	Computer operators I .....	4,890	665	7,979
Attorneys VI .....	822	3,876	46,509	Computer operators II .....	8,889	789	9,463
<b>Buyers</b>				Computer operators III .....	25,636	877	10,529
Buyers I .....	5,229	1,029	12,346	Computer operators IV .....	16,251	1,046	12,557
Buyers II .....	14,513	1,258	15,099	Computer operators V .....	3,775	1,175	14,099
Buyers III .....	16,233	1,502	18,021	Computer operators VI .....	1,008	1,369	16,423
Buyers IV .....	5,632	1,826	21,907	<b>Clerical</b>			
<b>Personnel management</b>				Clerks, accounting I .....	96,181	678	8,138
Job analysts II .....	240	1,131	13,572	Clerks, accounting II .....	82,419	866	10,388
Job analysts III .....	558	1,418	17,016	Clerks, file I .....	29,073	506	6,068
Job analysts IV .....	569	1,742	20,908	Clerks, file II .....	16,834	597	7,168
Directors of personnel I .....	1,139	1,588	19,062	Clerks, file III .....	5,446	757	9,082
Directors of personnel II .....	2,239	1,980	23,755	Keypunch operators I .....	63,325	670	8,045
Directors of personnel III .....	1,038	2,432	29,188	Keypunch operators II .....	46,523	778	9,337
Directors of personnel IV .....	338	3,149	37,785	Messengers .....	21,949	597	7,166
<b>Chemists and engineers</b>				Secretaries I .....	41,702	777	9,329
Chemists I .....	2,110	1,073	12,872	Secretaries II .....	78,726	842	10,100
Chemists II .....	4,171	1,203	14,439	Secretaries III .....	85,480	930	11,159
Chemists III .....	9,557	1,467	17,600	Secretaries IV .....	54,097	1,012	12,138
Chemists IV .....	11,143	1,806	21,674	Secretaries V .....	19,589	1,117	13,407
Chemists V .....	9,132	2,184	26,214	Stenographers, general .....	33,228	757	9,086
Chemists VI .....	4,565	2,544	30,526	Stenographers, senior .....	38,119	848	10,178
Chemists VII .....	1,564	3,027	36,329	Typists I .....	48,651	600	7,202
Chemists VIII .....	438	3,720	44,642	Typists II .....	34,874	715	8,585

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

<sup>2</sup> Salaries reported relate to the standard salaries that were paid for standard work schedules; that is, the straight-time salary corresponding to the employee's normal work schedule, excluding overtime hours and nonproduction bonuses, but including cost-of-living bonuses and incentive earnings.

NOTE: Chief accountant V, director of personnel V, and job analyst I were surveyed but data were insufficient for publication.

\*Table reproduced from: U.S. Department of Labor, Bureau of Labor Statistics, Monthly Labor Review (November 1977): 49.

## APPENDIX G

## SPECIAL CURRICULA OF STATE-OWNED INSTITUTIONS

Institutions	Special curricula
Bloomsburg*	Business Ed., Business Administration, Medical Technology, Special Ed., Nursing
California*	Industrial Arts, Special Ed., Medical Technology, Social Welfare
Cheyney*	Home Economics, Industrial Arts, Business Administration, Music
Clarion*	Library Science, Special Ed., Business Administration, Music, Nursing
East Stroudsburg*	Health and Physical Ed., Special Ed., Medical Technology, Nursing
Edinboro*	Art Ed., Library Science, Special Ed., Medical Technology, Music, Health and Physical Ed., Nursing
Indiana University of Pennsylvania**	Art, Bus., Bus. Ed., Home Ed., Food and Nutrition, Music, Special Ed., Health and Physical Ed., Medical Tech., Nursing, Criminology, Inhalation Therapy, Safety Mgt., Computer Science
Kutztown*	Art, Library Science, Special Ed., Fine Arts, Business Administration
Lock Haven	Health and Physical Ed., Social Services, Computer Science, Med. Tech., Soc. Wel.
Mansfield*	Home Economics, Music, Special Ed., Art Ed., Medical Technology
Millersville*	Industrial Arts, Library Science, Art Ed., Medical Technology, Special Ed., Music Ed.
Shippensburg*	Business Ed., Library Sci., Business Administration, Med. Technology, Social Welfare
Slippery Rock*	Health, Physical Ed., and Recreation, Library Science, Special Ed., Music, Medical Tech.
West Chester*	Music, Health & Physical Ed., Special Ed., Bus. Administration, Nursing, Social Welfare

\*These institutions have graduate programs leading to master's degrees.

\*\*Doctoral programs in elementary education and English offered.

SOURCE: Pennsylvania State Education Association, Pennsylvania School Journal (May 1976). Copied as presented.

