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ABSTRACT

Methodology and findings are reported for a series of statistical analyses conducted to identify those factors that account for variations in instructional unit costs (IUC) among the Illinois community colleges. The first analysis described in the report correlates five measures of district wealth with total IUC (i.e., total instructional costs divided by total credit hours produced) and two measures of variable unit costs (i.e., the portion of the IUC that fluctuates with enrollment). The five measures of district wealth included in the analysis are: property wealth per capita; property wealth and tax rate per capita; property wealth per full-time equivalent (FTE) enrollment; property wealth and tax rate per FTE enrollment; and per capita income. The second analysis examines the correlation of total and variable unit costs with 15 non-wealth factors, including: tuition and fees, faculty load, full-/part-time faculty ratio, and college program mix (i.e., the percentage of instructional effort devoted to each of seven curricular areas). The report then describes the application of two stepwise regression analysis procedures to determine the relation between the combined impact of 3 wealth and 15 non-wealth factors and IUC. The final analysis examines the correlation between measures of wealth and IUC adjusted to exclude equalization funding and tuition and fees. The report concludes with a discussion of the implications of the study for state funding. (JP)

Illinois Community College Board

AN ANALYSIS OF THE FACTORS WHICH AFFECT INSTRUCTIONAL UNIT COST IN THE PUBLIC COMMUNITY COLLEGES OF ILLINOIS

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HIGHLIGHTS OF AN ANALYSIS OF THE FACTORS WHICH EFFECT INSTRUCTIONAL UNIT COST IN THE PUBLIC COMMUNITY COLLEGES OF ILLINOIS

1. Some measures of a community college district's wealth are not discrete, that is, they are composed of several independent factors such as equalized assessed valuation (EAV), the tax rate, and the size of the college's student body. Hence, determining the relationship between such measures of wealth and unit costs does not identify which of the independent factors are responsible for this relationship.

2. Great differences exist when the various measures of wealth are applied to a given community college district. For example, a particular college district may be below average in wealth as measured by EAV per population or income per population, but would be above average in wealth as measured by EAV per full-time equivalent student.

3. The results of the analysis of the relationship between instructional unit costs and the various measures of a college district's wealth showed that a low positive relationship existed between measures of wealth per population such as EAV per population (.39) and income per population (.30). A moderate positive relationship existed between EAV per full-time equivalent student and instructional unit costs (.67) of community college districts. The strongest relationship existed between extensions per FTE student and unit costs (.83).

4. The analysis revealed that many other factors, in addition to wealth, had an impact on instructional unit costs. Some of these factors which had a significant relationship with instructional unit costs were energy costs (.55), operation and maintenance costs (.67), professional staff load (.48), and the size of the student body (FTE) (-.30). The composite effect of all of these non-wealth factors accounted for 70.6% of the variation in unit costs. When measures of wealth were included in the analysis 79.5% of the variation in unit costs was accounted for; thus many other factors in addition to wealth that impact unit costs.

5. The relationship between instructional unit cost and the program mix at the various community colleges was found to be low positive (.25). This relationship was lower than expected because a majority of the community colleges had program mixes which were very similiar. However, a few community colleges did deviate from the state average program mix significantly. The variable credit hour rates used in the funding formula treat all colleges, both those with a program mix that is similiar to the state average and those that have a program mix which deviates from the state average equitably; that is, a college is neither penalized for offering needed high cost programs nor excessively rewarded for offering lower cost programs.

Introduction

The Illinois Community College Board (ICCB) staff has completed a comprehensive study of the variables which relate to instructional unit costs of public community colleges in Illinois. This study was in response to Senate Resolution 509, which requests that an analysis of the "relationship between instructional costs and the wealth of local community college districts" be conducted. This analysis also provided an opportunity to determine the impact of various provisions of the state funding plan on instructional costs.

The comprehensive unit cost study conducted each year by the ICCB for all public community colleges in Illinois since FY 1970 provided the necessary unit cost data for this analysis. Other necessary data were readily available from the ICCB data base or ICCB records and reports. The analysis was conducted indepth for FY 1979 since it was the most current year for which all data necessary to complete the analyses were available. Several phases of the study looked at data for FY 1972 through FY 1980.

To analyze the relationship between instructional costs and the wealth of local community college districts, correlation analyses were used. These types of analyses measure the strength of association between the variables and provide a means of comparing the strength of relationships between two pairs of variables. It does not, however, measure causation. Correlations are a statistical relationship, and a large positive or negative value does not indicate whether a high value for one variable will cause the other variable to have a high value.

Since a college's unit cost is impacted by many different factors, in addition to wealth, multiple regression analyses were used to determine the overall dependence of unit cost on a number of these factors in combination. Multiple regression was used as a descriptive tool, i.e., to summarize the dependence of unit cost on other variables such as faculty load, size, full-time equivalent (FTE) students, faculty salaries, and program mix; rather than as an inferential tool for predicting unit costs.

Measures of Wealth

There are many ways to measure the wealth of a community college district. Five variables were utilized as measures of wealth in this study.

The wealth of a community college district may be defined as the total value of all equalized assessed valuations (EAV's), i.e., taxable property in a district. If this measure is used, the City Colleges of Chicago district ranks first in wealth. That is, the Chicago district has the largest property tax base in the State of Illinois. Kishwaukee ranks 32 of 38 districts using this definition of wealth, and would thus be considered below average in wealth. This measure (total EAV's)was not used to define the wealth of a community college district in this study since it ignores the number of people to be served in a district. For example, while the City of Chicago district, which ranks first in EAV's, has 63% more equalized assessed valuation than the second ranked district, it has 84% more full-time equivalent students and 76% more population than the second ranked district.

Since the equalized assessed value of property in a community college district provides the base for collecting tax revenues which are to be used by the community college in providing educational services to the people of the district, another measure of a district's wealth may be defined as EAV's per population (EAV/POP). If EAV/POP is used to measure a district's wealth, the City Colleges of Chicago district drops from a rank of first to a rank of 31; Kishwaukee moves from a below average ranking of 32 to an above average ranking of 9. (A complete list of rankings of the community college by the various wealth measures is included in the Appendix in Tables A, B, C, D, and E.)

Another measure which has been used to define a district's wealth is EAV's per full-time equivalent student (EAV/FTE). This measure may more appropriately define the wealth of a college, rather than the district's wealth, since this measure distributes the EAV's to the students the college is serving rather than the "potential students," i.e., population of the district. This measure includes an enrollment component, FTE students. When EAV/FTE is the measure applied in determining the wealth of a district, the rankings of many districts change. For example, Richland Community College has the highest EAV/FTE in the State of Illinois; however, it ranks 11 out of 38 districts in EAV/POP. It must be pointed out that this measure (EAV/FTE) can be greatly impacted by different enrollments in equally wealthy districts. Other examples of the various rankings a district may have when using these two measures are listed below:

College	EAV/FTE	Rank	EAV/POP	Rank
Richland	$1,051,865	1	$6,584	11
Illinois Eastern	124,613	38	5,880	22
Waubonsee	537,402	10	5,856	24
Triton	285,434	32	6,295	16

Tax extensions (EXT) are another means of measuring a community college district's wealth. Tax extensions represent the amount of revenue that a college would obtain from local property taxes if there are no tax collection losses. Distributing these dollars based on a district's population (EXT/POP) is an indication of the amount of money per person available to the college district for the purpose of providing educational services. It also measures the amount of tax support per person in the district. An additional component enters into the analysis when this measure is used, that is, tax rate. Illinois community college district tax rates range from a low of 12.5¢ per $100 assessed valuation to a high of 32.5¢ per $100 assessed valuation, a range of 20.0¢. When this additional component, tax rate, enters into the definition of a college district's wealth many of the district rankings change.

Triton, which has the highest tax rate (32.5¢), ranks 16th if EAV per population is used to measure its wealth. However, if extension per population is the measure applied, Triton ranks first. Lake Land, which has the lowest tax rate (12.5¢), ranks 36 when EXT/POP measures wealth but is considered average, 18, if EAV/POP is used to measure wealth.

Just as EAV/FTE measures wealth, extensions per FTE (EXT/FTE) may also be defined as a measure of a college's wealth. In addition to the enrollment factor that effects this measure, there is the additional effect of tax rates discussed in defining EXT/POP. It should be noted that equally wealthy districts, that is, two districts with the same equalized assessed valuation, with equal enrollments could have greatly different rankings in wealth as defined by this measure. The different rankings would depend entirely on the tax rate in each district.

The chart below shows that a district may be above average in "wealth" using extensions per FTE as a measure of wealth, but if the measure extensions per population is used, that district's "wealth" may be average. A comparison of the rankings of several districts when these measures, EXT/POP and EXT/FTE, are used indicate that they measure wealth differently.

College	EXT/FTE	Rank	EXT/POP	Rank
Richland	$1,999	1	$13	14
Illinois Eastern	311	37	15	6
Triton	928	15	20	1
Rend Lake	558	32	11	22

Another measure of wealth which was considered in this analysis was the per capita income of each district. This measure assumes that the earnings of the district's population defines the wealth of that district. It is conceivable that income wealth could be used as the basis for local tax revenues in the future although this would require changes in legislation.

The following chart summarizes the measures of wealth and their components used in this analysis:

WEALTH MEASURES AND THEIR COMPONENTS

(1) EAV/POPULATION - Property Wealth per Population
(2) EXTENSIONS/POPULATION - Property Wealth and Tax Rate per Population
(3) EAV/FTE - Property Wealth per Enrollments
(4) EXTENSIONS/FTE - Property Wealth and Tax Rate per Enrollments
(5) Per Capita Income - Income per Population

Any of the wealth measures discussed above may be used to determine the wealth of a community college district. Each of these have advantages and disadvantages in regard to describing the wealth of a college district for different purposes. There are a few that are used more commonly than others. Those measures that are most commonly used are equalized assessed valuation (EAV) per student, per capita income, and EAV's per population.

Illinois community colleges provide part of their local share of resources by taxing local property. However, there are great differences in the amount of local tax bases (equalized assessed valuation) per student throughout the state. Since EAV per FTE student represents the wealth per student in each district that is available to tax for college purposes, this measure is the one used for most of this analysis.

Definition of Unit Cost

A simple definition of instructional unit cost is:

$$\frac{\text{Total Instructional Costs}}{\text{Total Credit Hours Produced}} = \text{Instructional Unit Cost}$$

This definition indicates that unit cost is impacted not only by the total instructional expenditures a college district has but also by the amount of instruction produced, i.e., credit hours.

Relationships of Wealth Measures to Unit Cost

To determine the strength or weakness of the relationships of the measures of wealth to instructional unit cost (IUC), correlation analysis was used. Table 1 below shows the correlation coefficients of the various wealth factors to unit cost.*

Table 1

CORRELATIONS OF WEALTH TO UNIT COST*

Indicators of Wealth	Unit Cost
Per Capita Income	.30
EAV Per Population	.39
Tax Extensions Per Population	.45
EAV Per Full-Time Equivalent Student	.67
Tax Extensions Per Full-Time Equivalent Student	.83

*Correlation coefficients fall between 0.0 and $\pm$1.0. Coefficients in the $r = \pm.30$ to $r = \pm.70$ range could be called "moderate" correlations.

As this table indicates, most of the wealth measures have a moderate positive correlation with unit cost. Since most wealth measures are not discrete measures of wealth, caution is advised in placing too much emphasis on their relationships to unit cost. Although there is a strong positive relationship between tax extensions per FTE student and unit cost, the strength of the relationship between unit cost and the other measures of wealth diminishes as the measures become more discrete.

While tax extensions per FTE student has a strong positive relationship with instructional unit cost, to conclude that instructional unit cost is highly related to the wealth of a college district because of this one strong correlation would not be completely accurate. Tax extensions per FTE student is a good measure of the available revenue per student but it is not necessarily a good measure of a college district's wealth. For example, a college defined as poor by EAV per full-time equivalent student may be wealthy as defined by extensions per full-time equvialent student because it has a very high tax rate. The relationship between tax revenue per student and unit cost would be expected to be strong by definition since the amount of tax dollars extended is determined by the amount of expenditures a district budgets until the maximum tax rate is reached. Most community colleges require the maximimum tax rate allowed by voters in their district to meet their revenue needs. However, the maximum tax rate is often the result of a college's budget needs over a number of years. Tax extensions per FTE student

may be highly related to unit costs because those colleges with higher unit costs may have justified higher tax extensions per FTE student as a result of factors such as size, programs and faculty salaries.

Fixed Costs

Although there is controversy over whether or not there are certain "core" expenses which do not change as enrollments go up or down, it was assumed for this analysis that certain fixed costs exist. These expenses typically include the operation of physical facilities and expenses associated with certain "core" administrative staff, as well as "core" faculty. In an effort to define "fixed costs" in Illinois community colleges, which are difficult to define precisely, they were operationally defined in two ways for the purpose of this analysis. The first method defined fixed costs to be the lowest allocated costs, (which include academic administration and planning, learning resources, student services, data processing, general administration and auxiliary services), plus operation and maintenance costs, of any college in the system. Although in reality the larger colleges would have higher actual fixed costs than this amount, this conservative estimate was subtracted from each district's unit cost. That portion of unit cost remaining was then defined as the variable cost, which is the cost that can be attributed to activities which change in proportion to enrollments.

The assumption made in the first method is that the least amount of fixed costs (allocated and O & M Costs) reported by a college in Illinois is the minimum amount necessary for a college to exist. This minimum amount reduces the instructional costs of a small college by a greater proportion than a larger college; thus, it results in an advantage for the smaller college. The smaller college is able to divide a much smaller total instructional cost by its total credit hours produced resulting in a lower unit cost. Larger colleges do not gain this advantage since their total instructional costs are not reduced as greatly. For example, Chicago's unit cost was lowered by 1% with this adjustment, while Spoon River's unit cost was reduced 34%. (Chicago had the most full-time equivalent students in FY 1979 making them the largest college while Spoon River had the least, making them the smallest college.) The reductions in unit cost ranged from a low of 1% to a high of 49%. In order to minimize the skewing effect which this adjustment had on some of the analysis, a second fixed cost adjustment was made to each college's unit cost.

The second method used to determine fixed costs was based on the assumption that certain "core" expenses regardless of their variability from college to college, which are necessary for the operation of a college, would be considered fixed costs. These expenses include the operation of physical facilities and certain basic administrative services. Therefore, each college's actual operation and maintenance costs and allocated costs (student services, data processing, general administration, learning resources, and academic administration and planning) were subtracted from their total instructional costs. That amount was then divided by each college's credit hours resulting in the second method variable unit cost.

The assumption made in this second method of determining fixed costs is that each college has certain fixed costs that exist as a result of the size of the physical plant and the location. Large colleges benefit from this second adjustment as do small ones, that is, all colleges reduce their unit costs.

That portion of unit cost that remains after fixed costs have been subtracted has been called the variable unit cost in this analysis. Variable unit cost is that part of total instructional costs which fluctuates with the size of the student body. For example, more students require more services, faculty and administrative expenses, less students do not require as many personnel and services.

Table 2 below shows the correlation of both variable unit costs and total unit cost to the various wealth measures. Method one variable unit cost's correlation with extensions per population (.43) and EAV's per population (.49) remained about the same. However the correlation with per capita income was greatly increased (.69), while the correlation between EAV per full-time equivalent (FTE) student (.48) and extensions per FTE student (.53) were greatly reduced. Method two variable unit cost's correlation with all wealth measures except extensions per FTE student (.65) remained about the same.

Table 2

COMPARISON OF CORRELATION OF UNIT COST
AND VARIABLE UNIT COST TO WEALTH

	EAV/POP	Per Capita Income	EXT/POP	EAV/FTE	EXT/FTE
Unit Cost	.39	.30	.45	.67	.83
Variable Unit Cost (Method One)	.49	.69	.43	.48	.53
Variable Unit Cost (Method Two)	.41	.32	.31	.61	.65

Other Factors Impacting Unit Cost

Because of the complex nature of most of the common measures of a community college district's wealth, an analysis of the relationship of the many other factors which impact unit cost was also conducted. These factors were first analyzed separately using correlation analysis and then combined in a multiple regression analysis to determine the combined effect of all variables on unit cost.

The 15 variables used in this analysis are shown in Table 3 on the next page. This table also shows the correlations of these non-wealth variables to instructional unit costs and variable unit costs.

Table 3

CORRELATION ANALYSIS OF VARIABLES WHICH AFFECT UNIT COST

Factors Which Effect Unit Cost	Correlation With Total Unit Cost	Correlation With Variable Unit Cost (Method Two)	Correlation With Variable Unit Cost (Method One)
Tuition & Fees	.09	.19	.30
Faculty Load (FTE/ Faculty Yr.)	-.33	-.15	-.08
Physical Plant Size (GSF/FTE)	.23	-.07	-.25
Student Body Size (FTE)	-.30	-.28	.07
Mean Faculty Salary	.04	.16	.55
Full-Time/Part-Time Faculty Ratio	-.01	.07	-.08
Program Mix	.25	.22	.03
Professional Staff Load (FTE/P.S. Yr.)	-.44	-.22	-.08
Average Credit Hr. Grants	.32	.34	.11
Tax Rates	.15	-.06	-.02
Service Rate (FTE/Population)	-.47	-.43	-.28
Energy Cost/FTE	.55	.10	.003
O & M/FTE	.67	.32	.34
Professional Staff Salary/ Prof.Staff Year	.14	.32	.33
O & M - Energy Cost/FTE	.50	.31	.43

Factors which related positively to instructional unit cost in order of the strength of the relationship were operation and maintanence (O & M) cost per FTE (.67), energy cost per FTE (.55), O & M less energy costs per FTE (.50), average credit hours grant (.32), program mix (.25), and physical plant size (.23). Factors which related negatively to instructional unit cost in order of the strength of the relationship were FTE enrollment per population (.-47), FTE enrollment per professional staff (-.44), FTE enrollment per faculty (-.33), and FTE enrollment of the college (-.30). All other factors had a correlation very near zero, which indicated that they had no significant relationship to unit cost.

As shown in the definition of unit cost on Page 4, unit costs can be effected by a great many variables. To illustrate, a college operating with an average class size of 10 will have twice the unit cost of a college operating with an average class size of 20 if all other things are equal. Since all other things are not equal, a study of the various factors which effect unit cost was made to oetermine the impact these various non-wealth factors have on instructional unit costs.

Enrollments, defined as FTE, affect not only the wealth measures of a district, but have an impact on unit cost as well. Enrollments per population (FTE/POP) may be oefined as the service rate of a college or the participation rate of the population. This variable has a moderate negative relationship with unit cost (-.47) which indicates that as a college serves a greater portion of the population its unit cost will go down or, conversely, as fewer students are served, unit cost goes up. This is not suprising as it reflects

the impact of size (FTE) on unit costs. It does suggest, however, that the unit costs of some colleges may be higher because of their stage of development. For example, a relatively new college may not yet be serving the number of students it has the potential to serve. The impact of size is also indicated by the relationship of size (FTE students) to unit cost (-.30). The relation between enrollments and costs is not a straight line relation, however, because of the marginal costs involved. An enrollment increase of 5% will not necessarily increase costs by 5% nor will a decrease in enrollments result in a proportional decline in costs.

Further analysis of the correlations in Table 3 reveals differences in the strength of relationship of the various factors and variable unit costs. For example, the relationship of most factors which make up fixed costs, such as operation and maintenance, decreased as expected. On the other hand, mean faculty salary, average professional staff salary, and tuition and fees had a much stronger relationship with variable unit costs than with total unit cost.

Staff salaries were also examined to determine their impact on unit cost. Professional staff salary per professional staff year and mean full-time faculty salaries were used as measures of this variable. Their relations with unit cost and with each other are shown below.

	Mean Faculty Salary	Professional Staff Salary/Staff Year
Unit Cost	.04	.14
Mean Faculty Salary	1.00	.29

As the previous chart shows, there is not a strong relationship between mean faculty salary and unit cost. There is also not a strong relationship between professional staff salary per professional staff year and the mean faculty salary. The reason for this is believed to be the great number of part-time faculty employed at many of the community colleges in Illinois. Further study is needed in this area to determine the effect of full-time and part-time ratios on unit cost, as well as on the quality of educational services. Mean faculty salary had a stronger relationship with per capita income (.55) which may indicate that faculty salaries are higher in those districts that have a labor market that demands higher wages. However, since correlations do not show cause, further study in this area is necessary before such a conclusion may be drawn.

Another variable analyzed that has a small negative relation with unit cost is faculty load or class size measured by credit hours per faculty staff years (CH/FSY). The correlation coefficient is -.33, which would suggest that as faculty load increases, unit cost tends to decrease. The correlations of all variables used in this analysis are included in the appendix in Table G.

Average credit hour rates have a low positive relation to unit cost (.32). State funding recognizes that different educational programs require different expenditure patterns, and colleges are funded through credit hour grants on the basis of seven funding categories. The average credit hour rates in FY 1979 ranged from a low of $14.76 for Chicago to a high of $23.81 for Prairie State, a difference of $9.05. If Chicago is taken out of the analysis because of the high portion of low-cost ABE/GED/ESL courses it offers (79% of the statewide total), the range of credit hour rates is reduced to $4.80. This small range suggests that most colleges have a program mix that is close to the statewide average program mix.

Table 4

FY 1979 STATE AVERAGE PROGRAM MIX

	Chicago's Program Mix	Statewide Average Program Mix	Prairie State's Program Mix
Baccalaureate	27.0%	43%	54.0%
Business	13.0	15	14.0
Technical Occupational	5.0	13	21.0
Health	3.0	5	8.0
Remedial/Developmental	4.0	3	0.3
AGE/GED	39.0	15	2.0
General Studies	9.0	6	0.5
Average Credit Hour Rates	$14.76	$19.48	$23.81

There are some districts, such as Chicago, which produce a greater proportion of their credit hours in low-cost ABE/GED programs, which receive lower funding from credit hour grants. Others, such as Rend Lake, which produce greater proportions of its credit hours in high-cost technical programs, receive above average credit hour rates.

Prairie State receives the highest average credit hour rate ($23.81); its program mix is listed in Table 4 above. This table shows that Prairie State is above average in Baccalaureate, Technical/Occupational, and Health credit hours, the three highest funding categories. It is below average in Remedial/Developmental, ABE/GED, and General Studies, the three lowest funding categories. Therefore, as expected, Prairie State receives higher than average credit hour rates. Most colleges, however, have program mixes that are similar, resulting in the low correlation (.32) of unit costs to average credit hour rates. In addition, both high unit cost and low unit cost districts have similar program mixes.

In order to analyze the impact of program mix on unit cost, each college's unit cost was calculated using the state average unit cost for each of the seven funding categories. This unit cost was subtracted from the state average unit cost of $62.10 to show the amount each college was above or below the state average unit cost. This amount can be said to be that amount of unit cost that may be attributed to program mix. For example, Triton College's unit cost is $73.90, $11.80 above the statewide average unit cost. Of this amount, $4.77 may be attributed to Triton's program mix. Chicago Urban Skills Institute, which has a unit cost of $36.85 ($25.50 below the state average), can attribute $19.25 of this lower unit cost to program mix. Table 5 on Page 11 shows each college's actual unit cost, unit cost for program mix, and the dollar difference from the state average unit cost.

Although the relationship between average credit hour grants and unit cost is not a strong one, it is recommended that credit hour grants continue to be differentiated so that colleges will not be discouraged from providing needed high cost programs. The variable credit hour rates also provide the appropriate funding mechanism for funding a college that offers only one type

of program. While most community colleges in Illinois are comprehensive colleges offering all or almost all programs, there may be a need in the future for some colleges to specialize in a specific type of program. For example, it may be appropriate for a college to offer only technical occupational programs for it to be viable. If this should occur, the means for funding such an institution is alreaoy in place. If there were such schools in Illinois the relationship of unit cost and average credit hour grants would be much stronger.

Hence, the results of this analysis show that although a large group of colleges with average program mix would not be affected by a change to one flat rate credit hour grant, this change would significantly impact those colleges which have a significantly different program mix from the state average. A change to one credit hour rate would result in penalizing those schools that offer needed high cost programs, and overly rewarding those schools who offer lower cost programs. This feature (variable credit hour rates) of the funding plan would seem to be justified for the equitable funding of all community colleges.

Multiple Regression Analysis

A multiple regression analysis was completed to determine the relation between the combined effect of the various factors and instructional unit costs in community colleges. The stepwise multiple regression analysis was completed using the Statistical Analysis System (SAS) programs for this procedure available at the ICCB Office. This program selectes the independent variable that provides the greatest reduction in the unexplained variation of the dependent variable. To do this the program performs simple regression separately for each independent variable. The next steps of the program perform separate multiple regressions for the independent variables selected in the previous stage with all remaining independent variables. Again in each step, the regression that reduces unexplained variation the most is permanently included in all future stages. This process is completed until every variable has been included or until no further reduction in the unexplained variation of the dependent variable is possible.

The dependent variable in this analysis was instructional unit cost (IUC). The independent variables were:

Table 5

DOLLAR AMOUNT OF UNIT COST ATTRIBUTABLE TO PROGRAM MIX

Dist. No.	Community College	Unit Cost for Program Mix	Unit Cost for Program Mix - 62.10	FY 1979 Net Instruction Unit Cost
501	Kaskaskia	$ 67.81	$ 5.71	$72.82
502	DuPage	66.50	4.40	71.17
503	Black Hawk	(61.74)	(-0.36)	(70.93)
	Black Hawk-Q.C.	61.26	-0.84	69.93
	Black Hawk East	64.42	2.32	76.65
504	Triton	66.87	4.77	73.91
505	Parkland	67.94	5.84	77.92
506	Sauk Valley	67.51	5.41	60.53
507	Danville	64.69	2.59	66.62
508	Chicago	(54.32)	(-7.78)	(51.61)
	Kennedy-King	64.09	1.99	87.26
	Loop	67.79	5.69	64.91
	Malcolm X	64.46	2.36	71.45
	Truman	65.75	3.65	59.27
	Olive-Harvey	62.12	0.02	58.62
	Daley	65.13	3.03	64.56
	Wilbur-Wright	65.22	3.12	63.36
	Skills Center	42.85	-19.25	36.85
	City-Wide	63.60	1.50	49.25
509	Elgin	62.80	0.70	66.79
510	Thornton	61.96	-0.14	58.87
511	Rock Valley	66.24	4.14	62.52
512	Harper	65.63	3.53	65.24
513	Illinois Valley	67.40	5.30	62.51
514	Illinois Central	66.42	4.32	69.15
515	Prairie State	68.31	6.21	70.49
516	Waubonsee	65.43	3.33	73.56
517	Lake Land	67.23	5.13	66.05
518	Carl Sandburg	67.58	5.48	71.85
519	Highland	63.10	1.00	60.92
520	Kankakee	62.27	0.17	69.20
521	Rend Lake	69.83	7.73	59.75
522	Belleville	65.35	3.25	59.06
523	Kishwaukee	66.44	4.34	62.55
524	Moraine Valley	64.83	2.73	57.67
525	Joliet	64.48	2.38	65.77
526	Lincoln Land	66.99	4.89	79.99
527	Morton	66.66	4.81	85.02
528	McHenry	65.24	3.14	64.16
529	Illinois Eastern	(66.82)	(4.72)	(54.77)
	Lincoln Trail	64.32	2.22	51.47
	Olney Central	66.62	4.52	50.74
	Wabash Valley	70.36	8.26	65.45
	Frontier	60.77	-1.33	37.69
530	John A. Logan	65.52	3.42	61.41
531	Shawnee	63.67	1.57	55.39
532	Lake County	65.52	3.42	65.98
533	Southeastern	68.94	6.84	58.27
534	Spoon River	66.99	4.89	94.22
535	Oakton	64.61	2.51	73.01
536	Lewis & Clark	65.98	3.88	65.65
537	Richland	64.45	2.35	91.36
539	John Wood	67.87	5.77	62.32

Non-Wealth Variables:	
Tuition and fees	T & F
Faculty Load	(FTE/Faculty)
Physical Plant size	(GSF/FTE)
Student Body Size	(FTE)
Mean Faculty Salary	(MFACSAL)
Full-Time - Part-Time Faculty Ratio	(FT PT RATIO)
Program Mix	(PM)
Professional Staff Load	(FTE/PS)
Average Credit Hour Grants	(AVGCHG)
Tax Rate	
Service Rate	(FTE/POP)
Energy Costs	(EC/FTE)
O & M Costs	(OM/FTE)
Professional Staff Salary	(PSS/Yr.)
O & M less energy cost	(OMLEC/FTE)
Wealth Variables:	
EAV per FTE Student	(EAV/FTE)
EAV per Population	(EAV/POP)
Per Capita Income	(PERCAPIN)

The variables were divided by type into non-wealth and wealth variables so that the impact of wealth could be analyzed.

Two stepwise regression procedures were compiled. The first model did not include the wealth variable. The model is shown below.

$$IUC = T \& F + Cr.\ Hr./Faculty + GSF/FTE + FTE + MFACSAL + FTPTRATIO + PM + FTE/PS + AVGCHG + TAXRATE + FTE/POP + EC/FTE + OM/FTE + PSS/Yr. + OMLEC/FTE$$

The results indicated that the combined group of non-wealth variables accounted for 70.6% of the variability amoung unit costs. The second model for the stepwise regression was exactly like that used in the first model with the wealth variable included. Adding in the wealth variable increased the combined effect and accounted for 79.5% of the variability among unit costs.

This analysis is perhaps the most meaningful to this study. It indicated that many factors are responsible for the variability among instructional unit costs within community college districts. Wealth of a college district is one of the factors which does account for some of this variability, but when compared to the combined effects of all the other independent factors it accounts for only a fraction of the total variability.

Equa ation and Tuition and Fees

n an analysis of instructional unit costs it is appropriate to look at th impact of other state and local resources on unit costs; therefore, equalization and tuition and fees were added to tax extensions for the purpose of analyzing the total dollar amount per student available in each district.

Tuition and fees and equalization were also subtracted from the unit costs. An analysis of the relationships of the measures of wealth and instructional unit cost excluding tuition and fees and instructional unit cost

excluding equalization funding (shown in Table 6 below), was completed to determine how these two factors impacted these relationships. Unit costs without tuition were determined by excluding tuition revenue from the cost data, and unit costs without equalization were determined by excluding equalization revenue from the cost data. The results showed that these two factors had little impact on the relationship between the measures of wealth and instructional unit cost. This finding was further supported by the low relationship between tuition and instructional unit cost shown in Table 3.

Table 6

CORRELATIONS OF WEALTH TO UNIT COST

Indicators of Wealth	Unit Cost - Tuition & Fees	Unit Cost - Equalization	Unit Cost
EAV/POP	.30	.43	.39
Per Capita Income	.15	.34	.30
Extension/POP	.54	.43	.45
EAV/FTE	.56	.71	.67
Extension/FTE	.80	.85	.83
Extension & Equal./FTE	.82	.80	.81
Ext. & Equal. & T & F/FTE	.69	.84	.82

A further analysis of the impact of equalization funding and instructional unit cost showed that equalization funding reduces the range of unit costs by providing more revenue to those schools below average in wealth, defined as such by EAV per full-time equivalent student. Equalization is the manner in which the State of Illinois addresses the disparities of wealth among community college districts. When equalization is added to tax extensions, the range of dollars available per student is reduced. This reduction occurs at the minimum end of the range, i.e. the minimum is raised to $410 per FTE student from $310 per FTE student, while the maximum of the range stays the same. (See Table 7 below.) When tuition and fees are added to tax extensions and equalization grants the range of dollars is increased, i.e., the minimum is raised to $624 and the maximum is raised even more than the minimum to $2,451. Hence, tuition and fees increase the range of available revenue per district unlike equalization grants which reduces the range. However, the decision to charge tuition and the determination of what the rates should be is a local option, exercised by both above average and below average EAV/FTE districts.

Table 7

RANGE OF UNIT COST AND REVENUES PER FTE STUDENT

	Minimum	Maximum	Range
Unit Cost	$ 51.60	$ 94.20	$ 42.60
Unit Cost without Equalization	44.40	94.20	49.80
Extensions per FTE	310.00	1,999.00	1,680.00
Extensions & Equalization per FTE	410.00	1,999.00	1,589.00
Extensions & Equalizations & Tuition per FTE	621.00	2,451.00	1,830.00

Table 8 on Page 15 shows that equalization increased the money available to 11 districts in FY 1979 from a maximum of 104% to a minimum of 2%. In both FY 1980 and FY 1981, 17 districts, almost one-half, qualified for equalization. Equalization grants could be increased until all schools are equalized up to the maximum. Currently the State of Illinois equalizes up to the statewide average; it is possible to increase the level to 60% or higher. However, the community college system in Illinois was developed with the concept of shared responsibility in the financing of a district.

Graph 1 on Page 16 shows the state average unit cost and the unit costs of five colleges that have received equalization grants since they were initiated in 1972. As this graph depicts these schools have kept up with the state average unit cost over time, however, they would have fallen behind the state average unit cost without these grants. Graph 2 on Page 17 shows the same five equalization districts' unit costs over the same period of time with equalization grants subtracted from their unit costs.

In the following analysis total FY 1979 audited grants (credit hour grants, equalization grants and disadvantaged student grants) were subtracted from total net instructional costs for each district. The remaining amount is that portion of net instructional cost that is supported by local and other funds. The percent of net instructional costs that are supported by state grants and local funds was then calculated.

Table 9 on Page 18 lists the colleges from high to low unit cost. It shows the percent of resource contribution made by the state and local governments for each district. The last two columns show the rank of each community college district by equalized assessed valuation per full-time equivalent student (EAV/FTE) and tax extensions per full-time equivalent student (EXT/FTE). As indicated on this table, a district which is below average in EAV/FTE generally receives a greater share of state funds than one which is above average in wealth as measured by EAV/FTE.

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Table 8

DOLLAR AND PERCENT INCREASES FROM EQUALIZATION AND TUITION AND FEES

Community College	1978 Tax Extensions	FY 1979 Equalization	Total Equal. + Extensions	Percent of Increase	FY 1979 Tuition and Fees Contribution	Total	Percent Increase
Illinois Eastern	$ 1,627,700	$1,697,383	$ 3,325,083	104%	$ 694,540	$ 4,019,623	20%
Chicago	24,160,809	6,322,137	30,482,946	26	23,906,100	54,389,046	78
Shawnee	621,100	186,013	807,113	29	259,440	1,066,553	32
Southeastern	499,457	163,027	662,484	32	338,842	1,001,326	51
Black Hawk	2,166,758	309,475	2,476,233	14	3,014,370	5,490,603	121
Thornton	1,734,172	492,066	2,226,238	28	2,630,187	4,856,425	118
Rend Lake	971,519	223,490	1,195,009	23	578,391	1,773,400	48
Belleville	2,429,070	116,317	2,545,387	4	2,205,060	4,750,447	86
John A. Logan	1,131,242	125,536	1,256,778	11	471,530	1,728,308	37
Danville	1,442,290	93,071	1,535,361	6	794,502	2,329,863	51
Triton	7,405,538	182,865	7,588,403	2	3,566,533	11,154,936	46
Sauk Valley	1,000,540	1,967	1,002,507	2	1,000,300	2,002,807	100

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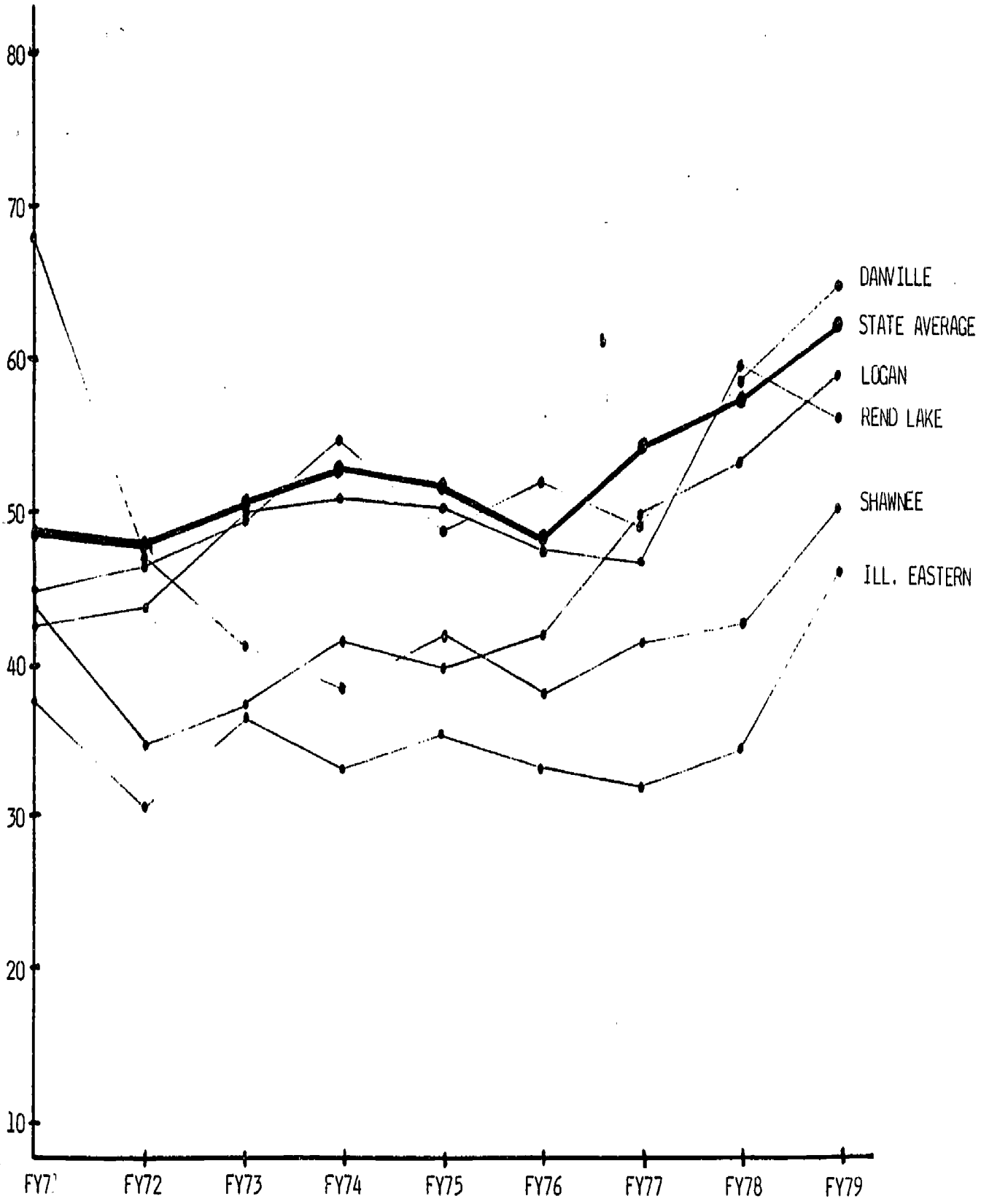
Graph 1

UNIT COST (EXCLUDING EQUALIZATION) OF EQUALIZATION DISTRICTS AND STATE AVERAGE UNIT COST
FY 1971 - FY 1979



Graph 2

UNIT COST (INCLUDING EQUALIZATION) OF EQUALIZATION DISTRICTS AND STATE AVERAGE UNIT COST
FY 1971 - FY 1979

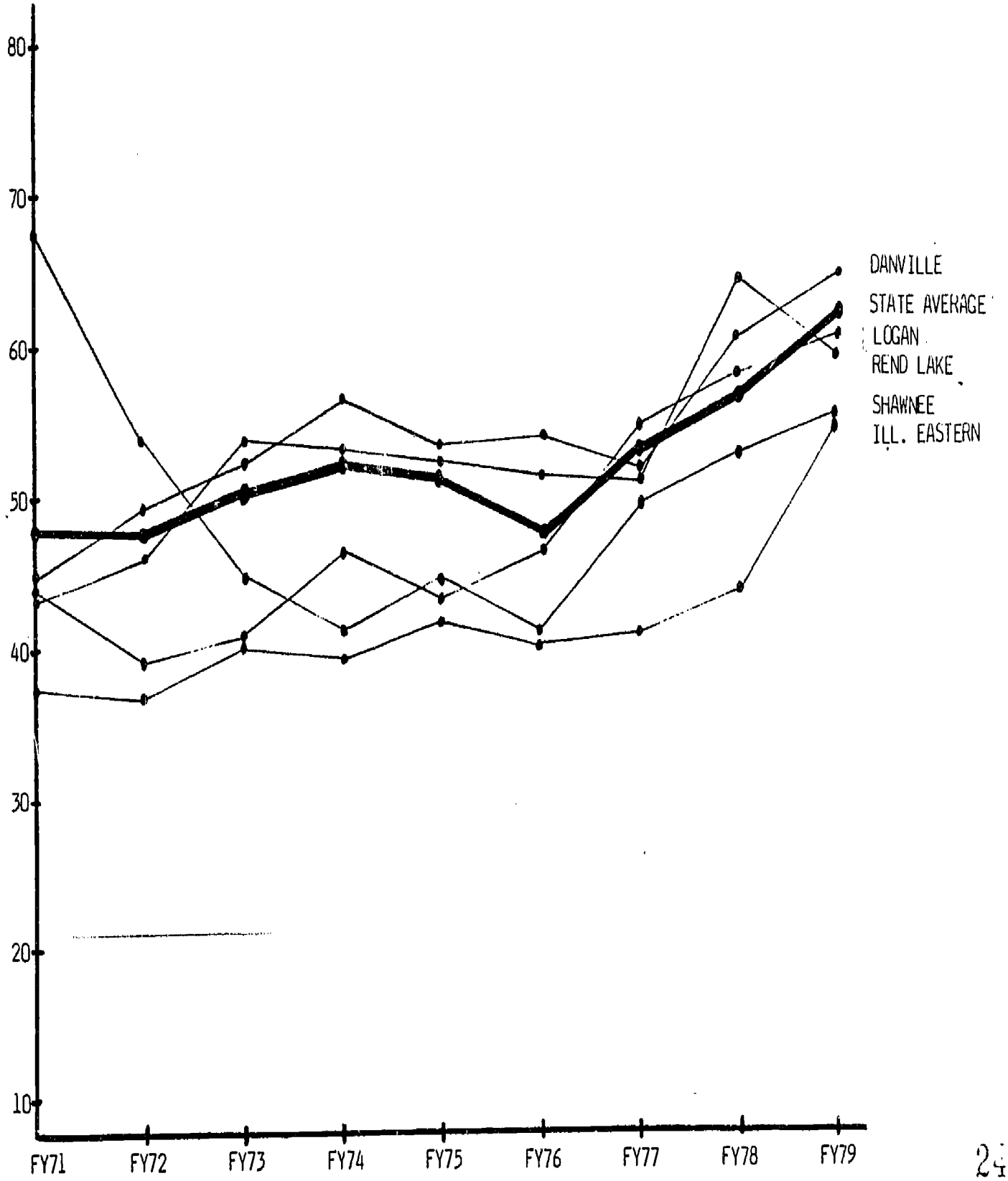


Table 9 shows that high unit cost colleges support a greater share of their unit costs from local revenues, however they do not necessarily rank above average in EAV's per FTE student or extensions per FTE students.

Table 9

COMMUNITY COLLEGES RANKED BY UNIT COST: PERCENT OF ICCB GRANTS AND LOCAL AND OTHER RESOURCES ON UNIT COST: RANK OF COMMUNITY COLLEGES BY WEALTH

	FY79 Unit Cost	% of Unit Cost From Local & Other Resources	% of Unit Cost From ICCB Grants	Rank EAV/FTE	Rank Extensions/ FTE
Spoon River	$94.21	77%	23%	5	2
Richland	91.35	76	24	1	1
Morton	85.02	73	27	21	10
Lincoln Land	79.99	71	29	3	5
Parkland	77.92	71	29	13	4
Triton	73.90	69	31	32	15
Waubonsee	73.56	69	31	10	9
Oakton	73.01	71	29	2	3
Kaskaskia	72.82	67	33	20	13
Carl Sandburg	71.84	67	33	6	14
DuPage	71.16	70	30	4	11
Black Hawk	70.93	69	31	24	33
Prairie State	70.48	66	34	27	26
Kankakee	69.19	71	29	18	21
Ill. Central	69.14	69	31	16	7
Elgin	66.79	67	33	14	6
Danville	66.61	67	33	28	20
Lake Land	66.04	65	35	15	30
Lake County	65.98	67	33	7	8
Joliet	65.77	67	33	11	16
Lewis & Clark	65.64	66	34	19	18
Harper	65.23	67	33	17	27
McHenry	64.16	68	32	8	17
Kishwaukee	62.55	66	34	25	28
Rock Valley	62.52	66	34	12	23
[redacted]. Valley	62.51	63	37	9	12
John Wood	62.31	62	38	26	22
Logan	61.41	60	40	31	25
Highland	60.92	67	33	29	24
Sauk Valley	60.53	62	38	22	29
Rend Lake	59.74	53	47	36	32
Belleville	59.05	63	37	30	34
Thornton	58.87	59	41	33	36
Southeastern	58.26	53	47	37	38
Moraine Valley	57.66	64	36	23	19
Shawnee	55.38	54	46	35	31
Ill. Eastern	54.76	43	57	38	37
Chicago	51.60	62	38	34	35

While 15% of the state appropriated funds were used for equalization grants in FY 1979 they provided as much as 33% of a college's state appropriations. In FY 1980 and FY 1981 a college received as much as 35% and 38% of state appropriations respectively from equalization grants.

Implications for State Funding

The state funding of community colleges in Illinois is based on a concept of shared responsibility among the state, the local district residents, and the students. Contributions from state funding, local taxes, and student tuition are the sources of revenue from those who share the responsibility of the community colleges of Illinois. Options are provided to the local community college districts to set their own student tuition rate (up to 1/3 of per capita cost) and to set their own tax rates (with approval of the citizens of the district). This concept of shared responsibility with local options has provided Illinois with one of the most viable systems of community colleges in the nation. However, this concept must tolerate and in fact encourage variability rather than uniformity among colleges for the system to remain viable. Limiting the local options in an effort to gain uniformity could severely handicap many community colleges. Table 10 on Page 20 illustrates the great variability among the community colleges in Illinois on a number of significant factors which determine their sources and amount of available revenue. This analysis shows that limited revenues from any given factor can often be overcome by different options and that different colleges are using different combinations of options. For example, colleges with higher than average unit costs must obtain either higher than average local taxes or charge higher than average tuitions. The last column in Table 10 shows that colleges with lower unit costs generally get a higher proportion of state funding.

Equalization funding to districts with below average EAV per FTE students has been provided to community college districts since FY 1972. This funding is essential for many community colleges so that they have the ability to use local options for other than survival needs. The amount of equalization funding has increased dramatically during the past few years. Figure 1A and Figure 1B in the appendix shows a comparison of the increases in equalization grants and credit hour grants to community colleges in Illinois since FY 1972. The equalization funding has doubled from FY 1979 to FY 1981 and has increased over 540% since FY 1976, while the credit hour grants have increased only 27.8% since FY 1976.

The findings in this analysis would support the continued emphasis on the present method of providing equalization funding in the state's funding plan. Annual analysis needs to be made, however, to insure that changes in tax laws, or shifts in college districts EAV's or enrollments do not dramatically change the need for equalization funding.

The continuation of the present cost based method of providing variable credit hour rate funding for student enrollments is also justified. This method provides an equitable method of distributing state funds among community college districts which is based on an audited accountability measure of outputs. Since this mechanism is already in place and is functioning rather well, it would seem unjustified to give up the equity gained by variable credit hour rates for the simplicity of credit hour grants based on one flat rate.

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Table 10 A Comparison of FY 1979 Unit Costs by College with Ranks by College Factors which Affect Unit Cost

munity lege	FY 79 Unit Cost	Rank EAV/ FTE	Rank EXT/ FTE	Rank Total FTE	Rank Tax Rate	Rank EXT/ Pop.	Rank EAV/ Pop.	Rank 1980 Pop.	Rank Per Capita Income	Rank FTE/ Pop.	Rank Tuition & Fees	% of Unit Cost from State
oon River	394.21	5	2	38	5	3	13	35	32	39	30	23%
kland	91.35	1	1	37	21	14	11	21	13	38	13	24
ton	85.02	21	10	28	5	7	25	26	7	22	24.5	27
ncoln Land	79.99	3	5	17	21	15	12	13	16	36	27	29
kland	77.92	13	4	14	2	2	3	15	17	15	8.5	29
tton	73.90	32	15	3	1	1	16	8	4	3	19	31
bonsee	73.56	10	9	22	19	20	24	19	10	32	34	31
kton	73.01	2	3	13	28.5	13	2	5	1	37	26	29
skaskia	72.82	20	13	35	11	17	29	29	34	25	32	33
l Sandburg	71.84	6	14	34	33	26	8	25	22	31	20	33
Page	71.16	4	11	2	30	24	6	2	2	34	5.5	30
ack Hawk	70.93	24	33	11	37	34	19	14	14	7	1	31
airie State	70.48	27	26	16	16.5	27	32	17	6	20	7	34
nkakee	69.19	18	21	25	23	21	14	27	27	18	23	29
linois Central	69.14	6	7	16	12	4	10	7	9	19	28.5	31
gin	66.79	14	6	18	13	10	23	18	12	26	24.5	33
nville	66.61	28	20	23	5	9	26	31	20	9	22	33
ke Land	66.04	15	30	20	38	36	18	20	30	23	4	35
ke County	65.98	7	8	10	25	19	7	4	5	29	14	33
liet	65.77	11	16	9	27	16	4	9	19	21	21	33
wis & Clark	65.64	19	18	19	18	28	30	16	29	30	16.5	30
rper	65.23	17	27	4	33	23	5	3	3	12	5.5	35
Henry	64.16	8	17	31	33	29	15	23	11	33	8.5	32
shwaukee	62.55	25	28	30	21	11	9	36	24	5	10	34
ck Valley	62.52	12	23	15	36	31	21	12	18	28	11.5	35
linois Valley	62.51	9	12	21	26	5	1	22	23	16	32	37
rn Wood	62.31	26	22	33	14	18	28	32	33	14	28.5	38
n A. Logan	61.41	31	25	29	10	33	38	24	36	27	35	40
ghland	60.92	29	24	32	9	12	27	34	28	10	11.5	33
ak Valley	60.53	22	29	26	33	30	17	30	25	13	3	38
nd Lake	59.74	36	32	24	5	22	33	33	35	4	32	47
lleville	59.05	30	34	8	28.5	37	36	6	26	24	16.5	37
rnton	58.87	33	36	12	33	38	35	11	15	17	2	41
utheastern	58.26	37	38	27	16.5	32	37	38	37	2	37	47
raine Valley	57.66	23	19	7	15	8	20	10	8	11	16.5	36
awnee	55.38	35	31	36	5	25	34	37	38	6	36	46
linois Eastern	54.76	38	37	5	5	6	22	28	31	1	38	57
icago	51.60	34	35	1	24	35	31	1	21	8	16.5	38

APPENDIX

Illinois Community College Board

Table A

RANKINGS OF ILLINOIS PUBLIC COMMUNITY COLLEGES
BY 1978 EAV PER POPULATION

Dist. No.	District Name	Value	Rank
513	Illinois Valley	$8901.75	1
535	Oakton	7822.92	2
505	Parkland	7517.29	3
525	Joliet	7235.53	4
512	Harper	7149.30	5
502	DuPage	6918.93	6
532	Lake County	6822.81	7
518	Carl Sandburg	6822.48	8
523	Kishwaukee	6775.79	9
514	Illinois Central	6759.79	10
537	Richland	6584.30	11
526	Lincoln Land	6537.78	12
534	Spoon River	6503.85	13
520	Kankakee	6342.60	14
528	McHenry	6314.86	15
504	Triton	6295.26	16
506	Sauk Valley	6281.92	17
517	Lake Land	6266.49	18
503	Black Hawk	6173.08	19
524	Moraine Valley	6159.83	20
511	Rock Valley	5904.26	21
529	Illinois Eastern	5880.31	22
509	Elgin	5866.31	23
516	Waubonsee	5856.65	24
527	Morton	5508.41	25
507	Danville	5471.46	26
519	Highland	5315.86	27
539	John Wood	5301.70	28
501	Kaskaskia	5099.20	29
536	Lewis & Clark	4386.32	30
508	Chicago	4552.62	31
515	Prairie State	4545.13	32
521	Rend Lake	4367.61	33
531	Shawnee	4198.46	34
510	Thornton	4054.56	35
522	Belleville	3974.74	36
533	Southeastern	3962.81	37
530	Logan	3627.20	38
601	SCC-E. St. Louis	0.0	39

Illinois Community College Board

Table B

RANKINGS OF ILLINOIS PUBLIC COMMUNITY COLLEGES
BY 1978 EAV PER FTE STUDENT

Dist. No.	District Name	Value	Rank
537	Richland	$1051865.77	1
535	Oakton	828529.06	2
526	Lincoln Land	674016.52	3
502	DuPage	661881.56	4
534	Spoon River	636613.13	5
518	Carl Sandburg	620365.37	6
532	Lake County	612999.52	7
528	McHenry	596239.82	8
513	Illinois Valley	591213.45	9
516	Waubonsee	537402.58	10
525	Joliet	530496.88	11
511	Rock Valley	523068.62	12
505	Parkland	494445.31	13
509	Elgin	483436.99	14
517	Lake Land	482086.08	15
514	Illinois Central	472776.56	16
512	Harper	455706.80	17
520	Kankakee	441462.45	18
536	Lewis & Clark	435315.86	19
501	Kaskaskia	414763.74	20
527	Morton	410381.52	21
506	Sauk Valley	403281.07	22
524	Moraine Valley	383491.28	23
503	Black Hawk	357020.66	24
523	Kishwaukee	353153.67	25
539	John Wood	347573.44	26
515	Prairie State	319932.47	27
507	Danville	319267.26	28
519	Highland	313162.06	29
522	Belleville	310020.18	30
530	Logan	299841.60	31
504	Triton	285434.94	32
510	Thornton	276979.98	33
508	Chicago	264945.70	34
531	Shawnee	234820.27	35
521	Rend Lake	222953.40	36
533	Southeastern	140747.49	37
529	Illinois Eastern	124513.28	38
601	SCC-E. St. Louis	124513.28	39

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Table C

RANKINGS OF ILLINOIS PUBLIC COMMUNITY COLLEGES
BY 1978 TAX EXTENSIONS PER 1980 POPULATION

Dist. No.	District Name	Value	Rank
504	Triton	$20.46	1
505	Parkland	19.55	2
534	Spoon River	16.26	3
514	Illinois Central	15.65	4
513	Illinois Valley	15.13	5
529	Illinois Eastern	14.70	6
527	Morton	13.77	7
524	Moraine Valley	13.77	8
507	Danville	13.68	9
509	Elgin	13.44	10
523	Kishwaukee	12.87	11
519	Highland	12.81	12
535	Oakton	12.52	13
537	Richland	12.51	14
526	Lincoln Land	12.42	15
525	Joliet	12.23	16
501	Kaskaskia	12.19	17
539	John Wood	11.93	18
532	Lake County	11.87	19
516	Waubonsee	11.54	20
520	Kankakee	11.47	21
521	Rend Lake	10.92	22
512	Harper	10.72	23
502	DuPage	10.57	24
531	Shawnee	10.50	25
518	Carl Sandburg	10.23	26
515	Prairie State	10.00	27
536	Lewis & Clark	9.67	28
528	McHenry	9.47	29
506	Sauk Valley	9.42	30
511	Rock Valley	8.75	31
533	Southeastern	8.72	32
530	Logan	8.71	33
503	Black Hawk	8.64	34
508	Chicago	8.15	35
517	Lake Land	7.83	36
522	Belleville	6.36	37
510	Thornton	6.08	38
601	SCC-E. St. Louis	0.0	39

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Table D

RANKINGS OF ILLINOIS PUBLIC COMMUNITY COLLEGES
BY 1974 PER CAPITA INCOME

Dist. No.	District Name	Value	Rank
535	Oakton	$7920.00	1
502	DuPage	6264.00	2
512	Harper	6251.00	3
504	Triton	6148.00	4
532	Lake County	5936.00	5
515	Prairie State	5699.00	6
527	Morton	5534.00	7
524	Moraine Valley	5523.00	8
514	Illinois Central	5301.00	9
516	Waubonsee	5236.00	10
528	McHenry	5236.00	11
509	Elgin	5179.00	12
537	Richland	5102.00	13
503	Black Hawk	5074.00	14
510	Thornton	5063.00	15
526	Lincoln Land	5021.00	16
505	Parkland	4921.00	17
511	Rock Valley	4908.00	18
525	Joliet	4808.00	19
507	Danville	4713.00	20
508	Chicago	4689.00	21
518	Carl Sandburg	4677.00	22
513	Illinois Valley	4644.00	23
523	Kishwaukee	4600.00	24
506	Sauk Valley	4529.00	25
522	Belleville	4453.00	26
520	Kankakee	4396.00	27
519	Highland	4363.00	28
536	Lewis & Clark	4363.00	29
517	Lake Land	4323.00	30
529	Illinois Eastern	4318.00	31
534	Spoon River	4282.00	32
539	John Wood	4142.00	33
501	Kaskaskia	4000.00	34
521	Rend Lake	3771.00	35
530	Logan	3753.00	36
533	Southeastern	3742.00	37
531	Shawnee	3419.00	38
601	SCC-E. St. Louis	2879.00	39

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Table E

RANKINGS OF ILLINOIS PUBLIC COMMUNITY COLLEGES
BY 1978 TAX EXTENSIONS PER FTE STUDENT

Dist. No.	District Name	Value	Rank
537	Richland	$1998.55	1
534	Spoon River	1591.53	2
535	Oakton	1325.65	3
505	Parkland	1285.56	4
526	Lincoln Land	1280.63	5
509	Elgin	1107.55	6
514	Illinois Central	1094.48	7
532	Lake County	1066.62	8
516	Waubonsee	1058.68	9
527	Morton	1025.95	10
502	DuPage	1010.69	11
513	Illinois Valley	1005.06	12
501	Kaskaskia	991.29	13
518	Carl Sandburg	930.55	14
504	Triton	927.66	15
525	Joliet	896.54	16
528	McHenry	894.36	17
536	Lewis & Clark	870.63	18
524	Moraine Valley	857.10	19
507	Danville	798.17	20
520	Kankakee	794.63	21
539	John Wood	782.04	22
511	Rock Valley	775.19	23
519	Highland	754.72	24
530	Logan	719.62	25
515	Prairie State	703.85	26
512	Harper	683.56	27
523	Kishwaukee	671.00	28
506	Sauk Valley	604.92	29
517	Lake Land	602.61	30
531	Shawnee	587.05	31
521	Rend Lake	557.38	32
503	Black Hawk	499.83	33
522	Belleville	496.03	34
508	Chicago	474.25	35
510	Thornton	415.47	36
529	Illinois Eastern	311.28	37
533	Southeastern	309.64	38
601	SCC-E. St. Louis	0.0	39

Illinois Community College Board

Table F

RANKINGS OF ILLINOIS PUBLIC COMMUNITY COLLEGES
BY 1978 NET OPERATING TAX RATE

Dist. No.	District Name	Value	Rank
504	Triton	$32.50	1
505	Parkland	26.00	2
507	Danville	25.00	3
521	Rend Lake	25.00	4
527	Morton	25.00	5
529	Illinois Eastern	25.00	6
531	Shawnee	25.00	7
534	Spoon River	25.00	8
519	Highland	24.10	9
530	Logan	24.00	10
501	Kaskaskia	23.90	11
514	Illinois Central	23.15	12
509	Elgin	22.91	13
539	John Wood	22.50	14
524	Moraine Valley	22.35	15
515	Prairie State	22.00	16
533	Southeastern	22.00	17
536	Lewis & Clark	20.00	18
516	Waubonsee	19.70	19
523	Kishwaukee	19.00	20
526	Lincoln Land	19.00	21
537	Richland	19.00	22
520	Kankakee	18.00	23
508	Chicago	17.90	24
532	Lake County	17.40	25
513	Illinois Valley	17.00	26
525	Joliet	16.90	27
535	Oakton	16.00	28
522	Belleville	16.00	29
502	DuPage	15.27	30
510	Thornton	15.00	31
528	McHenry	15.00	32
518	Carl Sandburg	15.00	33
506	Sauk Valley	15.00	34
512	Harper	15.00	35
511	Rock Valley	14.82	36
503	Black Hawk	14.00	37
517	Lake Land	12.50	38
601	SCC-E. St. Louis	0.0	39

Illinois Community College Board

Table G

CORRELATION MATRIX OF ALL VARIABLES

	IUC	EAVFTE	EAVPOP	EXTFTE	EXTPOP	UCWOFC	PERCAPIN	EXEQFTE	UCWOEQ	UCWOTF	TF	UCCHFSY	TOUCFTE
IUC	1.00	0.67	0.39	0.83	0.45	0.67	0.30	0.81	0.98	0.92	0.09	-0.33	0.82
EAVFTE	0.67	1.00	0.65	0.86	0.17	0.48	0.48	0.82	0.71	0.56	0.20	-0.08	0.88
EAVPOP	0.39	0.65	1.00	0.53	0.53	0.49	0.52	0.49	0.43	0.30	0.18	-0.05	0.53
EXTFTE	0.83	0.86	0.53	1.00	0.52	0.53	0.36	0.98	0.85	0.80	-0.02	-0.04	0.96
EXTPOP	0.45	0.17	0.53	0.52	1.00	0.43	0.25	0.55	0.43	0.54	-0.28	0.04	0.43
UCWOFC	0.67	0.48	0.49	0.53	0.43	1.00	0.69	0.50	0.67	0.52	0.30	-0.08	0.60
PERCAPIN	0.30	0.48	0.52	0.36	0.25	0.69	1.00	0.32	0.34	0.15	0.36	0.09	0.45
EXEQFTE	0.81	0.82	0.49	0.98	0.55	0.50	0.32	1.00	0.80	0.82	-0.12	-0.04	0.93
UCWOEQ	0.98	0.71	0.43	0.85	0.43	0.67	0.34	0.80	1.00	0.88	0.17	-0.29	0.84
UCWOTF	0.92	0.56	0.30	0.80	0.54	0.52	0.15	0.82	0.88	1.00	-0.30	-0.33	0.69
TF	0.09	0.20	0.18	-0.02	-0.28	0.31	0.36	-0.12	0.17	-0.30	1.00	0.06	0.24
UCCHFSY	-0.33	-0.08	-0.05	-0.04	0.04	-0.08	0.09	-0.04	-0.29	-0.33	0.06	1.00	-0.02
TOUCFTE	0.82	0.88	0.53	0.96	0.43	0.60	0.45	0.94	0.84	0.69	0.24	-0.02	1.00
ECFTE	0.55	0.20	0.01	0.37	0.07	0.00	-0.25	0.37	0.52	0.52	-0.01	-0.27	0.34
OMFTE	0.67	0.21	0.15	0.42	0.30	0.35	0.01	0.39	0.66	0.61	0.05	-0.33	0.41
GSFFTE	0.23	-0.04	-0.11	0.14	0.04	-0.25	-0.38	0.10	0.25	0.19	0.06	-0.13	0.12
UCFTE	-0.30	-0.17	-0.13	-0.21	-0.15	0.08	0.09	-0.18	-0.31	-0.32	0.09	0.55	-0.15
PSSPSY	0.14	0.33	0.27	0.40	0.25	0.33	0.35	0.36	0.20	0.06	0.20	0.59	0.43
MFACSAL	0.04	0.10	0.09	0.05	0.00	0.56	0.55	0.01	0.08	-0.05	0.24	0.07	0.10
FTPTR	-0.01	-0.05	-0.10	0.00	-0.07	-0.08	-0.15	0.01	-0.01	-0.03	0.06	0.17	0.02
UCFPM	0.25	0.05	0.14	0.13	0.28	0.04	-0.09	0.10	0.26	0.33	-0.23	-0.43	0.02
FTEPSY	-0.44	-0.19	-0.08	-0.21	-0.07	-0.08	0.07	-0.20	-0.41	-0.44	0.06	0.93	-0.17
AVGCHG	0.32	0.13	0.17	0.20	0.25	0.11	-0.05	0.16	0.35	0.36	-0.14	-0.35	0.11
TAXRATE	0.15	-0.38	-0.26	0.12	0.67	-0.02	-0.21	0.19	0.08	0.35	-0.54	0.06	-0.02
FTEPOP	-0.47	-0.68	-0.19	-0.59	0.18	-0.28	-0.27	-0.48	-0.57	-0.28	-0.44	0.05	-0.63
OMEEFTE	0.50	0.12	0.19	0.27	0.34	0.43	0.15	0.23	0.50	0.45	0.07	-0.28	0.26
VARVC	0.70	0.61	0.41	0.65	0.31	0.58	0.32	0.61	0.72	0.60	0.19	-0.15	0.67

IUC - Instructional Unit Cost
EAVFTE - Equalized Assessed Valuation/Full-Time Equivalent
EAVPOP - Equalized Assessed Valuation/Population
EXTFTE - Extensions/Full-Time Equivalent
EXTPOP - Extensions/Population
UCWOFC - Variable Unit Cost (First Method)
PERCAPIN - Per Capita Income
EXEQFTE - Extensions & Equalization/Full-Time Equivalent
UCWOEQ - Unit Cost Equalization
UCWOTF - Unit Cost Tuition & Fees
TF - Tuition & Fees
UCCHFSY - Faculty Load (Full-Time Equivalent Student/Faculty)
TOUCFTE - Total Revenues/Full-Time Equivalent Student (Tax Extensions and Equalization and Tuition and Fees/FTE)
ECFTE - Energy Cost/Full-Time Equivalent Student
OMFTE - Operation & Maintenance/Full-Time Equivalent Student
GSFFTE - Gross Square Feet/Full-Time Equivalent Student
UCFTE - Full-Time Equivalent Students (Size)
PSSPSY - Professional Staff Salary
MFACSAL - Mean Faculty Salary
FTPTR - Full-Time Part-Time Faculty Ratio
UCFPM - Program Mix
FTEPSY Professional Staff Load (Full-Time Equivalent/Professional Staff)
AVGCHG - Average Credit Hour Grants
TAXRATE - Tax Rate
FTEPOP - Full-Time Equivalent/Population
OMEEFTE - Operation & Maintenance Energy Cost/Full-Time Equivalent
VARVC - Variable Unit Cost (Second Method)

Table G (Continued)

CORRELATION MATRIX OF ALL VARIABLES

	ECFTE	OMFTE	GSFFTE	UCFTE	PSSPSY	MFACSAL	FTPTR	UCFPM	FTEPSY	AVGCHG	TAXRATE	FTEPOP	UMLECFTE	VARVC
IUC	0.55	0.67	0.23	-0.30	0.14	0.04	-0.01	0.25	-0.44	0.32	0.15	-0.47	0.49	0.70
EAVFTE	0.20	0.21	-0.04	-0.17	0.33	0.10	-0.05	0.05	-0.19	0.13	-0.38	-0.68	0.12	0.61
EAVPOP	0.01	0.15	-0.11	-0.13	0.27	0.09	0.10	0.14	-0.08	0.17	-0.26	-0.19	0.19	0.41
EXTFTE	0.37	0.42	0.14	-0.21	0.40	0.05	0.00	0.13	-0.21	0.20	0.12	-0.59	0.27	0.65
EXTPOP	0.07	0.30	0.04	-0.15	0.25	0.00	-0.07	0.28	-0.07	0.25	0.67	0.18	0.34	0.31
UCWOFC	0.00	0.35	-0.25	0.08	0.33	0.56	-0.08	0.04	-0.08	0.11	-0.02	-0.28	0.43	0.58
PERCAPIN	-0.25	0.01	-0.38	0.09	0.35	0.55	-0.15	-0.09	0.07	-0.05	-0.21	-0.27	0.15	0.32
EXEQFTE	0.37	0.39	0.10	-0.18	0.36	0.01	-0.01	0.10	-0.20	0.16	0.19	-0.48	0.23	0.61
UCWOEQ	0.52	0.66	0.25	-0.31	0.20	0.08	-0.01	0.26	-0.41	0.35	0.08	-0.57	0.50	0.72
UCWOTF	0.52	0.61	0.19	-0.32	0.06	-0.05	-0.03	0.33	-0.44	0.36	0.35	-0.28	0.45	0.60
TF	-0.01	0.05	0.06	0.09	0.20	0.24	0.06	-0.23	0.06	-0.14	-0.54	-0.44	0.07	0.19
UCCHFSY	-0.27	-0.33	-0.13	0.55	0.59	0.07	0.17	-0.43	0.93	-0.35	0.06	0.05	-0.28	-0.15
TOUCFTE	0.34	0.41	0.12	-0.15	0.43	0.10	0.02	0.02	-0.17	0.11	-0.02	-0.63	0.26	0.67
ECFTE	1.00	0.66	0.62	-0.32	-0.04	-0.26	-0.01	0.26	-0.33	0.33	0.10	-0.25	0.30	0.10
OMFTE	0.66	1.00	0.49	-0.33	-0.11	-0.02	0.07	0.46	-0.32	0.43	0.22	-0.29	0.92	0.32
GSFFTE	0.62	0.49	1.00	-0.42	-0.04	-0.45	0.30	0.26	-0.20	0.33	0.16	-0.20	0.29	-0.07
UCFTE	-0.32	-0.33	-0.42	1.00	0.00	0.21	-0.07	-0.70	0.66	-0.67	-0.09	0.10	-0.24	-0.28
PSSPSY	-0.04	-0.11	-0.04	0.00	1.00	0.29	0.25	-0.07	0.48	0.10	0.01	-0.32	-0.12	0.32
MFACSAL	-0.26	-0.02	-0.45	0.21	0.29	1.00	-0.15	-0.09	0.12	-0.05	-0.13	-0.19	0.12	0.16
FTPTR	-0.01	0.07	0.30	-0.07	0.25	-0.15	1.00	-0.07	0.20	0.02	0.02	-0.16	0.09	0.07
UCFPM	0.26	0.46	0.26	-0.70	-0.07	-0.09	-0.07	1.00	-0.46	0.95	0.22	0.09	0.44	0.22
FTEPSY	-0.33	-0.32	-0.20	0.66	0.48	0.12	0.20	-0.46	1.00	-0.39	-0.04	0.11	-0.23	-0.22
AVGCHG	0.33	0.43	0.33	-0.67	0.10	-0.05	0.02	0.95	-0.39	1.00	0.17	-0.05	0.38	0.34
TAXRATE	0.10	0.22	0.16	-0.09	0.01	-0.13	0.02	0.22	-0.04	0.17	1.00	0.36	0.23	-0.06
FTEPOP	-0.25	-0.29	-0.20	0.10	-0.32	-0.19	-0.16	0.09	0.11	-0.05	0.36	1.00	-0.23	-0.43
UMLECFTE	0.30	0.92	0.29	-0.24	-0.12	0.12	0.09	0.44	-0.23	0.38	0.23	-0.23	1.00	0.31
VARVC	0.10	0.32	-0.07	-0.28	0.32	0.16	0.07	0.22	-0.22	0.34	-0.06	-0.43	0.31	1.00

IUC - Instructional Unit Cost
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UCWOEQ - Unit Cost Equalization
UCWOTF - Unit Cost Tuition & Fees
TF - Tuition & Fees
UCCHFSY - Faculty Load (Full-Time Equivalent/Faculty)
TOUCFTE - Total Revenues/Full-Time Equivalent
ECFTE - Energy Cost/Full-Time Equivalent
OMFTE - Operation & Maintenance/Full-Time Equivalent
GSFFTE - Gross Square Feet/Full-Time Equivalent
UCFTE - Full-Time Equivalent Students (Size)
PSSPSY - Professional Staff Salary
MFACSAL - Mean Faculty Salary
FTPTR - Full-Time Part-Time Faculty Ratio
UCFPM - Program Mix
FTEPSY Professional Staff Load (Full-Time Equivalent/Professional Staff)
AVGCHG - Average Credit Hour Grants
TAXRATE - Tax Rate
FTEPOP - Full-Time Equivalent/Population
UMLECFTE - Operation & Maintenance Energy Cost/Full-Time Equivalent
VARVC - Variable Unit Cost (Method Two)

Illinois Community College Board

Table H

STEPWISE REGRESSION SUMMARY

	Model 1				Model 2				Model 3				Model 4			
	No Wealth Measures Used				Wealth Measure EAV/FTE Used				Unit Cost without Fixed Cost is Dependent Variable No Fixed Cost Variable Used in Model				Unit Cost is Dependent Variable No Fixed Cost Variables Used in Model			
	Enter Step	% of Variance R^2	Remove Step	% of Variance R^2	Enter Step	% of Variance R^2	Remove Step	% of Variance R^2	Enter Step	% of Variance R^2	Remove Step	% of Variance R^2	Enter Step	% of Variance R^2	Remove Step	% of Variance R^2
Tuition and Fees					5	79.5										
Faculty Load (Credit Hour/Faculty Year)					4	76.7										
Physical Plant Size (GSS/FIE)																
Student Body Size (Unit Cost FTE)	6	70.6*														
Mean Faculty Salary									1	34.7						
Full-Time/Part-Time Faculty Ratio																
Program Mix																
Professional Staff Load (FTE/PSY)	3	56.4											1	19.6		
Average Credit Hour Grants									2	38.8	4	34.7*	4	48.9	5	45.7*
Tax Rate					3	73.3							3	45.7		
Service Rate (FTE/POP)	2	50.6	5	62.0									2	34.4		
Energy Cost/FTE					6	80.9	7	79.5*								
O & M Cost Per FTE	1	44.8			1	44.8										
Professional Staff Salary/Staff Years	4	63.3														
O & M - Energy Cost/FTE																
Wealth (EAV/FIE)					2	64.3										

*Final % of variance accounted for in model.

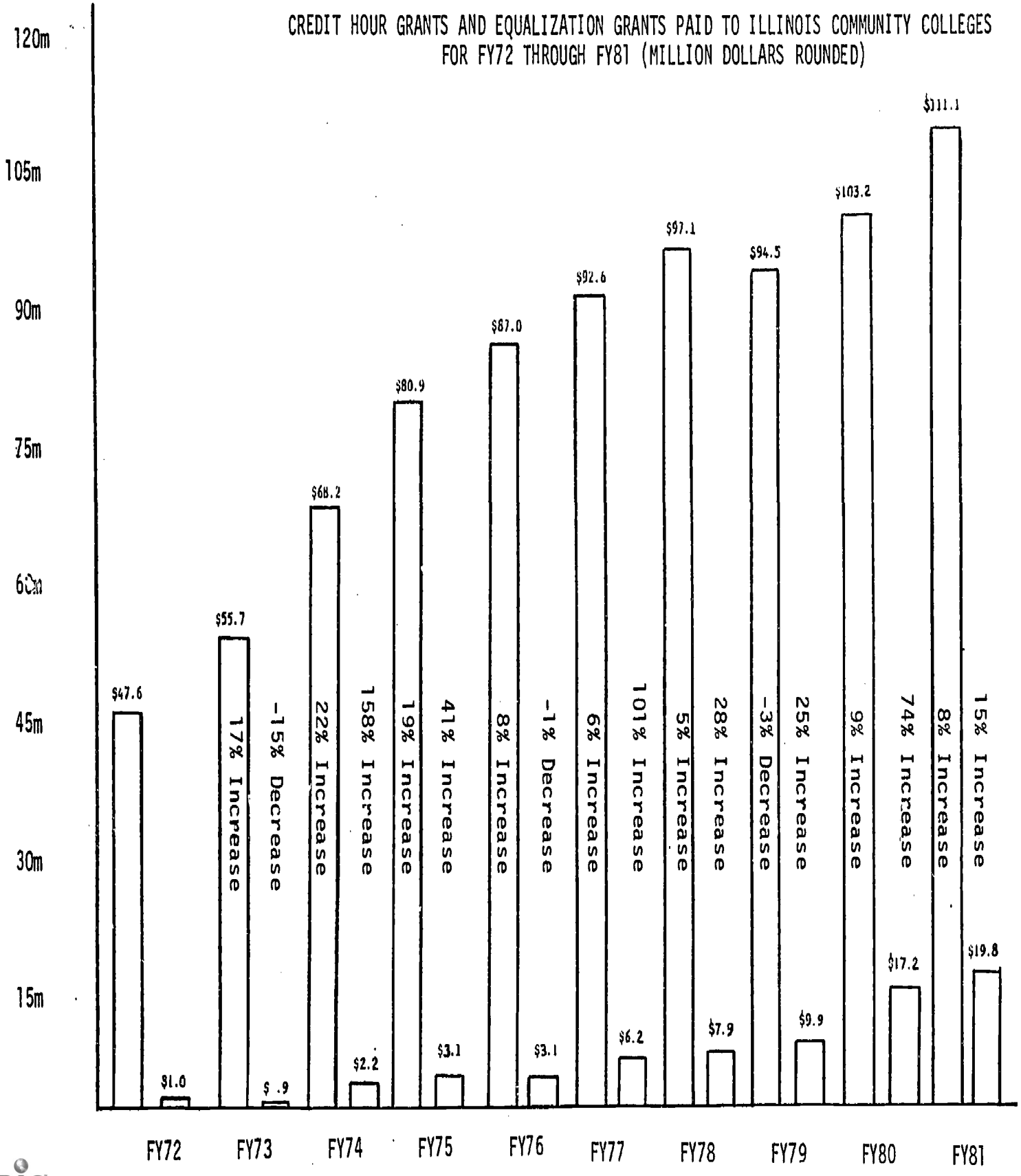
Illinois Community College Board

Table I

VARIABLES USED IN THIS UNIT COST ANALYSIS

Variables	Minimum	Maximum	Range
1. Instructional Unit Cost	$51.60	$94.20	$42.60
2. Unit Cost - Fixed Costs (Variable Unit Cost Method One)	28.20	70.20	42.00
3. Unit Cost - Equalization	44.40	94.20	49.80
4. Unit Cost - Tuition & Fees	36.60	46.30	82.90
5. Equalized Assessed Valuation Per Full-Time Equivalent Student (EAV/FTE)	$124,513	$1,051,866	$927,353
6. EAV's Per Population	3,627.00	8,902	5,272
7. Tax Extensions (EXT) Per FTE Student	310.00	1,999	1,689
8. Extensions Per Population (EXT/POP)	$6.00	$20.00	$14.00
9. Per Capita Income	$3,419.00	$7,920.00	$4,501.00
10. Tax Extensions & Equalization/FTE	410	1,999	1,589
11. Tax Extensions & Equalization + Tuition and Fees/FTE	$621.00	$2,451.00	$1,830.00
12. Tuition and Fees	$4.20	$18.30	$22.50
13. Net Operating Tax Rate	$12.50	$32.50	$20.00
14. Unit Cost for Program Mix	$54.30	$69.80	$15.50
15. Unit Cost Credit Hours Per Faculty Staff Years. (Load Measure)	$348	$1,016	$668
16. Energy Costs Per FTE	$35.00	$220.00	$185.00
17. Operation and Maintenance Per FTE (w/o John Wood & Richland)	$158.00	$513.00	$355.00
18. Gross Square Feet Per FTE (Physical Plant Size)	$44.00	$243.00	$199.00

Variables	Minimum	Maximum	Range
19. Unit Cost Full-Time Equivalent Students (FTE size measure)	$893	$53,126	$52,233
20. Professional Staff Salary Per Professional Staff Year	$10,858.00	$27,765	$16,906
21. Mean Faculty Salary	$16,686	$27,178	$10,492
22. Full-Time Faculty To Part-Time Faculty Ratio	.02	1.4	1.3
23. FTE Student Per Professional Staff Year	9.4	27.4	18.0
24. Average Credit Hour Grants	14.80	23.80	9.00
25. Average Credit Hour Grants without Chicago	19.25	23.80	4.55
26. FTE Per Population (Service Rates)	.6	4.7	4.1
27. O & M - Energy Costs Per FTE Student	81.00	381.00	300.00
28. Unit Cost for Program Mix	54.30	69.80	15.50
29. Tax Rate	12.5	32.5	20.0
30. Unit Cost - Fixed Costs (Variable Unit Cost Method Two)	27.30	48.60	21.30


CREDIT HOUR GRANTS AND EQUALIZATION GRANTS PAID TO ILLINOIS COMMUNITY COLLEGES FOR FY72 THROUGH FY81 (MILLION DOLLARS ROUNDED)
120m
105m
90m
75m
60m
45m
30m
15m
$47.6
$1.0
$55.7
17% Increase
$ .9
-15% Decrease
$68.2
22% Increase
$2.2
158% Increase
$80.9
19% Increase
$3.1
41% Increase
$87.0
8% Increase
$3.1
-1% Decrease
$92.6
6% Increase
$6.2
101% Increase
$97.1
5% Increase
$7.9
28% Increase
$94.5
-3% Decrease
$9.9
25% Increase
$103.2
9% Increase
$17.2
74% Increase
$111.1
8% Increase
$19.8
15% Increase
FY72
FY73
FY74
FY75
FY76
FY77
FY78
FY79
FY80
FY81

% Increase/Decrease of Credit Hour Grants and Equalization Grants from FY72