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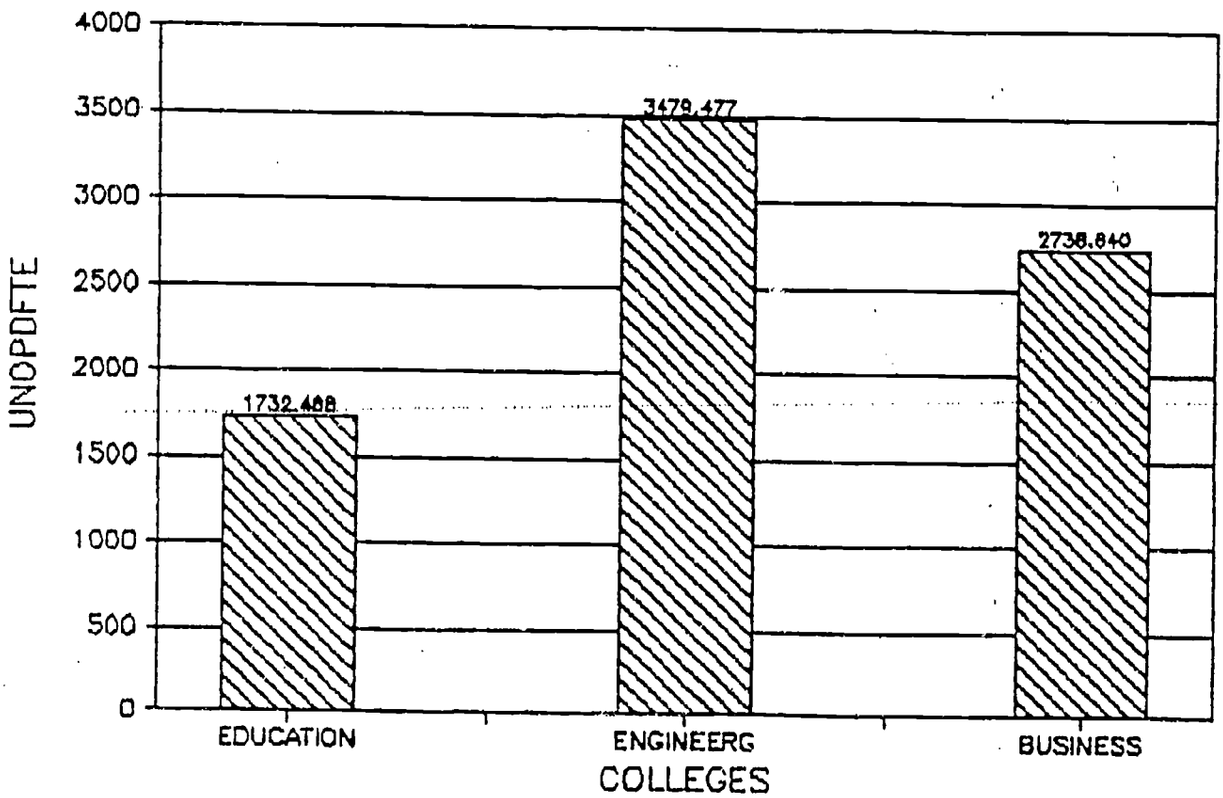
ABSTRACT

Data concerning the funding and productivity of teacher education divisions in major state universities and land-grant colleges in the United States are presented. Section I discusses concepts of funding adequacy and equity in public elementary, secondary, and post-secondary education. Data are included on differential weighing of academic programs. Section II presents and analyzes data concerning the principal resource and productivity variables in teacher education in 43 state universities and land-grant colleges for 1982-83. Tables show the comparative relationships of different variables among several institutions. In section III, a comparative analysis is presented of resources and productivity between the colleges of education, engineering, and business administration in a major public university, in the belief that this situation is probably representative of most public universities. Within this section, a statement is developed about the nature of teacher education programs and those two other disciplines. Section IV presents a series of conclusions and recommendations, with an emphasis on the policies needed to improve the preparation of the nation's teachers. (JD)

RESOURCES ALLOCATED TO TEACHER EDUCATION IN STATE UNIVERSITIES AND LAND-GRANT COLLEGES



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RESOURCES ALLOCATED TO TEACHER EDUCATION IN STATE UNIVERSITIES AND LAND-GRANT COLLEGES

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Introduction

This paper will bring together data concerning the funding and productivity of Teacher Education divisions in major state universities and land-grant colleges throughout the United States. The national data are derived from my sixth annual study of Teacher Education,(1) sponsored by the Association of Colleges and Schools of Education in State Universities and Land-Grant Colleges (ACSESULGC). Other data are derived from an analysis of Teacher Education in Florida, prepared in 1983 for the Joint Executive and Legislative Task Force for Teacher Education Quality Improvement.(2) A final set of data were obtained from a major public university, and include comparative statistics on resources and productivity between the colleges of Education, Engineering, and Business Administration.

The paper is organized as follows:

Section I is a discussion, based on the literature, of the concepts of adequacy and equity in the finding of public elementary, secondary, and post secondary education. Included is a presentation of data on differential weighing of academic programs.

Section II is a presentation and analysis of data concerning the principal resource and productivity variables in teacher education in 43 public state universities and land-grant colleges for the 1982-1983 fiscal year. Within that, tables show the comparative relationships on different variables among several institutions by the three of the six AACTE geographic regions.

Section III is a comparative analysis of resources and productivity between the Colleges of Education, Engineering, and Business Administration in a major public university. Although this is limited to a single institution, it is believed that this situation is probably representative of most public universities. Within this section, a statement is developed about the nature of teacher education programs and those two other disciplines.

The final section will develop a series of conclusions and recommendations, with emphasis on policies needed to improve the preparation of the nation's teachers.

I. The Basis For Funding Public Education

Legislators confront complex problems in deciding how the limited resources of the state shall be distributed to meet the needs of its people. The amount of money available is always inadequate. Each function of government--executive, legislative, judicial, highways, law enforcement, mental health, education, etc.--competes with the other for the scarce dollars. Even in combination with federal and regional categorical funds, the total monies are less than needed to provide necessary government services. Fundamentally, the legislature bases its resource allocation decisions on two principles: (a) adequacy (how much is minimally necessary for each function) and (b) equity (how each agency will receive its fair share). The two concepts of adequacy and equity are closely related. Legislative oversight also requires that a system of accountability be embedded within funding authorizations to ensure that the use of state funds is consistent with legislative intent.

In the case of public education, elementary and secondary schools are funded under the concept that the state pays and the community pays for educating children. Through minimum foundation programs, state monies from legislative appropriations are combined with local district taxes generated under a formula to provide a minimum foundation program. The intent of the legislature in authorizing funds for elementary and secondary education is clearly to distribute the available funds to ensure that at least a minimum level will be available to every child in the state, regardless of the child's condition or location. Florida, as an example, has further differentiated need and costs through a series of weights, with grade 4-9 regular students as a base weight of 1.00, through about 40 levels of program cost and complexity to a maximum weight of almost 16.00 for severely handicapped. Weights are then associated to program costs, and funds authorized accordingly.

Adequacy

The concept of adequacy in educational funding is concerned with how much a given program should cost. These are hypothetical amounts and are often expressed in a series of relationships of programs one to another. In the case of Florida elementary and secondary education, the cost of education in grades 4-9 of regular classrooms is weighted at 1.000, and 43 other programs (handicapped, vocational, etc.) are weighted in relation to that, on ratios from .079 for adult basic and high school to 15.894 for the education of hospitalized and homebound children.

Within each of the 44 categories, costs are classified as direct costs, school indirect costs, district indirect costs, and summed as total program costs. A proportion of those costs is

provided by the state through its legislative appropriation and the remainder must be raised through legislatively specified local district tax effort. Federal and regional categorical purpose funds (e.g., disadvantaged, bilingual) often supplement state and local funds. The effect of this funding formula is to guarantee that each child will have available a minimum level of funding, and that some children will have more than others because of the more specialized kinds of programs required by their mental or physical condition.

The concept of adequacy also applies in funding public higher education. Whereas elementary and secondary educational funds derive from the state appropriation and local taxes, higher education funds derive from the legislative appropriation and tuition income. In the former, the state and the community pay, and in the latter, the parents and the student pay for the guaranteed minimum costs of programs. At all levels, other funds are potentially available to supplement those minimum costs, from federal and regional sources, and, especially in higher education, from additional fees for laboratory, activities, building, health services, etc.

Higher education also uses a weighting system to express the relative complexity and consequent cost from one program to another. Approximately 35 states use some variation of formula funding for higher education. These express program complexity differences by academic specialization (teacher education, engineering, nursing, law, etc.) and by level (lower division, upper division, graduate 1, graduate 2). As with elementary and secondary, the postsecondary complexity factors and weights are derived primarily from historic experience. These program differentials undergo frequent revision, as evidence of their validity is revealed from expenditure analysis studies, national cost trend data, and requirements imposed by accrediting agencies.

How much is a minimally adequate amount of dollars for educational programs at any level? The adequate amount is influenced by two questions: (a) How much is probably available from the state treasury and the local tax or tuition source, and (b) How much is that level of funding compared to funding in other states and among peer institutions? The funding of state agencies is always constrained by the dollars available and fluctuates with economic conditions and the competing demands from government functions. The amount of dollars available is always less than ideal. This reinforces the requirement that state funds be supplemented by local taxes for elementary and secondary education and by tuition income for higher education.

Cost comparisons by educational level nationally and regionally are also a means of determining the adequacy of funding. The NEA publishes annual Rankings of the States (3)

studies which provide comparative data for elementary and secondary schools. In higher education, the comparative cost data are less comparable, often because of the different accounting practices and the wide variation in revenues from contracts and grants and other sources in universities. Nevertheless, certain discipline-specific studies are available from the accreditation agencies and other sources. The Engineering Planning Factors Study (4), completed annually at the Unversity of Florida on a national basis, is one. Another is my Sixth Annual Academic Production and Funding Study of Teacher Education in Senior State Universities and Land-Grant Colleges (1), under the sponsorship of the Association of Colleges and Schools of Education in State Universities and Land-Grant Colleges.

Equity

The equity concept is concerned with how each school district, each university, or each individual is assured of its fair share of the resources available for education. Terrell Sessums (5), Speaker of the Florida House of Representatives, believed the test of adequacy and fairness, as spelled out in the Serrano case, was that the wealth of the state should stand behind each child, so that state aid could compensate for differences in the wealth of local districts. Minimum foundation programs help ensure that, regardless of where a child lives, that child will receive at least a minimally adequately funded education.

Caruthers and Orwig (6) extended that concept to higher education:

> A frequent objective of budgeting in postsecondary education is to achieve equity in the funding provided. As used in these discussions, the concept of equity implies that similar resources will be provided for similar individuals, similar programs within an institution, or similar institutions within a state. One procedure used, particularly at the state level, to accomplish this purpose--formula budgeting--attempts to relate the allocation of resources to standard, consistent measures of activity. (p. 17).

Similar descriptions of the equity concept in higher education appear repeatedly in the literature on funding higher education (7). These reflect the fundamental principle of equity as expressed by Thomas Jefferson in his first inaugural address: "Equal and exact justice to all men, of whatever state or persuasion."

Several more particular aspects of equity also are apparent under the concept. Financial equity is the idea that a student should not have significantly more funds to support his education because of where the student lives or where the student attends school. It is concerned with making reasonably equal resources available to each student, or compensatory education available to those who need it, or more money to schools in high-cost areas. Resource equity states that the starting point for each student's education should be reasonably the same, and not a function of the wealth of the district or institution, or the moods of taxpayers, or the preferences of administrators, or variations in the local economy. Input equity concerns what the student brings with them to school (family background, social environment, experiences, prior academic preparation) plus what is made available by the institution for learning (teachers, classrooms, curriculum, materials, technology). Input equity may require unequal allocation of resources, reflecting different students' needs, more expensive teaching, somewhat higher costs of maintenance of buildings, more specialized equipment, or greater levels of clinical experiences in a curriculum. Output equity is reflected in requirements for levels of achievement as measured by tests and the compensatory or remedial education services which might be necessary to achieve that standard. Tax equity expresses the attempt to guarantee that all students will have access to education on the same terms. The taxes required of their parents or the tuition a student pays are as nearly the same regardless of where the student lives or which institution he attends.

The concepts of adequacy and equity form the fundamental framework within which decisions are made to provide education or any other service to the people of a state. Legislators restrain the attempts at political favoritism and preferential treatment of some over others as they are guided by these concepts. Adequacy and equity principles have forced higher education institutions to work together rather than in competition, and state governments have created administrative mechanisms such as the State Board of Education and the Board of Regents to develop statewide approaches to addressing the needs of public education.

The adequacy of funding public education and the equitable distribution of limited resources is a constant problem demanding the attention of the Legislature and its administrative agencies. Legislative oversight is a critically important means of determining whether the state's institutions have complied with the intent of the legislature which authorized the use of public funds.

A strict network of accountability from authorization to expenditure to verification has been established for elementary and secondary schools. Local school district superintendents have very little discretion over how much their schools will

receive and how it might be spent. Accountability is monitored closely by the State Superintendent of Education and reports returned for legislative oversight reviews. The maxim that "Trust is the surrogate to control" applies much more to higher education than to elementary and secondary education throughout the U.S. In higher education, although legislative decisions about funding authorizations to universities are made on the basis of enrollment data by programs and levels, university accountability in most states for expenditure reporting is categorical, rather than program-or discipline-specific. Only Texas and California require a followup audit of their postsecondary education to verify that funds were spent consistent with legislative intent. In most states, however, there is potentially little relationship between the basis on which funds are authorized and how they are spent--that is, to ensure that an Engineering student will have one level of financial support or a Teacher Education student will have another level of support--both minimums--regardless of which university they attend in a given state. The absence of that program-specific expenditure accountability assumes (if the legislative intent was inherent in the authorization) that university administrators who decide on funding for their academic divisions will be unbiased. That's a naive assumption!

Periodic program reviews through the Board of Regents, the State Department of Education, and accreditation agencies do reveal program strengths and weaknesses which often can be related to funding. However, most higher education programs do not begin with the same adequacy and equity premises as for elementary and secondary education--that a minimally adequate level of funding and an equitable method for its distribution is guaranteed through a weighted formula funded from state and local sources. The literature on Teacher Education includes numerous studies and abundant rhetoric on our status as a profession. Yet, we have failed to include minimum budget requirements, faculty-student ratios, or other indicators in accreditation standards which would enhance the development of quality programs as a departure from a beginning with essential resouces.

Carter (7) has summaried the problems of adequacy and equity in funding higher education:

> The objective of equity or fairness in the distribution of state support is not easy to define or carry out. A workable definition is to provide the same resources from state appropriations to each institution of higher education for each full-time equivalent student enrolled in comparable programs of instruction. In addition, there are special circumstances of enrollment size, location, stage of development, and of clientele served which may require modification of or exceptions to this definition.

What then about qualitative differences? There are such differences among institutions and among students, but there is no apparent basis for saying that high quality deserves high support or for saying that lower quality deserves lower support. For this reason the distribution of state support should be based upon equal resource support per student by program and by program level. Other sources of support can them provide the margin of difference which circumstances require. This definition of equity is justifiable in terms of the basic philosophy of higher education and in terms of the tradition of equality of opportunity in a democratic society.

There are three primary ingredients in an operative definition of equity, i.e., (a) state support based upon program costs, (b) state support based upon workload, and (c) state support based upon a common definition of available revenue. It must be emphasized that the concept of equity does not mean a distribution of support involving the same amount of money for each institution based upon workload and program differentials. Such differences are important characteristics of a concept of equity. The essence of equity is that state institutions of higher education should be treated the same in terms of workload and in terms of program offerings. (p.6).

II. Resources and Productivity in Teacher Education

Annual studies, under the sponsorship of the ACSESULGC, have been completed for the past six years on resources and productivity in Teacher Education divisions in the major state universities and land-grant colleges. The most recent study analyzed data on budgets, FTE faculty and support personnel, credit hour production, salaries, degrees awarded, and tuition costs in 73 universities in 44 states (1). The list of those participating universities is shown in Appendix A. The principal findings were that (a) there are great differences in both resources and productivity between colleges and teacher education, both within the 6 AACTE geographic regions and within individual states; and (b) the average direct cost per year of teacher education was only 72% as much as the average direct cost for a public school student nationally.

It is important to emphasize that all data on credit hours produced and enrollments and course sections offered were normalized by a formula whch equates the data from quarter-and-semester-system universities. Further, a system of differential weights was applied to the credit hour data, to reflect increased program complexity and cost of programs from lower division

undergraduate through advanced graduate level studies. These weights are consistent with the higher education funding formula factors found in more than two-thirds of the states. The table of weights is in Appendix B.

Resources and Productivity in 43 Universities

For the sake of brevity in this paper for the AACTE National Commission on Excellence in Teacher Education, a more limited analysis will be presented than was in the original ACSESULGC research project. All data are for the 1982-1983 fiscal year, which included the fall semester 1982, and the spring and summer sessions of 1983. Further, this section will analyze data for only three of the six AACTE geographic regions:

II Alabama, Florida, Georgia, Mississippi, North Carolina, Tennessee, and Virginia (17 universities)

III Indiana, Kentucky, Ohio and Pennsylvania (11 universities)

V Kansas, Louisiana, Oklahoma, and Texas (15 universities)

Only those states with data from two or more colleges of teacher education will be shown here, although there were single universities from other states in those regions in the original research. The data graphs which follow will therefore include three AACTE geographic regions, 15 states, and colleges of teacher education from 43 universities. All institutions are identified by a code number, desiginating the region and university, to protect the anonymity of each.

Four principal resource variables are shown in the following tables:

Academic year professor's salary
Ratio of FTE students to FTE instructional faculty
Ratio of FTE faculty to FTE support personnel
University funds for operations per FTE faculty

Four other principal productivity variables are then shown :

Weighted credit hours produced per FTE faculty
Cost per weighted semester credit hour
Institutional complexity index
Tuition as a percent of cost

Among the resource variables, only the full professor's salary is shown here. The number of full time equivalent (FTE) students was found by dividing the undergraduate credit hours

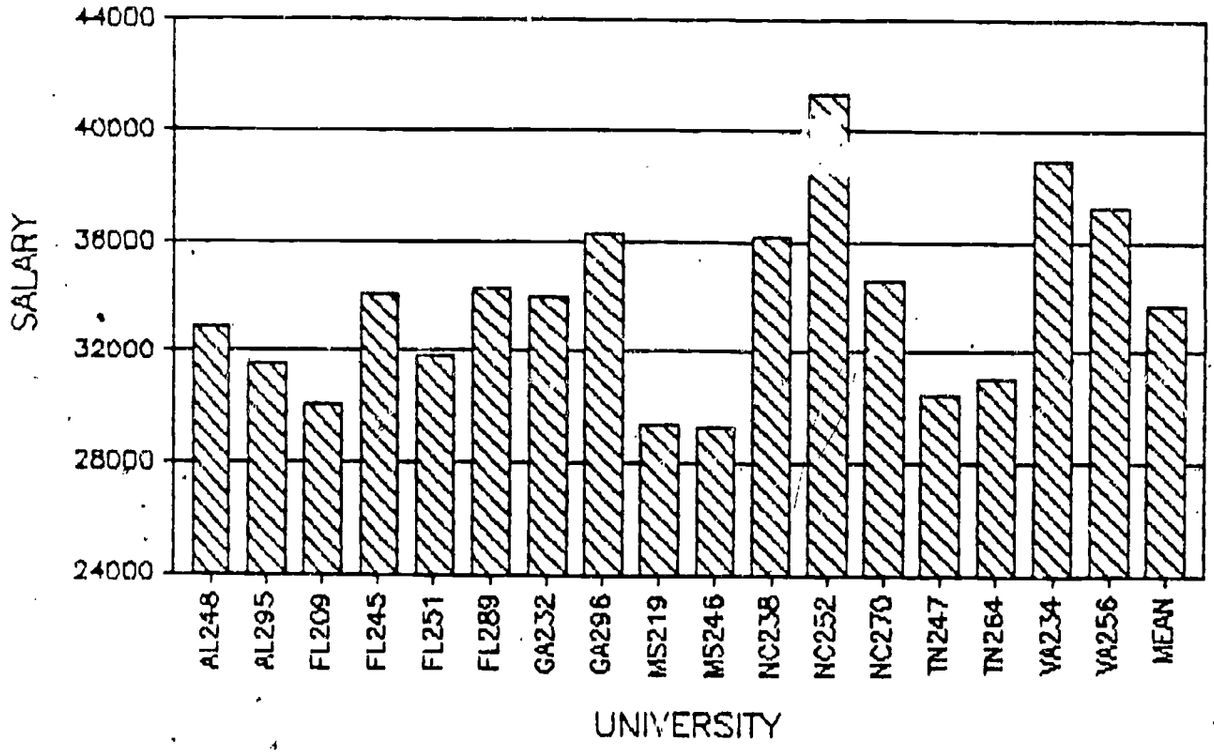
produced by 30 (2 semesters @ 15 semester hours each), the graduate 1 (master's level) credit hours by 24, and the graduate 2 (post master's) by 18. Then, the sum of these was divided by the budgeted full-time equivalent to derive the ratio. The ratio of FTE faculty to FTE support personnel (primarily secretarial) was found by division of budgeted FTE's. The university-supplied funds for operations (supplies, telephone, travel, etc.) per FTE faculty was calculated by dividing the former by the latter.

The productivity variables are a cluster of principal indicators of what each college of teacher education produced with its resources. The weighted credit hour productivity per FTE faculty required, first, that all credit hours by levels (undergraduate, graduate 1, and graduate 2) were multiplied by their weights, and the sum of the products divided by the number of FTE faculty. The cost per weighted credit hour was found by dividing the total weighted credit hours produced during 1982-1983 into the total university-supplied budget. The institutional complexity index is the ratio of weighted to unweighted crdit hours produced. Finally, tuition as a percent of cost is the result of dividing the direct cost of 30 semester hours in a given college of teacher education into the undergraduate tuition costs for the two academic semesters of 1983-1984.

The following tables are arranged to show a single variable for each of three AACTE regions (II, III, and V). The mean value for each table is the mean for that particular geographic cluster of universities. The universities are shown by code number on the x-axis of each graph. There are 17 universities in region II, 11 in region III, and 15 in region V. A brief narrative analysis follows each set of three graphs.

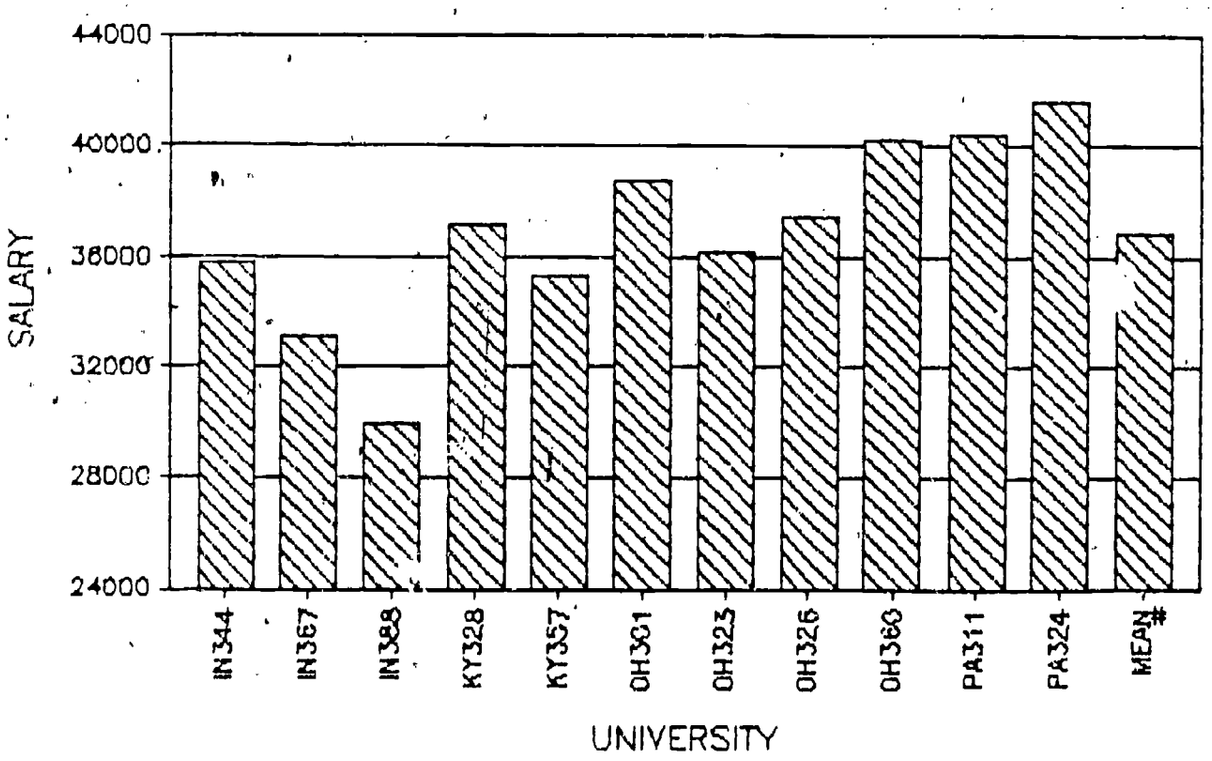
ACADEMIC YEAR PROFESSOR'S SALARY

17 UNIVERSITIES REGION II



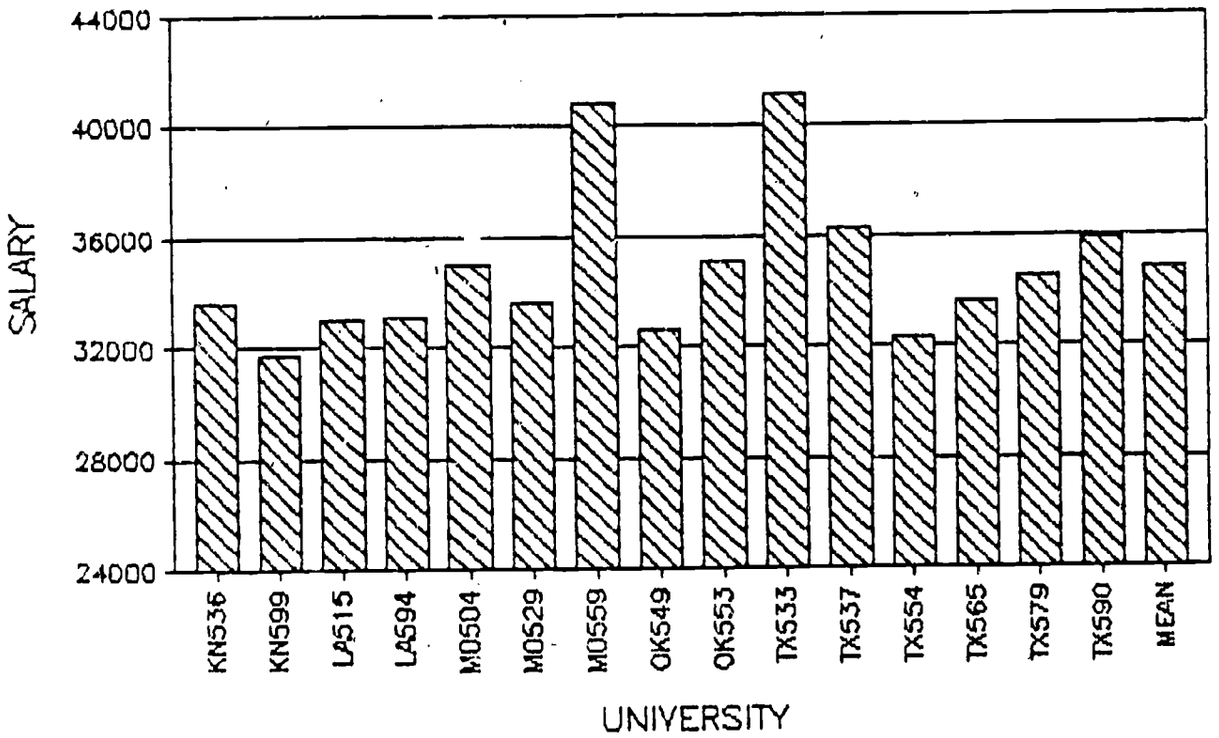
ACADEMIC YEAR PROFESSOR'S SALARY

11 UNIVERSITIES REGION III



ACADEMIC YEAR PROFESSOR'S SALARY

15 UNIVERSITIES REGION V



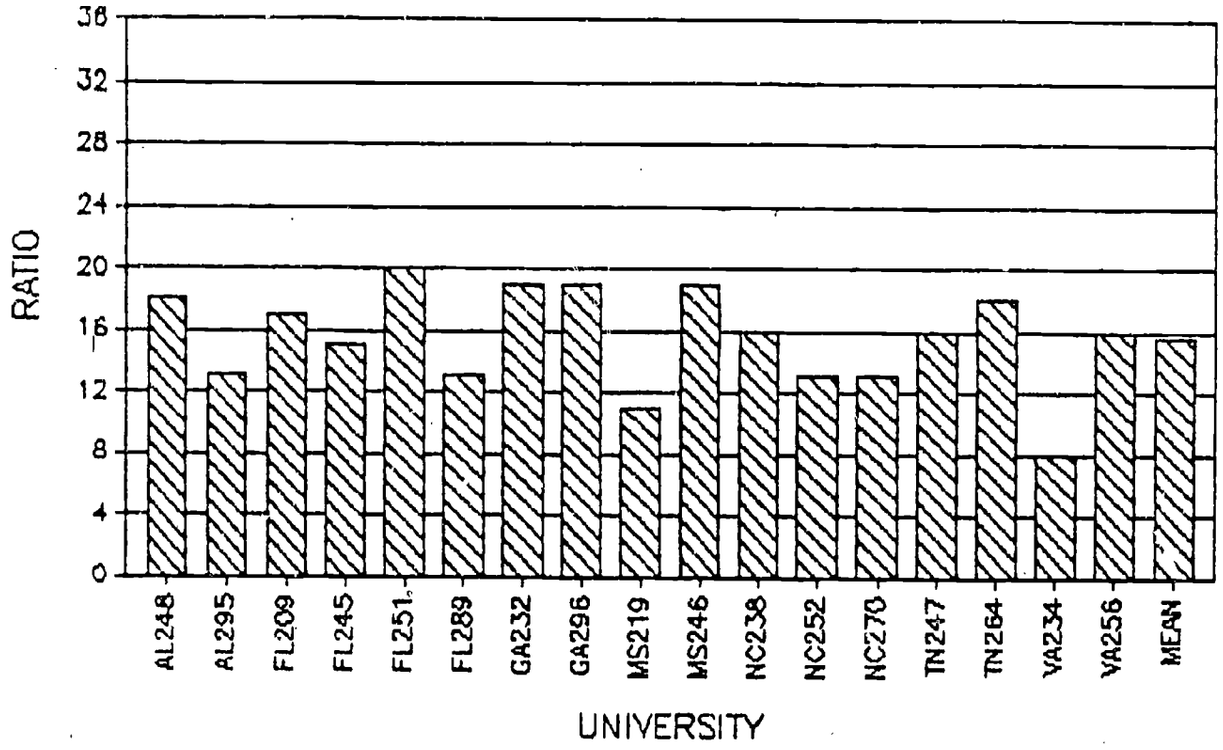
The average full professor's salary varies from $33,750 to $36,923 among these three regions. However, there are substantial differences among the universities within individual states:

Florida	$30,031 to $34,101
Indiana	$29,930 to $35,787
Missouri	$33,565 to $40,824
North Carolina	$34,575 to $41,360
Texas	$32,306 to $41,135

In none of these states was there a correlation between institutional complexity (the ratio of unweighted to weighted credit hours), which would represent greater or lesser proportions of graduate productivity, and higher or lower salaries.

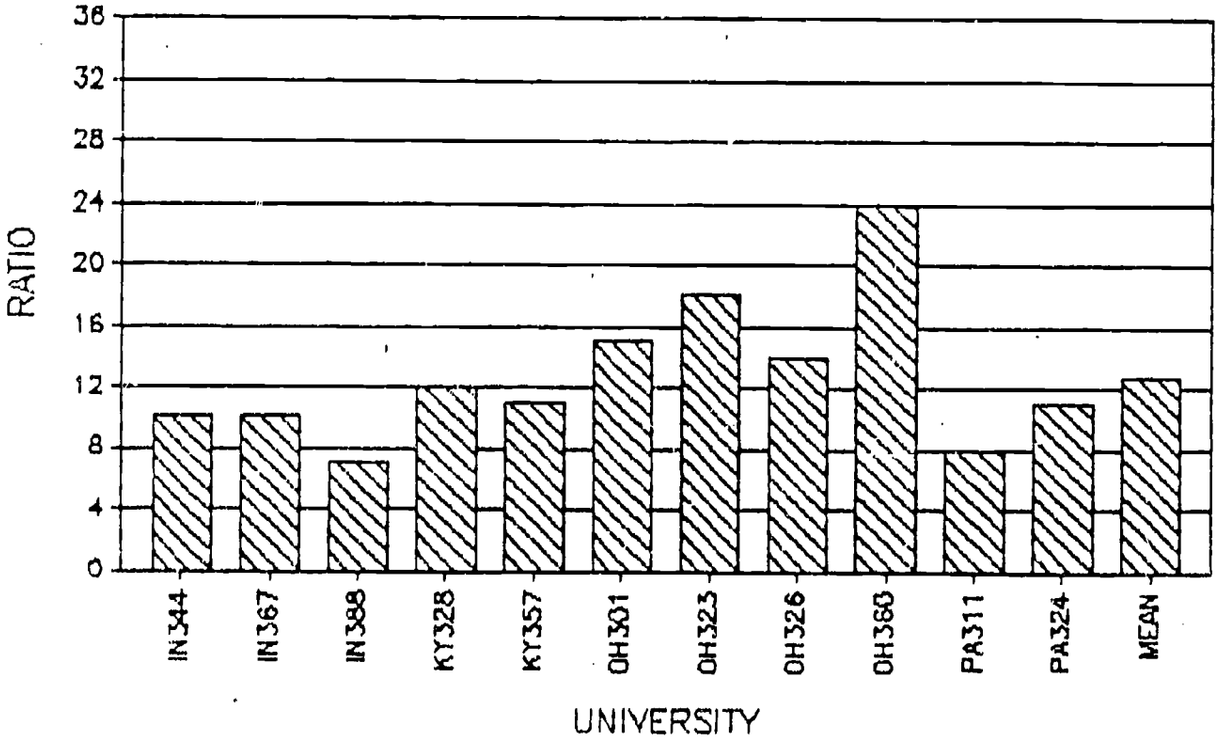
FTE STUDENT TO FTE FACULTY RATIO

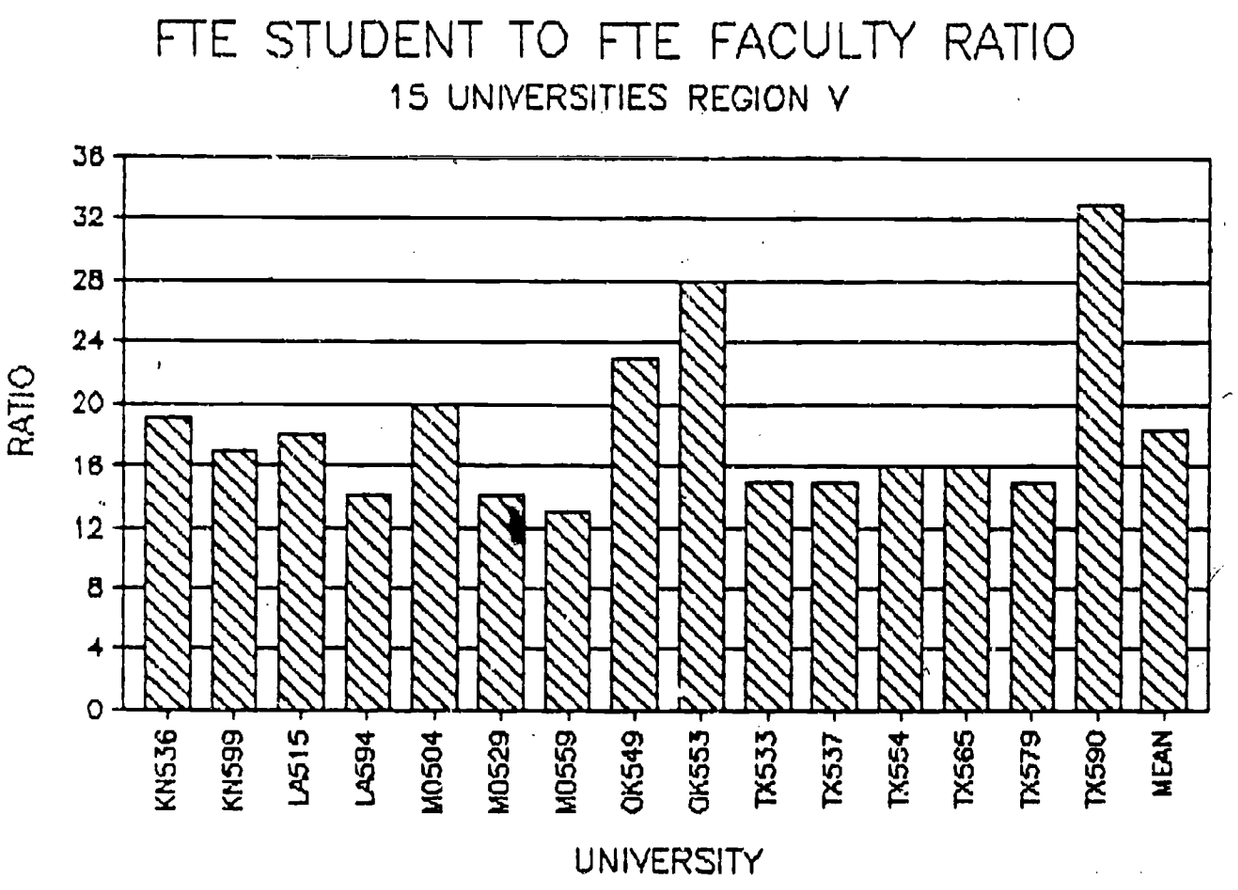
17 UNIVERSITIES REGION II



FTE STUDENT TO FTE FACULTY RATIO

11 UNIVERSITIES REGION III

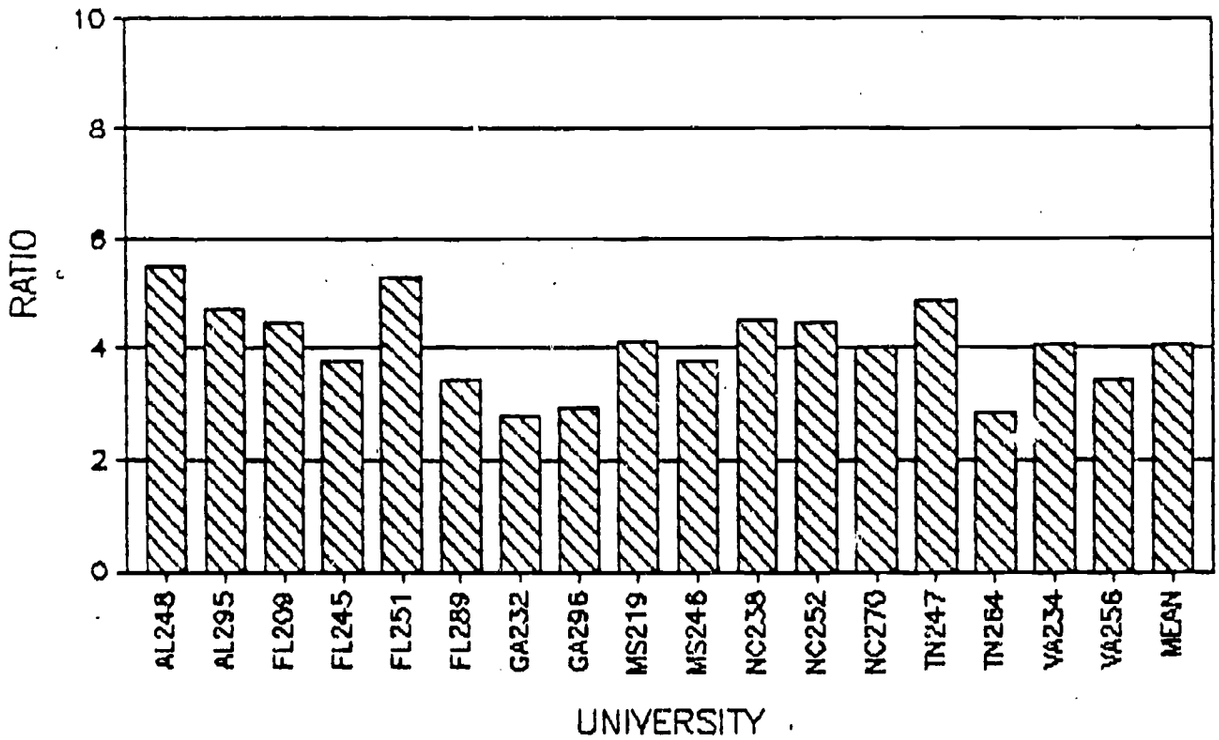




The ratio of FTE students to FTE instructional faculty among the 43 universities in these three regions varied from 5:1 to 33:1. Moreover, the higher ratios are often found in universities with greater proportions of advanced graduate productivity, contrary to the concept that more advanced level programs require more resources, smaller classes, and more individualized advising and supervision.

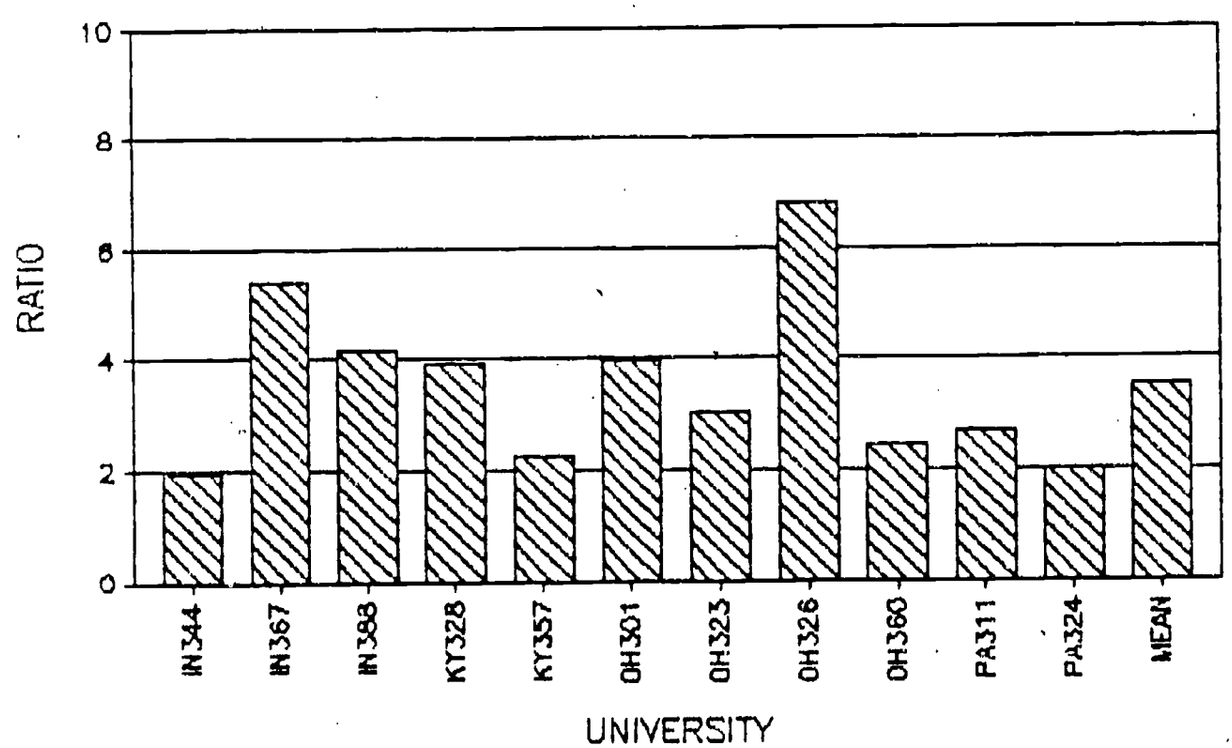
FTE FACULTY TO FTE SUPPORT STAFF RATIO

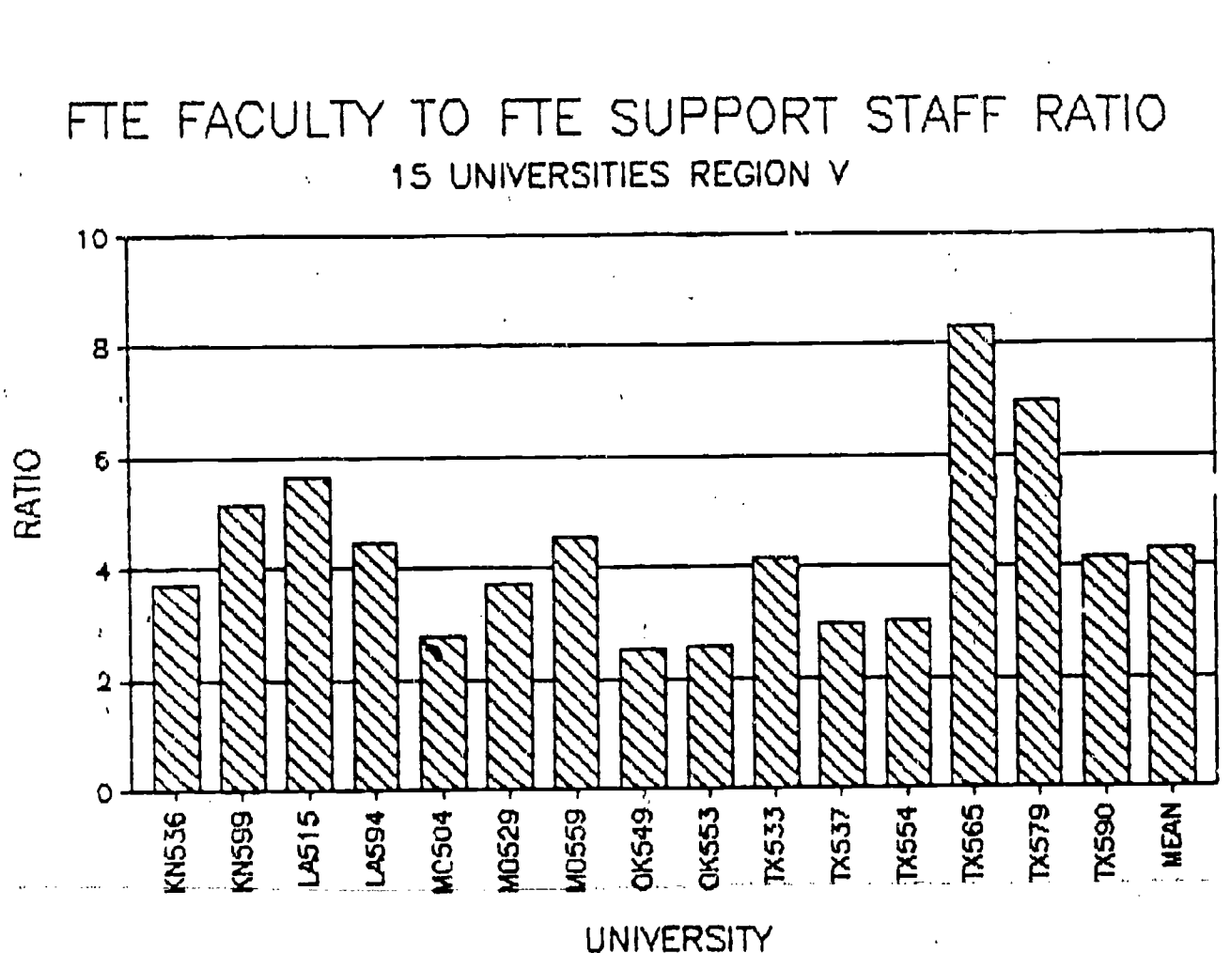
17 UNIVERSITIES REGION II



FTE FACULTY TO FTE SUPPORT STAFF RATIO

11 UNIVERSITIES REGION III

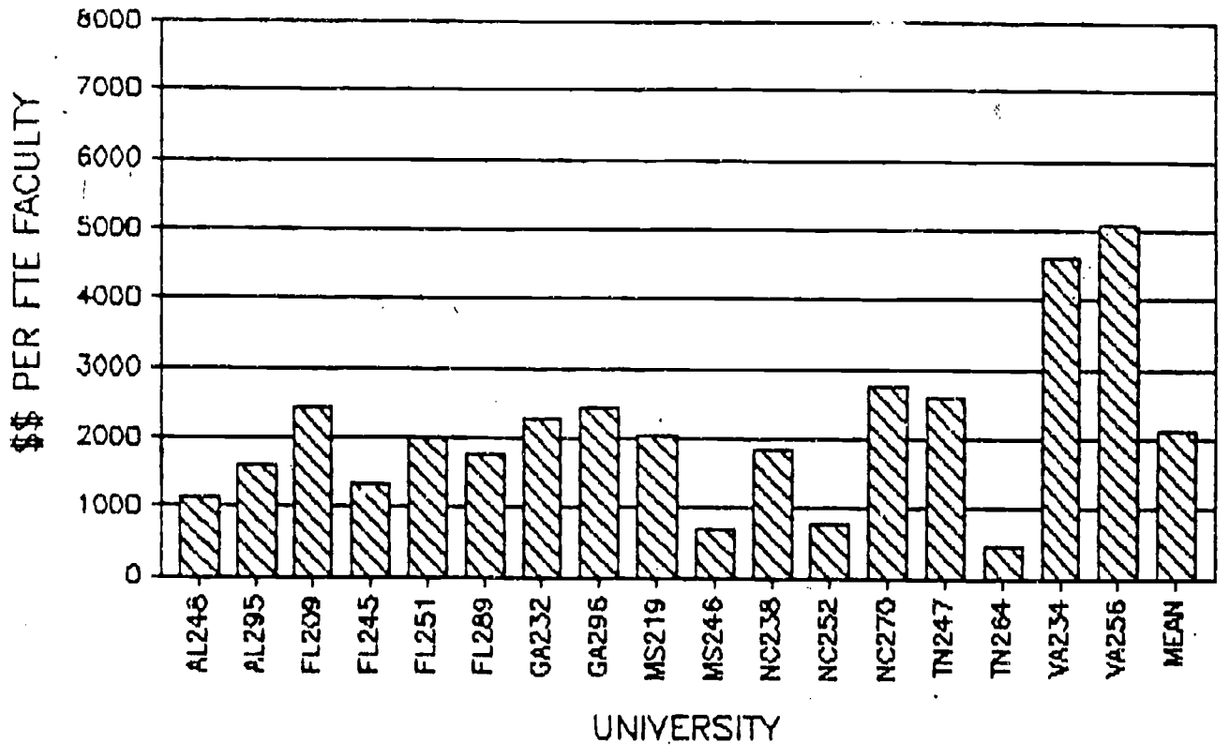




Support staff--primarily secretarial--are essential to provide the services necessary for faculty instruction, research, and service. Again, the concept of program complexity implies that faculty in programs with a greater proportion of advanced level productivity require more secretarial services, since those programs are more individualized. Higher ratios of faculty to support staff are often found in programs of higher complexity, however (note especially Kentucky, Louisiana, North Carolina, Pennsylvania, and Texas). Within individual states, great disparities are found in Florida, Tennessee, Indiana, Kentucky, Missouri, and Texas.

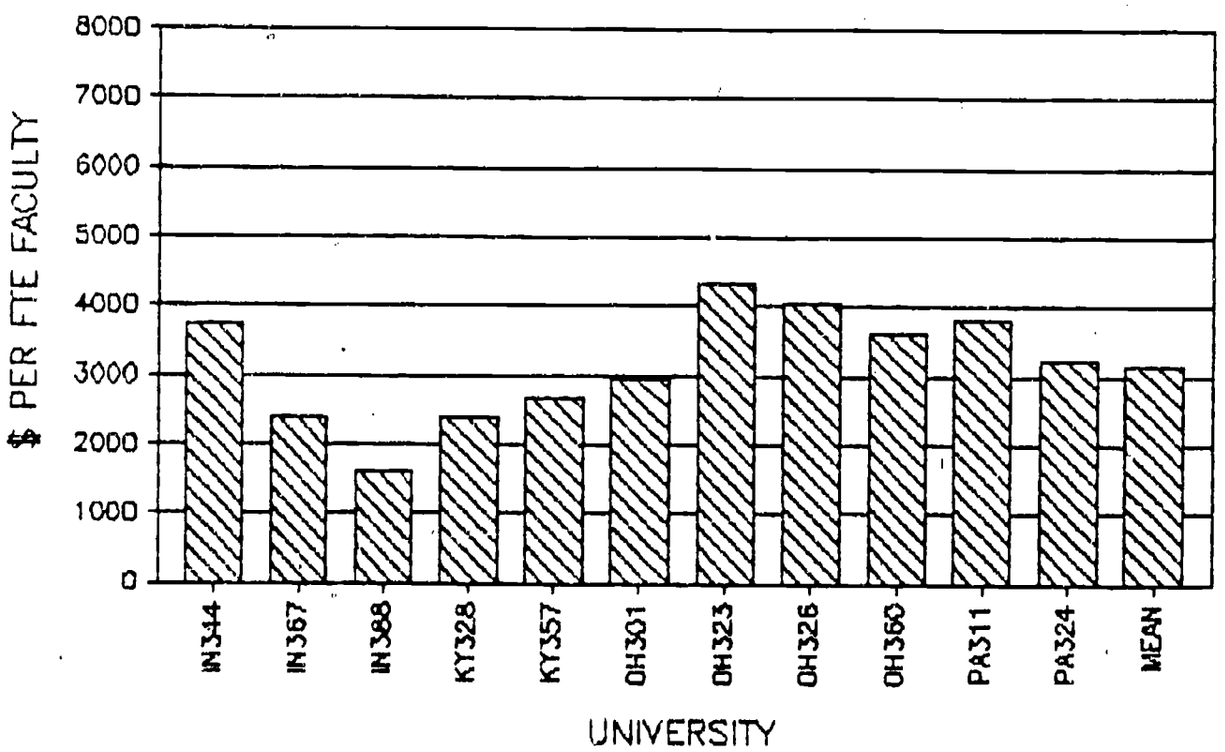
OPERATIONS FUNDS PER FTE FAC JLTY

17 UNIVERSITIES REGION II



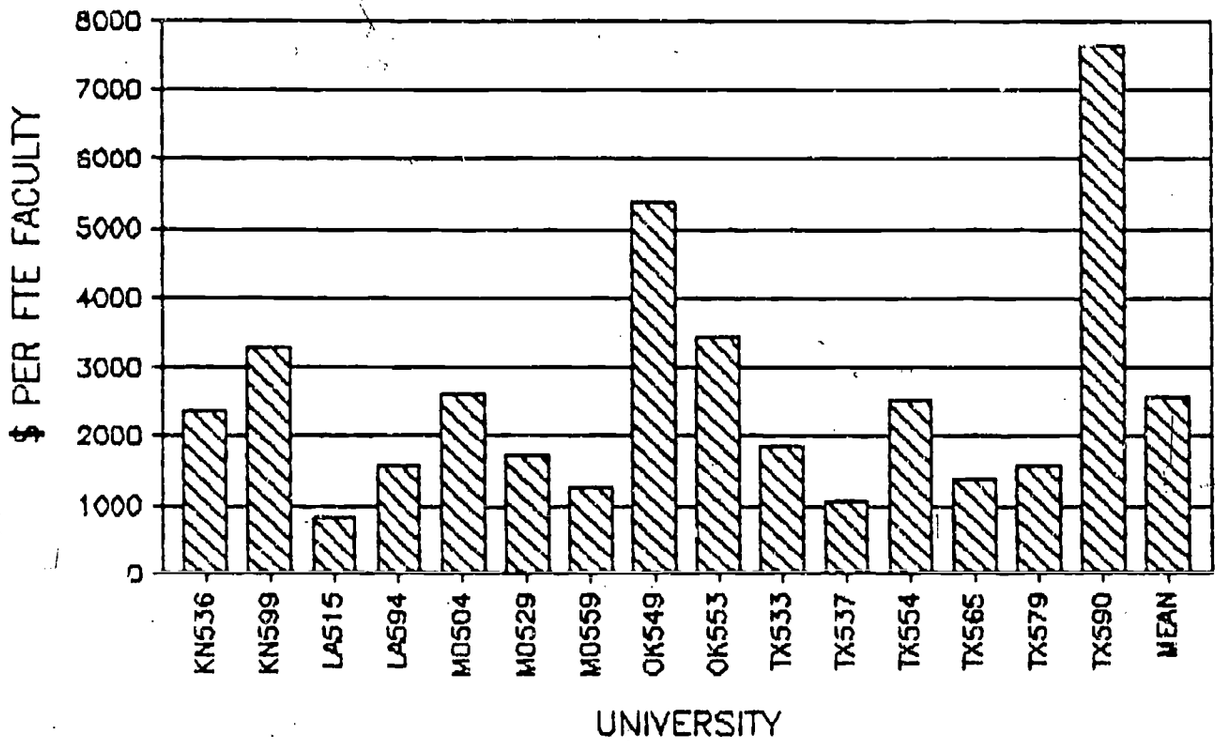
OPERATIONS FUNDS PER FTE FACULTY

11 UNIVERSITIES REGION III



OPERATIONS FUNDS PER FTE FACULTY

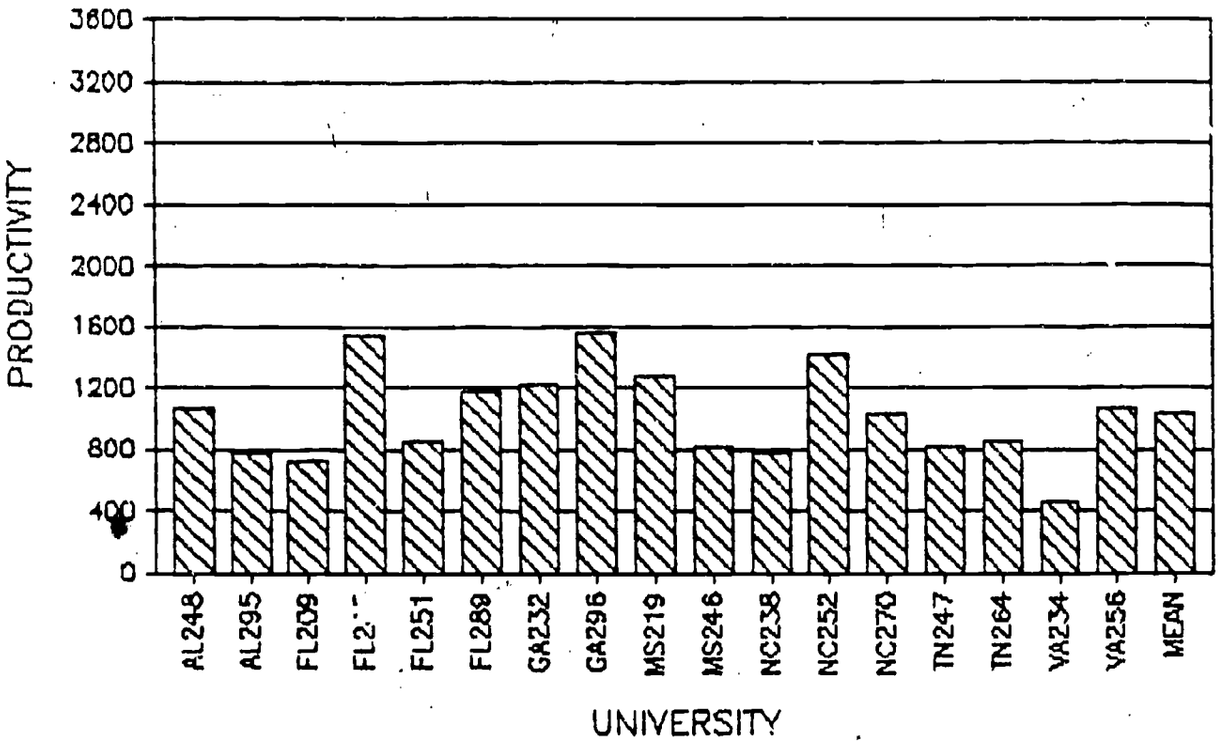
15 UNIVERSITIES REGION V



The operations budget of these colleges of teacher education provide funds for supplies, telephone, publications, travel, and other needs to support faculty functions. The average amount for 73 universities nationally was $2,627 per FTE faculty. Fourteen of the 17 universities in region II and 20 of the 15 in region V had less than that amount, whereas only 3 of 11 in region III had less than $2,627. There are substantial differences in the operating funds available to faculty within the universities of several individual states (Florida, Indiana, Louisiana, Missouri, Mississippi, North Carolina, Ohio, Oklahoma, Tennessee, and Texas). In six of those states, faculty in one institution had from two to five times as much operating funds to support their work as had faculty in another university in the same state.

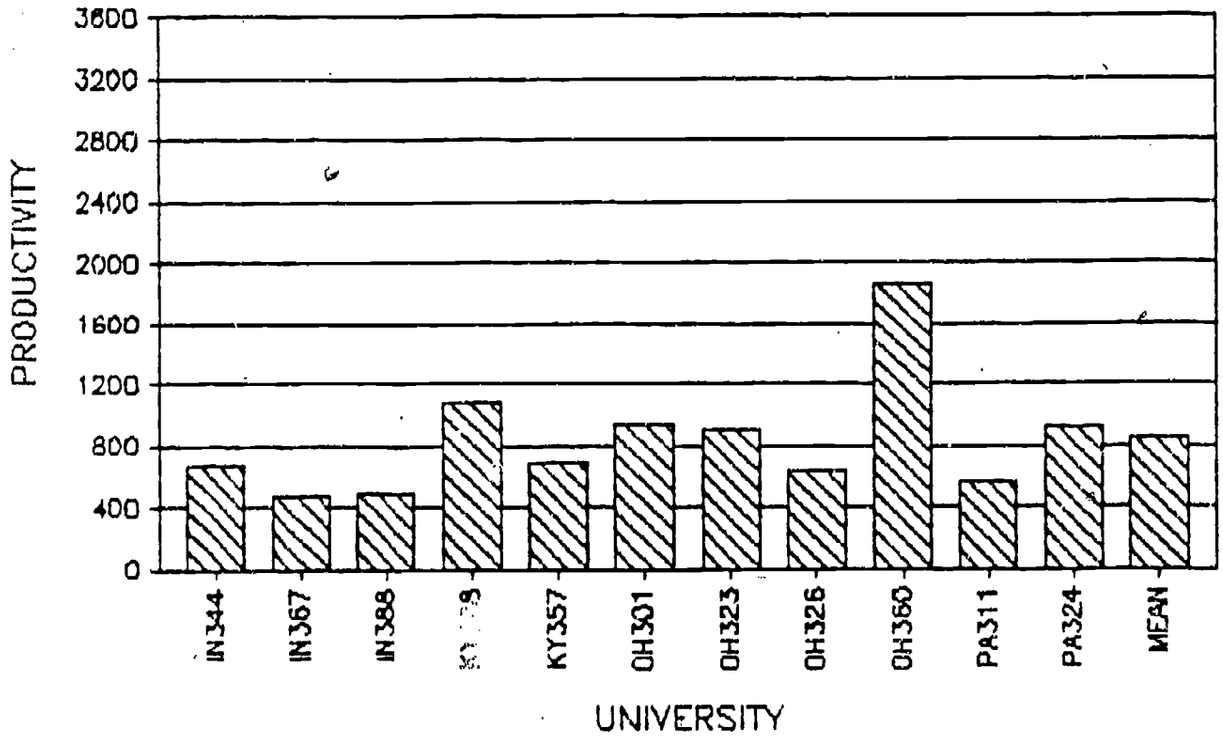
WEIGHTED CREDIT HOURS PER FTE FACULTY

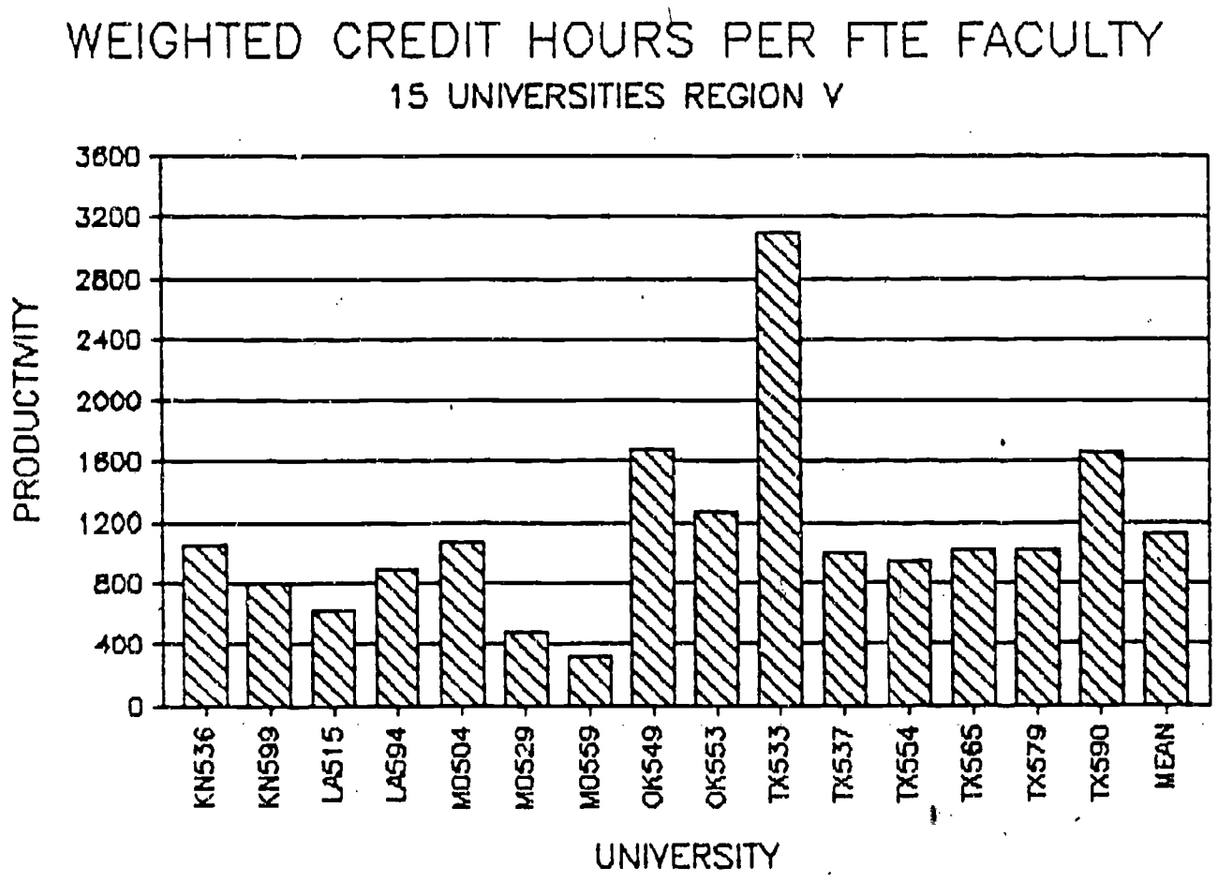
17 UNIVERSITIES REGION II



WEIGHTED CREDIT HOURS PER FTE FACULTY

11 UNIVERSITIES REGION III

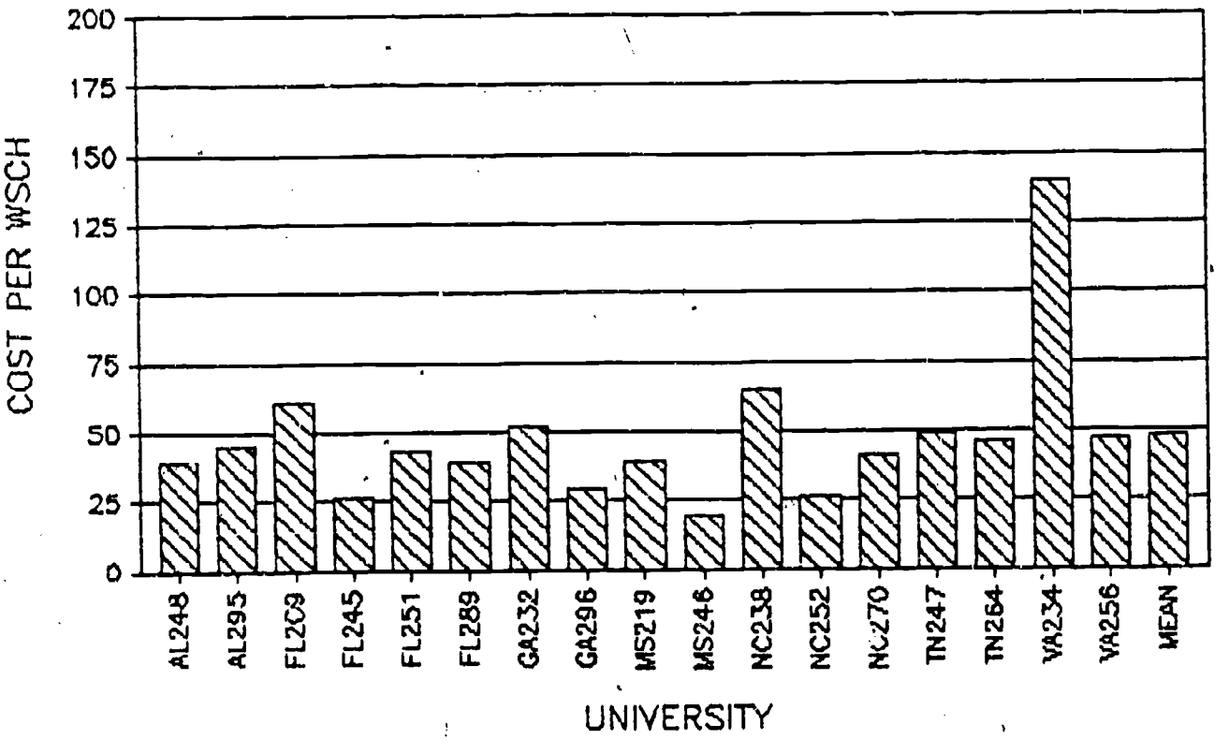




The first of the four productivity variables is a calculation of the weighted credit hours produced per FTE faculty in these 43 universities. Again, there are great differences among the institutions as a group, as well as within individual states. In 12 of the states, faculty in one university produced significantly more weighted credit hours than faculty in another university in the same state. In fact, in Florida, faculty in one university produced 215% as many WCH as did faculty in another Florida University. In Missouri, Ohio, and Texas, faculty in one university produced more than three times as many weighted credit hours as did faculty in another university in the same state.

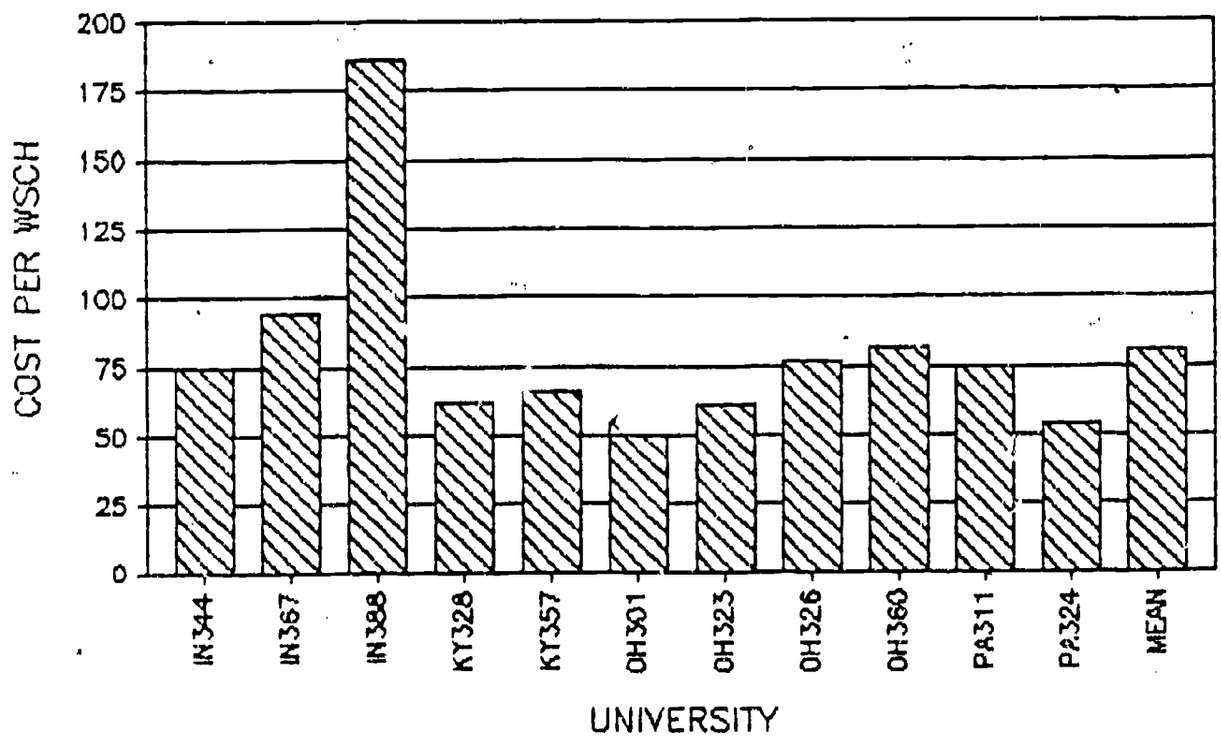
COST PER WEIGHTED CREDIT HOUR

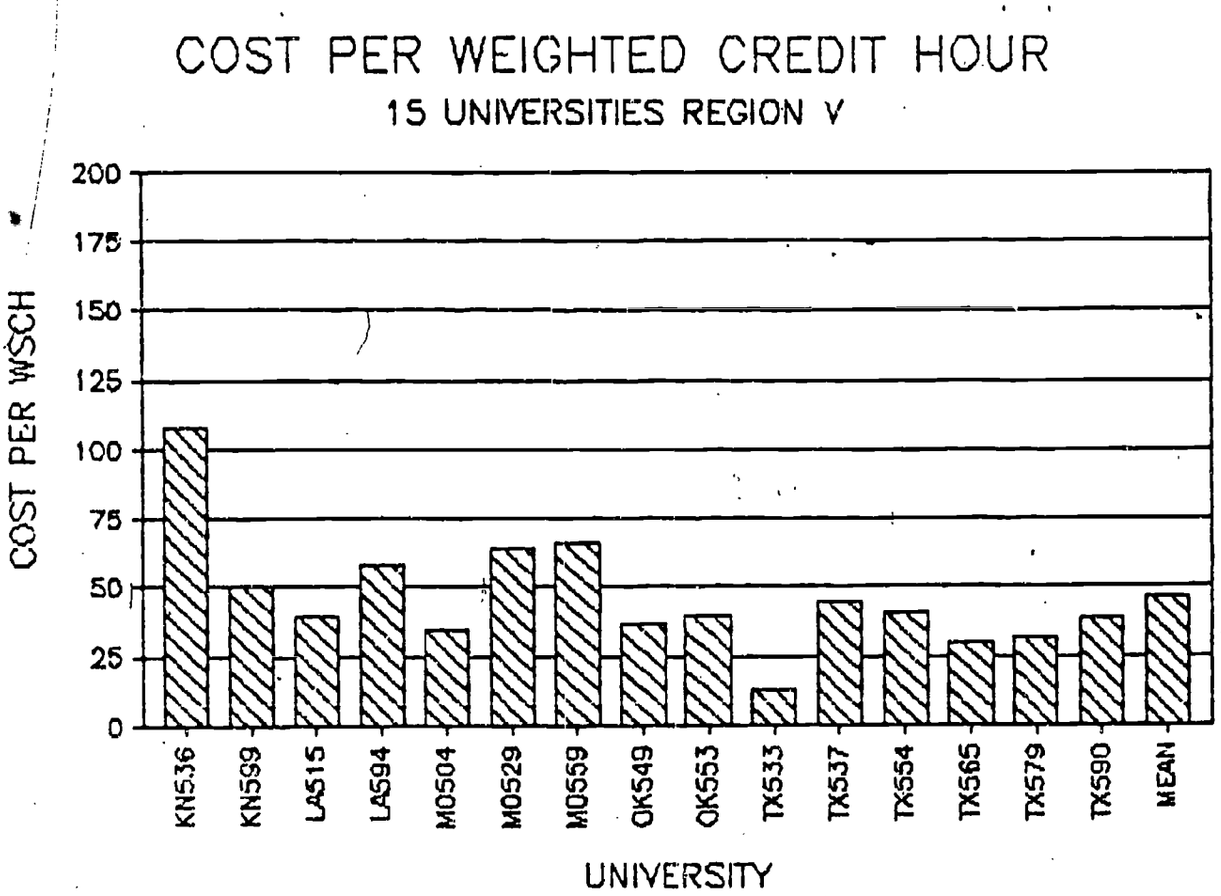
17 UNIVERSITIES REGION II



COST PER WEIGHTED CREDIT HOUR

11 UNIVERSITIES REGION III

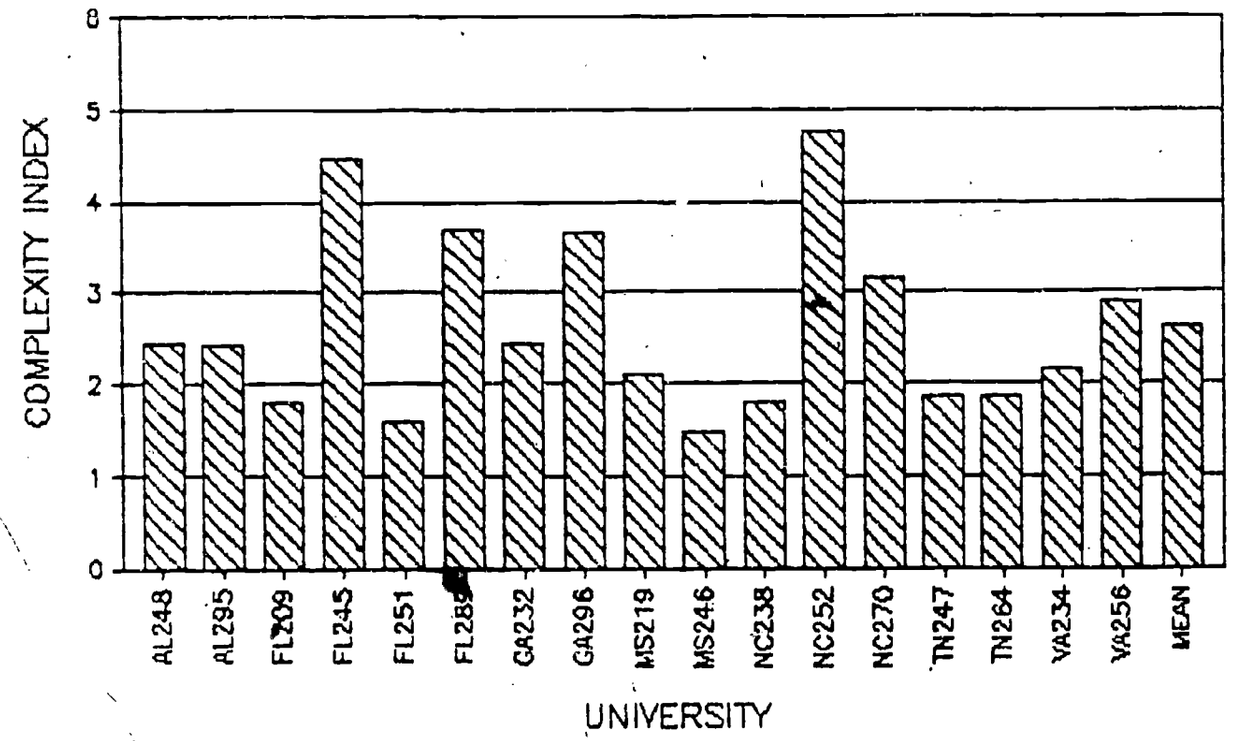




The cost per weighted credit hour varied from $12.65 to $186.32 among these 43 teacher education programs--a ratio of almost 15:1. Within individual states, the cost per weighted credit hour varied from a third more to 252% more than another university in the same state. These differences are especially severe in Florida, Indiana, Kansas, Missouri, North Carolina, Texas, and Virginia. As an example, the direct costs for an undergraduate teacher education student in the six Texas universities varied from $395 to $1393, while in the two Virginia universities the difference was from $1453 to $4364.

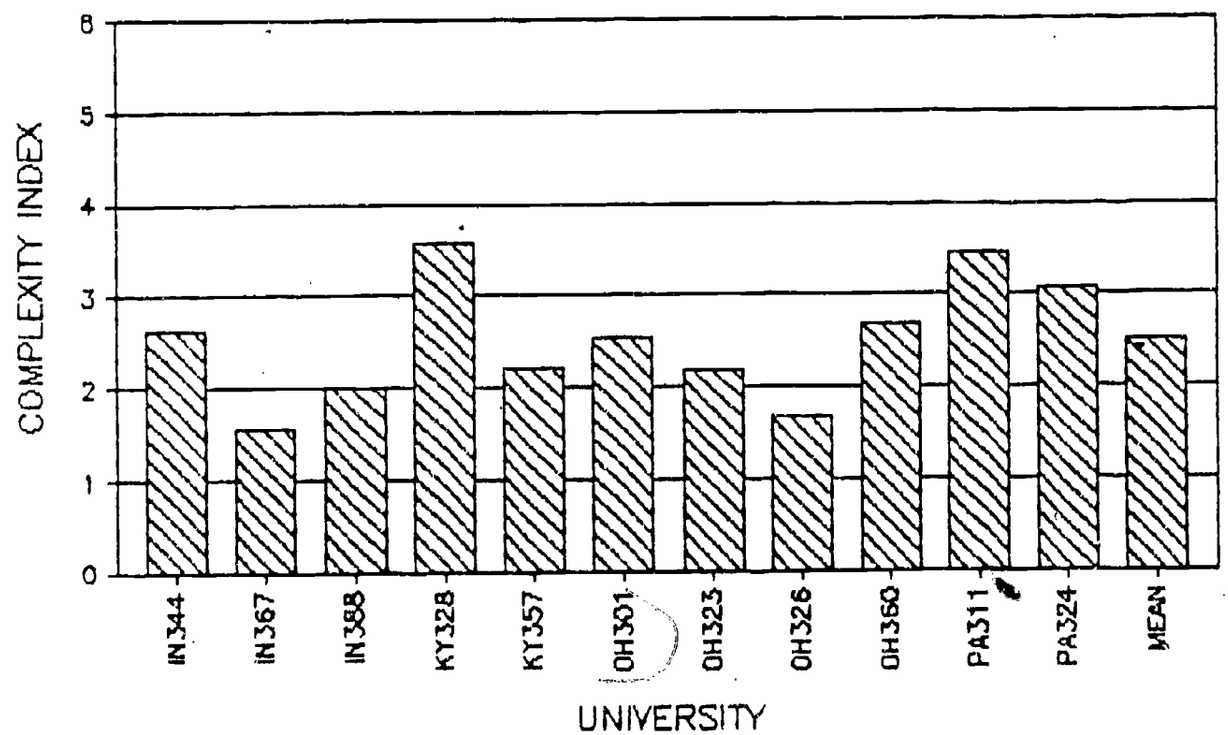
INSTITUTIONAL COMPLEXITY INDEX

17 UNIVERSITIES REGION II



INSTITUTIONAL COMPLEXITY INDEX

11 UNIVERSITIES REGION III



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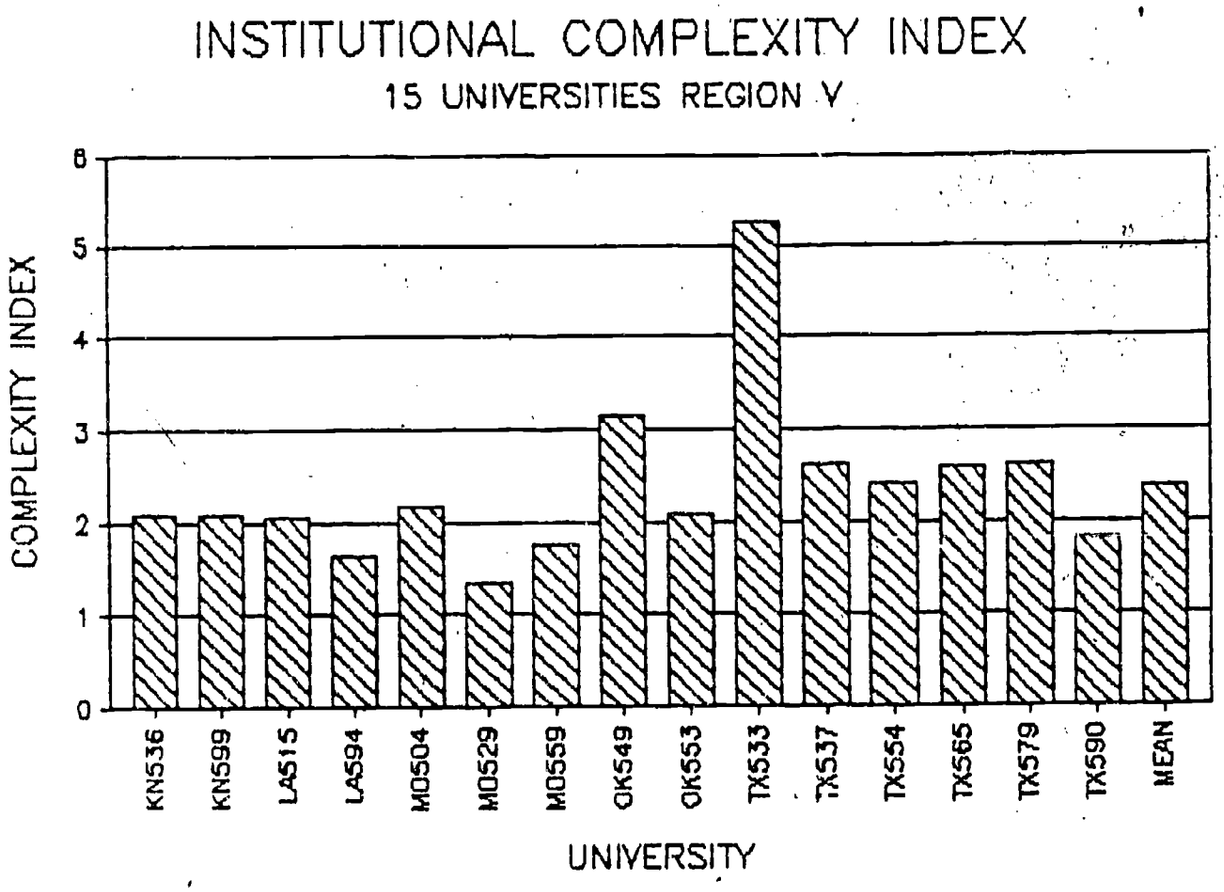

The institutional complexity index is the ratio of unweighted to weighted credit hours; the higher the index, the greater the proportion of advanced (graduate 2) studies. The index ranged from 1.48 to 5.27 among these 43 universities. Substantial differences are also found among the institutions within Florida, Georgia, Indiana, Kentucky, Missouri, North Carolina, Ohio, Oklahoma, and Texas. In Texas, the program complexity was almost three times as high in one institution versus another. Further, there is not a consistent correlation between the complexity index and cost per WSCH or faculty WSCH productivity.

TUITION AS PERCENT OF COST

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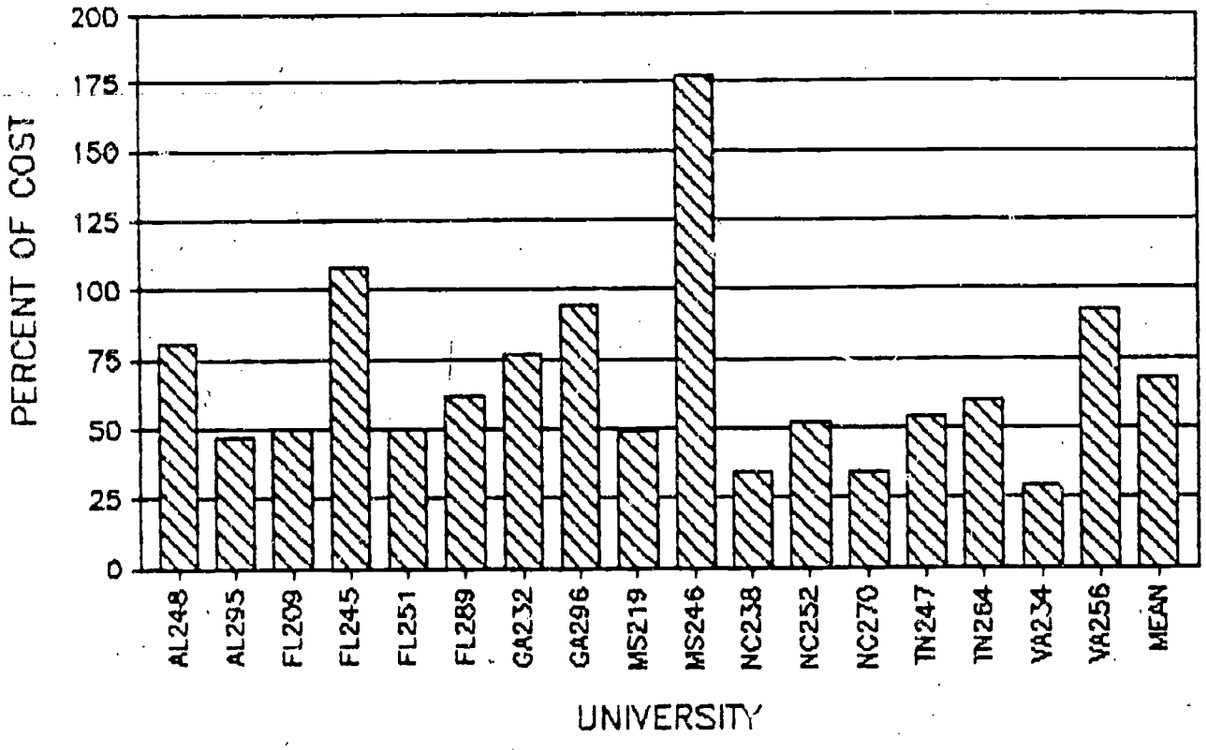

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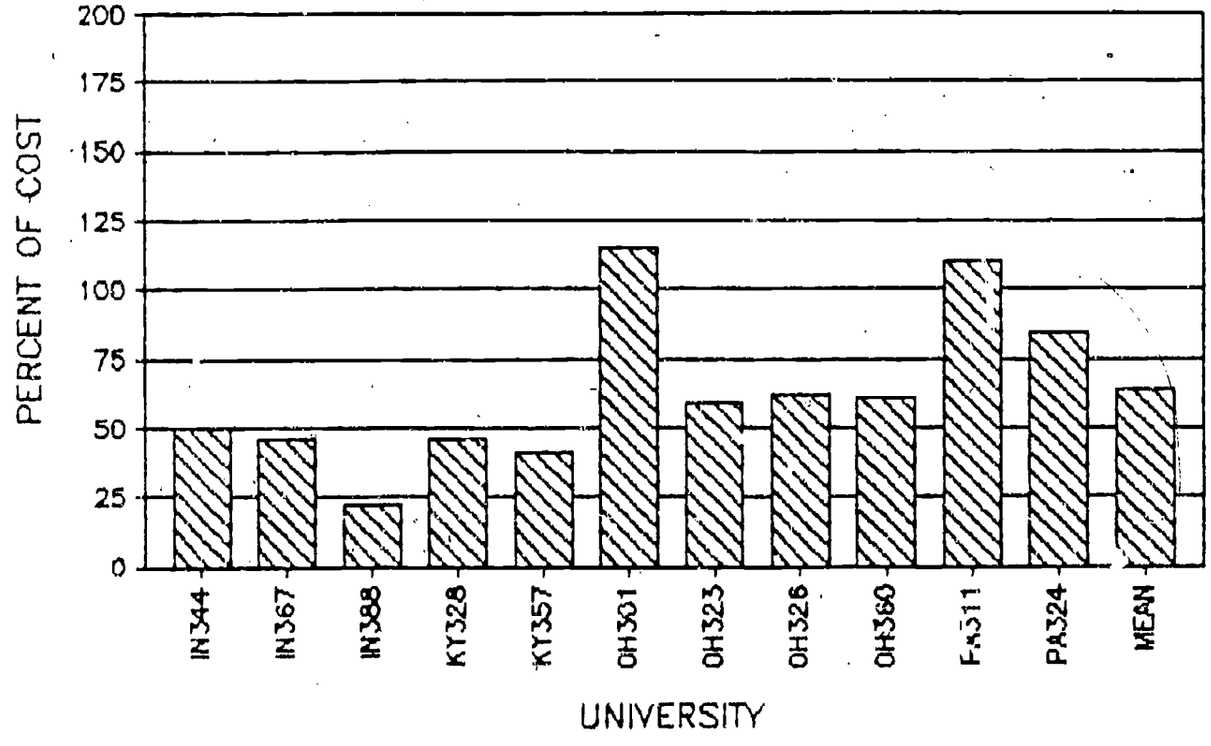

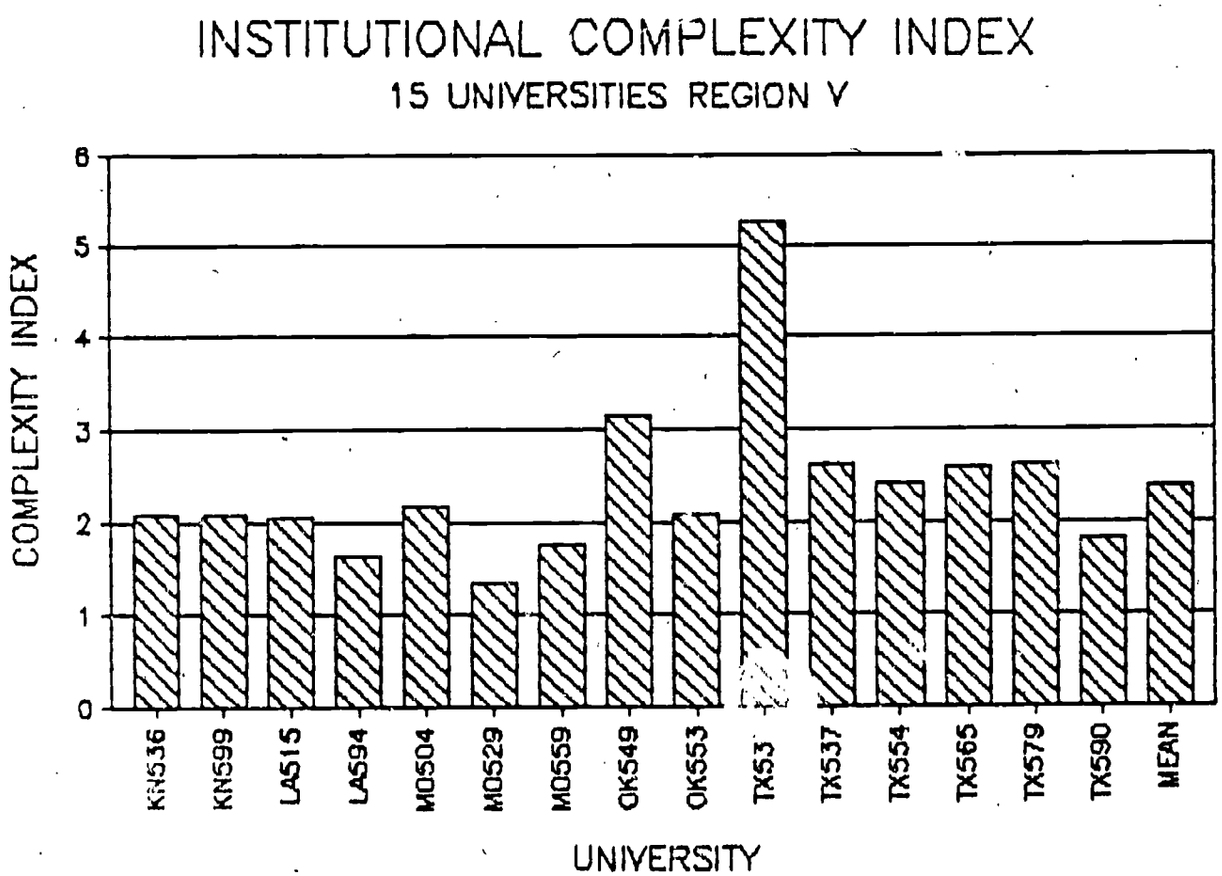

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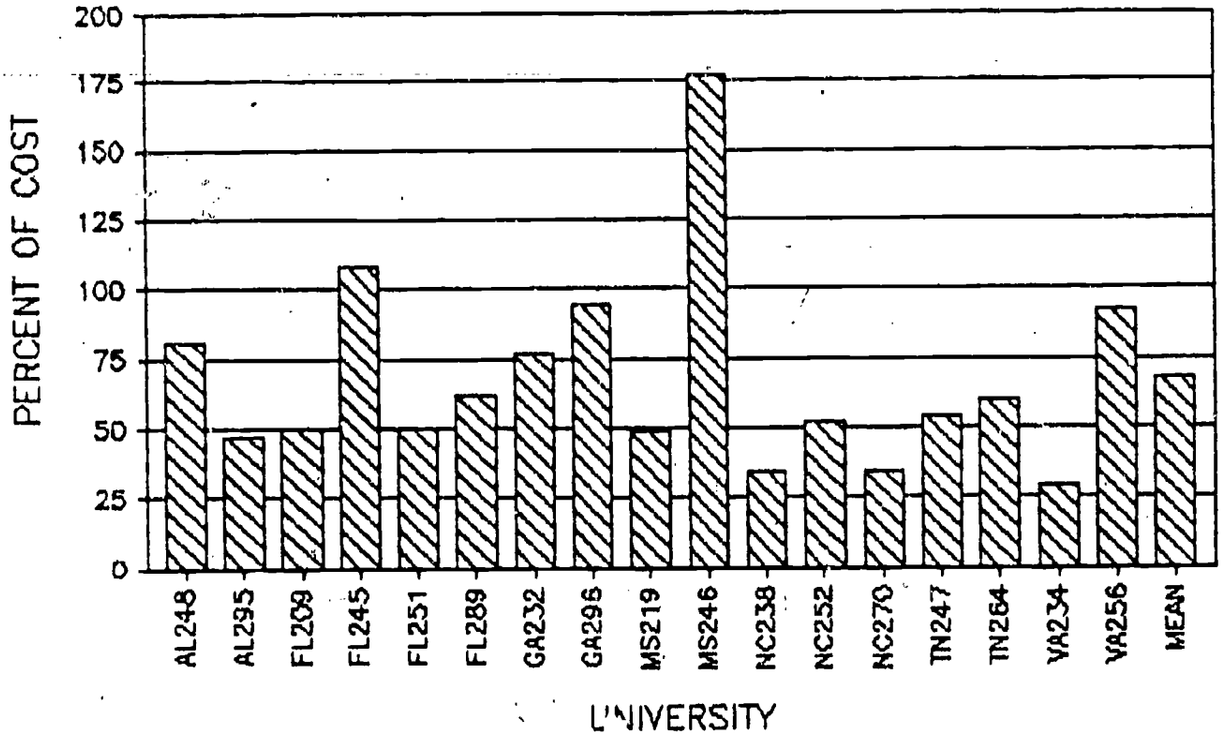

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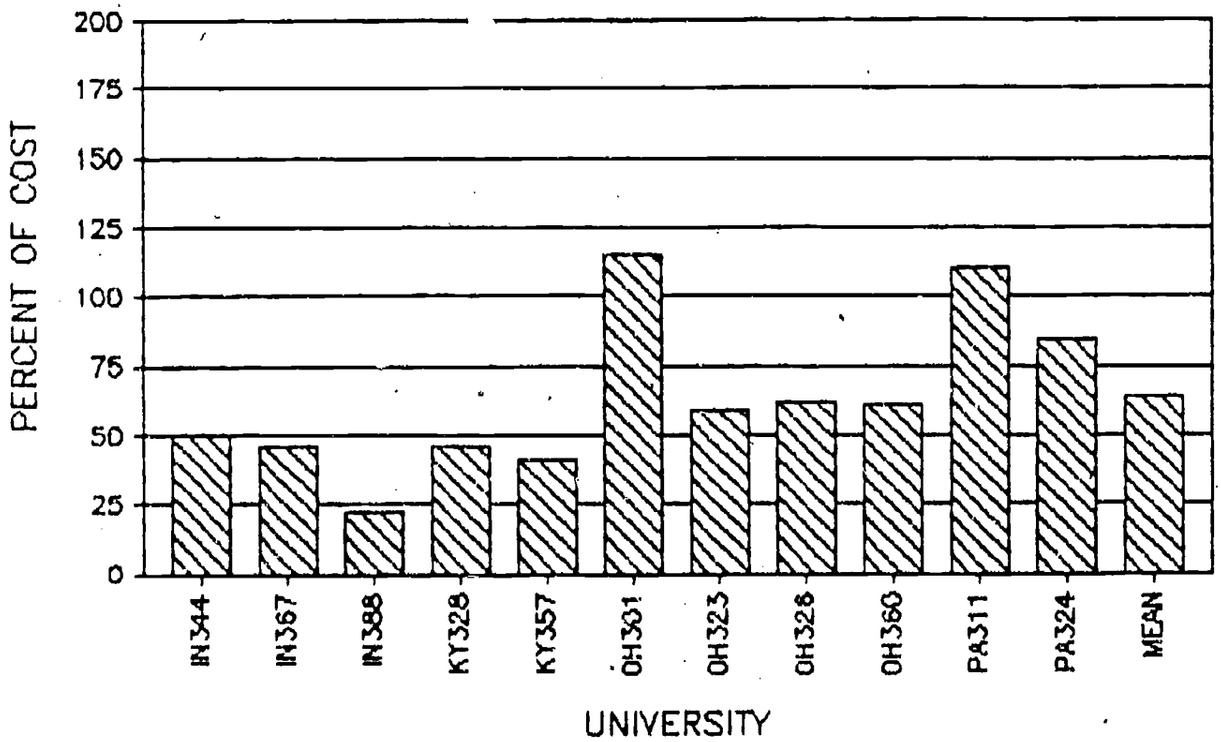
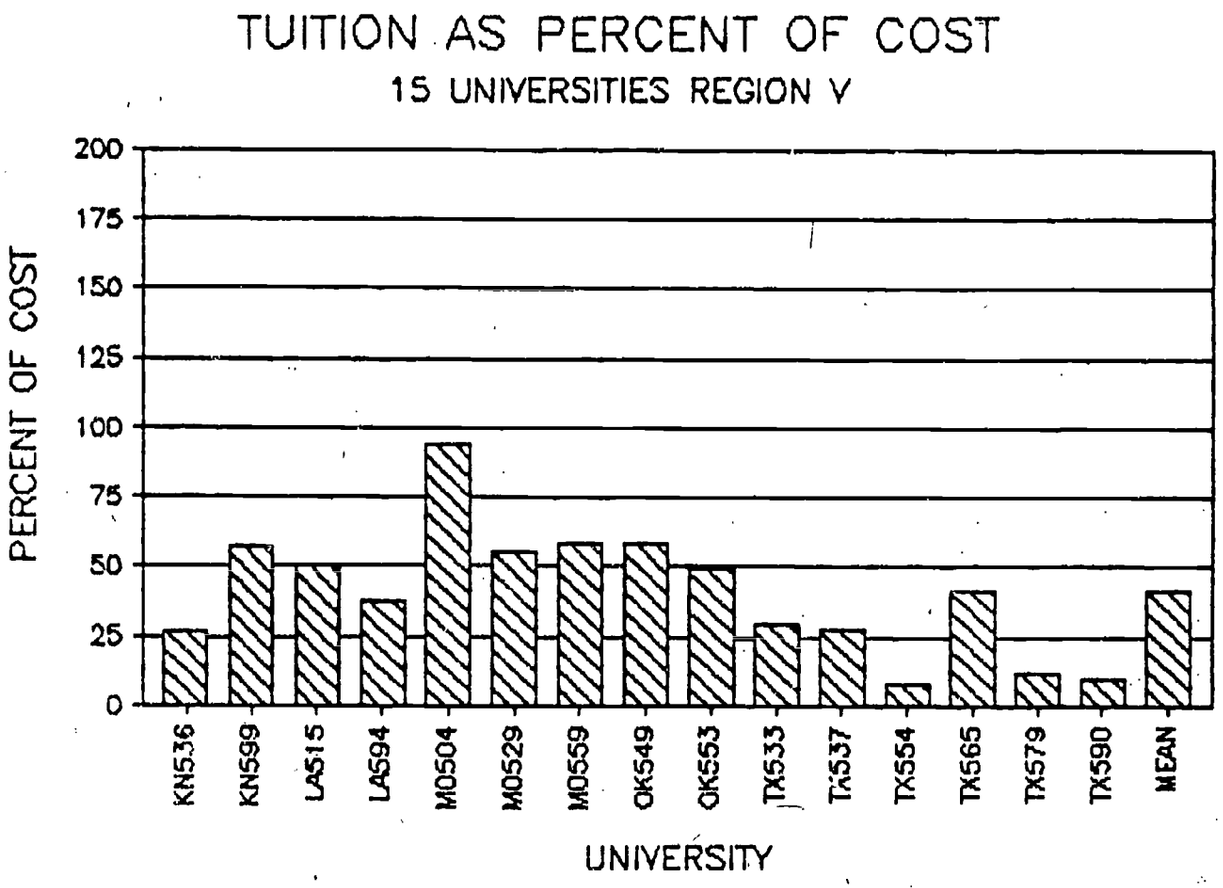




The final productivity variable, tuition as percent of cost, compares the academic year tuition paid by undergraduate teacher education students with the direct costs of 30 credit hours (2 semesters x 15) in each teacher education program. Bowen (8) reported that tuition accounted for 17-20% of the total cost per student across all disciplines in public universities; other studies estimated that tuition amounts to about 40% of the direct costs of instruction. In only 11 of these 43 universities was the tuition 40% or less of the direct cost of instruction, and 5 of those 11 were from Texas, where the general tuition structure for higher education is very low. In one institution in each of the states of Florida, Mississippi, Ohio, and Pennsylvania, undergraduate students tuition pays more than 100% of the direct costs of a year of studies, as if there were no support for their education from state funds!

Summary

The most obvious conclusion from these data on resources and productivity in Teacher Education in 43 universities is that there are no patterns of relationships. The quantitative standard embedded in the accreditation standards of other professional disciplines assume that there is a necessary relationship between the resources provided a college and what it produces -- not only how much but, more important, the quality of the program. The data presented here show that there are great, unexplained disparities among all of the resource and productivity data for individual programs and clusters of universities. Not only are these obvious by regional clusters of universities, but the differences are often just as severe within a group of universities in the same state!

The root of the problem, as I have argued earlier (9), is in the fact that there is no effective legislative oversight to assure that universities use the funds appropriated by the legislature and collected from tuition in a manner consistent with the i tent of the authorization. This is a serious failure on the part of state government. It is also a failure of the Teacher Education profession itself. There is a lack of effectively coordinated influence on state legislators and university administrators, and, more importantly, the professional associations charged with leadership in the program --AACTE, NCATE, and NASDTEC. Further, Teacher Education continues an independent and sometime's hostile relationship with practitioners themselves -- NEA and AFT, principally. Our excessive concern with describing the characteristics and activities of quality preparation programs has stopped short of the corollary issue of what resources are necessary for developing and carrying out those programs.

III. Comparisons of Business Administration, Engineering, and Teacher Education

Data were obtained from a major public university, from which comparisons of the resource and productivity variables could be made between colleges of business administration, engineering, and teacher education. Prior to the analysis of the data, however, a discussion of the nature of teacher education in relation to other professional disciplines (business administraton, engineering, law, and nursing) will be developed.

The Nature of Teacher Education

The nature of an academic program provides evidence which influences decisions about its relative complexity and, consequently, its need for faculty, support staff, materials, and other resources. Accreditation standards for the various

academic disciplines include extensive descriptions of curriculum, faculty, students, facilities, equipment and technology, didactic and clinical relationships, etc. The National Council for the Accreditation of Teacher Education (NCATE) and each State Department of Education's review of Teacher Education certification programs include frameworks for explaining the nature of program specializations and methods for verification of their existence and quality. Similar standards, criteria for assessment, and verification procedures exist for other disciplines: Business Administration, Dentistry, Engineering, Law, Medicine, and Nursing. An analysis of the condition of a given program and its relative quality rating cannot be done independent of its expected standards, an institutional self-study report, and a site visit by an evaluation team.

Every professional preparation program requires three sectors of academic and clinical studies: (a) general liberal arts, (b) academic majors and minors, and (c) professional area studies which include both theoretical and applied (clinical) experiences.

General Liberal Arts

University-level studies are required in all professional fields to broaden and extend the cultural preparation of the student, and to provide prerequisite learning to the more specialized and advanced studies in the professional field. Thus, English, social sciences, laboratory sciences, mathematics, and other disciplines contribute to extend the general learning of the student. These advanced general studies are normally completed within a division of Arts and Sciences in our universities.

Academic Majors and Minors

Some students complete academic majors within the core disciplines, such as mathematics, biology, or sociology. The medical and law schools normally require an undergraduate degree in a relevant academic major as a prerequisite to admission to the professional school. In the case of Teacher Education, those who prepare to be secondary school teachers must have the equivalent of an academic major.

Most of the professional school have majors which are a combination of advanced studies in the core disciplines and a sequence of studies within the professional school. Specialized courses in mathematics applied to a field of work are developed and offered within the professional schools. Concentrations of studies in either the core disciplines or within the professional

schools are required to support the professional preparation. These minor concentratons require from 12 to 18 semester hours of coursework. All of the professional fields, including Teacher Education, have such requirements.

Every professional school includes in its curriculum sequences of studies which concern the history of the profession, theoretical and specialized knowledge related to that field but derived from the core disciplines, experiences taught within laboratory conditions, and practical orientation and experience. These three curriculum aspects differentiate Teacher Education just as they do other professional programs.

Clinical Experiences

Each professional school also includes clinical experiences where students work with faculty and practitioners to translate learning to application.

--Business Administration uses case studies, modeling and stimulation, and occasional co-op assignments or internships.

--Education requires undergraduates to have numerous classroom visits as observers prior to a full semester or quarter of supervised student teaching. In the student teaching, the pre-service teacher is guided by a master teacher and a university faculty member from the planning and teaching of individual lessons to full responsibility for the classes for several weeks.

--Engineering education includes extensive electrical, electronics, thermodynamics, and materials laboratories. Field trips provide observation experiences. The highly successful co-op programs in Engineering enable students to work with practicing engineers, and relate studies to practice.

--Law Schools use the preparation of briefs, moot court, and law clerk assignments with legal firms to provide clinical learning.

--Medicine, Dentistry, and other health professions have curricula saturated with faculty-supervised clinical work, plus an extensive supervised internship.

The clinical experiences serve two functions within the professional preparation programs. First, faculty often have not been practitioners for some time. Their teaching often centers more on the conceptual, theoretical, and research base related to the field of knowledge than on its application. Second, the student learns as early as possible through clinical experiences how professionals in that field work and how the academic preparation contributes to their work.

The clinical dimension of Teacher Education is a critically important phase of the preparation program. The NEA (9) criticizes most current Teacher Education programs, and calls for field-based experiences beginning with the first education course and continuing throughout the entire program. Experiences should be sequenced, starting with observations, then working under direct faculty supervision, in teams, and independently. Recommended field-based experiences include numerous options under observation, microteaching, case study development, translation of theory into practice, curriculum design and development, instructional teachnology experiences, and classroom management and teaching. These clinical experiences are more costly than didactic courses in Teacher Education just as they are in other disciplines because they require more direct one-to-one supervision between student and faculty, more involvement of professional practicioners, higher costs for materials and travel, etc. The clinical experiences have been the most abused and neglected components of Teacher Education programs.

Comparisons of Resources and Productivity

The following graphs compare seven resource variables and eight productivity variables between the Colleges of Education, Engineering, and Business Administration in a major public university. Data are for the 1983-84 fiscal year (fall semester 1983 and spring and summer semester 1984). While these data are from only one university, it is possible that they are typical of the relative resources and productivity in other universities. However, it is recommended that data be gathered from a large number of institutions for comparison between these disciplines, before such a definitive judgment can be made.

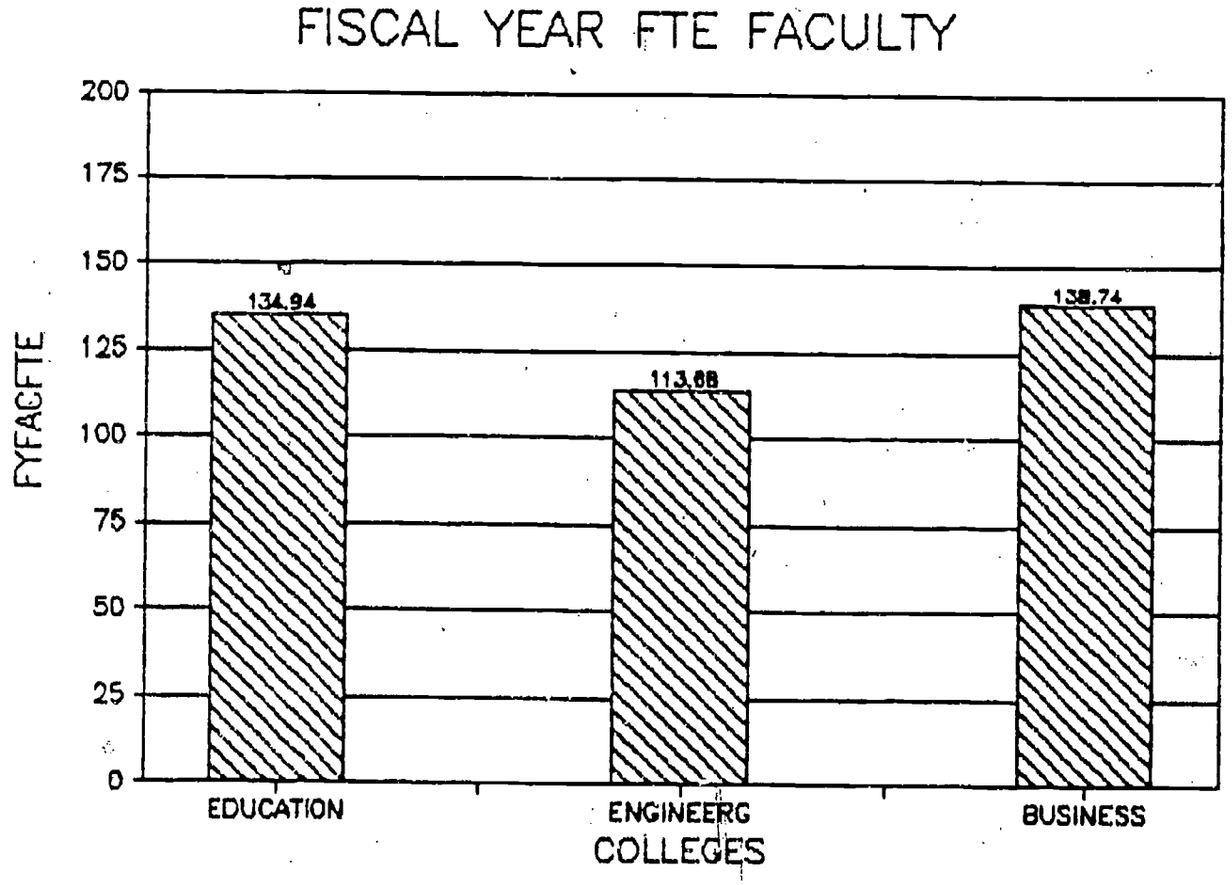
Resource Variables

The seven resource variables are:

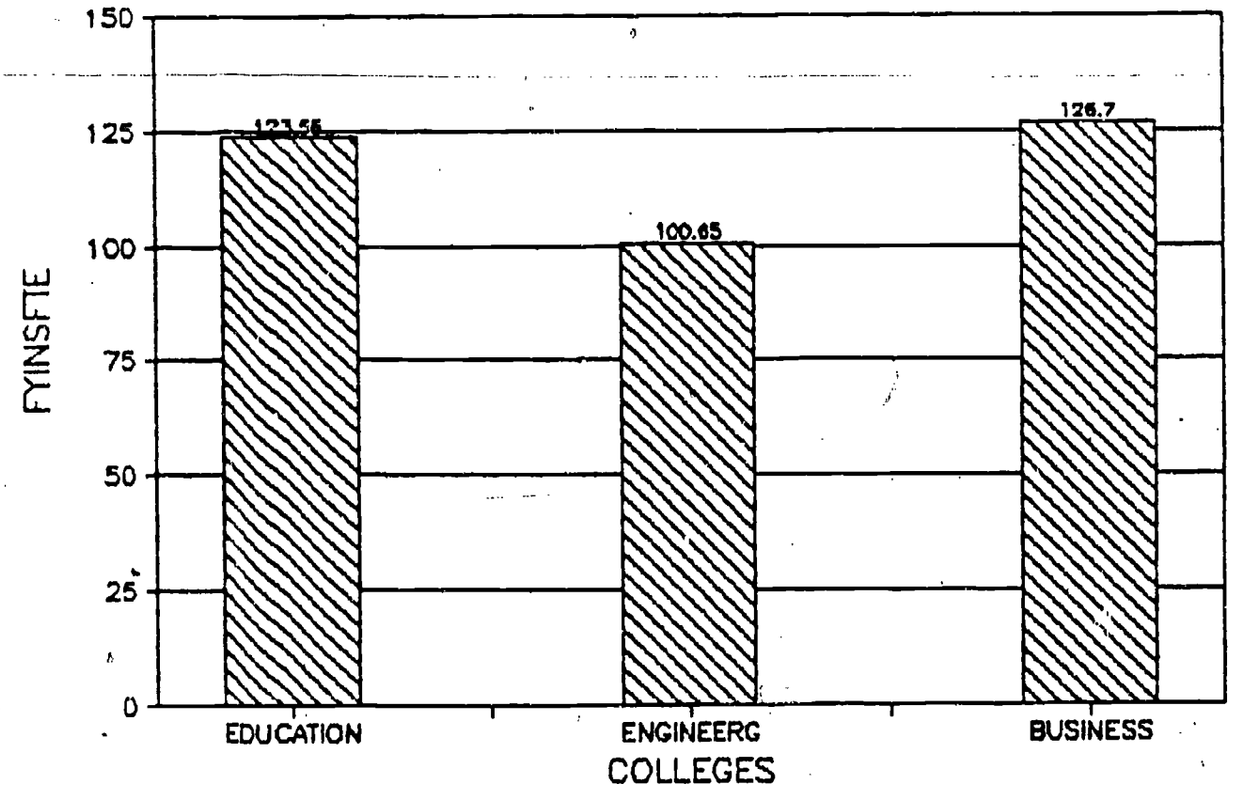
FISCAL YEAR FTE FACULTY (including instruction, administration, service research)
FISCAL YEAR FTE INSTRUCTIONAL FACULTY
AVERAGE FACULTY ACADEMIC YEAR SALARY (full professor)
OPERATIONS FUNDS PER FTE FACULTY (for telephone, supplies, departmental publications, travel, etc.)
UNIVERSITY FUNDS PER FTE FACULTY (includes entire university-suppled college budget)
FTE FACULTY TO FTE SUPPORT STAFF RATIO
AVERAGE FTE GRADUATE ASSISTANT SALARY

Fiscal Year FTE Faculty

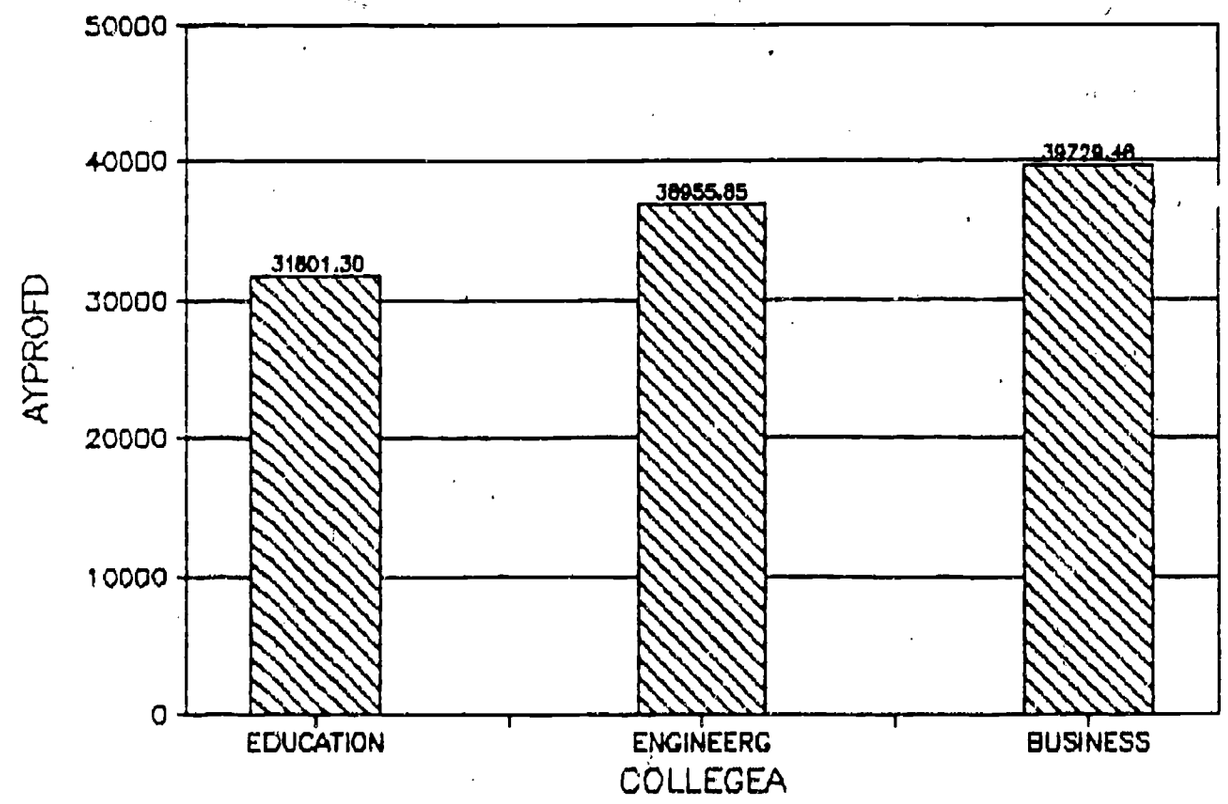
The College of Education had about two fewer FTE faculty than Business, and 21 more than Engineering. When only FTE instructional faculty were counted, Education had three fewer than Business, and 23 more than Engineering.



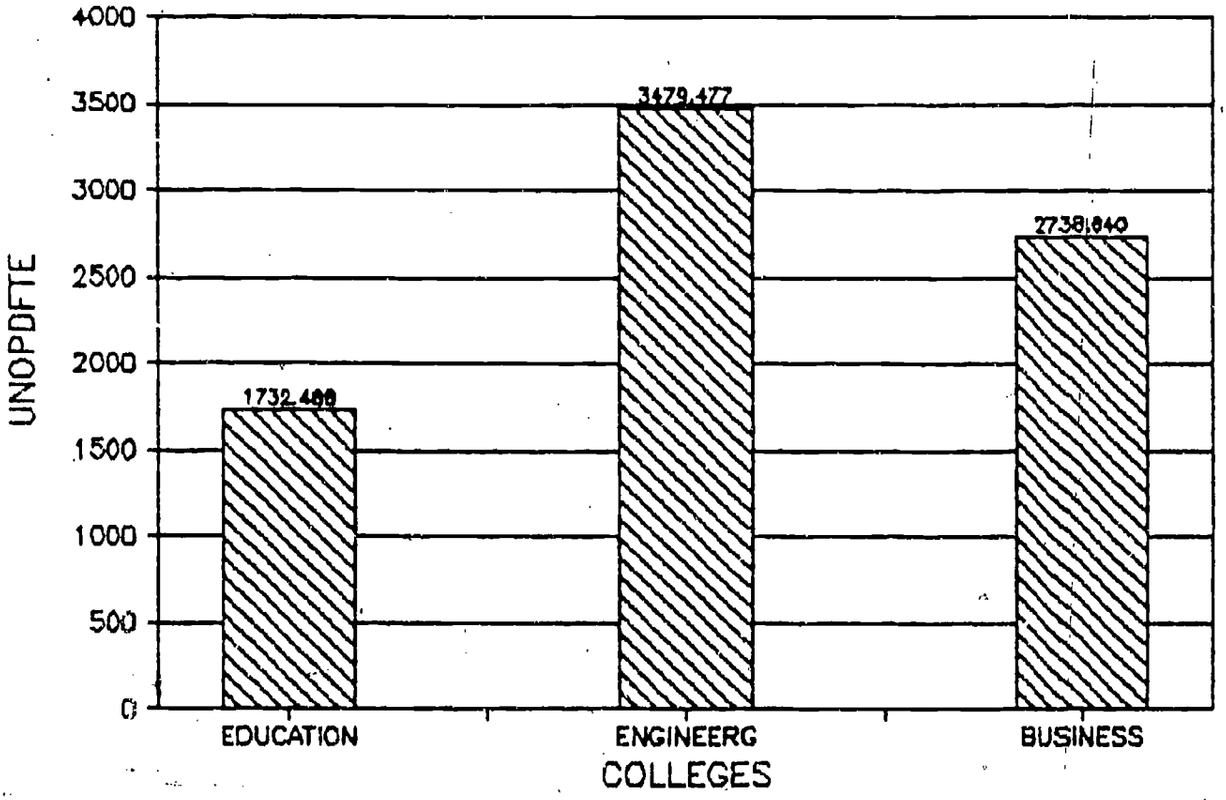
FISCAL YEAR FTE INSTRUCTIONAL FACULTY



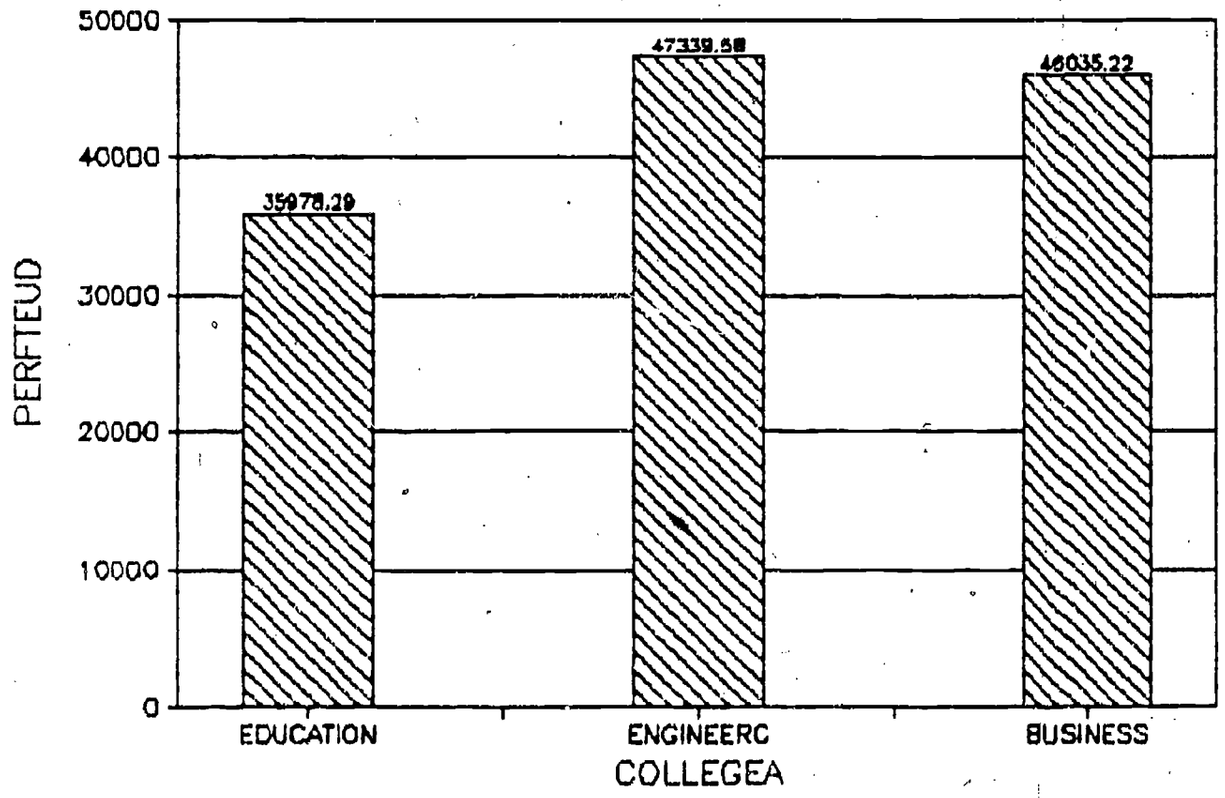
AVERAGE FACULTY ACADEMIC YEAR SALARY



OPERATIONS FUNDS PER FTE FACULTY



UNIVERSITY FUNDS PER FTE FACULTY



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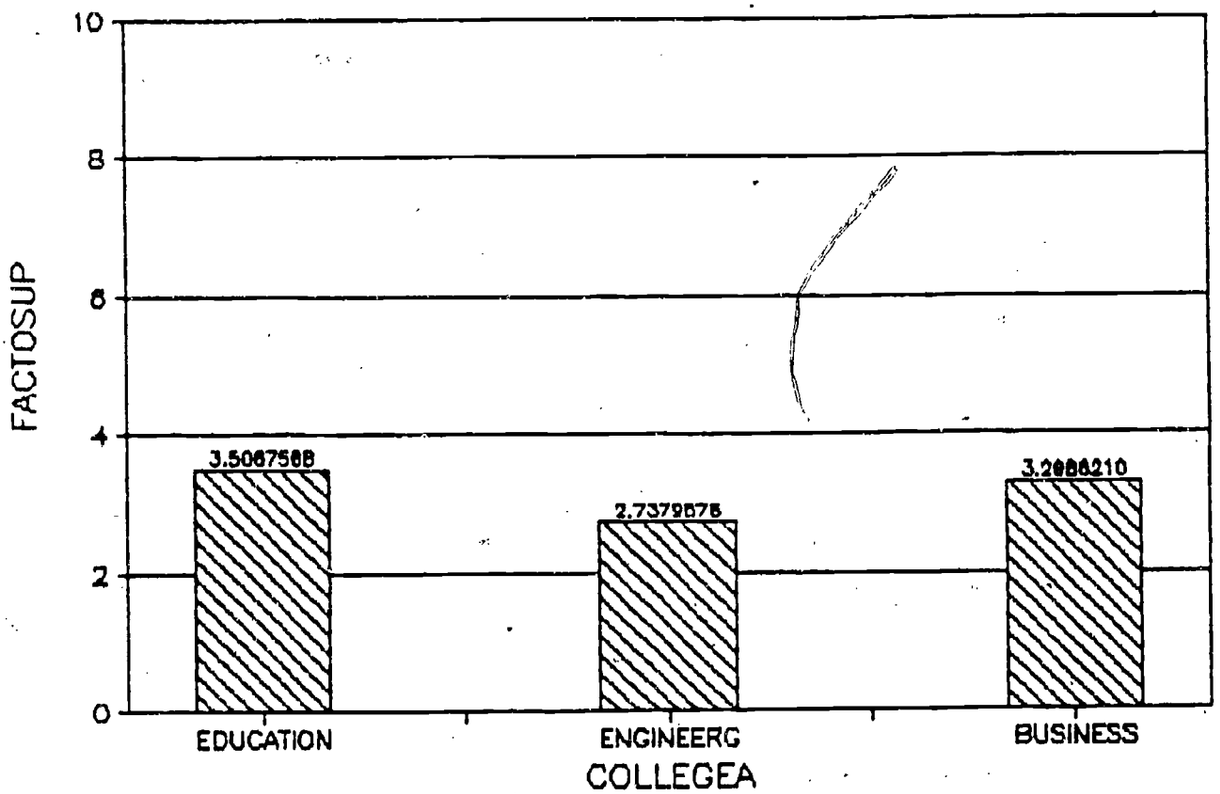
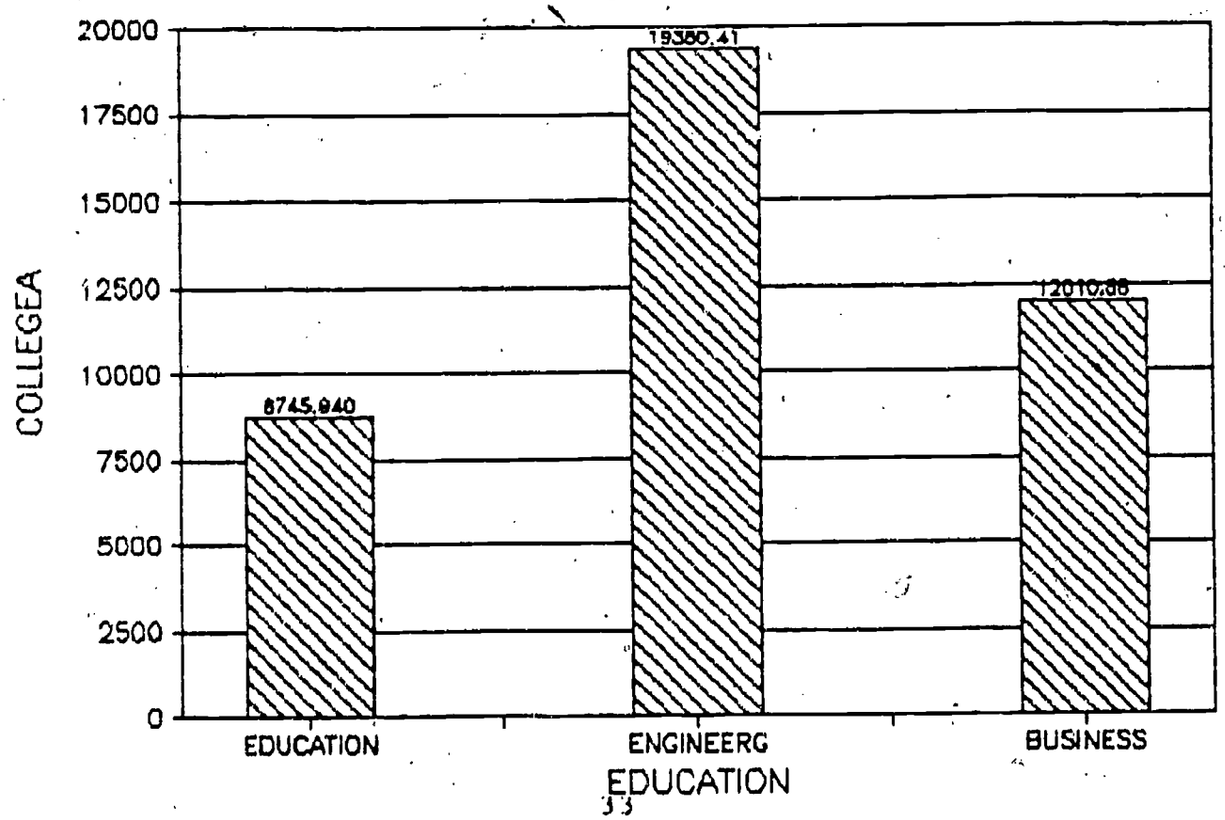
FTE FACULTY TO FTE SUPPORT STAFF RATIO



AVERAGE FTE GRADUATE ASSISTANT SALARY



Faculty Salaries

The mean salary for full professor's in Education was $5155 less than for Engineering and $7,927 less than for Business.

Operations Funds per FTE Faculty

Education faculty had less than half the funds provided to Engineering faculty to support their needs, such as supplies, communications, travel, and departmental publications. Business faculty had 58% more than Education faculty.

University Funds per FTE Faculty

The total college budget, divided by the total FTE with faculty rank shows that Education had only 69% as much as Engineering faculty and 73% as much as Business faculty.

Faculty to Support Staff Ratio

The Education faculty have the highest ratio of faculty to support staff. Although those differences are small in number, it means that less services -- primarily secretarial -- are available to assist faculty. In this case, there was little difference between Education and Business. The primary difference was with Engineering, which employs a number of technicians to maintain laboratory equipment, and who are counted in the support staff category.

Graduate Assistant Salaries

Most graduate assistants have half-time (.5 FTE) appointments; therefore, one FTE would be two graduate assistants with half-time appointments. The salaries of a full-time graduate assistant in Engineering were 121% more than for Education; graduate assistants in Business were paid 37% more than in Education.

Productivity Variables

The following eight variables represent what these three colleges produced with the resources they had available. The productivity variables are:

TOTAL FTE STUDENTS (derived by the formula explained earlier)
FTE FACULTY TO FTE STUDENT RATIO
WEIGHTED CREDIT HOURS PRODUCED (credit hours for 12 months multipled by the different weights in Appendix B).
WEIGHTED CREDIT HOURS PER FTE FACULTY
PROGRAM COMPLEXITY INDEX (weighted credit hours divided by unweighted credit hours)
GRAD 2 WEIGHTED CREDIT HOURS AS % OF TOTAL (as % of total weighted credit hours produced)
COST PER WEIGHTED CREDIT HOUR (total weighted credit hours produced divided into the college budget)
TUITION AS PERCENT OF COST (academic year tuition divided into the cost of 30 WSCH times the weights by academic discipline).

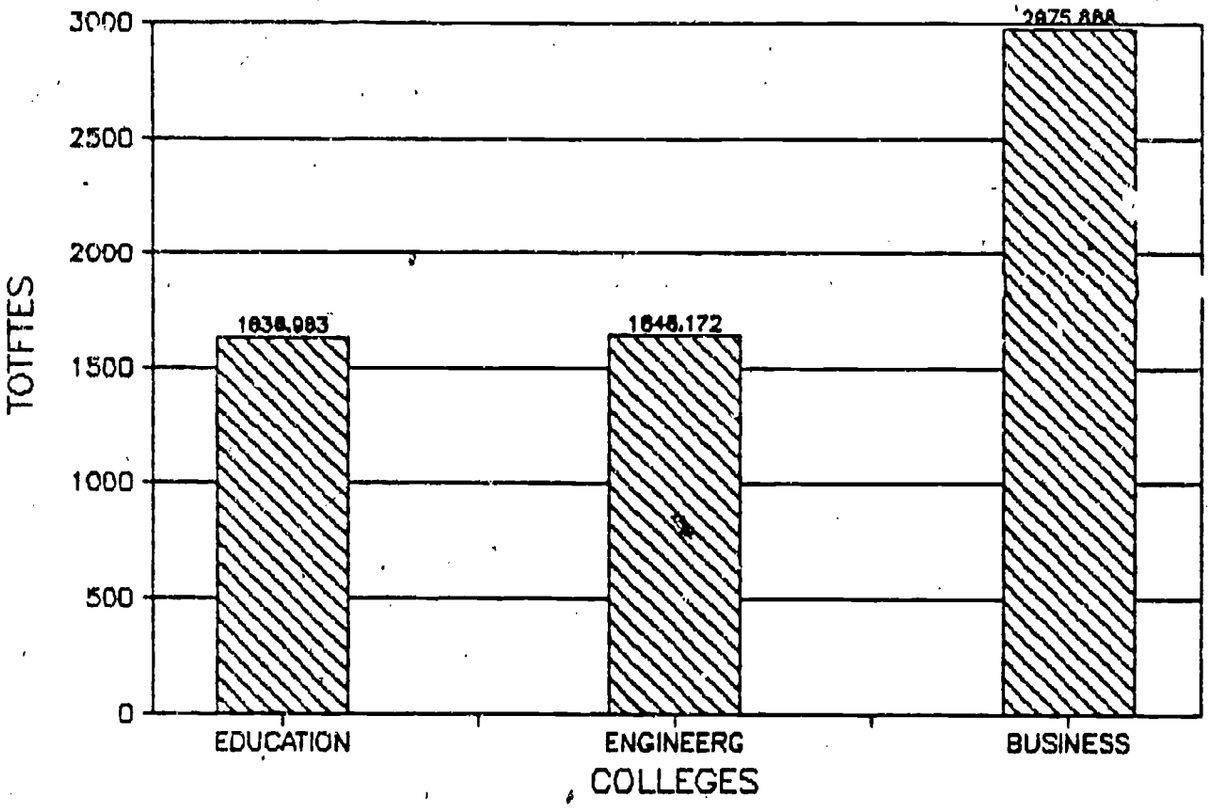
TOTAL FTE STUDENTS

The College of Education had 10 fewer FTE students than Engineering, but 1049 fewer than Business.

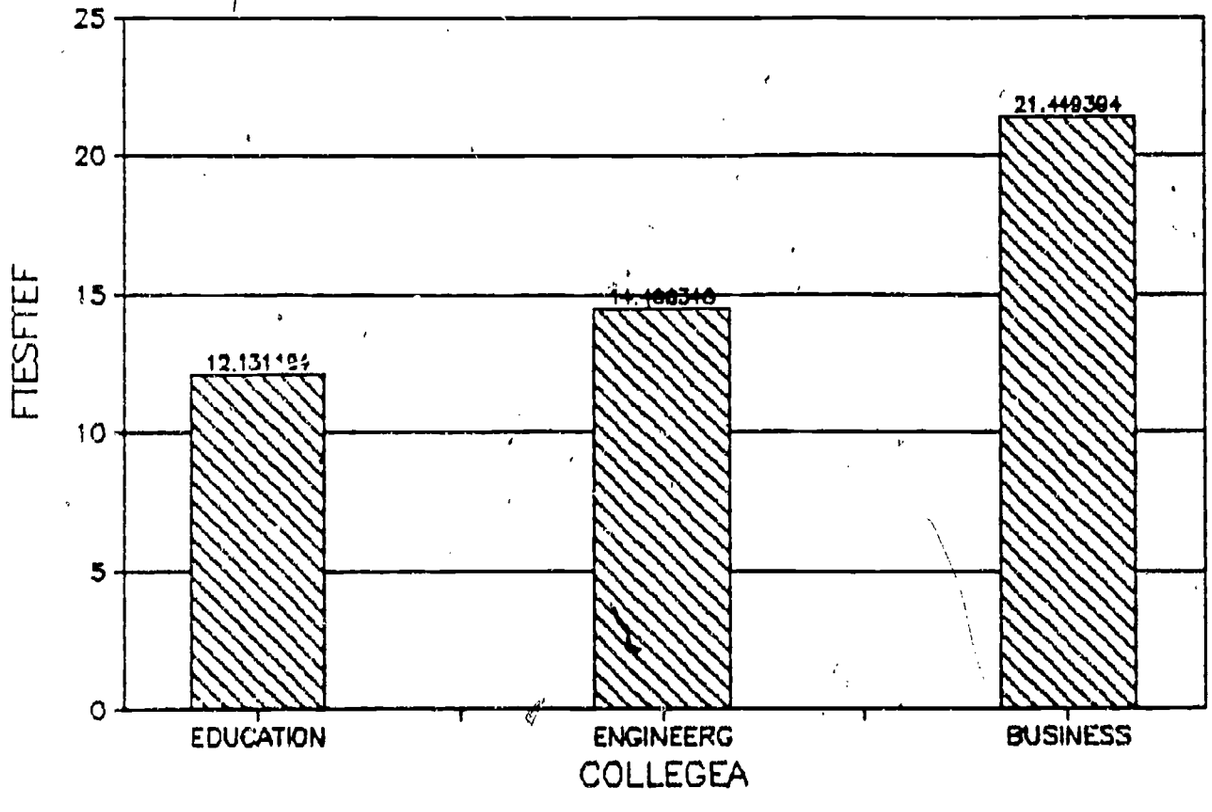
FTE Faculty to FTE Student Ratio

Along with many more FTE students, Business also had a much higher faculty:student ratio-- 9 more per faculty than in Education and 7 more than in Engineering. It must be noted, however, that Education has a much higher proportion of graduate students than the other two colleges. In some professional discipline's accreditation standards, for example, the maximum ratio of doctoral level students to FTE faculty is set at 7:1 or fewer.

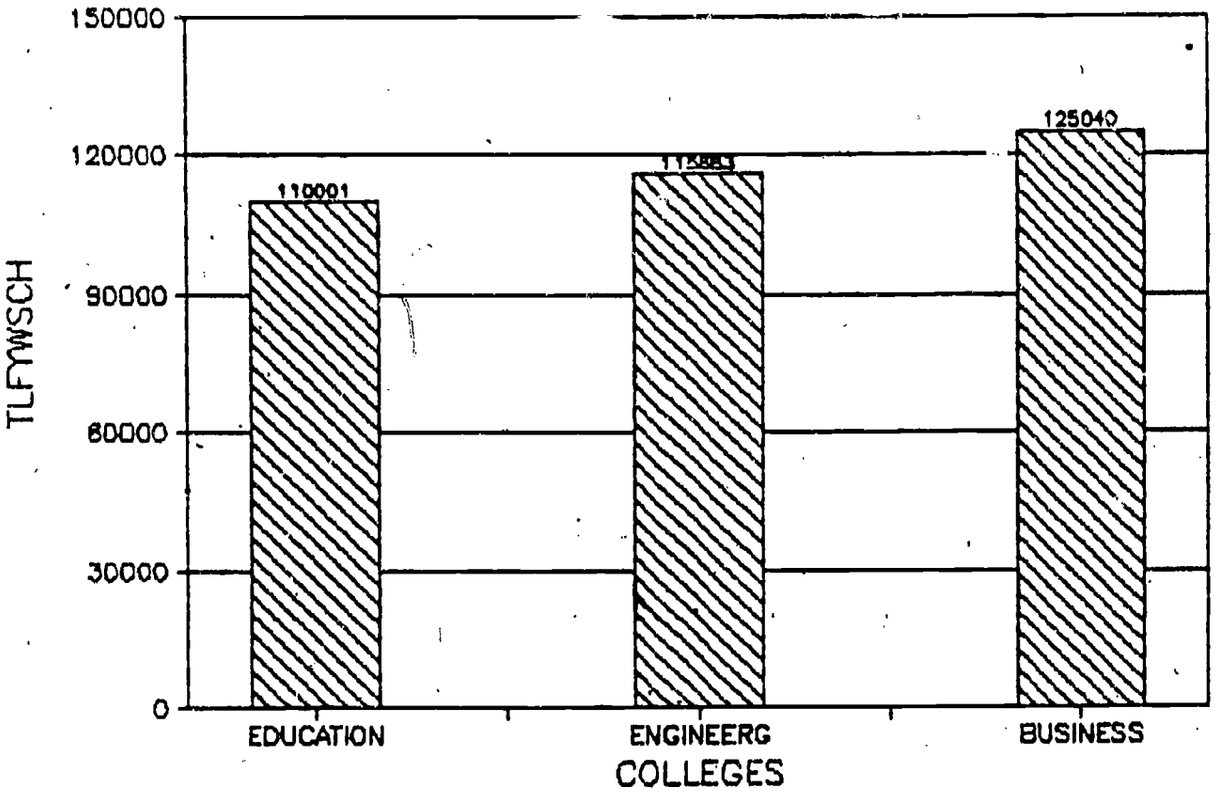
TOTAL FTE STUDENTS



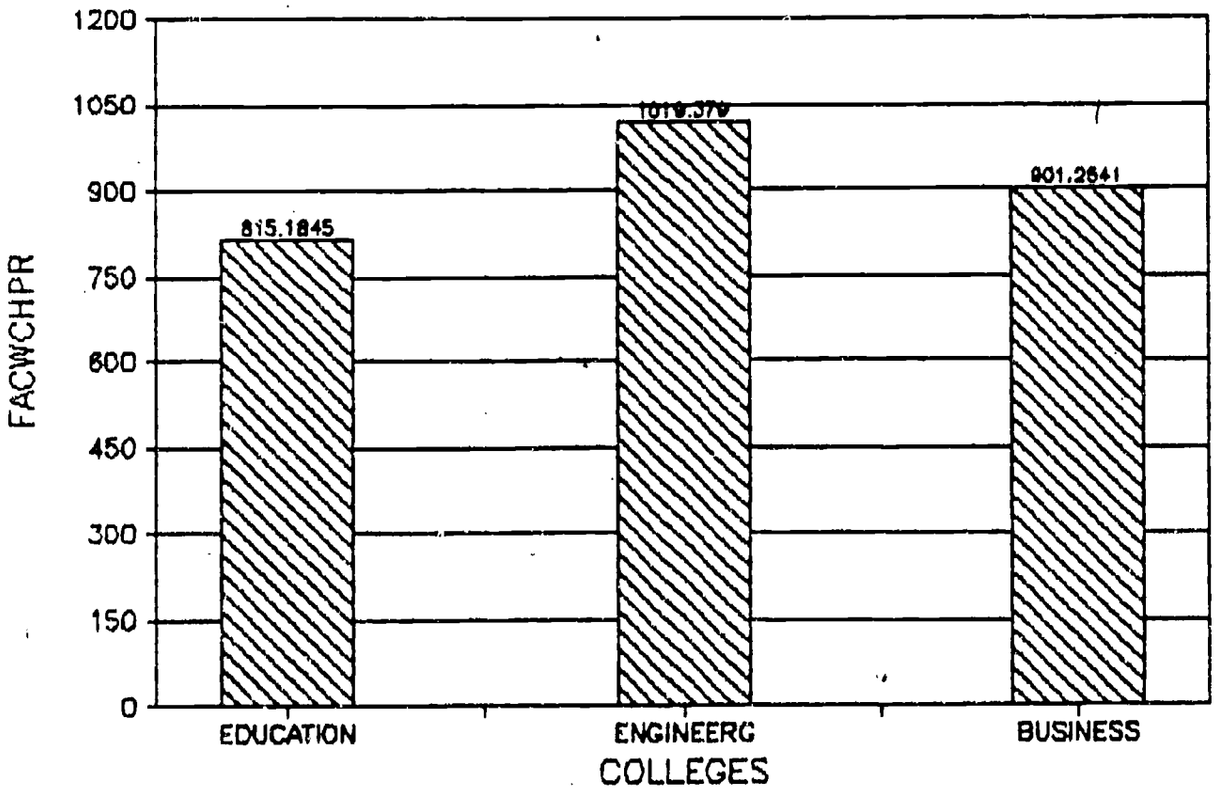
FTE FACULTY TO FTE STUDENT RATIO



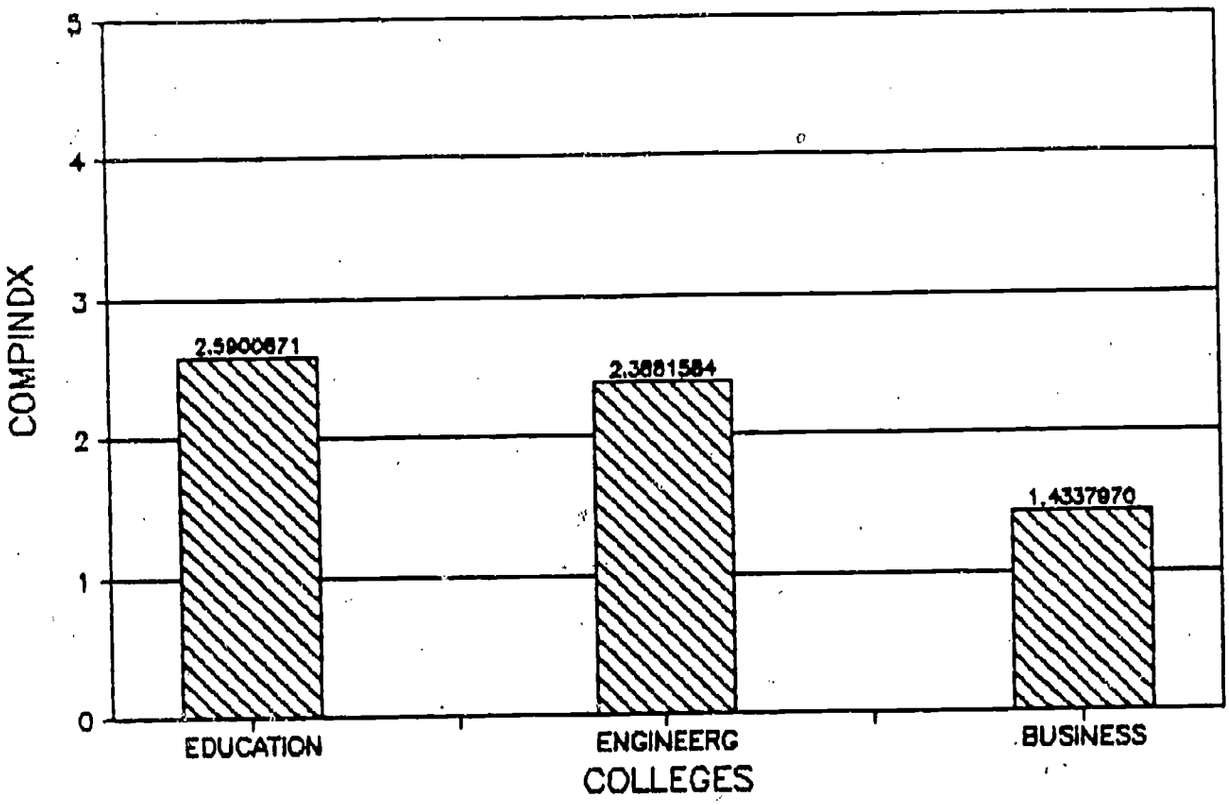
WEIGHTED CREDIT HOURS PRODUCED



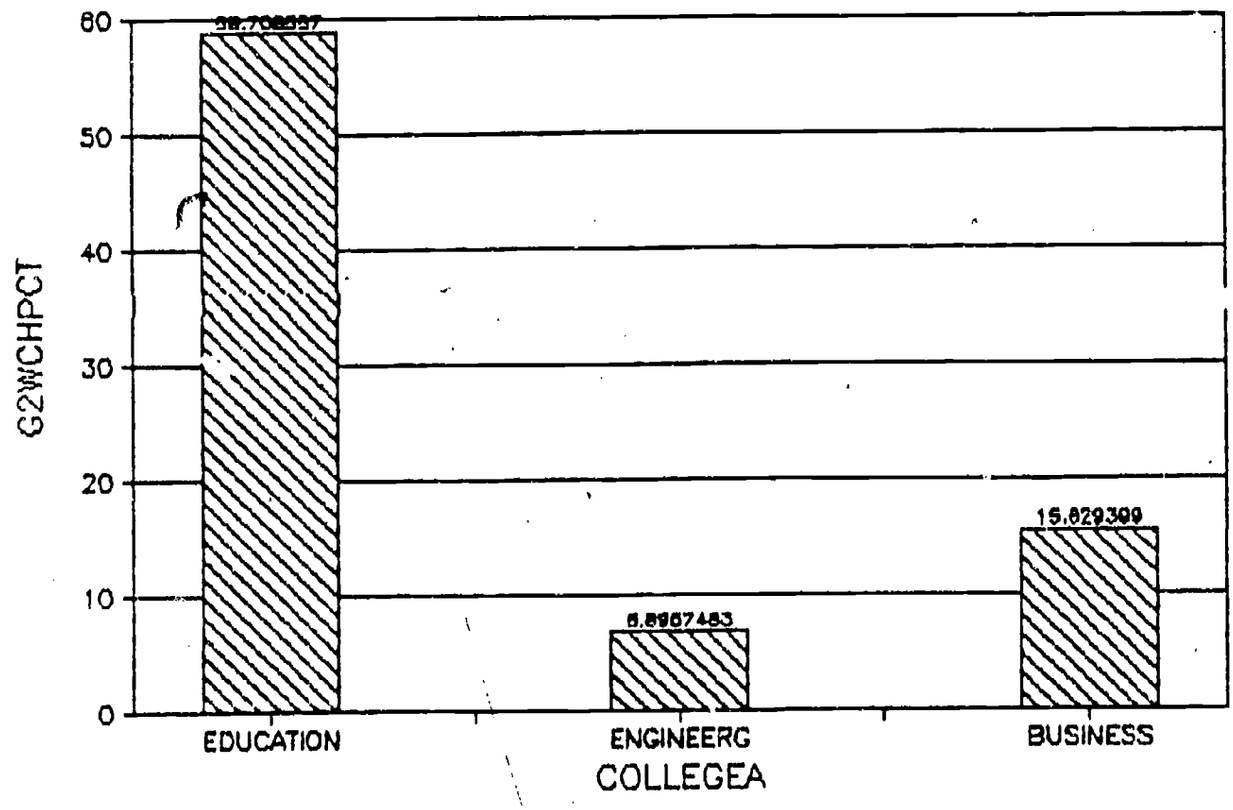
WEIGHTED CREDIT HOURS PER FTE FACULTY



PROGRAM COMPLEXITY INDEX



GRAD2 WEIGHTED CREDIT HOURS AS % OF TOTAL



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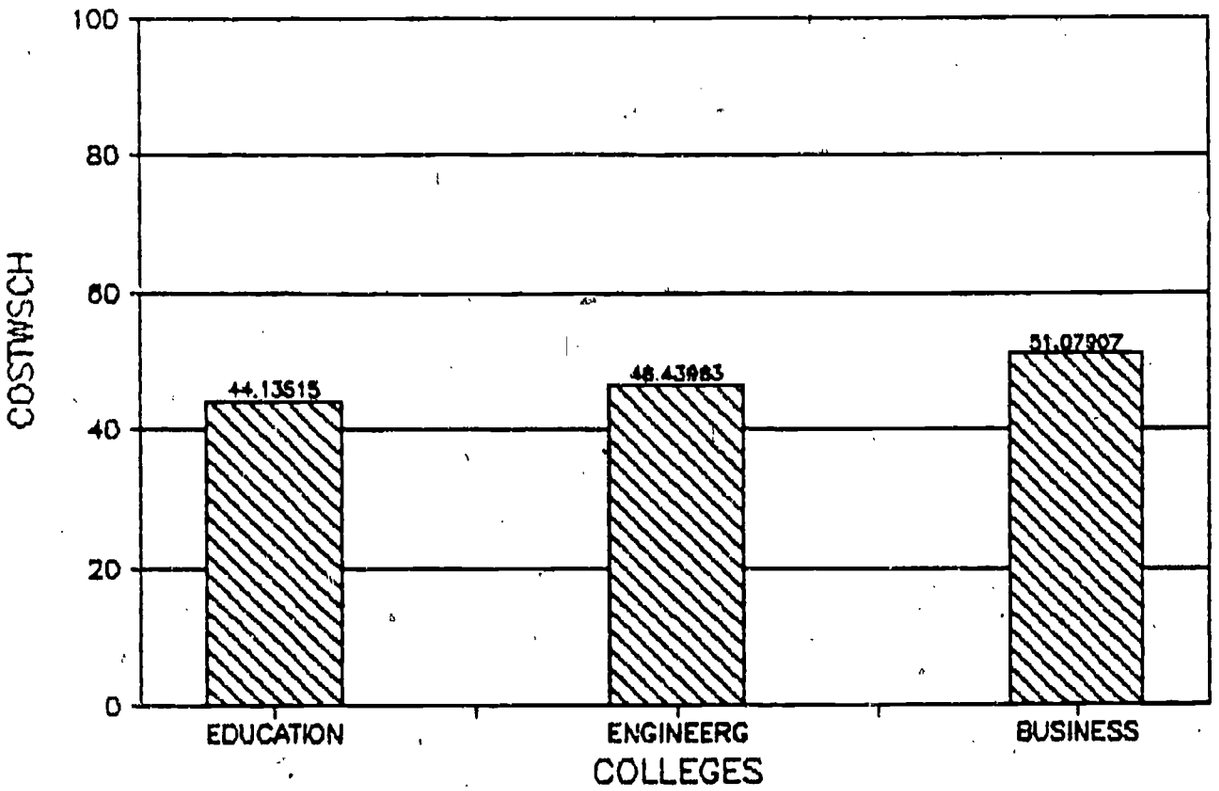
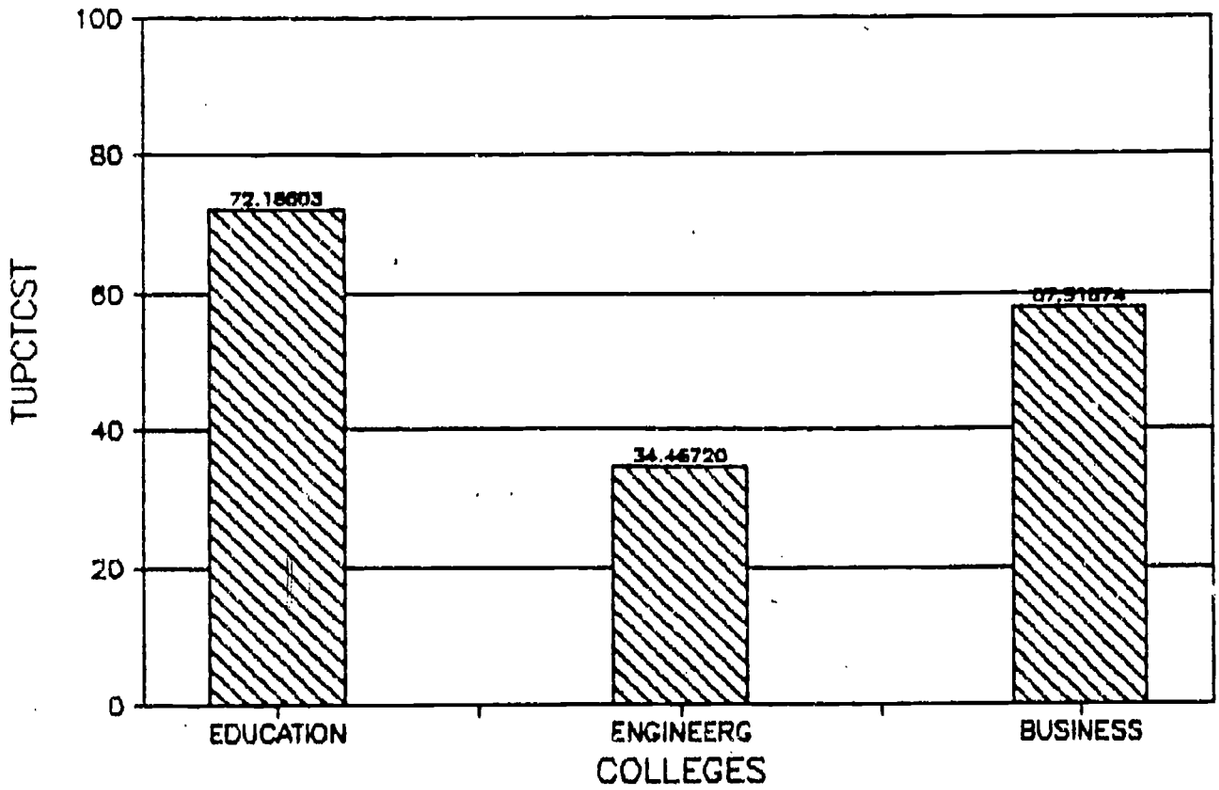
COST PER WEIGHTED CREDIT HOUR



TUITION AS PERCENT OF COST



Weighted Credit Hours Produced

The total unweighted credit hours produced during 1983-84 was multiplied by the appropriate weights by discipline and level, as shown in Appendix B. Business produced 7% more than Engineering and 13% more than Education.

Weighted Credit Hours per FTE Faculty

The weighted credit hours produced were divided by the FTE faculty for each college. Engineering produced 25% more WSCH than Education and 13% more than Business.

Graduate 2 Weighted Credit Hours as % of Total

Graduate 2 credit hours are post-master's level. When the weights were multipled by the credit hours by level for each of the three colleges and the weighted credit hours summed, Education had an overwhelming 57% of their total at the graduate 2 level. Engineering had about 7% and Business had almost 16% of their total at the graduate 2 level.

Cost per Weighted Credit Hour

The total weighted credit hours were divided into the total budgets (university-supplied funds only) for the three colleges. The cost per weighted credit hour for Business was 9% higher than for Engineering and 15% higher than for Education. Under true equity, all of the costs should be the same, since the differential weights are applied after this basic cost per WSCH is calculated. Any initial differences will be exacerbated after the weights are applied, for example:

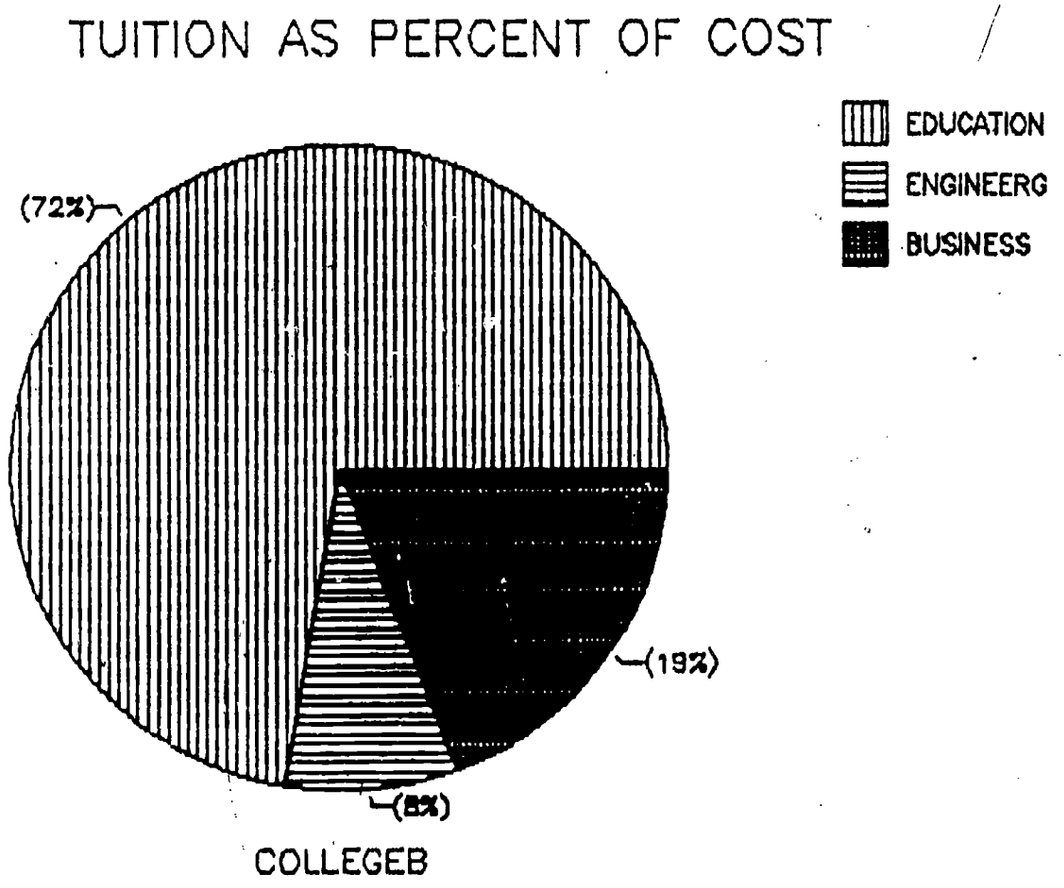
Education:	$44.13 x 1.04 = $45.98
Engineering:	$46.44 x 2.07 = $96.13
Business:	$51.08 x 1.12 = $57.20

If the basic initial cost had been equal among the three colleges, then the cost (using the Education WSCH as a base) would have been $45.89 for Education, $91.34 for Engineering, and $49.42 for Business. Instead, because of the initial differences, Business had 109% more funds, rather than 7% more as intended in the formula, and Engineering had 10% more. The latter may seem trivial, but when multiplied by the total WSCH the amount is more than $555,000 for Engineering and more than $972,000 for Business.

Tuition as Percent of Cost

Because the resources available to Education were so deficient, the cost per weighted credit hour was less, and, consequently, Education students pay a much greater proportion of the direct costs of their program from their tuition payments. Nationally, tuition pays for about 60% of the direct cost of an undergraduate student's program. In our case here, Engineering student's tuition paid for 34% of their program's direct costs; Business students paid almost 58% of their program costs by tuition, and Education students paid more than 72% of their direct program costs from tuition.

When the tuition (as a portion of program direct cost) burden is aggregated, almost three-fourths of that burden falls upon Education students, as shown in the pie chart which follows. The root of the problem lies in the initial weighted credit hour cost discrepancy. It is manifested not only in this excessive tuition burden on Education students, but also in the inadequacy of support staff available to assist program faculty, numbers and salary for graduate assistants, faculty load and productivity, faculty and support staff salaries, critical shortages of operations funds, and all resource variables necessary to produce quality programs and graduates.



IV. Conclusions and Recommendations

A devastating criticism of the caliber of teacher training and certification was recently published by the National Center for Education Information (11). The author demonstrates gross inconsistencies among the states in teacher education entrance and exit exams, certification requirements, and the issuing of substandard certificates. Despite dramatic decreases in teacher education enrollments across the nation, there continues to be far too many programs to meet the demands of the job market. The most pervasive characteristic of teacher education programs is that they are "low-cost." The data from my national study confirms that. Moreover, for each of the seven years of my studies, the average direct cost of a year of undergraduate teacher education has only been from 57% to 81% as much as for a public school child in third, seventh, or eleventh grade. Finally, my data are provided by the senior state universities and land-grant colleges, which are probably much better off than other colleges and universities.

The problem of creating and providing high-quality preparation programs for the professionals needed by society is enormously complex. The beginning -- and necessary -- prerequisite to that task is having adequate resources. My interpretation of the data on teacher education is that evidence on resources and productivity is like a quilt, made up of scraps of left-over fabric. There are no consistent patterns -- not even within individual states. The funds appropriated by the state legislatures to public colleges and universities are based on the good-faith assumption that students will have at least minimally adequate resurces, and, therefore, minimally qualitative programs, regardless of which public university they attend or which college major they choose. That good-faith assumption is made by legislators, and university administrators are the recipients of that trust.

Since there are no quantitative standards for teacher education, rigidly enforced by the accreditation agencies, who decides how much a program should have to support faculty attempts to provide quality programs? University administrators do. Without any standards, the resource allocation process within universities is left to the whims and biases of those administrators. The result is that one teacher education has several times more resources per unit of productivity (weighted credit hour, or FTE student, or faculty load, for example) than another university in the same state. These gross discrepancies are obvious within a particular university, also. Teacher education programs <u>are</u> "low-cost," because they are perceived to be so by those who allocate the money, because they <u>have</u> been so in the past, and because there are no quantitative resource or productivity standards to constrain the choices available to

those administrators. The cap of the dilemma is that the state does not audit the universities to uncover gross inequalities and inadequacies in sharing resources among programs.

The teacher education profession -- most notably NCATE -- has shunned the issue of resource and quality relationships as if demanding evidence of resource adequancy and equity might be interference in our universities' internal affairs. The other professional school accreditation agencies do not avoid that issue, and a program's resources are considered fundamental in its quality assessment.

Nor is the lack of a clear understanding of resource requirements a sufficient excuse for examining them and reaching some decisions. If a reasonable set of quantitative resource standards means that half of our teacher education programs would fail to meet them, then so be it. Teacher education programs have existed at a poverty level for so long that many believe it to be a normal condition.

Perhaps we might have the courage to adopt these resource standards options as a beginning:

1. The institution must allocate funding to the teacher education unit based on a formula of credit hours produced, with those credit hours differentially weighted by academic field and level. The weighting formula must have a least the following minimums:
   -general university studies (English, math, history, etc.) with a base weight of 1.00
   -teacher education credit hours weighted at 1.50 for undergraduate didactic courses, 2.50 for clinical, 2.50 for first-year graduate, 5.00 for sixth-year and specialist programs, and 8.00 for the doctoral level.

2. The institution must demonstrate that funding for the teacher edu ation programs is in some consistent relationship with other academic divisions in the institution and with an identified cluster of at least 10 teacher education programs in peer institutions.

3. Internally within the teacher education unit, resources must be distributed in a similar relationship to the distribution in those peer institutions, including faculty salaries, support staff, funds for operations, capital outlay, sabbaticals, and other faculty development activities.

4. Institutions which do not meet these minimum resource standards for their teacher education programs should terminate those programs.

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APPENDIX A

ACSESULGC ANNUAL STUDY OF TEACHER EDUCATION
PARTICIPATING UNIVERSITIES
AACTE REGIONS II, III, AND V
1982 - 1983

REGION II

University of Alabama
Auburn University
University of Florida
Florida Altantic University
Florida State University
University of Georgia
Georgia State University
Memphis State University
University of Mississippi
University of North Carolina/Chapel Hill
North Carolina State University
University of North Carolina/Greensboro
University of South Florida
University of Southern Mississippi
University of Tennessee
University of Virginia
Virginia Polytechnic University

REGION III

Ball State University
University of Cincinnati
Indiana State University
Indiana University
University of Kentucky
University of Louisville
Miami University of Ohio
Ohio State University
Ohio University
Penn State University
University of Pittsburgh

REGION V

East Texas State University
University of Houston
University of Kansas
Kansas State University
Louisiana State University
University of Missouri/Columbia
University of Missouri/Kansas City
University of Misouri/St. Louis

REGION V (Con't)

University of New Orleans
North Texas State University
University of Oklahoma
Oklahoma State University
University of Texas
Texas A & M University
Texas Tech University

APPENDIX B

FUNDING FORMULA WEIGHTING FACTORS*

ACADEMIC SUBDIVISIONS	COMPLEXITY INDICES		
	UNDERGRADUATE	GRADUATE 1	GRADUATE 2
1. Business	1.12	3.27	13.45
2. General	1.00	2.73	10.33
3. Education	1.04	2.30	8.79
4. Nursing, Health	2.74	4.94	17.60
5. Engineering	2.07	5.46	17.60
6. Fine Arts	2.09	4.95	17.71
7. Home Economics	1.39	3.34	9.31
8. Science	1.29	5.36	17.60
9. Military Science	0.12	--	--
10. Law	--	1.75	--
11. Architecture	1.67	4.79	16.52
12. Agriculture	1.51	4.57	16.52
13. Veterinary Medicine	--	5.77	20.53
14. Pharmacy	2.07	5.06	14.09
15. Interdisciplinary	1.26	3.23	10.33

*Weighting factors as used in the Texas and Alabama Formulas.