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**RESOURCE ALLOCATION PATTERNS AT U.S. COMMUNITY COLLEGES--
AN EVALUATION OF PRIORITIES, EFFICIENCY AND
THE HISTORICAL MISSION 1981-82 THROUGH 1986-87**

by

DOUGLAS B. MORRISON

A dissertation submitted in partial fulfillment of the
requirements for the degree of

**DOCTOR OF EDUCATION
in
EDUCATIONAL LEADERSHIP: POST-SECONDARY EDUCATION**

Portland State University

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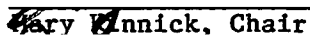
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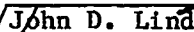
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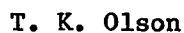
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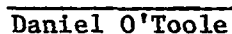
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Over a six-year period, this study compares the demonstrated priorities and efficiency of 328 U.S. community colleges to the historical mission of community colleges which includes the goals of

unrestricted student access, service to many students, and the delivery of comprehensive, high-quality, low-cost educational programs.

Sample data was provided by NACUBO for 328 institutions (out of a U.S. population of 770) reporting in both 1981-82 and 1986-87. The study compares the 1986-87 resource allocation patterns for each institution to the 1981-82 patterns for that same institution. Measurements include the level, mix, and rate of change in F.T.E. student enrollments, square footage, market penetration, the number of full-time faculty, F.T.E. faculty, support staff, and expenditures for Direct Instruction, Instructional Support, Student Services, Institutional Support, and Plant Operations.

Summary data is presented for the sample as a whole and separately by state for institutions with enrollment growth and for institutions with enrollment decline.

Over the six-year period, sample institutions received \$1.4 billion in incremental revenues. Classroom teaching received 43.1¢ of every incremental dollar, ranked fourth out of five expenditure categories in rate of expenditure growth and fell from 50.5% of total expenditures to 48.4%. Square footage and F.T.E. support staff increased 9.3% and 13.2% respectively while F.T.E. student enrollments and the number of full-time faculty declined 2.9% and 2.4% respectively. By 1986-87 fewer F.T.E. students and a smaller percentage of service area populations were served by fewer full-time teachers, at higher cost by substantially more square footage and support staff. The study concludes that these patterns are inefficient and inconsistent with the historical mission of community colleges.

Because of the magnitude and duration of the priority and efficiency changes and because institutions in all major states show great diversity in resource allocation patterns, the study concludes that the exercise of free will by local administrations and boards is primarily responsible for the changes.

The study calls for an explanation, increased accountability, and concludes that sample institutions can serve more F.T.E. students, at lower cost, using more full-time teachers and less square footage and support staff because they have done it historically.

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CHAPTER I

STATEMENT OF THE PROBLEM

This study is designed to provide community college board members, state legislators, and other interested parties with evidence demonstrating the specific priorities being pursued and the efficiencies being achieved by a large sample of U.S. community colleges. The determination of historical priorities and operating efficiency will be based on an evaluation of campus resource allocation patterns at two points in time, 1981-82 and 1986-87. In addition, this study will compare these demonstrated priorities and efficiencies to the historical mission of community colleges which is defined for purposes of this study to include the goals of unrestricted student access, service to many students, and the delivery of comprehensive, high-quality, low-cost educational programs.

At the broadest level, this study addresses three questions.

First, what are the demonstrated priorities of U.S. community colleges? The answer to this question will not be based on citations from community college literature, interviews with community college leaders, or a review of campus mission statements. It will be based instead on an historical examination of where community college campuses spent their money.

Second, have U.S. community colleges historically demonstrated efficient operation relative to student output? The answer to this

question will be based on an evaluation of the historical relationship between campus resource allocation patterns and student enrollments. The purpose is to determine if and where campus operating efficiencies are being achieved relative to student enrollments.

The third question is, to what extent are the demonstrated priorities and efficiencies consistent with the historical mission of community colleges? The answer to this question will be determined by an objectives-oriented evaluation of the consistency between campus resource allocation patterns and the historical community college mission.

Two factors differentiate this study from other efficiency studies found in the community college literature. First, the sample size is very large. Expenditure patterns will be examined for a sample of 310 campuses, student enrollments for a sample of 328 campuses, and staffing data for a sample of 228 campuses. The large national sample represents a departure from existing efficiency studies which are limited to individual states. Second, other efficiency studies do not compare operating performance to broad organizational objectives. This study does.

Evidence supporting the need for a comprehensive, long-term study of community college priorities and efficiency is presented throughout Chapters I and II.

This chapter begins with a discussion of the new and the historical community college mission. This is followed by a history of enrollment growth, a history of community college funding, calls for

limitations on the historical mission, and a summary of the need for answers to the three broad questions addressed by this study.

WHAT IS THE COMMUNITY COLLEGE MISSION?

Community college literature contains numerous references to the historical mission, calls by authors for limitations on that mission, and calls for a new and expanded mission. This leads to doubt about what specific priorities are actually being pursued by U.S. community colleges.

The New Mission

Tyree et al (1988), encourage community colleges of the future to broaden their historical mission statement in the interest of building communities. Their report includes approximately 80 specific priority recommendations. Community colleges are being asked to do more to reach out to disadvantaged students, increase student retention efforts, internationalize the curriculum, add to existing general education requirements, expand student recruiting, assessment, and remedial education, and to blend diverse student interests into a climate of community through expanded activities outside the classroom. The report states that an expansion of priorities is already underway at many campuses, and it encourages each campus to selectively adopt the specific priorities best suited to its needs.

We intend to find opportunities to share our findings and encourage community colleges to pursue recommendations in ways that fit the needs of each unique community. (Tyree et al, 1988, p.1)

The Historical Mission of Community Colleges

Tyree et al (1988) state that community colleges have historically been "bound together and inspired by common goals" (p. 5). These goals are specifically identified as serving many students, providing unrestricted student access, and offering quality education to all ages and social groups. The report also identifies teaching and learning as central to all community college activities.

We considered, for example, concentrating exclusively on teaching and learning, which established themselves early on as major thrusts of our report. (Tyree et al, 1988, p.1)

The report calls teaching and learning the "heartbeat of the educational enterprise" (p. 7). Community colleges have historically pursued the priority of teaching and learning primarily through offering a broad range of classes to students.

Most community college people tend to think of offering programs that can be categorized as transfer (first two years of college), terminal (vocational courses for recent high school graduates), and community service (vocational, avocational, and academic courses for those who are past the usual college age). (Garms, 1977, p. 32)

Garms is careful to point out that community colleges are not the only organizations offering post-secondary coursework. In his opinion, three special functions exist which make community colleges unique. The first special function is access for transfer students who, because of cost or location, would not otherwise be able to attend college. The second special function is to offer courses and programs not provided by four-year institutions, and the third special function is community service.

According to Garms (1977), low cost and a convenient location are part of the historical mission of community colleges. In the interest

of low cost, he argues for what he calls "intra-institutional efficiency" (p. 39). He encourages states to design funding models which will encourage individual campuses to deliver the maximum possible education at minimum cost.

Johnston (1980) expands the definition of access to include more than an open door and geographic accessibility. It includes specific efforts to facilitate individual student access including the scheduling of classes at convenient times and locations.

The underlying philosophy supporting the broad historical community college mission statement is summarized by the following quote:

In summary, the basic philosophy of the community college movement is found in the recognition of the fact that the community college is the logical and natural outcome of a long history in which the opportunities for increasingly more education, even universal education at public expense, have been vastly extended. Opportunities for universal education beyond high school can be realized only through a comprehensive curriculum, an open-door policy of admissions, and a community-oriented college in all its aspects and practices. (Monroe, 1972, p. 32)

As the preceding quote suggests, the historical mission statement is deliberately broad in scope. In summary, it includes the goals of unrestricted access, service to many students, and the delivery of comprehensive, high-quality, low-cost educational programs.

Based on student enrollment growth, the historical mission of community colleges has been enormously successful.

THE HISTORICAL GROWTH IN COMMUNITY COLLEGE ENROLLMENTS

The number of community college campuses increased from 640 in 1947 to 1224 in 1987. Over the same period, student headcount

enrollments rose from 497,065 credit students to 5,000,000 credit students, and, as of 1988, an additional 4,000,000 students were enrolled in non-credit courses. By 1988, 43% of all national undergraduate enrollments and 51% of national first-time entering freshman were enrolled in community colleges. (Tyree et al, 1988)

Within the community college segment of higher education, student enrollments are heavily concentrated in relatively few states. According to Breneman and Nelson (1981), in 1979 the seven largest community college states accounted for 60% of national community college headcount enrollment. In the same year, the seventeen largest community college states accounted for 83% of headcount enrollment and 65% of national community college campuses. These statistics show that the rapid historical growth of U.S. community colleges is primarily concentrated in seventeen states.

THE HISTORICAL GROWTH OF STATE FUNDING FOR COMMUNITY COLLEGES

Community colleges have historically drawn their operating revenues from student tuition and from Federal, state, and local governments. The proportion of total revenue contributed by state governments changed radically during the period 1958 through 1979. Some conflict appears in the literature with respect to the magnitude of this shift. Breneman (1981) shows the state's share of total community college financing increasing from 30.5% in 1958 to 49.8% in 1979. Cohen (1982) shows the state's share increasing from 29% in 1959 to 60% in 1980. While these authors disagree regarding the magnitude of the shift, they are agreed that a major shift has occurred. The primary

beneficiary has been local government which shows dramatic reductions in its proportional contribution to community college revenues.

In 1986, state appropriations accounted for almost half (48 percent) of the revenues received by community colleges; local government funding accounted for 23 percent; tuition accounted for 16 percent; and Federal funds accounted for 7 percent. (Tyree et al, 1988, p. 44)

Proportions do not adequately reflect the dollar magnitude of the increase in state support for community colleges. State dollar contributions to the support of community colleges rose from \$54 million in 1958 to over \$3 billion in 1980. (Breneman, 1981) This amounts to a 5700% increase in state support for community colleges.

In spite of the increase in state support for community colleges, Tyree et al (1988) characterize historical levels of community college funding as less than a fair share of state revenues.

...in too many states, community colleges receive the state's budgetary leftovers, and leftovers do little to help a long undernourished system. The nation will surely pay a price for such neglect. (Tyree et al, 1988, p. 45)

Terrey (1986) and Dennison (1987) voice similar complaints regarding the lack of adequate historical community college revenue. Because of finite resources, some authors foresee a need for limitations on the broad historical mission of community colleges.

Tension between mission and finance promises to become more pressing in the 1980's as resources for higher education become less plentiful. Institutional leaders will be forced to choose which activities are central to the college and which are of lesser importance. (Breneman, 1981, p. 80)

According to Breneman, a broad mission and finite resources will ultimately force a reduction in mission.

A second argument supporting limitations on the historical mission concerns educational program quality.

The "quality revolution" has provided challenges for the community college mission. Quality education, the critics charge, challenges the integrity of one or more of the four pillars of the community college mission: comprehensiveness, access, flexibility, and community centeredness. The argument is that the community college can not combine the open door (access) and quality; nor can the community college maintain a comprehensive program and maintain quality. Only if community colleges establish a more specialized mission and/or close the open door can they hope to become educational institutions of quality in the future. (Mancha, 1987, p. 32)

The need for answers to the three broad questions posed at the beginning of this chapter follows from the preceding discussion of mission, enrollments, and resources.

First, the simultaneous call for expansion and contraction of the historical mission creates a need for an objective measurement of community college priorities. What priorities are community colleges pursuing? Are they the historical priorities, a limited version of the historical priorities, or new priorities?

Second, are community colleges increasing their operating efficiency in response to the challenge of a broad mission and finite resources? If so, how are the efficiencies being achieved at the campus level?

Finally, are the demonstrated priorities and efficiencies consistent with the historical mission, or are community colleges moving away from the common goals which have historically bound them together?

CHAPTER II

LITERATURE REVIEW

Prior to 1982, the literature on community college finance was extremely limited. Only a few studies were available. Since 1982 there has been a considerable increase in the number of community college studies on the subject of finance. The literature may be divided into three groups: (1) descriptive studies, (2) revenue focused studies, and (3) efficiency studies. Each of these groups will be examined in this chapter, with particular emphasis on efficiency studies.

DESCRIPTIVE STUDIES

Foremost and most comprehensive among the recent descriptive research is the yearly National Association of College and University Business Officers (NACUBO) publication (Dickmeyer, 1977-78 through 1986-87). This annual report is based on a national sample of community colleges which has grown from a sample size of 97 in 1977-78 to a sample size of 535 in 1986-87. Included in the report are national medians and quartiles for community college revenues, expenditures, enrollments, salaries and staffing. Also included are numerous ratios which may be used as crude comparators by individual campuses and state systems.

The NACUBO publication is designed to be used for comparative purposes. The data collection and presentation are done carefully and a number of disclaimers regarding the comparative use of NACUBO data are

presented. No attempt is made, by NACUBO, to reach conclusions regarding the priorities and efficiency of individual campuses or for the sample as a whole.

The campuses reporting to NACUBO organize expenditure and staffing data to conform to a standard accounting taxonomy. Ordinarily, discussion of this taxonomy would appear in the Data Variables section of Chapter III; however, advance knowledge is required for an understanding of this chapter. Therefore, a brief description of major accounting categories, abstracted from the 1986-87 NACUBO report, is presented next.

The Community College Accounting Taxonomy

The accounting classification system for most community colleges contains one category for classroom expenditures and five individual categories which are charged with non-classroom expenditures.

Direct Instruction--includes primarily classroom instructional expenditures at the academic division or academic department level. It includes full-time and part-time teachers, secretarial help, instructional technicians, and academic goods and services. This budget typically includes expenditures for personnel who spend a substantial portion of their time engaged in administrative rather than teaching activities. For example, division chairperson and department head salaries are typically charged to Direct Instruction.

Instructional Administration--includes dean of faculty and staff to run the office of instruction.

Libraries--usually including learning resource centers.

Student Services--includes dean of students, counselling, placement, and related office staff.

Institutional Support--includes general administration, public relations, business office and president's office.

Plant Operation and Maintenance--includes custodial and maintenance staff and utility costs. It is important to note that in most states no capital expenditures for new construction or remodeling are included in this budget. Typically, this is strictly a maintenance budget.

To summarize, with minor exceptions, community college campuses charge classroom expenditures and staffing, including secretarial help, direct supervision, and goods and services, to an accounting category called Direct Instruction. With minor exceptions, all other expenditures and staffing are charged to accounting categories other than Direct Instruction. For the remainder of this study, the total expenditures in categories other than Direct Instruction will be referred to as non-classroom expenditures. This is because they provide essential services and support for the delivery of classes rather than the actual delivery of classes to students.

Other Descriptive Studies

A second set of comprehensive studies reviews state approaches to community college finance (Wattenbarger, 1981, 1983, 1985). The scope of these studies is limited primarily to an examination of the revenue function and a discussion of the current financial situation in each of

the 41 states surveyed. As with the NACUBO publications, priorities and efficiency are not specifically addressed.

A number of recent descriptive studies examine community college financing and operations (Graham, 1983; Hanselman, 1984; Moody, 1983; and Stumph, 1984). These studies are more limited in geographic scope than the major descriptive works previously mentioned.

REVENUE FOCUSED STUDIES

The revenue focused studies are often stronger on community college advocacy than on data. Complaints regarding a perceived lack of community college revenues appear frequently in these revenue studies. Dennison (1987) blames the three year lack of adequate funding in the British Columbia colleges on negative perceptions of community college performance which are unfounded in fact.

Terrey (1986) complains about the low levels of revenue for Washington State's community colleges and blames it on an elitist attitude on the part of the Business Roundtable, a legislative advisory committee made up of prominent businessmen.

Many of the revenue focused studies complain about the inadequacy of state financial support to community colleges. A second complaint is often advanced regarding the inconsistent funding methods both within and between states (Stumph, 1984), (Van Enoo, 1984).

Others focus on alternative sources of revenue for community colleges, (Bauske, 1985; Jenkins, 1984; Palmer, 1984; and Phillips, 1985).

Cost-Driven Funding Models

Another group of revenue focused studies examines alternative state funding models for generating community college revenues. The general approach of these studies is summarized in a study of Illinois community colleges (Fonte, 1985). This study examines the actual approaches taken by the State of Illinois to desensitize funding levels from enrollment trends. Desensitized funding models minimize the impact of short-run enrollment changes on the funding levels of individual campuses, particularly where enrollments are declining. This theme of desensitizing funding from enrollments appears in numerous funding model studies. One study examines the 1973 New York funding formula designed to finance the operating costs of New York's community colleges (Martens, 1973). A report by Yarrington (1981), compiled as a result of five regional community college roundtables includes recommendations that funding models finance actual community college program costs.

In the preliminary research for this study, discussions with budget officers at the state level in New York, Washington, Florida, Illinois and Texas disclosed that these states now use cost-driven funding models. While some specific differences exist in the mechanics of these models, between states, the common core of these models is the same. The state monitors and tracks the actual cost of both community college educational programs and non-classroom expenditures. Campuses are usually reimbursed for an estimated number of F.T.E. students based on actual campus costs or based on actual average statewide costs for educational programs and other expenditures.

Cost-driven models appeal to states because they make community college costs more predictable. If community college reimbursements become too large, many states fund less than 100% of the revenues called for by the funding model. In Illinois, for example, the state has historically funded less than 100% of the computed funding model revenues. These models also make it easier for individual campuses to predict revenue levels and to budget. From the perspective of community college priorities and efficiency, the key point is that, since 1980, many of the largest community college states have adopted funding models which are cost driven; and research on the effects of these models is non-existent.

This study focuses on an evaluation of resource allocation patterns and is not designed to measure the specific impact of these models on community college priorities and efficiency. However, a further discussion of these models, supported by data from this study, appears at the end of Chapter V in the agenda for future research.

EFFICIENCY STUDIES

The list of community college efficiency studies is very short. Typically, campuses and state systems do not publish efficiency studies. One study of the financial accounting practices of the Illinois community colleges (Skeadas, 1984) noted that neither state agencies nor any of the community college districts made any effort to measure or report on efficiency. A search of ERIC and the dissertation abstracts produced no inter-state studies of community college efficiency. The lack of citations, in a search of the literature,

suggests that the Illinois approach to efficiency is typical of most states.

Some published efficiency studies are written from the perspective of general economic theory (Garms, 1977), (Breneman, 1981), (Yarrington, 1981). These studies are theoretical in nature. They present the probable outcomes resulting from various funding formulas and approaches to funding.

Others use a cookbook approach to efficiency (Campbell, 1985), which devotes individual chapters to topics such as bookstore management and food service management. This approach stresses how to promote efficiency in specific areas of campus operations.

Only a few studies evaluate community college efficiency through examination of actual community college systems over time.

A Maryland Study

The Cost Containment Study, Maryland Community Colleges: A Report to the Senate Budget and Taxation Committee and House Appropriations Committee was compiled by a special committee in 1985. Presidents of all Maryland community colleges were asked to submit written summaries of specific cost containment actions taken by their campuses between 1979 and 1985. The appendix to this study includes summaries of 68 specific cost containment actions actually implemented.

This study offers a number of ratios for the Maryland community college system which imply increases in efficiency over the seven year period examined. The following quote summarizes the overriding conclusion of the study.

There is no question that these cost containment actions have been implemented in such a way as to pressure instructional offerings. (p. 27)

Specifically: equipment budgets were cut and maintenance of existing equipment was deferred, full-time faculty workloads were increased from 12 to 15 semester hours (+25%), 71 existing educational programs were discontinued and 66 new programs were implemented, overload pay for full-time faculty was cut, a hiring freeze on new full-time faculty was imposed and full-time faculty pay increased at a 49% rate during a period when community college system revenues rose 69%. Two statistics in particular are presented which represent greater personnel efficiency; (1) The ratio of F.T.E. students to faculty increased, and (2) the ratio of F.T.E. students to administrators and classified staff increased, indicating that individual campus employees, on the average, processed a greater number of F.T.E. students during 1984-85 than during 1978-79.

However, insufficient data exists in the study to determine the extent to which full-time faculty, part-time faculty, and administrators and classified employees shared in the overall 69% revenue growth. For example: if system revenues increased by 69% and full-time faculty pay rose only 49%, a disproportionally large percentage of the revenue increase was available to provide increased classes (though hiring part-time faculty) and/or to provide increased educational support (administrators and classified staff). The distribution of expenditures and the staffing patterns for full-time faculty, part-time faculty and support staff are not presented in the report. This additional evidence is needed to evaluate the means by which the system has increased its

efficiency. On the surface it appears that the economic burden of efficiency was placed primarily on Direct Instruction, and on the full-time faculty members.

Inflation

The Maryland study does make one efficiency claim which is difficult to accept. The point is made that between 1978 and 1984 costs per F.T.E. student rose by 41% versus a 62% increase in the Consumer Price Index (C.P.I.). The study concludes that this "indicates efficiency" (p. 2) in the system over time.

The theme of inflation runs through many studies. NACUBO presents data in both current and constant dollars. NACUBO, however, uses a specially constructed Higher Education Price Index not the C.P.I. to make data adjustments.

The C.P.I. is weighted for the housing, food, transportation, clothing, medical and entertainment expenditures of a typical U.S. consumer.

The Maryland study shows that Maryland community colleges typically spend between 75% and 85% of their budgets on salaries and fringe benefits. This means that if a Maryland community college price index existed it would be weighted 75% to 85% for employee compensation.

The C.P.I. fluctuates with the supply and demand for its components, the value of currency and politics, both foreign and domestic.

Community college labor costs are controlled by the legislature and local bargaining. No increase in employee compensation translates

into no inflation for the system with respect to 75% to 85% of campus budgets. If the C.P.I. grew faster than the cost per F.T.E. for Maryland community colleges, it would be fairer to say that employees of the Maryland community college system experienced purchasing power losses during the period under examination rather than saying the system became more efficient. Before claims of increased efficiency can be made, more data is needed to determine the extent to which full-time faculty, part-time faculty, administrators, and support staff increased productivity, and the extent to which each employee group shared in system expenditure growth.

California Efficiency Studies

Conclusions regarding community college efficiency emerge in two other studies. A study of California community colleges entitled Impact of 1982-83 Budget Constraints on California Community Colleges: Results of a Commission Survey (1983), examines the community college response to 1982-83 budget cuts. Ninety-five percent (95%) of the colleges reduced course offerings, F.T.E. students fell 5.3% system wide, 57% of the colleges reduced the number of administrators, and 50% of the colleges reduced counseling, learning resource centers, student services and other support staff.

A second study of the California community college system (Silverman, 1983) explores eighteen quality measures (ratios), including general overhead expenses per F.T.E. student. For the 1982-83 academic year, he found that the ratios most negatively sensitive to funding level reductions were: (1) faculty burnout, (2) library expenditures, and (3) staff development.

The Maryland study dealt with a period of growth in F.T.E. students and system revenues. Both California studies dealt with a period of decline in F.T.E. students and state revenues. The common thread between these community college efficiency studies seems to be that Direct Instruction and full-time faculty bore the economic brunt of community college operation regardless of the economic climate and enrollment trends.

A Washington Study of Priorities and Efficiency

In a study of the 27 Washington community colleges, for the period 1975-76 through 1982-83, Morrison (1985) found a shift in historical priorities and a decline in efficiency. Over an eight year period, total F.T.E. student enrollments remained stable (-0.3%) and student headcount enrollment fell from 159,386 to 152,976 (-4.0%).

System expenditures rose \$94.7 million (+87.8%) whereas Direct Instruction rose by \$46.7 million (+73.4%). Over the eight year period, Direct Instruction received 48.7 cents of every incremental dollar and ranked fifth out of six expenditure categories in rate of expenditure growth. The percentage of total expenditures going to Direct Instruction fell from 58.3% to 53.8%. In 1982-83, Direct Instruction received \$9,000,000 less than it would have, based on its share of 1975-76 revenues. The fastest growing expenditure categories were Institutional Support and Plant Operations and Maintenance. Institutional Support, which finances the campus business office, president's office, public relations, and fund raising activities, grew 92% faster than Direct Instruction; Plant Operations and Maintenance grew 78% faster than Direct Instruction.

The square footage of plant increased by 20.9% over the period.

Staffing data supports the expenditure data. The number of full-time faculty rose 4.3%, part-time faculty rose .6%, administrators were up 12.3%, and classified staff increased by 24.3%.

Over the eight-year period, the highest priorities were on increasing square footage, increases in administrative and classified staff, and increases in Institutional Support and Plant Operations and Maintenance expenditures. By the end of the eight year period, fewer students were being served, at higher cost, by significantly more square footage, administrators, and classified staff. The author concludes that these patterns demonstrate a change in system priorities and decreased operating efficiency relative to student enrollments.

The study also included a detailed analysis of Institutional Support expenditures, adjusted for biennial unemployment costs, and a detailed analysis of Plant Operations and Maintenance expenditures, adjusted for increased utility costs. In both cases, the accelerated rates of growth originally shown in these categories declined only slightly in response to these major adjustments. As a result, the study concluded that seldom could a large increase in fixed costs, or a large accounting peculiarity, invalidate the results of a long-run evaluation of expenditure patterns.

Evaluating Efficiency Through Comparisons

Comparisons may provide useful efficiency measurements, but only if equivalent comparators can be found. The problem is that seldom, if ever, can adequate comparators be found. The following three quotes,

taken from of the 1986-87 NACUBO report, provide ample disclaimers regarding the pitfalls of institutional comparisons using their data:

Original Data

Lack of well-established definitions for such terms as "full-time-equivalent student" and lack of consistency in reporting such expenditure functions as "Academic Support," "Institutional Support," and "Student Services" create difficulties in generating accurate comparative data. Moreover, some survey responses are estimates because some institutions do not keep precise data in all the areas surveyed. All these factors effect the quality of the results.

Institutional Comparability

There is no way to establish truly homogeneous peer groups for community colleges. Such major factors as mission, location, academic preparation of entering students, local nonsalary costs, and methods of financing create unique financial and operating patterns. Peer group comparisons that lead to administrative financial policy changes require sensitivity to the many factors not readily apparent from the statistics.

The Myth of the "Typical" Institution

No group of institutions exists whose data show them to be completely "typical." In fact, all institutions had fewer than three-quarters of their statistics within the middle two quartiles; on some statistics all institutions were higher or lower than 75% of the other institutions. There is no typical institution, and institutions should use this report only to find what makes them unique--not to pressure an institution toward some nonexistent "median" performance. This study has found a great diversity of expenditure, revenue, and staffing patterns. Diversity is clearly a characteristic--and no doubt a great strength--of community and junior colleges. (Dickmeyer, 1988, p. 3)

Because accounting practices and operating conditions differ between individual campuses and state systems, resource allocation patterns vary greatly. This, in turn, creates national interquartile ranges which can be used as very large statistical targets by campuses

and state systems for purposes of presenting normal behavior patterns. Big statistical targets, combined with selective data presentation and an absolute absence of disclaimers regarding the complexity of interpretation can create an impression in the minds of board members and legislators that everything is under control. The campus or system must be efficient because it falls within the interquartile range, or the campus is better than 75% of institutions nationally here and here, or perhaps we are a little low but we do more or less what everyone else does. As NACUBO disclaimers state, there is no norm with respect to community college resource allocation patterns.

Variability in campus operating conditions and accounting practices between campuses makes it almost impossible to adequately evaluate community college efficiency through direct comparison between institutions within the same state system, let alone between state campuses and systems. This is particularly true in the long-run where changes in local conditions and accounting practices are more likely to invalidate comparisons between campuses and between state systems.

A SUMMARY OF CHAPTERS I AND II

The essential points from Chapters I and II are: (1) the historical mission of community colleges is to serve many students, provide unrestricted student access, and to offer comprehensive, high-quality, low-cost educational programs; (2) there is a lack of published research which verifies the priorities being pursued by community colleges; (3) very few intra-state and no inter-state efficiency studies have been published by independent researchers; (4) because of great diversity in

local conditions and accounting systems, methodologies which employ comparisons between institutions and states are not reliable for use in determining priorities and efficiency; and (5) the community college finance literature does not contain an objectives-oriented evaluation of the consistency between priorities, efficiency, and the goals represented by the historical mission.

CHAPTER III

PROCEDURES

For the period 1981-82 through 1986-87, this study seeks answers to three questions. First, are certain campus priorities receiving an increased economic emphasis; and if so, which ones? Second, are campuses demonstrating efficient operation relative to student enrollments and are the efficiencies universal or selective in their impact on campus operations? Finally, are the demonstrated priorities and efficiencies consistent with the historical mission of community colleges which is to serve many students, provide unrestricted student access, and to offer comprehensive, high-quality, low-cost educational programs?

DESIGN

A Tylerian objectives-oriented evaluation design (Worthen and Sanders, 1987, p. 63) will be used in this study. This design requires, (1) the identification of broad organizational goals or objectives, (2) a definition of those goals in behavioral terms, (3) the development of measurement techniques, and (4) a comparison of performance data with the behaviorally defined goals.

The objectives-oriented evaluation design is well suited to this study because it permits a comparison of the goals contained in the historical community college mission with demonstrated campus priorities

and efficiencies over a six-year period. This comparison will disclose whether campus resource allocation patterns are consistent or inconsistent with that historical mission.

As discussed in Chapter II, because of differences in local conditions and accounting practices, there is great diversity in community college operating statistics. This means that priority and efficiency measurements, based on comparisons between institutions and states, may be challenged as unreliable and unfair. Therefore, the measurement techniques employed by this study will not rely on comparisons between campuses and states. Instead, this study will compare the 1986-87 operating performance of each campus, to the 1981-82 operating performance of that same campus. In essence, each campus in the sample is being compared to itself at two points in time. The changes in priorities and efficiency, by campus, will be aggregated and presented by state and for the sample as a whole.

THE SAMPLE

The author sought comparable institutional data for the largest possible sample over the longest possible period.

This study originally began as a case analysis of five of the seven largest community college states for a ten year period of time. During the summer of 1987, the NACUBO Board was petitioned to supply national data by institution. In December 1987, they agreed to supply comparable data for all community colleges reporting in both 1981-82 and 1986-87. As of 1986-87, NACUBO surveyed 535 community colleges out of a population of 770 (counting systems of branch campuses as single

institutions). In 1981-82, NACUBO surveyed 442 community colleges and some of these institutions were not surveyed again in 1986-87. In May of 1987, NACUBO provided data on approximately 340 community colleges for inclusion in this study. For some campuses, selected data was inconsistent and/or omitted. Because of this, the sample sizes vary for student enrollments (n = 328), square footage (n = 300), expenditures (n = 310), staffing (n = 228), market penetration (n = 298), and utility costs (n = 307).

While NACUBO began reporting in the mid-1970's, the six year period examined in this study represents the longest period for which comparable data, on a large number of community colleges, is available. Two conditions were imposed by NACUBO: (1) no individual institution can be identified in the study, and (2) an article, based on the study, must be submitted for publication in the The Business Officer, a monthly NACUBO magazine.

NACUBO utilizes data from the Integrated Postsecondary Education Data System (IPEDS). The IPEDS surveys are forwarded to the Center for Education Statistics (CES) which, in turn, forwards campus data to NACUBO. In addition, NACUBO conducts a supplemental survey of each campus, to collect data not available from CES.

In addition to the use of IPEDS finance data, a separate survey of 770 public institutions was conducted to gather information not currently available at the national level. Such information included data on:

1. Revenues and expenditures for noncredit institutional activities.
2. Utilities expenditures.
3. Student aid disbursements.
4. Building space.
5. Service area population.
6. Unduplicated student headcounts.

7. Staffing levels by function.
8. Course enrollment distributions.
9. Current Fund expenditures for salaries and wages.
(Dickmeyer, 1988, p. 53)

All data received by NACUBO originates at the campus level. The 1986-87 NACUBO report provides the following description of their sample:

The 535 public community colleges in this study may not reflect the financial and operational patterns of their 235 sister institutions (counting systems of branch campuses as single institutions). Care was taken to include institutions that are geographically representative, as well as representative of enrollment levels. However, because of the need to use only data from those cooperating institutions that filed both timely and complete reports, the sample is not random. Generalizing the sample statistics in this study to all public community colleges should be done with care because nonrespondents or late respondents to IPEDS and other surveys may be beset by particular administrative difficulties, thereby somewhat biasing the sample. However, the last 25% of the returns did not significantly affect the median scores calculated up to that point, indicating that late respondents may not be significantly different. (Dickmeyer, 1988, p. 2)

The NACUBO sample is stratified by institutional size and type. Since this study compares each institution to its own operating history, and not to other institutions, the campuses examined in this study will not be stratified by institutional size and type.

There are a number of reasons why great care should be exercised in generalizing the results of this study to the population of community colleges. First, there is great diversity between institutions with respect to local conditions and accounting practices. Second, this sample includes only those institutions which provided comparable data to NACUBO both in 1981-82 and 1986-87. Finally, NACUBO counts branch campuses as $n = 1$, so the actual number of individual campuses included in this study is not known.

Because of these sample limitations, the results of this study will be suggestive but not conclusive regarding population behavior. However, this study examines a very large, national sample of community colleges over a six-year period. Because the sample is large, long-term and inter-state, conclusions are expected to be significant without generalizing to the population of community colleges.

DATA VARIABLES

All data used in this study were provided by the campuses being evaluated. Individual campuses are responsible for the accuracy of all source data.

Each campus in this sample responded to the IPEDS survey and to the supplemental NACUBO survey both in 1981-82 and 1986-87. Expenditure data for Direct Instruction, Instructional Support, Student Services, Institutional Support, and Plant Operation and Maintenance came from the IPEDS survey. Taken as a whole, the four expenditure categories other than Direct Instruction will be referred to as non-classroom expenditures throughout the remainder of this study.

Data on F.T.E. student enrollments, service area populations, square footage of plant, utility costs, and the number of full-time faculty, part-time faculty, and support staff came from the supplemental NACUBO survey.

NACUBO provided a total of six data sheets for each institution under study. Three sheets contain campus data for 1981-82 and the other three sheets contain campus data for 1986-87.

Problems Of Data Reliability And Comparability

In the private sector, quarterly and annual reports must be filed with the Security and Exchange Commission by all publicly owned corporations. These reports are evaluated by a substantial number of analysts representing a variety of perspectives. Stock brokerage firms, banks, suppliers, government agencies, and stockholders assess the quality of a corporation's performance by examining trends within a firm and making comparisons with other firms. The analysis of corporate financial statements involves the computation of ratios designed to focus on various performance aspects of the business, specifically the relationships between revenues, expenses, assets, liabilities, and equity. The boards of directors and management of corporations must be sensitive to the results of ratio analysis as it impacts all aspects of the business. Stock prices, ability to borrow, ability to attract customers and suppliers, government relations, etc., all hinge on favorable analysis of financial statements. Corporate financial statements have been examined by independent third parties (C.P.A.'s) who express, in writing, opinions as to the fairness of the report. An unqualified audit opinion contains an assurance that Generally Accepted Accounting Principles have been followed in compiling the report and that data in the report was compiled on a consistent basis for the years presented. Both of these assurances are critical to quality judgments because trends and comparisons may be invalid if materially different accounting practices are followed: (1) from year to year (trends); or (2) between different firms during the same year (comparisons).

In contrast, most state community college systems issue an annual report called "Academic Year Report" or "Factbook". This annual report

includes data on individual colleges as well as system totals. This report is not audited by independent third parties (C.P.A.'s), and there is no assurance that Generally Accepted Accounting Principles have been followed or that the report was compiled on a consistent basis from year to year. Accounting classification changes are made and report forms are revised and presented in trend form often without adjusting prior years' data (under the old accounting method) to a fully comparable status with the new accounting/reporting method.

Controlling Problems Of Data Reliability And Comparability

The analysis of data presented in Chapters IV and V of this study is taken exclusively from the institutional data provided by NACUBO. The variation in local conditions and accounting practices will be controlled in this study by:

(1) basing the evaluation on changes within individual institutions rather than between institutions over time. The changes in accounting practices and local operating conditions, within an individual institution, will typically be far less than between institutions over time.

(2) limiting the data examined to statistics which do not tend to change materially in character or composition over time. Examples would be: the number of F.T.E. students served, expenditures by category, F.T.E. staffing by employee category, and square footage of plant.

(3) adjusting budgetary data for material components which could be responsible for distorting trends. An example would be the

presentation of the Plant Operations and Maintenance expenditures both with and without the effects of utility costs.

Additional precautions will be employed as follows:

(4) All campus data and summary schedules will be triple checked for mathematical accuracy.

(5) The staffing data is expected to be less complete and less reliable than expenditure data. Some campuses do not report on staffing at all. Instructional staff data is expected to be more reliable than support staff data. This is because support staff may be charged to Direct Instruction, Instructional Support, Student Services, Institutional Support, or Plant Operations and Maintenance. It is not unusual for support staff to divide their time between two or more of these support areas. For this reason staffing data will be accounted for and analyzed in three basic categories: F.T.E. faculty (including part-time), full-time credit faculty (which is included in the F.T.E. faculty number), and total F.T.E. faculty and staff (which includes F.T.E. faculty). In essence, support staff will be shown in total as the difference between total F.T.E. faculty and staff and F.T.E. faculty (including part-time). A detailed analysis of changes in staff for each non-classroom expenditure category would be based on less complete and less reliable data, and is not necessary for the approximation of efficiency changes.

(6) Any campus data which appears internally inconsistent will be entirely omitted from the analysis. For example, if a campus shows a "0" expenditure in a major category for one year, the campus expenditure data will not be used in this analysis. The same is true of

inconsistent staffing data. A three percent materially threshold will be applied to campuses and states where data appears to be questionable, but not out of line in the extreme. Data which represents less than 3% of the total campus data will be noted and included in the study. For example: over the period under examination, a number of campuses heavily utilized expenditure categories entitled Public Service, Mandatory Transfers, and Restricted Scholarships. Of the three categories, Public Service was typically the most material. Public Service enterprises can usually be funded by state dollars. Generally, these expenditures are not instructionally related.

In conformance with IPEDS definitions, any expenditures for instruction, even for noncredit instruction, that were included in public service were transferred and are included in the instruction (noncredit) line. (Dickmeyer, 1988, p. 16)

As the quote suggests, NACUBO adjusts from Public Service to Direct Instruction where appropriate, but they do not adjust from Direct Instruction to Public Service where appropriate.

In the author's experience, the criteria for using the Public Service classification may differ between campuses and state systems. As a result, the Public Service category will be treated carefully by this study. The costs of a child care center, for example, may be classified as a Public Service expenditure. If a campus runs a child care center in conjunction with an early childhood education instructional program, the costs of both the child care center and the early childhood education program may be charged to Direct Instruction. In this situation, NACUBO does not reassign the child care center costs to the Public Service category. However, the Public Service category

typically includes only those activities which do not include a Direct Instruction component.

A preliminary examination of NACUBO data for the period under study shows significant movement into and out of the Public Service expenditure category in eleven states. Based on the 3% materiality threshold, if the Public Service, category increased or decreased by more than 3% of total expenditures between the two years under examination, the entire campus expenditure data will be eliminated from the study on the grounds that exaggerated changes in this account may also involve and distort changes in the expenditure categories being measured by this study. The major states involved are: California, Illinois, New Jersey, New York, Ohio, Oklahoma, Oregon, South Carolina, Tennessee, Texas, and Washington.

The State of Texas used the Public Service category extensively during the period under study. In Texas, eleven schools out of a sample total of twenty-six would have to be eliminated if the 3% rule were applied to each school. The net effect of the changes in the Public Service category for the State of Texas as a whole, however, is less than 3% of total expenditures. This means that while these changes are greater than 3% of total expenditures for eleven of the individual campuses, for the state as a whole they are not. Because Texas is one of the biggest community college states in the nation, all Texas campuses will be left in the study on the basis that, in total, the state numbers are not materially affected by the Public Service category. Two other major states, California and Illinois, showed changes in Public Service expenditures at six campuses and eight

campuses respectively, above the 3% threshold. As with Texas, the aggregate effect for each state as a whole was less than 3%, and the campuses have been left in the study. For the remaining states, where individual campuses are materially affected, proportionally fewer campuses are involved than in California, Illinois, and Texas. The data from approximately twenty campuses in eight states will be eliminated from the analysis due to material shifts in expenditures and staffing involving the Public Service category.

(7) In some states, library expenditures include learning resource centers where students receive remedial education. In these states learning resource centers are usually accounted for in the Library expenditure category. The NACUBO data breaks out library expenditures as a subset of Instructional Administration expenditures in their 1981-82 data. No separate break-out is included in the 1986-87 data. Since the library expenditures are not shown separately for both years under examination, they will be included in the Instructional Administration category, as part of non-classroom expenditures. Technically the portion of library budgets devoted to the operation of learning resource centers should be counted as the delivery of classes. Based on a cursory examination of the 1981-82 NACUBO data, total library expenditures typically represent between 1.5% and 5.5% of total campus expenditures. The portion of total library expenditures devoted to the operation of learning resource centers would, therefore, typically be less than the 3% materiality threshold previously discussed. The impact of learning resource centers, for states which

report them as a subset of libraries, is not expected to materially effect the data used in this study.

PROCEDURES FOR RECORDING AND SUMMARIZING DATA

NACUBO provided a total of six data sheets for each institution under study. The data for each institution will be scheduled on three 13 column worksheets.

Worksheet #1 contains the NACUBO campus identification number, the numerical change in campus service area population, the number of F.T.E. students served for 1981-82 and 1986-87, the square footage of plant for 1981-82 and 1986-87, and market penetration data.

Worksheet #2 contains columns for recording campus expenditures for Direct Instruction, Instructional Support, Student Services, Institutional Support, and Plant Operations and Maintenance for both years under study. In addition, campus utility costs as a percentage of total budget will be compared for both years and an increase, decrease, or no change will be noted.

Worksheet #3 contains F.T.E. staffing data for full-time faculty, part-time faculty, and support staff for both years under study.

When the data for all campuses in a particular state has been recorded, the data will be aggregated into two groups. All campuses with F.T.E. student enrollment growth will be totaled and shown separately from all campuses with F.T.E. student enrollment declines. The data in both of these groups will then be added together to provide a grand total for each state. This approach will ultimately be used to assess the impact of increasing versus decreasing F.T.E. student

enrollments on expenditure and staffing patterns, both by state and for the sample as a whole.

The aggregate data for all campuses, by state, will be scheduled on a series of eight, 13 column worksheets.

The first worksheet contains total data for each state including: the sample size, F.T.E. students enrolled for both years, and market penetration data.

The second worksheet contains square footage of plant for both years, and utility costs as a percentage of campus expenditures.

Expenditure data is summarized on the next three worksheets. Totals, by state, are shown first, followed by two worksheets which split the totals by state into summary expenditure data for campuses with F.T.E. student growth versus campuses with F.T.E. student declines.

Staffing data is summarized on the last three worksheets. Total F.T.E. faculty, total full-time credit faculty and total F.T.E. faculty and staff are presented by state for both years on the first staffing worksheet. The total staffing data by state is then split into staffing data for campuses with F.T.E. student growth (staffing worksheet #2) and campuses with F.T.E. student declines (staffing worksheet #3).

At the request of NACUBO, the original worksheets containing individual campus data will not be presented in the study. The eight summary worksheets, containing totals by state and breakdowns for campuses with F.T.E. student enrollment growth versus campuses with F.T.E. student declines, will appear in Chapter IV of the study.

Other summary tables will be prepared and presented from the raw data and the worksheets as needed, to accompany the written evaluation of efficiency in Chapters IV and V.

All summary data and trends will be presented and analyzed by state, for the sample as a whole, and broken down separately within states for campuses with F.T.E. student enrollment growth and for campuses with F.T.E. student enrollment declines.

ANALYSIS

Goals

For purposes of this study, the historical goals of community colleges are to serve many students, to provide unrestricted student access, and to deliver comprehensive, high-quality, low-cost educational programs.

Expected Behaviors

Over any six-year period, a campus in active pursuit of these goals is expected to maintain or increase its proportional investment in classroom teaching and to maintain or increase operating efficiency. A heavy long-run investment in classroom teaching is consistent with the goals of high student enrollment and comprehensive, high-quality programs. Greater long-run operating efficiency is consistent with the goals of high student output and comprehensive, low-cost programs. Where classroom teaching receives a low economic priority and operating efficiency is decreasing over a six-year period, campus behavior is inconsistent with the historical goals of community colleges.

The Measurement of Priorities

The first question to be answered by this study is, are certain campus priorities receiving an increased economic emphasis?

The priorities of individual campuses and state systems will be identified through an examination of the six-year changes in expenditure and staffing patterns.

When a community college campus receives an extra dollar of revenue, not restricted as to specific use, administrators and boards decide where to invest the extra dollar. They may also decide to move existing budgets from one area to another, creating a disinvestment in one expenditure category in order to provide an investment in another expenditure category. A primary function of administrations and boards is to invest available resources in an effort to further the stated goals of the organization.

The cumulative effect of individual investing decisions, made by local community college administrators and boards, reflects in the long run expenditure and staffing patterns within each institution. Repeated decisions to pay additional compensation to existing staff, hire new staff, and to provide additional equipment and supplies will show as expenditure and staffing increases, charged to the expenditure category of the college which utilizes the resource.

A campus demonstrates a high priority on classroom teaching through accelerated rate of investment and staffing in Direct Instruction over the long-run.

A campus demonstrates a high priority on non-classroom functions through accelerated rates of investment and staffing in categories other than Direct Instruction over the long-run.

To use a simple illustration, suppose that a hypothetical community college campus, with a total budget of \$100, spends \$90 on non-classroom functions and \$10 on Direct Instruction. Also assume that

the campus receives \$10 in additional revenue and the Board adds \$2 to Direct Instruction and \$8 to non-classroom expenditures. Table I summarizes the campus expenditure patterns.

TABLE I
EXPENDITURE CHANGES
FOR A HYPOTHETICAL COMMUNITY COLLEGE

	<u>Original</u> <u>Position</u>	<u>% of</u> <u>Total</u> <u>Expenditures</u>	<u>\$</u> <u>Increase</u>	<u>New</u> <u>Position</u>	<u>% of</u> <u>Total</u> <u>Expenditures</u>	<u>%</u> <u>Change</u> <u>Expenditures</u>
Non-classroom Expenditures	\$ 90	90%	+\$ 8	\$ 98	89.1%	+ 8.9%
Direct Instruction	<u>\$ 10</u>	<u>10%</u>	<u>+\$ 2</u>	<u>\$ 12</u>	<u>10.9%</u>	<u>+20.0%</u>
TOTAL	\$100	100%	+\$10	\$110	100.0%	+10.0%

As measured in dollars and as a percentage of total expenditures, Direct Instruction is the lowest economic priority both before and after the change. In absolute terms, the dollar gap between non-classroom expenditures and Direct Instruction increased from \$80 (\$90-\$10) to \$86 (\$98-\$12). This is because non-classroom expenditures began with a much larger economic base. However, as a percentage of total expenditures, Direct Instruction improved its position from 10% to 10.9%. This means that Direct Instruction increased its share of total institutional resources. In addition, based on the rate of expenditure growth, Direct Instruction has received a higher economic priority (+20.0%) than non-classroom expenditures (+8.9%) over the period under examination.

One generalization emerges from the prior analysis. A faster rate of growth and an increasing percentage of total resources indicates a higher institutional priority over any time period under examination.

This should not be interpreted to mean that a fast growing area has more dollars than a slower growing area, only that it has received a higher relative priority during the time period under examination.

Expenditures expressed in dollars and as a percentage of total expenditures are static measurements at a point in time. The rate of change in expenditures is a dynamic measurement which reflects changes in emphasis between two points in time. All three measurements will be used in determining the expenditure and staffing priorities of the institutions in this sample. Summary tables, similar to Table I, will be prepared for expenditures and staffing. The expenditure tables will include Direct Instruction, Instructional Support, Student Services, Institutional Support, and Plant Operations and Maintenance. The staffing tables will include full-time faculty, part-time faculty, and support staff (non-faculty). The level and rate of change in square footage of plant and student enrollments will also be examined.

The Measurement of Efficiency

The second question to be answered by this study is, to what extent are campuses demonstrating efficient operation relative to student output, and are the efficiencies universal or selective in their impact on campus operations?

The generic definition of efficiency is to produce output with a minimum of effort, waste, and expense.

To economists, efficiency means more than just producing something for the lowest cost. An efficient allocation of resources is said to occur if the benefits (both public and private) from the production of some good or service exceed by as much as possible the total costs (both public and private) of producing it. (Breneman, 1981, p. 74)

According to Breneman (1981), the ultimate economic test of community college efficiency would be a comprehensive cost versus benefit analysis. Such a study would compare the costs of community college education to the ultimate benefit to students and society resulting from community college education. This definition of benefit to students and society requires an understanding of the lifetime personal, economic, and social benefits associated with community college attendance.

Based on an examination of 51 studies, Breneman and Nelson (1981) were unable to generalize regarding the lifetime benefits of community college attendance. Their conclusion is that the evidence is, at best, inconclusive.

The inability to generate a comprehensive cost versus benefit analysis does not preclude meaningful efficiency research. What is required is a narrower definition of the benefit. To a limited extent, the benefit to students and society can be measured by the level of service being delivered. The number of F.T.E. students served, the number of course sections being offered, student headcount enrollments, and market penetration (the ratio of F.T.E. students served to a service area population), are all indicators of the quantity of educational benefit to students and society.

A labor versus student enrollment approach was used to measure efficiency by the Maryland and Washington studies reviewed in Chapter II. Both the Maryland and Washington studies found that 75% to 85% of community college expenditures are used to pay salaries and fringe benefits to employees. Therefore, community college efficiency was

measured by comparing changes in the quantity and mix of labor inputs required to generate student enrollments over time.

This study measures changes in efficiency by comparing the number of full-time faculty, part-time faculty, support staff, and the square footage of plant required to produce F.T.E. student enrollment and market penetration in 1981-82 and 1986-87. Where student enrollment is down and a particular input is up, efficiency has declined. Conversely, where student enrollment is up and particular input is down, efficiency has increased. Where inputs and outputs move in the same direction, ratios of inputs to enrollments will be used to determine the direction of efficiency changes between the two points in time.

The sample size for the staffing ($n = 228$) is smaller than the sample size for F.T.E. student enrollments ($n = 328$). Therefore, the measurement of staffing efficiency will be based on an identical sample of 228 institutions. All other measurements in this study which utilize F.T.E. student enrollments will be based on the full sample ($n = 328$).

Evaluation

The objectives-oriented evaluation component of this study is designed to determine whether the six-year behavior of sample institutions is consistent or inconsistent with the goals of unrestricted student access, serving many students, and delivering comprehensive, high-quality, low-cost educational programs. The evaluation is not designed to measure the extent to which the behavior is consistent or inconsistent. In general, large changes in priorities and efficiency are expected to produce a greater impact on the historical mission than

small changes. Judgements regarding what is a large change and what is a small change will be left to the reader's discretion.

The goal of service to many students will be measured by changes in F.T.E. students served and by changes in market penetration. Where campus F.T.E. student enrollments increase over time, more education is being delivered to the community. Where F.T.E. student enrollments decline, the opposite is true. If market penetration (the ratio of F.T.E. students enrolled to service area population) goes up, the relative level of service to the community increases. The opposite is true where market penetration declines. F.T.E. student enrollments will be used to measure student output and market penetration because of weaknesses in student headcount data. A discussion of these weaknesses appears in the section on study limitations at the end of this chapter.

The goal of delivering low-cost education will be measured by changes in institutional efficiency. Increased efficiency reduces square footage and labor inputs relative to F.T.E. student enrollments. Decreased efficiency increases those inputs relative to student enrollments. Therefore, by employing fewer inputs relative to student output, greater efficiency promotes lower-cost education and decreased efficiency promotes higher-cost education.

The goal of unrestricted student access is more difficult to evaluate from sample data. Theoretically, unrestricted student access is achieved when all students who wish to take a class are served. Over a six-year period, increases in F.T.E. student enrollments and market penetration indicate expanding access while declines in these measurements indicate contracting access. However, student enrollments could

be up and still be restricted, and where student enrollments are down, declining student demand for classes could be responsible. Proof of access restrictions requires a specific knowledge of local conditions which is beyond the scope of sample data.

Similar measurement difficulties apply to an evaluation of the comprehensiveness of educational programs. Theoretically, comprehensive programs are achieved when all students who wish to attend are offered the class or program of their choice. As with the evaluation of unrestricted student access, changes in F.T.E. student enrollments and market penetration are suggestive but not conclusive. A detailed examination of curriculum by institution is necessary for a clear determination of changes in program comprehensiveness. This measurement is beyond the scope of sample data.

While the goals of unrestricted student access and comprehensive programs may not be conclusively measured, sample data provide evidence as to whether campus behaviors are consistent or inconsistent with these goals. For example, over a six-year period, a high economic priority for Direct Instruction is more likely to result in unrestricted access and comprehensive programs than a low economic priority for Direct Instruction. This does not assume that more money for Direct Instruction insures unrestricted access and comprehensive programs. It assumes that a high economic priority on classroom teaching is more likely to expand access and course offerings over a six-year period, than a low economic priority.

Efficiency, as measured by this study, is also directly related to the issues of program comprehensiveness and unrestricted student

access. This relationship is best illustrated by an extreme example. If a community college became so inefficient that only one class per year were offered to the community, the comprehensiveness of programs and access to students would be almost totally compromised. Add to this example the probable tuition cost to be paid by the students taking the only class offered and the role of efficiency becomes clearer. A lack of efficiency restricts program comprehensiveness and student access by limiting course offerings and by making the remaining courses more expensive for the students who are still able to afford them.

Since both a high economic priority for Direct Instruction and greater efficiency are consistent with the goals of unrestricted access and comprehensive programs, a low economic priority for Direct Instruction and declines in efficiency are inconsistent with these goals.

This study will evaluate educational program quality through examining the role of full-time faculty in campus priority and efficiency changes.

Based on the Maryland study and both California studies reviewed in Chapter II, and based on the following quote, there is reason to believe that the full-time faculty base is declining at U.S. community colleges.

It is the conviction of the Commission, however, that the increasing numbers of part-time faculty at many colleges are a disturbing trend. (Tyree et al, 1988, p. 12)

Because full-time faculty control the educational production function, they are an essential component of long-run educational program quality.

We conclude that faculty play a critical role in the building of community. Those who teach control the academic

standards, shape the curriculum, and help create the climate for learning on the campus. (Tyree et al, 1988, p. 13)

This study will evaluate changes in educational program quality through an examination of the six-year changes in the percentage of total institutional employment represented by full-time faculty, and the relationship of full-time faculty to student enrollments. At campuses where the full-time faculty base is stable or increasing relative to total institutional employment and relative to student enrollments, the behavior is consistent with maintaining or increasing long-run educational program quality. At campuses where the full-time faculty base is eroding relative to total institutional employment and relative to student enrollments, the behavior is inconsistent with maintaining or increasing long-run educational program quality.

A SUMMARY OF PRIORITIES, EFFICIENCY, AND MISSION

In summary, the historical goals of community colleges are to serve many students, to provide unrestricted student access and to deliver comprehensive, high-quality, low-cost educational programs. Over the six-year period evaluated by this study, campus resource allocation patterns consistent with the historical mission would reflect stable or increasing student enrollments and market penetration, increased efficiency, a high economic priority on Direct Instruction, and a stable or increasing full-time faculty base relative to total institutional employment and relative to student enrollments. Campus behavior inconsistent with the historical mission would reflect declines in student enrollments and market penetration, declines in efficiency, a low economic priority on Direct Instruction, and an erosion of the full-

time faculty base relative to total institutional employment and relative to student enrollments.

LIMITATIONS

(1) Ordinarily, market penetration is defined as the ratio of student headcount enrollments to service area population. NACUBO provides the following description of a student headcount data in their 1986-87 report.

Unduplicated headcounts are not monitored by all institutions; thus, these figures are often estimates and may be in error.

Service area populations may vary in the proportion of people who are generally eligible for college, i.e., 18 years and over. This somewhat limits the comparability of the statistic among institutions. In addition, many of the students counted in the headcount may be drawn from outside the service area, weakening the "market penetration" interpretation of the statistic. (Dickmeyer, 1988, p. 27)

Because of the weaknesses in student headcount enrollment data, this study defines market penetration as the ratio of F.T.E. student enrollments to service area population.

(2) The analysis of staffing is limited to an evaluation of changes in full-time faculty, part-time faculty, and support staff. The 1986-87 NACUBO report provides the following description of staffing data.

Some institutions could not provide staffing ratios by functional categories because they maintained only exempt, nonexempt, and faculty breakdowns.

Many respondents had difficulty in determining whether an employee who did not teach but who worked exclusively in the instructional area was instructional or academic support. There is probably considerable overlap between these two categories. (Dickmeyer, 1988, p. 32)

In the interest of examining a large and reliable staffing sample, this study will not present staffing changes by area of assignment.

(3) With the exception of utility costs, the goods and services portion of campus operating expenditures is not evaluated in detail. NACUBO did not provide detailed goods and services expenditure breakdowns.

(4) The effects of inflation are ignored. This study evaluates what has been done with available resources and is not concerned with the impact of inflation on campus operations.

(5) The measurement of comparative salary increases for faculty, administrators, and classified employees is beyond the scope of this study. Comparable institutional data is not available from NACUBO and job descriptions for support staff tend to change over time both within and between individual institutions.

The findings of this study are now presented in Chapter IV.

CHAPTER IV

FINDINGS

The central objective of this chapter is to construct a six-year evaluation of changes in efficiency and priorities for the sample as a whole. For each component of cost and output examined, states at the extreme will be cited for the sole purpose of illustrating the range of particular statistics. The range of behavior at campuses within each state will not be presented in this chapter but will be examined, without identifying particular institutions, in the discussion of outliers appearing in Chapter V.

Eight major tables appear in this chapter. These tables contain aggregate data for the 33 states in the sample. All smaller summary tables appearing in this chapter employ data drawn or computed exclusively from the eight major tables. As would be expected, great diversity is apparent in all statistics both between states and within states. For the sample as a whole, there is a shift in priorities evidenced by a diversion of resources from Direct Instruction to non-classroom expenditures. There is also evidence of decreased efficiency.

The chapter begins with a discussion of concentration within the sample. Then sample data on student enrollments, square footage, expenditures and staffing will be presented and discussed, in order.

THE SAMPLE

In 1986-87 NACUBO drew its sample from a total population of 770 U.S. community colleges (counting branch campus systems as $n = 1$). The sample used in this study represents approximately 40% of U.S. community colleges as defined by NACUBO. It includes all colleges that provided comparable data to NACUBO in both 1981-82 and 1986-87. The sample sizes, for individual components of cost and output, vary because of inconsistencies in source data and/or omissions. For components of output, sample sizes were as follows: F.T.E. student enrollments ($n = 328$), service area population ($n = 299$), and market penetration ($n = 298$). For components of cost, sample sizes were: square footage ($n = 300$), utility costs ($n = 304$), expenditures by category ($n = 310$) and staffing ($n = 228$).

The six largest community college states in the sample are California, Illinois, Florida, Texas, Michigan, and New York. These states accounted for approximately 57% of total 1986-87 expenditures for the sample as a whole. The fourteen largest states in the sample accounted for over 91% of total 1986-87 expenditures and included 67% of total campuses in the study. As expected, from an economic standpoint sample expenditures are highly concentrated in relatively few states.

As previously mentioned, this sample is not random and may not be representative, but it is large, long-term, and inter-state.

OUTPUT

For the sample as a whole, both absolute and relative levels of output are down. As Table II shows, F.T.E. students served declined by 41,582 (2.9%) over the six-year period.

Thirteen states showed an increase in F.T.E. students served, led by Kentucky (up 58.7%) and Maryland (up 37.9%). Twenty states showed declines in F.T.E. students served, led by Wisconsin (down 20.2%) and Virginia (down 14.8%). Service area populations are up at 71.2% of the institutions surveyed, meaning that, in general, populations near community colleges were expanding while overall community college enrollments were declining.

As would be expected, market penetration declined at 54.4% of the campuses reporting (n = 298).

TABLE II
OUTPUT MASTER (BY STATE) FOR THE SAMPLE AS A WHOLE

Change in Campus F.T.E. Student Enrollments			Population of Service area n = 299		Campuses Reporting (n = 328)	F.T.E. Students 1981-82	F.T.E. Students 1986-87	F.T.E. Students # change	% change	Market Penetration n = 298	
#>	#<		#>	#<						# up	# down
5	2	Alabama	+6	-1	7	12,570.0	13,288.0	+ 718.0	+ 5.7	4	3
3	1	Arkansas	+3	-1	4	3,279.0	4,495.0	+ 1,216.0	+ 37.1	3	1
4	3	Arizona	+6	-1	7	50,842.0	51,021.0	+ 179.0	+ 0.4	2	5
11	12	California	+15	-4	23	286,286.0	266,084.0	<20,202.0>	<7.1>	5	14
4	1	Colorado	+5	-0	5	8,866.0	8,751.0	<115.0>	<1.3>	2	3
2	6	Connecticut	+4	-2	8	9,264.0	8,805.0	<459.0>	<5.0>	1	5
4	17	Florida	+18	-1	21	142,477.0	128,969.0	<13,508.0>	<9.5>	3	16
5	6	Georgia	+4	-6	11	15,873.0	15,858.0	<15.0>	<0.1>	7	3
5	1	Iowa	+4	-2	6	22,766.0	22,356.0	<410.0>	<1.8>	5	1
6	16	Illinois	+15	-7	22	100,454.0	86,092.0	<14,362.0>	<14.3>	4	18
8	2	Kansas	+6	-3	10	14,580.0	16,763.0	+ 2,183.0	+ 15.0	6	3
1	0	Kentucky	+1	0	1*	15,740.0	24,978.0	+ 9,238.0	+ 58.7	*	*
4	3	Massachusetts	+4	-1	7	16,733.0	19,748.0	+ 3,295.0	+ 20.0	4	1
8	1	Maryland	+5	-3	9	30,310.0	41,810.0	+ 11,500.0	+ 37.9	6	2
7	9	Michigan	+10	-4	16	78,013.0	73,328.0	<4,685.0>	<6.0>	7	7
1	3	Minnesota	NA	NA	4	7,706.0	7,864.0	+ 158.0	+ 2.1	NA	NA
2	2	Missouri	+1	-3	4	30,028.0	27,772.0	<2,256.0>	<7.5>	2	2
3	1	Mississippi	+3	-1	4	11,456.0	11,761.0	+ 305.0	+ 2.7	1	3
11	5	North Carolina	+11	-3	16	33,885.0	38,241.0	+ 4,356.0	+ 12.9	10	4
2	3	Nebraska	+2	-3	5	11,793.0	13,896.0	+ 2,103.0	+ 17.8	4	1
3	6	New Jersey	+6	-3	9	40,816.0	38,509.0	<2,307.0>	<5.7>	3	6
9	12	New York	+13	-6	21	94,390.0	91,020.0	<3,370.0>	<3.6>	8	11
9	8	Ohio	+10	-6	17	53,405.5	53,113.0	<292.0>	<0.5>	8	8
2	2	Oklahoma	+2	-0	4	14,789.0	14,346.0	<443.0>	<3.0>	1	1
3	2	Oregon	+5	-0	5	23,030.0	19,879.0	<3,151.0>	<13.7>	2	3
5	3	Pennsylvania	+7	-1	8	43,056.0	39,467.0	<3,589.0>	<8.3>	4	4
3	2	South Carolina	+3	-2	5	9,501.0	10,300.0	799.0	8.4	3	2
4	4	Tennessee	+5	-2	8	17,655.0	17,368.0	<287.0>	<1.6>	2	5
19	7	Texas	+19	-7	26	132,378.0	139,755.0	7,377.0	5.6	17	8
4	14	Virginia	+13	-3	18	58,235.0	49,634.0	<8,601.0>	<14.8>	5	11
1	9	Washington	+5	-5	10	40,855.0	38,530.0	<2,325.0>	<5.7>	5	5
0	3	Wisconsin	+0	-3	3	20,381.0	16,262.0	<4,119.0>	<20.2>	0	4
2	2	Wyoming	+2	-2	4	6,400.0	5,887.0	<513.0>	<8.0>	2	2
160	168		213	86	328*	1,457,532.0	1,415,950.0	<41,582.0>	<2.9>	136	162

* Kentucky Community College System counted as 1.

SQUARE FOOTAGE

As Table III indicates, square footage, for the sample as a whole, increased by +11,671,298 sq. ft. (+9.3%) over the period.

Community college square footage increased in 28 of the 33 states reporting. The highest rate of square footage growth was in Connecticut (+73.4%) and the greatest decline was in Colorado (-21.6%). Since F.T.E. student enrollments were down in 20 of 33 states, there is an inverse relationship between changes in square footage and changes in F.T.E. student enrollments, for most states. At the extremes are Maryland (enrollments up 37.9%, square footage down 7.6%) and Illinois (enrollments down 14.3% and square footage up 17.9%).

For the sample as a whole, 9.3% more square footage served 2.9% fewer F.T.E. students by the end of the six-year period.

TABLE III
SQUARE FOOTAGE AND UTILITIES
MASTER (BY STATE) FOR THE SAMPLE AS A WHOLE

	Square Footage 1981-82	Sq. Ft. (n)	Square Footage 1986-87	# Change	% Change	Change in Utilities as a % of total campus expenditures (# of campuses) (n = 304)	
						>	<
Alabama	1,478,851.0	(7)	1,580,830.0	101,979.0	+ 6.9	4	3
Arkansas	438,195.0	(4)	498,111.0	59,916.0	+ 13.7	3	1
Arizona	3,328,850.0	(6)	4,201,812.0	872,962.0	+ 26.2	3	3
California	14,019,664.0	(16)	13,845,181.0	<174,483.0>	<1.2>	7	15
Colorado	1,531,391.0	(5)	1,201,185.0	<330,206.0>	<21.6>	1	2
Connecticut	764,151.0	(8)	1,325,070.0	560,919.0	+ 73.4	0	5
Florida	12,070,451.0	(19)	13,110,807.0	1,040,356.0	+ 8.6	4	14
Georgia	2,216,455.0	(10)	2,309,102.0	92,647.0	4.2	0	9
Iowa	1,919,641.0	(6)	2,424,956.0	505,315.0	26.3	6	
Illinois	7,781,567.0	(22)	9,177,001.0	1,395,434.0	+ 17.9	10	12
Kansas	1,834,743.0	(8)	2,012,437.0	177,694.0	+ 9.7	2	8
Kentucky	1,600,909.0	NA	1,754,584.0	153,675.0	+ 9.6	1	0
Massachusetts	2,087,988.0	(7)	2,536,847.0	448,859.0	+ 21.5	1	6
Maryland	2,679,468.0	(9)	2,475,858.0	<203,610.0>	<7.6>	2	7
Michigan	8,017,291.0	(16)	8,864,945.0	847,654.0	+ 10.6	1	15
Minnesota	729,676.0	(4)	830,258.0	100,582.0	+ 13.8	0	3
Missouri	2,141,990.0	(4)	3,480,956.0	1,338,966.0	+ 62.5	2	2
Mississippi	2,446,853.0	(4)	2,603,526.0	156,673.0	+ 6.4	4	0
North Carolina	1,976,028.0	(12)	2,224,261.0	248,233.0	+ 12.6	6	9
Nebraska	3,663,608.0	(5)	3,184,291.0	<479,317.0>	<13.1>	2	3
New Jersey	3,259,105.0	(9)	3,383,173.0	124,068.0	+ 3.8	2	7
New York	10,823,261.0	(20)	11,159,767.0	336,506.0	+ 3.1	2	15
Ohio	5,709,805.0	(15)	6,930,969.0	1,221,164.0	+21.4	1	11
Oklahoma	1,417,133.0	(4)	1,763,388.0	346,255.0	+ 24.4	3	1
Oregon	2,334,163.0	(4)	2,370,134.0	35,971.0	+ 1.5	1	4
Pennsylvania	2,982,624.0	(8)	3,217,541.0	234,917.0	+ 7.9	0	8
South Carolina	1,010,971.0	(5)	1,244,506.0	233,535.0	+ 23.1	2	2
Tennessee	1,621,954.0	(7)	1,793,791.0	171,837.0	+ 10.6	1	7
Texas	12,515,128.0	(23)	13,439,171.0	924,043.0	+ 7.4	5	22
Virginia	3,296,262.0	(18)	3,627,642.0	331,380.0	+10.1	2	14
Washington	3,823,332.0	(9)	4,204,740.0	381,408.0	+ 10.0	5	5
Wisconsin	2,283,870.0	(2)	2,263,870.0	<20,000.0>	<0.9>	1	3
Wyoming	1,308,990.0	(4)	1,744,956.0	435,966.0	+ 33.3	3	1
	125,114,368.0	(300)	136,785,666.0	11,671,298.0	9.3	81	223
						(26.6%)	(73.4%)

EXPENDITURES

Total expenditures were up \$1.4 billion (38.7%) for the sample as a whole. Direct Instruction received 43.1¢ (611,893/1,418,778) of every incremental dollar and non-classroom functions received 56.9¢ of every incremental dollar. As Table IV illustrates, the highest priority was Institutional Support (+53.8%) and the lowest priority was Plant Operations and Maintenance (+29.6%). Direct Instruction (+33.1%) ranked fourth out of five expenditure categories in rate of growth over the six year period.

TABLE IV
EXPENDITURES (in \$000's)
(n = 310)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in</u> <u>\$</u>	<u>Change in</u> <u>%</u>
Direct Instruct. (010)	\$1,849,254	\$2,461,147	\$611,893	33.1%
Instructional Admin. (040)	319,330	470,403	151,073	47.3
Student Services (060)	336,428	477,689	141,261	42.0
Institutional Support (080)	523,228	804,616	281,388	53.8
Plant Op. & Maint. (090)	<u>452,849</u>	<u>586,998</u>	<u>134,149</u>	<u>29.6</u>
TOTAL	\$3,664,518	\$5,083,296	\$1,418,778	38.7%

The low rate of growth in Plant Operations and Maintenance includes significant declines in relative utility costs. As a percentage of total campus expenditures, utility costs declined at 223 (73.4%) of reporting institutions. This means that if utility costs are entirely omitted from Plant Operations and Maintenance expenditures, the (29.6%) rate of increase goes up for the period under examination.

The next two tables break the sample institutions into campuses with growing student enrollments and campus with declining student enrollments. While the numbers and percentages are different, the priorities are the same.

TABLE V

EXPENDITURES (in \$000's)
(EXPANDING ENROLLMENTS) (n = 151)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in \$</u>	<u>Change in %</u>
Direct Instruct. (010)	\$716,373	\$1,031,398	\$315,025	44.0%
Instructional Admin. (040)	123,211	185,829	62,618	50.8
Student Services (060)	124,838	186,864	62,026	49.7
Institutional Support (080)	202,973	317,336	114,363	56.3
Plant Op. & Maint. (090)	<u>181,678</u>	<u>250,538</u>	<u>68,860</u>	<u>37.9</u>
Total	\$1,411,502	\$2,089,228	\$677,726	48.0%

TABLE VI

EXPENDITURES (in \$000's)
(DECLINING ENROLLMENTS) (n = 159)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in \$</u>	<u>Change in %</u>
Direct Instruct. (010)	\$1,132,881	\$1,429,749	\$286,868	26.2%
Instructional Admin. (040)	196,119	284,574	88,455	45.1
Student Services (060)	211,591	290,825	79,234	37.4
Institutional Support (080)	320,255	487,280	167,025	52.2
Plant Op. & Maint. (090)	<u>271,170</u>	<u>336,455</u>	<u>65,285</u>	<u>24.1</u>
Total	\$2,253,016	\$2,994,068	\$741,052	32.9%

At schools with expanding student enrollments, Direct Instruction received 46.5¢ (\$315,026/\$677,726) of every incremental dollar over the six-year period. At schools with declining student enrollments, Direct Instruction received 38.7¢ (\$286,868/\$741,052) of every incremental dollar.

In 1981-82, sample institutions spent 50.5% of total expenditures on Direct Instruction. In 1986-87 they spent 48.4%. By 1986-87, non-classroom expenditures cost more per year than classroom teaching. More important from an educational standpoint, is the economic impact of this devaluation of Direct Instruction.

By the end of the six-year period, an annuity in excess of \$106,000,000 had been diverted from Direct Instruction to non-classroom functions. Based on a hypothetical salary for a full-time faculty member of \$36,000 per year and a part-time faculty pay rate equal to 40% of \$36,000, this represents a loss of between 44,000 and 110,000 potential three-credit classes annually, depending on the mix of part-time versus full-time teachers employed. Assuming that student demand for extra classes does not exist, tuition and/or state reimbursements could be reduced by \$106,000,000 without affecting the 1986-87 levels of expenditure for Direct Instruction. Since the sample as a whole received \$1.4 billion in new revenues over the six-year period, the \$106 million equals 7.6% of total incremental revenues. This represents a major shift in expenditure patterns.

As with most other statistics, the changes in expenditure patterns varied greatly between states. At the extremes are Kentucky, which invested 69¢ of every incremental dollar in Direct Instruction, and

Arizona, which invested 29.7¢ of every incremental dollar in Direct Instruction.

Three comprehensive expenditure tables follow which present detailed expenditure data by state, for the sample as a whole, and separately for institutions with enrollment growth versus institutions with enrollment declines.

TABLE VII
MASTER EXPENDITURES BY STATE (IN THOUSANDS OF DOLLARS) FOR
THE SAMPLE AS A WHOLE

	1981-82	1986-87	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total ²			
N	010	040	060	080	090	Total ²	010	040	060	080	090	Total ²	010	040	060	080	090	Total ²	010	040	060	080	090	Total ²	010	040	060	080	090	Total ²
Alabama	7	16,229.5	2,143.1	2,237.0	3,722.5	3,992.6	29,734.4	21,824.0	3,064.3	4,281.8	5,094.8	4,595.0	40,731.6																	
Arkansas	4	4,443.2	889.1	1,440.2	2,060.4	1,167.0	10,329.5	7,122.4	734.6	1,313.9	2,717.7	1,396.1	14,046.0																	
Arizona	7	74,296.7	9,662.0	14,440.3	15,576.4	15,946.8	133,488.0	91,594.8	20,720.3	21,438.2	32,240.2	21,624.7	191,695.6																	
California	23	365,688.7	60,990.8	66,031.4	87,544.1	80,485.8	714,198.4	409,296.9	74,835.5	88,044.0	128,053.2	93,381.5	829,488.2																	
Colorado	5	16,750.7	2,370.6	2,567.9	4,467.1	2,907.4	30,438.1	20,430.0	4,886.9	3,990.1	7,043.0	3,939.1	41,221.4																	
Connecticut	8	8,732.2	2,054.4	2,122.9	4,161.3	1,797.7	20,411.3	13,598.1	4,886.9	4,369.3	6,918.5	2,241.7	33,141.6																	
Florida	21	177,266.1	40,834.9	38,253.3	57,874.8	46,514.6	377,088.9	236,693.3	50,393.7	52,412.0	89,337.8	56,653.7	519,843.8																	
Georgia	11	18,593.3	3,068.5	2,858.3	8,377.5	6,401.3	40,188.7	28,111.5	4,912.2	4,142.3	9,336.6	8,234.9	56,237.0																	
Iowa	6	31,261.7	4,893.1	4,313.6	7,318.1	6,597.0	55,390.8	50,756.1	6,737.3	5,329.8	9,948.8	8,470.8	87,346.3																	
Illinois	22	124,038.3	14,398.3	19,348.6	36,508.6	35,798.9	251,285.3	152,708.7	18,813.5	28,997.5	65,032.0	43,567.4	337,306.1																	
Indiana	10	21,091.8	4,855.0	5,270.0	6,975.2	7,639.9	48,434.3	35,944.5	6,514.9	9,350.6	12,646.9	9,076.5	60,180.9																	
Kentucky (System)	14	14,601.8	2,314.8	2,263.3	4,363.1	3,814.1	30,906.1	29,092.4	5,815.2	3,442.8	3,994.7	5,118.6	51,968.1																	
Massachusetts	7	19,020.3	4,149.2	3,990.3	6,355.2	7,610.1	42,394.1	36,328.3	7,389.7	6,084.3	13,382.3	11,678.1	81,776.5																	
Maryland	9	40,503.7	7,180.8	10,536.5	16,899.8	11,507.9	87,918.4	63,246.3	10,892.4	14,462.7	23,400.1	15,037.9	130,217.8																	
Michigan	16	118,354.0	23,019.6	27,978.6	22,878.9	26,842.0	227,499.0	152,043.0	40,891.6	35,377.6	53,064.3	37,165.4	312,694.2																	
Minnesota	4	9,475.7	2,509.3	4,075.3	2,427.5	2,107.4	22,636.8	11,793.7	3,192.8	5,184.4	3,092.4	3,023.6	27,584.4																	
Missouri	4	37,878.6	6,925.6	6,864.0	11,709.2	9,090.7	74,021.2	55,411.7	10,439.8	9,874.9	17,892.3	13,615.4	109,473.2																	
Mississippi	4	20,374.6	1,597.8	3,086.4	3,800.5	3,889.7	34,200.4	26,237.4	2,522.3	4,177.8	4,789.8	5,908.8	44,391.7																	
North Carolina	16	38,819.6	7,550.8	4,259.9	9,503.9	6,893.1	68,377.3	61,143.9	10,036.3	7,870.9	15,630.9	9,309.0	106,194.0																	
Nebraska	5	21,820.9	4,188.9	2,713.3	7,616.3	6,262.3	43,814.7	29,281.7	6,209.5	3,971.4	10,798.8	7,169.2	59,099.4																	
New Jersey	7	31,807.8	8,487.7	7,193.1	13,319.6	10,142.1	60,160.1	49,389.2	12,035.0	10,111.9	24,072.3	14,312.7	116,504.5																	
New York	17	126,771.2	9,047.2	18,002.8	41,590.0	34,317.3	236,532.2	169,619.3	18,181.4	25,741.6	53,452.6	47,223.5	331,008.9																	
Ohio	13	58,407.4	11,866.7	13,373.3	18,591.6	13,840.1	126,173.2	82,671.9	21,196.3	21,326.6	32,501.2	21,346.1	192,976.1																	
Oklahoma	3	12,368.0	1,403.5	1,562.2	1,153.4	2,363.9	19,132.5	15,898.0	1,481.4	1,947.0	1,498.7	2,466.0	24,021.2																	
Oregon	3	34,277.6	6,490.1	4,712.5	8,749.2	5,668.9	61,788.9	45,393.9	6,519.3	6,784.7	12,732.0	7,628.1	83,280.3																	
Pennsylvania	8	46,224.2	8,738.6	7,356.6	14,305.1	11,700.5	93,680.1	74,701.7	12,318.3	12,456.2	21,662.6	15,564.4	142,337.7																	
South Carolina	3	4,138.9	865.2	563.4	2,487.1	1,193.8	9,479.6	6,887.5	1,308.3	1,454.3	4,357.0	1,631.2	16,167.5																	
Tennessee	5	15,703.4	2,153.8	3,258.2	3,849.8	3,164.6	29,161.7	28,352.3	4,059.2	4,465.9	6,180.0	4,134.6	53,919.9																	
Texas	27	176,788.8	37,038.3	28,669.3	55,963.5	50,787.2	367,710.1	241,123.1	53,120.8	40,128.4	93,167.2	68,292.0	531,844.8																	
Virginia	18	67,781.8	15,201.1	11,099.7	19,416.7	11,803.6	127,442.8	93,617.8	23,435.1	15,468.7	28,724.7	14,421.4	179,143.9																	
Washington	8	31,991.6	5,004.5	5,873.5	6,610.3	6,720.8	54,889.6	42,514.4	5,880.5	8,478.9	11,284.9	8,029.4	60,078.6																	
Wisconsin	4	45,258.4	7,131.6	6,046.6	11,162.2	8,883.2	88,708.3	58,770.1	12,724.9	9,462.8	12,521.3	11,633.2	116,119.2																	
Wyoming	4	11,259.9	2,322.2	3,232.2	1,789.6	4,488.1	26,319.4	18,973.7	3,724.2	3,153.2	3,618.6	7,432.1	38,122.8																	
	310	1,649,254.3	319,329.8	336,428.4	523,227.7	452,848.6	3,664,517.6	2,461,146.8	470,402.7	477,689.1	804,616.3	586,993.1	5,083,296.2																	
		(010)	(040)	(060)	(080)	(090)	(Total)	(010)	(040)	(060)	(080)	(090)	(Total)																	
							(1981-82)						(1986-87)																	
							(Total)						(Total)																	

*SYSTEM

1 n = 7 not 8

2 Totals Included Public Service, Mandatory Transfers, and Restricted Scholarship expenditures.

TABLE VIII

MASTER EXPENDITURES BY STATE (IN THOUSANDS OF DOLLARS) FOR
INSTITUTIONS WITH EXPANDING P.T.E. STUDENT ENROLLMENTS

	N	1981-82 010	040	060	080	090	TOTAL ¹	1986-87 010	040	060	080	090	Total ¹
Alabama	5	13,981.7	1,880.5	2,454.4	3,207.1	3,536.1	25,800.6	18,776.5	2,747.5	3,903.2	4,396.3	4,120.3	35,541.8
Arkansas	3	2,915.1	719.4	597.1	1,321.2	691.0	6,735.7	4,902.6	528.5	996.2	1,987.3	796.7	9,656.5
Arizona	4	21,275.7	4,439.1	4,893.0	6,912.3	5,345.4	45,475.3	29,925.5	6,143.0	6,942.9	10,402.2	7,667.8	63,371.3
California	11	126,185.3	23,100.8	25,054.6	26,200.0	29,710.3	240,137.8	159,516.2	32,140.4	35,225.1	41,696.7	42,150.6	322,809.8
Colorado	4	13,530.4	1,429.4	1,884.4	3,332.7	2,326.3	23,938.1	14,587.3	2,477.3	2,690.6	5,473.2	2,879.4	29,515.7
Connecticut	2	2,370.6	616.7	450.4	1,067.3	62.9	3,098.4	3,917.9	1,400.9	903.6	1,562.8	271.7	8,541.6
Florida	4	21,784.1	4,399.3	4,442.4	6,366.2	4,800.2	43,106.5	31,849.7	7,455.7	6,570.5	10,872.8	7,344.5	65,739.8
Georgia	5	8,277.2	1,370.2	1,282.9	3,736.9	3,153.2	18,183.0	12,594.1	2,033.2	1,887.0	4,373.3	4,085.6	25,612.5
Iowa	5	26,446.8	4,030.8	3,969.0	6,557.1	5,306.1	47,386.4	44,290.8	6,070.0	5,038.0	8,859.5	7,226.0	76,456.6
Illinois	6	41,402.1	7,198.9	6,429.2	10,539.1	8,860.8	85,536.0	55,132.1	6,438.1	8,850.6	15,382.0	14,198.9	108,752.4
Kansas	8	18,395.6	4,050.2	4,115.3	5,998.1	6,552.9	41,465.2	32,028.4	8,110.9	6,649.1	11,075.1	8,029.7	69,524.8
Kentucky (System)	1	14,601.8	2,314.8	2,262.3	4,363.1	3,814.1	30,906.1	29,097.4	5,875.2	3,442.8	3,994.7	5,118.6	51,968.1
Massachusetts	4	11,763.4	2,586.3	2,049.1	4,119.7	4,889.8	25,657.7	24,238.6	5,152.6	5,286.5	9,413.7	7,172.2	55,278.5
Maryland	8	39,621.2	6,989.2	10,444.5	16,462.4	11,322.5	86,102.5	61,815.8	10,888.8	14,452.4	23,170.0	14,680.1	127,420.6
Michigan	7	16,233.0	3,957.7	3,409.8	3,791.3	4,156.6	32,989.5	23,559.1	5,757.0	6,319.7	5,990.9	6,099.7	50,517.5
Minnesota	1	2,434.1	648.8	1,281.2	483.2	408.7	5,804.4	3,242.9	1,005.2	1,351.9	652.5	714.7	7,341.5
Missouri	2	14,892.6	1,708.7	1,997.5	4,307.0	3,026.9	26,783.4	23,432.0	2,646.7	3,623.0	6,328.2	4,554.7	41,606.7
Mississippi	3	17,054.7	1,202.4	2,556.4	3,308.0	3,351.7	28,626.5	22,655.5	2,092.1	3,510.6	4,118.0	5,247.9	38,199.0
North Carolina	11	28,132.5	4,680.8	2,967.5	7,389.1	4,523.4	48,490.8	44,402.0	6,002.3	5,425.4	11,016.6	6,878.3	75,633.5
Nebraska	2	10,809.1	1,450.4	921.1	1,786.0	2,255.2	17,580.8	13,987.3	2,114.1	1,209.3	2,842.8	2,501.9	23,188.1
New Jersey	2	7,193.8	1,442.5	1,645.6	2,507.7	2,108.4	15,394.0	10,581.3	2,844.0	2,202.7	4,000.0	3,745.9	23,987.1
New York	8	65,133.1	5,042.9	8,997.0	20,146.7	16,964.6	118,748.1	84,667.6	9,823.1	12,962.8	30,143.9	23,568.5	190,390.4
Ohio	7	18,468.9	2,702.7	3,429.0	6,080.9	3,837.1	36,903.2	28,798.2	4,603.5	5,589.5	11,469.0	6,302.9	59,114.2
Oklahoma	1	2,445.9	243.2	322.8	247.0	490.0	3,754.8	2,293.4	287.7	430.8	406.5	512.4	4,051.2
Oregon	2	18,973.2	2,984.1	2,744.2	4,722.7	3,476.5	34,976.5	27,828.9	3,718.2	4,223.1	7,561.5	4,663.1	49,626.3
Pennsylvania	5	18,914.6	3,039.0	3,087.5	7,539.7	4,818.0	39,633.1	30,913.6	4,158.8	5,503.4	10,518.4	6,776.2	60,688.5
South Carolina	2	3,476.6	751.2	382.8	1,930.6	927.4	7,652.3	5,951.7	1,343.7	1,191.6	3,482.3	1,557.2	13,661.8
Tennessee	2	4,055.3	531.8	771.5	981.1	809.5	7,220.1	12,175.7	1,229.2	1,264.2	1,595.9	1,217.3	17,679.7
Texas*	20	110,834.1	24,701.8	16,702.5	34,139.8	36,049.3	231,256.9	151,331.4	35,807.7	26,036.2	58,442.4	44,836.1	339,092.9
Virginia	4	6,985.5	1,484.4	1,163.0	2,254.6	1,010.1	13,213.9	11,898.5	2,793.0	1,713.1	3,919.4	1,749.8	22,781.9
Washington	0												
Wisconsin	0												
Wyoming	2	7,785.0	1,512.6	2,129.7	1,174.1	3,093.2	16,943.9	11,006.0	2,140.5	1,468.3	2,188.3	3,869.5	21,477.6
	151	716,373.0 (010)	123,210.6 (040)	124,837.7 (060)	202,972.7 (080)	181,678.0 (090)	1,411,501.7 (1981-82) (Total)	1,031,398.0 (010)	185,828.9 (040)	186,864.1 (060)	317,316.2 (080)	250,538.2 (090)	2,089,227.9 (1986-87) (Total)

¹ Totals include Public Service, Mandatory Transfer, and Restricted Scholarship expenditures.

TABLE 1K
MASTER EXPENDITURES BY STATE (IN THOUSANDS OF DOLLARS) FOR
INSTITUTIONS WITH DECLINING P.T.E. STUDENT ENROLLMENTS

		1981-82	1986-87	TOTAL ¹	010	040	060	080	090	TOTAL ¹
N		010	010	010	010	040	060	080	090	TOTAL ¹
Alabama	2	\$1,247.8	\$262.6	\$3,953.8	\$3,047.5	\$316.8	\$378.6	\$598.5	\$674.7	\$5,189.8
Arkansas	1	1,728.1	243.1	3,593.8	3,219.8	306.1	317.2	230.4	599.4	4,389.5
Arizona	3	53,021.0	5,222.9	88,012.7	61,669.3	14,377.3	14,485.3	21,846.0	17,956.9	128,328.3
California	12	239,303.4	37,790.0	474,080.6	249,780.7	42,695.1	52,818.9	86,356.5	51,430.9	506,678.4
Colorado	1	3,320.3	841.2	6,900.0	5,862.7	403.6	899.5	2,369.8	1,059.7	11,705.7
Connecticut	6	6,381.6	1,437.7	1,734.8	9,480.2	3,437.9	3,465.7	5,355.7	1,970.0	24,603.0
Florida	17	155,482.0	36,235.6	333,382.4	204,835.6	42,938.0	46,041.5	78,465.0	49,509.2	454,204.0
Georgia	6	10,316.1	1,698.3	15,313.1	15,347.4	2,879.0	2,255.5	5,163.3	4,149.3	30,624.5
Iowa	1	4,814.9	346.6	8,004.2	6,465.3	867.5	491.6	1,089.3	1,244.8	10,889.7
Illinois	16	84,636.2	7,399.4	165,729.5	97,374.6	12,385.4	20,146.9	50,450.0	25,368.5	228,533.7
Kansas	2	2,896.2	1,156.7	6,969.1	3,936.1	404.0	2,409.5	1,371.8	1,846.8	10,658.1
Kentucky (System)	3	7,256.9	1,941.2	16,736.4	12,119.9	2,232.1	2,798.0	3,968.5	4,505.9	26,498.0
Massachusetts	1	882.5	191.6	1,808.9	1,430.3	103.6	210.3	830.1	377.8	2,797.2
Maryland	9	102,321.0	19,061.9	194,509.5	128,483.9	35,134.6	29,037.9	27,073.4	31,065.7	262,176.7
Michigan	3	7,051.6	1,860.5	16,932.4	8,350.8	2,187.6	3,832.7	2,439.9	2,358.9	20,242.9
Minnesota	1	22,986.0	5,217.1	47,337.8	31,979.7	7,993.1	6,451.9	11,364.3	9,080.7	67,066.5
Missouri	1	3,319.9	395.4	5,975.9	3,401.9	430.2	667.2	671.8	680.9	6,192.7
Montana	3	10,487.1	2,070.0	20,086.5	16,741.9	4,054.0	2,445.5	4,814.3	2,430.7	30,580.5
Nebraska	3	11,011.8	2,738.5	15,749.4	15,394.4	4,095.4	2,782.1	7,956.0	4,667.3	35,911.3
New Jersey	5	27,614.0	7,045.2	46,786.1	38,407.9	9,191.0	8,209.2	20,072.3	10,366.8	92,517.4
New York	9	61,638.1	4,024.3	117,774.1	84,951.7	8,358.3	12,778.8	25,306.7	23,455.0	160,616.5
North Carolina	6	37,938.5	9,164.0	99,370.0	53,873.7	16,593.0	15,939.1	21,032.2	15,043.2	132,861.9
Ohio	2	9,922.1	1,160.3	13,372.7	13,404.6	1,193.7	1,516.2	1,082.2	2,153.6	20,020.0
Oklahoma	1	15,304.4	1,506.0	26,812.4	17,365.0	2,801.1	2,561.6	5,170.3	2,963.0	32,636.0
Oregon	3	29,311.6	5,699.6	54,027.0	43,788.1	8,159.5	6,952.8	11,144.2	9,788.2	81,649.2
Pennsylvania	1	652.3	114.0	1,827.3	935.8	156.6	262.9	874.7	274.0	2,505.7
South Carolina	1	1,622.0	2,486.7	21,941.6	16,176.6	2,830.0	3,201.7	4,384.1	2,917.3	36,740.2
Tennessee	3	11,650.1	12,336.5	136,453.2	89,791.7	17,313.1	14,092.2	34,924.8	23,455.9	194,731.9
Texas	7	65,736.7	13,616.7	116,228.9	81,779.3	20,642.1	13,953.6	26,405.3	12,671.6	156,762.0
Virginia	14	60,796.3	5,004.5	54,889.6	42,914.4	5,880.5	8,478.9	11,284.9	9,029.4	80,878.6
Washington	8	31,991.6	7,151.6	88,708.3	50,770.1	12,724.9	9,262.8	12,521.2	11,634.2	116,119.2
Wisconsin	4	41,558.4	1,450.1	9,375.5	7,967.7	1,583.7	1,876.9	1,450.3	3,562.6	16,845.2
Wyoming	2	2,024.2	1,450.1	9,375.5	7,967.7	1,583.7	1,876.9	1,450.3	3,562.6	16,845.2
159		\$1,132,881.3	\$196,119.2	\$2,233,015.9	\$1,429,748.6	\$284,573.8	\$290,825.0	\$487,280.1	\$336,454.9	\$2,994,068.3
		(010)	(040)	(010)	(010)	(040)	(060)	(080)	(090)	(Total)
										(1986-87)
										(Total)

¹ Totals include Public Service, Mandatory Transfer, and Restricted Scholarship expenditures.

STAFFING

Since salaries are beyond the scope of this study, only changes in the number of positions, by employee category, will be considered in this section.

Staffing data, for many campuses in the sample, was omitted or inconsistent. Only 228 sample institutions from 29 states provided comparable staffing data for both 1981-82 and 1986-87. Table X provides staffing data for the sample as a whole.

TABLE X
TOTAL STAFFING (n = 228)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in #</u>	<u>Change in %</u>
Total F.T.E. Faculty	47,707	48,341	+634	+1.3%
Full-time Faculty	27,782	27,120	<661>	<2.4%>
Total F.T.E. Faculty & Staff	88,620	94,667	6,047	6.8%
Total F.T.E. Support Staff (non-faculty)	40,913	46,326	5,413	13.2%

Full-time faculty declined by 661 positions (-2.4%), F.T.E. faculty increased by 634 positions (+1.3%) and F.T.E support staff increased by 5,413 positions (+13.2%).

Part-time faculty accounted for the entire gain in F.T.E faculty employment plus the replacement of 661 full-time faculty positions.

This means that approximately 1 of every 10 new F.T.E. positions over the period was a faculty position, and it was filled entirely by part-time faculty.

Table XI presents staffing data for institutions with enrollment growth.

TABLE XI
STAFFING (n = 113)
EXPANDING ENROLLMENTS

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in #</u>	<u>Change in %</u>
Total F.T.E. Faculty	21,451	22,917	+1,466	+6.8%
Full-time Faculty	12,105	12,163	+58	+.5%
Total F.T.E Faculty & Staff	39,290	43,952	+4,662	+11.9%
F.T.E. Support Staff (Non-faculty)	17,839	21,035	+3,196	+17.9%

Institutions with growing student enrollments increased full-time faculty by 58 positions (0.5%), F.T.E faculty grew by 1,466 positions (6.8%), and F.T.E. support staff grew by 3,196 positions (17.9%).

Less than one of every three new F.T.E. positions was a faculty position. Only one of every eighty-two new F.T.E. positions was a full-time faculty position.

It is fair to say that over a six-year period, campuses with enrollment growth ignored full-time faculty growth and focused primarily on building support staff.

Similar patterns appear for institutions with declining student enrollments.

TABLE XII
STAFFING (n = 115)
DECLINING ENROLLMENTS

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in #</u>	<u>Change in %</u>
Total F.T.E. Faculty	26,255.2	25,423.7	<831.5>	<3.2%>
Full-time Faculty	15,676.4	14,956.7	<719.7>	<4.6%>
Total F.T.E. Faculty & Staff	49,330.0	50,715.0	+1,385.0	+2.8%
F.T.E. Support Staff (Non-faculty)	23,074.8	25,291.3	+2,216.5	+ 9.6%

The interpretation is slightly more complicated for campuses with declining student enrollments, because the total F.T.E. faculty and staff increase of 1,385 positions includes the decrease of 831.5 positions in F.T.E. faculty. This means that F.T.E. support staff (non-faculty) grew by 2,216.5 (1,385.0 + 831.5) positions over the period.

Full-time faculty cuts accounted for 87% (719.7/831.5) of total F.T.E faculty cuts. Approximately nine out of every ten F.T.E. faculty positions eliminated were full-time faculty positions. Over the same period, support staff increased by 9.6%.

Of the twenty-nine states represented in the staffing sample, eighteen showed student enrollment declines over the period. Twelve of the eighteen reduced the number of full-time faculty but only two reduced the number of support staff. In conclusion, at campuses with declining student enrollments, support staff are almost always added and almost never cut.

TABLE XIII

MASTER, STAFFING BY STATE
FOR THE SAMPLE AS A WHOLE

	N	TOTAL F.T.E. FACULTY				FULL-TIME F.T.E. FACULTY (CREDIT ONLY) NO. P.T.				TOTAL F.T.E. STAFF INCLUDING TOTAL F.T.E. FACULTY			
		81-82	86-87	# Change	% Change	81-82	86-87	# Change	% Change	81-82	86-86	# Change	% Change
Alabama	5	546.7	483.9	<62.8>	<11.5>	388.0	355.2	<32.8>	<8.5>	972.5	920.8	<51.7>	<5.3>
Arkansas	2	84.0	104.5	20.5	24.4	65.0	58.0	<7.0>	<10.8>	247.0	214.5	<32.5>	<13.2>
Arizona	7	2,890.0	2,998.0	108.0	3.7	1,258.0	1,256.6	<1.4>	<0.1>	4,710.0	5,481.8	771.8	16.4
California	12	3,808.9	4,089.8	280.9	7.4	2,138.0	1,879.0	<259.0>	<12.1>	6,920.9	7,548.9	628.0	9.1
Colorado	3	364.3	454.0	89.7	24.6	230.0	209.7	<20.3>	<8.8>	632.7	776.4	143.7	22.7
Connecticut	7	402.3	490.4	88.1	21.9	267.0	294.0	27.0	10.1	781.6	968.0	186.4	23.8
Florida	16	4,653.9	4,762.3	108.4	2.3	2,783.0	2,765.5	<17.5>	<0.6>	11,030.1	11,536.0	505.9	4.6
Georgia	8	373.5	359.7	<13.8>	<3.7>	306.1	303.9	<2.2>	<0.7>	864.4	871.6	7.2	0.8
Iowa	6	949.0	1,090.0	141.0	14.9	700.0	762.0	62.0	8.9	1,897.0	2,172.0	275.0	14.5
Illinois	17	4,226.5	3,546.3	<680.2>	<16.1>	1,895.0	1,854.0	<41.0>	<2.2>	7,012.1	6,845.2	<166.9>	<2.4>
Kansas	6	532.6	586.7	54.1	10.2	336.0	375.0	39.0	11.6	913.1	1,187.7	274.6	30.1
Kentucky													
Massachusetts	5	944.0	941.8	<2.2>	<0.2>	561.0	557.0	<4.0>	<0.7>	1,485.5	1,721.8	236.3	15.9
Maryland	7	1,400.5	1,647.1	246.6	17.6	745.0	786.5	41.5	5.6	2,844.8	3,233.5	388.7	13.7
Michigan	12	2,475.5	2,645.1	169.6	6.9	1,408.5	1,371.1	<37.4>	<2.7>	4,421.1	4,708.8	287.7	6.5
Minnesota													
Missouri	4	1,385.0	1,448.2	63.2	4.6	804.0	837.0	33.0	4.1	2,565.0	2,914.7	349.7	13.6
Mississippi	4	718.0	734.6	16.6	2.3	594.0	487.0	<107.0>	<18.0>	1,261.9	1,338.0	76.1	6.0
North Carolina	8	1,003.4	892.0	<111.4>	<11.1>	357.0	384.0	27.0	7.6	1,498.2	1,547.0	48.8	3.3
Nebraska	2	379.2	411.9	32.7	8.6	294.0	310.0	16.0	5.4	606.8	716.7	109.9	18.1
New Jersey	7	1,631.9	1,438.0	<193.9>	<11.9>	705.0	705.0	.0	.0	3,225.5	3,165.0	<60.5>	<1.9>
New York	13	3,121.9	3,346.6	224.7	7.2	2,218.0	2,146.0	<72.0>	<3.2>	5,940.7	6,361.5	420.9	7.1
Ohio	12	2,228.8	2,217.7	<11.1>	0.5	1,327.5	1,200.1	<127.4>	<9.6>	3,936.8	4,340.4	403.6	10.3
Oklahoma													
Oregon													
Pennsylvania	3	366.0	485.0	119.0	32.5	267.0	258.0	<9.0>	<3.4>	738.1	917.0	178.9	24.2
South Carolina	5	709.0	728.4	19.4	2.7	314.0	354.0	40.0	12.7	1,075.2	1,405.7	330.5	30.7
Tennessee	4	432.3	391.6	<40.7>	<9.4>	337.0	335.0	<2.0>	<0.6>	948.8	920.0	<28.8>	<3.0>
Texas	23	6,252.6	6,602.2	349.6	5.6	3,958.0	3,882.0	<76.0>	<1.9>	11,647.2	12,641.0	993.8	8.5
Virginia	15	2,678.9	2,568.3	<110.6>	<4.1>	1,630.7	1,507.0	<123.7>	<7.6>	4,686.9	4,593.2	<93.7>	<2.0>
Washington	8	1,380.3	1,426.7	46.4	3.4	808.0	850.0	42.0	5.2	2,602.4	2,705.2	102.8	4.0
Wisconsin	3	1,320.0	914.7	<405.3>	<30.7>	770.0	725.2	<44.8>	<5.8>	2,290.5	1,846.5	<444.0>	<19.4>
Wyoming	4	447.5	535.5	88.0	19.7	317.0	312.0	<5.0>	<1.6>	862.7	1,067.6	204.9	23.8
	228	47,706.5	48,341.0	634.5	1.3%	27,781.8	27,119.8	<662.0>	<2.4>	88,619.5	94,666.5	6,047.0	6.8

TABLE XIV
MASTER, STAFFING BY STATE FOR INSTITUTIONS
WITH EXPANDING P.T.E. STUDENT ENROLLMENTS

	N	TOTAL F.T.E. FACULTY		# Change	% Change	FULL-TIME F.T.E. FACULTY (CREDIT ONLY) NO. P.T.		# Change	% Change	TOTAL F.T.E. STAFF INCLUDING F.T.E. FACULTY		# Change	% Change
		81-82	86-87			81-82	86-87			81-82	86-87		
Alabama	4	493.0	430.9			355.0	325.0			875.0	834.1		
Arkansas	2	84.0	124.5			65.0	58.0			247.0	214.5		
Arizona	4	1,161.0	1,055.0			434.0	443.6			1,971.0	1,981.3		
California	5	2,198.8	2,189.5			1,033.0	936.3			3,950.0	4,117.4		
Colorado	2	180.7	233.3			132.0	102.7			318.1	368.0		
Connecticut	2	111.5	139.9			78.0	89.0			227.1	284.6		
Florida	4	710.7	856.6			423.0	460.0			1,602.6	1,890.3		
Georgia	3	111.2	108.5			83.4	84.8			274.8	280.5		
Iowa	5	824.0	951.0			613.0	644.0			1,658.0	1,893.0		
Illinois	4	1,008.0	1,101.5			454.0	474.0			1,804.5	2,022.9		
Kansas	4	424.5	472.0			256.0	286.0			724.0	979.0		
Kentucky													
Massachusetts	2	464.0	549.3			254.0	256.0			682.0	938.3		
Maryland	6	1,360.5	1,607.1			725.0	762.5			2,772.8	3,155.5		
Michigan	6	547.1	596.9			321.0	311.6			958.1	1,020.1		
Minnesota													
Missouri	2	523.0	650.2			269.0	309.0			889.0	1,076.7		
Mississippi	3	542.0	578.6			493.0	386.0			1,001.9	1,109.0		
North Carolina	7	890.0	782.0			320.0	338.0			1,313.5	1,353.0		
Nebraska	2	379.2	411.9			294.0	310.0			606.8	716.7		
New Jersey	3	708.8	600.0			272.0	293.0			1,337.3	1,268.0		
New York	6	1,150.2	1,323.2			855.0	843.0			2,326.4	2,718.3		
Ohio	7	1,208.9	1,301.6			711.0	689.6			2,312.6	2,653.5		
Oklahoma	0												
Oregon	0												
Pennsylvania	1	77.0	103.0			52.0	53.0			152.1	170.0		
South Carolina	3	644.0	668.0			274.0	321.0			918.4	1,251.0		
Tennessee	2	150.3	184.0			129.0	149.0			338.3	411.0		
Texas	19	5,024.6	5,257.7			2,883.0	2,884.0			9,140.2	10,064.0		
Virginia	3	227.3	357.1			150.0	172.0			407.3	586.8		
Washington	0												
Wisconsin	0												
Wyoming	2	247.0	304.0			177.0	182.0			480.7	594.0		
	113	21,451.3	22,917.3	1,466.0	6.8%	12,105.4	12,163.1	57.7	0.5%	39,289.5	43,951.5	4,662.0	11.9%

TABLE XV
MASTER, STAFFING BY STATE FOR
INSTITUTIONS WITH DECLINING F.T.E. STUDENT ENROLLMENTS

	N	TOTAL F.T.E. FACULTY		# Change	% Change	FULL-TIME CREDIT FACULTY (NO. P.T.)		# Change	% Change	TOTAL F.T.E. STAFF INCL. F.T.E. FACULTY		# Change	% Change
		81-82	86-87			81-82	86-87			81-82	86-87		
Alabama	1	53.7	53.0			33.0	30.2			97.5	86.7	<10.8>	<11.1>
Arkansas	0												
Arizona	3	1,729.0	1,943.0			824.0	813.0			2,739.0	3,500.5	761.5	27.8
California	7	1,610.0	1,900.3			1,105.0	942.7			2,970.9	3,431.5	460.6	15.5
Colorado	1	183.6	220.7			98.0	107.0			314.6	408.4	93.8	29.8
Connecticut	5	290.8	350.5			189.0	205.0			554.5	683.4	128.9	23.2
Florida	12	3,943.2	3,905.7			2,360.0	2,305.5			9,427.5	9,645.7	218.2	2.3
Georgia	5	262.3	251.2			222.7	219.1			589.6	591.1	1.5	0.3
Iowa	1	125.0	139.0			97.0	118.0			239.0	279.0	40.0	16.7
Illinois	13	3,218.5	2,444.8			1,441.0	1,380.0			5,207.6	4,822.3	<385.3>	<7.4>
Kansas	2	108.1	114.7			80.0	89.0			189.1	208.7	19.6	10.4
Kentucky													
Massachusetts	3	480.0	392.5			307.0	301.0			803.5	783.5	<20.0>	<2.5>
Maryland	1	40.0	40.0			20.0	24.0			72.0	78.0	6.0	8.3
Michigan	6	1,928.4	2,048.2			1,087.5	1,059.5			3,463.0	3,688.7	225.7	6.5
Minnesota													
Missouri	2	862.0	798.0			535.0	528.0			1,676.0	1,838.0	162.0	9.7
Mississippi	1	176.0	156.0			101.0	101.0			260.0	229.0	<31.0>	<11.9>
North Carolina	1	113.4	110.0			37.0	46.0			184.7	194.0	9.3	5.0
Nebraska	0												
New Jersey	4	923.1	838.0			433.0	412.0			1,888.2	1,897.0	8.8	0.5
New York	7	1,971.7	2,023.4			1,363.0	1,303.0			3,614.3	3,643.2	28.9	.8
Ohio	5	1,019.9	916.1			616.5	510.5			1,624.2	1,686.9	62.7	3.9
Oklahoma													
Oregon													
Pennsylvania	2	289.0	382.0			215.0	205.0			586.0	747.0	161.0	27.5
South Carolina	2	65.0	60.4			40.0	33.0			156.8	154.7	<2.1>	<1.3>
Tennessee	2	282.0	207.6			208.0	186.0			610.5	509.0	<101.5>	<16.6>
Texas	4	1,228.0	1,344.5			1,075.0	998.0			2,507.0	2,577.0	70.0	2.8
Virginia	12	2,451.6	2,211.2			1,480.7	1,335.0			4,279.6	4,006.4	<273.2>	<6.4>
Washington	8	1,380.3	1,426.7			808.0	850.0			2,602.4	2,705.2	102.8	4.0
Wisconsin	3	1,320.0	914.7			770.0	725.2			2,290.5	1,846.5	<444.0>	<19.4>
Wyoming	2	200.5	231.5			140.0	130.0			382.0	473.6	91.6	24.0
	115	26,255.2	25,423.7	<831.5>	<3.2%>	15,676.4	14,956.7	<719.7>	<4.6%>	49,330.0	50,713.0	1,385.0	2.8

The Range of Staffing Patterns for the Sample as a Whole

As with expenditure data for the sample, great variation in staffing patterns is evident between states. Pennsylvania, with enrollment declines, increased F.T.E. faculty by +119 positions and increased support staff by +59.9 positions. Illinois, also with enrollment declines, cut F.T.E. faculty by -680.2 positions and increased support staff by +513.3 positions. A second comparison involves Texas and Maryland, both with enrollment growth. Maryland increased F.T.E. faculty by 246.6 positions, F.T.E. staff (non-faculty) by +142 positions and full-time faculty by +41.5 positions. The ratio of new F.T.E. faculty to new F.T.E. staff was 1.74 to 1 and full-time faculty accounted for approximately one of every six new F.T.E. faculty positions. In contrast, Texas increased F.T.E. faculty by +349.6 positions, F.T.E. staff (non-faculty) by +643.9 and reduced full-time faculty by -76 positions. The ratio of new F.T.E. faculty to new F.T.E. staff was 1:1.84 and full-time faculty were displaced by part-time faculty. As these examples illustrate, the range of staffing behaviors between states is very great. The variation within each state is also substantial and will be discussed in the section on outliers in Chapter V.

Staffing and Efficiency

Changes in institutional efficiency are evaluated through a comparison of the level and mix of staffing required to generate F.T.E. student enrollments in 1981-82 and 1986-87. For purposes of this test only, F.T.E. student enrollment data is limited to the same 228

institutions that provided staffing data. Table XVI provides F.T.E. student enrollment data for the limited sample.

TABLE XVI
F.T.E. STUDENT ENROLLMENTS FOR
CAMPUSES PROVIDING STAFFING DATA (n = 228)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in #</u>	<u>Change in %</u>
Declining Enroll. (n = 115)	544,615	458,830	<85,785>	<15.8%>
Expanded Enroll. (n = 113)	<u>361,731</u>	<u>421,830</u>	<u>60,099</u>	<u>+16.6%</u>
Total	906,346	880,660	<25,686>	<2.8%>

Over the six-year period, student enrollments for the revised sample fell by 2.8%. Based on this sample, all three employee groups show declining efficiency relative to F.T.E. student enrollments. As Table XVII demonstrates, full-time faculty efficiency was stable (-0.46%) while support staff efficiency declined (-14.2%).

TABLE XVII
THE RATIO OF F.T.E. STUDENT
ENROLLMENTS TO STAFF BY CATEGORY (n = 228)

	<u>1981-82</u>	<u>1986-87</u>	<u>up/<dn> Change in #</u>	<u>up/<dn> Change in %</u>
F.T.E. faculty	19.00	18.22	< .78>	< 4.1%>
Full-time faculty	32.62	32.47	< .15>	<0.46%>
Support staff	22.15	19.01	<3.14>	<14.2%>

As Table XVIII demonstrates, at campuses with expanding enrollments the ratio of F.T.E. students to full-time faculty increased by 16.1% while the ratio for support staff declined by 1.1%. Relative to

F.T.E. student enrollments, full-time faculty efficiency increased and support staff efficiency declined. Based on the same ratio, F.T.E. faculty efficiency increased 9.2% over the six-year period.

TABLE XVIII

THE RATIO OF F.T.E. STUDENT ENROLLMENTS TO STAFF
BY CATEGORY WHERE ENROLLMENTS ARE GROWING (n = 113)

	<u>1981-82</u>	<u>1986-87</u>	<u>up/<dn> Change in #</u>	<u>up/<dn> Change in %</u>
F.T.E. faculty	16.86	18.41	1.55	9.2%
Full-time faculty	29.88	34.68	4.80	16.1%
Support staff	20.28	20.05	<.23>	<1.1%>

As Table XIX demonstrates, at campuses with declining enrollments, the ratio of F.T.E. students to full-time faculty fell by 11.7% while the ratio for support staff fell 23.1%. Support staff efficiency declined approximately twice as fast as full-time faculty efficiency and F.T.E. faculty efficiency over the six-year period.

TABLE XIX

THE RATIO OF F.T.E. STUDENT ENROLLMENTS TO STAFF
BY CATEGORY WHERE ENROLLMENTS ARE DECLINING (n = 115)

	<u>1981-82</u>	<u>1986-87</u>	<u>up/<dn> Change in #</u>	<u>up/<dn> Change in %</u>
F.T.E. faculty	20.74	18.05	<2.69>	<13.0%>
Full-time faculty	34.74	30.67	<4.07>	<11.7%>
Support staff	23.60	18.14	<5.46>	<23.1%>

These efficiency outcomes are consistent with the staffing priorities examined earlier in this chapter. Full-time faculty are added last in enrollment growth and cut first in enrollment decline. Support staff are added regardless of student enrollment patterns. As a result, full-time faculty increased efficiency relative to support staff and relative to F.T.E. faculty both at institutions with enrollment growth and at institutions with enrollment declines.

For the sample as a whole, the decrease in staffing efficiency resulted in a higher cost per F.T.E. student at the end of the six-year period than at the beginning.

A SUMMARY OF PRIORITIES AND EFFICIENCY FOR THE SAMPLE AS A WHOLE

Delivering classes to students requires a variety of inputs including full-time faculty, part-time faculty, administrators, classified staff, goods and services and square footage. For the sample as a whole output is down. F.T.E. student enrollments and market penetration are down for the period. The only declining input was full-time faculty. All other inputs are up. F.T.E. faculty are up +1.3%. Square footage and support staff are up +9.3% and +13.2% respectively. For the sample as a whole, efficiency is down, which results in higher-cost education. A comparison of changes in efficiency for the three staffing categories shows that full-time faculty are achieving relatively greater efficiency than F.T.E. faculty and support staff both at institutions with enrollment growth and at institutions with enrollment declines.

Stated in the simplest terms, fewer F.T.E. students and a smaller percentage of service area population are being served by fewer full-

time teachers, at higher cost, by substantially more square footage and support staff. The evaluation covers a six-year period.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS AND AN AGENDA FOR FUTURE RESEARCH

CONCLUSIONS

It is apparent from the data in Chapter IV that the community colleges in this sample operate in environments which provide both the opportunity and the incentive to build non-classroom expenditures at the expense of Direct Instruction. Campus priorities have changed and efficiency has declined. For the sample as a whole, student enrollments fell in 20 of 33 states by 42,000 F.T.E. students (-3%) and market penetration declined at 162 out of 298 campuses (54.4%). Output is down. Square footage, at 300 sample institutions, increased by 11,671,298 square feet (+9.3%). Total expenditures increased by \$1.4 billion (+38.7%) but Direct Instruction only received 43.1 cents of every incremental dollar. Even campuses with expanding F.T.E. student enrollments contributed only 46.5 cents of every incremental dollar to Direct Instruction. This is a significant point. Over the six-year period, sample institutions in a growth mode expanded enrollments by spending 4¢ less per dollar on classroom teaching than the 50.5¢ spent by all institutions in 1981-82.

Plant Operations and Maintenance was the only individual expenditure category, within non-classroom expenditures, that grew more slowly than Direct Instruction. The low rate of growth in Plant Operations and

Maintenance is due to declines in relative utility costs at 223 (73.4%) of the campuses reporting. Instructional Administration, Student Services and Institutional Support grew at significantly faster rates than Direct Instruction both at institutions with expanding student enrollments and at institutions with declining student enrollments.

Staffing data supports the expenditure data. For a sample of 228 campuses, full-time faculty are down by 661 positions (-2.4%), F.T.E. faculty are up 634 positions (+1.3%), and total F.T.E.. support staff (non-faculty) are up 5,413 positions (+13.2%). Institutions with growing student enrollments, and institutions with declining student enrollments show strikingly similar expenditure and staffing patterns. The relatively low rate of growth in Direct Instructional expenditures suggests that the growth in the number of support staff occurred primarily in the faster growing non-classroom expenditure categories.

From the standpoint of institutional priorities, the 310 community colleges reporting expenditures achieved one statistic which raises an interesting question. The percentage of total expenditures going to Direct Instruction fell from 50.5% in 1981-82 to 48.4% in 1986-87. If a majority of available revenue is now spent on non-classroom functions, has classroom teaching become a secondary economic priority?

For the sample as a whole, full-time faculty efficiency remained stable relative to F.T.E. student enrollments <-0.46%> while F.T.E. faculty and support staff efficiency declined <-4.6%> and <-14.2%> respectively.

The next section of this chapter presents a discussion of possible explanations for the shift in priorities and the efficiency declines.

Included is an examination of some quality implications which could be inferred from the changes.

EXPLANATIONS AND IMPLICATIONS

The question is, why did these changes occur? Eleven possible explanations will be examined. The eleven possibilities are not meant to be exhaustive and sample data will be used to support or refute them where applicable.

(1) Any time period selected for study is arbitrary. The period examined in this study represents the longest interval for which comparable data is available from a large number of U.S. community colleges. It is undeniable that a different six-year period, starting in 1980-81 or 1982-83, would alter the data presented in this study. The question is not whether the data would be different. The relevant question is, would the shift in priorities or the decline in efficiency be greatly reduced or reversed by moving the period one or two years in either direction. Six years is a long-run period. Any starting date near the one used, would still include four or five of the same years used in this six-year study. Because the changes in resource allocation patterns are substantial in magnitude and duration, it is unlikely that a different starting date would negate or reverse the findings of this study.

(2) Could economic emergencies, such as increased utility costs, or accounting quirks negate or reverse the findings of this study?

For the sample as a whole, utility costs grew at a slower rate than Plant Operations and Maintenance expenditures. This suggests that

sample institutions have adapted to higher utility rates and are conserving energy. Declining petroleum prices may also be related to the low rate of growth in utility costs. For the sample as a whole, utility costs have reduced, not increased, the rate of growth in non-classroom expenditures. As specifically illustrated in the Washington community college example (see Chapter II), it is unlikely that priority changes and efficiency declines of the magnitude and duration examined in this study would be invalidated or reversed by the effects of other economic emergencies and/or accounting quirks.

(3) Did the efficiency declines result from catch-up adjustments in non-classroom expenditures?

Over the six-year period, sample institutions in 20 of 33 states experienced F.T.E. student enrollment declines, while 28 of the 33 states increased the square footage of plant. Historically, sample institutions served more F.T.E. students with less square footage. However, because of rapid pre-1981 enrollment growth, individual campuses may be able to demonstrate a need for increased square footage, even where their 1981-82 through 1986-87 enrollments are in decline. Therefore, an evaluation of the need for increased square footage by campus is beyond the scope of sample data.

With respect to the need for accelerated rates of growth in expenditures and staffing for non-classroom functions, sample data provides stronger evidence. Based on the data in Chapter IV, there is no historical evidence to suggest that the rate of growth in expenditures and staffing for non-classroom categories lagged behind the rate of growth in Direct Instruction for the period 1981-82 through 1986-

87. Based on comparative rates of expenditure growth, it appears that Direct Instruction is lagging behind and needs a catch-up adjustment. Prior to 1981-82, NACUBO data is not comparable from year to year and the sample size falls dramatically each year back through 1978-79. Accounting classifications also differ prior to 1981-82. Because of these differences, data prior to 1981-82 should be interpreted with great care. Having said that, an examination of NACUBO data for the period 1978-79 through 1981-82 provides no evidence that the growth in non-classroom expenditure lagged behind Direct Instruction. Therefore, based on available evidence, to apply a catch-up argument is to advocate the return to an unsubstantiated historical equilibrium between Direct Instruction and non-classroom expenditures, which must have existed at least seven years and probably ten or more years ago. It is difficult to argue that the return to this equilibrium is worth substantial declines in efficiency because community colleges, in the sample, historically demonstrated the ability to service a larger number of students with significantly less support staff six years earlier. Catch-up adjustments, based on solid evidence, may be necessary for individual institutions or states in the sample. Taken as a whole, however, it would be unreasonable for the institutions in this study to argue for reduced efficiency and a diminution of mission in the interest of returning to an unsubstantiated historical equilibrium which favored non-classroom expenditures.

(4) Could increased governmental regulation and reporting requirements be responsible for efficiency declines of this magnitude and duration?

The use of computers might be expected to produce efficiency increases over the period under examination. While technological economies are not apparent from the data, it is possible to argue that efficiency might have declined even more without computers over the period under examination.

The strongest evidence available regarding the impact of increased regulation and reporting on resource allocation patterns, is the existence of outliers. Outliers are defined as institutions which show resource allocation patterns significantly different from other campuses and each state taken as a whole. From one to seven outliers appear in each of the fourteen largest community college states in the sample. Within each of these states, great diversity in expenditure and staffing patterns is evident between individual campuses. Several specific illustrations follow.

In California, one campus with student enrollment growth increased full-time faculty 2:1 over support staff, and F.T.E. faculty 4:1 over support staff. Growth campuses in California taken as a whole, reduced full-time faculty and F.T.E. faculty, while increasing support staff by 150 positions. Clearly the difference in staffing patterns for growth institutions in California, is very great. Another contrast involved two California community colleges with comparable levels of enrollment decline over the six-year period. Campus number one received almost \$500,000 in new revenues and invested approximately \$35,000 in Direct Instruction. Campus number two reduced the absolute level of expenditures for non-classroom expenditures and put more than 100% of

incremental revenues into Direct Instruction. These outcomes are almost exactly reversed.

In Florida, two campuses demonstrated much different staffing responses to enrollment declines over the period. Campus number one reduced F.T.E.. faculty by 30 positions, support staff by 38 positions, but increased full-time faculty by 8 positions. This campus shows a balanced staffing contraction with an increase in full-time faculty. Campus number two reduced F.T.E. faculty by 8.8 positions, full-time faculty by 20 positions, but increased support staff by 128 positions. This campus shows an unbalanced staffing contraction with emphasis on increasing support staff and decreasing full-time faculty. As with the California examples, these differences within an individual state, are extreme.

As previously noted, the fourteen largest community college states in this sample have from one to seven outliers each.

It can be argued that the initial resource allocation position of each institution may have played a part in creating the great diversity of outcomes at the end of the six-year period. At the campus level, primary responsibility for external reporting rests in the Institutional Support (080) expenditure category. NACUBO data for 1982-83 demonstrates that, as a percentage of total expenditures, the interquartile range of Institutional Support expenditures is very large. In 1982-83, a campus at quartile #1 spent 10.9% of total expenditures on Institutional Support while a campus at quartile #3 spent 17.2%. This range only includes the middle 50% of campuses surveyed. Great diversity in resource allocation patterns, between states and within each state,

suggests that free will and local conditions, not uniform external pressures, were primarily responsible for the resource allocation patterns at any given point in time.

Independent of the initial resource allocation position, changes in resource allocation patterns show great diversity within each state. Over the six-year period, expenditure and staffing changes in this study represent the sum of individual campus responses to both uniform external demands and the internal exercise of free will.

Outliers in all major states show incremental expenditure and staffing patterns significantly different from other state institutions and from the state taken as a whole. If new regulations and reporting requirements represented a major imposition on all state institutions, uniformity, not diversity of changes in resource allocation patterns would be expected.

(5) Can the accelerated rate of increase in non-classroom expenditures be traced to investments in programs designed to improve student recruitment, placement, retention, and program completion rates? Based on sample data, Student Services (060) ranked third out of five expenditure categories in rate of growth. Student Services grew faster than classroom teaching but slower than Institutional Support (080) and Instructional Support (040). This suggests that the rate of growth in Student Service expenditures contributed to, but is not primarily responsible for, the accelerated rate of growth in non-classroom expenditures. Sample data are not detailed enough to permit a closer examination of changes within the Student Services category over the six-year period. Such an examination, by object of expenditure, is

necessary for a clear determination of the specific activities funded by the accelerated rate of investment in Student Services.

(6) Could a change in the academic/vocational or part-time/full-time student mix be responsible for the priority and efficiency changes? Individual campuses may have experienced sufficient shifts in student mix to explain changes in local resource allocation patterns. Because of the magnitude, duration, and broadly-based nature of overall priority and efficiency changes, it is doubtful that student mix is a primary cause of altered patterns for the sample as a whole. Validation of this theory is beyond the scope of sample data and because of definitional problems, it may prove extremely difficult to validate from any data set.

(7) Can the change in patterns be due to the desire of a new class of professional managers to show quick and visible changes? There is a dual appeal to this theory. First, new classes and programs require an immediate investment which may take years to provide a tangible and visible payoff to the institution. Expenditures for new buildings, branch campuses, public relations, advertising, industry liaisons, foundations, grants, and increased support services may have a more immediate and visible impact on the community. From the standpoint of an upwardly mobile manager, there is an obvious appeal to quick returns. Add to this scenario the difficulty encountered when a new manager attempts to promote rapid instructional changes through a faculty with deep, long-run institutional roots. Quick returns and political realities combine to provide a plausible explanation for the priority and efficiency changes examined in this study. The data

presented in this study are consistent with this theory but validation is beyond the scope of sample data.

(8) Do the patterns in this study reflect the desire of institutional managers to escape the historical cut-rate educational image of community colleges? A successful image may be achieved through emulation of the full range of services and activities offered by four-year universities. Highly paid institutional managers promote the institution with a focus designed to impress externally rather than internally. Increasing revenue and expanding support services become the primary institutional objectives. As with (7), the data presented in this study are consistent with this theory, but validation is beyond the scope of sample data.

(9) Could the accelerated rate of investment in non-classroom functions represent a political response designed to pressure students, taxpayers, and state and local governments into providing increased revenue. Under this theory, student enrollment declines and relatively low levels of classroom funding translate into political pressure, while relatively high levels of investment in non-classroom activities enables an institution to increase lobbying and public relations efforts at the state and local level. Verification of this theory is beyond the scope of sample data.

(10) Could active or tacit collusion be responsible for the changes examined in this study? The vast majority of community college enrollments and expenditures are concentrated in fourteen states. Very few graduate level programs are designed to train community college leaders. Very few publications are devoted exclusively to community

college concerns. If there is any truth to theories (7), (8), and (9) and if community college leaders are networked, the patterns in this study may reflect a leadership consensus. Verification of this theory is beyond the scope of sample data.

(11) Regardless of the cause(s), it is apparent from sample data that local boards and administrators are pursuing a new or modified mission.

Taken as a whole, the community colleges in this sample have shifted available resources in a manner which emphasizes non-classroom functions and de-emphasizes Direct Instruction. This expansion of non-classroom activities is not limited to one or two specific measurements. It is broadly based and includes accelerated rates of growth in expenditures for Instructional Support, Student Services, Institutional Support, square footage and support staff. This means that over a six-year period almost every aspect of non-classroom operations received a higher economic priority than classroom teaching. The highest priority was Institutional Support, which finances the campus business office, public relations function, president's office, and fund raising activities. Institutional Support expenditures grew 63% faster than Direct Instruction over the six-year period.

Sample data demonstrates that building communities (Tyree, et al, 1988) is more than a vision for the future. It provides a validation of and a sanction for an internal shift of community college resources which is already occurring. Community colleges are replacing the historical priority of classroom teaching with the priorities of expanded support services and building communities beyond the

classroom. If this shift continues, it will become increasingly difficult to discuss the community college mission from a common base of understanding. Any of the approximately 80 priorities presented by Tyree et al (1988) may now, with authoritative support, be selectively adopted and aggressively pursued by community colleges which are encouraged by the report to rank the priorities in whatever order each campus deems appropriate. No longer are campuses limited to a primary mission of serving many students, providing unrestricted access, and delivering comprehensive high-quality, low-cost instruction. A full range of alternative priorities is now available. If future community college revenues do not keep pace with the new vision available to community college administrators, sample data suggests that Direct Instruction will continue to provide a likely source of funding for future shifts in campus priorities. If accelerated rates of growth in non-classroom activities are paid for by reductions in Direct Instruction, both the quantity and quality of education are threatened.

Nowhere is the threat to educational quality more evident than in staffing changes for the sample as a whole.

Educational Quality

Full-time faculty provide a necessary support base for the delivery of classes to students. The following quotes support the need for renewal of full-time faculty and limitations on the growth of part-time faculty.

Meanwhile, we believe that the renewal of community college faculty is absolutely crucial. If renewal is not forthcoming, if faculty support is not available, the community college will have depleted its most essential resource. (Tyree et al, 1988, p. 12)

It is the conviction of the Commission, however, that the increasing numbers of part-time faculty at many colleges are a disturbing trend. (Tyree et al, 1988, p. 12)

As the data in Chapter IV demonstrates, full-time faculty are not being added at institutions with student enrollment growth, and full-time faculty are being cut first at institutions with student enrollment declines. Over the six-year period examined, there is no student enrollment scenario in which full-time faculty are added.

If community colleges endeavor to deliver quality education, the long-run growth of student enrollments should be supported by long-run growth in full-time faculty. During student enrollment declines, full-time faculty assist in orderly contraction, provide the community with a solid, long-run base of programs and classes, and assist in rebuilding future enrollments. Consider the following evidence in support of these assertions.

Unlike many part-time faculty, full-time faculty must meet the minimum educational and experience requirements mandated by states and accrediting bodies. Full-time faculty are involved in program and curriculum design, campus planning and governance committees, academic advising, supervision of instructional technicians, hiring, training, and monitoring part-time faculty, preparing class schedules, textbook selection and review, high school recruiting, and helping students outside of class. Full-time faculty are also a primary public relations tool for the college. Many are involved in community activities. Campus programs often become closely identified with a particular teacher. Full-time faculty are more likely to be aware of campus functions, activities, and services available to students. By defini-

tion, part-time faculty are not career educators and cannot be expected to expand their duties beyond classroom teaching.

It may be argued that many full-time faculty moonlight as part-time faculty and, therefore, the distinction between the two groups is blurry. Whether true or not, this argument obscures the quality argument being made here. The question is not whether full-time instructors are better teachers than part-time instructors. The argument is that full-time faculty design curriculum, plan, coordinate, schedule, advise, recruit, and represent the institution in addition to teaching. The entire curriculum of the community college is designed and implemented, primarily, by full-time faculty. It is what full-time teachers do outside of class that makes them necessary to long-run educational quality. No administrative or classified employees can perform the work of full-time teachers across the broad range of a community college curriculum. Long-run educational program quality is entirely dependent on attracting and retaining high-quality, full-time faculty.

In absolute and relative terms, an erosion of the full-time faculty base is occurring at the 228 institutions surveyed. The number of full-time faculty declined by 661 positions and as a percentage of total institutional employment, full-time faculty declined from 31.3% in 1981-82 to 28.6% in 1986-87. It is ironic that the normal or typical long-run behavior of community colleges is (1) not to add full-time faculty when student enrollments expand, (2) to cut full-time faculty first when student enrollments decline, and (3) to add support staff regardless of student enrollment patterns.

Based on overall sample data, the ratio of support staff (non-faculty) to full-time faculty was 1.45:1 in 1981-82 and 1.71:1 in 1986-87. This represents an increase of 18% in the gap between the number of support staff and the number of full-time faculty over the six-year period. It appears that full-time faculty are valued much differently than support staff by the institutions in this sample.

SUMMARY OF CONCLUSIONS AND IMPLICATIONS

What educational priorities are reflected by the sample as a whole over the six-year period studied? Student enrollments, market penetration, and the number of full-time faculty are down. Square footage and support staff are up. These patterns are not consistent with delivering classes, unrestricted access and high-quality, low-cost education over a long-run period. They are also inefficient. By the end of the six-year period, classroom teaching received 48.4% of total institutional resources, down from 50.5% at the beginning.

The direction of these patterns is clear. In both absolute and relative terms, fewer students are being served, by fewer full-time teachers, at higher cost by a larger physical plant and a larger number of support staff. Stated differently: historically, more students were served by more full-time teachers at lower cost by a smaller physical plant and a smaller number of support staff. A change in educational priorities is evident for the sample as a whole. New or modified goals are being pursued, and because of the magnitude and duration of the changes as well as the great diversity in behavior between institutions

and states, the most likely explanation is the exercise of free will by local administrations and Boards.

A LIKELY RESPONSE TO A CHALLENGE

The current community college campaign, in support of greater revenue and in defense of historical performance, is being waged with legislators and the media on the basis of comparisons. Community colleges are being compared to each other, and community colleges are being compared to K-12 and four-year universities. A discussion of the unreliability of these comparisons is presented in Chapter II of this study.

From the standpoint of the institutions in this sample, comparisons between campuses are based on a community college norm that is changing. Over the six-year period examined in this study, the norm is to serve fewer F.T.E. students, to divert funding from classroom teaching to non-classroom functions, and to become less efficient. For any individual community college this may provide both a motive and a justification for the deliberate pursuit of enrollment restrictions and efficiency declines.

It is also apparent that pervasive and powerful incentives exist independent of the historical mission statement which supported the growth in non-classroom priorities over the six-year period in this study. These casual factors need to be identified and examined to determine what if anything can be done to direct resource allocation patterns to a more efficient position which reflects the delivery of classes, unrestricted access, and quality instruction. In the author's

experience, the attempt to redirect a campus or state system toward increased investment in classroom teaching is met with an attitude of defensiveness and rejection. This attitude manifests itself in the following specific behaviors: (1) The initial challenge, followed by (2) silence.

The initial challenge is organized as a loop. The arguments are circular. The loop begins with criticisms of the criticism. Mathematical errors, weaknesses in data, arguments over definitions, and criticisms of the time period selected are typical components. The purpose is to divert the debate to a focus on data. This is followed by a defense based on comparisons with other institutions or state systems. The essence of these arguments is that a particular campus or state system is not as bad as "X" or is better than "Y". If unfavorable comparisons are used in rebuttal, the campus or state system will argue that local conditions and accounting practices are so different that comparisons are invalid, and they will demonstrate this by beginning the loop again. The final argument in the initial challenge hinges on the claim that increased regulation and reporting requirements have caused non-classroom expenditures to increase. This argument is weakened by the existence of numerous outliers and by the broadly based nature of the non-classroom expansion.

This is not to say that all arguments, in the initial challenge, are without merit. To be sure, regulation and reporting may have increased and errors in data are expected, but it is doubtful that these factors are significant enough to explain the results of this study. The critical question is: over a six-year period, and in an environment

of finite state resources, would community colleges, in active pursuit of delivering classes, unrestricted access, and high-quality, low-cost education show the resource allocation patterns described in this study?

The initial challenge is usually followed by silence. Silence serves a dual purpose. It gives the impression that the issue has been settled and that the organization has been sufficiently vindicated to preclude further discussion. Silence also provides a waiting period during which the damage from the initial attack can be assessed.

When persistently pressured to change resource allocation patterns to reflect a classroom focus, administrators, and state officials typically redefine the situation as a public relations problem rather than a problem of educational substance. In this regard campus accounting systems can be creatively managed. All expenditures which can be redefined as Direct Instruction are charged accordingly. Administrative positions are retitled and accounted for as faculty positions. For example, the Director of a Women's Studies Center, who teaches one class per quarter and administers a program, may be charged entirely to Direct Instruction or Student Services as a full-time faculty member. The same could be true for any full-time administrative or classified employee in a part-time teaching situation. If the Director of Women's Studies is reclassified, secretarial help as well as goods and services may also be recoded to the Direct Instruction or Student Services expenditure category. Instructional Support also contains numerous expenditures which may be recoded to Direct Instruction. The purpose of these reclassifications is to show a greater classroom priority to campus board members

and critics. In short, expect that every possible cosmetic solution will be undertaken unless specifically prohibited and audited.

RECOMMENDATIONS

All institutional Board members and managers who have engineered heavy, long-run investments in non-classroom activities should be held accountable for their actions. As a first step, state legislators should ask local Boards and administrators to cost-justify long-run campus resource allocation patterns which appear inconsistent with the historical mission of community colleges. If the individuals responsible have quit, retired, or moved to new positions, they should be contacted and asked to explain the logic supporting changes initiated during their time of service. Specifically, they should be asked to provide hard evidence which demonstrates (1) that non-classroom functions are incapable of improving efficiency as an alternative to diverting resources from Direct Instruction, (2) that the long-run quantity and quality of educational programs can be maintained or improved in spite of devaluing Direct Instruction, (3) that a heavy investment in activities outside the classroom improves the quantity and/or quality of education more than a heavy investment in classroom activities, and (4) where students are being denied access to courses and programs, that those access restrictions are justified both by sufficient and measurable improvements in the quality of the remaining student output and by a history of increased institutional operating efficiency.

In situations where a state or local Board wishes to stop the erosion of classroom teaching, they should require:

(1) Campuses to fund Direct Instruction at a rate of growth greater than or equal to the rate of growth in total non-classroom expenditures. This means that the existing proportion of total institutional resources allocated to Direct Instruction cannot be eroded. The proportion must stay the same or grow. Conversely, during periods of expenditure decline, the rate of decline in Direct Instruction must be less than or equal to the rate of decline in total non-classroom expenditures. The four categories which comprise total non-classroom expenditures may grow individually at a faster rate than Direct Instruction, but the total must grow at a rate less than or equal to Direct Instruction. This would allow a campus to respond to new priorities, but not by eroding classroom teaching. This proposal is not designed to enhance Direct Instruction, though it may have that effect. It is designed to protect Direct Instruction from further erosion until a satisfactory explanation for the changes can be provided and until stronger instructional incentives can be designed and implemented where needed. It would be optimistic to assume that institutions will universally comply with the spirit of this recommendation. To provide reasonable assurance of compliance, two additional actions are necessary.

(2) Local Board members and/or states must prevent future manipulation of the existing campus and state accounting systems, particularly the reclassification and recoding of expenditures and staffing. In essence, they should freeze and clearly define the chart of accounts used by campuses and state Boards and insist that all historical data be cross-walked to a fully comparable status. Again, it would be excess-

ively optimistic to expect universal compliance. This leads to the last recommendation.

(3) Expand the role of state auditors to include an annual search for and eradication of creative accounting classifications as well as an annual evaluation of changes in priorities and efficiency for each campus. A copy of the annual auditor's findings should be sent to all campus board members and employees.

Any system of long-run incentives, designed to promote the historical community college mission, must reward schools that invest heavily in Direct Instruction.

Two additional points are offered as observations rather than recommendations. Community college board members need to study the historical community college mission relative to the historical resource allocation patterns of the institution they serve. Community college Boards also need to seek and receive independent institutional information beyond what campus administrators provide them.

FUTURE RESEARCH

The recommendations contained in this study are strictly designed to stop the erosion of Direct Instruction, not to rebuild it.

The most expedient method of designing incentives, which would promote an emphasis on greater efficiency and the historical community college mission, is to study outliers. Two approaches follow.

(1) Within each state, study outliers. Compare and contrast campuses with a history of efficiency and resource allocation patterns promoting Direct Instruction, to campuses with a history of promoting

non-classroom functions. Again, what specific local incentives play a part in promoting efficiency and a focus on Direct Instruction over time?

(2) Two states, Maryland (in enrollment growth) and Pennsylvania (in enrollment decline) show expenditure and staffing patterns which emphasize Direct Instruction. Contrast any two or three states like Maryland and Pennsylvania with Arizona (enrollment growth) and Illinois (enrollment decline). Arizona and Illinois show heavy investments in non-classroom categories over the period under examination. To what extent do state administered incentives play a part in promoting efficiency and a focus on Direct Instruction over time?

Cost-Driven Models

The effect of desensitized cost-driven models on long-run community college resource allocation patterns, needs to be carefully studied. Do these models promote efficient operation, a focus on Direct Instruction, and fulfillment of the community college mission? For example, to what extent have these models impacted community colleges in Arizona and Illinois over the six-year period examined in this study?

TABLE XX

ARIZONA (TOTAL EXPENDITURES IN \$000's)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in \$</u>	<u>Change in %</u>
Institutions with enrollment growth (n = 4)	\$45,475.3	\$63,371.3	\$17,896.0	39.4%
Institutions with enrollment declines (n = 3)	\$88,012.7	\$128,324.3	\$40,311.6	45.8%

As Table XX illustrates, the rate of expenditure increases for campuses with enrollment declines was greater than for campuses with expanding enrollments. The impact on Direct Instruction is even more dramatic.

TABLE XXI

ARIZONA (DIRECT INSTRUCTIONAL EXPENDITURES IN \$000's)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in \$</u>	<u>Change in %</u>
Institutions with enrollment growth (n = 4)	\$21,275.7	\$29,925.5	\$8,649.8	40.7%
Institutions with enrollment declines (n = 3)	\$53,021.0	\$61,669.3	\$8,648.3	16.3%

The institutions with student enrollment declines invested only 21.5¢ (\$8,648.3/\$40,311.6) of every incremental dollar in Direct Instruction over the six-year period versus the 48.3¢ (\$8,649.8/\$17,896.0) by growing institutions in the same state.

Illinois shows similar patterns.

TABLE XXII

ILLINOIS (TOTAL EXPENDITURES IN \$000's)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in \$</u>	<u>Change in %</u>
Institutions with enrollment growth (n = 6)	\$85,536.0	\$108,752.4	\$23,216.4	27.1%
Institutions with enrollment declines (n = 16)	\$165,729.5	\$228,553.7	\$62,824.2	37.9%

Institutions with declining enrollments increased total expenditures at a faster rate than institutions with enrollment growth.

TABLE XXIII

ILLINOIS (DIRECT INSTRUCTIONAL EXPENDITURES IN \$000's)

	<u>1981-82</u>	<u>1986-87</u>	<u>Change in \$</u>	<u>Change in %</u>
Institutions with enrollment growth (n = 6)	\$41,402.1	\$55,132.1	\$13,730.0	33.2%
Institutions with enrollment declines (n = 16)	\$84,636.2	\$97,574.6	\$12,938.4	15.3%

Again, the result in Illinois is similar to Arizona. The institutions with student enrollment declines invested only 20.6¢ (\$12,938.4/\$62,824.2) of every incremental dollar in Direct Instruction over the six-year period versus the 59.1¢ (\$13,730.0/\$23,216.4) by growing institutions in the same state.

These patterns show that long-run enrollment growth in both states was accompanied by slower rates of revenue increase. In contrast, student enrollment declines and heavy investment in non-classroom functions was accompanied by accelerated rates of revenue increase. On the surface of it, these examples raise serious questions regarding both the community college mission and community college politics in these states.

From a theoretical standpoint, desensitized cost-driven models may be criticized primarily on two grounds: (1) It is one thing to argue that program and curriculum decisions should not be based primarily on economic considerations. It is another thing, altogether, to argue that economics should not be considered in program and curriculum decisions. To the extent that campuses are reimbursed based on the actual

costs of programs, all program decisions are rendered economically neutral. (2) It makes sense for states to buy educational output, not educational costs. Under a desensitized cost-driven model, campuses may increase state reimbursement by increasing costs. To the extent that campus expenditures are desensitized from student output levels, local spending decisions can be made with minimal regard to output. Simply stated: If the dollars show up and the students don't, the money originally budgeted for Direct Instruction will likely be spent on non-classroom activities instead of classes. This in turn increases subsequent non-classroom expenditure reimbursements from the state to the institutions. From an efficiency standpoint, this may be counter-productive, particularly where F.T.E. student enrollments are in decline over a long-run period.

An in-depth study of funding models and expenditure outcomes is needed to compare and contrast results for the major community college states over time.

The final suggestion for future research is qualitative rather than quantitative. Campus panels (focus groups) of retired or senior career community college faculty, administrators and classified staff should be assembled to discuss the history of the campus they serve(d). The agenda should include a discussion of educational values, the history of programs, curriculum, expenditures, staffing, service levels, physical plant, and the educational climate on the campus. A discussion of major historical changes and how to improve the existing quantity and quality of education should also be included. The panel discussions should be video-taped and transcribed to provide an

historical context for judging the status quo and planning future directions for each campus.

The tapes should be updated periodically and should be required viewing for campus board members and all new campus employees.

IN THE AUTHOR'S OPINION

Sufficient Cause?

It has been suggested that a shift of 2% in total expenditures over a six-year period is too small to require justification. This argument ignores most of the data provided by the study including declines in F.T.E. student enrollments, market penetration, efficiency, and the number of full-time faculty combined with substantial increases in square footage and support staff.

In addition, the 2% expenditure shift is an aggregate statistic for the sample as a whole. The study does not call for justification from the sample as a whole. Only institutions with a strong, long-run economic commitment to the growth of non-classroom functions should be required to cost-justify their behavior.

Finally, the priority and efficiency changes in this study may have been continuing for much longer than six years. This opinion is based on an examination of data from California, Illinois, New York, and Florida beginning in 1975-76, and data from Washington beginning in 1969-70.

Why Fund the Classroom?

Classroom teaching is the primary function which distinguishes community colleges from other public social service agencies. It is

central to an educational mission. Therefore, it should be hard to divert resources away from classroom teaching. This is particularly true over any long-run period. Where it is necessary to do so, there should be a compelling and cost-justified reason.

The long-run devaluation of classroom teaching threatens a tradition built on democratizing post-secondary education. It alters the political, psychological, and social fabric of campuses, and stretches the ability of taxpayers and traditional community college students to pay. It is also bad business. Long-run student output is down, support costs are up, and there is a relatively low rate of growth in resources for classroom teaching. This strategy results in fewer sales of a devalued classroom at an inflated price. Sales resistance is bound to increase. This is not a viable, long-run strategy for any organization. Finally, it pays to invest in what you do well. The community college tradition is to deliver high-quality, low-cost education to as many students as possible. Increasing support costs, decreasing enrollments, and diverting resources from the classroom diminishes the historical strengths of community colleges.

Accountability

At this juncture, it is not clear how or why a heavy, long-run investment in a broad range of non-classroom functions and a corresponding diversion of resources away from classroom teaching leads to better education. Until well reasoned and well documented explanations come forth, the burden of justification should fall on decision makers at campuses on the leading edge of these changes.

In the author's opinion, a community college has little future where its long-run mission is directed away from high levels of student output supported by a heavy investment in Direct Instruction. Taken as a whole, the community colleges in this study are capable of serving more F.T.E. students and a larger percentage of their service area populations, at lower cost, using more full-time faculty and substantially less square footage and support staff. They can do it because they used to do it.

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