

DOCUMENT RESUME

ED 316 653

CE 054 165

AUTHOR Mitchell, Douglas E.; Hocht, Jeffrey
TITLE Quality and Effectiveness of California's Regional Occupational Centers and Programs. A Research Study. Final Report.
INSTITUTION California Educational Research Cooperative, Riverside.
PUB DATE 9 Jun 89
NOTE 172p.
AVAILABLE FROM California Educational Research Cooperative, School of Education, Sproul 1362, University of California, Riverside, CA 92521 (\$10.00; quantity price, \$7.00).
PUB TYPE Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS *Adult Vocational Education; *Cost Effectiveness; *Financial Support; Institutional Evaluation; *Management Information Systems; Outcomes of Education; Program Evaluation; *School Effectiveness; *Vocational Training Centers
IDENTIFIERS *Regional Occupational Centers and Programs

ABSTRACT

This document reports on a three-phase research study undertaken in October 1988 for the California Association of Regional Occupational Centers and Programs (ROC/P). Phase 1 was a comprehensive review of the legal and fiscal development of ROC/Ps since their inception in 1963. Phase 2 was a cost-effects study of ROC/P courses, relating such variables as student enrollments, expenditures, revenues, and course subjects to such variables as number of students continuing, completing, and leaving, as well as their follow-up status. Phase 3 was the planning for the development of a management information system. It was found that (1) program planning and evaluation are influenced by organizational and political factors as well as by fiscal and legal constraints; (2) simple cost comparisons, outcome analysis, and even cost-effects studies cannot fully describe the complex factors influencing ROC/P program performance; (3) across a broad range of fiscal, organizational, and program dimensions, ROC/P managers face rapidly changing conditions and an uncertain future. In the area of fiscal support, data revealed year to year fluctuations as high as 30 percent of the base revenues. In the area of accountability, pressures for cost-effective programs had risen sharply while assistance and resources had improved only slightly. An extensive list of references is included, along with 6 appendixes that provide the instrumentation for the study.) (CML)

 * Reproductions supplied by EDRS are the best that can be made *
 * from the original document. *

Quality and Effectiveness of California's Regional Occupational Centers and Programs

A Research Study

Final Report

by

**Douglas E. Mitchell
Jeffrey Hecht**

June 9, 1989

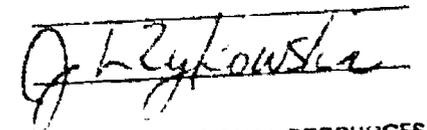
U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

This document has been reproduced as
received from the person or organization
originating it.

Minor changes have been made to improve
reproduction quality.

Points of view or opinions stated in this docu-
ment do not necessarily represent official
OEI position or policy.

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY



TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)"



**CALIFORNIA EDUCATIONAL
RESEARCH COOPERATIVE**

UNIVERSITY OF CALIFORNIA, RIVERSIDE

ED 511 105

THE CALIFORNIA EDUCATIONAL RESEARCH COOPERATIVE

CERC is a unique partnership between county and local school systems and the School of Education at the University of California, Riverside. It is designed to serve as a research and development center for sponsoring county offices of education and local school districts -- combining the professional experience and practical wisdom of practicing professionals with the theoretical interests and research talents of the UCR School of Education faculty.

CERC is organized to pursue six broad goals. These goals serve the needs and interests of cooperating public school members and the University by providing:

- Tangible practical support for school improvement
- Support for data-based decision-making among school leaders
- Proven strategies for resolving instructional, management, policy and planning issues facing public education
- Research, planning and evaluation activities that are meaningfully interpreted and applied to school district problems, and
- Valuable professional development opportunities for current and future school leaders
- Data and analysis to assist in generating public support for effective school programs

In addition to conducting research in these areas, CERC publishes reports and briefs on a variety of educational issues. CERC also sponsors regional workshops for local educational leaders.



**California Educational
Research Cooperative**
School of Education
University of California
Riverside, CA 92521-0128
Phone: (714) 787-3026
FAX: (714) 787-3942

CERC Executive Staff

Douglas E. Mitchell
Professor of Education
Director

Jane L. Zykowski
Assoc. Specialist in Ed.
Manager

Dana Sowers
Administrative Assistant

CERC MEMBERS

SPONSORING OFFICES OF EDUCATION

Riverside County Office of Education

Office of the County Superintendent of Schools
San Bernardino County Office of Education

SPONSORING SCHOOL DISTRICTS

Colton Joint Unified School District

Perris Elementary School District

East San Gabriel Valley RGP

Perris Union High School District

Fontana Unified School District

Rialto Unified School District

Hemet Unified School District

Riverside Unified School District

Hesperia Unified School District

Redlands Unified School District

Jurupa Unified School District

Romoland School District

Lake Elsinore Unified School District

Temecula Valley Unified School District

Moreno Valley Unified School District

Val Verde School District

Murrieta Unified School District

Victor Elementary School District

Ontario-Montclair School District

Victor Valley Union High School District

Yucaipa Joint Unified School District



June 22, 1989

TO: Friends of ROC/P's

FROM: Dave Divini, President
Ted H. Zimmerman, Chairperson, Research Committee

RE: Research Study: "Quality and Effectiveness of
California's ROC/P's"

Enclosed for your review and information is a personal copy of the results and findings drawn from the research project conducted during 1988-89 by University of California, Fiverside as a joint effort of CAROC/P and the State Department of Education.

The purposes of the study are threefold:

1. Review of the legislative development of ROC/P's with emphasis upon the historical enactments affecting funding.
2. Provide a cost effectiveness analysis of selected courses/programs.
3. Establish the essential framework for Management Information System (MIS) to act as the basis for annual data collection and review of ROC/P activities and productivity.

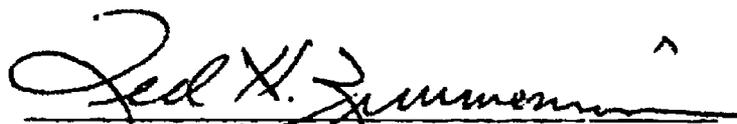
The Association is deeply appreciative for the advice and assistance provided by all invlved but in particular the study Advisory Committee. Their participation gave greater creditability and assurance that the study was essential and related activities appropriate.

Special gratitude is due the State Department of Education, Career Vocational Education Unit for the funding commitment and enthusiastic support of this joint research effort.

Active participation by all the membership of CAROC/P made it possible to garner excellent data. A special thanks to those CAROC/P members who hosted the UCR research for the on-site visitations. Both were critical to the study - and ROC/P leaders responded!

The results of this study will serve as a foundation for future Association planning and activities to improve or clarify the role of ROC/P within the entire California vocational education system.


Mr. Dave Divini, President


Dr. Ted Zimmerman, Chairperson

Executive Summary

The California Educational Research Cooperative (CERC), a research unit of the School of Education, University of California at Riverside, undertook in October of 1988 a three-phase research study for the California Association of Regional Occupational Centers and Programs (CAROC/P). The first phase of this study involved a comprehensive review of the legal and fiscal development of ROC/Ps in the State of California since their inception in 1963. Historical records detail a changing and not always clear mission for ROC/Ps. Fiscal records over the past ten years showed state-level financing of ROC/Ps resulting in wide year to year variations in the per ADA reimbursements. Furthermore, the real spending power of ROC/Ps has increased only 7.2%, compared to the entire K-12 system of 35.4%. The combination of funding instability and lowered growth has created substantial tension for ROC/P managers. Their focus appears to have shifted more to program preservation and maintenance than to innovative growth and expanded service.

Phase two consisted of a cost-effects study of ROC/P courses, relating program "inputs" (such as student enrollments, expenditures, revenues, and course subject) to program "outputs" (numbers of students continuing, completing, and leaving, as well as their follow-up status). Results showed differences in costs between the eight program areas studied, as well as between their completer rates. The rates of job placement and other positive student outcomes are relatively equal between courses. ROC/P finances were related to the numbers of students, with more students proportionally enrolled, completed, and placed with higher levels of funding. Finances were unconnected, however, with higher rates of program outcomes. Instead, increased rates of job placement and other student outcomes appeared to be a function of local population size, density, and wealth; the subject matter being taught; and other factors unrelated to direct course operations. Modifying ROC/P funding will alter the total number of students educated. Substantive changes in other operational areas would be required to achieve higher rates of completion, job placement, and other positive student outcomes.

The final phase was the planning for the development of a Management Information System (MIS). Twenty-two different ROC/P sites were visited, providing data on similar issues. Typically, ROC/Ps experience substantial tension between the business/economic aspects of program operation and important organizational/political issues. How well sites recognize this tension and the degree to which they are able to dynamically respond to their environment significantly influences the ease and success of their operations.

This study has produced significant findings in a number of important areas. First, the development of California's ROC/Ps has occurred within a process that is dynamically responding to the changing needs of both the student clients served, the participating local school districts, and the State policy makers. ROC/Ps have evolved by serving the needs of several different important interest groups. As a result, program planning and evaluation are influenced by organizational and political factors as well as by fiscal and legal constraints.

Second, simple cost comparisons, outcome analysis, and even cost-effects studies cannot fully describe the complex factors influencing ROC/P program performance. Sites where interdistrict harmony and home-school integration are dominant concerns necessarily generate a different mix of student services from ones where primary focus is on training adults to fill labor market shortages. Moreover, differences between state-level goals and local district-level goals subject program managers to complex cross pressures.

Perhaps the most important lesson from the research project is the extent to which it documents problems of uncertainty and instability confronting ROC/P program managers. Across a broad range of fiscal, organizational, and program dimensions, CAROC/P managers face rapidly changing conditions and an uncertain future.

In the area of Fiscal Support, the data reveal year to year fluctuations that have reached as high as 30% of the base revenues.

In the area of Regulations, CAROC/Ps have faced rapid changes calling for the collection and analysis of data which is expensive to gather and hard to synthesize into meaningful program guidance.

In the area of Accountability, pressures for documentation for cost-effective programs have risen sharply while assistance and resources have improved only slightly.

In the area of Client Recruitment, CAROC/P programs are confronted by the need to attract students to a sure program income which is controlled by enrollment in courses rather than by placement in jobs.

In dealing with Cooperating Districts, CAROC/Ps find that much of their autonomy and independence is absorbed by preexisting teacher's contracts, limited facilities, and political constraints on their program options.

In responding to Changing Market Conditions, CAROC/Ps find themselves responsible for tracking rapidly changing job opportunities but have no specific resources or training appropriate to this responsibility.

In building a Support Constituency, CAROC/P managers find themselves relatively isolated and lacking in strong advocates among state policy makers, local district leaders, or any other major education interest group.

These problems of uncertainty and instability call for substantive actions aimed at creating a stable environment and broad-based support for CAROC/P's role as a leadership agency for vocational education in California.

If California's Regional Occupational Centers and Programs are to be fully understood, any system of review and evaluation will have to take these factors into account. Clarifying the methods of evaluation to be used for ROC/Ps, as well as stabilizing and increasing the funding, is only part of a solution. The remainder comes from understanding the economic and social environment in which ROC/Ps exist and must function. Results from this study clearly demonstrate the importance of developing a broad consensus on ROC/P goals, and the building of a Management Information System utilizing consistent data definitions and standardized data reduction and analysis techniques.

With limited fiscal resources and even more limited authority California's ROC/Ps face a complex and difficult array of economic and political demands. The extent to which these demands are recognized and fully incorporated into program planning and operations will dictate the success of California's largest vocational education program. While many issues are addressed in this study there is a clear need for additional work both in policy and operations evaluation.

Acknowledgments

We are indebted to the Research Committee of the California Association of Regional Occupational Centers and Programs for the leadership and foresight to commission this study. Like every quality research project, this study required enormous support from a wide variety of individuals and groups. CAROC/P staff members throughout the state gave tirelessly of time and energy to locate data and complete complex survey forms. Many also gave their time to help the CERC research staff with on-site orientation to day-to-day ROC/P program operations.

Four people deserve special thanks for their support of this research work. Chris Almeda of the California State Department of Education revealed an uncommon dedication to the improvement of vocational education in his aggressive pursuit of financing for the study. Dave Davini the President of the California Association of Regional Occupational Centers and Programs, secured the support of the Association for project implementation. Dr. Dale S. Holmes Superintendent of the Riverside County Office of Education, served as fiscal agent. Special thanks goes to Ted Zimmerman who framed many of the study's key questions and worked tirelessly to link the CERC research team with CAROC/P members and leaders. We would also like to thank the CERC technical support staff: David Hough, Frank Beeman, and Gary Badarak who provided data collection assistance, assistance in data analysis, and editorial support for completion of the final report.

Table of Contents

History of ROC/Ps	1
The Beginnings of Vocational Education (1850's to 1960's)	1
Early ROC/Ps (1963 to 1977)	7
The Fiscal Years (1978 to 1982)	10
A Changing Mission (1983 to 1987)	15
Current Trends (1988)	19
Conclusions	22
 Fiscal Developments	 26
 Cost-Effects Analysis	 33
Limitations of Previous Research	41
Conclusions from Prior Research	52
Operationalization of this Study	53
Site Visits	58
Two Kinds of Surveys	60
Selection of the Sample	62
Analysis of the Data	68
Adequacy of the Sample	69
Cost-Effect Ratios	73
 Management Information System	 86
Responses to the Open-Ended Questions	86
Questions on the Follow-Up	88
Questions on ROC/P Revenues	93
Questions on ROC/P Expenditures	96
General Comments from the Sites	105
Conclusions from the Open-Ended Questions	106
Conclusions from the Site Visits	108
 Conclusions	 111
 Recommendations for Further Action	 114
A Continuation of M.I.S. Support	114
A Study of Exemplary Practices	115
A Study of Cohort Groups	116
 References	 118
 Appendices	 130

List of Tables

Table 1: Annual Average Daily Attendance	26
Table 2: Annual Income	28
Table 3: Annual Income Adjusted for Inflation	29
Table 4: Annual Income per ADA in Adjusted Dollars	29
Table 5: Comparison of Cost-Outcome Evaluation Methods	41
Table 6: J-300-ROP Accounting Categories	55
Table 7: VE-80-C Follow-up Categories	57
Table 8: Sample Distribution by Subject Area Domain	67
Table 9: Survey Response Distributions	69
Table 10: Frequency Chart by Organizational Type and Location	71
Table 11: Frequency Chart by Subject Area Domain	72
Table 12: Average Cost Distribution per ADA	81
Table 13: Cost-Effect Ratios by Course Area	83

List of Figures

Figure 1: Annual Average Daily Attendance	27
Figure 2: Statewide Total Annual Income	30
Figure 3: Income per ADA in Adjusted Dollars	32
Figure 4: Statewide Course Titles by Domain	65
Figure 5: Statewide Course Enrollment by Domain	66
Figure 6: Outcome Status by Three Program Areas	74
Figure 7: Outcome Status by Two Program Areas	75
Figure 8: Percent of Students in Outcome Status	77
Figure 9: Average Division of Direct Revenues	79
Figure 10: Average Division of Direct Expenditures	80
Figure 11: Average Cost Distribution per ADA	82

Appendices

Appendix A: Site Visit Protocol	130
Appendix B: Confirmation Letter for a Site Visit	131
Appendix C: Thank You Letter for a Site Visit	132
Appendix D: Course-Level Survey Instrument	133
Appendix E: Site-Level Survey Instrument	138
Appendix F: Cover Letter for the Survey Packets	149

History of ROC/Ps

To fully comprehend the status of regional occupational centers and programs in California today one must first gain an appreciation for a century and a half of vocational education evolution. Vocational programs have been used for a number of different purposes, ranging from solving high unemployment, to serving the war effort, to meeting the needs of special population groups. Funding and support for vocational education has also been mixed, vacillating from wide-spread support and a virtual blank check to guarded approval and limited funding.

This section prepares the reader for the investigation that follows by describing the general growth of vocational education in California, and the emergence of the regional occupational centers and programs in particular, from the mid-1850's through 1988. It is important to note that as there are few works on this subject, much of the material on the early years is drawn from A History of Vocational Education in California: 1900 - 1975 by Wesley P. Smith (1979). More recent history is supported by the California Education Code, various state-level budget and operations documents, and published works.

The Beginnings of Vocational Education (1850's to 1960's)

Organized efforts at vocational education in California have been recorded as far back as 1854 with the creation of the Mechanics' Institute "dedicated to the accumulation of library materials pertinent to the mechanic's craft; the dissemination of the lore through series of lectures; the staging of annual industrial exhibits; and the organization of classes in such areas as drawing, mathematics,

wood carving, and metalwork" (Smith, 1979, p. 2). At that time public education consisted of the "grammar grades" only, since it was the common belief that vocational education took place on the job and not in the public schools. The movement towards vocationally oriented schooling began in the latter part of the century, with the opening of the Cogswell Polytechnic College in 1888 and the California School of Mechanical Arts in 1895.

The turn of this century saw a rapid growth of high schools, and their inclusion of courses in the "manual arts". Though most of the education at this time was tailored by the University of California (the university having decided in 1884 that students who graduated from accredited schools could enter the university without further examination), there was a keen interest in the practical uses of a high school education. Mark Keppel, then the Los Angeles County Superintendent of Schools, said in a 1905 policy statement:

The high schools of our county are doing a great work, but they are not doing the work they could do and ought to do. Their work is shaped to meet the requirements of the state university, notwithstanding the fact that less than one-fourth of those who attend the high schools can ever reach the university. The high school ought to fit people for life. This ought to be the aim of the high school, and fitting for the university ought to be the result of this and not the beginning and the end of it. If the high schools are to do their duty to the children, they must give an increasingly large share of their time to commercial, industrial, and technical training. (Smith, 1979, p.6)

In 1912 the state education agency was reorganized and a new position, that of Commissioner of Industrial and Vocational Education, was filled by Dr. Edwin R. Snyder. Dr. Snyder reported in 1914 on the condition of vocational education in California:

1. Vocational education was largely unorganized and had no uniform pattern of objectives or outcomes.
2. A need existed to advertise the program, to preach the gospel of vocational education.
3. A philosophical problem existed of differentiating between *cultural* education and *vocational* education.
4. Economic conditions made it imperative for youth to go to work early, but too little was being done to fit youth for work.
5. A general attitude existed that vocational education was both narrowing and limiting opportunities. (Smith, 1979, p.9)

Significant changes were made in the next several years to correct these problems. When the federal government enacted the Smith-Hughes Act (Public Law 64-347) in 1917, California moved quickly to accept it. The difficulties associated with entry into World War One served as the impetus for the Smith-Hughes Act, though the effects of this legislation lasted far beyond the war. The main effect of this new legislation was the federal matching of state monies for occupational education in addition to requirements on data collection and reporting.

Total statewide enrollment in vocational education courses increased seven fold in the ten year span 1920-1930. Courses were offered in the three broad areas designated by the Smith-Hughes Act: agriculture, trades and industries, and home economics. The University of California, and several teachers' colleges, began programs of preservice and inservice training for vocational instructors. While the state's policy was to integrate vocational classes into the regular high school setting, demand soon stimulated expansion of offerings into both new curriculum areas and evening class times.

1929 saw the inauguration of the first recorded state advisory committee in a vocational subject (aeronautical education). The George-Reed Act of 1929

augmented the funding of the original Smith-Hughes legislation, allowing for an increase of over 20% in statewide vocational educational enrollments. New acts were adopted by federal legislators throughout the next several years (the George-Ellzey Act of 1934 and the George-Dean Act of 1937) adding to the available federal funding for vocational education. The depression of 1930 to 1940 resulted in a steady increase in vocational education programs.

The war years of 1940 to 1950 moved California's vocational education back into the arena of providing skilled war-time laborers. The federal War Production Training Act of 1940 served as the impetus for much of this coursework, emphasizing "short, intensive instruction conducted at any time, day or night" (Smith, 1979, p. 28). This statute produced the first five year plan for vocational education (for 1942 - 1947) and stimulated a new all-time high in enrollments. Though confusion was evident following the war, enrollment quickly increased as the decade ended, spurred on by the funding opportunities of the G.I. Bill of Rights. New federal legislation, in the form of the George-Barden Act (the Vocational Education Act of 1946), nearly doubled the support previously provided for vocational programs. The net result was an increase of over 150 percent in enrollments during the ten year period, more than any other state in the union.

Unlike the previous three decades the years from 1950 to 1960 were accompanied by retrenchment in both enrollment and activity. According to Smith a reduction in the need for laborers with specialized training, along with a booming economy and record growth, depressed the need for vocationally-oriented education. It is important to note, however, that it was during this period that California first

studied, and then enacted, legislation allowing for the granting of high school program credit for work experience education. Federal legislation moved from broad-based funding increases to allocations geared towards particular ends, such as the Health Amendments Act of 1956 (which was to increase the number of adequately trained professional and practical nurses) and the National Defense Education Act of 1958 (to train "technicians" essential to "national defense". During the latter part of this decade an event occurred having far reaching implications. The issue arose in San Jose which had long operated a technical high school as a separate vocationally-oriented institution. Though the school was still viable and well supported, enrollment had declined to the point where the San Jose school board considered closing it. A comprehensive study concluded that the community would be better served by turning the facility and staff into a district wide vocational education center, with students from all across the district coming to the center for part-time training in vocational subjects. The restructuring of this school, and similar changes in other districts throughout the state, served as the seed from which California's Regional Occupation Centers grew.

During the 1960's vocational education both in California and the nation literally grew dramatically. Three pieces of federal legislation significantly impacted the course of vocational programs. The first was the Manpower Development and Training Act of 1962 (Public Law 87-415). This act allocated federal funds for the training of hundreds of thousands of low-skilled workers through contracts with school districts and private schools administered by the State Employment Agency and the State Vocational Education Service. This

attempt at reducing unemployment by focusing on disadvantaged and undereducated individuals succeeded in training large numbers of persons but failed in its original mission of reducing unemployment. The number of individuals seeking employment without the necessary background skills and knowledge continued to be unacceptably high.

The Vocational Education Act of 1963 (Public Law 88-210) sought to modernize and expand the scope of the original Smith-Hughes legislation.

Vocational education would now be available to:

- (1) Persons attending high school,
- (2) Persons who had completed or left high school and who were available for full-time study in preparation for employment,
- (3) Persons who were in the labor market and who needed training or retraining, and
- (4) Persons who had academic, socioeconomic, or other handicaps that prevented them from succeeding in the regular vocational education program.

In addition, the Act provided for the construction of area vocational education school facilities, for ancillary services (such as evaluation, teacher training, curriculum development, experimentation, research, and leadership development), and for work-study programs in vocational education (Smith, 1979, p. 47). This was a significant departure from all prior program approaches. Rather than appropriating new funds along accepted program areas the federal government was now actively sponsoring programs across many subject areas in a much more far reaching way. Smith states that "The intent of the new law was obvious. Vocational education opportunities should become universal - in allocations, for all persons, and for almost all occupations" (Smith, 1979, p. 49).

Five years later congress passed the Vocational Education Act of 1968 (Public Law 90-576). Revisions in this law included the appropriation of more money (slightly more than one billion dollars per year, up from \$225 million in 1963), the creation of state advisory councils, and additional concentration on the training of the handicapped, disadvantaged, and "persons who had completed or left high school in preparation for entering the labor market" (Smith, 1979, p.51). These changes helped clarify some of the provisions of the 1963 Act as well as providing substantial assistance across all areas.

Early ROC/Ps (1963 to 1977)

California was quick to follow the federal lead. In 1963, new legislation was adopted allowing for the establishment of Countywide Vocational High Schools (Senate Bill 1379). This legislation created Section 7450, et al. of the education code which, until 1976, would serve as the "home" for all regional occupational education statutory language. As adopted, the stated mission of the Countywide High School was:

to provide qualified students with the opportunity to attend a technical high school and enroll in a vocational or technical training program, regardless of the geographical location of their residence in a county. The Legislature hereby declares that a countywide vocational high school will serve the state and national interests in providing vocational and technical education to prepare students for an increasingly technological society in which generalized training and skills are insufficient to prepare high school graduates for the many employment opportunities which require special or technical training and skills. The Legislature also declares the county-wide vocational high schools will enable a broader curriculum in technical subjects to be offered and will avoid unnecessary duplication of courses and expensive training equipment, and will provide a flexibility in operation which will facilitate rapid program adjustments and meeting emergency

training needs as they arise. (Cal Ed Code, § 7450 (1963))

Although financial incentives were provided in the form of a permissive local tax of fifteen cents for each one hundred dollars of assessed valuation, no sites were inaugurated. Wide ranging dissatisfaction with the concept of separate trade schools prevented their acceptance until, in 1965, the California Legislature changed the name to Regional Occupational Center (ROC). Financing changes adopted at this time made attendance at an ROC a legal substitute for regular school attendance in qualifying schools for apportionment funding of general school aid. With these modifications in place, the first ROC site began operations during 1967.

Amendments to Chapter 14 of the California Education Code in 1967 clarified the functions of an ROC as well as allowing for year-round programs and the inclusion of adults into the previously high-school only student base (California State Department of Education, 1971). Under the 1967 rules a school district or county could form an ROC and have students from two or more high schools attend part-time vocational programs at the center. Since this was not always practical, especially in more rural locations, the mandate was broadened in 1968 to allow for both an ROC and a Regional Occupational Program (ROP). The ROP would operate in the same way as the ROC, except that multiple sites (instead of a single, centralized one) could be used. Multi-district plans were allowed, with two or more single school districts jointly cooperating and enrolling students in a single ROC or ROP venture. Governed by local boards responsible for everything from curriculum planning to budgetary management, three ROC/ROP organizational types were developed: (1) single district (SD) operations, (2) joint

powers (JP), and (3) county operated (CO). By 1969 three ROCs and fifteen ROPs were in operation throughout the state.

Rapid growth, mostly a result of the addition of the ROP provisions, moved the legislature in 1969 to adopt modifications aimed at more closely monitoring and regulating the ROC/Ps. An annual report was called for and, though not directly funded, was produced for the next several years. Growth continued with enrollment in the first half of the new decade rising 474.9 percent in sixty-five ROC/Ps between 1970 and 1975 (California State Department of Education, 1976). With this explosive growth, legislative attention shifted from support and expansion of services to ways of controlling and maintaining program expansion. While it does not appear that anyone was displeased with the ROC/Ps, the resulting legislation was clearly intended to curb ROC/P growth.

In 1975 Senate Bill 199 placed a limit on state-level funding to ROC/Ps not to exceed 105 percent of the 1974-1975 allocations (California State Department of Education, 1988a; Smith, 1979, p. 78). Financial records from 1974 indicate that, on the average, ROC/Ps obtained their funding from three major sources: 69.9% from state ADA reimbursements (which includes federal VEA pass through jobs), 29.3% from permissive taxes, and less than 1% from other local and federal sources. Although the ROC/Ps could have moved towards a leaner mix from state ADA reimbursements, thus avoiding the 105 percent limitation, they were generally reluctant to pursue the permissive tax. Instead, most ROC/Ps accepted the limitation and worked to match their enrollments to the 105 percent level.

The next year saw a restructuring of the entire Education Code for the State

of California. The sections dealing with ROC/Ps were renumbered from 7450 to 7466 to new numbers of 52300 to 52331. It was also at this time that state policy makers began to become less concerned with how ROC/Ps were organized and more interested in what results were being generated from their operation.

The Fiscal Years (1978 to 1982)

The five year period of 1978 to 1982 produced extensive legislative reform and clarification for California's ROC/Ps. New laws focused on two major areas of concern. The first was the ways in which ROC/Ps accomplish their mission, what that mission should be, and how activities would be monitored. The second area centered on ROC/P finances. Combined, these two areas of legislative interest more than doubled the size of the applicable California Education Code for ROC/Ps over this period.

1977 saw a significant addition to vocational education by allowing regional occupational centers and programs to add courses providing direct work experience (Cal Ed Code, § 52372 (1977)). "Cooperative education" allowed the ROC/P to receive up to a maximum of one full day's Average Daily Attendance (ADA) allocation for each calendar day of student work experience. Guidelines were established that the ROC/P and the employer had to conform to. The reduced costs and practical on-the-job work experience made this one of the most popular and successful vocational education programs conducted (Magnum, 1985).

The Legislature also became interested in the outcomes from ROC/P. A data collection and dissemination system already in place in the Department of

Education was expanded (Van Zant, 1978), with an annual report mandated from the Department of Education and the Board of Governors of the Community College system. This report was to review the status of all statewide vocational education, detailing such factors as the functioning of ROC/Ps, the numbers of enrollees, graduates, and job placements. Although it provided only general information, this report began what was to become a trend toward accountability in statewide vocational education systems.

1979 heralded a reversal in ROC/P funding levels. Limits were placed on the amount of revenue a regional occupation center or program could generate through its permissive taxing ability (Cal Ed Code, § 52317 (1979)). While most ROC/P income was already coming from state ADA reimbursements (Cal Ed Code, § 52321 (1979)) this change signaled that lawmakers would no longer allow ROC/Ps the virtually unlimited expansion available in prior years. To facilitate accommodation to the revenue limits imposed, ROC/P teaching time was made ineligible as credit towards permanent status (Cal Ed Code, § 44910 (1979)), essentially keeping all ROC/P teachers as temporary employees. ROC/Ps were also enabled to issue bonds for certain construction and capital expenses (Cal Ed Code, § 52319 (1979)).

The only significant event of 1980 was the repeal of the permissive tax (Cal Ed Code, § 52317 (1980)). Although this was not a significant component in most site budgets it did require replanning and refocusing for all of the sixty-eight ROC/Ps then in existence. From this point forward ROC/Ps would have to rely on ADA reimbursed revenue as their primary source of income. Sites were free to

pursue other income sources, of course (e.g., federal grants and local business contracts), but these sources generally proved to be of little impact, accounting for less than 10% of overall ROC/P revenue (California State Department of Education, 1980, 1981, 1982b, 1983a, 1984, 1985, 1986a, 1987, 1988a).

Fiscal cutbacks continued into 1981. Legislation was adopted restricting the amount of money ROC/Ps could recoup for student transportation costs. ROC/P reimbursements were limited to one-third of 50% of the total transportation cost. Moreover, this amount would only be eligible for reimbursement if the total transportation cost for the ROC/P exceeded 10% of the total ROC/P budget (Cal Ed Code, § 41852 (1981)). Optional provision was made for the ROC/Ps to recoup part of their transportation costs from the parents of some students being transported (Cal Ed Code, § 39807.5 (1981)), though it is unclear to what extent this possibly unpopular option was exercised by local ROC/Ps. The intent of the legislation, is stated in the code:

It is the intent of the Legislature that the transportation provided by regional occupational centers or programs for which they receive state aid pursuant to section 41852, utilize, to the greatest extent possible, existing school buses and personnel. (Cal Ed Code, § 41852.2 (1981))

Naturally, the workability of such a provision depends on the cooperation of local school districts. No longer able to provide reimbursable transportation to their students on their own, ROC/Ps were forced to make a difficult decision: cut their budget in other areas so as to maintain the current level of transportation, or make arrangements with local districts and/or county agencies for transportation at a rate less than what self-operation might cost. Either alternatives would result

in increased expense to the ROC/P since neither would produce the previous level of reimbursement. Faced with this situation, ROC/Ps undertook a wide range of cooperative efforts with participating school districts to arrange for student transportation.

The following year (1982) produced legislative expansion of the basic ROC/P mission. For the first time ROC/Ps were allowed to enroll out of school 16 to 18 year old's, treating them essentially the same (for funding purposes) as regular high school students (Cal Ed Code, § 52314.5 (1982)). Additionally, pilot programs were undertaken in Los Angeles and Orange counties allow to up to ten percent of a site's students to come from outside the site's regular geographic service area (Cal Ed Code, § 52317 (1982)). An existing mandate for periodic review of courses was also expanded to include the input of local Private Industry Councils (PICs) (Cal Ed Code, § 52302.3 (1982)).

A new performance report was mandated starting in 1982. Legislation (Cal Ed Code, § 52332 (1982)) specified that the relationship between programs costs and ADA revenue limits was to be determined for a representative sample of selected courses. Although mandated for annual preparation, these reports were apparently only prepared for the years 1983 and 1986. Findings from the first report showed a wide range of quality in fiscal accounting systems statewide with variations in the calculation of "direct support costs" and "indirect costs" as well as "charges between participating districts and the fiscal agent" (California State Department of Education, 1983b). These problems lead to cautions by the report's authors regarding the interpretability of between-site data. The 1986 report

reiterates the cautions of the first, while adding that education methodology (cooperative education, community classroom) could not be distinguished and may confound the reported results (California State Department of Education, 1986c).

Much of what occurred between 1980 and 1985 was closely linked to developments impacting the California educational system as a whole. The late 1970's represented a slowing of the growth of funding for all public education programs. The combination of a decline in enrollment, an increasing difficulty in passing bond elections (Wirt and Kirst, 1982), and judicial decisions such as *Serrano v. Priest* in 1974 (declaring the funding of public schools by local property taxes unconstitutional due to the inequitable distribution of resources) impacted ROC/Ps as much as the regular K - 12 system. Proposition 13, passed in 1978, "had the immediate effect of cutting real property tax revenues statewide by more than half" (Catterall and Brizendine, 1984), with the effect that local schools were now more than ever before dependent on state-level funding for basic operations. Rising standards for admission to the state's University system interacted with a downsizing instructional staff to increase class sizes and eliminate or redirect certain instructional programs. The combined effect on California's ROC/Ps was not only just a reduction in available funding, but also a change in the authority system controlling ROC/P operations. Since the state was now in charge of the lion's share of ROC/P revenues (through ADA reimbursements) policy and planning direction shifted to the state and away from local districts.

A Changing Mission (1983 to 1987)

The only significant modification to the California Education Code regarding ROC/Ps during 1983 shifted the ROC/P education clientele more towards high school age students. Prior years had seen ROC/P's allowed to adjust the mix of high school and adult students to accommodate all types of individuals desiring ROC/P services. This ended when a 1983 requirement limited "growth" funding to support for expansion of services to 16 to 18 year old's (Cal Ed Code, § 52333 (1983)). Some of this money was available to sites if they could demonstrate that they were unable to increase 16 - 18 year old enrollments but did increase adult enrollments. The statement "assign the highest priority in services to youth from the age of 16 to 18 years, inclusive" was added to the code (Cal Ed Code 1983, § 52302.5 (1983)). An annual review by each ROC/P's local governing board of participation from students in grades 11 and 12 was implemented, with the intent of preparing plans to increase participation of eleventh and twelfth graders (Cal Ed Code, § 52304.1 (1983)).

This movement of ROC/Ps into the high schools continued into the next year with additional requirements and regulations governing the participation of high school students in ROC/P sponsored cooperative education (paid on-the-job) and community classroom (unpaid on-the-job) programs (Cal Ed Code, §§ 51762, 51762.5, 51769, and 52317 (1984)). The pilot program started several years earlier in Los Angeles and Orange counties was successfully ended, with the result that all ROC/Ps could now enroll any number of students from outside of their regular service area. At the same time limits were imposed on which of the high school

students could be served by an ROC/P. Previously any high school student was eligible (with limitations on work-experience programs dictated by state labor laws). Now only students 16 years or older, or at least in the eleventh grade, or having a special referral from a school-site counselor could participate in ROC/P programs and be eligible for ADA reimbursements (Cal Ed Code, § 52314 (1984)). It appears that the legislature was using its funding prerogatives to direct ROC/Ps to service more and more high school students, especially those eligible to leave high school. One possible reason for this is an attempt to reduce the dropout rate by making it advantageous for the ROC/Ps to actively solicit students from a specifically targeted group. Unfortunately, there is no evidence of any effect other than the reduction of ROC/P services to high school students (those ineligible under the new legislation) and an increase in adult ROC/P enrollments (to compensate for the lost revenues).

These changes appear to be a response to a situation which had evolved over the years whereby essentially duplicate-funding could be achieved for high school students enrolled in ROC/P vocational courses. The high school continued to receive full ADA reimbursement for the student while the ROC/P would receive an additional ADA reimbursed limit for its services. Students were not "tracked" into either an academic or vocational line, but rather could partake of both. The legislature had moved to restrict this group of students to mostly juniors and seniors, though allowing each ROC/P to enroll as many of these students as it could support. Further modifications were made during 1984 when legislation was passed that limited the ADA that could be earned by an ROC/P from high school

students (Cal Ed Code, § 52314.5 (1984)).

Not all problems were solved, however. ROC/Ps created in small districts and less populated areas were finding it extremely difficult to operate under the fiscal limits imposed through the prior years' legislation. The state responded to this need by allowing for a greater apportionment to "necessary small ROPs"; namely, those managing fewer than 350 ADA in the prior year (Cal Ed Code, § 52324.6 (1985)). Using data obtained from the California Basic Educational Data System (CBEDS), this additional source of revenue was made available to those ROC/Ps who both qualified and made special application for the monies. The level of additional support was initially tied to "minutes of instruction", though it was later modified to be based on a "minimum number of full-time equivalent certificated ROP employees" (Cal Ed Code, § 52324.6 (1986)).

The restriction of funding to ROC/Ps continued into 1986. Following the lead set in the *Serrano* decision and the desire to maintain control of education spending the California Legislature passed what was to become in the Education Code Article 1.5 - Apportionment of Funds for ROC/P (Cal Ed Code, §§ 52335.2, 52335.4, and 52335.5 (1986)). Prior to this legislation ROC/Ps had been allocated funding in much the same way as any other high school unit in California. This legislation had the effect of establishing a set of formulas by which the total revenue available to each ROC/P could be calculated. While the special funding for necessary small ROC/Ps was not affected, the base revenue for 1986 could not exceed that which the site had generated during 1982-83 except as allowed for by a percentage annual inflation adjustment in the annual Budget Act. Provisions

were made for growth, but were tied to a 1982-83 enrollment basis. Anticipating a possible budgetary shortfall, legislators included provisions for assigning priorities to funding categories and for allocating the total statewide resource among the operating ROC/Ps.

These calculations were modified somewhat in 1987 (Cal Ed Code, §§ 52335.25, 52335.4, and 53225.6 (1987)), but the intent had become clear. No longer could California's ROC/Ps expand at any desired rate and still receive the same level of support for all students. Scarce state resources had to be distributed fairly and equitably across the state. A new report was commissioned to prepare findings on these actions and to make recommendations concerning the effectiveness in achieving statewide equity in the allocation of funds and ADA (Cal Ed Code, § 52335.8 (1987)).

Financial records from this period indicate that the net effect of this legislation was reduced growth and a concurrent stabilization of funding to ROC/Ps, with only minor increases allowed in the annual Budget Bills. This resulted in a moderate expansion of the spending power of ROC/Ps when adjusted for inflation and total ADA served, increasing 7.2% in the period from 1978 to 1987. This expenditure growth was quite small when compared with the 35.4% increase in total education funding during the same period. ROC/Ps funding increased only about one-fifth as much as the average of all state K - 12 public programs. Placing constraints on fiscal resources did not, however, stabilize the programs or mission of the ROC/Ps. Rather, they encouraged ROC/Ps to approach both revenue development and expense-reduction on an ad hoc, expediency basis.

The adoption of the Hughes-Hart Educational Reform Act of 1983, commonly known as SB 813, contributed further to the ROC/P's change of mission. This new legislation forced schools into increasing the number of academic courses offered. Three years after passage of SB 813, Nowak and Hiatt (1986) reported an overall increase in academic offerings of an average of 15.4% statewide. This was accompanied by a decrease in vocational education offerings in the high schools by an average of 15.9%. The new graduation requirements mandated by SB 813 reduced the number and variety of elective courses available to high school students, with the effect of completely eliminating or drastically reducing the high school vocational offerings. These authors conclude that, while some students will be better prepared to enter college as a result of SB 813, more students may become dropouts who are less prepared to enter the world of work due to the decrease in the vocational education options.

Current Trends (1988)

In 1987-1988, the year covered in this research, California's ROC/Ps found themselves at the center of crucial fiscal and organizational issues. Funding increases, readily available in previous years, have slowed when compared to other state supported educational programs, becoming less responsive to the demands of either growth or inflation. Furthermore, since the Legislature decides on the bulk of ROC/P allocations, ROC/Ps must be as responsive to alliances in Sacramento as in their own community.

Increased attention to concurrent high school students, continued with

increased academic requirements in SB 813, have encouraged ROC/Ps to offer many vocational courses high schools are no longer able or willing to provide (Nowak, 1986). Recent funding restrictions make it difficult for ROC/Ps to meet these revised goals, however. Unable to afford expensive centers and saddled with unreimbursed transportation costs, most ROC/Ps must work diligently to establish working alliances with local school districts and county agencies in order to obtain students, facilities, and equipment. The requirements of SB 813 complicate development of strong alliances by moving further from a vocational emphasis than ever before. High school policy makers are ready to divest themselves of the responsibility for providing vocational courses, and reluctant to encourage vocational programs that threaten to divert students from mandated SB 813 objectives.

ROC/Ps are also facing a growing interest in system-wide accountability. Recent legislation (Cal Ed Code, §§ 8007 and 52302.3 (1987)), requires ROC/Ps to prove their worth as purveyors of skill based training. This, despite evidence that skill training *per se* is not as important for new employees as is positive work habits and attitudes (Wilms, 1983). Earlier accountability measures were largely internal, centering on how well ROC/Ps delivered stated services. Course review and approval procedures, as well as the two-year program review, were ROC/P quality control mechanisms. Newer legislation and interpretation by the California State Department of Education, (1987a, 1988a) shifted the emphasis away from product delivery to subsequent successful placement of students in the jobs for which they are trained. The latter objective does not necessarily conflict with the former, but they could lead to different program development and implementation

strategies. In the first case ROC/Ps are encouraged to deliver a course so as to maximize student performance in the course material. In the second case the ROC/P is encouraged to screen out potentially unsuccessful students and to retain only the most promising students; training them in skills directly needed for initial employment.

The mission of regional occupational centers has grown significantly from what was first approved in 1963. Today, that mission is:

to provide qualified students with the opportunity to attend a technical school or enroll in a vocational or technical training program, regardless of the geographic location of their residence in a county or region. The Legislature hereby declares that a regional occupational center will serve the state and national interests in providing vocational and technical educational to prepare students for an increasingly technological society in which generalized training and skills are insufficient to prepare high school students and graduates, out-of-school youth and adults for the many employment opportunities which require special or technical training and skills. The Legislature also declares that regional occupational centers will enable a broader curriculum in technical subjects to be offered, and will avoid unnecessary duplication of courses and expensive training equipment, and will provide a flexibility in operation which will facilitate rapid program adjustments and meeting changing training needs as they arise.

It is recognized by the Legislature that vocational programs may achieve great flexibility of planning, scope and operation by the conduct of such programs in a variety of physical facilities at various training locations.

It is the further intent of the Legislature that regional occupational centers and program provide vocational and occupational instruction to the attainment of skills so that trainees are prepared for gainful employment in the area for which training was provided, or are upgraded so they have the higher level skills required because of new and changing technologies or so that they are prepared for enrollment in more advanced training programs. (Cal Ed Code, § 52300 (1988))

ROC/Ps now serve both high school age persons, whether in a high school

or not, as well as other adults seeking vocational training. Previously held accountable for "vocational and occupational instruction related to the attainment of a specific skill which will make the trainee technically equipped to be immediately employable" (Cal Ed Code, § 7450 (1969)), ROC/Ps today are responsible for training for the acquisition of employment, upgrading of skills, and preparation for enrollment in further training. Instead of serving as the final step in a high school vocational education process, ROC/Ps today are assuming much, if not most, of the primary high school pre-vocational education mission.

Conclusions

Historical review has shown California's regional occupational centers to be an educational delivery system affected by a number of competing forces. Established as an outgrowth of available federal funding in the early 1960's, the ROC/Ps have evolved to an organization with a complex and multi-faceted mission and relatively scant resources with which to accomplish it. Five distinct threads wind their way through this history, each contributing significantly to the operations of ROC/Ps.

The first is concerned with the way in which ROC/Ps are financially supported. ROC/Ps are now almost entirely dependant on state ADA reimbursements for operational funds. The permissive tax provided in early legislation was rarely employed and was eventually repealed. Unlike other public schools, there is neither a mandate for attendance nor a minimum funding level available to ROC/Ps. Instead, ROC/Ps have always had to attract potential

students into their programs. Since enrollment is voluntary, ROC/Ps must actively recruit students in order to maintain income levels in a reimbursement system based on student attendance reimbursement (ADA).

Initially ROC/P vocational programs were open to virtually any student who expressed intent. This led to an explosive growth in ROC/P offerings, and state reimbursements, which the state legislature curbed by capping enrollments, limiting growth, and restricting the kind of student that could enroll. Further legislative mandates provided incentives to the ROC/Ps to enroll greater numbers of high school students, relieving the high schools of a substantial portion of their vocational education responsibilities. This was agreeable with many high schools seeking relief from increased graduation requirements embodied in SB 813. The ROC/Ps provided a natural agency to take over the vocational education needs of these students.

By accepting such an expanded mission the ROC/Ps moved further into the high school environment. In doing so they accepted responsibility for pre-vocational education instead of the upper level vocational training previously held. Such an arrangement seemed to insure that the ROC/Ps would have a steady flow of new students as well as readily available facilities (and, in some cases, equipment). However, it also put them under the indirect control of the local high schools. With the high schools able to control the ROC/Ps primary income stream (by mediating student access to the ROC/P programs) high schools were able to dictate an increasing share of ROC/P operations. Some ROC/Ps were viewed less as an alternative educational entity and more as a subdivision of the local district(s), with

cost-efficiencies being determined at the district, and not ROC/P, level.

Although never stated outright, this produced a subtle yet powerful shift in the true mission of the ROC/Ps. Initially intended to provide quality training for job readiness to a wide mix of students, ROC/Ps became more and more concerned with district and county organizational affiliations in order to support continued high school student enrollment. A good ROC/P became one that could deliver educational services in such a way as to benefit the participating school districts. This was typically measured not by student job placements but rather by students enrolled into the ROC/P program and, therefore, out of the high school for that time during the day (leaving the high school additional regular seats). Not insignificantly, they also became sources of increased income for the local district(s).

The final lesson from the ROC/P history is the prominence of state legislators' concern that ROC/P funding produces little beyond the benefits already resulting to high schools and local districts/counties. ROC/Ps were initially required to detail the costs of their operations and, more recently, to show what outcomes are being achieved. Unfortunately, these outcomes address only specified job placements ignoring both upgrade skills training (part of the legislative intents for ROC/Ps) as well as the number of high school programs shifted to the ROC/Ps. Reports generated from such data therefore only show a portion of ROC/P outcomes, and not necessarily those with which ROC/P managers are most concerned. Currently, funding for ROC/Ps rests not on their ability to either provide a quality educational service or success at training and placing students in particular vocational fields. Rather it is their ability to attract and secure students

from within a limited population group that controls revenues. Cooperation with local high schools is essential, since that is where most potential students are to be found and where important facilities and equipment for the training are located. With limited growth, and insufficient funds to be truly independent of the high school, ROC/Ps must work to ensure adequate enrollments and income. On top of these constraints, however, the state is requiring performance reporting limited to only a small range of the actual outcomes produced.

If it is the intent of the legislature to use ROC/P fiscal support to control program performance it must be demonstrated that, in the current operational environment, fiscal resources are related to program outcomes. This study examines that issue in detail. Should such a relationship not be found (as it appears with these results), ROC/P evaluation strategies will have to be reconsidered. Since California's regional occupational centers and programs must pursue a number diverse objectives, using competing strategies for their achievement, it is vitally important to identify which organizational and program characteristics contribute most to success in meeting various goals.

Fiscal Developments

Prior to 1969-70, State fiscal reports do not include any information specifically relating to ROC/Ps. Detailed fiscal data do exist for the ten-year span from 1977-78 through 1986-87. Analysis of these data provide a clear picture of ROC/P fiscal development. ROC/P income is largely controlled by attendance rates. Between 1977-78 and 1986-87, the average daily attendance (ADA) of Single District/Joint Powers ROC/Ps increased from 35,137 to 53,577, more than 50 percent. The ADA of County-Operated ROC/Ps, first reported separately in 1980-81, increased from 33,838 to 48,947. Total ADA (County level ROC/Ps plus Single District/Joint Powers ROC/Ps) increased from 70,829 in Fiscal Year (FY) 1977-78 to 102,524 in FY 1986-87. Overall this represents an approximately 45 percent increase in ADA.

<u>Year</u>	<u>S.D./J.P.</u>	<u>C.O.</u>	<u>Total</u>
1977-1978	35,137		70,829**
1978-1979	33,220		56,306**
1979-1980	38,962		63,112**
1980-1981	38,085	33,838	71,923
1981-1982	40,480	41,703	82,183
1982-1983	47,195	44,261	91,456
1983-1984	39,267	38,249	77,516
1984-1985	46,400	44,581	90,981
1985-1986	49,384	46,813	96,197
1986-1987	53,577	48,947	102,524

* Data from California Controller's Office
 ** Data from Office of Local Assistance, Sacramento

Table 1: Annual Average Daily Attendance

Regional Occupational Center/Program Annual Average Daily Attendance

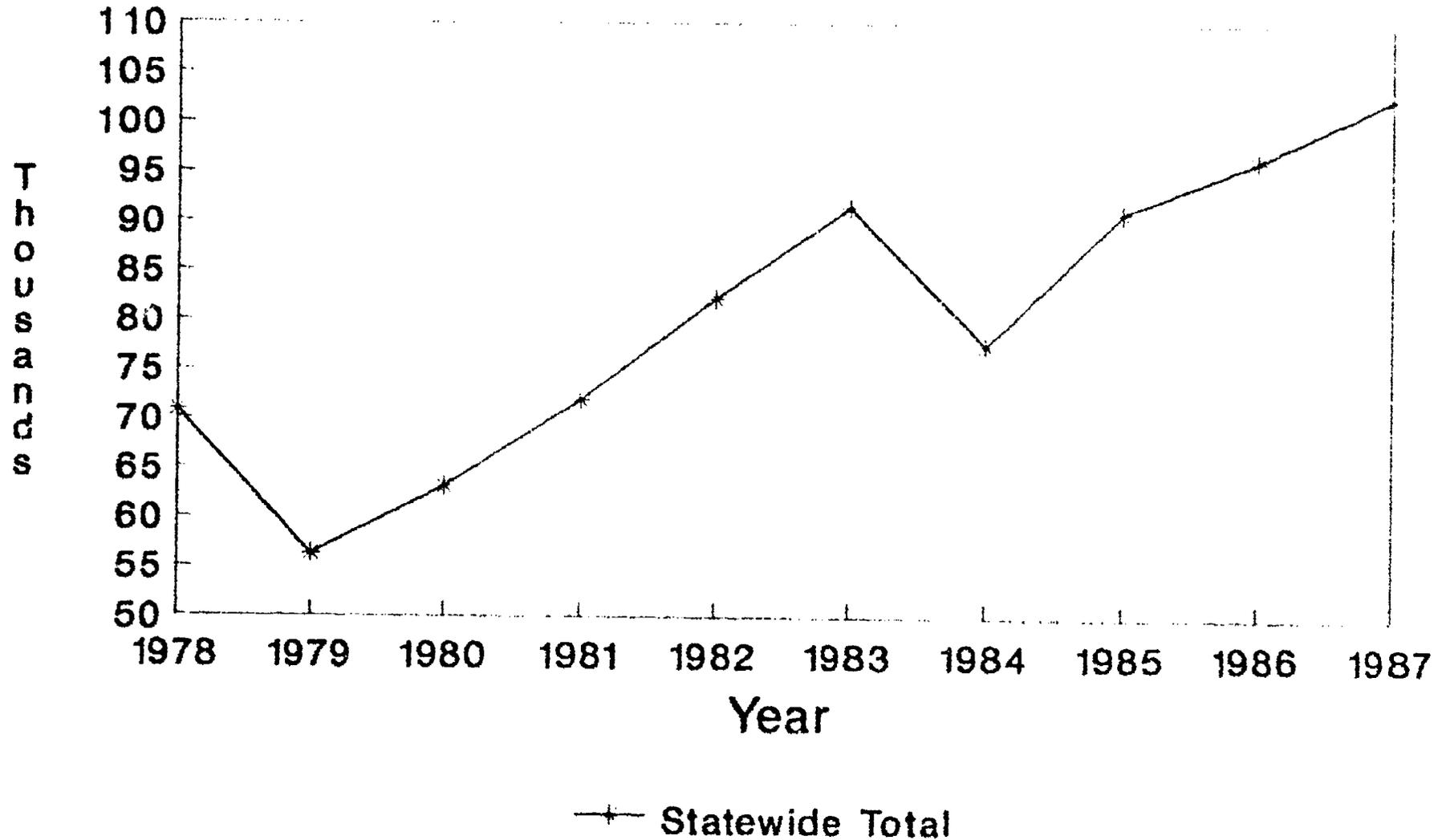


Figure 1: Annual Average Daily Attendance

Total income for ROC/Ps was \$94.9 million in 1977-78, rising to \$251.4 million in 1986-87.

<u>Year</u>	<u>S.D./J.P.</u>	<u>C.O.</u>	<u>Total</u>
1977-1978	48.6	46.3	94.9
1978-1979	47.1	41.9	89.0
1979-1980	53.2	27.5	80.7
1980-1981	61.0	66.7	127.7
1981-1982	69.8	77.6	147.4
1982-1983	84.1	81.9	166.0
1983-1984	89.5	87.5	177.0
1984-1985	96.6	90.9	187.5
1985-1986	113.4	105.7	219.1
1986-1987	138.6	112.8	251.4

* in Millions of Dollars

Table 2: Annual Income*

Although this appears to be a very sizeable increase, this income is in actual dollars, not adjusted for inflation. To insure between-years comparability the Implicit Price Deflator (IPD) was used as a measure of inflation. This general indicator of overall economic growth in the nation increased slightly more than 70 percent in the ten year span examined, from 140.05 in 1977 to 239.11 in 1987. When ROC/P income is adjusted for inflation using the IPD the increase in income is approximately 55 percent over the decade of interest, rising from \$67.76 million to \$105.14 million. These data are presented in Table 3 and jointly in Figure 2.

<u>Year</u>	<u>Total Income'</u>	<u>GNP/IDF''</u>	<u>Adj. Total'</u>
1977-1978	94.9	140.05	67.76
1978-1979	89.0	150.42	59.17
1979-1980	80.7	163.42	49.38
1980-1981	127.7	178.42	71.57
1981-1982	147.4	195.60	75.36
1982-1983	166.0	207.38	80.05
1983-1984	177.0	215.34	82.20
1984-1985	187.5	223.43	83.92
1985-1986	219.1	237.45	92.27
1986-1987	251.4	239.11	105.14

' in Millions of Dollars
 '' Base of 1972 = 100.00

Table 3: Annual Income Adjusted for Inflation

Increased ROC/P income was also adjusted for the increasing size of the student population served, as measured by ADA.

<u>Year</u>	<u>Adj. Income'</u>	<u>Total ADA</u>	<u>Inc/ADA''</u>
1977-1978	67.76	70,829	956.67
1978-1979	59.17	56,306	1,050.86
1979-1980	49.38	63,112	782.42
1980-1981	71.57	71,923	995.09
1981-1982	75.36	82,183	916.98
1982-1983	80.05	91,456	875.28
1983-1984	82.20	77,516	1,060.43
1984-1985	83.92	90,981	922.39
1985-1986	92.27	96,197	959.18
1986-1987	105.14	102,524	1,025.52

' in Millions of Dollars
 '' in Dollars

Table 4: Annual Income per ADA in Adjusted Dollars

Regional Occupational Center/Program Statewide Total Annual Income

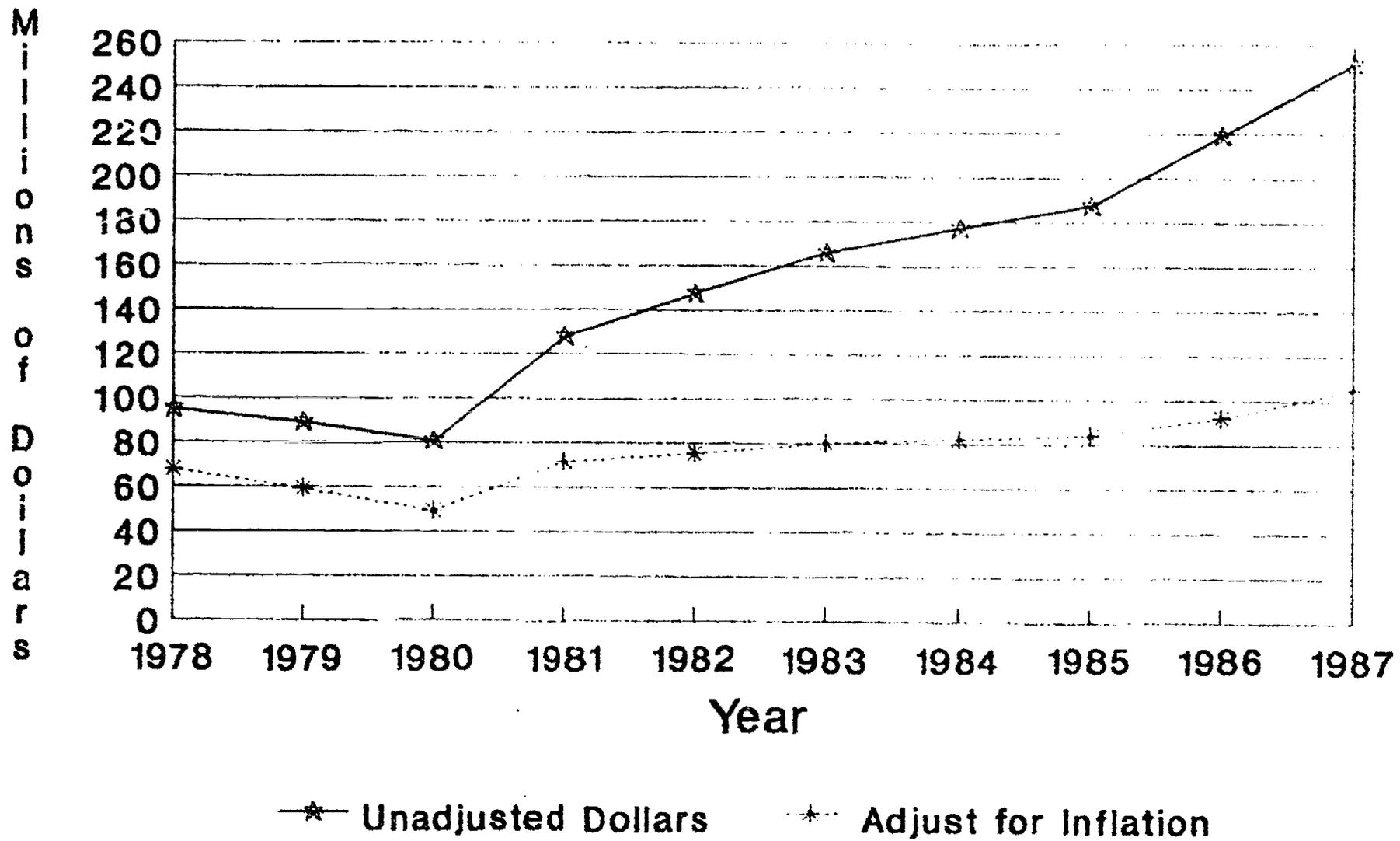


Figure 2: Statewide Total Annual Income

In FY 1977-78 the average income (in inflation-adjusted dollars) per unit of ADA was \$956.67. In FY 1986-87 the adjusted income per ADA was \$1025.52 per unit, a net increase of \$68.85 (7.2%). Wide variations in both enrollment and income plagued ROC/Ps throughout the decade, however. Per ADA income varied between a low of \$782/ADA in FY 1979-80 and a high of \$1060/ADA in FY 1983-84. The low figure probably reflects the overall impact of Proposition 13 on schools in California.

While the decade long picture shows significant enrollment growth, total ADA for all ROC/Ps actually decreased from 91,456 in FY 1982-83 to 77,516 in FY 1983-84. It is not clear why the ADA suffered such a decline, particularly since the total ADA rose to almost the FY 1982-83 level in the next year (FY 1984-85). These data are presented in Figure 3.

While ROC/P funding has increased over this ten year span the increase has neither been dramatic nor particularly stable. This instability in available revenues, coupled with the slight increase in spending power, and a renewed state-level interest in linking funding to performance criteria represent the significant points for this portion of the research.

Regional Occupational Center/Program Income per ADA in Adjusted Dollars

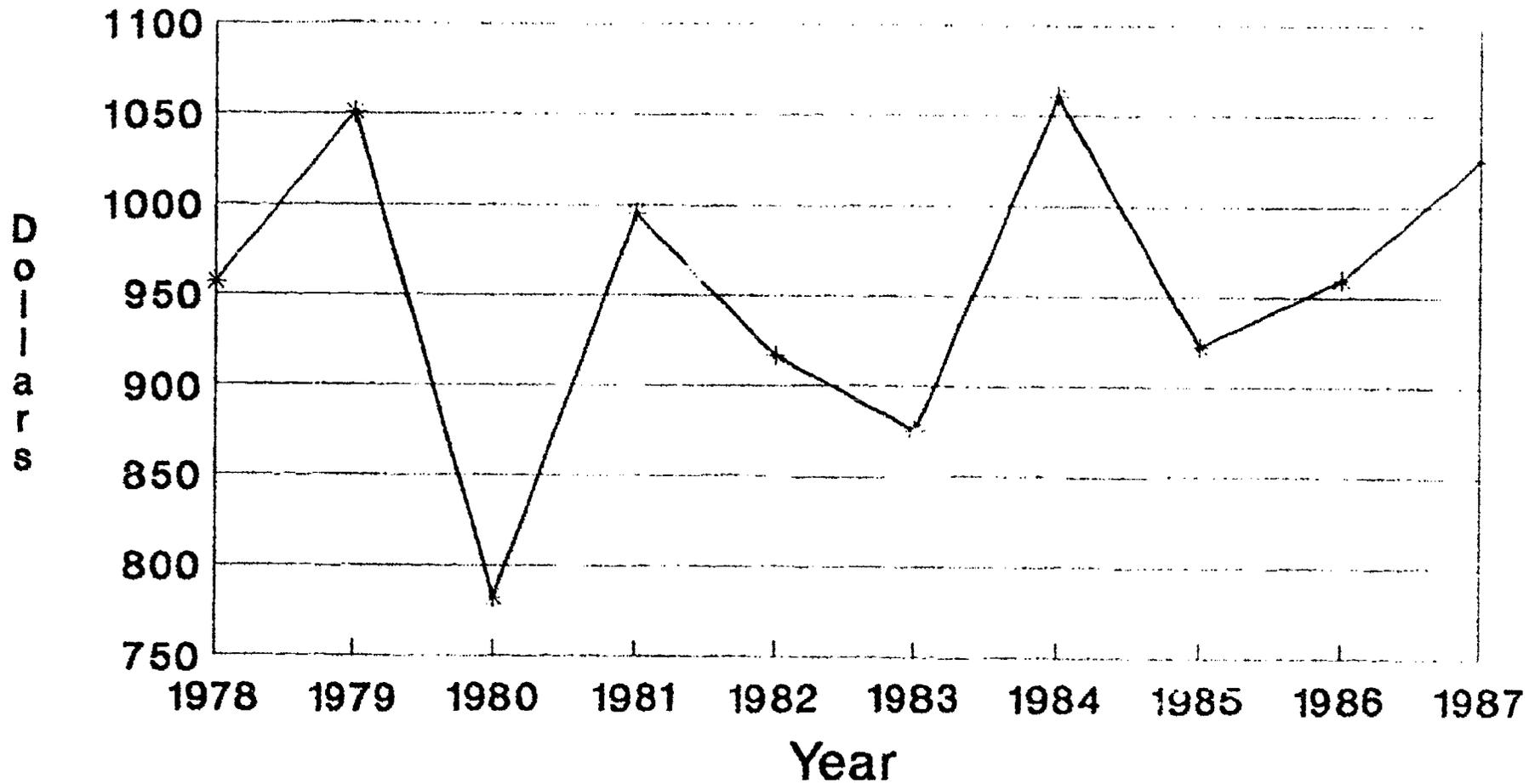


Figure 3: Income per ADA in Adjusted Dollars

* Statewide Total

20 21

Cost-Effects Analysis

A cost-outcome analysis of an educational program is a method whereby an attempt is made to relate factors needed to operate the given program with the outcome (or outcomes) that the program produces (Bentkover, Covello, & Mumpower, 1986). Methodologies for determining the inputs required to produce given levels of output are not new. Smith and Smith (1983) cite over 350 recent studies which relate costs to outcomes in a number of different fields, from medicine to education to politics. Before the relationship between costs and outcomes can be examined, though, it is necessary to gain a clear understanding of the meaning of each term.

Brinkman and Allen (1986) present the most cogent discussion of calculating the costs of a given program under study. Essentially, they state that there is no single, universal definition of costs. Rather, the cost of an enterprise depends greatly on the context in which the costs analysis question is being asked. They describe several ways in which costs may be considered:

- * Objectives (input, output, activity, organizational unit)
- * Basis (historical, projected, standard, imputed, replacement)
- * Assignability (direct, indirect, full)
- * Variability (fixed, variable, semi-variable)
- * Activity relationship (total, average, marginal)
- * Determination method (specific service, continuous service)
- * Time relationship (time period, accrual or cash, deflated)

Additionally, program costs are differentiated depending on whether the costs are recurring or nonrecurring as well as controllable or noncontrollable. Several authors have wrestled with this issue of what costs ought to be computed and included in a model. Both Nagel (1983) and Catterall (1982) argue for including

the cost of nonmonetary items. Smith (1984a) distinguishes between costs generated as part of a project's start-up versus those generated as a result of a program's operations. In a similar light, Thompson (1980) lists five different categories for computing costs (measurement, valuing, econometric methods, hypothetical questions, and political choices), while Levin and Seidman (1981) define five different valuation techniques (market prices, shadow prices, joint costs, annualized costs, and present value).

In the actual process of collecting and tabulating cost information, Levin (1983) advocates the use of an "ingredients model" for describing program costs. Essentially, every aspect of the program is enumerated with a cost (even if zero) assigned to each. He states:

Basically, the ingredients model will require that we specify all of the ingredients that are required for any particular intervention. Once these ingredients are specified, a value is placed on each of them. (Levin, 1983, p. 49)

The determination of what that value will be is just as important as knowing that a cost must be assigned for a given component. He argues that the cost used is not necessarily the price paid, but rather that

. . . the cost of a specific intervention will be defined as the value of all of the resources that it utilizes had they been assigned to their most valuable alternative use. In this sense, all costs represent the sacrifice of an opportunity that has been forgone. By using the resources in one way, we are giving up the ability to use them in another way, so a cost has been incurred. (p. 48)

It is obvious that even contributed or donated resources such as volunteers must be included as ingredients according to such an approach, for such resources will contribute to the outcome of the intervention, even if they are not included in budgetary expenditures. (p. 52)

Essentially, under Levin's scheme every aspect of a program must be assigned a cost value and be included in the total cost determination for that program. Determining what is the "most valuable alternative use", and what that alternative use might be worth, is no short order. Researchers must agree on both how this is done and what value is assigned in order for the results of any two studies to be comparable.

Not all researchers agree with Levin in this regard. Haggart (1978) differentiates costs on the basis of how the results of the study will be used. He argues that, for studies whose results are to be used within a single operational unit (such as a school district) it is necessary only to collect "district specific" cost items. When the study is to be generalized outside of the unit (district), costs representing a fuller range of items should be included. Smith (1985), in a work on streamlining the data collection techniques in cost-outcome analysis, clarifies this:

To streamline the calculation of program costs, an intermediate step can be added: identifying resources that represent direct costs to the sponsor. If the evaluation question pertains to the direct cost assumed by the sponsor, the calculation of program cost should include only those resources that involve direct costs. . . . This generally does not require the calculation of the value of resources such as volunteer time. . . . Such inclusion of opportunity costs would spuriously elevate the total cost figure for local analysis purposes. If a program is an adjunct to regular school programming, then only those costs over and above the regular school costs need to be included. (p. 7)

This differentiation of purposes is also magnified when the issue of "costs already taken" is addressed. Writers on this point seek to understand whether it is appropriate to include costs for those goods and services incurred prior to the

start of the program in question. Dunn and Sullins (1982) take a social welfare approach in discussing costs in a study on higher education by seeking to identify all costs, both monetary and nonmonetary, that society must bear to conduct a program. While counter to that of Smith, it essentially states two positions, one which advocates costing on the basis of total program inputs (direct, indirect, and support by society at large) while the other advocates costing on the basis of differences between programs (or between a program and no program at all).

Determination of program outcomes is likewise dependent on the context in which the program is held. Both Smith (1984b) and Hanson (1986) state the necessity of quantifying the results from the program in order to be sure that the comparisons are both interpretable and valid. Outcomes, though, can be both to the program (such as program continuance), to the providers (continued funding), and to the clients served (such as a particular skill learned or employment gained). In fact, Smith (1984b) recognizes the strong possibility that single programs may have multiple, and quite varied, outcomes. In such cases the various outcomes may be comparable within themselves but not in-between, leading to a need for differing methodologies if such a comparison is necessary.

Using these definitions of costs Levin (1981, 1983) has organized the two concepts of costs and outcomes together in evaluating educational programs. He describes four different kinds of cost-outcome analysis: cost-feasibility, cost-utility, cost-benefits, and cost-effects. Each method addresses a particular combination of costing and outcome problems as well as contextual frameworks in such a way that an evaluation could be performed.

The simplest kind of cost-outcome evaluation is the cost-feasibility (CF) analysis (Smith and Smith, 1983). In this situation there is a known and finite amount of resource that may be invested into a given project. The total costs for different programmatic alternatives for the project are tabulated and compared. Any program whose total cost is more than the available resource is automatically eliminated, since it would be impossible (given the finiteness of the resource) to meet its costs. All of the remaining less-or-equal costly programs are then ordered from least expensive to most and, all other things being equal, the least expensive program is chosen. The assumptions are made that no more than the finite resource may be expended on the project (regardless of the alternative), and that each program possibility stands an equal chance of achieving the same level of outcome. When these conditions are both known and applied CF analysis represents the most straightforward method for deciding between program alternatives. In essence, this approach relies on cost differences between similarly producing programs for decision making.

The next level of complexity in cost-outcome analysis is that of cost-utility. This type of analysis is useful when costs can be quantified (according to some method), but outcomes are varied and may only be estimated. In these cases the value of the outcome (its utility) is not completely known and may have to be determined in part, if not in full, by more subjective methods. Cost-utility (CU) analysis permits the use of both quantitative and qualitative data, including that of different measures of outcomes for the different programs under evaluation, by forcing the user to weight the values of the responses according to their perceived

impact, then comparing these weights according to the costs determined (Manpower Administration, 1983). Unfortunately, CU's flexibility is also its drawback, since differing outcomes measured qualitatively may produce different ratings (and, indeed, even different systems of rating) from person to person. Thus, the method could be found to be highly subjective, with the results useful only within the group doing the evaluation.

Levin's third method of analysis, stemming from a social welfare point of view, seeks to overcome the limitations of CU analysis. Rather than treating the outcome subjectively, cost-benefit (CB) analysis seeks to assign a monetary value (or worth) to each outcome. Each outcome is, therefore, carefully examined for both its short-term and long-term impacts on both the clients, the sponsor, and society at large. Positive programs are those which have a high monetary value to the outcome relative to the monetary value of the program cost (Hall, 1976). Dunn and Sullins (1982) put this slightly differently:

If one accepts the assumption that public resources should be invested so social welfare is maximized, then cost-benefit analyses should be used to identify investments that will achieve that result. (p. 21)

While interesting in theory, the problem of assigning costs to the long-term products of different outcomes can be both involved and confusing. Many authors (Thompson, 1980; Dunn and Sullins, 1982; Barnett, 1985; Levin and Seidman, 1981; and Hunting, Zymelman, & Godfrey, 1986) acknowledge this problem, though it is Dunn and Sullins (1982), in a study of the outcomes from higher education, who put it most succinctly.

In summary, estimating the value of the social return on higher education is an imprecise process. Measuring the earnings differential

of higher education is, in itself, difficult given the many other factors which are also highly correlated with one's income level. Nonmonetary direct returns to higher education are less easily measured. Indirect monetary and nonmonetary returns are even more difficult to measure. Hence, arriving at a precise and defensible value probably is not possible. Once again, the utility of cost-benefit analysis is challenged seriously by the tenuous character of one of its key components. (p. 30)

Cost-benefit analysis, while it does address the shortcomings of cost-utility analysis, has its own problems which may severely impact its usability. When both short- and long-term outcomes can be clearly identified and reliably collected, the value of CB analysis in addressing issues of broad social concern is unparalleled (Escobar, Barnett, and Keith, 1988; Dean and Dolan, 1986). Without those assurances, though, it is a process (like cost-utility analysis) that is open to criticism.

The final method of cost-outcome analysis forwarded by Levin (and others) is that of cost-effects (CE) analysis. Cost-effects analysis incorporates, as do the other methods of analysis, direct costs of program operation. Outcomes, however, are assumed to be both similar between the programs and measurable in quantitative terms. Since both costs and outcomes are expressed in quantitative, numerical terms it is possible to form a ratio between the two, known as the cost/effects ratio. Levin describes this ratio:

In order to use the CE approach, it is first necessary to determine the program objective and an appropriate measure of effectiveness. Then the alternatives that will be evaluated must be specified. Given these requirements, it is possible to design an evaluation of the alternatives on the particular criterion of effectiveness that has been established and to obtain cost information for each alternative. Finally, the cost and effectiveness data can be combined into CE ratios that show the amount of effectiveness that can be obtained for an estimated cost. Since these ratios can be compared among alternatives, it is possible

to provide information to decision makers on which alternatives seem to be most parsimonious in terms of costs, with respect to the measure of effectiveness that is under scrutiny. (p. 115)

Numerous studies have been undertaken in education using cost-effects analysis. Quinn, Mondfrans, and Worthen (1984) report applying CE techniques in a multiple regression analysis in order to identify the significant factors of the CE ratio in a study comparing different methods of mathematics instruction. Levin and Meister (1986) used this method in an investigation of four different methods of instruction in teaching math and reading (see also Chandler, 1986). Both the Technical Assistance Centers (Estes, 1983) and certain reading and math programs (Fitzgerald and Hunt, 1985) established under Chapter I funding were evaluated using CE methodologies.

Unfortunately, the literature also contains examples of studies calling themselves cost-effects when, in reality, the researchers only studied the comparative costs of the different programs (Dyer, 1985 being a representative example). These studies confuse the concept of cost-effects as defined above with that of cost-efficiency or, namely, finding the least expensive program. Such evaluations are more in kind with cost-feasibility studies than cost-effects studies, since little to no attempt is made to relate programmatic costs with programmatically-induced outcomes. The four methods of cost-outcome analysis are summarized in Table 5.

In general, Levin (1983) and others already cited (Smith and Smith, 1983; Smith, 1984a, 1984b, 1985; and Dunn and Sullins, 1985) find the cost-effectiveness framework to be the one more suited to most kinds of educational evaluation. The

major drawback of CE analysis is that it does not typically take into account the social value (or return) of the program. Nonetheless, it represents a method of comparison generally more stringent and repeatable than either cost-feasibility or cost-utility. When comparing two (or more) programs attempting to achieve the same (or similar) results and the overall operation of the programs are not at question (such as in CB analysis), it appears that cost-effects analysis is the cost-outcome method of choice for most educational program analyses.

<u>Type</u>	<u>Costs</u>	<u>Outcomes</u>	<u>Strengths</u>	<u>Weaknesses</u>
CF	Program	Similar	Easy to use	Essentially cost analysis only
CU	Prog/Soc	Can be varied	Less stringent	Difficult to reproduce; highly subjective
CB	Social	Long-term	Social impact	Economic valuing of outcomes
CE	Program	Similar & specific	Fully quantitative	Enforces similar outcomes

Table 5: Comparison of Cost-Outcome Evaluation Methods

Limitations of Previous Research

The interest group for this investigation is comprised of California's seventy regional occupational centers and programs; therefore, the literature relating to cost-outcome analysis in vocational education for the state of California has also been investigated. While the intent is to highlight only those sources dealing with ROC/Ps directly, a number of other interesting works were found relating to other

vocational education programs found throughout the state.

Basic information on vocational education in California during the last few years is found in a number of different places, with the most prominent agency being the California State Department of Education (1986b, 1986d, 1986e, 1987, 1988b). Vocational education in California consists of separate programs, such as through the ROC/Ps, in addition to programs integrated into the high schools and community colleges. The focus over the last few years, however, has been a movement towards a tighter infusion of these vocational education efforts into the mainstream of the K - 12 program. This is best exemplified in the 1986 Department of Education Annual Report (California State Department of Education, 1986d) which states:

California is in a period of transition - changing technology, changing jobs, and a dramatically changing population. The education and training of our students must change, as well, to remain relevant for the future. Many more of our students than ever before, regardless of career aspirations, now require a strong academic foundation to be successful. Academic and career-vocational preparation can no longer function as mutually exclusive enterprises. Instead, they must function as complementary components of a total process. (p. 27)

Movement towards this end is taking a number of forms. One is as a result of Assembly Bill 3639 (Chapter 1138, California Statutes of 1986) which authorizes appropriations to study the "2 + 2" and "2 + 2 + 2" programs. These programs encourage high school districts, regional occupation centers and program, the state's community college system, and the California State University and University of California to work together to provide articulation agreements for students in specially designed vocational career programs. Under these articulation plans

students would begin their vocational education in the high school, progress through an ROC/P and/or community college towards an Associate's degree, and then on to a four-year school for a Bachelor's degree.

Quality indicators, one of the fall-outs from the SB 813 movement for accountability in education (Hobson, 1983; Fetler, 1986), are also being stressed in vocational education circles. While vocational administrators generally support the notion of accountability in education, there is little consensus as to how that accountability both ought to be measured and how changes can be effected to improve it. Dual-track plans such as those adopted in some European countries hold much promise for achieving such accountability (Werner, 1986), since students could then be compared against other of similar interests and aptitudes. There is little evidence that California would move in such a direction, though, as current literature points to an ever-increasing integration of all education, career-vocational and academic, under a single roof. How this will affect the determination of vocational education's performance is unclear.

The best orientation to California's system of regional occupational centers and programs can be found in their Operations Handbook (California State Department of Education, 1988). This document serves as a working blueprint that current ROC/P administrators can use as a guide to both day-to-day operations and long term planning. As such, it provides a unique orientation to the current operational outlook on cost-outcomes analysis within the organization. Unfortunately, while this document repeatedly states the need for performance analysis and cost-effective operations, there is little in the way of concrete material

on which a cost-effects study could be based. Specific fiscal data, student enrollment and attendance figures, and follow-up reports are cited, however, which could serve as a basis for a study in the area.

This is not to say that no prior studies have been accomplished. Indeed, several works regarding ROC/Ps (both theoretical and applied) have been performed over the last few years. The earliest of these studies was done in 1971 as a result of a change in the education code mandating such (Cal Ed Code, § 7463 (1969)). This report summarizes the historical development of ROC/Ps since their inception in 1963, then provides both enrollment and fiscal figures for the five ROCs and nineteen ROPs that were in operation during 1969-1970. While these data are broken down by both ROC/P site and course subject area, two major components necessary for a cost-outcome analysis are excluded. First, there is no information on student placement rates (or other measures of success other than program completion). Second, and more importantly, no attempt was made at relating the costs of operation to any of the measures that were obtained. As such, that report reflects only a detailed listing of the status of California's ROC/Ps, not an investigation into costs related to outcomes. One important point surfaced, however, that may have a bearing on future investigations if it is still occurring today:

The financial constraints upon school districts, coupled with the desire and need to expand vocational education opportunities for youth and adults, have combined to produce a number of instances where school districts actively seek the financial resources provided by Chapter 14 [the ROC/P entitlement legislation] to support programs and services that have traditionally been financed through other means, and thus, in a number of instances, Chapter 14 financial resources have been construed to be "general aid" provisions for the support of all or most

of vocational education programs and services. (p. 6)

Other reports were produced under this legislative mandate, though they continued in the same track as the first. By 1976, the Status Report (California State Department of Education, 1976) was reporting on programs in over 65 ROC/P sites. The report now also included information on both student completer and follow-up rates for different programs of study, as well as the calculation of an average cost per unit of Average Daily Attendance (ADA). This first attempt at a cost-outcome comparison was somewhat lacking, as it aggregated Single District (SD), Joint Powers (JP), and County Operated (CO) together calculating a single value only for each of the three kinds. Nonetheless, this was the beginning of a movement that was to continue into the next decade.

It was little more than a year after that report was published that a decision was made at the state level to intensify the collection and analysis of information regarding ROC/P students. Van Zant (1978) began serious data collection with a statewide program to implement the "education program monitoring matrix", a method whereby standard reports could be used to collect and disseminate information on a number of program factors, including: program length, enrollment, completions, placements, and costs, including costs per enrollment, per completion, and per placement. This work also advocated the calculation of a benefit/cost ratio based on a societal benefit framework. The calculation methodology used for this benefit/cost ratio is extremely simplistic (it assumed that all unskilled workers are paid at the standard minimum wage and computes the benefit as the difference between the average wage of placed students and the minimum wage). Though

not rigorous, it did provide a bird's eye view of how cost and outcome data could be collected and analyzed from a California vocational education program.

This led to a four year study of the effects of vocational education. Ostensibly performed to comply with part of the regulations in the federal Carl D. Perkins Vocational Education Act (PL 94-482) these studies sought to determine the effects of vocational education in both high schools and regional occupational centers and programs (Neasham, 1980, 1981a, 1981b; California State Department of Education, 1982a; Wright and Kim, 1982, 1983). Concerned primarily with federal requirements, these studies investigated program "effectiveness" only. The most recent of these studies obtained administrator feedback across nine different areas: quality, availability, student services, facilities and equipment, teacher-pupil ratio, teacher qualifications, student achievement, sex fairness, and services for special populations. Comparisons were made between high school programs and ROC/P programs (in three of the four studies), as well as internally between the nine areas of interest. Differences in the ways in which these studies were conducted over the four years, the fact that the data were mostly self-reports from program staff, as well as the fact that no cost information was collected, make them only marginally useful for cost-outcome analysis.

At the same time these studies were in progress, the State Department of Education, to comply with another legislative mandate (Cal Ed Code, § 52332 (1982)) undertook several studies to determine the costs of ROC/P operations at a number of different sites (California State Department of Education, 1983b, 1986). The first of these studies investigated a stratified random sample of 100 courses

from which "information [derived from this sample] should fairly represent the costs of courses enrolling most ROC/P students" (p. 2). Following existing state mandated fiscal recording and reporting procedures allowed the study to collect similar data in most respects from each of the participating sites. Where this methodology fell short was in the appropriation of indirect costs.

While most of the programs show an excess of expenditures over revenue, it must be kept in mind that the calculation of "direct support costs" and "indirect costs" are normally the expenditures which create these imbalances. In the case of ROPs, these are very similar to a fixed cost which would occur regardless of whether the program was offered or not. . . . Procedures for establishing charges for administration between participating districts and the fiscal agent are varied and range from fixed percentages to in-kind contributions. (p. 13)

The latter report changed the data collection methodology, bowing to responses that the initial report was too fragmented to produce usable information. The second work focused instead on all of the costs at three ROC/P sites. Using much the same data collection strategy as before, this work showed both total revenues and expenditures, the total ADA, and the revenues and expenditures per ADA. While the first report showed an excess of expenditures to revenues the second report found the exact opposite. Like the first report, which only studied 100 courses statewide, the second report suffered from a lack of generalization by investigating only three sites (out of sixty-eight in operation during the year in question). Since only costs were considered (a characteristic of both works), little is found that could be applied to cost-outcomes analyses.

If this were not enough, a third movement was undertaken during the early 1980's to collect information on vocational education students. Known generally as

the Follow-up of Students and Employers (FUSE) or the Project for Student Employment Experiences (SEE) this multi-year investigation surveyed both high school and ROC/P students about their current work experiences. The major findings from these years of work were that more students were working in their third year out of school than in their first, that students working were employed in the field for which they had received training, and that they were also generally earning more money than those working in an unrelated field (Kim and Wright, 1984). As in prior studies, no figures for the cost of educating the students were collected, and the results are somewhat questionable since they were based on a small sample group with an uneven distribution.

A similar effort was undertaken in the community college system, called the Statewide Student Follow-up System (SSFS). Farland, Anderson, and Boakes (1987) describe a much more extensive survey effort relating students' stated goals in entering vocational education with the employment and educational experiences following their community college training. This study separated part time from full time employment and students who were seeking employment from those not seeking employment. This study also collected and analyzed the relationship between student's incoming educational goals to their subsequent outgoing education and employment status. It also collected student comments pertaining to educational and subsequent employment experiences. This effort also did not address the costs issue, but did take significant strides in clarifying outgoing student status. For the first time, performance status was also related to incoming goals across a series of different educational objectives. In this way students who

had changed objectives during training, as well as those only seeking training for self-improvement or field investigation, were identified separately from those seeking vocational training for eventual placement in the field.

Other studies have evaluated the effectiveness of vocational education from the employer's point of view, rather than from the students or schools. Wilms (1983) queried downtown Los Angeles and Torrance employers to uncover what traits they desired in a new employee. Analyzing data gathered from numerous interviews, they determined that employers placed the greatest value on new employees who were hard working and followed the employer's rules over those who simply had advanced skills training. He suggests that this is because employers believe new employees must at least come to work regularly, punctually, and do what is expected of them before they can be engaged in higher skills tasks. Technological advancements and special skills were only important in about one-quarter of the cases. If this is true, then vocational education should be concentrating more on general skills and employee attitudes than on the development of specialized skills acquisition, leaving such advanced training to the purview of the employer.

Carvell Education Management Planning (1984) brought the entire issue of outcome evaluation into focus with a lengthy and complete treatment of the concept of placement rate evaluation.

For the purposes of the study, the placement rate concept was defined as the number of students who received training and are available for work after training, divided into the number of students who find work. (p. 2)

This definition, still in use today by the California State Department of Education (California State Department of Education, 1988a), limits the evaluation of successful outcomes only to those students who obtained employment. Carvell's report criticizes this limitation, stating that the seven outcome categories defined by the state (related employment, unrelated employment, related education/advanced training, unrelated education/advanced training, military service, not in the labor force/not seeking work, and unemployed/seeking employment) did not allow for students enrolled in vocational courses for the purposes of upgrading their skills. Such students, called "Career Improvers" by Carvell, go unrecognized or misreported under the current system. The variety of findings lead them to recommend that

. . . standardized definitions for each postprogram placement option, program, completer, and leaver must be agreed upon and adopted to carry out student follow-up studies, data reporting, and analysis of program outcomes. (p. 3)

Also unknown by most vocational education administrators is the starting employment status of students at the time they enter a program of study as well as their intentions (or goals) for taking such a program. Without these components little can be said about the true impact of vocational education.

These issues are perhaps best addressed in a comprehensive study done by Stern, Hoachlander, Choy, and Benson (1986). Their findings, controversial to this day, show that vocational education students from comprehensive high schools and ROC/Ps (combined) experience a higher unemployment rate than the general 16 to 19 year old population (26% as opposed to 23%). They also determined that

vocational education was not, as a rule, an effective means of altering student dropout patterns. One interesting point they make in regard to regional occupational centers and programs relates to the voluntary status of students:

The essence of the ROC/ROP program, however, is not to be found in its statewide administrative structure but in the fact that enrollment of students in ROC/ROP programs is strictly voluntary. Funding by the state - standard practice - is based on attendance, which is closely related to enrollment. Hence, the size of a given ROC/ROP's budget, from which many good things flow, is a direct function of its ability to attract students. This gives an entrepreneurial cast to ROC/ROP administration. Somehow, the director and his or her faculty must convince an appropriate number of students (better yet, a growing number of students) that enrollment in their ROC/ROP is "worthwhile" (p. 2).

Several methodological problems may make these findings less powerful than they at first appear. It is possible that the students who would enroll in vocational education courses would be less likely to obtain employment than the regular population. If this is the case, and there is no way to tell from their data, the efforts of vocational education might be assisting this group by making them more like the regular population (even though they do not exceed it). Nonetheless, the authors make several recommendations regarding how vocational education can be restructured to shift the training for specific skills to ROC/Ps. High schools would then be free to concentrate more on general education and what they refer to as "enterprise training" (combining production with education, including all students in some form of vocational education, teaching teamwork, integrating vocational and academic education, and encouraging active inquiry). Further work appears needed if we are to learn whether it is vocational training, academic education, some combination of the two, and/or factors outside of the school that determine the

true correlates to post-high school employability and employment success

Conclusions from Prior Research

The literature makes a number of important points relative to the application of cost-effects analysis to vocational education. First, there is a sufficient number of works dealing with the theoretical division and applications of cost strategies to outcome indices. These studies generally follow a separation into four different kinds of studies: cost-feasibility, cost-utility, cost-benefits, and cost-effectiveness. Each method has been described and individual strengths and weaknesses highlighted. While numerous studies have been done applying these theories to other fields of inquiry, far fewer have been accomplished in the realm of education. When narrowed to vocational education, and specifically regional occupational centers and programs in the state of California, only a handful of works apply.

Readings of cost-outcome analyses across interest areas have shown that, often times, the studies are ill conceived and poorly executed. Program cost components are usually well identified but are not typically tied to a theory of cost analysis, leaving the reader to surmise the utility and application of the working framework. Cost-outcome theoreticians make a point of stating that such a framework must be acknowledged up front in order to drive the cost data identification and collection, not the other way around. Less well defined are the components of programmatic outcome. Outcomes intrinsic to the program are usually well understood but are felt to be of little applicability outside of the

program (such as the number of completers of a given course of study). Attempts at measuring extrinsic outcomes often lead to questionable conclusions since, while statistical relationships can be formed between the program components and the measured outcomes, it is usually not clear whether the outcomes being measured are truly a result of the program experiences as opposed to those that might have occurred naturally without the intervention (i.e., inadequate control variables or non-treatment cohort groups).

Previous studies in vocational education have tended to avoid this problem by only addressing either the costs or the outcomes of a program. While interesting in themselves, these studies do not further the knowledge of cost-outcome analysis within this field of education. California's ROC/Ps are just one example of a program being assailed with calls for accountability in both areas of concern. Yet it is this very call for cost and outcome accountability that requires an integrated investigation.

Operationalization of this Study

In order to conduct the research described above the various components of cost and outcome data would need to be collected about selected courses and environmental data collected about selected sites. An examination of available records showed only some of this data to be currently available or in press. Financial data, both revenues and expenditures, about all of the ROC/Ps was available from the California State Department of Education. Unfortunately, this data was aggregated to the site level and could not be disaggregated accurately on

a course by course basis. A portion of the student outcome information was available on a course by course basis from the State, but was generally not available until almost a year following course completion. Some of the environmental data was available (California State Department of Education, 1983c), but some did not exist anywhere except at the individual sites. It had become apparent that, in order to get the detail of data required for this analysis, the information would need to be requested from the ROC/Ps sites themselves.

State administrative regulations required that each ROC/P conform to standard accounting categories when reporting their financial information on annual reports (J-300-ROP, for example). Although this data was not available course by course, examination of these categories (Table 6) did provide an indication of how the ROC/Ps managed their financial data. The question remained of whether this information was available within each site on a course by course basis.

<u>Description</u>	<u>Source/Object Code</u>	<u>EDP Number</u>
Revenues		
Revenue Limit Sources	8010-8099	200
Federal Revenues	8100-8299	280
Other State Revenues	8300-8599	450
Other Local Revenues	8600-8799	597
Prior Year Revenue Adjustments	8800-8899	001
Total Revenues		599
Expenditures		
Certificated Salaries	1000-1999	627
Classified Salaries	2000-2999	651
Employee Benefits	3000-3999	702
Books and Supplies	4000-4999	729
Services, Other Operating Expenses	5000-5999	762
Capital Outlay	6000-6599	780
Other Outgo	7100-7299	846
Direct Support/Indirect Costs	7300-7399	855
Prior Year Expenditure Adjustments	7400-7599	002
Total Expenditures		857

Table 6: J-300-ROP Accounting Categories

Student outcome information from the State Department of Education detailed, for each course conducted during 1987-1988, the number of student enrolled in that course as well as the number of student who completed the course (California State Department of Education, 1988a). This information was further subdivided according to the number of students who were concurrent students (attending the ROC/P while attending a regular high school) versus those who were nonconcurrent students (those attending the ROC/P but not enrolled also enrolled in a high school program). This distinction could prove important, especially due to the changes made during the past few years encouraging more high school students in ROC/P program (see the section on ROC/P history for

more on this topic).

Placement information was mandated from the sites only for students who completed their course of study. Those students still enrolled in the ROC/P at the end of the reporting period, as well as those who had dropped out of the program prior to completion, were not required to be included in the follow-up process. This is not to say that students who left the ROC/P program prematurely did not seek or obtain employment. Indeed, it is possible that some did. Students who obtained employment in the field in which they were being trained but who had dropped out of the program early could be included as part of the sample statistics if information on these students had been collected and retained at the site level.

Placement information that was reported to the state adhered to the seven follow-up categories mandated for annual reporting (California State Department of Education, 1988a):

Status Unknown

Persons failing to return the follow-up survey or giving incomplete or multiple responses.

Military Service

Persons reporting full-time military service.

Pursuing Additional Education

Persons pursuing additional education even if they are employed (but only in a field NOT related to their vocational training), NOT in the labor force, or unemployed. The additional education must be in academics or advanced vocational training.

Other Reasons

Persons who are deceased; or persons not employed AND not pursuing additional education.

Employed - Nonrelated Field

Persons employed in a job not related to training AND not pursuing additional education.

Employed in Field Trained

Persons employed in a field related to training although they may be pursuing additional education.

Unemployed - Seeking Employment

Persons who are not employed AND not pursuing additional education BUT who are seeking employment.

Table 7: VE-80-C Follow-up Categories

Close examination of these categories reveals that they are not necessarily complete nor mutually exclusive. For example, it would be possible for a student to have obtained employment (full or part time) while also pursuing additional education. Since the instructions provided from the state do not address this (and similar) problems, and since it is possible that such problems could arise, it would be necessary to determine how the different ROC/Ps sites resolved the problem(s) in categorizing their completed students and filling out the VE-80-C form.

Finally, not all of the environmental information could be obtained from existing records. For example, only the local sites could accurately describe the population characteristics of their respective service areas, since exact definitions of the boundaries of these service areas do not exist except at the sites themselves.

Before data could be solicited from the sites these questions had to be resolved in order to insure that data collection would proceed smoothly and uniformly. If course level financial data were not available from the sites, or there were extreme differences between sites in terms of their handling of overlapping

outcome categorizations, the unit of analysis and basic methodology would have to be reconsidered. Therefore, a series of short visits were made to twelve of the seventy sites for the purpose of clarifying these issues prior to the commencement of full fledged data collection.

Site Visits

The protocol presented in the Appendices (Appendix A) was utilized in twelve site visits for the purpose of clarifying these issues of data definition and availability. These sites visits were conducted over a three month period from October through December, 1988. The actual sites were chosen to represent the three different organizational types of ROC/Ps (Single District, Joint Powers, and County Operated). A visits involved a maximum of one day including round trip travel time, with a maximum of four hours on site.

The chosen site's Directors were initially contacted over the telephone to solicit their participation in the site visit. A brief overview of the visit was provided to each, along with a description of the visit protocol. All sites contacted agreed to participate, with a date and time for the visit tentatively agreed upon. Following the telephone conversation a confirming letter was mailed to each site (Appendix B), giving more detail regarding the purpose of the visit, a recap of the telephone conversation, and identifying the ROC/P staff the Director had agreed to have participate in the visit. It had been requested of each site that the Director, the Business Manager/Accountant, and the Attendance/Enrollment/Student Records Manager attend the meeting. A few days

prior to the visit a reminder telephone call was placed to each Director.

The number of ROC/P participants at the visits ranged from two to eleven, always including at least the Business Manager and Student Records Manager. Except for one site the ROC/P Director also attended and participated in the meeting (in the case of the one site the Director was called away to an emergency meeting shortly after the site visit began). Time on site ranged from one and one-half hours to three hours.

The site protocol was followed in a loosely-structured interview format. All sites agreed with the State's definition of concurrent and nonconcurrent students, as well as with the different outcome statuses. Of the twelve sites, seven defined a student "completer" entirely on the basis of satisfactory academic achievement and one site defined a completer as "whether or not the student got a job". The remaining four used a mixture of satisfactory academics and employment attainment. None the less, each site clarified that a student was classified as a completer only if they could demonstrate, through some combination of academics and/or active employment, that the student had obtained sufficient job skills in their program of training in order to be employable in that field.

All of the sites indicated that the enrollment and completion data on all of their courses had already been submitted to the State Department of Education. Each felt that the reported data was complete and accurate. Only one site had already submitted student follow-up placement data.

When queried about their follow-up strategies three sites reported to following-up on both completers and leavers, with nine sites performing follow-up

studies on the completers only (as required by the State). Actual strategies for performing the follow-up studies were quite varied, including: teacher initiated contacts, telephone surveys, mail surveys, and special promotional events. Each site followed their own timetable for the follow-up process depending on the methods being used. Nine of the sites followed-up on all of the completers in all of the courses held during the year, two sites sampled all of the completers (and leavers, in one case) but only from a few selected courses, while the single remaining site took a partial sampling of completers from all of the courses held.

All twelve sites were able to produce relevant site-level fiscal documents and to describe their particular method for financial record keeping and transacting. Nine of the sites maintained fiscal information on a course-by-course level, with seven of these able to also report fiscal information on a section-by-section or district-by-district (for joint powers agreement and county operated sites) basis. The three sites that did not maintain fiscal data in any way uniformly reported that fiscal information could only be kept on the site level (since "some courses make money and some lose, but overall it has to balance") and that it would be difficult but not impossible to disaggregate their fiscal data to a course-by-course basis.

Participants were given an opportunity to express individual opinions and ideas not part of the protocol prior to the end of the visit. Following each visit a letter of appreciation was written to each site thanking them for their input and information (Appendix C).

Two Kinds of Surveys

It had become apparent through the twelve site visits that there were two classes of information available at each ROC/P site. The first was that which was course specific, such as: number of students enrolled in, completing, and leaving a particular course, the costs associated with the course, and the income generated by that course. Certain factors, however, were fairly universal for all courses at a particular site. These included: the way in which the site determined which students were course completers and which were leavers, the methodology used for the follow-up study, and how certain costs were determined (such as contractually negotiated teacher's salaries). A single survey instrument asking for data in both areas across multiple courses at a single site would encounter numerous repetitions on the site-specific information; thus, it was decided to employ the use of two survey instruments. The first would ask for data specific to selected individual courses while the second would request information about site-specific information. It was expected that, depending on the number of courses to be included in the survey, an individual site would receive only one of the site-level surveys and, probably, more than one of the course-level surveys.

The course-level survey instrument was developed first. Since an individual site might be expected to complete several of these an emphasis was placed on keeping this instrument both short and relatively easy to complete. The survey was divided into two parts: one to collect the "output" data (student follow-up) with the other to collect course "input" information (course costs and expenses). The layout of the items generally followed the standard format for information reporting already administered by the State of California, with modifications for

clarification made necessary by the insights gained through the site visits. It was expected that sites which only collected and reported information according to the state mandates would be able to complete the survey quite easily, while those who collected additional information would be able to include that information with only minimal additional work. Space was left on each survey for the addition of a self-stick label containing the specific course information (course identification number and title). This instrument is reproduced in Appendix D.

The site-level survey was developed next to collect the information specific to that site but not subdividable on a course by course basis. The sections on student follow-up and finances were repeated, but with a focus on the site as a whole instead of on individual courses. Questions were included on the first page to collect some of the environmental data (such as the site's service area population size, density, and local economic status). Additionally, several open ended questions were added to the last portion of the instrument to determine the extent to which volunteerism, donations, and less than market value purchasing was occurring at the site. This instrument is reproduced in Appendix E.

Selection of the Sample

The VE-80-B database for 1987-1988 was obtained from the California State Department of Education (1988a). This computerized data file contained the total enrollment and completion figures from all of the individual course offerings from each of the State's seventy ROC/P sites, a total of 2,958 different courses. This data represented the total of all courses available for investigation during the study

year. Preliminary analysis showed that the distribution of courses between sites was far from uniform. One site had as few as six course titles offered while another as many as 274. Distribution by subject area likewise ranged from CBEDS subject classifications which had only a single course offered in them to ones which had as many as 177 different titles. The numbers of students enrolled into these courses also varied considerably, from as few as eleven students taking course work in a single CBEDS subject area to as many as 22,943 in another.

For the studies findings to be as generalizable as possible the sample selected needed to be representative of the scope and nature of ROC/P courses being conducted across the state. Since only seventy sites existed it did not present an undue burden for each to be included in the research, although it did not seem necessary that all 2,958 courses be included. Therefore, a strategy was undertaken to determine which course titles were the most frequently occurring. A selection could be made from amongst these.

The data were organized according to CBEDS subject-area classification code number and were then cross-tabulated by ROC/P site in order to show the numbers of courses and students enrolled in these courses within each CBEDS subject area. While most of the sites conducted at least one course in each of the more popular subject areas this was by no means uniform across the state. Furthermore, the CBEDS classification system tends to group like major subject areas together (such as number 4000, Agricultural Production, and number 4002, Agricultural Mechanics) while not addressing similar groupings in the minor areas (such as between number 4002, Agricultural Mechanics, and number 4803, Auto

Mechanics).

As this strategy did not produce a clean separation of courses by either common subject areas or student enrollments the courses were further aggregated into broader subject area domains than employed by the CBEDS. Courses that were offered at more than one-half of the seventy sites and to at least one percent of the total statewide student population were chosen. This resulted in the selection of thirty CBEDS numbers accounting for 2,080 of the total titles (approximately 70% of the statewide total), accounting for 266,425 enrollees (74%). These thirty CBEDS numbers were further reduced according to course subject content to nine different subject area domains, eight of specific content areas and the last including all other unclassified codes. Each of the seventy ROC/P's course offerings was then separated, according to CBEDS number, into the different nine classifications. The distribution of all of the courses offered statewide into these nine domain classifications is depicted graphically in Figure 4, and the student enrollment statewide is depicted in Figure 5.

Regional Occupational Center/Program Statewide Course Titles by Domain

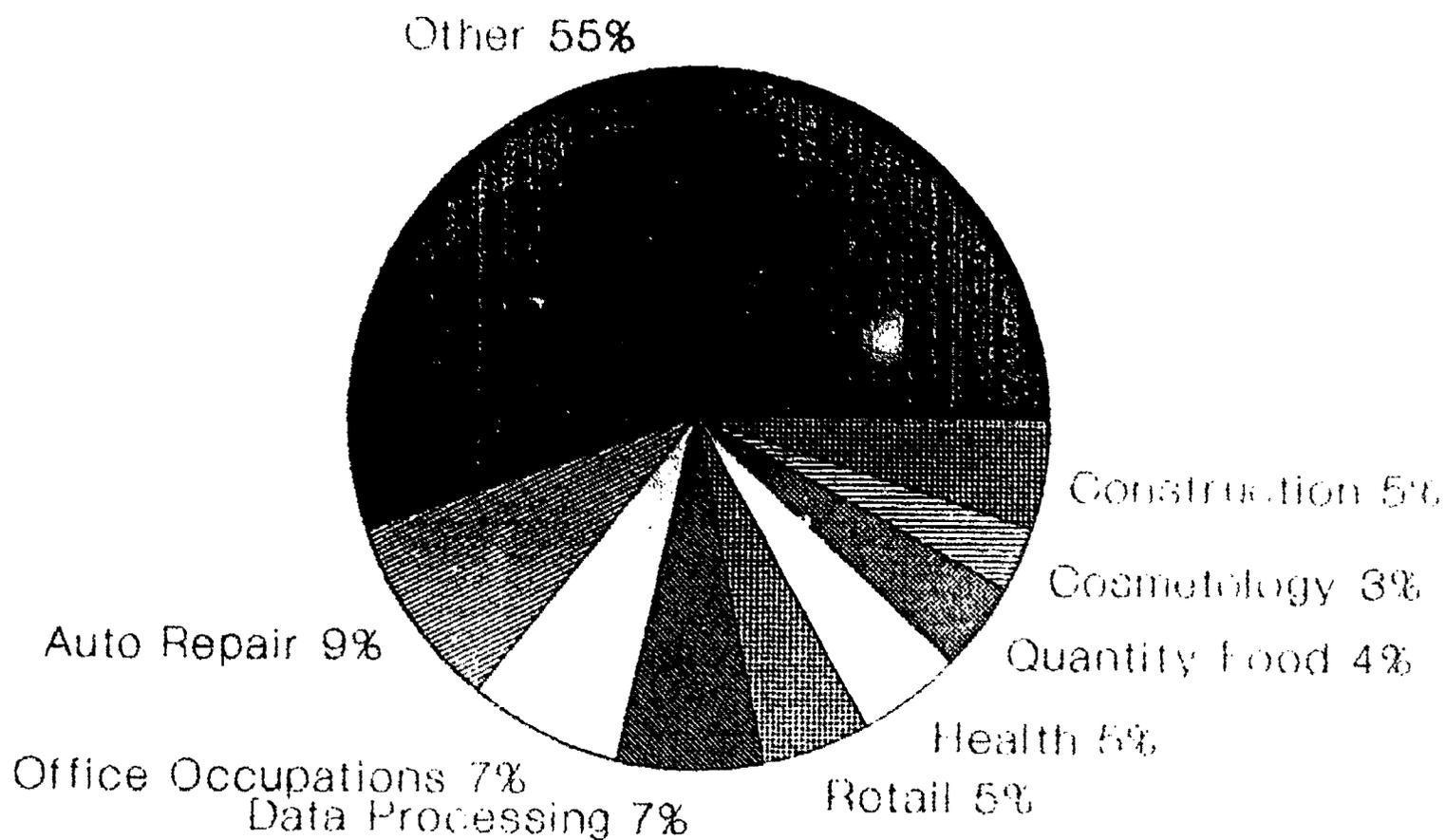


Figure 4: Statewide Course Titles by Domain

Regional Occupational Center/Program Statewide Course Enrollment by Domain

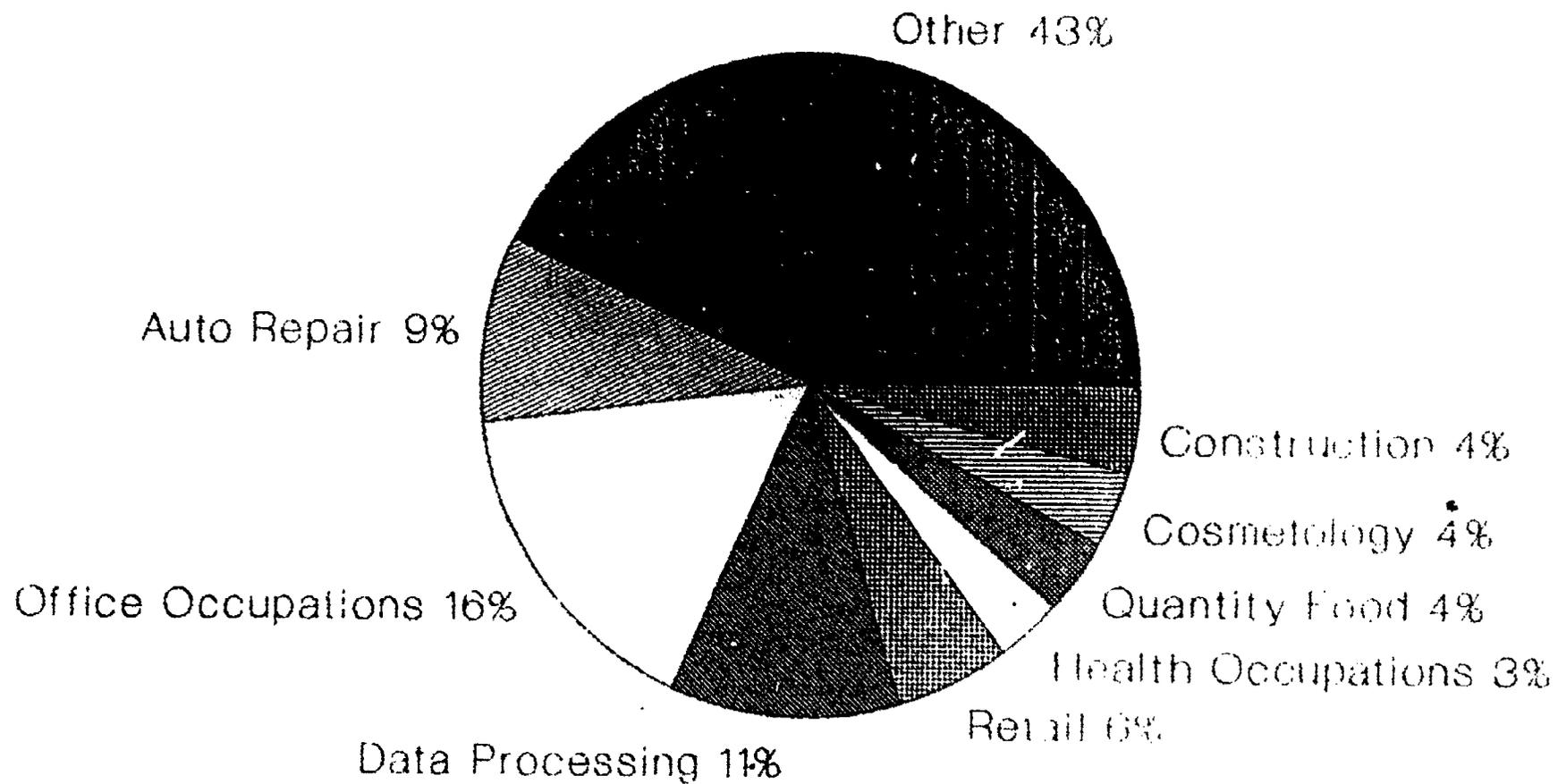


Figure 5: Statewide Course Enrollment by Domain

Using only the eight specific content area domains a random selection was made of a single course title from each domain from each site. Since not every site offered at least one course in each of the eight domains (some of the smaller ROC/Ps only offering a handful of courses in very specific content areas) not every site was able to have a total of eight courses selected. The selection did, however, result in 482 courses being selected, an average of 6.88 courses per site. Table 8 presents the eight subject area domains, the total number of courses selected in each domain, and the number of students enrolled into those courses.

<u>Subject Domain</u>	<u># and % of Courses</u>		<u># and % of Enrolles</u>	
Auto Repair	64	13.9%	13,655	12.6%
Office Occupations	65	13.5%	26,690	24.5%
Data Processing	63	13.1%	21,871	20.1%
Retailing	61	12.7%	13,200	12.1%
Health Occupations	59	12.2%	6,960	6.4%
Quantity Food	61	12.7%	9,680	8.9%
Cosmetology	47	9.8%	10,374	9.5%
Construction	59	12.2%	6,329	5.8%
Total	482	100.0%	108,759	100.0%
Statewide Total	2958		358,318	
Percent of Statewide		16.3%		30.4%

Table 8: Sample Distribution by Subject Area Domain

This selection produced a distribution of courses by ROC/P site with only one site having just two courses selected, one site with three courses, one with four courses, twelve with six courses, and the remainder with either seven or eight courses selected. Examination further revealed that those sites which had fewer

than seven courses selected were those sites in which the total number of courses offered at the site was also smaller. Thus, this sampling strategy allowed for participation of all of the ROC/P sites in the course-level survey process in such a way as to allow for a reasonable number of surveys from each site as well as the comparability of multiple sites across different subject area domains.

A survey packet consisting of a cover letter (Appendix F), a site-level survey, from two to eight selected course-level surveys, and a postage-paid return envelope was prepared for each of the seventy sites. The packets were mailed to the sites on January 27, 1989. Subsequent telephone contact with the sites determined that three of the seventy sites could not acknowledge receiving their packets and one site's packet was returned with an undeliverable address, so replacements were sent out to those four sites during the middle of February. Sites which had not responded by the end of February were contacted by telephone in an effort to encourage their response. This procedure was repeated in mid-March, with the data collection finally closing at the end of the first week in April, 1989.

Analysis of the Data

Fifty-one of the seventy sites (73%) returned their survey packets. Of these six sites had to be disqualified due to a large volume of incomplete responses, leaving a usable sample of 45 sites (64%). These remaining sites accounted for 307 different course-level surveys, or 64% of the total of 482 sent out. The total impacted student enrollment for the usable sample was 70,279, or 65% of the 108,759 students included.

<u>Surveyed</u>		<u>Obtained</u>
70	Total Sites	51 (73%)
	Valid Sites	45 (64%)
482	Total Courses	347 (72%)
	Valid Courses	307 (64%)
108,759	Total Enrollment	88,646 (82%)
	Valid Enrollment	70,279 (65%)

Table 9: Survey Response Distributions

Analysis of the data proceeded in three steps. The first analysis was to determine the adequacy of the returned sample. It was found that a representative sample of the statewide ROC/P population had been obtained. The survey responses were then examined through frequency and correlational analyses for the purpose of data clarification. Cost-effect ratios were calculated for each site on each of the outcome measures for each course across the eight subject area domains. Analysis of variance statistics showed significant differences in certain of these ratios, with multiple comparison techniques localizing these differences to specific subject area domains and outcome measures.

Adequacy of the Sample

The first consideration was whether the usable sample was similar in distributional characteristics to the total population. Since the exact parameters of the distribution were expected to vary depending on sub-group organization (such

as ROC/P location or organizational type) a distribution-free (non-parametric) statistic was used for this test. A Kolmogorov-Smirnov Z of .725 ($p = .669$) was obtained using enrollment as the test measure, determining no significant difference between the obtained sample and the surveyed sample.

The next concern was if the response distribution was similar to the surveyed distribution according to both ROC/P location and organizational type. Chi-square tests were performed row-wise (by organizational type), column-wise (by location), and table-wise (organizational type by location). The obtained sample was not significantly different from the surveyed sample on any of these three measures (row-wise ($\chi^2 = 0.498$, $p = .780$), column-wise ($\chi^2 = 1.116$, $p = .761$, and table-wise ($\chi^2 = 2.788$, $p = .972$). The frequency chart is presented in Table 10.

	Central	Coastal	Northern	Southern	Row Total
Surveyed	7	10	14	8	39
CO	10.0%	14.3%	20.0%	11.4%	55.7%
Obtained	4	7	7	5	23
	8.9%	15.6%	15.6%	11.1%	51.1%
Surveyed	5	7	3	11	26
JP	7.1%	10.0%	4.3%	15.7%	37.1%
Obtained	4	4	1	10	19
	8.9%	8.9%	2.2%	22.2%	42.2%
Surveyed	1			4	5
SD	1.4%	None	None	5.7%	7.1%
Obtained	1			2	3
	2.2%			4.4%	6.7%
Surveyed	13	17	17	23	70
Col Total	18.6%	24.3%	24.3%	32.9%	100.0%
Obtained	9	11	8	17	45
	20.0%	24.4%	17.3%	37.8%	100.0%

Table 10: Frequency Chart by Organizational Type and Location

A third area of sampling adequacy centered on the response rate among the eight subject-area domains. A frequency chart for the domains was formed comparing the number of courses surveyed in each area to the number of responses received (Table 11). A chi-square test showed no significant difference between the sample obtained and the sample mailed out ($\chi^2 = 1.148, p = .992$).

<u>Subject Area Title</u>	<u>Surveyed</u>		<u>Obtained</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Auto Repair	67	13.9%	42	13.7%
Office Occupations	65	13.5%	39	12.7%
Data Processing	63	13.1%	39	12.7%
Retailing	61	12.7%	42	13.7%
Health Occupations	59	12.2%	38	12.4%
Quantity Food	61	12.7%	37	12.1%
Cosmetology/Barbering	47	9.8%	34	11.1%
Construction	59	12.2%	36	11.7%
	-----	-----	-----	-----
Total	482	100.0%	307	100.0%

Table 11: Frequency Chart by Subject Area Domain

These tests show that the obtained sample is not substantially different from the population in terms of distribution. Even though not all of the sites responded to the survey a sufficient number did respond from a cross section of the organizational types and geographic locations in order to make the sample worthy for this analysis. In other words, there is no evidence that any one (or group) of ROC/P organizational types, locations, number of enrollees, or course domains responded more or less frequently than any other. Non-response, a potential problem in any survey data (Osborne, Rush, & Fondacaro, 1986; Clark & Finn,

1989, April; Green, 1989, April) appears to be a randomly distributed process unconnected to the above mentioned variables.

Cost-Effect Ratios

Further analyses focused on identifying commonalities among the different measures. Each of the eight subject areas share essentially the same leaver rates. The rate of continuers is highest in Cosmetology courses (perhaps owing to their typically longer duration), with the remaining courses all sharing a common rate. Courses in the health occupations exhibit the highest rate of completions, although this is not significantly different from other subject areas except cosmetology and construction. This data is depicted graphically in Figure 6.

Data on the eventual outcomes of course continuers was not reliably available from the individual sites, since multi-year student tracking is not commonly done for this purpose. If, however, course continuers are assumed to complete and leave in the same proportions as the rest of the students in their program, most of these differences in the completer and leaver rates disappear. These revised differences are reported in Figure 7.

Figure 6: Outcome Status by Three Program Areas

**Regional Occupational Center/Program
Outcome Status by Three Program Areas**

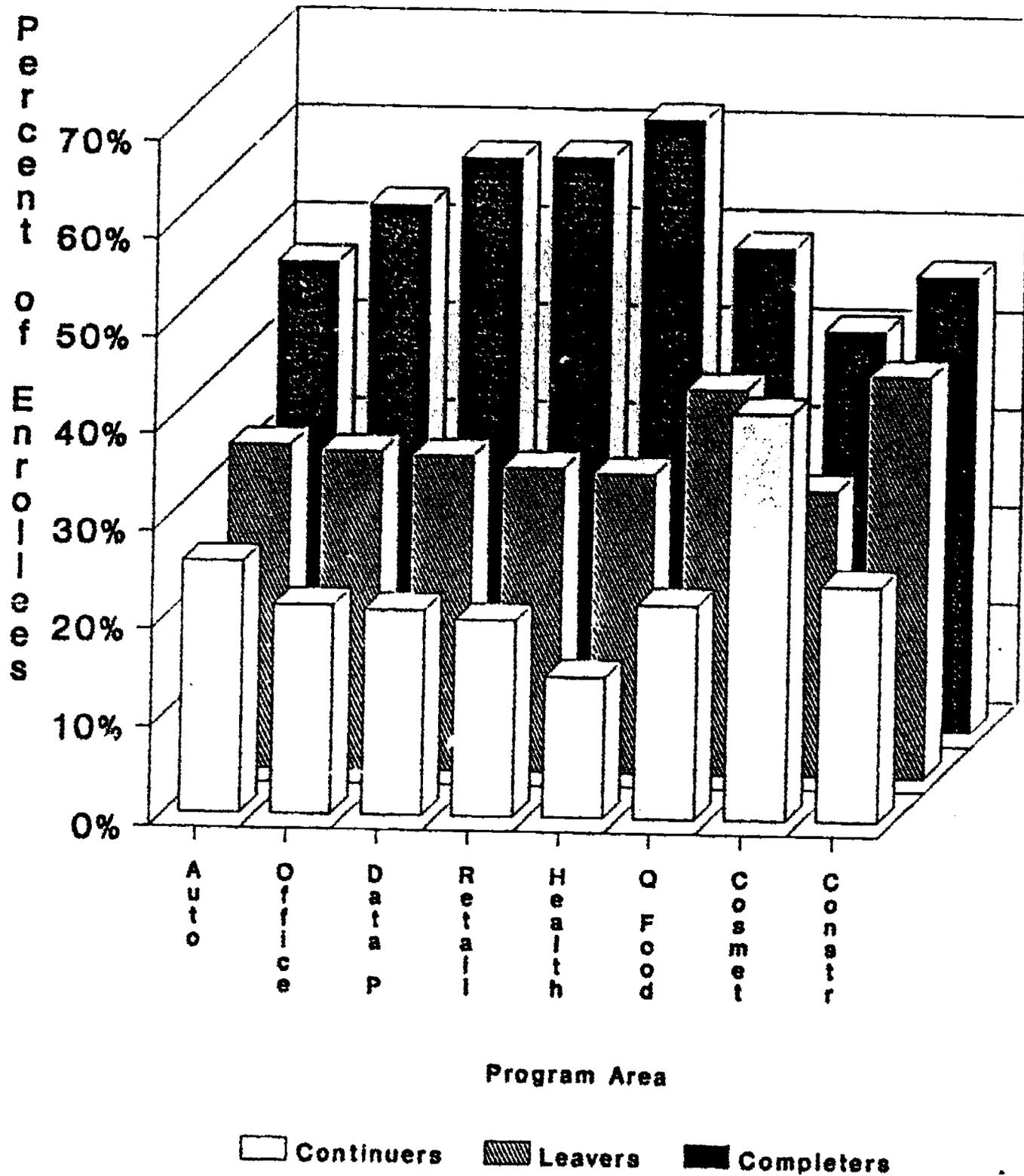
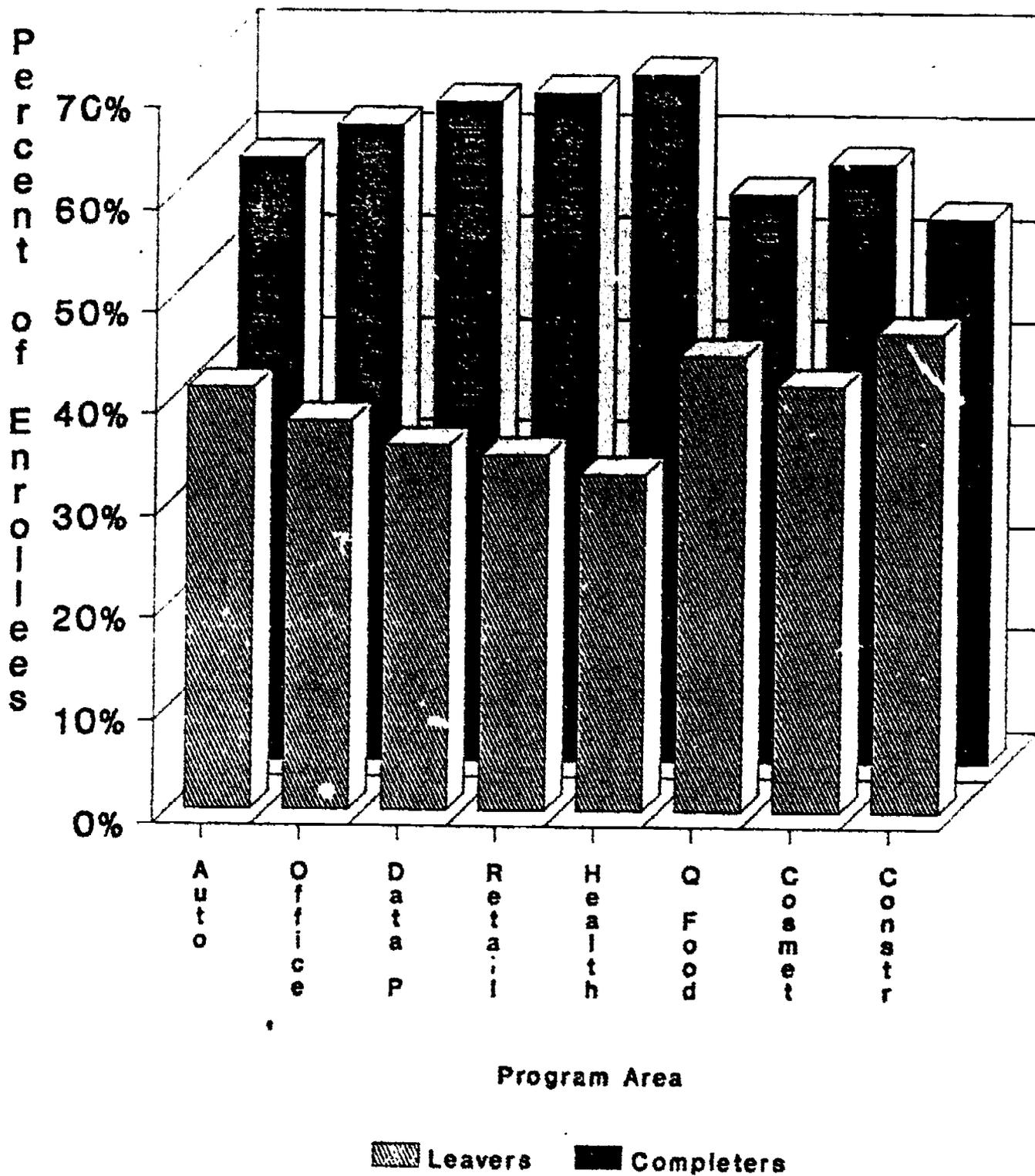


Figure 7: Outcome Status by Two Program Areas

Regional Occupational Center/Program
 Outcome Status by Two Program Areas
 Completers and Leavers Only



Most of the sites reported conducting follow-up studies on completed students only. A few sites reported following-up on all of their students, although this resulted in too few responses for reliable statistical analysis. From the available follow-up data two measures of student outcome achievement were calculated. The first represents general job placement, and follows the methodology used by the VE-80 reporting system. The VE-80 definition creates a ratio of the number of students who have secured employment, whether in the field in which they were trained or another field, over the total number of students who were seeking employment. Employment in the military is not considered for this ratio. The second measure is a more general one representing overall student positive outcomes. This ratio follows the mission statement for ROC/Ps as outlined in the Education Code. It was calculated by determining the total number of students who were either employed in any field, who enlisted in the military, or who went on for additional education as a ratio of all students who went through the program. A comparison between the completer rate, VE-80 definition follow-up rate, and mission statement definition follow-up rate is presented in Figure 8.

In both cases the ratios were calculated using only figures available from contacted students, ignoring the site's non-respondents. This procedure is acceptable if the samples obtained by each site are representative of all of the students in the course. Unfortunately, there was no way to determine in this study whether the non-respondents were different from those who did respond, either positively or negatively; thus, the obtained responses were used as representing the entire student body with appropriate cautions on this regard.

Regional Occupational Center/Program

Percent of Students in Outcome Status

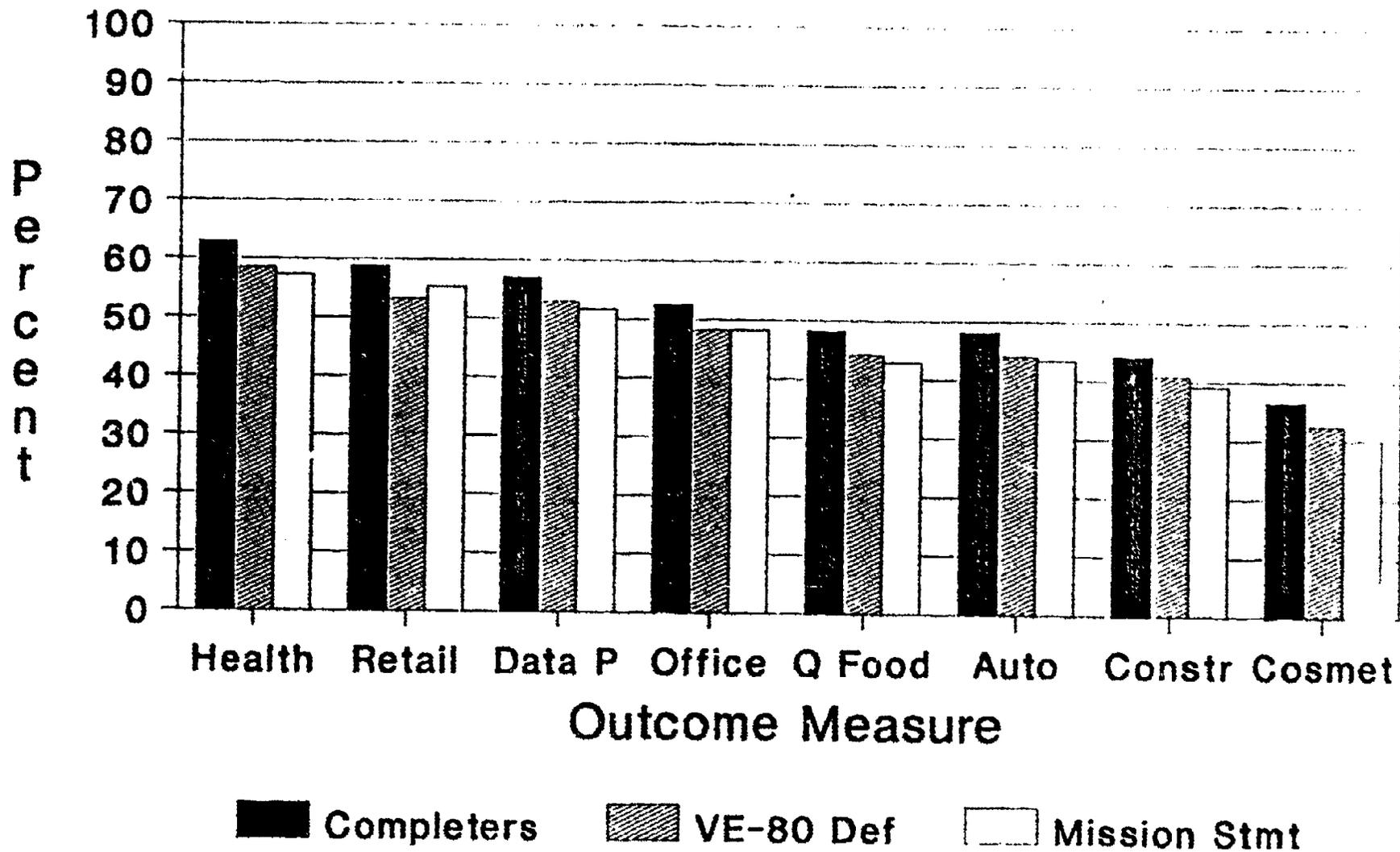


Figure 8: Percent of Students in Outcome Status

On the fiscal side, most sites reported revenue limit sources as their major or sole source of funding for individual courses. Minor exceptions were evident though it is clear that ADA reimbursement is the ROC/P's primary method of revenue generation. Expenditures tended to divide along two basic lines. Teacher salaries and benefits constituted the largest component, with contracted services and support charges (from participating districts and private schools) running a close second. The fiscal data are summarized graphically on the following pages.

The distinction between ROC/P conducted courses and those contracted to school districts or private schools showed clearly in the method of reporting. Courses that were conducted by the ROC/P itself provided many lines of detailed information while those courses that were contracted out to a district or third-party school tended to have fewer lines of expenditure data, typically only a single reporting of the total contractual amount. This was expected, since in the negotiations for these courses the details of specific expenditures are largely in the hands of the district or private school. While identifiable, this confounds the creation of a single cost-effects ratio, since it is clear from the site visits that ROC/Ps approach fiscal negotiations with participating school districts quite differently than when dealing with outside vendors.

Regional Occupational Center/Program Average Division of Direct Revenues

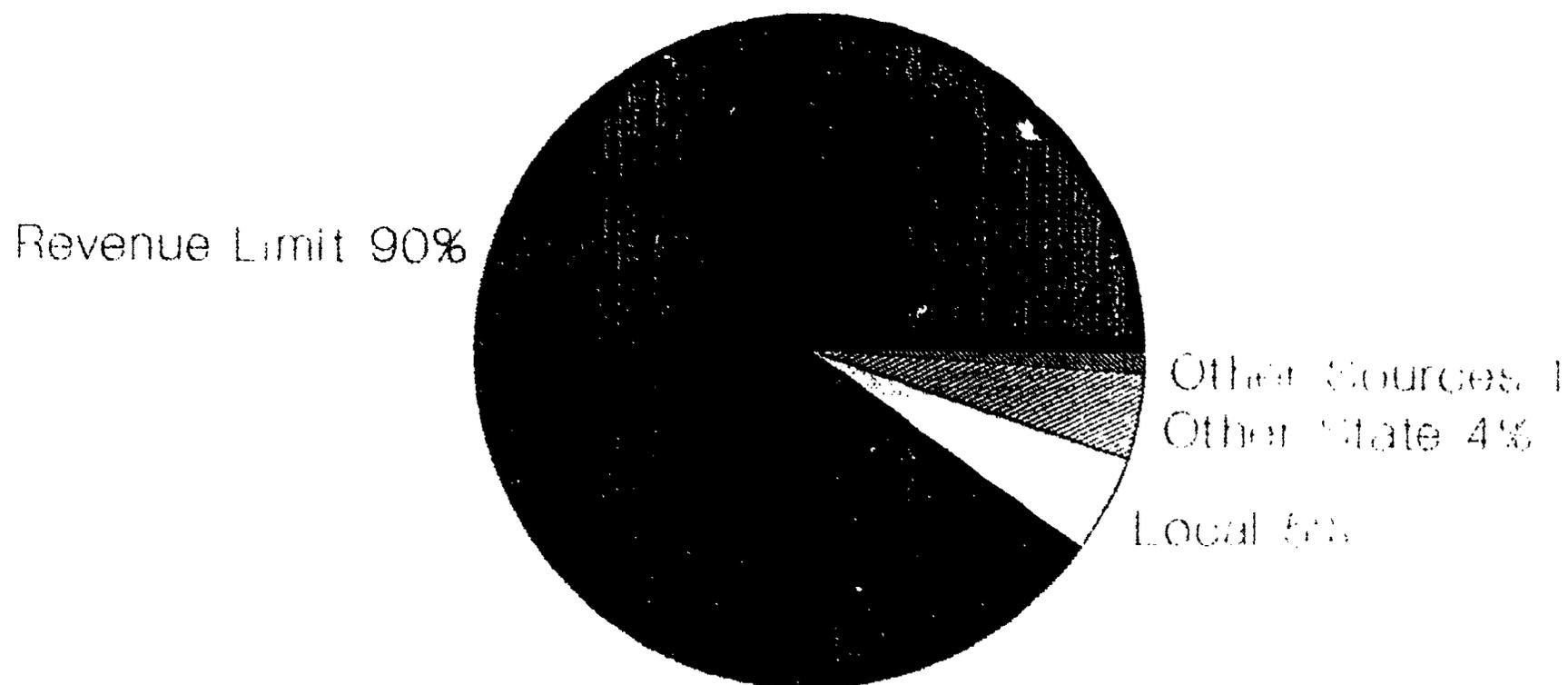


Figure 9: Average Division of Direct Revenues

Regional Occupational Center/Program Average Division of Direct Expenditures

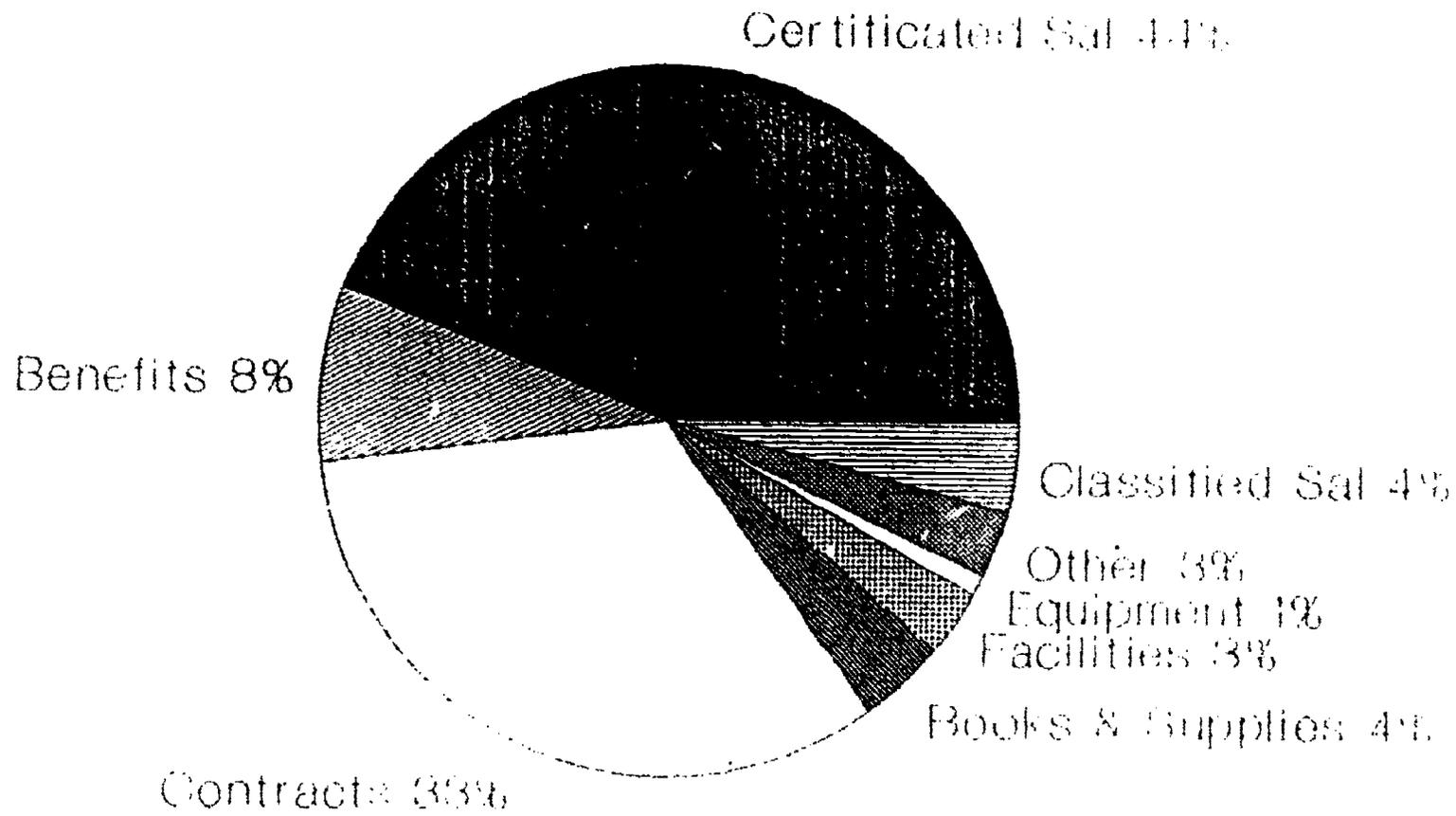


Figure 10: Average Division of Direct Expenditures

For most courses, direct costs operation are between \$100 and \$200 per enrollee below the total income. On average, direct costs for courses in quantity food exceed income, while in cosmetology revenues exceed per course expenditures. ROC/P indirect costs (central office staffing, benefits, facilities, and maintenance) can account for 15% or more of the overall budget. In order for programs to operate with the little revenue margin in most of the program areas courses like cosmetology and retailing must exist. It appears that without courses like these it is questionable whether ROC/Ps would have sufficient excess revenues for indirect cost operations. The distribution of these direct and indirect costs is presented below and in Figure 11.

<u>Subject Area</u>	<u>Direct Costs</u>	<u>Indirect Load</u>	<u>Total Costs</u>
Quantity Food	\$2,496	-\$202	\$2430
Construction	\$2,411	-\$8	\$2438
Health Occup	\$1867	\$526	\$2400
Auto Repair	\$1850	\$556	\$2388
Data Process	\$1693	\$544	\$2328
Office Occup	\$1693	\$614	\$2343
Retail	\$1516	\$798	\$2371
Cosmetology	\$1094	\$1213	\$2323

Table 12: Average Cost Distribution per ADA

Regional Occupational Center/Program Average Cost Distribution per ADA

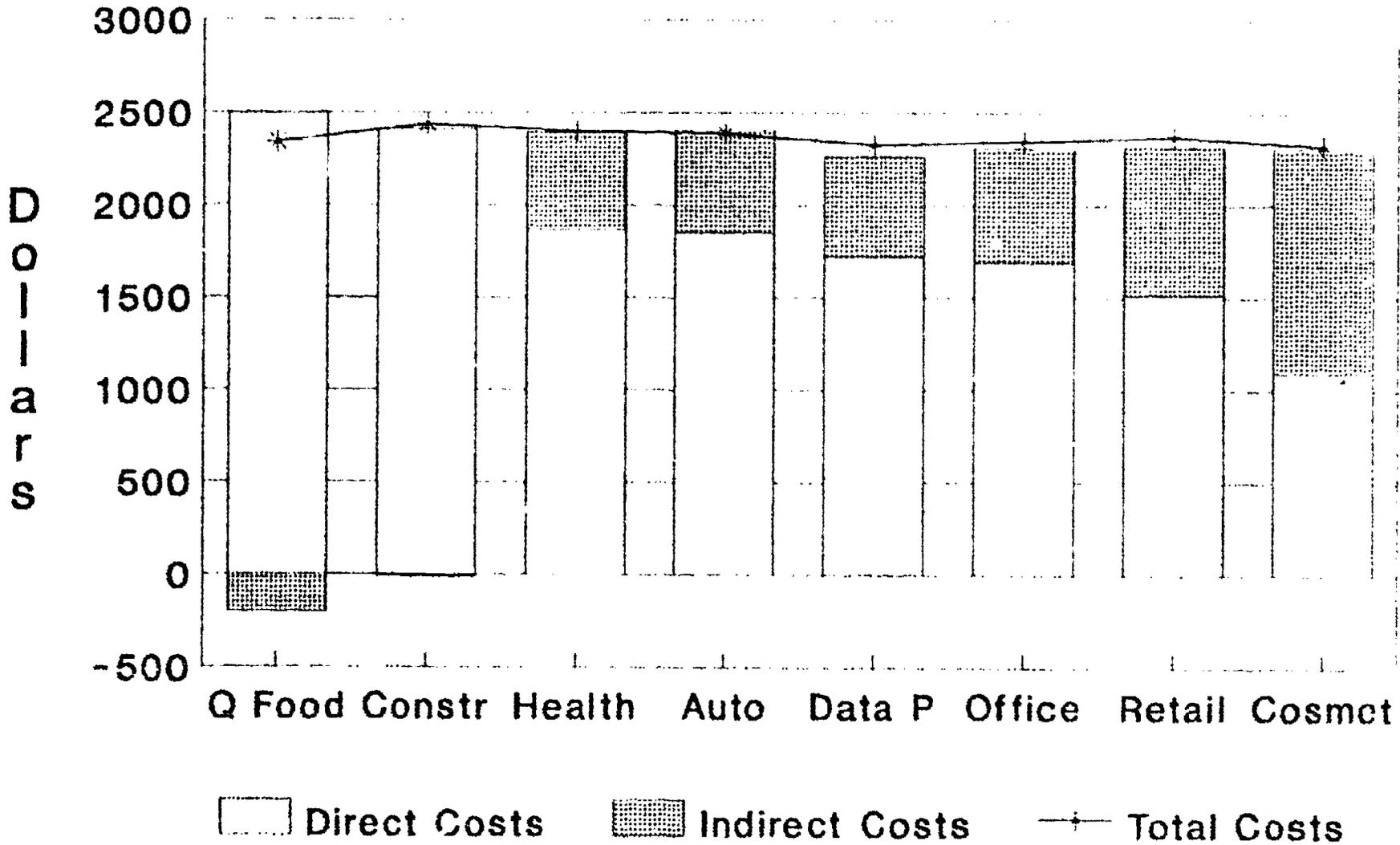


Figure 11: Average Cost Distribution per ADA

The next step of the data analysis involved the computation of the actual cost-effect ratios. Three different sets of ratios were computed comparing each of the eight courses. Each ratio consists of the total direct expenses incurred to operate each of the eight courses, expressed on a per ADA basis, divided by the number of students calculated (on the above percentages) to be in that outcome category. While these numbers are not useful for determining the cost of providing each kind of outcome on a per student basis (because of the calculation factors previously stated), they are important for inter-course comparisons. In general, the lower the number the less is costs to create each student in that outcome category for that course of instruction. This information is summarized in Table 13.

	<u>Completer</u>	<u>Job Plac</u>	<u>Mission</u>
Auto Repair	63	63	69
Office Occupations	40	45	45
Data Processing	62	60	77
Retailing	61	130	135
Health Occupations	46	52	52
Quantity Food	132	143	152
Cosmetology/Barbering	46	57	56
Construction	148	153	164

Table 13: Cost-Effect Ratios by Course Area

One way analysis of variance tests determined that differences exist between the ratios for only the completer column ($F = 3.6776$, $p = .0008$), with no differences apparent in the remaining three measures. A Student-Newman-Keuls multiple range test was applied to the data of the completer column to focus the

differences discovered through the ANOVA. This test determined that construction courses were significantly more costly per completer all other courses except those in quantity food. Courses in quantity food were also found to be more costly per completer than courses in office occupations or auto repair. The remaining comparisons were not significantly different from each other even though there appears to be a large range in the average ratios. This is due to the wide variation in both costs and outcomes rates for these two measures.

A close examination of this data reveals a possible explanation for this finding. On the whole, the average rates for leaving a course, securing employment, or obtaining any desirable outcome are essentially constant across all of the eight subject areas. Variations of up to twenty-five percentage points are present in some cases, but the averages tend to be very nearly the same. Only the rates of course completion differ significantly between courses, ranging from an average low of 37.32% for courses in Cosmetology to a high of 64.12% for courses in the health occupations. Variations are also evident in course costs, though they generally follow the pattern already mentioned with the exception that courses in Cosmetology are uniformly the least expensive per ADA of the eight subjects studied. It is only the matching relatively low completion rate in Cosmetology that does not allow it to be shown as a more cost-effective course for producing completers.

This data suggests that there is not a clean match between course expenditures and course outcomes, at least across three of the four outcome measures and most of the course subject areas. Yet there are variations to a

significant degree in both the course costs and, to a somewhat lesser degree, in the outcomes produced. These outcomes would be better predicted by variables other than course expenditures.

Structural equation analysis, in the form of path analysis, was undertaken to determine the relationship between actual expenditures and the three different outcome measures. Results from these tests, though statistically significant, were not sufficiently strong to enable their inclusion in this report. The data reveals that a mild contribution (approximately one-quarter of the explainable variation) is due to local population socio-economic factors. These include: ROC/P service area geographic size, population size, population density, and median family income. The more rural, less densely populated, larger geographic areas in a more affluent area seem to have a slight advantage in producing the measure outcomes. The bulk of the explainable variation, however, seems to be attributable to factors under the control of the ROC/P but unrelated to either site-level or course-level financing. While increased financing of ROC/Ps will allow for service to more students in more courses, financing does not influence the rates of outcome success for the courses measured. Other factors, such as course topic, numbers of sections and locations offered, and total enrollment (related to class sizes) are related. Although not the focus of this research, these findings suggest that well managed ROC/Ps -- ones in touch with the desires of their students and the local work community -- do achieve better rates of outcomes. Further research is needed on this question before firm conclusions could be drawn.

Management Information System

Information for the planning of a management information system was collected in two different ways: 1) open-ended questions were included on the site-level survey to ascertain key points of data collections and utilization, and 2) a total of twenty-two sites statewide were visited, twelve for one-day visits and ten for two-day extended visits.

Responses to the Open-Ended Questions

In addition to obtaining site total data for student enrollment, follow-up, and financial information several open-ended questions were included as part of the survey. These questions were intended to obtain more detailed information about specific areas for which the quantitative numerical information was possibly insufficient. Two specific areas were targeted for further investigation, based on information collected during the twelve one-day site visits.

The one-day site visits had shown that different methods exist between the sites in terms of both how the different out-status categories were defined and how the follow-up data were collected. As part of the site-level survey the ROC/Ps were asked to describe their follow-up process. Significant differences in terms of how the follow-up categories are defined, or how the data are collected, would affect the comparability of these data between sites as well as the usefulness of any potential findings.

In a like manner questions arose during the one-day site visits about the financial data. The financial statistics being requested were intended to represent

the typical operations of both the selected courses and the site. Revenues or expenditures that were of a one time, restricted, or non-periodic nature may represent a special event that occurred during the year. The amounts, if they exist, may have to be treated separately in order to obtain a true understanding of the course or site under investigation.

One of the basic premises of a cost-effects analysis is that there must be variation in either the costs or the effects (or both) in the program under study. It is also assumed that variations are due to choices made independently by the controlling organizations, with a high degree of uniformity in the regulations regarding the ways in which these decisions are reached. If significant influences exist differentially among the sites observed variations in the cost and/or effects of the program may occur more as a result of these influences and less as a result of programmatic variations. To determine the possible extent of restrictions several open-ended questions were included in the site level survey asking the sites about the degree of flexibility and level of interrelationships of the ROC/P with other organizations it relates with.

Finally, each site was invited to provide any additional comments they might desire concerning the subjects under study. Since no survey can anticipate every possible situation or response it was hoped that sites with information not easily fitting into one of the other categories would use this portion of the survey instrument to include their comments.

Questions on the Follow-Up

Three questions were included in the site-level survey in order to clarify each site's particular method of performing their follow-up study. The first question asked, "How many courses were included in the follow-up for 1987-1988?" and "If this is not the total of all of the courses taught during 1987-1988, please describe how these courses were selected for the follow-up". The purpose of these questions was to determine if the site included in the survey all of the courses that were conducted during the study year or only a selected sample of courses. If only certain courses were included there might be a bias, intended or not, as to which of the courses were chosen for inclusion depending on the method used.

Responses to these questions were virtually uniform in affirming that every course that was conducted during the year was also included in the follow-up process. One site responded additionally that their courses which were a total of twenty hours or less were excluded (for example, school bus driver certification renewal). This matches a general statewide practice of not considering a student as a candidate for follow-up unless that student has at least twenty hours of enrollment in a course. Only one site responded selecting a sample of courses, stating that courses approved by the state in an even number year were all included in the follow-up in one year, while all courses approved in odd numbered years were being included in the next year. This appears to be a random method of controlling for a large number of courses being conducted and, since each course will eventually be included in a follow-up, does not present a systematic bias for or against particular courses over the long run.

The second question in this area expands on the first one by asking "Were all students in these classes included in the follow-up?" and "If not all students from the selected classes were included, how were the students that were included selected for the follow-up?" While the first question determined how the courses were selected, this question determines how the students from the courses were selected. Responses to this question indicated that the majority (82%) only included completer students in the follow-up, with the remainder including both completers and leavers. One of these sites indicated that they also included continuing students as part of their follow-up process. Ninety-three percent of the respondents further indicated that all of these students (whether completers only or both completers and leavers) were included, with only three sites indicating that a sampling of students was chosen. One of these three sites indicated that a one-third random sample was used, while another wrote about a method for drawing a stratified random sample (based on the criteria of home high school, gender, and ethnicity).

The final question in this section was divided into three parts (named "Steps"). Each part asked respondents to describe their follow-up process by giving the following information:

- (1) How it is done (the method used to obtain the responses),
- (2) When it is done (which month(s) of the year),
- (3) Who does it (the primary person(s) responsible for the follow-up),
- (4) Number of students included in that step of the process, and
- (5) The typical response rate (given as a percentage of the students included) obtained at that step.

Prior conversations with a number of the sites uncovered that student follow-up sometimes occurred as a single event, while in other cases it occurred as a series of multiple contacts. This question was to determine how many contacts (up to three) were involved in the follow-up process and what each step of the process consisted of.

Overall, one of the sites did not respond to this question at all, and the rest indicated that they had at least a one step follow-up process. Twenty-nine sites further indicated that they had a second step, and only fifteen sites indicated having a third step. Respondents to the first step seemed equally divided among three methods for performing the study (mail, telephone, and in class). Seven sites reported employing multiple methods, and only three sites stated that their data were obtained from visits. Most conducted this first phase of the study from December through February, though a few reported starting as early as October, and one reported ending as late as May. Sites split in terms of who performed the follow-up, with approximately one-half reporting that the teacher did the process and the other half reporting that it was an ROC/P staff member doing it. Responses to the portion of the question asking for number of students included in that step were sporadic and unusable, with most sites not completing that portion of the question at all. Response rate varied widely, with eleven sites not responding to this item at all, thirteen sites indicating a response rate from zero to thirty-five percent of the students, and twenty sites indicating a response rate of over thirty-five percent.

Respondents to the second portion of this question indicated using mail and

telephone methods as their primary methods of surveying. As with the first step the surveys were generally conducted from December through February. Nineteen of the sites responding to this phase (65%) stated that it was ROC/P staff personnel performing this step of the follow-up, and that the contacts resulted in 54% of the sites with a thirty-five percent or less response rate.

This pattern continued into the third step of the follow-up, though only about one-third of the sites employed three steps in their follow-up process. As with the second step, sites indicated using mail outs and the telephone as their primary method of performing the follow-up, with staff members being the personnel actually doing the task. Response rates at this step were almost unanimously less than thirty-five percent; in fact, most were around twenty percent.

It appears from these questions that a fairly consistent pattern of follow-up studies has emerged throughout the state. Most sites perform their follow-up on all of the classes conducted during the year using all of the students who completed the course in the sample. The best response rates are obtained during the first step of the process, with successively poorer and poorer rates into the second and third step of the follow-up. Data are obtained from teachers in the classroom, and from staff personnel through mail and telephone contacts. Correlational analyses show that the best response rates result from data collected using in-class methods ($r = .4241$) with the worst response rates using mail methods ($r = -.3960$). Telephone methods were also related to higher response rates, though not significantly so. November appears to be the most successful month for obtaining

the highest response rates ($r = .4739$), though other months (April, May, July, August, and October) also show a high, but not statistically significant, relationship to increased response rates. No significant relationships appeared in terms of who performed the follow-up study. Even so, teachers showed the highest non-significant relationship to higher response rates, with ROC/P staff showing the next highest relationship.

Personal contacts with the sites shed some light onto these findings. Virtually every site that reported teacher involvement in the follow-up process stated that the teachers are requested to maintain contact with all their students throughout the entire year. Some sites formalized this into teacher completed student placement cards, though most preferred to simply collect this data once per year from the teacher's own records. Most of this contact occurs in the teacher's classroom, with the teacher gaining information on the students through either the students themselves or through peer reports. Some telephoning was made but, in most cases, it was left to the teacher's discretion as to how the data was obtained.

In conclusion, this data would seem to indicate an overall working pattern for ROC/P follow-up data collection. The first step for most sites would involve obtaining information from the classroom teacher on the student's activities. A second step, performed around November by the ROC/P's staff using a combination of mail and telephone techniques, would allow for follow-up on students unaccounted for. Additional steps could be added to the process, though the response rates beyond these two steps would tend to be low.

Questions on ROC/P Revenues

Several questions were included in the site-level survey in order to clarify the availability and flexibility of use of revenues. Almost all of the income that an ROC/P receives is from state-level reimbursements for student Average Daily Attendance (ADA). Financial reports for prior years of operation indicate that this generally amounts to anywhere from eighty-five to ninety percent of a site's income. The remainder of the income is derived from other sources. Revenue limit reimbursements can be used by the ROC/P for any expenditure generated, according to the rules adopted by the site's local governing board. Sources of additional income, though, may be restricted in both their availability and use. Should this be the case such funds may represent single opportunistic events for the ROC/P, unrepresentative of their usual operations. These questions were to determine the extent of the availability and restrictions on additional funding so it could be determined if special actions, such as the exclusion from the total revenue package, needed to be taken.

The first questions in this section asks "Were any of the above income funds restricted in their use?" and "If any were, please describe the source of the income, the amount restricted, and what it was restricted to". Approximately 60% of the respondents indicated that some of their reported revenues were restricted. Examination of these responses showed that lottery funds were the most common response, with lottery monies being restricted (for the most part) to capital acquisitions and maintenance programs. Other restricted funds included special projects such as: vocational, funds for student organizations, and special grants for

equipment acquisitions. There did not appear to be any pattern to either the kinds or amounts of these funds and, almost uniformly, the amounts in question were relatively small (around one percent of the total revenues).

The second question in this area was "Were any of the above income funds from a single-use, temporary, or non-periodic source?" and "If any were, please describe the course of the income, the amount involved, how many years (beyond 1987-1988) the monies would be available to your ROC/P, if the funds are renewable after that period, and if the use of the fund was restricted in any way". Only about thirty percent of the sites indicated that some of their income was from these kinds of sources. Most of these were from joint powers (JP) sites, and indicated that the income was derived from special training programs (such as J.T.P.A.). Unfortunately, no site completed all of the items of the questions, leaving some degree of uncertainty as to the full extent of these funds. Nonetheless, it turned out that for those sites that did report actual financial amounts these amounts were very small (generally less than one-half of one percent of the total site revenue). One exception to this was by a joint powers site which reported approximately one million dollars in income beyond that generated through revenue limit reimbursements. This site further reported, though, that this money was generated as a result of yearly renewed state and federal projects, the renewal of which was uncertain from year to year.

An area of current concern to the ROC/Ps visited was the distribution of lottery monies. Recent legislation in California allowed for the creation of a statewide lottery system, with a percentage of the proceeds earmarked for public

primary and secondary education. Through not specifically stated in the legislation ROC/Ps, as part of the qualified education system, were eligible to receive this money. Since all ROC/P monies are, however, paid to the ROC/P through the local districts and county agencies (as appropriate depending on the ROC/P's organizational type) the actual distribution of these monies was dependent on the cooperation of these district and county agencies. It is possible, under the legislation, for the local district to retain part or all of this additional revenue in the district's budget, or to distribute it to the ROC/Ps with certain restrictions on its use.

The final question in this area was, "Did your ROC/P receive lottery funds during 1987-1988?" and "If you did, describe how these funds were used (and if their use was restricted in any way). Three-quarters of the responding sites stated that they did receive some lottery monies, with amounts varying from as little as \$11,880 to \$113,632. Interestingly, all but one of the districts that did not receive lottery money were from the Coastal and Southern regions of the state. A few of the sites reported only receiving a portion of the total lottery funds earned by the ROC/P. The most common use of this funding was for instructional supplies and equipment, though two sites reported that lottery funds were being used to supplement cost-of-living salary increases for faculty and administration (even though this was not necessarily the legislative intent of these funds). One-quarter of the respondents reported not receiving any lottery funds whatsoever. In these cases it was not that the lottery funds were not earned (since lottery monies were distributed during 1987-1988 on the basis of ADA generated). Rather, it was that

the monies were retained by the participating districts and were not distributed for the ROC/P's use.

In conclusion, it does appear that restrictions on the use of non-revenue limit funds do exist for a significant number of the ROC/P sites. Fortunately, the financial amounts involved appear to be small relative to the overall budgets of the affected sites, with the possible exception of lottery funds. In these cases it appears that little compensation can be made in terms of an equitable redistribution. Conversations with several of the impacted sites indicated that organizational arrangements between the ROC/P and the local districts made it appear that other benefits had been reached by the ROC/P in exchange for the undistributed lottery monies. Typically, this took the form of facilities access and use at a reduced or nonexistent charge to the ROC/P. The conversations indicated that, should the ROC/P begin movements to acquire these lottery funds it would be likely that the local districts would impose fees for the use of the district facilities equal to or in excess of the lottery amounts undistributed to the ROC/Ps. In this political climate most affected ROC/Ps felt it was to their advantage not to pursue the acquisition of these funds but rather to continue as if they did not exist. Unfortunately, no data were gathered indicating whether those sites that did receive lottery funds paid a higher rate for their facilities than those that did not.

Questions on ROC/P Expenditures

The freedom to decide what objects to expend funds on is another important aspect in determining whether or not a given cost-effects model is truly

representative of the entities being measured. The cost-effects model assumes that control over expenditures rests with the agency being measured. The same premise can also apply if a controlling influence is distributed equally among the entities or programs being measured (such as a flat rate tax). It is when different levels of control are exercised that the model starts to exhibit trouble. In such a situation a cost-effects differentiation may be discovered even though each program may be performing equally well. The difference found may not be the result of differences between the performance of the programs compared but rather between the extent of control each program has over its own expenditures.

Ten questions were asked of each of the ROC/P sites in order to determine to what extent, if any, such external controls exist. These questions focused on both unique (or one time) expenditures, the same as was done in the revenues section, as well as on the areas of typical significant expenditures (salaries and benefits, facilities, equipment, and the maintenance of a reserve fund). The first question in this area asked "Were any of the expenditures given mandatory for your ROC/P?" and "If any were, please describe the object of the expenditure, the mandatory amount, who mandated the expenditure, and why it was mandatory". Sixty-seven percent of the responding ROC/Ps stated that they did not have mandatory expenditures. Of those that acknowledged such expenditures, the most common object of expenditure cited was that of indirect charges assessed by the ROC/P's participating school district. These charges, typically based on a certain percentage of either the total budget or the ADA revenues, is made by districts in exchange for certain district provided support services (such as: central office space

facilities and equipment, shared student transportation, and the use of district-level support equipment and personnel. While the rates of this recharge varied from site to site, the average seemed to be around eight percent of the ADA revenue generated. A few sites also reported other expenditures as mandatory, although these were typically of an obligatory contractual nature (such as payments for facilities or equipment).

The second question asked "Were any of the expenditures for objects of a single-use, temporary, or non-periodic source?" and "If any were, please describe the object of the expenditure, the amount involved, how many years (beyond 1987-1988) the object would reoccur for your ROC/P, and if the object is expected to continue after that period". Like the question in the revenues section, this item was used to determine expenditures made by the ROC/P that should be viewed as both unusual and non-recurring. In this way it may be considered to exclude such items from total program cost considerations, as they would not represent typical program charges. Thirty-four (77%) of the respondents stated that there were no expenditures of this type made during the 1987-1988 year. Of the ten sites that said they did make this kind of expenditures only two reported expenditures of a type that did not match similar unusual and non-reoccurring funding. One of these two sites reporting spending an amount as repayment on a short-term construction loan, while the other reported an even smaller amount for the buy-out on the remainder of a contracted employee's contract.

It would appear that ROC/Ps are not affected by large amounts of unanticipated expenditures, and that the most common mandatory expenditure is

in the form of district-levied indirect support charges. Conversations with several ROC/Ps reporting such indirect charges were unable to determine both the exact goods and/or services that were being provided for by these indirect charges, as well as whether or not the ROC/P could obtain similar goods and/or services elsewhere at a lesser cost. The impression was gained that the ROC/Ps regard these charges as part of the price of doing business, expecting a varied and perhaps only marginal return for their investment. This suggests that the costs involved are more determined through organizational affiliations and political negotiation than through cost-effective management.

One area of concern expressed during the initial site visits was over employees' salaries. It was felt by several of the ROC/Ps that were visited that salaries were not fully negotiated by the ROC/Ps and that, in some circumstances, ROC/Ps were influenced to hire more costly personnel than they might otherwise engage. A question was added to the survey to investigate this possibility, asking "Were ROC/P employees' salaries negotiated by the ROC/P directly?" and "If not, please describe how employee salaries are determined, and whether the ROC/P was required to hire under those salary limitations only or if other structures could be used". Almost eighty percent of the sites responded that employee salaries were not negotiated by the ROC/P directly. Clarification of this finding resulted in a clear division of the respondents. A few of the sites reported that they were either able to create and negotiate their own salary structures, or were an active part of a district(s) or the county's negotiating process. These sites give the impression that they are well connected with the salary determination process and are able

to exercise a degree of control in it. The majority of the respondents, however, stated that the ROC/P is bound by negotiations made by the participating district(s) or county. In most of these cases the ROC/Ps are required to hire the employees according to the terms of these contracts. While this is reasonable in a single district (SD) ROC/P, where all of the employees are all working for the same district, it can create difficulties in a joint powers (JP) or county operated (CO) ROC/P. In those cases the ROC/Ps report that different teachers working for the same ROC/P are being paid under different salary schedules, according to that negotiated by their primary district or county office.

This was clarified even further through conversations with several of the ROC/Ps who reported that, in addition to having to use another's salary schedule it was not uncommon for certain districts to impose certain teachers onto the ROC/P. Generally, the ROC/P always reserved the right to determine the quality of a given instructor's credentials when considering a person for a potential position. Some of the ROC/Ps report that, by hiring under the district/county contracts, they are obligated to continue certain instructors within the ROC/P unless the position for which that person was hired was totally discontinued. Three sites further stated that their participating districts had previously required the ROC/P to engage a particular district teacher in order for the district to allow the ROC/P course to be held on district facilities. These teachers, usually tenured faculty on the "high end" of the pay scale, were generally qualified for the instructional task but were also two to three times more expensive than an equally qualified newer teacher would be. In these situations the ROC/P is clearly trading

the ability to hold the course at that district (and perhaps the cost of the facilities) for the higher cost instructor.

The next question dealt with instructional sites, asking "Does your ROC/P have flexibility in choosing instructional sites" and "If not, please describe the reasons that you use the sites that are used. Also, indicate if an equally suitable and less expensive site would be available otherwise, what it might cost, and how it would be used as an alternative". Ninety percent of the respondents indicated that the ROC/Ps do have flexibility in choosing instructional sites. Two interesting kinds of comments were made. In most cases the ROC/P indicated that particular sites are chosen for their low cost. One site in particular indicated that they used facilities made available by their participating districts for a fee of forty-one cents per square foot. They further state that this cost includes all utilities and maintenance, and that to obtain a similar space and services in a commercial area would more than double the cost. It appears from these and other responses that commercial space in the community is only rented when no other school-based facilities are available. This finding was mediated somewhat by the second interesting comment which came exclusively from county operated (CO) sites. In these four cases the ROC/Ps stated that courses are conducted at a variety of locations throughout the county-wide service area. This creates problems of centralization, with the ROC/Ps indicating that it is more cost-effective to decentralize the classrooms than to transport the students to a single, central facility. Regardless, however, responding sites indicated it is their preference to use existing school buildings and classroom space whenever possible, due to the low or

nonexistent costs involved.

The final area of concern regarding ROC/P major expenditures is in regards to instructional equipment. Since no special provisions are made in the legislation to provide funding for ROC/P equipment acquisitions or maintenance it is up to the individual ROC/Ps to make provisions in their yearly budgets for such items. This is especially important in certain technological skills areas where employability depends to a large degree on the student being trained on the latest up-to-date equipment.

The first of two questions in this area asked "Are the instructional equipment maintenance and replacement costs shared by the ROC/P with other agencies?" and "If the costs are shared, please describe what pieces of equipment are shared, who they are shared with, and how much each entity pays for the upkeep of the equipment". Initial site visits had indicated in a few of the ROC/Ps that equipment acquisition and maintenance was, at least for some items, a process shared between the ROC/P and local districts. It was explained that such arrangements would reduce equipment duplication and keep the total expenses down, as long as an equitable use of the equipment could be arranged between the participating agencies. Eighty-two percent of the respondents stated that they did not engage in shared equipment acquisition and maintenance. These sites indicated that the ROC/P purchases instructional equipment for its use only. Of the eight sites responding that equipment costs were shared, most stated that such sharing occurred on an individual item by item basis. There was also a sense in the responses that sharing occurred more often when the equipment was based on

a district facility where the ROC/P course was also taught. This would make sense, since the equipment would be available both to regular district students and ROC/P students depending on a coordinated class schedule. Only one site reported sharing equipment with another non-district agency, this being the State Parks Authority which shared in the cost of equipment for use in a Forestry Conservation course (the equipment was used by the ROC/P during the conduct of the course, and by the state parks the remainder of the year).

The second question regarding instructional equipment asked "Do you make long-term provisions for the upgrading and/or replacement of ROC/P instruction equipment?" and "If you do, please describe the planning method used as well as how much money is periodically 'saved' for this purpose. If no long-term planning is done, what provisions (if any) exist for the replacement of old and out-of-date equipment?". Slightly under one-half of the respondents said they make long-term provisions for equipment upgrading and/or replacement. Responses varied from formalized plans (one stating a process for a multi-year plan for review based on the type and use of the equipment) to less formal ones (putting aside three percent of the annual budget to a general capital equipment replacement fund). Sites indicating that they did not have a long-term plan responded almost universally that the limiting factor to such plans was the unavailability of excess funds for such purposes. Without a stable base from which to develop multi-year plans these sites indicated that capital equipment acquisitions were handled on a year-to-year basis, utilizing such sources as: lottery funds, budget excesses, and special one-time funding sources.

The final question on expenditures asked each ROC/P was to report their reserve balance as of the start and end of 1987-1988. The California education code allows ROC/Ps to maintain a reserve fund for expenditures in three different areas: general reserve, unappropriated reserve, and capital expenditures reserve (Cal Ed Code 1987, section 52321). The increase or decrease in the total reserve serves as a fair general measure of the overall financial health of the ROC/P. Those sites unable to meet their expenditures with the current level of income would be forced to draw from their reserve, while those with excess revenues over expenditures would be able to increase it. Only four sites did not respond to this question. Of the remainder the majority reported neither an increase nor a decrease in their reserve accounts. Sites reporting a change generally reported a decrease in the reserve averaging \$24,125. A few of the sites stated that their reserve balances increased during the year, though these sites were clearly in the minority.

Overall, these questions have pointed out several important facets of ROC/P expenditure patterns. It appears that participating districts exercise a significant degree of control over the functioning of the ROC/Ps, from negotiating indirect cost levels to their degree of involvement with teacher staffing and contracts. While far from uniform, it appears that almost every site is impacted to some degree by its relationship with participating district(s). In addition, ROC/Ps generally do not have single-use or temporary expenditures, though when they do exist they are typically offset by a corresponding revenue object. Insufficient margins in the overall budgets make it difficult for most sites to realistically adhere to multi-year replacement and acquisition plans. This results in most ROC/Ps being able to

exercise actual purchases only on a year to year basis, whatever their long term plans might be. Finally, most sites are expending virtually every dollar that is generated. The across-sites average is to meet expenditures by reducing the reserve, though this reduction is typically less than one-half of one percent of the overall budget.

General Comments from the Sites

The last open-ended question on the site-level survey was a request for any additional pieces of information and comments that the site might feel was relevant to the study. Twenty-eight (64%) of the sites did not write any further comments in this section. Comments provided by the remaining sites centered on three major issues: clarifying and elaborating on responses made previously, views on state-level policy decisions regarding ROC/P funding, and suggestions for refinements to this study and suggestions for future studies. The comments that were of a clarifying or elaborating nature on previous question items were taken into account in the evaluation of responses to those items previously discussed.

Several sites provided interesting feedback on the availability and stability of state-source funding to ROC/Ps. These sites reported that the complete lack of (in some years) and small amounts of (in others) a cost-of-living allowance (COLA) for ROC/Ps has made it difficult to maintain all staffing and support levels as they have been. Sites are being pushed to maintain normal increases in staff, facilities, and equipment expenses by reducing or eliminating services in other areas. Coupled with a limit on the amount of growth an ROC/P can realize during a

given year, and the uncertainty in actual allocations (as determined by the state Budget Bill), these ROC/Ps report feeling more responsible to the state than to their local communities for funding. At the same time, however, they must work with their local school districts to insure both district support and student enrollment, both vital to their levels of expenditures and revenues. A strong message of fiscal uncertainty is conveyed by these comments, with the message that some ROC/Ps are feeling caught between state-level budget restraints and local requested for changed and expanded services.

A few sites had constructive comments on the survey instrument. The bulk of these reported that the ROC/P does not collect data in the way it was requested by the surveys (namely, course by course). These sites also reported that, while generally a lot of information is accumulated about students in and finishing their programs, only that data as required by the state (such as on the VE-80-C) form is actually tabulated and reported. One site expressed concern that a study such as this might show results less than favorable to ROC/Ps by relating course finances to course outcomes. This site indicated that many more outcomes occur as a result of ROC/P operation than just those being measured, and that an understanding of all these additional effects is necessary for a complete understanding.

Conclusions from the Open-Ended Questions

The fourteen open-ended questions were designed to obtain information from the sites in areas which would affect the utility of potential cost-effects findings.

Sites were asked about a number of areas all generally dealing with the issue of flexibility in the exercise of control over particular aspects of program planning and operation. It is assumed that the lower the degree of uniform restrictiveness the less generalizable cost-effects findings would be. This is posited since conditions between the sites would, therefore, be sufficiently different as to make it difficult if not impossible to either replicate or even equate. It was planned that in such cases where restrictions existed, sufficient information would be provided by the sites to enable both analysis and equative action to be taken in the cost-effects model.

This attempt proved only mostly successful in that, while significant sources of unequal restrictions were identified, insufficient information was provided by the sites to determine an adequate methodology for correction. This became manifest in two ways. In considering the methods used for performing the follow-up studies, it was apparent that all of the sites employed similar techniques at about similar points in time. Sufficient variations between sites, especially in the response rates obtained at each step, suggest that there are differences that could affect both quality and quantity of the response data. With the subtle variations inherent in each site's responses, and only forty-eight sites to deal with, it was not possible to determine a way in which like sites may be grouped. In fact, the most useful organization was with all sites together, since all sites had performed a follow-up involving at least certain common components.

Questions in the financial area showed that one time revenues and/or expenditures were rare and usually small, and typically offset each other (with a

one time expenditure being paid for by a one time expenditure). Since no pattern could be found in terms of an other than fairly random distribution of these items they can safely be treated as normal components of ROC/P operation for comparison purposes. The impact of local school districts, on the other hand, appears to be sufficiently invasive and strong that it cannot be set aside. Unfortunately, while the ROC/Ps acknowledge such interactions as affecting their operations little was included in response to the survey questions to quantify these relationships. While it is apparent that local districts do exercise a high degree of control over ROC/P autonomy it is not possible, do to these incomplete responses, to relate different organizational relationships to potentially different cost and/or effects. As important as this appears, it will necessarily have to wait for a future investigation in that area.

Conclusions from the Site Visits

Sites were chosen on the basis of three criteria: (1) geographic distribution throughout the state, (2) organizational type (Single District, Joint Powers, and County Operated), and (3) kind (ROC, ROP, and ROC/P). The visits were conducted from October, 1988, through March, 1989. Interviews concentrated on three major areas of ROC/P operations: Enrollment/Attendance/Follow-up, Budgeting and Fiscal Management, and Program Planning and Operations.

Data obtained during the different site visits tended to reinforce that communicated through the site-level surveys. All sites visited have internally consistent methods for student attendance accounting. Few sites produce

attendance reports beyond those required for ADA determination purposes. There were differences between sites in whether attendance was recorded by student presence or absence, as well as how frequently the attendance records were transmitted from the teacher to the ROC/P central office. This contributed to differential methods for addressing student absence issues, with some sites preferring to leave all attendance issues to the local high school (except for nonconcurrent students) and others wishing to handle absence follow-up for all ROC/P students regardless of local district policy.

Considerable variation was found in ROC/P follow-up methods. All sites attempt to comply with the State guidelines (VE-80 forms B and C) for following up on students, though there are significant differences in terms of both student category definitions and data collection strategies. "Continuing" students are generally defined as those remaining in the ROC/P course into the next reporting period, though some sites extend that definition to include any concurrent student not completing high school (since they might return to ROC/P in the next year). The requirements for a "completer" vary, with some sites employing strictly academic criteria and others including students who obtain employment in the field trained (regardless of the level of academic achievement). Additionally, since the State does not require "leavers" to be included in ROC/P follow-up studies, few sites include them as part of the study group.

Follow-up sampling procedures differ as well. Most sites sample all students classified as completers in all courses. A number of sites sample all or some of the students in a selected sample of the courses. Determination of a student's

employment status is generally based on whether they are employed at the time of the follow-up study, which may occur anywhere from zero to six months following course completion. Some sites check to see if the students were ever employed since completion (regardless of their current work status). Students who could not be contacted are generally grouped into the category "status unknown", though some sites divide the status unknown students into the other follow-up categories based on known respondent's percentages.

Especially troublesome in any effort to use student follow-up data is the fact that the seven follow-up categories based on the VE-80 form are neither complete nor mutually exclusive. This leads to different methods of categorization of some students (such as when a student is both working part-time and continuing his/her education). There were many different methods used to perform the follow-up survey (including instructor contact, mail-outs, and telephoning) and a wide time-frame over which the follow-ups are performed. All of these issues contribute significantly to the difficulty of providing accurate between-site data analysis. Only a few sites employ follow-up results for their own meaningful program analysis. Most collect the data merely to fulfill the VE-80 requirements.

Most of the sites visited do not have structured plans or methods for periodic course reviews. While all recognize the mandate for such reviews, in most cases courses are reviewed only when significant problems become evident. Of the sites engaging in structured periodic reviews most apply criteria that extend beyond course income, costs, and job placements, including: teacher and student evaluations, student final grades, and advisory committee inputs (to name a few).

Conclusions

This study has produced significant findings in a number of important areas. First, the development of California's ROC/Ps has occurred within a process that is dynamically responding to the changing needs of both the student clients served, the participating local school districts, and the State policy makers. ROC/Ps have evolved by serving the needs of several different important interest groups. As a result, program planning and evaluation are influenced by organizational and political factors as well as by fiscal and legal constraints.

Second, simple cost comparisons, outcome analyses, and even cost-effects studies cannot fully describe the complex factors influencing ROC/P program performance. Sites where interdistrict harmony and home-school integration are dominant concerns necessarily generate a different mix of student services from ones where the primary focus is on training adults to fill labor market shortages. Moreover, differences between state-level goals and local district-level goals subject program managers to complex cross pressures.

Perhaps the most important lesson from the research project is the extent to which it documents problems of uncertainty and instability confronting ROC/P program managers. Across a broad range of fiscal, organizational, and program dimensions, CAROC/P managers face rapidly changing conditions and an uncertain future.

In the area of Fiscal Support, the data reveal year to year fluctuations that have reached as high as 30% of the base revenues.

In the area of Regulations, CAROC/Ps have faced rapid changes calling for the collection and analysis of data which is expensive to gather and hard to synthesize into meaningful program guidance.

In the area of Accountability, pressures for documentation for cost-effective programs have risen sharply while assistance and resources have improved only slightly.

In the area of Client Recruitment, CAROC/P programs are confronted by the need to attract students to a sure program income which is controlled by enrollment in courses rather than by placement in jobs.

In dealing with Cooperating Districts, CAROC/Ps find that much of their autonomy and independence is absorbed by preexisting teacher's contracts, limited facilities, and political constraints on their program options.

In responding to Changing Market Conditions, CAROC/Ps find themselves responsible for tracking rapidly changing job opportunities but have no specific resources or training

appropriate to this responsibility.

In building a Support Constituency, CAROC/P managers find themselves relatively isolated and lacking in strong advocates among state policy makers, local district leaders, or any other major education interest group.

These problems of uncertainty and instability call for substantive actions aimed at creating a stable environment and broad-based support for CAROC/P's role as a leadership agency for vocational education in California.

If California's Regional Occupational Centers and Programs are to be fully understood, any system of review and evaluation will have to take these factors into account. Clarifying the methods of evaluation to be used for ROC/Ps, as well as stabilizing and increasing the funding, is only part of a solution. The remainder comes from understanding the economic and social environment in which ROC/Ps exist and must function. Results from this study clearly demonstrate the importance of developing a broad consensus on ROC/P goals, and the building of a Management Information System utilizing consistent data definitions and standardized data reduction and analysis techniques.

Recommendations for Further Action

The CAROC/P study just completed highlights a critical need for better linkages between the several missions served by regional occupational centers and programs, and the ways in which supportive management information is gathered and analyzed. The Management Information System component of this study identified issues affecting ROC/P stability in seven distinct areas: fiscal, regulatory, accountability, client, cooperating districts, market conditions, and constituency.

Information collection, analysis, and utilization must be aimed at stabilizing and strengthening ROC/P performance in these areas by reducing the uncertainty and vulnerability currently plaguing program managers. The lack of information, as well as the difficulty in applying information regarding the marginal utility of various policy and program options, only confounds the issues.

A Continuation of M.I.S. Support

The first and most important step is to assist CAROC/P to understand the results of the current study, and to develop management information systems that enable them to document the existence of specific elements used to secure program stability and to deliver dependable training services. This M.I.S. development involves both a staff development process (enabling CAROC/P members to build local capacity) as well as further research and development work (to help identify specific data elements and analysis procedures).

To be successful in future planning and operations California's ROC/Ps must address themselves to understanding the parameters of the seven areas mentioned

above. Knowing about them is only the beginning; planning for effective change requires that managers appreciate the component elements driving each area. Future M.I.S. support work would begin with disseminating the findings of this research to the statewide ROC/P units. Feedback would be elicited from managers as to the component structures of each area, including concrete ways in which these are both measured and used in current planning and operations practice. Results would be tabulated and compared in order to identify potential type, regional, or statewide patterns. A final report would summarize these seven areas, their component structures, and ways in which the level of instability in each is being successfully reduced through particular intervention practices. It is our strong recommendation that such an effort, whether performed by us or by others, be considered as a cornerstone to further work.

A Study of Exemplary Practices

One of the best ways to improve organizational performance is to model operational programs after those already proficient at the task. This applies to ROC/Ps as much as any other educational agency. The twenty-two site visits of the study just completed have shown the full range of effective ROC/Ps. It is clear that some ROC/P sites are much better than others at performing different management tasks, operating different courses, and generally providing services. These "exemplary" ROC/Ps could be used as role models for others in the state, with their methods studied and made available for replication.

A study such as this one would require the identification and cooperation of

the best ROC/P sites in California, as determined along several dimensions of interest. These sites would be visited for a period of up to one week each for an in-depth investigation of their outstanding operations. Findings from the sites would be aggregated according to the dimensions outlined. The final report would consist of a handbook detailing the factors contributing to dimension success, with suggestions on how other sites might achieve them.

The M.I.S. planning resulting from such an investigation would center around the items identified as contributing to high program performance. Part of the handbook would be ways in which sites could collect and analyze information to monitor progress towards specific program goals. Since role models would provide the standard of excellence, achievement levels and progression rates could be determined.

A Study of Cohort Groups

A further step in stabilizing CAROC/P programs and services is to document the importance of current services to the individual students served. The study just completed defines the problems of program and policy stability, but cannot document the value of services to students. To show state and district policy makers the value of the services provided requires information on the students themselves.

The question is whether the regional vocational education provided students is truly effective in assisting these students into employment, further education, and other benefits. The key to this question, of course, is: more effective than

what? While statistics of completer rates, job placements, and the like can be calculated and quoted there are significant questions as to the comparability of this data, as well as it is still unknown to what degree the students would have achieved these goals had the students not participated in ROC/P education.

To answer this question requires not only collecting data on the students who participate in ROC/P education, but also of students who did not. This would require the cooperation of not only selected ROC/Ps, but also several participating school districts in order to obtain the necessary cohort data. Specific outcomes would have to be carefully quantified, as well as the methods and time frames used to collect the data on these outcomes. Since immediate outcomes are often not those of long-term interest, the study would have to be both cross-sectional (of selected demographic and subject-area characteristics) and longitudinal (over the course of several years follow-up).

A cohort study would provide clear and compelling answers to many questions. Primarily, it would demonstrate the utility of ROC/P vocational education against both no vocational education and other alternatives available to high school students. The study would provide real-world comparisons of different methods of achieving similar outcomes. It would also allow for a complete quantification of the costs involved in each methodology, to truly show the cost-effectiveness of ROC/P vocational education.

References

- Asher, H. B. (1987). *Causal Modeling, Second Edition*. Beverly Hills, CA: Sage.
- Barnett, W. S. (1985). Benefit-cost analysis of the Perry Preschool Programs and its policy implications. *Educational Evaluation and Policy Analysis*, 7(4), 333-342.
- Benson, C. S. (1988). Economics of education: the U.S. experience. In O'Connell, R. T. (ed.), *Handbook of research on educational administration* (pp. 355-372). New York: Longman.
- Bentkover, J. D., Covello, V. T., & Mumpower, J. (1986). *Benefits assessment: the state of the art*. Hingham, MA: Kluwer Academic Publishers.
- Benveniste, G. (1985). The design of school accountability systems. *Educational Evaluation and Policy Analysis*, 7(3), 261-279.
- Bragg, D. D., & Hull, W. L. (1984, December). *An application of modeling to vocational education R & D product evaluation*. Paper presented at the American Vocational Education Research Association Convention, New Orleans, LA.
- Brinkman, P. T., & Allen, R. H. (1986). *Concepts of cost and cost analysis for higher education* (Report No. 23). Tallahassee, FL: Association for Institutional Research.
- California Educational Research Cooperative. (1988). *Proposal for the CAROC/P Research Study*. University of California at Riverside, CA: Author.
- California Postsecondary Education Commission (1984). *The first follow-up survey of the high school class of 1983* (Commission Report 84-25). Sacramento, CA: Author.
- California Postsecondary Education Commission (1987a). *The class of '83 one year later: a report on follow-up surveys from the commission's 1983 high school eligibility study* (Commission Report 87-19). Sacramento, CA: Author.
- California Postsecondary Education Commission. (1987b). *Articulating career education programs from high school through the community college to the baccalaureate degree* (Commission Report 87-48). Sacramento, CA: Author.

- California State Department of Education. (1971). *Regional Occupational Centers and Programs* (Status Report for 1969-70). Sacramento, CA: Author.
- California State Department of Education. (1976). *Regional Occupational Centers and Programs* (Status Report for 1974-75). Sacramento, CA: Author
- California State Department of Education. (1978). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1979). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1980). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1981). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1982a). *Responses to PAVE 1981-1982 program self-assessment questionnaire items*. Sacramento, CA: Author.
- California State Department of Education. (1982b). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1983a). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1983b). *A study of course costs conducted in California regional occupational centers and programs*. Sacramento, CA: Author.
- California State Department of Education. (1983c). *The census and the schools: selected statistics (1980)*. Sacramento, CA: Author.
- California State Department of Education. (1984). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1985). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1986a). *Selected financial and related data for California public schools*. Sacramento, CA: Author.

- California State Department of Education. (1986b). *A parent's handbook on California education*. Sacramento, CA: Author.
- California State Department of Education. (1986c). *A study of course costs conducted in California regional occupational centers and programs*. Sacramento, CA: Author.
- California State Department of Education. (1986d). *Challenge of Excellence. Annual Report. 1986*. Sacramento, CA: Author.
- California State Department of Education. (1986e). *Documentation guide for handicapped, disadvantaged, and limited-english-proficient students in vocational education programs and services*. Sacramento, CA: Author.
- California State Department of Education. (1987a). *Instructions for completing the VE-80 series reports*. Sacramento, CA: Career-Vocational Preparation Division.
- California State Department of Education. (1987b). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1988a). *VE-80-A, -B, -C*. Sacramento, CA: Career-Vocational Preparation Division.
- California State Department of Education. (1988b). *Selected financial and related data for California public schools*. Sacramento, CA: Author.
- California State Department of Education. (1988c). *Operations handbook for regional occupational centers and programs (June 1988 Draft)*. Sacramento, CA: Author.
- California State Department of Education. (1988d). *Two-year federal supplement to the California plan for career-vocational education, 1988-89/1989-90*. Sacramento, CA: Author.
- Carvell Education Management Planning, Inc. (1984) *Placement rate concept: a feasibility study for utilizing the placement rate concept in California vocational education to determine impacts on students, program outcomes, program planning, program evaluation, and program improvements*. Los Altos, CA: Author.
- Catterall, J. S. (1982). *The costs of school testing programs* (Technical Report No. 194). Los Angeles, CA: Center for the Study of Evaluation, University of California.

- Catterall, J. S. (1984). Assessing the economic outcomes of vocational education. *Studies in Educational Evaluation*, 10, 17-26.
- Catterall, J. S. (1988, April). *Estimating the costs and benefits of large scale assessments: lessons from recent research*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.
- Catterall, J. S., & Brizendine, E. (1984). Proposition 13: effects on high school curricula, 1978-1983. *American Journal of Education*, 5, 327-351.
- Clark, S. B., & Boser, J. A. (1989, April). *Seeking consensus on empirical characteristics of effective mail questionnaires: a first step*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Clark, S. B., & Finn, M. G. (1989, April). *Interpreting nonresponse in survey research: methodological heresy?*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Cobb, R. B., & Preskill, H. (1983). Evaluating vocational education: a review of past practices and suggestions for future policy. *Educational Evaluation and Policy Analysis*, 5(4), 495-505.
- Copa, G. H. (1978, March). *Improving cost-effectiveness of vocational education programs*. Paper presented at the National Training Project on Improving Cost-Effectiveness of Vocational Programs, Indianapolis, IN.
- Cumming, C. E. (1986, May). *Curriculum costs: vocational subjects*. Paper presented at the Vocationalising Education Conference, London, England.
- Datta, L. (1978, March). *Inside the black box: Process evaluation as a part of cost/effectiveness/benefits analysis*. Paper presented at the National Training Project on Improving Cost-Effectiveness of Vocational Programs, Indianapolis, IN.
- Dean, D. H., & Dolan, R. C. (1986). Toward an improved methodology for estimating benefits of the vocational rehabilitation program. *Rehabilitation Counseling Bulletin*, 30(2), 110-115.
- Drake, K. (1982). The cost effectiveness of vocational training: a survey of British studies. *Economics of Education Review*, 2(2), 103-125.

- Dubravcic, E. V., Chinien, C. A., & Pratzner, F. C. (1986). *Evaluating short-term skill training* (Research and Development Series No. 261). Columbus, OH: The National Center for Research in Vocational Education.
- Dunn, B. P., & Sullins, W. R. (1982). Cost-benefit analysis: applicability in higher education. *Journal of Education Finance*, 8, 20-32.
- Dyer, A. F. (1985). Using cost/contact hour for comparing productivity between two adult education programs (Doctoral dissertation, Nova University, 1985). *Educational Resources Information Center* (No. ED270612).
- Escobar, C. M., Barnett, W. S., & Keith, J. E. (1988). A contingent valuation approach to measuring the benefits of preschool education. *Educational Evaluation and Policy Analysis*, 10(1), 13-22.
- Estes, G. D. (1983, April). *Cost effectiveness in evaluation technical assistance: different aspects of measuring cost and outcomes*. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada.
- Farland, R. W., Anderson, B., & Boakes, B. (1987). *Vocational education student follow-up system for information*. Sacramento, CA: California Community Colleges, Office of the Chancellor.
- Fetler, M. (1986). Accountability in California Public Schools. *Educational Evaluation and Policy Analysis*, 8(1), 31-44.
- Fitzgerald, N. B., & Hunt, R. K. (1985, April). *Cost-effectiveness predictors in Chapter 1 programs: the Minnesota example*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.
- Gastright, J. F. (1989, April). *The class of 1987: a one year follow-up survey*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Gordon, R. (1985). *The social payoff from occupationally specific training: the employers' point of view* (Research Brief No. 5). Columbus, OH: The National Center for Research in Vocational Education.
- Gorman, C. D. (1985, October). *Cost-effective training through job analysis*. Paper presented to the Annual Conference of the National Council for Occupational Education, Denver, CO.

- Green, K. E. (1989, April). *Reluctant respondents: differences between early, late, and nonresponders to a mail survey*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Haggart, S. (1978). *The resource approach to the analysis of educational program costs* (SN 017-080-01914-1). Washington, DC: U.S. Government Printing Office.
- Hall, N. (1976). *Cost-benefit analysis in industrial training*. Manchester, England: The University of Manchester.
- Hanson, R. A. (1986). Program evaluation and improvement based on cost-effectiveness analyses. *Studies in Educational Evaluation*, 12, 89-108.
- Hoachlander, E. G., Choy, S. P., & Lareau, A. P. (1985). *From prescriptive to permissive planning: new directions for vocational education policy*. Berkeley, CA: MPR Associates, Inc.
- Hobson, A. T. (Ed.). (1983). *Guidelines and quality indicators for vocational education in California*. Sacramento, CA: Association of California School Administrators.
- Hu, T. W. (1980). *Studies of the cost-efficiency and cost-effectiveness of vocational education*. Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University.
- Hunting, G., Zymelman, M., & Godfrey, M. (1986). *Evaluating vocational training programs: a practical guide*. Washington, DC: International Bank for Reconstruction and Development.
- Kantor, H. (1986). Work, education, and vocational reform: the ideological origins of vocational education, 1890-1920. *American Journal of Education*, 94(4), 401-426.
- Kim, J. E. (1978a, March). *Computing cost-effectiveness measures of vocational programs*. Paper presented at the National Training Project on Improving Cost-Effectiveness of Vocational Programs, Indianapolis, IN.
- Kim, J. E. (1978b, March). *Developmental strategies and evaluation techniques for improving cost-effectiveness of vocational programs*. Paper presented at the National Training Project on Improving Cost-Effectiveness of Vocational Programs, Indianapolis, IN.

- Kim, J. E. (1980). Cost-effectiveness/benefit analysis of post-secondary occupational programs: a conceptual framework. *Planning & Changing*, 11(3), 150-165.
- Kim, J. E., & Harris, R. C. (1976). *A cost-effectiveness analysis model for secondary vocational programs*. Bloomington, IN: Indiana University.
- Kim, Y. & Wright, C. E. (1982). *Selection and validation of the first annual sample for project SEE*. Menlo Park, CA: Educational Evaluation and Research.
- Kim, Y., & Wright, C. E. (1984) *A longitudinal study of vocational education students from California secondary schools*. Menlo Park, CA: Educational Evaluation and Research, Inc.
- Levin, H. M. (1975). Cost-effectiveness analysis in evaluation research. In Guttentag, M., & Streunig, E. (Eds.) *Handbook of evaluation research* (Volume 2, pp. 89-122). Beverly Hills, CA: Sage.
- Levin, H. M. (1983). *Cost-effectiveness: a primer*. Beverly Hills, CA: Sage.
- Levin, H. M. (1988). Cost-effectiveness and educational policy. *Educational Evaluation and Policy Analysis*, 10(1), 51-69.
- Levin, H. M., & Meister, G. (1986). Is CAI cost-effective? *Phi Delta Kappan*, 6, 745-749.
- Levin, H. M. & Seidman, A. (1981). *Manual for cost analysis in educational evaluation*. Portland, OR: Northwest Regional Educational Laboratory.
- Lewis-Beck, M. S. (1987). *Applied regression: an introduction*. Beverly Hills, CA: Sage.
- Madey, D. L. (1982). Some benefits of integrating qualitative and quantitative methods in program evaluation, with illustrations. *Educational Evaluation and Policy Analysis*, 4(2), 223-236.
- Mangum, S. L. (1985). On-the-job versus classroom training: some deciding factors. *Training*, 1, 75-77.
- Manpower Administration. (1983). *Assessment of the relative effectiveness of job corps current training occupations. Job Corps vocational offerings review* (Documentation Report No. 5). Washington, DC: Job Corps.

- McGhee, M. B., Arrington, L. R., & Cheek, T. G. (1985). Toward a programmatic research scheme for product evaluation of vocational education in agriculture. *Journal of Vocational Education Research*, 10(4), 13-32.
- McKinney, R. A. (1978, March). *Determining program objectives and outputs*. Paper presented at the National Training Project on Improving Cost-Effectiveness of Vocational Programs, Indianapolis, IN.
- Mertens, D. M. (1984). Federal policy for sex equity in vocational education. *Educational Evaluation and Policy Analysis*, 6(4), 401-409.
- Michigan State Department of Education (1981). *1981 employer follow-up survey of 1980 completers and leavers*. Berkeley, MI: Instructional Development and Evaluation Associates, Inc.
- Mitchell, D. & Hecht, J. B. (1989). *Quality and effectiveness of California's Regional Occupational Centers and Programs*. Riverside, CA: University of California, California Educational Research Cooperative.
- Mitchell, J., Jacobs, H. E., & Yen, F. (1987). Costs and response rates in follow-up for a psychiatric vocational rehabilitation program. *Rehabilitation Counseling Bulletin*, 30(4), 273-277.
- Nagel, S. S. (1983). Nonmonetary variables in benefit-cost evaluation. *Evaluation Review*, 8(1), 37-64.
- Navarantnam, K. K., & Hillison, J. H. (1985). Determining economic outcomes of vocational education. *Journal of Vocational Education Research*, 10(4), 1-11.
- Navaratnam, K. K. (1986). *A cost-benefit analysis model for secondary vocational programs: a new approach from school perspective*. Blacksburg, VA: Virginia Tech Cooperative Extension Service.
- Navaratnam, K. K., Hillison, J., & Oliver, J. D. (1985, December). *Using cost-benefit analysis to determine profitability of secondary vocational programs*. Paper presented at the American Vocational Association meeting, Atlanta, GA.
- Neasham, E. R. (1980). *Results of the first annual survey of vocational education programs in California secondary schools*. Sacramento, CA: California State Department of Education.

- Neasham, E. R. (1981a). *A quantitative evaluation of California vocational education programs, 1978-1979*. Sacramento, CA: California State Department of Education.
- Neasham, E. R. (1981b). *A quantitative evaluation of California vocational education programs, 1979-1980*. Sacramento, CA: California State Department of Education.
- Nicoll, P. (1984). The cost of efficiency in vocational education in Florida. *Educational Evaluation and Policy Analysis*, 6(2), 123-129.
- Nowak, J., & Hiatt, D. B. (1986, April). *Effects of state legislation on selected curriculum offerings*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Ogborne, A. C., Rush, B., & Fondacaro, R. (1986). Dealing with nonrespondents in a mail survey of professionals: the cost-effectiveness of two alternatives. *Evaluation and the Health Professions*, 9(1), 121-128.
- Pennington, D. E. (1978, March). *Analyzing program costs in vocational education*. Paper presented at the National Training Project on Improving Cost-Effectiveness of Vocational Programs, Indianapolis, IN.
- Pershing, J. A. (1978, March). *Increasing the cost efficiency of vocational education*. Paper presented at the National Training Project on Improving Cost-Effectiveness of Vocational Programs, Indianapolis, IN.
- Pogrow, S. (1983). Shifting policy analysis and formation from an effectiveness emphasis to a cost perspective. *Educational Evaluation and Policy Analysis*, 5(1), 75-82.
- Purcel, D. (1979). *Longitudinal methods as tools for evaluating vocational education*. Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University.
- Quinn, B., Mondfrans, A. V., & Worthen, B. R. (1984). Cost-effectiveness of two math programs as moderated by pupil SES. *Educational Evaluation and Policy Analysis*, 6(1), 39-52.
- Saar, S. S. (1980). The role of decision-analysis and bayesian approach in planning and evaluating education programs. *Educational Evaluation and Policy Analysis*, 2(3), 63-72.

- Sabino, M. J., & Seaman, D. F. (1988). Follow-up of GED completers: an analysis of eight studies in the U.S. and Canada. *Lifelong Learning*, 11(7), 4-6.
- Sadler, D. R. (1985). Evaluation, policy analysis, and multiple case studies: aspects of focus and sampling. *Educational Evaluation and Policy Analysis*, 7(2), 143-149.
- Samson, G. E., Graue, M. E., Weinstein, T., & Walberg, H. J. (1984). Academic and occupational performance: a quantitative synthesis. *American Educational Research Journal*, 21(2), 311-321.
- Sheldon, M. S. (1983). What is a vocational student? Why VEDS is inadequate. *Vocational Education*, 9, 30-32.
- Shugoll, M., & Helms, T. (1982). Cost-benefit analysis of vocational education: problems and strategies. *Journal of Vocational Education Research*, 7(2), 31-43.
- Smith, J. K. (1984a). *Cost-outcome analysis: measuring costs* (Guide No. 2). Portland, OR: Northwest Regional Educational Laboratory.
- Smith, J. K. (1984b). *Cost-outcome analysis: measuring outcomes* (Guide No. 4). Portland, OR: Northwest Regional Educational Laboratory.
- Smith, J. K. (1985). *Cost-outcome analysis: streamlining techniques* (Guide No. 16). Portland, OR: Northwest Regional Educational Laboratory.
- Smith, J. K., & Smith, N. L. (1983). *Cost-analysis bibliography* (Paper and Report Series No. 88). Portland, OR: Northwest Regional Educational Laboratory.
- Smith, W. P. (1979). *A history of vocational education in California: 1900-1975*. Sacramento, CA: Office of State Printing.
- Stamps, C. A. (1987). *Statewide comparative costs study between occupational and academic education, grades 9-12 in Nevada, 1987*. Carson City, Nevada: Nevada State Department of Education.
- Stern, D., Hoachlander, E. G., Choy, S., & Benson, C. (1986). *One million hours a day: vocational education in California public secondary schools* (Policy Paper No. PP86-3-2). Berkeley, CA: Policy Analysis for California Education, University of California.

- Stufflebeam, D. L., & Webster, W. J. (1980). An analysis of alternative approaches to evaluation. *Educational Evaluation and Policy Analysis*, 2(3), 5-20.
- Thomas, H. (1983). Education and the maximization of welfare: a response to 'curricular yogies and cost-benefit commissars'. *Journal of Curriculum Studies*, 15(1), 73-82.
- Thompson, M. (1980). *Benefit-cost analysis for program evaluation*. Beverly Hills, CA: Sage.
- Tittle, C. K., Green, M., & Zibrin, M. (1981). A procedure to link evaluation and funding decisions. *Educational Evaluation and Policy Analysis*, 3(3), 43-53.
- Van Zant, J. L. (1978). *Vocational education program monitoring system and determining benefit/cost estimates*. Sacramento, CA: California Occupational Information System.
- Vandenberg, L. (1983). *Evaluation in non-formal education: a selected, annotated bibliography* (Annotated Bibliography #13). East Lansing, MI: Non-Formal Education Information Center, Michigan State University.
- Wentling, T. L., Klit, J. A., & Roegge, C. A. (1989, April). *Computer aided evaluation for vocational education programs*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Werner, G. A. (1986, October). *Recent developments of vocational and professional continuing education in West Germany: trends and prospects*. Paper presented at the National Adult Education Conference, Hollywood, FL.
- Wilms, W. W. (1983). *The limited utility of vocational education: California employers' views* (Public Affairs Report 24(4)). Berkeley, CA: University of California.
- Wilms, W. W. (1984). Vocational education and job success: the employer's view. *Phi Delta Kappan*, 1, 347-350.
- Wilms, W. W. (1986, May). *Captured by the american dream: vocational education in the United States*. Paper presented at the Vocationalising Education Conference, London, England.

Wright, C. E. & Kim, Y. (1982). *A quantitative evaluation of California vocational education programs, 1980-1981*. Sacramento, CA: California State Department of Education.

Wright, C. E. & Kim, Y. (1982). *Handbook for project SEE follow-up studies*. Menlo Park, CA: Educational Evaluation and Research.

Wright, C. E. & Kim, Y. (1983). *Quantitative evaluation of 1981-1982 vocational education programs*. Menlo Park, CA: Educational Evaluation and Research, Inc.

Zordo, L. (1987). *Vocational education evaluation: Humboldt regional occupational program follow-up study*. Unpublished master's thesis, Humboldt State University, Humboldt, CA.

Appendices

Appendix A: Site Visit Protocol

Introduction

Self, CERC, and UCR

Research study overview

Cost-effectiveness analysis of selected courses/sites

Purpose for this visit

Discover ways in which course cost and enrollment/follow-up data is kept
Clarify definitions for costing and completion/leaver categories
Find sources of local variation, and concerns of local units

Obtain overview of site

ROC/P type, area served, numbers and subjects of courses offered
Typical student enrollment by course by sex by con/nonconcurrent
Chief administrative contact person, phone, address, assistant

Enrollment data

VE-80-B form in by August 31st? Accurate?
Definitions of: concurrent v. nonconcurrent (v. other?)
continuing v. completer v. leaver (v. other?)
Factoring course length and student total attendance
"Getting a job" v. "academic completion" (v. other?)
Anyone not reported on the form?
Could replicate of a single course be reported?

Follow-up data

VE-80-C form by January 31st? Accurate?
How sampled: all, random, stratified, other?
only sample reported, or applied as if to all?
Definitions of follow-up categories
Follow-up on "completers" only, or both completers and leavers?
Period of time when sampling is done? Criteria for "being employed"?

Cost data

Which "J" forms reported? When? Accurate?
Data available on a course-by-course basis? Paper or Electronic? How?
Important "objects of expenditure" (object code, EDP number, form)
Differentiation of "direct" costs and "indirect" (overhead) costs?
Appropriation of revenues on a course-by-course basis possible?

Wrap up

Any additional info that might be helpful.
Willingness to participate/assist with further data collection/analysis
Thank you

Appendix B: Confirmation Letter for a Site Visit

[Director Name & Title]

[Date]

[ROC/P Name]

[ROC/P Street Address]

[ROC/P City], [ROC/P State] [ROC/P Zip]

Dear [Director Name],

I wanted to thank you for being able to meet with me on [Meeting Date] at [Meeting Time] at your site in order to discuss the data collection and analysis aspects of the California Association of Regional Occupational Centers and Programs (CAROC/P) Research Study.

As I mentioned over the telephone I am one of the researchers from the California Educational Research Cooperative (CERC), a unit of the School of Education at the University of California at Riverside, that will be working on this project. This study involves an investigation of the legislative and fiscal history of California's ROC/Ps since their inception in 1963, as well as an evaluation of ROC/P cost-effectiveness. It is this second part that I am interested in meeting with you about.

The State of California collects, with the "J" series fiscal forms and the VE-80 series vocational education forms, information on the cost and outcomes of ROC/Ps. One of the purposes of this study is to go one step further than the mandated reporting by looking at the costs and effects of individual classes within many different ROC/P sites throughout the state. The purpose of our upcoming meeting is so that I might become acquainted with your site's methods for collecting, maintaining, and reporting individual course cost (both direct and indirect) and effect (follow-up) data.

Naturally, any additional staff that would be able to assist with this process would be extremely welcome. You had mentioned [Bus Mgr Name], Business Manager and [Stud Rec Name], Student Record Manager, as individuals who would be able to make significant contributions. I would welcome everyone who might be able to shed some light onto this topic.

Again, thank you for taking the time out of your busy schedule to accommodate me as the research study. I look forward to our meeting.

Sincerely,

Jeffrey B. Hecht
Research Fellow
CAROC/P Research Project

Appendix C: Thank You Letter for a Site Visit

[Director Name & Title]

[Date]

[ROC/P Name]

[ROC/P Street Address]

[ROC/P City], [ROC/P State] [ROC/P Zip]

Dear [Director Name],

I want to thank you and your associates for taking the time during the past week to meet with me concerning the data requirements for the California Association of Regional Occupational Centers and Programs Research Study. My visit to your site, and the information that I obtained during our [Mtg Length] meeting, is proving to be extremely valuable in formulating the requirements for further data collection and analysis. Without our pre-data collection interviews such as these certain assumptions about the uniformity of information meaning, gathering, storage, and retrieval would go untested, which could lead to interesting (but unusable) results in a study such as this if there indeed proved to be significant inter-site differences.

As I mentioned during my visit I will be back in touch with you during the first part of January, 1989 regard the actual data collection process. In the meantime if you should think of any further items that would be important to the study please do not hesitate to contact me. Thanks again.

Sincerely,

Jeffrey B. Hecht
Research Fellow
CAROC/P Research Project

Appendix D: Course-Level Survey Instrument

CAROC/P Research Study Course Follow-Up

General Instructions

This part of the survey covers course enrollment and follow-up data. Please complete one form for the course designated on the label attached to the right. Complete all items on the attached form, writing "N/A" or "Unknown" on any lines for which data is not available. Report only those numbers that apply to the 1987-1988 offering of this course.

If multiple sections and/or locations of the same course were conducted total them together and report the total. Do not, however, report figures on an entire program of which this course might be one of several. Report data on all sections of this one course only.

Follow-up Data

Report data used by your ROC/P to identify "Completers". Enter the total number of students classed as completers for this course by filling in the appropriate number next to each statement. If all of the completers for this course fall under only one of the statements then write the total number there, writing "N/A" in the other spaces. The statement "Total Number of Completers" should be the sum of the three previous values, and should agree with the total number of completers reported on your 1987-1988 VE-80B form for this course.

Enter the total number of "Leavers" on the next line. Report the number of both completers and leavers that were included in the follow-up process for this course only. Total these two numbers in the final line.

Status Categories Data

The Status section asks you to detail the follow-up figures for all students who enrolled in this course, both completers and leavers. If your follow-up was on both completers and leavers please write the appropriate numbers on both sides of this section. If only completers were followed-up, you should only write in the "Completers" section (write in "N/A" in the "Leavers" section) and write the words "Only Completers Followed-up On" at the bottom of the page.

The items in **bold type** are the reporting categories reported on your 1987-1988 VE-80C form for this course. Begin by copying the values you reported under those headings on the VE-80C to the appropriate lines on this form.

If you have more detailed follow-up information available, please enter appropriate figures onto the spaces provided. The following definitions will help clarify the meaning of these additional categories. Information from these more detailed follow-up categories will be extremely valuable if you have it available. Should you be using follow-up categories not listed please feel free to add them onto the sheet, but be sure to provide a written explanation of what your categories mean.

Status Categories

Full Time Employment: Employed Full Time in the field trained.

Part Time Employment: Employed Part Time in the field trained.

Unknown Employment: Employed in the field trained, but it is unclear whether it is Full or Part time.

Full Time Employment: Employed Full Time in a nonrelated field.

Part Time Employment: Employed Part Time in a nonrelated field.

Unknown Employment: Employed in a nonrelated field, but it is unclear whether it is Full or Part time.

H.S. Without P/T Employment: Returned to high school and not employed in any field.

H.S. With P/T Employment: Returned to high school and employed in any field.

H.S. Employment Unknown: Returned to high school but employment status is unknown.

Addtl Voc Ed Training: Undertaking additional vocational, technical, or trade related education.

College/University: Attending a college or university.

GED Program: Pursuing a GED.

Military Service: Enlisted in a branch of the military.

Can't Contact: Whereabouts unknown (bad-address, disconnected phone, moved away).

Unclassifiable: Student contacted but cannot be classified because responses are vague or unintelligible.

Non-Response: Contact unsuccessful because the student did not respond (letters not returned, phone not answered, student uncooperative).

Unable to Work: Wants to work but is unable to because of physical, family, or other hardship considerations.

Unwilling to Work: Does not want to work and is not seeking employment.

Other: Any other reason (please clarify if used).

Course Follow-Up

Follow-Up

- _____ Employed in any field but did not complete the course's academic requirements
- _____ Employed in any field and did complete the course's academic requirements
- _____ Not employed and did complete the course's academic requirements
- ===== **Total Number of Completers**

- ===== **Total Number of Leavers**

- _____ Number of completers included in the follow-up
- _____ Number of leavers included in the follow-up
- ===== **Total Number of Students Included in the Follow-up**

Status Categories

	Completers			Leavers		
	Con	Noncon	Total	Con	Noncon	Total
Employed in Field Trained						
Full Time Employment _____						
Part Time Employment _____						
Unknown Employment _____						
Total Employed, Field Trained						
Employed Nonrelated Field						
Full Time Employment _____						
Part Time Employment _____						
Unknown Employment _____						
Total Employed, Nonrelated						
Pursuing Additional Education						
H.S. Without P/T Employment _____						
H.S. With P/T Employment _____						
H.S. Employment Unknown _____						
Addtl Voc Ed Training _____						
College/University _____						
GED Program _____						
Total Pursuing Addtl Ed						
Military Service						
Total Military Service						
Status Unknown						
Can't Contact _____						
Unclassifiable _____						
Non-Response _____						
Total Status Unknown						
Unemployed, Seeking Employment						
Total Unemployed, Seeking						
Other Reasons						
Unable to Work _____						
Unwilling to Work _____						
Other _____						
Total Other Reasons						
Grand Total						

CAROC/P Research Study

Course Finances

General Instructions

This part of the survey covers revenue and expenditure data on the specific ROC/P course shown on the label attached to the right. Please complete one form for each course designated (label attached to the right). Complete all items on the attached form, writing "N/A" or "Unknown" on any lines for which data is not available. Report only those numbers that apply to the 1987-1988 offering of this course.

If multiple sections and/or locations of the same course were conducted total them together and report the total. Do not, however, report figures on an entire program of which this course might be one of several. Report data on all sections of this one course only.

ADA Instructions

Report the head-count enrollment, the Full Time Equivalent (FTE) average daily attendance (ADA), and total number of student instructional hours for this course. Enter concurrent and non-concurrent students separately, the total the two groups on the line provided.

Revenues Instructions

We are interested in all revenues that could be attributed to this course. The categories to be reported follow the J-300-ROP form, except that while the J-300-ROP requests information on the entire ROC/P we would like revenue information as it applies to this course only.

Please be careful to break out the "Sales From the Operation of a Business" and "Fees & Contracts" from the category "Other Local Revenues". Report only those other revenues that are not sales and/or fees on the line "All Other Local Revenues".

If there are other sources of revenue not accounted for in the regular categories please include them on an "Other" line. Detail the source of each revenue amount, its EDP line number (if known), and the amount earned. Include a short explanation of what the revenue source is, how it was obtained, whether it is one time only or continuing, and if there were restrictions on how it could be used. If grants, contracts, or other sources of revenue provide income for more than one course (eg. an equipment or general support grant), apportion this income and show the amount attributable to this particular course.

"Total Revenues" should be the sum of all the lines, and should equal the total amount of revenue directly generated by and attributed to this course. If you were to repeat this process for each and every course taught at your ROC/P the totals of all these sheets should equal the total revenue generated for the ROC/P. There should be no excluded income.

Expenditures Instructions

Detail the course-specific expenditures for this course. Include only those expenditures that can be identified as belonging specifically to this course. Do not report on this form expenditures made by the ROC/P in support of many courses which cannot be directly attributable to this individual course (eg. Superintendent's salary, central building, central office supplies). A separate form has been provided to collect ROC/P-level information.

Determine the number of Full Time Equivalent (FTE) teachers and instructional aides, as well as all other certificated and classified staff delivering services to this course, and report the amounts on the blanks provided. Report teachers' salaries on a separate line from all other certificated salaries, and separate instructional aides' salaries from all other classified salaries. When a person's sole job is for this particular course count their entire annual salary. When a person is split between this course and one or more other job responsibilities determine the total percentage of their time expended on this course and multiply that by their annual salary. Employee benefits apply only to those person(s), or percentage of person(s) time, expended in support of this course. Person's employed by the ROC/P without a direct and identifiable link to this course should not be reported on this form.

Separate "Total Services and Other Operating Expenses" by "Facilities", "Equipment", and "All Other Services/Operating Expenses". When facilities and equipment are shared between several courses compute the percentage of physical area and/or time used for this course then multiply that by the annual cost. For both facilities and equipment check the appropriate line (or several lines if more than one type is appropriate) and write in an amount depending on whether it is:

Free: available without any cost. Enter zero for cost.
District: provided for a fee by a local school. The amount is the annual charge for this course.
Rent: : obtainable through a lease or rental agreement. Enter the annual amount paid for the rent.
Own: owned by the ROC/P. The amount is the annual mortgage or bond paid. If fully paid for, enter zero.

Detail other items of expenditure on an "Other" line. "Total Expenditures" should be the sum of all the lines, and should equal the total amount of expenditures incurred by this course. If you were to repeat this process for each and every course at your ROC/P the totals of all these sheets should equal the total direct costs for the ROC/P. When added to the ROC/P-level indirect/support costs, this total should be the total expenditures for the ROC/P. There should be no excluded expenditures.

Course Finances

ADA

During 1987-1988, _____ sections of this course were taught at _____ different locations.

	<u>Enrollment</u>	<u>ADA</u>	<u>Stud Inst Hrs</u>
Concurrent:	_____	_____	_____
Non-Concurrent:	_____	_____	_____
Total:	<u>_____</u>	<u>_____</u>	<u>_____</u>

Revenues

	<u>Actual Dollars (EDP)</u>
Total Revenue Limit Sources	(200)
Total Federal Revenues	(280)
Total Other State Revenues	(450)
Total Other Local Revenues	
Sales From Operation of a Business	(483)
Fees & Contracts	(508)
All Other Local Revenues	
Total Prior Year Revenue Adjustment	(001)
Other: _____	()
Other: _____	()
Total Revenues	<u>(599)</u>

Expenditures

Total Certificated Salaries	
Teachers' Salaries: _____ FTE	(600)
All Other Certificated Salaries: _____ FTE	
Total Classified Salaries	
Instructional Aides' Salaries: _____ FTE	(630)
All Other Classified Salaries: _____ FTE	
Total Employee Benefits	
Total Books & Supplies	(729)
Total Services and Other Operating Expenses	
Facilities: ___ Free ___ District ___ Rent ___ Own	
Facilities Cost	
Equipment: ___ Free ___ District ___ Rent ___ Own	
Equipment Cost	
All Other Services/Operating Expenses	
Total Capital Outlay	(780)
Total Other Outgo	(846)
Total Direct Support/Indirect Costs	(855)
Total Prior Year Expenditure & Other Adjust	(002)
Other: _____	()
Other: _____	()
Total Expenditures	<u>(599)</u>

Appendix E: Site-Level Survey Instrument

CAROC/P Research Study

ROC/P Total Survey

Directions

The next several pages ask for information relating to several aspects of your ROC/P. The areas include: basic information, student enrollment and follow-up methods and total outcome, income and expenditures, and general comments. Please circulate this survey to the appropriate people within your organization for completion of the different sections. Do not separate the pages, since only the front most page is labeled with your site identification. If you should have additional comments on any of the items please feel free to include them on the final page and/or to attach additional sheets.

Thank you for your cooperation and assistance.

Basic Information

County: ___ District: ___ School: ___

ROC/P Name: _____

Mailing Address: _____

Street Address: _____

Person to Contact: _____ Telephone: () _____

Type (circle one): County-Operated Joint-Powers Single-District
If County-Operated or Joint-Powers, how many school districts served? _____

Number of different courses (ROC/P ID Numbers) taught in 1987-1988: _____

ROC/P Location (circle one): Urban Rural Mixed

Size of population base served: _____

Economic status (circle one): Lower Middle Upper Mixed

CAROC/P Research Study

ROC/P Total Follow-Up

General Instructions

This part of the survey seeks enrollment and follow-up data for your entire Regional Occupational Center or Program. Please report the total for all courses conducted during 1987-1988. Total all sections and locations of each course conducted. Complete all items on the attached form, writing "N/A" or "Unknown" on any lines for which data is not available. Report only those numbers that apply to the 1987-1988 reporting year.

Follow-up Data

Report data used by your ROC/P to identify "Completers". Enter the total number of students classed as completers for all courses by filling in the appropriate number next to each statement. If all of the completers for all courses fall under only one of the statements then write the total number there, writing "N/A" in the other spaces. The statement "Total Number of Completers" should be the sum of the three previous values, and should agree with the total number of completers reported on all of your 1987-1988 VE-80C forms for this ROC/P.

Enter the total number of "Leavers" on the next line. Report the number of both completers and leavers that were included in the follow-up process. Total these two numbers in the final line.

Status Data

The Status section asks for detailed follow-up figures for all students, enrolled in all course, completer or leaver. If your follow-up included both completers and leavers please write the appropriate numbers on both sides of this section. If only completers were followed-up, enter data only in the "Completers" section (write in "N/A" in the "Leavers" section) and write the words "Only Completers Followed-up On" at the bottom of the page.

The items in **bold type** are the reporting categories reported on your 1987-1988 VE-80C forms. Begin by totaling the values you reported under those headings on the VE-80C forms for all courses to the appropriate lines on this form.

If you have more detailed follow-up information available, please enter appropriate figures onto the spaces provided. The following definitions will help clarify the meaning of these additional categories. Information from these **more detailed follow-up categories** will be **extremely valuable** if you have it available. Should you be using follow-up categories not listed please feel free to add them onto the sheet, but be sure to provide a written explanation of what your categories mean.

Status Categories

Full Time Employment: Employed Full Time in the field trained.

Part Time Employment: Employed Part Time in the field trained.

Unknown Employment: Employed in the field trained, but it is unclear whether it is Full or Part time.

Full Time Employment: Employed Full Time in a non-related field.

Part Time Employment: Employed Part Time in a non-related field.

Unknown Employment: Employed in a non-related field, but it is unclear whether it is Full or Part time.

H.S. Without P/T Employment: Returned to high school and not employed in any field.

H.S. With P/T Employment: Returned to high school and employed in any field.

H.S. Employment Unknown: Returned to high school but employment status is unknown.

Addl Voc Ed Training: Undertaking additional vocational, technical, or trade related education.

College/University: Attending a college or university.

GED Program: Pursuing a GED.

Can't Contact: Whereabouts unknown (bad-address, disconnected phone, moved away).

Unclassifiable: Student contacted but cannot be classified because responses are vague or unintelligible.

Non-Response: Contact unsuccessful because the student did not respond (letters not returned, phone not answered, student uncooperative).

Unable to Work: Wants to work but is unable to because of physical, family, or other hardship considerations.

Unwilling to Work: Does not want to work and is not seeking employment.

Other: Any other reason (please clarify if used).

ROC/P Total Follow-Up

Follow-Up

- _____ Employed in any field but did not complete the course's academic requirements
- _____ Employed in any field and did complete the course's academic requirements
- _____ Not employed and did complete the course's academic requirements
- ===== **Total Number of Completers**

- ===== **Total Number of Leavers**

- _____ Number of completers included in the follow-up
- _____ Number of leavers included in the follow-up
- ===== **Total Number of Students Included in the Follow-up**

Status Categories

	Completers			Leavers		
	Con	Noncon	Total	Con	Noncon	Total
Employed in Field Trained						
Full Time Employment						
Part Time Employment						
Unknown Employment						
Total Employed, Field Trained						
Employed Nonrelated Field						
Full Time Employment						
Part Time Employment						
Unknown Employment						
Total Employed, Nonrelated						
Pursuing Additional Education						
H.S. Without P/T Employment						
H.S. With P/T Employment						
H.S. Employment Unknown						
Addtl Voc Ed Training						
College/University						
GED Program						
Total Pursuing Ad Itl Ed						
Military Service						
Total Military Service						
Status Unknown						
Can't Contact						
Unclassifiable						
Non-Response						
Total Status Unknown						
Unemployed, Seeking Employment						
Total Unemployed, Seeking						
Other Reasons						
Unable to Work						
Unwilling to Work						
Other						
Total Other Reasons						
Grand Total						



**CAROC/P Research Study
ROC/P Total Follow-Up**

(1) How many courses were included in the follow-up for 1987-1988? _____

If this is not the total of all of the courses taught during 1987-1988, please describe how these courses were selected for the follow-up.

(2) Were all students in these classes included in the follow-up? YES NO

If not all students from the selected classes were included, how were the students that were included selected for the follow-up?

(3) Please describe your follow-up process, being as specific as possible. For each step in the process please detail:

- a) how it is done (the method used to obtain the responses)
- b) when it is done (which month of the year)
- c) who does it (primary person responsible for the follow-up)
- d) number of students included in the step of the process
- e) typical response rate (percent) obtained from that step

For each step include appropriate comments, as necessary, to assist in our understanding of what is done at that step. If possible include with this survey sample copies of any survey instruments, mail-outs, and the like that are a part of your ROC/P's follow-up.

Space is provided on the next page for your responses.

CAROC/P Research Study
ROC/P Total Follow-up

	<u>Method</u>	<u>When Done</u>	<u>Who Does It</u>	<u># Studs</u>	<u>% Response</u>
Step I	<input type="checkbox"/> Mail	<input type="checkbox"/> Jan <input type="checkbox"/> Jul	<input type="checkbox"/> Teacher		
	<input type="checkbox"/> Telephone	<input type="checkbox"/> Feb <input type="checkbox"/> Aug	<input type="checkbox"/> Administrator		
	<input type="checkbox"/> In Class	<input type="checkbox"/> Mar <input type="checkbox"/> Sep	<input type="checkbox"/> Staff		
	<input type="checkbox"/> Visit	<input type="checkbox"/> Apr <input type="checkbox"/> Oct	_____	_____	_____%
	_____	<input type="checkbox"/> May <input type="checkbox"/> Nov	_____		
	_____	<input type="checkbox"/> Jun <input type="checkbox"/> Dec	_____		
	Comments:				

Step II	<input type="checkbox"/> Mail	<input type="checkbox"/> Jan <input type="checkbox"/> Jul	<input type="checkbox"/> Teacher		
	<input type="checkbox"/> Telephone	<input type="checkbox"/> Feb <input type="checkbox"/> Aug	<input type="checkbox"/> Administrator		
	<input type="checkbox"/> In Class	<input type="checkbox"/> Mar <input type="checkbox"/> Sep	<input type="checkbox"/> Staff		
	<input type="checkbox"/> Visit	<input type="checkbox"/> Apr <input type="checkbox"/> Oct	_____	_____	_____%
	_____	<input type="checkbox"/> May <input type="checkbox"/> Nov	_____		
	_____	<input type="checkbox"/> Jun <input type="checkbox"/> Dec	_____		
	Comments:				

Step III	<input type="checkbox"/> Mail	<input type="checkbox"/> Jan <input type="checkbox"/> Jul	<input type="checkbox"/> Teacher		
	<input type="checkbox"/> Telephone	<input type="checkbox"/> Feb <input type="checkbox"/> Aug	<input type="checkbox"/> Administrator		
	<input type="checkbox"/> In Class	<input type="checkbox"/> Mar <input type="checkbox"/> Sep	<input type="checkbox"/> Staff		
	<input type="checkbox"/> Visit	<input type="checkbox"/> Apr <input type="checkbox"/> Oct	_____	_____	_____%
	_____	<input type="checkbox"/> May <input type="checkbox"/> Nov	_____		
	_____	<input type="checkbox"/> Jun <input type="checkbox"/> Dec	_____		
	Comments:				

CAROC/P Research Study

ROC/P Total Finances

General Instructions

This part of the survey covers revenue and expenditure data for your entire ROC/P. Please report the total for all income and expenditures conducted during 1987-1988. Complete all items on the attached form, writing "N/A" or "Unknown" on any lines for which data is not available. Report only those numbers that apply to the 1987-1988 reporting year.

ADA Instructions

Report the head-count enrollment, the Full Time Equivalent (FTE) average daily attendance (ADA), and total number of student instructional hours for all courses. Enter concurrent and non-concurrent students separately, the total the two groups on the line provided.

Revenues Instructions

We are interested in all revenues that were generated by this ROC/P. The categories to be reported follow the J-300-ROP form, except in acting for more detailed information in some areas.

Please be careful to break out the "Sales From the Operation of a Business" and "Fees & Contracts" from the category "Other Local Revenues". Report only those other revenues that are not sales and/or fees on the line "All Other Local Revenues".

If there are other sources of revenue not accounted for in the regular categories please include them on an "Other" line. Detail the source of each revenue amount, its EDP line number (if known), and the amount earned. It would be appreciated if you could also include a short explanation of what the revenue source is, how it was obtained, whether it is one time only or continuing, and if there were restrictions on how it could be used.

"Total Revenues" should be the sum of all the lines, and should equal the total amount of revenue generated by this ROC/P. There should be no excluded income.

Expenditures Instructions

Detail the total expenditures for this ROC/P. Include all expenditures made by this ROC/P, whether in direct support of a particular course or for items supporting multiple courses. Report all expenditures.

Report teachers' salaries on a separate line from all other certificated salaries, and separate instructional aides' salaries from all other classified salaries.

Separate "Total Services and Other Operating Expenses" by "Facilities", "Equipment", and "All Other Services/Operating Expenses". For both facilities and equipment check the appropriate line and write in an amount depending on whether it is:

Free: available without any cost. Enter zero for cost.
District: provided for a fee by a local school. The amount is the annual charge for this course.
Rent: available through a lease or rental agreement. Enter the annual amount paid for the rent.
Own: owned by the ROC/P. The amount is the annual mortgage or bond paid. If fully paid for, enter zero.

Detail other items of expenditure on an "Other" line. "Total Expenditures" should be the sum of all the lines, and should equal the total amount of expenditures incurred by the ROC/P. There should be no excluded expenditures.

ROC/P Total Finances

ADA

During 1987-1988, _____ sections of all courses were taught at _____ different locations.

	<u>Enrollment</u>	<u>ADA</u>	<u>Stud Inst Hrs</u>
Concurrent:	_____	_____	_____
Non-Concurrent:	_____	_____	_____
Total:	<u>_____</u>	<u>_____</u>	<u>_____</u>

Revenues

	<u>Actual Dollars</u>	<u>(EDP)</u>
Total Revenue Limit Sources	_____	(200)
Total Federal Revenues	_____	(280)
Total Other State Revenues	_____	(450)
Total Other Local Revenues		
Sales From Operation of a Business	_____	(483)
Fees & Contracts	_____	(508)
All Other Local Revenues	_____	_____
Total Prior Year Revenue Adjustment	_____	(001)
Other: _____	_____	()
Other: _____	_____	()
Total Revenues	<u>_____</u>	(599)

Expenditures

Total Certificated Salaries		
Teachers' Salaries: _____ FTE	_____	(600)
All Other Certificated Salaries: _____ FTE	_____	_____
Total Classified Salaries		
Instructional Aides' Salaries: _____ FTE	_____	(630)
All Other Classified Salaries: _____ FTE	_____	_____
Total Employee Benefits	_____	_____
Total Books & Supplies	_____	(729)
Total Services and Other Operating Expenses		
Facilities: _____ Free _____ District _____ Rent _____ Own		
Facilities Cost	_____	_____
Equipment: _____ Free _____ District _____ Rent _____ Own		
Equipment Cost	_____	_____
All Other Services/Operating Expenses	_____	_____
Total Capital Outlay	_____	(780)
Total Other Outgo	_____	(846)
Total Direct Support/Indirect Costs	_____	(855)
Total Prior Year Expenditure & Other Adjust	_____	(002)
Other: _____	_____	()
Other: _____	_____	()
Total Expenditures	<u>_____</u>	(599)

**CAROC/P Research Study
ROC/P Total Finances**

- (1) Were any of the above income funds restricted in their use? YES NO

If any were, please describe the source of the income, the amount restricted, and what it was restricted to.

- (2) Were any of the above income funds from a single-use, temporary, or non-periodic source? YES NO

If any were, please describe the source of the income, the amount involved, how many years (beyond 1987-1988) the monies would be available to your ROC/P, if the funds are renewable after that period, and if the use of the fund was restricted in any way.

- (3) Did your ROC/P receive lottery funds during 1987-1988? YES NO

If you did, describe how these funds were used (and if their use was restricted in any way).

CAROC/P Research Study
ROC/P Total Finances

- (4) Were any of the expenditures given mandatory for your ROC/P? YES NO

If any were, please describe the object of the expenditure, the mandatory amount, who mandated the expenditure, and why it was mandatory.

- (5) Were any of the expenditures for objects of a single-use, temporary, or non-periodic source? YES NO

If any were, please describe the object of the expenditure, the amount involved, how many years (beyond 1987-1988) the object would reoccur for your ROC/P, if the object is expected to continue after that period.

- (6) Were ROC/P employee's salaries negotiated by the ROC/P directly? YES NO

If not, please describe how employee salaries are determined, and whether the ROC/P was required to hire under those salary limitations only or if other structures could be used.

CAROC/P Research Study
ROC/P Total Finances

- (7) Does your ROC/P have flexibility in choosing instructional sites? YES NO

If not, please describe the reasons that you use the sites that are used. Also, indicate if an equally suitable and less expensive site would be available otherwise, what it might cost, and how it would be used as an alternative.

- (8) Are the instructional equipment maintenance and replacement costs shared by the ROC/P with other agencies? YES NO

If the costs are shared, please describe what pieces of equipment are shared, who they are shared with, and how much each entity pays for the upkeep of the equipment.

- (9) Do you make long-term provisions for the upgrading and/or replacement of ROC/P instructional equipment? YES NO

If you do, please describe the planning method used as well as how much money is periodically "saved" for this purpose. If no long-term planning is done, what provisions (if any) exist for the replacement of old and out-of-date equipment?

- (10) What was the ROC/P's Reserve Balance at the start of 1987-1988? \$ _____
What was the ROC/P's Reserve Balance at the end of 1987-1988? \$ _____

**CAROC/P Research Study
ROC/P Total Survey**

We are interested in any other pieces of information and comments that you would like to include as part of your responses. Please use the front and back sides of this page for any such comments, attaching additional sheets of paper as desired.

Appendix F: Cover Letter for the Survey Packets

January 31, 1989

Page 1 of 2

[Director Name & Title]
[ROC/P Name]
[ROC/P Street Address]
[ROC/P City], [ROC/P State] [ROC/P Zip]

Dear [Director Name],

The California Educational Research Cooperative (CERC), a research unit at the School of Education of the University of California at Riverside, has been commissioned by the California Association of Regional Occupational Centers and Programs (CAROC/P) to perform a research study. This study, underway since November of 1988, is looking at three specific areas concerning all ROC/Ps in the State of California. These areas are:

- (1) the legal, regulative, and fiscal history and development of ROC/Ps in California from their inception in 1963 through the present.
- (2) the relationship between inputs (costs and other program-related internal and external variables) and outputs (numbers of students enrolled, completed, and follow-up status) of selected ROC/P courses.
- (3) the collection and use of information by the ROC/P for management decision making purposes (a prelude to the development of a management information system).

We would appreciate your participation in the second phase of this study. Enclosed with this letter you will find a site-level survey (requesting information on your ROC/P as a whole), from two to eight specific course-level surveys (requesting information on specific courses taught at your ROC/P), and a postage-paid return envelope. The specific courses selected have been chosen at random from each of eight different subject area domains (auto repair, office occupations, data processing, retailing, health occupations, quantity food, cosmetology/barbering, and construction), weighted by the size of your ROC/P, your specific course offerings, and the number of students in the different courses.

Appendix F: Cover Letter for the Survey Packets

January 31, 1989

Page 2 of 2

Directions for completing the different surveys are included in with the actual survey sheets. We would appreciate if you could complete the surveys and return them all together in the postage-paid envelope provided. CERC Research Fellow Jeffrey Hecht is available at (714) 787-3026 if you or your staff should have any questions when completing the surveys.

Every ROC/P that was operating in California during 1987-1988, including [ROC/P Name], is being sent a packet similar to the one you are now holding. To gain the most complete and accurate understanding of the costs of operating ROC/P we want to obtain feedback from as many sites as possible. Your cooperation is essential to the success of this effort.

The anonymity of your responses will be upheld throughout all phases of this research. While each of the surveys is coded to your site such coding will be used only internally for data verification and cross-reference, not to be published as part of any interim or final reports. It is not the intent of this part of the study to either commend top performers or spotlight poor ones. Rather, we seek an understanding of what factors are both significant and under the control of the ROC/P in deciding course inputs and how those factors can be reliably related to specific course outcomes. Such information could prove to be an extremely useful tool for all ROC/Ps for future planning.

Please return all of the surveys to us in the postage-paid envelope by the last day of February. This tight deadline is necessary if the CERC staff is to process and analyze all of the data in time for the Spring CAROC/P conference. Again, if there are any questions please do not hesitate to call.

Thank you for your assistance.

California Educational Research Cooperative
School of Education
University of California at Riverside