DOCUMENT RESUME

ED 206 845 CE 029 930

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TITLE Study of the Career Intern Program. Task D: Final Report, Volume 3. A Cost Analysis of the CIP.
INSTITUTION RMC Research Corp., Mountain View, Calif.
SPONS AGENCY National Inst. of Education (ED), Washington, D.C.
REPORT NO RMC-UR-483
PUB DATE May 81
CONTRACT 400-78-0021
NOTE 39p.; For related documents see CE 029 925-929 and TM 810 654.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Budgets; *Career Education; *Cost Effectiveness; Cost Estimates; Dropout Prevention; *Dropouts; *Economically Disadvantaged; Educational Facilities; Educational Finance; Equipment; Equipment Maintenance; Experiential Learning; *Field Experience Programs; *High School Students; Life Cycle Costing; Nontraditional Education; Operating Expenses; Potential Dropouts; Program Costs; Program Implementation; Salaries; Secondary Education; Services; Teacher Salaries; Training
IDENTIFIERS *Career Intern Program

ABSTRACT

A study analyzed the cost of the Career Intern Program (CIP). (The CIP is an alternative high school designed to enable disadvantaged and alienated dropouts or potential dropouts to earn regular high school diplomas, to prepare them for meaningful employment or postsecondary education, and to facilitate their transition from school to work by providing instruction, counseling, hands-on career exposure, diagnosis/assessment, and climate.) Data from site visits, budgetary documentation, and resource inventories were compiled and analyzed to explicate the cost of resources used in CIP replication. The cost of CIP was then compared to the costs of a high school program in Philadelphia (the location of the original CIP site). Examined in the cost analysis were the acquisition cost of facilities and personnel and the operating cost of facilities, personnel, services, and miscellaneous equipment and expenditures. The resource cost model used in the study generated estimates of initial year site level CIP costs as $601,650. When compared to the cost of public education programs, CIP appears quite competitive. (Related reports evaluating other aspects of CIP are available separately through ERIC--see note.) (MN)

RMC Report No. 483

# STUDY OF THE CAREER INTERN PROGRAM

Task D Final Report
Volume 3

## A Cost Analysis of the CIP

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May 1981



Prepared for the
National Institute of Education

RMC Research Corporation
Mountain View, California

The research reported herein was performed pursuant to Contract No. 400-78-0021 with the National Institute of Education, U.S. Department of Education. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Institute position or policy, and no official endorsement by the sponsor should be inferred.

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Abstract

As a part of the larger study of the Career Intern Program (CIP), an analysis of the cost of the CIP was undertaken. The intent of the analysis was to estimate the comparable replication cost of the CIP model for use in policy and planning contexts to assess the reasonableness of the CIP cost. The study employed the resource approach to educational cost analysis (Haggart, 1971, 1978) which seeks to explicate the cost of the resources actually used in the program. This approach differs from more traditional methods used in educational cost studies. The method is described in the body of the report.

The acquisition cost of the CIP at the project level is estimated to be $76,775 with an operating cost of $524,875. When the acquisition and operating costs are combined, the total first-year cost of the program is $601,650. It is important to understand that these are comparable replication cost estimates and that the actual cost of mounting a CIP in a new location will depend upon the incremental resource requirements and the prevailing prices of resources at that new location.

The comparable replication cost at the program level is converted to a per-intern basis, as well. For programs serving 150, 175, and 200 interns, the acquisition costs are $510, $440, and $385 respectively, and the operating costs are $3,500, $3,000, and $2,605 respectively. These per-intern values are based on the unavoidable assumption that all interns share alike in the program's resources.

When compared to the cost of public education programs, the CIP appears to be quite competetive, especially under operating circumstances wherein the enrollment goals of the model are met. Where the CIP operates at or near its design capacity, the operating cost is very close to the total current expenditures per-pupil in the three states in which the demonstration took place. The CIP is also

compared cautiously to the per-participant costs of various non-education-based programs directed at the youth employment problem. These programs (e.g., Job Corps, employment programs), which differ dramatically in method from the CIP, exhibit substantially higher per-participant costs than does the CIP. Extreme caution in interpreting these comparisons is, however, required.

On the whole, the CIP appears to be one alternative and innovative program that can be successfully transported to new sites at a reasonable cost. As other reports in this series have demonstrated, the task of implementing a new CIP is, however, neither simple nor easy.

# I. INTRODUCTION

Youth unemployment, particularly of minority and economically disadvantaged young people who have not completed high school, is a major social problem in the United States. A variety of programs have been advanced to address both youth unemployment and the high incidence of dropping out of school. One of the most successful to date has been the Career Intern Program (CIP), developed and tested in Philadelphia by Opportunities Industrialization Centers of America, Inc. (OIC/A) from 1972 to 1976. The CIP is an alternative high school program for dropouts and students at high risk of dropping out. In Philadelphia, the CIP achieved notable success in enabling dropouts and potential dropouts to graduate from high school and make effective transitions to productive, stable employment or further technical or academic education.

Under authorization of the Youth Employment and Demonstration Projects Act (YEDPA, PL 95-93), the Department of Labor (DOL) and the National Institute of Education (NIE) entered into an Interagency Agreement late in 1977 to test the replicability of the CIP and find out if the same beneficial outcomes could be achieved in new sites. Subsequently, NIE contracted with OIC/A, and OIC/A subcontracted with local OIC affiliates in four sites across the country to implement the CIP.

To study the effectiveness of the CIP in the new sites, NIE awarded a contract to RMC Research Corporation's Learning Systems Division in Mountain View, California, in April 1978. RMC's charge has been to undertake four tasks:

- assess the sites' implementation of the CIP;
- determine the effects of the CIP as implemented in the new sites and compare the effects with those achieved in Philadelphia;
- analyze the program to determine causal relationships among program components and effects; and

- compare the CIP with other youth programs in aspects relevant to policymaking.

The sites selected for the CIP replication were inner-city regions of three major metropolitan areas and one small (population 35,000) city. The geographical locations of the sites included the east, midwest, and northwest sectors of the nation. The main economic activity at three sites is manufacturing, while at the other there is a high proportion of retailing and professional activity. The similarity and variability afforded by these four sites were believed to provide a reasonable test of how the CIP model might operate in various contexts.

## Objectives of this Report

This report presents the cost analysis results of the study of the Career Intern Program. This cost information is crucial to the overall objective of the CIP demonstration, namely to see if the CIP is replicable in new sites at reasonable cost within a reasonable period of time, and to determine whether the same success achieved in the original Philadelphia site can be realized at new sites.

From a cost point of view, the principal issue of interest is to determine the reasonableness of the cost of the CIP. To do so requires that estimates of the comparable replication cost (Haggart, 1971) be obtained. Our original plan was to perform a full resource-cost analysis of the four CIP replications and to do similar analyses for selected other youth programs as a part of the Task D studies. However, the lack of both comparable outcome and resource (cost) data for other youth programs, along with the recommendation of our Advisory Panel, led us to abandon the idea that cost-effectiveness comparisons could be made between the CIP and other youth programs. Therefore, the cost analysis presented in this report deals solely with the CIP demonstration and does not attempt either to estimate in a formal sense the costs of other

youth programs or to compare the CIP to other programs on a cost-effectiveness basis.

Two fairly modest cost comparisons are offered in the interests of setting the CIP cost data in a more meaningful context. The first comparision substitutes local school district salary schedules for those paid by the OIC affiliates in order to provide an estimate the relative cost differences associated with running the CIP by a community-based organization or the public schools. The second comparison, which contrasts the reported costs of some non-education-based approaches to the youth employment problem, is even less rigorous. Neither of these comparisons should be construed as formal or definitive contrasts. Rather, they are intended only to place the CIP in some larger cost context.

The cost information provided in this report should be useful to policy makers as they consider the various options available for assisting youth.

## Data Sources and Limitations

The principal sources of data for the report were the initial site visits made by RMC staff in conjunction with work on Tasks A and C, budgetary documentation obtained from NIE/DOL, visits to three of the sites made by the present author for the purpose of obtaining resource inventories, and the cost portion of the original evaluation by Gibboney Associates (1977).

Details of the site visit agendas and activities for Tasks A and C may be found in the interim and final reports for those tasks (Treadway, Stromquist, Fetterman, Foat, & Tallmadge, 1979, 1981; Fetterman, 1979, 1981). The visits themselves resulted in, among other things, a detailed working model of the CIP. That working model, although somewhat idealized, was what was to have been replicated during the CIP demonstration. As such, the CIP model details most of the staff and physical resources required to operate

a program based on the Philadelphia prototype. It therefore provides the basic resource descriptions (when augmented by other data) needed to estimate the comparable replication cost.

## Organization of the Report

The report which follows is organized into three major sections. The material in Section II provides the methodological basis for the analysis. It presents, in some detail, the basic principles behind the approach used in this cost analysis and attempts to make clear the basis upon which the cost estimates were generated. It also presents a discussion of the goals and purposes of the analysis and contrasts the analysis with that made earlier of the Philadelphia prototype. Section III details the results of the analysis by providing the various cost estimates for the CIP model, and the two fairly modest comparisons between the cost of operating the CIP, the cost of running a similar program in a public school environment, and the cost of some non-education-based youth programs. The final section (IV) is concerned with an overall summary of the results and a discussion of the usefulness of those results for future policy.

## II. METHOD

The original RFP for the Study of the Career Intern Program did not include a specific or separate cost analysis component. RMC's response to the RFP suggested that a resource-cost analysis could be performed on the CIP replications and that the results could be used as one input to the comparison of the CIP to other youth programs. Although it was not feasible to collect the necessary resource data from other youth programs, the cost estimated for the CIP should prove to be useful to policy makers in their future deliberations. Indeed, as noted elsewhere in this report as well as in the comments of our Advisory Panel, the direct comparison of program outcomes between the CIP replicates and other youth programs is a task to be undertaken with great trepidation. Even more caution is called for where program costs are included among the measures of interest. Sound cost data are typically unavailable and cannot be very accurately derived from budgetary sources. Since in-depth cost analyses of comparison programs were far beyond the scope of this study, we chose to avoid the hazards of comparisons based on questionable information.

The approach we opted to take in this analysis is one that seeks to explicate the cost of the resources used in the CIP replication. This approach, known as the resource approach (Haggart, 1971, 1978) differs in important ways from the analysis done in the original evaluation of the Philadelphia prototype. A brief discussion of how the present analysis differs from the original one should help to illuminate the purposes and possible uses of the analysis for the CIP study.

The stated purpose of the original cost analysis was to compare the cost of the CIP to the costs of a high school program in Philadelphia. Although the author of the original cost report (Gibboney Associates, 1977, Vol. 2, p. 172) states that the results "should be used to determine the potential costs that a school district might incur in adopting a program such as the CIP" and notes further that

some factors (e.g., school size) could affect the actual future costs of an adopting organization, the cost estimates are decidedly not useful in that mode.

The cost analysis method used in the original study did not yield estimates of the CIP program costs that are amenable to use in a planning context for the following reasons: (a) The estimates were based solely on prevailing price levels in Philadelphia at the time, (b) They were entirely budget based, (c) The system for estimating the costs of the comparable public high school simply prorated all administrative and other indirect costs for the Philadelphia school district on a per-capita basis (which has the likely effect of depressing the estimate by pooling costs for elementary and secondary schools), and (d) Separate considerations of the acquisition and operating cost were not offered. In contrast, the primary product of the present study is the information needed for providing a cost input to future feasibility studies of the CIP vis-à-vis other youth programs. Clearly, such information about the likely dollar impact of a decision is essential when choosing among alternative courses of action.

Consistent with the basic principles of the resource approach, the CIP resource-cost model was designed to incorporate the notion of total resource costing. By that we mean all resources found at the replication sites have been included in the cost estimates, whether they were donated, inherited, or purchased directly. In conjunction with the use of standard prices for resources, the inclusion of all identifiable resources results in estimates of the comparable replication cost. It is extremely important to keep in mind that these estimates are not appropriate for use in assessing the likely cost of implementing a CIP in any particular site. The cost to any new implementor of a CIP program requires estimates of the incremental cost. The incremental cost is determined by subtracting those resources already available to the potential new implementor from those required to operate the CIP and, using locally prevailing prices, costing out those incremental resources

to estimate the likely cost. The incremental cost in any given location will depend substantially on the particular conditions at that location.

Four general concerns guide the development of a cost model using the resource approach. First, resource quantities are the desired input measures rather than dollars themselves. For example, rather than calculating a cost based on categorical expenditure records, a tally of the resources (staff, equipment, etc.) is made and those resource quantities become the input to the cost model. Second, cost calculations are made from the "bottom-up" rather than from the "top-down." That is, resources are enumerated at the lowest aggregation level of interest (i.e., at the student level, or in the case of the CIP, at the project or site level) rather than allocating from the top down by dividing total dollar expenditures by number of participants or other beneficiaries. Third, effort is directed at identifying the relevant costs. Relevant costs may be thought of as the costs of those resources that vary from program to program. Support costs that do not differentiate one program from another, such as normal facilities or central administrative costs, are frequently excluded.[1] Fourth, some considerable care is taken to distinguish between the one-time or start-up costs of the program and the continuing operating costs of the program.

The cost analysis of the CIP replication study poses several difficult and challenging problems. First, as in any systematic analysis of costs, the determination of which costs are relevant and

[1] For the present study we have chosen to include many of these costs because of the nature of the demonstration effort. The CIP represents a school in toto rather than a specific new program added into the curriculum of an existing high school. Therefore, those elements that might normally not be included in a resource-cost analysis (basic facilities) are of some interest in the present study. Including these resources is, of course, wholly consistent with the notion of total resource costing Some cost elements related to the management of the demonstration effort (e.g., OIC/A costs and administrative support from the local OIC affiliates) are not considered and therefore have not been included. Similarly, the cost associated with the evaluation is not included.

which are not is difficult. In the case of the CIP, this difficulty is exacerbated by the nature of the implementation/diffusion effort. The different circumstances into which the CIP was exported (LEA cooperation, community size, etc.) make it necessary for us to consider these factors in the cost analysis. Because the level of cooperation received from the local LEA can dramatically affect the availability of resources to the local CIP, and hence the actual start-up expenditures, a simple tallying of actual expenditures would do little to indicate the future consequence of decisions to expand (or contract) CIPs. As Quade (1975, p. 132) notes, "programs do not have costs. The decision to set them up or carry them out have costs."

Following up on Quade's notion that decisions rather than programs have cost implications, the first task facing the analysis of the CIP demonstration costs is to link the decision framework to the CIP elements. That is, to generate cost estimates associated with possible future decisions to disseminate the CIP program more widely. In the analyses to be presented, the focus is upon the planning or resource costs associated with the somewhat idealized CIP model developed by RMC. The model describes in some detail the planned aspects of the CIP including staffing requirements and other physical resources needed to establish and operate the program. Table 1 shows the staffing requirements as set forth in the model.

Although not often acknowledged as such, the methodology used in a cost analysis can have important influences on the results. For example, the selection of what values to use for the salaries is, of course, a non-trivial decision that can have important impacts on the bottom-line cost estimates. Three plausible alternatives exist. First, we could have chosen to use the actual salaries and fringe benefits at the four replication sites, averaged over the sites; or we could have used values derived from the local salary schedules in the four host cities; or we could have used some national average values obtained from NEA or NCES.

Table 1

The Staffing Requirements of the
Career Intern Program Model

| Staff Category | # of Staff Required |
|---|---|
| Director | 1 |
| School Coordinator | 1 |
| Instructional Supervisor | 1 |
| Counseling Supervisor | 1 |
| Instructors | 6 |
| Reading Specialist | 1 |
| Math Specialist | 1 |
| Counselors | 3 |
| Career Developers | 3 |
| Curriculum/Resource Specialist | 1 |
| Associate Professionals | 3 |

Rather than restrict our model, we have generated cost estimates using both the site averages and the salary schedules of the home site cities. Available data on national averages (NEA, 1979) were not amenable to aligning the CIP personal requirements to the NEA schedules. (The schedules available from NEA do not give simple national values; instead, values are provided as joint functions of enrollment size and geographic region.) In the cases of counselors and job developers, no alignment whatsoever was infeasible.

The two sets of salary values, shown as total costs by staff category, are presented in Table 2. Also included in the table are four support-staff positions that were not included in the model described by Treadway and his colleagues (1979), but that are, based on the experience of the four demonstration sites, essential to smooth program operation. Since the salary values obtained from NEA schedules are for the 1978-79 school year while the CIP site averages are for a time period encompassing 1979-80, the differences are probably somewhat underestimated due to the time lag. As an aid to

interpreting the values in Table 2, it should be noted that the national average salary for classroom teachers at the secondary level was $16,387 in 1979-80 (NEA, 1980), while the estimated average for all instructional personnel (elementary and secondary) was $16,813.

Table 2

Career Intern Program Personnel Costs
Using Two Salary Bases

| Staff Category (Number) | Personnel Cost: Actual Site Mean[a] | Personnel Cost: Local School District Mean[b] |
|---|---|---|
| Director | $ 23,243 | $ 24,970 |
| School Coordinator[c] | 25,913 | 25,913 |
| Instructional Supervisor | 17,685 | 19,506 |
| Counseling Supervisor | 17,253 | 20,557 |
| Instructors (6) | 86,090 | 103,350 |
| Reading Specialist | 14,058 | 19,506 |
| Math Specialist | 14,612 | 19,506 |
| Counselors (3) | 39,971 | 53,631 |
| Career Developer (3) | 38,567 | 41,895 |
| Curriculum Resource Specialist | 9,863 | 12,000 |
| Associate Professionals | 27,485 | 30,000 |
| Non-Model Staff (clerk, secretary, custodian, security guard) | 40,021 | 48,000 |
| Fringe Benefits @ 19-1/2% | 69,178 | 81,673 |
| | $423,939 | $500,507 |

[a]Annual values based on the salary schedules in effect during the final nine months of the demonstration.

[b]Average values for 1978-79 school year as reported by the National Education Association (1979).

[c]Based on one site where the position was held by a school district employee.

## The Resource-Cost Model

In accordance with the general principles and concerns outlined above, a resource-cost model was designed to estimate the cost of the CIP. In its simplest form, the model translates the resource requirements of the CIP into estimates of the cost of providing those resources. The specific resource requirements are shown in Table 3 (the staffing requirements comprising the personnel category were shown earlier in Table 1). The resource requirements are listed separately for acquisition and operating categories. A separate consideration of these two categories is an essential element in any cost analysis that purports to inform future policy decisions. Not shown are such general categories (both of the acquisition and operating sort) as the original design of the program, the development of materials, the evaluation, and the activities associated with the management of the demonstration effort.

Before describing the functional character of the resource-cost model used, it is useful to specify in somewhat more detail the basic distinction between acquisition and operating costs that is so important to the model.

Acquisition costs are those (also referred to as non-recurring, one-time, or start-up costs) costs associated with initiating any program. In the predictive or planning sense, any reasonable cost analysis of a service program should seek to isolate these non-recurring costs from the total cost estimates. This isolation allows the future cost consequences of operating a given program for a set period of time to be known without having those consequences clouded by unusual pre-program conditions at a given site. Where programs and/or projects have demonstrably different levels of effectiveness in meeting similar goals and objectives, the distinction between recurring and non-recurring costs becomes especially critical. Clearly effective programs with high initial costs can suffer in comparison to less successful programs that have lower acquisition costs. This would obviously be the case in comparing

Table 3

Resource Categories Associated With
The Career Intern Program

| Acquisition Resource Categories | Operating Resource Categories |
|---|---|
| **Facilities** | **Facilities** |
| Furnishings | Rent |
| Renovation/Remodeling | Insurance |
| Equipment Purchase--Program Related | Utilities |
| Equipment Purchase--Intern Related | Furnishings--Replacement/ Maintenance |
| Materials & Supplies--Program Related | Equipment Replacement/ Maintenance--Program Related |
| Materials & Supplies--Intern Related | Equipment Replacement/ Maintenance--Intern Related |
| **Personnel** | Upkeep |
| Pre-Service Training | **Personnel** |
| | Salaries/Fringe Benefits |
| | Staff Development |
| | **Services** |
| | Communications |
| | Reproduction |
| | Special Intern Services (Hands-On, etc.) |
| | **Other** |
| | Computer |
| | Consultants |
| | Travel (transportation) |

any non-school-based program to a program that operate within an existing school environment. The basic physical resources that can ordinarily be assumed to be available to new programs operated by existing school authorities become real resource acquisition requirements for some programs operated outside of the usual educational system. Space facilities, furniture, and the like are cases in point.

Operating costs, on the other hand, are those cost elements that recur from year-to-year during the lifetime of a program. Most important among these is the personnel cost. To the extent that one program requires better trained or more experienced staff who command higher wage rates than some other program, its operating cost, other factors being equal, will be greater. A separate consideration of the recurring and non-recurring costs assists in identifying this type of difference between programs in the cost analysis.

Once the list of resource categories as shown in Table 3 is developed, the resource requirements under each category are enumerated using the descriptive data collected on site at the CIP replications. The process of translating the program descriptive information into estimates of the cost of the resources used in the CIP is reasonably straightforward. Essentially the process involves using the descriptive data as the resource inputs (Q) and the information generated from salary schedules, inventories, and the like as "price" inputs in the following equation:

$$C = P \times Q$$

where C = cost of a resource

P = price per unit of the resource

Q = quantity of the resource

Substantial elaborations of the basic equation are possible and have been made by RMC in other studies. For example, program costs reflecting differential use of both staff and non-staff resources by individual students have been estimated by Haggart, Klibanoff, Sumner, and Williams (1978); Klibanoff and Haggart (1981) used a

variant on the method to generate estimates at the classroom (instructional group) level.

These elaborations, however, can impose a large additional burden in the form of greatly increased data collection, as well as the necessity for including additional factors to the model in order to calculate the cost at the desired level of aggregation. Within the overall design of the CIP study, the basic model, which provides cost estimates at the program (or site) level, is the appropriate one to use. Once the cost of each item is estimated, the total cost, by category, is built up by simply grouping and summarizing the individual estimates. The result is the comparable replication cost estimate for the CIP. We should note that no special effort was made to account for the effects of future inflation on the resulting cost estimates. We should also note that the values given for operating cost beyond the program's initial year are not discounted back to their current value.

## III. RESULTS

In this section of the report we present the results of applying the resource-cost model (discussed in the preceding section) to the CIP demonstration effort. The cost estimates presented in this section reflect the comparable replication cost for the in-toto CIP effort. At the project (site) level, the estimates of the comparable replication cost are not dependent upon any specific number of CIP interns. These estimates are those for future programs of the same approximate magnitude as nominally specified in the original design for the CIP demonstration. That design called for each of the replication sites to be prepared to serve 150-200 interns per year (Treadway et al., 1979). That specification is the basis for the staffing pattern discussed in the previous section.

A second set of cost estimates, those prorated to a per-intern (per-pupil) basis, is also provided. These estimates are simple allocations of the costs to a number of interns equal to the number called for in the CIP model. It should be clear that these per-intern cost estimates are not based on data collected at the intern level. Hence, these estimates neither reflect nor account for any of the very real inter-student differences in resource consumption (service intensity) that are known to have been commonplace at each of the four replication sites.

### Program-Level Cost

The basic program-level results are shown in Table 4. The acquisition and operating costs associated with each of the resource categories described in the previous section are shown. The total acquisition cost is estimated to be $76,775 and the yearly operating cost is estimated at $524,875. These combine to yield an initial or first-year cost of $601,650.

Table 4

Comparable Replication Cost by Detailed Resource Categories for the Career Intern Program

| Program Cost Category | Program Cost |
|---|---|
| **Acquisition Cost:** | |
| Facilities | |
| Furnishings | $ 21,960 |
| Renovation/Remodeling | 6,140 |
| Equipment--Program Related | 7,615 |
| Equipment--Intern Related | 6,415 |
| Materials--Program Related | 4,285 |
| Materials--Intern Related | 15,845 |
| Personnel | |
| Pre-Service Training (two weeks for each staff member) | 14,465 |
| Total Acquisition Cost: | $ 76,775 |
| **Operating Cost:** | |
| Facilities | |
| Rent | $ 33,245 |
| Insurance | 5,450 |
| Utilities | 5,720 |
| Upkeep | 620 |
| Furnishings--Replacement/Maintenance | 1,100 |
| Equipment--Intern Related, Replacement/Maintenance | 1,285 |
| Equipment--Program Related, Replacement/Maintenance | 1,525 |
| Materials--Intern Related, Replacement/Maintenance | 3,170 |
| Materials--Program Related, Replacement/Maintenance | 855 |
| Personnel | |
| Salaries/Fringe Benefits | 423,940 |
| Staff Development | 7,230 |
| Services | |
| Communication | 5,675 |
| Reproduction | 5,675 |
| Special Item Services | 19,440 |
| Photography | 240 |
| Other | |
| Computer | 1,875 |
| Consultants | 2,690 |
| Travel (transportation) | 5,140 |
| Total Operating Cost: | $524,875 |
| Total First-Year Cost: | $601,650 |

Note: All values are rounded to the nearest $5. Table does not include costs of program development, evaluation, or the demonstration contractor cost.

Because the number of row entries implied in Table 4 is fairly large, we believe it to be useful to combine some of the resource categories into somewhat larger groupings (e.g., program-related and student-related equipment purchase; a number of smaller operational categories into a facilities cost). The results on this somewhat less disaggregated basis are shown in Table 5. In considering the future consequences of the CIP model from the point of view of a potential adopter, the estimates in Table 5 are probably more useful.

Personnel account for slightly less than 71% of the total first-year cost estimate. On an operating basis, personnel account for about 81% of program cost. These results compare reasonably well with other educational cost studies. If we ignore the one-time start-up cost, the personnel factor of 81% is quite close to RMC's 82%-87% estimates of total personnel-related costs in a recent national study of reading and math programs in elementary schools (Haggart et al., 1978).

Given that the relative proportion of total cost represented by personnel resources appears to be reasonable, we can further examine the relative distribution of costs among the various resources (as shown in Table 5). From the program planner's point of view, the acquisition or non-recurring cost represents 12.76% of the total first-year requirements. In conjunction with the other burdens associated with initiating a new program from the ground up, any failure to recognize and plan for these start-up costs can cause considerable difficulty in the early history of a program such as the CIP.

Because the CIP, like most educationally-oriented programs, is quite labor-intensive, the susceptibility of the cost estimates to major error resulting from the assumptions about non-personnel resources built into the resource-cost model is fairly low. Consider, for example, the factor used for replacement and maintenance of

Table 5

Comparable Replication Cost
Career Intern Program
(Reduced List of Resource Categories)

| Program Cost Category | Program Cost |
|---|---|
| **Acquisition Cost** | |
| Facilities (furnish/remodel) | $ 28,150 |
| Equipment Purchase | 14,030 |
| Materials | 20,130 |
| Pre-Service Training | 14,465 |
| Total Acquisition Cost: | 76,775 |
| **Operating Cost** | |
| Facilities (rent, utilities, insurance, maintenance and replacement of furnishings, upkeep) | 46,130 |
| Personnel | 423,940 |
| Staff Development | 7,230 |
| Equipment (replacement/ maintenance) | 2,805 |
| Materials (replacement) | 4,025 |
| Intern Services (Hands-On, etc.) | 19,440 |
| Other Services (communications, reproduction) | 11,600 |
| Other Costs (travel, computer, consultants) | 9,705 |
| Total Operating Cost: | 524,875 |
| Total First Year Cost: | 601,650 |
| Subsequent Years' Cost: | 524,875 |

Note: All values are rounded to nearest $5. Does not include costs of program development, evaluation, or the demonstration contractor costs.

equipment and furnishings and the factor used for replacement of materials in estimating the CIP operating cost. In the equipment area, the resource-cost model incorporates a 20% maintenance/ replacement factor. Similarly, a 20% replacement factor was used in the materials category. A 5% factor was used for replacement of furnishings. The question of how sensitive the ultimate results are to assumptions such as these is explored in the following discussion.

It is comforting to note that the precision of the cost estimates for particular items (staff or equipment) varies directly with the importance and magnitude of the items. The CIP model carefully and precisely defines the staff (and their characteristics) required to operate a successful CIP program. On the other hand, there is little specification as to what items of instructional or other equipment are required. Obviously, the cost estimate for the latter category is more likely to contain errors than the personnel estimate. However, even fairly substantial errors in the non-personnel areas are unlikely to alter the bottom-line cost estimates very much. Personnel represent nearly 71% of the first-year costs (exclusive of pre-service training) and 81% of the subsequent operating costs. Even an error as large as 40% or 50% in the cost of, say, instructional equipment would have only a small effect on the bottom-line, first-year figure. Subsequent years' estimates would be affected even less. In the light of the program analyses reported in Tasks A, B, and C that identify program leadership and climate (people-related concepts) as central to the success of the CIP, the potentially larger errors in the estimates for non-personnel cost become less threatening to the reliability and validity of the analysis.

Going beyond the factors incorporated in the cost model, we know that, typically, the individual site budgets for the final nine-month period of the demonstration included plans to acquire new equipment at rates not very much lower than those observed during the initial stages of the demonstration. These rates are

certainly substantially higher than the replacement factor included in the resource-cost model. This may be due to the fact that not all needed furnishings and equipment were acquired during the first two-year period of the demonstration. In addition, at least one site was reportedly burglarized repeatedly throughout the demonstration period. It may be that a combination of site locations in high-crime areas and an initial underestimate of the educational equipment requirements accounts for the somewhat larger share of non-personnel items in the subsequent years' operating cost.

As discussed earlier, all non-personnel cost elements amounted to approximately 30% of the first-year total cost and about 19% of the subsequent years' operating cost. Of these proportions, the maintenance and replacement of equipment, materials, and furnishings account for 7.9% of the non-personnel costs, or 1.7% of the total operating cost. Even if this estimate is somewhat too low for the reasons noted in the preceding paragraph, the impact of the error on bottom-line costs would be almost negligible. We may conclude, therefore, that the model is quite robust with respect to errors in specifying the factors associated with non-personnel cost.

Intern-Level Cost

The results presented above dealt with the comparable replication cost of the CIP at the site or program level. We now turn to a consideration of the cost data on a per-intern (per-pupil) basis. It is important to note, and hence worth reiterating, that these per-intern costs are obtained by a simple proration of the program cost equally to all students. This procedure carries with it the implicit assumption that all students share equally in the educational (and other) resources offered by the CIP. This assumption, of a constant utilization rate across participants, is clearly in error. Yet the widely used per-pupil cost figure, which almost always makes this same assumption, does, indeed, convey useful information that is difficult to glean from the program-level cost

estimates presented above. So, fully recognizing that the conversion of program cost to a per-pupil (per-intern) basis makes an unwarranted assumption,[2] the conversion using three different participant loads are shown in Table 6. The costs are shown for programs serving 150, 175, and 200 interns per year. The CIP model for the demonstration effort called for projects to serve 150-200 interns each year.

The first (and most obvious) point about the data in Table 6 is that increasing the number of interns directly reduces the per-intern cost. The operating cost of $3,500 per intern, for example, is reduced to $3,000 per intern by adding 25 interns to the group. Increasing the project size to 200 reduces the per-intern cost to $2,625. There is more substance, however, than the simple tautology implied by the statement that increasing the number of interns would reduce the per-intern cost. If we think in terms of fixed and variable costs, we can then note that the same package of program resources can serve a range in the number of interns. Allocating the package cost for the CIP model to some number of interns shows the potential variation in per-intern cost within a program cost that remains fixed. The difficulty, of course, arises in identifying the points on the cost curve where additional (incremental) resources are required. This is especially true in the area of personnel resources.

The CIP model specified that, during the demonstration period, 150-200 interns would be served annually. The results for this range in the number of interns to be served show a range in per-intern operating cost of $875 ($2,625 to $3,500). Similarly, the

[2] Of course, when only cost data are under consideration, the assumption that all students share equally in the resources is less significant than it would be if the intent were to relate resource use to outcome effectiveness directly in a cost-effectiveness analysis. Sumner et al. (1979) offer a further discussion of the the point in their review of past cost-effectiveness studies in education.

Table 6

Conversion of Program Cost to a Per-Intern Basis for Three Levels of Program Size

| Program Cost Category | 150 Interns | 175 Interns | 200 Interns |
|---|---|---|---|
| Acquisition Cost | | | |
| Facilities (furnish/remodel) | $ 190 | 160 | 140 |
| Equipment Purchase | 95 | 80 | 70 |
| Materials | 135 | 115 | 100 |
| Pre-Service Training | 95 | 85 | 70 |
| Total Acquisition Cost: | 510[a] | 440[a] | 385[a] |
| Operating Cost | | | |
| Facilities (rent, utilities, insurance, maintenance and replacement of furnishings, upkeep) | 310 | 265 | 230 |
| Personnel | 2,825 | 2,425 | 2,120 |
| Staff Development | 50 | 40 | 35 |
| Equipment (replacement/ maintenance) | 20 | 15 | 15 |
| Materials (replacement) | 25 | 25 | 20 |
| Intern Services (Hands-On, etc.) | 130 | 110 | 95 |
| Other Services (communications, reproduction) | 75 | 65 | 60 |
| Other Costs (travel, computer, consultants) | 65 | 55 | 50 |
| Total Operating Cost: | 3,500 | 3,000 | 2,625 |
| Total First Year Cost: | 4,010 | 3,440 | 3,010 |
| Subsequent Years' Cost: | 3,500 | 3,000 | 2,625 |

Note: All values are rounded to nearest $5. Does not include costs of program development, evaluation, or the demonstration contractor costs.

[a]Total per-intern costs are derived by dividing total cost by the appropriate number of interns. The result may not equal the sum of the individual item per-intern costs.

acquisition cost, on a per-intern basis, would range from $385 to $510. However, these per-intern values assume that the resource package will remain constant. At some point, of course, greater enrollments would necessitate hiring additional staff. The model calls for nine instructional staff persons (one supervisor, two specialists, and six instructors) implying a ratio of about 17 to 22 interns[3] to each member of the instructional staff. The point beyond an enrollment of 200 interns that would require new instructional staff to be hired is unknown. Similarly, how much below the 150 intern level the program could operate before a reduction in the number of staff could be achieved is also unknown. Clearly, with low enough enrollment figures, the package cost could decline substantially but, paradoxically, the per-intern cost could remain unchanged or it could be increased depending on the ratio of enrollment reductions to resource reductions. Increases in enrollment could lead to similar paradoxical effects.

## A Modest Comparison

The cost estimates presented and discussed thus far are intended to be representative of the comparable replication cost of the CIP. As such, they are based on the CIP model and the experiences of the four replication sites. As we discussed in the introductory section, direct cost comparisons of the CIP to other youth programs was not undertaken because of the lack of comparable data and on the advice of the study's Advisory Panel. Yet, it is clear that others will compare the CIP cost, at least informally, to the cost of public high schools and, perhaps, to other programs designed to serve at-risk youth. These comparisons could take the form of generalized statements such as one made in the original RFP for this study: "[A]lternative schools have higher completion rates, and therefore lower per-completer cost than approaches to improve traditional schools...." (p. 24).

[3] These numbers are not inconsistent with the CIP model's specifications of 15 interns per student in class since not all interns are in class each period.

Another example, drawn from a recent report by the Congressional Budget Office (CBO), offers a different generalization. In their considerations of alternatives to the Youth Initiative offered by former President Carter, analysts examined such possibilities as alternative and innovative educational programs for high school age youth. Based on an informal survey of school districts they state that, "The average cost per pupil of an alternative education program is estimated to be about 1.5 times that of a regular educational program" (CBO, 1980, p. 69). On a per-ADA basis, the average cost for current expenditures for public elementary and secondary day schools, in 1978-79, was $1,961 (NEA, 1980). However, that $1,961 figure tends to underestimate high school costs by pooling them with elementary school expenditures which, of course, tend to be lower. Moreover, the $1,961 figure represents an average over all fifty states and the District of Columbia. Using NEA data for the three states where the CIP demonstration effort occurred, the average per-pupil expenditure (again with elementary and secondary expenditures pooled) is $2,400.

Recall that our estimates of the comparable replication cost for operating the CIP ranged from $2,625 to $3,500 (Table 6). Clearly, the $2,625 for a project serving 200 interns is not half-again as expensive as the pooled value of $2,400. Of course, these cost values are not directly comparable but are indeed suggestive that an alternative program such as the CIP need not necessarily be vastly more expensive than regular high school programs.

It may well be that the estimates obtained by the Congressional Budget Office are indeed accurate with respect to operating an innovative, alternative program within the public school structure. As indicated in Section I of this report, we estimated the personnel cost of the CIP using the salary schedules in the four host communities. On that basis the operating cost for personnel would be $500,505 versus the $423,940 using the CIP salary schedules. The difference of $76,565 is within $200 of the total acquisition cost for the CIP and would translate to a $385 to $510 per-student

difference, depending on the size of the participant group. These data suggest that operating a program as intensive as the CIP in a public school environment could, indeed, be substantially more costly than the regular school program. However, when operated outside of the public school environment where lower wages can be paid, the cost differences are greatly reduced.

Since treatment of the CIP program cost on a per-intern or per-pupil basis can lead to some paradoxical results (see above), the present comparison of community-operated versus public-school-operated programs is modest indeed. It would appear that where the CIP, operated by an organization such as OIC, functions at or near the maximum enrollment levels specified in the demonstration model, the cost is reasonably comparable to that which could occur in a public-school milieu. Where the program operates at substantially less than the design size without concommitant reductions in the staffing pattern, the cost could, of course, be a good deal higher. The critical factors in determining which of these conditions would obtain at a particular locale are the incremental resource requirements at the locale, the managerial ingenuity of the program operator, and, most importantly, the success in attracting and recruiting sufficient numbers of qualified interns.

## A Second Modest Comparison

Within the broader domain of public policy decisions about youth employment (and education), academic or school-based programs do not stand alone. The preceding comparison examined, albeit modestly, the relative costs of community-based operation versus public-school-based operation of an alternative program. But the CIP is an education-based program whether it is operated within or outside the traditional public educational system. There are other programs designed to reduce the youth employment problem that do not rely so heavily on educational factors. By and large, these programs are not directly comparable to the CIP in method, although they are directed at similar, if not identical, populations. Among

these programs are such efforts as the Job Corps, Summer Youth, public service employment programs under CETA Title II-D and VI, and other CETA and non-CETA programs.

In their consideration of these programs, the analysts at the Congressional Budget Office reported cost data obtained from sources such as the U.S. Department of Labor. No information is given as to how these costs were estimated. It is likely that they represent total expenditures divided by the raw numbers of participants. Some of these per-participant costs, for one year, are as follows: Title II-D: $10,049; Summer Youth: $5,132; Job Corps: $13,383; YETP: $5,307; Title VI: $10,194. In the area of work experience programs, the CBO's report indicates a per-participant cost of $2,951 for in-school programs, $5,087 for summer programs, and $8,975 for out-of-school programs.

Although these costs, especially where cash transfers to participate are involved, cannot be directly compared to the CIP costs (particularly in the absence of detailed information on the programs, the populations served, and their outcomes), they do provide a dollar context within which the CIP cost can be better understood. It would appear on the surface that the CIP is cost-competitive with these other programs. In fact, by and large they are more expensive than the CIP.

Generally, then, the cost of the CIP appears to be reasonable both on its face and in comparison to other youth programs, regular public school programs, and similarly innovative programs that might be offered by a public school.

## IV. SUMMARY AND DISCUSSION

The preceding sections presented both the methodology and the results of the cost analysis of the Career Intern Program. The intent of this cost study was to provide credible estimates of the comparable replication cost of the CIP. The comparable replication cost is defined as the cost of all the resources that are needed for the acquisition and operation of the program. Standard values, averages over the four replication sites in this case, are used for pricing the resources employed in the program, most notably staff salaries. The resulting cost estimates permit equitable comparisons across programs and sites. As such, the resulting estimates are appropriate for use in the policy-making and planning contexts. The influence of extraneous variations in the price of resources or in the particular conditions of implementation at the various sites is substantially reduced by using this approach. Therefore, the future cost consequences of decisions regarding the CIP can be more clearly seen by policy makers.

### Program-Level Cost

The resource cost model used in this study generated estimates of the CIP cost at the program or site level as $76,775 for acquisition or start-up of the program and $524,875 for the yearly operating cost. Combining these two categories of the comparable replication cost yields an initial-year cost of $601,650. These estimates describe the cost implications of the CIP as specified in the dissemination model. Under that model the program serves 150-200 interns per year.

Personnel salaries and fringe benefits were found to account for 71% of the total first-year cost and 81% of the subsequent operating cost. The non-recurring cost of acquiring the program was found to account for just under 13% of the total first-year cost. The acquisition cost is equal to nearly 15% of an entire

year's operating cost. This result confirms the importance and value of separately considering the two categories of cost.

Intern-Level Cost

The major intent of this study was to estimate the comparable replication cost at the program or site level, in order to address the basic question of whether the cost of the CIP is reasonable. Although the scope and design of the overall study did not allow or call for the collection of resource-use data on an intern-by-intern basis, simple prorations of the program-level cost to a per-intern basis were investigated. Using three levels of program enrollment, we estimate that the per-intern operating cost ranges from $2,625 to $3,500 and that the per-intern acquisition cost ranges from $385 to $510. Extrapolations of these per-intern figures to include enrollment sizes outside the range (150-200 interns) specified in the CIP model are not straightforward. Reductions in the project size could increase per-intern cost, but also could be accompanied at some point by compensating reductions in the resource requirements of the program; similarly, increases in the enrollment beyond the model upper limit of 200 interns would decrease the per-intern resource availability to the point where additional resources, especially staff, would be required. The net effect on the per-intern cost would depend upon the ratio of changes in program size to changes in the resources used.

Based on the simple prorations of program cost to a per-intern basis, the CIP, when operating at or near its design level of efficiency, does not demonstrate an excessively high cost. Considering the intensiveness of this alternative program, a per-intern cost that ranges from $3,010 to $4,010 for the start-up year and from $2,625 to $3,500 on an operating basis appears to be reasonable. At the lowest end of the per-intern cost range ($2,625) the CIP is quite competitive with regular school programs which have, we estimate (using NEA data for the three states involved in the

demonstration study), average total current expenditure of $2,400 per student over both elementary and secondary programs.

The Comparisons

The lack of comparable data about other youth programs--in terms of the program descriptions, the populations served, and the outcomes--led us to abandon the original plan for performing cost-effectiveness comparisons between the CIP and other youth programs. Two simple comparisons of the CIP cost to alternatives were undertaken. The first compared the CIP cost to the cost of providing the same programmatic treatment within the public-school environment in the same four communities that participated in the demonstration.

Using prevailing salary schedules in the relevant public school system we estimate that the personnel cost would be $500,505 versus the $423,940 observed for the CIP. The difference in operating personnel cost essentially counterbalances the entire acquisition cost of the CIP. Hence, the CIP, as offered by OIC, is at least competitive on a total cost basis with a similarly intensive program run by the public school system. On a purely operational basis, the CIP may have a cost advantage when run by a community-based organization (CBO). Our analysis held all non-personnel costs constant, letting only the differential wage rates enter the comparison. In the event that real economies of scale and other efficiencies were present in a similar program operated in the public school system, the lower wage rates offered by a CBO would be likely to offset those savings leaving the CBO-operated program cost competitive with the school-system operated program. Were the public school unable to absorb much of the non-personnel cost into an existing structure, a cost advantage would very likely favor the CBO program.

In the second comparison, we used available data on the cost of some other youth programs. These programs, which differ from the CIP in that they are not education-based programs, are reported to have substantially higher per-participant costs. Since many of

these programs involve direct or indirect cash transfers to participants, however, they are not truly comparable to the CIP. As is the case with the first comparison, the comparative cost data are included for the purpose of establishing a dollar context within which the CIP cost estimates can be better understood. In neither case should the comparison be considered formal or definitive. They should serve only as one point of reference for considering the CIP.

## Conclusions

Based on this cost analysis of the CIP, we may conclude that the CIP, operated by OIC, is a cost-competitive program. As other reports in this series have amply demonstrated (Tallmadge & Yuen, 1981), the CIP can be exported to new sites with reasonable success; however, it is neither a simple program nor an easy one to implement. Considering the success observed and the events which detracted from that success in conjunction with the cost results, leads us to the conclusion that the CIP can be transported to new sites at a reasonable cost.

A final word of caution is in order here. As decisions are made regarding the future adoptions of the CIP at new locations, the cost estimates presented in this report can be used as guideposts. They should not, however, be the sole source of information used in either the decision-making or funding process. Our analyses provide estimates of the comparable replication cost which can, indeed, guide overall funding-level decisions at the federal level, but would need to be considered in the light of future levels of inflation in terms of its effects on the aggregate dollar amount. At the level of the program operator, he or she will need, as discussed in section 2, to consider his or her incremental resource requirements and their cost in the decision and budgetary deliberations, as well as the effects of inflation. Using the estimates as a starting point, national decision making and planning should be facilitated.

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