

Cost Benefit Analysis of a Training Program

« Alabama Experience »

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Aside from the recent work of Borus (1980) and Taggart (1981), there are very few studies that present a general overview of evaluation results. Borus (1980) examined the results of a large number of studies which Employed the evaluation yardstick of whether or not this type of training had increased the participants' earnings. His conclusions, while mixed, have given researchers a benchmark.

The main purpose of the present paper is to consider benefit—cost ratios, net present values of improved earnings, and payback periods as three measures of the economic impact of employment and training programs. To do this I will (1) examine the results of a large number of studies that have employed these approaches and (2) present the results of my own study using these approaches. My application focuses upon an analysis of CETA Title II, B, C in the state of Alabama for fiscal year 1980. The application will also focus exclusively on the public perspective rather than the individual program participant perspective. Only public economic costs and benefits will be considered.

PREVIOUS RESEARCH

Benefit—cost analysis attempts to bridge the gap between the conceptual models of welfare economics and social policies such as public employment and training programs. While there are problems in making this jump (Weisbrod and Helming, 1980), the technique does provide a measure of the programs and has been widely employed in evaluations of employment and training programs.

Table 1 presents estimates of benefit—cost ratios, net present values, and payback periods associated with various employment and training programs. Studies evaluating classroom training, on—the—Job training, and work experience are shown for both the pre—CETA (before 1974) and the post—CETA (1974 — 1982) periods. The service life (expected time period benefits will be in effect) and discount rates of future benefits will differ somewhat.

The reader should be cautioned that the method of calculating benefit/cost ratios varies by author. Some researchers include private benefits (increased income of the individual) as well as public benefits (increased tax revenue, reduced transfer payments), while others include only public benefits. Benefit—cost analysis does not take into account changes in the value of money due to varying inflation rates at different time periods. The discount rate and the net present value are affected by how closely the assumptions fit reality in terms of rates of inflation and real interest rates.

The excellent results in the Borus, Stromsdorfer, and Scott studies can be attributed to their methods of calculating benefits and costs as well as unique features of the programs they studied. In Borus' study the cost was very low since the programs were very short. Cost range from \$ 67 to \$ 138 depending on the type of training program. In Stromsdorfer's study the large present value may be attributed to the fact benefits were before tax and he used low discount rates and a long service life period. In Scott's study, benefits included net private benefits as well as the increase of tax payments. In Somers' and Stromsdorfer's study, benefits also included large private benefits during the 18 month post—training period. The findings from these studies can be summarized as follows :

1 — Benefits exceed the costs in classroom training. The ratio ranges from below one to more than twenty—to—one depending

upon the varying assumptions of the authors with regard to service life and discount rate.

2 — Benefits also exceed the costs in on—the—job training. Moreover, they exceed cost by a greater margin than in the case of classroom training. The researchers agree that investment in classroom training is not as effective as on—the—job training.

3 — The National Council of Employment policy found work experience to have the lowest benefit/cost ratio. The Denver prime sponsor also showed a longer payback period than is typically found for classroom and on—the—job training. However, some other work by the Seattle — Kings County prime sponsor and the Kansas prime sponsor found more favorable results for work experience as compared to classroom training. Given these widely varying results, generalizations regarding the effectiveness of work experience programs are hazardous.

METHOD

Data were collected for all program participants in Title II, B, C of CETA for all six Alabama prime sponsors during fiscal year 1980. Title II, B, C emphasizes employment in both the private and public sectors by providing funds for training, counseling, testing, and placement. Data reported in this paper were provided from standard statistical reports prepared by prime sponsors for the regional office of the U.S. Department of Labor.

The analysis will occur in three stages. First, the summary of program outcomes by participant and program characteristics will be examined. Second, total net benefits of the program and payback periods under various assumptions will be calculated. A twenty year service life is used in the calculations. This represents a compromise between the short and long service lives used in other studies. These calculations will be based upon costs associated with all participants who terminated from the program (positively or negatively). Obviously, including costs associated

with those still in the program at the time of our study would not be appropriate since these individuals are still receiving services and their outcomes are unknown.

Three categories of benefits will be determined : (1) increased tax receipts for all levels of government ; (2) reduced expenditures for unemployment insurance ; and (3) reduced expenditures for public assistance.

The third step will be a calculation of net present values and benefit/cost ratios. Net present value is the present value of benefits (increased tax payments + savings on unemployment insurance + savings in public assistance) minus the present value of expenditures associated with the program. Benefit/cost ratios measure the dollar return for each dollar invested by the government. If the ratio is more than one, the program pays for itself.

Results based upon several assumptions will be shown. A discount rates of 5%, 10%, and 15% for future earnings will be used. The earnings differential (pre-CETA minus post-CETA) will be examined on the basis of three assumptions: (1) it declines at a 10% annual rate ; (2) it remains constant ; and (3) it increases at a 10% annual rate.

It should be emphasized that the analysis in this paper is extremely conservative in that it only measures benefits which can be quantified in dollar terms. Benefits were calculated only for those participants who were placed in jobs. Other social and economic benefits were not included in the analysis. For Example, Alabama prime sponsors had a rate of return to school of 29% of their total terminations (3401 participants). The long-run increase in Gross National product and tax collections resulting from these participants, who return to school as a result of CETA and then enter the labor market, is not included in the analysis. Nor is the increased satis-

faction with social institutions and consequent reduction in anti-social activity measured in the calculations of the benefits. Family life, health, housing, and race relations may also have improved without being reflected in the analysis.

The research is also conservative in another sense. As compared to other Southeastern states in Region IV, Alabama had a lower placement rate (29% vs. 45%) and a higher cost per placement (\$ 7,833 vs. \$ 5,375) (Bain and Fottler, 1981). This may reflect both a higher unemployment rate in the state, as well as a participant mix with a higher than average proportion of difficult to place teenagers. The consequent lower placement rates will have a negative effect on payback periods, net present values, and benefit/cost ratios. If this type of intensive analysis were performed in one of the states with a higher placement rate, the evaluation of CETA would be more favorable.

RESULTS

Participant and Program Characteristics

The participant distribution in Table 2 shows that 56 percent of the program participants were female, 53 percent were black, 41 percent were teenagers, and 29 percent were school dropouts. Placement rates were high among females, whites, offenders, handicapped, older participants, high school graduates, non-students (regardless of former education), the unemployed, those receiving unemployment compensation, and veterans. Alternatively, low placement rates were evident among blacks, youth, students, and those receiving public assistance.

The reasons for these differences were not obvious and cannot be determined from the data alone. Nevertheless, certain reasonable explanations can be advanced. Low placement rates among blacks may be due to discrimination. Youth and students may stay in school or return to school. This is a positive termin-

ation, but not a placement. Moreover, employers may be less willing to employ youth rather than old people. Finally, there may also be discrimination against hiring welfare recipients due to real or perceived problems of motivation as compared to unemployment compensation recipients who have (presumably) held a regular job in the past. Whatever the real reasons for these differences, it is apparent that these subgroups are less attractive to employers than those subgroups identified earlier. Those prime sponsors with larger proportions of such individuals will therefore show poorer results based upon the usual performance standards.

Table 2 also shows the types of training engaged in by Alabama CETA participants under Title II B, C and a variety of outcome measures for each type of training. Enrollees could receive classroom training, on—the—job training, or work experience. The largest number of participants received classroom training for occupational skills while the smallest number received on—the—job training. However, placement rates are highest for on-the-job training and lowest for work experience and classroom training in other than occupational skills. These results are not surprising since those in on—the—job training are already on the job, while those in classroom training are not. Moreover, classroom training which does not emphasize occupational skills may not motivate participants enough to complete the program. Such results are consistent with the results of earlier studies identified in Table 1.

The basis for calculating the benefits of our employment and training program is some notion of the increase in wages associated with the program together with projections of such increases over time. Those CETA participants who were placed in jobs in Alabama had a mean pre-CETA wage of \$ 2.03 per hour compared to \$ 3.07 after placement. This increase of \$ 1.04 per hour amounted to 51 percent. On an annual basis this is an increase of \$ 2,164 (from \$ 4,222 to \$ 6,386) if the individual worked full-time for a full year.

However, the typical CETA participant is not expected to work a full year after initial placement in a job. Nor was the individual employed for a full year prior to entry into CETA. Previous research has indicated that prior to entry into CETA, the typical participant has worked about 52 percent of the year, while after CETA this rate increases to 67 percent (Westat, 1981a, b). Given that the normal full-time workweek is forty hours, the average participant increased his or her income from \$ 2,296 to \$4,278 per year for an increase of \$ 2,082 or 91.2 percent. For the total group of 3,392 CETA placements in Alabama, the increase was \$ 7.06 million.

This figure together with the participant characteristics of those placed on jobs, provided a basis for projecting economic benefits over a twenty year period. Data provided in other research (Danziger, Haveman, and Plotnick, 1978; U.S. President, 1980; and Westat, 1981 a, b) was also used in estimating values (i.e., weeks of employment pre and post-CETA) which were not available in the statistical reports provided by prime sponsors.

Payback Period :

The payback period costs tell us how long it will take to earn back the investment made in CETA participants. It is the total benefits divided by the costs, (i.e., \$ 17.9 million). Before the payback period can be calculated, the total net benefits need to be determined. The total benefits include the increase in total tax payments to government, savings in unemployment insurance payments, and savings in public assistance payments as indicated by Table 3. Three assumptions regarding the time trend of the original earnings gain are shown. These assumptions result in different amount of total benefits ranging from \$31 to \$ 44 million over a twenty year period.

Table 3 also shows the payback period calculated under a variety of assumptions regarding time trends of original earnings

gains. The payback period ranged from 7.2 to 8.7 years. Using the most moderate assumptions where there is no increase or decrease in initial benefits over time, the payback period is eight years. This payback period is quite reasonable even in light of today's high inflation and high interest rates.

Net Present Value and Benefit/Cost Ratios :

Table 4. shows the present values and net present values for all benefits, over a twenty year period, under three assumptions concerning the discount rate and changes in the earnings differential. Obviously, the results vary a great deal depending upon the discount rate and the earnings assumption used. The net present values (present value of benefits - present value of costs) of an earnings differential which remains constant and a 10 percent discount rate becomes positive after about sixteen years. The present value of the costs is \$ 17.93 million.

Table 4 also shows benefit/cost ratios under the same set of assumptions. Except when a discount rate of 15 percent is applied, all of the benefit/cost ratios become more than one, between eight and nineteen years. Under the most reasonable assumptions of a constant earnings differential and a 10 percent discount rate, the benefit/cost ratio becomes positive after about 16 years.

By comparing our results in Table 4. with the Findings in other studies in Table 1, CETA prime sponsors in Alabama appear to be less effective than CETA prime sponsors in other areas or in programs offered before 1973. Under the assumption of a constant earnings differential, the payback period was 8 years. By the end of these 8 years, all expenditures will be covered as a result of the increase in tax payments, savings of public assistance, and savings in unemployment insurance. Previous studies typically showed shorter payback periods. The benefit/cost ratio, under the assumptions of 10% discount rate, 10 years service life, and a constant earnings differential, was less than one. Again, all

pre-CETA programs with similar assumptions had benefit/cost ratios greater than one except for Nowak's study.

The comparison with pre-CETA programs in Table 1 may not be relevant for many reasons. First, these studies were conducted under widely varying assumptions. Second, and more important, pre-CETA programs were operating under favored economic conditions. Between 1966 and 1973 (pre-CETA period) the rate of unemployment averaged 4.5%. From 1973 to 1977 the unemployment rate averaged 7.2% (Anderson, 1980). Unemployment was even higher after 1977 and averaged almost 8 percent for the 1980—1981 period (U. S. President, 1982). Given the fact that the unemployment rate has a negative impact on program effectiveness as measured by placement and earnings (Ripley, 1978—1979; Borus and Prescott, 1974), the comparison between pre — CETA and post — CETA programs may not be legitimate.

Table 1, however, includes four different studies that dealt essentially with CETA programs conducted in recent years. These studies were conducted by the Broward County, Florida prime sponsor, the Denver prime sponsor, the Seattle—King County prime sponsor, and the Kansas balance—of—state prime sponsor. A comparison between our Alabama study and these four studies is relevant for 4 reasons:

(1) They have been conducted over the same time period. As a matter of fact, the Broward and Denver Studies cover FY 1980 exactly as in our Alabama study, Kansas and Seattle-King cover FY 1979.

(2) All of the studies, including Alabama had used the 10% discount rate, 10 years service life, and constant earnings differential.

(3) All of them conducted the study from the governmental point of view.

(4) All of them reported results for Title II B/C overall.

The comparison with these five studies indicated that the Alabama prime sponsor programs were less effective. The payback period in the Alabama study was 8 years. On the contrary, the payback period in any of the other four studies never exceeded 4 years. The benefit/cost ratio and net present value also gave the same result. The benefit/cost ratio for Title II B/C in Alabama was always less than one with a negative NPV under the above stated assumptions. For the other studies, the benefit/cost ratio was greater than one with positive net present values.

CONCLUSIONS AND IMPLICATIONS

The results reported here and in other recent studies that employed benefit—cost analysis provide no basis for support of drastic cutbacks in employment and training programs. However, redirection of such programs in terms of training mix and participant mix does seem to be in order. The CETA program in Alabama could be evaluated as moderately successful even under our conservative assumptions. Moreover, if this analysis had been done in a state with a high (and more representative) placement rate, the results would have been more positive. z

The payback period calculation indicated that the program would pay for itself in about eight years. When discounted cash flow concepts are introduced, the breakeven point for net present value is sixteen years using a 10 percent discount rate, and a constant earning differential (pre and post-CETA). The benefit/cost ratio also becomes 1.0 at about sixteen years under the same set of assumptions.

The relatively poor performance of CETA in Alabama may be attributed to higher unemployment rates and a less favorable participant mix. The unemployment rate in Alabama averaged 9.0% in fiscal year 1980. The rate of unemployment however, averaged 5.6% in the four other service areas studied (U.S. Depa-

Department of Labor, 1982). These rates were 6.9%, 5.9%, 5.7% and 4.0% for Broward County, Denver, Seattle—King County, and the Kansas service areas respectively (U.S. Department of Labor, 1982).

The high percentage of participants under 22 years (54%), public assistance recipients (22%), and non—whites (54%) were associated with low placement in our study of Alabama. Alabama has larger proportions of participants with these characteristics than do the other prime sponsors (average percentages were 47% under 22, 14% public assistance recipients, and 42% non-white). One should therefore not be surprised to find a lower level of effectiveness in Alabama compared to other primes. More favorable results could have been achieved if Alabama prime sponsors had concentrated their efforts on participants (i.e., whites, females, offenders, handicapped, older participants, non-students, high school graduates the unemployed, those receiving unemployment compensation, and veterans) and programs (i.e., on—the—job training) with higher placement rates.

However, this raises an interesting dilemma which faces both policymakers and prime sponsors. Certain target groups were identified in the CETA legislation (blacks, AFDC recipients, youth, etc.). To the extent that these subgroups show poorer results than others, prime sponsors who enroll large percentage from such subgroups are evaluated negatively based on the traditional evaluation criteria. There appears to be a tradeoff between serving those most in need (i.e., the target groups) and good evaluation outcomes. A decision needs to be made concerning whether service to the target groups or economic returns are to be the primary criteria for evaluating employment and training programs.

Present performance standards (such as those used in our study) are inadequate in terms of prime sponsor acceptance and their relevance to certain targeted subgroups such as youth. Either

the program designs or the performance criteria themselves should be changed. The development of more realistic and relevant performance standards would allow the federal government to use such standards as a basis for funding prime sponsors. It would also allow the federal government to focus on **outcomes** rather than **processes**. This would encourage maximum local discretion for the prime sponsor in terms of such decisions as the selection of participants and subcontractors. Local prime sponsors would then have the authority necessary for them to make decisions which are compatible with their responsibility to enhance program performance. Such an approach would also tend to reduce unnecessary paperwork.

Irrespective of whether service or economic returns are to be the major criteria for evaluating employment and training programs, program administrators still have to face the dilemma of whether to concentrate upon those with a high probability of success (where success is based upon tests of work motivation, references, previous work history, and interviews) or to serve those who may have already had little success in the usual labor market channels.

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REFERENCES

Anderson, Bernard E. « How Much Did the Programs Help Minorities and Youth. » In **Employing the Unemployed**, pp. 41-59. Edited by Eli Ginzberg. New York : Basic Books, Inc., 1980.

Ashenfelter, Orley. « Estimating the Effect of Training Programs on Earnings, » **The Review of Economics and Statistics LX** (February 1978), 47—57.

Bain, Trevor and Myron D. Fottler. **Determinants of CETA Prime Sponsor Performance**. Human Resources Institute, University of Alabama, 1981.

Barsby, Steve I. **Cost-Benefit Analysis and Manpower Programs**. Toronto : Lexington Books, 1972.

Borus, Michael E. « A Benefit-Cost Analysis of the Economic Effectiveness of Retraining the Unemployed, » **Yale Economic Essays IV** (Fall 1964), 371—429.

———. « Assessing the Impact of Training Programs. » In Eli Ginzberg, **Employing the Unemployed**. New York : Basic Books, Inc., 1980, 25—40.

———, John P. Brennan, and Sidney Rosen. « A Benefit-Cost Analysis of the Neighborhood Youth Corps : The Out-of-School Program in Indiana, » **Journal of Human Resources. VI** (Spring 1970), 139 — 159.

Borus, Michael E. and Edward C. Prescott. « The Effectiveness of MDTA Institutional Training Over Time and in Periods of High Unemployment. » **American Statistical Association 1973 Proceedings of Business and Economic Statistics Section**. Washington, D. C. : American Statistical Association, 1974.

Broward Employment and Training Administration. « CETA as Economic Investment, » **Information Exchange Report** (Washington, D. C. : United States Conference of Mayors Office of Urban Employment and Education, 1981), pp. 2—8.

Danziger, Sheldon; Robert Haveman; and Robert Plotnick. « How Income Transfer Programs Affect Work, Savings, and the Income Distribution : A Critical View, » **Journal Of Economic Literature**, XIX (September 1981), 975—1028.

Denver Employment and Training Administration. « Assessing Program Effectiveness, » **Information Exchange Report** (Washington, D. C. : United States Conference Mayors Office Of Urban Employment and Education, 1981), pp. 3 — 6.

Hardin, Einar and Michael E. Borus. « Benefits and Costs Of MDTA—ARA Retraining. » **Industrial Relations XI** (May 1972), 115 — 114.

Kansas Balance - Of - State CETA. **Impact Evaluation System for Kansas Balance - of - State CETA**. Prepared by Judith C. Sardo and David E. Shulenburger (Kansas : Human Resources Program, University of Kansas, 1981), pp. 2 and 15.

Kaufman, Jacob J., Tah—wei Hu, Maw Lin Lee, and Ernst W. Stromsdorfer, **Cost—Effectiveness Study of Vocational Education : A Comparison of Vocational and Non—Vocational Education in Secondary Schools**. Pennsylvania : Institute for Research on Human Resources, Pennsylvania State University 1969, 147 — 196.

Marshall, Ray. **Some Reflections on Employment and Training Policies**, Paper delivered at the Human Resources Institute, University of Alabama, July 23, 1982.

Mirengoff, William, Lester Rindler, Harry Greenspan, and Charles Harris, **CETA : Accomplishments, Problems, Solution-**

Washington, D. C. : Bureau of Social Science Research, Inc., 1981, xv-xvi.

National Council on Employment Policy of CETA's Results and Their Implication. **Daily Labor Report**. 9—22—1981. No. 153 D—1.

Nowak, Laura S. «Analysis of New York City's Manpower Training and Placement Programs,» **Nebraska Journal of Economics and Business** XVI (Spring 1977), 27—36.

Perry, Charles R., Richard L. Rowan, Bernard E. Anderson and Herbert R. Northrup. **The Impact of Government Manpower Programs**. Pennsylvania : University of Pennsylvania, 1975, 158.

Ripley, Randall and Associates. **CETA Prime Sponsor Management Decisions and Program Goal Achievements**, R & D Monograph 56. Washington, D.C. : Government Printing Office, 1978.

Ripley, Randall and Associates. **Employment and Training Administration. Area-wide Planning in CETA**, R & D Monograph 74. Washington, D.C. : Government Printing Office, 1979.

Scott, Loren C. « The Economic Effectiveness of On-the-Job Training : the Experience of the Bureau of Indian Affairs in Oklahoma, **Industrial and Labor Relations Review**, XXIII ((January 1970)), 220 — 236.

Seattle Consortium. **Follow-up Study of the Post-Training Labor Market : Experience of Former Title II—B Participants**. Prepared by Osoro and Associates, 1981, pp. 127—134.

Sewell, D. O. **Training the Poor : A Benefit—Cost Analysis of Manpower Programs in the U.S. Antipoverty Program**. Ontario : Industrial Relations Center, Queen's University, 1971, 89—132.

Somers, Gerald G. and Ernst W. Stromsdorfer, « A Benefit—Cost Analysis of Manpower Retraining, » **Proceedings of the Seventeenth Annual Meeting of the Industrial Relations Research Association, 1964**), 172 — 185.

Stromsdorfer, Ernst W. « Estimation of Economic Success in Retraining the Unemployed : The West Virginia Experience, » **Journal of Human Resources, III** (Spring 1968) pp. 173 — 158.

Stromsdorfer, Ernst W. and George Farkas (eds), **Evaluation Studies : Review Annual, Volume 5. Beverly Hills, California :** Sage Publications, 1980.

Taggart, Robert. **An Assessment of Training and Remediation Strategies.** Kalamazoo, Michigan : W. E. Upjohn Institute, 1981, 278 — 279.

U. S. Department of Labor, **CETA Grant Review Guidelines, 1982.**

U.S. President, **Employment and Training Report of the President.** (Washington : U. S. Government Printing Office, 1982).

Weisbrod, Burton A. and Margaret Helming, **What Benefit — Cost Analysis Can and Cannot Do : The Case of Treating the Mentally,** unpublished manuscript, 1980.

Westat, Inc., **Continuous Longitudinal Manpower Survey : Experience in the First Two Post—Program Years, with Pre/Post Comparisons, for Terminates who Entered CETA during January—June, 1975. Follow—up Report No. 3** (January 1981), pp. 5—11.

Westat, Inc. **Continuous Longitudinal Manpower Survey : Impact of 1977 Earnings of New FY 1976 CETA Enrollees in Selected Program Activities. Net Impact Report No. 1** (March 1981). Appendix B.P. B—11.

Youchum, Gilbert. « Societal Benefits and Costs of Manpower Training in Appalachia, » **Growth and Change, VIII** (April 1977), 38 — 42.

TABLE 2

Participant Mix, Program Mix, and Placement Rates

Participant Mix :	Participation Distribution		Placement Rate ¹
	Number	%	
Total Participants	17,549	100	29
By Sex			
Male	7,743	44	27
Female	9,806	56	30
By Race			
White	8,079	46	37
Black	9,382	53	23
Others ²	88	1	51
Age			
14 — 21	9,265	53	19
22 — 24	6,715	38	47
45 and over	1,569	9	90
Education			
School Dropout	5,116	29	37
Student (High School or Less)	3,916	22	1
High School Graduate or equiv. (no post-H.S.)	7,070	40	46
Post-High School Attendee	1,447	9	35
Labor Market Status			
In — School	4,064	23	1
Underemployed	426	3	57
Unemployed	11,934	68	43
Other	1,125	6	33

Table 2 — Continued

Participant Mix :	Participation Distribution		Placement Rate
	Number	%	
Other Characteristics			
Veteran	1,058	6	50
Handicapped	1,053	5	43
Offender	645	4	43
Received Public Assistance	3,783	22	19
Unemployment Compensation Claimant	913	5	57
Program Mix :			
Classroom Training :			
Total Participants	8,874	53	39
Occupational	6,978	42	43
Other	1,796	11	26
On - the - Job Training	1,290	8	57
Work Experience :			
In — School	3,115	19	1
Others	3,373	20	31

(1) Placement Rate = Total Placements/Total Termination.

(2) Hispanic, American Indians, and Asians.

Sources : Quarterly Summary of Participant Characteristics, and The Annual Report of Detailed Characteristics.

(1) Net Present Value are expressed in millions. Annual in parentheses are negative.

TABLE 3

Total Benefits and Payback Periods Under
 Different Earnings Trend Assumptions
 (Cost Basis = \$ 17,934,361)

Period of impact	Increase in tax payments	Saving of unemployment insurance	Saving of public assistance	Total benefits	Payback Period
5 years	\$ 1.06	\$ 3.08	\$ 10.33	\$ 14.47	8.7 years
10 years	1.68	4.47	12.98	19.13	
20 years	2.27	8.51	20.66	31.44	
Earnings differential is constant :					
5 years	(0.88)	1.28	10.33	14.69	8.1 years
10 years	(4.00)	2.56	12.98	20.01	7.3 years
20 years		5.12	20.66	34.30	8.5 years
Earnings differential increases at 10% annual rate :					
5 years	1.55	3.08	10.33	14.96	
10 years	4.11	4.47	12.98	21.56	
20 years	14.72	8.51	20.66	43.89	7.2 years

(1) All benefits are in millions.

and Discount Rate Assumptions:
 Benefit/Cost Ratio Under Different Earnings Trend
 Net Present Value of All Benefits and

TABLE 4
 Net Present Value of All Benefits and
 Benefit/Cost Ratios Under Different Earning Trend
 and Discount Rate Assumptions¹

Period of impact	Discount rate 5%		Discount rate 10%		Discount rate 15%		
	Net Present Value	B/C Ratio	Net Present Value	R/O Ratio	Net Present Value	B/C Ratio	
Earnings differential decreases at 10% :	5 years	(4.00)	.78	(4.54)	.75	(4.88)	.73
	10 years	(0.88)	.95	(2.40)	.87	(3.40)	.81
	20 years	4.95	1.28	0.37	1.02	(1.98)	.89
	B/C ratio = 1 at 11.5 years			18.7 years		32.2 years	
Earnings differential is constant	5 years	(3.80)	.97	(4.34)	.76	(4.78)	.73
	10 years	(0.18)	.99	(1.90)	.89	(3.01)	.83
	20 years	6.50	1.36	1.33	1.07	(1.34)	.92
	B/C ratio = 1 at 10.2 years			16.1 years		28.4 years	
Earnings differential increases at 10%	5 years	(3.58)	.80	(4.18)	.77	(4.60)	.74
	10 years	0.87	1.05	(1.18)	.93	(2.49)	.86
	20 years	11.24	1.63	3.79	1.21	0.05	1.06
	B/C ratio = 1 at 8.0 years			12.5 years		17.0 years	

(1) Net present values are expressed in millions. Number in parentheses are negative.

**B/C Ratios, NPV,
for Previous Studies
OJT, and Work**

	Service Life (Years)	Discount Rate (%)	B/C Ratios	NPV (\$)	Payback Period (Years)
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Classroom. Training

Pre - CETA					
Barsby	10	5	1.1		
	30	5	4.2		
	10	10	.8		
Borus	30	10	2.2		
	State Sponsored Programs				
	10	5	25.3		
Federally Sponsored Programs					
	10	5	22.1		
Hardin and Borus	10	10	1.21		
Kaufman, Hu, Lin Lee, and Stromsdorfer					
City A	6	6	1.30		
	6	10	1.10		
City C	6	6	2.90		
	6	10	2.30		
Nowak	5	5	.39	(1980)	
	10	5	.69	(991)	
	5	10	.34	(2136)	
	10	10	.55	(1415)	
Perry, Rowan, Anderson, and Northrup					
	10	10	2.00		

**and Payback Periods
of Classroom Training,
Experience Programs (1)**

	Service Life (Years)	Discount Rate (%)	B/C ⁽²⁾ Ratios	NPV (\$)	Paybac Period (Years)
On-the-Job Training					
Pre-CETA					
*Nowak	5	5	.93	(252)	
	10	5	1.67	2181	
	5	10	.82	(579)	
	10	10	1.33	1074	
*Perry, Rowan, Anderrson, and Northrup	10	10	3.0		
*Scott	5	6	8.7		
	10	6	14.8		
	5	10	7.6		
	10	10	12.4		1.0
*Sewell					
Male	30	10	3.3		
Female	30	10	6.8		
*Yochum	10	5	3.8		
	30	5	7.1		
	10	10	3.1		
	30	10	4.5		
Post - CETA					
*Denver prime Sponsor					3.5
*Kansas Prime Sponsor	10	10	.60	(387)	7.1
*National Council of Em- ployment Policy	39-43	15	.72		

	Service Live (Years)	Discount Rate (%)	B/C ⁽²⁾ Ratios	NPV (\$)	Payback Period (Years)
Sewell					
Male (2)	30	10	1.7		
Somers and Stromsdorder	1.5	10		3230	.7
Stromsdorder					
Male	30-35	4		14,300	
	30-35	6		11,400	1.1
Female	30-35	4		10,8000	
	30-35	6		6,300	1.6
Post - CETA.					
Denver Prime Sponsor					3.0
Kansas Prime Sponsor	10	10	1.9	190	2.0
National Council of Employment Policy	39-43	15	.6		
Seattle-King County					4.5

- (1) See reference for Full Title of the Study.
- (2) All Studies which distinguish between males and Females are
- (3) All are Post - CETA.

Post - CETA

Denver prime sponsor

	(Years) Live Service	(%) Rate Discount	Ratios B/C	(\$) NVP	(Years) Period Payback
Seattle - King Conuty					2.7
Work - Experience (3)					
Denver Prime Sponsor					4.1
Kansas Prime Sponsor	10	10	2.4	178	1.6
National Council of Employ- ment Policy	39-43	15	.5		
Seattle - King County					38
Overall Title II B/C of CETA (3)					
Broward, Florida P.S.	10	10	2.0	3233	1.5
Denver P.S.					2.5
Kansas P.S.	10	10	1.4	153	2.9
Seattle - King County	10	10	2.8	26,377	4.0

indicated in the table.