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Long-Term Follow-Up and Benefit–Cost Analysis of the Jobs Program: A Preventive Intervention for the Unemployed

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Results are reported from a 2½ year follow-up of respondents who participated in a randomized field experiment that included the Jobs Program, a preventive intervention for unemployed persons. The intervention was intended to prevent poor mental health and loss of motivation to seek reemployment and to promote high-quality reemployment. The results of the long-term follow-up were consistent with those found 1 and 4 months after intervention (Caplan, Vinokur, Price, & van Ryn, 1989). The results demonstrate the continued beneficial effects of the intervention on monthly earnings, level of employment, and episodes of employer and job changes. These findings are supported by a benefit–cost analysis, which demonstrates large net benefits of the intervention to the participants and to the federal and state government programs that supported the project.

In times of rapid economic slowdown, unemployment can become a major social problem. Even during times of stable economic growth, 4% to 5% of all workers are still looking for a job. Moreover, rates of unemployment for disadvantaged groups in some regions of the country, and in some local areas, are consistently high regardless of overall national unemployment rates.

Epidemiological studies have documented that unemployment produces significant deterioration in mental health and well being (e.g., Catalano & Dooley, 1977; Dew, Bromet, & Schulberg, 1987; Kessler, Turner, & House, 1988, 1989; Warr, 1983) as well as contributing to other adverse effects, such as poor physical health (Cobb & Kasl, 1977), suicide (Brodsky, 1977), and child abuse (Justice & Duncan, 1977). However, it has been repeatedly shown that reemployment reverses the adverse mental health effects that are caused by unemployment (Kessler et al., 1988, 1989; Vinokur, Caplan, & Williams, 1987). That is, when unemployed persons regain employment, they also regain their previous levels of mental health and well being. For most people, unemployment is an episodic phenomenon but with the potential of being recurrent.[1] Furthermore, Kessler et al. (1989) found the probability of reemployment to be unrelated to baseline emotional functioning. Thus, the episodic nature of the effects of unemployment suggests that a primary long-term goal of an intervention to prevent deterioration of mental health due to unemployment should focus on providing participants with personal resources and skills that promote reemployment and that reduce the number of episodes of unemployment or the length of unemployment when it occurs.

However, to increase the likelihood of early reemployment, several intermediate objectives must be met. These objectives include enhancing job-seeking skills and motivation while simultaneously addressing the various negative affective states that contribute to deterioration in mental health. A program in which unemployed workers are trained in job-seeking skills needs to enhance job seekers' awareness of the skills they already possess and to build their confidence and self-efficacy (Bandura, 1977) in their ability to engage in effective job-seeking behavior. Such a program also needs to address the motivational obstacles that result from disappointments in the job-seeking process. In other words, the program must reinforce participants' ability to persist in the face of setbacks (Brownell, Marlatt, Lichtenstein, & Wilson, 1986; Janis, 1983; Marlatt & Gordon, 1985; Meichenbaum, 1985). Thus, a successful intervention should, in the short run, enhance job-seeking confidence, increase motivation to find a new job, and improve mental health. In the long run, a truly successful preventive intervention should enable participants to work more hours per week, or to be paid at a higher rate than nonparticipants, or both.

On the basis of these principles, we designed a preventive intervention for unemployed persons and tested it in a randomized field experiment. In our short-term follow-up evaluations 1 and 4 months after the intervention, persons in the experimental condition had obtained higher quality reemployment in terms of earnings and job satisfaction or had greater job-seeking self-efficacy and motivation if they were still unemployed. Furthermore, we found significantly lower levels of depressive symptomatology among those who participated in the intervention than among their counterparts in the control group (for details see Caplan, Vinokur, Price, & van Ryn, 1989; Vinokur, Price, & Caplan, in press).

Given the demonstrated short-term effects of the interven-

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[1] During the time our study was conducted, the U.S. Bureau of Labor Statistics (1986) reported that 50% of the people who lose a job become reemployed within 7.9 weeks.

tion, there is a need to examine the extent to which the effects persist 2 or more years after the intervention. In addition, even if the long-term benefits of the intervention are established, there remains the question of whether these benefits outweigh the various costs of such a program for unemployed persons. A detailed examination of the relations of the benefits to the costs should also take into account the gains and losses of the various actors involved: the unemployed participants and the public (as represented by the federal and state governments that often fund such programs). Benefit–cost analysis can provide critical information for policy makers considering this issue.

There is one final issue, even deeper. Suppose it can be shown that an intervention does more than pay for itself, either because participants earn more or are unemployed less. Are these gains being realized at the expense of others who suffer lower wages or more unemployment? The general answer of economists is no, though it is very hard to get conclusive evidence. In the case of unemployment, an intervention that gets people back to work faster enhances the efficiency of the labor market and should add to the total number of jobs. Moreover, if workers become more productive and get paid more because they spend less time unemployed, it is hard to see how that would lower the productivity of other workers—There are as many reasons to believe that other workers would earn more. But whatever the case, it is very difficult to measure these "general equilibrium" effects, and we follow others in not even making the attempt.

Hence, in this article, we examine the results of our long-term follow-up of the intervention effects and then subject the intervention outcomes to a benefit–cost analysis. The latter analysis was conducted from the point of view of the intervention participants as well as of the public (who provide the financial support for such a program), but it does not deal with the general equilibrium effects of the program.

Method

Detailed information about sample recruitment and characteristics, the intervention process and its assessment, and the two short-term follow-ups were included in our earlier reports (Caplan et al., 1989; Vinokur et al., in press). Briefly, 1,087 unemployed respondents were recruited from the Michigan Employment Security Commission offices to participate in this study. Of these respondents, 928 were randomly placed into a control or an experimental condition. The treatment consisted of eight 3-hr sessions of the intervention. Out of the 606 respondents in the experimental condition, 298 did not show up for the intervention. However, to preserve the integrity of the randomization and the experimental design, we continued to include these nonparticipants in the experimental condition. Self-administered pretest (T1) questionnaires were obtained from the respondents before the intervention, and follow-up questionnaires were obtained 1 month (T2), 4 months (T3), and 32 months (T4) after the intervention.

The T4 questionnaire included three additional questions to assess employment history. The first question inquired about the percentage of time the respondent had been working for at least 30 hrs per week since last filling out the questionnaire (over 2½ years previously). The exact month and year in which the respondent had filled out the previous follow-up questionnaire was provided as part of the question. The second and third questions requested the respondents to report the number of different employers they had worked for and the number of job changes they had experienced since the last time they completed the follow-up questionnaire.

Results

Response Rate

At T4, the long-term follow-up, we were able to collect data from 94% of the respondents who filled out the questionnaire in the prior T3 follow-up about 28 months earlier. Thus, since T1, more than 2½ years earlier, responses have been received from 76% of the original sample of 1,087 respondents. There were no significant interaction effects between experimental condition (experimental vs. control) and respondent status (responders vs. nonresponders) on any of the demographic, mental health, or job-search variables at pretest.

Intervention Effects

The long-term effects of the intervention (measured at T4) are presented in Table 1 according to the original random assignment, first for all the respondents (left side of the table) and then for the reemployed respondents earning at least $1.00 per month (right side of the table).

The results for all respondents, regardless of current employment status, did not reveal any single significant effect of the intervention. Further examination of current and past employment variables was conducted with a multivariate analysis of variance (MANOVA) on earnings per month, percentage of time working over 30 hr per week, and number of employers and job changes for the previous 28 months (since T3). The MANOVA results for all respondents failed to indicate a significant intervention effect, $F(4, 568) = 1.29$.

It appears that the intervention did not have a statistically significant effect on the entire sample of respondents. However, it must be noted that our analyses on the entire sample included a subgroup consisting of 18.5% of the respondents with $0 earnings. These analyses were based on a pronounced bimodal distribution of earnings, which violated the assumption of normality for the F tests presented in Table 1, and which included those with $0 earning as an extreme mode. Because the subgroup of those with no earnings was equally distributed between the experimental and the control group, it may be more meaningful to focus on the reemployed respondents who earned at least some money from paid work. Furthermore, analyses conducted only on the respondents with some income are based on an income distribution that is more normally distributed and thus is more appropriate for the tests of statistical significance. (An additional statistical technique, TOBIT, that corrected for the bias produced by those who did not earn money and were scored 0 was used on the earning data to compare the per month earnings of the groups. The detailed results based on this technique are reported later with the benefit–cost analyses.)

Analyses of Respondents Who Earned at Least $1

As can readily be seen in the right portion of Table 1, the findings for the subgroup of respondents who earned money demonstrate that the intervention had two statistically significant effects. The experimental-group respondents reported working 30 or more hours per week a higher proportion of the time, $F(1, 508) = 6.24$, $p < .05$, and reported having fewer changes in employers, $F(1, 473) = 7.33$, $p < .01$.

Table 1
Means, Differences, and F Tests for Adjusted Differences in Reemployment Variables Between Full Experimental and Control Groups

	All respondents					Respondents earning $1.00 or more				
	Condition					Condition				
Outcome variable	Experimental	Control	Difference	*F*	*df*	Experimental	Control	Difference	*F*	*df*
Current $ earning per month	1,306	1,234	72	0.78	1, 664	1,628	1,492	136	3.04	1, 534
% time working over 30 hrs/week in the past 28 months	71.20	68.30	2.90	1.25	1, 661	80.60	74.70	5.90*	6.24	1, 508
No. of employers in past 28 months	1.80	2.15	−0.35	3.50	1, 612	1.75	2.32	−0.57**	7.33	1, 473
No. of job changes in past 28 months	0.67	0.74	−0.07	0.59	1, 681	0.63	0.74	−0.11	1.12	1, 523

Note. Differences were adjusted for age, sex, education, and family income at pretest.
* $p < .05$. ** $p < .01$.

MANOVAs were performed for these respondents in a manner identical to those described above for all respondents. The MANOVA that was performed for the variables capturing current and past employment status yielded statistically significant effects of the intervention; respondents in the experimental group had superior employment history and status, $F(4, 457) = 3.15$, $p < .05$.

Benefit–Cost Analysis

A benefit–cost analysis of the intervention was performed with standard economic guidelines (Gramlich, 1990). The analysis was conducted from the perspectives of individuals taking part in the intervention, the federal government (which funded the project), and the state of Michigan (whose unemployed persons were recruited to become participants through its employment offices).

The analysis was based mainly on the T2, T3, and T4 follow-ups, conducted from 1 to 32 months after the end of the intervention. We also analyzed projections for a 5-year follow-up and for the period when the participants would reach 60 years of age and begin to retire or reduce their participation in the labor force. The value of all benefits and costs were estimated in 1989 dollars. Present values for all postintervention earnings were calculated with 2.5% and 5% discount rates, the standard practice in economic analyses (Gramlich, 1990). For comparison purposes, our analyses also included estimated benefits with no discounting (discount rate 0%).

We also investigated the changes in total income as a function of changes in its two components: wage rate and total number of hours working for pay. The detailed examination of the components was aimed at providing an answer to whether changes in income are due to securing jobs paying higher wages or to an increase in work hours, or both.

The results of these detailed analyses are presented in Table 2. The mean wage rate per hour, the number of hours worked per week, and earnings per month are displayed separately for the T2, T3, and T4 posttests. The data on wage rate includes only respondents who reported at least some income. In contrast, the data on hours worked per week and earnings per month also include respondents who did not work or earn any income at all. Because the bimodal distribution of these latter variables violates the assumption of Student's *t* test and the truncation of the dependent variable at zero, we analyzed these variables with the TOBIT technique (Amemiya, 1985; Tobin, 1958) and the LIMDEP program (Greene, 1988). Instead of the usual means, the TOBIT analysis generates predicted means that are corrected for the bias inherent in the means of variables with a censored distribution (in our case, truncation of earnings and hours of work at zero).

At T2 and T3, experimental-group respondents were entering the labor market faster than control respondents; thus, on the average they reported working significantly more hours per week than did their control group counterparts (mean differences were 4.7 and 5.9, $p < .01$). However, the wage rate of the experimental-group respondents was not significantly different from the control subjects at T2 and T3. In contrast, at T4 it was the wage rate, and not the number of hours of work for pay, that was significantly higher for the respondents in the experimental group than for their control-group counterparts (mean difference of $.85, $p < .05$). Because of the experimental group's initial faster entry into the labor market and, later, their higher wage rate, their earnings per month were significantly higher than those of the control-group respondents at each follow-up period. In the TOBIT analysis, the predicted mean differences between the groups were $178, $227, and $239, for T2, T3, and T4, respectively (all $ps < .05$).

The mean earnings per month predicted by the TOBIT analysis across the three follow-ups are displayed in Figure 1. The trend across time in both groups reflected the increase in per month earning noted previously. The gap between the experimental and the control group appears to remain the same or even to increase slightly in favor of the experimental group. The results of a MANOVA with repeated measures, performed to test whether the earning slopes of the two groups differed between T3 and T4, failed to reach statistical significance.[2]

The evidence for this large and enduring gap in income over 2 years suggests that it can be used as the basis for performing

[2] The MANOVAs were performed three times: once for the entire sample, a second time for all respondents who indicated at least some earnings at T3 and T4, and a third time for respondents who were fully employed at both T3 and T4. The results of all three analyses failed to reach statistical significance. In each, there was a small trend for the gap between the experimental and control groups to increase in favor of the experimental group.

Table 2
Means, Regression Coefficients, and TOBIT Differences in Wages and Hours Worked per Month

Group	Wage rate[a]			Hours worked per week			Earnings per month		
	T2	T3	T4	T2	T3	T4	T2	T3	T4
	Mean[b]			TOBIT predicted mean[b]					
Full experimental	7.96	7.96	10.09	16.60	26.60	32.60	509	870	1,302
Control	7.07	8.07	9.24	11.90	20.70	30.00	331	643	1,063
Mean difference	0.89	−0.11	0.85*	4.70**	5.90**	2.60	178**	227*	239*
	Regression coefficients			TOBIT differences					
Full experimental	88.91	−10.92	84.77*	3.81**	4.10**	0.89	157.72**	163.50*	160.91*
t	1.90	−0.23	2.11	2.60	2.52	0.55	2.98	2.31	1.96
df	7,312	7,511	7,531	7,803	7,792	7,697	7,803	7,792	7,697
N	319	518	538	810	797	704	810	797	704

Note. T2 = 1-month follow-up; T3 = 2-month follow-up; T4 = 32-month follow-up. For all analyses, reported *N*s and degrees of freedom include weights to bring no-shows in the experimental group back to original level.
[a] $/hr. Wage rate analyses were computed only for those respondents who reported some income. [b] T1 age, sex, education, and income prior to T1 unemployment period were controlled for.
* $p < .05$. ** $p < .01$.

analyses not only for the period of the follow-ups but also for longer projected periods in the future. On the assumption that the same gap in earning found between the groups at T4 will continue in the future, we performed benefit–cost analyses for an additional period of 28 months past T4, which encompass the 5-year period following the intervention. We also conducted the benefit–cost analysis for the period that covered each individual until age 60, when large numbers of workers begin to

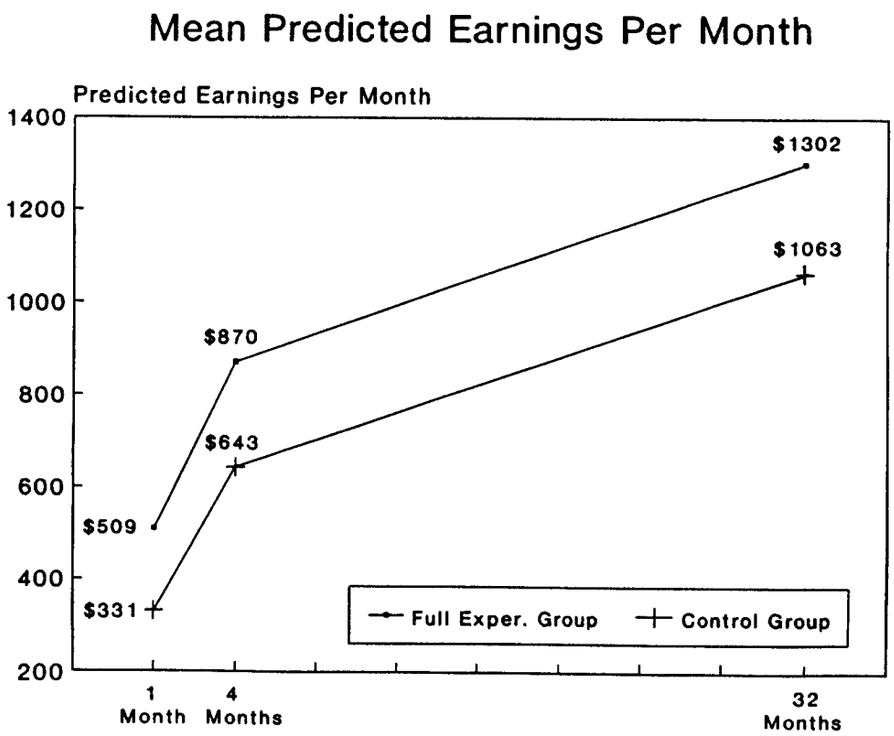

Figure 1. TOBIT predicted means of earnings per month adjusted for age, sex, education, and income.

drop out of the labor force. On average, the latter period was 22 years after the intervention.

The results of the benefit–cost analyses for these three time periods (that is, from the initiation of the project to the T4 posttest, to 5 years after the intervention, and to the point when all the individuals reach 60 years of age) are presented in Table 3. The analyses for these three periods were based on the TOBIT estimated gap in earnings between the experimental- and the control-group respondents at T4, which was $239 per month, using annual real discount rates of 0%, 2.5%, and 5%, respectively.

The expenses involved in training and implementing, and conducting the intervention, including the 59% overhead, were clearly the largest category of costs; these expenses totaled $173,373, or $286 per individual. All the expenses that were specifically attributable to the research function of the project were excluded from the analysis because they would not be needed for the implementation and functioning of this intervention in the future. Opportunity costs of participation in the intervention did not need to be dealt with separately because they were already netted out in differences between experimental and control groups.[3]

The top part of Table 3 includes details for the period that ended 32 months after the intervention. The bottom part of the table includes the projected estimates of net total benefits for each of the two additional periods—5 years after the intervention, and until age 60.

As can readily be seen in the first row labeled net total (32 months), the benefits of this intervention far exceeded the costs for every major player. The federal government, which in this case funded the project, benefited in the amount of $720 per participant. The state of Michigan, which provided the collaboration necessary to recruit the participants for the project, benefited in the amount of $308 per respondent in the experimental group. Finally, the total net gain for the average individual in the experimental group amounted to $5,392.

The net total 5 years after the intervention, computed with a 0% discount rate, is very close to twice that for 2½ years (32 months). Even with the largest discount rate of 5%, the net total for an individual is $10,377; and for the federal government and the state of Michigan, the net total is $1,649 and $593 per person, respectively.

The net total at 60 years of age, computed with a 0% discount rate, is $58,913 for the average individual, and $10,705 and $3,370 per person for the federal government and the state of Michigan, respectively. Once again, because of the length of this period, the net total benefits are much smaller with the various discount rates. With a 2.5% and a 5% discount, the net benefit for the average individual is $49,290 and $38,994, respectively.

Finally, it is important to realize that the resultant gain to the individuals was accrued by the 308 persons who actually showed up and participated in the intervention and was not shared by those 298 persons in the experimental group who did not show up. The benefit–cost calculations appearing in Table 3 are based on both participants and dropouts, who were combined to form the full experimental group that was compared to the control group. It is therefore estimated that, on the average, each of the 308 actual participants in the intervention gained amounts equal to about twice as much as is shown for the various estimates in Table 3.

Discussion

The pattern of results from both the short-term and the long-term follow-ups provides strong evidence that the program accomplished its goals as a preventive intervention. The findings of the short-term evaluations, conducted 1 and 4 months after the intervention, were reported in detail in our earlier articles (Caplan et al., 1989; Vinokur et al., in press). These findings show that the intervention participants not only found jobs more quickly than did their counterparts in the control group but that the jobs they found were better ones in terms of pay and stability. Moreover, the findings of the short-term follow-up demonstrate that even those who participated in the intervention but remained unemployed had reduced depressive symptomatology, higher job-seeking confidence, and higher motivation to engage in job-seeking activities than did their counterparts in the control group (Vinokur et al., in press).

The findings of the long-term follow-up that was conducted more than 2½ years after the intervention are described in detail in this article. These findings show the beneficial lasting effects of the intervention for the majority of the persons (i.e., 81%) who were reemployed and had some earnings at the time of the follow-up. Respondents in the experimental group had jobs with significantly higher per-hour pay than did respondents in the control group. Respondents in the experimental group also earned more over the preceding 28 months than did those in the control group. Whereas the perceived quality of jobs is determined by several job characteristics, pay is the single most important factor and accounts for one third of the total explained variance in ratings of job quality (Jencks, Perman, & Rainwater, 1988).

In the same vein, subjects in the intervention group had significantly higher levels of employment. They had spent a higher percentage of their time working more than 30 hr per week over the past 28 months and had experienced fewer changes in jobs and employers. Thus, the evidence strongly suggests that the intervention achieved its long-term goals by diminishing exposure to episodes of unemployment, which have been shown in the literature to have strong negative effects on mental health.

It seems clear that, even after obtaining an initial job, this population experienced episodes of unemployment. Respondents reported an average of two employers over the 28 month follow-up period (although members of the experimental group reported significantly fewer employers, presumably reflecting a more stable attachment to the labor force). We do not know whether these job changes were involuntary, but it seems reason-

[3] Other costs for the intervention participants were the foregone unemployment benefits they could have collected from the state of Michigan. These foregone benefits for the individuals are savings to the state because it did not have to pay unemployment compensation. However, because the difference in the number of eligible days for unemployment compensation between the respondents in the control and the experimental groups was not statistically significant, estimated transfer of unemployment compensation costs were not included in the results that are presented in Table 3.

Table 3
Benefits and Costs of the Preventive Intervention for Unemployed Persons in Present-Value Terms per Person

Benefits and costs	Individual	Federal	State	Total
Benefits				
Gain in after-tax earning 32 months after the program[a]	5,392	0	0	5,392
Gain in taxes paid	0	1,006	308	1,314
Total benefits	5,392	1,006	308	6,706
Total costs	0	286	0	286
Net total for 32 months	5,392	720	308	6,420
Net total for 5 years				
0% discount rate	10,784	1,726	616	13,126
2.5% discount rate	10,575	1,686	604	12,865
5% discount rate	10,377	1,649	593	12,619
Net total until age 60				
0% discount rate	58,913	10,705	3,370	72,988
2.5% discount rate	49,290	8,909	2,819	61,018
5% discount rate	38,944	6,979	2,228	48,151

Note. Based on TOBIT estimates of predicted mean differences of $239.50 between full experimental group and control group in earnings per month, adjusted for age, sex, education, and family income at Time 1 using LIMDEP program.
[a] Gain occurred within last 28 month period as recorded by T4 data collection. During the first 4 months, most respondents were still looking for a job.

able to assume that they represent a mix of voluntary efforts to secure more stable, better paying jobs and involuntary job dislocations. However, experimental-group members were able to secure higher paying jobs as a result of their enhanced job-seeking skills and higher motivation.

Although there are various types of intervention programs of varying quality for unemployed persons (Price, 1990), the Jobs Program successfully trained people in job-search skills despite adverse circumstances. Such a program is likely to be helpful in a wide range of unemployment situations. Even when a person is retraining for a new job or relocating in a new geographical area, the ability to effectively apply job-search skills is still critical. Indeed, it is reasonable to view the Jobs Program as one that imparts a set of life skills that enable people to more successfully cope with a major life transition.

The benefit–cost analysis of the Jobs Program described in this article demonstrates the net benefits of the program, not only to the job losers who bear the heaviest burden of unemployment but also to the society as a whole. The analysis highlighted the large economic benefits accruing to the participants of the intervention as well as to the federal and state governments. Not only did the benefits of the program exceed all costs within less than 2 years, but because the wage differences appear to persist, the benefits should continue to accumulate for many years. According to our most conservative estimates, by the time experimental group participants reach age 60, they can be expected to have accrued $48,151 more benefit per person than their counterparts in the control groups.

Finally, our detailed analysis of the components that determine earning levels, wage rates, and hours of work demonstrates that the benefits accrued to the experimental group participants were mainly the result of obtaining higher wages rather than working more hours than control group respondents. As suggested earlier, this latter finding implies that the main economic impact of the intervention was to increase the productivity of the workforce as a whole, not simply to reallocate a given number of jobs.

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