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**National Job Corps
Study: Methodological
Appendixes on the
Impact Analysis**

Executive Summary

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EXECUTIVE SUMMARY

Since 1964, the Job Corps program has been a central part of federal efforts to provide employment assistance to disadvantaged youths between the ages of 16 and 24. It is an intensive, comprehensive program whose major service components include academic education, vocational training, residential living, health care and health education, counseling, and job placement assistance. These services are currently delivered at 119 Job Corps centers nationwide. Most Job Corps students reside at Job Corps centers while training, although about 12 percent are nonresidential students who live at home. Each year, Job Corps serves more than 60,000 new enrollees and costs more than \$1 billion.

The National Job Corps Study, funded by the U.S. Department of Labor (DOL), was designed to provide a thorough and rigorous assessment of the impacts of Job Corps on key participant outcomes. The cornerstone of the study was the random assignment of all youth found eligible for Job Corps to either a program group or a control group. Program group members were allowed to enroll in Job Corps; control group members were not (although they could enroll in other training or education programs).

This report presents estimates of the impacts of Job Corps on participants' employment and related outcomes during the 48 months after random assignment. The outcome measures for the analysis were obtained from interview data.

The report answers the following three research questions:

1. ***How effective is Job Corps overall at improving the employability of disadvantaged participants?*** Job Corps participation led to (1) increases of about 1,000 hours (or about one school year) in time spent in education and training; (2) substantial increases in the attainment of GED and vocational certificates; (3) earnings gains by the beginning of the third year after random assignment that persisted through the end of the follow-up period (resulting in a 12 percent gain in year 4); (4) reductions of about 16 percent in arrests, convictions, and incarcerations for convictions; (5) reductions in crimes committed against participants; (6) small beneficial impacts on the receipt of public assistance and self-assessed health status; (7) small increases in the likelihood of living with a partner and living independently; (8) no impacts on self-reported alcohol and illegal drug use, fertility, or custodial responsibility, but some increases in the use of child care.
2. ***Do Job Corps impacts differ for youths with different baseline characteristics?*** Job Corps is effective for broad groups of students. Program participation led to substantial improvements in education-related outcomes across diverse groups of students. Employment and earnings gains were similar for males and females, and were found for groups of students at special risk of poor outcomes (such as very young students, females with children, and older students without a high school credential at

enrollment), *as well as* for groups at lower risk (such as older students with a high school credential). Reductions in criminal activity were found for nearly all groups.

3. ***How effective are the residential and nonresidential components of Job Corps?*** Each component is effective for the groups it serves. Postprogram earnings and employment impacts for those assigned to each component were positive overall, and for nearly all groups defined by gender and the presence of children. Participation in each component led to reductions in criminal activity for most groups of students, except that no reductions were found for nonresidential males.

A separate report presents findings from the benefit-cost analysis (McConnell et al. 2001), where program benefits (calculated by placing a dollar value on the estimated program impacts) are compared to program costs. That report concludes that the benefits of Job Corps exceed the substantial public resources that are invested in it.

STUDY DESIGN

The results for the impact analysis are based on a comparison of eligible program applicants who were randomly assigned to a program group (who were offered the chance to enroll in Job Corps) or to a control group (who were not). The key features of this experimental design are as follows:

The impact evaluation is based on a fully national sample of eligible Job Corps applicants. With a few exceptions, the members of the program and control groups were randomly selected from *all* youths who applied to Job Corps in the contiguous 48 states and the District of Columbia and who were found eligible for the program.

Sample intake occurred between November 1994 and February 1996. All youths who applied to Job Corps for the first time between November 1994 and December 1995 and were found eligible for the program by the end of February 1996 were included in the study--a total of 80,883 eligible applicants.

During the sample intake period, 5,977 Job Corps-eligible applicants were randomly selected to the control group. Approximately 1 eligible applicant in 14 (7 percent of 80,883 eligible applicants) was assigned to the control group. For both programmatic and research reasons, the sampling rate to the control group differed somewhat across some youth subgroups. Thus, sample weights were used in all analyses, so that the impact estimates could be generalized to the intended study population.

Control group members were not permitted to enroll in Job Corps for a period of three years, although they were able to enroll in other programs available to them. Thus, the outcomes of the control group represent the outcomes that the program group would have experienced if they had not been given the opportunity to enroll in Job Corps. Because control group members were allowed to enroll in other education and training programs, the comparisons of program and control group outcomes represent the effects of Job Corps *relative to other available programs* that the study population would enroll in if Job Corps were not an option. The impact estimates do not represent the effect of the program relative to no education or training; instead, they represent the incremental effect of Job Corps.

During the sample intake period, 9,409 eligible applicants were randomly selected to the research sample as members of the program group.¹ Because random assignment occurred after youths were determined eligible for Job Corps (and *not* after they enrolled in Job Corps centers), the program group includes youths who enrolled in Job Corps (about 73 percent of eligible applicants), as well as those who did not enroll, the so-called “no-shows” (about 27 percent of eligible applicants). Although the study’s research interest focuses on enrollees, all youths who were randomly assigned, including those who did not enroll at a center, were included in the analysis to preserve the benefits of the random assignment design. However, as discussed below, statistical procedures were also used to estimate impacts for Job Corps participants only.

Job Corps staff implemented random assignment procedures well. Using program data on all new center enrollees, we estimate that less than 0.6 percent of youths in the study population were not randomly assigned. In addition, only 1.4 percent of control group members enrolled in Job Corps before the end of the three-year period during which they were not supposed to enroll.² Hence, we believe that the research sample is representative of the youths in the intended study population and that the bias in the impact estimates due to contamination of the control group is very small.

DATA SOURCES, OUTCOME MEASURES, AND ANALYTIC METHODS

The impact analysis used a variety of data sources, outcome measures, and analytic methods to address the main study questions, as outlined next.

The analysis relied primarily on interview data covering the 48-month period after random assignment. Follow-up interview data collected 12, 30, and 48 months after random assignment were used to construct outcome measures for the impact analysis. In addition, baseline interview data, collected soon after random assignment, were used to create subgroups defined by youth characteristics at random assignment, and to construct outcome measures that pertain to the period between the random assignment and baseline interview dates.

¹The remaining 65,497 eligible applicants were randomly assigned to a program nonresearch group. These youths were allowed to enroll in Job Corps but are not in the research sample.

²An additional 3.2 percent of control group members enrolled in Job Corps after their three-year restriction period ended and before four years after random assignment.

Response rates to the baseline, 12-month, 30-month, and 48-month interviews were fairly high and were similar for program and control group members. The response rate was 95 percent to the baseline interview, 90 percent to the 12-month follow-up interview, 79 percent to the 30-month interview, and 80 percent to the 48-month interview. Response rates were similar across key subgroups.

The primary sample used for the analysis includes those who completed 48-month interviews. This sample contains 11,313 youths (6,828 program group members and 4,485 control group members). About 88 percent of this sample also completed 30-month interviews, and 95 percent completed 12-month interviews. Furthermore, baseline interview data are available for everyone in this sample, because all youths completed either the full baseline interview or an abbreviated baseline interview in conjunction with the 12-month interview. Thus, complete data are available for most of the analysis sample.

The study estimated impacts on the following outcome measures that we hypothesized could be influenced by participation in Job Corps: (1) education and training, (2) employment and earnings, and (3) nonlabor market outcomes. The nonlabor market outcomes include welfare, crime, alcohol and illegal drug use, health, family formation, child care, and mobility. In general, outcome measures were defined over several periods after random assignment. We constructed measures by quarter (to examine changes in impact estimates over time), for year 1 (a period when many program group members were enrolled in Job Corps), for year 2 (a period of still significant but less intensive Job Corps participation), for years 3 and 4 each (a postprogram period for most program group members), and for the entire 48-month period.

We present estimates of Job Corps impacts per eligible applicant and per Job Corps participant. The estimates of Job Corps impacts *per eligible applicant* were obtained by computing differences in the distribution of outcomes between all program and control group members. This approach yields unbiased estimates of the effect of Job Corps for those offered the opportunity to enroll in the program. These impacts are pure experimental estimates, because random assignment was performed at the point that applicants were determined to be eligible for the program.

The comparison of the outcomes of all program and control group members yields *combined* impact estimates for the 73 percent of program group members who enrolled in Job Corps centers and the 27 percent who did not. Policymakers, however, are more concerned with the effect of Job Corps on those who enrolled in a center and received Job Corps services. This analysis is complicated by the fact that we do not know which control group members would have shown up at a center had they been in the program group. However, this complication can be overcome if we assume that Job Corps has no impact on eligible applicants who do not enroll in centers. In this case, the impact *per participant* can be obtained by dividing the impact *per eligible applicant* by the proportion of program group members who enrolled in Job Corps (73 percent).³ We present estimated impacts both per eligible applicant and per participant.

³The estimates per participant were further refined to adjust for the small number of control group members who enrolled in Job Corps during their three-year restriction period, by dividing the impacts per eligible applicant by the difference between the participation rate among the program group and the control group crossover rate.

Impact estimates were obtained for key subgroups defined by youth characteristics at baseline. The purpose of this subgroup analysis was to identify groups of Job Corps students who benefit from program participation and those who do not, so that policymakers can improve program services and target them appropriately. We estimated impacts of Job Corps on the following seven sets of subgroups: (1) gender, (2) age at application to Job Corps, (3) educational attainment, (4) presence of children for females, (5) arrest experience, (6) race and ethnicity, and (7) whether the youth applied to the program before or after new zero tolerance (ZT) policies took effect.⁴ Subgroup impact estimates were obtained by comparing the distribution of outcomes of program and control group members in that subgroup. For example, impacts for females were computed by comparing the outcomes of females in the program and control groups.

We estimated separate impacts for those assigned to the residential and nonresidential program components. These impacts were estimated using data on the predictions of outreach and admission (OA) counselors as to whether sample members would be assigned to a residential or a nonresidential slot. As part of the application process, OA counselors filled in this information on a special form developed for the study. The anticipated residential status information is available for both program *and* control group members, because it was collected prior to random assignment. Thus, the impacts of the residential component were estimated by comparing the distribution of outcomes of program group members designated for a residential slot with those of control group members designated for a residential slot. Similarly, the impacts of the nonresidential component were estimated by comparing the experiences of program and control group members designated for nonresidential slots. This analysis produced reliable estimates of program impacts for residential and nonresidential students, because the anticipated residential status information is available for all sample members, and because it matched actual residential status very closely for program group members who enrolled in Job Corps.

An important point about the interpretation of the impact findings for residents is that they tell us about the effectiveness of the residential component *for youths who are typically assigned to residential slots*. Similarly, the impact estimates for nonresidents tell us about the effectiveness of the nonresidential component *for youths who are typically assigned to nonresidential slots*. The characteristics of residential and nonresidential students differ (nonresidential students tend to be females with children and tend to be older). Consequently, our results cannot necessarily be used to measure the effectiveness of each component for the *average* Job Corps student. Nor can they be used to assess how a youth in one component would fare in the other one.

JOB CORPS EXPERIENCES

Job Corps staff have implemented a well-developed program model throughout the country (as described in a separate process analysis report by Johnson et al. [1999]). To understand the impacts that Job Corps had on the employment and related outcomes of participants, we must examine the

⁴In response to congressional concerns about the operation of the Job Corps program, and in particular, about safety on center, new ZT policies for violence and drugs were instituted in March 1995--during the sample intake period for the study. The new policies were instituted to ensure full and consistent implementation of existing policies for violence and drugs.

Job Corps experiences of the program group. Because we can expect meaningful Job Corps impacts on key outcomes only if program group members received substantial amounts of Job Corps services, we examined whether program group members received services, and then gauged the intensity and types of those services.

Our results, which indicate that program group members received extensive Job Corps services, can be summarized as follows:

Most program group members enrolled in Job Corps. Of those assigned to the program group, 73 percent reported enrolling in Job Corps within 48 months.

Participants typically enrolled very soon after random assignment. The average enrollee waited 1.4 months, or about six weeks, to be enrolled in a Job Corps center, although nearly three-quarters of those who enrolled did so in the first month, and only four percent enrolled more than six months after random assignment.

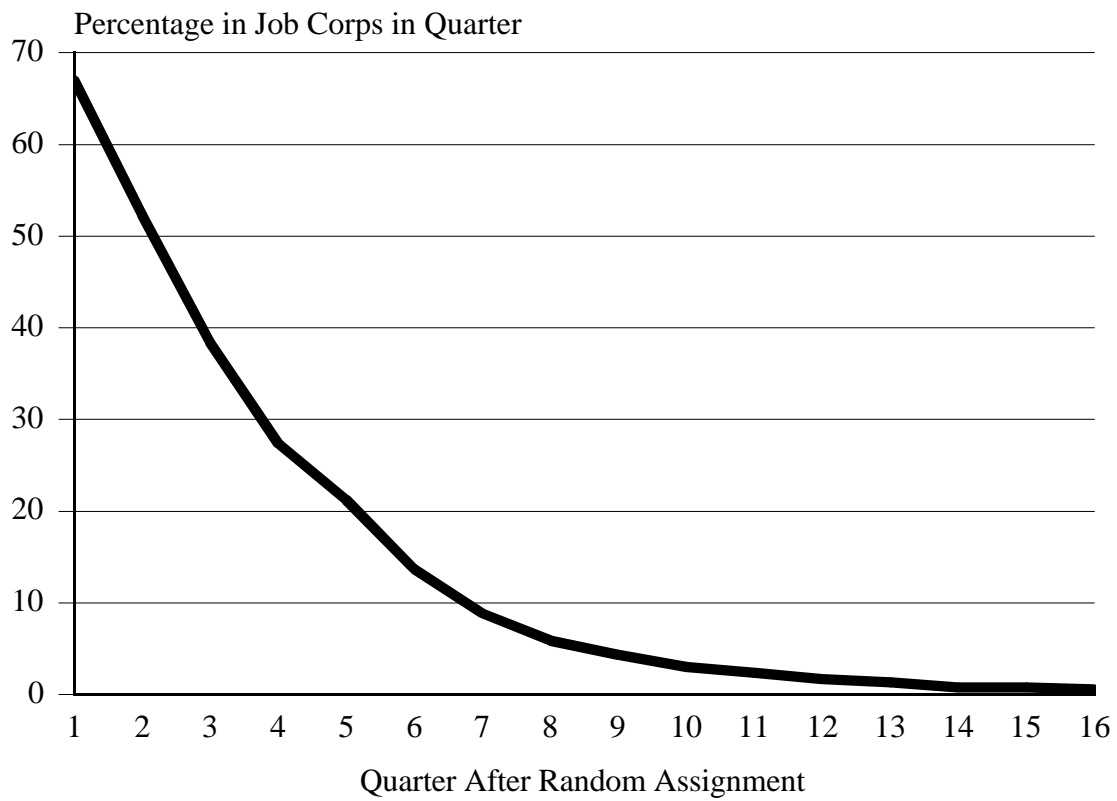
Most participants stayed in Job Corps for a substantial period of time, although the period of participation varied considerably. The average period of participation per enrollee was eight months. About 28 percent of all enrollees participated less than three months, and nearly a quarter participated for over a year. Because of this wide range in the duration of stay in Job Corps, participants left Job Corps at different points during the follow-up period.

The average postprogram period for participants was more than three years. Variations in the duration of participation in Job Corps resulted in variations in how much of the 48-month period was actually a postprogram period. However, most participants had been out of Job Corps for some time at the 48-month point: almost 67 percent of enrollees had been out for more than three years, and nearly 92 percent for more than two years. Less than 3 percent of enrollees had been out for less than one year.

Most participation occurred during the first 24 months after random assignment; the final two years of the 48-month period was a postprogram period for most participants (Figure 1). Figure 1 shows the fraction of program group members (including the no-shows) who participated in Job Corps during each quarter after random assignment. The participation rate declined from a peak of 67 percent in the first quarter after random assignment to 21 percent in the fifth quarter (beginning of the second year), and 3 percent in the tenth quarter. By the end of the 48-month period, almost all participants had left Job Corps. Only 0.3 percent of the program group (0.4 percent of enrollees) were in Job Corps in the final week of the 48-month follow-up period.

FIGURE 1

JOB CORPS PARTICIPATION RATES FOR THE FULL PROGRAM GROUP,
BY QUARTER



Source: 12-, 30-, and 48-month follow-up interviews for those who completed 48-month interviews.

Based on these broad patterns of participation, we interpret the period from quarters 1 to 4 (year 1) as largely an “in-program” period. The period from quarters 5 to 8 (year 2) was a period of transition, in which smaller yet still substantial fractions of the program group were engaged in Job Corps training. The final eight quarters (years 3 and 4) were a postprogram period for most students. The use of these in-program, transition, and postprogram periods provides a framework to help explain the time profiles of employment and earnings and related impacts.

Program group enrollees participated extensively in the core Job Corps activities. As the program design intends, a large majority of Job Corps participants (77 percent) received both academic instruction and vocational training. More than 82 percent of enrollees reported receiving academic instruction, and nearly 89 percent received vocational training. The average enrollee reported receiving 1,140 hours of academic and vocational instruction (which is approximately equivalent to one year of classroom instruction in high school). Also, most enrollees participated in the many socialization activities in Job Corps, such as parenting education, health education, social skills training, and cultural awareness classes. Many enrollees, however, reported that they did not receive job placement assistance from the program.

While many subgroups had different experiences in Job Corps, the differences were small. The mix of academic and vocational training a student received depended on whether the youth had already received a high school credential (GED or diploma) before program entry. Students with no credential generally took both academic instruction and vocational training. High school graduates were more likely to focus on vocational training. Nonresidential students (especially females with children) had somewhat lower enrollment rates than residential students. Once in Job Corps, however, the residential and nonresidential students had similar amounts, types, and intensity of training, as well as similar exposure to the other program components. The many other subgroup differences were small, and overall each group’s experience was consistent with the conclusions drawn above for the program group as a whole.

EDUCATION AND TRAINING

Job Corps provides intensive academic classroom instruction and vocational skills training to increase the productivity and, hence, the future earnings, of program participants. The typical Job Corps student stays in the program for an extended period (about eight months on average), and Job Corps serves primarily students without a high school credential (about 80 percent of students do not have a GED or high school diploma at program entry). Thus, participation in Job Corps probably increases the amount of education and training participants receive and improves their educational levels relative to what they would have been otherwise.

Important elements of the impact analysis are to describe the education and training experiences of program and control group members and to provide estimates of the impact of Job Corps on key education and training outcomes during the 48 months after random assignment. We examine education and training experiences of the *program group*, both in Job Corps and elsewhere, to provide a complete picture of the services they received. The education and training experiences of the *control group* are the counterfactual for the study, showing what education and training the program group would have engaged in had Job Corps not been available. The net increase in

education and training due to Job Corps depends critically on what education and training the control group received and what education and training the program group received from other sources, as well as from Job Corps.

Our main findings can be summarized as follows:

Many control group members received substantial amounts of education and training. Nearly 72 percent participated in an education or training program during the 48 months after random assignment. On average, they received 853 hours of education and training, roughly equivalent to three-quarters of a year of high school. Participation rates were highest in programs that substitute for Job Corps: GED programs (37 percent); high school (32 percent); and vocational, technical, or trade schools (29 percent).⁵ These high participation rates are not surprising, because control group members demonstrated motivation to go to Job Corps, and thus had the motivation to find other programs.

It is noteworthy that although high school participation rates were high, those who returned to high school stayed there for an average of only about nine months. Because the typical sample member without a high school credential at random assignment had completed less than grade 10, very few control group members graduated from high school.

Job Corps substantially increased the education and training that program participants received, despite the activity of the control group (Tables 1 and 2). Nearly 93 percent of the program group engaged in some education or training (both in and out of Job Corps), compared to about 72 percent of the control group (an impact of 21 percentage points per eligible applicant). Job Corps participants spent about 4.8 hours per week--998 hours in total--more in programs than they would have if they had not enrolled in the program. This impact per participant corresponds to *roughly one school year*.

The program group also spent significantly more time in academic classes, and even more in vocational training (Table 2). Program group members spent an average of 3.1 hours per week in academic classes, as compared to 2.5 hours per week for the control group. The program group typically received about three times more vocational training than the control group (3.1 hours per week, compared to 0.9 hours per week).

The impacts on participation in education and training programs were concentrated in the first six quarters (that is, 18 months) after random assignment (Figure 2). Impacts were large during this period, because many program group members were enrolled in Job Corps then, but decreased as program group members started leaving Job Corps. About 76 percent of program group members were ever enrolled in an education or training program (including Job Corps and other programs) during the first quarter after random assignment, compared to 29 percent of control group members--an impact per eligible applicant of 47 percentage points. The impact on the participation rate decreased to 22 percentage points in quarter 3 and 10 percentage points in quarter

⁵The participation rates in GED programs and high school pertain to those who did not have a GED or high school diploma at random assignment.

TABLE 1
IMPACTS ON PARTICIPATION AND TIME SPENT IN EDUCATION
AND TRAINING PROGRAMS

	Program Group	Control Group	Estimated Impact per Eligible Applicant ^a	Estimated Impact per Participant ^b
Percentage Ever Enrolled in an Education or Training Program During the 48 Months After Random Assignment	92.5	71.7	20.8*	28.9*
Average Percentage of Weeks Ever in Education or Training	24.4	18.2	6.3*	8.7*
Average Hours per Week Ever in Education or Training	7.6	4.1	3.5*	4.8*
Sample Size	6,828	4,485	11,313	

SOURCE: Baseline and 12-, 30-, and 48-month follow-up interview data for those who completed 48-month interviews.

^aEstimated impacts per eligible applicant are measured as the difference between the weighted means for program and control group members.

^bEstimated impacts per Job Corps participant are measured as the estimated impacts per eligible applicant divided by the difference between the proportion of program group members who enrolled in Job Corps and the proportion of control group members who enrolled in Job Corps during their three-year restriction period.

*Significantly different from zero at the .05 level, two-tailed test.

TABLE 2

IMPACTS ON PARTICIPATION AND TIME SPENT IN ACADEMIC
CLASSES AND VOCATIONAL TRAINING

	Program Group	Control Group	Estimated Impact per Eligible Applicant ^a	Estimated Impact per Participant ^b
Percentage Ever Took Academic Classes During the 48 Months After Random Assignment	80.8	57.2	23.7*	32.9*
Average Hours per Week Ever in Academic Classes	3.1	2.5	0.6*	0.8*
Percentage Ever Took Vocational Training	74.0	28.4	45.6*	63.4*
Average Hours per Week Ever Received Vocational Training	3.1	0.9	2.2*	3.1*
Sample Size^c	3,383	2,350	5,733	

SOURCE: Baseline and 12-, 30-, and 48-month follow-up interview data for those who completed 48-month interviews.

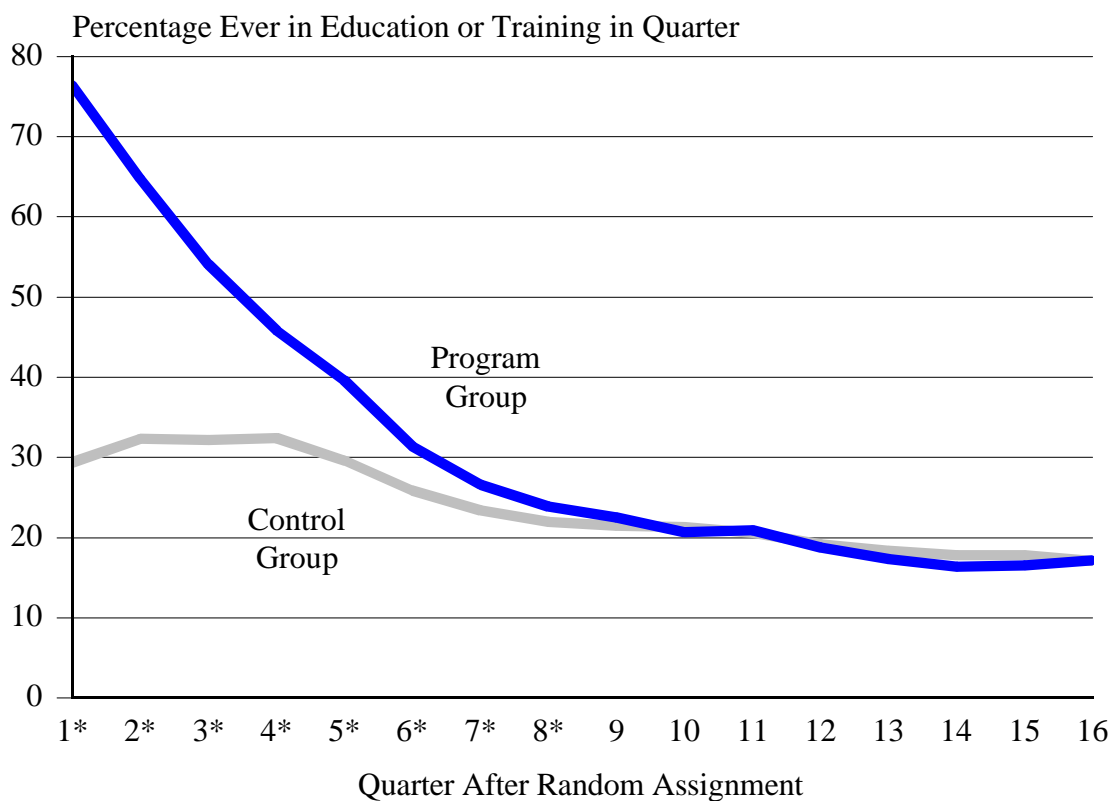
^aEstimated impacts per eligible applicant are measured as the difference between the weighted means for program and control group members.

^bEstimated impacts per Job Corps participant are measured as the estimated impacts per eligible applicant divided by the difference between the proportion of program group members who enrolled in Job Corps and the proportion of control group members who enrolled in Job Corps during their three-year restriction period.

^cThe sample consists of those in the 48-month sample (1) who completed a 30-month interview after April 1998, because of an error in the 30-month interview's skip logic before then; and (2) who did not complete a 30-month interview.

*Significantly different from zero at the .05 level, two-tailed test.

FIGURE 2
PARTICIPATION RATES IN EDUCATION AND TRAINING PROGRAMS,
BY QUARTER



Source: Baseline and 12-, 30-, and 48-month follow-up interview data, and SPAMIS data, for those who completed 48-month interviews.

*Difference between the mean outcome for program and control group members is statistically significant at the 5 percent level. This difference is the estimated impact per eligible applicant.

5. The impact was about 3 percentage points in quarter 7 and near zero in each quarter in years 3 and 4.

Similar percentages of program and control group members were enrolled in education and training programs toward the end of the 48-month period. For example, about 13 percent of both research groups were enrolled in a program during the last week of the 48-month follow-up period. This finding is important, because it suggests that impacts on employment and earnings late in the 48-month period were not affected by differences in school enrollment rates by research status.

Control group members spent more time than program group members in programs other than Job Corps, although the differences were smaller than anticipated (Figure 3). About 71 percent of control group members enrolled in a program other than Job Corps during the 48-month period, compared to 63 percent of program group members. The differences in participation rates in programs that substitute for Job Corps (high school, GED programs, vocational schools, and ABE and ESL programs) are statistically significant. There were no differences in enrollment rates in two- or four-year colleges.⁶

While impacts on participation in alternative programs are statistically significant, they were smaller than expected. Program group members made considerable use of these same programs, which increased impacts on education and training and reduced the offset to Job Corps program costs.

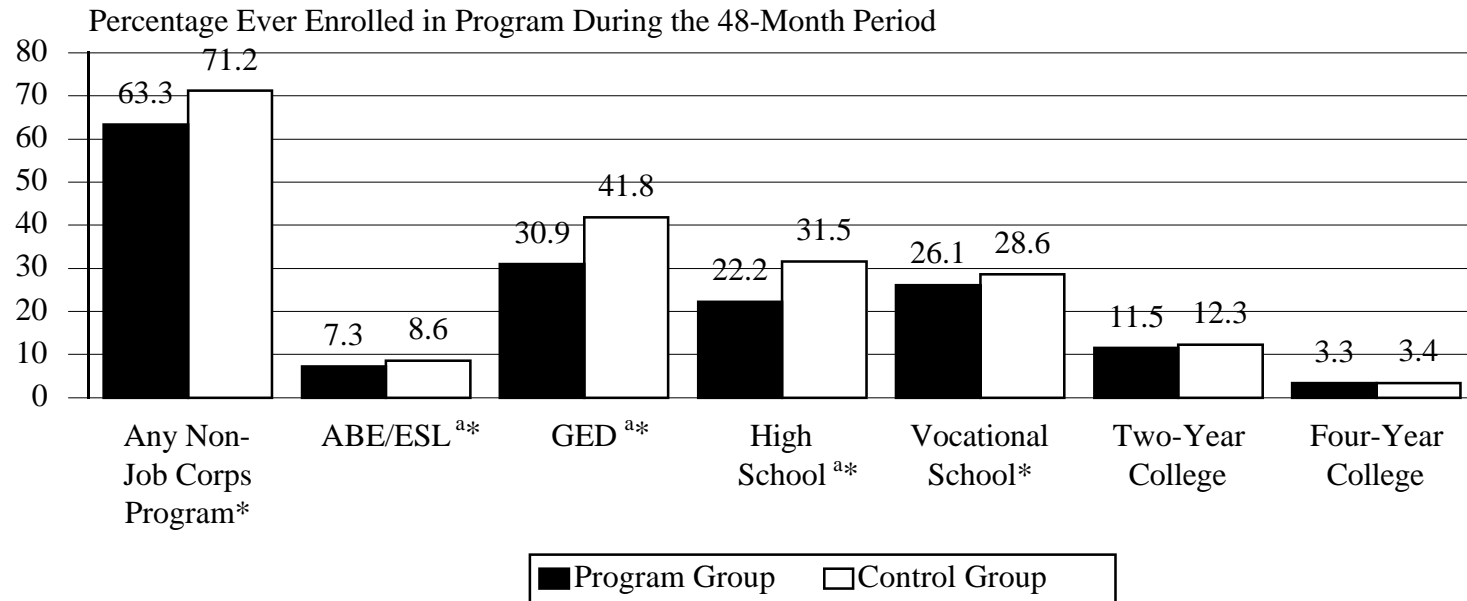
Job Corps participation led to substantial increases in the receipt of GED and vocational certificates, but it led to slight reductions in the attainment of a high school diploma (Figure 4). Job Corps had large effects on the receipt of certificates that it emphasizes. Among those without a high school credential at random assignment, about 42 percent of program group members (and 46 percent of program group participants) obtained a GED during the 48-month period, compared to only 27 percent of control group members (an impact of 15 percentage points per eligible applicant). Similarly, more than 37 percent of program group members (and 45 percent of Job Corps participants) reported receiving a vocational certificate, compared to about 15 percent of control group members (an impact of 22 percentage points).

Among those without a credential at baseline, a slightly higher percentage of control group members than program group members obtained a high school diploma (7.5 percent, compared to 5.3 percent). As noted above, although many of the younger control group members attended high school, most of those in high school did not complete it, because they attended high school for an average of only about nine months.

⁶About 15 percent of Job Corps participants attended an education or training program during the follow-up period before they enrolled in Job Corps (that is, between their random assignment and Job Corps enrollment dates). Not surprisingly, most of this activity was high school. About one-half of Job Corps participants enrolled in an education or training program after leaving Job Corps. About 72 percent of the no-shows enrolled in a program during the 48-month period.

FIGURE 3

PARTICIPATION IN EDUCATION AND TRAINING PROGRAMS,
BY TYPE OF PROGRAM

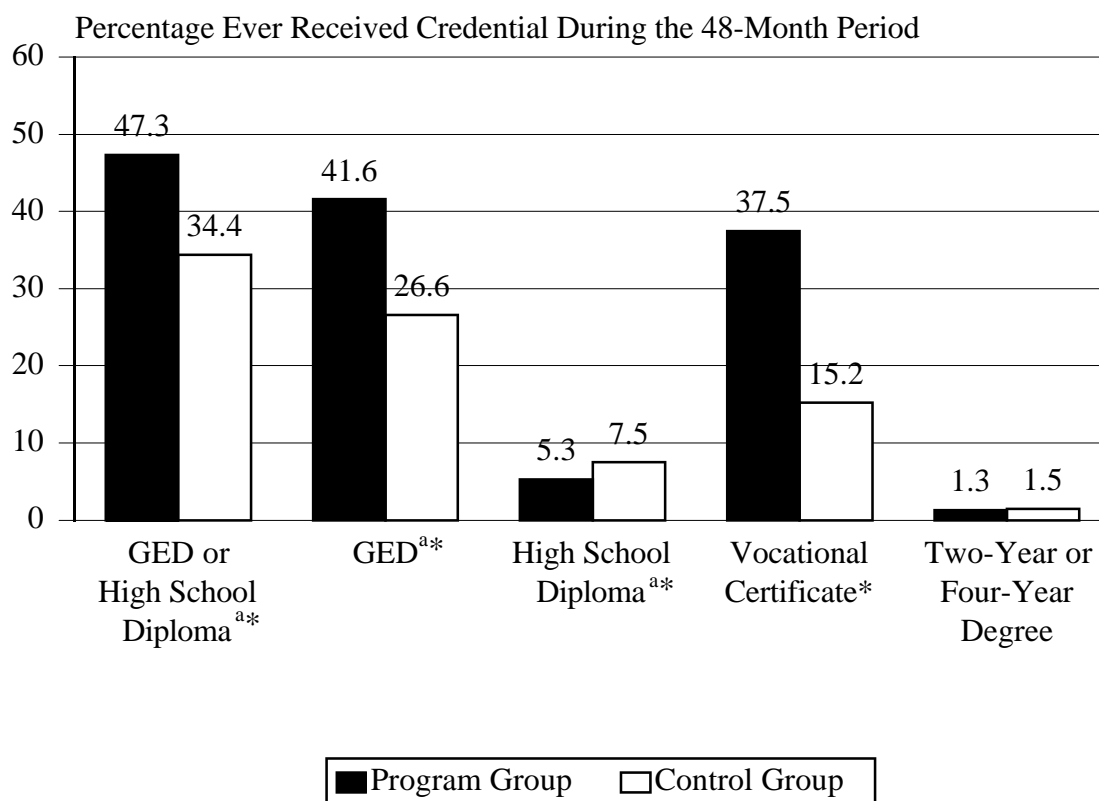


Source: Baseline and 12-, 30-, and 48-month follow-up interview data for those who completed 48-month interviews.

^aFigures pertain to those who did not have a high school diploma or GED at random assignment.

*Difference between the mean outcome for program and control group members is statistically significant at the 5 percent level. This difference is the estimated impact per eligible applicant.

FIGURE 4
DEGREES, DIPLOMAS, AND CERTIFICATES RECEIVED



Source: Baseline and 12-, 30-, and 48-month follow-up interview data for those who completed 48-month interviews.

^aFigures pertain to those who did not have a high school credential at random assignment.

*Difference between the mean outcome for program and control group members is statistically significant at the 5 percent level. This difference is the estimated impact per eligible applicant.

Job Corps had no effect on college attendance and completion (Figures 3 and 4). About 12 percent of each research group attended a two-year college, and about 3 percent attended a four-year college. Less than 2 percent obtained a two- or four-year college degree.

Impacts on education and training were large across all subgroups defined by youth characteristics. Impacts on total time spent in programs and on the attainment of a GED (among those without a high school credential at baseline) or a vocational certificate were very large and statistically significant for all key subgroups. However, the pattern of impacts across subgroups defined by age at application to Job Corps exhibited some differences. There were no impacts on hours in academic classes for those 16 and 17, because nearly half of all control group members who were 16 and 17 attended academic classes in high school. However, large impacts were found on hours spent in academic classes for the older youth, and on hours spent in vocational training for all age groups.

Of particular note, impacts were similar for those assigned to the residential and nonresidential components. This is consistent with findings from the process analysis (Johnson et al. 1999) that nonresidential students are fully integrated into the academic and vocational components of Job Corps.

EMPLOYMENT AND EARNINGS

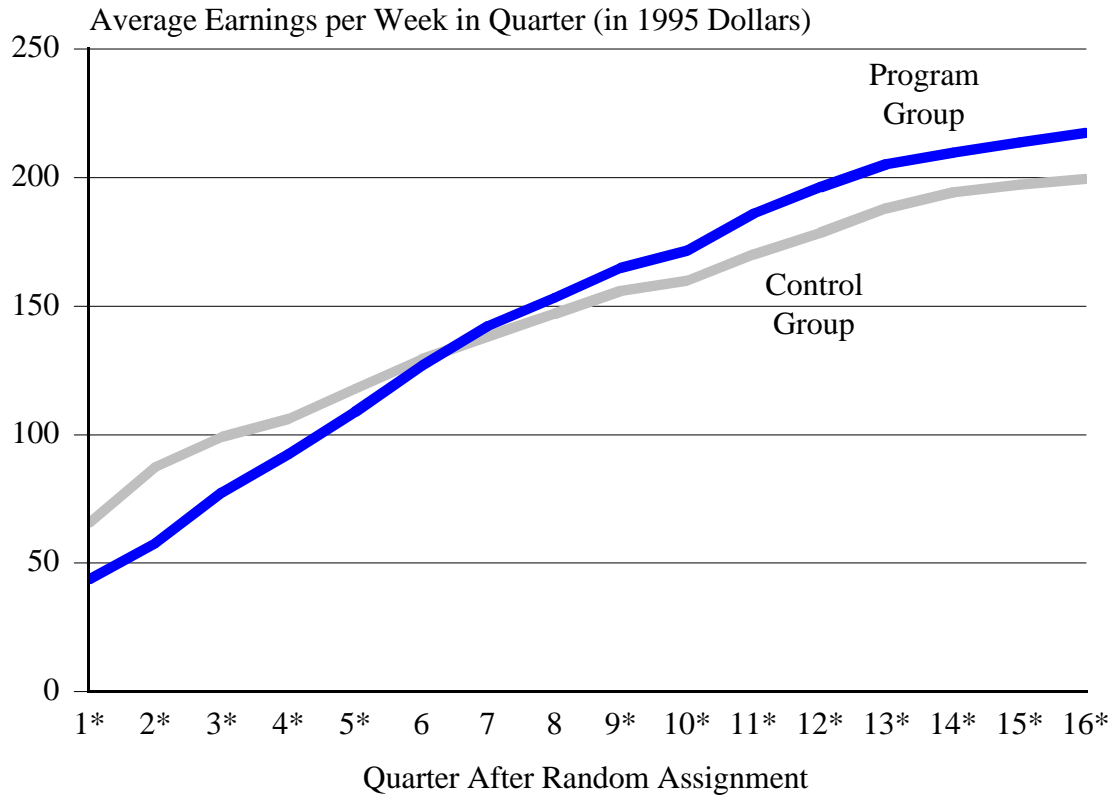
We have seen that Job Corps participation leads to large impacts on time spent in academic classes and vocational training and on the attainment of GED and vocational certificates. These large impacts could increase participants' skill levels and, hence, their labor market productivity. This increased productivity may in turn enhance the time spent employed, earnings, wage rates, and fringe benefits of participants after they leave the program.

We expect negative impacts on participants' employment and earnings during the period of enrollment, because some would have held jobs if they had not gone to Job Corps. However, because of improvements in participants' skills, we expect positive impacts on employment and earnings after they leave the program and after a period of readjustment. In light of the variation in the duration of program participation and the period of readjustment, it is difficult to predict when positive impacts will emerge.

A summary of our findings is as follows:

Job Corps generated positive earnings impacts beginning in the third year after random assignment, and the impacts persisted through the end of the 48-month follow-up period (Figure 5 and Table 3). As expected, the earnings of the control group were larger than those of the program group early in the follow-up period, because many program group members were enrolled in Job Corps then. It took about two years from random assignment for the earnings of the program group to overtake those of the control group. The impacts grew between quarters 8 and 12 (that is, in year 3), and remained fairly constant from quarters 13 to 16 (that is, they *persisted* in year 4). In year 4, average weekly earnings for program group members were \$16 higher than for control group members (\$211, compared to \$195). The estimated year 4 impact per Job Corps *participant*

FIGURE 5
AVERAGE EARNINGS PER WEEK, BY QUARTER



Source: Baseline and 12-, 30-, and 48-month follow-up interview data for those who completed 48-month interviews.

*Difference between the mean outcome for program and control group members is statistically significant at the 5 percent level. This difference is the estimated impact per eligible applicant.

TABLE 3

IMPACTS ON EARNINGS, EMPLOYMENT RATES, AND TIME EMPLOYED
IN QUARTERS 13 TO 16 (YEAR 4)

	Program Group	Control Group	Estimated Impact per Eligible Applicant ^a	Estimated Impact per Participant ^b
Average Earnings per Week, by Quarter				
After Random Assignment				
13	205.3	188.0	17.3*	24.1*
14	209.8	194.2	15.7*	21.8*
15	213.7	197.2	16.5*	22.9*
16	217.5	199.4	18.1*	25.2*
Percentage Employed, by Quarter				
13	66.8	63.4	3.4*	4.8*
14	67.5	65.1	2.4*	3.3*
15	69.2	65.6	3.6*	5.0*
16	71.1	68.7	2.4*	3.3*
Average Percentage of Weeks Employed, by Quarter				
13	58.6	55.7	3.0*	4.1*
14	59.6	56.8	2.9*	4.0*
15	60.9	57.7	3.2*	4.4*
16	61.8	59.0	2.8*	3.9*
Average Hours Employed per Week, by Quarter				
13	26.8	25.4	1.5*	2.0*
14	27.3	25.9	1.4*	1.9*
15	27.7	26.3	1.5*	2.0*
16	27.9	26.4	1.5*	2.0*
Sample Size	6,828	4,485	11,313	

SOURCE: Baseline and 12-, 30-, and 48-month follow-up interview data for those who completed 48-month interviews.

^aEstimated impacts per eligible applicant are measured as the difference between the weighted means for program and control group members.

^bEstimated impacts per Job Corps participant are measured as the estimated impacts per eligible applicant divided by the difference between the proportion of program group members who enrolled in Job Corps and the proportion of control group members who enrolled in Job Corps during their three-year restriction period.

*Significantly different from zero at the .05 level, two-tailed test.

was \$22 per week (or \$1,150 in total), which translates into a 12 percent earnings gain. These year 4 impacts are statistically significant at the 1 percent significance level.

Over the whole period, Job Corps participants earned about \$3 per week (or \$624 overall) more than they would have if they had not enrolled in Job Corps. This impact, however, is not statistically significant.

Job Corps also had statistically significant impacts on the employment rate and time spent employed beginning in year 3 (Figure 6 and Table 3). The impacts on the employment-related measures were negative during the in-program period. They became positive in quarter 8, increased sharply between quarters 8 and 12, and remained fairly constant afterwards. In year 4, the average quarterly impact on the employment rate was about 3 percentage points per eligible applicant (69 percent for the program group, compared to 66 percent for the control group). The year 4 impact on hours employed per week was 1.4 hours per eligible applicant (27.4 hours for the program group, compared to 26 hours for the control group).

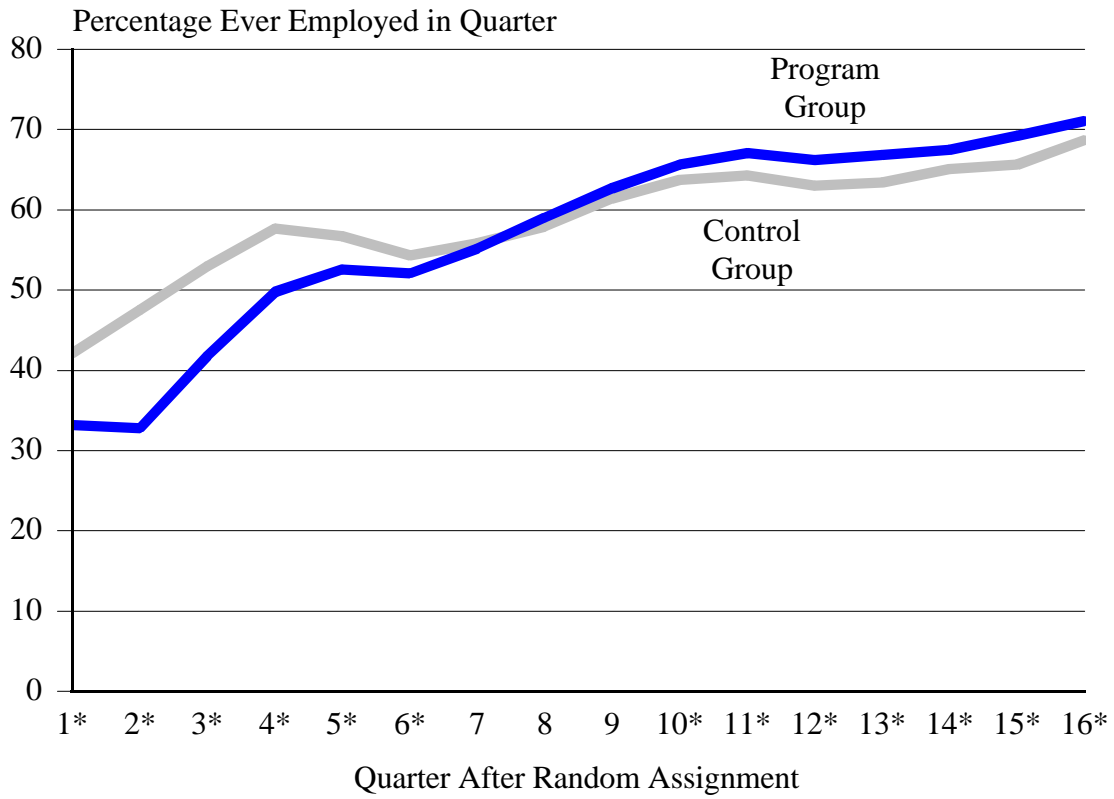
The earnings gains late in the period were due to a combination of greater hours of work and higher earnings per hour. Program group members earned about \$11 more per week in year 4 than control group members because they worked more hours, and they earned about \$5 more per week because they had higher earnings per hour. These gains sum to the \$16 impact on earnings per week in year 4.

Program group members secured higher-paying jobs with slightly more benefits in their most recent jobs in quarters 10 and 16. These findings are consistent with our findings from the literacy study (Glazerman et al. 2000) that Job Corps increases participants' skill levels and, hence, productivity. Employed program group members earned an average of \$0.24 more per hour than employed control group members in their most recent job in quarter 10 (\$6.77, compared to \$6.53), and an average of \$0.22 more per hour in their most recent job in quarter 16 (\$7.55, compared to \$7.33). Furthermore, the wage gains were similar across broad occupational categories, although similar percentages of program and control group members worked in each occupational area in both quarters.

Employed program group members were slightly more likely to hold jobs that offered fringe benefits in quarters 10 and 16. For example, in quarter 16, about 57 percent of the employed program group received health insurance, compared to 54 percent of the employed control group (a statistically significant increase of 3 percentage points, or nearly 6 percent). Similarly, about 48 percent of employed program group members were offered retirement or pension benefits, compared to 44 percent of employed control group members.

Earnings gains were found broadly across most key subgroups defined by youth characteristics at random assignment. Earnings gains during the postprogram period were very similar for males and females. Positive earnings impacts were found for groups of students at special risk of poor outcomes (such as very young students, females with children, youths who had been arrested for nonserious offenses, and older youths who did not possess a high school credential at baseline), *as well as* for groups at lower risk (such as older students with a high school credential at baseline). Impacts were similar for youth who applied to the program before or after the new ZT

FIGURE 6
EMPLOYMENT RATES, BY QUARTER



Source: Baseline and 12-, 30-, and 48-month follow-up interview data for those who completed 48-month interviews.

*Difference between the mean outcome for program and control group members is statistically significant at the 5 percent level. This difference is the estimated impact per eligible applicant.

policies took effect, and for whites and African Americans.

Job Corps did not increase the employment and earnings of Hispanic youths and 18- and 19-year-olds. We are not able to provide a satisfactory explanation for these findings, although we have been able to rule out several possibilities. In particular, the lack of an impact is not due to differences in Job Corps enrollment rates or length of time in the program. Hispanics had similar enrollment rates as non-Hispanics, and Hispanic students participated for more than a month *longer*, on average than non-Hispanics. Job Corps participation measures did not differ by age.

The lack of impacts also does not appear to be related to other personal or family characteristics associated with low impacts. Overall, the characteristics of Hispanic students and African American participants are very similar (apart from primary language and region of residence), and the characteristics of those 18 and 19 are not unusual. We also found smaller impacts for Hispanic than non-Hispanic students and for those 18 and 19 compared with those in other age groups across nearly all subgroups defined by other key youth characteristics.

Language barriers do not explain the Hispanic findings, as we found similar impacts for Hispanic students whose primary language was English and for those whose primary language was Spanish. Finally, the findings are not due to characteristics of centers or regions in which Hispanic or 18- and 19-year-old students are concentrated. The patterns of impacts by race and ethnicity were similar for sample members designated for centers with a high concentration of Hispanic students and for those designated for centers with a lower concentration.⁷ Similarly, impacts were smaller for Hispanic than non-Hispanic students both in regions with a high concentration of Hispanics and in other regions. Centers attended by those 18 and 19 were similar to centers attended by older participants.

The residential program component was effective for broad groups of students it served. Earnings and employment impacts in years 3 and 4 for those assigned to the residential component were positive overall, and they were similar for residential males, females with children, and females without children.

The nonresidential component was also effective for the students it served. Participation in the nonresidential component improved postprogram earnings overall. It improved average earnings per week in year 4 by more than \$35 for females with children (an increase of 24 percent), and by more than \$55 for males (an increase of 26 percent). The nonresidential component had no effect, however, on females without children.

We emphasize again that the impact findings by residential status should be interpreted with caution. As discussed, our estimates provide information about the effectiveness of each component for the populations it serves. The estimates cannot be used to assess how a youth in one component

⁷These impacts were estimated using information provided by OA counselors on the center to which each eligible applicant in our study population was likely to be assigned. This information was collected prior to random assignment, and thus is available for both program and control group members.

would fare in the other one, or how effective each component would be for the average Job Corps student. This is because the characteristics of residents differ from those of nonresidents in ways that can affect outcomes.

WELFARE, CRIME, ILLEGAL DRUG USE, AND OTHER OUTCOMES

The study examined the impacts of Job Corps on several additional outcomes to help assess whether the program achieves its goals of helping students become more responsible and productive citizens. This section reports on impacts on welfare dependence; involvement with the criminal justice system; use of tobacco, alcohol, and illegal drugs; the overall health of participants; the likelihood of bearing or fathering children while unmarried; custodial responsibility; the likelihood of forming stable, long-term relationships; mobility; and the use of child care.

Our main results are as follows:

Job Corps participation reduced the receipt of public assistance benefits (Table 4). Overall, program group members reported receiving about \$460 less in benefits (across several public assistance programs) than control group members, and this impact is statistically significant at the 1 percent level. The estimated average reduction per participant was \$640. The estimated program impacts on the receipt of individual types of assistance were small and in many cases not statistically significant. The number of months receiving AFDC/TANF benefits differed by just 0.4 months (5.0 months for the program group and 5.4 months for the control group). Control group members received food stamps for slightly more months on average than program group members (7.0 months, compared to 6.5 months). Impacts on the receipt of GA, SSI, and WIC benefits and on the likelihood of being covered by public health insurance were small.

Contrary to our expectations that reductions in welfare benefits would be concentrated during the in-program period, when students' material needs were met by the program, the reductions in benefit receipt were fairly uniform across the 48-month follow-up period. To some extent, this reflects different time patterns of the impacts for different groups. The benefit reductions for males were uniform throughout the follow-up period. For females without children at baseline, benefit reductions were largest early in the follow-up period and then declined to nearly zero. In contrast, the benefit reductions for females with children at baseline, many of whom were nonresidential students, were negligible during the in-program period, when welfare helped support the participant and her child, but became larger during the postprogram period, when earnings also increased.

Job Corps participation significantly reduced arrest and conviction rates, as well as time spent in jail (Table 4). About 33 percent of control group members were arrested during the 48-month follow-up period, compared to 29 percent of program group members (a statistically significant impact of -4 percentage points per eligible applicant). The impact per participant was about -5 percentage points, which translates to a 16 percent reduction in the arrest rate. Arrest rate reductions were largest during the first year after random assignment (when most program enrollees were in Job Corps). Interestingly, however, Job Corps also led to small arrest reductions during the later months of the follow-up period, after most youths had left Job Corps.

TABLE 4
IMPACTS ON KEY PUBLIC ASSISTANCE AND CRIME OUTCOMES

	Program Group	Control Group	Estimated Impact per Eligible Applicant ^a	Estimated Impact per Participant ^b
Average Amount of Benefits Received, by Year (in Dollars)				
All years	3,696.0	4,155.7	-459.8*	-638.9*
1	1,109.8	1,225.9	-116.2*	-161.4*
2	978.7	1,101.6	-122.9*	-170.8*
3	893.3	1,001.4	-108.1*	-150.2*
4	745.5	825.6	-80.1*	-111.3*
Percentage Arrested or Charged with a Delinquency or Criminal Complaint, by Year				
All years	28.8	32.6	-3.7*	-5.2*
1	11.1	14.1	-3.1*	-4.3*
2	10.5	11.3	-0.8	-1.2
3	11.1	11.4	-0.4	-0.5
4	9.6	10.3	-0.7	-0.9
Percentage Convicted, Pled Guilty, or Adjudged Delinquent During the 48 Months After Random Assignment				
	22.1	25.2	-3.1*	-4.3*
Percentage Served Time in Jail for Convictions During the 48-Month Period				
	15.8	17.9	-2.1*	-2.9*
Average Weeks in Jail for Convictions During the 48-Month Period				
	6.0	6.6	-0.6	-0.8
Sample Size	6,828	4,485	11,313	
SOURCE: Baseline and 12-, 30-, and 48-month follow-up interview data for those who completed 48-month interviews.				
^a Estimated impacts per eligible applicant are measured as the difference between the weighted means for program and control group members.				
^b Estimated impacts per Job Corps participant are measured as the estimated impacts per eligible applicant divided by the difference between the proportion of program group members who enrolled in Job Corps and the proportion of control group members who enrolled in Job Corps during their three-year restriction period.				
^c Benefits include AFDC/TANF, food stamps, SSI/SSA, and General Assistance.				
*Significantly different from zero at the .05 level, two-tailed test.				

Program group members were less likely to have arrest charges for nearly all categories of crimes. However, reductions were slightly larger for less serious crimes (such as disorderly conduct and trespassing).

Job Corps participation also reduced convictions and incarcerations resulting from a conviction. More than 25 percent of control group members were ever convicted during the follow-up period, compared to 22 percent of program group members. Similarly, Job Corps reduced the percentage incarcerated for convictions by 2 percentage points (from 18 percent to 16 percent) and the average time spent in jail by about six days.

Although the level of criminal activity differed substantially across youth subgroups, the impacts on crime outcomes were very similar (in particular, by gender and age). We find some differences, however, in crime impacts by residential status. Job Corps reduced arrest rates for male residents, female residents, and female nonresidents. However, the program had no effect for male nonresidents.

Job Corps participation led to reductions in crimes committed against program participants. On average, Job Corps reduced the average number of victimizations by about 130 victimizations per thousand during the first 12 months after random assignment--a 20 percent reduction. As expected, the frequency of victimizations was reduced most during the in-program period, but the reductions persisted somewhat afterwards. Reductions were found for almost every crime type, and across most subgroups.

Job Corps had no impacts on the self-reported use of tobacco, alcohol, and illegal drugs. This finding applied for the full sample and for key subgroups. Job Corps also had little effect on time spent in drug treatment.

Job Corps improved participants' perceived health status. At each interview, about 17.5 percent of the control group and 15.5 percent of the program group said their health was "poor" or "fair."

Job Corps had no impacts on fertility or custodial responsibility, either for the full sample or by gender. About 38 percent of those in both the program and control groups had a child during the follow-up period (49 percent of females and 31 percent of males), and more than 80 percent of children were born out of wedlock. About two-thirds of all parents (and 42 percent of male parents) were living with all their children, and about 82 percent of male parents provided support for noncustodial children.

Job Corps participation slightly promoted independent living at the 48-month interview point. A slightly smaller percentage of program group members were living with their parents (32 percent, compared to 35 percent of control group members), and a slightly larger percentage were living with a partner either married or unmarried (31 percent, compared to 29 percent). Furthermore, program group members were more likely to report being the head of their household (52 percent, compared to 50 percent). This same pattern holds for males and females with and without children at baseline.

Job Corps slightly increased mobility, but had no impact on the types of areas in which participants lived at the 48-month interview point. Program group members were slightly less likely than control group members to have lived less than 10 miles from where they lived at application (73 percent, compared to 75 percent of the control group), and were slightly more likely to have lived more than 50 miles away (17 percent, compared to 16 percent). Thus, the average distance between the zip codes of residence at application to Job Corps and at the 48-month interview was slightly larger for the program group (94 miles, compared to 86 miles). The average characteristics of the counties of residence at 48 months, however, were similar for program and control group members. Furthermore, they were similar to the average county characteristics of residence at the time the youths applied to Job Corps (because most youths lived in the same areas at program application and at 48 months).

Job Corps participation led to increases in the use of child care. During the 48-month period, Job Corps participants used an average of about 146 more hours of child care than they would have if they had not enrolled in Job Corps.⁸ Impacts on child care use were positive during the first year after random assignment (when many program group members were enrolled in Job Corps) and during the fourth year (when employment impacts were the largest), but not in years 2 and 3. Impacts were found for females but not for males, because only a small percentage of fathers were living with their children and needed to find child care.

CONCLUDING OBSERVATIONS

Job Corps provided participants with the instructional equivalent of one additional year in school. Enrollees reported receiving extensive Job Corps services. Overall, they received an average of about 1,000 hours of education and training that they would not have received otherwise. This is approximately the hours of instruction delivered in a typical school year. These impacts on education and training could have led to the postprogram earnings gains we observed.

Of course, Job Corps also provides other services that could have contributed to the postprogram earnings gains. It provides a residential living program, health care, and a broad range of services designed to help youth who have not succeeded in school to become productive young adults. Many staff and observers of the program believe that the distinctive residential component of Job Corps is a key ingredient, both because the residential component is necessary for delivering effective academic and vocational instruction and because the experience of living in a community committed to learning has intrinsic benefits apart from the formal education and training that Job Corps provides. Because of the comprehensive nature of Job Corps, it is difficult to determine the relative contributions of the different parts of the program to the beneficial impacts that we find. However, viewing Job Corps as providing an additional year of schooling offers a way to place the earnings impacts into perspective.

Earnings gains observed beginning in the third year after random assignment are commensurate with what would be expected from an additional year of school. Economists

⁸Child care use pertains only to arrangements used by parents while they were working or attending education and training programs.

have long been concerned about the returns to schooling. They pose the question, How much difference does an additional year of schooling make in the lifetime earnings of an individual? The answers they have developed over the last two decades provide an important perspective on the study's findings.

Studies of the average returns to a year of schooling consistently find that a year of schooling increases earnings over a worker's lifetime by 8 to 12 percent. Measured in hours spent in academic classes and vocational training, Job Corps provided roughly the equivalent of a year of additional schooling per participant. In this context, the 12 percent earnings gains and the persistence of the earnings gains during the latter part of the 48-month period are in line with what one would expect from an intensive education and training program that serves primarily school-aged youth.

Most subgroups of students benefited from Job Corps. The finding that Job Corps improves key outcomes for broad groups of students rather than for only a subset provides further evidence that the program is effective. Participation led to substantial improvements in education-related outcomes for all subgroups of students that we investigated. Employment and earnings gains were similar for males and females. Postprogram earnings gains were found for groups of students at special risk of poor outcomes (such as very young students, females with children, those arrested for nonserious crimes, and older youths who did not possess a high school credential at baseline), *as well as* for groups at lower risk (such as older students with a high school credential at baseline). The program increased earnings for whites as well as for African Americans (although earnings gains were not found for Hispanics), and for those who applied before and after the ZT policies took effect. Reductions in criminal activity were found for nearly all groups of students. Thus, Job Corps effectively serves a broad group of students with differing abilities and needs.

While Job Corps is broadly effective, the impacts for several particularly vulnerable or difficult-to-serve groups are especially noteworthy.

Beneficial program impacts were found for 16- and 17-year-old youth. For this group: (1) average earnings gains per participant were nearly \$900 in year 4, (2) the percentage earning a high school diploma or GED was up by 66 percent, and (3) arrest rates were reduced by 11 percent and rates of incarceration for a conviction by 19 percent. While staff find this group difficult to deal with, and while more of them leave Job Corps before completing their education and training than do older students, the youngest age group does appear to benefit from their program experiences.

Females with children at the time of enrollment enjoyed significant earnings gains and modest reductions in welfare receipt. More than one-half of young women with children enrolled in Job Corps as nonresidential students, because child-rearing responsibilities required that they live at home. However, these young women received similar amounts of academic classroom instruction and vocational training as other students, despite living at home. Furthermore, in year 4, they enjoyed increases of more than 20 percent in their earnings and reductions of about 12 percent in their receipt of public assistance.

The residential and nonresidential programs serve different groups of students, and each is effective for the groups it serves. Earnings and employment impacts during the last two years of the follow-up period were positive overall for those assigned to each component. Furthermore, earnings gains were positive in each component for nearly all subgroups defined by gender and the presence of children at random assignment.

Importantly, it is *not* appropriate to conclude that the residential component could be abolished and everyone served just as well in the less expensive nonresidential component, for several reasons. First, the two components serve very different students. Nonresidential students tend to be females with children and older youths who would be unable to participate in the residential Job Corps program because of family responsibilities. On the other hand, residential students tend to be younger and less educated, and are deemed by Job Corps staff to require training in a residential setting to fully benefit from the program. Consequently, our results cannot be used to assess how students in the residential component (for example, 16- and 17-year-old residents) would fare in the nonresidential component.

Second, most centers with nonresidential slots also have residential slots, so nearly all nonresidential students train with residential students and may benefit from interacting with them. The program experiences of nonresidential students would probably be much different if the residential component were abolished.

Finally, nonresidential students receive services that are similar in many ways to those received by residential students, and the nonresidential component of Job Corps is more intensive and comprehensive than most other nonresidential training programs. In fact, the program cost per nonresidential student is only about 16 percent less than the program cost per residential student (McConnell et al. 2001). Thus, the cost of Job Corps would not be reduced significantly if all students were served in the nonresidential component.

In conclusion, we find that Job Corps produces beneficial impacts on the main outcomes that it intends to influence. Beneficial impacts on education-related, employment-related, and crime-related outcomes were found overall, as well as for broad subgroups of students. The residential and nonresidential program components were each effective for the students they served. A companion report, presenting findings from the benefit-cost analysis, concludes that Job Corps is a worthwhile investment both for the students and for the broader society that supports their efforts.