

# REPORT

FINAL REPORT

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## **National Job Corps Study: 20-Year Follow-Up Study Using Tax Data**

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Peter Z. Schochet

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**Submitted by:**

Mathematica Policy Research  
P.O. Box 2393  
Princeton, NJ 08543-2393  
Telephone: (609) 799-3535  
Facsimile: (609) 799-0005  
Project Director: Sarah Dolfin  
Reference Number: 50174.01.850.479.000

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## A. INTRODUCTION

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Job Corps stands out as the nation's largest career technical training and education program for at-risk youth between ages 16 and 24. Administered by the U.S. Department of Labor (DOL), the program provides vocational, academic, health, and supportive services, primarily in a residential setting at Job Corps centers. The program's objective is to help disconnected youth become more responsible, employable, and productive citizens. Each year, Job Corps serves more than 60,000 youth, at a cost of more than \$1.5 billion. Since 1964, the program has served more than 2.5 million participants.

Between 1993 and 2004, DOL sponsored the National Job Corps Study to examine the effectiveness of the program as it operated in the mid-1990s. Mathematica Policy Research was the prime contractor for the study, with subcontractors Battelle Human Affairs Research Centers and Decision Information Resources, Inc. The evaluation was designed to (1) assess the effectiveness of Job Corps in improving the educational attainment, labor market, and crime-related outcomes of program participants; (2) compare program benefits to program costs; and (3) document implementation of the program, the services provided, and program administration.

The impact evaluation used an experimental design, in which all eligible program applicants nationwide between late 1994 and early 1996 were randomly assigned to a program group who could enroll in Job Corps or to a control group who could not (but who could enroll in other available programs in their communities). The study obtained nationally representative impact estimates by comparing the outcomes of program and control group members over time, using survey data covering the four years after random assignment and earnings records from tax data through 2001. DOL subsequently contracted with Mathematica to examine longer-term earnings impacts using tax data through 2004, roughly nine years after random assignment.

The National Job Corps Study found that Job Corps made a difference:

- The process study, which used data from week-long visits to 23 centers and surveys of program staff, found that Job Corps uses a well-developed, well-implemented program model that provides extensive education, training, and other services to its participants.
- The impact study found that, relative to a control group, program participation led to an extra year of schooling, increased the attainment of General Educational Development (GED) and vocational certificates by more than 20 percentage points each, and reduced arrest and conviction rates by about 15 percent each (Schochet et al. 2001). Job Corps led to earnings gains during the two years after program exit (roughly years 3 and 4 after random assignment) for a wide range of student groups. It led to longer-term earnings gains in years 5 to 9 for the older students (ages 20 to 24), but not overall or for the younger students.
- Based on the impact results, measured social benefits did not offset program costs for the full sample; however, program benefits did exceed program costs for the older students and from the perspective of program participants.<sup>1</sup>

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<sup>1</sup> The key project publications include Johnson et al. (1999; process analysis); Burghardt et al. (1999; implementation of random assignment); Schochet et al. (2001; impacts based on survey data); McConnell and

With this backdrop, Mathematica conducted a longer-term follow up study to examine employment-related impacts using tax records through 2015, about 20 years after random assignment and 11 years since the previous collection of tax data. In 2015, study participants were between ages 36 and 44. The study was conducted as part of a project at the Office of Tax Analysis (OTA) at the U.S. Department of the Treasury and had access to richer income data than previous analyses using tax data from the Social Security Administration (SSA).<sup>2</sup>

### **Study goals**

The 20-year follow-up study addressed the following research questions:

- Twenty years after random assignment, what were the impacts of Job Corps on participants' annual employment and earnings overall and by age group?
- What were impacts on types of employment (hourly wage and salaried employment, contractor employment, and self-employment); the receipt of Social Security Disability Insurance (SSDI) benefits; and spouse employment? Did the program have an effect on tax filings, liabilities, and balances due?

Examining long-term program effects is important for a number of reasons. As the sample reached adulthood and matured, they may have settled into more stable jobs and careers, with earnings increasingly likely to be reported in the tax data. Additionally, Job Corps and similar programs focus not only on developing cognitive skills, but also on improving health and noncognitive skills. Job Corps offers a broad range of services designed to promote health, life, and workplace success. It provides medical treatment and counseling; offers world-of-work, cultural awareness, parenting, and health classes; and provides many residential living activities, such as social skills training, recreation, and center government opportunities. A growing literature has demonstrated the importance of noncognitive skills in educational attainment and longer-term employment and earnings growth (Almlund et al. 2011; Heckman et al. 2006; Zamarro et al. 2016). These character strengths—such as perseverance, industriousness, grit, resilience, and self-control—have been shown to contribute significantly to success in adulthood and to upward mobility. Yet there is little evidence demonstrating the long-term impacts of incorporating these types of approaches in programs such as Job Corps.

More generally, there is little evidence in the literature about the long-term effects of career technical training and education programs for at-risk youth similar to Job Corps. Couch (1992) used administrative earnings data to examine the labor market effects eight years after program participation for youth included in the National Supportive Work (NSW) evaluation, and found no effects. However, the NSW program differed from Job Corps because it provided

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*(continued)*

Glazerman (2001; initial benefit-cost analysis based on survey data); Schochet et al. (2003, 2005, 2006; earnings impacts and updated benefit-cost analysis based on tax data); and Schochet et al. (2008; journal article summarizing key findings).

<sup>2</sup> The OTA project is entitled “The Effects of Employment and Earnings on Tax Filing and Tax Liability: Evidence on Short-term and Long-term Effects Using Administrative Tax Data” (Manoli and Patel 2018). The Job Corps study is important for tax policy because understanding the effects of Job Corps participation on employment and earnings could influence long-term tax filings and liabilities for these at-risk individuals.

considerably less intensive services in a nonresidential setting. Card et al. (2010, 2015) conducted several meta-analyses of labor market programs in the U.S. and abroad—including classroom and on-the-job training programs—but classified “long-run” estimates as those that covered just three years after program completion. Therefore, findings from the 20-year Job Corps study will contribute to the literature about the mid-career labor market effects of participation in a major national education and training program serving at-risk youth.

### **Preview of 20-year impact findings**

The 20-year results largely mimic the results from the nine-year study using the tax data. We find evidence that the positive program effects persisted, but did not grow, for the 20- to 24-year-olds. The older participants experienced employment gains of about 4.2 percentage points in 2013 to 2015, with associated 10 percent increases in tax filing rates and 40 percent reductions in the receipt of SSDI benefits. Furthermore, the older program group earned more, on average, than the older control group throughout the period, although their \$1,265 (or 7.3 percent) earnings gain in 2015 is not statistically significant. However, as with the nine-year study, we find no evidence of long-term program effects on employment and earnings overall or for the 16- to 19-year-olds in years 10 to 20. The study findings do not change previous conclusions from the benefit-cost analysis.

The rest of this report presents the analysis findings in more detail and our conclusions. In a companion report, Appendix A contains detailed tables of impact results and Appendix B provides more details on the tax data and analysis methods.

## B. 20-YEAR IMPACT FINDINGS USING TAX DATA

For the study, we examined impact findings using tax records from 2001 through 2015, at which time sample members were between ages 36 and 44. We begin by summarizing the data and methods for the analysis (Appendix B in a companion report provides more details).

### Data and analysis methods

We examined long-term impacts using the tax data on several categories of calendar year outcomes from 2001 to 2015 (the years available at the time of our data requests). We measured employment and earnings from W-2 forms (hourly wage and salaried employment), 1099-MISC forms (contractor employment), and Schedule C forms (self-employment for the tax unit [household] for those who filed tax returns). We also examined the receipt of SSDI, spouse employment, and tax filing status, liabilities, and balances due. All earnings and income measures were scaled into 2015 dollars so that the results can be consistently compared over time. The earnings and income measures include zero values (for example, zero earnings for those who did not work).

For the National Job Corps Study, random assignment took place when program applicants were determined eligible for the program. Thus, for the original and current evaluation, we estimated impacts for eligible applicants by comparing the mean outcomes of the program and control groups over time. We also estimated impacts for the 73 percent of program group members who enrolled in Job Corps using statistical adjustments (see Appendix B).

We estimated impacts for the full sample and separately for three age groups defined at program application: those 16 and 17, 18 and 19, and 20 to 24. To gain data access, OTA allowed only a very limited number of subgroups for the analysis, so we could not estimate impacts for the wide range of subgroups examined previously (for example, by gender and for residential and nonresidential students). We selected age subgroups because differences in impacts by age were the key driver of impact variation from previous analyses of administrative earnings data. Table 1 displays study sample sizes.

**Table 1. Study sample sizes**

Subgroup	Program group	Control group	Total
Full sample	9,267	5,860	15,127
Age at application			
16 to 17	3,720	2,431	6,151
18 to 19	2,944	1,852	4,796
20 to 24	2,603	1,577	4,180

Source: Job Corps sample matched to IRS tax data.

To focus the analysis and mitigate spurious significant impact findings that can occur when examining impacts across many outcomes, the *confirmatory* (primary) outcome variables for the analysis were limited to employment and earnings in 2013 to 2015—the most current period—based on reported W-2 forms (wage and salary income). Recognizing statistical power limitations for the age-specific analyses (especially for the older students; see Appendix B), we

did not adjust the confirmatory analyses using multiple comparisons methods (see Schochet 2009). Rather, we examined statistical significance at the 5 and 10 percent levels for each confirmatory analysis and examined the pattern of findings. In addition, we relied on F-tests for the age group analyses to gauge whether impacts differed across the three age groups.

## Impact findings

This section first discusses the impact findings for the full sample and then for the three age groups. We focus on the confirmatory analysis findings, summarized in Table 2, that show some evidence of long-term program effects for the 20- to 24-year-olds, but no long-term program effects for the full sample or for the 16- to 19-year-olds. We also discuss the exploratory impact findings to provide context. Appendix A in a companion report contains detailed tables of analysis results from both the current and previous analyses using the tax data.

**Table 2. Summary of 20-year impact findings on confirmatory (primary) employment and earnings outcomes (tax data)**

Outcome and subgroup	Impacts for participants <sup>a</sup>		
	2013	2014	2015
<b>Employed based on W-2 forms (percentage points)</b>			
Full sample	-0.7 (1.1)	-0.4 (1.1)	0.1 (1.1)
Age at application	+	+	
16 to 17	-0.8 (1.7)	0.0 (1.7)	-0.3 (1.7)
18 to 19	-4.6** (2.0)	-4.6** (2.0)	-2.3 (2.0)
20 to 24	4.2* (2.4)	4.2* (2.4)	4.2* (2.4)
<b>Earnings from W-2 forms (2015 dollars)</b>			
Full sample	81 (490)	412 (516)	383 (538)
Age at application			
16 to 17	32 (683)	297 (723)	324 (769)
18 to 19	29 (892)	-133 (951)	-263 (978)
20 to 24	214 (1,074)	1,265 (1,109)	1,265 (1,148)

SOURCE: IRS tax data (Manoli and Patel 2018). Sample sizes are shown in Table 2.

Notes: Standard errors are in parentheses. Calendar year 2015 is roughly 20 years after random assignment.

<sup>a</sup> Estimated impacts per Job Corps participant are measured as the estimated impacts per eligible applicant (mean program-control difference) 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.

\*/\*\*/\*\* Impact is significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

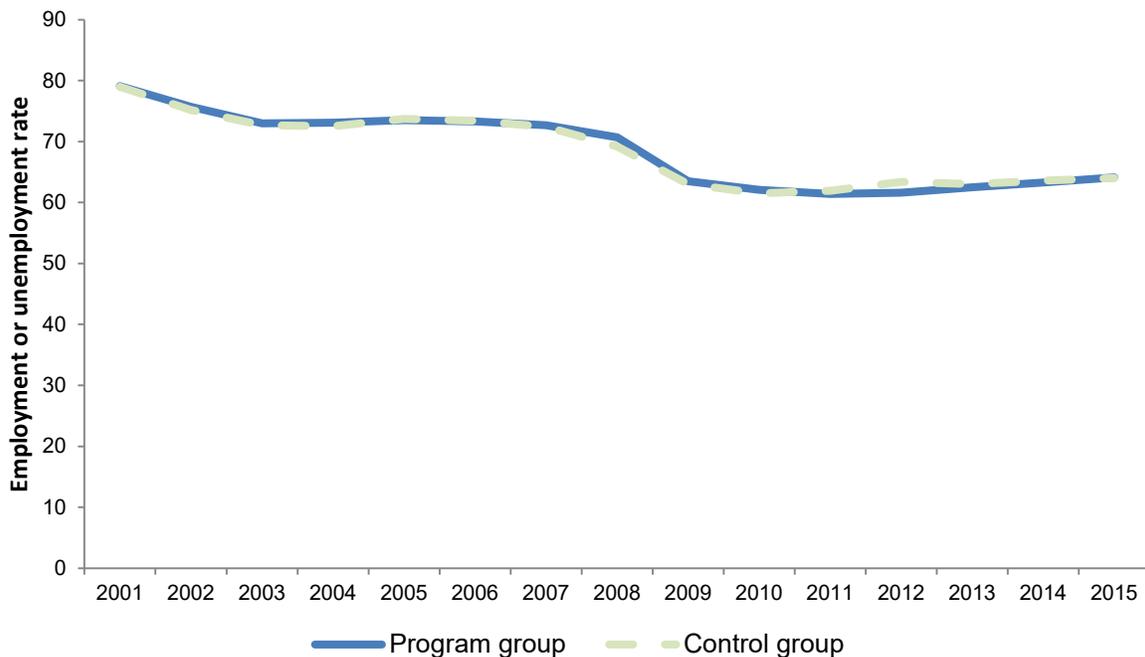
+ Differences in impacts across age levels is statistically significant at the .05 level, two-tailed test.

## Impacts for the full sample

**Employment.** We find no impacts on long-term employment rates in 2013 to 2015 for the full sample as measured by reported W-2 forms (Figure 1; Table A.1). In 2015, the employment rate was 64.1 percent for the program group and 64.0 percent for the control group, and the rates were similar in 2013 and 2014. Employment rates for both research groups decreased during the recession starting in 2008, then rebounded slowly. However, regardless of the economic conditions, impacts on employment were zero throughout the period starting in 1999 (year 4 after random assignment; Table A.1).

Impacts were also zero for each type of employment separately (Figure 2; Tables A.3, A.5, and A.6). In 2015, about 64 percent of both research groups had wage employment, 7 percent had contractor employment, and 11 percent were self-employed. During the 2001–2015 period, contractor employment grew by about 50 percent, and self-employment more than doubled.

**Figure 1. Annual employment rates between 2001 and 2015 for the full sample based on W-2 forms**

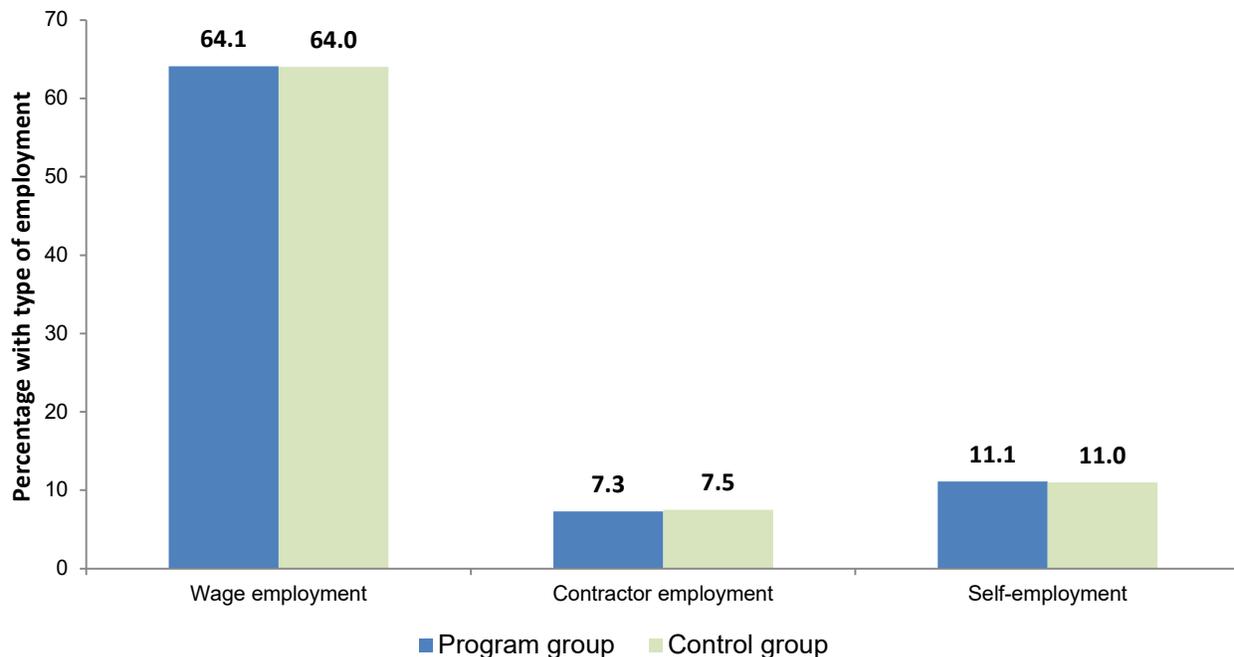


SOURCE: IRS tax data on 9,267 program group and 5,830 control group members (Manoli and Patel 2018).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

**Figure 2. Employment rates in 2015 for the full sample, by type of employment**



SOURCE: IRS tax data on 9,267 program group and 5,830 control group members (Manoli and Patel 2018).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

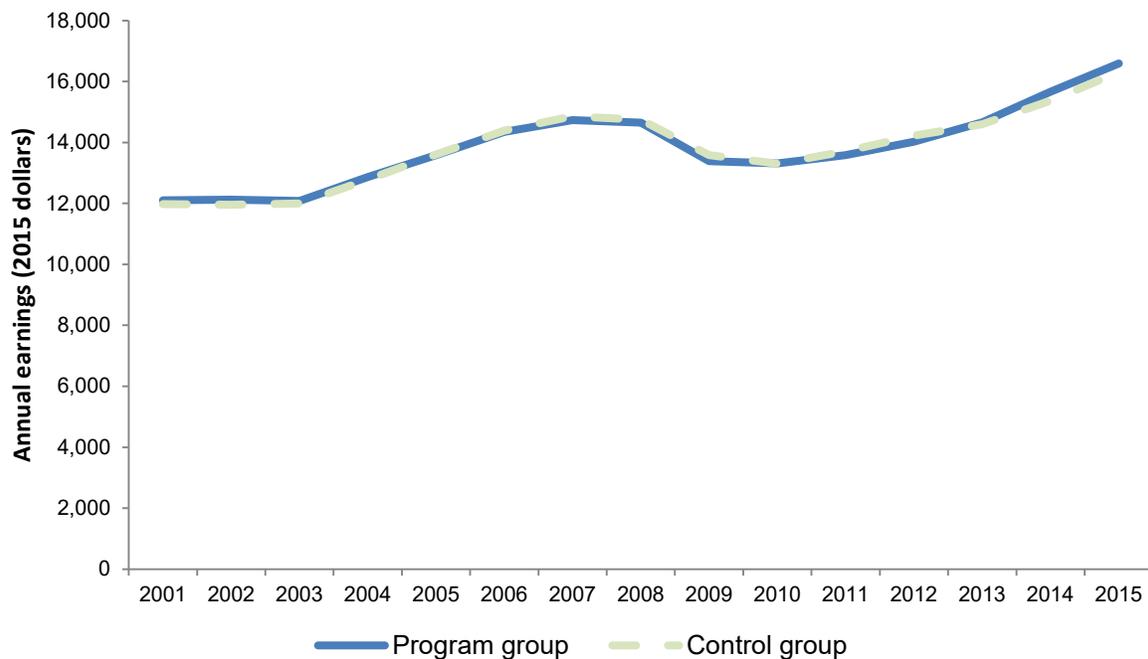
**Earnings and income.** We find no impacts on earnings from wage and salary jobs in the 2013–2015 period (Figure 3; Table A.2). In 2015, the average program group member earned \$16,589 from wage and salary employment, compared to \$16,314 for the average control group member (an impact of \$275 for eligible applicants and \$383 for program participants), and similar impacts were found in 2013 and 2014. Among those employed in 2015, program group workers earned about \$25,880 on average, compared to \$25,491 for control group workers. Between 2001 and 2015, the program group earned only \$286 more from wage and salary employment than the control group (\$207,708, compared to \$207,422), a difference that is not statistically significant. During that period, earnings for both groups grew by about 37.5 percent, from \$12,000 to \$16,500 (in 2015 dollars).

We also find no statistically significant impacts on other measures of earnings and income for the full sample (Figure 4). There were no program impacts on W-2 wages combined with contractor income (Table A.4), broad income that includes wage and contractor income as well as UI and SSDI benefits (Table A.8), and total household income based on line 22 on IRS Form 1040 for filers and broad income for nonfilers (Table A.9). For both research groups, in 2015, contractor income increased W-2 earnings by an average of about \$1,800 (\$18,200, compared to \$16,400), broad income added an additional \$800 of income, and total household income was

about \$7,000 larger than broad income (\$26,000, compared to \$19,000), reflecting earnings and benefits from other household members in the tax unit.

Consistent with the impact findings on employment and earnings, we find no impacts for the full sample on the receipt of SSDI benefits for those no longer able to perform a substantial amount of work as the result of a physical or mental impairment (Figure 5; Table A.7). Although a smaller percentage of the program group than control group received SSDI benefits throughout the period, the differences of about -0.4 percentage points are not statistically significant. As discussed in the next section, these differences were due primarily to the older students. The percentage of sample members receiving SSDI benefits increased over time, from about 1.5 percent in 2001 to 6.0 percent in 2015.

**Figure 3. Annual earnings between 1998 and 2015 for the full sample based on W-2 forms**

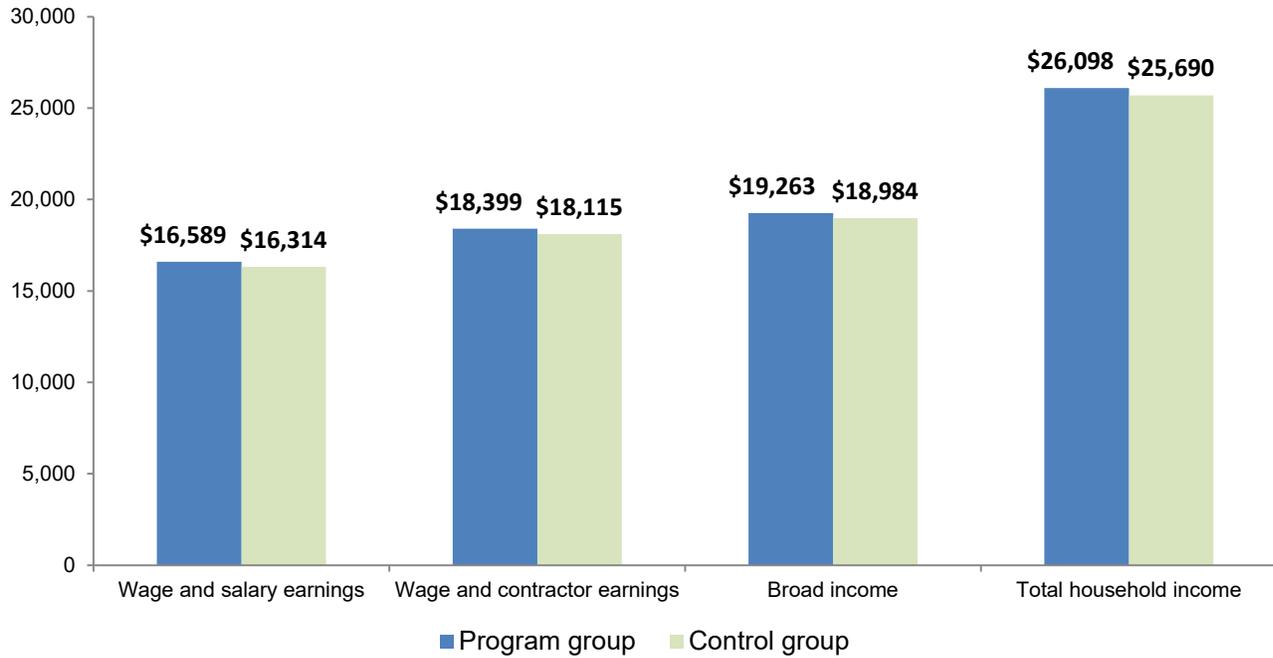


SOURCE: IRS tax data on 9,267 program group and 5,830 control group members (Manoli and Patel 2018).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

**Figure 4. Earnings and income in 2015 for the full sample, by source**

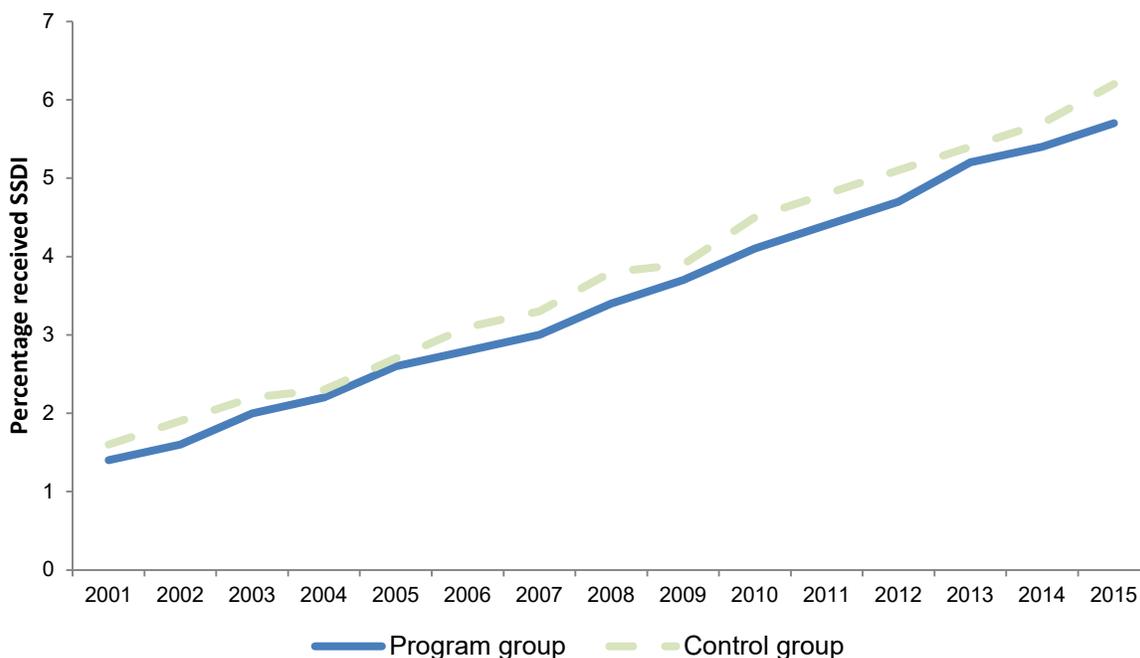


SOURCE: IRS tax data on 9,267 program group and 5,830 control group members (Manoli and Patel 2018).

NOTES: Wage and salary earnings are from W-2 forms, broad income includes wage and contractor income as well as UI and SSDI benefits, and total household income is based on line 22 on IRS Form 1040 for filers and broad income for nonfilers. Earnings and income are measured in 2015 dollars. Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

**Figure 5. SSDI receipt between 2001 and 2015 for the full sample based on 1099-SSA forms**



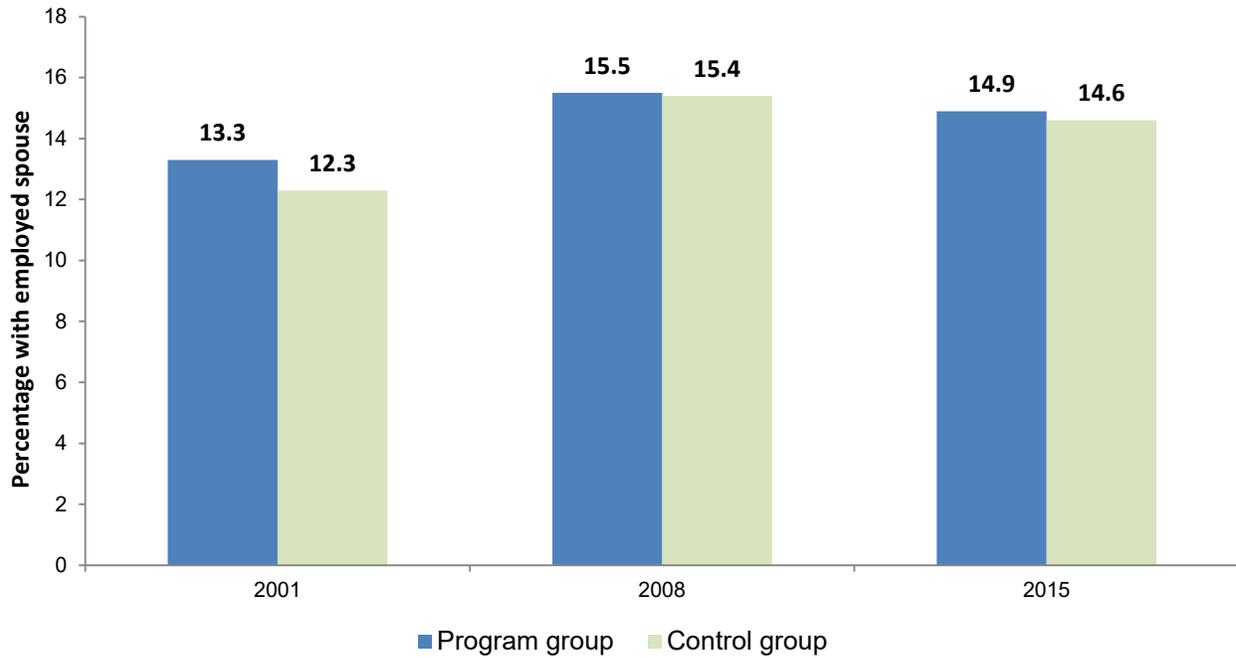
SOURCE: IRS tax data on 9,267 program group and 5,830 control group members (Manoli and Patel 2018).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

**Spouse employment.** We find no overall program effects on the employment of spouses in the tax unit based on their W-2 forms (Figure 6; Table A.10). It is surprising that spouse employment rates were about 15 percent throughout the period and did not grow as the sample aged. The impact results suggest that Job Corps did not have a long-term effect on marriage rates or on spouse employment rates among those with spouses (although these two effects cannot be formally disentangled with the available data).

**Tax filing and liabilities.** Consistent with the impact findings on labor market outcomes, we find no impacts for the full sample on tax filings, tax liabilities, and total balances due (Table 3; Tables A.11–A.13). In 2015, about 62 percent of the sample filed a tax return. Tax filing rates decreased somewhat between 2001 and 2015 (perhaps due to increases in the receipt of SSDI benefits), but total tax liabilities increased as earnings grew. In 2015, total tax liabilities averaged about \$1,600, and total tax refunds averaged about \$2,000.

**Figure 6. Spouse employment rates from W-2 forms, by year**

SOURCE: IRS tax data on 9,267 program group and 5,830 control group members (Manoli and Patel 2018).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

**Table 3. Impacts on tax measures for the full sample for selected years**

Calendar year	Program group	Control group	Estimated impact per eligible applicant <sup>a</sup>		Estimated impact per participant <sup>b</sup>	
<b>Tax filing rates</b>						
2001	71.2	72.4	-1.2	(0.8)	-1.7	(1.1)
2008	70.4	70.1	0.3	(0.8)	0.4	(1.1)
2015	62.4	61.4	1.0	(0.8)	1.4	(1.1)
<b>Total tax liabilities (2015 dollars)</b>						
2001	958	957	1	(37)	1	(52)
2008	1,095	1,042	53	(42)	74	(58)
2015	1,591	1,540	51	(61)	71	(85)
<b>Total tax balance due (2015 dollars)</b>						
2001	-1,848	-1,879	31	(37)	43	(52)
2008	-2,451	-2,470	19	(48)	26	(67)
2015	-2,184	-2,172	-12	(51)	-17	(71)
<b>Sample size</b>	<b>9,267</b>	<b>5,860</b>	<b>15,127</b>			

SOURCE: IRS tax data (Manoli and Patel 2018).

Notes: Standard errors are in parentheses. Calendar year 2015 is roughly 20 years after random assignment.

<sup>a</sup> Estimated impacts per eligible applicant are measured as the difference between the weighted means for program and control group members.

<sup>b</sup> 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.

\*/\*\*/\*\* Impact is significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test.

### Impacts by age

This section provides impacts by age at program application; separate impacts are presented for those 16 and 17, 18 and 19, and 20 to 24. The findings provide some evidence of long-term program effects on labor market outcomes for those ages 20 to 24 at program application, but not for those younger.

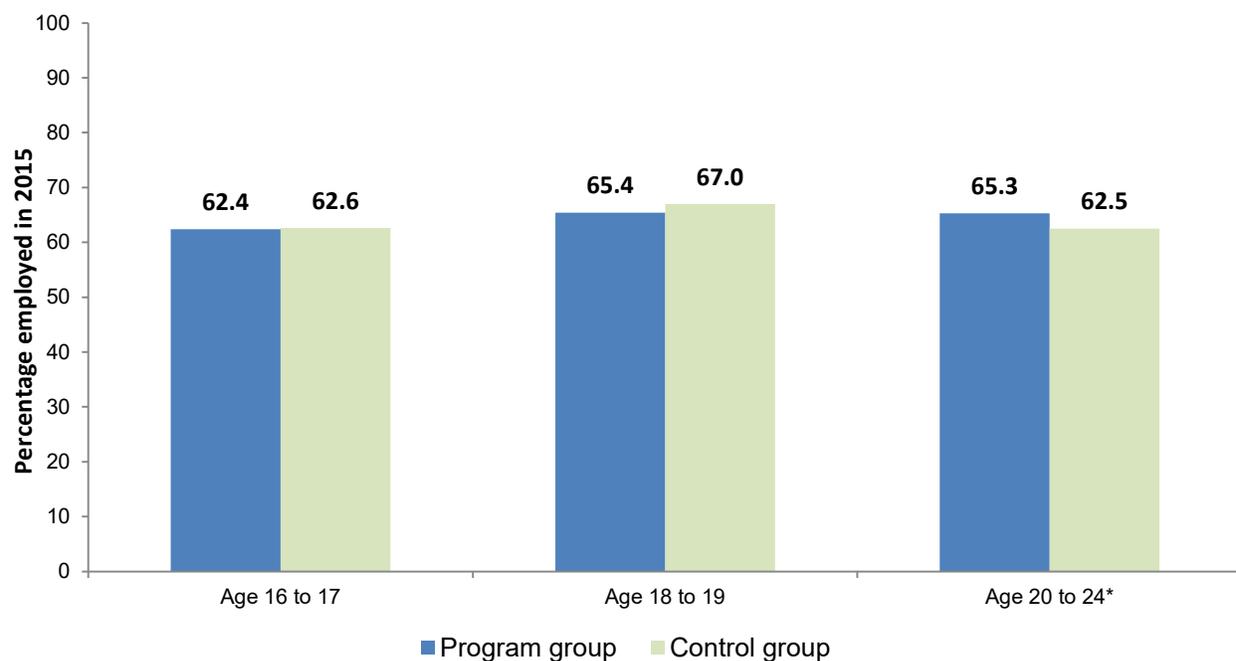
**Employment.** In 2015, the impact on the employment rate from hourly wage and salaried jobs (W-2 employment) is statistically significant at the 10 percent level for the 20- to 24-year-olds but not for those younger (Figure 7; Tables A.14, A.27, and A.40). For the older cohort, 65.3 percent of the program group was employed in 2015, compared to 62.5 percent for the control group, an employment gain of 2.8 percentage points for eligible applicants and 4.2 percentage points for program participants. The results are similar in 2013 and 2014, where differences in impacts across the three age groups are significantly significant at the 5 percent level (based on F-tests).

Looking over the whole 1998 to 2015 period (years 4 to 20 after random assignment), we see that, among the older students, a higher percentage of program group members than control group members were employed in *each* year, where the impacts for participants hovered between 2 and 4 percentage points (Figure 8, Table A.40). No beneficial program effects on annual

employment rates were found for the younger students throughout the period, and the impacts were negative for the 18- to 19-year-olds in some years (Tables A.14 and A.27).

The positive employment impacts for the older students were due to program effects on W-2 employment, but not to contractor employment or self-employment (Table 4; Tables A.16–A.19, A.29–A.32, and A.41–A.43). It is interesting that, in 2015, the percentage of sample members receiving income from contractor employment (7.5 percent) and self-employment (11 percent) did not differ by age, but the prevalence of these income sources increased over time for all age groups.

**Figure 7. Employment rates in 2015 from W-2 forms, by age**

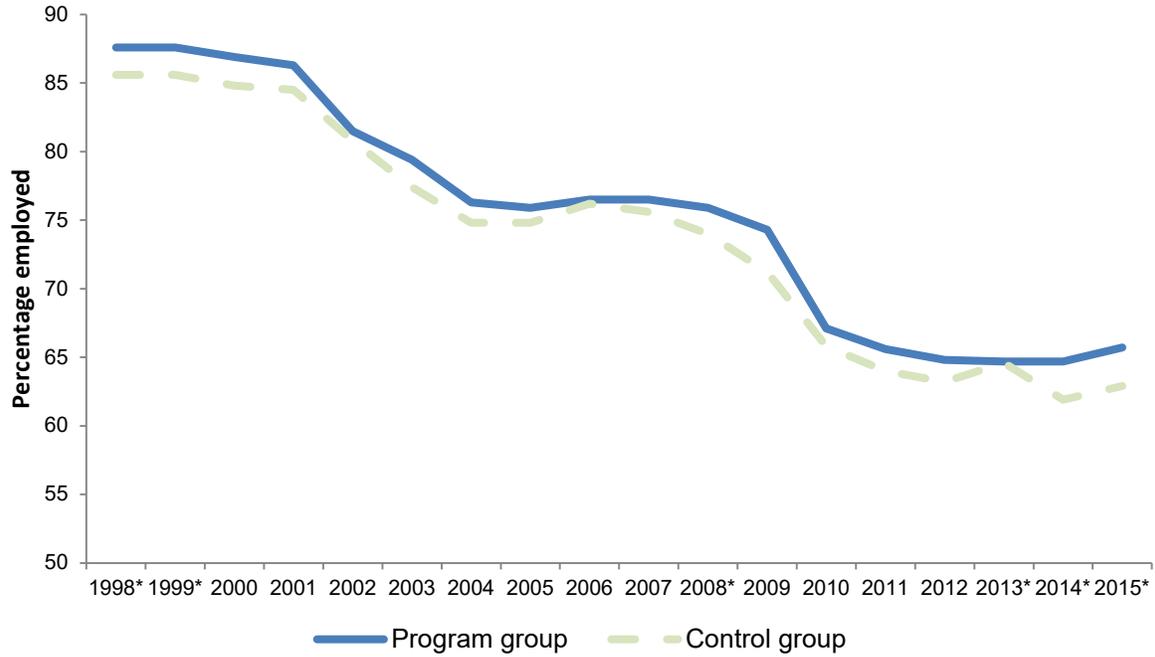


SOURCE: IRS tax data (Manoli and Patel 2018; see Table 2 for sample sizes).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.10 level, two-tailed test.

**Figure 8. Annual employment rates between 1998 and 2015 for those ages 20 to 24 at program application based on W-2 forms**



SOURCE: IRS tax data on 2,603 program group and 1,577 control group members (Manoli and Patel 2018).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.10 level, two-tailed test.

**Table 4. Impacts on the employment rate in 2015, by type of employment and age**

Age at application	Program group	Control group	Estimated impact per eligible applicant <sup>a</sup>	Estimated impact per participant <sup>b</sup>
<b>Wage employment</b>				
16 to 17	62.4	62.6	-0.2 (1.3)	-0.3 (1.7)
18 to 19	65.4	67.0	-1.6 (1.4)	-2.3 (2.0)
20 to 24	65.3	62.5	2.8* (1.6)	4.2* (2.4)
<b>Wage or contractor employment</b>				
16 to 17	65.4	65.2	0.2 (1.3)	0.3 (1.7)
18 to 19	67.9	70.2	-2.3* (1.4)	-3.3* (2.0)
20 to 24	68.0	66.0	2.0 (1.5)	3.0 (2.2)
<b>Contractor employment only</b>				
16 to 17	7.6	7.5	0.1 (0.7)	0.1 (0.9)
18 to 19	7.1	7.5	-0.4 (0.8)	-0.6 (1.1)
20 to 24	7.2	7.6	-0.4 (0.8)	-0.6 (1.2)
<b>Self-employment</b>				
16 to 17	11.2	11.6	-0.4 (0.8)	-0.5 (1.0)
18 to 19	11.0	11.1	-0.1 (1.0)	-0.1 (1.4)
20 to 24	11.1	10.1	1.0 (1.0)	1.5 (1.5)

SOURCE: IRS tax data (Manoli and Patel 2018; see Table 2 for sample sizes).

Notes: Standard errors are in parentheses. Calendar year 2015 is roughly 20 years after random assignment.

<sup>a</sup> Estimated impacts per eligible applicant are measured as the difference between the weighted means for program and control group members.

<sup>b</sup> 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.

\*/\*\*/\*\* Impact is significantly different from zero at the 0.10/0.05/0.01 level, two-tailed test. Stars next to the calendar years signify that differences in impacts across the three age groups are statistically significant.

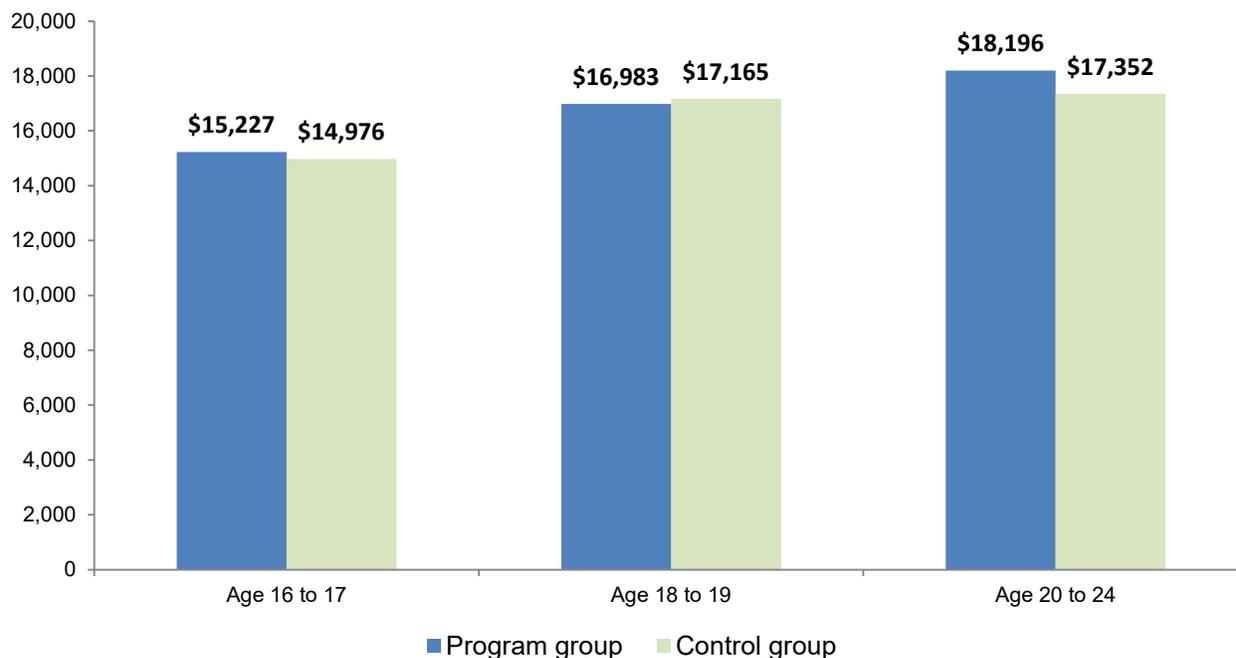
**Earnings and income.** We find no statistically significant impacts on earnings from wage employment in 2013 to 2015 for any age group (Figure 9; Tables A.15, A.28, and A.41). Yet there is some evidence of positive effects for the 20- to 24-year-olds (see box below).

#### Evidence of Positive Effects for the Older Students

- In both 2014 and 2015, program participants experienced a 7.3 percent earnings gain. During those years, the program group earned an average of \$844 more than the control group, or \$1,265 more for program participants.
- Average earnings for the program group were higher than for the control group in *every* year between 1998 and 2015 except for 2012 (Figure 10). During this period, the average program participant earned about \$13,000 more than they would have if they had not enrolled in Job Corps.
- Although the annual earnings impacts are not statistically significant—that is, we cannot formally conclude that the program-control group differences differ from zero—the study had relatively limited power to detect realistic earnings impacts for the older students (see Appendix B). This is due to the relatively small sample size for this group (about one-quarter of the sample) and the large standard deviation of earnings (which considerably reduces power). For the older students, the minimum detectable impact on annual earnings for eligible applicants was about \$1,980 in 2013 to 2015, which is more than double the observed impacts. Therefore, we interpret the evidence more broadly.
- The pattern of earnings impacts closely follows the pattern of the employment impacts, where we have more statistical power for detecting program effects.
- We find a similar pattern of results when examining impacts on other sources of income besides the W-2 forms, such as combined income from contractor employment and W-2 employment (Table A.43) and broad income (Table A.47), although these impact estimates are measured less precisely (have larger standard errors).
- Job Corps participation markedly reduced the receipt of SSDI benefits for the older students. The program group was less likely than the control group to receive SSDI starting in 2006, and the effects then grew (Figures 11 and 12; Table A.46). In 2015, 6.6 percent of the program group received SSDI, versus 9.0 percent for the control group. This statistically significant 2.4 percentage point reduction is a 3.6 percentage point—40 percent—decrease for program participants. Job Corps also increased tax filing rates, as discussed later.
- The current results do not change the finding from Schochet et al. (2006) that the measured benefits of the program (as it operated in the mid-1990s) exceeded program costs from the social perspective for the older students. This is because the earnings impacts based on the tax data for the older students did not change substantially (\$1,038 in 1998, \$1,103 in 2004, and \$1,265 in 2015), and the long-term impacts are heavily discounted in the benefit-cost calculations, so they have only a small effect on the results.

Although evidence exists that Job Corps participation led to labor market gains for the older students, the effects did not increase over time. Furthermore, there is no evidence that Job Corps participation led to long-term earnings gains for the younger students. Between 2001 and 2015, the program-control group contrasts on all income measures are all close to zero for the 16- to 17-year-olds and tend to be negative for the 18- to 19-year-olds, although none of these impacts is statistically significant (Tables A.15, A.17, A.21, A.22, A.28, A.30, A.34, and A.35). Furthermore, impacts on the receipt of SSDI are statistically insignificant for the younger cohorts (Figure 12; Tables A.20 and A.33).

**Figure 9. Earnings in 2015 from W-2 forms, by age**

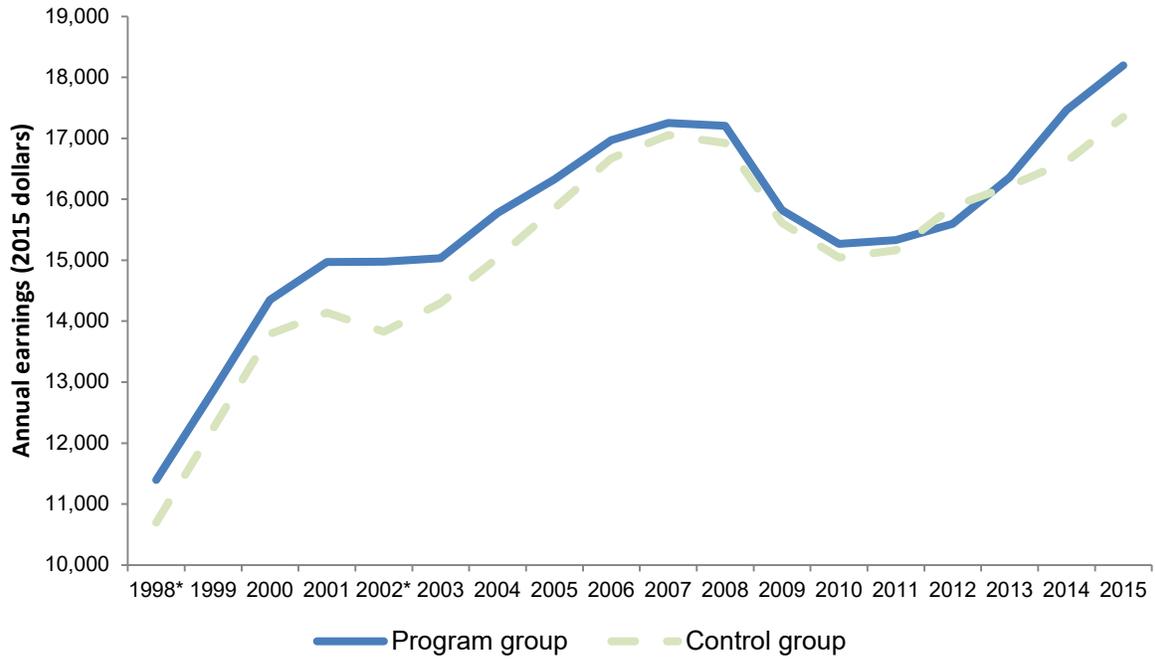


SOURCE: IRS tax data (Manoli and Patel 2018; see Table 2 for sample sizes).

Notes: Calendar year 2015 is roughly 20 years after random assignment. Earnings are measured in 2015 dollars

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

**Figure 10. Annual earnings between 1998 and 2015 for those ages 20 to 24 at program application based on W-2 forms**

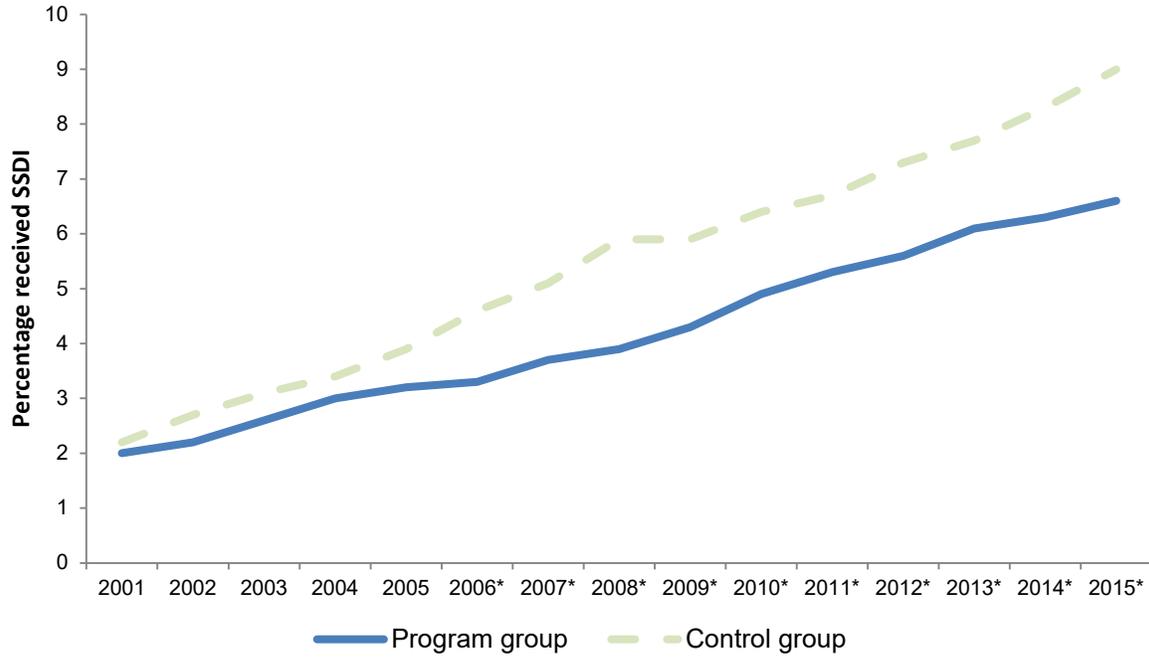


SOURCE: IRS tax data on 2,603 program group and 1,577 control group members (Manoli and Patel 2018).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

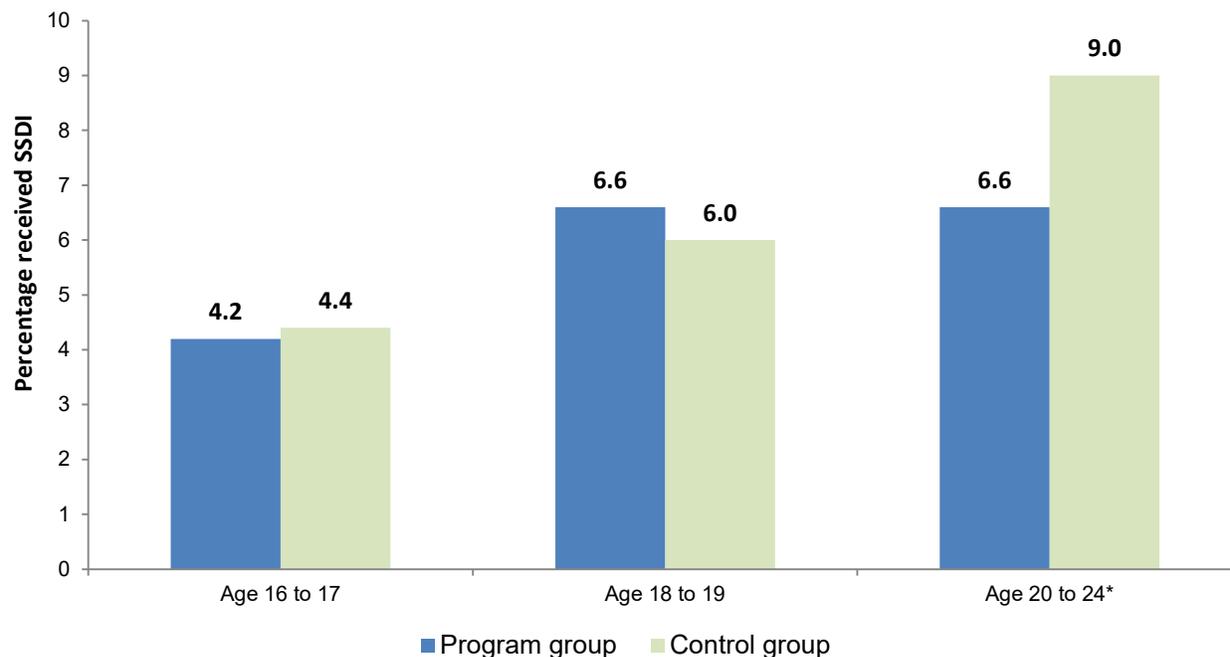
**Figure 11. SSDI receipt between 2001 and 2015 for the 20- to 24-year-olds based on 1099-SSA forms**



SOURCE: IRS tax data on 2,603 program group and 1,577 control group members (Manoli and Patel 2018).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.10 level, two-tailed test.

**Figure 12. SSDI receipt in 2015, by age**

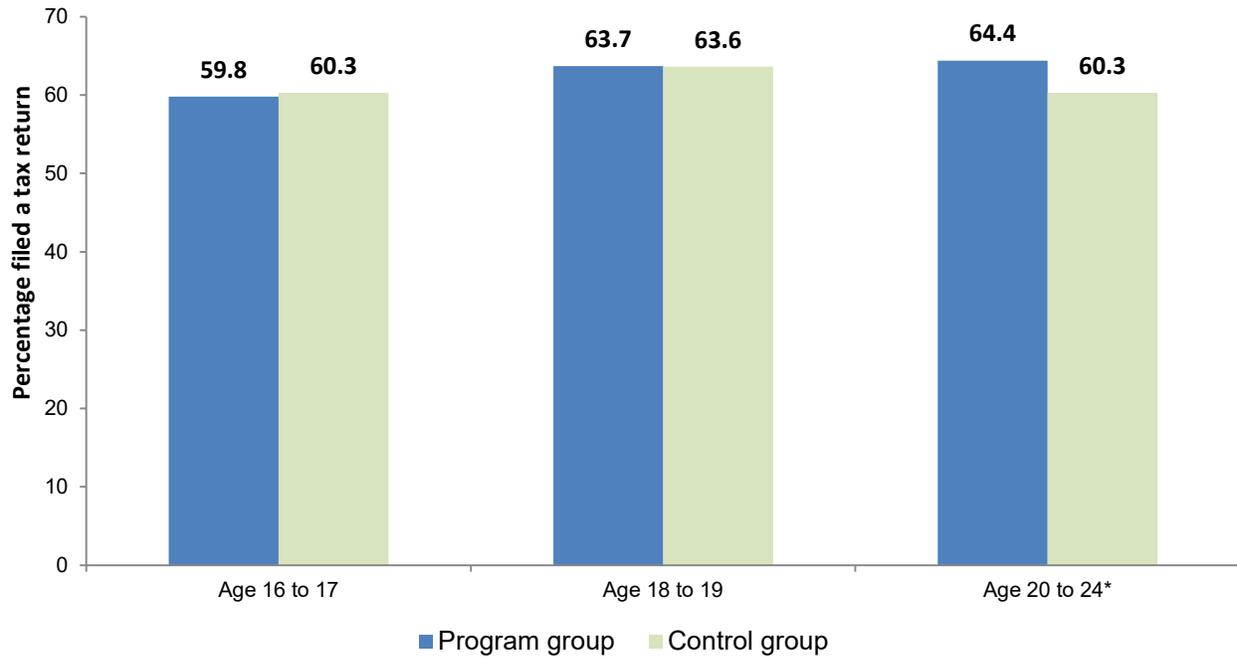
SOURCE: IRS tax data (Manoli and Patel 2018; see Table 2 for sample sizes).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

**Spouse employment.** There is no clear evidence of program effects on spouse employment for any age group, although there is some evidence that effects were negative for the 16- to 17-year-olds and positive for the 18- to 19-year-olds in some years (Tables A.23, A.36, and A.49). Spouse employment rates were typically about 13 percent for those ages 16 and 17 and about 15.5 percent for the two older groups. The rates did not increase over time for any age group.

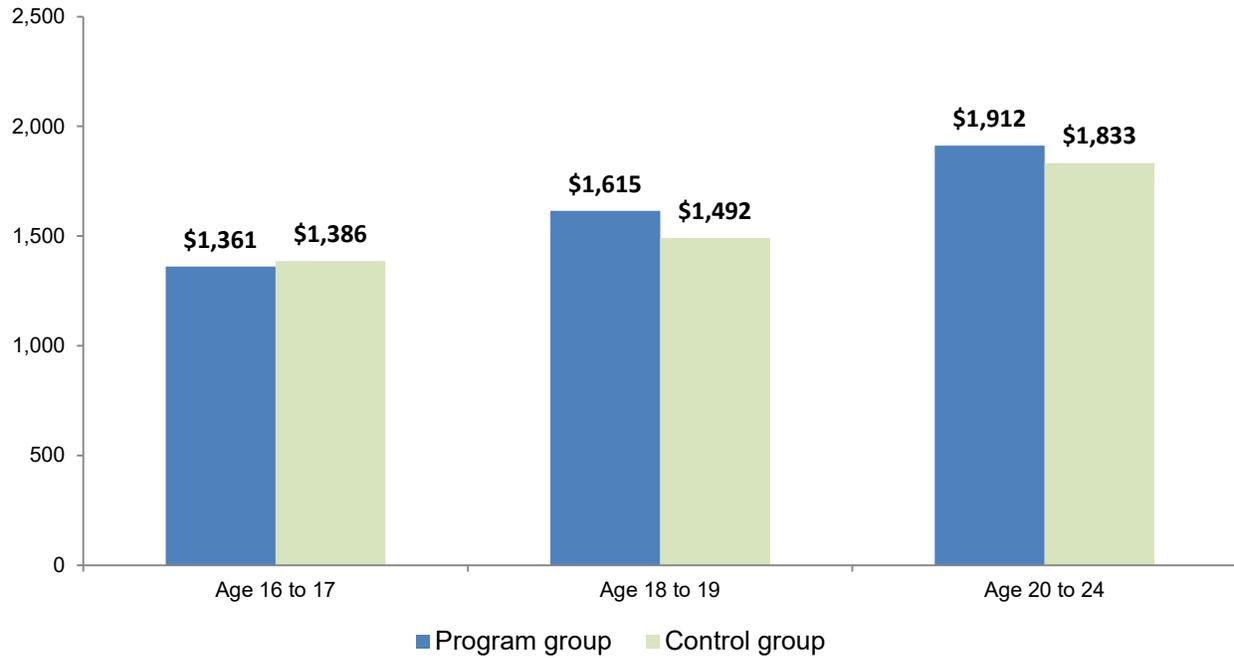
**Tax filing and liabilities.** Job Corps participation led to increases in tax filing rates between 2013 and 2015 for the older students, but not for the younger ones (Figure 13; Tables A.24, A.37, and A.50). In 2015, among the 20- to -24-year-olds, 64.4 percent of program group members filed a tax return, compared to 60.3 percent of control group members. This difference corresponds to a statistically significant 6.1 percentage point (10 percent) increase in tax filing rates for program participants. This result is consistent with the impact findings on employment and SSDI receipt for the older students. The impacts on tax filing rates for the older students, however, did not lead to program effects on their total tax liabilities or tax balances due (Figure 14; Tables A.51 and A.52). We find no impacts on the tax measures for the younger groups (Tables A.24-A.36 and A.37–A.39).

**Figure 13. Tax filing rates in 2015, by age**

SOURCE: IRS tax data (Manoli and Patel 2018; see Table 2 for sample sizes).

Note: Calendar year 2015 is roughly 20 years after random assignment.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

**Figure 14. Total tax liabilities in 2015, by age**

SOURCE: IRS tax data (Manoli and Patel 2018; see Table 2 for sample sizes).

Notes: Calendar year 2015 is roughly 20 years after random assignment. Liabilities are measured in 2015 dollars.

\* Impact is significantly different from zero at the 0.05 level, two-tailed test.

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## C. CONCLUSIONS

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The Job Corps program is designed to provide career technical training, education, and supportive services to at-risk youth between ages 16 and 24, primarily in a residential setting. The National Job Corps Study, which evaluated the program as it operated in the mid-1990s, found that the program was successful at providing these services to its participants. Job Corps students stayed an average of eight months in centers and received about 1,000 hours more academic and vocational training than they would have otherwise, which corresponds to an extra year of schooling. The students reported receiving a host of residential, health, counseling, social skills, and supportive services while in the program. This experience led participants to increase their attainment of GED and vocational certificates by more than 20 percentage points each, as well as to improve their functional literacy.

The goal of Job Corps is to help program participants become more responsible, employable, and productive citizens. Previous evaluation results suggest that the Job Corps model showed promise in achieving this goal. The program reduced arrest and conviction rates by about 15 percent during the four years after random assignment (the period covered by the survey). In addition, Job Corps led to earnings gains during the two years after program exit (roughly years 3 and 4 after random assignment) for a range of student groups, and led to longer-term earnings gains in years 5 to 9 for the 20- to 24-year-old students.

This 20-year follow-up study aimed to answer the following questions: Did the earnings impacts return in mid-career for the overall sample and younger students? Did the labor market gains persist, or even grow, for the older students? To test these hypotheses, this report presented impact findings using tax records through 2015, about 20 years after random assignment and 11 years since the previous tax data collection. In 2015, the sample was between ages 36 and 44.

The 20-year results largely mimic the results from the nine-year study using the tax data. Most of the evidence suggests that the positive program effects persisted for the 20- to 24-year-olds in the longer-term, but the effects did not grow. The older participants experienced employment gains of 4.2 percentage points in 2013 to 2015, with associated 10 percent increases in tax filing rates and 40 percent reductions in the receipt of SSDI benefits. However, as with the nine-year study, we find no evidence of long-term program effects on employment and earnings for the overall sample or for the 16- to 19-year-olds in years 10 to 20.

The earnings gains for the older students were not statistically significant in years 10 to 20. However, we must confront statistical power limitations for detecting realistic earnings gains for these analyses due to relatively small sample sizes and the large standard deviations of earnings, leading us to interpret the evidence more broadly. When doing so, we find that, on average, the older program group earned more than the older control group in every year between 2001 and 2015 except one. In addition, in the most recent period in 2014 and 2015, the older program participants experienced a 7.3 percent earnings gain of \$1,265 per year. Over the entire 1998 to 2015 period (years 4 to 20), 20- to 24-year-old participants earned an average of about \$13,000 more than they would have if they had not enrolled in Job Corps. Furthermore, although the impact estimates on earnings varied somewhat over time, they were similar in 2015 and 1998 (\$1,265 versus \$1,038). Therefore, the bulk of the evidence suggests that Job Corps participation moved the needle regarding long-term labor market success for the older students.

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The findings for the 20- to 24-year-olds are consistent with other project findings from the National Job Corps Study. The older students in the study remained in Job Corps for an average of 1.3 months longer than younger ones and thus received more Job Corps services. In addition, the older students were more motivated and well-behaved, as reported by program staff at 23 randomly selected centers, so they may have gained more from their Job Corps experiences.

The 20-year impact findings do not change previous conclusions regarding how measured program benefits compared to program costs in the mid-1990s (McConnell and Glazerman 2001; Schochet et al. 2005, 2006) that assumed the earnings gains would persist for the older participants, but not overall or for the younger participants. Specifically, the longer-term results support the findings that (1) for all participants, program benefits to society were smaller than program costs; (2) the program was cost-effective for the 20- to 24-year-olds; and (3) benefits exceeded costs from the perspective of program participants.

We emphasize that the findings presented in this report pertain to the Job Corps program as it operated in 1995 and 1996, when our program group members were enrolled in Job Corps, and not necessarily to the program as it operates today. Nonetheless, the impact findings provide suggestive evidence of Job Corps' effects today. In particular, Job Corps currently serves more students with characteristics shown by the evaluation to be associated with positive earnings impacts. Job Corps students today tend to be older: about 23 percent of students in program year 2015 were ages 16 to 17, compared to more than 40 percent at the time of the study. Related to this fact, nearly twice as many youth today are high school completers (43 percent, compared to 23 percent in the mid-1990s). Furthermore, because of changes in program eligibility rules that have increased program access for applicants with disabilities, nearly one-quarter of students today have disabilities. Hock et al. (2017) showed using National Job Corps Study survey data that youth with medical limitations experienced statistically significant earnings gains of 30 percent and reductions in SSA disability benefit receipt of 52 percent in year 4. DOL is currently co-funding a study with SSA to examine 20-year impacts for this group using administrative SSA earnings and disability benefit receipt data.

Overall, the impact findings suggest that, although the Job Corps model shows promise, the key policy challenge is to improve program services to sustain the earnings gains for the younger students by addressing their program readiness and program structure. Recently, DOL has funded several such initiatives. DOL is currently piloting and rigorously evaluating a new model for Job Corps—the Cascades College and Career Academy (CCCA) at a re-structured Job Corps center in Washington State—to improve outcomes for younger students. CCCA provides students ages 16 through 21 with evidence-based programming that is more structured than is typically provided at Job Corps centers. CCCA uses a career pathways model—an integrated sequence of career-themed, structured college and career preparatory programming (academic learning, career and technical education training, work-based learning, and social/noncognitive skills training). The goal of this model is to better enable Job Corps' younger students to obtain industry-recognized credentials, to advance to higher levels of education, and to secure in-demand jobs in their field of training. Recently, DOL has also funded an external review of Job Corps to consider evidence-based options for enhancing the Job Corps program (Berk et al. 2018)—including options for better serving younger students beyond the CCCA model—as well as a companion report outlining design considerations for the promising practices identified in the evidence scan (Lee et al. 2018).

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