Do Youth Employment Programs Work? Evidence from the New Deal

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Abstract: *We provide the first comprehensive assessment of the short- and long-term effects of means-tested youth employment programs on a large number of outcomes. To do so we study the Civilian Conservation Corps (CCC) – the first and largest youth training program in the U.S. in existence between 1933 and 1942. We digitized enrollee records from the CCC program in Colorado and New Mexico and matched these records to the 1940 Census, WWII enlistment records, Social Security Administration records, and death certificates. We find that enrollees who spent more time in CCC training grew taller, were healthier and lived more years of life as a result of their participation in the program. We also find modest increases in the educational attainment of the participants. These effects were larger for Hispanics and for those participating during periods of high unemployment. In the short run, we find no evidence that their labor force participation or employment rate increased, which is consistent with the findings from RCTs of modern jobs programs including Job Corps. But training did increase migration and resulted in relocation to counties with higher wages and potentially better amenities. Overall the results are consistent with the hypothesis that the program provided important in-kind goods and services to disadvantaged populations in a time of need, ultimately improving their survival, rather than providing critical training and experience with returns in the labor market.*

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I. Introduction

Unemployment rates are typically highest among the young, particularly for those from poor backgrounds and in bad economic times. For example, at the height of the Great Recession, unemployment rates for those over age 25 reached a peak of 8.4 in 2010, but were as high as 19.6 for those ages 16-24 (US Bureau of Labor Statistics 2018). To address youth unemployment, government-run employment training programs specifically target young adults. However, the effects of these programs have been shown to be modest, at best, and there is no evidence of their effectiveness over the long run. A recent meta-analysis of 200 training programs around the world by Card, Kluve, and Weber (2018) suggests substantial heterogeneity in the impacts of these programs and important dynamic effects. Specifically, programs appear to have no effects on labor market performance in the first year and though their impact appears to rise overtime, the overall impact remains small. Other recent reviews (Barnow and Smith 2015, Crepon and van den Berg 2016) come to similar conclusions but make the point that we should evaluate more than labor market outcomes to get a more complete accounting of the costs and benefits of such programs.

We re-evaluate the *short* and *long run* effects of means-tested employment and training programs targeted at young adults by studying the impact of the Civilian Conservation Corps (CCC). The CCC was the first and largest employment program in U.S. history and was implemented during a period of profound levels of youth unemployment – the Great Depression (GD). Unemployment rates among young adults during the GD was estimated as high as 60 percent, depending on how partial employment is counted.[1] To address high youth unemployment, the CCC was created in 1933 by the Roosevelt Administration. It employed young men aged 17 to 23 in unskilled, manual labor. Under the Army's supervision, enrollees were sent to work in camps in rural areas. In addition to work experience, the CCC provided academic and vocational courses as well as cash transfers to the families of poor unemployed youths. The CCC also helped enrollees obtain employment. Lastly, enrollees were also well-fed, housed and given access to medical treatment during training. Enrollment in the CCC was voluntary and enlistment periods

[1] Salmond (1967) reports that in 1932, 25 percent of youth were unemployed and another 29 percent was only employed part-time. Rawick (1957) also comes to similar conclusions that about 20% of youth were unemployed and 30% who were working part-time.

lasted 6 months with an option to re-enlist up to four times. Between 1933 and 1942, the CCC had three million enrollees and operated about 2,600 camps. Several programs in existence today such as Job Corps, Youth Conservation Corps, JobsFirstNYC, or CalWORKs are modeled after this earlier program.[2]

We collected a new large individual-level data set of CCC participants and their long-term outcomes. We digitized administrative records from the CCC program in Colorado and New Mexico covering the population of men training in the CCC program between 1938 to 1943. Our data include application and dismissal records on more than 25,000 men and details their demographic characteristics, compensation amounts, duration of enlistment and reasons for leaving the program. We matched these enrollee records to 1940 Federal Census records, WWII enlistment records, Social Security Administration records and individual death certificates. The fully compiled data allow us to investigate the effects of the CCC on many long run outcomes including education, geographic mobility, employment, marriage and longevity.

To estimate the effects of the program we exploit variation in the duration and nature of the program. Treatment duration varied from a few days to more than two years with the average enrollee participating for approximately nine months. We show that the determinants of duration are complex and that those who trained for long periods were not necessarily from higher or lower SES backgrounds. We confirm these observations by investigating the reasons for dismissal. We then explicitly control for many individual and aggregate characteristics that predict participation and long-term outcomes in our analysis including reasons for dismissal. We also exploit camp level predictors of duration as instruments in order to investigate causal effects. Although participation in the CCC was voluntary, once individuals signed up they were allocated by the authorities to various camps—individuals were not allowed to choose which camp in which to train. We exploit the quasi-random nature of the assignment to camps to compare the duration of training and the outcomes of individuals assigned to better and worse camps.

We find that individuals who trained longer in the CCC also lived longer. These gains appear to be driven by the improved health of the participants (measured by height and weight) as well as their increased geographic mobility towards richer areas. These effects are larger among Hispanics, and for those serving in times of high unemployment. We also find modest increases on educational attainment and increases in the probability of serving in WWII. In the short run, we

[2] Levine (2010).

find no evidence that their labor force participation, employment or wages increased—these effects are very small and statistically insignificant and are consistent with the previous findings in the literature cited above. Overall the results are consistent with the hypothesis that the program provided important in-kind goods and services to disadvantaged populations in a time of need, ultimately improving their survival, rather than providing critical training and experience with returns in the labor market. Our findings underscore the fact that there are positive returns to investments made during adolescence.

To further investigate the internal and external validity of our findings, we make use of publicly available experimental data from the Job Corps (JC) program which followed randomly assigned participants for four years.[3] Although the data pertains to youth training which took place in the 1990s and thus many decades after the CCC ended, the program was modeled after the CCC and so retained many similar features. JC participants are quite similar with regard to socio-economic characteristics (with some notable exceptions) and train for similar durations. More interestingly, the estimated treatment effects from the RCTs are very comparable to the effects of duration in a simple OLS model. Additionally, the direction and magnitude of the results is also comparable. The RCT finds that the program increases education levels, has small effects on employment rates and has positive, but statistically insignificant, effects on wages among those employed. We also document that Job Corps increases geographic mobility. Our results from CCC are very similar in the short-term to the effects of JC, which suggests that Job Corps participants today might live longer as a result of the program, despite the null impact of the program on their labor market outcomes. As such, job training evaluations that focus only on the labor market impact of the program may underestimate the overall benefits which can include changes in health and non-cognitive skills, for example.

This paper also contributes to the broader evaluation of the New Deal programs developed during the Great Depression. The Great Recession of 2008 renewed interest in understanding whether government programs deployed during large economic crises can be effective and for whom. Fishback (2017) provides a comprehensive survey of the literature on the effects of New Deal programs and states that studies show New Deal programs increased internal migration, lowered crime and reduced mortality in the short run (See also Fishback, Haines and Kantor, 2007 and Vellore 2014). Our results are consistent with these findings for migration and health. To our

[3] The data pertaining to the longer 9 or 20 follow-ups is not publicly available.

knowledge to date there are no statistical studies of the long term causal effects of the CCC program or of any other New Deal program on individual lifetime outcomes.

II. Background: The CCC Program

Program Overview. The CCC, which was signed into law on March 31, 1933, was created by President Franklin Delano Roosevelt by executive order "for the relief of unemployment through the performance of useful public work and for other purposes."[4] The CCC had two objectives: 1) To provide relief to unemployed youth; and 2) To preserve and enhance natural resources. "Relief through work" rather than "direct relief" was a basic tenet of all the work programs in the New Deal because of the prevailing view at the time that the provision of work would be more beneficial to the unemployed than the receipt of cash transfers. There was also a perception that idle youth would commit crimes and cause social disturbances (Brock 2005).

The untapped work capacity of idle youth was to be used to create national parks and forests as well as create efforts to manage the drought that resulted from the Dust Bowl. One of the primary appeals of the CCC was that the work of enrollees would not directly compete (in terms of labor) with private sector activities.

As the program evolved, it added education components, and these became mandatory in 1937. The nature of the program changed again in 1941 when military training was added to the program as a result of growing tension in Europe during World War II.[5]

Size and allocation of projects and enrollees. The federal government commissioned the CCC to build national parks, preserve forests and irrigate land. Within weeks of the creation of the CCC program, 1,250 projects had been submitted and 749 camp sites had been approved by the director of the CCC and the President.[6] Camp locations were chosen to be close to the site in which enrollees would work and chosen to minimize the distance to communities that provided access to

[4] The program was extended in 1935, 1937 and 1939, and ended in 1942 when Congress voted against another renewal, despite prior efforts to make the program permanent. In addition, the program was originally called the Emergency Conservation Work Program, but its name was changed in 1937 to Civilian Conservation Corps, its popular name. Data Appendix Figure 1 contains a timeline describing the major changes to the program throughout its existence.
[5] Although perhaps unintended upon its creation, and due to the fact that the military was in charge of running the camps, another perceived benefit of the CCC program was that "enrollees made splendid soldier material" (McEntee 1942).
[6] US Department of Labor Report, 1933.

supplies. Most camps had 200 enrollees at a time and many smaller "side camps" were also created to allow for work in remote locations.[7]

Eligibility. Only unmarried unemployed men, ages 17 to 25, who were American citizens, were eligible.[8] Preference was to be given to those in greater need—in practice, CCC enrollees were often selected from families already enrolled in relief programs.[9] Government reports at the time confirm that enrollees were poorly educated with little work experience and undernourished weight (McEntee 1942).[10] Enrollees had to present in good physical condition (an examination was required at enlistment) and have no history of criminal activity.[11] Finally, they had to be willing to send a substantial portion of their wages to an assigned family member and to move to the designated camp location for the duration of the enrollment period. After the enrollee signed the contract there was a two-week conditioning period and then enrollees were sent to a camp.[12]

Compensation and program cost. Enrollees were required to work 40 hours per week and paid $30 per month of which $25 was sent home to a designated family member.[13] The government also paid for the transportation to and from the camp, provided housing, uniforms, food, dental and medical care, and workers' compensation insurance. Thus, it is estimated that the real monthly

[7] Local labor could be employed when there were needs for specific skills to complete a project. Although initially some communities were concerned with possible increases in crime resulting from nearby camps, most communities eventually welcomed and moreover demanded camps be placed nearby, with the notable exception of black-only camps, and camps with a large share of Hispanics. The CCC program was popular and many communities welcomed the camps and the monies that it brought (Parham, 1981). A nation-wide poll in 1936 showed that more than 80 percent supported the continuation of the program, and this support was larger in the Rocky Mountain states (Paige 1985). However, there were racial tensions (Rawick 1957)

[8] There were some changes to these initial criteria, importantly age eligibility of juniors was modified twice. Data Appendix Figure 1 documents some of the important changes in the history of the program.

[9] In 1935 when the program was expanded, it became a requirement that enrollees be drawn from relief rolls, though in practice this was not always the case. In 1937 this requirement was eliminated.

[10] For example, in 1939 and 1940, about 52% had 8 years of schooling or less (Annual Report 1940).

[11] Enrollees were vaccinated against typhoid, paratyphoid and smallpox at enlistment.

[12] In addition to accepting "juniors", the CCC program also made veterans eligible. There was also a large CCC program for American Indians, which operated under somewhat different rules and was managed by the Bureau of Indian Affairs. Finally, the CCC also enrolled LEM "local enlisted men" which had skills and knowledge not available among its Army or enlisted personnel. The total number of men training in the CCC was reported to be 3.2 million, LEMs accounted for 263,000, Indians 127,000, and veterans

[13] Later in the program, a portion was held up as savings and given to enrollees upon dismissal.

wages of CCC enrollees was $66.25 per month.[14] CCC administration estimated that on average a CCC camp would spend about 5,000 per month in local markets.[15]

Duration of enrollment. Individuals initially enrolled for a six-month period, and were allowed to re-enroll, for a maximum of two years (4 terms). Although the *average* enrollee trained for 9 months, there is large variation in the duration of training. CCC contracts could be terminated unilaterally by the government, based on governmental needs, at any point. Many individuals also deserted, resigned or were expelled prior to completing their contract. Enrollees could also leave early if they had secured employment, were enrolled in a formal schooling program or for "urgent and proper call" reasons, for instance the death of a parent or some other personal emergency. Enrollee turnover was costly, and efforts were made to keep it low.

Education component. Soon after the creation of the CCC, there was a realization that an educational component would be needed as a large number of enrollees were illiterate or had education levels so low it prevented them from performing their assigned tasks at the camp.[16] An education program was put into place by March of 1934 and the 1937 extension of the CCC program included an important requirement that the CCC provide at least ten hours a week of general or vocation training.[17]Participation was not mandatory unless the enrollee was illiterate.

a. The CCC in Colorado and New Mexico

We study the program using administrative data from Colorado (CO) and New Mexico (NM). Both CO and NM were relatively poor states during the Great Depression, though NM was poorer and arguably one of the poorest states at the time. Estimates from National Income Accounts for 1930 suggest that per capita annual personal income in CO was $571, and it was $329 in NM, while the nationwide average was $618.[18] About a quarter of the population in CO was on relief

[14] See Levine (2010). Levine (2010) also reports this program was considerably more expensive than Works Progress Administration as it was estimated to cost approximately $800 per enrollee. Critics of the program pointed out that direct relief would have cost an estimated $250 per year instead (McEntee 1942). The value of the training and of the work achieved in terms of conservation is of course not considered in this estimate.
[15] Paige (1985).
[16] Britton reports than in Northern camps an average of 3 to 5 percent of enrollees were illiterate, but as many as 25% were illiterate in Virginia camps.
[17] Act of June 28, 1937, Public No 163, 75th Congress.
[18] Bureau of Economic Analysis NIPA 1929-today. SA1-3

in 1933 and New Mexico had the highest share of the population on relief in the nation (Hinton 2008).[19]

Colorado and New Mexico had disproportionate participation in the CCC program because of the large number of parks and forests in these states and because these states were severely affected by the Dust Bowl. On average, there were 34 main camps operating in CO and 32 in NM in operation in a given year.[20] The number of individuals training in CO and NM was disproportionately large. In CO, a total of 57,944 men served of which 35,000 came from CO. In NM a total of 54,500 served of which 32,300 came from NM.[21] Enrollees in Colorado and New Mexico were disproportionately Hispanic and in the case of New Mexico.[22]

III. Estimation Strategy and Estimation Issues

We estimate the effect of the program on lifetime outcomes. To address the issue of endogeneity of program enrollment, contemporary studies typically use a RCT design. Without an RCT, we address this source of endogeneity by conditioning on program enrollment and comparing outcomes for those who served longer and shorter periods. In this way, we condition on or control for underlying differences in individuals who chose to enroll versus those who do not. The main challenge with this approach is that duration may not be random either. Therefore, we use the determinants of duration to flexibly control for unobserved heterogeneity. We regress

$$Y_{ibj} = c + b * duration\ of\ CCC\ service_{ibj} + X_{ibj}B + e_{ibj} \qquad (1)$$

where Y_{ibj} is an outcome such as employment or age at death for individual *i* born in year *b* training in CCC camp *j*, and X_{ibj} includes individual-level and camp-level covariates. The independent variable of interest is $duration\ of\ CCC\ service_{ibj}$, the duration of training in years. We estimate

[19] Census of relief 1933. Table 9.
[20] Final report. This number does not include the so-called side camps, which were smaller in size than typical camps, whose population hovered around 200 men.
[21] Cohen
[22] New Mexico also had a large share of Native Americans. Native Americans had their own CCC programs which operated separately within Indian reservations and were administered by the Bureau of Indian Affairs. See Parman (1971) for details. We have no data on the Indian CCC program.

equation (1) clustering the standard errors at the application county and enrollment year-quarter level, though the results are not sensitive to this choice.[23]

The coefficient *b* identifies the causal effect of duration on a given outcome only if duration is uncorrelated with other determinants of the outcome. There are several threats to identification. Duration is measured with error because dates are often incomplete or missing, possible causing downward bias in the estimates. Second there is possible omitted variable bias. It may be that individuals with higher abilities trained longer because they benefitted more from the program and were able to better adapt to military lifestyle in camps (positive selection). Or, poorer individuals may have had stronger incentives to train in the CCC because they were more in need of the payment that they and their families received (negative selection). In either case, the coefficient on duration would be biased.

Therefore, we first investigate the determinants of duration to determine the extent of possible selection issues. Then, to account for selection on observables, we explore how the inclusion of individual- and camp-level covariates affect the estimates of the effect of duration. In addition to using predetermined covariates as predictors of duration, we also make use of the observed reasons for CCC termination contained in our data. Camp characteristics such as weather might also cause omitted variable bias if e.g. bad weather causes individuals to drop out and also affects long term health. We collected and constructed many camp characteristics to address this possibility. And as we discuss further below, we use alternative strategies (IV and comparison to RCT results) to further assess the validity of our empirical strategy.

IV. Data and descriptive statistics

A. Data collection

Colorado Enrollees. We digitized the entirety of CCC records contained at the State Archives of Colorado. These records include original applications of all individuals who applied.[24] The entire collection, which includes 21,538 individuals, accounts for the population of individuals that

[23] We also experimented with alternative approaches and estimate results clustering at the application county, enrollment year level. Overall, we found these alternatives do not materially impact our conclusions, and the evidence suggests that there is little correlation across individuals in the data.

[24] Of the 35,000 that trained in CO and came from CO, about 30,000 were junior and veterans, and 5,000 were non-enrolled personnel (hired from local population), and about 500 were part of the Indian CCC program.

trained between 1937 and 1942 but not for those who enrolled prior to 1937.[25] The applications contain the following: name, address, date of birth, place-of-birth, height, weight, race and social security number (SSN), marital status, whether the father or mother is living, number of brothers, number of sisters, number of family members in household, rural status, farm ownership, occupation of main wage earner in household, educational details, employment status and history. With the exception of information on height, weight and race which were collected upon medical examination, the rest was self-reported. In addition, previous CCC enrollment information was collected, and information on the designated allottee(s), that is the family member that would receive the allotment from the CCC (name, relationship and amount allotted, for up to two allottees). If the individual was rejected, this is noted in the file. Otherwise we observe the discharge information containing company and camp the individual attended, reason for dismissal, the date of dismissal and whether the dismissal was honorable.

New Mexico Enrollees. We digitized the entirety of CCC records from the New Mexico State Records Center, which has the entire set of discharge forms for the state from 1938 to 1942. These records include the information for 9,699 individuals, covering the population of individuals that trained in state from 1938 to 1942.[26] For each individual, the records contain the following: name, date of birth, address, family information (i.e. head of family, address of family, and relationship to enrollee), allottee information (i.e. name, address and relationship to allottee, for up to two allottees), enrollment date, assigned camp, and date and reason for dismissal and whether the dismissal was honorable. Because enrollment forms are unavailable, records from NM contains substantially less information on participants than for CO.

Camp-level Data. We collected information on the exact location of camps. In particular, each camp was assigned to a zip code within a county using post-office codes. Then, we coupled camp location information (latitude and longitude) with historical weather patterns (i.e. temperature and precipitation), which come from PRISM Climate Group. Additionally, we retrieve longitude and latitude information of closest towns and individual's residence cities from the United States Board of Geographic Names and use them to compute (Euclidian) distances to the closest towns and to each enrollee's hometown. Using the camp name, we can construct indicators for the agency (and

[25] We established based on published reports from the CCC that the records account for the complete population of records starting in 1937 (see Data Appendix Figure 4).

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thus the type of work) that created the camp. We use our records to construct average characteristics of enrollees (such as the fraction under age 18) in each camp and point in time. Finally, we match camps to census county-level information about the county in which it was located such as unemployment rates.

Death Records. The administrative data from CO and NM was matched to death records (including the Social Security Death Master File and state-level death records) to identify the date of death and social security number of each enrollee. This match was done manually by trained genealogist at BYU, who found CCC enrollees in the collection of records kept by Ancestry.com and FamilySearch.org. A summary of this process is available in Appendix 6. We find death dates for 88% of CO recipients and 75% of NM recipients.[27] We use these data to compute the age at death using the date of death in the death certificate and date of birth in the CCC application.[28]

1940 and WWII records. We match our records to the Federal Census of 1940 and to WWII Enlistment Records. These matches are made using the Abramitzky, Mill, and Perez (2018) algorithm. Details of the procedure are available in Data Appendix D and E. The 1940 census includes location, demographics (race and ethnicity, marital status, place of birth, household information), and labor market information (employment occupation and wages). We successfully match 44% of individuals to the census. We match about 29% of individuals to WWII enlistment records. This lower match rate is to be expected: not all individuals enlisted or served in WWII even when they were eligible. Also, not all records of those who served survived.

Sample Selection

[27] Our match rates are higher than those typically found in the literature (which range from 20 to 50%) for two reasons. First, administrative records contain information not just on individuals but also on their family members. This greatly improves our ability to find individuals by using information from family trees and various vital registration records. Second, the death records come from various sources. Most commonly these come from the Death Master File (DMF) which includes the universe of death certificates in the US starting in the mid 1970s. But the collection also includes records from other sources, including state vital registration sources, deaths during WWII, and gravestones. A few individuals are observed as dying during CCC training.

[28] Mortality information is missing for some individuals for several reasons. First, some individuals died prior to 1975, which is the first year of complete death records in the Social Security Death Master File (For more information about coverage of the DMF, refer to Hill and Rosenwaike (2001). In this case, we might find a death record for them if one exists in state vital records. Second, some individuals might still be alive, so the age at death is censored. Based on SSA life tables we compute that about 1.1% of individuals born in 1920 (our median birth year) would be expected to be alive by 2017. Lastly, we might not have found individuals who died in the 1975-2017 interval due to measurement error and matching errors. The key issue for estimation will be whether missing data is differentially missing for those that trained for linger durations.

For our analysis, we restrict attention only to individuals for whom we can observe duration of training, camp, and the outcome of interest. We drop individuals who have no birth year, enrollment year, discharge year or application county, as well as those whose entire discharge records are missing. This results in a sample of men 23,722 out of 26,290. Appendix Table 1 details the number of observations that are lost due to missing data.

For the mortality analysis, we make additional restrictions. We include only individuals with age of death information but investigate the effects of missing data and also use imputations in alternative specifications. To avoid counting deaths during World War II, we restrict the sample to those who died after age 45. The final data set contains information on 17,639 men. This estimation sample generally is representative of the initial data (see Table 1) except that, by construction, the age at death is significantly higher.

Summary Statistics: CCC Training and Lifetime Outcomes

Pre-CCC Characteristics

Characteristics of the men in our data are presented in Table 1a and 1b. The average CCC enrollee enlisted around 1939 and was 18.7 years old, but many enrollees however appear to have misrepresented their age: 22% overstated their age (their age in the death certificates suggest they were younger then they reported) and another 11% understated their age. While some of these discrepancies might be due to errors in matching individuals to death certificates, they might also indicate that many men, particularly the young ones, were quite desperate to train and lied about their age to gain eligibility.[29]

As expected, more detailed data for CO suggest that the enrollees were relatively disadvantaged. Enrollees completed 8.7 years of schooling and came from a household of about 5 individuals. About 25% come from a farm, 20% had a father that died and 15% had a mother that died. Despite height and weight examinations to exclude the unhealthy, about 7% were underweight. Imputing the ethnic origin of the participants, we estimate that about 45% are Hispanic.[30] Among the subset we match to the 1940 census, we observe that 34% are of Hispanic origin and 99% are white (see Table 1b). CO and NM enrollees are even more disadvantaged than the average CCC enrollee in the nation—they are substantially younger, shorter, weigh less, have

[29] A few of the men are not junior (less than 1%) which can also explain a small fraction of the violations in the age criteria. Individual accounts of CCC participants include accounts of lying and over-eating in order to qualify.
[30] See Data Appendix for method of imputation.

more dependents, and more of them have fewer than 4 years of schooling.[31] Data Appendix Figure 6 documents this graphically. Data on the camps suggest that they were typically rural in nature and as such, located relatively far from the enrollees' hometowns (150 miles)

Post CCC outcomes

Table 1b shows the mean outcomes for CCC enrollees after they left the program. In 1940, 91% of those who had already completed their training were in the labor force, and 72% were working. About 28% were married and 42.5% owned their own home and a substantial fraction (29%) were living in a different county from their prior county of residence. Similar patterns are observed in the WWII enlistment data.[32]

The average enrollee eventually lived to be 70 years old, below what SSA cohort life tables predict for male cohorts born in 1920 who survived to age 17 (71). In our estimation sample, conditioning for dying after 45, the average enrollee lived to be 73.6 years old, which is also lower than 74.5 from the SSA cohort life tables. This evidence is again consistent with the fact CCC men were poor and came from poor states.

V. Determinants of Training Duration.

We start by investigating the determinants of enrollment duration. On average enrollees in our estimation sample trained for 9.8 months (S.D. 0.7) or .82 years. Aggregate data on the national CCC program from a 1937 CCC Census shows that the distribution of duration in our states is representative of the national distribution in each year (Data Appendix Figure 6). The mean duration, of 9 months, is also surprisingly similar to the duration in Job Corps today.

There is large variation in the duration of training. Figure 1 shows the histogram of duration in months. It shows spikes exactly at 6, 12, 18 and 24 months corresponding to 1, 2, 3 and 4 terms. However, most individuals (62%) dropped out in the middle of their assignment (Table 1a, see "Reason Ended: End of Term). And there is significant variation in duration among those serving

[31] We check this by comparing the means in our estimation sample to the published national means. These were published in *Annual Report of the Director of the Civilian Conservation Corps: Fiscal Year Ended June 30, 1937* Appendix H: Census of Civilian Conservation Corps Enrollees.

[32] At the time of WWII enlistment (around 1942) 22% were ever married, and 30% were living in a different county from their prior county of residence.

partial terms: 9% of individuals trained less than 2 months and a few individuals (about 1%) trained for more than 3 years (despite program rules).

Among those who left before completing their term, 21% deserted, 15% were dismissed "for the convenience of the government" (for instance because the camp closed), 12% left for a job, and another 12% left because of an "urgent and proper call," for example because a family member was sick or died though the specific reason is not generally noted. Thus, short duration may have resulted from either positive or negative circumstances, making it difficult to assign the direction of selection into duration based on reason for leaving.

To investigate the determinants of duration we estimate simple OLS regressions of the duration of training as a function of individual, family and camp characteristics. Table 2 shows the results. We include year-of-birth fixed effects (YOB) because different cohorts were eligible to train for different amounts of time (see Data Appendix Figure 5). We also include all observed individual characteristics (Column 1). Almost all individual characteristics are significant and together they explain about 18% of the variation in durations. Column 2 shows that camp characteristics by themselves also predict durations (r-squared of 0.16). These results could reflect differences in the types of individuals that trained in different types of camps. Column 3 shows that when we control for both individual and camp characteristics, most coefficients are similar, suggesting a small amount of sorting of individuals into camps.

It is well documented that the type of individuals that apply for training (and other government benefits) varies substantially with economic conditions. To address this, we include county-of-enlistment by quarter-of-enlistment (CQE) fixed effects (column 4) for two reasons This also addresses the fact that the number and types of camps that were opened varied over time and space.

As expected, we find that individuals enrolling in counties with high unemployment trained for longer periods (column 1). This set of controls results in a substantial decrease in many individual and camp level coefficients on duration. Some coefficients (for example the coefficient on being younger than reported or some of the coefficients on peers) also switch sign suggesting that when and where individuals signed up for training contains important information about their type and their incentives for training for a long time.

Finally, in column 5, we control for the dismissal reason—another indication of the type of individuals that trained and the conditions they face, and thus their motivation for training for a

long time. Individuals with honorable discharges trained for longer suggesting positive selection into duration. However, among those who quit early, the results are more ambiguous: individuals with "urgent and proper calls" trained less than those who deserted. Furthermore, those who were rejected upon further examination trained for just as long as those who were dismissed for the convenience of the government.[33]

In examining the relationship between personal characteristics and duration, no clear relationship emerges. Individuals who reported being older than they truly were trained for shorter durations whereas those that were older trained for longer durations. Those who were far away from home also trained for longer.[34] Surprisingly, individuals with a high BMI, who were presumably healthier individuals, trained for *shorter* durations. In addition, height, which is a marker of improved nutrition and health during the growing years, does not predict training duration. Those with more education trained for longer but so did those who came from larger households or whose parents were deceased.

This evidence is not consistent with any of the common narratives and surviving evidence on the typical profile of long-serving CCC enrollees. Some of the individuals who trained for a long period appeared to have been positively selected (i.e. these individuals had more education or were older). However, others who trained for long periods appear to come from poorer backgrounds and to be poorer.

The evidence also suggests that, conditional on individual characteristics (including place and time of enrollment) camp conditions mattered. For instance, in places with less rain and milder weather, individuals trained for a longer period, as did those who were farther from cities. Peer characteristics also mattered. Durations were longer in places with larger Hispanic shares of the population or with more men under 18, but shorter in camps with many men who misrepresented their age or sent smaller amounts on their families.

In sum, the primary evidence shows that desirable traits in an enrollee or in a camp (i.e. being close to a city) did not necessarily lead to longer durations.

[33] These results are qualitatively similar if we estimate regressions separately for CO and NM (see Appendix Table 3) but some coefficients are only significant in one state. Notably Hispanics were more likely to train longer in NM but not in CO. Individuals who were older than they reported trained longer in CO but not in NM. Weather is a significant predictor in CO but not in NM. There are no cases in which the coefficients are statistically significant and of opposite signs.

[34] Other traits predict durations. Those were paid and not juniors trained longer for instance.

VI. The Long-Term Effect of CCC Training on Mortality

We now investigate the way in which duration of enrollment affected lifetime outcomes, namely mortality. For this analysis, we restrict attention to individuals that died after age 45 and who have been linked to a death certificate. The results are not sensitive to these restrictions.

a. Preliminary evidence

Figure 2 shows the relationship between average duration of training and mean age at death among CCC men: the longer an enrollee trained, the longer he lived. The relationship is positive and fairly linear. Figure 3 shows the estimated density of the age at death variable for individuals that trained less than one term, between 1 and 2 terms, and more than three terms. The distribution of the age at death appears to shift to the right for those who trained for longer.

Although our results on the determinants of duration do not reveal selection in a single direction, we cannot rule out that selection into duration may bias our estimates. Thus, we proceed with an OLS estimation of the relationship between duration and mortality (the natural log of death) in which we add increasingly more controls for the characteristics of the enrollees and the camps and examine whether and how our estimates change in response.

b. OLS

The first column of Table 3 with few controls shows a very precise coefficient on duration of 0.013 . Thus, in the absence of any controls, one more year of training increased the age at death by one year (roughly 1.3 percent of 73.6 years of life). Controlling for cohort fixed-effects and county-of-enrollment*quarter-of-the-year fixed-effects (column 2) does not change the coefficient estimate. Including family and individual characteristics (columns 3) lowers the coefficient to 0.011. Adding camp characteristics (column 4) does not change the coefficient. But adding peer characteristics (column 5) increases the coefficient a bit to 0.013. Column 6 adds camp fixed effects, but the coefficient estimate is the same as in column 1, which is 0.013. Finally, including the reasons for dismissal (column 7) results in a coefficient of 0.09. Of course, duration and reason for dismissal are determined jointly so it is not clear that we want to control for both, but the results still suggest that the coefficient is stable and very robust to the addition of controls. This last regression coefficient implies that one more year of training is associated with about 0.7 years of life. The fact that the coefficient on duration moves both up and down is consistent with our

observation that selection is not always biasing the coefficient in a particular direction. Since the coefficient is essentially unchanged from columns 1-7, that selection bias appears to be small.

Coefficients on other covariates are interesting and shed some light on the issue of selection. They show that the variables that predict longer duration do not always predict longer lives. On the one hand, more educated individuals trained longer and lived longer as well. Similarly, individuals that were accepted but eventually rejected trained for shorter durations and lived shorter lives, consistent with accounts that these shorter durations were mostly related to physical disabilities. On the other hand, individuals who were older than they reported, trained for longer durations but lived shorter lives. Similarly, those who lived far away trained longer but lived shorter lives.

c. Dealing with sample attrition

About 18% of the original sample is missing age at death. We assess whether missing age at death is systematically related to training duration (with or without conditioning on covariates). Appendix Table 3 shows that, without controls, the missing rates are not a function of training duration. But conditional on camp, family and individual characteristics, age at death is about 2% *less* likely to be missing for those who trained for an additional year. Once we condition on reasons for dismissal the coefficient falls to about 1%, but it is still statistically significant at the 10% level. This suggests that differential attrition could bias the OLS estimates.

To address this issue, we estimate survival models where we make various assumptions about the missing data. Table 4 shows the results. We start by estimating survival models using only the sample without missing data for reference (Panel A). We concentrate on survival to age 70, which is slightly below the median age at death (73). Because the number 70 is a round multiple of ten, it avoids issues of age heaping. Panel A shows the same basic patterns we found in Table 3 but the dependent variable is the probability of survival to age 70 instead of age at death. Those who trained longer also wound up living longer, and this effect is relatively robust to the addition of controls (columns 1-4) with the exception of when we control for dismissal reasons. In this last specification, the results imply that one more year of training increased the probability of survival to age 70 by about 3% relative to the mean. Panel B shows the results when we impute the probability of survival using life tables and information on the age at the time of training. Here,

we find that the effect of training duration (once we add all controls) is somewhat lower (2.3% instead of 3%) but still statistically significant.

In Panel C, we impute all missing as zero (we assume that all the men for whom survival is missing died before age 70). The rationale for doing this is that the DMF and other sources of death tend to be complete starting in the 1970s (Hill and Rosenwaike, 2001). If most of the missing data is missing because of death certificates are not available to researchers (rather than due to errors in matching) then all the missing deaths occurred between the CCC training and 1970, much before our CCC men turned 70 (recall most of the men were born around 1920).[35] When we do this, we find that one more year of training is associated with about a 3% increase in survival.

Finally, in Panel D we estimate bounds. The previous exercises do not necessarily impute survival rates differentially for those who trained longer. In the spirit of Manski (1990) we can estimate bounds for the coefficients of interest, by making best- and worst-case assumptions about the missing data. In short, the OLS parameter on one covariate $\boldsymbol{x}_k$ can be expressed as $\beta_k = \sum_i \left(\left[\left(\sum_j \tilde{x}_{jk}^2 \right)^{-1} \tilde{x}_{ik} \right] y_i \right)$, where $\tilde{x}$ is the "partialled-out" portion of x using the rest of the covariates. If y_i is bounded and positive, we can think about maximizing the possible coefficient by imputing the maximum y_i for observations with positive $\tilde{x}_{ik}$ and minimum for observations with negative $\tilde{x}_{ik}$. We can think about minimizing the possible coefficient by doing the opposite. This gives us possible bounds of β_k that can come from missing values of y_i. Without controls the bounds do not include zero and suggest a positive effect of duration. With further controls the bounds get larger and are no longer informative. But overall these set of results (Table 4) suggest that missing age at death is not significantly affecting our results.

Because the choice of age 70 is arbitrary Figure 4 shows the results of our basic survival regression for every age between 45 and 90. The coefficients are small and statistically insignificant at younger ages, when the survival is very high. They become positive and statistically significant starting at age 56, and continue to increase and peak between ages 68 and 78, and then decline thereafter. As a function of the baseline survival rate, which is declining throughout, the effects rise until age 67, and then decline.

[35] The DMF is the only close to complete source of death records for the population. This database is not complete until the 1970s. Before then we have death certificates for some states or we observe age at death from death stones, but these alternative sources do not cover the entire population.

Heterogeneity. Overall, we find that the poorest and most disadvantaged benefitted more, provided they were in good health. The results also suggest that the program has larger benefits in bad economic times, but not otherwise (Appendix Table 4). Hispanics, those whose allottees were mothers, and those who served in times of high unemployment all had larger treatment effects. Interestingly, the effects are smaller for individuals who were underweight.[36]

IV estimates. Finally, we also implement an instrumental variable strategy that leverages the fact that individuals who enrolled at the same time and place were not able to choose where they would ultimately serve. Yet camps differed vastly in their desirability depending on how far they were located from enrollees' homes, from towns and cities, because of the weather conditions and as a function of the other enrollees serving at the same time. These traits, as we documented above, significantly affected duration.

To collapse all of these different measures that affect desirability of the camp into a single measure, we calculate the average duration in the camp over all men assigned to the camp excluding those assigned in the same month and year as the focal man. We then instrument for an individual's duration using the mean duration of the camp where they served. For some individuals, camp assignment does not appear to be random (see appendix). Thus, we perform this analysis for the whole sample and for the subset for whom we are confident that assignment was close to random. The estimates from the IV regression range from 0.007 to 0.07 (Table 5). Although the standard errors are large, our IV estimates are not different from OLS.

VII. Short-Term Outcomes: Evidence from the 1940 Census and WWII Enlistment Records

What might explain these long run effects? To investigate, we examine the impact of training on short run outcomes. We show simple bivariate regressions and then add sets of covariates progressively. First, we investigate the effects on employment and wages, the standard outcomes that are typically assessed in job training programs. Then, we also investigate other mechanisms that include formal education increases, health improvements, marriage and geographic mobility.

a. Labor market outcomes: Evidence from the 1940 census

[36] These results are similar if we look at the probability of survival to age 70. See Appendix Table 4.

Table 6 shows the association between training duration and outcomes as measured in the 1940 census, for the sample of 9,623 men that participated in CCC before January 1st of 1940, of whom we find 43% percent in the 1940 census.[37]

The CCC appears to have little effect on the short run labor market outcomes of CCC enlistees. Most men (91%) are in the labor force and longer CCC training had at best a very small effect on this outcome. Without controls, the coefficient on duration is 0.014 which is a 1.5% increase relative to the mean of 0.91. We observe no effect on employment (conditional on labor force participation) during the census week. Because we observe individuals shortly after their training, those who served had shorter experience in the labor market explaining the results. So it is possible that the labor market outcomes could improve in the long term.

Next, we look at weeks worked and annual wage income in 1939. Restricting to those who served in CCC before January 1st of 1939, there appears to be a small negative and imprecise effect of duration on weeks worked or earnings. For example, the largest coefficient for weeks worked is -0.937 which corresponds to 3.4% change relative to the mean or 0.1 days worked. Similarly, we observe a negative but statistically insignificant effect on earnings, corresponding to about a 3% decrease in wages.

b. Health and military service: Evidence from WWII enlistment records

We observe height and BMI in the WWII enlistment data which we have for 31% of our sample (about 7,300 observations). Duration does predict whether we find enrollees in these data. Each year of CCC training leads to about a 0.03 increase in the probability we find the individual in the WWII enlistment records, about a 10% increase that is robust and statistically significant.

This result is not surprising: the army organized and administered life in the camps and CCC men who trained for a long time were well acquainted with the military lifestyle. Some men (2% in our data) ended their CCC engagement to enlist in the military directly, particularly towards the end of the program in 1942. Given that we have not found differential matching rates in any of our other data, we do not believe differential matching explains this result. Rather, we conclude that the program made men more likely to serve.

[37] Duration does not predict whether we find an enrollee in the 1940 census once we include birth cohort and county*quarter fixed effects (Table 6 top panel).

For outcomes observed in WWII records (or in both WWII and 1940), we control for the time difference between WWII enlistment date and CCC discharge date to account for the fact that individuals enrolled at different times in the army. Unlike regressions using the 1940 Census, essentially controls for experience.

We examine how the CCC affected two health outcomes: height and BMI which were measured upon enlistment. Individuals received food and medical care, including vaccinations, as part of their participation in the program, possibly improving their nutritional status. We find that one more year of training translated into roughly 1 more inch of height—this result is statistically significant and relatively robust to the inclusion of covariates once cohort dummies are included as controls. While this coefficient is small relative to the mean (about 1.5%), it is large by historical standards: for example, it took British men 100 years for their average height to increase by 6 inches (Fogel 1994). This result holds conditional on height at enlistment, so it corresponds to additional growth rather than initial differences in height (recall that initial height did not predict duration of training). This effect is consistent with national reports of the CCC program that the average height gain was ½ an inch (McEntee 1942), though our estimates are a bit larger, possibly because they are measured sometime after the conclusion of enrollee's training. It might seem surprising that the program increased heights given that these enrollees' average age is 19. However, undernourished populations grow more slowly and achieve their final adult height at older ages (Steckel 1986) and our results are consistent with this.

The results for BMI, which is a commonly used indicator of short-term nutrition, also show statistically significant increases, across specifications. Again, recall that we include observed measured height and weight at enrollment in CO so these results correspond to increases in BMI relative to baseline. These coefficients imply gains of about 5-6% depending on the specification. The final report documents an average weight gain of enrollees during the program of 11 pounds (McEntee 1942), and our results suggests that some of these gains persisted. For an average enrollee in our sample, adding 11 pounds would translate to a gain of 8%, so our results suggest that about 40-60% of the weight gain obtained during the program persisted.

c. Effects on education, marriage, and geographic mobility

We conclude by showing results on formal years of schooling, marriage, and geographic mobility which are observed in both the Census of 1940 and WWII Enlistment Records. For these

outcomes, we combine information from the two sources to maximize sample size as described in the appendix.[38]

We find a positive and statistically significant effect of duration on years of schooling of about 0.18 years, controlling for education at baseline. When we restrict our analysis to those with non-missing baseline education, the estimate declines to 0.12, but still statistically significant at the 5% level. While this is only 1-2% relative to the mean it is about one tenth of the standard deviation of schooling in WWII records, and it is larger than the effect of many education policies, such as child labor laws, on educational attainment during the early 20th century.[39]

This magnitude is somewhat larger than what one would expect based on the number of individuals that gained formal education during their CCC enlistment and suggests that perhaps individuals obtained school after participating in the CCC. CCC reports indicate that 8% of men obtained additional schooling.[40] Assuming 8% obtained one more year of school, it would result in a gain in years of schooling of 0.08, below but close to our estimate. Given that about 3.5% of enrollees in our data cited education as an explicit reason for leaving the program—this post-CCC education could account for the rest of the effect.

We see a zero effect of duration on ever being married, conditioning on the time since discharge measures. Thus, even for those with same amount of time of exposure outside CCC, there is no effect of additional length of CCC service on being married.

Finally, we look at geographic mobility, defined as whether in 1940 or at the time of WWII enlistment, CCC men are living in a different county than where they enrolled for CCC. On average 35% of them moved. We find that training in the CCC longer substantially increased the likelihood they moved. The coefficient on duration is positive and statistically significant in many specifications and it hovers around 0.05, thus one more year of training increases this likelihood by about 15%. This is substantial particularly during this period which was characterized by historically low migration nationwide, at least across states. In the 1940 census 12% of people report living in a different county than in 1935.[41] Individuals trained in camps that were on average

[38] The results are not qualitatively different if we run the regressions separately although they are less frequently statistically significant as a result of the smaller sample size. Results available upon request.
[39] For example, see Lleras-Muney (2002) or Goldin and Katz (2008). One more year of compulsory schooling led to about 0.05 years of schooling.
[40] The final report states that over one hundred thousand enrollees (3%) were taught how to read and write in the CCC program, 4% of men received primary school degrees (8th grade), 0.6% got their high school diplomas and a handful (270 out of more than 3 million) obtained college degrees. Thus, about 7-8% obtained some schooling.
[41] https://www.census.gov/dataviz/visualizations/010/

very far from their hometowns—it is possible that individuals ended up living in different counties are a result of this "forced" mobility. In the last two panels of the table, we show that when CCC men moved, they moved to locations that had higher paying weekly or annual wages in 1940 and thus potentially better economic opportunities.

VIII. External Validity and Comparisons to Modern Job Corps program

To shed some light on external validity, we analyze data from the modern Federal Job Corps program (JC hereafter) which was modeled in part on the CCC. Using data from a randomized evaluation of the JC program conducted in 1994-1996, we first compare JC and CCC enrollees along a number of dimensions including prior schooling and training duration. We follow this with a comparison of estimates of duration in JC and the CCC in terms of short run outcomes. We then compare our estimated treatment effects (using OLS methods) with JC estimates based on randomization to assess the validity of our research design.

Comparing CCC and JC Enrollees

Overall, JC and CCC participants share a number of similarities. Both are young in age (19 years old on average), have relatively few years of schooling (Appendix Table 5). JC participants have completed 10 years of schooling, compared with 8.5 for the CCC enrollees, and 19% have graduated from high school compared with 12% of the CCC enrollees. JC participants differ from CCC participants in two key respects: JC includes women and married individuals whereas the CCC prohibited them.

They are also similar in terms of duration of enrollment and reasons for disenrolling. For JC enrollees served on average 0.67 years and CCC enrollees 0.81 years. Similarly, about 30% of JC enrollees complete the program, compared with 40% of the CCC. And of those who leave before completed, 30% in the JC and 22% in the CCC "deserted" while 12 and 4%, respectively, left because of employment opportunities. Finally, when we try to predict duration in the JC and the CCC, we find evidence of both positive and negative selection into duration. We find that education, Hispanic ethnicity, non-native speakers trained longer and individual with a criminal history or those with shorter work histories trained for shorter periods of time (Appendix Table 6).

Comparing Treatment Effects for the JC and the CCC

We compare the effects of the two programs on three key outcomes that have already been studied: labor force participation, employment and wages. We also include geographic mobility and marriage as additional outcomes which can be investigated in both settings.

We first reproduce the JC evaluation results in Schochet et al. (2008), which leverages the experimental randomization and simply compares treated and control groups *only among males* (Table 8, column 1).[42] The second column shows the implied effects of training duration under a set of assumptions.[43] The third and fourth columns shows the results of our OLS strategy (with or without controlling for reasons why training ended). The last column replicates our CCC results for comparison.[44]

There are two major findings from this exercise. First, we find that in general the OLS approach is a reasonable approximation of the experimental results. Second, we find that these JC short run effects are very similar to our estimated effects from 1940 with some exceptions. We discuss these results in detail now.

OLS as a reasonable approximation of experimental estimates. With the exception of marriage, we find that in the OLS estimates are the same sign and have the same statistical significance as the RCT estimates. For example, for education the RCT effect is estimated to be 0.17 and it is statistically significant. Since the treated trained 5.82 months on average this implies that the effect of a year of training is about 0.35. If we use data only from the treated group and estimated the effect of training duration on education, the coefficient we would estimate is 0.35, below the experimental estimate. This conclusion holds for employment, earnings, and earnings conditional on employment. For mobility the OLS estimates are in the same direction but substantially higher. Only the marriage results differ substantially: in the RCT are essentially zero but they are negative and statistically significant at the 10% in the OLS regression.

Comparing CCC estimates with the JC RCT estimates.

[42] The results in the first column are almost identical to those in Schochet et al. (2008) except that we are restricting the sample to males and we constructed a few new outcomes (years of education, mobility and marriage). We can reproduce the full RCT results very closely.

[43] We observe the average duration among the treated group. Assuming that there are no heterogeneous treatment effects, and that the effect of training duration on the outcomes is linear.

[44] Appendix Table 7 shows that the treated and control groups are balanced among males only suggesting that the RCT results for this subsample are valid. However, we show both groups since the original RCT was not designed or powered to estimated effects among males only.

We find that the JC and the CCC program both had positive and statistically significant effects on education and mobility, and no effects on marriage. It is interesting that JC and CCC affected mobility—this might be an important channel by which long term outcomes are affected and yet it is not one that is usually considered. However, we find opposite effects on labor market outcomes. While small positive effects on employment, weeks worked, and annual earnings are found in the JC program, we find a zero effect on employment and negative effects on earnings in the CCC program (although these are not statistically significant). The differences might be due to the effects of experience: the labor market outcomes are measured on average only two years after leaving the CCC program but they are measured 4 years out for JC. The differences could also be driven by the fact that labor market conditions differed at the time of the evaluation and were still quite dire in the 1930s and early 1940s.

Overall, we conclude that CCC participants are comparable in some important dimensions to JC participants: they are young and uneducated, and they participate in training for about 7 to 9 months. In the short run, both programs appear to raise educational attainment and geographic mobility, but neither program results in substantial earnings gains conditional on employment. This suggests that in the long-term JC participants will benefit from JC mostly by living longer lives.

IX. Discussion.

In the long run, we find that individuals who participated in CCC for longer had increased longevity by about 0.7 years. In the short run, within 0-6 years of training, we find no significant effects of training duration on labor force participation, employment or earnings. But we find improvements on education and large increases in geographic mobility, height and BMI.

These findings are consistent with the literature on the determinants of mortality. Height and a normal BMI are both associated with longevity (Fogel 1994) and both indicators of health improved with CCC duration. The education of the men (formal and informal) was also increased and education is likewise associated with longevity (Cutler et al. 2006). Finally, the men appeared to have moved to richer locations—Chetty et al. (2016) show large variation in life expectancy based on residence conditional on individual incomes.

Moreover, the CCC program seems just as cost-effective as other programs that also targeted the poor but at younger ages. We compare the cost-effectiveness ratio of the CCC program to the cost-effectiveness of the Mothers' Pension (MP) program which also affected the same cohorts (roughly born between 1900 and 1925) and targeted poor children under the age of 14 living with single mothers (Aizer et al. 2016). The cost benefit ratio of the MP program is roughly 6.7 (based on life expectancy gains of 1.3 years at a cost of roughly 30K). The cost benefit ratio for CCC is about 6.8 which is very similar. Thus, these results suggest that on the basis of longevity gains, programs that target adolescents and young adults can be just as effective as those that target children.

This research has some important limitations. First, while suggestive of positive impacts, durations could be correlated to unobserved determinants of outcomes. The evidence however does not support a simple narrative of selection: those who trained for long periods were both positively selected (had more schooling) and negatively selected (came from poorer households and had lost parents). Thus, it is difficult to sign the omitted variable bias in our case. However, when we use modern data on the Job Corps program we find that our OLS approach yields estimates of the treatment effects of the program that are similar (though not identical) to those that are obtained using the randomization. Thus, we cautiously conclude that the preponderance of evidence suggests that there are important benefits of CCC on some long-term outcomes and that these benefits are likely to accrue to the participants of current job training programs. However, the results also suggest that the benefits of the program are largest in bad economic times and for the most disadvantaged populations, suggesting that training programs will not always be beneficial. Overall the results are most consistent with the hypothesis that the program provided important in-kind goods and services to disadvantaged populations in a time of need, ultimately improving their survival, rather than providing critical training and experience with returns in the labor market.

Second, there are some important outcomes that we do not observe. We have no data to assess whether the programs led to reductions in criminality which current research suggests might be important. There are also a host of other "soft" skills that the programs might have imparted, related to socialization and discipline. The CCC led to individuals living in camps and mixing with people from many different places and potentially from different ethnicities. Also, the Army imposed a certain discipline and rules of behavior that were unusual for most individuals. These

might have been beneficial as well. We have no measures of individual social skills to assess this hypothesis. We do observe however that the CCC increased the probability that young men served in the Army consistent with a change in either discipline or attitudes towards national service.

Despite these limitations, our results are important nevertheless. First, these results inform the current view of job training programs. The vast majority of impact evaluations of job training programs focus on labor market outcomes in the short to medium term. And they find small and/or insignificant effects. We confirm these findings in our data. But we observe large changes in other important determinants of lifetime outcomes that are not usually studied, namely education, health, military service and geographic mobility. These findings suggest that as previous scholars have noted, it is essential to evaluate multiple mechanisms and indicators of well-being when assessing the impacts of various interventions. Our results also suggest that long term evaluations that include multiple outcomes can give a vastly different picture of the ultimate value of interventions.

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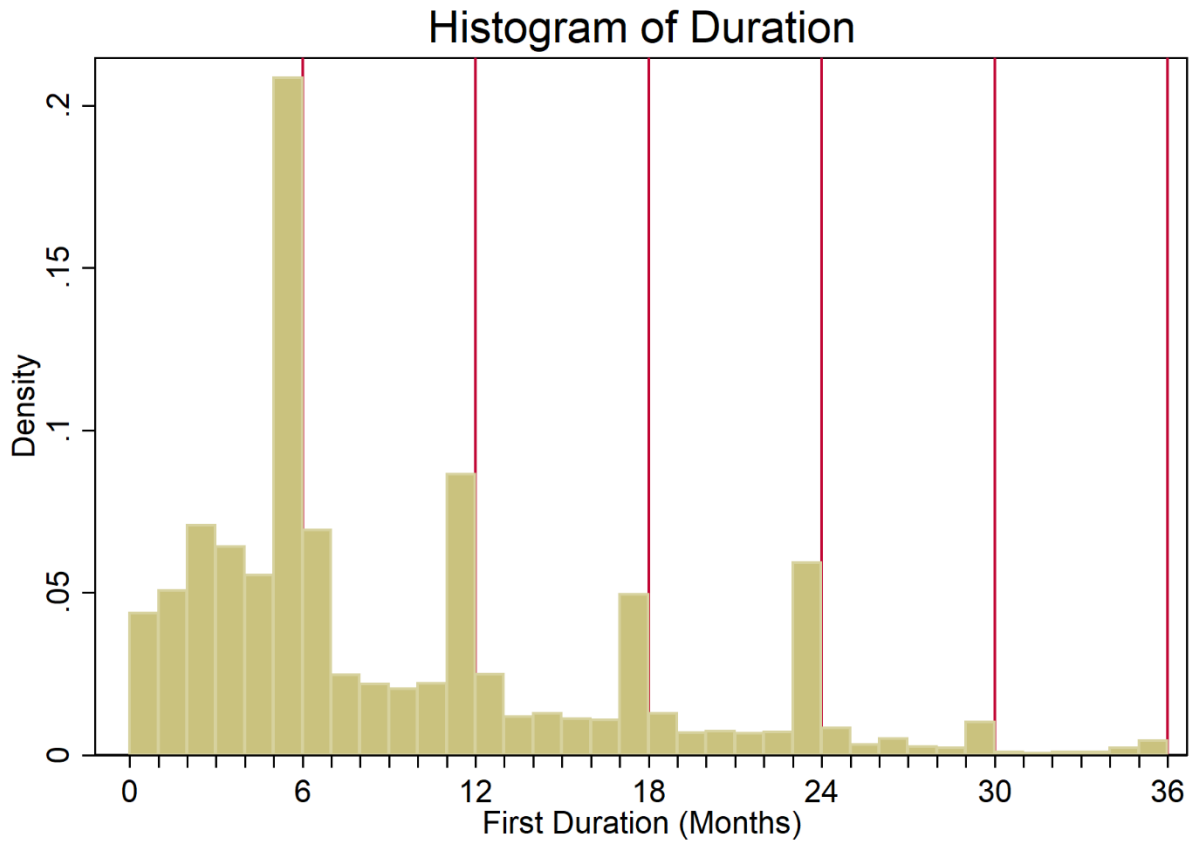
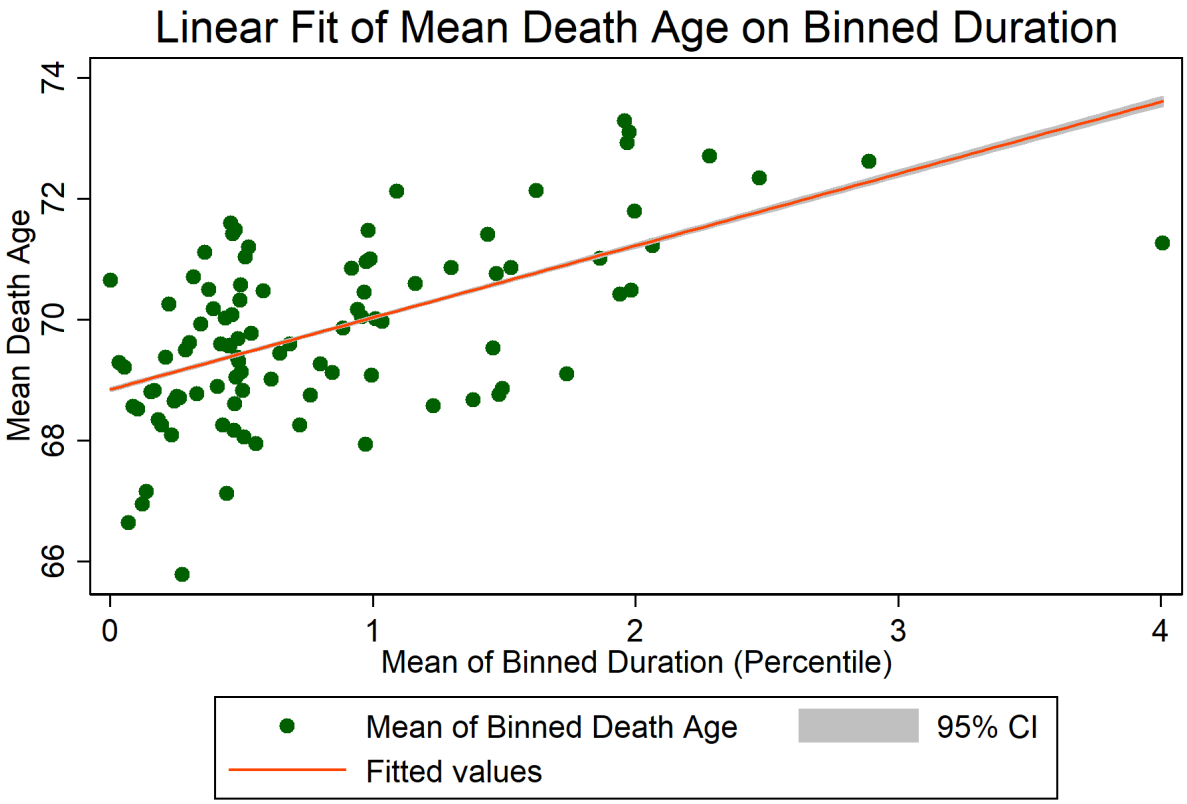
Figure 1: The distribution of service duration in the CCC records



Notes: We exclude durations greater than 3 years (less than 1% of the observations) in this figure. Mean duration is 9.44 months (s.d. 7.47)

Figure 2: Longevity increases with CCC service duration



Data: Administrative records matched to death certificates. See text for more details.

Figure 3: CCC enrollees who served more terms lived longer

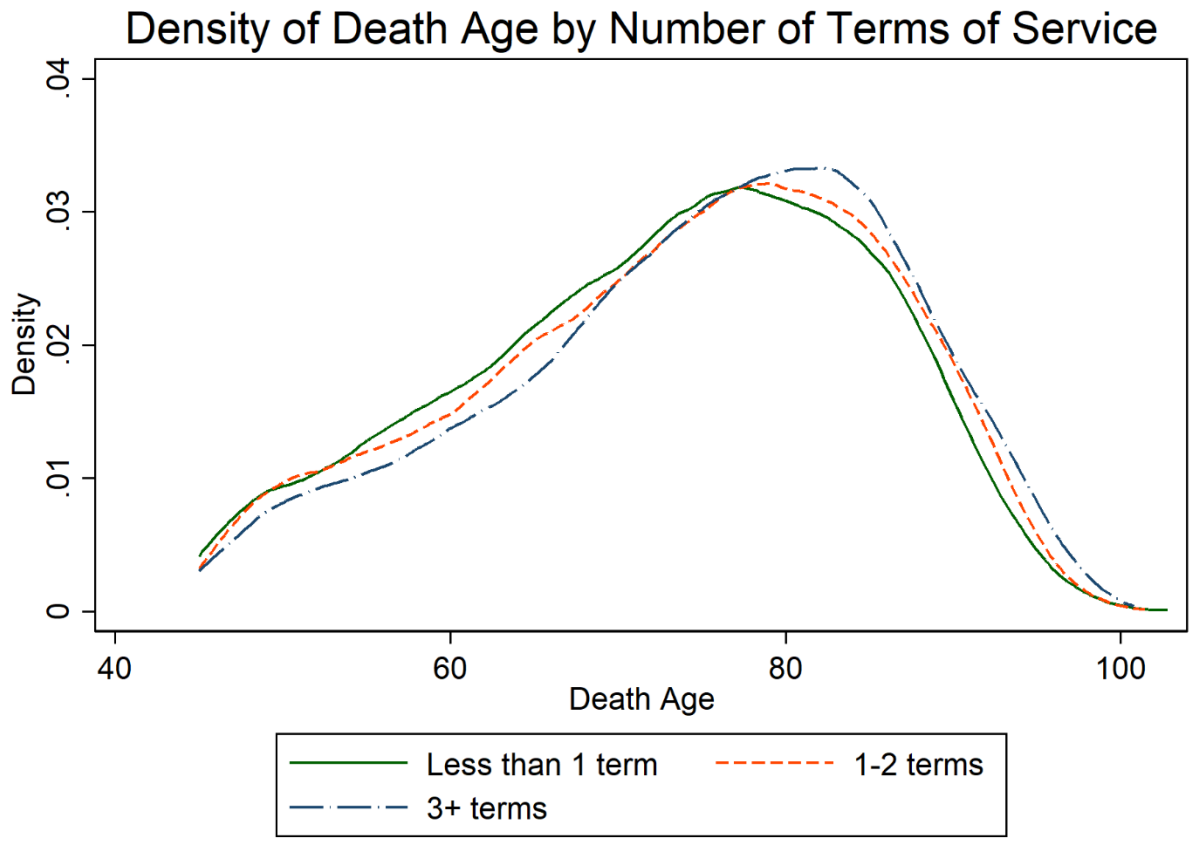


Figure 4: Effect of service duration on the probability of survival to different ages

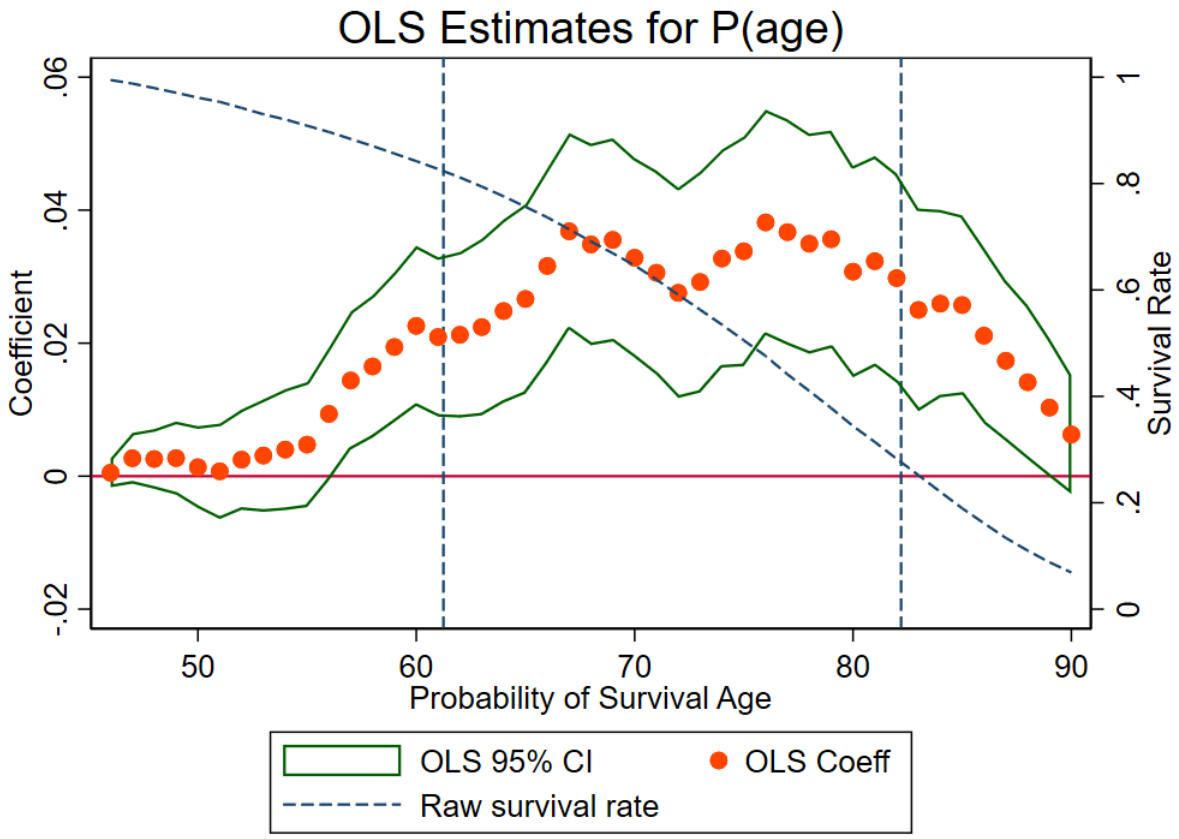
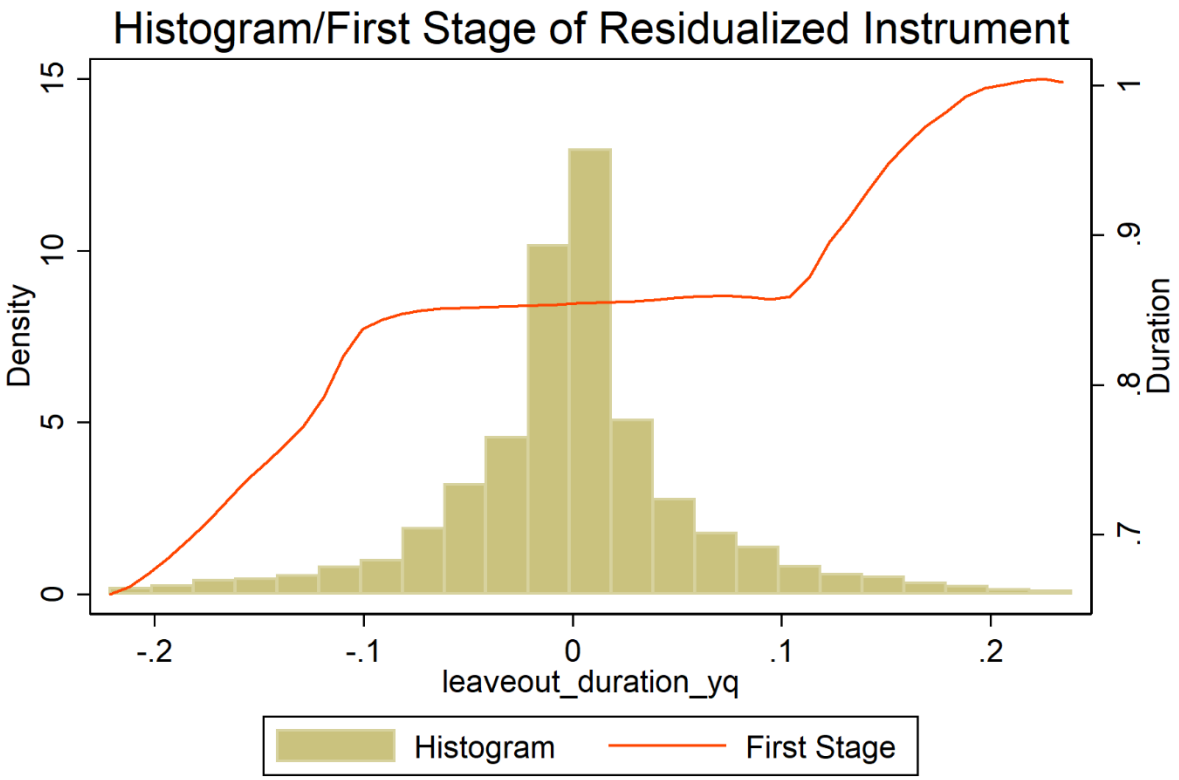


Figure 5: The relationship between camp leave-out mean and individual duration

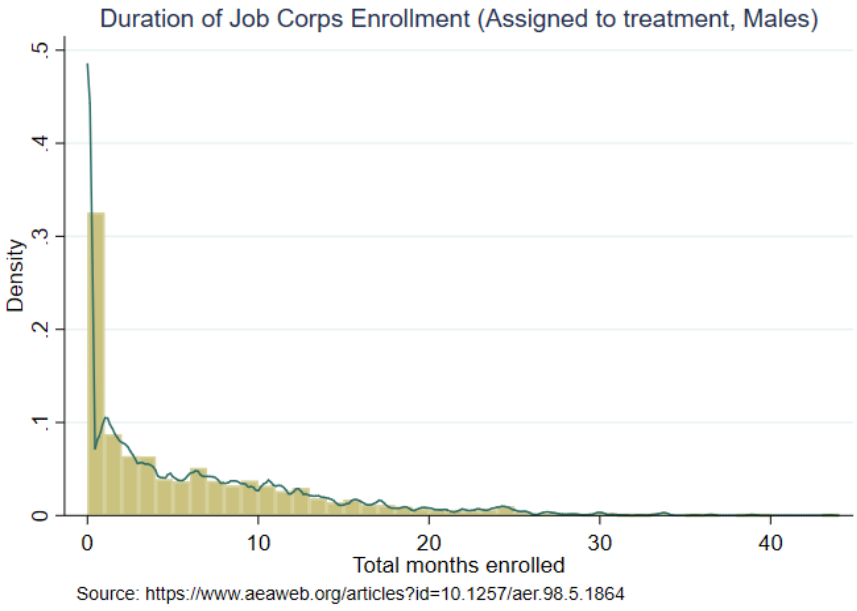
First Stage



Values outside 1-99 percentiles are suppressed. Mean: 0.00, SD: 0.08.
First stage: Epanechnikov kernel with bandwidth 0.05

Appendix Figure 1: Duration of Jobs Corps Enrollment

Panel A: Duration among all who were assigned to treatment



Panel B: Duration among those who have enrolled

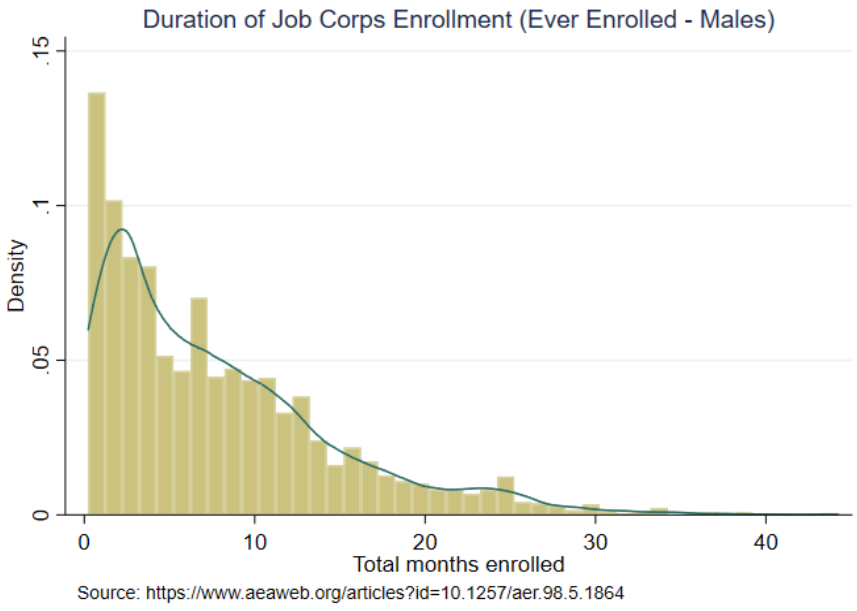


Table 1a: Summary statistics from enrollment records

	Analytic Sample			Mortality Sample		
	N	mean	sd	N	mean	sd
Characteristics in enrollment application						
Birth year	23,722	1,920	3.712	17,639	1,920	3.649
Age at enrollment	23,488	18.75	2.122	17,449	18.73	2.170
Enrollment year	23,722	1,939	1.902	17,639	1,939	1.894
Reported age younger than DMF or oldest reported	23,722	0.0888	0.284	17,639	0.113	0.317
Reported age older than DMF or oldest reported	23,722	0.167	0.373	17,639	0.219	0.413
Age is 17 or 18	23,488	0.564	0.496	17,449	0.535	0.499
Not Eligible	23,722	0.0151	0.122	17,639	0.0143	0.119
Allottee is father	23,722	0.334	0.472	17,639	0.332	0.471
Allottee is mother	23,722	0.466	0.499	17,639	0.475	0.499
Non-junior	23,722	0.00628	0.0790	17,639	0.00675	0.0819
Hispanic (imputed using hispanic index)	23,722	0.484	0.500	17,639	0.451	0.498
additional information in CO records						
Highest grade completed (CO only)	14,507	8.592	2.109	11,235	8.674	2.081
Household size excluding applicant (CO only)	7,870	4.745	2.600	6,283	4.763	2.591
Live on farm? (CO only)	8,101	0.248	0.432	6,460	0.253	0.435
Height (Inches) (CO only)	8,141	67.80	3.089	6,475	67.88	3.083
Weight (100 pounds) (CO only)	8,234	1.385	0.171	6,561	1.390	0.172
Body Mass Index (CO only)	8,115	21.21	2.178	6,461	21.23	2.174
Underweight (CO only)	8,115	0.0694	0.254	6,461	0.0689	0.253
Overweight (CO only)	8,115	0.0450	0.207	6,461	0.0461	0.210
Father Living (CO only)	7,943	0.799	0.401	6,339	0.803	0.398
Mother Living (CO only)	8,006	0.850	0.357	6,391	0.855	0.352
Tenure in county (years) (CO only)	5,432	12.66	6.483	4,326	12.68	6.504
Ever had a paid regular job? (CO only)	8,841	0.375	0.484	7,022	0.386	0.487
Male White Unemployed / Male White Pop 1937	23,709	0.0885	0.0397	17,629	0.0864	0.0388
Male White Unemployed / Male White Pop 1940	23,709	0.0710	0.0308	17,629	0.0696	0.0299
Service characteristics						
First allottee amount (dollars per month)	22,970	21.63	3.772	17,088	21.67	3.721
Duration of service (yrs)	23,722	0.821	0.706	17,639	0.826	0.708
Ever Rejected?	23,722	0.0194	0.138	17,639	0.0201	0.140
=1 if disabled	23,722	0.00847	0.0917	17,639	0.00686	0.0825
Gap in service (more than 3 months)	23,722	0.160	0.366	17,639	0.173	0.378
Reason ended: End of term	23,722	0.379	0.485	17,639	0.379	0.485
Reason ended: Employment	23,722	0.116	0.320	17,639	0.124	0.329
Reason ended: Convenience of the government	23,722	0.145	0.352	17,639	0.151	0.358
Reason ended: Urgent and Proper Call	23,722	0.117	0.321	17,639	0.122	0.327
Reason ended: Deserted	23,722	0.222	0.416	17,639	0.206	0.404
Reason ended: Rejected upon examination	23,722	0.00915	0.0952	17,639	0.00754	0.0865
Reason ended: No Record	23,722	0.0128	0.112	17,639	0.0120	0.109
Honorable Discharge	23,722	0.767	0.423	17,639	0.785	0.411

Table 1a continued -- Camp Characteristics

Distance from home to camp in miles (derived)	22,405	154.8	207.1	16,645	157.2	208.0
1st closest city distance form camp (miles)	23,480	26.68	22.50	17,454	26.57	22.26
2nd closest city distance form camp (miles)	23,480	49.86	22.49	17,454	49.33	22.32
Mean precipitation in camp 1933-1942	23,202	33.43	9.281	17,253	33.52	9.321
Mean min temp in camp 1933-1942	23,202	1.459	3.474	17,253	1.382	3.457
mean max temp in camp 1933-1942	23,202	17.51	4.114	17,253	17.39	4.108
Camp Mean Hispanic (imputed using hispanic index)	23,722	0.482	0.313	17,639	0.462	0.312
Camp Type: Department of Grazing	23,671	0.135	0.341	17,593	0.132	0.339
Camp Type: Federal Reclamation Project	23,671	0.0553	0.229	17,593	0.0566	0.231
Camp Type: Fish and Wildlife Service	23,671	0.0118	0.108	17,593	0.0111	0.105
Camp Type: National Forest	23,671	0.295	0.456	17,593	0.290	0.454
Camp Type: National Monument	23,671	0.0191	0.137	17,593	0.0184	0.134
Camp Type: National Park	23,671	0.105	0.307	17,593	0.108	0.310
Camp Type: Soil Conservation	23,671	0.307	0.461	17,593	0.311	0.463
Camp Type: State Park	23,671	0.0524	0.223	17,593	0.0527	0.223
Camp Type: Other	23,671	0.0202	0.141	17,593	0.0206	0.142

Notes: Basic sample includes records with duration (begin and end date of enrollment), camp id and enrollment county. The analytical sample for the mortality analysis only includes those not missing death age and death age more than 45. When multiple records were found for a samgle individual we use the information in the first enrollment record. *Reported age being younger (older) than DMF OR than the oldest (youngest) reported if the individual has multiple enrollment spells.

Table 1b: Death certificate, 1940 and WWII records

	Analytic Sample			Analytic Sample for mortality		
	N	mean	sd	N	mean	sd
Death certificate data						
Age at death	19,377	69.82	16.84	17,639	73.62	12.03
=1 if missing age at death	23,722	0.183	0.387	17,639	0	0
Survive at 70	19,377	0.587	0.492	17,639	0.644	0.479
P(70), imputed to 0 if missing	23,722	0.479	0.500	17,639	0.644	0.479
Imputed Prob of Survival at 70 Using Age at Discharge	23,718	0.589	0.446	17,636	0.644	0.479
1940 census data						
1940 Cens: Matched	23,722	0.449	0.497	17,639	0.479	0.500
Panel a: those that served before 1940						
1940 Cens: Year of birth	4,217	1,918	3.836	3,410	1,918	3.803
1940 Cens: Age at last birthday (in years)	4,217	21.77	3.836	3,410	21.75	3.803
1940 Cens: Hispanic	4,217	0.279	0.449	3,410	0.258	0.438
1940 Cens: White	4,217	0.991	0.0933	3,410	0.992	0.0903
1940 Cens: Ever married	4,217	0.279	0.448	3,410	0.282	0.450
1940 Cens: In labor force	4,217	0.909	0.288	3,410	0.912	0.283
1940 Cens: Working, conditional on labor force	3,833	0.711	0.453	3,110	0.718	0.450
1940 Cens: Wage, conditional on working	2,983	405.3	361.0	2,424	401.8	337.4
1940 Cens: Lives in CO	4,217	0.776	0.417	3,410	0.787	0.409
1940 Cens: Lives in NM	4,217	0.166	0.372	3,410	0.152	0.360
1940 Cens: Years of educ	4,159	8.770	2.477	3,363	8.842	2.445
1940 Cens: Lives with parent	4,217	0.629	0.483	3,410	0.626	0.484
1940 Cens: Father's years of educ	2,049	7.098	4.299	1,658	7.168	4.280
1940 Cens: Mother's years of educ	2,295	7.393	4.230	1,849	7.422	4.234
1940 Cens: Household income	2,996	404.3	362.1	2,429	400.8	338.8
1940 Cens: Mother Native	2,420	0.909	0.288	1,958	0.910	0.286
1940 Cens: Father Native	2,152	0.919	0.273	1,742	0.917	0.275
1940 Cens: Owns home	4,109	0.432	0.495	3,318	0.425	0.494
1940 Cens: House value	1,730	960.5	2,601	1,373	1,008	2,843
Panel b: those that served after 1940						
1940 Cens: Moved Residence Counties	4,215	0.299	0.458	3,408	0.291	0.454
1940 Cens: Year of birth	636	1,920	3.486	532	1,920	3.493
1940 Cens: Age at last birthday (in years)	636	19.66	3.486	532	19.62	3.493
1940 Cens: Hispanic	636	0.365	0.482	532	0.340	0.474
1940 Cens: White	636	0.994	0.0791	532	0.992	0.0865
1940 Cens: Ever married	636	0.0393	0.194	532	0.0301	0.171
1940 Cens: In labor force	636	0.879	0.326	532	0.883	0.321
1940 Cens: Working, conditional on labor force	559	0.719	0.450	470	0.711	0.454
1940 Cens: Wage, conditional on working	440	253.8	167.2	366	258.6	172.1
1940 Cens: Lives in CO	636	0.855	0.352	532	0.868	0.338
1940 Cens: Lives in NM	636	0.134	0.341	532	0.122	0.328
1940 Cens: Years of educ	629	8.347	2.135	526	8.390	2.114
1940 Cens: Lives with parent	636	0.918	0.274	532	0.925	0.264
1940 Cens: Father's years of educ	458	7.118	4.264	386	7.210	4.336
1940 Cens: Mother's years of educ	523	7.075	4.276	442	7.005	4.200
1940 Cens: Household income	440	254.2	167.5	367	258.9	172.2
1940 Cens: Mother Native	545	0.897	0.304	461	0.902	0.297
1940 Cens: Father Native	490	0.918	0.274	407	0.914	0.281

Table 1b continued

1940 Cens: Owns home	630	0.506	0.500	526	0.487	0.500
1940 Cens: House value	316	633.5	831.7	254	600.2	707.8
1940 Cens: Moved Residence Counties	636	0.145	0.352	532	0.139	0.346
WWII records						
WWII: Matched	23,722	0.306	0.461	17,639	0.338	0.473
WWII: birth year	7,263	1,920	2.810	5,954	1,920	2.831
WWII: enrollment year	7,262	1,942	1.424	5,954	1,942	1.439
WWII: years of education	7,263	9.395	1.787	5,954	9.404	1.785
WWII: height in inches (dropped 99 and values<40)	5,971	67.52	6.089	4,876	67.70	6.098
WWII: weight in lbs (dropped values below 90 and over 350)	5,641	138.6	26.19	4,595	138.7	25.70
WWII: BMI	5,466	21.55	4.500	4,451	21.50	4.101
WWII: Ever Married	7,256	0.215	0.411	5,947	0.221	0.415
WWII: Home State CO	7,232	0.591	0.492	5,928	0.605	0.489
WWII: Moved Residence Counties	7,215	0.303	0.460	5,914	0.296	0.457
WWII: Home State NM	7,232	0.319	0.466	5,928	0.305	0.460
WWII: Birthplace CO	7,215	0.444	0.497	5,913	0.451	0.498
WWII: Birthplace NM	7,215	0.322	0.467	5,913	0.309	0.462
WWII: Birthplace Rest of US	7,215	0.230	0.421	5,913	0.237	0.425

Notes: Basic sample includes records with duration (begin and end date of enrollment), camp id and enrollment county. The analytical sample for the mortality analysis only includes those not missing death age and death age more than 45. When multiple records were found for a samgle individual we use the information in the first enrollment record.

Table 2: Determinants of CCC service duration

	(1) Indiv Controls	(2) Camp Controls	(3) Indiv+Camp	(4) Add County-Quarter FE	(5) Add Reason
Individual characteristics					
Ever Rejected?	-0.201***		-0.020	-0.007	-0.016
	(0.033)		(0.034)	(0.032)	(0.029)
=1 if disabled : Enrollment 1	-0.446***		-0.465***	-0.328***	-0.196***
	(0.055)		(0.055)	(0.050)	(0.059)
Non-junior : Enrollment 1	0.832***		0.839***	0.508***	0.533***
	(0.122)		(0.119)	(0.097)	(0.097)
Reported Age Younger than DMF or Oldest Reported 1	0.033*		0.025	0.003	0.004
	(0.019)		(0.019)	(0.014)	(0.013)
Reported Age Older than DMF 1	0.081***		0.090***	-0.047***	-0.037***
	(0.015)		(0.015)	(0.012)	(0.012)
Not Eligible : Enrollment 1	0.298**		0.264*	0.174**	0.163**
	(0.139)		(0.141)	(0.076)	(0.077)
Age is 17 or 18 : Enrollment 1	0.101***		0.104***	-0.035***	-0.037***
	(0.014)		(0.014)	(0.011)	(0.011)
Allottee amount : Enrollment 1	0.058***		0.060***	-0.001	-0.002
	(0.004)		(0.005)	(0.004)	(0.004)
Allottee is father : Enrollment 1	0.045***		0.045***	0.001	-0.010
	(0.017)		(0.017)	(0.013)	(0.013)
Allottee is mother : Enrollment 1	0.046***		0.046***	0.017	0.011
	(0.017)		(0.016)	(0.014)	(0.013)
Gap in service	-0.200***		-0.154***	-0.156***	-0.190***
	(0.016)		(0.015)	(0.013)	(0.013)
Log distance from home to camp (miles)	-0.016***		-0.013**	-0.012**	-0.011**
	(0.005)		(0.005)	(0.005)	(0.005)
Hispanic (imputed using hispanic index)	0.078***		0.059***	0.026**	0.018
	(0.014)		(0.014)	(0.013)	(0.012)
Highest grade completed (CO only)	0.024***		0.021***	0.019***	0.015***
	(0.003)		(0.003)	(0.003)	(0.003)
Household size excluding applicant (CO only)	0.012***		0.013***	0.007***	0.006**
	(0.003)		(0.003)	(0.002)	(0.002)
Live on farm? (CO only)	0.053***		0.052***	0.016	0.017
	(0.016)		(0.017)	(0.014)	(0.014)
Height (Inches) (CO only)	0.002		0.001	0.000	0.001
	(0.003)		(0.003)	(0.002)	(0.002)
Weight (100 pounds) (CO only)	-0.189***		-0.154***	-0.085*	-0.076*
	(0.054)		(0.052)	(0.045)	(0.042)
Father Living (CO only)	-0.054***		-0.055***	-0.018	-0.022
	(0.019)		(0.019)	(0.015)	(0.015)
Mother Living (CO only)	-0.088***		-0.095***	-0.051***	-0.049***
	(0.021)		(0.021)	(0.016)	(0.016)
Tenure in county (years) (CO only)	-0.001		-0.001	-0.001	-0.001
	(0.001)		(0.001)	(0.001)	(0.001)
Constant	-1.452***	3.334***	2.798***	12.998***	12.207***
	(0.458)	(0.518)	(0.570)	(0.871)	(0.804)
Reason for discharge (code) : Enrollment 1 = 2, Emp					-0.166***
					(0.018)
Reason for discharge (code) : Enrollment 1 = 3, COG					-0.179***
					(0.017)
Reason for discharge (code) : Enrollment 1 = 4, UrgProp					-0.258***
					(0.017)
Reason for discharge (code) : Enrollment 1 = 5, Desert					-0.196***
					(0.053)
Reason for discharge (code) : Enrollment 1 = 6, Rej					-0.166*
					(0.096)
Reason for discharge (code) : Enrollment 1 = 7, No Rec					-0.152***
					(0.046)
Honorable Discharge : Enrollment 1					0.193***
					(0.051)

Table 2 continued - *Camp characteristics*

=1 if camp is in New Mexico : Enrollment 1		-0.094***	0.053	0.154***	0.176***
		(0.034)	(0.051)	(0.058)	(0.055)
Mean precipitation in camp 1933-1942		-0.001	-0.001	-0.004***	-0.003***
		(0.001)	(0.001)	(0.001)	(0.001)
Mean min temp in camp 1933-1942		0.010	0.013**	0.029***	0.026***
		(0.006)	(0.006)	(0.008)	(0.007)
mean max temp in camp 1933-1942		-0.018***	-0.021***	-0.034***	-0.031***
		(0.006)	(0.006)	(0.007)	(0.007)
Camp Type: Department of Grazing		0.132***	0.124***	-0.075	-0.066
		(0.044)	(0.041)	(0.063)	(0.060)
Camp Type: Federal Reclamation Project		0.119**	0.100**	-0.056	-0.071
		(0.047)	(0.045)	(0.070)	(0.067)
Camp Type: Fish and Wildlife Service		0.106**	0.024	-0.384***	-0.295**
		(0.051)	(0.048)	(0.131)	(0.127)
Camp Type: National Forest		0.010	-0.004	-0.106*	-0.091
		(0.043)	(0.041)	(0.060)	(0.058)
Camp Type: National Monument		0.145*	0.121	-0.303***	-0.289***
		(0.088)	(0.084)	(0.090)	(0.087)
Camp Type: National Park		0.070	0.061	-0.118*	-0.120**
		(0.044)	(0.042)	(0.063)	(0.060)
Camp Type: Soil Conservation		0.121***	0.101***	-0.075	-0.061
		(0.040)	(0.038)	(0.059)	(0.057)
Camp Type: State Park		-0.030	-0.040	-0.119*	-0.100
		(0.054)	(0.050)	(0.069)	(0.066)
Log distance to closest city (miles) : Enrollment 1		-0.007*	-0.007**	0.011**	0.010*
		(0.004)	(0.004)	(0.005)	(0.005)
Log distance to 2nd closest city (miles) : Enrollment 1		0.029	0.036*	-0.017	-0.024
		(0.019)	(0.019)	(0.022)	(0.021)
Peer, daily weighted: Hispanic at enrollment : Enrollment 1		0.387***	0.238***	0.248***	0.222***
		(0.044)	(0.047)	(0.071)	(0.066)
Peer, daily weighted: Age at enrollment : Enrollment 1		-0.200***	-0.236***	-0.319***	-0.304***
		(0.021)	(0.023)	(0.034)	(0.032)
Peer, daily weighted: Age Younger than DMF or Oldest one		0.484***	0.383**	-0.604***	-0.589***
		(0.170)	(0.169)	(0.211)	(0.196)
Peer, daily weighted: Reported Age Older than DMF 1		-0.275**	-0.451***	-1.025***	-0.996***
		(0.127)	(0.137)	(0.200)	(0.189)
Peer, daily weighted: Not Eligible (First enrollment)		1.860***	1.585***	1.346***	1.267***
		(0.256)	(0.273)	(0.389)	(0.373)
Peer, daily weighted: Allottee amount : Enrollment 1		0.083***	0.030***	-0.256***	-0.241***
		(0.005)	(0.007)	(0.017)	(0.016)
Peer, daily weighted: Allottee: Father		-0.083	-0.120	0.018	-0.026
		(0.126)	(0.122)	(0.149)	(0.143)
Peer, daily weighted: Allottee: Mother		-0.162	-0.115	-0.032	-0.080
		(0.126)	(0.129)	(0.134)	(0.123)
Peer, daily weighted: Gap in service		-0.933***	-0.696***	-0.653***	-0.614***
		(0.098)	(0.098)	(0.133)	(0.124)
White Male Unemployment Rate 1937/1940	1.951***		1.510***		
	(0.329)		(0.307)		
Observations	17,639	17,085	17,085	17,085	17,085
R-squared	0.182	0.160	0.222	0.573	0.606
Mean Dep	0.83	0.84	0.84	0.84	0.84
FE	BD	BD	BD	BD,CYQ	BD,CYQ
Sample	All	All	All	All	All
Reason	N	N	N	N	Y
Number of groupayq				1,789	1,789

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Only Duration <= 3 years, death age >= 45 included in regression

Variables imputed if missing and missing dummies included

County Unemployment is from ICPSR compilation of County statistics from 1937 Census of Unemployment and 1940 Decenniel Census. Those values are given to enrollment years 1937, 1938 for 1937 Ce

Table 3: The effect of service duration on longevity

VARIABLES	(1) No Controls	(2) Birth + County-quarter Dummies	(3) Add Indiv Controls	(4) Add Camp Chars	(5) Add Peer Chars	(6) Add Camp FE	(7) Add Reason for Dismissal
Individual characteristics							
Duration of service : Enrollment 1	0.013***	0.013***	0.011***	0.011***	0.013***	0.013***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Ever Rejected?			-0.030***	-0.031***	-0.030***	-0.030***	-0.031***
			(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
=1 if disabled : Enrollment 1			-0.006	-0.006	-0.006	-0.004	0.008
			(0.016)	(0.016)	(0.016)	(0.016)	(0.018)
Non-junior : Enrollment 1			0.003	0.004	0.003	-0.000	0.002
			(0.018)	(0.019)	(0.019)	(0.019)	(0.019)
Reported Age Younger than DMF or Oldest Reported 1			-0.019***	-0.019***	-0.019***	-0.019***	-0.019***
			(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Reported Age Older than DMF 1			-0.022***	-0.022***	-0.022***	-0.022***	-0.021***
			(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Not Eligible : Enrollment 1			0.011	0.011	0.010	0.011	0.012
			(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Age is 17 or 18 : Enrollment 1			0.006*	0.007*	0.007*	0.007*	0.007*
			(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Allottee amount : Enrollment 1			0.000	0.000	0.000	0.000	0.000
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Allottee is father : Enrollment 1			0.008*	0.008*	0.008*	0.008	0.007
			(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Allottee is mother : Enrollment 1			0.001	0.001	0.001	0.001	0.001
			(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Gap in service			0.000	0.001	0.001	0.001	-0.002
			(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Log distance from home to camp (miles)			0.001	0.002	0.002	0.002*	0.002*
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hispanic (imputed using hispanic index)			0.018***	0.018***	0.018***	0.019***	0.019***
			(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Highest grade completed (CO only)			0.004***	0.004***	0.004***	0.005***	0.004***
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household size excluding applicant (CO only)			0.003***	0.003***	0.003***	0.003***	0.003***
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Live on farm? (CO only)			0.011*	0.011*	0.011*	0.011*	0.011*
			(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Height (Inches) (CO only)			0.001	0.001	0.001	0.001	0.001
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Weight (100 pounds) (CO only)			-0.042**	-0.041**	-0.041**	-0.041**	-0.041**
			(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Father Living (CO only)			0.000	0.001	0.000	-0.000	-0.000
			(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Mother Living (CO only)			0.008	0.008	0.008	0.008	0.008
			(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Tenure in county (years) (CO only)			-0.001	-0.001	-0.001	-0.001	-0.001
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	4.274***	4.391***	4.308***	4.295***	4.065***	4.364***	4.373***
	(0.002)	(0.137)	(0.160)	(0.168)	(0.206)	(0.162)	(0.162)
Observations	17,085	17,085	17,085	17,085	17,085	17,085	17,085
R-squared	0.003	0.117	0.126	0.127	0.128	0.138	0.139
Mean Dep	73.62	73.62	73.62	73.62	73.62	73.62	73.62
FE	None	BD,CYQ	BD,CYQ	BD,CYQ	BD,CYQ	BD,CYQ,Camp	BD,CYQ,Camp
Sample	All	All	All	All	All	All	All
Reason	N	N	N	N	N	N	Y
Number of groupayq		1,789	1,789	1,789	1,789	1,789	1,789

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Only Duration <= 3 years, death age >= 45

Table 4: Effect of service duration on survival rates by age

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Survival to age 70 | mean:	0.65					
Duration	0.030***	0.032***	0.028***	0.035***	0.030***	0.030***
	(0.005)	(0.006)	(0.006)	(0.007)	(0.008)	(0.008)
Observations	17,085					
Panel B: Survival to age 70 missing imputed | mean:	0.64					
Duration	0.022***	0.026***	0.023***	0.028***	0.023***	0.023***
	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Observations	21,268					
Panel C: Survival to age 70 missing imputed to 0 | mean:	0.52					
Duration	0.025***	0.038***	0.037***	0.040***	0.034***	0.034***
	(0.005)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Observations	21,268					
Panel D: Bounding exercise						
Upper bound	0.133	0.158	0.158	0.184	0.189	0.185
Lower bound	-0.083	-0.104	-0.112	-0.125	-0.138	-0.150
County-Quarter FE	N	Y	Y	Y	Y	Y
Controls	N	N	Y	Y	Y	Y
Peer + Camp Controls	N	N	N	Y	Y	Y
Camp FE	N	N	N	N	Y	Y
Type of Dismissal	N	N	N	N	N	Y

*** p<0.01, ** p<0.05, * p<0.1. Standard errors (clustered at the application county and enrollment year-quarter level) in parentheses. Sample only includes death ages >= 45. Panel B imputes survival probability using the age at discharge and life tables from SSA. Panel C imputes 0 for missing survival probability. Panel D implements the bounding procedure explained in the text.

Table 5: IV estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	pass randomization test or randomization test cannot be computed		pass randomization test		All	
Dependent variable: survived to age 70, imputed (mean:)	Indiv Controls only	Add Camp + Peer Chars	Indiv Controls only	Add Camp + Peer Chars	Indiv Controls only	Add Camp + Peer Chars
Instrumental Variables Estimate						
Duration of service : Enrollment 1	0.0129	0.0484	0.00748	0.00734	0.0245	0.0761
	(0.0348)	(0.0699)	(0.0556)	(0.117)	(0.0347)	(0.0705)
Observations	19,097	19,097	6,513	6,513	21,195	21,195
Number of groupayq	1,794	1,794	150	150	1,839	1,839
First Stage						
Enrollment Quarter leave-out mean duration of camp	1.073***	0.582***	1.060***	0.573***	0.986***	0.522***
	(0.0951)	(0.0926)	(0.131)	(0.114)	(0.0944)	(0.0954)
F-statistic	127.12	39.47	65.14	25.15	108.95	29.89
F-statistic corrected using Hull's correction	.7	.22	.39	.15	.6	.17
OLS						
Duration of service : Enrollment 1	0.0222***	0.0268***	0.0335***	0.0416***	0.0226***	0.0275***
	(0.00545)	(0.00608)	(0.00798)	(0.00868)	(0.00526)	(0.00584)
Reduced Form						
Enrollment Quarter leave-out mean duration of camp	0.0138	0.0282	0.00793	0.00421	0.0241	0.0397
	(0.0375)	(0.0410)	(0.0590)	(0.0668)	(0.0342)	(0.0365)

Note: the leave out mean excludes men that enrolled in the same quarter the enrollee started. This table uses the life table imputations for P70.

Table 6: Effect of service duration on Labor market outcomes observed in the 1940 census

Regression of Outcome on Duration	(1) No Controls	(2) Birth + County-quarter Dummies	(3) Add Indiv Controls	(4) Add Camp Chars	(5) Add Peer Chars	(6) Add Camp FE	(7) Add Reason for Dismissal	(8) Before Median Year
Census								
Found in Census records	Mean Dep	0.43						1937
Duration	-0.015**	0.009	0.007	0.009	0.006	0.012	-0.000	0.014
	(0.007)	(0.010)	(0.010)	(0.010)	(0.011)	(0.012)	(0.012)	(0.014)
Observations	9,518	9,518	9,518	9,518	9,518	9,518	9,518	6,839
R-squared	0.001	0.137	0.152	0.154	0.155	0.166	0.168	0.154
In Labor Force	Mean Dep	0.91						1937
Duration	0.014**	0.013*	0.013*	0.015**	0.016*	0.019*	0.014	0.019
	(0.006)	(0.007)	(0.007)	(0.007)	(0.009)	(0.010)	(0.011)	(0.012)
Observations	4,052	4,052	4,052	4,052	4,052	4,052	4,052	2,889
R-squared	0.001	0.272	0.279	0.280	0.280	0.305	0.309	0.267
Working In Census Week | Labor Force	Mean Dep	0.71						1937
Duration	0.006	-0.004	-0.005	-0.004	-0.010	-0.015	-0.021	-0.003
	(0.011)	(0.014)	(0.014)	(0.014)	(0.019)	(0.022)	(0.023)	(0.026)
Observations	3,684	3,684	3,684	3,684	3,684	3,684	3,684	2,672
R-squared	0.000	0.265	0.279	0.283	0.286	0.310	0.315	0.289
Weeks Worked in 1939	Mean Dep	27.88						1936
Duration	0.669	-0.691	-0.911	-0.937	-0.896	0.265	-0.566	-0.442
	(0.732)	(1.044)	(1.049)	(1.029)	(1.082)	(1.199)	(1.217)	(1.271)
Observations	2,360	2,360	2,360	2,360	2,360	2,360	2,360	1,343
R-squared	0.000	0.314	0.345	0.351	0.354	0.383	0.388	0.339
Total Annual Wage in 1939	Mean Dep	383.71						1936
Duration	16.773	-12.266	-18.948	-20.038	-21.185	-14.497	-24.773	-20.755
	(16.061)	(23.145)	(23.911)	(23.533)	(25.577)	(26.389)	(26.764)	(31.272)
Observations	2,148	2,148	2,148	2,148	2,148	2,148	2,148	1,225
R-squared	0.001	0.318	0.352	0.357	0.359	0.391	0.398	0.361
Ln Total Annual Wage | Working	Mean Dep	471.25						1936
Duration	0.047	-0.035	-0.047	-0.042	-0.051	-0.014	-0.034	-0.022
	(0.039)	(0.052)	(0.051)	(0.052)	(0.058)	(0.062)	(0.064)	(0.076)
Observations	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,049
R-squared	0.001	0.396	0.447	0.452	0.454	0.487	0.493	0.406

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Sample are those whose first term in CCC is before 1940 and are not enrolled in 1940. The 1940 Census was taken on April 1, 1940.

^ Sample are those whose first term in CCC is before 1939 and are not enrolled in 1939. Census asks labor force and work status on the week before the Census enumeration, while wage information and weeks worked is asked for the year before the Census 1939.

Table 7: Effect of service duration on health, education, marriage, mobility observed in WWII enlistment and 1940 census

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regression of Outcome on Duration	No Controls	Birth + County-quarter Dummies	Add Indiv Controls	Add Camp Chars	Add Peer Chars	Add Camp FE	Add Reason for Dismissal	Before Median Year
WW2								
Found in WWII records	Mean Dep	0.31						1939
Duration	0.018***	0.036***	0.034***	0.035***	0.038***	0.038***	0.032***	0.046***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.009)
Observations	22,963	22,963	22,963	22,963	22,963	22,963	22,963	13,879
Enlistment Year	Mean Dep	1942.24						1939
Duration	-0.181***	0.976***	0.975***	0.976***	0.966***	0.962***	0.964***	0.961***
	(0.025)	(0.008)	(0.008)	(0.008)	(0.009)	(0.010)	(0.010)	(0.012)
Observations	7,018	7,018	7,018	7,018	7,018	7,018	7,018	4,398
Height	Mean Dep	67.55						1939
Duration	-0.022	1.098***	1.098***	1.097***	1.161***	1.143***	1.197***	1.015***
	(0.103)	(0.190)	(0.191)	(0.190)	(0.209)	(0.221)	(0.221)	(0.261)
Observations	5,770	5,770	5,770	5,770	5,770	5,770	5,770	3,742
BMI	Mean Dep	21.53						1939
Duration	-0.134**	0.789***	0.829***	0.822***	0.874***	1.018***	1.062***	0.715***
	(0.064)	(0.191)	(0.191)	(0.190)	(0.195)	(0.204)	(0.206)	(0.205)
Observations	5,287	5,287	5,287	5,287	5,287	5,287	5,287	3,538
Combined WW2 Census								
Education	Mean Dep	9.23						1938
Duration	-0.072**	0.299***	0.185***	0.186***	0.188***	0.169***	0.187***	0.120**
	(0.035)	(0.041)	(0.035)	(0.036)	(0.038)	(0.040)	(0.041)	(0.052)
Observations	9,586	9,586	9,586	9,586	9,586	9,586	9,586	5,254
Ever Married	Mean Dep	0.25						1938
Duration	-0.012*	0.007	0.008	0.008	0.005	0.003	0.007	0.003
	(0.007)	(0.008)	(0.008)	(0.008)	(0.009)	(0.010)	(0.010)	(0.014)
Observations	9,610	9,610	9,610	9,610	9,610	9,610	9,610	5,280
Moved	Mean Dep	0.34						1938
Duration	0.003	0.054***	0.054***	0.054***	0.062***	0.057***	0.069***	0.036**
	(0.008)	(0.009)	(0.009)	(0.009)	(0.011)	(0.011)	(0.012)	(0.014)
Observations	9,568	9,568	9,568	9,568	9,568	9,568	9,568	5,254
New County Has Higher Weekly Wage	Mean Dep	0.58						1939
Duration	0.017	0.039*	0.038*	0.044**	0.073***	0.109***	0.096***	0.095**
	(0.020)	(0.020)	(0.020)	(0.020)	(0.025)	(0.032)	(0.033)	(0.038)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102
New County Has Higher Yearly Wage	Mean Dep	0.59						1939
Duration	-0.005	0.046**	0.049**	0.047**	0.062**	0.077**	0.068**	0.062
	(0.020)	(0.020)	(0.020)	(0.021)	(0.026)	(0.034)	(0.035)	(0.039)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Sample are those found in WWII records. WWII: additionally includes the age at enlistment dummies. Combined: additionally includes age at observation dummies, where if observed in Census, the age is 1940 - birth year.

Table 8: Comparison to Job Corps

Sample	JOB CORPS Data			CCC data
	Males only			
	RCT results		OLS results	OLS results
	coefficient on treatment dummy (ITT)	Implied effect of a year of training	coefficient on duration (years). Sample of	coefficient on duration (years).
Years of school	0.170***	0.350	0.346***	0.169***
	(0.039)		(0.042)	(0.040)
N	6,507		3,130	9,620
Employment (in week of the survey)**	0.023*	0.047	0.055***	0.006
	(0.013)		(0.015)	(0.025)
N	6,242		3,028	2,686
Weeks worked in previous year	1.404***	2.890	2.601***	0.434
	(0.530)		(0.636)	(1.203)
N	6,462		3,111	2,383
Total Annual Earnings in previous year	890.706***	1833.672	928.488***	-16.226
	(277.942)		(347.633)	(26.061)
N	6,307		3,056	2,168
ln(Earnings) | weeks worked>0	0.029	0.060	0.075**	-0.010
	(0.027)		(0.032)	(0.061)
N	5,190		2,546	23,103
Moved***	0.019*	0.039	0.062***	0.054***
	(0.010)		(0.014)	(0.011)
N	6,528		3,136	9,603
Married	0.003	0.006	-0.018*	-0.003
	(0.010)		(0.011)	(0.010)
N	6,522		3,136	9,645
Duration of training in months			5.829	
Individual controls*?	no		yes	yes

*Controls include year and quarter of baseline, year and quarter of 48-mo followup survey, whether individual was enrolled in non-residential program and baseline characteristics such as whether individual had child, was ever arrested, had ever used drugs, had a job, had a job in the previous year, ever had a job, race, native language, on welfare as a child, education, baseline marital status and others.
**employment is not conditional on labor force participation. ***for Job Corps it is defined as living more than 20 miles away from baseline residence. For CCC it is defined as living in a different county than the county of residence at the time of enrollment. For Job Corps, employment is defined as having a job during the 208th week after the baseline survey (four years). Earnings conditional on employment only includes the earnings of individuals employed during the 208th week after the baseline survey.

Appendix Table 1: Sample Selection

Sample Restriction	Itself	Sequential
All	26290	26290
Camp Exist	25165	25165
Enrollment Exist	24832	23943
Duration Exist	**26050**	**23722**
Death Age Exist	21457	19377
Death Age Restrict	24386	17639
IV Exists	24391	17468
Individual Controls	26290	17468
Camp Controls	24580	17163
Peer Controls	24546	17028
Randomized (Large)	23872	15335
Randomized (Small)	7161	5052

The rows show many observations survive after dropping for each restriction. Itself column shows how many observations survive if we drop for just the restriction in the row. Sequential column shows the final observations that survive when we drop for each reason sequentially. Our working sample is 23,889, where we additionally lose observations to Death Age Exist for death age analysis

Appendix Table 2: Heterogeneiety in determinants of CCC service duration

	(1)	(2)	(3)	(4)
VARIABLES	Randomized	CO	CO with NM	NM
Individual characteristics				
Ever Rejected?	0.074	-0.006	-0.009	-0.013
	(0.054)	(0.036)	(0.036)	(0.070)
=1 if disabled : Enrollment 1	-0.237***	-0.359***	-0.368***	-0.284***
	(0.081)	(0.056)	(0.056)	(0.080)
Non-junior : Enrollment 1	0.454***	0.578***	0.572***	0.685***
	(0.169)	(0.122)	(0.121)	(0.140)
Reported Age Younger than DMF or Oldest Reported 1	0.008	0.011	0.010	-0.000
	(0.022)	(0.020)	(0.020)	(0.018)
Reported Age Older than DMF 1	-0.053**	-0.027*	-0.033**	-0.060***
	(0.020)	(0.016)	(0.016)	(0.017)
Not Eligible : Enrollment 1	0.103	0.219**	0.225**	0.112
	(0.085)	(0.102)	(0.106)	(0.116)
Age is 17 or 18 : Enrollment 1	-0.050***	-0.046***	-0.046***	-0.004
	(0.018)	(0.014)	(0.014)	(0.016)
Allottee amount : Enrollment 1	-0.014	0.010	0.009	-0.009*
	(0.010)	(0.006)	(0.006)	(0.005)
Allottee is father : Enrollment 1	0.003	0.001	-0.001	-0.009
	(0.021)	(0.018)	(0.018)	(0.018)
Allottee is mother : Enrollment 1	0.032	0.029	0.022	-0.005
	(0.022)	(0.018)	(0.017)	(0.018)
Gap in service	-0.141***	-0.105***	-0.076***	-0.235***
	(0.020)	(0.015)	(0.013)	(0.020)
Log distance from home to camp (miles)	-0.030***	-0.015***	-0.018***	-0.001
	(0.009)	(0.006)	(0.006)	(0.006)
Hispanic (imputed using hispanic index)	0.016	-0.011	-0.015	0.083***
	(0.024)	(0.017)	(0.016)	(0.017)
Highest grade completed (CO only)	0.027***	0.015***		
	(0.006)	(0.003)		
Household size excluding applicant (CO only)	0.009*	0.008***		
	(0.005)	(0.002)		
Live on farm? (CO only)	0.007	0.011		
	(0.034)	(0.015)		
Height (Inches) (CO only)	0.000	-0.000		
	(0.005)	(0.002)		
Weight (100 pounds) (CO only)	0.019	-0.104**		
	(0.088)	(0.046)		
Father Living (CO only)	-0.054**	-0.019		
	(0.025)	(0.014)		
Mother Living (CO only)	-0.077***	-0.051***		
	(0.026)	(0.017)		
Tenure in county (years) (CO only)	-0.000	-0.001		
	(0.002)	(0.001)		

Appendix Table 2 Continued - Camp characteristics

=1 if camp is in New Mexico : Enrollment 1	0.242***	0.161***	0.154**	
	(0.091)	(0.059)	(0.060)	
Mean precipitation in camp 1933-1942	-0.006***	0.002	0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.003)
Mean min temp in camp 1933-1942	0.042***	0.028***	0.029***	0.017
	(0.015)	(0.008)	(0.008)	(0.018)
mean max temp in camp 1933-1942	-0.045***	-0.022**	-0.023***	-0.018
	(0.012)	(0.009)	(0.009)	(0.013)
Camp Type: Department of Grazing	-0.008	0.140	0.134	-0.297***
	(0.075)	(0.088)	(0.086)	(0.065)
Camp Type: Federal Reclamation Project	0.019	0.166*	0.160*	-0.431***
	(0.107)	(0.097)	(0.095)	(0.080)
Camp Type: Fish and Wildlife Service	-0.334**			-0.548***
	(0.150)			(0.107)
Camp Type: National Forest	-0.042	0.053	0.050	-0.355***
	(0.080)	(0.079)	(0.076)	(0.085)
Camp Type: National Monument	-0.181	-0.259*	-0.262*	-0.526***
	(0.143)	(0.148)	(0.146)	(0.105)
Camp Type: National Park	-0.030	0.005	0.002	-0.238***
	(0.080)	(0.080)	(0.078)	(0.076)
Camp Type: Soil Conservation	-0.009	0.115	0.110	-0.378***
	(0.077)	(0.081)	(0.078)	(0.064)
Camp Type: State Park	0.052	-0.063	-0.057	-0.283***
	(0.094)	(0.092)	(0.090)	(0.085)
Log distance to closest city (miles) : Enrollment 1	0.020**	0.002	0.002	0.023***
	(0.008)	(0.007)	(0.007)	(0.008)
Log distance to 2nd closest city (miles) : Enrollment 1	0.001	-0.051**	-0.046*	0.032
	(0.038)	(0.025)	(0.025)	(0.058)
Peer, daily weighted: Hispanic at enrollment : Enrollment 1	0.306**	0.003	0.015	0.931***
	(0.133)	(0.070)	(0.071)	(0.215)
Peer, daily weighted: Age at enrollment : Enrollment 1	-0.441***	-0.318***	-0.322***	-0.374***
	(0.072)	(0.036)	(0.036)	(0.071)
Peer, daily weighted: Reported Age Younger than DMF or Oldest Reported 1	-0.259	-0.620**	-0.611**	-0.736*
	(0.295)	(0.259)	(0.261)	(0.408)
Peer, daily weighted: Reported Age Older than DMF 1	-0.969*	-0.853***	-0.865***	-1.521***
	(0.499)	(0.238)	(0.241)	(0.302)
Peer, daily weighted: Not Eligible (First enrollment)	1.554**	-0.316	-0.272	3.088***
	(0.679)	(0.460)	(0.472)	(0.538)
Peer, daily weighted: Allottee amount : Enrollment 1	-0.215***	-0.383***	-0.386***	-0.175***
	(0.028)	(0.025)	(0.025)	(0.019)
Peer, daily weighted: Allottee: Father	-0.113	-0.030	-0.043	-0.246
	(0.244)	(0.178)	(0.180)	(0.347)
Peer, daily weighted: Allottee: Mother	-0.241	-0.065	-0.062	0.048
	(0.198)	(0.148)	(0.152)	(0.291)
Peer, daily weighted: Gap in service	-0.790***	-0.155	-0.167	-3.197***
	(0.216)	(0.139)	(0.142)	(0.466)
Constant	14.322***	15.119***	15.124***	11.375***
	(1.706)	(0.994)	(0.983)	(1.447)
Observations	5,236	11,069	11,069	6,154
R-squared	0.423	0.490	0.485	0.735
Number of groupayq	152	1,231	1,231	558
Mean Dep	0.78	0.76	0.76	0.97
FE	BD,CYQ	BD,CYQ	BD,CYQ	BD,CYQ
Sample	Randomize P	CO	NM	NM
Reason	N	N	N	N

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Only Duration <= 3 years, death age >= 45 are included in regression.
Variables imputed if missing and missing dummies included
County Unemployment is from ICPSR compilation of County statistics from 1937 Census of Unemployment and 1940 Decenniel Census.
Those values are given to enrollment years 1937, 1938 for 1937 Census and 1939-1942 for 1940 Census

Appendix Table 3: Missing Rates for Death Age

VARIABLES	(1) No Controls	(2) Birth + County-quarter Dummies	(3) Add Indiv Controls	(4) Add Camp Chars	(5) Add Peer Chars	(6) Add Camp FE	(7) Add Reason for Dismissal
Duration of service : Enrollment 1	0.000	-0.019***	-0.023***	-0.023***	-0.020***	-0.017***	-0.006
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
Ever Rejected?			-0.020	-0.020	-0.020	-0.020	-0.019
			(0.024)	(0.024)	(0.024)	(0.023)	(0.023)
=1 if disabled : Enrollment 1			0.094***	0.096***	0.096***	0.097***	0.089**
			(0.031)	(0.031)	(0.032)	(0.031)	(0.035)
Non-junior : Enrollment 1			-0.028	-0.030	-0.029	-0.037	-0.035
			(0.037)	(0.037)	(0.037)	(0.037)	(0.037)
Reported Age Younger than DMF or Oldest Reported 1			-0.264***	-0.264***	-0.264***	-0.262***	-0.261***
			(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Reported Age Older than DMF 1			-0.281***	-0.281***	-0.281***	-0.279***	-0.279***
			(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Not Eligible : Enrollment 1			0.027	0.027	0.028	0.033	0.031
			(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Age is 17 or 18 : Enrollment 1			0.028***	0.028***	0.028***	0.027***	0.027***
			(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Allottee amount : Enrollment 1			0.000	0.000	-0.000	-0.000	-0.000
			(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Allottee is father : Enrollment 1			-0.039***	-0.039***	-0.040***	-0.041***	-0.038***
			(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Allottee is mother : Enrollment 1			-0.037***	-0.037***	-0.038***	-0.039***	-0.038***
			(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Gap in service			-0.054***	-0.054***	-0.054***	-0.054***	-0.045***
			(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Log distance from home to camp (miles)			0.004**	0.003*	0.003*	0.004*	0.003
			(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Hispanic (imputed using hispanic index)			0.081***	0.081***	0.081***	0.082***	0.081***
			(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Highest grade completed (CO only)			-0.011***	-0.010***	-0.010***	-0.010***	-0.009***
			(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Household size excluding applicant (CO only)			-0.003*	-0.003*	-0.003*	-0.003*	-0.003*
			(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Live on farm? (CO only)			-0.022**	-0.022*	-0.022*	-0.022*	-0.021*
			(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Height (Inches) (CO only)			-0.002	-0.002	-0.002	-0.002	-0.002
			(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Weight (100 pounds) (CO only)			0.013	0.016	0.016	0.012	0.011
			(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Father Living (CO only)			-0.003	-0.003	-0.003	-0.001	-0.000
			(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Mother Living (CO only)			-0.006	-0.006	-0.006	-0.005	-0.004
			(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Tenure in county (years) (CO only)			-0.001	-0.001	-0.001	-0.001	-0.001
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
=1 if camp is in New Mexico : Enrollment 1				-0.022	-0.025		
				(0.027)	(0.028)		
Mean precipitation in camp 1933-1942				-0.000	-0.001		
				(0.001)	(0.001)		
Mean min temp in camp 1933-1942				-0.004	-0.005		
				(0.003)	(0.003)		
mean max temp in camp 1933-1942				0.002	0.002		
				(0.003)	(0.003)		
Camp Type: Department of Grazing				0.008	0.011		
				(0.033)	(0.032)		
Camp Type: Federal Reclamation Project				-0.015	-0.016		
				(0.033)	(0.033)		
Camp Type: Fish and Wildlife Service				0.031	0.032		
				(0.059)	(0.059)		
Camp Type: National Forest				0.000	0.003		
				(0.032)	(0.031)		
Camp Type: National Monument				0.014	0.020		
				(0.040)	(0.039)		
Camp Type: National Park				-0.025	-0.020		
				(0.033)	(0.032)		
Camp Type: Soil Conservation				-0.016	-0.012		
				(0.031)	(0.030)		

Appendix Table 3 Continued

Camp Type: State Park				-0.029	-0.025		
				(0.034)	(0.034)		
Log distance to closest city (miles) : Enrollment 1				0.001	0.001		
				(0.002)	(0.002)		
Log distance to 2nd closest city (miles) : Enrollment 1				-0.003	-0.001		
				(0.010)	(0.010)		
Peer, daily weighted: Hispanic at enrollment : Enrollment 1					-0.005	0.033	0.035
					(0.028)	(0.044)	(0.044)
Peer, daily weighted: Age at enrollment : Enrollment 1					0.002	0.013	0.015
					(0.008)	(0.011)	(0.011)
Peer, daily weighted: Reported Age Younger than DMF one					-0.074	0.031	0.032
					(0.079)	(0.100)	(0.100)
Peer, daily weighted: Reported Age Older than DMF 1					0.010	0.126*	0.132**
					(0.058)	(0.067)	(0.067)
Peer, daily weighted: Not Eligible (First enrollment)					-0.047	-0.089	-0.088
					(0.107)	(0.125)	(0.125)
Peer, daily weighted: Allottee amount : Enrollment 1					0.005	0.007	0.006
					(0.004)	(0.005)	(0.005)
Peer, daily weighted: Allottee: Father					-0.129**	-0.147**	-0.145**
					(0.055)	(0.072)	(0.072)
Peer, daily weighted: Allottee: Mother					-0.076	-0.085	-0.087
					(0.048)	(0.062)	(0.062)
Peer, daily weighted: Gap in service					-0.001	0.019	0.027
					(0.048)	(0.058)	(0.057)
Reason for discharge (code) : Enrollment 1 = 2, Emp							-0.008
							(0.009)
Reason for discharge (code) : Enrollment 1 = 3, COG							-0.000
							(0.010)
Reason for discharge (code) : Enrollment 1 = 4, UrgProp							0.005
							(0.009)
Reason for discharge (code) : Enrollment 1 = 5, Desert							-0.016
							(0.028)
Reason for discharge (code) : Enrollment 1 = 6, Rej							-0.024
							(0.050)
Reason for discharge (code) : Enrollment 1 = 7, No Rec							0.011
							(0.028)
Honorable Discharge : Enrollment 1							-0.076***
							(0.028)
Constant	0.195***	1.111***	1.182***	1.203***	1.134***	0.450	0.483*
	(0.006)	(0.005)	(0.114)	(0.143)	(0.235)	(0.289)	(0.292)
Observations	21,406	21,406	21,406	21,406	21,406	21,406	21,406
R-squared	0.000	0.118	0.216	0.217	0.217	0.226	0.230
Mean Dep	0.20	0.20	0.20	0.20	0.20	0.20	0.20
FE	None	BD,CYQ	BD,CYQ	BD,CYQ	BD,CYQ	BD,CYQ	BD,CYQ
Sample	All	All	All	All	All	All	All
Reason	N	N	N	N	N	Y	Y
Number of groupayq		1,844	1,844	1,844	1,844	1,844	1,844

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Only Duration <= 3 years, death age >= 45

Appendix Table 4: Heterogeneity in OLS effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sample	CO	NM	Age <= 18	Age > 18	Allottee Mother	Allottee Father	Allottee Other	Urate above median	Urate below median
Panel A: Log Death Age									
All Controls									
Duration of service : Enrollment 1	0.013***	0.012**	0.014***	0.012***	0.019***	0.008	0.009	0.016***	0.011
	(0.003)	(0.006)	(0.005)	(0.004)	(0.004)	(0.006)	(0.009)	(0.005)	(0.009)
Add Reasons for Dismissal									
Duration of service : Enrollment 1	0.009***	0.010*	0.010**	0.010**	0.015***	0.004	0.007	0.012**	0.009
	(0.004)	(0.006)	(0.005)	(0.004)	(0.005)	(0.006)	(0.009)	(0.005)	(0.009)
Mean Death Age	73.28	74.18	72.94	74.15	73.35	74.22	73.12	73.64	73.50
Observations	11,274	6,255	8,068	9,461	8,317	5,835	3,377	8,324	2,764
Panel B: P70									
All Controls									
Not Eligible : Enrollment 1	0.035***	0.007	0.032**	0.024**	0.041***	0.022	0.012	0.027**	0.025
	(0.009)	(0.015)	(0.014)	(0.011)	(0.012)	(0.017)	(0.025)	(0.012)	(0.023)
Effect as % of mean	0.06	0.01	0.05	0.04	0.06	0.03	0.02	0.04	0.04
Add Reasons for Dismissal									
Duration of service : Enrollment 1	0.025***	0.002	0.025*	0.019	0.035***	0.008	0.009	0.015	0.022
	(0.010)	(0.016)	(0.014)	(0.012)	(0.012)	(0.016)	(0.026)	(0.013)	(0.024)
Effect as % of mean	0.04	0	0.04	0.03	0.05	0.01	0.01	0.02	0.03
Mean P70	0.63	0.67	0.63	0.65	0.64	0.66	0.62	0.65	0.63
Observations	11,274	6,255	8,068	9,461	8,317	5,835	3,377	8,324	2,764

Appendix Table 4: Heterogeneity in OLS effects (cont.)

	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Sample	Hispanic	Not Hispanic	BMI < 18.5 (CO)	BMI 18.5-25 (CO)	BMI >= 25 (CO)	Phase 2 (1935-1937)	Phase 3 (1937-1940)	Phase 4 (1940-1942)	Randomized
Panel A: Log Death Age									
All Controls									
Duration of service : Enrollment 1	0.018***	0.009**	-0.024	0.012*	0.056	0.020***	0.023***	0.018*	0.021***
	(0.005)	(0.004)	(0.070)	(0.007)	(0.148)	(0.006)	(0.005)	(0.010)	(0.005)
Add Reasons for Dismissal									
Duration of service : Enrollment 1	0.014***	0.005	-0.002	0.008	0.034	0.016**	0.018***	0.014	0.019***
	(0.005)	(0.004)	(0.071)	(0.007)	(0.150)	(0.007)	(0.005)	(0.010)	(0.006)
Mean Death Age	74.27	73.04	72.30	73.17	71.53	73.69	73.69	73.43	73.46
Observations	7,939	9,590	437	5,653	291	3,918	7,299	6,073	5,337
Panel B: P70									
All Controls									
Not Eligible : Enrollment 1	0.026**	0.028**	-0.059	0.025	0.124	0.054***	0.035**	0.029	0.049***
	(0.013)	(0.011)	(0.195)	(0.020)	(0.313)	(0.016)	(0.014)	(0.029)	(0.013)
Effect as % of mean	0.04	0.05	-0.1	0.04	0.22	0.08	0.05	0.04	0.08
Add Reasons for Dismissal									
Duration of service : Enrollment 1	0.020	0.017	-0.110	0.017	-0.131	0.045***	0.025*	0.027	0.049***
	(0.013)	(0.011)	(0.215)	(0.021)	(0.321)	(0.017)	(0.015)	(0.029)	(0.014)
Effect as % of mean	0.03	0.03	-0.19	0.03	-0.23	0.07	0.04	0.04	0.08
Mean P70	0.67	0.62	0.59	0.63	0.56	0.64	0.64	0.65	0.64
Observations	7,939	9,590	437	5,653	291	3,918	7,299	6,073	5,337

Appendix Table 5—Characteristics of Eligible Job Corps Applicants

Characteristic	Percentage of eligible applicants	males only	CCC males
Baseline Characteristics			
Duration (in years, only positive durations)	0.67	0.652	0.819
Male	0.6	1	1
Age at application	18.8	18.728	18.75
White, non-Hispanic	0.3	0.304	NA
Black, non-Hispanic	0.5	0.451	NA
Hispanic	0.2	0.169	0.484
Other	0.1	0.076	NA
Years of education	10.2	10.042	8.581
High school diploma or more (including GED)	0.2	0.19	0.12
Ever arrested	0.3	0.332	NA
Had a job in the past year	0.6	0.662	NA
Ever had job	0.8	0.808	0.375
Average earnings in the past year (dollars)	2974.9	3255.739	NA
Mean for outcomes			
Duration for treatment group (in years, only positive duratio	0.67	0.652	0.826
Duration for treatment group (in years)	0.483	0.487	0.819
Years of school	11.145	11.07	9.403
Employment (in week of the survey)**	0.606	0.631	0.71
Weeks worked in previous year	30.622	32.165	27.88
Total Annual Earnings in previous year	10538.311	11947.78	382.43
Total Annual Earnings in previous year | weeks worked>0	12990.854	14471.774	466.69
Moved***	0.198	0.207	0.34
Married	0.205	0.185	0.25
Reason ended: End of term	0.31	0.302	0.378
Reason ended: Employment	0.042	0.038	0.116
Reason ended: Convenience of the government	0.001	0	0.145
Reason ended: Urgent and Proper Call	0.09	0.056	0.116
Reason ended: Deserted	0.331	0.373	0.223
Reason ended: Rejected upon examination	0	0	0.0101
Reason ended: No Record	0.228	0.232	0.0127
Observations - Baseline	14327	8646	NA
Obervations - Outcomes	11313	6528	NA

Source: Baseline data

Appendix Table 6: Determinants of Job Corps service duration

VARIABLES	(1) Basic Controls	(2) Add YQ Baseline & YQ Interv. FE	(3) Add Reason
Age	0.009	0.001	-0.007
	(0.015)	(0.013)	(0.009)
Age at appl.: 18-19	0.019	0.036	0.021
	(0.035)	(0.034)	(0.026)
Age at appl.: 20-24	0.005	0.035	0.056
	(0.067)	(0.066)	(0.048)
Non-residential assignment	-0.114***	-0.116***	-0.065**
	(0.036)	(0.036)	(0.027)
Black	0.013	0.016	0.036*
	(0.025)	(0.025)	(0.019)
Hispanic	0.030	0.042	0.065**
	(0.039)	(0.038)	(0.028)
Race - Other	-0.028	-0.024	-0.004
	(0.045)	(0.044)	(0.033)
Non-English Native Lang.	0.161***	0.151***	0.117***
	(0.044)	(0.042)	(0.032)
Married	-0.086	-0.080	-0.046
	(0.058)	(0.058)	(0.040)
Has child	-0.108***	-0.103***	-0.083***
	(0.032)	(0.032)	(0.023)
Ever Arrested	-0.108***	-0.102***	-0.031*
	(0.021)	(0.021)	(0.016)
Ever used drugs	-0.052**	-0.055***	-0.033**
	(0.021)	(0.021)	(0.016)
Lived in area	-0.002	-0.005	-0.004
	(0.024)	(0.023)	(0.018)
On welfare as child	0.013	0.012	0.009
	(0.021)	(0.021)	(0.016)
Ever worked	-0.092**	-0.092**	-0.064**
	(0.038)	(0.037)	(0.028)
Job in past year	0.035	0.040	-0.004
	(0.029)	(0.029)	(0.022)
Current job	0.018	0.011	0.024
	(0.027)	(0.027)	(0.020)
Highest grade completed	-0.013	-0.008	-0.005
	(0.015)	(0.011)	(0.009)
HS Degree	0.072*	0.057	0.039
	(0.044)	(0.041)	(0.030)
GED	0.034	0.018	0.007
	(0.054)	(0.051)	(0.038)

Appendix Table 6 continued

MSA category = 2	-0.036	-0.039	-0.029
	(0.026)	(0.026)	(0.020)
MSA category = 3	-0.012	-0.015	0.014
	(0.032)	(0.032)	(0.025)
Reason for discharge (code): Employment			-0.337***
			(0.064)
Reason for discharge (code): Closure			-116.222
			(101.697)
Reason for discharge (code): Urgent and Proper Call			-0.542***
			(0.044)
Reason for discharge (code): Quit			-0.630***
			(0.023)
Reason for discharge (code): No Record			-0.452***
			(0.033)
Never enrolled			-0.570***
			(0.058)
Constant	0.534**	0.593**	0.770***
	(0.222)	(0.258)	(0.202)
Observations	3,113	3,109	3,109
R-squared	0.041	0.056	0.454
Mean Dep	0.49	0.49	0.49
FE	-	YQ B/I	YQ B/I
Sample	All	All	All
Reason	N	N	Y

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Explanatory variables measured at baseline except for reason for discharge/never enrolled. Regression includes all individuals assigned to treatment group and who completed the 48-month follow-up. Duration measured in years. YQ Baseline is year and quarter of baseline interview fixed effect while YQ Interv is year and quarter of follow-up interview fixed effects

Appendix Table 7—Balance Test of Baseline Characteristics for Job Corps Applicants

	Full sample				Males only			
Characteristic	Treatment	Control	Difference		Treatment	Control	Difference	
Male	0.591	0.599	-0.008	(0.009)				
Age	18.861	18.826	0.035	(0.038)	18.735	18.717	0.018	(0.047)
White - Non-Hispanic	0.274	0.265	0.009	(0.008)	0.309	0.295	0.014	(0.01)
Black - Non-Hispanic	0.476	0.478	-0.002	(0.009)	0.45	0.452	-0.002	(0.011)
Hispanic	0.174	0.181	-0.007	(0.007)	0.163	0.178	-0.015*	(0.008)
Non-English Native Language	0.141	0.143	-0.001	(0.006)	0.14	0.144	-0.004	(0.008)
Has Child	0.181	0.179	0.002	(0.007)	0.106	0.108	-0.002	(0.007)
Childhood Household Head - Mother	0.483	0.49	-0.007	(0.009)	0.45	0.467	-0.016	(0.011)
Highest Grade Completed - Mother	11.516	11.539	-0.022	(0.051)	11.678	11.658	0.02	(0.062)
Highest Grade Completed - Father	11.471	11.578	-0.107	(0.064)	11.605	11.608	-0.003	(0.079)
Never on Welfare During Childhood	0.47	0.459	0.012	(0.009)	0.489	0.485	0.004	(0.012)
Highest Grade Completed	10.069	10.081	-0.012	(0.027)	9.953	9.969	-0.016	(0.032)
High School Degree	0.178	0.182	-0.004	(0.007)	0.139	0.142	-0.003	(0.008)
GED	0.047	0.055	-0.008*	(0.004)	0.05	0.052	-0.001	(0.005)
Ever Worked	0.8	0.788	0.011	(0.007)	0.812	0.801	0.011	(0.009)
Worked in Past Year	0.649	0.64	0.009	(0.008)	0.666	0.655	0.012	(0.01)
Currently has Job	0.215	0.208	0.007	(0.007)	0.221	0.204	0.017*	(0.009)
Months Worked in Past Year	6.055	6.127	-0.072	(0.092)	6.028	6.067	-0.039	(0.113)
Earnings in Past Year (if employed during past year)	3019.377	2903.822	115.556	(103.731)	3319.099	3156.064	163.035	(137.756)
Typical Hours Worked (if employed during past year)	35.635	35.344	0.291	(0.348)	36.922	36.73	0.192	(0.44)
Typical Wage (if employed during past year)	5.062	5.078	-0.017	(0.033)	5.167	5.194	-0.027	(0.042)
Received AFDC	0.316	0.316	-0.001	(0.009)	0.244	0.242	0.002	(0.01)
Received Food Stamps	0.437	0.446	-0.009	(0.009)	0.37	0.378	-0.008	(0.011)
Received Any Welfare	0.578	0.585	-0.007	(0.009)	0.511	0.518	-0.007	(0.012)
Ever Used Drugs	0.386	0.376	0.01	(0.009)	0.43	0.423	0.007	(0.011)
Ever Arrested	0.264	0.266	-0.001	(0.008)	0.337	0.326	0.011	(0.01)
Non-residential Job Corps Participant	0.137	0.141	-0.004	(0.006)	0.067	0.072	-0.005	(0.005)
Obs	8813	5514	14327		5036	3610	8646	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Data source is baseline data for Job Corps program from Schochet et al. (2008). If employed during past year is measured as the individual worked for at least 2 weeks in the previous year

Appendix Table 8—Returns to experience

VARIABLES	(1) 1940 1% log(wage)	(2) 1940 1% log(wage)	(3) CO & NM log(wage)
Highest Grade Completed	0.11520***	0.12695***	0.14029***
	(0.000)	(0.001)	(0.001)
Experience	0.07237***	0.09482***	0.09605***
	(0.000)	(0.001)	(0.001)
Experience^2	-0.00100***	-0.00141***	-0.00147***
	(0.000)	(0.000)	(0.000)
Constant	4.79886***	4.45787***	4.17845***
	(0.007)	(0.009)	(0.008)
Ages?	All	15-55	15-55
Sex?	All	male	male
Race?	All	white	white
Observations	370,377	217,828	253,767
R-squared	0.306	0.261	0.290

*** p<0.01, ** p<0.05, * p<0.1; Notes: Standard errors in parentheses; Experience is potential experience measured using Experience = Age - Years of Education - 6

Appendix Table 9 - Effect of service duration on likelihood of moving to a "better" county

Regression of Outcome on Duration	(1) No Controls	(2) Birth + County-quarter Dummies	(3) Add Indiv Controls	(4) Add Camp Chars	(5) Add Peer Chars	(6) Add Camp FE	(7) Add Reason for Dismissal	(8) Before Median Year	(9) CO Only
Combined WW2 and Census									
New County Has Higher Education	Mean Dep		0.57					1939	
Duration	-0.018	0.012	0.018	0.012	0.016	0.024	0.013	0.023	0.022
	(0.021)	(0.019)	(0.019)	(0.019)	(0.024)	(0.032)	(0.033)	(0.038)	(0.033)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102	1,209
R-squared	0.001	0.655	0.673	0.680	0.681	0.703	0.706	0.675	0.690
New County Has Higher Employment	Mean Dep		0.47					1939	
Duration	0.026	0.035	0.031	0.032	0.024	0.011	0.006	0.038	0.014
	(0.020)	(0.024)	(0.025)	(0.024)	(0.028)	(0.036)	(0.038)	(0.042)	(0.037)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102	1,209
R-squared	0.002	0.659	0.678	0.682	0.687	0.713	0.716	0.693	0.710
New County Has Higher Weekly Wage	Mean Dep		0.58					1939	
Duration	0.017	0.039*	0.038*	0.044**	0.073***	0.109***	0.096***	0.095**	0.108***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.025)	(0.032)	(0.033)	(0.038)	(0.033)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102	1,209
R-squared	0.001	0.623	0.637	0.644	0.646	0.681	0.684	0.645	0.663
New County Has Higher Yearly Wage	Mean Dep		0.59					1939	
Duration	-0.005	0.046**	0.049**	0.047**	0.062**	0.077**	0.068**	0.062	0.079**
	(0.020)	(0.020)	(0.020)	(0.021)	(0.026)	(0.034)	(0.035)	(0.039)	(0.035)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102	1,209
R-squared	0.000	0.613	0.632	0.638	0.640	0.671	0.673	0.641	0.661

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Combined: additionally includes age at observation dummies, where if observed in Census, the age is 1940 - birth year. Employment defined as percentage of prime aged men (ages 25-54) employed. County education based on prime-aged men. Weekly and yearly wages are county medians for men who are salaried

Appendix Table 10 - Effect of service duration on quality of county for movers

Regression of Outcome on Duration	(1) No Controls	(2) Birth + County-quarter Dummies	(3) Add Indiv Controls	(4) Add Camp Chars	(5) Add Peer Chars	(6) Add Camp FE	(7) Add Reason for Dismissal	(8) Before Median Year	(9) CO Only
Combined WW2 and Census									
County Diff in Avg Education	Mean Dep		0.17					1939	
Duration	-0.018	0.022	0.028	0.030	0.069	0.103	0.062	0.136	0.114
	(0.062)	(0.047)	(0.045)	(0.048)	(0.062)	(0.078)	(0.082)	(0.093)	(0.080)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102	1,209
R-squared	0.000	0.694	0.714	0.719	0.721	0.750	0.756	0.725	0.716
County Diff in Avg Employment	Mean Dep		-0.00					1939	
Duration	0.001	0.002	0.002	0.001	0.000	-0.001	-0.001	0.003	-0.000
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102	1,209
R-squared	0.000	0.765	0.775	0.783	0.786	0.804	0.805	0.770	0.806
County Diff in Median Weekly Wage	Mean Dep		1.29					1939	
Duration	0.059	0.161	0.157	0.132	0.408	0.651**	0.488	0.506	0.726**
	(0.243)	(0.215)	(0.204)	(0.207)	(0.270)	(0.330)	(0.333)	(0.384)	(0.328)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102	1,209
R-squared	0.000	0.673	0.695	0.699	0.702	0.731	0.737	0.707	0.715
County Diff in Median Yearly Wage	Mean Dep		92.21					1939	
Duration	-2.598	7.591	7.172	5.128	24.665	38.278*	28.296	28.202	43.477**
	(15.701)	(13.000)	(12.264)	(12.313)	(16.078)	(20.198)	(20.580)	(23.866)	(20.316)
Observations	1,452	1,452	1,452	1,452	1,452	1,452	1,452	1,102	1,209
R-squared	0.000	0.681	0.700	0.704	0.707	0.733	0.737	0.714	0.723

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Combined: additionally includes age at observation dummies, where if observed in Census, the age is 1940 - birth year. Employment defined as percentage of prime aged men (ages 25-54) employed. County education based on prime-aged men. Weekly and yearly wages for men who are salaried or wage

Appendix Table 11 - Camp specific treatment effects

	(1)	(2)	(3)	(4)	(5)
	Joint (Coefficients on camp indicators interacted with duration)				*Separately by camp*
Treatment effects	No Controls	Birth + County-Quarter Dummies	Add Indiv Controls	Add Peer Chars	Same as (2)
Mean	0.015	0.019	0.017	0.020	0.010
Standard Error	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
Max	0.113	0.132	0.120	0.115	0.154
75th Percentile	0.033	0.036	0.034	0.036	0.044
50th Percentile	0.016	0.016	0.016	0.021	0.011
25th Percentile	-0.001	0.001	0	-0.001	-0.016
Min	-0.045	-0.053	-0.051	-0.051	-0.192
Significant at .10	0.182	0.242	0.202	0.222	0.131
at .05	0.101	0.152	0.111	0.152	0.061
at .01	0.051	0.04	0.03	0.04	0.03
% significant at .10 that are >0	0.889	0.958	0.95	0.955	0.846
Mean CO	0.016	0.017	0.016	0.019	0.009
Mean NM	0.014	0.021	0.018	0.021	0.012
Camps	99	99	99	99	99

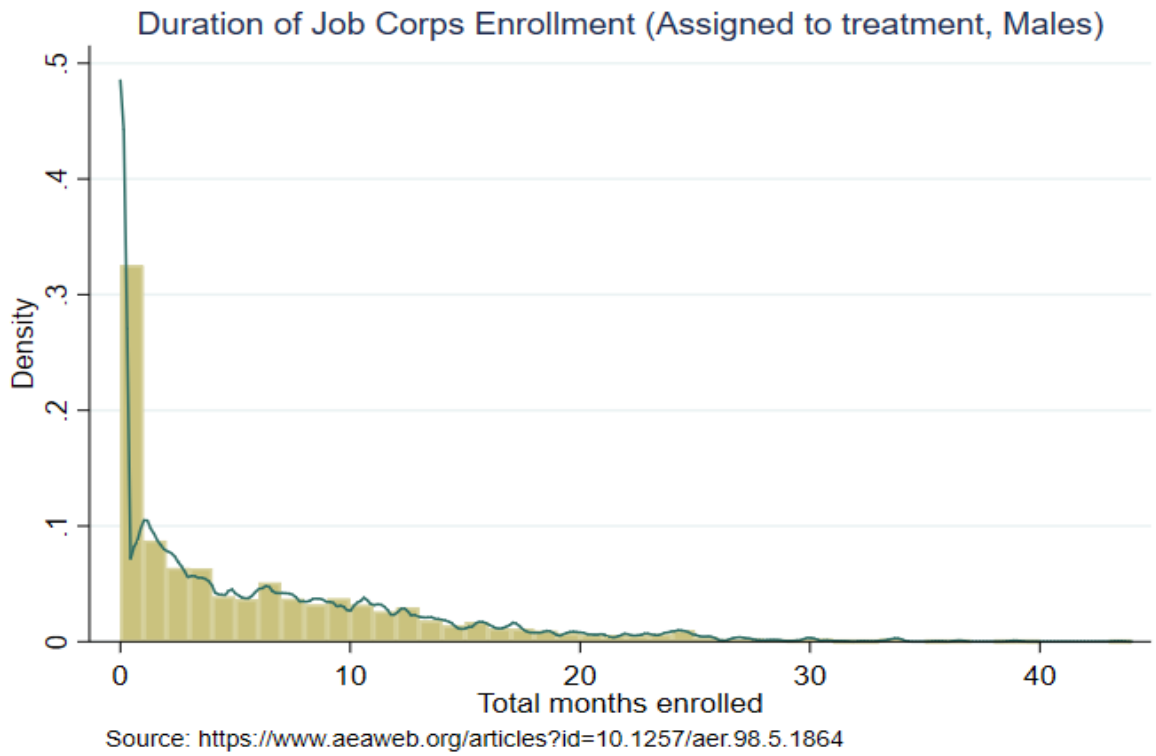
Notes: Errors clusted at County-Quarter level. (1)-(4) stack all camps with camp fixed effect and the camp-specific treatment effects are interaction between camp dummy and duration. (5) is run separately for each camp where treatment is coefficient on duration

Appendix Table 12 - Relationship between predicted longevity and duration

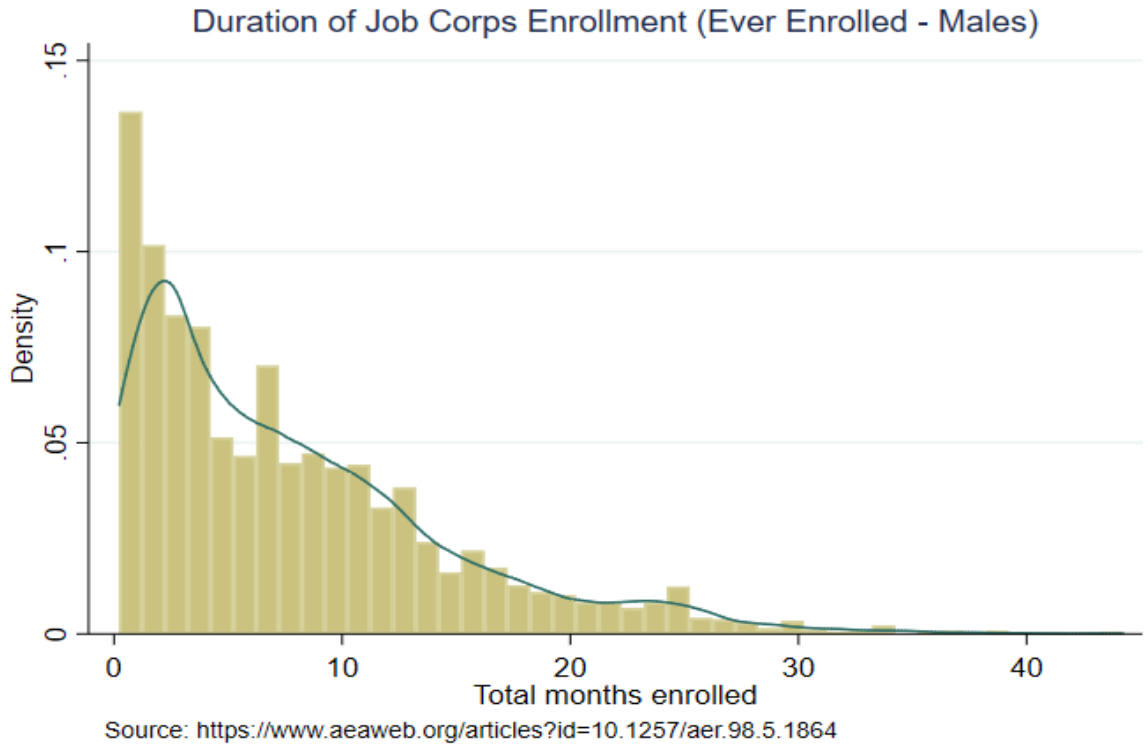
	(1)	(2)	(3)	(4)	(5)	(6)
	No controls			County-Quarter FE		
	All	CO	NM	All	CO	NM
Duration	0.0063***	0.005***	0.0119***	0.0001	0.0007**	-0.0013**
	(0.0012)	(0.0012)	(0.0028)	(0.0004)	(0.0003)	(0.0007)
	0	0	0	0.8251		
Obs	17799	11511	6288	17799	11511	6288

Note: *** p<0.01, ** p<0.05, * p<0.1; Errors clustered at County-Quarter level; longevity predicted by regressing on birth year FE, allottee amount, allottee relationship, hispanic, county unemployment rate, county-quarter FE, school

Appendix Figure 1—Duration of Job Corps assignment

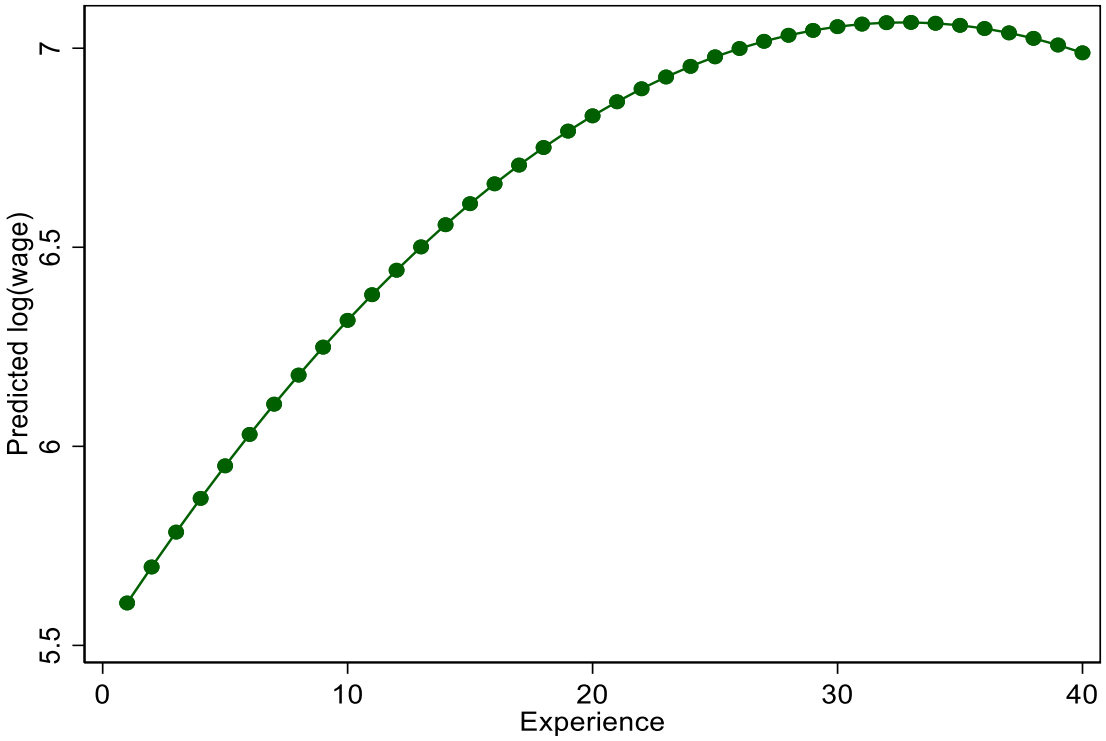


Source: https://www.aeaweb.org/articles?id=10.1257/aer.98.5.1864



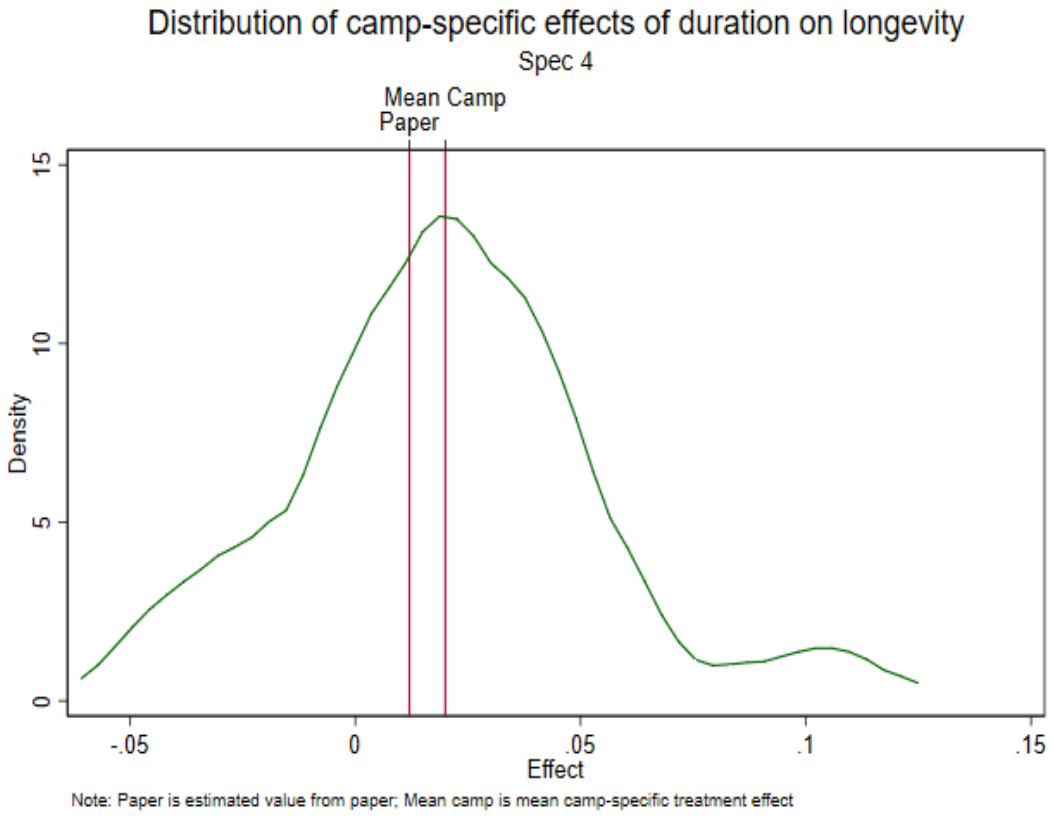
Source: https://www.aeaweb.org/articles?id=10.1257/aer.98.5.1864

Appendix Figure 2 - Returns to experience as measured in 1940 Census



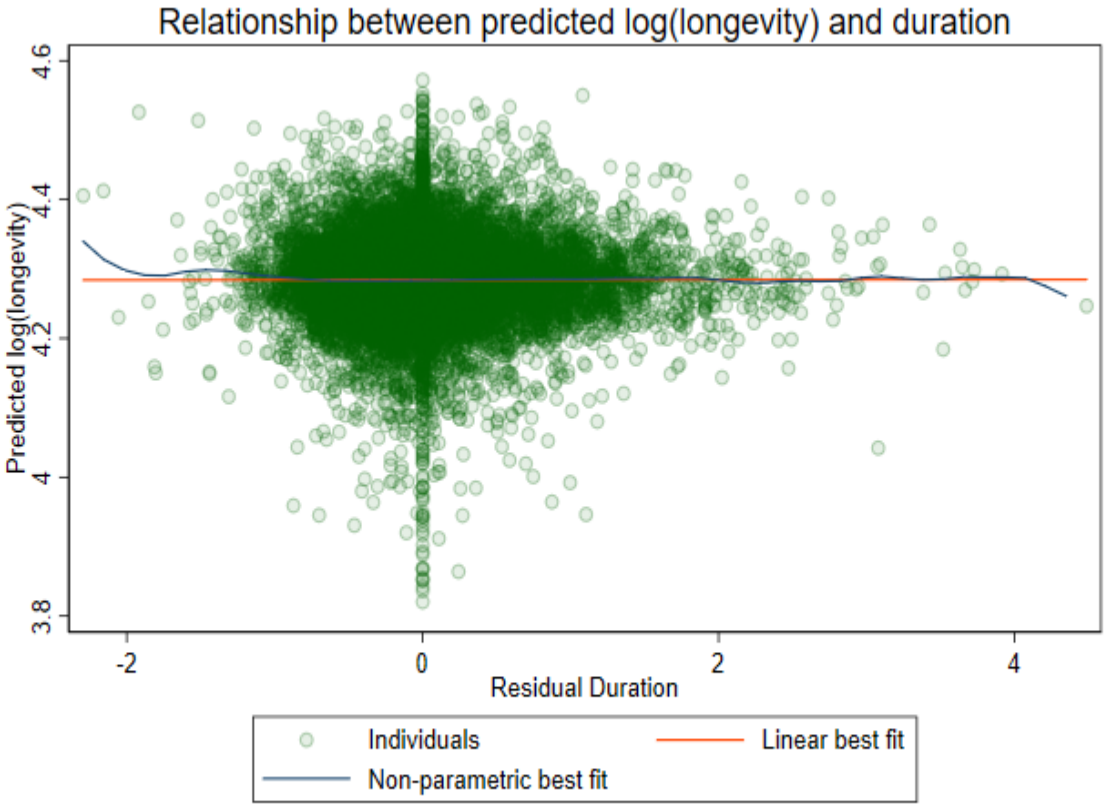
Predicted log(wage) using experience and experience squared from regression of log(wage) on experience, experience squared, and education for employed white men between the ages of 15-55 in CO and NM in the 1940 Census

Appendix Figure 3 - Distribution of camp-specific treatment effects



Note: Uses specification (4) from Appendix Table 11

Appendix Figure 4 - Relationship between predicted log(longevity) and residualized duration



Note: Predicted log(longevity) using Colorado controls, birth year FE, application county-year-quarter FE. Duration residual from regression of duration on county-quarter FE

Appendix

A. Instrumental variables approach.

To estimate causal effects, we pursue an instrumental variables strategy that exploits special features of the program, inspired by the literature exploiting examiner/judge leniency (Dahl et al. 2014, Dobbie et al. 2018). We posit that there are "good" and "bad" camps that differ in enrollee retention. We calculate the mean duration of training in camps as a measure of enrollee retention and use it as an instrument for their individual duration. More specifically, to take care of the mechanical correlation between enrollees and their camp mean duration, we calculate the leave-out mean duration by excluding the individual and their peers in the mean calculation.
We exploit the quasi-random nature of the assignment to camps to compare the duration of training and the outcomes of individuals assigned to "good" and "bad" camps. Although participation in the CCC was voluntary, once individuals signed up, they were allocated by the authorities to various camps—individuals were not allowed to choose which camp to train on:

No promises to be made regarding camp location. - *The assignment of enrollees to camp is the responsibility of the Army following enrollment. The location of vacancies and the administrative convenience of the Corps are the primary bases upon which such assignments must be made. Under no circumstances, therefore, will a selecting agent make any definite and binding promises to prospective enrollees as to the camps to which they will be assigned.*[1]

To which camp an individual was assigned was an important determinant of the duration of training. The historical evidence discussed in the previous section suggests that many camp characteristics—weather, distance to home, type of camp/work, the characteristics of one's peers and idiosyncratic characteristics of the Army personnel running the camps—had great effects on how long individuals trained. We show evidence that observable camp characteristics did indeed influence duration. While there is a myriad of factors that affect duration none of them is individually a large predictor of duration. But we demonstrate that the average duration in the camp an individual was assigned to is a powerful predictor of an individuals' duration. We rely on this evidence and make use of the average camp duration as an instrument for individual durations. This IV strategy relies on multiple assumptions. In addition to being predictive of individual durations (satisfying the relevance condition), the leave-out mean camp duration must affect outcomes only through its effect on individual durations (exclusion restriction). If individuals of the same type trained together at the same time in the same camp, their durations and outcomes will be correlated. We rely on the historical and statistical evidence of the quasi-random nature of the camp assignment to argue this is unlikely to be the case.

However, we must also assume that these factors that affected camp duration had no impact on outcomes. One concerning possibility is that individuals formed network of friends in a given camp leading to longer durations and also affecting possibly labor market outcomes and well-being. To avoid this complication, we compute a special leave-out mean, that does not include the duration of the peers that the individual trained with. Essentially a person's duration is predicted using the average duration of individuals that did not overlap with the person in the camp. We also

[1] *Standards of eligibility and selection for junior enrollees*. Civilian Conservation Corps. June 15, 1939. pp 13.

investigate how controlling for peer characteristics affects the results. We discuss these assumptions more formally in Section V.t.

I. Instrumental Variable Results

We base our IV on a simple idea. As described in the empirical strategy section, individuals did not choose which camp to attend and the process by which they were assigned to camps was ad hoc, possibly quasi-random. If this is the case then individuals are sent to good or bad camps independently of their characteristics. So we can use camp characteristics as instruments for duration. Although many camp traits affect duration, the most predictive camp characteristic will be the average duration of training in a given camp: this summarizes whether altogether the camp was such that individuals were induced to train for long durations as a result of the camp conditions. We now more formally specify the model and assumptions under which this intuition holds.

a. Construction and Assumptions

Suppose we have the following model for person i assigned to camp j,

$$y_{ij} = \beta_0 + \beta_1 D_{ij} + \beta_2 x_i + \beta_3 \mathrm{C}_j + \gamma_i + \varepsilon_{ij}$$

$$D_{ij} = \pi_0 + \pi_1 Z_j + \pi_2 x_i + \pi_3 \mathrm{C}_j + \gamma_i + \nu_{ij}$$

where y_{ij} is the age at death (or some other outcome), D_{ij} is the duration of CCC training, x_i is a vector of individual characteristics, γ_i is the enrollment cohort (county-quarter) dummy, c_j is vector of observable camp characteristics, and $\boldsymbol{Z_j}$ is a scalar summary measure of camp characteristics that affect only duration, but not the outcome. Following Dobbie et al. (2018) we will construct the following "leave-out mean" using the residualized camp duration, after controlling for the enrollment cohort, which in our case is the unit of (quasi) randomization. First, we calculate the residual from regressing D_{ij} on γ_i which yields D_{ij}^*.

$$D_{ij}^* = \mathrm{D_{ij}} - \hat{\gamma}_1 = \mathrm{Z}_j^* + \mathrm{x}_i^* + \mathrm{c}_j^* + \mathrm{v}_{ij}^*$$

where x^* denotes variables uncorrelated with γ_i. Then we calculate the leave-out mean of the residuals of duration, by summing over all individuals who trained in the camp, except for i as follows

$$\hat{\mathrm{Z}}_{\mathrm{ij}} = \sum_{\mathrm{k} \in \mathrm{K_j}} \frac{\mathrm{D}_{kj}^* - D_{ij}^*}{\left|\mathrm{K_j}\right| - 1} = \mathrm{Z}_j^* + \bar{u}_{-ij} = \mathrm{Z}_j^* + \overline{x^*}_{-ij} + \mathrm{c}_j^* + \overline{v^*}_{-ij}$$

where set K_j includes everyone who trained in camp j. If there is indeed conditional randomization, then this leave-out instrument is uncorrelated to ν_{ij} *so long as all other relevant camp characteristics are controlled for in both the first and second stages.* However, if we think that there are omitted camp characteristics in the first and second stage equations, this will cause problems for our instrument, as that term will belong in the residualized instrument.

A potentially important violation of this assumption arises if there are peer effects, that is if the characteristics of one's peers affect one's survival and also one's duration. Then the leave-out

mean will be correlated with the mean duration but also with the error term. A simple solution consists in leaving out all the contemporary peers from the computation of the leave-out mean. This avoids the mechanical correlation between $\overline{v^*}_{-ij}$ (omitted peer characteristics) in the first stage equation and the leave-out mean. Then our instrument consists of the mean duration of individuals who trained in the same camp as *i* but did not overlap with *i*. In practice overlap is itself endogenous since it depends on one's duration, which in turn depends on one's peers. To avoid this, we exclude the duration of those who enrolled in the same quarter and year.[2]

The second concern is that there are other characteristics of the camp that affect duration and that are correlated with outcomes. If this is the case, we violate the "exclusion restriction" assumption. We can never be certain this assumption holds, but we can include camp characteristics directly as controls in the first and second stage to test the sensitivity of the results to these characteristics. For example, as discussed before, we find that weather has a (small) effect on duration. It might also have a long-term effect on health. We can control for weather and type of camp. However, we will have to assume that other unobserved camp characteristics are not correlated with the cohort leave-out duration mean at the camp.

In summary, we will proceed as follows. First, we compute a test statistic to examine for each randomization unit whether individuals that enrolled in the same time and county were as good as randomly assigned to camps. Second, we compute leave-out camp mean durations for each individual *i*, leaving *i* and all of *i*'s peers out of the computation and use these as instruments. Lastly, we test the sensitivity of the results to controlling for observable camp characteristics.

b. Instrumental variable results

The historical evidence is consistent with the narrative that individuals could not chose their camp. The instruction booklet *Standards of eligibility and selection for junior enrollees* "The location of vacancies and the administrative convenience of the Corps are the primary bases upon which such assignments must be made". To test that individuals are "as good as randomly assigned" to camp, and thus that their characteristics are not determining camp durations, we conduct a test described in more detail in appendix XX. The basic idea is that if individuals who showed up in a given time and place are randomly assigned to different camps, then the mean characteristics of those individuals should be the same across camps. We first verify that there is in fact variation in where individuals are sent: within randomization units there are in fact many camps individuals are assigned to. Out of 1,858 "randomization units, only 190 have a single camp where individuals were sent to. In the remainder the average number of camps is 4.4, and the median number of camps is 3.

There is another challenge in implementing this test: we have relatively small samples within a randomization unit, so that simple means tests will suffer from small sample biases. We solve the first problem by conduct exact inference. Out of 1437 randomization units, there are 197 for which the test can be conducted (more than 30 observations), and 152 that pass the test. In terms of observations, there are 10,597 observations for which the test can be conducted and 7,301 that pass the test. For our estimation, we will consider how restricting the sample to this smaller sub-sample

[2] We experimented with alternative definitions, for instance excluding peers in the same camp in the first month of training, or those who enrolled in the same county and quarter. The results from these alternatives are similar.

affects our results. We consider two sub-samples: 1) "Randomized" sample that only takes county-of-enrollment*quarter-of-enrollment (CQE) cells that pass the randomize test, and 2) "Randomized Large" sample that assumes the CQE cell to pass if the test statistic cannot be computed due to its small sample (< 30).

Figure 5 shows the distribution of our instrument residualized for other controls in our specification (histogram) and the nonparametric first stage (line) calculated using an Epanechnikov kernel. There is a first stage positive relationship and it is monotonically increasing. Table 7 shows that the leave-out mean is a strong predictor of duration (after controlling for all covariates) of individual durations: regardless of the set of controls we use, or the estimation sample we consider, the camp leave-out mean is a statistically significant and economically significant predictor of individual duration. The magnitude changes from around 1 when not controlling for camp and peer controls to about 0.3 when controlling for camp and peer controls. The F-statistic is large, greater than 30 in most cases, well above the threshold of 10 required for weak instruments.

Table 5 shows the IV results of estimating survival to age 70 as a function of duration, and instrumenting individual training duration using the cohort-leave out mean duration. We show results with two sets of controls (individual controls and peer/camp characteristics added) and three samples ("Randomized Large", "Randomized", and the full sample). The results are very similar across specifications. The IV coefficients are imprecisely estimated, and while they are not different than our OLS estimates they are also not different from zero.