Long-term Consequences of Vietnam-Era Conscription: New Estimates Using Social Security Data

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The long-term consequences of Vietnam-era conscription have been extensively studied but are still changing. Estimates from the 2000 census, reported in Joshua D. Angrist and Stacey H. Chen (2011), suggest the large civilian earnings losses documented by Angrist (1990) for the 1970s and early 1980s had faded by 1999. At the same time, researchers have noted sharp recent growth in the number of Vietnam-era veterans receiving federal disability transfers (e.g., Mark Duggan, Robert Rosenheck, and Perry Singleton, 2006). David H. Autor and Duggan (2008) and Angrist, Chen and Brigham Frandsen (2010) argue that this growth is due to the increasing attractiveness of Veterans Disability Compensation (VDC) for low-skill men.

This note reports new estimates of the long-term impact of Vietnam-era service on veterans. As in earlier work on the consequences of Vietnam-era conscription, we use the draft lottery to identify causal effects free of selection bias. The results reported here make a number of contributions. First, we take advantage of newly available Social Security Administration (SSA) data to trace the effects of military service on earnings through 2007, a year in which the oldest members of the main draft lottery cohorts turned 57. We also use SSA data to construct estimates for new outcomes: employment (as measured by an indicator for positive earnings) and disability status (as measured by an indicator for SSDI or SSI application).

Finally, we exploit the fact that SSA administrative records now contain improved information about workers' military service, at least for some periods of service. In the absence of reliable veteran status information in the mid 1980s, Angrist (1990) used a two-sample IV estimator (Angrist and Alan B. Krueger, 1992). The absence of reliable veteran status information also precluded the calculation of OLS estimates. Today we can use SSA administrative records to compute and compare conventional two-stage least squares (2SLS) and ordinary least squares (OLS) estimates, potentially saying something about the extent of selection bias in the latter.

I. Data and Empirical Framework

A. Data

Our primary data source is the SSA's Continuous Work History Sample (CWHS), described in Constantijn Panis, Roald Euller, Cynthia Grant, Melissa Bradley, Christine E. Peterson, Randall Hirscher, and Paul Stinberg (2000). Briefly, the CWHS includes data on earnings and basic demographic characteristics for a one percent sample of social security numbers (SSNs).

The most reliable and longest-running earnings series in the CWHS is FICA taxable earnings, which captures total Social Security-covered earnings for each year, including wages from all employers and earnings from self-employment. The FICA variable records a zero for those who are either not working or have no earnings in covered employment. FICA earnings are censored at the taxable maximum for each year (those with more than one employer

can have earnings above the taxable maximum). For more on coverage and censoring in the CWHS, see Angrist (1990).

Table 1. Sample Means for Men Born 1950-52

	Whites		Nonwhites	
	SSA	Census	SSA	Census
Variable	(1)	(2)	(3)	(4)
Draft-eligible	0.376	0.375	0.376	0.382
Vietnam veteran	0.268	0.229	0.198	0.162
Earnings for workers	40692	56452	35075	37453
Working (earnings>0)	0.771	0.831	0.640	0.765
Disability status	0.135	0.122	0.176	0.211
N	50473	710418	16001	194718

Notes: Sample means from the Social Security CWHS and the 2000 census. Census statistics use sample weights. SSA earnings and employment data are for 1999.

For the purposes of this project, we augmented the regular CWHS active file (a file that omits those who have never worked) with information on whether workers were granted additional earnings credits for military service between 1968-75. Our veteran status variable is an indicator for the presence of these credits for any year from 1968-75. We also constructed a dummy indicating those who applied for either Social Security Disability Insurance (SSDI) or Supplemental Security Income (SSI). This information comes from SSA's 831 disability file, Master Beneficiary Record, and Supplemental Security Record, which record decisions made by SSA's Disability Determination Services. Our disability status variable indicates workers who applied for SSDI or SSI at any time between 1974-2007.

Table 1 shows descriptive statistics for samples of men born 1950-52 in SSA's CWHS and, for purposes of comparison, the 2000 census. The SSA labor market variables are reported for calendar year 1999 to match the census. The census extract is similar to that used by Angrist, Frandsen, and Chen (2010) except that here we code Hispanics as nonwhite to better match the SSA race and ethnicity variable. The SSA sample includes CWHS men born 1950-52, excluding men who reported earnings only after 1983 or who died before 1967. The SSA earnings sample includes men with positive FICA earnings in the relevant year, while the SSA employment and disability

variables were coded in each year for men alive in that year.

About 38 percent of men born 1950-52 were draft-eligible, a fraction that differs little by race or data set. Roughly a quarter of white men in these cohorts served in the Vietnam era; the corresponding estimates for nonwhites are lower. The proportion veteran comes out higher when estimated using SSA data than the census. Three-quarters of whites and two-thirds of nonwhites had positive FICA earnings in 1999. Proportions with positive earnings are higher in the census than in the CWHS, while the CWHS earnings mean for whites is 72% of the corresponding census mean, a difference that probably reflects SSA coverage and censoring at the taxable maximum.

B. 2SLS Strategy

Causal effects of Vietnam-era military service are estimated using the model

$$(1) \qquad Y_{it} = X_i'\gamma_t + \beta_t VET_i + \epsilon_{it}$$

where the vector of covariates (X_i) includes controls for year of birth (YOB) and month of birth (MOB), and VET_i indicates Vietnam-era veteran status. The dependent variables (Y_{it}) are, for each year indexed by t, annual FICA taxable earnings, employment status, and disability status, as defined above.

We report OLS and 2SLS estimates of equation (1). The 2SLS estimates use randomly assigned draft-eligibility as an instrument for veteran status. The first draft lottery, held in December 1969, affected men born 1944-50 who were at risk of conscription in 1970, while subsequent draft lotteries involved 19-year-olds only. Men born in 1951 were at risk of conscription in 1971 and men born in 1952 were at risk of conscription in 1972. Although men as old as 26 could have been drafted as a result of the 1970 lottery, the risk of conscription for all cohorts affected by a lottery was limited to the lottery year. In each draft lottery, numbers from 1-366, known as random sequence numbers (RSNs), were randomly assigned to dates of birth.

Table 2. First-Stage Estimates

Source	Pooled 1950-52 (1)	By Year of Birth 1950 (2)	1951 (3)	1952 (4)
	A. White			
SSA	0.184	0.171	0.162	0.225
	(0.004)	(0.007)	(0.007)	(0.008)
Census	0.140	0.129	0.134	0.164
	(0.001)	(0.002)	(0.002)	(0.002)
	B. Nonwhite			
SSA	0.085	0.077	0.085	0.086
	(0.007)	(0.012)	(0.012)	(0.013)
Census	0.064	0.062	0.064	0.065
	(0.002)	(0.004)	(0.004)	(0.004)

Notes: Draft-eligibility effects on Vietnam veteran status (with robust standard errors in parentheses). Models include dummies for year of birth and month of birth. Census estimates use weights.

Each lottery was associated with a draft-eligibility ceiling or cut-off. Men with an RSN below the ceiling were draft-eligible while men with an RSN above the ceiling were draft-exempt. Ceilings were 195 in the 1970 lottery, 125 in the 1971 lottery and 95 in the 1972 lottery. Draft eligibility is highly correlated with Vietnam-era veteran status, but the link is far from deterministic. Some men with draft lottery numbers below the ceiling were able to avoid conscription through an occupational or educational deferment, or because of poor health or low test scores, while many with lottery numbers above the ceiling volunteered for service. Throughout the Vietnam era (1964-1975), most soldiers were volunteers.

The draft lottery first stage is

$$(2) \quad VET_i = X_i'\pi_0 + \pi_1 ELIG_i + \eta_i,$$

where $ELIG_i$ is the draft-eligibility instrument and π_1 is the first-stage effect (not time-varying). The first-stage estimates, reported in Table 2, show that draft-eligible white men born 1950-52 were about 18 percentage points more likely to have served in the Vietnam-era, while the first-stage estimate for nonwhites is about half as large. Angrist (1991) argues that the diminished draft-eligibility first stage for nonwhites reflects their relatively high valuation of mili-

tary service in comparison to available civilian alternatives. As a practical matter, the low first stage for nonwhites leads us to focus on whites. The analysis here is also limited to men aged 19 in the year they were at risk of conscription.

II. OLS and 2SLS Estimates

Table 3 reports estimates constructed from a version of equation (1) that pools the years in each decade, generating four average effects covering the 1970s through the 2000s. The pooled models include a full set of year-by-cohort effects and month-of-birth effects. Standard errors in Table 3 are clustered on individual SSNs.

Table 3. OLS and 2SLS Estimates for White Men Born 1950-52

	Earnings			Working		
	Nonvet mean	2SLS	OLS	Nonvet mean	2SLS	OLS
Years	(1)	(2)	(3)	(4)	(5)	(6)
1970-79	6932	-0.153	0.015	0.801	0.043	0.137
		(0.032)	(0.006)		(0.014)	(0.002)
1980-89	21204	-0.100	-0.096	0.788	0.004	0.079
		(0.039)	(0.008)		(0.017)	(0.003)
1990-99	34652	-0.023	-0.083	0.763	0.030	0.070
		(0.042)	(0.009)		(0.019)	(0.003)
2000-07	47246	-0.068	-0.070	0.717	0.012	0.054
		(0.048)	(0.010)		(0.021)	(0.004)

Notes: Estimated veteran effects on log FICA earnings and work (pos. FICA) for white men born 1950-52, with robust standard errors clustered on SSN. Models control for year of earnings*year of birth and month of birth.

2SLS estimates for the 1970s show earnings losses of about 16.5 percent (15.3 log points) in the 1970s and about 10.5 percent (10 log points) in the 1980s. These results are consistent with the estimates for 1970-84 reported in , though attenuated somewhat relative to the earlier findings by the larger SSA first stage. Table 3 also shows small and insignificant 2SLS earnings effects in the 1990s, with larger though still insignificant effects in the 2000s. This fade-out is consistent with the loss-of-experience interpretation of veteran effects proposed by Angrist (1990) and with the estimates for 1999 earnings reported in Angrist and Chen (2011).

The 2SLS estimates in Table 3 suggest Vietnam-era service had little effect on veterans' subsequent employment rates. This implies that we loose little by analyzing

treatment effects on outcomes such as log wages, that are defined for workers only. Perhaps surprisingly, for three out of four decades, the OLS and 2SLS estimates of earnings effects shown in columns 2 and 3 seem broadly consistent. On the other hand, the OLS estimates of employment effects in column 5 contrast sharply with the 2SLS estimates in column 6: the former show markedly higher employment rates for veterans in every decade, but the 2SLS estimates suggest this is not a causal effect.

Figure 1 plots the yearly time series of 2SLS estimates, along with the associated confidence bands. The figure documents a surprisingly rapid fadeout of the veteran earnings penalty. Estimated earnings losses decline to zero in 1990 and are not significantly different from zero thereafter. The more modest recent estimates contrast with larger estimated earnings losses for the 1980s, many of which are individually significant and reasonably precise when pooled, as in Table 3. Extrapolating a quadratic earnings profile, Angrist (1990) estimated a veteran over-taking age of about 50 but Figure 1 shows convergence by about age 40.[1]

Ongoing concerns about the health of Vietnam veterans notwithstanding, Figure 2 shows no evidence that Vietnam-era conscription boosted disability application rates. This echoes the small census-based 2SLS estimates of veteran effects on disability status reported by Angrist, Frandsen, and Chen (2010). On the other hand, census data also show that less-educated Vietnam veterans are significantly more likely to receive a Social Security disability payment than are other low-skill men. Unfortunately, the CWHS does not lend itself to a similarly fine-grained analysis.

III. Concluding Comments

The results reported here replicate a number of earlier findings and include some new ones. By way of replication, we find large earnings losses for white Vietnam-era

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[1] The earlier analysis of SSA data generated an initial earnings loss of $-.189$, closing by $.006$ for each year of potential experience.

conscripts in the 1970s and 1980s. We also reproduce earlier draft lottery estimates showing little evidence of an impact on overall disability rates, in this case, as measured by application for SSA's disability insurance programs.

New findings for more recent years show surprisingly rapid convergence in veteran and nonveteran earnings: by the early 1990s, there was no longer a substantial Vietnam-era conscription penalty. This result is broadly consistent with the loss-of-experience interpretation of service-related earnings losses detailed in Angrist (1990), but convergence has emerged more quickly than was predicted by extrapolating earlier data on FICA earnings profiles.
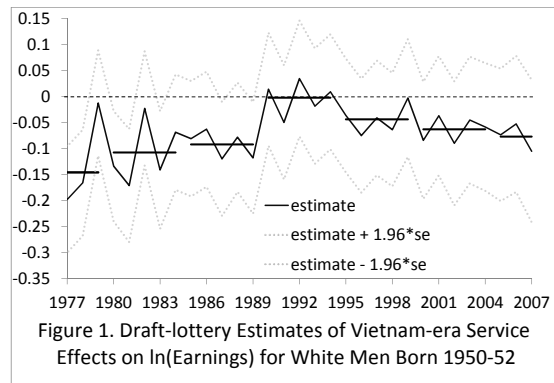

Figure 1. Draft-lottery Estimates of Vietnam-era Service Effects on ln(Earnings) for White Men Born 1950-52
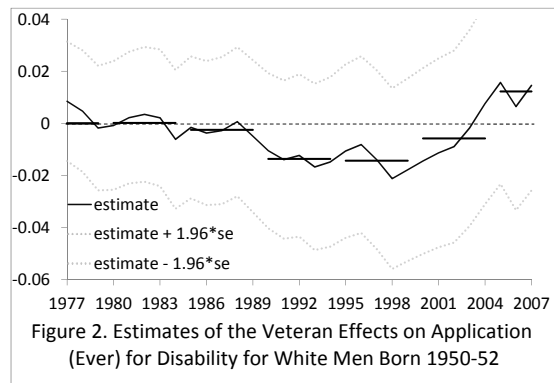

Figure 2. Estimates of the Veteran Effects on Application (Ever) for Disability for White Men Born 1950-52

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