Schooling and the Vietnam-Era GI Bill: Evidence from the Draft Lottery

Joshua D. Angrist and Stacey H. Chen

25th October 2010

Web Appendix

I Sample Notes

We worked with a non-public-use version of the 1-in-6 long-form sample that includes date of birth. The long-form sample is the basis for the publicly available Integrated Public Use Microdata Series (IPUMS) files. These files are simple random samples drawn from the 1-in-6 file, though the 1-in-6 file is not a simple random sample from the census sampling frame. Rather, the Census Bureau reduces the sampling rate in more densely populated areas (Census Bureau 2005). Adjustment for variation in sampling rates is made here using the weighting variables that are included in the long-form file. These weights adjust for non-response and for non-random sampling, and are designed to match external population totals by age, race, sex, and Hispanic origin. In practice, weighting matters little for our results. We confirmed that the means from the 1-in-6 file are close to those from the 5 percent file distributed via IPUMS. The original 2000 long-form sample includes Puerto Rico and island territories; residents of these areas are omitted from our study.

II Schooling Imputation

Using a matched CPS file with responses to both old (highest grade completed) and new (categorical) schooling questions, Jaeger (1997) calculates average and median highest grade completed conditional on categorical school values. He finds that the conditional median gives a better fit than the mean. We therefore use median highest grade completed for most categorical values. A drawback of this scheme, however, is that the categories in the new CPS schooling variable differ slightly from those on the 2000 Census long-form. Specifically, the Census allows for an additional some-college category: "some college, but less than one year." Because some veterans appear to have used the GI Bill to start a college program which they then left, we would like to distinguish this group from other veterans when imputing years of schooling. This may matter for our draft-lottery

1

estimates of linear-in-schooling human capital earnings functions. A second drawback of the Jaeger scheme for our purposes is that it assigns the same value to those who report finishing 12th grade with no diploma and those who received a diploma.

In view of these concerns, we used Jaeger's finer conditional mean imputation to assign values to the census categories "grade 12 no degree" and "one or more years of college". Finally, we estimated a fractional year for the census category "some college but less than one year", by assuming that time in college is exponentially distributed with a fixed dropout hazard each month. This hazard rate was estimated from the ratio of those with at least 13 years completed to those with at least 13 years enrolled in the 1980 Census (for men aged 26-36), assuming a fixed hazard for 8 months of school. The exponential parameter was then used to estimate expected months in school for those ever enrolled in grade 13 college who drop out after one year. The result is an imputed value of 12.55 years. The resulting imputation scheme is: no schooling (0); nursery school through 4th grade (2.5); 5th-6th grade (5.5); 7th-8th grade (7.5); 9th (9); 10th grade (10); 11th grade (11); 12th grade no diploma (11.38); high school graduate (12); some college less than 1 year (12.55); 1 or more years of college no degree (13.35); associate degree (14); bachelors degree (16); masters, professional or doctoral degree (18).

A direct application of Jaeger's formula generates results almost identical to those reported in the paper. Note also that estimates of effects of military service on discrete schooling variables (e.g., an indicator for college graduation status) are unaffected by the choice of imputation scheme.

III   Additional Tables

This section includes three additional tables for nonwhites. Table A1 shows the effect of Vietnam-era veteran status on education, Table A2 reports the effect on education by birth year, and Table A3 shows the effect on labor market variables and other outcomes.

Online Table 1: Veteran Effects on Education for Nonwhites

	1950-52		2SLS		1948-52		2SLS	
	Mean	OLS	elig	5zx	Mean	OLS	elig	5zx
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Years of schooling (imputed)	12.6	.512	.203	.090	12.6	.645	.184	.196
		(.020)	(.230)	(.226)		(.016)	(.235)	(.211)
Years of college	1.02	.118	.192	.173	1.02	.150	.159	.163
		(.0116)	(.118)	(.115)		(.0088)	(.119)	(.108)
9th grade +	.948	.043	.0013	.0003	.944	.055	-.009	-.0018
		(.0016)	(.019)	(.019)		(.0013)	(.020)	(.018)
10th grade +	.923	.063	-.0056	-.0044	.918	.079	-.015	-.0050
		(.0019)	(.023)	(.022)		(.0015)	(.023)	(.021)
11th grade +	.882	.090	.019	.019	.876	.110	.016	.025
		(.0023)	(.027)	(.027)		(.0018)	(.028)	(.025)
12th grade (no diploma) +	.832	.122	-.0021	-.0028	.826	.144	-.014	.0038
		(.0027)	(.032)	(.031)		(.0021)	(.032)	(.029)
High school graduate or higher +	.770	.147	.055	.055	.766	.170	.045	.058
		(.0032)	(.035)	(.034)		(.0024)	(.035)	(.032)
Some college (less than 1 year) +	.468	.158	.080	.083	.468	.171	.094	.092
		(.0042)	(.041)	(.040)		(.0031)	(.041)	(.037)
1 or more years of college (no degree) +	.400	.117	.070	.068	.400	.132	.054	.065
		(.0042)	(.040)	(.040)		(.0032)	(.041)	(.037)
Associate's degree +	.226	.024	.055	.051	.228	.031	.042	.051
		(.0036)	(.035)	(.034)		(.0027)	(.035)	(.032)
Bachelor's degree +	.160	-.032	.028	.020	.163	-.026	.012	.010
		(.0030)	(.031)	(.030)		(.0023)	(.031)	(.028)
Master's degree +	.057	-.020	.0080	.0060	.060	-.021	.020	.011
		(.0018)	(.019)	(.019)		(.0014)	(.020)	(.018)
Professional degree+	.018	-.012	-.0028	-.0027	.019	-.012	.0086	.0018
		(.0010)	(.011)	(.011)		(.0008)	(.011)	(.010)

Note: All regressions include a full set of dummies for state of birth, year of birth and month of birth. Columns 3-5 and 8-10 report 2SLS estimates with the instrument sets listed. Robust standard errors are reported in parentheses. Estimates computed using sampling weights.

Online Table 2: Veteran Effects on Education by Single Year of Birth for Nonwhites

	1948	1949	1950	1951	1952
	(1)	(2)	(3)	(4)	(5)
Years of schooling (imputed)	1.002	-.226	-.014	.358	.134
	(1.144)	(.714)	(.400)	(.386)	(.418)
Years of college	.010	-.056	.057	.067	.275
	(.589)	(.355)	(.205)	(.200)	(.209)
1 or more years of college (no degree) +	.015	.040	.003	.052	.122
	(.198)	(.119)	(.069)	(.068)	(.072)
Associate's degree +	.018	.031	-.004	.050	.066
	(.172)	(.104)	(.060)	(.058)	(.062)
Bachelor's degree +	-.073	-.087	.021	-.022	.0330
	(.152)	(.091)	(.053)	(.051)	(.054)
Master's degree +	.112	.022	.023	-.029	.027
	(.107)	(.060)	(.034)	(.032)	(.032)

Note: The table reports 2SLS estimates of schooling effects by single year of birth using the 5z instrument set. All regressions include a full set of dummies for state of birth, year of birth, and month of birth. Robust standard errors in parentheses. Estimates were computed using sampling weights.

Online Table 3. Other Veteran Effects for Nonwhites

		1950-52				1948-52		
			2SLS				2SLS	
	Mean	OLS	elig	5zx	Mean	OLS	elig	5zx
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Labor market variables								
Employment	.665	.049	.018	.033	.662	.063	.0013	.020
		(.0040)	(.040)	(.039)		(.0030)	(.040)	(.037)
Unemployment	.056	-.0035	-.047	-.048	.054	-.0063	-.027	-.036
		(.0019)	(.019)	(.019)		(.0014)	(.019)	(.018)
Not in labor force	.279	-.045	.029	.015	.284	-.057	.026	.016
		(.0039)	(.039)	(.038)		(.0029)	(.039)	(.036)
Self employed	.067	-.015	.007	.002	.068	-.016	.012	.009
		(.0020)	(.021)	(.020)		(.0015)	(.021)	(.019)
Usual hours worked	32.8	1.97	3.58	4.12	32.6	2.33	3.68	3.77
		(.171)	(1.71)	(1.68)		(.129)	(1.73)	(1.57)
Weeks worked	35.9	2.14	2.84	3.15	35.7	2.73	2.41	2.72
		(.186)	(1.86)	(1.82)		(.141)	(1.88)	(1.70)
Wage and salary income	27584	1324	3476	4948	27711	2109	1006	3294
		(313)	(3231)	(3199)		(239)	(3255)	(2968)
Log weekly wage	6.41	.028	-.037	.011	6.43	.042	-.0090	.018
		(.0074)	(.067)	(.065)		(.0057)	(.067)	(.061)
Self employment income	1709	-616	328	489	1708	-511	1750	1167
		(108)	(1177)	(1134)		(82.4)	(1167)	(1065)
Other outcomes								
Works in public sector	.198	.080	.127	.129	.200	.083	.085	.111
		(.0036)	(.033)	(.033)		(.0027)	(.033)	(.030)
Works in federal government	.062	.074	.101	.099	.064	.075	.080	.088
		(.0025)	(.020)	(.020)		(.0018)	(.020)	(.019)
Lives in the state of birth	.639	-.072	-.038	-.040	.631	-.061	-.051	-.053
		(.004)	(.039)	(.039)		(.003)	(.040)	(.036)
Currently single	.176	-.068	.007	.009	.166	-.063	-.023	-.008
		(.003)	(.032)	(.031)		(.002)	(.031)	(.029)
Currently married	.557	.030	-.017	-.020	.564	.036	.027	.001
		(.004)	(.041)	(.041)		(.003)	(.042)	(.038)
Ever married	.824	.068	-.007	-.009	.834	.063	.023	.008
		(.003)	(.032)	(.031)		(.002)	(.031)	(.029)

Note: All regressions include a full set of dummies for state of birth, year of birth and month of birth. Columns 3-4 and 7-8 report 2SLS estimates with the instrument sets listed. Robust standard errors are reported in parentheses. Estimates computed using sampling weights.