Does Military Service Shorten Lives? The Effect of Compulsory Military Service on Smoking Prevalence

Dean R. Lillard[1,2,3] and Jacob Fahringer[1]
[1]Ohio State University, [2]DIW-Berlin, [3]NBER
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Corresponding author:
Dean R. Lillard
Department of Human Sciences
235B Campbell Hall
1787 Neil Avenue
Columbus, OH 43210-1295
Tel. (614) 292-4561
FAX (614) 688-8133
e-mail: lillard.13@osu. edu

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Extended Abstract

Tobacco, and the manufacturers that prepare it for consumption, has long been at the center of American culture. Its farmers played an important part in the revolution of the country as they began to fight against the navigation acts taking from their profits. These same farmers, along with cotton producers, also played a large role in trying to preserve slavery. It's no surprise then that by the middle of the 20th century consumption of tobacco rose to staggering heights and that there was such strong pushback when its harmful effects were fully exposed to the public. This history is one of addiction––an addiction facilitated by the large tobacco corporations supplying their cigarettes to the public. In this paper, we investigate their use of the military rations and the subsidized provision of tobacco through the military commissaries to predict whether men compelled to serve are more likely to smoke. We use life histories of individuals' smoking status in each year of life from the US Panel Study of Income Dynamics to estimate whether men compelled to serve are causally more likely to smoke. We also use instrumental variable methods to predict the effect of military service for men who were young enough to avoid the draft. We then use the predicted probability of smoking, together with the average quit probabilities of smokers, to predict the mortality cost of military service.

Tobacco and the Military

During World War I, the connection between tobacco companies and the United States armed forces became prominent as companies convinced the military to start including name-brand tobacco in some of the ration packs provided to soldiers fighting overseas. Prior to the war, the military supplied rations to the units in bulk, and local quartermasters then divided supplies amongst the troops. However, this changed with the

increase of trench warfare because the fighting kept soldiers from field kitchens for long periods of time. The military needed to devise a way to provide soldiers with non-perishable food safe from any contamination. The final result was a ration "tin" issued to every soldier in case of situations that stranded them from the field kitchens.

Initially, the inclusion of tobacco in the rations was by chance, but it quickly became an opportunity by tobacco companies to distribute tobacco to captive consumers. When designing the reserve rations––the tin of food given to every soldier in case of emergency––US engineers initially used sawdust or tobacco to fill empty space in the tins to prevent the contents from being damaged during shipping. However, when strategists at "a large corporation learned of this fact [they] got permission to fill the empty space in some of the containers with tobacco."[1] When it became clear that the troops valued the cigarettes and it boosted their moral, the military expanded this practice to all of the reserve rations.

Further expanded in World War II, the military provided cigarettes in the C- and K-rations issued to the troops. Quartermasters designed the K-rations for specialized forces, but their cost-effectiveness and convenience soon caused them to become overused.[2] This meant that service members received more tobacco, regardless of their smoking habits. The military continued to include cigarettes in rations until growing pressure from health advocates forced them the Department of Defense to discontinue the partnership with tobacco companies in 1975.[3]

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[1] Crowell, Benedict. *America's Munitions 1917-1918: Report of Benedict Crowell, the Assistant Secretary of War, Director of Munitions*. Washington, D.C.: G.P.O., 1919. 445. Print.
[2] Kearny, Cresson H. *Jungle Snafus ... and Remedies*. Cave Junction, Or.: Oregon Institute of Science and Medicine, 1996. 292-93. Print.
[3] Joseph, Anne M. "The Cigarette Manufacturers' Efforts to Promote Tobacco to the US Military." *Military Medicine* 170 (2005): 874-80. Print.

Also during World War I, cigarette rations started in their own right after tobacco supporters lauded the product's benefits for the soldiers. With worries of tobacco shortages, the Department of War even went so far as to buy the entire output of some companies to give out to the troops.[4] This process was continued in World War II when tobacco companies negotiated an agreement to sell cigarettes tax-free in military commissaries.

Though first established in 1825, US military commissaries have existed in their current form since 1865. They function the same as grocery stores and grew in a similar fashion. They initially opened up to sell goods to enlisted personnel tax-free, but began offering their services to retired military members and their families in 1879.[5] In addition to basic grocery items, commissaries also sold tax-free tobacco products. However, as with the opposition to the inclusion of cigarettes in rations, health advocate groups forced the Department of Defense to begin discouraging the sale of tobacco in commissaries, moving all cigarette stock to the back of the store in 1992, and even going so far as to raise prices to within 5 percent of local prices in 2001.[6]

Data

We use this history together with data on individual smoking behavior and military service to predict the causal effect of compulsory service on smoking behavior. in particular, we use data from the University of Michigan's Panel Study of Income Dynamics (PSID). Begun in 1968 with a nationwide sample of approximately 5,000 families, the PSID has annually

[4] Brandt, Allan M. *The Cigarette Century: The Rise, Fall, and Deadly Persistence of the Product That Defined America*. New York: Basic, 2007. 50-53. Print.
[5] "History of U.S. Military Commissaries." *Commissary*. Defense Commissary Agency, Web.
[6] Joseph, Anne M. "The Cigarette Manufacturers' Efforts to Promote Tobacco to the US Military." *Military Medicine* 170 (2005): 874-80. Print.

interviewed heads of families to collect data on a wide variety of subjects, ranging from their family's personal history to various economic decisions they make.[7]

We use data on respondents' lifetime smoking behavior and military service. We draw data on smoking behavior from questions asked in 1986, 1990, 1999, 2001, 2003, 2005, 2007, 2009, and 2011 about whether a head and their spouse ever smoked, currently smoke, the age they started and, if an ex-smoker, the age they quit. The sample thus includes anyone who answered these questions on at least one survey in one the above years. I also use data generated by questions that asked respondents to report whether they had ever served in the military, and when military service and active military duty began and ended. The PSID collected these data for the household head and their spouse.

We use these data to construct two variables that indicate, for each year of each respondent's life, whether a person smoked and whether they actively engaged in the military. These indicators equal 0 in years they did not smoke––were not in the military–– and equals 1 in years she did smoke––was in the military

Military accessions

Respondents who were born in 1959 or later were the first cohort not subject the the draft associated with the Vietnam war. Although subsequent cohorts did have to register, they did not have to serve. To predict their probability of serving in the military, we use Department of Defense data on the number of people actively serving in the US military in each year from 1920 to 2012.

Estimation strategy

[7] Starting in 1997 the PSID administers the survey biennially.

To test the hypothesis that compulsory military service causes a person to smoke, we estimate a model of the probability that a person smokes in any given year as a function of the state cigarette tax, P_{st}, whether a person is in active military service, M_{ist}, and his demographic characteristics, X_{ist},. It is given by:

$$y_{ist} = \beta_0 + \beta_1 P_{st} + \beta_2 M_{ist} + \gamma X_{ist} + \mu_s + \mu_t + \epsilon_{ist} \qquad (1)$$

where the error term or unexplained probability of smoking consists of a component common to all people living in the same state, μ_s, common to everyone in the same year, μ_t, and a person-specific stochastically distributed error term, ϵ_{ist}, that is assumed to be normally distributed. The hypothesis tests consist of tests of significance on the coefficients on military service β_2.

However, the coefficients on military service may be biased if men joining the military are more predisposed to a smoking lifestyle. To identify the causal effect of military service on the decision to smoke, we use the method of instrumental variables.

The method of instrumental variables (IV) predicts the endogenous variable using variation in a third variable that is uncorrelated with the ultimate outcome of interest––in this case, the probability of smoking. Here we exploit differences in the probability that a given PSID respondent served in the military that stems from variation in US conscription laws.

The Selective Services Act of 1940 required every man ages 21 to 36 to sign up for the draft, starting in September 1940. The ages were extended to 18 to 45 in December 1941, and the term of service expanded from 12 to 24 months. A year later, in December 1942, voluntary enlistment was ended, making every man serving from that date until

March 1947––when the act expired––a selection from the draft.[8][9][10] The idea of conscription was soon brought back though, as the Military Selective Service Act was passed in June 1948 establishing a draft to fill any vacancies in the military with men aged 18 to 26. This act was eventually allowed to expire in 1973, ending conscription in the United States.[11]

We also use variation over time in the number of people serving in uniform as a proxy for the probability that a person gets drafted.

Preliminary IV regression results suggest that men who served in the military were 28% more likely to be a smoker than an equal counterpart not drafted into the military.

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[8] Selective Training and Services Act of 1940, §§ 720-301-318 (1940). Print.
[9] Service Extension Act of 1941, §§ 362-351-362 (1941). Print.
[10] Exec. Order No. 9279, 3 C.F.R. (1942). Print.
[11] Military Selective Service Act, §§ 625-451-473 (1948). Print.

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Table 1

Summary Statistics						
Variables	Panel Study of Income Dynamics 1942-1973		Panel Study of Income Dynamics 1890-2009		Integrated Public Use Microdata Series 1900-2012	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Outcome Variables						
Current Smoker	0.29	0.54	0.29	0.452		
Active Service	0.03	0.17	0.02	0.13	0.06	.23
Fair Trade Law	0.10	0.44	0.11	0.45		
Covariates						
Age	28.28	7.76	28.29	7.86	30.03	8.10
Race	1.59	1.14	1.59	1.14	1.52	1.44
Female	0.54	0.50	0.52	0.50	0.50	0.50
Urban Population Percentage	0.70	0.16	0.71	0.17		
Percent Difference in US Military Strength by Year	-0.00	0.01	-0.00	0.01		

Note: Age restricted in all cases between 16 and 45. US population percentage and percent difference in US military strength by year were calculated from census data and are representative of the national level.

Table 2

Difference in Samples		
	Number of Observations	Number of People
Full set		
Current Smoker	460525	5193
Age	905143	39434
Race	459902	5520
Female	905064	73250
Urban Population Percentage	902762	39434
Active Service	905143	73268
Percent Difference in US Military Strength	895653	66305
Sample set		
Current Smoker	458243	2077
Age	458243	2077
Race	458243	2077
Female	458243	2077
Urban Population Percentage	458243	2077
Active Service	458243	2077
Percent Difference in US Military Strength	458243	2077

Note: Age restricted in all cases between 16 and 45.

Table 3

Effect on Smoking	
	Current Smoker
Active Service	0.28
	(0.05)
Female	-0.07
	(0.00)

Note: The dependent variable in this regression is people that claim to be current smokers in data taken from the PSID. The independent variables in the first stage of the instrumental variable regression are: the percent difference in US military strength by year for the years of World War 2, the Korean War, and the Vietnam war, and urban population percentage for the same years. Year, race, age, and state are also used as control variables. Age was restricted between 16 and 45. Data comes from 458,243 observations of 2,077 people from the Panel Study of Income Dynamics. Standard errors are listed in parentheses.

Table 4

Effect of Price on Smoking	
	Current Smoker
Price for Active Service	-1.10
	(0.69)
Sales Price	-0.08
	(0.00)
Active Service	4.63
	(1.63)

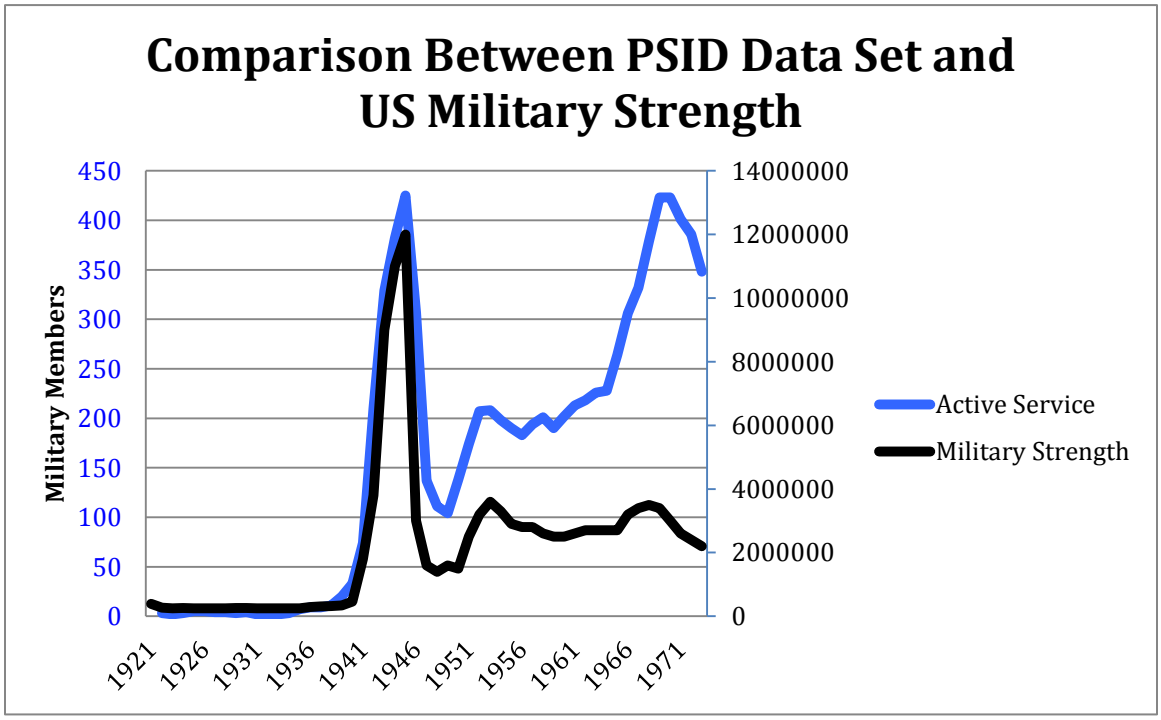
Note: The dependent variable in this regression is people that claim to be current smokers in data taken from the PSID. Price for Active Service found by multiplying sales price and active service. The independent variables in the first stage of the instrumental variable regression are: state tax, the percent difference in US military strength by year for the years of the Korean War, and the Vietnam war, and urban population percentage for the same years. Year, race, age, and state are also used as control variables. Age was restricted between 16 and 45. Only representative of years after 1951. Standard errors are listed in parentheses.

Table 5

Effect of Tax on Smoking	
	Current Smoker
Tax for Active Service	7.67
	(0.21)
Sales Tax	-0.16
	(0.00)
Active Service	-2.40
	(0.09)

Note: The dependent variable in this regression is people that claim to be current smokers in data taken from the PSID. Tax for Active Service found by multiplying sales price and active service. The independent variables in the first stage of the instrumental variable regression are: the percent difference in US military strength by year for the years of the Korean War, and the Vietnam war, and urban population percentage for the same years. Year, race, age, and state are also used as control variables. Age was restricted between 16 and 45. Only representative of years after 1951. Standard errors are listed in parentheses.

Chart 1



Note: Active service data from PSID sample used in regressions.