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Behavior in the Market for U.S. Army Recruits: PLS and 2SPLS Analysis of the Impact of Health Insurance Unavailability in the Non-Military Sector, 2003-2007

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Abstract

This empirical study addresses a largely heretofore-ignored issue, namely, does the unavailability of health insurance in the non-military sector of the U.S. act as a marginal incentive for persons to enlist in the U.S. Army? Within a cost-benefit framework, the present study endeavors to provide insight into this issue. The empirical analysis includes a variety of economic and non-economic control variables and takes the form of a panel data study for the years 2003 through 2007. Panel least squares and two-stage panel least squares estimates demonstrate, among other things, that the greater the percentage of the civilian population without health insurance, the greater the rate of enlistment in the U.S. Army.

Keywords: Army enlistment, Lack of health insurance, Opportunity costs

1. Introduction

Various dimensions of the healthcare industry in the U.S. have attracted considerable attention in recent years. This attention covers a broad spectrum of topics, ranging from hospital costs, profitability, and efficiency issues to medical malpractice to physician staffing to health care inflation (Chirikos, 1998-99; Daniels & Gatsonis, 1999; Given, 1996; Glied, 2003; Goodman & Stano, 2000; Jordan, 2001; Karsten, 1995; Okunade, 2001, 2003; Olsen, 1996). These issues notwithstanding, the issue that has received the greatest growth in attention is that of health insurance coverage (Bharmal & Thomas, 2005; Cebula, 2006; Cutler, 1994; Dushi & Honig, 2003; Frick & Bopp, 2005; Gruber, 2003; Harris & Keane, 1999; Kronick & Gilmer, 2002; Newhouse, 1994; Nyman, 2003; Swartz, 2001, 2003). This high visibility has resulted in enormous public controversy over proposed federal legislation in the form of HR 3200 ("America's Affordable Health Choices Act of 2009") and other somewhat similar health care reform proposals.

The issue of health insurance coverage has increasingly captured the interest not only of the popular press and political pundits but also of a host of scholars across a variety of academic disciplines. Presumably, as argued in Dushi & Honig (2003, p. 252), at least part of this increased attention can be attributed to the fact that there was a noticeable decline in health insurance coverage over the early 1990s during the first Clinton Administration. Indeed, more than 15 years ago, Cutler (1994, p. 20) had observed that "About 15 percent of the population…are uninsured." More recently, for the year 2003, Bharmal & Thomas (2005, p. 643) observe that the number of uninsured reached 43.6 million or 17.3 percent of persons under the age of 65. It is estimated that some 48 million are medically uninsured at the present time. It is no surprise that the issue of healthcare reform is on the priority list for the Obama Administration.

This study seeks to provide insights into a very different dimension of the overall health insurance issue. In particular, this study hypothesizes that the greater the percentage of the civilian population that is without health insurance, the greater the incentive at the margin for civilians to enlist in the U.S. Army, ceteris paribus. In the interest of relevance, the study period runs from 2003 through 2007, thereby permitting consideration of the Wars in Iraq and Afghanistan. To empirically test this hypothesis, a cost-benefit framework is considered, one in which the percent of the civilian population without health insurance, along with factors such as per capita income, percent of the population having a "veteran" status, the civilian unemployment rate, the percent of the population with at least a college degree, and the fatality rate associated with military service are treated as arguments in the enlistment decision process. This study adopts state-level data for all 50 states and conducts panel data (panel least squares and two-stage panel least squares) analyses for the study period.

The study begins with a literature review. Following that review, a cost-benefit model is developed, one in which all of the explanatory variables are identified. The next part of the study is the empirical analysis. Within the model, two different sets of PLS (panel least squares) estimates are provided. In addition, a 2SPLS (two-stage panel least squares) estimate of the model is provided. The concluding section of the study provides a brief summary and

overview.

2. Literature Review

This literature review is consists of recent published literature on health insurance coverage determinants on the one hand and on military enlistment determinants on the other hand. Beginning with the former, the following observation by Swartz (2003) is relevant. In particular, Swartz (2003, p. 283) makes the observation that, simply put, many of those who do not have health insurance "…simply cannot afford to purchase it…" Swartz (2003, p. 283) proceeds to observe that many households "…cannot afford to purchase health insurance unless it is heavily subsidized." Continuing along this line, Swartz (2003, p. 283) states that most of those households that "…do not have access to employer-sponsored coverage…must purchase…health insurance in the non-group [individual] market…where insurance is typically twice as expensive [to the household] as employer-group coverage…" Ergo, the likelihood of purchasing health insurance is lower than otherwise: a simple application of the law of demand.

Dushi & Honig (2003, p. 253) provide evidence on gender differences in the propensity to purchase group health insurance when the latter is available. Their data reveal that, overall, females in the labor force tend to have a lower "take-up" rate than males in terms of health insurance plans: 73 percent of the time for females versus 88 percent of the time for males. Dushi & Honig (2003) argue that some significant portion of this male-female take-up disparity is attributable to married women opting to rely on a spouse's health insurance plan. This male-female take-up disparity notwithstanding, when a health insurance plan is available through the employer, nearly three-fourths of the time women do take advantage of the option. Moreover, unions increase health insurance availability.

Focusing upon a different perspective, namely, the propensity of the elderly to purchase health insurance, is the study by Newhouse (1994), who observes that most of the U.S. population age 65 and older are covered by Medicare. Newhouse (1994) also stresses that as one's age progresses, so does the incidence of health problems. Given the limitations on Medicare coverage, Newhouse (1994, p. 7) observes that many elderly persons regard Medicare coverage as insufficient to meet their needs, leading to the finding that "…over 80 percent of Medicare beneficiaries…had some form of supplemental health insurance, with a third having individually purchased insurance."

Frick & Bopp (2005) observe that the classic utility-insurance model makes it patently clear that having a very low income can seriously restrict the ability to purchase health insurance. The Frick and Bopp (2005) study not only focuses on the effects of poverty on health insurance purchases but also on other factors. For example, Frick & Bopp (2005) find that the percent of the population without health insurance is an increasing function of the percent of the population whose income lies below the poverty level, the percent of the population that is female, and the percent of the population with only a high school diploma.

Finally, the study by Cebula (2006) adopts an aggregate state-level cross-section data set dealing with the percent of the population without health insurance in the year 2000. The

most interesting aspect of this study is the effort to include as an explanatory variable a measure of the effects of being either self employed or an independent contractor. In any case, five estimates are provided. The most interesting finding is that the percent of the population without health insurance is an increasing function of the percent of the population that is either self employed or independent contractors.

The political basis and economics of the military draft and the subsequent formation of the AVF (all-volunteer military force) are analyzed in the insightful studies by Tollison (1970) and by Tollison, Amacher, Miller, Pauly, & Willett (1973). Beyond the scope of these studies, Seeborg (1994) conducted a study based on data derived from the National Longitudinal Survey of Youth, in which he concluded that the probability of enlistment is directly related to minority and poverty status, while controlling for ability and a number of other socioeconomic background variables. In addition, the Seeborg (1994) analysis of poverty transitions shows that a large percentage of enlistees in the early 1980s who were living in poverty at age 17 had escaped poverty by 1990, i.e., that the military can serve as a mechanism for upward economic mobility.

Segal, Bachman, & O'Malley (1999) study the differences in the propensity to enlist of various subgroups of potential enlistees into the U.S Military. The analysis furthers the idea that black youths regard the military as a vehicle for upward social and economic mobility and therefore are more likely to enlist in the military compared to white youths. This finding is consistent with Kleykamp (2006). Furthermore, according to Segal, Bachman, & O'Malley (1999), the presence of a military parent, military grandparent or a military sibling within the family increases the propensity of a potential enlistee to enlist. This is consistent with more recent studies such as Kleykamp (2006) and Cebula, Menon, & Menon (2008) indicating that the institutional and cultural presence of the military within an area has a significant influence on the enlistment decisions made by youths.

Finally, the studies by Warner, Simon, & Payne (2003) and Cebula, Menon, & Menon (2008) both conclude that civilian job opportunities are a significant consideration for high school graduates when assessing the decision to enlist. Although post high school educational opportunities and access played a role in the ultimate decision, it was the overall economic opportunity available that was the most significant factor in an enlistment decision, especially among rural youth. This finding is consistent with the fundamental reasoning underlying the nature of opportunity costs and "rational" decisions.

3. Framework of Analysis

The framework adopted in this study treats the decision to enlist in the U.S Army as a cost-benefit decision. In particular, the decision to enlist in the military, Denlist, is predicated upon the expected net benefits of enlistment, ENBenlist. The latter is treated as an increasing function of the expected gross benefits of enlistment, EGBenlist, and a decreasing function of the expected gross costs of enlistment, EGCenlist, such that:

$$ENBenlist = f(EGBenlist, EGCenlist),\ DenlistEGBenlist > 0,\ DenlistEGCenlist < 0 \quad (1)$$

Naturally, as evidenced in the studies referenced in the literature review above, there are a number of variables that typically are expected to exercise an influence over enlistment rates.

To be addressing these, we focus first on the EGBenlist:

$$\text{EGBenlist} = g\ (\text{economic benefits, Family/Cultural benefits}) \quad (2)$$

The basic hypothesis being tested in this study is that the greater the percentage of the population without health insurance [UNINS], the greater the propensity to enlist [ENLIST] in the U.S. Army, ceteris paribus. This hypothesis is based on the fact that those enlisted in the U.S. armed forces, along with their immediate families (spouse, children) receive free medical care provided through the military. Given the increased proportion of the U.S. population without health insurance and the increasing proportion of the population in the U.S. with inadequate insurance, free medical care provided by the armed forces should act as an attraction to potential enlistees, i.e., increase the EGBenlist. Alternatively stated, given that military enlistment brings with it health care without any health insurance premiums, the economic benefits associated with enlistment are expected to be greater the higher the percentage of the non-military population without health insurance (UNINS), ceteris paribus. Thus, the higher the percentage of the population without health insurance, the greater the EGBenlist level. This hypothesis is consistent with the shorter-run preliminary study by Cebula, Menon, & Menon (2008).

In addition, the "family/cultural benefits" of enlistment are expected to be greater in an environment which has a higher presence of persons who are military veterans (Kleykamp, 2006; Segal, Bachman, & O'Malley, 1999; Cebula, Menon, & Menon, 2008). This is because enlistment is viewed as a socially approved and admired behavior and receives positive psychological reinforcement, encouragement, and approval in environments with a higher percentage of the population being veterans (PVET). Thus, the family/cultural benefits from enlistment are an increasing of PVET, ceteris paribus. Hence, (2) becomes:

$$\text{EGBenlist} = g\ (\text{UNINS, PVET}),\ g\text{UNINS} > 0,\ g\text{PVET} > 0 \quad (3)$$

The level of EGCenlist is expected to be in part a function of opportunity costs of enlistment. These opportunity costs can be measured by income from non-enlistment sources, measured here by personal income per capita, PIPC, by the unemployment rate of the civilian labor force, UNR, and/or by improved higher-level employment options afforded by having earned a higher degree of formal education, e.g., having completed a Bachelors degree or higher (BACH). Accordingly, in principle paralleling Warner, Simon, & Payne (2003), Seeborg (2003), and Cebula, Menon, & Menon (2008), based on opportunity-cost reasoning, it is hypothesized that EGCenlist is an increasing function of PIPC and/or BACH and is a decreasing function of UNR, ceteris paribus. Finally, it is also assumed that risk-averse behavior would treat a greater degree of risk in the form of per capita fatalities in Operation Iraqi Freedom, PCFATAL, as elevating EGCenlist, ceteris paribus. Hence, the EGCenlist is expressed as:

$$\text{EGCenlist} = h\ (\text{PIPC, UNR, BACH, PCFATAL}),\ h\text{PIPC} > 0,\ h\text{UNR} < 0,\ h\text{BACHELOR} > 0,\ h\text{PCFATAL} > 0 \quad (4)$$

Substituting from (3) and (4) into (1) yields the following:

$$\text{ENBenlist} = f\ (\text{UNINS, PVET, PIPC, UNR, BACH, PCFATAL}),$$

$$fUNINS > 0, fPVET > 0, fPIPC < 0, fUNR > 0, fBACH < 0, fPCFATAL < 0 \quad (5)$$

3. Empirical Analysis

Based on the model in (5) above, the following model is to be estimated using panel data for the period 2003 through 2007, with j referring to the observation for state j:

$$ENLISTj = a0 + a1\ UNINSj + a2\ PVETj + a3\ PIPCj + a4\ UNRj + a5\ BACHj + a6\ PCFATALj + u \quad (6)$$

Each of the variables in the system is formally defined in Table 1, which also includes the data source for each variable in the system. The term a0 is the constant term, and u is the stochastic error term. The model uses state-level data; included in the analysis were all 50 states, with Washington, D.C. being excluded from the analysis as an outlier, given its myriad demographic and economic differences from states.

Table 1. Definitions and sources of state-level data, 2003-2007

Variable	**Definition** (**Source**)
ENLIST	Number of army enlistees in each state per 1,000 of the 18-24 year old population in each state (National Priorities Project Database, 2008)
UNINS	Percentage of state population without any form of health Insurance (U.S. Census Bureau, 2004; 2005; 2006; 2007; 2008)
PVET	Percentage of state population classified as veterans by the DOD (U.S. Census Bureau, 2004; 2005; 2006; 2007; 2008)
UNR	Percentage of state civilian population that is unemployed (U.S. Census Bureau, 2004; 2005; 2006; 2007; 2008)
PIPC	Personal income per capita, expressed in year 2000 dollars (U.S. Census Bureau, 2004; 2005; 2006; 2007; 2008)
BACH	Percentage of state population with a Bachelor's degree or higher (U.S. Census Bureau, 2004; 2005; 2006; 2007; 2008)
PCFATAL	Per Capita Fatalities in Operation Iraqi Freedom, Total Yearly Fatalities from the State/Total State Population (Iraq Coalition Casualties Count Database, 2008)

Table 2 provides the results of three empirical estimates reflecting the basic model and two variations thereof, all of which are Panel Least Squares (PLS) estimates with White (1980) heteroskedasticity-corrected standard errors and t-values. The terms shown in parentheses in Table 2 are t-values. Observe that a linear trend variable, TREND, is included in each of the estimates in this study in order to account for trends in the variables over the 2003 through 2007 time period.

Table 2. PLS estimations for dependent variable ENLIST, 2003-2007

Variable\Estimate	**(a)**	**(b)**	**(c)**
Constant	+0.52	+2.01	+0.05
UNINS	+0.03	+0.034	+0.032
	(+5.11)	(+6.60)	(+7.20)
PVET	+14.8	-------	+18.01
	(+2.29)		(+3.31)
UNR	+0.19	+0.29	-------
	(+1.88)	(+2.21)	
PIPC	-0.00003	-------	-0.00004
	(-4.01)		(-5.87)
BACH	-0.02	-0.027	-0.025
	(-2.29)	(-2.50)	(-2.42)
PCFATAL	-33.41	-35.19	-36.33
	(-4.97)	(-5.06)	(-6.98)
TREND	+0.09	+0.05	+0.08
	(+2.26)	(+2.15)	(+2.21)
R^2	0.66	0.49	0.56
adj R^2	0.64	0.46	0.54
F	48.71	20.88	44.9

In Table 2, all 15 of the estimated (non-trend) coefficients on the explanatory variables exhibit the expected signs. Of these, nine are statistically significant at the one percent level, and five are statistically significant at the five percent level, with the remaining coefficient being statistically significant at the ten percent level. The trend variable is significant at the five percent level in all three cases. The coefficients of determination range from a low of 0.49 to a high of 0.66, with the model thusly explaining roughly one-half to as much as two-thirds of the army enlistment rate. The F-statistics are all significant at beyond the one percent level, attesting to the overall strength of the models.

Based on the findings shown in Table 2, it is inferred that the army enlistment rate is: an increasing function of military environmental factors as proxied by variable PVET; a decreasing function of opportunity costs as represented by either PIPC (personal income per capita) or BACH (having completed a Bachelors degree or higher); and an increasing function of UNR (the civilian unemployment rate). Furthermore, the army enlistment rate is

consistently also a decreasing function of the fatality risk factor, PCFATAL, presumably a reflection of rational risk-aversion behavior.

Finally, and from the viewpoint of this study, most importantly, it is observed that the coefficient on the UNINS variable is positive and statistically significant across all three estimates. This provides strong empirical support for the hypothesis that the enlistment rate is an increasing function of the percent of the population without health insurance. Alternatively expressed, the expected economic benefits associated with U.S. Army enlistment are expected to be greater the higher the percentage of the population without health insurance (UNINS), ceteris paribus. This is because enlistment brings with it health care without any health insurance premiums. These findings consistently imply that army enlistment has been positively impacted by this "fringe benefit" of employment in the U.S. armed forces.

In the PLS estimates shown in Table 2, all of the data are annual; however, the explanatory variables are all contemporaneous with the dependent variable, ENLIST. To allow for the possibility of simultaneity issues, the specification of the PLS estimates in Table 3 lag all of these same explanatory variables by one period (year). As the reader can readily observe, the results shown in Table 3 are almost entirely consistent with those in Table 2.

In particular, all 15 of the estimated (non-trend) coefficients exhibit the expected signs, with nine statistically significant at the one percent level and five statistically significant at the five percent level. Only one, that for variable UNRt-1 in estimate (d), fails to be statistically significant at the ten percent level. Moreover, except for the latter variable, the pattern of results for estimates (d), (e), and (f) rather closely parallels that in

the un-lagged counterpart estimates (a), (b), and (c). Indeed, not only are the t-values similar in magnitude, but the coefficients are as well.

Thus, although the evidence in Table 3 on behalf of the army-enlistment influence of the unemployment rate is mixed, the other explanatory variables continue to exercise their hypothesized effects. Namely, the U.S. Army enlistment rate is an increasing function of the PVET variable, while being a deceasing function of PIPC, BACH, and PCFATAL variables. Finally, there continues to be strong empirical evidence on behalf of the hypothesis that the greater the percent of the civilian population without health insurance, the greater the enlistment rate.

Table 3. Additional PLS estimations

Variable\Estimate	**(d)**	**(e)**	**(f)**
Constant	+0.51	+1.97	+0.08
$UNINS_{t-1}$	+0.031	+0.034	+0.033
	(+7.05)	(+6.48)	(+6.99)
$PVET_{t-1}$	+14.6	-------	+17.61
	(+2.24)		(+3.15)
UNR_{t-1}	+0.17	+0.25	-------
	(+1.64)	(+2.15)	
$PIPC_{t-1}$	-0.00003	-------	-0.00004
	(-3.82)		(-5.25)
$BACH_{t-1}$	-0.02	-0.025	-0.024
	(-2.23)	(-2.45)	(-2.39)
$PCFATAL_{t-1}$	-32.12	-34.24	-34.99
	(-4.90)	(-4.98)	(-6.11)
TREND	+0.04	+0.05	+0.07
	(+2.10)	(+2.13)	(+2.17)
R^2	0.68	0.48	0.55
adj R^2	0.65	0.45	0.53
F	46.22	19.18	41.30

One final estimate is to be provided. It lags five of the six explanatory variables,

leaving just one, that for the variable of central interest, UNINS, un-lagged, i.e., expressed/treated as UNINSt. The purpose of this estimate is to test the basic health-insurance/enlistment hypothesis under the assumption that the lack of health insurance among the civilian population impacts the enlistment rate without a substantial lag. Since ENLIST and UNINS are specified as being contemporaneous, a 2SPLS (two-stage panel least squares) estimation is undertaken, with the instrument being the two-year lag of the percent of the population in each state that is at or below the federally defined poverty level, POVt-2. The choice of this instrument is based on the finding in Frick & Bopp (2005) that a higher poverty rate raises the percent of the civilian population without health insurance, whereas ENLISTt and POVt-2 were found to be very highly correlated and variable POVt-2 is not correlated with the error terms in the system.

The 2SPLS estimate is given by equation (7), after once again adopting the White (1980) heteroskedasticity correction:

ENLISTjt = +1.01 + 0.029 UNINSjt + 15.65 PVETjt-1 - 0.00003 PIPCjt-1

(+5.28) (+2.30) (-3.86)

+0.16 UNRjt-1 - 0.024 BACHjt-1 - 33.15 PCFATALjt-1 + 0.06 TREND,

(+2.02) (-2.31) (-4.25) (+2.13)

F = 49.87 (7)

As shown in equation (7), the estimated coefficients for all six of the non-trend explanatory variables exhibit the expected signs, with three being significant at the one percent level, and three being significant at the five percent level. Thus, this 2SPLS estimate reveals that the U.S. Army enlistment rate is an increasing function of both the percent of the population classified as veterans and the civilian unemployment rate, while being a decreasing function of personal income per capita, the percent of the population with a Bachelors degree or more, and the fatality rate. Finally, there is yet more strong evidence on behalf of the hypothesis that the greater the percentage of the civilian population that is without health insurance, the greater the incentive at the margin for civilians to enlist in the U.S. Army.

4. Conclusion

This study addresses an essentially heretofore-ignored issue, namely, "Does the unavailability of health insurance act as a marginal incentive for persons to enlist in the U.S. Army?" Within a cost-benefit framework, the present study provides insight into this issue. The empirical analysis includes a variety of control variables and takes the form of a state-level panel data study for the years 2003 through 2007, the most recent years to date for which all of the variables in the model are available and dependable. The six PLS and one 2SPLS results demonstrate, among other things, that the greater the percentage of the civilian population without health insurance, the greater the rate of enlistment in the U.S. Army. One logical implication of this finding would be that if universal health care were implemented across the U.S. as a whole, as would be the case under HR 3200 and the variations thereof being considered by Congress, other things held constant, it would have a deleterious impact on the U.S. army enlistment rate and, presumably, on enlistment in all branches of the military. To the extent that this conclusion holds, additional incentives to increase enlistment would be necessitated in order to maintain the desired/required levels of military personnel.

References

Bharmal, M., & Thomas, J. III. (2005). Health insurance coverage and health-related quality of life: analysis of 2000 medical expenditure panel survey data. *Journal of Health Care for the Poor and Underserved,* 16 (4), pp. 643-654.

Cebula, R.J. (2006). A further analysis of determinants of health insurance coverage. *International Advances in Economic Research,* 12 (3), pp. 382-389.

Cebula, R.J., Menon, S., & Menon, M. (2008). Military enlistment: a panel data set analysis. 2003-2005, 8 (3), pp. 9-16.

Chirikos, T.N. (1998-99). Further evidence that hospital production is inefficient. *Inquiry*, 35 (4), pp. 408-416.

Cutler, D.M. (1994). A guide to health care reform. *Journal of Economic Perspectives*, 8 (3), pp. 13-29.

Daniels, M.J., & Gatsonis, C. (1999). Hierarchical generalized linear models in the analysis of variations in health care utilization. *Journal of the American Statistical Association*, 94 (445), pp. 29-42.

Dushi, I., & Honig, M. (2003). Price and spouse's coverage in employee demand for health insurance. *American Economic Review Papers and Proceedings*, 93 (2), pp. 252-256.

Frick, K., & Bopp, A. (2005). Poverty, insurance theory and the medically uninsured. *Atlantic Economic Journal*, 33 (4), pp. 575-585

Given, R.S. (1996). Economies of scale and scope as an explanation of merger and output diversification in the health maintenance organization industry. *Journal of Health Economics*, 15 (4), pp. 685-713.

Glied, S. (2003). Health care costs: on the rise again. *Journal of Economic Perspectives*, 17 (2), pp. 125-148.

Goodman, A.C., & Stano, M. (2000). HMOs and health externalities: a local public good perspective. *Public Finance Review*, 28 (3), pp. 247-269.

Gruber, J. (2003). Evaluating alternative approaches to incremental health-insurance expansion. *American Economic Review Papers and Proceedings*, 93 (2), pp. 271-276.

Harris, K.M., & Keane, M.P. (1999). A model of health plan choice: Inferring preferences and perceptions from a combination of revealed preference and attitudinal data. *Journal of Econometrics*, 89 (1-2), pp. 131-157.

Iraq Coalition Casualties Count Database. (2008). Fatalities data. [Online] Available: http://icasualties.org/oif/ (accessed March 15, 2009)

Jordan, W.J. (2001). An early view of the impact of deregulation and managed care on hospital profitability and net worth. *Journal of Healthcare Management*, 46 (1), pp. 161-71.

Karsten, S.G. (1995). Health care: private good vs. public good. *The American Journal of Economics and Sociology*, 54 (2), pp. 129-144.

Kleykamp, M. A. (2006). College, jobs, or the military? Enlistment during a time of war. *Social Science Quarterly*, 87 (2), pp. 272-290.

Kronick, R., & Gilmer, T. (2002). Insuring low-income adults: does public coverage crowd out private?" *Health Affairs*, 21 (1), pp. 225-239.

National Priorities Project Database. (2008). Recruiting data. [Online] Available: http://nationalpriorities.org/ (accessed March 10, 2009)

Newhouse, J.P. (1994). Symposium on health care reform. *Journal of Economic Perspectives*, 8 (3), pp. 3-11.

Nyman, J. (2003). The theory of demand for health insurance. Stanford, CA: Stanford University Press.

Okunade, A. A. (2003). Are factor substitutions in HMO industry operations cost saving?. *Southern Economic Journal*, 69 (4), pp. 800-821.

Okunade, A.A. (2001). Cost-output relation, technological progress, and clinical activity mix of U.S. hospital pharmacies. *Journal of Productivity Analysis*, 16 (1), pp. 167-193.

Olsen, R.N. (1996). The reform of medical malpractice law: historical perspectives. *The American Journal of Economics and Sociology*, 55 (3), pp. 257-275.

Seeborg, M. C. (1994). Race, poverty and enlistment: some evidence from the National Longitudinal Survey of Youth. *The Journal of Economics*, (1), pp. 15-24

Segal, D. R., Bachman, J.G., Freedman-Doan, P., & O'Malley, P. (1999). Propensity to serve in the U.S military: secular trends and sub-group differences. *Armed Forces and Society*, 25 (3), pp. 407-427.

Swartz, K. (2001). Markets for individual health insurance: can we make them work with incentives to purchase insurance? *Inquiry*, 38 (2), pp. 133-145.

Swartz, K. (2003). Reinsuring risk to increase access to health insurance. *American Economic Review Papers and Proceedings*, 69 (2), pp. 283-287.

Tollison, R. (1970). The political economy of the military draft. *Public Choice*, 10 (1), pp. 67 78.

Tollison, R., Amacher, R., Miller, J., Pauly, M., & Willett, T. (1973). The economics of the military draft. Morristown, NJ: General Learning Press.

U.S. Census Bureau. (2004). Statistical abstract of the United States, 2004. Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau. (2005). Statistical abstract of the United States, 2005. Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau. (2006). Statistical abstract of the United States, 2006. Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau. (2007). Statistical abstract of the United States, 2007. Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau. (2008). Statistical abstract of the United States, 2008. Washington, D.C.: U.S Government Printing Office.

Warner, J. T., Simon, C. J., & Payne, D.M. (2003). The military recruiting productivity slowdown: the roles of resources, opportunity cost, and the tastes of youth. *Defense and Peace Economics*, 14 (4), pp. 329-342

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48 (3), pp. 817-838.