
Incarceration Among Male Veterans: Relative Risk of Imprisonment and Differences Between Veteran and Nonveteran Inmates

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Abstract

Using data from national surveys of jail and prison inmates conducted in 2002 and 2004, the authors found that male veterans in the age group that entered military service in the early years of the All Volunteer Force (AVF) were at greater risk of incarceration than nonveterans of similar age and ethnicity, whereas veterans who enlisted in later years of the AVF had less risk of incarceration than nonveterans. Although White veterans tend to have greater risk of incarceration than nonveteran Whites, Black and Hispanic veterans were at less risk than their nonveteran peers, although they are at greater risk than White veterans. These patterns are best explained by changes over time and in differential effects across racial/ethnic groups of recruiting practices, accession standards, and in civilian employment opportunities rather than combat trauma or other adverse experiences in the military. For example, reductions in the relative risk for incarceration of veterans during the AVF appear to generally result from increases in recruit qualifications and socioeconomic status due to greater military pay, improved skill in recruiting, and higher accession standards.

Keywords

veterans, incarceration, race, ethnicity, cohort, mental health

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Since the Vietnam War, there has been increasing concerns about the impact of military service and, especially, combat exposure on the well-being of veterans. One possible negative outcome of military service is an increased risk for incarceration. Veterans may be at greater risk of incarceration than the general population as a result of mental health conditions such as posttraumatic stress disorder (PTSD), substance abuse, and other psychiatric disorders (Boivin, 1987; McGuire, Rosenheck, & Kaspro, 2003; Pentland & Dwyer, 1985; Saxon et al., 2001; Shaw, Churchill, Noyes, & Loeffelholz, 1987). In addition, some studies suggest that greater exposure to combat is associated with a higher frequency of violent acts, expressed hostility (Boulanger, 1986; Egendorf, Kadushin, Laufer, Rothbart, & Sloan, 1981; Kulka et al., 1990), and antisocial behavior (Fontana & Rosenheck, 2005), which may increase the risk of incarceration. An estimated one fifth of incarcerated veterans report past exposure to combat (Saxon et al., 2001), and some studies suggest that incarcerated veterans are more likely to have been involved in combat than nonincarcerated veterans (Boivin, 1987).

An often-ignored factor that may better explain variation in the risk of incarceration across veteran cohorts than any direct effect of military service is changes in military accession, that is, who joins the military. The characteristics of military enlistees are determined by who applies or is drafted as well as by accession standards (who is allowed into the military). Due to changes over time in recruiting conditions and practices (especially the advent of the All Volunteer Force [AVF] in 1973), there is considerable variation across cohorts in enlistee characteristics. Characteristics of the draft, during World War II and the Korean War resulted in enlistees from these eras being more representative of the population of draft-eligible young men (Gamache, Rosenheck, & Tessler, 2001) than subsequent cohorts. In contrast, the Vietnam era cohort drew on a relatively modest percentage of the large baby-boom generation, and there is some evidence that deferments and exemptions allowed better educated and economically advantaged men to avoid service (Angrist & Krueger, 1994; Cohaney, 1992; Small, 1999). There were recruitment difficulties, following the Vietnam War (i.e., during the early years of the AVF), caused by the unpopularity of military service, a lack of pay comparability with civilian jobs, an improving civilian job market, and the loss of GI bill (Servicemen's Readjustment Act of 1944) benefits in 1976. As a result of these factors, enlistees during the early years of AVF were of lower socioeconomic status, were less likely to be high school graduates, had lower intellectual aptitude test scores, and were more likely to have problems with substance abuse than their age-matched peers (Bray et al., 1986; Cahalan, Cisin, Gardner & Smith, 1972; Cooper, 1977; Kim, Nestel, Phillips, & Borous, 1980; Laurence, Ramsberger, & Gribben, 1989; Office of the Assistant Secretary of Defense for Personnel and Readiness [OASDPR], 1990; Polich, 1981).

Accession standards may have significantly affected the characteristics of veteran cohorts in a manner that parallels the above trends. Although there were very large man power needs during World War II, a relatively high proportion of men examined for induction were rejected (35.8%) for such reasons as dental defects, eye defects,

mental illness, and education deficiency. In contrast, during the Vietnam War and the early AVF, the military had difficulty in implementing accession standards. For example, during the Vietnam War, Secretary of Defense Robert McNamara implemented Project 100,000, one purpose of which was to recruit disadvantaged youth so as to better prepare them for later civilian employment. As a result, the 354,000 men who enlisted through this program between October 1966 and December 1971 were in comparison to other recruits much less likely to be high school graduates, had much lower scores on mental and aptitude tests, and were more likely to have disciplinary problems (Mahmoud, Clark, & May, 2003; Rostker, 2006). In addition, audits during the early and mid-1970s found that a high proportion of recruiters engaged in activities that avoided accession standards altogether, such as not thoroughly conducting medical examinations and police checks or coaching recruits on entrance examinations and tests (Rostker, 2006). Between 1977 and 1980, the Armed Forces Qualification Test was also misnormed, resulting in the enlistment of a large number of recruits of low ability who normally would not have been allowed to enlist (Hogan, Simon, & Warner, 2004; Rostker, 2006; White, 2004).

In the 1980s, the military began to address these problems (Rostker, 2006; Thurman, 1996; White, 2004). In 1980, congress mandated clear standards with respect to educational qualifications and aptitude tests (Armor & Sackett, 2004; OASDPR, 1999, 2003) and the military implemented a "zero tolerance" policy toward illicit drug use, screening out active drug users and reducing drug use among active duty military personnel (Bachman, Freedman-Doan, O'Malley, Johnston, & Segal, 1999; Department of Defense, 1997). Most importantly, from the 1980s until the recent Iraq and Afghanistan conflicts, the military appears to have significantly toughened accession standards with respect to academic and other qualifications (Armor & Sackett, 2004; OASDPR, 1999, 2003). In addition, the proportion of recruits with criminal backgrounds who were given waivers so they could enlist also decreased from 16.9% in the early 1980s to 8.9% in the mid-1990s, although not monotonically (General Accounting Office, 1999; Means, 1983).

Variability in recruiting patterns and accession standards raises the possibility that veterans in cohorts who were recruited during periods in which many enlistees were poorly qualified and tended to be of lower socioeconomic status would be at greater risk of incarceration than other cohorts following their military service. For example, the qualifications of personnel who volunteered for military service during early periods of the AVF were lower on average than those who enlisted during the later AVF because of improved recruiting conditions, more stringent accession standards, greater funding of recruiting activities, and increased pay and benefits (Dorn, 1996; Eitelberg, 1996; Hogan et al., 2004; OASDPR, 1990, 2004; Rostker, 2006; White, 2004). These changes might suggest that the earliest AVF cohort would be at a higher risk of incarceration when they became veterans than later AVF cohorts.

In this study, we used data from several national data sets to calculate the proportion of veterans among incarcerated men and among men in the general population as well as the relative risk of incarceration of male veterans as compared with nonveterans,

stratified by age and race/ethnic subgroups. We also examined the degree to which there was a greater prevalence of risk factors for incarceration among incarcerated veterans as contrasted to incarcerated nonveterans. These risk factors include age, health status (mental and substance dependence or abuse), past criminal justice system involvement, socioeconomic characteristics, and exposure to trauma. Such a comparison allows for an implicit investigation of the degree to which incarcerated veterans and nonveterans differ in characteristics that may be associated with their incarceration.

Method

Data Sources

The data presented here are derived from the 2000 Decennial Census, the 2002 Survey of Inmates in Local Jails, and the 2004 Survey of Inmates in State and Federal Correctional Facilities (Census Department, 2003; U.S. Department of Justice, Bureau of Justice Statistics [BJS], 2006, 2007b). Two files were extracted from the 2000 Decennial Census. The first included data on age, race, and gender of all U.S. veterans, whereas the second contained comparable data on adult, male nonveterans. Both extracts also included a variable that was used to weight the surveyed cases so as to generate estimates of the total U.S. population. All individuals in these two extracts were 17 years or older. In order that the age of individuals analyzed in the census data matched that of those of the inmate sample, 17- and 18-year olds were removed from the two census extracts. Thus, we began with an estimated general population of 189,724,726 in 2000 of individuals 17 years and older that was reduced to 75,253,678 by the exclusion of women and individuals younger than 19 years. These exclusions reduced the total veteran population for analyses from 26,568,966 to 24,965,550, 33% of U.S. males 19 years and older.

Jail surveys. The inmate surveys were carried out by the Bureau of the Census for the Department of Justice (DOJ; U.S. Department of Justice, BJS, 2006, 2007b) to provide nationally representative data on inmates. The Survey of Inmates in Local Jails interviews were conducted from January through April 2002 (U.S. Department of Justice, BJS, 2006), whereas the 2004 Survey of Inmates in State and Federal Correctional Facilities was conducted from October 2003 through May 2004 (U.S. Department of Justice, BJS, 2007b).

The sample design for the Survey of Inmates in Local Jails was a stratified two-stage selection with jails selected first and then inmates chosen from those in the selected jails. Jails were divided into six strata based on the size of the male, female, and juvenile populations in each jail. All the jails from the first two strata were selected as follows: (a) 38 jails containing more than 40 juvenile inmates and various adult populations and (b) 191 jails with more than 1,500 adult, male inmates or more than 75 adult, female inmates and 40 or fewer juvenile inmates. A total of 231 more jails were selected from 3,136 jails in the remaining strata. Although the jails in each strata

differed in size, roughly equal numbers of jail inmates were in the jails selected from each strata, making a total sample of 465 jails. Interviews were conducted in only 417 of the jails because 39 refused and 9 were closed.

In the second stage of sample selection, 7,750 jail inmates were randomly selected from a list provided by each jail—1 in every 92 males, 1 in every 27 females, and 1 in every 12.6 juvenile inmates. A total of 6,982 interviews were completed because 263 inmates refused to participate, 407 inmates were released after sampling, and 98 inmates could not be interviewed due to medical, security, or other administrative reasons. The second stage non-response was 9.9% and from both stages the non-response was 15.9%.

State and federal prisons surveys. The sample design for the 2004 Survey of Inmates in State and Federal Correctional Facilities was also a stratified two-stage selection with sample selection involving several steps. First, the 14 largest prisons with male inmates and the 7 largest prisons with female inmates were selected from the 1,758 state prisons in 2000 Census of State and Federal Correctional Facilities (CSFCF) data file. A list of the remaining state prisons was stratified by census region. The prisons within each stratum were ordered by the size of their population. Using selection based on probability, 211 additional prisons with male inmates and 58 additional prisons with female inmates were selected.

Additional prisons were selected from a file containing data on facilities that were opened between completion of the 2000 CSFCF and April 1, 2003. Of the 36 prisons, an additional 6 prisons with male inmates and 1 prison with female inmates were selected using the same techniques for selecting prisons that were in the 2000 CSFCF data file.

A total of 40 federal prisons were chosen in an analogous manner with the only difference being that federal prisons were first stratified by security level rather than by region (for further details, see U.S. Department of Justice, BJS, 2007b). Of the 1,947 U.S. prisons, 327 (287 state and 40 federal) participated in the study. Fifteen selected prisons did not participate for various reasons, such as they were closed after selection or no longer housed the sex of the inmate for which they had been chosen.

In the second stage of sample selection, inmates in state prisons were randomly selected from a list provided by each prison. The total number of prisoners selected at each state prison was based on prison size and the gender of the prison inmates. A total of 13,098 males and 3,054 females (out of 1,115,853 male and 77,404 female inmates) were randomly sampled from state prisons. For federal prisons, the sample was drawn in two stages so as to make sure that nondrug offenders would be included in the sample in large enough numbers to be analyzed. First, an oversample of inmates was randomly selected from a central list using a random start and a predetermined sample interval. Next, from these inmates, one in every three drug offenders and all the non-drug offenders were selected, resulting in a sample of federal prisoners that consisted of 3,347 males and 1,009 females. Interviews were completed for 14,499 state inmates and 3,686 federal inmates. All interviews were an hour long and based on computer-assisted personal interviewing. Inmates were assured of confidentiality (for further details, see U.S. Department of Justice, BJS, 2006, 2007b).

Weighting. Each survey was weighted to account for sampling design, for nonresponses, so that the sum of all sample weights would equal the total number of inmates represented by the survey sample (i.e., the number of inmates imprisoned in a particular type of facility). Thus, the sum of all sample weights for the jail survey was 631,241, the total number of inmates in local jails in 2001. The total sample weight for the survey of state prisoners was 1,226,175, the number of inmates in state correctional facilities at the end of 2003, whereas the total sample weight for the survey of federal inmates was 129,299, the number of federal inmates on January 3, 2004. We then proportionally down weighted each of the three samples so that our statistical tests would not be overly sensitive to the large weighted population. A new weight measure was created for each sample by dividing the existing final weight by the average number of inmates represented by each case (i.e., $631,241 / 6,982 = 90.41$ for jail inmates, $1,226,175 / 14,499 = 84.6$ for state inmates, and $129,929 / 3,686 = 35.2$ for federal inmates). State and federal inmate samples were then combined.

Since the 2002 Survey of Inmates in Local Jails was conducted 2 years after the U.S. Census, 2 years were subtracted from the ages of jail inmates so as to represent their age in 2000 and maintain comparability with census data. Similarly, 4 years were subtracted from inmates' ages on the 2004 Survey of Inmates in State and Federal Facilities.

After the removal of individuals below 19 years and all women, 4,025 cases were available from the 2002 Survey of Jail Inmates, representing a population of 477,921 male jail inmates older than 18 years of whom 56,765 (11.9%) were veterans. Altogether, 12,986 cases were available from the 2004 Survey of State and Federal Inmates, representing a population of 1,136,972 male state and federal inmates older than 18 years, of whom 136,389 (12.0%) were veterans. The final sample thus represented the entire incarcerated adult male population of the United States with the exception of individuals incarcerated in military prisons.

Measures

Two sets of dichotomous measures addressing age and race/ethnicity were used for both the analysis of relative risk of incarceration among veterans and for the comparison of veterans and nonveterans on socioeconomic and clinical characteristics.

Age and service era. Age was summarized in six categories as follows: 19 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, and 65 and older. These age categories were constructed to represent the highest proportion possible of veterans who served in the following specific service periods: the World War II and Korean eras (1955 and earlier), Interwar (1956-1965), Vietnam (1966-1975), early AVF (1976-1985), mid-AVF (1986-1995), and recent AVF (1996-2003). We based this categorization on the assumption that veterans were typically 19 years of age on average when they enlisted and that the years of each official service era were as follows: World War II from 1940 to 1947, the Korean War from 1950 to 1955, the Vietnam era from 1964 to 1975, and the first two decades of the AVF following 1973 (early and middle period) plus the most recent 9 years, 1996-2003 (late period). These cohorts were based on the time of the last census, that

is, 2000, and not on the year the inmate surveys occurred or the publication year of this article. Thus, for example, individuals who were 19 to 24 years old in the year 2000 (the year of the census) would have been born between 1976 and 1981 and on average would have enlisted between 1995 and 2000, the most recent period of the AVF. For some cohorts, the enlistment periods slightly differed from the specified service eras.

Race and ethnicity. Two rules were used to classify individuals as Black, White, Other, or Hispanic so as to create four dichotomous indicators of racial/ethnic identity. First, respondents who reported more than one racial category or who did not report being Black, White, or Hispanic were classified as "Other." Second, Hispanics, regardless of their racial category, were classified as Hispanic.

Socioeconomic characteristics. A series of dichotomous measures were created using the inmate survey data to represent marital status, employment status prior to arrest, veteran status, as well as education (at least a high school degree or General Educational Development [GED]) and earnings of greater than a US\$1,000 per month prior to arrest. We used one dichotomous measure of income rather than a continuous measure or several dichotomous measures because there was only one categorical measure of income in each of the inmate files and the two measures had different scales. A cutoff of US\$1,000 was used because it was the amount closest to the median that existed for both measures. An additional dichotomous measure represented whether the inmate reported a period of homelessness in the year prior to incarceration. For jail inmates, the period of prior incarceration at the time of the interview was represented by a dichotomous indicator of whether the inmate had been in jail less than 1 month, whereas for federal and state inmates four dichotomous indicators were used to represent quartiles of prison tenure: less than 263 days, 263 to 774 days, 775 to 1,936 days, and greater than 1,936 days.

Mental health and substance abuse. Five dichotomous measures used self-reported symptoms to assess problems with substance abuse and mental illness. One measure was based on whether each inmate currently reported a cluster of symptoms that indicated difficulty with drug abuse or dependence and another on whether they reported a cluster of symptoms that suggested problems with alcohol abuse or dependency. Three additional measures were created that indicated whether inmates reported clusters of symptoms associated with depression, mania, or psychosis. The symptom items that make up each measure come from a modified structured clinical interview for the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) that is included in the DOJ surveys. These measures were constructed using algorithms (see Table 1 for details) developed by the DOJ to approximate *DSM-IV* diagnoses (James & Glaze, 2006). These measures do not represent clinical or research diagnoses because the DOJ surveys do not assess the severity or duration of the symptoms or the distress they cause, and no exclusions were made for symptoms due to medical illness, bereavement, or substance abuse. In addition, the clusters of items that make up several measures somewhat differ from the sets used for *DSM-IV* measures.

Three additional measures reflected mental health service use in either the year prior to the arrest for which the individual was incarcerated or since incarceration: (a) treatment in a mental hospital or other treatment program, (b) receipt of psychotropic

Table 1. Measures

Scale	Items
Mania	<p>Persistent anger or irritability (lost your temper easily, have been angry more often, or hurt or broken things on purpose because angry) <i>or all of the following symptoms:</i> Diminished ability to concentrate or think Psychomotor agitation or retardation <i>or</i> increased or decreased pleasure in activities (periods when felt talked or moved more slowly than usual or periods when could not sit still <i>or</i> a change in activity level or change in sex drive) Changes in time spent sleeping</p>
Depression	<p>Feelings of emptiness/numbness <i>or</i> Change in activity levels <i>along with three of the following eight additional symptoms:</i> Feeling of emptiness/numbness Change in activity levels Changes in time spent sleeping Change in appetite Psychomotor agitation or retardation (periods when felt talked or moved more slowly than usual or periods when could not sit still) Feelings of worthlessness (given up hope in last year for your life or future or experienced periods in which you felt like no one cared about you) Diminished ability to concentrate or think Attempted suicide</p>
Psychoses	<p><i>One of the following:</i> Delusions (felt that others were able to control brain/thoughts, felt that others could read mind, or felt that others, besides the corrections staff, have been spying or plotting against them) Hallucinations (seen things others deny seeing or heard things others deny hearing)</p>
Drug dependence or abuse ^a	<p>In the year before incarceration one of the first four listed symptoms or three or more of the seven following symptoms: (1) Got into situations while using drugs that increased chances of getting hurt (2) <i>Drugs created interpersonal problems as indicated by one of the following three symptoms^b:</i> (a) had arguments under the influence of drugs, (b) had physical fights while using drugs, or (c) used drugs even though causing problems with family, friends, or work (3) <i>Drugs causing performance failure as indicated by one of the following three symptoms:</i> (a) lost a job because of drug use, (b) have trouble at school or job because of drug use, or (c) drug use prevented from attending important activities (childcare, school, or work).</p>

(continued)

Table 1. (continued)

Scale	Items
	(4) Drug use caused arrest or being held at a police station
	(5) Had to take more of a drug to get the same effect
	(6) <i>Problems with withdrawal as indicated by either (a) experienced such withdrawal effects as shaking, nausea, sweating, restlessness, and so on or (b) Kept using drugs to get over any of the bad aftereffects of drug use</i>
	(7) Gave up activities interested in or important to you to use drugs
	(8) <i>Drugs caused either (a) emotional problems or (b) physical problems</i>
	(9) Spent a lot of time getting drugs, using them, and getting over bad aftereffects
	(10) More than once wanted to cut down on drug use but found could not
	(11) Used drugs for longer periods or larger amounts than intended

Note: Scales are based on a Bureau of Justice Statistics special report that used the 2002 Survey of Inmates in Local Jails and personal conversations with the authors of this article (James & Glaze, 2006).

^aAlcohol dependence and abuse scale parallels the drug dependence and abuse scale.

^bFor the drug dependence and abuse scale, italics indicates multiple items were used to address a symptom.

medications, or (c) receipt of professional counseling. A measure was also created to indicate whether the inmate had been told that he or she had a mental health diagnosis within the past year.

Trauma. Several measures were also created to indicate whether the inmate had ever experienced trauma, including being shot at (excluding military combat), attacked with a knife or other sharp object, sexually abused, or physically abused. Two additional variables addressed whether the inmate had been physically or sexually abused as a minor.

Crime. Five measures were used to indicate the type of current controlling offense (i.e., reason for the current incarceration): violence, property, drug use, public disorder, or other. The surveys designate one offense for each inmate as the "controlling offense." If an inmate is incarcerated for multiple offenses, the controlling offense is the crime that results in the longest or most severe maximum sentence. For state and federal inmates, similar dichotomous measures were used to classify past offenses (i.e., whether they had been arrested, sentenced to probation, or served time for these types of offenses), whereas for jail inmates, two dichotomous measures were used to indicate the commitment of violent and nonviolent offenses.

Analyses

We conducted two types of analyses. First, we investigated the degree to which veterans in various age and racial/ethnic groups were at risk for incarceration in jail or prison as compared with their nonveteran peers, and second, we examined the degree

to which various risk factors differentiated incarcerated veterans from incarcerated nonveterans. For the first analyses, we combined the jail and prison data to create a combined data set of all male inmates in the United States.

There were several steps in the analyses of relative risk in the combined inmate sample (i.e., men either in jails and prisons). First, for descriptive purposes, we calculated the percentage of all veterans who were in jails and prisons for each age–race/ethnicity category. Next, we determined the percentage of veterans among inmates and separately among men in the general population by age and race/ethnicity. Last, we calculated the risk ratio for each age–race/ethnicity category, that is, the ratio of the proportion of prisoners who were veterans to the proportion of inmates who would be expected to be veterans given their representation in the general population. Ratios higher than 1 indicate more veterans in prison than might be expected based on the proportion in the general population. A two-sided score test distributed on a standard normal distribution was then used to determine whether the risk ratio was significantly different from 1 (Rothman, 1998).

In the second type of analyses, multivariate logistic regressions were used to compare incarcerated veterans and nonveterans for the prevalence of various risk factors, that is, to calculate odds ratios (ORs) for these risk factors. Because of some differences in the variables available from the two data sets, two models, one for jail inmates and the other for state and federal inmates, were used to evaluate the association of veteran status with measures of criminal justice system involvement, clinical status, mental health service use, socioeconomic characteristics, and trauma. Age was represented in the model by categorical variables representing four age categories—19 to 24, 25 to 34, 35 to 44, and with age 45 and older as the reference condition. Forward stepwise selection of variables was used. The criterion for entry into the models was $p < .05$, and for removal, it was $p > .05$. Statistical modeling was done with the procedure PROC LOGISTIC of the SAS[®] software system (SAS Institute, Cary, NC) version 8.0. Dichotomous indicators of membership in the Black, Hispanic, and other racial and ethnic groups were forced into the models so that the reference group in both models was White.

Results

Veteran Incarceration Rate

Rates of incarceration generally declined with age in all race/ethnic groups with some relatively minor deviations from the monotonic trend (Table 2). Black veterans were far more likely to be incarcerated than veterans of other racial/ethnic groups, with incarceration rates that were two to four times those of Whites. Hispanic veterans were also more likely to be incarcerated than White veterans.

Proportion of Veterans in Federal and State Prisons and the General Population

The top two panels of Table 3 show the proportion of veterans among age–race/ethnic categories of incarcerated men and among men in the general population. There is a

Table 2. Percentage of Male Jail and Prison Inmates Among U.S. Veterans by Age and Race in 2000

Race/ethnicity	Age					
	19-24 (%)	25-34 (%)	35-44 (%)	45-54 (%)	55-64 (%)	65 and more (%)
Whites	3.01	1.22	1.75	0.59	0.27	0.04
Blacks	5.86	5.51	5.99	2.73	0.73	0.06
Hispanic	2.07	1.38	2.42	1.27	0.28	0.04
Other	2.44	3.58	4.12	1.53	0.82	0.12
All males	3.25	2.01	2.63	0.88	0.32	0.04

substantial increase by age in the percentage of men who are veterans among inmates and in the general population, reflecting the large percentage of men who served in World War II and during the Korean and Vietnam conflicts.

Veterans' Actual to Expected Rate of Incarceration

The bottom panel of Table 3 shows the risk of incarceration among veterans as compared with nonveterans computed as the ratio of the percentage of prisoners who are veterans to the proportion expected from their representation in the general population, for each age–race/ethnic category. A significantly greater proportion of White veterans aged 19 to 24 years and between 35 and 64 years was incarcerated than would be expected from the proportion of veterans in the general population (risk ratios of 1.89, 1.65, 1.24, and 1.21, respectively). In contrast, the risk ratio for White veterans aged 25 to 34 years, the later period of the AVF, was significantly less than expected at 0.86. Similarly, for all four cohorts for which we had adequate data, veterans classified as “of other ethnicity” were significantly more likely to have been incarcerated than their peers with relatively high risk ratios ranging from 1.59 to 2.26.

In contrast to Whites and veterans classified as Other, risk ratios for all Hispanic and Black cohorts were below 1. The risk ratios for all five Black cohorts were statistically significantly below 1, reflecting a reduced risk of incarceration as compared with Black nonveterans. Hispanic veterans aged 25 to 34 years were also statistically significantly less likely to be incarcerated than expected, with a risk ratio of 0.44.

Combining all racial/ethnic groups together, veterans in the 35 to 44 years age group (the immediate post–Vietnam era veterans) had a greater risk of incarceration than expected (1.33), whereas veterans in the 25 to 34 years age group (the later period of the AVF) were incarcerated at a significantly less-than-expected rate (0.71). Risk ratios for the other combined age cohorts did not significantly differ from 1.

Inmate Characteristics Associated With Veteran Status

For these analyses, stepwise multivariate logistic regressions were used. Thus, only those measures with a $p < .05$ are presented in Table 4 and discussed here. The results

Table 3. Percentage of Male Jail and Prison Population and the General Population That Are Male Veterans as Well as the Relative Risk Ratio of Being Imprisoned in Jail and Federal Prisons for Veterans as Compared With Nonveterans

Race/ethnicity	Age					
	19-24	25-34	35-44	45-54	55-64	65 and more
Percentage of jail and prison population ^a						
Whites	5.4%	8.7%	21.8%	39.8%	55.9%	68.4%
Blacks	1.5%	6.4%	17.0%	26.6%	23.5%	
Hispanic	0.9%	1.9%	6.9%	14.8%		
Other		9.1%	20.4%	32.2%	43.6%	
All males	2.4%	6.4%	17.3%	30.8%	40.2%	57.2%
Percentage of general population						
Whites	2.8%	10.1%	13.2%	32.1%	46.3%	69.2%
Blacks	2.7%	11.9%	19.7%	31.0%	33.8%	50.2%
Hispanic	1.6%	4.4%	7.6%	16.1%	20.4%	31.8%
Other	2.1%	5.7%	9.0%	18.2%	24.0%	35.8%
All males	2.5%	9.0%	13.0%	29.7%	42.1%	64.3%
Risk ratio ^b						
Whites	1.89**	0.86*	1.65**	1.24**	1.21**	0.99
Blacks	0.56**	0.54**	0.86**	0.86**	0.70*	
Hispanic	0.60	0.44**	0.91	0.92		
Other		1.59*	2.26**	1.77**	1.82*	
All males	0.98	0.71**	1.33**	1.04	0.96	0.89

^aBlank spots indicate that percentages were based on counts that were too low to be meaningful.

^bBlank spots indicate that the expected value for the number of veterans in prison or the total number of prisoners minus the expected number of veterans in prison was 5 or below. For the estimated z score and significance level to be meaningful these values must be above 5.

* $p < .05$. ** $p < .001$.

indicate that the largest differences between veterans and nonveterans were in socioeconomic characteristics. In particular, veterans in both jails and prisons were far more likely to be older than 44 years, as compared with nonveterans, and White and had several other socioeconomic differences. They were more likely to have a high school degree or a GED (OR of 5.9 and 5.1, respectively), to have had incomes greater than US\$,1000 a month (OR = 1.5 for jail inmates and 1.4 prison inmates), and were less likely to be among the longest tenured inmates (OR = 0.74).

Although veterans in jails were no more or less likely to report having mental health or substance abuse problems, or to use mental health services than nonveterans, veterans in state and federal prisons were significantly more likely (a) to report receiving a diagnosis of mental illness in the previous year (OR = 1.4), (b) to report at least one night in a mental hospital either in the year before arrest or since incarceration (OR = 1.5), or (c) to have received professional counseling in the year before arrest or since incarceration (OR = 1.2).

Table 4. Inmate Characteristics Associated With Veteran Status

	Jail inmates		State and federal prisoners	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
	<i>n</i> = 3,828		<i>n</i> = 10,824	
Socioeconomic characteristics				
Age 19 to 24 (reference age 45 and older)	0.054	[0.036, 0.082]	0.048	[0.036, 0.063]
Age 25 to 34 (reference age 45 and older)	0.11	[0.080, 0.15]	0.14	[0.12, 0.16]
Age 35 to 44 (reference age 45 and older)	0.45	[0.35, 0.59]	0.40	[0.35, 0.47]
Black	1.00	[0.80, 1.26]	0.88	[0.77, 1.00]
Other	0.51	[0.30, 0.86]	1.06	[0.86, 1.32]
Hispanic	0.50	[0.35, 0.74]	0.30	[0.24, 0.38]
High school degree or GED	5.9	[4.3, 8.0]	5.14	[4.22, 6.27]
Income greater than US\$1000 a month	1.5	[1.2, 1.8]	1.38	[1.21, 1.56]
Tenure in jail: greater than 936 days (4th quartile)			0.74	[0.64, .85]
Mental health and substance abuse				
Mental health diagnosis this year			1.29	[1.03, 1.62]
Night stay in a mental health hospital			1.37	[1.04, 1.81]
Professional counseling			1.21	[1.00, 1.47]
Trauma				
Ever physically abused	2.1	[1.6, 2.8]	1.33	[1.12, 1.58]
Ever attacked with a knife or sharp object	1.6	[1.3, 2.0]		
Crime				
Controlling offense is violent			1.35	[1.18, 1.54]
Controlling offense is drug	0.62	[0.47, 0.82]		
Past nonviolent offense exists	0.56	[0.44, 0.72]		[Not applicable]
Past violent offense exists	0.60	[0.46, 0.78]	0.83	[0.73, 0.95]
Past property offense		[Not applicable]	0.70	[0.62, 0.79]
Past drug offense		[Not applicable]	0.75	[0.65, 0.87]

Note: GED = General Educational Development. A stepwise reentry was used for these analyses. Thus, only those measures with a $p < .05$ were included in these models and presented in this table.

Veterans in jail and prisons were more likely to report having been the victim of physical abuse as a child or adult (OR of 2.1 and 1.3, respectively) and veterans in jail were more likely than nonveterans to report having been knifed (OR = 1.6).

Veterans in jails and prisons were less likely than nonveterans to report a past criminal history. Specifically, veterans in jail were significantly less likely to have reported committing either a nonviolent or violent offense in the past (OR = 0.56 and 0.60, respectively), whereas veterans in prison were significantly less likely to have reported

a past violent offense (OR = 0.83), property offense (0.70), or drug offense (0.75). Veterans in jail were also less likely to have reported that their controlling offense was a drug crime (OR = 0.62). In contrast to their limited criminal history, veterans in prison were more likely to report that their controlling offense was violent (OR = 1.35).

Discussion

This study examined the relative risk of incarceration among veterans as compared with nonveterans through a comparison of the proportion of veterans in age and race/ethnic subgroups of imprisoned men and among men in the general population. It also compared incarcerated veterans with nonveterans for the presence of various risk factors for incarceration. As with an earlier study (Greenberg, Rosenheck, & Desai, 2007), this study found that veterans who served during the early years of the AVF were significantly more likely to be incarcerated than their nonveteran peers and that Vietnam era veterans were not at a higher risk than their nonveteran peers for incarceration. These findings suggests that patterns of military recruiting and changes in accession standards rather than exposure to combat are more likely to explain variation in the risk of incarceration across veteran cohorts because veterans who served during the early AVF were much less likely to be exposed to combat than veterans who served during the Vietnam War era. Another finding of interest is that the relative risk of incarceration was much lower for all veterans who served during the middle period of the AVF (i.e., those aged 25-34 years at the time of the survey). This result may reflect improvements in military recruiting and more stringent accession standards in the 1980s and early 1990s as well as generally higher youth unemployment during much of this period (Armor & Sackett, 2004; Bachman et al., 1999; Dorn, 1996; Hogan et al., 2004; OASDPR, 1990, 1999, 2003, 2004; Rostker, 2006; White, 2004). Improvement in the quality of military personnel during the 1980s and 1990s is indicated by greater high school graduation rates and higher scores on the Armed Forces Qualification Tests among recruits as compared with nonrecruits (Dorn, 1996; Hogan et al., 2004; OASDPR, 1990, 2004).

This study also found that Black and Hispanic veterans were at less risk of incarceration than their nonveteran age mates, in contrast to White veterans who were generally at greater risk for incarceration than their nonveteran peers. These results suggest either that the benefits of military service, such as education or training, are greater for Blacks and Hispanics than Whites or that Black and Hispanic veterans, unlike White veterans, were better off than their peers when they entered military service. Military service has been judged to be especially beneficial on average for individuals in racial/ethnic minority groups because it removes them from environments with few resources, may provide better opportunities than civilian employment for upward social mobility, and offers an experience working in a large organization with members of other racial/ethnic groups (Cooney, Segal, Segal, & Falk, 2003; Moskos & Butler, 1997; Phillips, Andrisani, Daymont, & Gilroy, 1992; Quester & Gilroy, 2002). Several studies have

shown that military service is more beneficial for minorities than for Whites with respect to future earnings and job prospects, although these findings seem to be strongest for studies of those who served in World War II and the Korean War (Cooney et al., 2003; Phillips et al., 1992; Treachman & Tedrowm, 2004). Veteran benefits, such as pensions, health care services, and educational assistance, may also be either more helpful to minority veterans or minorities may use them to a greater degree. One large study found that in 1977, White Vietnam era veterans were less well educated than their peers, whereas Black Vietnam era veterans were better educated than their peers primarily because they took greater advantage of their veteran educational benefits (Egendorf et al., 1981).

There is also considerable evidence that selection effects (i.e., who volunteers for or is drafted into military service and accession standards for who is accepted into the military) are likely to at least partially explain the racial/ethnic differences among veterans in their relative risk for incarceration. In the years preceding the Vietnam era (i.e., 1950 to 1966), for example, 54% of Blacks were rejected by the military because of low scores on the Armed Forces Qualification Test, whereas only 19% of Whites were rejected (Egendorf et al., 1981), and in 1981, White recruits were twice as likely as Blacks to have entered military service with a moral waiver (i.e., for past criminal justice system involvement; Binkin & Eitelberg, 1982). During the Vietnam era, the result of such selection processes is that White recruits were poorer than other White males, whereas Black recruits had higher family incomes than comparable Black civilians (Egendorf et al., 1981). A study that used 1987 enlistment data found that Black enlistees were drawn disproportionately from areas where Black family incomes are relatively high. This pattern was reversed for White recruits. This study also found that Black enlistees had better educational qualifications than their Black peers, which was not the case for Whites (Fernandez, 1996). These differences remained in 2002 when more than 95% of all new military recruits (both Whites and minorities) and about 85% of White civilians had either a high school diploma or a GED, as contrasted with only 74% of Black and 60% of Hispanic civilians (OASDPR, 2004). It is important to keep in mind that although these racial and ethnic differences in qualifications and background appear to be associated with a lower relative risk of incarceration among minority veterans as compared with minority nonveterans, Black veterans, especially, were still found to have higher incarceration rates than White veterans, following trends in the general population (U.S. Department of Justice, BJS, 2007a).

Although Black and Hispanic veterans who served in the most recent period of the AVF were at lower risk of incarceration than nonveterans (Blacks significantly), Whites were, as in earlier years, at a higher risk. This result is difficult to explain and may merely be due to the relatively low number of cases available for the youngest cohort of each of these ethnic groups.

It is unlikely to represent the effect of combat in Iraq and Afghanistan because the surveys were conducted in 2002 and 2004, before many Operation Iraqi Freedom and Operation Enduring Freedom service members had been discharged from the military.

Consistent with our analysis of the degree to which veterans in various age and racial/ethnic groups were at risk for incarceration as compared with nonveterans, the results of the multivariate analyses indicated that incarcerated veterans were significantly more likely than nonveteran inmates to be White and older. As discussed above, White veterans were worse off than their nonveteran peers, whereas the opposite was true for minority veterans, particularly Black veterans. We have also seen that improvements in the quality of recruits and subsequently veterans reflected changes in the AVF that resulted in a lower likelihood of incarceration for veterans 25 to 34 years old.

Findings from the multivariate analyses also indicated that after controlling for ethnicity and age, veterans were better off than nonveteran inmates in terms of education and income. These findings likely reflect selection factors associated with recruiting techniques, raised accession standards, and more limited civilian employment opportunities that resulted in the recruitment of better qualified enlistees. Veteran benefits, such as educational assistance, access to free health care, and pensions and compensation for illness and injuries obtained during military service, may also contribute to the difference in income between incarcerated veterans and nonveterans.

Although there were no differences between a jailed veteran and nonveteran on the mental health indicators, veterans in state and federal prisons were more likely than nonveteran prison inmates to have a mental health diagnosis, to have been treated in an inpatient mental health program, and to have received counseling services. These differences are most likely due to measurement factors. The two measures of service use (night stay in a mental hospital and receipt of counseling) address treatment since incarceration and because state and federal prison inmates serve longer periods than jail inmates, they are more likely to have received such services. In addition, the state and federal prison inmate sample is larger than the jail inmate sample. Thus, the results on the three service use measures for federal and state prison inmates may be more sensitive to any differences between veterans and other inmates.

With regard to explaining the significant differences between veterans and nonveterans incarcerated in state and federal prisons on these three measures, we lack the data to discern the degree to which differential access to services rather than differences in the prevalence of mental health disorders explains these results. It is possible that in the year prior to incarceration, veterans had greater access to mental health services than nonveterans because many veterans, particularly poor veterans, qualify for Veteran's Health Administration services. This interpretation would be consistent with our finding that veterans and nonveterans did not significantly differ with respect to the measures that more directly evaluated mental health status, that is, the five measures which used self-reported symptoms to assess problems with substance abuse and mental illness. However, it can also be suggested that while veterans as a group are no more likely to suffer from more mental disorders than non-veterans (Norquist, Golding, & Escobar, 1990), incarcerated veterans are simply less well off than non-veteran inmates with respect to mental health problems and that this disadvantageous characteristic of veterans incarcerated in state and federal prisons outweighs socioeconomic advantages they have in comparison to other inmates. Such an

interpretation of the results would be consistent with earlier research, suggesting that mental health problems are an important risk factor for imprisonment among veterans (Boivin, 1987; McGuire et al., 2003; Pentland & Dwyer, 1985; Saxon et al., 2001; Shaw et al., 1987).

The results regarding controlling offenses for veterans in jails and prisons also differed somewhat from each other across the two samples. Jailed veterans were found to have a lower likelihood than nonveterans of having a violation of a drug law as their controlling offense, a result that may reflect the recent zero tolerance policy toward illicit drug use among military personnel. In contrast, veterans incarcerated in state and federal prisons were more likely than nonveterans to have a violent act as their controlling offense, a finding that is consistent with previous research (Boulanger, 1986; Fisher, 1999; Kulka et al., 1990; Mumola, 2000) and may reflect combat exposure (Boivin, 1987; Card, 1983; Egendorf et al., 1981).

Also of interest is that supplemental analyses showed that there were slight differences in the frequency of violent crimes between veterans and nonveterans. For approximately 7.9% of jailed veterans, the controlling offenses were of a sexual nature, whereas this was only true of 3.3% of jailed nonveterans. With respect to prison inmates, the difference was much smaller (18.4% vs. 17.3%). In addition, imprisoned veterans were slightly more likely than nonveterans to have been guilty of murder (12.2% vs. 9.7%). In contrast, both jailed and imprisoned nonveterans were slightly more likely than veterans to be incarcerated for robbery (5.4% for jailed nonveterans vs. 3.2% for jailed veterans and 12.5% for imprisoned nonveterans vs. 8.6% for imprisoned veterans). Veterans are thus slightly more likely than nonveterans to commit violent interpersonal crimes. There is unfortunately not enough information in the data set to offer an interpretation of these differences.

Several potential limitations of our study deserve comment. First, individuals who were incarcerated in military prisons were not included in our analytic sample. However, the number of such individuals is likely to be relatively small in that in 1998, the most recent year for which we have data, there were only 2,426 military personnel held in military brigades (roughly equivalent to jails in terms of sentence length; BJS Statisticians, 1998). An additional limitation of this study is that we do not have indications for when individuals who have mental health and substance abuse illnesses developed their conditions or when traumas were experienced by individuals. Thus, we were unable to examine the degree to which military service was associated with the development of mental health and substance abuse conditions and the experience of traumas. A third limitation is that measures of only three types of mental disorders, such as depression, mania, and psychosis, are available in the DOJ survey, whereas illnesses, such as PTSD, for which there may have been greater differences between veteran and nonveteran jail inmates, were not documented. Finally, the five measures of mental health and substance conditions we used, although based on *DSM-IV* criteria, did not evaluate all *DSM-IV* criteria. However, clusters of *DSM-IV* mental health and substance abuse symptoms do provide informative indications of mental health and substance abuse status.

Veterans of different service eras and ethnicities have different risks of incarceration as compared with their nonveteran peers of similar age and ethnicity. Two factors explain the different results we found for minority and White veterans. First, the benefits of military service, such as education or training, appear to be greater for Blacks and Hispanics than Whites. Second, recruiting processes and accession standards resulted in minority recruits who were better qualified and of higher socioeconomic status than their age-matched peers, whereas the opposite was true for White recruits. Recent declines in the relative risk of incarceration likely reflect general improvements in the quality of recruits in the later periods of the AVF due to increased military pay, greater skill in recruiting, and increasingly stringent accession standards. Veteran incarceration rates should be examined carefully in future surveys because combat exposure in Iraq and Afghanistan as well as more difficult recruiting conditions, the relaxation in accession standards due to these two wars, and relatively low unemployment rates (until the recession of 2008) may increase veterans risk of incarceration. The relaxation of accession standards has been particularly evident in that the number of waivers issued to recruits for past criminal convictions has increased, the number of recruits with a high school diploma has declined, and the proportion of recruits who did not perform well on qualification tests has been growing (Alvarez, 2007; National Priorities Project, 2009).

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