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## The Association of Military Discharge Variables with Smoking Status among Homeless Veterans

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### INTRODUCTION

The past several decades have seen a sharp decline in the prevalence of smoking in the US, with current rates near 18% [1]. In contrast, the prevalence of smoking among the homeless is in excess of 70% [2,3]. Unfortunately, the health burdens associated with smoking in this population have largely been overlooked [4]. This is a pressing concern as more than 1.6 million individuals experience homelessness in the US in a given year [5].

Veterans are at heightened risk for homelessness relative to the general population [7–9]. Indeed, Veterans comprise approximately 10% of the overall homeless population in the US; over 160,000 individuals [10]. Past research has demonstrated that this group exhibits a unique socio-demographic, mental health, and substance use profile compared to the general homeless population [6–9,11]. Homeless Veterans tend to be older, better educated, and have a higher risk for substance abuse disorders compared to their homeless non-Veteran counterparts [8,9,11].

The present study sought to address whether the established differences between homeless Veterans and non-Veterans extend to homeless smokers. Currently, very little is known about the socio-demographic, health, substance use, and smoking characteristics of homeless Veteran smokers. As past research has demonstrated that Veterans smoke at higher rates

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#### Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

than the general population [12,13], and because it has been demonstrated that the heightened prevalence of alcohol abuse disorders among Veterans is also seen among homeless Veterans [8,9,11], it was hypothesized that homeless Veterans would exhibit a higher prevalence of smoking than homeless non-Veterans. In addition, we explored whether any socio-demographic, health, or substance use characteristics were independently associated with Veteran status among homeless smokers.

A subsequent aim was to examine the correlates of smoking among homeless Veterans. Identifying the factors associated with smoking among homeless Veterans is an important first step toward the development of effective smoking cessation and prevention strategies for this group. Therefore, homeless Veteran smokers and nonsmokers were compared across a series of factors found to be associated with smoking status in past studies of homeless populations [2,14–15], as well as several Veteran-specific variables. Subsequent analyses explored whether any of these factors were independently associated with smoking status among homeless Veterans.

The aims of the present study were two-fold. First, we sought to compare the socio-demographic, health, substance use, and cigarette use profiles of homeless Veteran and homeless non-Veteran smokers. These analyses were meant to elucidate the health profile of a vulnerable homeless sub-population which has received little attention within the tobacco literature. A subsequent aim was to determine the correlates of smoking among homeless Veterans. Enhancing our understanding of the factors associated with smoking among homeless Veterans may provide a foundation for more effective cessation interventions on this deleterious health behavior.

## METHODS

### Design

Data were obtained from the Homelessness in Minnesota survey conducted by the Wilder Research Foundation on October, 22, 2009 [16]. This survey involved more than 1,000 volunteers who conducted structured, face-to-face interviews with homeless individuals in over 80 cities throughout Minnesota. The criterion for homelessness was whether the individual was currently residing in an emergency or battered women's shelter, a transitional housing program, an open encampment, or an abandoned building.

### Sample

The final dataset provided by the Wilder Research Foundation included data from 4750 participants. Those interviewed comprised approximately 60% of Minnesota's sheltered homeless population, and the survey participation rate was 90%. Approximately 67% of the homeless individuals identified by the study were located in the twin cities metropolitan area. Participants who responded to an item assessing Veteran status and identified as current smokers (n=3182) were included in analyses comparing Veteran smokers (n=351) and non-Veteran smokers (n=2831). Subsequent analyses were conducted among the Veteran sample (n=503), and compared smokers (n=351) to nonsmokers (n=152).

## Measures

**Military History**—Type of military discharge was dichotomized (Honorable or Other). Era of military service was separated into four categories based on date of enlistment (Prior to August 1964, August 1964 to August 1980, September 1980 to March 2003, and after March 2003). Participants indicated whether they had ever served in a combat zone and whether they were currently receiving any Veteran's benefits.

**Cigarette Use**—Participants who smoked a cigarette in the past 30 days were identified as current smokers, the criterion used by the CDC to assess current smoking [1]. These participants responded to items assessing age of smoking initiation and average number of cigarettes smoked per day.

**Socio-Demographics**—Measures included age, gender, and number of grades completed. The education variable was subsequently dichotomized (Less than 12 grades completed, or 12 or more grades completed). Participants were separated into four racial categories (African ancestry, White, American Indian, or another racial group). Current marital status was separated into three categories (Married, Separated/Divorced/Widowed, or Never Married).

**Physical Health**—Participants indicated if they had experienced any of the following illnesses or conditions in the past 12 months: Asthma, other chronic lung or respiratory problems, frostbite or trenchfoot, high blood pressure, other chronic heart or circulatory problems, diabetes, tuberculosis, hepatitis, HIV/AIDS, a sexually transmitted infection (STI) other than HIV/AIDS. These measures were assessed both individually and as a dichotomous physical health status variable (One or more physical health problems, or no physical health problems). Participants also indicated whether they felt they needed help from a medical professional for a current physical health problem, dichotomized as yes/no.

**Mental Health**—Participants indicated if a doctor or nurse had told them in the past 2 years that they had one of the following conditions: Schizophrenia, Paranoid or Delusional Disorder, Manic Depression or Bipolar Disorder, Major Depression, any severe personality disorder, or Post-Traumatic Stress Disorder (PTSD). These measures were assessed both individually and as a dichotomous mental health status variable (One or more mental health problems, or no mental health problems). Participants also indicated whether they felt they needed help from a medical professional for a current mental health problem, dichotomized as yes/no.

**Substance Use**—Participants indicated whether they had used any of the following substances in the past 30 days: Marijuana, Crack or Cocaine, Heroin, Inhalants, Meth, LSD or another hallucinogen. Another item asked if the participant had consumed an alcoholic beverage in the past 30 days. Participants also indicated whether they considered themselves to currently be alcohol or chemical dependent.

**Economic Status**—Participants indicated their total income in the preceding month from all sources, not including food stamps. Another item asked whether they were currently employed, dichotomized as yes/no.

### Statistical Analyses

The first set of univariable analyses compared homeless Veteran smokers and homeless non-Veteran smokers across a series of socio-demographic, health, substance use, and cigarette use variables using Pearson chi-square tests and two-sample t-tests (Table 1). Variables significant at the  $p < 0.05$  level were added to a multivariable logistic regression model predicting Veteran status among the homeless smokers (Table 2). Subsequent univariable analyses compared homeless Veteran smokers and homeless Veteran non-smokers across a series of variables hypothesized to be associated with smoking using Pearson chi-square tests and two-sample t-tests (Table 3). Variables significant at the  $p < 0.05$  level were added to a multivariable logistic regression model predicting smoking status among the homeless Veterans. Although not significant in the unadjusted analyses, gender, age, race, and education were included as covariates in this regression model due to their well-documented association with smoking (Table 4). Analyses were conducted using SAS version 9.3.

## RESULTS

### Comparison of Homeless Smokers by Veteran Status

Analyses indicated that homeless Veteran smokers were older, more likely to be male, and better educated than homeless non-Veteran smokers (Table 1). There was a higher proportion of Whites in the Veteran compared to non-Veteran group. There were a higher proportion of separated, widowed, or divorced participants and a lower proportion of never married participants in the Veteran compared to the non-Veteran group. The Veterans also reported an older age of first homelessness than the non-Veterans. The prevalence of alcohol and/or chemical dependence was significantly higher among homeless Veteran smokers compared to homeless non-Veteran smokers (Table 1). The prevalence of current smoking in the original sample (N=4750) was higher among Veterans than non-Veterans. The Veterans also averaged more cigarettes per day than the non-Veterans. Veterans fared more poorly than non-Veterans across many acute and chronic health conditions. The prevalence of frostbite or trenchfoot, respiratory problems, high blood pressure, diabetes, and tuberculosis were significantly higher among Veterans compared to non-Veterans. Veterans had a lower prevalence of HIV/AIDS and non-HIV/AIDS-related STIs than non-Veterans, although the prevalence of these conditions in both groups was low. The self-reported need for medical care for a current physical health problem was significantly higher among Veterans compared to non-Veterans. There were few differences across homeless Veteran and homeless non-Veteran smokers with respect to mental health status (Table 1). The prevalence of PTSD was higher in the Veteran compared to the non-Veteran group. The groups did not differ with respect to the self-reported need for medical attention for a current mental health problem.

### Factors Associated with Veteran Status among Homeless Smokers

When added to a multivariable regression model, several socio-demographic factors were independently associated with Veteran status among homeless smokers (Table 2). Male homeless smokers had significantly higher odds of reporting Veteran status than female homeless smokers (aOR = 6.48, 95% CI = 4.37–9.60). Homeless smokers with at least 12 years of education had higher odds of reporting Veteran status than homeless smokers with less than 12 years of education (aOR = 2.95, 95% CI = 2.17–4.02). Homeless smokers who were separated, widowed, or divorced had significantly higher odds of reporting Veteran status than homeless smokers who had never been married (aOR = 1.37, 95% CI = 1.04–1.82). Homeless smokers who were currently married had significantly higher odds of reporting Veteran status than homeless smokers who had never been married (aOR = 2.14, 95% CI = 1.12–4.07). Homeless smokers of African ancestry had significantly lower odds of reporting Veteran status than White homeless smokers (aOR = 0.57, 95% CI = 0.42–0.77).

### Comparison of Homeless Veterans by Smoking Status

Homeless Veteran smokers and homeless Veteran nonsmokers did not differ significantly with respect to gender, age, race, marital status, or homelessness characteristics (Table 3). The proportion of Veterans with less than 12 years of education was higher in the smoking group compared to the nonsmoking group, a difference which was marginally significant. Smokers had lower monthly incomes than nonsmokers; this difference was also marginally significant.

Homeless Veteran smokers and homeless Veteran nonsmokers did not differ with respect to era of military service or whether they had served in a combat zone (Table 3). The smokers were less likely to have received an honorable discharge than the nonsmokers. There were a lower proportion of individuals currently receiving Veteran's benefits among the smokers compared to the nonsmokers.

The homeless Veteran smokers were more likely than the nonsmokers to have experienced relationship abuse in the past 12 months, although this difference was marginally significant (Table 3). Smokers had higher rates of childhood physical and/or sexual abuse than nonsmokers. Smokers also had a much higher prevalence of alcohol/chemical dependence and a higher prevalence of at least one mental health disorder than the nonsmokers.

### Factors Associated with Current Smoking among Homeless Veterans

When added to a multivariable regression model, several factors were independently associated with smoking status among homeless Veterans (Table 4). Veterans who did not receive an honorable discharge had higher odds of being current smokers than those with an honorable discharge (aOR = 1.82, 95% CI = 1.04–3.19). Veterans currently receiving Veteran's benefits had lower odds of being current smokers than those not receiving benefits (aOR = 0.60, 95% CI = 0.38–0.96). Veterans who were alcohol and/or chemical dependent had higher odds of being current smokers than Veterans who were not alcohol or chemical dependent (aOR = 2.04, 95% CI = 1.24–3.37).

## DISCUSSION

Consistent with past research comparing the Veteran and non-Veteran homeless, homeless Veteran smokers were older, better educated, had higher a proportion of men, and had a higher proportion of Whites than the homeless non-Veteran smokers [8,9,11]. A greater percentage of Veteran smokers were divorced, separated, or widowed than non-Veteran smokers, who were more likely to have never been married. Veteran smokers also reported an older age of first homelessness than non-Veteran smokers. These data suggest that homeless Veterans smokers exhibit a unique socio-demographic and homelessness profile relative to homeless non-Veteran smokers.

Past research has demonstrated high rates of chronic and acute physical health conditions among the homeless, a population which tends to suffer from many preventable and treatable health problems [17,18]. The present study demonstrates that the prevalence of these deleterious health conditions may be even higher among homeless Veteran smokers. This group had a higher prevalence of alcohol and/or chemical dependence than the homeless non-Veteran smokers, a finding which parallels past research comparing the Veteran and non-Veteran homeless [8,9,11]. In addition, the prevalence of smoking was higher in the Veteran compared to the non-Veteran group. However, it is important to note that the presence of a physical health condition, alcohol/chemical dependence, and smoking were not independently associated with Veteran status among homeless smokers after controlling for such variables as age, race, education, and gender. This suggests that the underlying demographic profile of homeless Veteran smokers may significantly contribute to the high prevalence of these health problems.

The multivariable regression analyses conducted among the homeless Veteran sample revealed several key factors that were independently associated with current smoking status. First, these analyses replicated the association between alcohol and/or chemical dependence and smoking among the homeless [2,14]. The high rate of alcohol and/or chemical dependence among Veteran smokers demonstrates their vulnerability to a host of deleterious health behaviors and emphasizes the need to target these issues when developing smoking interventions for this population.

In addition, two Veteran-specific variables were independently associated with smoking status. First, Veterans without an honorable discharge had significantly higher odds of being current smokers than Veterans with an honorable discharge. This finding suggests that there is an association between military conduct and smoking, although the cross-sectional nature of the study precludes us from asserting that the added smoking risk posed to these Veterans is the result of struggles during their military tenure. While Veterans who did not receive an honorable discharge constituted a minority of the overall Veteran sample, future research may help to elucidate which aspects of military service and discharge may be associated with a heightened risk for smoking.

This study re-affirms the high proportion of homeless Veterans who need access to VA benefits [19], benefits which have been shown to be associated with a lower likelihood of becoming homeless [20] and a higher quality of life [21]. In the present study, receipt of

Veterans benefits was also associated with lower odds of smoking. Interestingly, this finding runs in contrast to past research which has noted that homeless Veterans who need Veteran's benefits and those who do not are similar with respect to mental health status and substance use [19]. The results of the present study suggest that the negative effects associated with the loss of, or inadequate access to, Veteran's benefits among homeless Veterans may be more pronounced than initially thought. This finding provides an additional incentive to increase Veterans' knowledge of and access to these resources.

## Study Limitations

The present study has several limitations. First, the cross-sectional design makes it difficult to draw causal relationships between the predictors and smoking status. Second, variation in interviewing techniques across the volunteers could affect the validity of the data due to differences in the volunteers' levels of past experience delivering structured interviews. Third, because all of the items were assessed using self-report, there is the possibility that social desirability bias may have resulted in underreporting of certain physical and mental health conditions. In addition, our Minnesota-based sample may differ demographically from homeless populations living in other areas of the country. The criterion of  $p < 0.05$  used for inclusion of variables in the multivariable regression analyses may have resulted in the exclusion of potentially important variables. Finally, the small sample size in the Veteran nonsmoking group ( $n=122$ ) reduced the power of our model, meaning potentially meaningful associations may have gone undetected.

## Conclusion

This study raises several important points relevant to the debate on how to better serve homeless Veterans. First, these data highlight the dire health profile of homeless Veteran smokers, a group which has been overlooked in the tobacco literature. Our study suggests that this group exhibits rates of deleterious physical and mental health conditions, alcohol/chemical dependence, and cigarette use that exceed those seen among other homeless smokers. While past research has shown that smoking-related deaths occur at twice the rate among homeless and marginally housed individuals than among the general population [18], our data suggest that homeless Veterans may be at even higher risk for smoking-related mortality. These data also shed light on several Veteran-specific risk factors for smoking. To date, no previous research has examined the association between military service variables and smoking status among homeless Veterans. Given the high prevalence of smoking in this population, these service-related variables may be important focal points for cessation efforts in the future.

Increasing cessation rates among homeless Veteran smokers may offer a path toward reducing the significant health burdens of cancer, cardiovascular disease, and respiratory disease. Furthermore, research has demonstrated that homeless smokers are often motivated to quit and that cessation programs tailored toward homeless smokers are feasible, although with lower quit rates than among the general population [22]. To help inform future cessation strategies geared toward homeless Veteran smokers, greater attention should be placed on elucidating how cessation-related attitudinal, self-efficacy, and motivational constructs relate to cessation action planning and plan enactment, factors which have been



shown to be associated with both intention to quit and cessation [23]. In addition to these cognitive and attitudinal factors, underutilization and lack of access to Veteran's medical facilities is another factor influencing cessation among this population. Homeless Veterans are more likely to visit Emergency Departments than Veterans' clinics [24] and it has been shown that homeless Veterans who do not access VA homeless assistance services are less likely to access preventive health and behavioral healthcare services provided by the VA [25]. Increasing the scope and accessibility of programs like the Healthcare for Homeless Veterans (HCHV) Program can help address the causes of homelessness while also providing homeless Veterans with access to quality health services to overcome addiction. In addition, utilization of text-based and eHealth smoking cessation programs are potentially promising and cost-effective strategies for engaging this group [26, 27]. Indeed, a recent study showed that nearly 90% of homeless Veterans have a mobile phone, 76% have access to the internet, and 88% would be interested in mobile phone reminders for medical appointments [28]. Future efforts should focus on increasing all Veterans' access to and knowledge of Veterans' health resources, as well as working to develop new and innovative strategies to boost cessation among this population.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## REFERENCES

1. Agaku IT, King BA, Dube SR. Current cigarette smoking among adults - United States, 2005–2012. *MMWR Morb Mortal Wkly Rep.* 2014; 63(2):29–34. [PubMed: 24430098]
2. Baggett TP, Rigotti NA. Cigarette smoking and advice to quit in a national sample of homeless adults. *Am J Prev Med.* 2010; 39(2):164–172. [PubMed: 20621264]
3. Tsai J, Rosenheck RA. Smoking among chronically homeless adults: Prevalence and correlates. *Psychiatr Serv.* 2012; 63:569–576. [PubMed: 22476200]
4. Baggett TP, Tobey ML, Rigotti NA. Tobacco use among homeless people--addressing the neglected addiction. *N Engl J Med.* 2013; 369(3):201–204. [PubMed: 23863048]
5. U.S. Department of Housing and Urban Development (HUD). The 2010 Annual Homeless Assessment Report to Congress. Washington, DC: 2011.
6. Fargo J, Metraux S, Byrne T, et al. Prevalence and risk of homelessness among US veterans. *Prev Chronic Dis.* 2012; 9:E45. [PubMed: 22280960]
7. Gamache G, Rosenheck R, Tessler R. The proportion of veterans among homeless man: a decade later. *Soc Psychiatry Psychiatr Epidemiol.* 2001; 36:481–485. [PubMed: 11768845]
8. Rosenheck R, Frisman L, Chung AM. The proportion of veterans among homeless men. *Am J Public Health.* 1994; 84(3):466–469. [PubMed: 8129068]



9. Tsai J, Mares AS, Rosenheck RA. Do homeless veterans have the same needs and outcomes as non-veterans? *Mil Med.* 2012; 177(1):27–31. [PubMed: 22338975]
10. U.S. Department of Housing and Urban Development (HUD) & U.S. Department of Veterans Affairs (VA). *Veteran homelessness: A supplement to the 2009 annual homelessness report.* Washington, DC: U.S. Department of Housing and Urban Development; 2011.
11. Tessler R, Rosenheck R, Gamache G. Comparison of homeless veterans with other homeless men in a large clinical outreach program. *Psychiatr Q.* 2002; 73(2):109–119. [PubMed: 12025719]
12. Brown DW. Smoking prevalence among US veterans. *J Gen Intern Med.* 2010; 25(2):147–149. [PubMed: 19894079]
13. IOM (Institute of Medicine). *Combating Tobacco Use in Military and Veteran Populations.* Washington, DC: The National Academies Press; 2009.
14. Baggett TP, Lebrun-Harris LA, Rigotti NA. Homelessness, cigarette smoking and desire to quit: results from a US national study. *Addiction.* 2013; 108(11):2009–2018. [PubMed: 23834157]
15. Torchalla I, Strehlau V, Okoli CT, Li K, Schuetz C, Krausz M. Smoking and predictors of nicotine dependence in a homeless population. *Nicotine Tob Res.* 2011; 13(10):934–942. [PubMed: 21622493]
16. Wilder Research. *Homelessness in Minnesota: Key Findings From the 2009 Statewide Survey.* Saint Paul, Minnesota: Wilder Research; 2010.
17. Hwang SW, Orav EJ, O'Connell JJ, Lebow JM, Brennan TA. Causes of death in homeless adults in Boston. *Ann Intern Med.* 1997; 126(8):625–628. [PubMed: 9103130]
18. Hwang SW, Wilkins R, Tjepkema M, O'Campo PJ, Dunn JR. Mortality among residents of shelters, rooming houses, and hotels in Canada: 11 year follow-up study. *BMJ.* 2009; 339:b4036. [PubMed: 19858533]
19. O'Toole TP, Conde-Martel A, Gibbon JL, Hanusa BH, Fine MJ. Health care of homeless veterans: Why are some individuals falling through the safety net? *J Gen Intern Med.* 2003; 18(11):929–933. [PubMed: 14687279]
20. Edens E, KasproW W, Tsai J, Rosenheck R. Association of substance use and VA service-connected disability benefits with risk of homelessness among Veterans. *Am J Addictions.* 2011; 20(5):412–419.
21. Rosenheck RA, Dausey DJ, Frisman L, KasproW W. Outcomes after initial receipt of social security benefits among homeless veterans with mental illness. *Psychiatr Serv.* 2000; 51:1549–1554. [PubMed: 11097652]
22. Okuyemi K, Goldade K, Des Jarlais D, et al. Motivational interviewing to enhance nicotine patch treatment for smoking cessation among homeless smokers: a randomized controlled trial. *Addiction.* 2013; 108(6):1136–1144. [PubMed: 23510102]
23. De Vries H, Eggers S, Bolman C. The role of action planning and plan enactment for smoking cessation. *BMC Public Health.* 2013; 13(1):1–11. [PubMed: 23280303]
24. Tsai J, Doran KM, Rosenheck RA. When health insurance is not a factor: national comparison of homeless and nonhomeless US veterans who use Veterans Affairs Emergency Departments. *Am J Public Health.* 2013; 103(Suppl 2):S225–S231. [PubMed: 24148061]
25. Montgomery A, Byrne T. Services utilization among recently homeless Veterans: A gender-based comparison. *Mil Med.* 2014; 179(3):236–239. [PubMed: 24594455]
26. Stanczyk N, Smit E, Evers S, et al. An Economic Evaluation of a Video- and Text-Based Computer-Tailored Intervention for Smoking Cessation: A Cost-Effectiveness and Cost-Utility Analysis of a Randomized Controlled Trial. *Plos ONE.* 2014; 9(10):1–14.
27. Te poel F, Bolman C, Reubsaet A, De vries H. Efficacy of a single computer-tailored e-mail for smoking cessation: results after 6 months. *Health Educ Res.* 2009; 24(6):930–940. [PubMed: 19574405]
28. McInnes D, Petrakis B, O'Toole T, et al. Retaining Homeless Veterans in Outpatient Care: A Pilot Study of Mobile Phone Text Message Appointment Reminders. *Am J Public Health.* 2014; 104(S4):S588–S594. [PubMed: 25100425]

### Highlights

- Among homeless smokers, Veterans have a poorer health profile than non-Veterans
- Military discharge characteristics are associated with smoking in homeless Veterans
- Boosting homeless Veterans' access to VA health resources may reduce smoking rates

**Table 1**Characteristics of homeless Veteran smokers vs. homeless non-Veteran smokers. <sup>a</sup>

Characteristic	Veteran Smokers (n = 351)	Non-Veteran Smokers (n = 2831)	P Value
	No. (%)	No. (%)	
<b>Socio-Demographic</b>			
Male	315 (89.7)	1525 (50.4)	<0.001
Age	47.0±9.7(49)	35.8±12.4(35)	<0.001 <sup>b</sup>
Education			<0.001
< 12 Years	69 (19.8)	1255 (44.6)	.
12 Years	280 (80.2)	1560 (55.4)	.
Currently Employed	59 (16.8)	437 (15.5)	0.511
Race			<0.001
White	184 (52.7)	1106 (39.4)	.
African Ancestry	101 (28.9)	1072 (38.2)	.
American Indian	41 (11.8)	404 (14.4)	.
Other	23 (6.6)	228 (8.1)	
Marital Status			<0.001
Married	16 (4.6)	114 (4.1)	.
Separated/Widowed/Divorced	178 (51.3)	793 (28.2)	.
Never Married	153 (44.1)	1910 (67.8)	.
Age 1 <sup>st</sup> Homeless	33.1±14.0(31)	25.7±12.5(22)	<0.001 <sup>b</sup>
Times Homeless			0.433
< 8	258 (75.2)	2011 (73.2)	.
8	85 (24.8)	735 (26.8)	.
<b>Abuse</b>			
Relationship	55 (15.7)	707 (25.1)	<.0001
Childhood	135 (39.0)	1242 (44.4)	0.058
<b>Healthcare</b>			
Medical Coverage	245 (70.2)	2072 (74.0)	0.129
<b>Physical Health</b>			
Condition			
Asthma	51 (14.6)	546 (19.4)	0.031
Respiratory Problem	74 (21.2)	303 (10.8)	<0.001
Frostbite or Trenchfoot	22 (6.3)	77 (2.7)	<0.001
High BP	121 (34.7)	628 (22.8)	<0.001
Heart Problem	55 (15.9)	212 (7.6)	<0.001
Diabetes	37 (10.6)	204 (7.3)	0.026
TB	8 (2.3)	26 (0.9)	0.019
Hepatitis	35 (10.1)	123 (4.4)	<0.001

Characteristic	Veteran Smokers (n = 351)	Non-Veteran Smokers (n = 2831)	P Value
	No. (%)	No. (%)	
STI (not HIV/AIDS)	2 (0.6)	86 (3.1)	0.008
HIV/AIDS	0 (0.0)	43 (1.5)	0.020
1(+) Conditions	208 (59.8)	1395 (50.1)	<0.001
Needs Medical Care	158 (45.0)	1018 (36.2)	0.001
<b>Mental Health</b>			
Condition			
Schizophrenia	24 (7.0)	204 (7.3)	0.827
Paranoid Disorder	28 (8.2)	225 (8.0)	0.939
Bipolar Disorder	82 (23.8)	669 (24.0)	0.934
Depression	141 (40.9)	1140 (40.8)	0.977
Personality Disorder	63 (18.2)	498 (17.8)	0.860
PTSD	100 (29.1)	617 (22.2)	0.004
1(+) Conditions	183 (52.7)	1453 (52.0)	0.786
Needs Medical Care	140 (40.7)	1140 (40.7)	0.987
<b>Substance Use</b>			
Alcohol/Chemical Dependent	160 (45.9)	946 (33.6)	<0.001
<b>Cigarette Use</b>			
Prevalence	(74.2)	(70.0)	0.055
Cigarettes/Day	12.6±8.8(10)	11.0±8.7(10)	0.001
Age of Initiation	15.3±5.3(15)	15.3±5.3(15)	0.966

<sup>a</sup>Plus-minus values are means ±SD(median).

<sup>b</sup>Satterthwaite test

**Table 2**

Factors associated with Veteran status among homeless smokers.

Characteristic	aOR	95% Confidence Interval	P Value
<b>Gender</b>			<0.001
Female	ref	-	.
Male	6.48	4.37, 9.60	.
<b>Age</b>	1.07	1.05, 1.09	<0.001
<b>Education</b>			<0.001
< 12 Years	ref	-	.
12 Years	2.95	2.17, 4.02	.
<b>Race</b>			<0.002
White	ref	-	.
African Ancestry	0.57	0.42, 0.77	.
American Indian	1.06	0.70, 1.61	.
Other	0.88	0.52, 1.48	.
<b>Marital Status</b>			0.010
Never Married	ref	-	.
Separated/Widowed/Divorced	1.40	1.06, 1.85	.
Married	2.11	1.11, 4.00	.
<b>Age 1<sup>st</sup> Homeless</b>	0.99	0.98, 1.00	0.064
<b>Alcohol/Chemical Dependent</b>			0.337
No	ref	-	.
Yes	1.14	0.87, 1.48	.
<b>Relationship Abuse</b>			0.373
No	ref	-	.
Yes	1.17	0.83, 1.67	.
<b>1(+) Physical Health Conditions</b>			0.339
No	ref	-	.
Yes	1.14	0.88, 1.48	.
<b>Cigarette Use</b>			0.415
Cigarettes/Day	0.99	0.98, 1.01	.

**Table 3**Characteristics of homeless Veteran smokers vs. homeless Veteran nonsmokers. <sup>a</sup>

Characteristic	Veteran Smokers (n = 351)	Veteran Nonsmokers (n = 122)	P Value
	No. (%)	No. (%)	
<b>Socio-Demographic</b>			
Male	315 (89.7)	113 (92.6)	0.350
Age (Mean)	47.0±9.7(49)	47.7±11.7(49)	0.539 <sup>b</sup>
Education			0.068
< 12 Years	69 (19.8)	15 (12.4)	.
12 Years	280 (80.2)	106 (87.6)	.
Total Monthly Income	413.2±469.0(203)	503.6±610.3(247)	0.146 <sup>b</sup>
Employed	59 (16.8)	21 (17.2)	0.918
Race			0.411
White	184 (52.7)	57 (47.1)	.
African Ancestry	101 (28.9)	45 (37.2)	.
American Indian	41 (11.8)	12 (9.9)	.
Other	23 (6.6)	7 (5.8)	
Marital Status			0.195
Married	16 (4.6)	10 (8.3)	.
Separated/Widowed Divorced	178 (51.3)	65 (54.2)	.
Never Married	153 (44.1)	45 (37.5)	.
Age 1 <sup>st</sup> Homeless (Mean)	33.1±14.0(31)	35.3±14.6(36)	0.141
Times Homeless			0.819
< 8	258 (75.2)	90 (76.3)	.
8	85 (24.8)	28 (23.7)	.
<b>Military Service</b>			
Era of Service			0.645
Prior to 1964	5 (1.4)	3 (2.5)	.
1964 to 1980	177 (51.0)	55 (45.1)	.
1980 to 2003	143 (41.2)	56 (45.9)	.
After 2003	22 (6.3)	8 (6.6)	.
Combat Zone	87 (25.4)	38 (31.4)	0.198
Discharge Type			0.012
Honorable	222 (65.3)	91 (77.8)	.
Other	118 (34.7)	26 (22.2)	.
Veteran's Benefits	126 (35.9)	56 (45.9)	0.050
<b>Abuse</b>			
Relationship	55 (15.7)	11 (9.1)	0.072
Childhood	135 (39.0)	29 (24.0)	0.003

Characteristic	Veteran Smokers (n = 351)	Veteran Nonsmokers (n = 122)	P Value
	No. (%)	No. (%)	
<b>Healthcare</b>			
Medical Coverage	245 (70.2)	94 (77.7)	0.114
<b>Mental Health</b>			
Condition			
Schizophrenia	24 (7.0)	4 (3.3)	0.151
Paranoid Disorder	28 (8.2)	9 (7.5)	0.818
Bipolar Disorder	82 (23.8)	21 (17.7)	0.166
Depression	141 (40.9)	32 (27.1)	0.008
Personality Disorder	63 (18.2)	16 (13.3)	0.220
PTSD	100 (29.1)	28 (23.5)	0.244
1(+) Conditions	183 (52.7)	45 (37.8)	0.005
Needs Medical Care	140 (40.7)	36 (30.0)	0.857
<b>Substance Use</b>			
Alcohol/Chemical Dependent	160 (45.9)	35 (28.9)	0.001

<sup>a</sup>Plus-minus values are means  $\pm$ SD (median).

<sup>b</sup>Satterthwaite test



**Table 4**

Factors associated with current smoking among homeless Veterans.

Characteristic	aOR	95% Confidence Interval	P Value
<b>Gender</b>			0.595
Female	ref	-	.
Male	0.78	0.32, 1.94	.
<b>Age</b>	0.99	0.97, 1.02	0.528
<b>Education</b>			0.086
< 12 Years	ref	-	.
12 Years	0.56	0.29, 1.09	.
<b>Race</b>			0.819
White	ref	-	.
African Ancestry	0.83	0.50, 1.39	.
American Indian	0.73	0.34, 1.56	.
Other	0.95	0.34, 2.61	.
<b>Discharge Type</b>			0.037
Honorable	ref	-	.
Other	1.82	1.04, 3.19	.
<b>Receiving Veteran's Benefits</b>			0.031
No	ref	-	.
Yes	0.60	0.38, 0.96	.
<b>Alcohol/Chemical Dependent</b>			0.005
No	ref	-	.
Yes	2.04	1.24, 3.37	.
<b>Childhood Physical/Sexual Abuse</b>			0.263
No	ref	-	.
Yes	1.37	0.79, 2.36	.
<b>1(+) Mental Health Conditions</b>			0.211
No	ref	-	.
Yes	1.37	0.84, 2.24	.