The pervasive role of rank in the health of US veterans

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ABSTRACT: The following paper tests the hypothesis that veterans have better health if they were officers when they were in the US military than if they served in the enlisted ranks. It examines this hypothesis by presenting results from logistic regressions that are based on four surveys: the National Survey of Veterans, the Survey of Retired Military, the Panel Study of Income Dynamics, and the Wisconsin Longitudinal Study. In all four of these surveys, the evidence is consistent with the hypothesis that military rank is associated with health, particularly among veterans who served longer. It also suggests that the health gradient by rank is independent of similar gradients by education and income, as well as health differences by race. These findings indicate that health may be influenced not just be differences in civilian society, but also by those in the military.

KEYWORDS: military service, socioeconomic gradients, inequality, life course, aging

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"Start wrapping up. I could use another one."
"Anybody know if he's an officer or an enlisted man?"
"He's an enlisted man."
"Make the stitches big."
— O.R. dialogue in Robert Altman's M*A*S*H (1970)

For more than three decades, researchers have explored socioeconomic gradients in health and the links between social inequality and health outcomes.[1] Beginning in the aftermath of the Vietnam conflict, which raised awareness of mental health consequences in particular, research into the relationship between health and military service has burgeoned into a vibrant field.[2] Despite much activity in both these active areas of research, relatively little work to date discusses or even tests for social gradients in health among veterans.

According to the health inequality literature, people have better health if they have higher socioeconomic status than if they have lower status. They live longer, have fewer chronic health conditions, and report their health as better. In the famous Whitehall Studies begun in the 1960s, British civil service workers were less likely to die of all causes if they had higher rank than they had lower rank.[3] Researchers have demonstrated that health is associated with a variety of socioeconomic measures, including income, education, wealth, and occupational status. They have demonstrated that these socioeconomic measures are associated with a variety of health outcomes, ranging from cardiovascular disease to depression.[4] They have examined a variety of mechanisms that might explain the gradient, which range from standard socioeconomic and sociodemographic pathways to psychosocial elements, social capital, and the psychology of healthy behaviors.[5] Many researchers assume that socioeconomic characteristics determine health. Other researchers, however, have suggested that poor health can reduce socioeconomic attainment, at least during later stages of the life cycle.[6] Regardless of the causal direction, all

previous research reveals a positive correlation between socioeconomic status and health over long periods of time.[7]

In the veterans' health literature, researchers compare the health of veterans to that of nonveterans. Most researchers focus on the health of veterans who have been exposed to combat, examining the impact of war on post-traumatic stress disorder (PTSD) and other measures of physical and mental health. They have also examined how the health of veterans was affected by Agent Orange.[8] This research consistently finds that combat veterans suffer worse health than non-combat veterans and than non-veterans, revealing a direct pathway through which military service erodes health.[9] Two recent papers explore whether veterans may experience worse health because of unhealthy behaviors, such as increased cigarette smoking and drinking. They produce mixed findings.[10]

In this paper, we test the hypothesis that veterans have better health if they were officers when they were in the US military than if they served in the enlisted ranks. Like members of the British civil service in the Whitehall studies, veterans were assigned a pay grade and rank during service, which creates a distinct within-group social gradient.[11] Military ranks may be conceptualized as similar to groupings of the Duncan socioeconomic index (SEI), which applies to civilian occupations.[12] Like the SEI, military rank organizes service-members by socioeconomic rewards and job characteristics and is thus another measure of social standing similar to education, income, occupation, and wealth. Nonetheless, very few researchers have examined whether rank affects health in similar fashion as do civilian markers of socioeconomic position.

We know of only five previous papers that have examined how rank is related to outcomes in later life, two that examine how rank relates to health, and three that examine how it

relates to socioeconomic attainment. The first paper, published in this journal, examines a single cohort of enlisted veterans from World War II and finds that those with higher rank at the end of the war were less likely to die than those who left with lower rank, regardless of differences in educational attainment.[13] A more recent study documents wide and growing disparities in life expectancy among male military retirees according to final rank, but it is unable to control for socioeconomic status due to data limitations.[14] The other three papers show that veterans who served as officers have higher post-service socioeconomic attainment than veterans who served in the enlisted ranks.[15]

This paper seeks to expand this previous research by revealing the extent of social disparities in old-age health among veterans using individual-level data covering many cohorts. In addition, we examine several alternative explanations for the social gradient among veterans. By examining veterans from a variety of eras and from the entire spectrum of rank, our study takes a broader scope than the 1978 study of enlisted men in a World War II cohort.[16]

The paper proceeds according to the following plan. The next section describes the characteristics of each of the four data sets that we examine. The key characteristic of these data is the measurement of military rank among veterans, which is quite rare. Following the description of the data, we conduct parallel multivariate analyses using each of the data sets and present our results. We conclude by speculating about the meaning of our results and proposing plans for future research.

Data on health and rank among veterans

Although many sociodemographic and health surveys in the US ask whether the respondents served in the military, they ask about rank infrequently. Four recent surveys, however, contain measures of both health and rank. Two of the surveys are based on national

cross-sectional samples of veterans. Two are longitudinal studies based on the general population. The first two are the 2003 Survey of Retired Military (SRM) and the 2001 National Survey of Veterans (NSV), which are large-scale, nationally representative samples of US veterans. The third is the Panel Study of Income Dynamics (PSID), a smaller nationally representative panel of people in households in the US who were asked their rank in 1994 and have sporadic coverage of health. The fourth data set, the Wisconsin Longitudinal Study (WLS), also asks about rank and health but only covers a single cohort of predominantly white high school graduates mostly born in 1939.

Each dataset has significant limitations. Mortality is hard to measure because the data from military samples are cross-sectional, while the longitudinal studies are too small. We therefore focus on self-reported health status, which researchers have shown is linked to mortality.[17] The military surveys include information about health, and their large size enhances precision. They do not, however, include information provided by nonveterans, which makes it difficult to compare the effects of rank on health to those of other socioeconomic variables. The civilian data sets allow comparison of veterans and nonveterans, but their smaller size hampers inference. The WLS survey is problematic for examining disparities because it is racially homogeneous. The following analyses, therefore, compare coefficients in a uniform model across all four data sets.

Table 1 presents means and proportions of the analysis variables by rank and veteran status in each dataset. The first two columns display data for all males age 40 and older in the 2003 SRM, which covered over 32,000 military retirees. Retirees typically have 20 years of military service and thus tend to be at least 40 years old. However, veterans with shorter periods of service and service-related disabilities can also qualify for retirement payments and therefore

are also included in these survey data. The second two columns display data from the 2001 NSV, which sampled over 20,000 respondents and was designed to represent the entire surviving population of US veterans. The fifth through seventh columns show statistics drawn from a subsample of respondents in the 2001 wave of the PSID who answered the questions on military service included in the 1994 wave. The last three columns report means and proportions from the 2004 wave of the WLS. In these data sets, pay grade is measured on the day before retirement. The two civilian data sets consist of small samples of veterans, which preclude examination by individual ranks. Warrant officers, therefore, are combined with officers, while noncommissioned officers are combined with other enlisted men. Previous research has shown that finer gradations of rank are informative for health but not required.[18]

In each of the four datasets, enlisted veterans report worse health than do officers. In both the SRM and NSV, about 35 percent of enlisted veterans report their health as fair or poor, compared with only about 20 percent of officers. Veterans in the non-military samples are even less likely than those in the military samples to report their health as poor or fair. These health differences are partly due to sample design. The military surveys contain large samples of veterans who were disabled or had a VA disability. Regardless of rank, the military retirees were very likely to report having a VA disability rating, at rates of 63 and 65 percent. Veterans in the NSV were also quite likely to do so, at rates of between 30 and 40 percent. Veterans were much less likely to report a VA disability in the PSID and WLS, with rates of between 1 and 4 percent.

<<TABLE 1 ABOUT HERE>>

Table 1 also shows that officer veterans tend to be about 4 years older on average than their enlisted counterparts in each dataset. This age difference could reflect either over-representation of enlisted service-members in the armed forces, a greater prevalence of enlisted

among the Vietnam cohort, or both. Military retirees in the SRM are about 5 years younger than veterans in the NSV, which likely reflects the relative scarcity of career military in the large and aging World War II and Vietnam cohorts. Nonveterans in the 2001 wave of the PSID were almost 10 years younger on average than the older, largely draft-era veterans in the sample. This age difference likely stems from the transition to the All-Volunteer Force (AVF) and the lower likelihood that people born in 1955 and later years would serve in the military.

The two nationally representative surveys lead to different conclusion regarding whether veterans have better or worse health than nonveterans. In the PSID, enlisted veterans report worse health than do non-veterans. This finding is consistent with some previous research that suggests that military service is bad for health.[19] Enlisted veterans in this sample are also older than nonveterans, which could account for their worse health. Officer veterans, however, are also older than nonveterans, but they report better health. In the WLS, enlisted veterans report the same rates of poor and fair health as do nonveterans, and a majority of officer veterans report excellent health.

Combat exposure, which is measured in all datasets except the SRM, is somewhat more common among veterans of the officer corps, but the differences are small. Years spent on active duty, the next row in table 1 and also an indicator of exposure, is higher among officers in each dataset except the SRM, where long-term service is largely required. The same patterns are evident in the following line, which reports the percentage by rank with 20 years of service.

According to table 1, officer veterans tend to have more favorable characteristics than non-veterans and enlisted veterans in terms of their socioeconomic standing. In all datasets, officers are more likely to be married than are enlisted veterans. Enlisted veterans, however, are more likely to report being married than nonveterans. They are also more likely than officer

veterans to be African-American. This pattern probably captures the lingering effects of segregation, which only ended after World War II. It also reflects the fact that African-Americans are currently disproportionately likely to serve in the enlisted ranks on active duty today.[20] Due to sample design, African-Americans constitute 25.7 percent of the nonveterans in the PSID. However, they are less likely to have served in the military. Hispanics are a distinct minority across all datasets. In the military samples, they are more likely to have served in the enlisted ranks than they are to have served as officers. Officers report having 3 to 4 years more education than enlisted veterans in each dataset, about the difference between a high school and a college degree. Education also affects rank, since admission to the officer corps typically requires a college degree. Enlisted veterans are less likely than nonveterans to have graduated from college. Between 20 and 25 percent of enlisted veterans graduated from college, while 30 to 40 percent of nonveterans did. Accordingly, nonveterans report higher household incomes than enlisted veterans, although they do not earn more than officers. Military retirees in general tend to pay a penalty for lost time in the labor market.[21] Veterans in the PSID appear to be similarly penalized even though they served for relatively short periods. Enlisted veterans may report relatively worse health because they have lower household income. They may, however, have lower household income because they are in worse health.

Logit models of self-reported health status

The following section shows that among the veterans of the United States armed forces surveyed in four different contexts, those who served as officers have better health than those who served in the enlisted ranks. In the two veterans-only data sets, officers routinely report better health than enlisted men even after controlling for other socioeconomic covariates and length of military service. In the data covering both nonveterans and veterans, in which officers

are a small minority, the evidence is somewhat less clear but still consistent with an independent association of health with rank. To examine the associations between military service, rank, and health in a multivariate setting, we model the probability of person *i*'s self-reporting either fair or poor health, a dichotomous variable, using the logit transformation:

$$\text{logit[fair or poor health]} = \alpha + \beta\, officer_i + \gamma\, nonveteran_i + \delta\, age_i + B\, X_i. \quad (1)$$

The first covariate after the constant term is an indicator variable of rank, namely whether person *i* was an officer as opposed to being an enlisted man. The second covariate is an indicator of nonveteran status, whether person *i* did or did not serve in the military. Age is a continuous variable; and X_i is a vector of covariates including race, ethnicity, marital status, education, and income.[22]

The exponential of a logit coefficient is the odds ratio, and the coefficient itself is approximately the percentage change in the odds. An estimate of $\beta = -0.60$, for example, reveals that the ratio of an officer's odds of reporting fair or poor health to an enlisted man's odds are $\exp(\beta) = 0.55$, implying that an officer's odds are $\exp(\beta) - 1$, or 45 percent, lower than an enlisted man's, ceteris paribus. To the extent that the other covariates control adequately for preexisting conditions and similar characteristics, a negative and significant estimate of β provides evidence of a health disparity by rank favoring officers. In the case of γ, a negative value implies that the odds of reporting poor or fair health are lower among nonveterans than among enlisted men.

We proceed to estimate equation (1) among various subgroups of veterans and nonveterans in our four datasets, reporting the results in tables 2-6. Table 7 examines how the marginal association of rank with health depends on the composition of the covariate vector X_i in one dataset, the NSV.

Military retirees

Table 2 displays patterns of self-reported health among military retirees in the 2003 Survey of Retired Military, which are consistent with the hypothesis that officer veterans have better health than veterans who served in the enlisted ranks. The first column contains the widest subsample of respondents, all retirees aged 40 and older, while the second through fourth columns examine several subgroups. The top-left cell in the table shows that after controlling for age, race, ethnicity, marital status, education, and income, the odds of an officer reporting fair or poor health are lower in the broadest sample, and significantly different from zero at the 1 percent level. The officer effect is more than twice the size of the effect of having a college degree, which also lowers the odds of poor or fair health. Column 2 contains results estimated on the sample of retirees with 20 years of active-duty service. Column 3 contains results estimated on the sample without a VA disability rating. Column 4 contains results estimated on a sample defined by the intersection of those two subgroups. As shown in table 1 and in the second column here, more than 90 percent of the retired military sample has 20 years of service. The coefficients, therefore, change very little when the sample is restricted to those retirees. In columns 3 and 4, the officer coefficient is about –0.72, somewhat larger than in columns 1 and 2 although not significantly larger. Disability, which does vary in this sample, may dampen the effect of rank, but the effect seems negligible.

<<TABLE 2 ABOUT HERE>>

All veterans

Table 3 contains estimates from the logit model in equation (1) based on data from the 2001 NSV, which are also consistent with the hypothesis that officer veterans have better health

than veterans of the enlisted ranks. Each column restricts the sample in a manner corresponding to the sample restrictions used in table 2.

<<TABLE 3 ABOUT HERE>>

The first column reports estimates from the model based on the sample of all male veterans age 40 and over in the NSV. It reveals an officer effect (–0.201) that is smaller in magnitude than the effect in the Survey of Retired Military but still significant at the 5 percent level. The coefficient on age is also smaller, but the effect of being African American is larger. Marital status has a muted effect in the NSV compared to the Survey of Retired Military. Having less than a high school diploma is significantly associated with a higher probability of poor health in the NSV, and the coefficient on college graduate is also significant and equal and opposite in sign at –0.365. Log income is more protective here than in the Survey of Retired Military, with a coefficient of about –0.68.

As in table 2, the second column in table 3 restricts the sample to those with 20 years of active duty service, which reduces the sample by 85 percent. The officer coefficient jumps to –0.581, is highly significant, and is very similar to that shown in the second column of table 2. Many other coefficients are quite different when compared either to table 2 or to column 1 in table 3. The effect of a college degree reverses sign and becomes highly insignificant, while the coefficient on log income rises to –0.95. The estimates in the third column, which only conditions on VA disability and has a much larger sample again, are almost identical to those in the first column. The officer coefficient is again smaller and falls to 10 percent significance, a college degree is again protective, and the coefficient on income is around –0.70 again.

In the fourth column, the sample dwindles to the mere 575 veterans in the NSV who served for 20 years and did not have a VA disability, and standard errors become

correspondingly large. But the coefficient on officer regains significance at the 5 percent level even though it has risen to –0.671, back into the range we saw among retirees in table 2. The coefficients on officer status in columns 2 and 4 provide further evidence that the health gradient according to rank is associated with length of service. The officer effect is also quite robust in table 3, which is noteworthy given the non-robustness of the education effect. Only age and household income are similarly significant across all four columns.

Veterans and nonveterans in the PSID

Table 4 contains estimates of the association between health and rank derived from a data set that includes nonveterans alongside veterans, which also suggest that officer veterans have better health than enlisted veterans, though this association is not statistically significant in some cases. The first column presents estimates of equation (1) based on the entire sample, including nonveterans, and the estimated effect of nonveteran status γ appears below that of officer status β. Both coefficients are estimated at approximately –0.32, although significance varies between 10 and 5 percent. This suggests that enlisted veterans suffer poorer health than either officers or non-veterans, while officers and non-veterans have approximately the same odds of fair or poor health, holding all else constant.

<<TABLE 4 ABOUT HERE>>

Results in table 4 also strongly suggest that rank is more than just a proxy for socioeconomic status. The point estimate of the officer coefficient in column 1 is on par with estimates in tables 2 and 3, and the marginal associations between health and other markers of socioeconomic standing such as race, education, and income are also comparable. The PSID includes three times as many nonveterans as veterans, so it is highly unlikely that the coefficients on the socioeconomic variables are somehow attenuated by the presence of rank in the equation.

Rather, we see a strengthening of the marginal effect of education; not having graduated from high school increases the odds of fair or poor health, while a college degree reduces them. Household income is less strongly related to health here than in the NSV, but the coefficient, –0.485, is larger than that found in the Survey of Retired Military.

The second column in table 4 reestimates the model after dropping nonveterans from the PSID sample, which reduces the sample size by almost two-thirds, to 923. Although the point estimate of the officer effect increases to –0.502, the standard error more than doubles, reducing significance. Sample size is clearly an issue, but estimates were more precise in an even smaller subsample in column 4 of table 3. Sample composition is apparently also important. The 575 veterans in the NSV subsample served considerably longer and were more likely to have seen combat and have a disability rating than were the 923 veterans in the PSID sample.

The third column in table 4 further limits the sample to veterans who were not receiving a VA disability check, the only available measure of VA disability in this dataset. As in column 2, large standard errors in column 3 impede firm conclusions. Removing veterans with combat disabilities reduces the point estimate of the officer effect to –0.357, although the change is technically not significant. There is virtually no change in any of the coefficients on socioeconomic characteristics. We do not estimate the model based on PSID veterans with 20 years because that subsample dips to a mere 40 people.

Veterans and nonveterans in the WLS

Table 5 mirrors table 4 but contains estimates based on the 2004 wave of the Wisconsin Longitudinal Study, which produces similar estimates that suggest that officer veterans have better health than enlisted veterans, though, again, the estimates are not statistically significant. The model does not include estimates of the effects of age, race, ethnicity, or less than high

school attainment because the members of the sample were mostly born in 1939 and were primarily white, non-Hispanic high school graduates. Although the homogeneity of this cohort is a drawback, its high rate of military service, 54 percent compared to 35 percent in the PSID, makes the WLS an attractive dataset.

<<TABLE 5 ABOUT HERE>>

Despite the high rate of military service and relatively large sample size, the marginal effects of both officer status and veteran status on health are statistically insignificant in the first column. The officer coefficient, –0.648, is large and on par with that among military retirees, but it is estimated imprecisely. The officer effect does not change appreciably when the sample is restricted to veterans and to those without disability payments in magnitude or significance. Coefficients on marital status are fairly stable across the columns, as are coefficients on education, which are strongly significant and of comparable size to earlier results. The only incongruent result is that household income is only significant in the first column. Overall, the socioeconomic indicators do not appear to be stealing the thunder of the officer variable, nor the reverse.

The statistical insignificance of rank in table 5 probably stems from the fact that the respondents in the WLS veteran subsample served for relatively few years. It may also stem from their relative homogeneity in race, ethnicity, age, and to some extent education. To evaluate these explanations, a previous version of this paper contained re-estimates of the models (available on request) based on three sub-samples: 1) the respondents to the Survey of Retired Military who were similar to the WLS veterans in birth-year, race, and ethnicity; 2) the respondents to the NSV who had similar characteristics; and 3) the respondents from multiple NSV birth cohorts who served only during peacetime and for a relatively short period of time.

The officer effect was of standard size and significance among the first subsample of homogeneous career military but nonexistent among the second and third subsamples. This suggests that officers have better health than enlisted veterans because of the treatment they received when they were in the military. They have better health not because they have more favorable socioeconomic characteristics, but because they were affected differently by serving longer or being exposed to combat.

Comparing the protective effects of rank across samples

Table 6 collects point estimates across all four data sets of the odds ratios of being in fair or poor health associated with officer status. The first column depicts estimates over all veterans captured in each of the different surveys, while the second and third columns examine effects among subgroups defined by disability status or length of service. Across all columns, these odds ratios fluctuate within a fairly wide band, from around 0.50 to about 0.80, or within 30 percentage points around an average of about 0.60. Conditioning on disability status does not seem to change the range of results much at all, as shown in the second column. But it would appear that long service in the military, which we require in the third column, may be associated with greater stability in the odds ratio across data sets. Among veterans who served 20 or more years, the odds ratios for officers are either 0.57 or 0.56 depending on the data.

<<TABLE 6 ABOUT HERE>>

Rank versus other measures of socioeconomic status

Table 7 depicts a series of nested models estimated on NSV data with sequentially expanding sets of covariates. The first three columns reveal that the officer effect on health is not a proxy for race or marital status. The officer effect declines by only a small amount when race is included in the model, and by an even smaller amount when marital status is included. It is

attenuated by nearly half, however, when education is included. Net of educational differences, officers had lower odds than enlisted men of reporting poor or fair health. The officer effect shrinks again when post-service household income is included. These results suggest that the association of officer status with better health is less like the protective effects of race or marital status and more like the effects of education and income.

<<TABLE 7 ABOUT HERE>>

Discussion

The preceding analyses have revealed a persistent association between rank in the US armed forces and self-rated health across four different surveys. Officers are less likely than are enlisted men to report fair or poor health even after controlling for a variety of socioeconomic characteristics. In the large samples of military retirees and veterans, the evidence of health disparities according to rank is strongest. In the two non-military datasets, the associations were estimated less precisely, but the estimates of the officer effect were sometimes larger.

Results suggest that the protective effect of officer status stems at least in part from length of service. In the Survey of Retired Military, the respondents were almost all career military men who had served at least 20 years. Across all subsets within those data, officers had significantly better health than enlisted men. In the National Survey of Veterans, officers also had significantly better health than enlisted men, but these estimates were largest among career military veterans. By comparison, veterans in the two non-military surveys were very unlikely to have served for more than four years, and estimates of the health effect of officer status were often not statistically significant in these data. We also found that across all four data sets,

conditioning on long military service reduced the variance in our estimates of the officer effect to practically nothing.

Longer-serving veterans appear not to have experienced one well-known health disparity, namely the negative effect of being African-American. Among nondisabled veterans in the military samples, African-Americans were as healthy as whites. Although there are still racial disparities in health among other veteran subpopulations, these findings coincide with those on racial disparities among VA patients.[23] They are also similar to those of work demonstrating that military service reduces racial gaps in job satisfaction and marital status. This work has argued that service reduces such gaps because African-Americans are treated more equally in the military than they are in civilian society.[24]

We remain circumspect about our current conclusions because the data are limited. Statistical power is weak with only 90 officers in the 2001 wave of the PSID, which is unfortunate given the ability of longitudinal surveys like the PSID to inform us about causal pathways by revealing the evolution of health over the life cycle. Inferences drawn from cross-sectional patterns in the large datasets of veterans must be tempered with the usual caveats. Officers may have better health than enlisted men because of their pre-service characteristics, which would mean that rank is a marker, not a treatment. For example, except in extremely rare cases, officers have higher pre-service educational attainment than enlisted veterans, which may, in turn, explain their better health. Service-members also have different experiences in the armed forces, and we explore only one such experience, that of serving at a particular rank, and only to a lesser extent the length of service, combat exposure, and disability. Members of the military serve in different branches, receive different types of training, and experience very different day-to-day operations. Some are deployed to other countries while others are not. All of these diverse

experiences may have different relationships with health, with causality potentially running in either direction.

Length of service could also reflect heightened selection, which if experienced differently by officers and enlisted men, could also increase health disparities by rank. Officers typically face an "up or out" policy with respect to job tenure, meaning that officers who have completed 20 years of active duty progressed upward rather that outward. If they have higher ability, therefore, they are more likely to be promoted, thus serving longer, and also may be more likely to have better health. They may look healthier than enlisted men because they are more select. If long-serving enlisted men are subject to the same "up or out" policy, however, both subgroups would be equally select, and there would be no health inequalities based solely on selection. The degree of selection across rank is likely more important now in the context of the All-Volunteer Force. Previous research has shown that veterans of the early part of the AVF were more likely than their non-veteran peers to become homeless and to be incarcerated.[25] Differences in selection across rank and change in such selection over time represent interesting topics for future research.

If the association between rank and health reflects a treatment, however, officers may be healthier than enlisted men because they face less psychosocial stress. Researchers studying the Whitehall cohorts have speculated that civil service workers are affected by rank because those at lower ranks have less control over their environments. According to this view, people suffer more psychosocial stress if they work lower in a bureaucratic hierarchy, which, in turn, leads them to have worse health.[26] In qualitative interviews, officer veterans describe learning skills such as leadership and self-confidence, while enlisted men describe learning discipline and how

to obey orders.[27] Officers appear to have more control than enlisted men over their work environment and may be at lower risk of psychosocial stress.

Military service-members face a relatively unique form of job-related stress, namely combat exposure, which may amplify the effect of rank on health. In the three surveys that measure combat, officers are more likely to report combat exposure. When the models are restricted to the samples of longer-serving veterans, who are more likely to have seen combat, the officer effect increases. Veterans who report combat may have different experiences of combat by rank. Officers, for example, may experience combat from staff positions that are relatively less dangerous. Enlisted service-members, by contrast, may have more direct contact with the enemy. Unfortunately, the Survey of Retired Military does not ask about combat exposure, so it is difficult to say whether the officer effect is due to length of service or to combat exposure. Because of recent US military history, veterans who served longer are more likely than those who served for shorter time periods to have been exposed to combat. The effects of combat exposure represent a promising avenue for future research.

Combat-related or VA disability is also a compelling explanation for health disparities, but leads to different conclusions in different surveys. In the Survey of Retired Military, officers have a smaller advantage in health among retirees with a VA disability. In the National Survey of Veterans, they have a larger advantage. There are two possible reasons for these contradictory results. First, if injury during combat is a random event, VA disability may be evenly distributed across rank and thus contain little information. Second, if officers are more adept at obtaining a VA disability rating due to their higher status, the effect of disability per se may be confounded in the variable. Officers may obtain better access to medical care because of their position in the

hierarchy. Patterns in table 1 could support either hypothesis. Officers may have better health, however, because they live healthier lifestyles, and are less likely to smoke or drink excessively.

The findings suggest possible changes in policy, which differ depending on whether the association between rank and health stems from differences in stress, behavior, or health care. If stress leads to the association, the armed forces could try to ensure that enlisted service-members work in environments that do not impose stress that is unnecessary. Previous research has suggested, for example, that service-members experience more stress when they have to work longer hours.[28] The armed forces could try to ensure that enlisted service-members are not routinely asked to work overtime. If behavior causes the association, the armed forces could target enlisted service-members for health programs. Enlisted service-members, for example, may be more likely than officers to engage in unhealthy behaviors, such as smoking. Perhaps in recognition of this possibility, the armed forces have recently developed a public relations campaign to help people quit smoking, which is targeted at junior enlisted service-members.[29] To determine whether the association stems from health care, future research should examine whether enlisted service-members have less access than officers to quality health care through the Department of Defense or through the Department of Veterans Affairs. If there are health care differences, the government should work to redress these inequities among service-members and veterans by rank.

Regardless of the cause, veterans who served as officers have better health than veterans who served in the enlisted ranks, even after taking their higher levels of education and income into account. Future work should examine whether this benefit stems from pre-service demographic differences between officers and enlisted men, such as family background and

cognitive aptitude, from psychosocial factors such as on-the-job stress and combat exposure, from behavioral factors such as smoking and drinking, or from differential access to health care.

Table 1. Sample characteristics in four datasets by rank and veteran status

	2003 SRM		2001 NSV		2001 PSID			2004 WLS		
	Enlisted	Officers	Enlisted	Officers	Enlisted	Officers	Nonveterans	Enlisted	Officers	Nonveterans
	1	2	3	4	5	6	7	8	9	10
Age	54.9	58.7	60.9	63.8	59.3	62.5	51.2	64.4	64.1	64.4
Percentage in:										
Excellent health	7.6%	19.5%	10.7%	21.0%	14.9%	31.1%	22.0%	23.9%	51.4%	24.1%
Very good health	23.9%	32.5%	22.6%	27.0%	34.7%	40.0%	30.7%	39.4%	25.7%	36.4%
Good health	33.7%	28.2%	30.5%	30.9%	28.1%	17.8%	30.8%	27.1%	20.3%	29.3%
Fair health	23.6%	14.5%	22.6%	13.1%	16.1%	5.6%	11.8%	7.5%	2.7%	7.9%
Poor health	11.2%	5.3%	13.6%	8.1%	6.2%	5.6%	4.7%	2.0%	0.0%	2.3%
Fair or poor health	34.8%	19.8%	36.2%	21.2%	22.3%	11.2%	16.5%	9.5%	2.7%	10.2%
Has a VA disability rating	65.3%	62.8%	30.0%	39.6%	4.1%	1.1%	-	0.9%	2.0%	-
Exposed to combat	-	-	48.3%	58.8%	35.5%	38.9%	-	7.5%	35.1%	-
Years on active duty	21.1	23.4	5.9	12.4	4.0	7.9	-	2.5	3.5	-
20 years of service	89.3%	94.1%	10.9%	34.9%	2.4%	18.0%	-	0.0%	0.0%	-
Married	82.1%	89.4%	71.2%	81.2%	83.2%	88.9%	82.1%	86.1%	91.9%	83.7%
Never married	2.2%	1.1%	4.6%	3.4%	1.9%	0.0%	1.9%	3.4%	2.0%	4.4%
African American	15.5%	9.4%	9.5%	4.3%	19.8%	4.4%	25.7%	-	-	-
Hispanic	4.0%	2.0%	2.5%	0.7%	0.4%	0.0%	0.5%	-	-	-
Years of education	14.4	18.4	13.0	16.1	13.3	15.8	13.3	13.4	17.5	14.5
Has a college degree	24.4%	88.1%	19.6%	73.6%	23.6%	77.8%	30.0%	21.9%	95.9%	40.1%
Household income	$72,490	$125,953	$47,843	$87,718	$72,059	$121,860	$86,539	$77,844	$143,958	$87,012
N	13,229	6,195	10,591	1,339	833	90	1,711	1,486	148	1,376

Sources: Survey of Retired Military, 2003; National Survey of Veterans, 2001; Panel Study of Income Dynamics, 2001; Wisconsin Longitudinal Study, 2004

Table 2. Multivariate logit models of self-reported fair or poor health among retired military men 40 years and older

	1		2		3		4	
Is an officer	-0.582	***	-0.560	***	-0.723	***	-0.715	***
	(0.047)		(0.050)		(0.126)		(0.128)	
Age	0.040	***	0.046	***	0.050	***	0.050	***
	(0.002)		(0.002)		(0.004)		(0.005)	
African American	0.386	***	0.408	***	0.092		0.118	
	(0.046)		(0.049)		(0.131)		(0.133)	
Hispanic	0.123		0.149		-0.199		-0.169	
	(0.089)		(0.095)		(0.266)		(0.267)	
Currently married	-0.165	***	-0.140	***	-0.376	***	-0.358	***
	(0.046)		(0.050)		(0.104)		(0.107)	
Never married	-0.175		-0.409	***	-0.556	*	-0.468	
	(0.125)		(0.153)		(0.307)		(0.310)	
Educational attainment (reference: high school graduate)								
Less than high school	0.141		-0.156		0.189		0.054	
	(0.250)		(0.281)		(0.443)		(0.461)	
Some college	-0.042		-0.025		-0.175		-0.176	
	(0.054)		(0.058)		(0.109)		(0.111)	
College graduate	-0.262	***	-0.282	***	-0.601	***	-0.623	***
	(0.061)		(0.066)		(0.138)		(0.141)	
Log household income	-0.350	***	-0.330	***	-0.245	***	-0.238	***
	(0.022)		(0.024)		(0.042)		(0.042)	
Constant	1.176	***	0.498	*	-1.358	**	-1.428	***
	(0.275)		(0.292)		(0.551)		(0.563)	
Observed π	0.300		0.289		0.117		0.119	
N	19,424		17,653		6,827		6,435	
LR $\chi 2$ statistic	1,549		181		385		382	
Prob > chi-square	0.000		0.000		0.000		0.000	
Pseudo R2	0.065		0.070		0.078		0.077	
Sample characteristics			20 years		no VA disability		no VA disability 20 years	

Source: 2003 Survey of Retired Military.
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3. Multivariate logit models of self-reported fair or poor health among veterans 40 years old and older

	1		2		3		4	
Is an officer	-0.201	**	-0.581	***	-0.198	*	-0.671	**
	(0.079)		(0.171)		(0.111)		(0.328)	
Age	0.010	***	0.019	***	0.016	***	0.033	***
	(0.002)		(0.006)		(0.002)		(0.011)	
African American	0.549	***	0.550	***	0.467	***	0.078	
	(0.070)		(0.169)		(0.092)		(0.335)	
Hispanic	0.201		0.169		0.044		-1.048	
	(0.132)		(0.372)		(0.177)		(1.083)	
Currently married	0.005		0.089		-0.061		-0.278	
	(0.053)		(0.158)		(0.067)		(0.272)	
Never married	-0.197	*	-0.033		-0.264		-0.137	
	(0.106)		(0.465)		(0.130)		(0.661)	
Educational attainment (reference: high school graduate)								
Less than high school	0.365	***	-0.177		0.391	***	-0.581	
	(0.067)		(0.325)		(0.081)		(0.526)	
Some college	-0.068		0.098		-0.142	**	0.017	
	(0.051)		(0.144)		(0.065)		(0.252)	
College graduate	-0.365	***	0.135		-0.530	***	-0.316	
	(0.063)		(0.181)		(0.083)		(0.335)	
Log household income	-0.680	***	-0.950	***	-0.715	***	-0.708	***
	(0.032)		(0.117)		(0.040)		(0.205)	
Constant	5.867	***	8.236	***	5.620	***	4.779	**
	(0.367)		(1.315)		(0.459)		(2.336)	
Observed π	0.292		0.322		0.282		0.221	
N	11,930		1,619		8,224		575	
LR $\chi 2$ statistic	1,373		172		1,100		57	
Prob > chi-square	0.000		0.000		0.000		0.000	
Pseudo R2	0.089		0.085		0.112		0.094	
Sample characteristics			20 years		no VA disability		no VA disability 20 years	

Source: 2001 National Survey of Veterans.
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. Multivariate logit models of self-reported fair or poor health among men 40 years and older

	1		2		3	
Is an officer	-0.325	*	-0.502		-0.357	
	(0.174)		(0.386)		(0.390)	
Is not a veteran	-0.317	**				
	(0.141)					
Age	0.040	***	0.054	***	0.052	***
	(0.005)		(0.008)		(0.008)	
African American	0.571	***	0.587	**	0.611	**
	(0.129)		(0.232)		(0.243)	
Hispanic	0.892		1.136		1.196	
	(0.658)		(1.256)		(1.259)	
Currently married	-0.080		-0.289		-0.257	
	(0.152)		(0.247)		(0.258)	
Never married	-0.515		-0.568		-0.524	
	(0.425)		(0.807)		(0.811)	
Educational attainment (reference: high school graduate)						
Less than high school	0.612	***	0.551	*	0.678	**
	(0.154)		(0.288)		(0.295)	
Some college	-0.288	*	-0.154		-0.077	
	(0.153)		(0.221)		(0.227)	
College graduate	-0.698	***	-0.735	***	-0.811	***
	(0.168)		(0.258)		(0.277)	
Log household income	-0.485	***	-0.303	**	-0.320	***
	(0.073)		(0.119)		(0.123)	
Constant	1.717	**	-1.055		-0.860	
	(0.867)		(1.412)		(1.460)	
Observed π	0.181		0.212		0.203	
N	2,681		923		888	
LR χ2 statistic	411		129		123	
Prob > chi-square	0.000		0.000		0.000	
Pseudo R2	0.162		0.135		0.137	
Sample characteristics			Veterans		Veterans no VA disability payment	

Source: 2001 Panel Study of Income Dynamics
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5. Multivariate logit models of self-reported fair or poor health among white men from Wisconsin 40 years and older

	1	2	3
Is an officer	-0.648	-0.724	-0.674
	(0.532)	(0.555)	(0.558)
Is not a veteran	0.155	-	-
	(0.130)		
Age	-	-	-
African American	-	-	-
Hispanic	-	-	-
Currently married	-0.354 **	-0.397	-0.263
	(0.180)	(0.261)	(0.276)
Never married	0.494 *	0.692 *	0.847 **
	(0.289)	(0.419)	(0.429)
Educational attainment (reference: high school graduate)			
Less than high school	-	-	-
Some college	-0.431 **	-0.734 ***	-0.783 ***
	(0.187)	(0.275)	(0.282)
College graduate	-0.647 ***	-0.696 ***	-0.744 ***
	(0.168)	(0.264)	(0.271)
Log household income	-0.321 ***	-0.197 *	-0.170
	(0.075)	(0.109)	(0.111)
Constant	1.678 **	0.419	-0.001
	(0.784)	(1.144)	(1.174)
Observed π	0.095	0.089	0.088
N	3,010	1,634	1,617
LR χ2 statistic	81	40	38
Prob > chi-square	0.000	0.000	0.000
Pseudo R2	0.043	0.041	0.040
Sample characteristics		Veterans Military	Veterans No VA disability payment

Source: 2004 Wisconsin Longitudinal Study
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. Odds ratios of officer effect derived from logit models of self-reported fair or poor health among veterans 40 years and older, across 4 datasets

	All veterans	Without VA disability	>20 years
SRM	0.56	0.49	0.57
NSV	0.82	0.82	0.56
PSID	0.61	0.70	
WLS	0.48	0.51	

Sources: SRM (Survey of Retired Military 2003); NSV (National Survey of Veterans 2001); PSID (Panel Study of Income Dynamics 2001); WLS (Wisconsin Longitudinal Study 2004).

Table 7. Nested multivariate logit models of self-reported fair or poor health among veterans 40 years and older

	1		2		3		4		5	
Is an officer	-0.826	***	-0.794	***	-0.776	***	-0.382	***	-0.201	**
	(0.071)		(0.071)		(0.071)		(0.077)		(0.079)	
Age	0.022		0.024	***	0.024	***	0.020	***	0.010	***
	(0.002)	***	(0.002)		(0.002)		(0.002)		(0.002)	
African American			0.732	***	0.691	***	0.645	***	0.549	***
			(0.066)		(0.067)		(0.068)		(0.070)	
Hispanic			0.328	***	0.329	***	0.289	**	0.201	
			(0.128)		(0.128)		(0.130)		(0.132)	
Currently married					-0.435	***	-0.392	***	0.005	
					(0.048)		(0.049)		(0.053)	
Never married					-0.081		-0.062		-0.197	*
					(0.100)		(0.102)		(0.106)	
Educational attainment (reference: high school graduate)										
Less than high school							0.524	***	0.365	***
							(0.065)		(0.067)	
Some college							-0.181	***	-0.068	
							(0.049)		(0.051)	
College graduate							-0.710	***	-0.365	***
							(0.060)		(0.063)	
Log household income									-0.680	***
									(0.032)	
Constant	-1.884	***	-2.143	***	-1.816	***	-1.479	***	5.867	***
	(0.107)		(0.110)		(0.118)		(0.124)		(0.367)	
Observed π	0.292		0.292		0.292		0.292		0.292	
N	11,930		11,930		11,930		11,930		11,930	
LR $\chi 2$ statistic	291		415		502		816		1,373	
Prob > chi-square	0.000		0.000		0.000		0.000		0.000	
Pseudo R2	0.019		0.027		0.033		0.053		0.089	

Source: 2001 National Survey of Veterans
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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[11] The correspondence between pay grade and ranks is technically only one-to-one within and not necessarily between branches of the armed services. We will speak of the two concepts as though they were identical because rank is a more familiar term to lay people and because our measures are based off of pay grade, which is uniform across branches.

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