Research Report

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Among Black Americans, Is Military Service Associated with Better Quality of Life?

In recent decades, the percentage of Black enlisted accessions has exceeded the percentage of civilian Black Americans in the U.S. population. Despite the strong representation of Black Americans in military service and significant research efforts focused on the well-being of military service members and veterans in general, there is little research on the impact of military service on Black people—i.e., whether Black veterans have better life outcomes, in terms of health, economic status, and social relationships—compared with their Black civilian counterparts and with White veterans and civilians.[1]

Much research on the impact of military service has focused on the detrimental effect of combat on veterans' mental and physical health (e.g., Tanielian and Jaycox, 2008). There is also some evidence that White individuals have more opportunities during military service than their Black peers, including evidence of racial bias in the military disciplinary system (Lam, 2021) and lower rates of promotion for Black officers and Black enlisted leaders in certain branches of service (Military Leadership Diversity Commission, 2011). When combining this evidence with the known disparities in health (Artiga, Orgera, and Pham, 2020),

KEY FINDINGS

- A majority of Black veterans experience improved economic stability compared with Black Americans who have never served, as measured by higher income, improved ability to cover costs of medical and dental care, higher rates of homeownership, and decreased reliance on food assistance programs.
- Black veterans have a substantially lower likelihood of marijuana use disorder than Black civilians and White veterans and civilians.
- Black veterans are more likely to be married, and at younger ages, than Black civilians, and marriage has been shown to be associated with positive economic and mental and physical health outcomes.
- Black veterans still do not have economic equity compared with White civilians and veterans on such indicators as annual income and need for food assistance.
- Black veterans have higher odds than Black civilians of experiencing chronic pain, high-impact pain, hypertension, high cholesterol, Type 2 diabetes, prostate cancer, and work-related limitations.

Abbreviations

ACS	American Community Survey
NHIS	National Health Interview Survey
NSDUH	National Survey of Drug Use and Health
PTSD	posttraumatic stress disorder
PUMS	Public Use Microdata Sample
SNAP	Supplemental Nutrition Assistance Program
VA	U.S. Department of Veterans Affairs

health care (Institute of Medicine [US] Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care, 2003), and economic (Manduca, 2018) outcomes for Black Americans relative to White Americans, one might expect that military service could lead to detrimental outcomes for Black veterans compared with Black civilians and the White population.

However, there are also positive benefits to military service. For example, military life can create a sense of community that can help military families adapt to life stressors (Bowen et al., 2003), and military service can provide economic advantages, such as steady work, good pay, health care, and funding for postsecondary education (Hosek and Wadsworth, 2013). Black enlisted service members and officers have consistently higher retention than their White counterparts (Military Leadership Diversity Commission, 2011), suggesting that they perceive an ongoing benefit of service, at least compared with their available civilian opportunities. Thus, it is unclear whether military service would be associated with better or worse life outcomes for Black Americans, and prior literature on this topic is sparse.

We sought to address this gap by examining the ways that military service might be correlated with experiences of Black individuals and by exploring several factors that could be meaningful to health and well-being for Black Americans. We focused on two questions:

- How do the social, health, and economic outcomes of Black veterans compare with those of Black civilians?
- How do the outcomes of Black veterans compare with those of White veterans and White civilians?[2]

We answered these questions by looking at four types of outcomes: physical health, behavioral health, economic stability, and interpersonal relationships. For each topic, we first conducted a brief literature review, focusing on literature related to the influence of military status and race on the outcomes of interest. We then conducted analyses of three large national data sets to examine differences in outcomes among Black and White veterans and civilians:

- The American Community Survey (ACS) Public Use Microdata Sample (PUMS) is administered by the U.S. Census Bureau (U.S. Census Bureau, 2021). It assesses such outcomes as marital status, income, housing status, and demographic data from individual people or housing units. We used the 2015–2019 ACS PUMS.
- The National Survey of Drug Use and Health (NSDUH) is administered by the Substance Abuse and Mental Health Services Administration (NSDUH, undated). It measures the use of illegal drugs, prescription drugs, alcohol, and tobacco; substance use disorders; and serious psychological distress and mental illness. We used the 2019 NSDUH.
- The National Health Interview Survey (NHIS) is administered by the Centers for Disease Control and Prevention (NHIS, undated). It assesses such outcomes as physical and mental health, chronic conditions, measures of functioning, and access to services. We used the 2019 NHIS.

We examined basic differences in outcomes between Black veterans, Black civilians, White veterans, and White civilians. We also conducted analyses to determine whether outcomes varied by race and veteran status, adjusting for other relevant socioeconomic characteristics (e.g., age, gender). We did so by examining race by veteran status interaction effects in adjusted logistic regression models; when the interaction effect was nonsignificant, we ran a main effects–only model. All models account for relevant survey weights, given that the surveys we analyzed

used a complex survey design. Appendix A provides details of our methods, including additional information about the data sources, analytic approach, and limitations of the study. Given the limited existing literature on this topic, these analyses were largely exploratory in nature and reflect an effort to identify areas for which it might be valuable to further investigate the role of race and military service.

In this report, we present comparisons among four non-Hispanic racial groups: Black veterans, Black civilians, White veterans, and White civilians. We compare outcomes, by racial group, for those who served in the military for some period with outcomes for those who did not. In an effort to center our focus on the Black experience, we first compare outcomes for Black veterans with those for Black civilians. In addition, because White individuals are the majority racial group in the U.S. military and the United States more broadly, we also compare outcomes for Black veterans with those for White veterans and White civilians. However, comparing Black people with White people can also implicitly suggest that having the same numbers, measures, or status of White people is the goal, or that the "White" experience should be considered the normative or desirable experience (Garcia, López, and Vélez, 2018). In reference to wealth, the Black-White wealth gap is severe; at the same time, however, the goal of Black wealth acquisition should not be to mimic White wealth, because White wealth is also marked by inequality (e.g., Kochhar and Cilluffo, 2018). Thus, we acknowledge the complexity of referencing White groups when exploring the association of military service with future outcomes and that this practice can be fundamentally flawed, yet still useful.

Our data analyses (and the vast majority of the studies we reviewed) did not allow us to measure the *impact* of serving in the military on later outcomes—that is, to compare how a set of individuals would have had different outcomes had those individuals served or not served in the military. We also did not compare how veterans from different eras fared after service because of the limitations in the NSDUH and NHIS data sets (e.g., lack of an indicator for era of service, very small numbers of veterans in certain eras of service for certain outcomes). Our findings on the associations among outcomes, veteran status, and race should not be interpreted as being *caused by* military service.

In addition, although comparisons across racial groups are suggestive about the effects of military service, there are important differences among the groups studied that might account for some of the observed differences in outcomes. There could also be systematic differences between the veterans and civilians included in the data sets; for example, we expected a greater proportion of men among the veterans than among the civilians. To account for such differences, we adjusted the results for sociodemographic characteristics to isolate the effect of veteran status. Where appropriate in tables throughout the report, we provide adjusted predicted probabilities, which indicate the likelihood that individuals in a given group experienced an outcome of interest (e.g., depression, diabetes) after adjustment for sociodemographic characteristics.

The remainder of this report is organized as follows. We first provide an overview of the veteran population. We then present findings for each of the four outcomes studied: physical health, behavioral health, economic stability, and interpersonal relationships. Finally, we provide our conclusions, including future directions related to supporting military veterans and conducting future research.

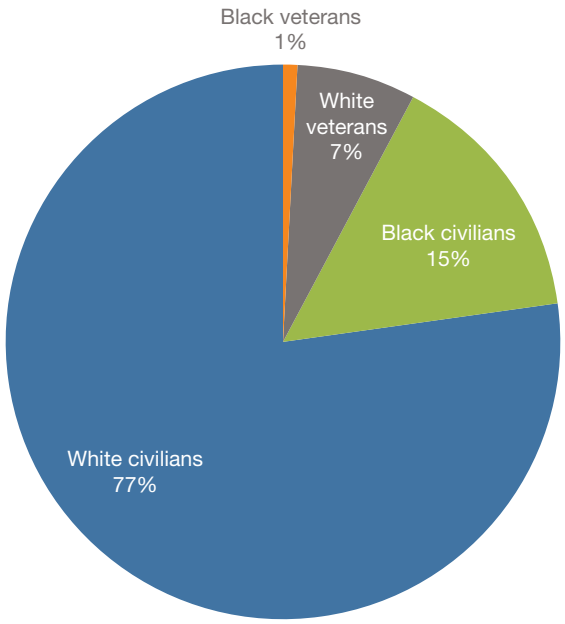
Overview of the Veteran Population

According to the U.S. Census Bureau, Black Americans are the second largest racial minority, making up an estimated 13.4 percent of the population. Among approximately 18 million veterans, 11.7 percent are Black and 76.7 percent are White (Vespa, 2020). With slowly rising numbers, women make up 9.2 percent of the veteran population.

The analyses in this report focus on Black veterans as compared with Black civilians, White veterans, and White civilians. We do not include individuals who may also identify as Hispanic. Figure 1 displays the proportion of these four groups relative to the sum population of these four groups (i.e., not including other racial and ethnic groups). As Table A.1 in Appendix A shows, the different data sources have

FIGURE 1

Distribution of Analyzed Population, by Race and Veteran Status



SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).

slightly different compositions of these groups, but they are generally quite similar.

The veteran groups differ from the nonveteran groups in terms of age and gender, which might be important in interpreting some of the comparisons in this report. As Figure 2 shows, the civilian populations are slightly more than half female, while the veteran populations are overwhelmingly male. Women make up 15 percent of the Black veteran group, compared with 8 percent of the White veteran group.

Veterans tend to be older than civilians, and the White population has an older average age than the Black population. As Figure 3 shows, White veterans average 64 years of age, 16 years older than White civilians. Black veterans average 56 years of age, 13 years older than Black civilians. Among veterans, those who served during the Vietnam era constitute the largest group, followed by those who served during the peacetime, Gulf War, and post–September 11, 2001, eras, respectively (data not shown).

Physical Health

In this section, we explore how serving in the U.S. military is associated with physical health—specifically, hypertension and high cholesterol, diabetes-related indicators, cancer diagnoses, and pain and pain-related interference—and look at the impact of cost on decisions to pursue care. For each condition, we present known relationships. First, we establish differences between Black veterans and Black civilians, and then we establish differences between racial groups or veteran status.

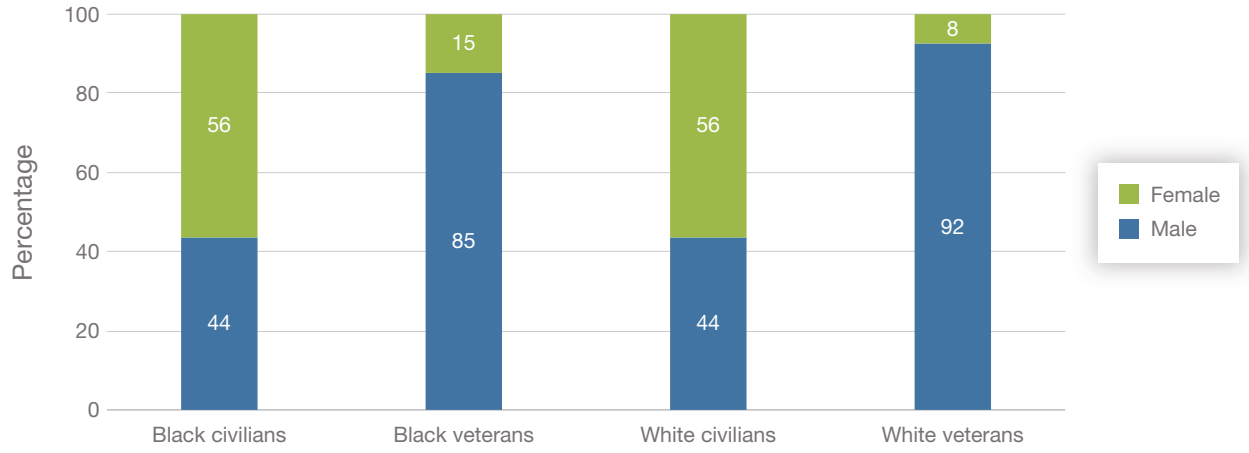
Hypertension and Cholesterol

Research assessing the prevalence of hypertension in the civilian population found that Black civilians have a higher prevalence of hypertension than their White counterparts (Mujahid et al., 2011) and tend to be diagnosed at a younger age (Bell, Thorpe, and LaVeist, 2010). One study found that Black veterans were similarly more likely than White veterans to report having hypertension (Egede et al., 2010). These disparities have often been attributed to genetic differences, socioeconomic status, lifestyle behaviors, and even psychosocial stressors (Mujahid et al., 2011). Despite the lack of significant differences in the prevalence of hypertension between veterans and nonveterans when adjusted for obesity (Fryar et al., 2016), one study on U.S. Department of Veterans Affairs (VA) care suggests that younger Black veterans who were able to receive care in the VA had improved cardiovascular outcomes, indicating the importance of access to quality care (Norris et al., 2016).

Regarding the prevalence of high cholesterol, research shows that Black civilians have lower rates of high cholesterol than their White counterparts, even at different socioeconomic levels (Terlizzi and Villarroel, 2020). This was also observed in the veteran population (Weaver et al., 2007). However, veterans without trauma exposure had decreased odds of both high cholesterol and cancer compared with veterans who were exposed to trauma; this might reflect a variety of factors, including stress-related eating behaviors after trauma exposure (El-Gabalawy et al., 2018).

FIGURE 2

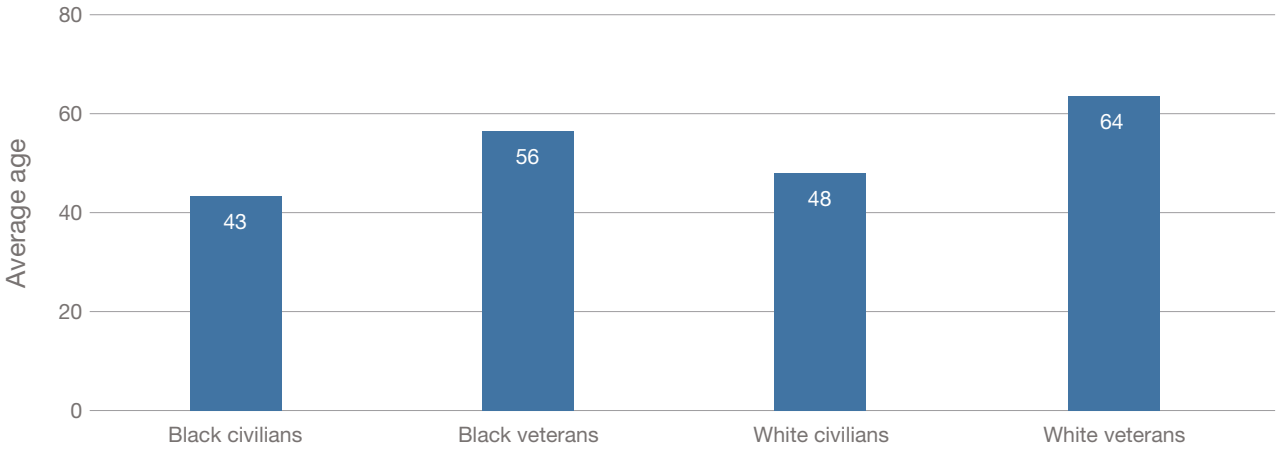
Gender Distribution, by Race and Veteran Status



SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).

FIGURE 3

Average Age, by Race and Veteran Status



SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).

Using 2019 NHIS data, we found, after adjusting for sociodemographic characteristics, that **Black veterans were significantly more likely to report having been diagnosed with hypertension and high cholesterol in the past 12 months and more likely to report taking medication for hypertension and cholesterol than Black civilians** (Table 1). **Black veterans were also significantly more likely than White veterans and White civilians to report having been diagnosed with hypertension and to report currently taking medication for hypertension.** Although Black veterans were significantly more likely than White civilians to report having been diagnosed with high cholesterol and to report currently taking cholesterol medication, there was no statistically significant difference between Black veterans and White veterans. We also explored whether there were differences in the effect of race and veteran status on rates of hypertension and high cholesterol for men versus women and found no significant difference.

TABLE 1
Hypertension and Cholesterol, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Hypertension, past 12 months	35.2 (30.4, 40.0)[a, b, c]	34.7 (32.7, 36.7)[b, c]	25.6 (24.0, 27.5)[c]	23.5 (22.8, 24.2)
Now taking medication for hypertension	40.0 (35.1, 45.0)[a, b, c]	36.1 (34.4, 37.9)[b, c]	27.3 (25.7, 28.9)[c]	25.5 (24.9, 26.1)
High cholesterol, past 12 months	20.6 (16.4, 24.8)[a, c]	18.0 (16.4, 19.5)[b, c]	19.5 (17.8, 21.1)[c]	17.6 (17.0, 18.3)
Now taking medication for cholesterol	18.5 (14.6, 22.3)[a, c]	17.8 (16.3, 19.3)[b, c]	18.5 (17.1, 19.9)[c]	17.2 (16.6, 17.8)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

Diabetes-Related Indicators

Prior studies have identified a higher prevalence of diabetes in the Black population than in the White population; Black civilians are twice as likely as White civilians to have diabetes (Atchison et al., 2011; Brancati et al., 1996; Cheng et al., 2019). Black civilians also appear to have higher rates of family history of diabetes than their White counterparts (Yang et al., 2018). The higher prevalence of diabetes is also observed in the Black veteran population, and the rate of hospitalization due to diabetes among Black veterans is almost double the rate among White veterans (Twombly et al., 2010). Research examining veterans with diabetes showed that Black veterans had lower glycemic control, lower medication adherence, and poorer insulin self-management than White veterans (Cramer and Pugh, 2005; Egede et al., 2010).

Black veterans were significantly more likely to report having adult-onset Type 2 diabetes than Black civilians, White veterans, and White civilians.

Using 2019 NHIS data, we found, after adjusting for sociodemographic characteristics, that **Black veterans were significantly more likely to report having adult-onset Type 2 diabetes than Black civilians, White veterans, and White civilians** (Table 2). When we examined whether this effect differed for men and women, we found no significant difference. The prevalence of Type 1 diabetes did not vary by veteran race or status, which is perhaps unsurprising given that Type 1 diabetes diagnoses likely predated military service.

Focusing on individuals who had a diabetes diagnosis, we found the same pattern for indicators of diabetes treatment. Using 2019 NHIS data, we found, after adjusting for sociodemographic characteristics, that **Black veterans with diabetes were significantly more likely to report taking diabetic pills and taking insulin than Black civilians, White veterans, and White civilians with diabetes** (Table 3).

Cancer Diagnoses

Existing literature suggests that, for multiple types of cancers, including prostate and colorectal cancer, there are higher incidence and mortality rates for Black civilians than for their White counterparts—and this result has been found within the veteran population as well (Powell, Schwartz, and Hussain,

TABLE 2

Diabetes-Related Indicators, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Type 1 diabetes	1.6 (0.0, 3.2)	1.1 (0.7, 1.6)	0.9 (0.4, 1.4)	0.8 (0.7, 1.0)
Type 2 diabetes	12.8 (9.3, 16.3)[a, b, c]	10.4 (9.2, 11.8)[b, c]	8.0 (6.9, 9.1)[c]	6.9 (6.5, 7.3)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

TABLE 3

Diabetes-Related Indicators, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Taking diabetic pills	10.2 (6.9, 13.4)[a, b, c]	6.8 (5.7, 8.0)[b, c]	4.8 (3.9, 5.7)[c]	4.1 (3.8, 4.5)
Taking insulin	4.1 (1.7, 6.5)[a, b, c]	1.9 (1.4, 2.4)[b, c]	2.0 (1.3, 2.6)[c]	1.4 (1.2, 1.6)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income. These items were reported only among individuals who had first indicated that they were diagnosed with diabetes.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

1995; Samanic et al., 2004; Singh and Jemal, 2017). Within the VA health care system, the five most frequently diagnosed cancers for veterans and civilians were found to be prostate cancer, lung/bronchus cancer, colon/rectum cancer, urinary bladder cancer, and skin melanomas (Zullig et al., 2012). In a study assessing the risk of cancer in veterans with and without diabetes, veterans with diabetes were shown to have a lesser risk for prostate and lung cancers but an increased risk of liver, pancreas, biliary, colon, rectum, and kidney cancers, as well as melanoma and leukemia (Atchison et al., 2011).

We examined five types of cancer using 2019 NHIS data: liver, lung, prostate (among men), stomach, and colorectal cancer. Adjusted rates of liver and stomach cancer were so low across groups (0.1 percent or lower for most groups) that we opted not to report these; instead, we focused on lung, prostate, and colorectal cancer. After adjusting for sociodemographic characteristics, we found that **prostate cancer was the only cancer diagnosis with statistically significant findings** (of the cancer diagnoses examined). **Black veterans were significantly more likely to report a prostate cancer diagnosis than both Black civilians and White civilians**, and there was no significant difference between Black veterans and White veterans (Table 4).

Pain and Pain-Related Interference

Chronic pain is one of the most prevalent concerns among veterans. Musculoskeletal conditions are the most common diagnosis among veterans receiving VA health care (VA, 2017), and there is evidence that veterans have significantly higher rates of severe pain than their civilian counterparts, especially among younger groups (Edmond et al., 2018; Nahin, 2017). Black veterans tend to have more-persistent pain than White veterans (Higgins et al., 2014) and report receiving more chronic pain treatment than White veterans. Despite receiving more treatment, Black veterans receiving pain treatment raise concerns about the effectiveness of their treatment compared with the effectiveness of their White counterparts' treatment (Dobscha et al., 2009). In civilian populations, there is mixed evidence regarding duration and

TABLE 4
Cancer Diagnoses, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Lung cancer	0.7 (0.0, 2.0)	0.3 (0.0, 0.5)[b]	0.7 (0.3, 1.2)[c]	0.4 (0.3, 0.6)
Prostate cancer	7.9 (4.4, 11.4)[a, c]	6.2 (3.7, 8.7)	4.6 (3.9, 5.3)[c]	3.1 (2.7, 3.6)
Colorectal cancer	0.3 (0.0, 0.8)	0.6 (0.3, 1.0)[b]	0.7 (0.4, 1.0)[c]	0.7 (0.5, 0.8)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income. Analyses focused on prostate cancer were conducted only among individuals who identified as men; therefore, the proportions reflect the estimated percentage of the population of men. All other cancers were examined in men and women.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

severity of pain for White versus Black individuals (Hardt et al., 2008; Portenoy et al., 2004), although providers tend to underestimate the severity of pain in Black patients and tend to be more conservative in their treatment of patients from racial and ethnic minority groups (Anderson et al., 2000; Meghani, Byun, and Gallagher, 2012).

After adjusting for sociodemographic characteristics, we found that **rates of chronic pain and high-impact pain were significantly higher among Black veterans than among Black civilians** (Table 5). This is consistent with previous research suggesting that pain is more prevalent among veterans. **Black veterans had significantly lower rates of chronic pain than White veterans, but higher rates than White civilians. However, rates of high-impact pain were not significantly different for Black veterans and White veterans.**

Influence of Health Care Costs on Access to and Utilization of Care

There is significant overlap between physical health and socioeconomic status such that higher socioeconomic status is associated with better health. Although there are additional reasons for health disparities beyond health care costs and health care systems (e.g., social determinants), health care costs are negatively associated with access to health care—and may disproportionately affect Black populations. For example, one study found that Black cancer survivors are less likely to obtain medical care, prescription medications, and dental care than their White counterparts because of cost (Weaver et al., 2010). It is also well documented that Black civilians are more likely than White civilians to be uninsured (Kirby and Kaneda, 2010; Masi, Blackman, and Peek, 2007). Among the veteran population, veterans in racial minority groups have a higher chance of being dependent on the VA health system for health care (Trivedi et al., 2011). Research shows that Black veterans with access to health care could have lower mortality rates than Black civilians for certain illnesses (Kovesdy et al., 2015). The ability of vulnerable veterans (e.g., those with service-related disabilities and low incomes) to enroll in the VA health system (Trivedi et al., 2011) may mitigate the adverse impact of the cost of care for Black veterans compared with Black civilians.

Using 2019 NHIS data, we found, after adjusting for sociodemographic characteristics, that **there was no significant difference in the impact of cost on care between Black veterans and Black civilians** (Table 6). **There was also no statistical difference when we compared Black veterans with White civilians across eight of the nine variables of interest, although Black veterans were more likely to report an overarching problem paying medical bills.** When comparing Black veterans with White veterans, we found that **Black veterans were significantly more affected by the cost of care for five of the nine variables of interest**: experiencing problems paying medical bills, needing dental care but not getting it because of cost, skipping medication to save money,

TABLE 5

Past Three Months Pain-Related Interference

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Chronic pain	26.0 (21.0, 31.1)[a, b, c]	17.1 (15.6, 18.6)[b, c]	29.5 (27.1, 31.8)[c]	23.2 (22.5, 23.9)
High-impact pain	10.8 (7.3, 14.4)[a, c]	6.7 (5.8, 7.6)[b]	13.6 (11.8, 15.4)[c]	9.1 (8.6, 9.6)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

TABLE 6

Impact of Cost on Care in the Past 12 Months, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Problem paying medical bills	18.0 (12.8, 23.2)[b, c]	16.6 (15.0, 18.3)[b, c]	15.3 (13.2, 17.5)	13.0 (12.4, 13.7)
Delayed medical care due to cost	7.7 (3.6, 11.8)	7.7 (6.6, 8.8)[b, c]	8.3 (6.5, 10.1)[c]	8.6 (8.0, 9.1)
Needed medical care but did not get it because of cost	7.0 (3.0, 10.9)	8.1 (6.8, 9.4)[b, c]	7.4 (5.6, 9.2)[c]	7.6 (7.0, 8.1)
Delayed dental care due to cost	19.8 (14.5, 25.0)	19.6 (17.9, 21.3)[b, c]	19.2 (17.1, 21.3)[c]	20.1 (19.4, 20.9)
Needed dental care but did not get it because of cost	16.6 (11.5, 21.7)[b]	16.6 (14.9, 18.2)[b, c]	15.2 (13.2, 17.2)[c]	15.5 (14.8, 16.2)
Skipped medication doses to save money	6.7 (2.6, 10.8)[b]	3.6 (2.9, 4.3)[b]	3.4 (2.3, 4.6)[c]	3.9 (3.6, 4.3)
Took less medication to save money	6.6 (2.7, 10.5)[b]	3.9 (3.2, 4.6)[b]	3.7 (2.4, 5.1)[c]	4.4 (4.1, 4.8)
Delayed filling prescription to save money	6.5 (2.5, 10.4)	5.4 (4.5, 6.2)[b, c]	4.7 (3.3, 6.2)[c]	5.5 (5.1, 5.9)[c]
Needed prescription medication but did not get it because of cost	9.4 (5.0, 13.7)[b]	7.0 (6.1, 8.0)[b, c]	5.4 (3.9, 6.9)[c]	7.0 (6.5, 7.4)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income. Analyses regarding skipping medication doses, taking less medication to save money, delaying filling one's prescription, and needing prescription medication but not obtaining it because of cost were asked only among those who indicated that they had taken prescription medications in the past 12 months.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

taking less medication to save money, and needing prescription medication but not getting it because of cost.

We also examined hospital visits in the past 12 months—specifically, whether respondents had visited urgent care, visited the emergency department, and/or been hospitalized overnight during this time frame. After adjusting for sociodemographic characteristics, we found that **there was no significant difference in hospital visits between Black veterans and Black civilians. There was also no significant difference when we compared Black veterans with White veterans. Black veterans were less likely than White civilians to report having visited urgent**

care in the past 12 months (25.9 percent [CI = 19.7, 32.1] compared with 30.2 percent [CI = 29.2, 31.2], respectively).

Behavioral Health

This section explores how serving in the U.S. military is associated with behavioral health—specifically, the use of alcohol and other drugs; anxiety; depression; and suicidality. Again, for each condition, we present known relationships. First, we establish differences between Black veterans and Black civilians, and then we establish differences between racial groups or veteran status.

Alcohol Use

Findings from the literature suggest that Black veterans and Black civilians report similar rates of alcohol consumption (Sutherland and Ericson, 2010; Wong et al., 2021). Using 2019 NSDUH data, we also found, after adjusting for sociodemographics, **no significant differences between Black veterans and Black civilians with respect to alcohol use, heavy drinking,**[3] **or past-year alcohol abuse or dependence**[4] (Table 7). In addition, research has shown that Black service members are less likely than White service members to be binge drinkers or to report "problematic alcohol use" (Meadows et al., 2018; Wong et al., 2021). In contrast to previous studies, **we found no significant differences between Black veterans and White veterans or civilians with respect to alcohol use, heavy drinking, or alcohol abuse**. Moreover, there were no gender differences in the effects of race or veteran status on these outcomes.

Other Substance Use

Rates of marijuana and other drug use tend to be quite low for military service members (Meadows et al., 2021). A study using NSDUH data found that marijuana was the most commonly misused drug among veterans, although its use was not significantly different for comparable nonveterans (Wagner et al., 2007). Similar findings emerged for the likelihood of substance use disorders. However, there has also been evidence that rates of cannabis use disorder, a substance use disorder reflecting problematic marijuana use leading to impairment in functioning or to distress, have increased among veterans (Bonn-Miller, Harris, and Trafton, 2012). Comorbidities, such as posttraumatic stress disorder (PTSD), have been found to be associated with an increased risk of cannabis use disorder in veterans (Grant, Pedersen, and Neighbors, 2016). Regarding race, some research has suggested that rates of marijuana use disorder are higher among Black individuals than among White individuals (Pacek, Malcolm, and Martins, 2012).

There is minimal literature regarding the use of other illicit drugs (e.g., cocaine, heroin, stimulants, sedatives) among veterans. Wagner and colleagues found a low prevalence of illicit drug use, abuse, and dependence (less than 2 percent across outcomes) among both veterans and civilians (Wagner et al.,

TABLE 7
Alcohol Use and Dependence, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Any alcohol use, past month	50.1 (40.5, 59.7)	51.0 (48.3, 53.6)[b, c]	60.1 (56.3, 63.7)	59.7 (58.6, 60.7)
Heavy drinking, past month	3.3 (1.3, 8.2)	2.8 (2.3, 3.5)[b, c]	7.2 (5.4, 9.5)	6.4 (6.0, 6.9)
Alcohol abuse or dependence, past year	4.5 (1.8, 11.1)	3.3 (2.8, 4.0)[b, c]	6.0 (4.3, 8.4)	5.0 (4.6, 5.5)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

2007). However, veterans might be at greater risk for a fatal opioid overdose, potentially because of high rates of service-related chronic pain (Realuyo, 2019). Regarding race, studies have found that the prevalence of other substance use disorders (e.g., cocaine, sedatives, tranquilizers) is lower among Black individuals than among White individuals (Pacek, Malcolm, and Martins, 2012).

There has also been growing concern about the misuse of prescription drugs—i.e., any use of medications other than that directed by a doctor (e.g., use without a prescription or use of one's own prescription in a greater amount or frequency than prescribed). Rates of prescription drug misuse are low among service members (estimated at 1.4 percent), with no significant differences between Black and White service members (Meadows et al., 2021). Among civilians, one study found substantially higher rates of prescription drug misuse in young adults (25.6 percent), with misuse being more common among White respondents. Prescription drug misuse was more common among those with a history of alcohol and marijuana use (Harrell and Broman, 2009).

Using 2019 NSDUH data, we found, after adjusting for sociodemographic characteristics, that **Black veterans did not have significantly different rates of prescription drug misuse than Black civilians. Black veterans had significantly lower rates than White veterans and civilians in the past month** (Table 8). There were no significant differences between Black veterans and any other group with respect to marijuana or any illicit drug use.

Black veterans were significantly less likely than other groups to report marijuana abuse or dependence.

Regarding past-year substance use disorders, there was one outcome for which a significant race by veteran interaction effect emerged. **Black veterans were significantly less likely than other groups to report marijuana abuse or dependence** (see Figure 4). This suggests that there might be some downstream protective effect of military service for Black veterans for this outcome or that there might be a bias against marijuana use among Black people who join the military. There was no significant difference between Black veterans and other groups with respect to illicit drug abuse (not shown), and, because no Black veterans reported prescription drug abuse or dependence, analyses could not be conducted for this outcome.

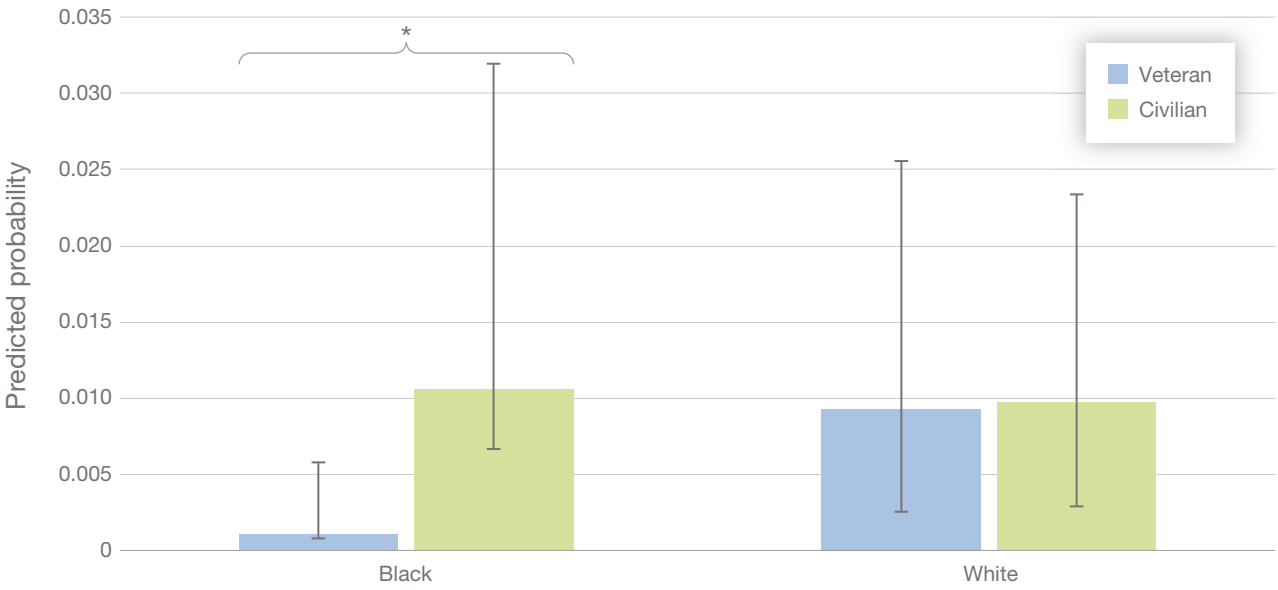
TABLE 8
Past-Month Substance Use, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Marijuana	7.8 (4.8, 12.4)	8.8 (7.8, 9.8)[c]	9.9 (7.5, 13.0)	10.2 (9.5, 10.9)
Any illicit drug	10.1 (6.3, 15.8)	9.5 (8.5, 10.6)[c]	12.4 (9.6, 15.9)	11.8 (11.1, 12.6)
Prescription drug misuse	0.3 (0.1, 1.3)[b, c]	0.7 (0.5, 1.0)[b, c]	1.9 (0.9, 3.9)	1.9 (1.7, 2.2)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income. Illicit drugs include marijuana, cocaine, heroin, hallucinogens, inhalants, methamphetamine, and prescription drugs when they are being misused.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

FIGURE 4

Past-Year Marijuana Use Disorder, by Race and Veteran Status, Adjusted Predicted Probabilities



SOURCE: RAND analysis of 2019 NSDUH data (NSDUH, undated).
NOTE: * $p < 0.05$.

Mental Health

Depression and Anxiety

Depression and anxiety are some of the most common mental health concerns among veterans and nonveterans (Grant, Pedersen, and Neighbors, 2016; Trivedi et al., 2015), although Black veterans and civilians have lower rates of depression than their White counterparts (Hasin et al., 2005; Liu et al., 2019; Riolo et al., 2005). Researchers have proposed various reasons for this racial-group difference in likelihood of depression. On the one hand, it has been suggested that resilience in the Black community serves as a protective factor among Black individuals; on the other hand, it may be that depression presents differently in Black individuals, and current diagnostic criteria and screening instruments are not sensitive to these cultural differences (Bailey, Mokonogho, and Kumar, 2019).

With respect to anxiety, the findings have been more mixed. A limited study of Gulf War veterans found higher rates of anxiety in non-White individuals (Black et al., 2004). Similarly, a study based on the National Health and Resilience in Veterans Study found a higher likelihood of current anxiety disorders among Black veterans (Carr et al., 2021). However, a recent examination of NHIS data suggested similar rates of anxiety among White and Black civilians (Terlizzi and Villarroel, 2020).

Using 2019 NHIS data, we found, after adjusting for demographic characteristics, that **although the prevalence of depression was somewhat higher in Black veterans than in Black civilians, it was not statistically significantly different**. Similarly, **there were not significantly different rates of anxiety in Black veterans and Black civilians**. Black veterans had somewhat lower rates of depression and anxiety than White veterans, but, again, there were no statistically significant differences (Table 9). An examination of main effects in the overall logistic regression models did indicate that **veterans were significantly more likely to screen positive for depression and anxiety, but Black individuals were less likely to screen positive for both** (results not shown).

TABLE 9
Depression and Anxiety, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Depression	7.8 (4.2, 11.4)	4.8 (3.9, 5.6)	11.3 (9.3, 13.3)	7.5 (7.0, 8.0)
Anxiety	6.2 (3.0, 9.4)	4.0 (3.2, 4.7)	9.4 (7.6, 11.2)	6.7 (6.2, 7.2)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Depression was measured using the Patient Health Questionnaire-9. Anxiety was measured using the General Anxiety Disorder-7. For more details on these measures, see Appendix A. Analyses were adjusted for age, sex, marital status, education, and income.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

Suicidality

Suicide rates in the United States have been increasing in the past few years (Carter et al., 2020). There is evidence that veterans have a higher risk of suicidal ideation, suicide attempts, and completed suicides than nonveterans (Hoffmire et al., 2021; Kaplan et al., 2007; Posey, 2009; Straus et al., 2019); one study found that veterans had twice the likelihood of dying by suicide (Kaplan et al., 2007). Black veterans appear to have a lower risk of suicide than White veterans (Carter et al., 2020), and Black civilians have a lower risk of suicide than White civilians (Curtin, Warner, and Hedegaard, 2016; Kaplan et al., 2007). That said, young adulthood is a time of relatively greater suicide risk, although a study found evidence that Black young adults have lower rates of suicidal ideation than—but similar rates of suicide attempts as—White young adults (Lorenzo-Luaces and Phillips, 2014).

Using 2019 NSDUH data, we found, after adjusting for sociodemographic characteristics, that **there was no significant difference between Black veterans and Black civilians for any of the suicide-related outcomes** (Table 10). Similarly, **there was no significant difference between Black veterans and White veterans or civilians**.

Economic Stability

This section explores how serving in the U.S. military is associated with improved economic stability, as defined by higher income, decreased reliance on food assistance, and higher rates of homeownership. We also describe how Black veterans are doing relative to the cost of living in ten cities in which Black veterans predominantly live. We first establish differences between the Black veterans and Black civilians, and then we establish differences between racial groups or veteran status.

Income

Income is crucial to the well-being of individuals and families. Because an individual's income varies significantly by age and gender, we focused on a specific age range with separate comparisons by gender. Because the composition of the Black and White veteran and civilian groups varies notably in terms of age and gender, this specific focus is important to make reasonable comparisons. We focused on income for individuals aged 45 to 55 (inclusive). This decade is critical to an individual's long-term financial security because it generally represents the peak earning years for both men and women and represents a crucial period for building assets, including retirement savings that enable individuals and families to enjoy a financially secure later life (as shown by analysis of earnings from payscale.com reported in Elkins, 2018). We also focused on this period because it occurs after most active-duty military personnel have left the service or at least become eligible for military pension, which is normally available after 20 years of active-duty service. Service typically starts between ages 18 and 25, so this point is generally reached by age 45.

Research on cohorts of youth eligible for enlistment has shown that enlisting in the military is causally related to 20 to 30 percent higher earnings later in life (Martorell et al., 2013), although there is

TABLE 10
Past-Year Suicidality, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Thought about killing self	3.5 (1.5, 8.2)	2.1 (1.7, 2.5)[b, c]	5.6 (4.0, 7.9)	4.0 (3.6, 4.4)
Made plans to kill self	0.5 (0.1, 2.0)	0.5 (0.4, 0.8)[b, c]	1.3 (0.7, 2.2)	0.9 (0.7, 1.2)
Attempted to kill self	0.2 (0.03, 1.5)	0.3 (0.2, 0.5)	0.3 (0.1, 1.1)	0.3 (0.2, 0.4)

SOURCE: RAND analysis of 2019 NSDUH data (NSDUH, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

considerable variation based on individual characteristics and the choices made by service members and the military services (such as length of service and military occupation).

Figure 5 depicts the income and major sources of income for each of these groups from our ACS analysis, by gender. **Overall income varied markedly across the groups. Black veterans had higher income than Black civilians, among both men and women.** Among the White groups, the pattern was more mixed. White male veterans earned less than White male civilians, while White female veterans earned more than White female civilians. Perhaps because the military offers a fairly standardized income and benefits, in this sample, **service appeared to raise income prospects for those who would otherwise be low in the income distribution (e.g., Black people) and lower income prospects for those who would otherwise be high in the distribution (e.g., White men)**. Thus, Black men and women and White women, all of whom have lower average income than White men, experience higher income later in life that is associated with military service. Vick and Fontanella, 2017, found similar patterns using a more detailed controlled analysis. They found that a significant portion of the disadvantage for White male veterans compared with their civilian counterparts is associated with reductions in the highest portion of the earnings distribution.

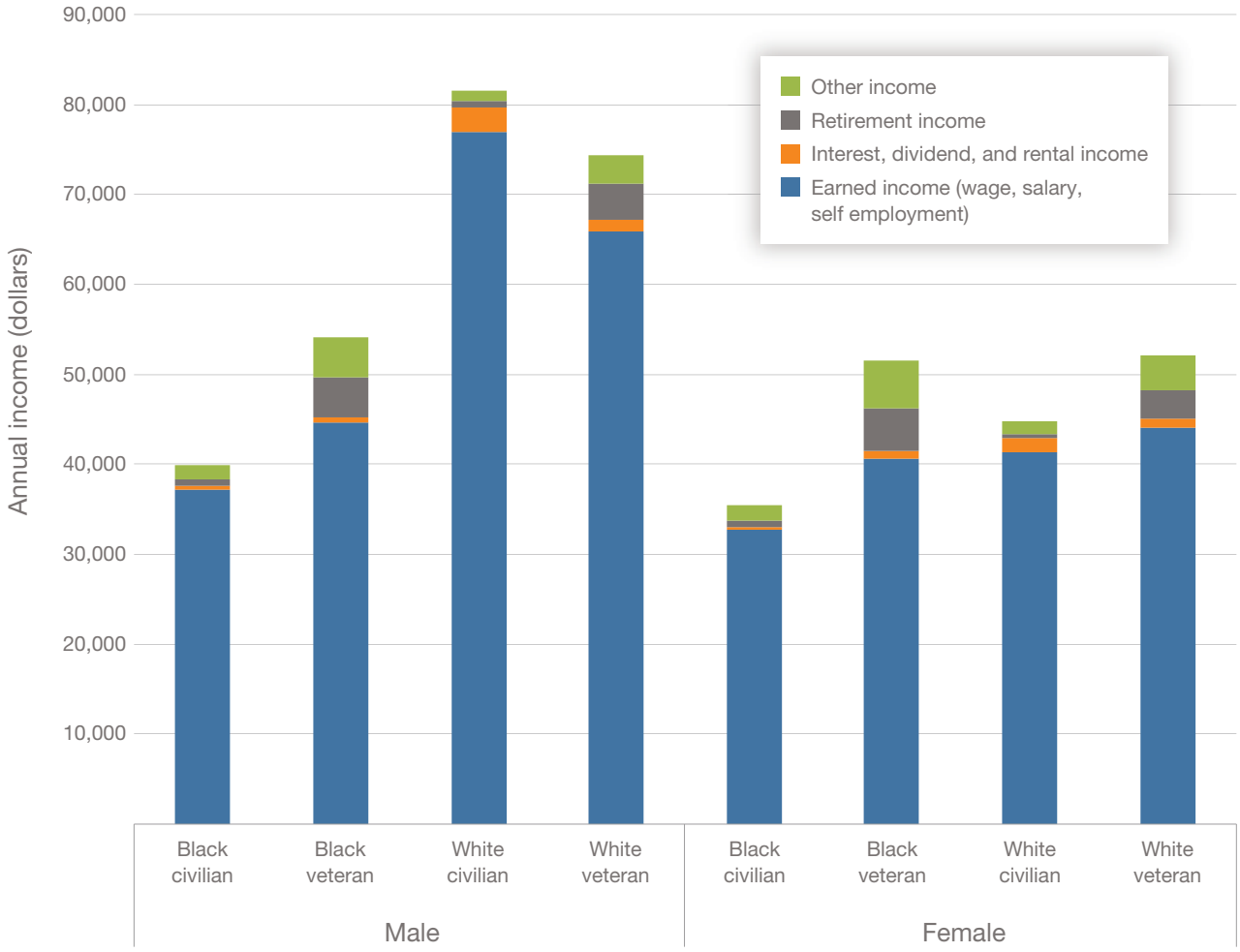
Overall income varied markedly across the groups. Black veterans had higher income than Black civilians, among both men and women.

In this age range, earned income (which includes wages, salaries, and self-employment or contract income) made up the vast majority of income for all groups and thus accounts for most of the patterns that we have just described. But there are some further influences. The veteran groups each earned an additional $3,000 to $5,000 in retirement income, most of which is likely from military pensions that a portion of each veteran group earns by reaching 20 years of active-duty service. (Reservists can also earn a pension after age 60, so that source is not a factor for this age range.) This retirement income contributes to the income advantage for the three veteran groups with higher incomes than those of their civilian counterparts, but these groups also have more earned income, so their advantage derives from both higher earned income and retirement income.

Passive income earned from assets (interest, dividends, and rental income) can be a key factor in financial security, especially for high-income individuals. As earning potential declines with age, especially after age 55, this passive income becomes increasingly important to a secure retirement when

FIGURE 5

Sources of Income, by Race, Gender, and Veteran Status, Ages 45–55



SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).
NOTE: See Table B.1 in Appendix B for means and confidence intervals.

individuals either are compelled or choose to stop working. White male civilians had by far the most of this passive income. Other income, which includes public assistance and unemployment compensation, was much more significant for all of the veteran groups than for the civilian groups.

Cost-of-Living Comparisons for Black Veterans and Black Civilians

Although our analysis showed that military service is associated with higher income among Black veterans than among Black civilians and that incomes vary with location, in this section, we report whether incomes are above expected expenditures in top cities where Black people live. Comparing cost of living, or consumer expenditure, with income might be useful to determine whether the income received is sufficient for purchasing and saving and also provides a picture of how much better Black veterans are doing compared with Black civilians, if at all (Charron-Chénier, Fink, and Keister, 2017).

Using five-year ACS data (2015–2019), we first determined the geographic distribution of Black veterans by ranking the population living in metropolitan areas from the most to the least popular among Black veterans. The cities that emerged as top locations were Washington, D.C.; Atlanta, Georgia;

Chicago, Illinois; New York City, New York; Los Angeles, California; Dallas, Texas; Houston, Texas; Philadelphia, Pennsylvania; Norfolk, Virginia; and Baltimore, Maryland. The population ranged from 6 percent of Black veterans living in the D.C. area to 2.6 percent of Black veterans living in the Baltimore area. In total, about one-third of Black veterans live in these ten cities. The top cities for Black civilians are the same as those for their veteran counterparts, with the exception of Norfolk (where there is a naval station) and Baltimore.

Next, we compared the median household income for each group with the average cost of living in each of those cities. We assessed whether Black men and women veterans' incomes exceeded, matched, or fell short of the average cost of living within those most popular cities.

Again, we limited our analysis to the income for individuals aged 45 to 55 (inclusive), a critical period in earning and family demands. We also separated our analysis for men and women because our previous income analysis showed differences in income by gender. For this analysis, we compared Black people's expenditures with the mean expenditures in each city as a reference rather than with White people's expenditures.

Analyses showed that **the median income exceeded the mean consumer expenditures for Black male veterans in each city**. This held true for Black female veterans as well, except in Houston and Philadelphia. **In Chicago and Los Angeles, Black female veterans earned more than their Black male veteran counterparts** ($p < 0.0001$). Finally, **in all of the top cities except Houston, Black veterans earned more than their Black civilian counterparts**, indicating a relatively greater ability to spend and save. In Houston, Black female veterans' income was not significantly different from Black female civilians' income. Figure 6 shows our analysis of total family income in Los Angeles, California; Chicago, Illinois; Philadelphia, Pennsylvania; Houston, Texas; and Washington, D.C., by veteran status, race, and gender, limited to the age range of 45–55.

Food Assistance

For decades, the United States has had an entitlement program, called the Supplemental Nutrition Assistance Program (SNAP), that seeks to reduce hunger and food insecurity for people with low incomes. According to the U.S. Department of Agriculture (Usdansky, London, and Wilmoth, 2009), 39.7 million individuals participated in SNAP in an average month in 2018, which was before the coronavirus disease 2019 pandemic. Eligibility is based on income and assets, typically a percentage above the federal poverty line (FPL), and varies with household size, so individuals with children are more likely to be eligible than individuals with similar earnings but no children. In Washington, D.C., the maximum gross monthly income limit is 130 percent of the FPL, whereas in California the limit is 200 percent of the FPL.

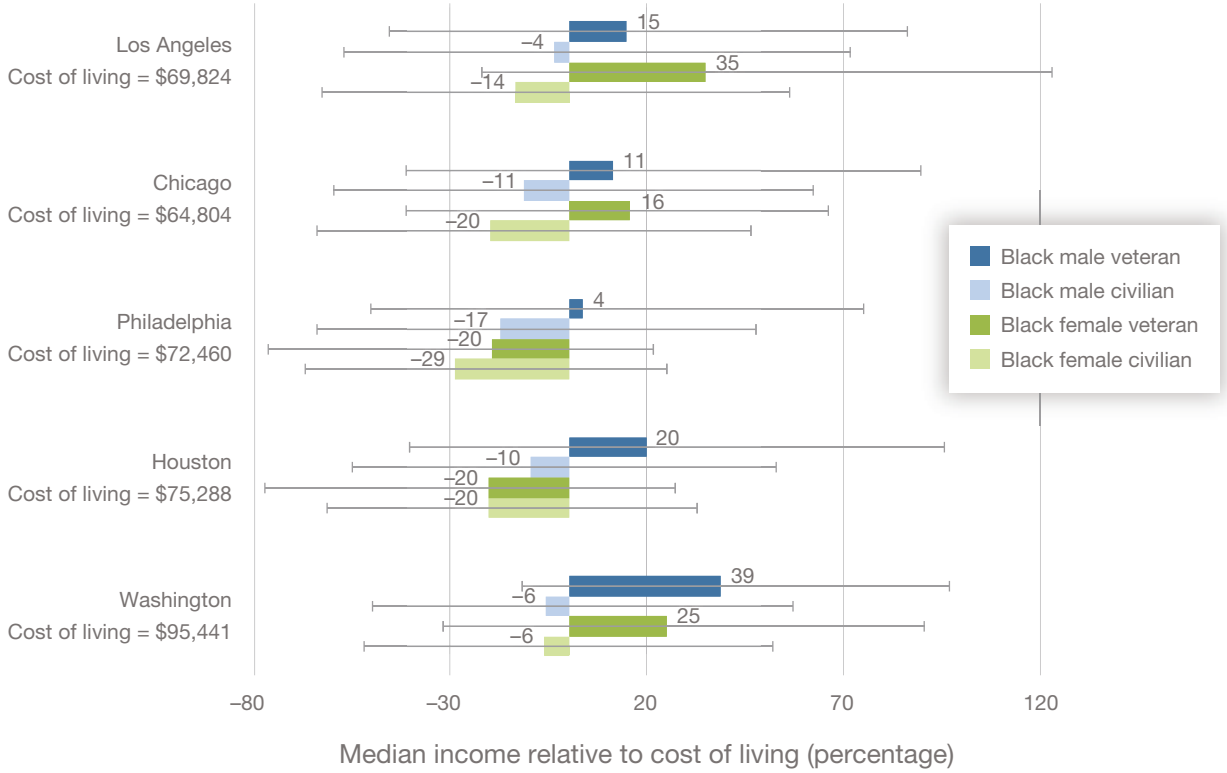
Because research has found that food insecurity is associated with psychological distress and poorer health, we analyzed receipt of SNAP benefits in the past 12 months as an indication of this vulnerability (Charron-Chénier, Fink, and Keister, 2017; Flórez et al., 2015). Our analysis found that **there is a disparity among utilization rates by race; 26.4 percent (about one-quarter) of Black civilians receive SNAP benefits, compared with 8.4 percent of White civilians**. Table 11 shows the receipt of SNAP benefits by race, veteran status, and gender. While many Black veterans have an improved economic outlook compared with Black civilians, **some Black veterans are eligible to receive SNAP benefits based on their low incomes**. Overall, **women had a higher rate of SNAP utilization than men, and Black female civilians had the highest rate of utilization (31 percent)**. In addition, **veterans had a lower utilization rate than their civilian counterparts** among both men and women.

Homeownership

There are many benefits of homeownership in America. Higher homeownership rates are associated with increased social capital investment and create incentives to improve communities (DiPasquale and Glaeser, 1999). Revitalization efforts bring positive

FIGURE 6

Median Income for Black Veterans and Civilians Relative to Average Consumer Expenditures, by Top Five Cities, Ages 45–55



SOURCES: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021) and data from U.S. Bureau of Labor Statistics, undated.

TABLE 11

Receipt of SNAP Benefits in Past 12 Months, by Race, Veteran Status, and Gender

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Men	11.7 (11.4, 12.1)[a, b, c]	17.9 (17.6, 18.1)[b]	4.8 (4.7, 4.8)[c]	6.2 (6.2, 6.3)
Women	16.7 (15.7, 17.6)[a, b, c]	31 (30.8, 31.2)[b]	8.8 (8.4, 9.2)[c]	10.2 (10.2, 10.3)

SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).
NOTES: CI = confidence interval.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

spillover effects; owner-occupiers tend to undertake more neighborhood maintenance relative to renters (Rossi-Hansberg, Sarte, and Owens, 2010). In addition, there is evidence that children growing up in owner-occupied housing have higher high school graduation rates and higher test scores than children of renters (Green and White, 1997; Haurin, Parcel, and Haurin, 2002). Children of homeowners are also more likely to be homeowners than children of renters, all other things held equal (Choi, Zhu, and Goodman, 2018).

Overall, history of military service is associated with higher homeownership rates. This is seen at all age levels and is true across racial groups. Both veteran status and active-duty military status have been found to narrow the homeownership divide among

different racial and ethnic categories (Strochak, Choi, and Goodman, 2020). Veterans also have access to a VA home loan program that provides an option for $0 down, which may contribute to the narrowing of the homeownership gap.

Using five-year ACS data (2015–2019), we found that **higher rates of homeownership are associated with military service and that this pattern persists for Black and White individuals**. Black veterans have a nearly 19 percent higher level of homeownership than their civilian counterparts, whereas White veterans experience less than a 10-percent increase in homeownership relative to White civilians (Figure 7).

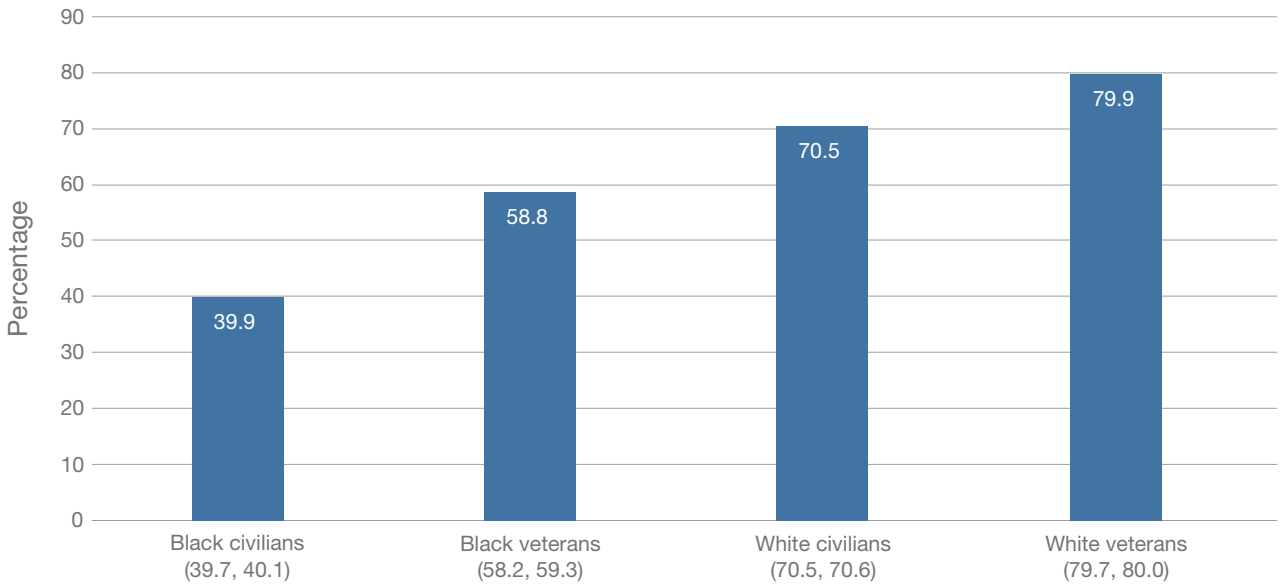
Similarly, **in all of the top ten cities, the pattern is consistent**. Veterans have a higher rate of homeownership than civilians, and White people have a higher rate than Black people ($p < 0.0001$).

Interpersonal Relationships and Social Functioning

This section explores how serving in the U.S. military is associated with relationships and social functioning, including marital status, participating in social activities, and doing errands. For each aspect, we present known relationships and establish differences between Black veterans and Black civilians, differences between racial groups, and differences in veteran status, if any.

Being married is associated with important mental (e.g., Brown, 2000) and physical (e.g., Rendall et al., 2011) health outcomes, and the economic advantages of marriage play a role in Black-White differences in the accumulation of wealth (Addo and Lichter, 2013). Thus, the associations of military service with increased marital status among Black veterans could substantially contribute to improved individual and family well-being compared with Black civilians. However, it is also possible that gains in marital equality among Black service members will not translate into similar gains among veterans. Military life poses challenges for married couples: Frequent moves, deployments, and the aftereffects of combat experiences, such as PTSD, all place stress on military marriages, which negatively affects marital satisfaction and could lead to divorce (Karney and Trail, 2017; Meadows, Tanielian, and Karney, 2016; Negrusa, Negrusa, and Hosek, 2014; Tong et al., 2018).

FIGURE 7
Homeownership Rates, by Race and Veteran Status



SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).
NOTE: The numbers in parentheses are confidence intervals.

Marital Status

Members of the active duty-military population as a whole are more likely to be married than civilians of similar age, employment, and education levels (Hogan and Seifert, 2010; Karney, Loughran, and Pollard, 2012). Although Black civilians are less likely to be married than White civilians (Raley, Sweeney, and Wondra, 2015), active-component Black service members are as likely to be married as White civilians and more likely to be married than Black civilians of similar age, employment, and education levels (Karney, Loughran, and Pollard, 2012; Lundquist, 2004; Teachman, 2007; Teachman, 2009; Teachman and Tedrow, 2008).

Our analysis found that **the association between military service and marital status persists for Black veterans**.[5] As shown in Figure 8, almost 50 percent of Black veterans were married, compared with 29 percent of Black civilians. Rates of marriage were similar among Black veterans and White civilians (52 percent), but Black veterans were less likely to be married than White veterans, who were much more likely to be married than any of the other groups (66 percent). Also, Black veterans were more likely to be divorced or separated than Black civilians (26 percent versus 15 percent) and more likely to be divorced than White civilians (13 percent) and White veterans (16 percent).

To further explore these findings, we examined the relationship between marital status, race, and veteran status across different age groups (Figure 9). We found that **both Black veterans (30 percent) and White veterans (39 percent) under age 30 were more likely to be married than their civilian counterparts (9 percent and 19 percent, respectively)**. This finding aligns with the literature indicating that service members marry at younger ages than their civilian counterparts (Adler-Baeder, Pittman, and Taylor, 2006). **At older ages, Black veterans were consistently more likely to be married than Black civilians**—differences of around 10–20 percent for each age group in Figure 9. However, **marriage rates for Black veterans were consistently lower than those for White veterans and civilians in older age groups**. This suggests that the similar marriage rates for Black veterans and White civilians shown in Figure 9 are mainly driven by a higher likelihood of Black veterans being married at younger ages.

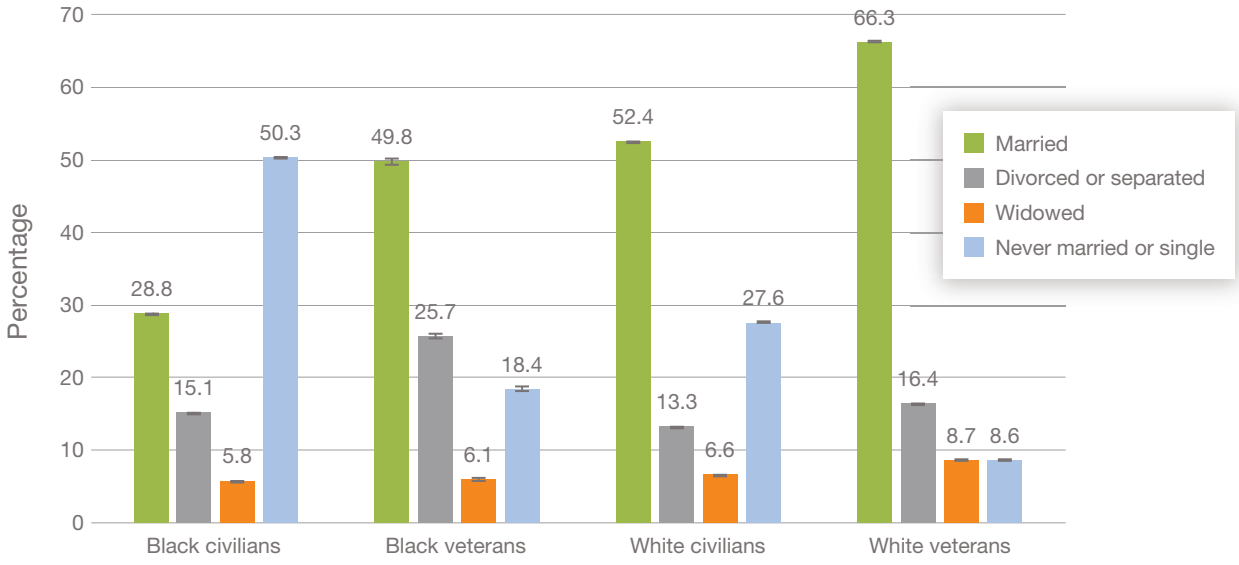
Both Black and White veterans were more likely to be divorced or separated at younger ages than their civilian counterparts.

In general, service members are more likely to be divorced at younger ages than civilians (Adler-Baeder, Pittman, and Taylor, 2006; Hogan and Seifert, 2010). This is also true in our analysis: **Both Black and White veterans were more likely to be divorced or separated at younger ages than their civilian counterparts** (Figure 10). This is perhaps not surprising, since one cannot be divorced or separated without first being married. More illuminating is the comparison between Black veterans and White veterans: **The percentage of Black veterans who were separated or divorced under age 30 is similar to that of White veterans (14 percent and 13 percent, respectively), but, at older ages, Black veterans were more likely than White veterans to be divorced or separated**. This suggests that, combined with the results for overall marriage rates, Black and White veterans are more likely to be married and to be married at younger ages than their civilian counterparts, but Black veterans are also more likely to be divorced or separated at older ages than White veterans.

Our findings are consistent with previous research demonstrating the relationship between military service and marriage for Black Americans. Although much of the previous research on this issue has examined marriage among active-duty service members, a few studies have examined the relationship between race and marriage among those who have left the service, and these studies have shown that Black veterans are more likely to be married

FIGURE 8

Overall Marriage Rates, by Race and Veteran Status

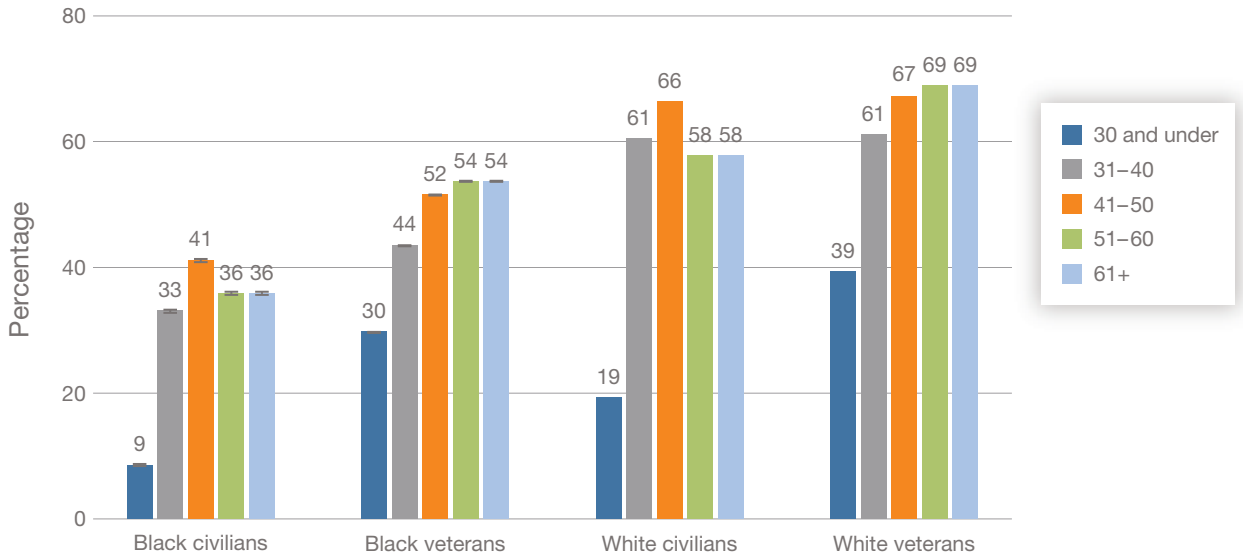


SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).

NOTE: Error bars display 95-percent confidence intervals. All 95-percent confidence intervals ranged from 0.02 percent to 0.41 percent of the group percentage.

FIGURE 9

Marriage Rates in Different Age Groups, by Race and Veteran Status

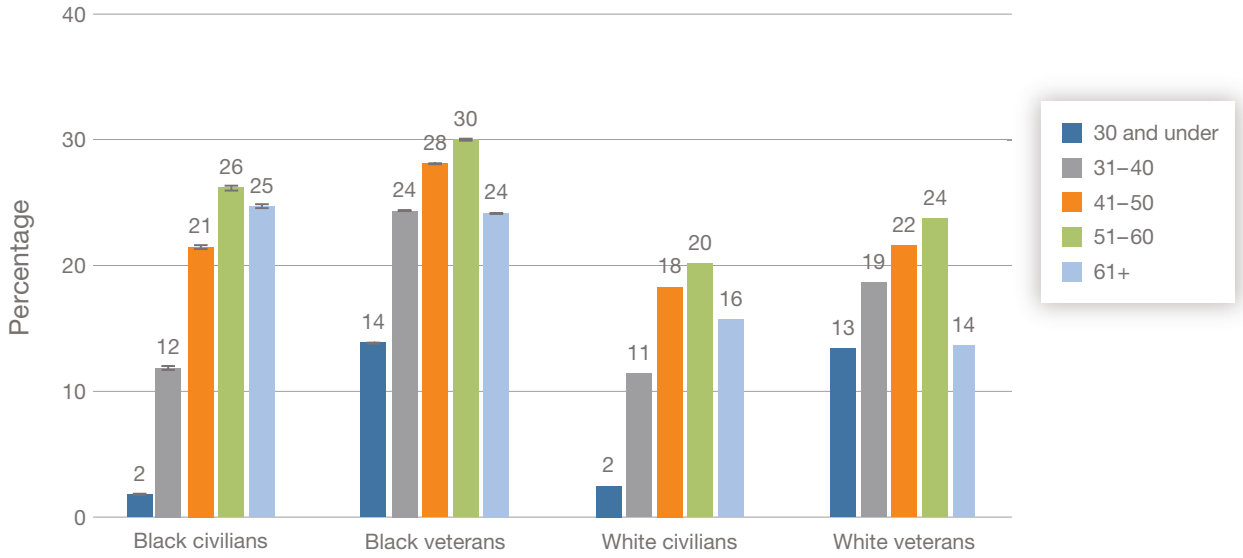


SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).

NOTE: Error bars display 95-percent confidence intervals. All 95-percent confidence intervals ranged from 0.06 percent to 1.4 percent of the group percentage.

FIGURE 10

Divorce Rates in Different Age Groups, by Race and Veteran Status



SOURCE: RAND analysis of ACS PUMS data for 2015–2019 (U.S. Census Bureau, 2021).

NOTE: Error bars display 95-percent confidence intervals. All 95-percent confidence intervals ranged from 0.02 percent to 1.1 percent of the group percentage.

than similar Black civilians (Lundquist, 2004; Usdansky, London, and Wilmoth, 2009).

In contrast to the current results, some earlier studies have found that Black active-component service members and veterans have lower (Lundquist, 2006) or similar (Heerwig and Conley, 2013) divorce rates than Black civilians and White service members. Our analysis is cross-sectional rather than longitudinal, so it provides a snapshot of marital status at one point in time, which is not an ideal method for examining factors associated with divorce and its consequences (Lucas, 2005). Also, the negative impact of divorce on well-being depends on a host of factors, including gender (men experience fewer negative economic consequences of divorce) and whether or not one re-partners (Raley and Sweeney, 2020). In addition, the negative consequences of divorce appear to be experienced among a subset of people, and most people who divorce do not experience long-term negative outcomes (Sbarra, 2015). Thus, divorce among Black veterans deserves further study using longitudinal methods to track the predictors and consequences of divorce relative to other groups.

Social Functioning

Social functioning and social role participation among veterans is important for multiple reasons. First, veterans face the transition of reintegration into civilian society, whether after a deployment or after transitioning out of the military (Sayer et al., 2010; Sayer et al., 2011). Second, veterans who have service-related physical and mental health conditions (e.g., PTSD) may find that their ability to participate in typical social or professional activities has been affected by these conditions (Frueh et al., 2001; Sherman, Larsen, and Borden, 2015; Tsai et al., 2012). For example, a survey of veterans found that 44 percent of post-9/11 veterans had difficulty adjusting to civilian life (Morin, 2011).

However, among both veteran and civilian populations, there has been little focus on differences in social functioning by race. The limited research available has focused on individuals with specific diagnoses (e.g., breast cancer, cystic fibrosis, gout, stroke), finding that Black individuals had poorer social functioning outcomes (Bourjolly, Kerson, and Nuamah, 1999; Ellis et al., 2015; Morin, 2011; Quittner et al., 2010).

Using 2019 NHIS data, **after adjusting for sociodemographic factors, we found that Black veterans were significantly more likely than Black civilians to report that their work was limited because of physical, mental, or emotional problems** (Table 12). **They were also significantly more likely than White civilians to report work limitations.** However, Black veterans did not significantly differ from White veterans, and White veterans were more likely than White civilians to report that their work was limited because of physical, mental, or emotional problems, which suggests that this finding is related to veteran status in general and perhaps reflects the impact of service-related physical or mental health conditions. There were no significant differences between Black veterans and the other groups with respect to difficulty doing errands alone or participating in social activities.

Conclusion

Our preliminary exploration of outcomes from nationally representative surveys suggests that, for many Black Americans, military service is associated with many positive aspects compared with the life they might have had without ever serving. However, to be clear, these are associations only and might not be causal relationships. We have no measures about life before military service or selection bias factors that influence the decision to serve. There are many unmeasured characteristics that determine who chooses military service, including aspects of physical and mental health, as well as discipline and general organizational skills. At the same time, we found fewer differences by race and veteran status than expected, which might reflect the strength of the relationship between the covariates we examined and the outcomes of interest. It is also important to take into account the multiple statistical models conducted for this study and the potential for false positive errors.

Nonetheless, findings from this exploratory study might inform new and ongoing efforts to support race-conscious programming to enhance aspects of life that are deemed to be positive for Black veterans. For example, the transition assistance program can highlight top cities in which to retire and guide Black service members into careers that are likely to provide higher incomes. Alternatively, programs can be created to support reintegration into civilian society by increasing independence (e.g., the ability to do errands), decreasing work-related limitations, or providing marital counseling to reduce the divorce rate. It is also important to understand that many of the positive outcomes that are associated with military service shine a light on the struggles that Black Americans encounter, such as employment, health care access, and social functioning. Our findings reveal that Black veterans do better than Black civilians across several important outcomes. However, it is still striking that, in general, Black Americans do worse than their White counterparts across many of the outcomes we examined. Improving the health and well-being of Black people and other marginal-

TABLE 12
Current Social Functioning, Adjusted Predicted Probabilities

	Black Veterans % (95% CI)	Black Civilians % (95% CI)	White Veterans % (95% CI)	White Civilians % (95% CI)
Difficulty doing errands alone	4.4 (2.0, 6.8)	3.3 (2.6, 3.9)	5.7 (4.7, 6.8)[c]	4.0 (3.7, 4.4)
Difficulty participating in social activities	4.4 (1.8, 7.0)	2.5 (2.0, 3.1)[b]	6.9 (5.4, 8.3)[c]	4.0 (3.6, 4.3)
Work limited because of physical, mental, or emotional problem	31.6 (26.2, 37.1)[a, c]	22.1 (20.3, 24.0)[b, c]	30.7 (28.5, 33.0)[c]	21.9 (21.1, 22.7)

SOURCE: RAND analysis of 2019 NHIS data (NHIS, undated).
NOTES: CI = confidence interval. Analyses were adjusted for age, sex, marital status, education, and income.
[a] Significantly different from Black civilians.
[b] Significantly different from White veterans.
[c] Significantly different from White civilians.

Future Directions

Overall, this report provides initial insight into the ways in which military service might shape the experiences of Black people who have served compared with Black people who have never served and White individuals. However, it also highlights several important future directions, both for supporting military veterans and for conducting research. First, although we looked at a variety of relevant outcomes, there are many more outcomes that could be of interest that are beyond the scope of this report. These could include additional health and mental health outcomes (e.g., PTSD, mental health care utilization, postmilitary community reintegration), social outcomes (e.g., family stability, relationship satisfaction), and economic outcomes (e.g., access to credit). In addition, we propose the following future research questions.

How does the broader experience of Black individuals in American society shape the experience of Black veterans? Long before their military service, Black veterans' lives are shaped by their experiences as Black individuals in the United States. These experiences include exposure to explicit and implicit discrimination and the effects of systemic racism (e.g., disproportionate rates of poverty, poorer access to quality education, the impact of disproportionate criminal justice involvement on families). Understanding how these experiences contribute to the outcomes of Black veterans before, during, and after military service is critical.

What protective factors serve as a buffer against certain negative outcomes for Black Americans? For some outcomes we examined, Black individuals fared better than their White counterparts. It is important to continue to identify what protective factors might be, such as religion, social support, or a strong sense of community, and how these can be leveraged to further improve outcomes for Black Americans.

How do the experiences of Black veterans unfold over time? We were limited to examining veterans at a single snapshot in time. Longitudinal research is needed to track the experiences of Black veterans over time—for example, how do experiences before and after leaving the military shape later outcomes?

What is the impact of racism in the military on service members and veterans? Although we were able to describe the characteristics of Black veterans, we were unable to examine the factors that might contribute to differential outcomes observed between Black and White veterans. An examination of such factors, including the effect of racism experienced during military service or any disparities in promotion or career progression, is an important next step. There might also be value in examining any differences in discrimination experienced during military service compared with experiences of civilians.

What programs or services are needed to address the needs of Black service members and veterans? The military, the VA, and community-based organizations offer a variety of supports to individuals as they serve in the military, transition from the military, and reintegrate into civilian life. Do these programs equally benefit Black service members and veterans? Are there additional needed supports?

ized individuals should be an important priority toward a more just society.

Appendix A. Methods

In this study, we aimed to examine the ways in which military service might shape the experiences of Black individuals compared with White individuals. To explore answers to our research questions, we identified three publicly accessible data sources that assessed domains of interest—behavioral health, physical health, and economic outcomes—and that contained indicators of veteran status. Each data source and relevant variables are described in more detail in this appendix.

Data Sources and Measures

National Survey of Drug Use and Health

NSDUH is a national, annual survey administered by the Substance Abuse and Mental Health Services Administration. It measures the use of illegal drugs, prescription drugs, alcohol, and tobacco; substance use disorders; and serious psychological

distress and mental illness. We limited our analyses to individuals aged 18 and older. We focused on the following variables.

Alcohol Use

We examined indicators of past-month alcohol use and *heavy alcohol use*, defined as "drinking five or more drinks on the same occasion for males or four or more drinks on the same occasion for females on each of 5 or more days in the past 30 days" (Substance Abuse and Mental Health Services Administration, 2020). We also examined an indicator of alcohol use disorder in the past year. This indicator included individuals who met criteria for alcohol *abuse* (i.e., they reported one or more of the following criteria: reporting serious problems due to alcohol use, having put themselves in physical danger after using, having been repeatedly in trouble with the law because of alcohol use, or having problems with family or friends but continuing to use alcohol) and individuals who met criteria for alcohol *dependence* in the past year (i.e., they reported three or more of the following criteria: spending a great deal of time over a month on obtaining, using, or recovering from alcohol; being unable to keep limits on use; demonstrating tolerance to the substance; being unable to stop using alcohol when desired; continuing to use alcohol despite its physical or behavioral health effect; reducing participation in activities because of alcohol use; or experiencing withdrawal symptoms when not using alcohol).

Other Substance Use

We examined binary indicators of past 30-day marijuana use, any use of an illicit drug (i.e., cocaine, hallucinogens, heroin, inhalants, methamphetamines, marijuana, pain relievers, sedatives, stimulants, or tranquilizers), and any use of a prescription drug (i.e., pain relievers, sedatives, stimulants, or tranquilizers). We opted for these aggregate variables rather than separate indicators of specific substances (e.g., cocaine, hallucinogens, sedatives) because of the small numbers of individuals reporting the use of certain substances. We also examined binary indicators of marijuana abuse or dependence, prescription drug abuse or dependence, and any illicit drug abuse or dependence.

Suicidality

We examined binary indicators of past-year suicidal ideation, plans to kill oneself, or attempts to kill oneself.

National Health Interview Survey

NHIS is a national, annual survey administered by the Centers for Disease Control and Prevention. It assesses such outcomes as physical and mental health, chronic conditions, measures of functioning, and access to services. We focused on the following variables.

Depression

Depression was measured using the Patient Health Questionnaire-9 (PHQ-9) (Kroenke, Spitzer, and Williams, 2001). We analyzed two depression-related measures based on the PHQ-9 scores. The first was a continuous depression score ranging from 0 to 27. The second was a dichotomized variable to identify individuals who screened positive for depression (i.e., scores of 10 to 27) (Kroenke and Spitzer, 2002).

Anxiety

Anxiety was measured using the General Anxiety Disorder-7 (GAD-7) (Spitzer et al., 2006). We analyzed two anxiety-related measures based on the GAD-7 scores. The first was a continuous anxiety score ranging from 0 to 21. The second was a dichotomized variable to identify individuals who screened positive for generalized anxiety disorder (i.e., scores of 10 to 21) (Spitzer et al., 2006).

Pain

We derived two variables to identify individuals who were experiencing chronic pain and individuals who were experiencing substantial pain-related interference in their life or work. Individuals with chronic pain were identified using a variable examining frequency of pain in the past three months. Those who reported experiencing pain "most days" or "every day" were classified as experiencing chronic pain (Dahlhamer et al., 2018). Those with high-impact pain were identified using a question assessing the frequency with which pain limited life or work activities in the past three months. Those indicating "most

days" or "every day" were identified as having high-impact pain (Dahlhamer et al., 2018).

Social Functioning

Respondents completed three questions regarding social functioning. These assessed difficulty doing errands alone, difficulty participating in social activities, and difficulty working. Individuals who indicated "no difficulty" or "some difficulty" on a given item were coded as not having difficulty with social functioning (Theis et al., 2013). Those who indicated "a lot of difficulty" or "cannot do at all" on a given item were coded as having difficulty with social functioning (Theis et al., 2013).

Hypertension

Respondents completed two questions regarding hypertension. These assessed whether the respondent had been diagnosed with hypertension in the past 12 months and whether they were currently taking medication for hypertension.

Cholesterol

Respondents completed two questions regarding cholesterol. These assessed whether the respondent had been diagnosed with high cholesterol in the past 12 months and whether they were currently taking medication for high cholesterol.

Diabetes-Related Indicators

Respondents completed three questions regarding diabetes-related indicators. These assessed whether the respondent was currently taking diabetic pills; currently taking insulin; and had ever been diagnosed with Type 1 diabetes, Type 2 diabetes, or "Other." Given the low prevalence of those responding "Other," this response was removed from the data set.

Cancer Diagnoses

Respondents completed multiple questions that assessed whether they had ever been diagnosed with certain types of cancer. We focused on liver, lung, prostate, stomach, and colorectal cancers, which have increased incidence rates among the Black community.

Impact of Cost on Care in the Past 12 Months

Respondents completed multiple questions regarding the impact of cost on pursuing care in the past 12 months. These assessed whether the respondent had problems paying medical bills, experienced delayed medical care because of cost, needed medical care but did not get it because of cost, experienced delayed dental care because of cost, needed dental care but did not get it because of cost, skipped medication doses to save money, took less medication to save money, delayed filling a prescription to save money, or needed prescription medication but did not get it because of cost.

Hospital Visits in the Past 12 Months

Respondents completed three questions related to hospital visits in the past 12 months. These assessed whether the respondent had visited urgent care, visited the hospital emergency room, or been hospitalized overnight in this time frame.

American Community Survey Public Use Microdata Sample

The ACS is a national, annual survey administered by the U.S. Census Bureau (U.S. Census Bureau, 2021). The Census Bureau also produces the five-year PUMS sample that uses two-thirds of the full ACS sample. The ACS PUMS assesses such outcomes as income, housing status, and demographic data from individual people or housing units. We focused on the following variables.

Marital Status

We calculated marital status from a question that had the following responses: (1) never married; (2) now married; (3) separated; (4) widowed; and (5) divorced.

Income

We calculated income using questions regarding earned income (which includes wages, salaries, and self-employment or contract income), retirement income, passive income (which includes interest, dividends, and rental income), and other income (which includes public assistance and unemployment compensation).

Cost of Living

Cost of living is the average annual expenditures and characteristics based on the Consumer Expenditure Survey (2018–2019). Expenditure figures include food and alcohol, housing or other shelter and utilities, apparel and services, transportation, health care, entertainment, personal care products and services, reading, education, tobacco products and smoking supplies, cash contributions, and personal insurance and pension contributions.

Food Assistance

We calculated receipt of food assistance using a question that identifies households in which one or more current members received SNAP benefits during the past 12 months ("yes" or "no"). Race and veteran status were determined using the demographic identity of the head of the household.

Homeownership

We calculated homeownership rates using estimates for the top cities in which Black veterans live. The question has separate categories for owners with and without a mortgage, for renters, and for individuals occupying units without payment of rent. We combined owners with and without a mortgage to calculate homeownership. The ACS PUMS data provide homeownership rates based on geographic areas included in the Census, from the national level down to the block group level.

Data Analysis

Across all of the data sets, we included individuals who were Black or White and who had complete data regarding veteran status. To ensure that findings were comparable across data sources, we developed consistent definitions of veteran status and race. Veteran status was based on a variable that indicated whether an individual had ever served on active duty in the military (to include active-duty service members and members of the Reserve and National Guard who had been activated). For race, we focused on non-Hispanic Black and non-Hispanic White individuals. Among eligible individuals, the breakdown of the data set by race and veteran status is in Table A.1.

For the majority of our analyses, we derived a four-level variable to capture veteran status and race (i.e., Black veteran, Black civilian, White veteran, White civilian) and tested for bivariate associations between this four-level variable and each dichotomous outcome using chi-squared tests. To further explore the bivariate associations, we performed post hoc pair-wise chi-squared tests for each unique pair of groups from the combined veteran and race variable and each outcome. When specified, our analysis is separated by sex and age to further explore well-being. In addition, when specified, we performed adjusted logistic regressions, first testing for interactions between military status and race for each outcome and then testing for main effects of military

TABLE A.1

Race and Veteran Status, by Data Source (percentage)

Data Source	Black Veterans	Black Civilians	White Veterans	White Civilians
NSDUH	0.9	15.0	6.8	77.2
NHIS	1.3	14.2	8.7	75.9
PUMS	1.1	14.9	7.4	76.6

status and race separately for each outcome for those outcomes for which no significant interaction was detected. The behavioral health and physical health models were adjusted for age, sex, marital status, education, and income, which were coded categorically within each data source. For outcomes that we expected might differ by gender, we also conducted analyses stratified by gender to determine whether the effect of race, veteran status, and the interaction of race and veteran status was substantially different for men compared with women. To facilitate interpretation of these findings, we then calculated adjusted predicted probabilities, which are reported in the text. The economic analyses note any adjustments. All analyses accounted for analysis weights and were run using the appropriate survey procedures in SAS software version 9.4 (SAS Institute Inc., 2013).

Limitations

There are certain limitations of our study approach. First, we relied on three data sources to examine the outcomes of interest. Although we were able to use comparable measures of race and veteran status across data sets, each data source used a different sampling and weighting approach, and comparisons across data sources should be made with that caution in mind. Second, given the available variables in each data source, our analyses were limited to a simple measure of veteran status. Although some data sources (i.e., NHIS, NSDUH) had indicators of combat experience, the size of certain subgroups (e.g., non-Hispanic Black veterans with combat experience) precluded us from examining the impact of combat experience on the outcomes of interest. Relatedly, the data sets did not include information about when veterans separated from the military. Therefore, we were unable to determine the extent to which outcomes observed in veterans were related to military service versus postmilitary experiences. In addition, these data sources make it difficult to track service members over time. Although the surveys are administered annually, they provide only a snapshot in time for a particular cohort of individuals. Although it might be valuable to examine trends over time across cohorts, this was beyond the scope of our exploratory study. There were also changes over time in the way certain questions were asked (e.g., prior waves of NHIS used the K-6 to measure mental health symptoms), making it difficult to examine trends over time. Finally, we limited our analyses to Black and White individuals, given that White individuals are the majority group in the U.S. military. However, we acknowledge that there is value in understanding how Black individuals compare with individuals from other racial and ethnic groups and that the "White" experience should not always be considered the normative or desirable experience. For some of the outcomes, it was more possible to identify an "objectively" ideal outcome—for example, lower rates of depression or suicide. For others, the ideal outcome might depend on racial, cultural, regional, or other norms, such as the importance of homeownership or marriage.

Appendix B. Supplemental Table

Table B.1 presents confidence intervals for the estimates depicted in Figure 5.

TABLE B.1

Sources of Income, by Race, Gender, and Veteran Status, Ages 45–55

	Total Personal Income M (95% CI)	Interest, Dividend, and Rental Income M (95% CI)	Retirement Income M (95% CI)	Earned Income (wage, salary, self-employment) M (95% CI)	Other Income M (95% CI)
Male					
Black civilian	$39,899 ($39,562, $40,236)	$434 ($385, $484)	$660 ($623, $696)	$37,234 ($36,900, $37,567)	$1,572 ($1,540, $1,604)
Black veteran	$54,093 ($53,311, $54,876)	$538 ($419, $657)	$4,422 ($4,225, $4,619)	$44,670 ($43,933, $45,407)	$4,464 ($4,300, $4,627)
White civilian	$81,517 ($81,282, $81,753)	$2,660 ($2,611, $2,710)	$787 ($771, $804)	$76,962 ($76,738, $77,187)	$1,107 ($1,096, $1,118)
White veteran	$74,373 ($73,909, $74,837)	$1,284 ($1,203, $1,366)	$4,046 ($3,962, $4,129)	$65,894 ($65,448, $66,340)	$3,149 ($3093, $3,206)
Female					
Black civilian	$35,404 ($35,165, $35,642)	$303 ($269, $336)	$594 ($565, $623)	$32,780 ($32,542, $33,019)	$1,727 ($1,699, $1,755)
Black veteran	$51,465 ($50,011, $52,919)	$861 ($485, $1,237)	$4,616 ($4,225, $5,008)	$40,676 ($39,314, $42,039)	$5,311 ($4,959, $5,664)
White civilian	$44,804 ($44,676, $44,932)	$1,596 ($1,561, $1,630)	$506 ($496, $517)	$41,295 ($41,173, $41,417)	$1,407 ($1,395, $1,419)
White veteran	$52,158 ($51,207, $53,109)	$1,122 ($927, $1,318)	$3,159 ($2,971, $3,347)	$44,005 ($43,093, $44,916)	$3,872 ($3,708, $4,036)

NOTES: CI = confidence interval; M = mean.

Notes

[1] We focused our analyses on Black and White individuals given that White individuals are the majority group in the U.S. military and in the U.S. general population.

[2] For the purposes of this report, we use the term *veterans* to refer to those individuals who have served in the U.S. military and the term *civilians* to refer to those who have not. We acknowledge that military veterans are technically "civilians," as they are no longer serving in the military, and some publications prefer to use the term *nonveterans* for this reason. However, we have opted to use the term *civilians* to refer to those without a history of military service to make the distinction between our groups of interest clearer for a wider audience of readers.

[3] *Heavy alcohol use* is defined as "drinking five or more drinks on the same occasion for males or drinking four or more drinks on the same occasion for females on each of 5 or more days in the past 30 days" (Substance Abuse and Mental Health Services Administration, 2020).

[4] The designation of "past-year alcohol abuse or dependence" was based on a series of items assessing the diagnostic criteria for these diagnoses.

[5] Note that all comparisons in this section were significant at $p < 0.0001$.

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About This Report

This report documents research and analysis conducted as part of a project entitled *The Impact of Military Service on the Lives of Black Americans*. The purpose of the project was to identify the impact of military service on the lives of Black service members and veterans.

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