

# ECONOMIC WELL-BEING IN THE MILITARY

A SNAPSHOT OF SERVICE MEMBERS AND VETERANS IN THE  
MILLENNIUM COHORT STUDY, 2019-2021



MILLENNIUM COHORT STUDY



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ECONOMIC WELL-BEING IN THE MILITARY

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## THIS REPORT

This report provides a snapshot of new 2019-2021 data describing the cohort and brief details on their economic well-being. Economic outcomes included self-reported household income, employment status, homelessness, financial condition, and financial problems such as bankruptcy. This report also describes how these economic outcomes differed across selected groups, including active duty personnel, Reservists and National Guardsmen, and veterans.

During the most recent data collection cycle conducted between 2019 and 2021, the study enrolled 58,609 new Panel 5 participants, while follow-up surveys were received from 80,986 previously enrolled Panel 1-4 participants. A total of 139,595 participants responded to the survey during this period.

# STUDY OVERVIEW



U.S. Army National Guard photo by Sgt. Jessi Ann McCormick/Released

## Rationale for Research on Military Health

In the late 1990s, public concern about the potential health effects of deployments following the Vietnam and Gulf War conflicts prompted the Institute of Medicine, Department of Defense (DoD), Department of Veterans Affairs (VA), and Congress to identify how military occupational exposures affected the long-term health of U.S. service members. The 1999 National Defense Authorization Act (NDAA), Section 743, established “a longitudinal study to evaluate data on the health conditions of members of the armed forces upon their return from deployment.” The result was the Millennium Cohort Study, the largest prospective health study in DoD history.

Millennium Cohort Study researchers, in collaboration with all military services and the VA, evaluate detailed data on how military occupational and deployment-related exposures influence a broad spectrum of important health outcomes. Although the original designers of the study could not foresee the military conflicts occurring following the events of September 11, 2001, the study was uniquely positioned to examine near- and long-term effects related to these operations. As force health protection continues to be a priority for the U.S. military, the study will inform the short- and long-term health for generations of military members.

## Goal

The goal of the study is to understand the impact of military service, including deployments and other occupational exposures, on the long-term physical health, mental health, and quality of life of service members. The study contributes to force protection by providing information that is critical for enhancing the long-term health of future generations of military members, veterans, and their families.

## Methods

Launched in summer 2001, the Millennium Cohort Study began enrolling a representative sample of U.S. military personnel consisting of all branches of the military, Reserve, and National Guard members. Participants were first enrolled in 2001, with additional groups enrolled in 2004, 2007, 2011, and 2020. To date, over 260,000 service members have enrolled in the cohort and more than 50% of participants have deployed in support of military operations. Over time, they have transitioned out of service, and currently more than 65% are no longer serving in the military. Participants complete follow-up surveys approximately every 3 to 5 years during and after their time in service. The Millennium Cohort Study will continue to enroll and follow participants for the next five decades, through 2068, to fully assess health throughout their lifetime.

## Partners

Investigators include scientists from the Army, Navy, Air Force, VA, and leading academic institutions. The Millennium Cohort Strategic Board includes many distinguished external scientific researchers and subject matter experts from academia, DoD, VA, and Veteran Service Organizations.

# STUDY OVERVIEW

The Millennium Cohort Study is one of the largest sources of self-reported health information of current and former service members. Many DoD studies only examine current service members and many VA studies begin examining veterans after they have separated from the military. The Millennium Cohort Study is one of the few studies that straddle this line.

- Dennis Faix, physician, former Millennium Cohort Study principal investigator and director, and retired NHRC commanding officer

## About the Study

The Millennium Cohort Study is the largest and longest-running health study of U.S. military personnel. The study began in 2001 to understand the long-term health and well-being of contemporary U.S. military personnel.

Data from our participants have helped to inform policy aimed at improving health and well-being among military and veteran populations. The Millennium Cohort Study is headquartered at the Naval Health Research Center (NHRC) in San Diego, California.

**The Millennium Cohort Study is “the most methodologically rigorous epidemiological study on American military personnel deployed to Iraq and Afghanistan.”**

Figure 1. Study Timeline and Description

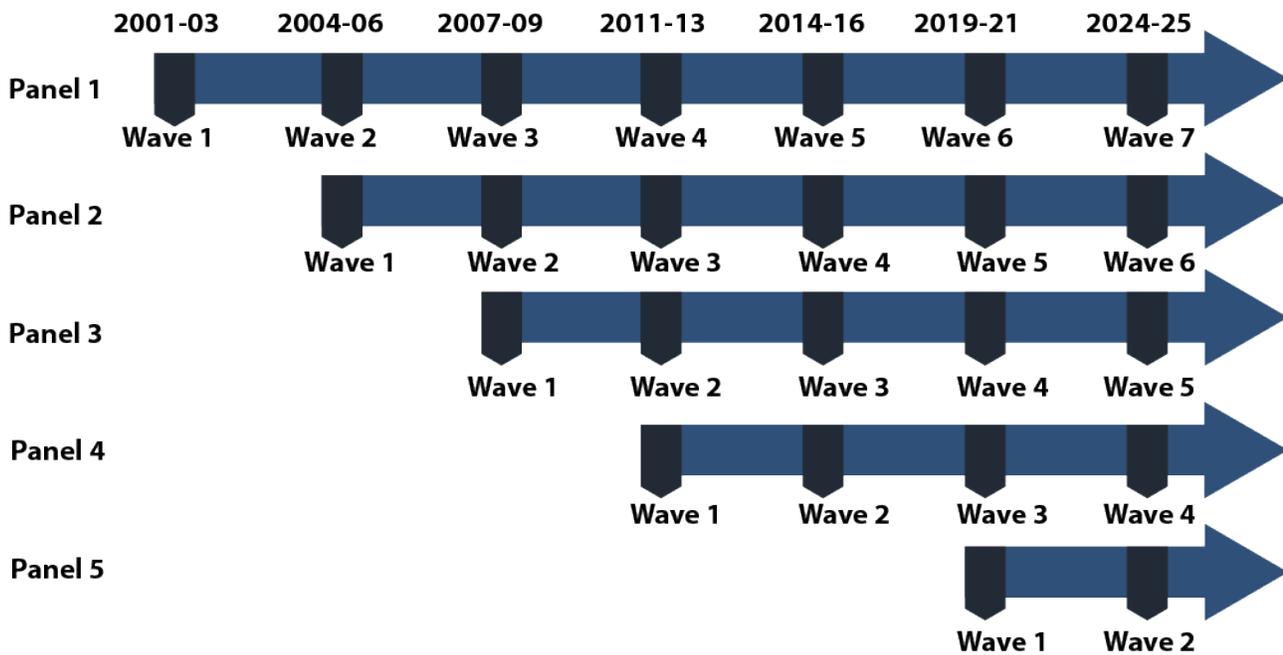


Figure 1 is a timeline of study enrollment and survey data collection. Panel is defined as a group of people enrolled into the study. Wave is defined as the data collection time point. Earlier panels have more waves of data since they have been enrolled in the study longer. As the study continues, additional panels will be enrolled, along with more waves of data collection, through 2068.

**What happens after participants join the study?** Participants complete surveys approximately every 3 to 5 years, regardless of military service. Participants complete the survey on the website ([millenniumcohort.org](http://millenniumcohort.org)) or through paper surveys.

# RESEARCH AREAS

We have conducted extensive research focused on service members, veterans, and their families that examine military factors (e.g., combat and deployment experiences) associated with physical and mental health, well-being, and health behaviors. Our research has contributed to knowledge and policies impacting readiness and protection of our service men and women. We have produced over 200 scientific publications, book chapters, briefings, and conference presentations.

**Readiness and Deployment:** Readiness is the ability of military forces to fight and meet the demands of assigned missions<sup>2</sup> and is important because it increases the chances that our armed forces will be successful in conflict.<sup>3</sup> Our research has shown that obesity and health behaviors, such as optimal sleep, affect readiness and resilience of our service men and women. We are continuing to contribute to research on factors that can optimize readiness.

**Mental Health:** Historically, most of our research has focused on different aspects of mental health among military personnel during and after their service. Post-traumatic stress disorder (PTSD) has been recognized as a major consequence of combat experience and can lead to a range of negative health consequences. While much of our research to date has focused on specific mental health conditions, such as PTSD and major depression, we are now also focusing on emerging areas of research, such as anger, stress, post-traumatic growth, and the adverse health effects of sexual trauma.

**Health-Related Behaviors:** Over the years, we have focused on major modifiable health behaviors, such as tobacco use, tobacco cessation, risky alcohol use, and sleep quality, related to military service, deployments, and transition to veteran status. We are also researching the effects of smokeless tobacco, vaping, and health care utilization.

**Occupational and Environmental Exposures:** Our team has conducted research on combat deployments and potential exposures to airborne hazards, including burn pit emissions. We have also investigated mental health in relation to specific occupational categories, such as Special Operators and veterinarians. We are continuing this line of research on occupational and environmental exposures experienced during service.

**Physical Health and Injury:** Major health concerns that we have examined include chronic diseases, such as diabetes, hypertension, heart disease, autoimmune diseases, and chronic multisymptom illness. In addition, areas ~~we~~ that we are currently researching include respiratory health, musculoskeletal injury, traumatic brain injury and blast injury, hearing loss (tinnitus), neurodegenerative disease, and cancer.

**Veterans Health, Financial Well-Being, and Civilian Reintegration:** As more of the cohort separates from military service, veterans health and the transition to civilian life become growing priorities for our research team. We are also currently examining mental health, financial well-being, social support during civilian transition, employment issues, and homelessness among veterans.

**Women's Health:** Our research team understands how vitally important women are to the mission, with women accounting for 17.5% of the U.S. Armed Forces active duty force and 22% of the Reserve and National Guard, and now able to serve in all occupations. We have conducted studies on a wide range of topics and experiences, including mental, physical, and reproductive health, tobacco and alcohol use, and the effects of sexual trauma. We continue to investigate many aspects of women's health, with emerging topics in sexual health, overall health of women in combat occupations, cancer screenings, and musculoskeletal conditions and injuries.

**Disparities:** Our research team is currently examining the military experiences and overall health of service members identifying as racial/ethnic or sexual minorities to understand how the military can support readiness and retention among these communities.



# REPORT OVERVIEW



U.S. Army photo by Kayla Overton/Released

This report provides a snapshot of new 2019–2021 data describing the cohort and brief details on their economic well-being.

Economic outcomes in this report include self-reported:

- \* Annual household income
- \* Employment status
- \* Homelessness
- \* Financial conditions of family (e.g., able to make ends meet)
- \* Financial problems such as bankruptcy

This report also describes how these economic outcomes differed across selected groups, including active duty personnel, Reservists and National Guardsmen, and veterans.

During the most recent data collection cycle conducted between 2019 and 2021, a total of 139,595 participants responded to the survey.

The study enrolled 58,609 new Panel 5 participants, while follow-up surveys were received from 80,986 previously enrolled Panel 1–4 participants.

# CHARACTERISTICS AMONG THE COHORT

The Millennium Cohort Study participants who completed the 2019–2021 survey comprised active duty (45%), veterans (42%), and Reserve and National Guard (13%) participants. The Army service branch represented over 40% of the cohort (41%), followed by the Air Force (34%), Navy (14%), Marine Corps (9%), and Coast Guard (2%).

Among those currently serving in the military, the majority (69–74%) were enlisted pay grade and 26–31% were officers.

Almost three quarters were under 44 years of age (73%) (average age = 38, standard deviation [SD] = 13).

In terms of race and ethnicity, 68% identified as White, Non-Hispanic, followed by Hispanic/Latino (12%), Black, Non-Hispanic (11%), Asian or Pacific Islander, Non-Hispanic (6%), multiracial (2%), and American Indian or Alaska Native, Non-Hispanic (1%) (**Table 1**).



U.S. Air National Guard photo by Tech. Sgt. Nicholas Perez/Released

**Table 1. Characteristics among 2019–2021 survey responders**

Characteristic (sample size)	%
<b>Panel (enrollment period) (n = 139,595)</b>	
1 (2001–2003)	27.9
2 (2004–2006)	7.5
3 (2007–2008)	9.9
4 (2011–2013)	12.7
5 (2020–2021)	42.0
<b>Service status (n = 139,595)</b>	
Veteran	41.5
Reserve or National Guard	13.2
Active duty	45.3
<b>Last known service branch (n = 139,547)</b>	
Army	40.9
Navy	14.4
Marine Corps	8.8
Air Force	33.7
Coast Guard	2.3
<b>Pay grade of active duty (n = 63,185)</b>	
Junior enlisted	30.2
Senior enlisted	43.3
Officer	26.4
<b>Pay grade of Reserve and National Guard (n = 18,410)</b>	
Junior enlisted	18.9
Senior enlisted	50.5
Officer	30.6
<b>Age (n = 139,595, mean = 38 years, SD = 13 years)</b>	
17–24	17.2
25–34	29.3
35–44	26.0
>44	27.5
<b>Race and ethnicity (n = 139,548)</b>	
American Indian or Alaska Native, Non-Hispanic	1.1
Asian American or Pacific Islander, Non-Hispanic	6.2
Black, Non-Hispanic	10.8
Hispanic or Latino	11.9
Multiracial	1.8
White, Non-Hispanic	68.2

*Totals may not add to 100% due to rounding*

## CHARACTERISTICS AMONG THE COHORT, CONTINUED

Most participants who completed the 2019–2021 survey were male (70%).

91% of participants identified as heterosexual or straight, with 3% identifying as gay or lesbian, and 4% as bisexual, while 3% preferred not to answer.

Most participants reported living with one or more household members (77%), 61% were currently married, and 58% had no children (**Table 2**).



U.S. Navy photo by Petty Officer 2nd Class Michael Russell/Released



U.S. Air Force photo by Staff Sgt. Lauren Cobin/Released

**Table 2. Characteristics among 2019–2021 survey responders (cont'd)**

Characteristic (sample size)	%
<b>Sex (n = 139,595)</b>	
Male	69.8
Female	30.2
<b>Sexual orientation (n = 117,499)</b>	
Heterosexual or straight	90.5
Gay or lesbian	2.6
Bisexual	4.0
Prefer not to answer	3.0
<b>Marital status (n = 139,595)</b>	
Single	26.5
Married	61.0
No longer married	12.6
<b>Number in the household (n = 125,944)</b>	
No additional household members	23.5
One or more additional household members	76.5
<b>Number of children (n = 126,879, mean = 0.83, SD = 1.18)</b>	
0	58.0
1	16.1
2+	25.9

*Totals may not add to 100% due to rounding.*

**Notes.** In Tables 1 and 2, enlisted pay grade categories for Army, Marine Corps, Navy, and Coast Guard are as follows: junior enlisted (E1–E3) and senior enlisted (E4–E9); for Air Force, junior enlisted (E1–E4) and senior enlisted (E5–E9). Sexual orientation was self-reported for Panels 1–4 at the 2014–16 survey and Panel 5 at the 2020–21 survey. Service status and pay grade stem from Defense Manpower Data Center (DMDC) data from the month and year closest to the participant's survey submission. A veteran is defined as someone who separated from the military for any reason. Missing information on self-reported questions resulted in varying sample sizes.

## ECONOMIC WELL-BEING AMONG ALL PARTICIPANTS

Among all participants in 2019–2021, almost half (48%) reported an annual household income over \$75,000 per year and 6% reported a major financial problem such as bankruptcy.

When asked about their current financial condition, most participants reported that they were able to make ends meet without difficulty (44%) or were very comfortable (36%) (**Table 3**).



U.S. Marine Corps photo by Sgt. Mary Torres/Released

**Table 3. Financial well-being among 2019–2021 survey responders**

Characteristic (sample size)	%
<b>Household income (n = 129,432)</b>	
<\$25,000	7.6
\$25,000–\$49,999	23.4
\$50,000–\$74,999	20.7
\$75,000–\$99,999	15.3
\$100,000–\$124,999	12.4
\$125,000–\$149,999	7.1
>\$150,000	13.5
<b>Suffered major financial problems such as bankruptcy (n = 131,837)</b>	
Yes	5.7
<b>Which best describes the financial condition of you and your family? (n = 129,613)</b>	
In over our heads	1.0
Tough to make ends meet but keeping our heads above water	4.9
Occasionally have some difficulty making ends meet	13.8
Able to make ends meet without much difficulty	44.0
Very comfortable	36.3

*Totals may not add to 100% due to rounding.*

**Notes.** For “suffered major financial problems such as bankruptcy,” Panel 5 had the stem to report if it “ever” happened, whereas Panels 1–4 had the stem “in the past 3 years.” Missing information on self-reported questions resulted in varying sample sizes.

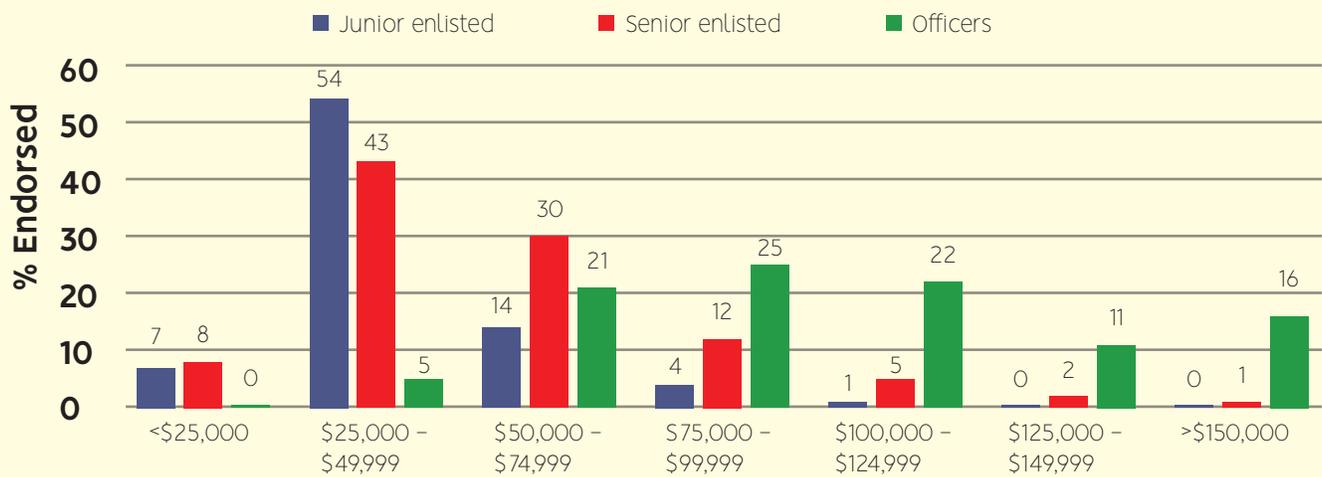


U.S. Navy photo by  
Mass Communication Specialist 3rd Class Isaac Rodriguez/Released

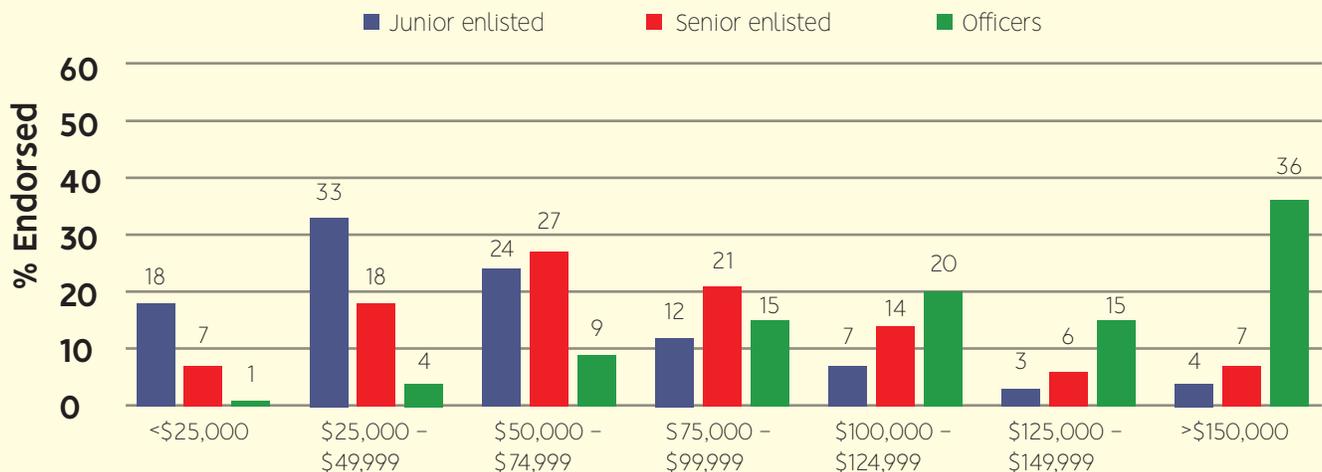
# HOUSEHOLD INCOME AMONG ACTIVE DUTY, RESERVE, AND NATIONAL GUARD PARTICIPANTS

Between 2019 and 2021, annual household income levels varied among service members by pay grade. For example, among active duty service members (Figure 1), 61% of junior enlisted reported an annual income under \$50,000 compared with 51% of senior enlisted, and 5% of officers. Conversely, 16% of officers reported an annual household income over \$150,000 compared with less than 1% of junior enlisted and 1% of senior enlisted. The household income differences between enlisted and officers was also evident among Reserve and National Guard service members (Figure 2). Note, these findings are based on household annual income, which may include income from the service member as well as others in the household (e.g., spouse).

**Figure 1. Household income by pay grade among active duty participants, 2019–2021 (n = 54,928)**



**Figure 2. Household income by pay grade among Reserve and National Guard participants, 2019–2021 (n = 17,141)**

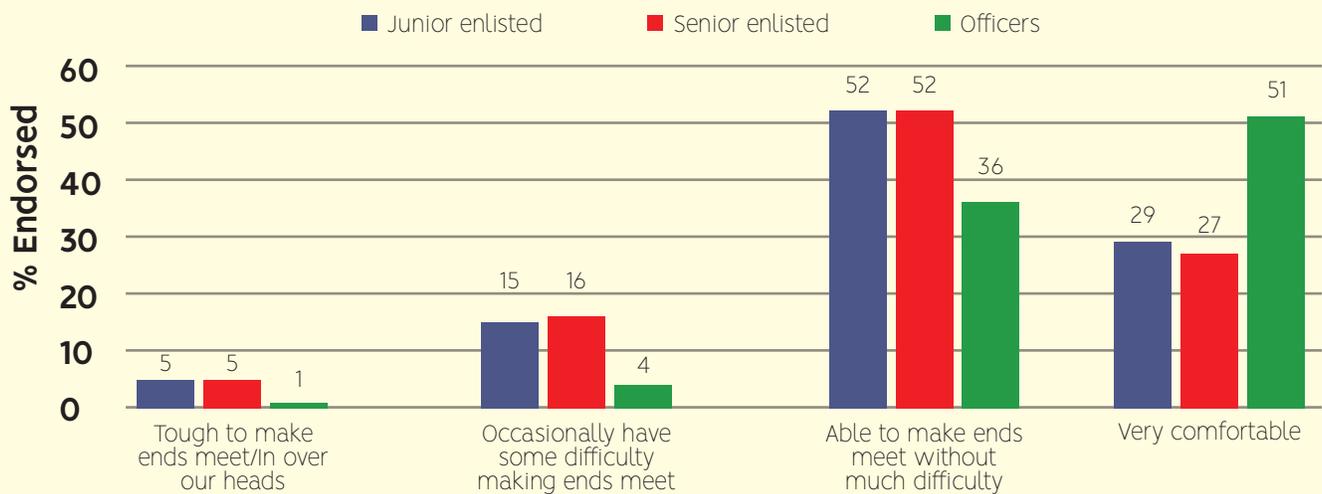


Notes. Enlisted pay grade categories for Army, Marine Corps, Navy, and Coast Guard are as follows: Junior enlisted (E1–E3) and senior enlisted (E4–E9); for Air Force, junior enlisted (E1–E4) and senior enlisted (E5–E9).

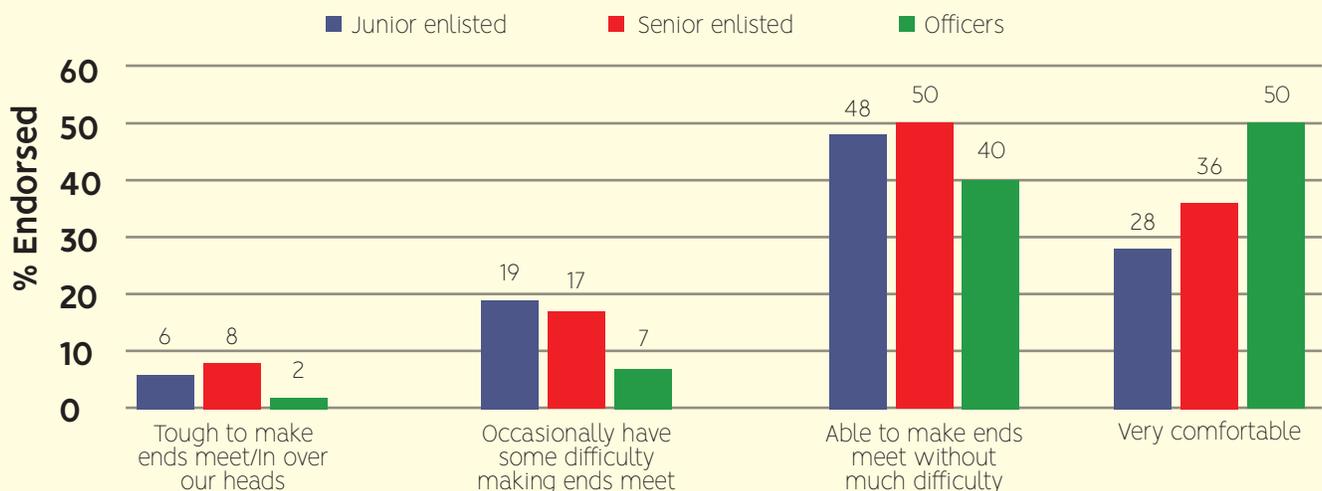
## FINANCIAL WELL-BEING AMONG ACTIVE DUTY, RESERVE, AND NATIONAL GUARD PARTICIPANTS

Between 2019 and 2021, data from 72,036 active duty and Reserve and National Guard U.S. military personnel showed differences in perceived financial well-being by pay grade. When asked, “Which best describes the financial condition of you and your family?”, a large proportion of active duty members reported they were able to make ends meet without much difficulty (47%), or that they felt very comfortable (37%) (data not shown). When examined by pay grade, differences in financial well-being were observed, with more officers reporting being very comfortable (51%) compared with junior and senior enlisted personnel (29–27%) (Figure 3). Similar patterns were observed for members of the Reserve and National Guard (Figure 4).

**Figure 3. Financial well-being by pay grade among active duty participants, 2019–2021 (n = 54,887)**



**Figure 4. Financial well-being by pay grade among Reserve and National Guard participants, 2019–2021 (n = 17,149)**



Notes. Enlisted pay grade categories for Army, Marine Corps, Navy, and Coast Guard are as follows: Junior enlisted (E1–E3) and senior enlisted (E4–E9); for Air Force, junior enlisted (E1–E4) and senior enlisted (E5–E9).



U.S. Marine Corps photo by Lance Cpl. Landon Lingle/Released

## ECONOMIC WELL-BEING AMONG VETERAN PARTICIPANTS

At the time of the 2019–2021 survey completion, there were 57,960 veteran participants. Among these, most (80%) had separated from the military more than 5 years ago, with an average of 10 years.

In addition, the majority of veterans reported an annual household income of \$75,000 or more (63%) and were employed full time (66%).

Most veteran participants were financially very comfortable (37%) or were able to make ends meet without much difficulty (40%).

Nearly 8% of veterans reported major financial problems in the last 3 years, and over 2% of experienced homelessness in the last 6 years (**Table 4**).

**Table 4. Characteristics among separated participants, 2019–2021**

Characteristic (sample size)	%
<b>Time since military separation (n = 57,960)</b>	
0–5 years	20.0
6–10 years	31.8
11–15 years	30.7
16+ years	17.5
<b>Household income (n = 57,324)</b>	
<\$25,000	4.7
\$25,000–\$49,999	13.9
\$50,000–\$74,999	18.6
\$75,000–\$99,999	16.5
\$100,000–\$124,999	15.4
\$125,000–\$149,999	9.8
>\$150,000	21.0
<b>Suffered major financial problems such as bankruptcy (n = 57,693)</b>	
Yes	7.9
<b>Experienced homelessness last 6 years (n = 57,407)</b>	
Yes	2.4
<b>Which best describes the financial condition of you and your family? (n = 57,537)</b>	
In over our heads	1.7
Tough to make ends meet but keeping our heads above water	6.5
Occasionally have some difficulty making ends meet	15.1
Able to make ends meet without much difficulty	40.2
Very comfortable	36.5
<b>Employment (n = 57,655)</b>	
Full-time	66.2
Part-time (<30 hours per week)	6.2
Not employed, looking for work	3.1
Not employed, not looking for work	1.3
Not employed, retired	12.3
Not employed, disabled	5.2
Homemaker	2.4
Other	3.1

Totals may not add to 100% due to rounding.

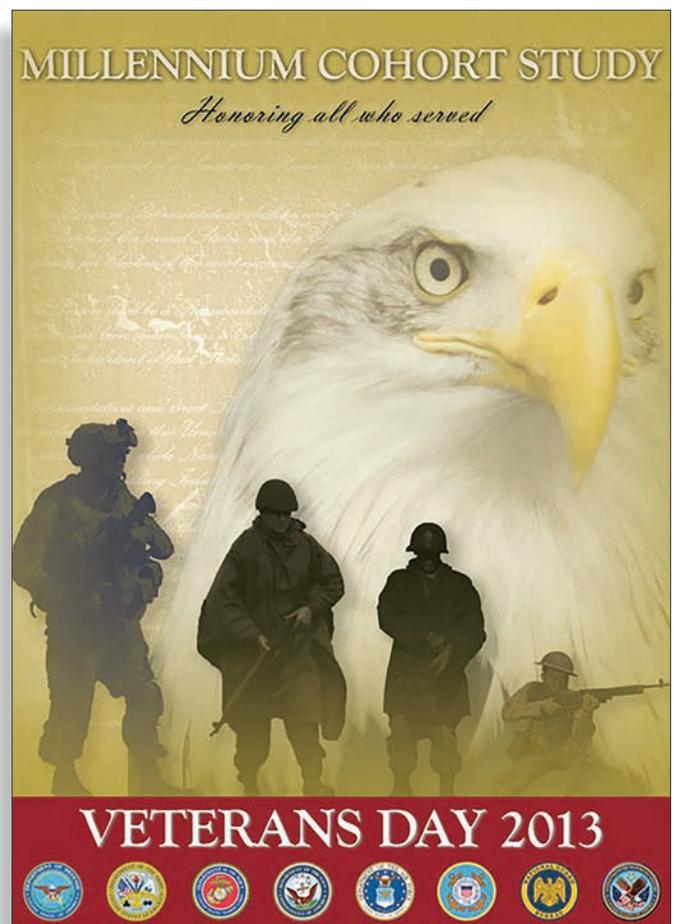


Photo courtesy of the Millennium Cohort Study

## SUMMARY

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This report provides a snapshot of the economic status of approximately 58,000 new participants and almost 81,000 previously enrolled Millennium Cohort Study participants in 2019–2021. The 2019–2021 survey respondents were predominantly men, non-Hispanic White, and active duty service members. Overall, most participants reported positive financial well-being. The majority reported feeling comfortable with the financial condition of their family. Nearly half reported a household income slightly higher than the median income for the U.S. around the time of survey reporting (e.g., \$75,000 median household annual income was reported by participants vs. \$71,000 median household income in the U.S. in 2021<sup>4</sup>). About 6% of all participants reported major financial problems, (e.g., bankruptcy). For both active duty and Reserve/National Guard participants, income levels varied among service members by pay grade, with officers reporting markedly greater annual household incomes than junior or senior enlisted. More officers reported being very comfortable with the financial condition of their family compared with junior and senior enlisted for both active duty and Reserve/National Guard personnel. Among veteran participants, 20% had separated from the military in the last 5 years. Around two-thirds of veterans reported an annual household income of \$75,000 or more and approximately two-thirds were employed full time. About 8% of veteran participants reported major financial problems like bankruptcy and 2% experienced homelessness in the last 6 years. The Millennium Cohort Study can serve as a resource for understanding the long-term impact of military service on the economic condition of service members, veterans, and their families.

## REFERENCES

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1. McNally RJ. Are we winning the war against posttraumatic stress disorder? *Science*. 2012;336(6083):872–874. doi:10.1126/science.1222069.
2. Cancian MF, Daniels SP. *The State of Military Readiness: Is There a Crisis?* Center for Strategic and International Studies; 2018. <https://www.csis.org/analysis/state-military-readiness-there-crisis>
3. *DOD Dictionary of Military and Associated Terms*. Department of Defense; 2017. <https://www.tradoc.army.mil/wp-content/uploads/2020/10/AD1029823-DOD-Dictionary-of-Military-and-Associated-Terms-2017.pdf>
4. Semega J, Kollar M. *Income in the United States: 2021, Report No. P60–276*. US Census Bureau; 2022. Accessed December 1, 2023. <https://www.census.gov/content/dam/Census/library/publications/2022/demo/p60-276.pdf>

# ACKNOWLEDGMENTS

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The participants in this study contributed many hours responding to questions about their health status over the years. The success of this study is due to their dedication and contribution of time and effort. We thank the participants for their commitment. The valuable information participants provide on a regular basis helps us understand the health concerns and needs of service members and veterans. This information is critical to shape future DoD, VA, and other organizational policies and initiatives. We would like to extend our sincerest gratitude to participants for your time spent completing the Millennium Cohort Study surveys.



U.S. Marine Corps photo by Lance Cpl. Iyer Ramakrishna/Released

# CITATION

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Castañeda SF, Kolaja CA, Sharifian N, Roesch SC, Harbertson J, Baccetti A, Lewis CL, Jacobson I, Carey FR, Walstrom J, Sheppard B, Rull RP, Millennium Cohort Study Team. *Economic Well-Being in the Military: A Snapshot of Service Members and Veterans in the Millennium Cohort Study, 2019–2021*. Naval Health Research Center; 2024. NHRC Report No. 24–99.

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A SNAPSHOT OF SERVICE MEMBERS AND VETERANS IN THE  
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