



How the Military's Basic Allowance for Housing Compares With Civilian Housing Costs



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MARCH | 2024

At a Glance

The U.S. military has provided room and board, or allowances in lieu thereof, to its personnel and their dependents for many decades. Currently, most service members on active duty are provided with housing through the basic allowance for housing (BAH), which is part of their cash compensation. In fiscal year 2023, funding for all types of BAH was about \$24 billion (in 2023 dollars), 14 percent of funding for the Department of Defense's (DoD's) military personnel accounts. Retaining active-duty personnel depends in part on whether their compensation package—which includes the housing allowance—is sufficient to entice them to stay in the military.

In this report, the Congressional Budget Office compares the kinds of housing that DoD defines as suitable for military personnel who receive BAH, known as military housing standards, with the housing choices made by two groups of civilians: those with age and education profiles comparable to military personnel of each pay grade and those with comparable income. CBO also compares the size of BAH payments (which are derived from the military housing standards) with the rental costs (including utilities) that comparable civilians pay.

CBO focused its analysis on civilians who were similar to enlisted military personnel with dependents at pay grade E-5 from 2017 to 2019. Service members at that pay grade are typically between the ages of 23 and 28 and hold the rank of sergeant in the Army, Marine Corps, and Space Force; staff sergeant in the Air Force; or petty officer, second class in the Navy. They constitute one of the largest groups of BAH recipients.

CBO found the following:

- The housing choices that civilians made varied considerably by location. They tended to live in smaller units in more expensive areas and larger units in less expensive areas. By contrast, the military housing standards for off-base housing do not vary by location, regardless of prevailing housing costs.
- Civilians who were similar to military personnel in demographic characteristics (age and education) tended to rent smaller housing units than the military housing standard. Civilians who had income similar to that of military personnel also sometimes rented smaller housing units than the standard. Generally, though, they rented units that were larger than those rented by civilians with age and education levels similar to military personnel.
- The BAH rate for military personnel was typically higher than what similar civilians paid for rent and utilities. For example, the BAH rate for E-5 personnel with dependents for a given geographic area was about 47 percent higher, on average, than the median rents paid by civilians with similar age and education profiles. The difference narrowed to about 20 percent for civilians with income similar to that of E-5s. There was considerable variation in the size of that gap across areas with similar BAH rates.

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Notes About This Report

Unless this report indicates otherwise, all years referred to are calendar years. Occasionally, the report refers to federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end.

All dollar values are expressed in 2019 dollars unless otherwise specified, the most recent year of the American Community Survey (ACS) data that the Congressional Budget Office analyzed. To remove the effects of inflation in housing costs reported in the ACS, CBO adjusted housing rental prices using the consumer price index for rent of primary residence as described at <http://tinyurl.com/3umubw44>. All other costs were adjusted using the gross domestic product price index as described in *The Budget and Economic Outlook: 2024 to 2034* (February 2024) and published in full on CBO's website at www.cbo.gov/data/budget-economic-data#11.

Numbers in the text and tables may not add up to totals because of rounding.

How the Military’s Basic Allowance for Housing Compares With Civilian Housing Costs

Summary

About two-thirds of military service members collect a tax-free housing allowance, called the basic allowance for housing (BAH), that can be used to rent or purchase homes in the local community or to rent privately managed housing on military bases.¹ By law, BAH rates must reflect the cost of adequate housing for civilians with similar income; housing allowances are intended to cover 95 percent of the combined rent and utility costs of suitable housing for service members, regardless of the earnings of other household members. Service members who live off base may choose to pay more than their BAH for housing, or they may pay less and keep the extra pay.

Underpinning BAH rates are military housing standards, which reflect what the Department of Defense (DoD) determines is suitable housing—including the type of dwelling and number of bedrooms—for BAH recipients. The housing standards are intended to generally reflect community living standards and are established on the basis of service members’ pay grades (which reflect their rank) and their family status (whether or not they have a spouse or dependent children). DoD annually surveys the rental costs of vacant housing that meets the standard for certain pay grades and family statuses in each geographic location around military facilities (known as a military housing area, or MHA) and uses those costs as the basis for BAH rates for all recipients.

Between fiscal years 1999 and 2023, BAH funding more than doubled (after removing the effects of inflation in rental housing prices). In fiscal year 2023, funding for

all types of BAH was about \$24 billion (in 2023 dollars), accounting for 14 percent of funding for DoD’s military personnel accounts. Such increases in the cost of personnel may reduce the military’s ability to invest in other priorities, such as training or weapons procurement. But if housing allowances are not adequate, service members’ well-being may be diminished, and DoD’s efforts to recruit and retain high-quality personnel may be adversely affected.

In this report, the Congressional Budget Office addresses two main questions:

- How do the housing standards used to determine the monthly rates of BAH compare with the housing rented by similar civilians?
- How do BAH rates compare with the rental costs (that is, rent and utility costs) paid by similar civilians?

To answer those questions, CBO looked at BAH payments and civilian housing choices for the 2017–2019 period. (CBO analyzed the years immediately before the coronavirus pandemic because the pandemic affected the rental housing and labor markets in atypical ways as well as the Census Bureau’s data collection efforts and the resulting data quality.) The agency’s results suggest that, on average, BAH provided to military personnel was higher (in some cases, substantially higher) than the rental costs that similar civilians pay. However, the difference between BAH and civilian rental costs varied considerably by location.

How Did CBO Define Similar Civilians?

CBO focused on civilians similar to enlisted service members on active duty with a pay grade of E-5 who have dependents. E-5s are one of the largest groups of service members who receive BAH payments. They are typically between the ages of 23 and 28, are generally

1. There are several types of housing allowances. In this report, CBO focuses on the type that makes up the largest portion of BAH funding: payments to service members stationed in the United States who live off base or in housing on base that is operated by private-sector companies through public-private partnerships.

in their second or third enlistment period, and hold the rank of sergeant in the Army, Marine Corps, and Space Force; a staff sergeant in the Army; or a petty officer, second class in the Navy.

The agency defined similar civilians in two ways. In the first, CBO used demographic characteristics. It identified civilians with age and education profiles similar to those of military personnel at various pay grades because those characteristics influence the choices people make across a spectrum of decisions and economic outcomes. In the second, CBO identified civilians with income similar to the cash compensation for service members, by pay grade, as measured by regular military compensation (RMC).² Defining similar civilians in that way accords with the requirement set in law that BAH rates be determined on the basis of the cost of “adequate housing for civilians with comparable income levels in the same area.” In both cases, only civilians who were U.S. citizens and working full time were included.

CBO used those approaches to assess the military housing standards and the adequacy of BAH in two different ways. Comparing BAH payments with the housing costs of civilians with age and education profiles similar to those of service members indicates what kind of housing service members would probably rent if they worked in the civilian sector; comparing BAH standards to the housing costs of civilians with the same income shows the housing choices civilians make when afforded the same resources as military service members.

How Do Military Housing Standards Compare With the Types of Housing Civilians Rent?

The type of housing that civilians chose to rent varied substantially from MHA to MHA. That variation was partly attributable to differences in the cost of rental housing compared with other goods and services across the United States: Civilians typically rented smaller housing units (apartments) in more expensive MHAs and larger units (detached single-family homes) in less expensive ones. By contrast, the type of housing set by military

housing standards is the same regardless of the MHA or the cost of those units, and the allowance varies by MHA to accommodate those uniform standards in different housing markets. (CBO assessed the size of a unit on the basis of the number of bedrooms and whether it was detached or part of a multi-unit structure.)

CBO found that civilians who were similar in age and education to military personnel tended to rent dwellings that were smaller than the military housing standards, particularly in high-cost MHAs. Averaging across the MHAs, almost one-half of E-5–equivalent civilians rented units that were smaller than the standard specified by DoD for service members at that pay grade with dependents—a two-bedroom townhouse or duplex. In high-cost areas, that share was larger—nearly 60 percent of civilians rented smaller apartments. Only 4 percent of E-5 civilian equivalents rented units that matched the housing standard.

Civilians who had income similar to that of military personnel also sometimes rented housing that was smaller than DoD’s standard. For example, averaging across MHAs, about 30 percent of civilians with income similar to that of an E-5 with dependents rented units smaller than the standard. In high-cost MHAs, nearly 45 percent rented smaller units. A small share (4 percent) rented the standard.

CBO found similar patterns under both approaches when comparing civilians similar to E-6s.

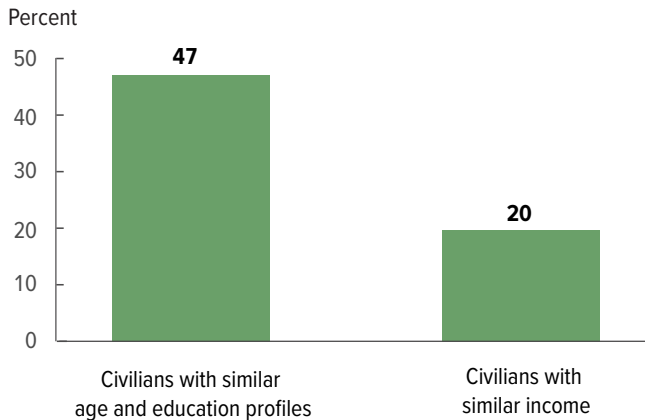
How Do Basic Allowance for Housing Payments Compare With the Rental Costs of Similar Civilians?

The average BAH payment in an MHA was typically higher than the median cost for rent and utilities paid by civilians who were similar to service members either in terms of demographic characteristics or income (see Summary Figure S-1). CBO found that BAH for E-5s with dependents was 47 percent larger, on average, than the rental costs paid by civilians with similar age and education profiles. That difference was most pronounced in MHAs with the highest BAH rates and the highest overall costs of renting (including utility costs). For example, the New York and Boston metropolitan areas had two of the highest BAH rates and rental costs—and also two of the largest gaps between BAH and what comparable civilians pay in rent and utilities. BAH was much closer to civilian rental costs in some other areas.

2. RMC includes basic pay, the tax-free allowances for food and housing, and the tax advantage associated with those allowances. The average housing allowance per service member included in RMC has an imputed amount for those service members who live on base in government housing and do not receive a full housing allowance, generally junior enlisted service members. RMC excludes nonregular cash compensation such as bonuses as well as noncash compensation and benefits such as health care and pensions.

Figure S-1.

Average Percentage by Which BAH for E-5s With Dependents Exceeded Median Rental Costs of Similar Civilians, 2017 to 2019



Average BAH for E-5s with dependents exceeded the median rental costs of similar civilians. The difference was more than twice as large for civilians with similar age and education profiles as it was for civilians with similar income.

Data source: Congressional Budget Office, using data from the American Community Survey and the Department of Defense. See www.cbo.gov/publication/59570#data

Rental costs include utility costs.

Percentage differences between BAH and median civilian rental costs within each MHA were averaged across MHAs to derive the average percentage difference. CBO did not weight each MHA by its active-duty or civilian population.

CBO's sample included civilians who were married, had dependent children, or both and who were employed full time. Civilians who were similar to E-5s in age and education profiles were between the ages of 23 and 28 and had a high school diploma or some college education. Civilians who were similar to E-5s by income were between the ages of 18 and 45 and had income equal to regular military compensation (RMC) plus or minus 10 percent. (CBO calculated local RMC rates by replacing the national average BAH payment with MHA-specific BAH rates.) The sample included civilians who rented all types of housing that were available, except for studio apartments, boats, RVs, and tents (none of which were common in most MHAs).

BAH = basic allowance for housing; MHA = military housing area.

BAH for an E-5 with dependents was about 20 percent higher, on average, than housing costs for civilians with similar income. That 20 percent gap was less than half the size of the gap between BAH and housing costs for civilians with similar demographic characteristics because cash compensation for enlisted personnel approximates

the earnings at about the 90th percentile of male civilian workers with comparable years of experience and education.³ Most civilians with income similar to that of E-5s tend to have different demographic characteristics than E-5s: They are older and have more education.

What Are the Limitations of CBO's Analysis?

Although CBO used two methods to compare civilians to military personnel, those civilians probably differed from service members in other ways (such as ability and job characteristics) that contribute to the differences in BAH and civilian housing that CBO found. Civilian renters may also differ from service members in their decision-making process. In addition, comparisons of BAH and civilian housing were less precise because the national survey data that CBO used did not align perfectly with MHAs and because few respondents similar to military personnel were surveyed for some geographic areas. (For more details about CBO's method and the data the agency used, see the appendix.)

The Basic Allowance for Housing

Since its establishment, DoD has provided government-owned quarters or an allowance in lieu thereof to some service members. In fiscal year 1998, a collection of housing allowances for service members was consolidated into the Basic Allowance for Housing program.⁴ Within that program, there are several types of allowances.⁵ This report considers only active-component personnel stationed in the United States who receive the full tax-free allowance. Those personnel generally live off base or in housing on base that is operated by private-sector companies through public-private partnerships (what DoD

- DoD's goal is to provide cash compensation equal to the earnings of the 70th percentile of comparable civilians. See Congressional Budget Office, *Atlas of Military Compensation* (December 2023), www.cbo.gov/publication/59475; Congressional Budget Office, *Approaches to Changing Military Compensation* (January 2020), www.cbo.gov/publication/55648; and Beth J. Asch and others, *Setting the Level and Annual Adjustment of Military Pay* (RAND Corporation, 2020), www.rand.org/pubs/research_reports/RR368-1.html.
- For more details about the consolidation, see sec. 603 of the National Defense Authorization Act for Fiscal Year 1998 (Public Law 105-85).
- For instance, service members without dependents living in government quarters in the United States (such as on base in housing owned or operated by DoD or on a ship) are generally entitled to a very small monthly allowance, typically less than \$10. See Department of Defense, "Military Compensation: Different Types of BAH" (accessed December 6, 2023), https://militarypay.defense.gov/pay/allowances/bah_types.aspx/.

refers to as privatized housing). The BAH that military personnel receive is intended to cover 95 percent of the rental costs of suitable housing.

In 2019, about 890,000 service members, or about two-thirds of military personnel, received full BAH. They received an annual housing allowance of about \$21,400, on average.⁶ About 700,000 of those service members lived in off-base housing.

DoD's spending on the housing allowance has increased faster than the rate of general inflation and the rate of rental housing costs in the United States over the past 25 years. That increase has been fueled by the growth both in the share of service members receiving BAH and in the average monthly payment per service member.

How DoD Determines BAH Rates

By law, BAH rates must reflect the cost of “adequate housing for civilians with comparable income levels in the same area.”⁷ To accomplish that goal, DoD employs a multistep process:

- First, DoD sets military housing standards that assign a number of bedrooms and type of housing to service members on the basis of pay grade and family status.
- Second, DoD divides the country into military housing areas and sets separate BAH rates for each military housing standard in each MHA.
- Finally, BAH rates are adjusted annually on the basis of surveys of local rental prices (although DoD considers other factors as well). Those changes occur under existing DoD policy and current law and do not require an explicit policy decision by the department or action by the Congress.

Military Housing Standards. DoD defines housing standards using six types of dwellings that are linked to certain combinations of pay grade and dependency. Those combinations are known as anchor points (see Table 1). For example, the anchor point for an E-5 with dependents is a two-bedroom townhouse or duplex.

Military Housing Areas. To reflect geographic differences in housing costs, DoD creates about 300 MHAs,

6. CBO calculated the average annualized payment per recipient, which is equal to the monthly payment multiplied by 12.
 7. See sec. 403 of the Pay and Allowances of the Uniformed Services Act, 37 U.S.C.

Table 1.

Selected Military Housing Standards and the Pay Grade Associated With Each Housing Type

Housing type (anchor point)	With dependents	Without dependents
One-bedroom apartment	n.a.	E-4
Two-bedroom apartment	n.a.	O-1
Two-bedroom townhouse or duplex	E-5	O-1E ^a
Three-bedroom townhouse or duplex	E-6	O-3E ^a
Three-bedroom single-family house	W-3	O-6
Four-bedroom single-family house	O-5	n.a.

Data source: Department of Defense, Defense Travel Management Office, *Basic Allowance for Housing (BAH): Primer* (January 2018).

The Department of Defense defines housing standards for BAH, associating six types of housing (or anchor points) with selected pay grades and dependency statuses. It surveys vacant dwellings of those types in selected areas within each MHA to determine BAH rates for those statuses. BAH rates for other statuses are interpolated.

BAH = basic allowance for housing; MHA = military housing area; n.a. = not applicable.

a. Officers who were enlisted service members before entering the officer ranks.

each of which surrounds one or more military installations.⁸ MHAs are meant to represent regional housing markets where most service members might live; DoD can and sometimes does reassess those boundaries.⁹

DoD uses the rental prices in a given MHA for each anchor point to set BAH rates for that area to ensure that service members can afford housing that meets their military housing standard in that geographic area. Military housing standards do not change depending on where a service member is stationed, but the BAH they receive does.

8. To address areas of the country with relatively small military populations, DoD also constructs additional geographic areas (called County Cost Groups or CCGs), which are groups of counties. In 2023, there were nearly 40 CCGs, which in total represented areas in which fewer than 5 percent of service members lived; however, most of the country's land area is contained within those CCGs.
 9. MHA boundaries were originally defined using DoD's Defense Enrollment Eligibility Reporting System (DEERS) data. Those data provided information on where members at each installation were living and created a data set that reflected those preferences.



BAH Rates. To establish or adjust BAH rates for an MHA, local DoD housing offices and contractors obtain market information on vacant rental properties. That information, collected in rental market surveys, excludes properties in an MHA that are deemed inadequate or unsuitable on the basis of certain criteria, such as the condition of the dwelling or security of the neighborhood. Rental properties in some areas, such as those where the typical civilian income is not comparable with service members' income or those near environmental hazards, may also be excluded.

DoD uses data from those rental market surveys to determine the median rental cost for vacant properties for each anchor point and national survey data from the American Community Survey (ACS) to determine the average utility costs in an MHA. Together, those values form the basis for the BAH rates associated with each MHA for each of the anchor points. DoD uses additional data and methods to account for areas with few vacancies and to adjust for other anomalies.

For those pay grades that are not assigned to an anchor point, DoD uses interpolation (or "filling in" between anchor points) to calculate the BAH rate. For most personnel, DoD interpolates a BAH rate by calculating the cost difference between the assigned anchor point and the next anchor point and adding a percentage of that difference to the assigned anchor-point rate. For example, for an E-7 with dependents, DoD uses a value (in terms of rental costs) between a three-bedroom townhouse or duplex and a three-bedroom single-family home. DoD makes additional adjustments as needed to ensure that BAH rates for each pay grade and status abide with the laws and policies governing the allowance.

The process of surveying rental rates in the civilian rental market begins roughly a year before the new BAH rates take effect, which means that any new rates reflect market conditions from the previous year. (That can pose a problem for service members if rents rise rapidly within a year.) If BAH rates are raised in an MHA, service members who move to or remain stationed in that MHA collect the new BAH payments. If BAH rates are adjusted down because rents are falling, service members who already are stationed in that MHA receive the same BAH rate as they did the previous year with no reduction.

How BAH Payments Vary by Service Member

The size of the BAH payment provided to military service members who live off base or in privatized housing varies by service members' pay grade and their family

status. Because the cost of housing also varies by location, where service members are stationed also affects the amount of their housing allowance.¹⁰

Pay Grade. Military personnel in the same location and with the same family status receive higher BAH payments as their pay grade increases. The exception is junior enlisted personnel (pay grades E-1 through E-4): They are required by law to receive the same BAH. In 2019, annual payments for officers who collected BAH were, on average, \$25,200; for enlisted service members, those payments were \$20,100.

Personnel at higher pay grades were more likely to be eligible for and receive BAH (see Figure 1). For instance, more than 90 percent of senior enlisted service members (pay grades E-6 to E-9) and officers received a housing allowance in 2019, whereas only 37 percent of junior enlisted members did. More than 80 percent of service members with the pay grade of E-5 were eligible for and received BAH. CBO focused on E-5s in its analysis because they were one of the largest groups of military personnel, accounting for 17 percent of personnel, or 230,000 service members, in 2019. E-5s were also the largest pay grade receiving BAH, accounting for 21 percent of the total.

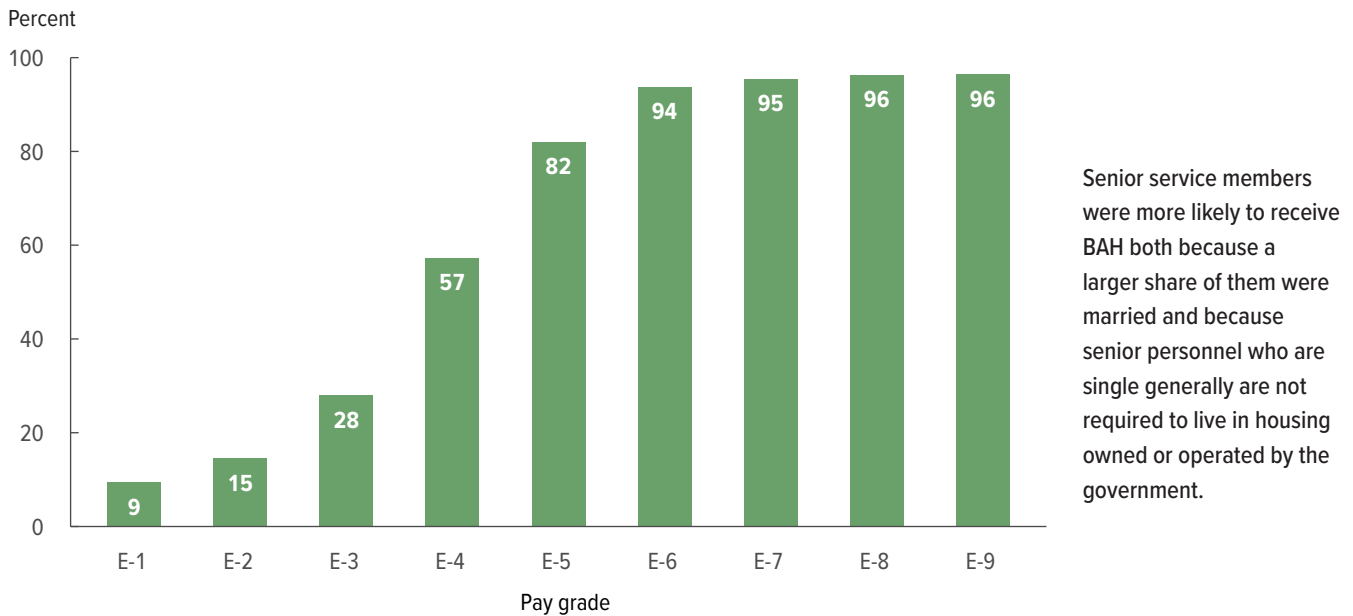
Dependents. Most senior enlisted personnel and officers are eligible for BAH regardless of whether they are married or have children. (More than 75 percent of those personnel had dependents in 2019.) By contrast, junior enlisted service members are typically eligible to receive BAH only if they have a dependent; otherwise they are usually required to live on base in housing owned and operated by the government, such as barracks. (In 2019, only 27 percent of junior service members had dependents.)

Service members at the same pay grade without dependents receive at least 75 percent of the BAH payment received by those with dependents. For example, in 2019, an E-5 without dependents stationed in Jacksonville, Florida, received \$17,100, whereas an E-5 with dependents received \$20,200.

10. Additional rules also guide the determination of BAH eligibility and payments. For further information, see sec. 403 of the Pay and Allowances of the Uniformed Services Act, 37 U.S.C.; and Department of Defense, *Military Pay Policy—Active Duty and Reserve Pay*, vol. 7A, *Financial Management Regulation* (August 2021), <https://comptroller.defense.gov/FMR/fmrvolumes.aspx>.

Figure 1.

Share of Enlisted Service Members Who Received BAH in 2019, by Pay Grade



Data source: Congressional Budget Office, using Department of Defense's Compensation Greenbook, 2019. See www.cbo.gov/publication/59570#data.

BAH = basic allowance for housing.

Location. BAH rates vary most by location. Service members stationed in a high-cost area (as measured by the median amount paid by civilians for a two-bedroom apartment) receive relatively large housing allowances. In 2019, for example, annual BAH for an E-5 with dependents ranged from \$9,800 in Johnstown, Pennsylvania, to \$52,400 in San Francisco (see Figure 2).

Despite that wide variation, BAH payments were generally similar for most MHAs; in 2019, less than 10 percent had BAH payment rates exceeding \$30,000 for E-5s with dependents. The nationwide average across MHAs for those service members was \$19,200 that year. (The median payment across MHAs was \$17,300; the lower median value indicates that payments for higher-cost MHAs deviated from the average by more than payments for lower-cost MHAs did.)

How Costs for BAH Have Changed

The growing share of service members receiving BAH, coupled with increasing monthly payments per recipient, has fueled growth in DoD's spending on the housing allowance that is faster than both the rate of general inflation and the rate of changes in rental costs in the United States over the past 25 years. The average

monthly payment has also grown faster than other elements of RMC. (BAH is the second-largest component of RMC.)

DoD's Spending on Housing for Service Members.

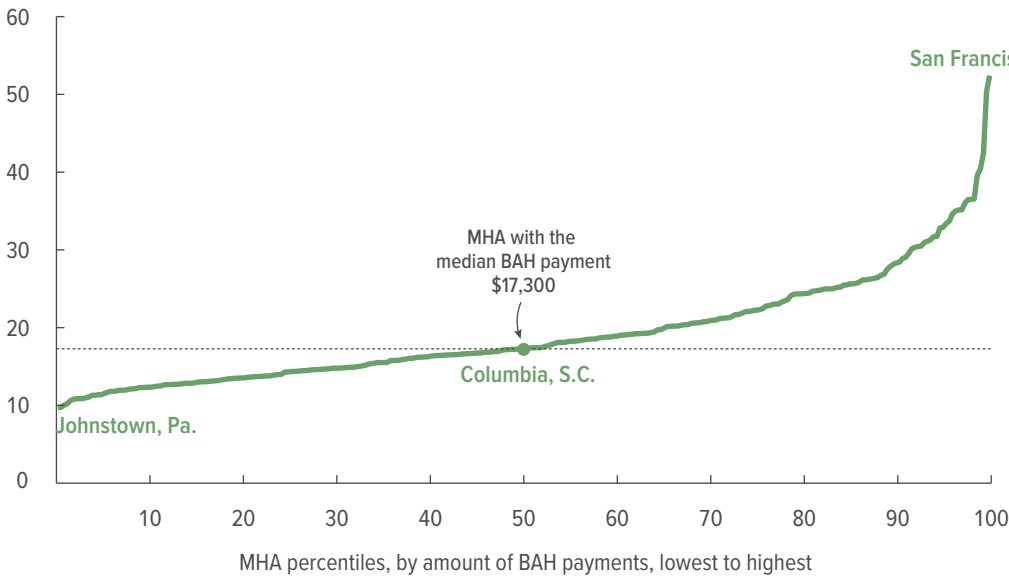
The most recent major reform occurred in fiscal year 1998, when the existing housing allowances were consolidated into a single BAH program—which specified methods for setting allowances that differed from the previous program and affected payments for military personnel across the country. At about the same time, DoD undertook a program to improve the quality of military housing available to service members by privatizing on-base military housing, known as the Military Housing Privatization Initiative (MHPI).¹¹

11. The Military Housing Privatization Initiative Act of 1996 provided the military with alternative authorities for the building, improvement, and maintenance of military housing. The National Defense Authorization Act for Fiscal Year 1996 (P.L. 104-106) created the MHPI as a five-year pilot program. For a summary of the privatization initiatives, see Andrew Tilghman, *Military Housing*, Report R47728, version 4 (Congressional Research Service, September 2023), <http://tinyurl.com/3n4k39ch>; and Military Housing Association, "About MHPI" (accessed February 11, 2023), <https://tinyurl.com/45yt8yeh>.

Figure 2.

Annual BAH for E-5s With Dependents in 2019, by Military Housing Area

Thousands of 2019 dollars



Across MHAs, the annual median BAH payment for E-5s with dependents was \$17,300 in 2019. That is, half of all MHAs had allowances that were higher than that amount and half had allowances that were lower. E-5s in most MHAs received roughly similar amounts, although the highest annual BAH was \$52,400 in San Francisco, and the lowest was \$9,800 in Johnstown, Pennsylvania.

Data source: Congressional Budget Office, using data from the Department of Defense. See www.cbo.gov/publication/59570#data.

CBO ranked all MHAs by their amount of BAH, lowest to highest. The three MHAs with the lowest BAH were in the first percentile, the next three in the second percentile, and so forth. The line connects the different MHAs' BAH values.

BAH = basic allowance for housing; MHA = military housing area.

With the advent of the MHPI, some of DoD's housing costs shifted from appropriations for family housing to those for military personnel (the appropriations title from which BAH is paid). The implementation of the MHPI increased spending on BAH. Previously, service members who lived on base in DoD-managed housing were not responsible for monthly rental payments; instead, the cost for their housing was paid directly from DoD's family housing appropriations. With the privatization of on-base housing, DoD began providing BAH to those service members who live in that housing; the amount of service members' BAH is automatically deducted from their paychecks and paid to the housing provider.¹²

However, BAH increased significantly more than the family-housing budget account shrank, even after

removing the effects of inflation (see Figure 3).¹³ Between fiscal years 1999 and 2023, BAH grew from \$10 billion to \$24 billion, in 2023 dollars, or by 140 percent. Over the same period, funding for family housing fell by about \$4 billion, or just over 60 percent.¹⁴ By 2023, BAH accounted for about 14 percent of the military personnel appropriation and about 3 percent of the total DoD budget. Those shares were the same in 2019, the focus of this report.

Increasing Number of Service Members Receiving BAH. The share of service members who receive BAH has grown rapidly—from about one-half of active-component personnel (or about 700,000 service

12. DoD's contracts with the private-sector managers specify that those managers do not charge more than the monthly BAH payment their tenants received.

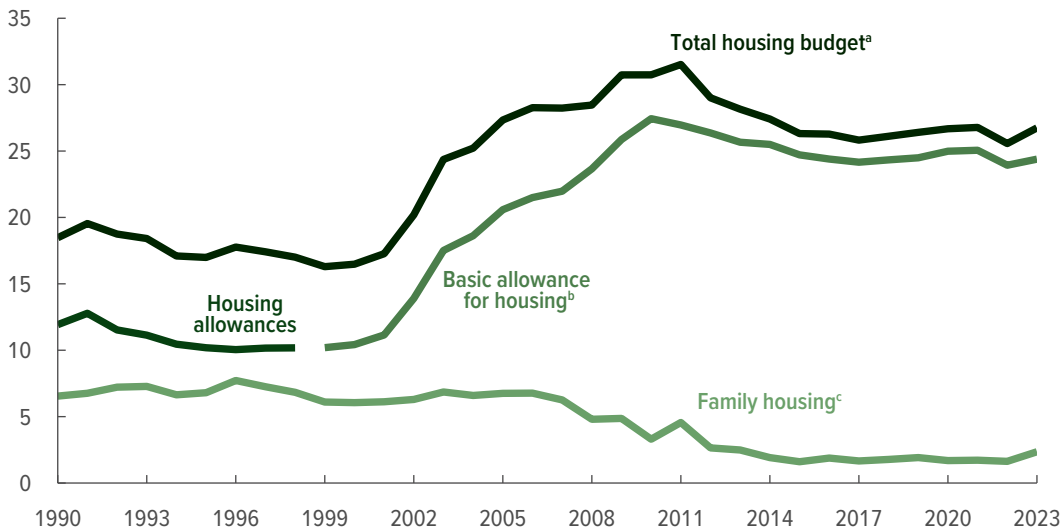
13. Funding for BAH includes payments to all service members who received any type of BAH, whether as active-component personnel or activated reservists.

14. The MHPI was created, in part, to induce private investment in the renovation and construction of family units to improve the quality of on-base housing, much of which was in need of renovation and not sufficiently funded in the family housing account before the change.

Figure 3.

Budget for Military Housing, by Fiscal Year

Billions of 2023 dollars



The amount spent on military housing has increased faster than economywide inflation in the United States over the past 25 years because the number of BAH recipients and the cost per recipient have increased. The housing allowance increased rapidly in the 2000s largely as a result of the privatization of on-base housing, which increased the number of service members receiving BAH, and other policy changes that modified the way housing allowances were calculated.

Data source: Congressional Budget Office, using data from the Department of Defense. See www.cbo.gov/publication/59570#data.

BAH = basic allowance for housing; DoD = Department of Defense.

- The sum of the budgets for the housing allowance and family housing.
- Includes the costs associated with all types of BAH. In 1999, the BAH program replaced a different program of housing allowances managed by DoD.
- Funds the operation, maintenance, leasing, and construction of military family housing that is owned and operated by DoD worldwide. It also funds the oversight of DoD's privatized housing on base.

members) in 2000 to two-thirds (or about 890,000 service members) in 2019. That increase is directly related to the privatization of military housing complexes. In 2000, few service members lived in privatized housing on base, but by 2019, between 175,000 and 200,000 service members did, by CBO's estimate. The growth in the number of recipients accounts for roughly one-third of the overall growth in spending on BAH over that period.

Other factors, although smaller in scope, also contributed to more service members receiving BAH. First, the share of service members in more senior pay grades who qualified for BAH has grown slightly. Second, some services dropped the requirement that unmarried E-3s, E-4s, and E-5s live in government-provided housing, now allowing some of those service members to live off base or in privatized on-base housing and to collect BAH. Those changes resulted in more than

50,000 service members receiving BAH in 2019 who would not have done so otherwise.

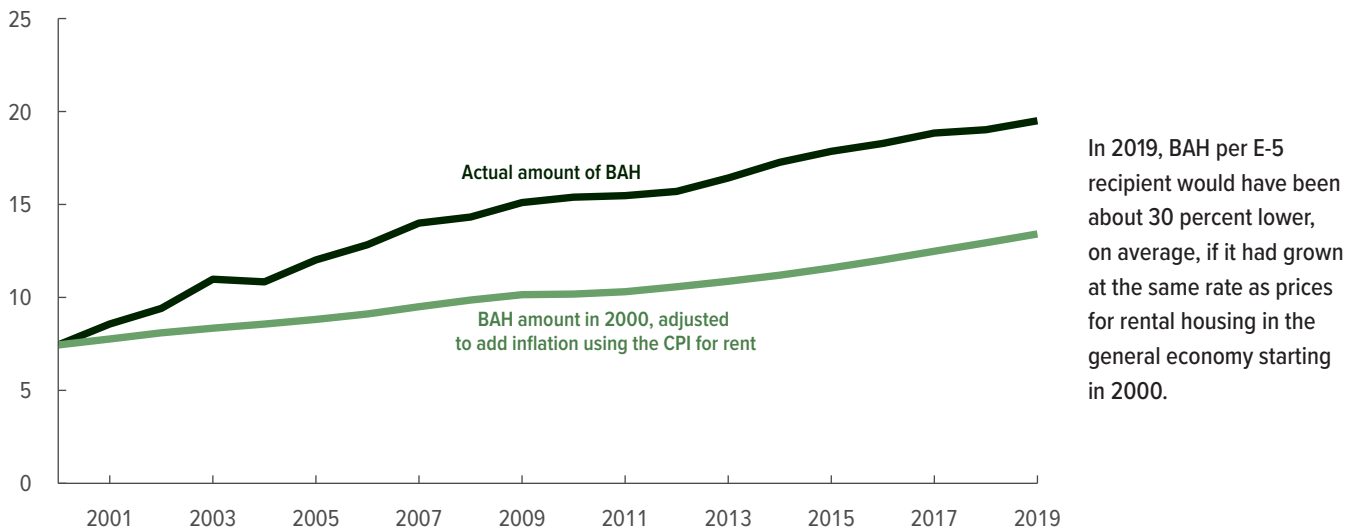
Rising Average Payments per Recipient. The increase in the size of payments that service members receive accounts for roughly two-thirds of the growth in total BAH spending from 2000 to 2019. Overall, payments per recipient increased from about \$12,100 in 2000 to about \$21,400 in 2019 (adjusted to remove the effects of economywide inflation and expressed in 2019 dollars). Over that period, the average annual increase in BAH per recipient was 5.0 percent, higher than the 3.2 percent growth in the consumer price index for rent of the primary residence (CPI for rent) and the 1.9 percent inflation rate in the economy as measured by the gross domestic product price index.

To illustrate the effect of the growth in BAH, CBO calculated the average annual BAH payment that service

Figure 4.

Comparison of Growth in BAH for E-5s and Civilian Rental Prices, by Calendar Year

Thousands of nominal dollars per recipient



Data source: Congressional Budget Office, using data from the Department of Defense and the Bureau of Labor Statistics. See www.cbo.gov/publication/59570#data.

BAH = basic allowance for housing; CPI for rent = consumer price index for rent of the primary residence.

members with the rank of E-5 would have received between 2000 and 2019 if BAH payments had grown at the same rate as the prices of rental housing, as measured by the CPI for rent (see Figure 4).¹⁵ By 2019, average payments would have been about 30 percent smaller—about \$13,500—had BAH grown at the rate of the CPI for rent after 2000. Assuming that the differences between BAH growth and the CPI for rent of the primary residence for other pay grades were similar to the differences for E-5s, BAH spending would have been roughly \$5 billion (or about 25 percent) less in 2019 if it had grown at the rate experienced in rental housing generally since 2000. In other words, BAH spending in excess of economywide growth in the cost of rental housing was about \$5 billion in 2019.

Several changes in DoD's housing policies over the past 25 years increased BAH payments to recipients, particularly in the early 2000s. First, lawmakers authorized a restructuring of housing allowances to eliminate the out-of-pocket expenses that service members were expected

to pay for housing.¹⁶ (Before 2001, BAH payments were required to cover 85 percent of the monthly cost of adequate housing in the area.)¹⁷ Second, allowance rates were more closely linked to increases in local rental rates; and finally, BAH payments were protected from any declines in those rates.¹⁸ As a result of those changes, annual increases in housing allowances substantially outpaced changes in the CPI for rent between 2000 and 2005. For E-5s, BAH grew by 10.2 percent per year on average during that period, whereas annual growth in rental rates in the economy averaged 3.4 percent.

16. The authorizing legislation to reduce the out-of-pocket costs to service members was part of the National Defense Authorization Act for Fiscal Year 2001 (P.L. 106-398).

17. The National Defense Authorization Act for Fiscal Year 1998 (P.L. 105-85) provided a six-year window to “incrementally manage the rate of growth of the various components of the basic allowance for housing.” Through 2000, the out-of-pocket costs were higher than the 15 percent differential set in law. See Lawrence Kapp, Congressional Research Service, memorandum, “Military Housing Allowances as a Proportion of Servicemember Housing Expenses, 1995–2020” (September 3, 2020).

18. For more information on changes to the rate-setting process, see General Accounting Office (now Government Accountability Office), *DoD Personnel: Improvements Made to Housing Allowance Rate-Setting Process*, GAO-01-508 (April 2001), www.gao.gov/products/gao-01-508.

15. By calculating growth for a single pay grade, CBO controlled for growth in BAH stemming from changes in DoD's end strength (the number of military personnel at the end of a fiscal year) or shifts in the mix of ranks.

In addition, amid concerns about differences in housing allowances for service members with and without dependents in the late 2000s, DoD raised housing allowances for service members without dependents to equal at least 75 percent of allowances for service members with dependents in the same duty location with the same rank. That change also increased average BAH payments.

Two changes offset some of the growth in BAH per recipient in the 2010s. In 2015, DoD eliminated the cost of renter's insurance from the computation of BAH payments. It also reversed the policy of paying for 100 percent of local median rental costs. Over a five-year implementation period, DoD slowed the growth in BAH until, in 2019, DoD set housing allowances to cover 95 percent of those costs. As a result, the growth rate of BAH spending per recipient for that period was slightly slower than the growth rate of the CPI for rent.

The increases in BAH payments to cover a larger share of rental costs (from 85 percent to 95 percent) resulted in additional costs to DoD of roughly \$2 billion in 2019, which accounts for 40 percent of BAH spending per recipient in excess of economywide growth in the cost of rental housing.

How CBO Identified Similar Civilians

CBO used the Census Bureau's American Community Survey (ACS) data from 2017 to 2019 to determine the type and rental cost of housing that civilians similar to military personnel chose. CBO did not include data for civilians who owned their houses because BAH is calculated to cover rental costs, not homeownership costs. However, some military personnel chose to purchase homes and pay for those costs using BAH (for more details, see Box 1).

To identify civilians similar to service members at specific pay grades, CBO used two approaches. Under the first approach, CBO identified civilians with age and education profiles similar to those of military personnel at each pay grade. CBO considered age and education in part because both reflect a person's human capital (their skills, knowledge, and experience) and, consequently, influence their potential earnings. Both older workers and workers with higher levels of education typically have higher earnings. Additionally, those demographic characteristics affect people's lives in many ways, including how they make decisions about employment and housing.

However, DoD selects more skilled or able recruits among high school graduates, as evidenced by their above-average scores on national aptitude tests, physical

fitness exams, and other entrance criteria. Because age and education do not account for the standards required to enter military service, the median salary of civilians with similar age and education profiles is likely to be lower than that of their military counterparts. As a result, the types of housing that group of civilians selects are, on average, probably smaller than the military standard, and median rents for that group are likely to be lower than BAH.

Under the second approach, CBO identified civilians with personal income similar to the average income that service members received at each pay grade. CBO considered income for two reasons. First, it is an important component in determining people's choices for housing, and second, DoD is required to provide housing allowances that reflect the costs of adequate housing for civilians with comparable levels of income in the same area.

Using income to compare military personnel and civilians also has limitations, however. First, civilians with similar income tend to be older and have more education than military personnel. Second, enlisted service members are paid at about the 90th percentile of the earnings of civilians with similar demographic characteristics; service members would have lower earnings if they were paid at DoD's benchmark of the 70th percentile. In addition, research has shown that when holding factors such as the standardized test scores in the Armed Forces Qualification Test fixed, military personnel earn more than civilians with similar characteristics.¹⁹ In other words, median salaries of military personnel would probably have been lower had they been civilians.

How CBO Compared Data for Civilian Housing and Military Housing Areas

Housing data summarized at a national level may obscure large differences in where service members and civilians live, as well as regional variations in housing; thus, CBO compared civilian housing data at the MHA level. However, geographic units in the ACS do not align with MHAs, so CBO used a weighting method to

19. For more details, see Kyle Greenberg and others, "Army Service in the All-Volunteer Era," *Quarterly Journal of Economics*, vol. 137, no.4 (November 2022), pp. 2363–2418, <https://doi.org/10.1093/qje/qjac026>. For earnings differences by service, see David S. Loughran and others, *The Effect of Military Enlistment on Earnings and Education* (RAND Corporation, 2011), www.rand.org/pubs/technical_reports/TR995.html; and Paco Martorell and others, *Effects of Military Service on Earnings and Education, Revisited: Variation by Service Duration, Occupation, and Civilian Unemployment* (RAND Corporation, 2014), www.rand.org/pubs/research_reports/RR342.html.

Box 1.

BAH and Home Ownership

The Basic Allowance for Housing (BAH) is intended to offset the rental cost of housing; however, it can also be used for mortgage payments, and many military personnel choose to purchase a home rather than rent one. Using data from the American Community Survey (ACS) from 2017 to 2019, the Congressional Budget Office found that about 25 percent of service members stationed in the United States owned their own homes. When the sample was restricted to only those service members who received full BAH, the share was larger, at 38 percent.¹

Several factors may contribute to whether service members receiving BAH buy or rent their housing. First, the military lifestyle—for example, regularly moving throughout one's career—probably affects service members' decisions about whether they purchase a home. The costs associated with buying or selling a home when changing assignments could make owning relatively costly when compared with renting. Although those service members might be able to rent their homes when they moved to a new duty station, doing so also would entail costs and risks that service members might want to avoid.

Second, service members' age and marital status affect their housing decisions. Military homeowners, on average, were six years older than the general military population over the 2017–2019 period and were more likely to be married. Just over 50 percent of all service members were married, compared with 80 percent of service members who were homeowners. Those older service members might be able to remain at a location for more than one tour or they might plan to reside at the location after leaving military service.

1. Personnel who live on base in housing owned or operated by the government—such as barracks or bachelor officer quarters—do not receive full BAH and were therefore not included in the sample.

Third, the decision of service members to own or rent a home could also be correlated with higher household income (if, for example, they have a spouse with another income). However, spouses of military homeowners were only slightly more likely to work than those of service members who rented. Data from the ACS suggest that service members who chose to purchase a home with their BAH payment often did not rely on a second income to cover ownership costs.

Fourth, general considerations relevant to all potential homeowners also affected service members' housing decisions. Homeowners assume a host of responsibilities and risks in terms of time and money—such as upkeep and property value depreciation—that renters do not. Homeownership also carries benefits, however, including capital appreciation of the housing. The relative weight of those costs and benefits differs for each owner or renter.

Additionally, although homeowners do not pay rent, they would probably make a monthly mortgage payment. BAH payments are calibrated according to median rental costs and do not necessarily reflect the costs of home ownership in an area. Monthly mortgage costs are affected by the down payment and interest rate paid by the borrower. Those factors are partially offset by the home loan guarantee program of the Department of Veterans Affairs (VA), which allows eligible service members to obtain mortgage loans with more favorable terms. Also, VA loans do not generally require a down payment, thereby enabling more military personnel to purchase homes.

distribute the population within each geographic unit to each of the MHAs it overlaps with. To determine how much similar civilians paid for rent and utilities, CBO used the rental costs they reported in the ACS. That is, the agency used occupied rental units to compare costs of rent and utilities with BAH payments. (CBO did not exclude some housing units that DoD might deem unsuitable when calculating median rental prices. See the appendix for more details.)

How Civilian Housing Choices Compare With Military Housing Standards

DoD's policy of fixing one housing standard for all geographic regions allows service members of the same pay grade and family status to live in similar housing no matter where they are stationed, although they are free to choose other housing types. That practice permits service members to rent similar housing if they move to a different posting. However, the policy does not account for the fact that people tend to rent different types of housing in different geographic regions depending, in

part, on the relative prices of goods and services there. When housing costs are relatively expensive, people tend to reduce the “quantity” of housing they consume and increase their purchases of other goods and services.

To gauge whether DoD’s fixed housing standards broadly reflect the housing choices of comparable civilians, CBO examined the types of housing that civilians rent in high-, middle- and low-cost housing areas.²⁰ Military installations where large numbers of active-duty personnel are stationed are represented in each of the cost areas, although most MHAs with large numbers of active-duty personnel are not in the highest-cost areas. For example, Fort Bliss and Fort Cavazos (formerly Fort Hood) have large populations of active-duty service members and are located in low-cost areas in Texas. San Diego, California, and the Washington, D.C., metropolitan area are two of the exceptions: They both have many military installations with some of the largest populations of military personnel and are in high-cost areas.

CBO found substantial differences between military housing standards and civilians’ housing choices regardless of the overall cost of housing for the area.²¹

Housing Choices Made by Civilians With Age and Education Profiles Similar to Those of Military Personnel

BAH rates for E-5s with dependents are based on the cost of renting a two-bedroom townhouse or duplex. CBO found that, on average, only about 4 percent of civilians who were comparable to E-5s with dependents in terms of age and education rented such homes.

Instead, their housing choices varied considerably (see Figure 5, top panel).²²

Because military housing standards remain the same across MHAs, the patterns in civilian housing choices suggest that service members in high-cost areas were generally able to rent housing that was larger than that of their civilian counterparts, whether they had similar age and education profiles or similar income. Averaged over the MHAs, nearly half of E-5–equivalent civilians rented smaller units (defined as one- or two-bedroom apartments) than the military housing standard.

Typically, civilians rented relatively smaller housing units in more expensive MHAs than they did in less expensive ones. Nearly 60 percent of civilians comparable to E-5s with dependents in high-cost areas rented units that were smaller than a two-bedroom townhouse or duplex compared with about 35 percent of those in low-cost MHAs. In high-cost areas, about 20 percent of civilians rented larger homes (defined as three-bedroom townhomes or three- or four-bedroom single-family homes) than the military housing standard; in low-cost areas, more than 30 percent of civilians did so. The difference between high- and low-cost areas was even greater when considering all housing larger than the DoD housing standards. (That category also included three- and four-bedroom apartments and townhomes and two-bedroom single-family homes, which make up a large share of the “other” category.)

Differences in housing choices in high-cost and low-cost areas were also evident for civilians who were comparable with service members of other military ranks. However, a smaller share of older civilians (or civilians equivalent to service members of higher military ranks) rented one- or two-bedroom apartments than did younger civilians. That held true in high- and low-cost areas.

20. To create distributions of housing types that comparable civilians rented, CBO ranked MHAs by the median cost for people between the ages of 18 and 45 for a two-bedroom apartment. (Two-bedroom apartments are plentiful in most locations.) CBO considered those in the lowest quartile of median rental costs as low-cost housing areas, and those in the highest quartile as high-cost areas. CBO estimated that the monthly rental costs in low-cost areas were about \$850 or less and those in high-cost areas were \$1,225 or more. CBO then looked at the types of housing in each MHA within a quartile and calculated the share of similar civilians that lived in each type of housing for each MHA. CBO did this calculation for both groups of civilians, those with similar age and education profiles and those with similar income.

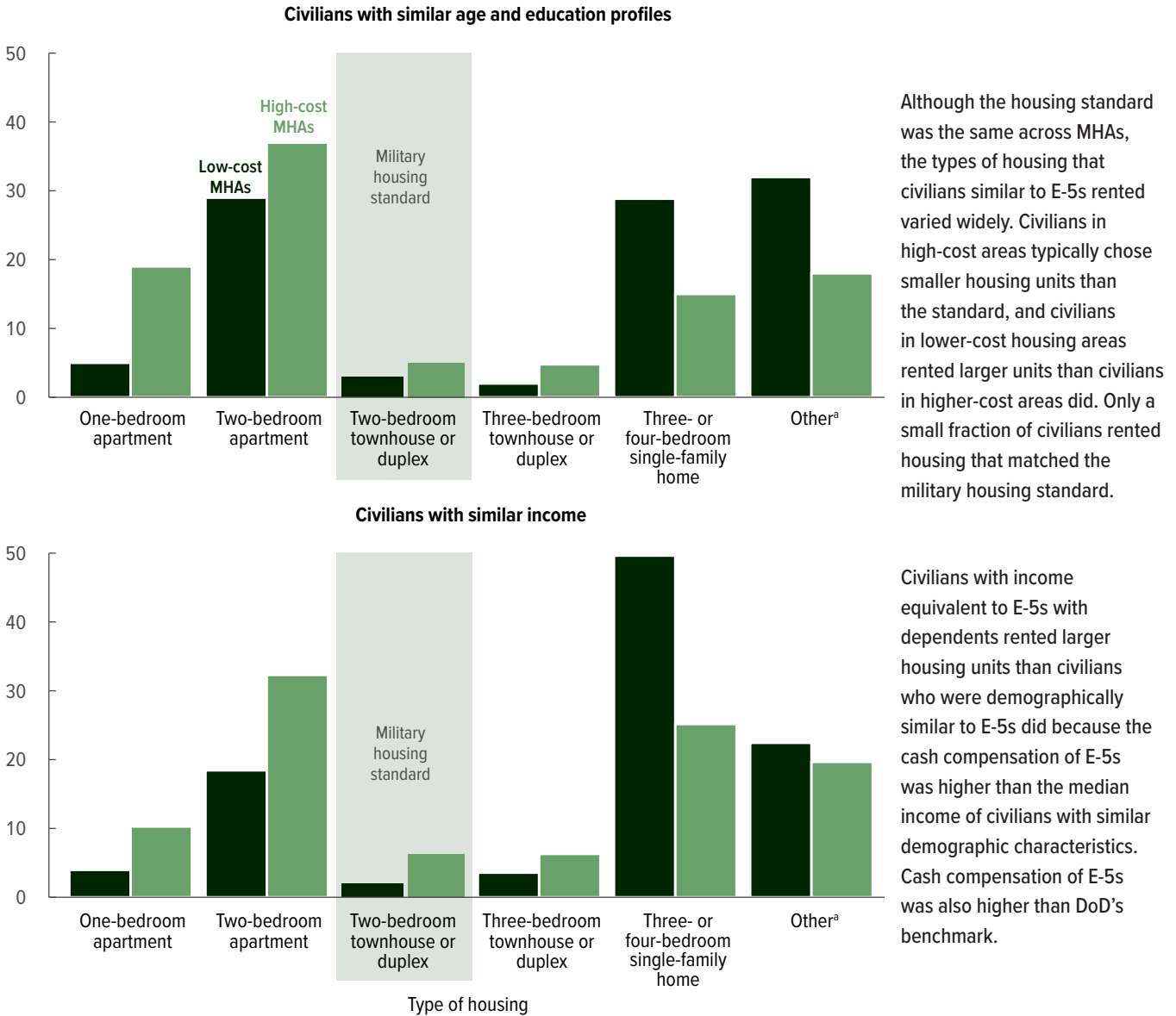
21. The calculations are averages across MHAs. CBO did not weight each MHA by its active-duty or civilian population.

22. Because some service members would probably own homes if they left military service, CBO also looked at the distribution of types of homes both rented and owner-occupied. The share of civilians demographically equivalent to E-5s who rented or owned two-bedroom townhomes remained small, about 3 percent. About 28 percent of civilians rented or owned smaller housing (one- or two-bedroom apartments or condominiums), and 44 percent of civilians rented or owned larger housing than the standard (three-bedroom townhomes or three-bedroom or four-bedroom single-family homes).

Figure 5.

Housing Rented by Civilians Similar to E-5s With Dependents, 2017 to 2019

Percent



Data source: Congressional Budget Office, using data from the American Community Survey. See www.cbo.gov/publication/59570#data.

To identify low-cost and high-cost MHAs, CBO calculated the cost of housing in an MHA on the basis of the rental costs (including utilities) paid by people between the ages of 18 and 45 for a two-bedroom apartment. The agency then ranked MHAs by median rent and considered those MHAs in the lowest quartile of median rent as low-cost housing areas and those in the highest quartile as high-cost areas. The distribution of housing rented by civilians was calculated within each MHA and then averaged across high- and low-cost MHAs to derive the reported distributions. CBO did not weight each MHA by its active-duty or civilian population.

CBO's sample included civilians who were married, had dependent children, or both and who were employed full time. Civilians who were similar to E-5s in age and education were between the ages of 23 and 28 and had a high school diploma or some college education. Civilians who were similar to E-5s by income were between the ages of 18 and 45 and had income equal to regular military compensation (RMC) plus or minus 10 percent. (CBO calculated local RMC rates by replacing the national average BAH payment with MHA-specific BAH rates.) The sample included civilians who rented all types of housing that were available, except for studio apartments, boats, RVs, and tents (none of which were common in most MHAs).

BAH = basic allowance for housing; DoD = Department of Defense; MHA = military housing area.

a. Includes most types of housing other than DoD's housing standards, such as three- and four-bedroom apartments, mobile homes, and two-bedroom single-family homes. Most housing in that category was larger than the housing standard for E-5s with dependents.

Housing Choices Made by Civilians With Income Similar to That of Military Personnel

DoD requires that military housing standards reflect the housing types normally occupied by civilians of comparable income. However, as was the case for civilians with similar age and education profiles, few civilians with comparable income—also 4 percent—rented housing that corresponded to the military housing standard for E-5s with dependents. Although about 30 percent of civilians with income equivalent to E-5s rented housing smaller than the standard, they were more likely than civilians with comparable age and education profiles to rent larger units than the military housing standard (see Figure 5 on page 13, bottom panel).

Factors Influencing Civilians' Housing Choices

With both types of comparisons, CBO found that the types of housing rented by civilians similar to E-5s with dependents varied widely and that the percentage of civilians who rented homes at the military housing standard was relatively small. It is not surprising to find such a wide variety of housing occupied by renters. Two factors may help explain those findings: individual preferences and total household income.

First, people have different priorities when choosing housing—some are willing to pay more of their income than other people for some attributes, such as high-quality local schools or a larger property. Other people, in order to afford larger homes, may be willing to sacrifice in other ways. For instance, some of the rentals that CBO classified as larger could be older, less well-maintained, or in less popular neighborhoods. Although the type of housing people chose to rent varied, in some cases, the cost of that housing could be similar to the BAH rates assigned to the relevant military housing standard. CBO could not determine from ACS data the desirability of the different types of housing that civilians chose.

Second, some households included in the ACS had dual incomes and some had single incomes. DoD sets its BAH rates on a service member's income, but housing decisions are based, in part, on household income, which may include more than one income. As household income increases, housing expenditures generally also increase. Civilians who were part of dual-income families might have rented larger homes than military housing standards because their household income exceeded that of similar service members. To examine the effect dual incomes had on civilians' housing choices, CBO analyzed the distribution of housing by single- and

dual-income families separately. The agency found that 26 percent of E-5-equivalent civilians with working spouses rented single-family homes with three or four bedrooms, whereas about 22 percent of those households with only one income did so.

Either comparison might be considered appropriate, so CBO included both single- and dual-income households in its primary analysis. On the one hand, DoD service members are less likely to have spouses who work in the paid labor force, and those who do earn less than comparable civilians.²³ Consequently, total income in service members' households might not be as high as that in comparable civilians' households. If the military lifestyle makes working less feasible for spouses, some might argue that housing allowances should compare to what dual-income families pay in rent. On the other hand, service members earn more than most civilians of similar age and with similar education, in which case military housing standards and BAH payments may partially or wholly offset the effect of dual incomes on civilians' housing choices.

How Median Civilian Rents Compare With BAH

BAH rates vary by location, so CBO also examined whether those rates matched the median rents that comparable civilians paid. To do so, the agency determined the median rental costs for comparable civilians in each MHA and then calculated the percentage difference between that and BAH.²⁴

23. In 2006, about 43 percent of military spouses were out of the labor force compared with nearly 25 percent of married civilian women with similar characteristics. In 2000, the earnings of military spouses who worked were also about one-third lower. See Nelson Lim and David Schulker, *Measuring Underemployment Among Military Spouses* (RAND Corporation, 2010), www.rand.org/pubs/monographs/MG918.html; and Nelson Lim, Daniela Golinelli, and Michelle Cho, "Working Around the Military" Revisited: Spouse Employment in the 2000 Census Data (RAND Corporation, 2007), <http://tinyurl.com/drtb4vzw> (PDF).

24. CBO did not report findings for MHAs with few observations (fewer than 35), resulting in a sample of 232 MHAs (instead of 301) for the age and education approach and a sample of 135 for the income approach. (The number of MHAs that CBO could use under the income approach was much smaller because there are fewer regions where there are enough observations of civilians ages 18 to 44 in the survey with income as high as military personnel.) The distribution of percentage differences in BAH and the costs of civilians' rental housing was roughly the same with that minimum sample size restriction as it was for the full sample.

CBO found that within individual MHAs, the amount of BAH that DoD paid to service members was usually larger than the median rental rates for comparable civilians—under both methods CBO used to define civilian equivalents. That percentage difference was, on average, largest in those locations with the highest BAH rates and those with the highest average rental costs. For an example of how housing choices and rental rates varied by pay grade within a specific MHA (Norfolk, Virginia), see Box 2.

Rental Costs for Civilians With Age and Education Profiles Similar to Those of Military Personnel

CBO found that BAH rates were higher than the median rent of civilians with similar age and education profiles in almost all MHAs. That relationship suggests that DoD may be offering larger housing allowances, on average, than necessary to meet retention goals.

Averaged over all MHAs in CBO's sample of civilians with similar demographic characteristics, the monthly BAH payment for E-5s in 2019 was \$1,600, whereas the median rental cost for civilians was \$1,100, a difference of 47 percent.²⁵ MHAs with the highest BAH rates had, on average, larger differences between BAH and what civilians paid for rent and utilities than MHAs with the lowest BAH rates (see Figure 6 on page 18, left panel). In the quarter of MHAs with the highest BAH payments, BAH rates for E-5s were 68 percent higher than their civilian median rental costs.²⁶ By contrast, in the quarter of MHAs with the lowest BAH payments, BAH rates for E-5s were about 22 percent higher than the median civilian rental costs in those locations. Those results include both single- and dual-income civilian households.

25. The median rental cost is calculated for 2017 through 2019, adjusted to remove the effects of inflation. Because CBO was analyzing the percentage difference in BAH and median civilian rent (including utilities) among MHAs, the primary analysis did not weight the MHA by the number of service members or civilians to account for population differences in the MHAs.

26. The U.S. Department of Housing and Urban Development (HUD) annually publishes estimates of median rental costs for geographic areas by type of housing (as defined by the number of bedrooms the unit has). For a small sample of MHAs that roughly aligned with HUD-defined areas, CBO compared its estimates of civilian rental costs for two-bedroom apartments and two-bedroom townhomes with those from HUD. CBO's estimates of the rental costs were roughly consistent with HUD's estimates.

Although there was, on average, a gap between BAH and median civilian rental costs, there was considerable variation in the size of that gap across MHAs with similar BAH rates (see Figure 7 on page 19). In only a few cases was BAH lower than the median rental cost for civilians with comparable age and education, and only in the lower percentiles.

CBO also estimated the median civilian rental costs for single- and dual-income households separately. Because of frequent moves and the deployments of service members, it may be more difficult for military spouses to work. In that case, DoD may make up for lower spousal income with a housing allowance that allows service members to afford the same housing as dual-income families. CBO found that civilians living in dual-income households spent about \$130 more per month on housing than those living in single-income households, reducing the percentage gap between BAH for E-5s with dependents and median civilian rental costs over all MHAs in the sample from 47 percent to 43 percent, on average.

Rental Costs for Civilians With Income Similar to That of Military Personnel

CBO found that a gap between civilian rental costs and BAH payments persisted but was smaller for civilians with income similar to that of E-5s with dependents, because median rent (including utilities) was higher for those civilians than it was for civilians with age and education profiles similar to those service members. Averaged over all MHAs in CBO's sample of civilians with similar income, the monthly BAH payment for E-5s in 2019 was \$1,800, compared with the median monthly rental cost of \$1,500 for civilians with similar income, a difference of 20 percent.²⁷ The difference tended to be larger, on average, in areas with the highest BAH rates and smaller in areas with the lowest BAH rates (see Figure 6, right panel). In the quarter of MHAs with the largest housing allowances, BAH rates for E-5s were 33 percent higher than the median rental costs paid by civilians with similar income. Among the quarter of

27. The requirement of a minimum number of observations within an MHA—35—resulted in a smaller sample of MHAs under the income approach than under the age and education approach. The average BAH for MHAs was larger under the income approach (\$1,800 per month) than under the age and education approach (\$1,600 per month), because the omitted MHAs in the former were disproportionately from areas with lower housing costs and BAH. Those omitted areas tended to have smaller percentage differences between BAH payments and rental costs.

Box 2.

Case Study: Norfolk, Virginia

The types of housing civilians choose to rent and the associated costs can vary considerably by military housing area (MHA). That variation is based, in part, on the local market's supply of rental housing, the relative prices of goods, and people's preferences. The Congressional Budget Office analyzed the housing choices of civilians in Norfolk, Virginia, to compare civilian housing choices with military housing standards and the associated basic allowance for housing (BAH) rates for service members at multiple pay grades.

CBO chose Norfolk, Virginia, in part, because it is home to one of the Navy's largest bases. The MHA surrounding Norfolk has a relatively large active-duty population of roughly 45,000 and a civilian population of over 1 million.¹ In addition, its overall

cost of housing was in the middle of the national distribution in 2019. CBO examined the housing choices made by three groups: civilians similar to E-5s with dependents, civilians similar to E-4s without dependents, and civilians similar to E-6s with dependents.²

Types of Housing Chosen by Civilians. At least 60 percent of civilians with age and education profiles similar to those of E-5s rented housing that was smaller (one- or two-bedroom apartments) than the military housing standard of a two-bedroom townhouse, and more than 16 percent rented housing

Air Force Base and Fort Eustis Army Base. That MHA has about another 15,000 service members stationed there.

2. CBO chose those additional ranks for two reasons: First, the Department of Defense directly surveys housing information for those groups, and second, large numbers of service members are in those ranks.

1. A separate MHA for Newport News and Hampton Roads is adjacent to the Norfolk MHA. Newport News and Hampton Roads are home to both Langley

Housing Rented by Civilians Similar to Service Members at Various Pay Grades in Norfolk, Virginia, 2017 to 2019

Percent

Type of housing	E-4 without dependents	E-5 with dependents	E-6 with dependents
Civilians with similar age and education profiles			
One-bedroom apartment	39	8	5
Two-bedroom apartment	27	52	30
Two-bedroom townhouse or duplex	5	7	6
Three-bedroom townhouse or duplex	0	7	13
Three- or four-bedroom single-family house	7	9	24
Other ^a	22	17	22
Total	100	100	100
Civilians with similar income			
One-bedroom apartment	53	6	6
Two-bedroom apartment	33	23	24
Two-bedroom townhouse or duplex	3	8	8
Three-bedroom townhouse or duplex	0	12	8
Three- or four-bedroom single-family house	8	26	34
Other ^a	4	25	21
Total	100	100	100

Data source: Congressional Budget Office, using data from the American Community Survey and Department of Defense. See www.cbo.gov/publication/59570#data.

CBO's sample included civilians who were married, had dependent children, or both and who were employed full time. Civilians who were similar to E-5s in age and education were between the ages of 23 and 28 and had a high school diploma or some college education. Civilians who were similar to E-5s by income were between the ages of 18 and 45 and had income equal to regular military compensation (RMC) plus or minus 10 percent. (CBO calculated local RMC rates by replacing the national average BAH payment with MHA-specific BAH rates.) The sample included civilians who rented all types of housing that were available, except for studio apartments, boats, RVs, and tents (none of which were common in most MHAs).

BAH = basic allowance for housing; MHA = military housing area.

a. Includes most types of housing other than DoD's housing standards, such as three- and four-bedroom apartments, mobile homes, and two-bedroom single-family houses. Most housing in that category was larger than the housing standard for E-5s with dependents.

Box 2.

Continued

Case Study: Norfolk, Virginia

larger than the Department of Defense’s (DoD’s) standard (see first table).³ The difference persisted but was smaller for E-6–equivalent civilians: at least 42 percent of comparable civilians rented housing that was smaller than the standard for that pay grade (a three-bedroom townhouse or duplex). Relatively few E-5s or E-6s rented housing similar to their respective standard (only 7 percent of E-5s and 13 percent of E-6s).

The share of E-5– and E-6–equivalent civilians residing in housing larger than the DoD standards increased substantially when CBO compared civilians with military personnel based on income. That share increased further when considering all housing larger than the DoD housing standards contained in the “other” category. Those patterns are similar to those at the national level.

In the broader analysis, CBO did not focus on E-4s because there were very few similar civilians for comparison (most civilians comparable to E-4s had roommates). But for completeness, the agency did analyze that group for Norfolk. Most E-4s without dependents in the military are between the ages

of 20 and 24. BAH rates allow those service members to rent their housing standard—a one-bedroom apartment—without requiring a roommate; however, most civilians comparable to E-4s seek out roommates.

In Norfolk, nearly 95 percent of civilians comparable to E-4s in terms of age and education reported living with a roommate or family member. In this analysis, CBO restricted the civilian sample to renters who did not report living with roommates or family members to better compare civilian housing outcomes with the military standard. However, civilians without roommates probably earned more than civilians with roommates, and therefore CBO’s sample presumably included a relatively large share of people who chose larger housing.

Differences between BAH Payments and Civilian Rents.

Similar to the national pattern, the determination of median civilian rents in Norfolk depended on how CBO defined a comparable civilian. BAH rates in Norfolk were higher than civilian rents for the demographic and income comparisons for all categories with the exception of civilians with income similar to that of E-5s with dependents (see second table). The percentage differences between BAH and civilian rent were smaller when income, not age and education, was used as the metric.

3. Those percentages do not include the shares of most types of housing other than DoD’s housing standards; most housing in those categories was larger than the standard for E-5s with dependents.

Monthly BAH for Service Members at Various Pay Grades and Median Rental Costs for Similar Civilians in Norfolk, Virginia, 2017 to 2019

2019 dollars

	E-4 without dependents	E-5 with dependents	E-6 with dependents
Monthly BAH payment	1,280	1,520	1,880
Civilians with similar age and education profiles			
Median rental cost	990	1,200	1,320
Percent difference	29	26	43
Civilians with similar income			
Median rental cost	1,080	1,560	1,590
Percent difference	18	-2	18

Data source: Congressional Budget Office, using data from the American Community Survey and Department of Defense. See www.cbo.gov/publication/59570#data.

Rental costs include utility costs.

CBO’s sample included civilians who were married, had dependent children, or both and who were employed full time. Civilians who were similar to E-5s in age and education were between the ages of 23 and 28 and had a high school diploma or some college education. Civilians who were similar to E-5s by income were between the ages of 18 and 45 and had income equal to regular military compensation (RMC) plus or minus 10 percent. (CBO calculated local RMC rates by replacing the national average BAH payment with MHA-specific BAH rates.) The sample included civilians who rented all types of housing that were available, except for studio apartments, boats, RVs, and tents (none of which were common in most MHAs).

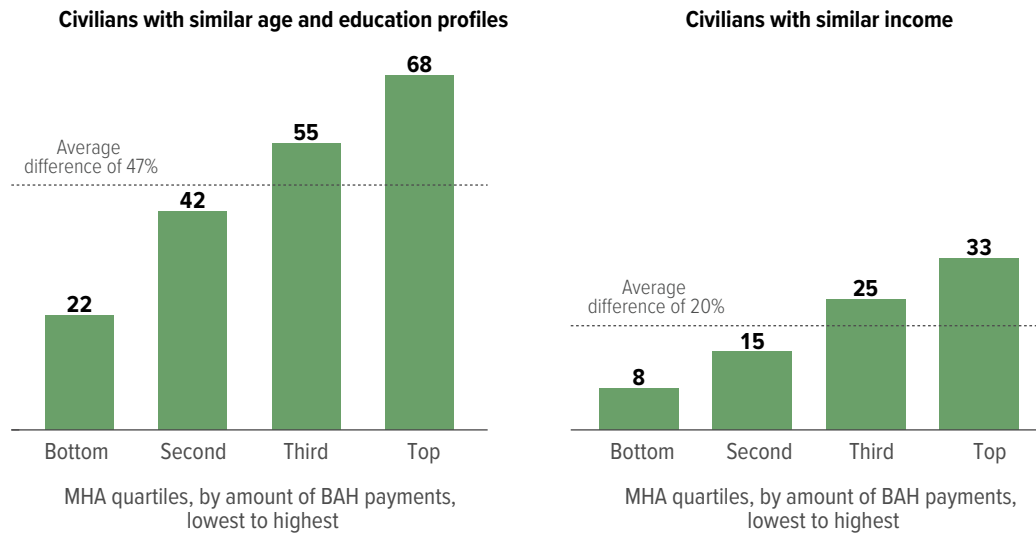
BAH = basic allowance for housing; MHA = military housing area.



Figure 6.

Percentage by Which BAH for E-5s With Dependents Exceeded Median Rental Costs of Similar Civilians, 2017 to 2019

Percent



Average BAH for E-5s with dependents was 47 percent larger than the median rent of civilians with similar age and education profiles and 20 percent larger than that of civilians with similar income.

For both categories of similar civilians, the percentage difference between BAH and civilian rental costs was greatest in MHAs with the highest BAH and smallest in MHAs with the lowest BAH. Across all quartiles, the gap was substantially higher for civilians with similar age and education profiles than for civilians with similar income.

Data source: Congressional Budget Office, using data from the American Community Survey and the Department of Defense. See www.cbo.gov/publication/59570#data.

Rental costs include utility costs.

Percentage differences between BAH and median civilian rent within each MHA were averaged across MHAs to derive the average percentage differences. CBO did not report findings for MHAs with fewer than 35 observations in the American Community Survey, resulting in a sample with 232 MHAs for civilians with similar age and education levels and 135 MHAs for those with similar income. CBO constructed the quartiles, which divide the number of MHAs into four equal groups, on the basis of those smaller samples.

CBO's sample included civilians who were married, had dependent children, or both and who were employed full time. Civilians who were similar to E-5s in age and education were between the ages of 23 and 28 and had a high school diploma or some college education. Civilians who were similar to E-5s by income were between the ages of 18 and 45 and had income equal to regular military compensation (RMC) plus or minus 10 percent. (CBO calculated local RMC rates by replacing the national average BAH payment with MHA-specific BAH rates.) The sample included civilians who rented all types of housing that were available, except for studio apartments, boats, RVs, and tents (none of which were common in most MHAs).

BAH = basic allowance for housing; MHA = military housing area.

MHAs with the lowest housing allowances, BAH rates were 8 percent higher than the median rental costs for civilians. Though variation in the percentage difference was large across locations regardless of the BAH rates, that variation was smaller for civilians with comparable income than for civilians with comparable age and education profiles (see Figure 7). In addition, rental costs exceeded BAH in fewer than 15 percent of MHAs.

Under the income approach, the number of observations was too small to calculate the difference in median rental

costs by single-income households and dual-income households in the civilian sector. However, if the same difference (\$130 per month) applied to the income approach as under the demographic approach, the percentage gap between BAH and median rental costs would drop from roughly 20 percent to 18 percent.

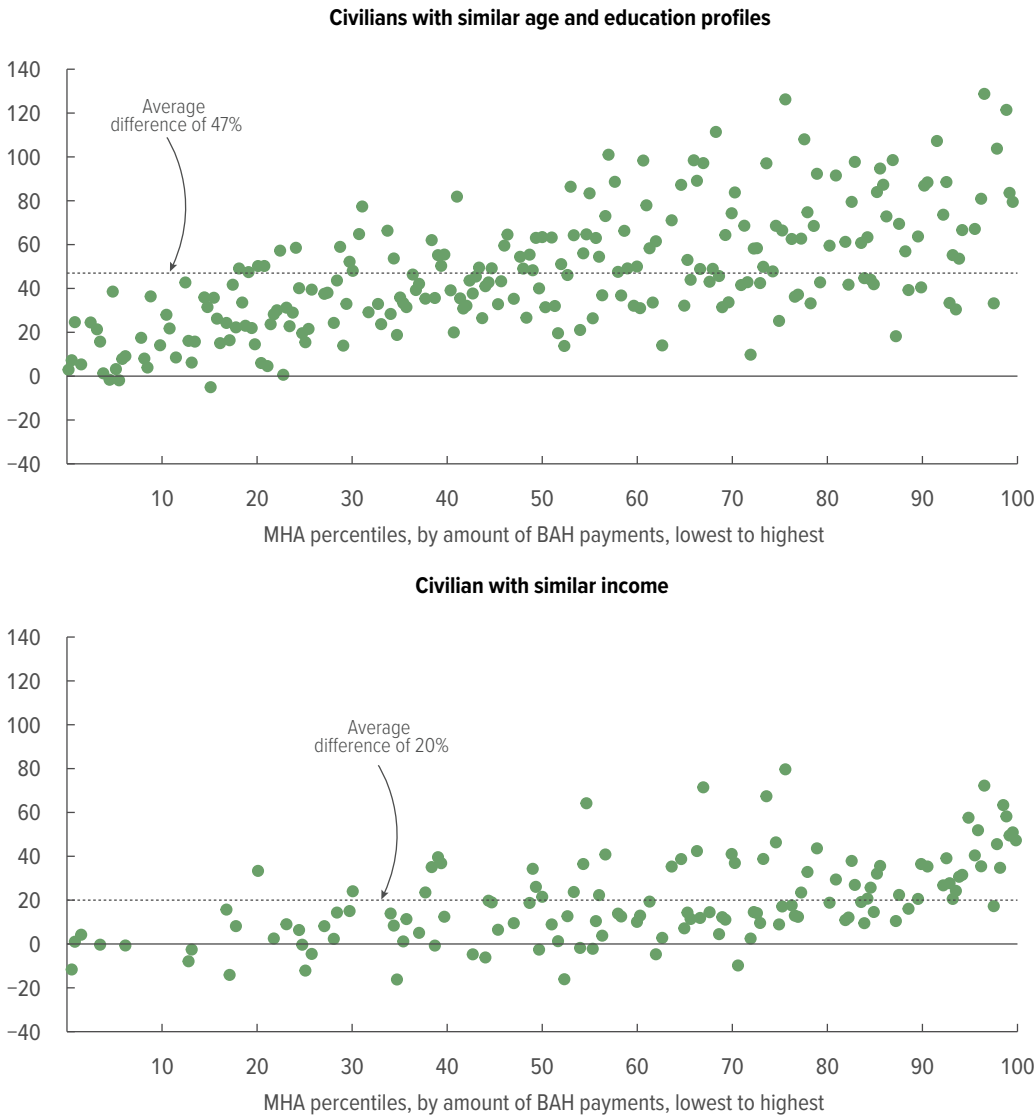
How BAH and Median Civilian Rental Costs Differ by MHAs' Characteristics

CBO also examined whether some attributes of the MHAs were associated with the percentage differences

Figure 7.

Variation in the Percentage by Which BAH Exceeded Median Rent Paid by Civilians Similar to E-5s With Dependents, 2017 to 2019

Percent



The difference in BAH and the median rent paid by civilians varied substantially across MHAs under both approaches. BAH was lower than the median rent paid by civilians with similar age and education profiles in only a few MHAs.

BAH was closer to the median rent paid by civilians with similar income but was still lower in only a small number of MHAs.

Data source: Congressional Budget Office, using data from the American Community Survey and the Department of Defense. See www.cbo.gov/publication/59570#data.

Costs of rental housing include utility costs.

Each dot in the figure represents an estimate for one MHA. Some MHAs had fewer than 35 observations; the figure does not include dots for those MHAs. However, MHA percentiles were constructed using all MHAs, regardless of the number of observations.

CBO's sample included civilians who were married, had dependent children, or both and who were employed full time. Civilians who were similar to E-5s in age and education were between the ages of 23 and 28 and had a high school diploma or some college education. Civilians who were similar to E-5s by income were between the ages of 18 and 45 and had income equal to regular military compensation (RMC) plus or minus 10 percent. (CBO calculated local RMC rates by replacing the national average BAH payment with MHA-specific BAH rates.) The sample included civilians who rented all types of housing that were available, except for studio apartments, boats, RVs, and tents (none of which were common in most MHAs).

BAH = basic allowance for housing; MHA = military housing area.

between BAH payments and median rents (including utilities). To do so, CBO considered the correlation between the percentage difference in BAH and civilian rental costs using three measures: the overall cost of housing in an MHA, the number of service members living in the MHA, and the total population of the MHA.²⁸

CBO found that in MHAs where rental costs were most expensive, the percentage difference between BAH for E-5s with dependents and the median rental costs of civilians of similar age and education paid was also disproportionately large. About 45 percent of the highest-cost MHAs were in the top quarter of differences between BAH and civilian rental costs for those who were similar to E-5s in age and education levels. For example, Washington, D.C., was in the largest difference group, but the Honolulu, Hawaii, MHA had relatively small percentage differences between BAH and median civilian housing costs. About 43 percent of the areas with the lowest overall costs of housing were in locations with the smallest percentage differences. The same relationships held true for civilians with income similar to that of E-5s.

BAH rates may differ substantially from median civilian rental costs in high-cost areas for a variety of reasons. High-cost MHAs often span large metropolitan areas, and a greater share of rental units may be excluded from DoD's price calculations in those urban settings if a large share of rental housing is of low quality or in areas with crime rates above the national average. Moreover, DoD's rental surveys primarily include rental units that are on the market at the time the survey was conducted. Data show that the annual growth in rental costs for recent movers is higher than that for long-term tenants.²⁹ The difference in rental prices for new tenants and other renters may be larger in more expensive locations.

Under both definitions of similar civilians, CBO found that BAH rates in MHAs associated with large military installations and correspondingly large numbers

of service members stationed there were more closely aligned with median civilian rental costs than those in MHAs with few service members. That correlation mitigates some of the additional costs DoD would have incurred had all large installations been located in high-cost MHAs.

CBO also found that the larger the share of service members of total population in an MHA, the more similar BAH rates were to civilians' cost of housing. It is unclear whether DoD does a better job matching housing market prices in those areas or if BAH has an outsized effect on market rates in those areas. It is possible that BAH rates might cause local rental rates to rise, particularly if the number of service members as a share of the local population was relatively large. However, evidence of the correlation is limited.³⁰

Factors Affecting BAH Rates and Estimates of Median Civilian Rental Costs

Estimates of civilian rental costs, and consequently BAH rates, are sensitive to the way those costs are calculated. Several factors affect the calculation of median rental costs: how comparable civilians are defined, how rental housing is identified, what criteria are used to exclude housing units, how geographic areas used for comparison are defined, and how limitations inherent in surveys are handled.

First, how similar civilians are defined can provide higher or lower estimates of their median rent. Second, in determining the BAH rate for an MHA, DoD surveys the cost of vacant rentals on the market, which may not be the same as the cost for occupied rentals. Research by the Bureau of Labor Statistics shows that people who move have a larger increase in annual rental costs than those who do not. DoD's method may better align BAH to the rental costs faced by service members who move to a new duty station. By contrast, CBO calculated the cost of rental housing using the median rental costs for occupied housing; those costs may be lower than the costs paid by people who move.³¹ The agency did not adjust for that

28. CBO defined the overall cost of an area in the same way as in the previous section: on the basis of the rental cost of two-bedroom apartments rented by civilians ages 18 to 45 and not on any age and education or income group corresponding to a specific rank. As such, it is one measure of overall rental costs for an area.

29. Ben Houck, "Housing Leases in the U.S. Rental Market," *Spotlight on Statistics* (Bureau of Labor Statistics, September 2022), <http://tinyurl.com/mud89jnz>.

30. For an exploration of the effects of military housing allowances on rents in the private sector near installations, see W. Brent Boning, *Does Increasing Military Housing Allowances Affect Rental Markets* (CNA Corporation, May 2002).

31. CBO found that the rental costs for recent movers (defined as people who occupied a two-bedroom apartment at the time of the survey but had moved within the previous 12 months) were about 9 percent higher than for those who had not moved.

difference, however, because civilians who are the same age as E-5s move at roughly the same frequency that service members do (about one-third in a given year), suggesting that rates based on vacant rentals may overstate rental costs for those who have been in their units for a year or more.

Third, DoD's criteria for the inclusion or exclusion of a housing unit in its surveys probably affects BAH rates. Eliminating lower-cost housing choices available to civilians (either by excluding less desirable neighborhoods or smaller types of housing) results in higher estimates of median rental costs and, consequently, higher BAH rates than would have occurred without the restrictions. However, not all inclusions or exclusions appear to change the median rents substantially. For instance, the inclusion or exclusion of studio apartments and mobile homes made very little difference in CBO's findings—the median civilian rental costs changed by less than 5 percent.

Fourth, the estimation of civilians' rental costs is sensitive to the boundaries of an MHA. Not surprisingly, expanding or constricting the area can lead to variation in the

median rents calculated and subsequent BAH payments. For instance, eight geographic areas in the ACS feed into the Norfolk, Virginia, MHA, either wholly or partially. The difference in civilian rental costs between the highest- and lowest-cost areas was roughly 30 percent.

Finally, small sample sizes and data anomalies associated with surveys can affect the calculation of median rental costs. For a particular housing standard, DoD often cannot find enough vacant units to meet its sampling goal (generally 30 to 75 units).³² In about 44 percent of MHAs, DoD could not survey enough rental units at the E-5 housing standard to meet its minimum sample target in 2019. To mitigate that problem, DoD uses additional methods to calculate BAH rates, such as data from previous years, and allows the substitution of housing types at some anchor points. Those substitutions tend to increase the rental costs that DoD calculates and the BAH that it pays.

32. Government Accountability Office, *Military Housing: Actions Needed to Improve the Process for Setting Allowances for Servicemembers and Calculating Payments for Privatized Housing Projects*, GAO-21-137 (January 2021), www.gao.gov/products/gao-21-137.

Appendix: CBO's Method

The Congressional Budget Office used the Census Bureau's American Community Survey (ACS) data from 2017 to 2019 to identify civilians comparable to service members and to determine the type and cost of housing they rented.¹ The ACS is among the largest of the Census Bureau's surveys, reaching about 2 million households each year, and it is designed to be representative of the entire U.S. population. Households in the ACS provide information on housing, demographics, income, employment, and many other topics.² The ACS's large sample size enabled CBO to account for differences in where service members and civilians worked and lived, what type of housing they rented, and how much they paid for it.

CBO's Approaches to Identifying Similar Civilians

The characteristics of service members and civilians diverge in many ways. When compared with civilians, service members are, on average, younger than the general population, more likely to hold at least a high school diploma, and more likely to be married. They are less likely to live in a major metropolitan area. The agency accounted for those differences by restricting its analysis to civilians who worked full time, were between the ages of 18 and 45, had at least a high school diploma, and rented housing.

In addition, CBO excluded civilians who lived with roommates, relatives, or other families because the housing type and rental payments reported by those respondents cannot be directly compared with military housing

standards and basic allowance for housing (BAH) payments.³ Because military housing standards differ for service members who are married or have children, the agency also accounted for civilians' family status in its analysis.

To identify civilians similar to military personnel at specific pay grades, CBO restricted its dataset further using two approaches: age and education profiles and income. Age and educational attainment are often used to compare civilian and military personnel when reviewing military compensation policies.⁴ For its comparisons with enlisted personnel at all ranks, CBO selected civilians with a high school diploma or some college education. Because age can vary substantially within a pay grade, CBO used data about civilians whose age fell within a range that encompassed at least 50 percent of service members at a given pay grade.

The income approach allows comparisons with civilians who have similar resources. Specifically, CBO defined similar income as the average regular military compensation (RMC) for each pay grade, plus or minus 10 percent, without matching the age or the education profile of civilians to that of the military personnel at that pay

-
1. CBO analyzed the housing outcomes of civilians in the years immediately before the coronavirus pandemic because the pandemic affected the rental housing and labor markets in atypical ways, as well as the ACS's data collection efforts and the resulting data quality.
 2. For more information on the American Community Survey, see Census Bureau, "American Community Survey (ACS)" (accessed December 31, 2023), www.census.gov/programs-surveys/acs/. For the ACS public use microdata and its documentation, see Steven Ruggles and others, IPUMS-USA: Version 10.0 (dataset, accessed December 31, 2022), <https://doi.org/10.18128/D010.V10.0>.

3. For example, although the housing standard for an unmarried E-4 service member is a one-bedroom apartment, a comparable civilian living with roommates might report renting a four-bedroom house. It is unclear how to interpret such a difference or whether reported rental rates represent each roommate's share; thus those civilians were excluded from CBO's samples. That exclusion had the largest effect on the samples of civilians similar to unmarried junior military personnel, because few comparable civilians at those ages (roughly 10 percent) lived alone. It probably substantially increased the median civilian rents that CBO estimated for that pay grade, which is one reason why CBO focused on E-5s.
4. For more information, see Department of Defense, *Report of the Thirteenth Quadrennial Review of Military Compensation* (December 2020), <https://militarypay.defense.gov/References/QRMC/>; Congressional Budget Office, *Approaches to Changing Military Compensation* (January 2020), www.cbo.gov/publication/55648; and Beth J. Asch and others, *Setting the Level and Annual Adjustment of Military Pay* (RAND Corporation, 2020), www.rand.org/pubs/research_reports/RRA368-1.html.

grade. So that CBO could make income comparisons between civilians and military personnel at a local level, CBO calculated specific RMC rates for each military housing area (MHA) by pay grade by replacing the national average BAH level with MHA-specific BAH rates.⁵

CBO included only civilians who rented (and excluded homeowners) because BAH is intended to offset the rental cost of housing for service members. Civilian renters may, however, differ in their decision-making from service members in some respects. For example, civilian renters who want to own a home may limit their current housing costs to save for a down payment. (In contrast, service members are usually eligible for loans that do not require a down payment and are guaranteed by the Department of Veterans Affairs.) In addition, civilian renters are likely to have better knowledge of the local market and may be able to devote more time to searching for housing than service members who relocate to different geographic regions more frequently.

CBO's Approach to Analyzing Data for Civilian Housing and Military Housing Areas

The ACS contains extensive data on the type of housing people live in, including how many bedrooms are in a unit, how many units are in a housing structure, whether the home is rented or owned, and how much housing and utilities cost. CBO used that information to compare civilians' housing with military housing standards and BAH payments.

CBO included most housing types in its analysis. It did not exclude certain housing types or locations within a military housing area that DoD might deem unsuitable when calculating median rental prices (for example, high-crime areas or areas near environmental hazards). It did exclude some types of housing that were uncommon in most MHAs: boats, tents, RVs, and studio apartments.

How CBO Mapped Survey Data to Military Housing Areas

The Census Bureau takes many steps to preserve the privacy of the respondents in the publicly available microdata that CBO used for this report, including grouping

individual respondents' information about where they reside into geographic areas called Public Use Microdata Areas, or PUMAs (which are larger than some other census-defined geographic units). PUMAs are determined differently than MHAs, which are defined by a collection of zip codes. MHAs often contain one or more PUMAs in their entirety and portions of other PUMAs. For example, the MHA for Fort Riley, Kansas, includes geographic areas from four PUMAs and had a total population of more than 150,000 people in 2019 (see Figure A-1). Including the entire populations of those PUMAs would have included nearly 500,000 people—a vast overestimate of the MHA population.

Consequently, the agency had to use alternative methods to make its comparisons. Broadly speaking, CBO used a three-step process to map ACS geographic data to the Department of Defense's (DoD's) MHAs.

Step 1: Substitute Zip Code Tabulation Areas for Zip Codes

MHA boundaries are published online by the Defense Travel Management Office. Across the continental United States, service members live in about 300 MHAs (340, including county cost groups, or CCGs), each uniquely identified by a set of postal zip codes.

A zip code is a five-digit number that describes a set of postal routes used by the Postal Service (USPS). Zip codes are not well aligned with geographic areas, such as census blocks or tracts, and they are subject to change as postal routes shift. Therefore, the Census Bureau uses zip code tabulation areas (ZCTAs) to record the geographic location of households. ZCTAs are defined as the most frequently occurring zip code within a census block and can comprise multiple census blocks. (A census block is the smallest geographical area that the Census Bureau uses: it generally has between zero and a few hundred people living in it.) For most census blocks, the zip code and the ZCTA are the same.⁶ Since less than 5 percent of zip codes (or about 1,000) did not correspond to ZCTAs, CBO treated zip codes and ZCTAs as equivalent.⁷

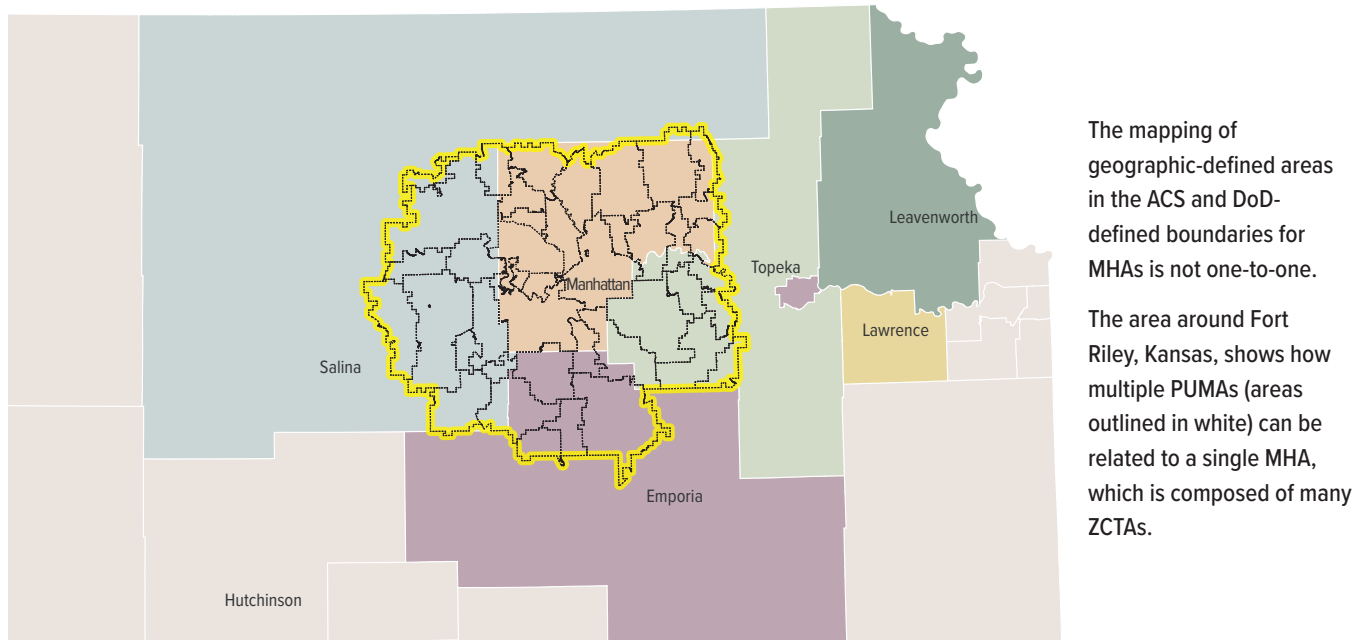
5. For BAH rates for 2017 to 2019, see Defense Travel Management Office, "All BAH Rates" (accessed December 31, 2022), <https://tinyurl.com/45uu269p>.

6. For more information about ZCTAs, see Census Bureau, "ZIP Code Tabulation Areas (ZCTAs)" (accessed December 31, 2023), <https://tinyurl.com/4cc4hkta>.

7. CBO calculated the number of zip codes that do not correspond to ZCTAs using data from the ACS and the Defense Travel Management Office.

Figure A-1.

Geographic Areas From the Census Mapped Onto the Fort Riley, Kansas, Military Housing Area



Data source: Congressional Budget Office, using data from the American Community Survey, the Missouri Census Data Center's Geocorr 2018: Geographic Correspondence Engine, and the Department of Defense. See www.cbo.gov/publication/59570#data.

Shaded areas, outlined in white, indicate PUMAs, as defined by census data. The area outlined in yellow delineates the MHA for Fort Riley, as defined by DoD. Regions outlined in black indicate ZCTAs within the Fort Riley MHA. ZCTAs are geographic areas defined by the Census Bureau and usually match zip codes.

ACS = American Community Survey; DoD = Department of Defense; MHA = military housing area; PUMA = public use microdata area; ZCTA = zip code tabulation area.

Step 2: Divide Public Use Microdata Areas into Zip Code Tabulation Areas

The ACS records information at the ZCTA-level for each observation, but data privacy issues restrict the public release of those data. As a result, the smallest geographic unit in the ACS at the person level for public use is the PUMA. A PUMA is a collection of census blocks that defines a geographic area encompassing 100,000 to 200,000 people within a state.⁸ The Census Bureau directs state partners to delineate PUMAs so that geographic units comprise areas entirely inside or entirely outside metropolitan areas whenever possible. In effect, counties with large populations are typically subdivided

into multiple PUMAs, and counties with small populations may be aggregated into a single PUMA.

To align the geographic areas in the ACS to MHAs, CBO divided each PUMA into its smaller ZCTA components. Various academic institutions create crosswalks to disaggregate PUMA data to the ZCTA level. CBO used the Missouri Census Data Center's application to generate a list of ZCTAs within each PUMA.⁹

8. For more information about PUMAs, see Census Bureau, "Public Use Microdata Areas (PUMAs)," (accessed December 31, 2023), <https://tinyurl.com/4ep8ebd8>.

9. Missouri Census Data Center, Geocorr 2022: Geographic Correspondence Engine, version 1.8 (revised October 2022), <https://mcdc.missouri.edu/applications/geocorr2022.html>. CBO used the crosswalk populated by 2010 census data, which were the most recent data available at the time of analysis.

Step 3: Assign ACS Observations to Military Housing Areas

Using DoD data that listed all zip codes within each MHA and CCG, CBO assigned MHAs and CCGs to each ZCTA and PUMA combination in the crosswalk to generate PUMA and MHA matches. CBO found that the majority of PUMAs analyzed in this study overlapped with two or more MHAs (or CCGs) because many ZCTAs belonging to a single MHA fed into multiple PUMAs. To approximate the extent to which a PUMA spans multiple MHAs, CBO calculated the proportion of each PUMA's population within a given MHA using the PUMA's 2010 census population. A high proportion (close to 1) indicates that most of the PUMA's population lived in a single MHA. A low proportion indicates that most of the PUMA's population resided in other MHAs.

Using the ACS microdata, CBO linked each person's PUMA with all MHAs and CCGs that fed into that PUMA and to the share of the population of each MHA and CCG associated with each person's PUMA. CBO

then aggregated the person-observations into individual MHAs. Individual person-observations in the ACS data could be associated with more than one MHA.

CBO reweighted the person-observations to MHAs using the ACS sample weights and the proportions calculated above. That reweighting provided a nationally representative sample of survey data, split into military housing areas.

Limitations of CBO's Weighting Method

The specific location of an ACS respondent is not made available to the public. CBO's approach affords flexibility in determining which MHA the respondent may have resided in; however, the respondent may have actually lived in a neighboring MHA or CCG where rent may have differed significantly. Moreover, CBO could not analyze geographic areas smaller than the PUMA. Housing choices and rental costs may vary significantly within and between PUMAs in large MHAs.

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About This Document

This report was prepared at the request of the former Ranking Member of the Subcommittee on Personnel of the Senate Committee on Armed Services. In keeping with the Congressional Budget Office's mandate to provide objective, impartial analysis, the report makes no recommendations.

Heidi Golding, Kathryn McGinnis (formerly of CBO), and F. Matthew Woodward prepared the report with guidance from David Mosher and Edward G. Keating. Nikhil Bhandarkar contributed to the analysis. Nianyi Hong and Dawn Sauter Regan offered comments. R. Derek Trunkey fact-checked the report.

Glenn Ackerman of CNA, David Chu of the Institute for Defense Analyses, and Matthew Goldberg of the Institute for Defense Analyses commented on an earlier draft. The assistance of external reviewers implies no responsibility for the final product; that responsibility rests solely with CBO.

Jeffrey Kling and Robert Sunshine reviewed the report. Caitlin Verboon edited it, and Jorge Salazar created the graphics and prepared the report for publication. This report is available on CBO's website at www.cbo.gov/publication/59570.

CBO seeks feedback to make its work as useful as possible. Please send comments to communications@cbo.gov.



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March 2024