VALUATION OF THE MEDICARE-ELIGIBLE RETIREE HEALTH CARE FUND

SEPTEMBER 30, 2020

ACTUARIAL CERTIFICATION

This report documents the results of an actuarial valuation of the postretirement medical benefits offered to Medicare-eligible retirees and dependents of the United States uniformed services. The purpose of this valuation is to determine the Actuarial Liability as of September 30, 2020, and certain funding requirements -- the FY 2022 unfunded liability amortization payment and FY 2023 per capita normal costs for the Medicare-Eligible Retiree Health Care Fund (MERHCF) -- in support of the Secretary of Defense and the MERHCF Board of Actuaries (MERHCF Board) in meeting the requirements of Chapter 56, Title 10, United States Code. Use of these results for other purposes may not be appropriate. To prepare the results in this report, actuarial assumptions are used to model a single scenario from a range of reasonable outcomes for the valuation basis. The results based on that single scenario are included in this report. Please contact the DoD Office of the Actuary for further information.

We have performed the valuation using methods and assumptions approved by the MERHCF Board and in accordance with generally accepted actuarial principles, standards, and practices. In general, the projected benefit costs and decrement rates used in the valuation are based on MERHCF experience. The annual economic assumptions include a 2.75% inflation rate, 4.50% discount rate and 4.75% ultimate medical trend rate.

The actuarial methods and assumptions used in the preparation of this report are reasonable, and the valuation results present a fair picture of the financial condition of the MERHCF for purposes of meeting the requirements of Chapter 56, Title 10, United States Code. A valuation report is a snapshot of a plan's estimated financial condition at a particular point in time; it does not predict a plan's future financial condition or its ability to pay healthcare benefits in the future. Future report results may differ significantly from those presented and documented in this report for reasons that include changes in military health benefits, military force structure, and the broader economic environment. These amounts and other variables are unknowable at the valuation date.

Peter Zouras [*]   ChiaChun (Chelsea) Chu [*]
Chief Actuary   Health Actuary
ASA, EA   FSA
DoD Office of the Actuary   DoD Office of the Actuary
Peter.M.Zouras.civ@mail.mil   ChiaChun.Chu.civ@mail.mil

[*]   Meets the qualification standards of the American Academy of Actuaries, and continuing professional development requirements of the Society of Actuaries, to render the actuarial opinion referenced above.

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INTRODUCTION

The Fiscal Year (FY) 2001 National Defense Authorization Act contained a provision for extending TRICARE coverage to Medicare-eligible members or former members of the uniformed services (and their Medicare-eligible dependents and survivors) entitled to retired or retainer pay. The Act also created a mechanism to fund benefits for these beneficiaries. Specifically, United States Code (U.S.C.), Chapter 56, Title 10 established the Department of Defense (DoD) Medicare-Eligible Retiree Health Care Fund (MERHCF), administered by the Secretary of the Treasury. The purpose of the MERHCF is to accumulate funds needed to finance liabilities associated with uniformed services retiree health care programs for Medicare-eligible beneficiaries on an actuarially sound basis. Medical benefits were provided to Medicare-eligible retirees and dependents of the uniformed services beginning October 2001, and the MERHCF was established October 2002.

A description of the medical benefits provided to Medicare-eligible retirees and their eligible dependents can be found in Appendix A.

Section 1114 of Title 10 created a Medicare-Eligible Retiree Health Care Board of Actuaries (Board). The three independent members who comprise the Board are appointed by the Secretary of Defense. The Board is required to approve methods and assumptions used in actuarial valuations of the MERHCF, to approve the method of amortizing unfunded liabilities, to report annually to the Secretary of Defense, and to report to the President and Congress on the status of the MERHCF at least every four years[1]. The DoD Office of the Actuary (OACT) provides technical and administrative support to the Board. The terms of the Board members are fifteen years (after staggered initial appointments of five, ten and fifteen years) and a member can be removed only for misconduct or failure to perform the duties of the office. As of the public meeting, the members were David Osterndorf (Chairperson) and Stuart Alden. Since then Jian Yu has been appointed to the Board. The DoD Chief Actuary is the Executive Secretary for the Board.

Chapter 56 of Title 10, U.S.C., also requires that an actuarial valuation be performed at least once every four years, using the aggregate entry-age normal cost funding method. Under this law, the Treasury Department makes payments from general revenues to amortize the unfunded liability, including any gains or losses that have arisen from assumption or benefit changes, or from assumed experience differing from actual experience. On behalf of the uniformed services, the Treasury Department also deposits funds for the annual accrued benefits based on each current year of service (normal cost), and the uniformed services reflect these normal cost contributions in their budgets.

NOTIFICATION ABOUT ROUNDING AND FUND NAME

Throughout this report (including the appendices), numbers may not appear to add due to rounding. Throughout this report and appendices, the MERHCF is also referred to as "the Fund".

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[1] For access to the official transcripts from the August 2021 Board meeting, the purpose of which was to approve the September 30, 2020, valuation assumptions, and confirm the FY 2022 MERHCF per capita normal costs, follow this link: https://actuary.defense.gov/External-Links/

SUMMARY OF VALUATION RESULTS

The purpose of the September 30, 2020, MERHCF valuation is to develop normal costs (NCs), actuarial accrued liabilities (ALs), unfunded accrued liabilities (UFLs), and UFL amortization payments associated with postretirement medical benefits payable from the MERHCF.

The 2020 valuation uses census population data as of September 30, 2020, aggregate claims data for FY2020, and detailed claims data from fiscal years 2015 to 2020 (each fiscal year runs from October 1st through September 30th). The 2020 valuation produces AL and UFL figures as of September 30, 2020, a UFL amortization payment for October 1, 2021, and per capita NCs for FY 2021 that are projected to FY2023. The total October 1, 2021, Treasury payment is the sum of the October 1, 2021, UFL amortization payment and the October 1, 2021, Treasury NC payment. The October 1, 2021, NC payment is a function of FY 2022 per capita NC amounts promulgated by the Board in 2020, as well as budgeted average force strengths for FY 2022. The aggregate entry-age normal cost method is used to produce the per capita normal costs, as stated in the law. These per capita normal costs are contributed for each eligible full-time (active duty) and part-time (reserve) participant each year. The per capita normal costs are determined by projecting a new-entrant cohort and its expected benefit payments for 100 years. Table 1 is a summary of the Fund's liabilities, Table 2 shows the October 1, 2021 Treasury payment, and Table 3 shows the FY 2023 per capita normal costs.

The first confirmed case of coronavirus (COVID-19) pandemic in the US was in January 2020, and in late 2020 a vaccine was developed and deployed, and, subsequently, variants started to emerge. We have made certain pandemic-related adjustments to the medical trend rate assumptions used in this report, as described in Appendix D. In future Fund valuations, OACT will continue to assess the impact of the pandemic.

TABLE 1

LIABILITY SUMMARY

($ millions)

	AL	Fund	UFL
As of September 30, 2020	$472,395	$289,677	$182,718

TABLE 2

TREASURY PAYMENT

($ millions)

Payable	UFL Amortization	NC	Total
October 1, 2021	$7,503	$9,613	$17,116

TABLE 3

PER CAPITA NORMAL COSTS FOR FY 2023

Payable	Active Duty	Reserve
October 1, 2022	$5,795	$2,279

Additional tables containing further breakdowns of the AL and per capita normal costs are presented in Appendix B.

FUNDED STATUS

The Actuarial Liability (AL) is defined as the Present Value of Future Benefits (PVFB) minus the Present Value of Future Normal Costs (PVFNC). The Unfunded Liability (UFL) is the AL minus the Fund balance. The MERHCF represents the actuarial (not market) value of assets, and is adjusted to subtract estimates of incurred-but-not-paid liabilities. This adjustment is made because the actuarial liabilities are valued on an incurred basis. Table 4 presents the funded status of the MERHCF as of September 30, 2020.

TABLE 4

FUNDED STATUS AS OF SEPTEMBER 30, 2020

($ millions)

PVFB	$544,815
PVFNC	$72,420
AL	$472,395
Fund	$289,677
UFL	$182,718

ASSETS

The assets of the MERHCF are invested in special issue Treasury obligations bearing interest at rates determined by the Secretary of the Treasury, taking into consideration current market yields for outstanding marketable U.S. obligations of comparable maturities. Each security issued to the fund mirrors a security that has been issued to the public, i.e., it has the same maturity date and coupon rate. The special issue security that is mirrored may have been issued recently, or at any time in the past.

Under current procedures adopted by Treasury, the investment manager is permitted to redeem long-term special issue securities at any time before maturity for their fair market value, which is based on the bid price for the public issue with the same maturity date and coupon rate. However, Treasury policy encourages a buy-and-hold approach giving consideration to the needs of the Fund in determining the maturities of securities purchased.

For purposes of determining the unfunded liability, the assets of the fund are valued using the amortized cost method. Under this method, the yield to maturity of a security valued at any point in time is equal to the yield to maturity at the time of purchase. In the valuation of the MERHCF, the amortized cost value is referred to as the "actuarial value of assets." The actuarial value of assets is determined by amortizing premium and discount over the life of the securities. The total investment return includes the interest coupons received, the change in the actuarial value of assets during the year, and the inflation compensation accrued from the holdings of Treasury Inflation-Protected Securities.

The actuarial value of assets used in the determination of the unfunded liability includes the accrued interest, which is the amount of the next semiannual interest coupon payment that has accrued since the date of the last coupon payment. The amount of the accrued interest is determined by multiplying the coupon payment by the ratio of the time that has elapsed since the last coupon payment date to the total time between coupon payments. Table 5 presents a statement of the actuarial value of assets as of September 30, 2020; Table 6 presents a statement of changes in the actuarial value of assets.

TABLE 5

STATEMENT OF ACTUARIAL VALUE OF ASSETS AS OF SEPTEMBER 30, 2020

($ millions)

Assets at Book Value	$290,627
Less: Accounts Payable	$366
Less: IBNR	$583
Actuarial Value of Assets	$289,677

TABLE 6

FY 2020 STATEMENT OF CHANGES IN THE ACTUARIAL VALUE OF ASSETS

($ millions)

Actuarial Value of Assets, Beginning of Year	$277,820
Contributions	
Amortization of UFL	$6,637
Normal Cost	$8,050
Nonrecurring, other	$0
Investment Income	$7,680
Total Additions	$22,367
Less: Benefit Payments	$10,510
Actuarial Value of Assets, End of Year	$289,677

The MERHCF financial statements are required to use the market value of assets. Table 7 shows the market value of assets for comparison purposes.

TABLE 7

MARKET VALUE OF ASSETS AS OF SEPTEMBER 30, 2020

($ millions)

Non-marketable, Market-based Securities	$363,974
Fund Balance with Treasury	$69
Accounts Receivable	$306
Total Market-based Value of Assets	$364,349

ACTUARIAL GAINS AND LOSSES

Gains and losses reflect the difference between expected results, based on rolling forward the prior year's valuation results, and actual results of the current year's valuation. The total gain or loss represents the difference between the actual and expected unfunded liabilities, including both asset and liability components of the gain or loss. The broad categories of gain/loss specified by Chapter 56 of Title 10 are:

- Experience (different from what was expected in the valuation model)
- Assumption changes, and
- Benefit changes.

Within the experience category, gains and losses are divided into an asset component and a liability component. Within the assumption and benefit change categories there are only liability components.

Tables 8, 9, and 10 display summary level (gain)/loss information from the September 30, 2020, valuation. A more detailed display of the step-by-step liability gain/loss reconciliation is contained in Appendix B.

TABLE 8

TOTAL (GAIN) / LOSS SUMMARY

($ millions)

	AL	Fund	UFL
September 30, 2019 (actual)	$452,776	$277,820	$174,956
September 30, 2020 (expected)	$472,506	$296,192	$176,315
September 30, 2020 (actual)	$472,395	$289,677	$182,718
(Gain) / loss			$6,403

TABLE 9

SEPTEMBER 30, 2020 ASSET AND LIABILITY (GAIN) / LOSS SUMMARY

($ millions)

	Liability	Asset	Total
Experience	($22,442)	$6,514	($15,928)
Assumption	$22,331		$22,331
Plan Change	$0		$0
Total	($111)	$6,514	$6,403

(Gain) / Loss Expressed as a % of September 30, 2020 AL

	Liability	Asset	Total
Experience	-4.8%	1.4%	-3.4%
Assumption	4.7%		4.7%
Plan Change	0.0%		0.0%
Total	0.0%	1.4%	1.4%

TABLE 10

CHANGE IN UNFUNDED LIABILITY

($ millions)

1. Actual Unfunded Accrued Liability, Sept. 30, 2020	$182,718	38.7%
2. Expected Unfunded Accrued Liability, Sept. 30, 2020	$176,315	37.3%
3. Total (Gain) / Loss	$6,403	1.4%
a. Total experience (gain) / loss	($15,928)	3.4%
census	$1,307	0.3%
claims	($23,749)	5.0%
asset	$6,514	2.2%
b. Total benefit change (gain) / loss	$0	0.0%
c. Total assumption (gain) / loss	$22,331	4.7%
medical trend rates	$2,635	0.6%
admin and Rx rebate %	($344)	0.1%
mortality and other demographic	($4,593)	1.0%
discount rate	$24,633	5.2%

(Percentages shown are ratios of absolute values of each gain or loss component to the actuarial accrued liability, except the percentage given for the asset (gain)/loss: it is the ratio of the gain or loss to the actuarial value of assets. In this table, negative values represent actuarial gains.)

PAST AND PROJECTED UNFUNDED LIABILITY PAYMENTS

The UFL is divided into four components: the initial UFL, and the three categories of gain/loss previously mentioned, i.e., changes in the UFL arising from actuarial experience, actuarial assumption changes, and benefit changes. The Board chose to amortize the initial UFL over a 50-year period through the FY 2012 payment. At its meetings in 2012 and 2017, the Board decided to decrease the period over which the initial UFL is amortized by five years and seven years, respectively. The reason for the shorter amortization period is to ensure that the annual amortization payment covers, at a minimum, the interest growth on the initial unfunded liability. The last payment on the initial unfunded liability is expected to be made October 1, 2039, with payments increasing at the rate of 3.00%. In addition, at its July 2017 meeting, the Board reduced the amortization period for all outstanding actuarial gains and losses to 20 years. New gains and losses in the three categories are amortized over 20 years, with new gains and losses combined with existing unamortized balances on an aggregate basis and a weighted remaining period

determined as (20 years weighted by the absolute value of the new gain/loss, and the remaining period weighted by the absolute value of the remaining unamortized balance)**.**

Historical and projected components of the UFL amortization payments and UFL balances are shown in Appendix B.

PLAN AMENDMENTS

Benefit changes or plan amendments are amortized over 20 years. There were no new plan changes in the 2020 valuation.

VALUATION DATA AND PROCEDURE

Census Data

The active service member census data is the same as the active service member census data used for OACT's September 30, 2020, Military Retirement Fund (MRF) valuation for DoD members, supplemented by summary end-strength data provided by the other uniformed services. A summary of active service member census data is provided in Appendix C.

Retired sponsor counts for the MERHCF valuation are higher than counts in OACT's retirement pay valuation because of the inclusion of non-DoD uniformed services in the MERHCF valuation and because this valuation includes all retired sponsors, regardless of whether they are in "paid" status. For similar reasons, survivor counts are higher in this valuation. However, the number of eligible reserve retirees in the MERHCF is lower than the number of eligible reserve retirees in the MRF. This discrepancy results from P.L 110-181, enacted January 28, 2008, which reduces the retirement age (for retiree pay) below age 60 by three months for every 90 days of certain active service with a maximum age reduction of 10 years. This early reserve retirement does not apply to subsidized retiree health care eligibility age (which continues to be age 60 for reserves).

The valuation input census data was extracted from files maintained at the Defense Manpower Data Center. Data on individual retirees came from official files submitted by the Defense Finance and Accounting Service. Reserve data was obtained from the Reserve Component Common Personnel Data System, the official source for all reserve strengths and statistics. All eligible retirees and their eligible surviving spouses are included in the data. Data is matched to the Defense Eligibility and Enrollment Reporting System to obtain eligible spouses and children.

Active service member (active duty and reserve) data came from files provided by the four military personnel centers (Army, Navy, Air Force, and Marines). Since the MERHCF provides benefits for retirees of additional uniformed services (as defined in section 1072(3) of Title 10), summary strength data is collected from the remaining units (Coast Guard, Public Health Service (PHS), and National Oceanic and Atmospheric Administration (NOAA)). The number of covered service members as of September 30, 2020, is shown in Table 11.

Adjustments were made to the classification of former spouse data so that some former spouses are valued as survivors and others are valued as dependents. Since the valuation model projects costs on a per-sponsor and per-survivor basis, it was necessary to treat former spouses who are not

survivors as dependents (i.e., like spouses). Furthermore, since former spouses are represented in the census under their own IDs (since FY 2004), they must be allocated between dependent spouses and surviving spouses, based on their prior representation in the data.

TABLE 11

ACTIVE SERVICE MEMBERS AS OF SEPTEMBER 30, 2020

DoD	
Active Duty	1,419,816
Reserve	708,007
Coast Guard	
Active Duty	40,782
Reserve	5,883
PHS Active Duty	5,970
NOAA Active Duty	324
Total	
Active Duty	1,466,892
Reserve	713,890

Population projections are generated by an actuarial projection model (called "HORGO" for the retiree medical valuation). The population projection structure used by OACT includes four broad categories of personnel, representing the starting status of the population. Each of the four categories is further divided into 12 subcategories, representing projected future status, for a total of 48 categories.

The four broad categories (starting status) are:

1   All Uniformed Services Active Service Members and Retirees
2   DoD Retirees
3   DoD Active Service Members (active duty and reserve)[2]
4   New Entrant Cohort

The 12 subcategories (future status) are:

1   Retiree, Active Duty Component, Nondisabled, Enlistee
2   Retiree, Active Duty Component, Nondisabled, Officer
3   Retiree, Active Duty Component, Disabled, Enlistee
4   Retiree, Active Duty Component, Disabled, Officer
5   Retiree, Reserve Component, Nondisabled, Enlistee

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[2]This category includes non-Selected Reserves with 20 or more good years.

6   Retiree, Reserve Component, Nondisabled, Officer
7   Retiree, Reserve Component, Disabled Enlistee
8   Retiree, Reserve Component, Disabled Officer
9   Survivor, Active Duty Component, Enlistee
10   Survivor, Active Duty Component, Officer
11   Survivor, Reserve Component, Enlistee
12   Survivor, Reserve Component, Officer

Separate data arrays are maintained in HORGO for each of the 48 population categories. These data arrays are available upon request.

The data on active duty service members and drilling reserves (also called Selected Reserves) are grouped into cells by age and number of years of service. Each cell contains the number of service members with that particular combination of age and length of service.

Non-Selected Reserves with 20 or more good years are reservists who have completed 20 good years of military service and have satisfied all requirements for retirement except for the minimum age needed to begin receiving the retired pay benefit. Reserves also are not eligible for subsidized retiree medical benefits before age 60. Data on non-Selected Reserves are grouped into cells by age and number of years of service.

Data on the retired population and surviving families are grouped into cells by age. A summary of retiree and survivor census is contained in Appendix C.

In HORGO, these starting populations are projected year by year into the future. Each year personnel are moved from one population category to another (e.g., from active to disabled or nondisabled retiree, or dropped from the system altogether) by means of decrement rates such as withdrawal, nondisability retirement, temporary disability, permanent disability, transfer, death with and without survivors, etc. At the end of each year, the number of people is saved, and the population is aged. After 100 years, when none of the current active or retired personnel are left in the system, the present values of the series of future benefit payments are determined, using the valuation interest rate. Because no new entrants come into the system, the projection is a "closed group" model.

Claims Data

OACT pulled detailed claims data and workload files from DoD's Medical Data Repository for fiscal years 2015, 2016, and 2017. The data were used to develop claim vectors (CVs), and completed aggregate 2020 incurred claims data were used to adjust the CVs to 2020 cost levels.

OACT processes detailed claims and workload data by matching individual claims in the incurred period to members who met the eligibility requirements at the time of the claim. This data matching process achieves the goal of separating claims incurred when a member is Medicare-eligible from claims incurred when a member is not Medicare-eligible. Since the MERHCF valuation only covers claims incurred when a member is Medicare-eligible, this step is essential. OACT also properly accounts for Medicare beneficiaries (and their claims) who turn Medicare-eligible during the year.

Once the detailed claims and workload data are processed and matched to the retiree population, OACT produces average expected benefit costs per retired sponsor and per survivor. OACT also produces average expected benefit costs associated with the US Family Health Plan, which is TRICARE's designated provider plan, a managed care plan which receives payments in the form of per capita rates and which provides comprehensive patient care (with no reimbursement from Medicare). A description of these average costs and how they are applied in the valuation model is contained in Appendix E.

Direct Care (DC) claims (workload data) are claims for care received in Military Treatment Facilities (MTFs). While DC comprises a relatively small portion of total medical care received by Medicare-eligible retirees (retirees are seen at MTFs on a space-available basis, and most retirees do not live near an MTF), OACT must rely on DC data that does not come from an audited, patient-level accounting system. Determining DC claims costs requires the application of adjustments to individual claims records (encounter data) that contain workloads (a measure of level of effort (LOE) for each procedure). The Defense Health Agency provides OACT with an annual cost-allocation analysis obtained from the MTFs' Medical Expense and Performance Reporting System. This LOE analysis allows OACT to convert workloads into claims costs. However, OACT is unable to perform more than a high-level review of the LOE analysis.

Purchased Care (PC) claims are for care obtained outside the MTFs.

Participation

There is no requirement to enroll in TRICARE for Life (TFL) and there are no contributions. Retirees and their dependents become eligible for TFL upon becoming eligible for Medicare Part A and signing up for Medicare Part B. Since some retirees have coverage other than TFL and Medicare, OACT monitored several plan utilization statistics to determine any trends in plan participation, and set assumptions for the ultimate level of plan usage within the PC and DC environments. Changes identified in plan participation help explain changes in aggregate and per capita plan cost, and also allow for reasonable medical trend estimates.

In August 2019, the Board approved removing the remaining three years of participation rates (FY 2018 to FY2020) for use in the valuation as of September 30, 2018 (i.e., participation rates set to 100%). This decision was based on an OACT study that showed MERHCF medical trends to be more consistent with industry medical trends. Therefore, the application of participation rates (in addition to the medical trend rates) is no longer needed.

Economic Assumptions

Economic assumptions, i.e., the annual rate of inflation, annual medical trend rates, and the annual valuation interest rate, were decided upon by the Board after analysis of past trends and future expectations. A discussion of these trends and other considerations is contained in Appendix D.

Decrement Rates

The decrement rates and other non-economic assumptions can be categorized as follows, and details are described in the Appendices as indicated:

- Active duty decrement rates (Appendix F)
- Drilling and non-drilling (with 20 good years) reserve decrement rates (Appendix G)
- Retiree and survivor decrement rates (Appendix H)

MEDICAL TREND SENSITIVITY

Future medical trend rates assumed in this valuation (described in Appendix D) represent an estimate of changes in the cost, mix, and utilization of medical treatment over the next 100 years. A one percentage point change in the assumed healthcare cost trend rates would have the following effects on the Actuarial Liability and per capita normal cost.

TABLE 12

MEDICAL TREND SENSITIVITY

	Assumed Trend	1% Higher Trend	1% Lower Trend
Actuarial Liability as of 09/30/20 ($ millions)	$472,395	$595,093	$381,143
Per Capita Normal Cost for FY 2023			
Active Duty	$5,795	$9,301	$3,626
Reserve	$2,279	$3,633	$1,430
Percentage Change in:			
Actuarial Liability as of 09/30/20		26.0%	-19.3%
Per Capita Normal Cost for FY 2023			
Active Duty		60.5%	-37.4%
Reserve		59.4%	-37.3%

APPENDIX A

ELIGIBILITY AND PLAN PROVISIONS

INTRODUCTION

Medical care coverage program for military families dates back to the late 1700s. The program known today as TRICARE has gone through many changes over the years, and it continues to change each year according to provisions made in the annual National Defense Authorization Act, (NDAA). The 2001 NDAA expanded pharmacy benefits as well as TRICARE For Life (TFL), a benefit plan for Medicare-eligible retired beneficiaries. TFL is a Medicare wraparound plan, added by Congress with the provision that the plan be funded in an actuarially sound manner.

The information in this Appendix describes plan eligibility requirements and benefit provisions.

SUMMARY OF ELIGIBILITY REQUIREMENTS

General Eligibility Requirements – TRICARE

Retired service members of the uniformed services and their family members (spouses and children) are eligible for TRICARE. The uniformed services include the U.S. armed services (Army, Air Force, Navy, and Marine Corps), the Coast Guard, the Commissioned Corps of the Public Health Service, and the Commissioned Corps of the National Oceanic and Atmospheric Administration.

Unmarried children remain eligible up to their 21st birthday (or 23rd birthday if a full-time student), or while severely disabled if disability occurs before one of these limiting ages and the child remains financially dependent on the TRICARE-eligible parent. Notwithstanding these requirements, unmarried children under age 26 who do not satisfy the eligibility conditions for subsidized TRICARE coverage and who do not have access to employer-sponsored health care coverage may purchase nonsubsidized coverage as part of the TRICARE Young Adult program (which became effective May 1, 2011).

Survivors

Survivors of a service member retain coverage when the sponsor dies. Available health plan options and costs depend on the survivor's status: Survivor or Transitional Survivor. "Transitional Survivor" is a temporary status that refers to a survivor of a sponsor who dies while on active duty. Spouses retain their Transitional Survivor status for the first three years from the date of the member's death, and then the spouse transitions to Survivor status. Children remain Transitional Survivors until they age out of TRICARE (and then become eligible for TRICARE Young Adult coverage) or marry, if earlier. Surviving spouses maintain TRICARE eligibility for life unless they remarry a non-service member.

Transitional Survivors pay costs and receive medical coverage equal to that of an active duty family member. Survivors pay costs and receive medical coverage equal to that of a retired family member.

DoD Office of the Actuary (OACT) does not distinguish between Transitional Survivors and other Survivors when developing the MERHCF retiree medical liabilities. Almost all of the survivors eligible for Medicare are no longer eligible for transitional benefits, and most Medicare-eligible survivors are enrolled in a medical plan that requires no contribution.

Medically-Retired Service Members (Disabled)

For a service member to be placed on the Temporary Disabled Retirement List (TDRL), the Service's medical evaluation must determine that the member has a physical condition, injury or disease that renders the member unfit to perform duties (under certain qualifying conditions). In addition, the member must receive a disability rating of at least 30 percent or have at least 20 years of service. This DoD disability rating is separate from the one given by the Department of Veterans Affairs. However, it is determined using the VA's schedule of rating disabilities.

TDRL members are re-evaluated by the Service at least every 18 months for any change in disability. A final determination must be made within five years, except for retirees placed on this list after December 31, 2016. The final determination must be made within three years. At that time, the Service determines whether the situation has improved, remained the same, or has gotten worse. Depending on the outcome, the member can be retained on the TDRL, separated from service, returned to duty, or placed on the Permanent Disability Retirement List (PDRL).

Temporary and Permanent retired beneficiaries are eligible for TRICARE retiree benefits as long as they are registered in DEERS.

Retired National Guard or Reserve Members

Retired members of the National Guard or Reserves are not eligible for subsidized[1] TRICARE health benefits until they reach age 60 and are eligible for retiree pay.

Former (Divorced) Spouses

Former (divorced) spouses of active, retired, or former military members may be eligible for TRICARE if they meet the following requirements:

1. Must not have remarried. (If remarried, the loss of benefits remains applicable even if the remarriage ends in death or divorce.)
2. Must not be covered by an employer-sponsored health plan.
3. Must not be the former spouse of a North Atlantic Treaty Organization or Partners for Peace nation member.
4. Must meet the requirements of one of the following two situations:

Situation 1 (20-20-20 Rule)

Must have been married to the same member or former member for at least 20 years, and at least 20 of those years must have been creditable in determining the member's eligibility for retirement.

Eligibility of the former spouse continues as long as the preceding requirements continue to be met.

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[1] TRICARE Retired Reserve is unsubsidized coverage available to retired reserves (qualified for a non-regular retirement) who are under age 60 and not eligible for or covered by FEHB. Family members of qualified retired reserves are eligible for the same unsubsidized TRICARE Retired Reserve coverage.

Situation 2 (20-20-15 Rule)

Must have been married to the same member or former member for at least 20 years, and at least 15, but less than 20, of those years must have been creditable in determining the member's eligibility for retirement. The duration of benefit continuation (following divorce) depends on the date the marriage ended:

- For marriage end dates on or after September 29, 1988, coverage continues for one year
- For marriage end dates between April 1, 1985, and September 28, 1988, coverage continues for two years, or until December 31, 1988 if later
- For marriage end dates before April 1, 1985, coverage continues for life, as long as the preceding requirements continue to be met.

SUMMARY OF PLAN PROVISIONS

Plan Options and Plan Provisions for Retired Beneficiaries Eligible for Medicare

Medicare-eligible retired beneficiaries and survivors are eligible or currently enrolled in the following health plan options depending on where they reside:

- TRICARE Prime (if under age 65)
- US Family Health Plan (in specific U.S. locations)
- TRICARE For Life (with Medicare Part A & B coverage)

Note: Retired service members and their families are also eligible to purchase dental coverage. Beginning January 2019, this coverage is available from the Office of Personnel Management's Federal Employees Dental and Vision Insurance Program. Since military retirees are required to pay the full cost of retiree dental benefits, OACT excludes dental coverage from the development of the postretirement health valuation. Only a small, non-material group of survivors of uniformed personnel who die while on active duty are eligible for up to three years of subsidized dental benefits (from the TRICARE Active Duty Dental Program), and most, if not all, of these transitional survivors are not eligible for Medicare. Therefore, dental plan options are not described in this report.

Benefit Costs Payable from the MERHCF

Section 1113 of Title 10, U.S.C. states that the MERHCF is responsible for paying the costs of health care benefits for all eligible retirees of the uniformed services who are entitled to retired or retainer pay and who are eligible for Medicare Part A (and their eligible dependents who are eligible for Medicare Part A).

Medicare-eligible retired beneficiaries can receive benefits under TFL if they enroll in Medicare Part B (and continue to pay their Part B premium). Currently there is no member contribution required for TFL. Instead of TFL, Medicare-eligible retirees can choose to enroll in (and pay for) a US Family Health Plan (USFHP), if the plan is available in the member's location. The member contribution and copayments for USFHP are waived if the member pays for Medicare Part B. Medicare-eligible retired beneficiaries who are under age 65 can also elect TRICARE Prime, and the member contribution is waived if the member pays for Medicare Part B. Eligibility for USFHP

when a member is eligible for Medicare due to age has been restricted to a grandfathered group of beneficiaries who have been enrolled in USFHP since September 30, 2012.

Key Features of TRICARE For Life

TFL is a Medicare wrap-around plan that also covers prescription drugs. Therefore, Medicare is the primary payer for Medicare Part A and Part B services. If a member is covered by other health insurance (other than Medicaid), that other coverage pays second, and TFL pays last. TFL pays similarly to TRICARE Select when a member is overseas and Medicare is not available.

NOTE: Further plan eligibility and provisions for Medicare-eligible retired beneficiaries can be found on the Tricare website, https://Tricare.mil. The website provides the latest information and does not necessarily reflect the benefits valued in this report.

APPENDIX B

SUPPLEMENTAL VALUATION RESULTS

SUPPLEMENTAL VALUATION RESULTS

Tables B1 through B4 provide additional breakdowns of the Actuarial Liability and per capita Normal Costs (NCs). Table B5 shows the reconciliation of the MERHCF liability gain/loss. Table B6 provides details regarding the MERHCF's asset gain.

Historical and projected components of the Unfunded Liability amortization payments are shown in Table B7. Historical and projected UFL balances are shown in Table B8.

Note:
- No future gains or losses are projected after the current valuation year.
- Gains are shown as negative numbers.
- The first UFL payment was determined from a preliminary AL calculation. Although the AL was later restated, the UFL payment remained unchanged.

TABLE B1

SEPTEMBER 30, 2020, ACTUARIAL LIABILITY BY BENEFIT TYPE

($millions)

				Proportion of Total		
	DC	PC	Total	DC	PC	Total
Inpatient	$29,456	$40,305	$69,761	6.2%	8.5%	14.8%
Outpatient	$42,120	$179,877	$221,997	8.9%	38.1%	47.0%
Pharmacy	$32,428	$131,002	$163,430	6.9%	27.7%	34.6%
USFHP	$0	$17,207	$17,207	0.0%	3.6%	3.6%
Total	$104,004	$368,391	$472,395	22.0%	78.0%	100.0%

Table B2 shows the breakout of the AL by Active Duty and Reserve, by In-service (currently active duty or reserves (drilling or grey area[1]) and Inactive (currently retired, and their survivors and dependents), and by Direct Care (DC) and Purchased Care (PC).

TABLE B2

SEPTEMBER 30, 2020, ACTUARIAL LIABILITY

BY SPONSOR STATUS

($millions)

	Active Duty		
	DC	PC	Total
In-service	$23,120	$58,629	$81,749
Inactive	$70,281	$211,266	$281,547
Total	$93,401	$269,895	$363,297
	Reserve		
	DC	PC	Total
In-service	$6,649	$56,686	$63,335
Inactive	$3,953	$41,810	$45,764
Total	$10,602	$98,496	$109,098
	Total		
	DC	PC	Total
In-service	$29,769	$115,315	$145,084
Inactive	$74,235	$253,076	$327,311
Total	$104,004	$368,391	$472,395

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[1] In this report, unless stated otherwise the term "grey-area" reserves refers to the entire category of non-Selected Reservists with 20 good years.

TABLE B3

FY 2023 ACTIVE DUTY PER CAPITA NORMAL COST

| | DC | PC | Total | | Proportion of Total | | |
					DC	PC	Total
Inpatient	$410	$428	$838		7.1%	7.4%	14.5%
Outpatient	$671	$2,287	$2,958		11.6%	39.5%	51.0%
Pharmacy	$436	$1,564	$1,999		7.5%	27.0%	34.5%
USFHP	$0	$0	$0		0.0%	0.0%	0.0%
Total	$1,517	$4,278	$5,795		26.2%	73.8%	100.0%

| | Non-disabled Retiree | Disabled Retiree | Survivor | Total | Proportion of Total | | | |
					Non-disabled Retiree	Disabled Retiree	Survivor	Total
Total	$3,575	$1,144	$1,076	$5,795	61.7%	19.7%	18.6%	100.0%

TABLE B4

FY 2023 RESERVE PER CAPITA NORMAL COST

| | DC | PC | Total | | Proportion of Total | | |
					DC	PC	Total
Inpatient	$61	$194	$255		2.7%	8.5%	11.2%
Outpatient	$100	$1,069	$1,168		4.4%	46.9%	51.3%
Pharmacy	$108	$747	$855		4.7%	32.8%	37.5%
USFHP	$0	$0	$0		0.0%	0.0%	0.0%
Total	$268	$2,011	$2,279		11.8%	88.2%	100.0%

| | Non-disabled Retiree | Disabled Retiree | Survivor | Total | Proportion of Total | | | |
					Non-disabled Retiree	Disabled Retiree	Survivor	Total
Total	$1,602	$280	$396	$2,279	70.3%	12.3%	17.4%	100.0%

TABLE B5

SEPTEMBER 30, 2020, LIABILITY (GAIN)/LOSS RECONCILIATION

		Actuarial Liability			Normal Cost					Actuarial Liability (Gain)/Loss ($millions)	(Gain)/Loss Category
Step	As of	Amount ($millions)	% Change From Prior Step	FY	Active Duty	% Change From Prior Step	Reserve	% Change From Prior Step			
	09/30/19	$452,776		FY22	$5,506		$2,138				
0	09/30/20	$472,506	4.36%	FY23	$5,767	4.75%	$2,239	4.74%			Expected
1	09/30/20	$473,813	0.28%	FY23	$5,766	-0.01%	$2,239	0.01%	$1,307		Experience
2	09/30/20	$475,503	0.36%	FY23	$5,787	0.36%	$2,244	0.21%	$1,690		Assumption
3	09/30/20	$472,454	-0.64%	FY23	$5,742	-0.78%	$2,235	-0.40%	($3,050)		Assumption
4	09/30/20	$465,679	-1.43%	FY23	$5,480	-4.56%	$2,235	0.00%	($6,774)		Assumption
5	09/30/20	$469,219	0.76%	FY23	$5,466	-0.26%	$2,143	-4.12%	$3,540		Assumption
6	09/30/20	$445,471	-5.06%	FY23	$5,164	-5.53%	$2,039	-4.85%	($23,749)		Experience
7	09/30/20	$445,127	-0.08%	FY23	$5,160	-0.08%	$2,037	-0.10%	($344)		Assumption
8	09/30/20	$469,760	5.53%	FY23	$5,769	11.80%	$2,275	11.68%	$24,633		Assumption
9	09/30/20	$472,395	0.56%	FY23	$5,795	0.45%	$2,279	0.18%	$2,635		Assumption

A description of the steps shown in Table B5 follows.

0. Expected results on September 30, 2020, based on a roll forward of September 30, 2019, valuation results.

1. Update census (as of September 30, 2020).

2. Add one more year of mortality improvement (MI). Mortality rates are improved to the valuation date.

3. Update Mortality Improvement Rates.

4. Update Active Duty Rates.

5. Update Reserve Rates.

6. Claims True-up.

7. Update admin loads.

8. Update discount rates.

9. Update trend rates.

TABLE B6

SEPTEMBER 30, 2020, ASSET (GAIN)/LOSS

($millions)

	(Gain)/Loss	% of 9/30/2020 Fund
1. Incurred Benefit Payments vs. Expected	($138)	0.05%
2. Implemented Per Capita NCs vs. Expected	$681	0.24%
3. Force Strengths vs. Expected	$2	0.00%
4. Unexpected, Nonrecurring Deposit	$0	0.0%
5. Yield vs. Expected	$5,969	2.06%
6. Total	$6,514	2.25%

Percentages shown are ratios of absolute values of each gain or loss component to the actuarial value of the MERHCF.

TABLE B7

PAST AND PROJECTED UNFUNDED LIABILITY PAYMENTS

ON OCTOBER 1

($millions)

Calendar Year	Original UFL Pmt	Assumption Changes	Benefit Changes	Actuarial Experience	Total UFL Pmt
2002 (prelim.)	$14,369	$0	$0	$0	$14,369
2002 (final)	$14,369	$0	$0	$0	$14,369
2003	$16,260	$0	$0	$0	$16,260
2004	$16,082	($1,014)	$0	$653	$15,721
2005	$16,686	($973)	$0	$899	$16,612
2006	$17,311	($1,968)	$0	$265	$15,608
2007	$17,164	($3,256)	$0	($978)	$12,930
2008	$17,016	($4,239)	$0	($2,117)	$10,660
2009	$17,654	($5,031)	$0	($2,617)	$10,006
2010	$18,316	($6,303)	$0	($2,228)	$9,785
2011	$19,003	($9,254)	($478)	($2,555)	$6,716
2012	$21,603	($10,919)	($1,543)	($2,999)	$6,142
2013	$23,214	($12,229)	($3,209)	($3,526)	$4,250
2014	$24,027	($13,113)	($3,321)	($3,588)	$4,005
2015	$24,827	($13,625)	($3,789)	($4,089)	$3,324
2016	$25,633	($13,420)	($4,094)	($2,449)	$5,670
2017	$31,404	($16,666)	($5,026)	($3,145)	$6,567
2018	$32,424	($17,219)	($6,102)	($3,383)	$5,720
2019	$32,665	($16,175)	($6,148)	($3,705)	$6,637
2020	$33,658	($16,413)	($6,331)	($3,931)	$6,983
2021	$33,887	($14,911)	($6,371)	($5,102)	$7,503
2022	$34,904	($15,358)	($6,562)	($5,255)	$7,729
2023	$35,951	($15,819)	($6,759)	($5,412)	$7,961
2024	$37,030	($16,293)	($6,962)	($5,575)	$8,200
2025	$38,141	($16,782)	($7,171)	($5,742)	$8,446
2026	$39,285	($17,286)	($7,386)	($5,914)	$8,699
2027	$40,463	($17,804)	($7,607)	($6,092)	$8,960
2028	$41,677	($18,338)	($7,835)	($6,274)	$9,230
2029	$42,928	($18,889)	($8,070)	($6,463)	$9,506
2030	$44,215	($19,455)	($8,313)	($6,657)	$9,790
2031	$45,542	($20,039)	($8,562)	($6,856)	$10,085
2032	$46,908	($20,640)	($8,819)	($7,062)	$10,387
2033	$48,315	($21,259)	($9,083)	($7,274)	$10,699
2034	$49,765	($21,897)	($9,356)	($7,492)	$11,020
2035	$51,258	($22,554)	($9,636)	($7,716)	$11,352
2036	$52,795	($23,230)	($9,926)	($7,948)	$11,691
2037	$54,379	($4,386)	($1,874)	($1,501)	$46,619
2038	$56,011	$0	$0	$0	$56,011
2039	$57,691	$0	$0	$0	$57,691
2040	$0	$0	$0	$0	$0

TABLE B8

PAST AND PROJECTED UNFUNDED LIABLITY BALANCES ON SEPTEMBER 30

(BEFORE PAYMENT)

($millions)

Calendar Year	Original UFL	Assumption Changes	Benefit Changes	Actuarial Experience	Total UFL
2002 (prelim.)	$405,553	$0	$0	$0	$405,553
2002 (final)	$442,054	$0	$0	$0	$442,054
2003	$454,416	($20,704)	$0	$13,339	$447,050
2004	$465,540	($20,454)	$0	$18,703	$463,789
2005	$477,550	($40,252)	$0	$6,187	$443,485
2006	$489,668	($68,708)	$0	($20,195)	$400,765
2007	$500,698	($91,839)	$0	($46,424)	$362,435
2008	$511,337	($107,567)	$0	($57,265)	$346,505
2009	$522,745	($133,109)	$0	($48,757)	$340,879
2010	$534,133	($195,223)	($10,411)	($54,141)	$274,358
2011	$545,477	($228,850)	($33,859)	($62,584)	$220,184
2012	$556,746	($244,824)	($68,265)	($70,540)	$173,116
2013	$565,914	($257,241)	($70,559)	($70,419)	$167,695
2014	$573,905	($260,797)	($78,848)	($79,136)	$155,125
2015	$580,121	($251,805)	($83,580)	($50,289)	$194,448
2016	$585,836	($278,969)	($84,179)	($52,563)	$170,124
2017	$589,613	($280,132)	($98,394)	($54,901)	$156,186
2018	$587,515	($259,685)	($98,270)	($58,916)	$170,644
2019	$582,846	($251,127)	($96,777)	($59,986)	$174,956
2020	$576,314	($223,781)	($94,934)	($74,882)	$182,718
2021	$567,076	($216,700)	($92,590)	($74,144)	$183,643
2022	$557,182	($210,869)	($90,098)	($72,149)	$184,066
2023	$545,781	($204,309)	($87,296)	($69,904)	$184,272
2024	$532,772	($196,972)	($84,161)	($67,394)	$184,245
2025	$518,051	($188,810)	($80,673)	($64,601)	$183,967
2026	$501,506	($179,769)	($76,809)	($61,507)	$183,420
2027	$483,020	($169,795)	($72,547)	($58,095)	$182,583
2028	$462,473	($158,831)	($67,863)	($54,343)	$181,436
2029	$439,731	($146,815)	($62,729)	($50,232)	$179,955
2030	$414,659	($133,683)	($57,119)	($45,739)	$178,119
2031	$387,114	($119,368)	($51,002)	($40,841)	$175,904
2032	$356,943	($103,799)	($44,350)	($35,514)	$173,281
2033	$323,987	($86,901)	($37,129)	($29,732)	$170,224
2034	$288,077	($68,596)	($29,309)	($23,469)	$166,704
2035	$249,036	($48,800)	($20,850)	($16,696)	$162,690
2036	$206,678	($27,427)	($11,719)	($9,384)	$158,148
2037	$160,808	($4,386)	($1,874)	($1,501)	$153,048
2038	$111,218	$0	$0	$0	$111,218
2039	$57,691	$0	$0	$0	$57,691
2040	$0	$0	$0	$0	$0

APPENDIX C

VALUATION POPULATION DATA

VALUATION POPULATION DATA

The population data used in the MERHCF valuation includes military personnel, retirees, and their dependents. The tables below provide summary data for active duty and reserve military personnel, and military retirees, dependents, and surviving spouses.

<u>DoD and All Uniformed Military Personnel</u>

Table C1 includes summary data of active duty, Selected Reserve, and non-Selected Reserve military personnel for DoD, Coast Guard, PHS, and NOAA. Dependents (spouses, children, and survivors) are not included in this table. The MERHCF valuation includes assumptions about dependents and projects costs for dependents based on an analysis of retiree dependents and survivor data. Note that full-time Selected Reserves are included in the active duty counts, and only the part-time Selected Reserves are included in the Selected Reserve counts. Note also that non-Selected Reserves only include those with 20 or more good years of military service.

<u>DoD and All Uniformed Retirees and Surviving Spouses</u>

Table C2 includes summary data of military retirees, dependents (spouses, children, and other), and surviving spouses for DoD, Coast Guard, PHS, and NOAA.

TABLE C1

ACTIVE DUTY AND RESERVE AS OF 9/30/2019 AND 9/30/2020

ALL UNIFORMED

	FYE 2019	FYE 2020	'19 to '20 % Change
DoD			
Active Duty	1,409,079	1,419,816	0.8%
Selected Reserve	716,643	708,007	-1.2%
Non-Selected Reserve	202,963	201,162	-0.9%
Coast Guard			
Active Duty	40,266	40,782	1.3%
Selected Reserve	6,229	5,883	-5.6%
Non-Selected Reserve	2,305	2,273	-1.4%
PHS Active Duty	6,159	5,970	-3.1%
NOAA Active Duty	323	324	0.3%
TOTAL			
Active Duty	1,455,827	1,466,892	0.8%
Selected Reserve	722,872	713,890	-1.2%
Non-Selected Reserve	205,268	203,435	-0.9%

TABLE C2

ELIGIBLE RETIRED BENEFICIARIES AS OF 9/30/2019 AND 9/30/2020

ALL UNIFORMED

	FYE 2019	FYE 2020	'19 to '20 % Change
Retired Sponsors			
Non-Medicare-eligible	1,035,068	1,033,091	-0.2%
Medicare-eligible	1,190,075	1,200,734	0.9%
Total	2,225,143	2,233,825	0.4%
Spouses of Retirees			
Non-Medicare-eligible	929,767	922,026	-0.8%
Medicare-eligible	733,379	737,389	0.5%
Total	1,663,146	1,659,415	-0.2%
Children of Retirees			
Non-Medicare-eligible	862,693	860,614	-0.2%
Medicare-eligible	8,837	8,845	0.1%
Total	871,530	869,459	-0.2%
Other Dependents of Retirees			
Non-Medicare-eligible	2,464	2,495	1.3%
Medicare-eligible	4,729	4,695	-0.7%
Total	7,193	7,190	0.0%
Survivors			
Non-Medicare-eligible Spouse	78,161	76,956	-1.5%
Non-Medicare-eligible Children	30,718	30,522	-0.6%
Non-Medicare-eligible Other	125	128	2.4%
Medicare-eligible Spouses	516,588	519,068	0.5%
Medicare-eligible Children	7,671	7,848	2.3%
Medicare-eligible Other	344	353	2.6%
Total Spouses	594,749	596,024	0.2%
Total Children	38,389	38,370	0.0%
Total Other	469	481	2.6%
Retirees, Dependents, Survivors			
Non-Medicare-eligible	2,938,996	2,925,832	-0.4%
Medicare-eligible	2,461,623	2,478,932	0.7%
Total	5,400,619	5,404,764	0.1%

APPENDIX D

ECONOMIC ASSUMPTIONS

ECONOMIC ASSUMPTIONS

In August 2021, the MERHCF Board (the Board) adopted the following economic assumptions for use in the valuation as of September 30, 2020:

- General inflation rate = 2.75%;
- Valuation discount rate = 4.50%;
- Ultimate medical trend rate = 4.75%.

To view the select medical trend rate assumptions, and associated economic assumption rationale, see meeting minutes found in this link: https://actuary.defense.gov/External-Links/

As background for determining the economic assumptions, DoD Office of the Actuary (OACT) presents the Board with a number of external and internal analyses prepared by economists and actuaries, and provides the Board with extensive historical data on inflation, interest rates, and health care cost trends. The Board also considers the most recent analysis and assumptions developed by the Center for Medicare and Medicaid Services as well as the assumptions made by the DoD Board of Actuaries for the actuarial valuation of the Military Retirement Fund.

Inflation

The CPI is used as an inflation assumption, a component of nominal interest, and also of long term-medical trend.

The CPI assumption chosen in 2021 by the Board is 2.75%, unchanged from last year, and the same as the CPI assumption selected in 2021 by the DoD Board of Actuaries for the Military Retirement Fund. This assumption is reasonably consistent with the 2.40% intermediate CPI assumption selected by both the Trustees of the Center for Medicare and Medicaid Services and the Trustees of the Social Security Administration in their 2020 Trustees' Reports.

Interest Rate

The Board analyzes the real interest rate data, as well as financial forecasts, when setting the interest rate assumption. The real interest rate is defined as the difference between the nominal interest rate and the CPI. Other things being equal, a lower element of risk in an investment will give a lower real interest rate. Because the MERHCF must be invested in obligations of the U.S. Government, a highly secure investment, the real interest rates are expected to be relatively low. The Board examines past real interest rates that would have been earned by the types of public debt securities in which the military retirement funds are invested. The Board members recognize the importance of selecting a real interest rate that would prevail on the average over a long period of time and that would not unduly weight recent experience or expected results during the near-term.

The rate of real interest chosen in 2021 by the Board is 1.75%, 25 basis points lower than last year. Since 2.75% had been adopted as the inflation rate, the nominal rate of interest is 4.50%. (In this case, the real interest assumption is expressed in the arithmetic sense such that real interest plus inflation equals nominal interest.) This rate reflects the expected long-term rate of return on the MERHCF's assets.

It is relevant to note the real interest rate being assumed by two other major public benefit systems. The Trustees of the Center for Medicare and Medicaid Services and the Trustees of the Social Security Administration both used an intermediate ultimate real interest rate assumption of 2.30% in their 2020 Trustees' reports.

The comparisons to Medicare and Social Security are not meant to imply an expectation that all three systems should use the same assumptions.

COVID-19 Impacts

The Board decided to reflect the impact of COVID-19 in the September 30, 2020, Fund valuation by (1) adjusting the medical cost trends for inpatient and outpatient utilization by adjusting a period of higher-than-normal utilization after that caused by a catchup effect of the deferred medical procedures, and (2) shifting prescription drug fills from direct care to retail.

Medical Trend Rates

Medical trend rates are used in the actuarial valuation to project the starting average plan costs to each future year's cost level. During a 25-year select period, there are separate trend rate assumptions for Inpatient costs (IP), Outpatient costs (OP), pharmacy costs (Rx), and USFHP costs. In addition, these trend rates are determined separately for Purchased Care (PC) and Direct Care (DC) costs. All costs grow at the same ultimate trend rate, since over the long term, all plan costs are assumed to experience the same growth in prices and utilization of services.

At its 2021 meeting, the Board approved the use of the medical trend rates for the MERHCF actuarial valuation as of September 30, 2020. Consistent across all benefit trends (IP, OP, Rx, and USFHP), the Board maintained its original position that there be a 25-year select period. In addtition, the Board decided to keep the ultimate medical trend at 4.75%.

Inpatient Medical Trend

Following the Board's recommendation, OACT based the preliminary inpatient medical trend for PC benefits on the trend assumptions implied in the projections of Medicare Part A deductibles and copayments produced by the Centers for Medicaid and Medicare Services Office of the Actuary (CMS OACT). In particular, CMS OACT provided:

- Table V.E1 ─ HI Cost Sharing and Premium Amounts, from its 2020 Medicare Trustees Report, and

- Projected Medicare Part A utilization and enrollment

From this data, which included projections through 2029, OACT developed inpatient medical trends on a fiscal year basis through 2030. For the remainder of the 25-year select period, the inpatient trend rates grade linearly to the ultimate assumption of 4.75%. Adjustments were made to obtain the final IP trend rates for PC and DC costs:

- PC and DC IP trends for years 2020 to 2030 were increased 0.25% for years five through ten to reflect the higher expected growth in the TRICARE IP utilization component of trend compared to the lower expected growth in the Medicare Part A

utilization component of trend due to the impending influx of baby boomers into Medicare. Military member strength did not increase commensurate with general population increases caused by the baby boom generation. CMS OACT assumed that the reduction in the average age of Medicare-eligible retirees resulting from baby boomers aging into Medicare would result in a reduction in the utilization component of the CMS trend rates (utilization of services increases with age).

- After the above adjustments, PC IP trends were multiplied by a scalar for years five through ten (0.8 in this year's valuation), and the first four years PC IP trends were set to 6.08%, 12.20%, 4.55%, and 3.00%, to account for the utilization impact from COVID-19. DC IP trends were multiplied by a scalar for years five through ten (1.07 in this year's valuation), and the first four years of DC IP trend were set to 6.08%, 12.20%, 4.55%, and 3.00%, to account for the utilization impact from COVID-19.

Outpatient Medical Trend

Following the Board's recommendation, OACT based preliminary outpatient medical trends for PC on the trend assumptions implied in the projections of Medicare Part B out-of-pocket costs for Part B enrollees, produced by CMS OACT. In particular, CMS OACT provided:

- Table IV.B1 ─ Components of increases in Total Allowed Charges per Fee-for-Service Enrollee for Practitioner Services, from its 2020 Medicare Trustees Report
- Table IV.B2 ─ Incurred Reimbursement Amounts per Fee-for-Service Enrollee for Practitioner Services, from its 2020 Medicare Trustees Report
- Table IV.B4 ─ Incurred Reimbursement Amounts per Fee-for-Service Enrollee for Institutional Services, from its 2020 Medicare Trustees Report
- Projected per capita Medicare Part B deductible and coinsurance payments for fee-for-service enrollees

From this data, which included projections through 2029, OACT developed outpatient medical trends on a fiscal year basis through 2030. For the remainder of the 25-year select period, the outpatient trend rates grade linearly to the ultimate assumption of 4.75%. Similar to the IP trend development, adjustments were made to obtain the final OP trend rates for PC and DC costs:

- PC and DC OP trends for years 2020 to 2030 were increased 0.25% for years five through ten to reflect the higher expected growth in the TRICARE OP utilization component of trend compared to the lower expected growth in the Medicare Part B utilization component of trend due to the impending influx of baby boomers into Medicare. Military member strength did not increase commensurate with general population increases caused by the "baby boom" generation. CMS OACT assumed that the reduction in the average age of Medicare-eligible retirees resulting from baby boomers aging into Medicare would result in a reduction in the utilization component of the CMS trend rates (utilization of services increases with age).

- After the above adjustments, PC and DC OP trends were multiplied by a scalar for years five through ten (1.0 in this year's valuation). The first four years of PC OP trend were set to 9.55%, 9.03%, 4.04%, and 3.97%, and the DC OP trends were set to 9.55%, 9.03%, 4.04%, and 3.97% to account for the utilization impact from COVID-19. The

COVID-19 impact on utilization is higher with the OP than IP since OP services tend to be more discretionary.

Prescription Drug Trend

After reviewing OACT's analyses, the Board approved a set of prescription drug trends for the September 30, 2020, MERHCF actuarial valuation.

OACT analyzed FY 2017 to FY 2021 PC and DC prescription drug data and determined per capita trends in drug cost and utilization. Items noted include increases in generic dispense rates, popular brand drugs coming off patent, efforts to convert retail maintenance prescriptions to mail order or DC pharmacy, increasing specialty drug utilization, and the effect of Medicare Part D enrollment on net plan cost.

OACT developed PC and DC drug trend rates that consider recent experience, near-term industry projections, federal drug pricing rules, and DoD's drug utilization mix. The Board approved DC Rx trend rates of -2.10%, 4.13%, and 3.18%, and PC Rx trend rates of 2.93%, 3.38% and 2.96% in the first three years. Consistent with the Board's recommendations for long-term trend, the aggregate rate was graded linearly to an ultimate 4.75% over the next 22 years.

In general, drug prices are expected to rise more slowly than industry forecasts because retail, mail order, and MTF pharmacy prescriptions under TRICARE are subject to federal drug pricing formulas that limit the annual rate of increase in individual drug prices to inflation rates. However, it is expected that drug prices will rise somewhat higher than inflation over the long term due to provisions in the federal drug pricing system that allow price renegotiations every five years. In addition, specialty drugs are having a similar impact on TRICARE pharmacy drug trend as they have on other drug plans. The trend assumptions adopted by the Board incorporate assumed inflation in drug prices, utilization increases (in PC), the introduction of new brand drugs (specialty and nonspecialty), and the expiration of patent protections.

USFHP Trend

OACT received the full set of USFHP capitation rates[1] by age, gender, and designated provider plan (or location) for the contract periods from October 2015 to September 2021. The Board agreed that the ultimate trend rate applied to each of the fee-for-service benefits should also

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[1] The USFHP statute calls for an annual determination of the capitation rates, involving a negotiation and mutual agreement between the Secretary of Defense and the designated providers. The statute provides a number of parameters for determining the rates, including: (1) consideration of "competitive market rates" applied to the utilization experience of USFHP enrollees, (2) a "ceiling rate" limitation under which capitation payments to designated providers shall not exceed "the cost that would have been incurred by the Government if the enrollees had received such health care services through a military treatment facility, the TRICARE program, or the Medicare program, as the case may be," (3) taking into account "health status" in establishing the ceiling rate, (4) a requirement that the rates are subject to periodic review for actuarial soundness and to adjustment for any anticipated adverse or favorable selection, and (5) an allowance for an alternative basis for calculating capitation payments if mutually agreed to by the Secretary of Defense and the designated provider.

apply to USFHP capitation rates. For the initial trend rate, the Board agreed that the rate should be a weighted average of PC and DC trends, using the TFL cost components of DC pharmacy and PC pharmacy, PC inpatient and PC outpatient, and of Medicare Parts A and B, as weights. This weighting was used during each of the 25 years in the select period to produce the USFHP trend rates.

APPENDIX E

AVERAGE BENEFIT COSTS

DEVELOPMENT OF EXPECTED AVERAGE BENEFIT COSTS

The average expected claim costs in this model are stored in claim vectors (CVs) and represent average family costs per retired sponsor (or survivor), by sponsor age (or survivor age), where the retiree is the sponsor for the retiree CVs and the surviving spouse is the sponsor for the survivor CVs. A CV is computed as the ratio of the total cost to the government (DoD) to the total number of retired sponsors (or survivors) of both Medicare-eligible and non-Medicare-eligible of the specified age. Separate CVs are developed for:

(i) average family costs derived from claims incurred while the patient was Medicare-eligible (Medicare-eligible CVs).
(ii) average family costs derived from claims incurred while the patient was not Medicare-eligible (non-Medicare-eligible CVs).

Since the MERHCF valuation projects the liability associated with claims incurred by Medicare-eligible beneficiaries, only the CVs in (i) are used for this valuation. The CVs are available upon request.

As an example, the Medicare-eligible sponsor (or survivor) CVs contain a value for age 80 that represents the Medicare-eligible average annual claims cost for claims incurred by Medicare-eligible beneficiaries associated with an 80-year-old retired sponsor (or survivor):

(Annual costs for all Medicare-eligible, retiree-related beneficiaries associated with 80-year-old sponsors (or survivors)) ÷ (total number of 80-year-old retired sponsors (or survivors), both Medicare and non-Medicare-eligible)

The Medicare-eligible CVs include average costs by each retired sponsor (or survivor) age from 18 to 118.

The MERHCF valuation uses 84 claim vectors, derived from seven benefit categories and 12 population subcategories. The seven benefit categories are:

- Direct Care inpatient (DC IP)
- Direct Care outpatient (DC OP)
- Direct Care prescription drugs (DC Rx)
- Purchased Care inpatient (PC IP)
- Purchased Care outpatient (PC OP)
- Purchased Care prescription drugs (PC Rx)
- Purchased Care US Family Health Plans (USFHP)

Direct Care (DC) refers to care obtained at a military treatment facility (MTF), and Purchased Care (PC) refers to care obtained outside the MTFs. USFHP refers to the managed care program run by US Family Health Plans. While USFHP is considered PC, the USFHP CV development is described in its own section (below) because USFHP CVs are based on global rates and not experience claims.

The 12 population subcategories correspond to the 12 population subcategories identified in the "Valuation Data and Procedure" section of this report.

CV values represent starting costs in the valuation year. These CVs are multiplied by cumulative trend rates in each projection year of the model.

Purchased Care Starting Costs

Purchased Care benefit CVs were developed on a "claims-only" basis. Initial, "input" CVs were used to compute preliminary PVFB amounts, and then loads were applied to calibrate costs to aggregate incurred claim levels and to account for administrative costs.

PC CVs for the September 30, 2020, valuation were developed by blending detail data from fiscal years 2015 to 2017 (no blending was needed for retail and mail order Rx, where only 2017 claims were used). Before blending, the claims in each age cell for 2015 and 2017 were brought to 2016 claim cost levels by multiplying each element by the following ratio:

Adjustment to 2015 claim cells before blending:

$$\frac{2016 \; weighted \; average \; cost \; per \; 2016 \; sponsor \; and \; family}{2015 \; weighted \; average \; cost \; per \; 2015 \; sponsor \; and \; family}$$

Adjustment to 2017 claim cells before blending:

$$\frac{2016 \; weighted \; average \; cost \; per \; 2016 \; sponsor \; and \; family}{2017 \; weighted \; average \; cost \; per \; 2017 \; sponsor \; and \; family}$$

The adjustments shown above use "sponsor and family" CVs as an illustration. The same adjustments apply to all CVs, including the survivor CVs.

The September 30, 2020, input CVs were smoothed with a combination of formulaic and manual methods.

The IP, OP, and Rx CVs were adjusted to reflect aggregate 2020 incurred PC claims levels for IP, OP, and Rx benefits, respectively. Estimates of 2020 incurred PC claims were produced from aggregate claims paid through March 2021. 2020 incurred PC claims (completed) are shown in Table E1.

TABLE E1

FY 2020 MERHCF PURCHASED CARE INCURRED CLAIMS

($ millions)

Inpatient Hospital	$793
Outpatient	$2,868
Pharmacy	$3,941
Total	$7,603

Incurred pharmacy claims in Table E1 have not been adjusted to reflect rebates on retail brand prescriptions incurred during FY 2020.

Additional adjustments to PC costs are made to account for administrative costs, retail pharmacy rebates, and adjustments to mail order pharmacy ingredient costs.

Administrative Costs

PC costs associated with plan administration, including claims processing, were added to the average claims costs in the form of a CV load. For the September 30, 2020, valuation, the MERHCF Board approved PC claim loads for administrative costs of 2.00% (IP and OP) and 1.60% (Rx). These loads are based on amounts paid for claims administration that were not already reflected in the claims data.

Adjustment for Retail Brand Drug Rebates

Expected retail pharmacy rebates were subtracted from each future year's projected cash flow. The National Defense Authorization Act for Fiscal Year 2008 included a law requiring that prescriptions dispensed under TRICARE's retail pharmacy program be subject to federal ceiling prices. The final ruling on this law was effective May 26, 2009. In addition, prior voluntary drug rebate arrangements, implemented in FY 2007, are also in effect. More information regarding the details and status of these DoD retail drug rebate programs is available in the Management's Discussion and Analysis of the DoD Medicare-Eligible Retiree Health Care Fund year-end financial statement.

As with most drug rebate programs, the reduced drug price comes in the form of rebates or refunds (i.e., not in the claims), so an explicit assumption is applied to the PC pharmacy CVs to reflect this discount. An estimate of annual incurred pharmacy rebates under the voluntary and mandatory rebate arrangements was determined by analyzing rebate data supplied by Defense Health Agency (DHA). Accounting reports of expected rebates and rebate payments received in each incurred fiscal quarter were studied to estimate future actual-to-expected collection ratios. These estimates were converted to an effective PC pharmacy refund rate in the first valuation year. This refund rate represents the expected discounts on retail brand prescriptions as a percentage of total PC Rx (retail plus mail order Rx) net plan payments. For the September 30, 2020, MERHCF valuation, that effective rate was approximately 12.84%. This rate was adjusted over the next 20 years to incorporate assumed future trends in drug dispensing venues (mail order vs. retail vs. MTF), changes in generic dispense rates, patent expirations, and new traditional and specialty drugs. The effective pharmacy rebate factor in year 20 of the valuation is projected to be approximately 12.94% for non-exempt and 12.52% for exempt retired beneficiaries, respectively[1]. Since the refund rate is applied to the CVs that have been loaded for administration costs, the effective drug refund rate must be divided by

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[1] The projected pharmacy rebate factors for pharmacy claims incurred by beneficiaries who are exempt from the copay increases specified in the 2018 NDAA are a little lower than for non-exempt beneficiaries. The reason is that the rebate dollars are a smaller percent of exempt beneficiaries' net pharmacy claims since their copays are not increasing. Exempt beneficiaries include medically retired sponsors and their dependents, and survivors of sponsors who died while on active duty.

one plus the drug admin load in order to preserve the expected level of administration costs on pharmacy claims.

Adjustments to Mail Order Pharmacy Ingredient Costs

DoD pays to replenish its mail order warehouse supplies, and in doing so obtains favorable federal drug pricing as well as additional savings and credits. The replenishment costs have been lower than the total of ingredient costs found in the claim records. Therefore an adjustment is made to aggregate mail order pharmacy costs in order to reflect the actual amount DoD paid.

U.S. Family Health Plan (USFHP) Starting Costs

Approximately 1.90% of the MERHCF-eligible population enrolls in a USFHP plan. USFHP is a managed care plan, offered in six US locations, that is funded on a fully capitated or global rate basis. Average costs for USFHP enrollees are higher than costs for other enrollees primarily because USFHP is the primary payer (enrollees' costs are not offset first by Medicare, and perhaps other health insurance, as is the case with TRICARE For Life).

OACT produced USFHP CVs[2] based on the average family global rate per retired sponsor or survivor who is Medicare-eligible and enrolled in USFHP. Actual monthly rates for each of the six USFHP locations were weighted by monthly USFHP enrollment of retired members eligible for Medicare to compute average global rates by age and gender. The smoothing techniques that were used to develop the PC CVs were also used to develop the USFHP CVs. Since the USFHP global rates are all inclusive (all benefits), only 12 CVs were produced ─ one for each population subcategory.

The USFHP CVs were adjusted to calibrate the initial MERHCF valuation year's cash flow to aggregate incurred global rate payments ($783 million for FY 2020). Estimates of FY 2020 incurred USFHP payments were obtained from the Military Health System Data Mart and verified against DHA's Contract Resource Management MERHCF Trust Fund Reports.

The valuation model includes adjustments in each projection year to account for future changes in USFHP enrollment patterns for Medicare-eligible members. This change in enrollment, a slow decrease in the percent of Medicare-eligible members who are enrolled in USFHP, will result over the next several years as the proportion of USFHP retired members who are grandfathered (i.e., may stay in the plan after turning age 65) decreases. This adjustment affects the current retiree populations only. USFHP eligibility for future retirees will remain unchanged for pre-65 coverage, and will terminate upon attainment of age 65.

Administrative Costs

Most of the administrative costs for this program are incorporated in the USFHP capitation rates. There is a small, additional administrative cost associated with enrollment

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[2] In the case of USFHP, CV refers to the age-based vector of capitation rates. "Capitation rate" and "global rate" are used interchangeably.

administration and billing consolidation. For the September 30, 2020, valuation, the MERHCF Board approved an administration cost load of 0.40% for the USFHP CVs.

Direct Care Starting Costs

Direct Care benefit CVs were developed from workload units rather than claim costs (workload for prescription drugs is measured by ingredient cost). DC inpatient workloads are based on Relative Weighted Products (RWPs), and DC outpatient workloads are based on Composite Weight representing a weighted combination of Relative Value Unit and Ambulatory Payment Classifications. RWPs and Composite Weights reflect the relative intensity of a treatment with RWPs focused on facilities and Composite Weights focused on professional services. These initial "input" CVs were used to compute preliminary first year outlays in terms of workloads[3]. The ratio of 2020 aggregate incurred claims levels to the preliminary first year outlays (based on workloads in the input CVs) was used to convert workload-based CVs to cost-based CVs. Unlike PC CVs, the DC CVs have no loads applied for administrative costs, since the DC calibrated values already include the applicable overhead costs.

DC CVs for the September 30, 2020, valuation were developed by blending detail data from fiscal years 2015 to 2017. Before blending, the workloads in each age cell for 2015 and 2017 were brought to 2016 workload levels by multiplying each element by the following ratio:

Adjustment to 2015 workload cells before blending:

$$\frac{2016\ weighted\ average\ workload\ per\ 2016\ sponsor\ and\ family}{2015\ weighted\ average\ workload\ per\ 2015\ sponsor\ and\ family}$$

Adjustment to 2017 workload cells before blending:

$$\frac{2016\ weighted\ average\ workload\ per\ 2016\ sponsor\ and\ family}{2017\ weighted\ average\ workload\ per\ 2017\ sponsor\ and\ family}$$

The adjustments shown above use "sponsor and family" CVs as an illustration. The same adjustments apply to all CVs, including the survivor CVs.

The September 30, 2020, input CVs were smoothed with a combination of formulaic and manual methods.

The IP, OP, and Rx CVs were adjusted to reflect aggregate 2020 incurred DC claims levels for IP, OP, and Rx benefits, respectively. Estimates of 2020 incurred DC claims were provided by DHA in their annual "level of effort" (LOE) analysis of Military Treatment Facilities. The LOE values are shown in Table E2. For more information about DC data, please refer to the VALUATION DATA AND PROCEDURE, Claims Data section of this valuation report.

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[3] Transition among several MTFs to a new DC workload reporting platform MHS GENESIS impacting the claims development process is underway, but ongoing data quality issues prevent this data from being used this year.

TABLE E2

FY 2020 MERHCF DIRECT CARE COSTS

($millions)

Inpatient Hospital	$617
Outpatient	$758
Pharmacy	$871
Total	$2,245

APPENDIX F

ACTIVE DUTY RATES

ACTIVE DUTY RATES

The active duty rates consist of decrement rates related to probabilities of a member leaving a category of military service for a specific reason. In addition, they include a new entrant distribution and a set of reentrant ratios. The active duty decrement rates are used to project active duty deaths, temporary and permanent disability retirements, nondisability retirements, and withdrawals (i.e., other active duty losses). The active duty decrements also include rates of transfer from enlisted to officer.

Death rates for non-retired active duty members were updated in the September 30, 2020, valuation using an underlying experience period from FY 2015 to FY 2019. The death rates are given by age nearest birthday separately for officers and enlisted. In addition, the death rates are updated each year to reflect another year of mortality improvement (MI) (from the midpoint of the experience period used to develop the death rates to the valuation date), using MI scales that are based on the Society of Actuaries' MP-2020 mortality projection scales. The valuation MI scales used reflect an 80%/20% male/female mix.

The remaining rates are given by completed years of active service for officers and enlistees separately. The formulas used to create the active duty rates are shown on page F-3. Table F1 shows the fiscal years on which various rates are based. The experience period of the rates was selected such that the net change in the active duty force size during the years covered by the period was approximately zero. Because of the large number of cases available and the need to avoid smoothing through real discontinuities, the nondisability retirement and withdrawal rates were not graduated (smoothed). Rates were separated into ranges where assumptions of continuity were reasonable. The death rates were smoothed using Generalized Additive Models in the R programming language.

A reentrant is defined as someone who is on active duty at year end, who was not on active duty a year earlier, and who is not a new entrant. The reentrant ratios give the expected number of reentrants per year, per active member, in each cell. The cells are defined by length of service and by officer/enlistee.

The new entrant distribution gives the percentages of new entrants to the Services by age and by officer/enlistee status.

Active duty disability retirement rates were updated in the September 30, 2020, valuation using an underlying experience period from FY 2015 to FY 2019 for years of service less than 19.

ACTIVE DUTY RATE FORMULAS

WITHDRAWAL FROM ACTIVE DUTY (by completed years of service)

$$\frac{Withdrawals\ during\ the\ year}{Number\ at\ beginning\ of\ year}$$

REENTRANT RATIOS (by completed years of service)

$$\frac{Number\ reentering\ during\ the\ year}{Number\ at\ beginning\ of\ year}$$

ACTIVE DEATH (by age nearest birthday)

$$\frac{Deaths\ during\ the\ year}{[Number\ at\ beginning\ of\ year - \frac{1}{2} \times (Withdrawals + Nondisability\ retirements\ during\ the\ year)]}$$

NONDISABILITY RETIREMENT (by completed years of service)

$$\frac{New\ retirees\ during\ the\ year}{Number\ at\ beginning\ of\ year}$$

TEMPORARY DISABILITY RETIREMENT (by completed years of service)

$$\frac{New\ temporary\ disabilities\ during\ the\ year}{[Number\ at\ beginning\ of\ year - \frac{1}{2} \times (Withdrawals + Nondisability\ retirments\ during\ the\ year)]}$$

PERMANENT DISABILITY RETIREMENT (by completed years of service)

$$\frac{New\ permanent\ disabilities\ during\ the\ year}{[Number\ at\ beginning\ of\ year - \frac{1}{2} \times (Withdrawals + Nondisability\ retirements\ during\ the\ year)]}$$

TRANSFER (by completed years of service)

$$\frac{Transfers\ to\ category\ during\ the\ year}{[Number\ at\ beginning\ of\ year - \frac{1}{2} \times (Withdrawals + Nondisability\ retirements\ during\ the\ year)]}$$

TABLE F1

SUMMARY OF FISCAL YEARS ON WHICH ACTIVE DUTY RATES ARE BASED

RATE	2015-2019
Death	X
Nondisability Retirement	X
Temporary Disability Retirement	X
Permanent Disability Retirement	X
Withdrawal (other losses)	X
Reentrant Ratios	X
New Entrant Distribution	X
Paygrade Transfer	X

TABLE F2
NONRETIRED ACTIVE DUTY DEATH RATES
BY AGE AND PAY GRADE

Age	Officer	Enlistee	Age	Officer	Enlistee
16	0.00031	0.00053	39	0.00046	0.00068
17	0.00031	0.00057	40	0.00047	0.00068
18	0.00032	0.00061	41	0.00046	0.00069
19	0.00032	0.00067	42	0.00047	0.00069
20	0.00032	0.00071	43	0.00047	0.00069
21	0.00033	0.00074	44	0.00046	0.00069
22	0.00033	0.00075	45	0.00046	0.00069
23	0.00034	0.00074	46	0.00046	0.00069
24	0.00034	0.00071	47	0.00046	0.00068
25	0.00036	0.00069	48	0.00047	0.00068
26	0.00036	0.00067	49	0.00046	0.00068
27	0.00037	0.00065	50	0.00047	0.00068
28	0.00038	0.00065	51	0.00049	0.00073
29	0.00039	0.00064	52	0.00053	0.00078
30	0.00040	0.00064	53	0.00057	0.00083
31	0.00041	0.00063	54	0.00061	0.00089
32	0.00042	0.00063	55	0.00065	0.00095
33	0.00043	0.00064	56	0.00070	0.00102
34	0.00043	0.00064	57	0.00075	0.00110
35	0.00044	0.00065	58	0.00081	0.00118
36	0.00044	0.00065	59	0.00087	0.00128
37	0.00045	0.00066	60	0.00093	0.00138
38	0.00046	0.00067			

NOTE: These death rates should not be compared to other published rates or used for other purposes without examining the exposure formula used in the derivation.

TABLE F3
NONDISABILITY, TEMPORARY DISABILITY & PERMANENT DISABILITY
RETIREMENT RATES (BY COMPLETED YEARS OF SERVICE)
ACTIVE DUTY OFFICER

Years of Service	Non-disability	Temporary Disability	Permanent Disability
0	0.00000	0.00030	0.00050
1	0.00000	0.00095	0.00113
2	0.00000	0.00155	0.00175
3	0.00000	0.00176	0.00219
4	0.00000	0.00193	0.00261
5	0.00000	0.00190	0.00310
6	0.00000	0.00212	0.00335
7	0.00000	0.00242	0.00353
8	0.00000	0.00288	0.00355
9	0.00000	0.00227	0.00374
10	0.00000	0.00303	0.00396
11	0.00000	0.00271	0.00398
12	0.00000	0.00299	0.00333
13	0.00000	0.00298	0.00297
14	0.00000	0.00228	0.00289
15	0.00000	0.00233	0.00280
16	0.00000	0.00180	0.00237
17	0.00000	0.00183	0.00171
18	0.00000	0.00085	0.00120
19	0.29403	0.00338	0.00532
20	0.16779	0.00555	0.00915
21	0.14554	0.00346	0.00698
22	0.13847	0.00279	0.00646
23	0.14688	0.00258	0.00574
24	0.15556	0.00195	0.00631
25	0.16765	0.00250	0.00596
26	0.16944	0.00134	0.00466
27	0.18323	0.00129	0.00466
28	0.17728	0.00140	0.00442
29	0.37643	0.00166	0.00432
30	0.32271	0.00292	0.00537
31	0.22694	0.00151	0.00481
32	0.22616	0.00151	0.00481
33	0.26632	0.00151	0.00481
34	0.26337	0.00151	0.00481
35	0.26825	0.00151	0.00481
36	0.27241	0.00151	0.00481
37	0.36614	0.00151	0.00481
38	0.30560	0.00151	0.00481
39	0.50633	0.00151	0.00481
40	1.00000	0.00151	0.00481

Note: Nine completed years of service could include anywhere from 9.0 to 9.999 years of service. The associated rate applied to the number of people at the beginning of the year in the category will produce the expected number of occurrences during the following year.

The increase in disability rates shown between 18 and 19 years of service is due to the removal of the 30% disability rating minimum for members with 20 years of service. Certain tax advantages accorded disability retired pay may result in members choosing disability over nondisability retirements.

TABLE F4

NONDISABILITY, TEMPORARY DISABILITY & PERMANENT DISABILITY
RETIREMENT RATES (BY COMPLETED YEARS OF SERVICE)
ACTIVE DUTY ENLISTEE

Years of Service	Non-disability	Temporary Disability	Permanent Disability
0	0.00000	0.00071	0.00049
1	0.00000	0.00293	0.00250
2	0.00000	0.00523	0.00524
3	0.00000	0.00670	0.00624
4	0.00000	0.00692	0.00756
5	0.00000	0.00743	0.00823
6	0.00000	0.00817	0.00870
7	0.00000	0.00887	0.00917
8	0.00000	0.00930	0.00949
9	0.00000	0.00947	0.00997
10	0.00000	0.00924	0.00994
11	0.00000	0.00969	0.01003
12	0.00000	0.00874	0.01000
13	0.00000	0.00829	0.00967
14	0.00000	0.00736	0.00884
15	0.00000	0.00594	0.00768
16	0.00000	0.00537	0.00656
17	0.00000	0.00450	0.00521
18	0.00000	0.00308	0.00359
19	0.44646	0.00718	0.01239
20	0.24403	0.01022	0.02069
21	0.21888	0.00761	0.01793
22	0.22832	0.00745	0.01693
23	0.36389	0.00607	0.01405
24	0.24012	0.00565	0.01646
25	0.42157	0.00545	0.01439
26	0.21405	0.00455	0.01314
27	0.18270	0.00442	0.01001
28	0.21955	0.00493	0.00950
29	0.65357	0.00489	0.00826
30	0.56604	0.00450	0.01350
31	0.57998	0.00780	0.02220
32	0.56550	0.00780	0.02220
33	0.53907	0.00780	0.02220
34	0.57436	0.00780	0.02220
35	0.54193	0.00780	0.02220
36	0.54193	0.00780	0.02220
37	0.54193	0.00780	0.02220
38	0.54193	0.00780	0.02220
39	0.54193	0.00780	0.02220
40	1.00000	0.00780	0.02220

Note: Nine completed years of service could include anywhere from 9.0 to 9.999 years of service. The associated rate applied to the number of people at the beginning of the year in the category will produce the expected number of occurrences during the following year.

The increase in disability rates shown between 18 and 19 years of service is due to the removal of the 30% disability rating minimum for members with 20 years of service. Certain tax advantages accorded disability retired pay may result in members choosing disability over nondisability retirements.

TABLE F5
WITHDRAWAL, REENTRANT, AND NET LOSS RATES
BY COMPLETED YEARS OF SERVICE
ACTIVE DUTY OFFICER

Years of Service	Withdrawal	Reentrant	Net Loss
0	0.00598	0.25021	-0.24423
1	0.00933	0.01792	-0.00859
2	0.02707	0.01788	0.00919
3	0.07932	0.02102	0.05830
4	0.09222	0.01924	0.07298
5	0.07260	0.01771	0.05489
6	0.08255	0.01617	0.06638
7	0.08597	0.01636	0.06961
8	0.06623	0.01484	0.05139
9	0.00000	0.01378	0.04477
10	0.08470	0.01274	0.07196
11	0.06448	0.01467	0.04981
12	0.04453	0.01313	0.03140
13	0.03107	0.01152	0.01955
14	0.02274	0.00804	0.01470
15	0.01625	0.00693	0.00932
16	0.01136	0.00602	0.00534
17	0.00774	0.00551	0.00223
18	0.00405	0.00492	-0.00087
19	0.00000	0.00272	-0.00272
20	0.00000	0.00298	-0.00298
21	0.00000	0.00256	-0.00256
22	0.00000	0.00227	-0.00227
23	0.00000	0.00234	-0.00234
24	0.00000	0.00157	-0.00157
25	0.00000	0.00135	-0.00135
26	0.00000	0.00180	-0.00180
27	0.00000	0.00179	-0.00179
28	0.00000	0.00104	-0.00104
29	0.00000	0.00076	-0.00076
30	0.00000	0.00231	-0.00231
31	0.00000	0.00157	-0.00157
32	0.00000	0.00134	-0.00134
33	0.00000	0.00118	-0.00118
34	0.00000	0.00113	-0.00113
35	0.00000	0.00102	-0.00102
36	0.00000	0.00083	-0.00083
37	0.00000	0.00079	-0.00079
38	0.00000	0.00064	-0.00064
39	0.00000	0.00048	-0.00048
40	0.00000	0.00000	0.00000

Note: Nine completed years of service could include anywhere from 9.0 to 9.999 years of service. The associated rate applied to the number of people at the beginning of the year in the category will produce the expected number of occurrences during the following year.

The reentrant (and all other) rates are developed for valuation purposes to be consistent with the data sources used in the valuation. For example, high reentrant rates for members with zero completed years of service at the beginning of the year reflect members showing up on the valuation data files with one completed year of service at year end, who were not on the data files at the beginning of the year, and who were not new entrants. For this reason, the above rates should not be used for other purposes.

TABLE F6

WITHDRAWAL, REENTRANT, AND NET LOSS RATES
BY COMPLETED YEARS OF SERVICE
ACTIVE DUTY ENLISTEE

Years of Service	Withdrawal	Reentrant	Net Loss
0	0.07250	0.02377	0.04873
1	0.05576	0.00855	0.04721
2	0.09772	0.00741	0.09031
3	0.26795	0.01103	0.25692
4	0.18400	0.00953	0.17447
5	0.17611	0.00902	0.16709
6	0.10506	0.00830	0.09676
7	0.14336	0.00815	0.13521
8	0.09028	0.00736	0.08292
9	0.08105	0.00678	0.07427
10	0.06290	0.00543	0.05747
11	0.05449	0.00491	0.04958
12	0.04363	0.00476	0.03887
13	0.05195	0.00410	0.04785
14	0.04700	0.00360	0.04340
15	0.01822	0.00279	0.01543
16	0.01524	0.00219	0.01305
17	0.00909	0.00187	0.00722
18	0.00356	0.00160	0.00196
19	0.00000	0.00084	-0.00084
20	0.00000	0.00110	-0.00110
21	0.00000	0.00104	-0.00104
22	0.00000	0.00088	-0.00088
23	0.00000	0.00125	-0.00125
24	0.00000	0.00146	-0.00146
25	0.00000	0.00135	-0.00135
26	0.00000	0.00273	-0.00273
27	0.00000	0.00121	-0.00121
28	0.00000	0.00166	-0.00166
29	0.00000	0.00167	-0.00167
30	0.00000	0.00230	-0.00230
31	0.00000	0.00844	-0.00844
32	0.00000	0.00871	-0.00871
33	0.00000	0.00724	-0.00724
34	0.00000	0.00769	-0.00769
35	0.00000	0.00757	-0.00757
36	0.00000	0.00513	-0.00513
37	0.00000	0.00435	-0.00435
38	0.00000	0.00357	-0.00357
39	0.00000	0.00444	-0.00444
40	0.00000	0.00000	0.00000

Note: Nine completed years of service could include anywhere from 9.0 to 9.999 years of service. The associated rate applied to the number of people at the beginning of the year in the category will produce the expected number of occurrences during the following year.

The reentrant (and all other) rates are developed for valuation purposes to be consistent with the data sources used in the valuation. For example, high reentrant rates for members with zero completed years of service at the beginning of the year reflect members showing up on the valuation data files with one completed year of service at year end, who were not on the data files at the beginning of the year, and who were not new entrants. For this reason, the above rates should not be used for other purposes.

TABLE F7

DISTRIBUTION OF ACTIVE DUTY NEW ENTRANTS
BY AGE AND PAYGRADE

Age	Officer	Enlistee	Total
16	0.00000	0.00000	0.00000
17	0.00000	0.00050	0.00050
18	0.00000	0.09671	0.09671
19	0.00001	0.24693	0.24694
20	0.00004	0.18239	0.18243
21	0.00019	0.10786	0.10805
22	0.01306	0.07295	0.08601
23	0.02407	0.05589	0.07996
24	0.01025	0.04433	0.05458
25	0.00405	0.03366	0.03771
26	0.00354	0.02485	0.02839
27	0.00359	0.01769	0.02128
28	0.00253	0.01302	0.01555
29	0.00191	0.00950	0.01141
30	0.00128	0.00676	0.00804
31	0.00098	0.00489	0.00587
32	0.00071	0.00375	0.00446
33	0.00061	0.00285	0.00346
34	0.00047	0.00234	0.00281
35	0.00035	0.00196	0.00231
36	0.00025	0.00081	0.00106
37	0.00021	0.00038	0.00059
38	0.00018	0.00028	0.00046
39	0.00013	0.00028	0.00041
40	0.00014	0.00022	0.00036
41	0.00011	0.00007	0.00018
42	0.00009	0.00002	0.00011
43	0.00005	0.00003	0.00008
44	0.00004	0.00001	0.00005
45	0.00003	0.00001	0.00004
46	0.00002	0.00000	0.00002
47	0.00003	0.00001	0.00004
48	0.00003	0.00000	0.00003
49	0.00002	0.00001	0.00003
50	0.00002	0.00001	0.00003
51	0.00001	0.00000	0.00001
52	0.00001	0.00001	0.00002
53	0.00000	0.00000	0.00000
54	0.00001	0.00000	0.00001
55	0.00000	0.00000	0.00000
	0.06902	0.93098	1.00000

TABLE F8
ACTIVE DUTY TRANSFER RATES
BY COMPLETED YEARS OF SERVICE AND PAYGRADE

Years of Service	Officer to Enlistee	Enlistee to Officer
0	0.00000	0.00625
1	0.00000	0.00135
2	0.00000	0.00155
3	0.00000	0.00191
4	0.00000	0.00258
5	0.00000	0.00306
6	0.00000	0.00395
7	0.00000	0.00547
8	0.00000	0.00701
9	0.00000	0.00886
10	0.00000	0.00999
11	0.00000	0.01118
12	0.00000	0.01056
13	0.00000	0.00905
14	0.00000	0.00757
15	0.00000	0.00569
16	0.00000	0.00432
17	0.00000	0.00330
18	0.00000	0.00285
19	0.00000	0.00261
20	0.00000	0.00132
21	0.00000	0.00148
22	0.00000	0.00099
23	0.00000	0.00075
24	0.00000	0.00043
25	0.00000	0.00025
26	0.00000	0.00000
27	0.00000	0.00000
28	0.00000	0.00000
29	0.00000	0.00000
30	0.00000	0.00000
31	0.00000	0.00000
32	0.00000	0.00000
33	0.00000	0.00000
34	0.00000	0.00000
35	0.00000	0.00000
36	0.00000	0.00000
37	0.00000	0.00000
38	0.00000	0.00000
39	0.00000	0.00000
40	0.00000	0.00000

Note: Nine completed years of service could include anywhere from 9.0 to 9.999 years of service. The associated rate applied to the number of people at the beginning of the year in the category will produce the expected number of occurrences during the following year.

APPENDIX G

RESERVE RATES

RESERVE RATES

Modeling decrement rates for reserves is similar to modeling decrement rates for active duty. There are additional challenges due to moving between active and reserve components, the structure of the reserve force, limitations of the reserve data, and changes in how the reserves are used.

Reserves are modeled in two population categories in the portion of the career prior to receiving retired pay–Selected Reserves and non-Selected Reserves with 20 good years. The Selected Reserves include only part-time members and are the reserves for whom normal costs are paid. The non-Selected Reserves with 20 good years[1] are modeled because they qualify for retirement.

The reserve rates consist primarily of decrement rates related to the probabilities of a member leaving a category of military service for a specific reason. The concept of "Entry Age" is constructed based on an assumption of no breaks in service. In addition, the reserve rates include a new entrant distribution; a set of reentrant ratios; rates of transfer to 20-year non-Selected Reserve status; and blow-up[2] factors. The decrement rates are mainly shown by age nearest birthday at entry and completed years of service since Pay Entry Base Date (PEBD), separately for officers and enlistees. The PEBD is a service entry date that is adjusted for each break in service. Below is a description of the rates used in the reserve valuation process.

The data for most of the rates were taken from the Reserve Component Common Personnel Data System files as of September 30 for the years 2017 through 2019 (additional data were used for developing updated death rates, as explained below). The experience period was selected such that the sum of the part-time Selected Reserve force size changes for the included period was near zero. The fiscal years on which the rates are based is provided in Table G1. A qualitative description of the rates follows. The general formula derivation is similar to those of the Active Duty rates (Appendix F) and Retiree/Survivor rates (Appendix H). The reserve rate formulas are not shown, but may be requested from the Office of the Actuary.

The separation rates represent the probability that a member in a given status at the beginning of the fiscal year leaves that status during the fiscal year. Separation rates from the Selected Reserve include standard losses, transfers to active duty, transfers to the full-time reserves, discharge, and death. They do not include transfers to non-Selected Reserves with 20 good years, or retirement. Separation rates from the non-Selected Reserve with 20 good years include transfer to Selected Reserve, death, discharge, and file corrections and timing delays. They do not include transfer to retirement status.

A reentrant is defined as someone who is in the Selected Reserves at year end, who was not in the same status a year earlier, and who is not a new entrant (as defined by having greater than zero completed years of PEBD service). It can include transfers from active duty; former Selected Reserve or active duty members returning after breaks in service; reserve members returning after

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[1]This includes the category commonly referred to as the "grey area" as well as other non-Selected Reserves with 20 qualifying retirement years.

[2]Ratios are used to adjust for persistent patterns of actual outcomes not conforming to expectations based on known data. For example, each year new reserve retirees appear who were not in the data as eligible-to-retire the year before. The need for such "blow up" factors is one of many challenges in modeling reservists.

being attached to a non-Selected Reserve component (Individual Ready Reserve or Inactive National Guard); and members transferring to part-time Selected Reserves from full-time reserves.

The new entrant distribution provides the percentages of new entrants to the part-time Selected Reserves (as defined by having zero completed years of PEBD service) by age and by officer/enlistee status. The distribution is used in the normal cost (new entrant) valuation.

In most cases the separation and reentrant rates and ratios are not smoothed (graduated). However, cells with numerators of fewer than 10 cases were combined with other cells.

Death rates for non-retired selected and non-selected reserve members were developed in the September 30, 2020, valuation using an underlying experience period from FY 2015 to FY 2019. The death rates are given by age nearest birthday for officers and enlistees separately. In addition, the death rates are updated each year to reflect another year of mortality improvement (MI) (from the midpoint of the experience period used to develop the death rates to the valuation date), using a military MI scale that is based on FY 2000-FY 2020 military data, based on methods and assumptions used in the Society of Actuaries' recent MI scales.

TABLE G1

SUMMARY OF FISCAL YEARS ON WHICH RESERVE RATES ARE BASED

RATE	2015	2016	2017	2018	2019
Death (Selected and Non-Selected)	X	X	X	X	X
Separation (Selected)			X	X	X
Separation (Non-Selected)			X	X	X
Transfer (Selected-to-Non-Selected)			X	X	X
Retirement (Selected and Non-Selected)			X	X	X
New Entrant Distribution (Selected)			X	X	X
Reentrant (Selected)*			X	X	X
Paygrade Transfer (Selected)*			X	X	X
Disability Retirement (Selected)*			X	X	X
Retirement Ratios (Non-Selected)*				X	X
Transfer Ratios (Selected-to-Non-Selected)*			X	X	X

* Rates are available upon request.

TABLE G2

NONRETIRED SELECTED RESERVE DEATH RATES
BY AGE AND PAYGRADE

Age	Officer	Enlistee	Age	Officer	Enlistee
16	0.00015	0.00066	40	0.00045	0.00080
17	0.00016	0.00069	41	0.00047	0.00081
18	0.00017	0.00073	42	0.00049	0.00082
19	0.00018	0.00077	43	0.00051	0.00083
20	0.00019	0.00080	44	0.00054	0.00085
21	0.00019	0.00084	45	0.00056	0.00087
22	0.00020	0.00086	46	0.00058	0.00089
23	0.00020	0.00088	47	0.00060	0.00094
24	0.00020	0.00088	48	0.00064	0.00100
25	0.00022	0.00088	49	0.00067	0.00107
26	0.00022	0.00086	50	0.00071	0.00115
27	0.00023	0.00084	51	0.00076	0.00124
28	0.00025	0.00081	52	0.00081	0.00135
29	0.00026	0.00079	53	0.00087	0.00147
30	0.00028	0.00077	54	0.00094	0.00160
31	0.00030	0.00074	55	0.00101	0.00173
32	0.00031	0.00074	56	0.00109	0.00187
33	0.00032	0.00073	57	0.00119	0.00201
34	0.00035	0.00073	58	0.00128	0.00216
35	0.00036	0.00075	59	0.00140	0.00231
36	0.00039	0.00076	60	0.00153	0.00247
37	0.00040	0.00077	61	0.00166	0.00264
38	0.00042	0.00078	62	0.00181	0.00282
39	0.00044	0.00078	63	0.00197	0.00301

Note: These death rates should not be compared to other published rates or used for other purposes without examining the exposure formula used in the derivation.

TABLE G3

NONRETIRED NON-SELECTED RESERVE DEATH RATES
BY AGE AND PAYGRADE

Age	Officer	Enlistee
37	0.00040	0.00080
38	0.00041	0.00081
39	0.00040	0.00082
40	0.00041	0.00083
41	0.00042	0.00084
42	0.00042	0.00078
43	0.00043	0.00073
44	0.00044	0.00073
45	0.00044	0.00077
46	0.00046	0.00087
47	0.00048	0.00102
48	0.00052	0.00117
49	0.00060	0.00127
50	0.00069	0.00132
51	0.00081	0.00140
52	0.00094	0.00157
53	0.00111	0.00180
54	0.00132	0.00205
55	0.00153	0.00230
56	0.00172	0.00267
57	0.00188	0.00316
58	0.00203	0.00361
59	0.00221	0.00381
60	0.00252	0.00397
61	0.00311	0.00458
62	0.00407	0.00601
63	0.00552	0.00844

Note: These death rates should not be compared to other published rates or used for other purposes without examining the exposure formula used in the derivation.

TABLE G4

SELECTED RESERVE

NONDISABILITY RETIREMENT RATES

BY AGE AND PAYGRADE

Entry Age	Officer	Enlistee
39	0.001	0.001
40	0.001	0.002
41	0.001	0.001
42	0.001	0.002
43	0.002	0.002
44	0.004	0.003
45	0.004	0.003
46	0.003	0.003
47	0.004	0.003
48	0.004	0.004
49	0.004	0.004
50	0.006	0.004
51	0.006	0.004
52	0.010	0.003
53	0.011	0.004
54	0.015	0.004
55	0.013	0.007
56	0.025	0.011
57	0.048	0.023
58	0.060	0.076
59	0.275	0.397
60	0.462	0.813
61	0.234	0.515
62	0.317	0.660
>62	0.162	0.389

Note: Rates show the probability that a member retires during the fiscal year, and were developed solely by age and paygrade.

TABLE G5

NON-SELECTED RESERVE WITH 20 GOOD YEARS
NONDISABILITY RETIREMENT RATES
BY AGE AND PAYGRADE

Entry Age	Officer	Enlistee
40	0.000	0.000
41	0.001	0.000
42	0.000	0.000
43	0.002	0.000
44	0.002	0.000
45	0.001	0.000
46	0.001	0.000
47	0.001	0.000
48	0.001	0.000
49	0.001	0.000
50	0.002	0.006
51	0.002	0.000
52	0.002	0.000
53	0.004	0.000
54	0.007	0.001
55	0.011	0.001
56	0.019	0.004
57	0.032	0.008
58	0.054	0.023
59	0.457	0.399
60	0.906	0.850
61	0.382	0.284
62	0.234	0.133
>62	0.081	0.053

Note: Rates show the probability that a member retires during the
fiscal year, and were developed solely by age and paygrade.

TABLE G6

DISTRIBUTION OF SELECTED RESERVE NEW ENTRANTS
BY AGE AND PAYGRADE

Entry Age	Officer	Enlistee	Total
17	0.00000	0.02172	0.02172
18	0.00000	0.20382	0.20382
19	0.00000	0.23865	0.23865
20	0.00009	0.14100	0.14108
21	0.00012	0.08618	0.08629
22	0.00156	0.05648	0.05803
23	0.00359	0.04285	0.04645
24	0.00219	0.03462	0.03681
25	0.00119	0.02815	0.02935
26	0.00111	0.02354	0.02466
27	0.00116	0.01951	0.02067
28	0.00105	0.01674	0.01779
29	0.00124	0.01386	0.01510
30	0.00132	0.01068	0.01200
31	0.00119	0.00902	0.01022
32	0.00124	0.00764	0.00888
33	0.00111	0.00663	0.00774
34	0.00099	0.00617	0.00716
35	0.00096	0.00598	0.00694
36	0.00080	0.00313	0.00393
37	0.00094	0.00178	0.00271
38	0.00000	0.00000	0.00000
39	0.00000	0.00000	0.00000
40	0.00000	0.00000	0.00000
Total	0.02185	0.97815	1.00000

Note: New Entrant distribution (for a normal cost valuation), where a new entrant is
defined as: a part-time Selected Reserve on the file as of year-end, who was not in that
status in the prior year, and who has zero completed PEBD years of service. Rates
create an age scatter of the new entrant cohort.

TABLE G7

SELECTED RESERVE DISABILITY RETIREMENT RATES
BY DISABILITY TYPE AND PAYGRADE

PEBD Years of Service	Permanent		Temporary	
	Officer	Enlistee	Officer	Enlistee
Under 1	0.00055	0.00011	0.00010	0.00008
1	0.00055	0.00016	0.00010	0.00010
2	0.00055	0.00024	0.00010	0.00011
3	0.00055	0.00036	0.00010	0.00013
4	0.00055	0.00054	0.00010	0.00016
5	0.00068	0.00082	0.00010	0.00021
6	0.00084	0.00124	0.00010	0.00028
7	0.00100	0.00183	0.00019	0.00036
8	0.00117	0.00257	0.00026	0.00044
9	0.00131	0.00336	0.00030	0.00053
10	0.00144	0.00406	0.00032	0.00060
11	0.00156	0.00459	0.00032	0.00067
12	0.00167	0.00495	0.00033	0.00074
13	0.00179	0.00522	0.00033	0.00080
14	0.00192	0.00546	0.00036	0.00087
15	0.00207	0.00574	0.00039	0.00093
16	0.00225	0.00608	0.00043	0.00100
17	0.00247	0.00650	0.00048	0.00107
18	0.00272	0.00703	0.00053	0.00114
19	0.00301	0.00770	0.00057	0.00121
20	0.00331	0.00843	0.00060	0.00127
21	0.00361	0.00913	0.00063	0.00132
22	0.00388	0.00966	0.00065	0.00135
23	0.00409	0.00989	0.00066	0.00135
24	0.00424	0.00984	0.00067	0.00133
25	0.00435	0.00961	0.00068	0.00131
26	0.00441	0.00933	0.00072	0.00131
27	0.00447	0.00911	0.00076	0.00132
28	0.00454	0.00898	0.00082	0.00135
29	0.00467	0.00894	0.00088	0.00137
30	0.00487	0.00895	0.00092	0.00137
31	0.00516	0.00898	0.00095	0.00135
32	0.00555	0.00903	0.00097	0.00132
33	0.00602	0.00910	0.00096	0.00128
34	0.00660	0.00921	0.00094	0.00128
35	0.00727	0.00940	0.00090	0.00128
36	0.00803	0.00968	0.00084	0.00128
37	0.00803	0.01006	0.00084	0.00128
38	0.00803	0.01055	0.00084	0.00128
39	0.00803	0.01111	0.00084	0.00128
40	0.00803	0.01173	0.00084	0.00128

Note: Rates represent the probability that a member receives a disability retirement during the fiscal year.

TABLE G8

NON-SELECTED RESERVE
WITH 20 GOOD YEARS
NONDISABILITY RETIREMENT RATIOS
BY AGE AND PAYGRADE

Age	Officer	Enlistee
55	0.000	0.000
56	0.000	0.000
57	0.000	0.000
58	0.000	0.000
59	1.031	1.072
60	1.054	1.091
61	1.443	2.609
62	2.870	6.591
>62	2.313	5.818

Note: These "blow-up" factors or "loads" are applied to the nondisabled retirement rates for non-Selected Reserves to account for each year's new grey area retirees that were not present in the prior year's grey area reserve data file.

APPENDIX H

RETIREE AND SURVIVOR DECREMENT RATES

RETIREE AND SURVIVOR DECREMENT RATES

Military retiree decrement rates are used to predict death, "other" losses from retiree status, and rates of transfer from temporary disability to permanent disability. With respect to the MERHCF valuation, the "other" losses consist of returns to active duty or civilian life from temporary disability (additional "other loss" categories used in the military retirement valuation are not relevant to retiree medical benefit eligibility). These rates were developed using age nearest birthday for officers and enlistees separately, and were further subdivided by three types of retirement: nondisability, temporary disability, and permanent disability. For temporary disability retirees, select rates were created for each of the first three years of retirement. After three years, those who are still in the temporary disability status are transferred to a permanent disability status[1].

The data for the rates was taken from the Defense Manpower Data Center Retiree and Survivor Files as of September 30 for the years 2007 through 2018. These files were created by the Finance Centers of the military services (consolidated under the Defense Finance and Accounting Service), which have responsibility for sending monthly annuity payments to military retirees. A military retiree can be in "paid status" or "nonpaid status." Nonpaid status indicates that a retiree has an entitlement to an annuity, but the annuity is fully offset. Retirees who terminate from paid status during a fiscal year are on the retiree file at the end of that fiscal year with a termination code indicating the type of termination. For purposes of the MERHCF valuation, paid status is not relevant. The retiree need only be eligible for Medicare Part A and monthly annuity payments (even if fully offset) in order to have medical benefits paid from the MERHCF.

The rate development process begins by matching two consecutive fiscal year-end files by Social Security number. Cases no longer in paid status are categorized by type of loss. Cases returned to paid status (from non-paid status at the start of the year) are subtracted from a given type of loss. After following the above procedures, crude rates are created using the formulas given on page H-4. These rates are smoothed using the Whittaker-Henderson type B ("Method B") graduation, or by fitting a polynomial to the crude rates. Where there is reason to suspect valid discontinuities in the underlying rates, those segments are not smoothed. A summary of the years on which various rates are based is provided in the Table H1.

Retiree and survivor rates are shown in Tables H2 through H7. In Tables H2 and H3, the nondisability death rates (updated in the September 30, 2014, valuation) include death rates that can be as high as 2 due to the use of a central death rate formula.

Death rates for permanent disability retirees, shown in Tables H2 and H3, use an experience period from FY 2014 to FY 2016. In addition, the updated death rates are based on all disability retiree data, including retirees in a nonpaid status[2]. Disability retirees in nonpaid status (i.e., with a full VA offset) tend to have higher mortality.

For Table H6, it is important to note that the MERHCF valuation does not apply divorce rates but does apply remarriage rates. Since former spouses can continue their medical benefit eligibility

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[1] The 2017 NDAA (P.L. 114-328, Sec 525) reduced the maximum duration on the Temporary Disability Retired List (TDRL) from five years to three years, effective January 1, 2017. Anyone placed on TDRL before January 1, 2017 is grandfathered under the five-year maximum duration plan.
[2] Development of death rates for disability retirees for the Military Retirement Fund excludes disability retirees in a nonpaid status.

even if the retiree remarries, divorce does not change the benefit promise to an eligible former spouse. Remarriage rates for survivors are relevant because a survivor loses benefit eligibility upon remarriage (excluded in this experience is remarriage to another military spouse). Survivor remarriage and death rates were updated in the September 30, 2016, valuation, using an experience period from FY 2014 to FY 2015. A detailed description of the benefit eligibility requirements for survivors and former spouses is contained in Appendix A.

Tables H8 and H9 contain the expected "spouse per sponsor" ratios at each sponsor age in order to properly generate a projection of surviving spouses. Spouse per sponsor ratios are determined by comparing the sum of spouses and eligible former spouses to the number of sponsors at each sponsor age. The spouse per sponsor ratios are based on FY 2018 data.

RETIREE AND SURVIVOR DECREMENT RATE FORMULAS

DEATH OF NONDISABILITY RETIREES (by age nearest birthday)

$$\frac{Nondisability\ deaths\ during\ the\ year}{[Number\ at\ beginning\ of\ year - \frac{1}{2} \times (Nondisability\ deaths + Other\ losses)]}$$

DEATH OF PERMANENT DISABILITY RETIREES (by age nearest birthday)

$$\frac{Permanent\ disability\ deaths\ during\ the\ year^{3}}{[Number\ at\ beginning\ of\ year - \frac{1}{2} \times (Permanent\ disability\ deaths + Other\ losses)]}$$

DEATH OF TEMPORARY DISABILITY RETIREES (by age nearest birthday and years retired)

$$\frac{Temporary\ disability\ deaths\ during\ the\ year^{4}}{[Number\ at\ beginning\ of\ year - \frac{1}{2} \times (Deaths + Transfers + Other\ losses)]}$$

OTHER LOSSES FROM TEMPORARY DISABILITY (by age nearest birthday and years retired)

$$\frac{Losses\ other\ than\ death\ or\ transfers\ to\ permanent\ disability\ during\ the\ year}{Number\ at\ beginning\ of\ year}$$

TRANSFER FROM TEMPORARY TO PERMANENT DISABILITY
(by age nearest birthday and years retired)

$$\frac{Transfers\ to\ permanent\ disability\ during\ the\ year}{Number\ at\ beginning\ of\ year}$$

REMARRIAGE OF SURVIVING SPOUSE (by age nearest birthday)

$$\frac{Surviving\ spouse\ remarriages\ during\ the\ year}{Number\ at\ beginning\ of\ year}$$

DEATH OF SURVIVING SPOUSE (by age nearest birthday)

$$\frac{Surviving\ spouse\ deaths\ during\ the\ year}{Number\ at\ beginning\ of\ year}$$

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[3] Includes only the deaths of members who had permanent disability status at the beginning of the year.
[4] Includes deaths of members who had temporary disability status at the beginning of the year, then transferred to permanent disability, and later died before the end of the year. Determined for each year of temporary disability retirement.

TABLE H1

SUMMARY OF FISCAL YEARS ON WHICH RETIREE AND SURVIVOR RATES ARE BASED

	2007 - 2009	2010	2011	2012	2014	2015	2016	2018
DEATH RATES								
ND Officer		X	X	X				
ND Enlistee		X	X	X				
PD Officer					X	X	X	
PD Enlistee					X	X	X	
TD Officer	X	X						
TD Enlistee	X	X						
OTHER LOSS RATES								
TD Officer	X	X						
TD Enlistee	X	X						
TRANSFER RATES FROM TD TO PD								
Officer	X	X						
Enlistee	X	X						
SURVIVOR RATES								
Remarriage					X	X	X	
Survivor Death					X	X	X	
SPOUSES GENERATED PER SPONSOR								
Officer								X
Enlistee								X

ND = Nondisabled
PD = Permanently Disabled
TD = Temporarily Disabled

TABLE H2

RETIRED OFFICER DEATH RATES

| Age | Non-Disability | | Permanent Disability | Temporary Disability | | |
| | | | | Year of Retirement | | |
	Active	Reserve		One	Two	Three
16	0.00028	0.00032	0.00334	0.00939	0.00890	0.00841
17	0.00028	0.00032	0.00334	0.00939	0.00890	0.00841
18	0.00028	0.00032	0.00334	0.00939	0.00890	0.00841
19	0.00028	0.00032	0.00334	0.00939	0.00890	0.00841
20	0.00028	0.00032	0.00334	0.00939	0.00890	0.00841
21	0.00028	0.00032	0.00334	0.00939	0.00890	0.00841
22	0.00028	0.00032	0.00334	0.00939	0.00890	0.00841
23	0.00028	0.00032	0.00334	0.00939	0.00890	0.00841
24	0.00028	0.00032	0.00335	0.00939	0.00890	0.00841
25	0.00028	0.00032	0.00335	0.00939	0.00890	0.00841
26	0.00028	0.00032	0.00335	0.00939	0.00890	0.00841
27	0.00028	0.00032	0.00335	0.00939	0.00890	0.00841
28	0.00028	0.00032	0.00335	0.00939	0.00890	0.00841
29	0.00028	0.00032	0.00335	0.00939	0.00890	0.00841
30	0.00028	0.00032	0.00335	0.00939	0.00890	0.00841
31	0.00030	0.00034	0.00335	0.00939	0.00890	0.00841
32	0.00031	0.00037	0.00335	0.00939	0.00890	0.00841
33	0.00033	0.00040	0.00335	0.00939	0.00890	0.00841
34	0.00034	0.00042	0.00335	0.00939	0.00890	0.00841
35	0.00035	0.00046	0.00289	0.00939	0.00890	0.00841
36	0.00037	0.00049	0.00289	0.00939	0.00890	0.00841
37	0.00038	0.00053	0.00289	0.00939	0.00890	0.00841
38	0.00040	0.00056	0.00289	0.00939	0.00890	0.00841
39	0.00042	0.00061	0.00289	0.00939	0.00890	0.00841
40	0.00043	0.00065	0.00281	0.00939	0.00890	0.00841
41	0.00046	0.00070	0.00281	0.00939	0.00890	0.00841
42	0.00048	0.00075	0.00281	0.00939	0.00890	0.00841
43	0.00050	0.00081	0.00281	0.00939	0.00890	0.00841
44	0.00052	0.00087	0.00281	0.00939	0.00890	0.00841
45	0.00054	0.00094	0.00342	0.00939	0.00890	0.00841
46	0.00057	0.00102	0.00333	0.00939	0.00890	0.00841
47	0.00060	0.00109	0.00329	0.00939	0.00890	0.00841
48	0.00066	0.00117	0.00331	0.00939	0.00890	0.00841
49	0.00074	0.00126	0.00338	0.00939	0.00890	0.00841
50	0.00083	0.00135	0.00350	0.00939	0.00890	0.00841
51	0.00093	0.00145	0.00368	0.00939	0.00890	0.00841
52	0.00106	0.00156	0.00394	0.00939	0.00890	0.00841
53	0.00120	0.00167	0.00426	0.00939	0.00890	0.00841
54	0.00135	0.00180	0.00465	0.00939	0.00890	0.00841
55	0.00152	0.00193	0.00510	0.00939	0.00890	0.00841
56	0.00171	0.00207	0.00563	0.00939	0.00890	0.00841
57	0.00193	0.00222	0.00622	0.00939	0.00890	0.00841
58	0.00216	0.00238	0.00689	0.00939	0.00890	0.00841
59	0.00243	0.00256	0.00762	0.00939	0.00890	0.00841
60	0.00273	0.00275	0.00843	0.00939	0.00890	0.00841
61	0.00308	0.00303	0.00931	0.00939	0.00890	0.00841

TABLE H2 (CONT'D)

RETIRED OFFICER DEATH RATES

	Non-Disability		Permanent Disability	Temporary Disability Year of Retirement		
Age	Active	Reserve		One	Two	Three
62	0.00347	0.00341	0.01027	0.00939	0.00890	0.00841
63	0.00393	0.00386	0.01131	0.00939	0.00890	0.00841
64	0.00446	0.00441	0.01244	0.00939	0.00890	0.00841
65	0.00507	0.00503	0.01366	0.00939	0.00890	0.00841
66	0.00576	0.00573	0.01499			
67	0.00656	0.00654	0.01645			
68	0.00747	0.00744	0.01806			
69	0.00853	0.00846	0.01983			
70	0.00974	0.00962	0.02182			
71	0.01115	0.01093	0.02404			
72	0.01279	0.01245	0.02656			
73	0.01470	0.01419	0.02940			
74	0.01692	0.01621	0.03264			
75	0.01950	0.01856	0.03631			
76	0.02250	0.02131	0.04047			
77	0.02595	0.02454	0.04520			
78	0.02995	0.02832	0.05054			
79	0.03455	0.03277	0.05656			
80	0.03984	0.03797	0.06335			
81	0.04594	0.04405	0.07097			
82	0.05294	0.05112	0.07952			
83	0.06097	0.05928	0.08907			
84	0.07017	0.06867	0.09972			
85	0.08065	0.07937	0.11155			
86	0.09257	0.09147	0.12464			
87	0.10604	0.10504	0.13905			
88	0.12121	0.12012	0.15486			
89	0.13821	0.13672	0.17213			
90	0.15715	0.15483	0.19090			
91	0.17814	0.17444	0.21123			
92	0.20128	0.19552	0.23314			
93	0.22670	0.21807	0.25670			
94	0.25453	0.24210	0.28192			
95	0.28492	0.26761	0.30884			
96	0.31804	0.29461	0.33746			
97	0.35752	0.32710	0.36783			
98	0.40586	0.36766	0.39999			
99	0.46467	0.41761	0.43395			
100	0.53476	0.47736	0.46974			
101	0.61641	0.54182	0.50490			
102	0.69255	0.61293	0.54309			
103	0.77349	0.68944	0.58380			
104	0.85780	0.77003	0.62719			
105	0.94444	0.85393	0.67339			
106	1.03295	0.94202	0.72307			
107	1.12561	1.03552	0.77647			
108	1.22111	1.13325	0.83382			
109	1.31794	1.23396	0.89540			
110	1.41632	1.33581	0.96152			

TABLE H3

RETIRED ENLISTEE DEATH RATES

Age	Non-Disability Active	Non-Disability Reserve	Permanent Disability	Temporary Disability Year of Retirement One	Temporary Disability Year of Retirement Two	Temporary Disability Year of Retirement Three
16	0.00049	0.00043	0.00078	0.00616	0.00565	0.00514
17	0.00049	0.00043	0.00078	0.00616	0.00565	0.00514
18	0.00049	0.00043	0.00078	0.00616	0.00565	0.00514
19	0.00049	0.00042	0.00078	0.00616	0.00565	0.00514
20	0.00049	0.00042	0.00078	0.00616	0.00565	0.00514
21	0.00049	0.00042	0.00078	0.00616	0.00565	0.00514
22	0.00049	0.00042	0.00079	0.00616	0.00565	0.00514
23	0.00049	0.00042	0.00159	0.00616	0.00565	0.00514
24	0.00049	0.00042	0.00164	0.00616	0.00565	0.00514
25	0.00049	0.00042	0.00169	0.00616	0.00565	0.00514
26	0.00049	0.00042	0.00174	0.00616	0.00565	0.00514
27	0.00049	0.00042	0.00178	0.00616	0.00565	0.00514
28	0.00049	0.00042	0.00183	0.00616	0.00565	0.00514
29	0.00049	0.00042	0.00188	0.00616	0.00565	0.00514
30	0.00049	0.00042	0.00193	0.00616	0.00565	0.00514
31	0.00052	0.00046	0.00199	0.00616	0.00565	0.00514
32	0.00056	0.00050	0.00204	0.00616	0.00565	0.00514
33	0.00060	0.00055	0.00211	0.00616	0.00565	0.00514
34	0.00065	0.00060	0.00218	0.00616	0.00565	0.00514
35	0.00070	0.00065	0.00226	0.00616	0.00565	0.00514
36	0.00075	0.00071	0.00234	0.00616	0.00565	0.00514
37	0.00081	0.00077	0.00243	0.00616	0.00565	0.00514
38	0.00087	0.00084	0.00253	0.00616	0.00565	0.00514
39	0.00093	0.00092	0.00264	0.00616	0.00565	0.00514
40	0.00100	0.00100	0.00276	0.00616	0.00565	0.00514
41	0.00105	0.00109	0.00289	0.00616	0.00565	0.00514
42	0.00111	0.00119	0.00304	0.00616	0.00565	0.00514
43	0.00116	0.00130	0.00321	0.00616	0.00565	0.00514
44	0.00122	0.00141	0.00341	0.00616	0.00565	0.00514
45	0.00128	0.00154	0.00365	0.00616	0.00565	0.00514
46	0.00135	0.00168	0.00394	0.00616	0.00565	0.00514
47	0.00144	0.00183	0.00430	0.00616	0.00565	0.00514
48	0.00156	0.00200	0.00472	0.00616	0.00565	0.00514
49	0.00170	0.00217	0.00523	0.00616	0.00565	0.00514
50	0.00188	0.00236	0.00583	0.00616	0.00565	0.00514
51	0.00209	0.00258	0.00654	0.00616	0.00565	0.00514
52	0.00233	0.00281	0.00735	0.00616	0.00565	0.00514
53	0.00260	0.00306	0.00828	0.00616	0.00565	0.00514
54	0.00291	0.00333	0.00931	0.00616	0.00565	0.00514
55	0.00327	0.00363	0.01044	0.00616	0.00565	0.00514
56	0.00367	0.00395	0.01166	0.00616	0.00565	0.00514
57	0.00413	0.00430	0.01295	0.00616	0.00565	0.00514
58	0.00468	0.00468	0.01429	0.00616	0.00565	0.00514
59	0.00531	0.00510	0.01567	0.00616	0.00565	0.00514
60	0.00605	0.00555	0.01706	0.00616	0.00565	0.00514
61	0.00691	0.00607	0.01846	0.00616	0.00565	0.00514

TABLE H3 (CONT'D)

RETIRED ENLISTEE DEATH RATES

Age	Non-Disability Active	Non-Disability Reserve	Permanent Disability	Temporary Disability Year of Retirement One	Temporary Disability Year of Retirement Two	Temporary Disability Year of Retirement Three
62	0.00789	0.00671	0.01987	0.00616	0.00565	0.00514
63	0.00903	0.00747	0.02130	0.00616	0.00565	0.00514
64	0.01032	0.00837	0.02278	0.00616	0.00565	0.00514
65	0.01178	0.00938	0.02435	0.00616	0.00565	0.00514
66	0.01342	0.01054	0.02607			
67	0.01527	0.01183	0.02801			
68	0.01732	0.01328	0.03024			
69	0.01961	0.01490	0.03283			
70	0.02216	0.01670	0.03581			
71	0.02501	0.01872	0.03921			
72	0.02817	0.02100	0.04303			
73	0.03167	0.02356	0.04728			
74	0.03552	0.02646	0.05194			
75	0.03971	0.02976	0.05702			
76	0.04424	0.03352	0.06254			
77	0.04917	0.03782	0.06852			
78	0.05454	0.04276	0.07500			
79	0.06040	0.04839	0.08200			
80	0.06684	0.05478	0.08957			
81	0.07395	0.06199	0.09775			
82	0.08180	0.07009	0.10660			
83	0.09049	0.07913	0.11618			
84	0.10015	0.08921	0.12656			
85	0.11093	0.10038	0.13778			
86	0.12294	0.11276	0.14988			
87	0.13636	0.12640	0.16286			
88	0.15131	0.14135	0.17673			
89	0.16794	0.15767	0.19149			
90	0.18643	0.17539	0.20711			
91	0.20697	0.19457	0.22362			
92	0.22974	0.21522	0.24100			
93	0.25494	0.23741	0.25928			
94	0.28283	0.26115	0.27848			
95	0.31366	0.28649	0.29862			
96	0.34770	0.31342	0.31972			
97	0.38810	0.34597	0.34183			
98	0.43709	0.38655	0.36496			
99	0.49600	0.43625	0.38913			
100	0.54423	0.49512	0.41435			
101	0.59692	0.55848	0.44840			
102	0.65278	0.62767	0.48492			
103	0.71051	0.70129	0.52412			
104	0.77009	0.77806	0.56617			
105	0.83112	0.85776	0.61161			
106	0.89399	0.94077	0.66076			
107	0.95988	1.02861	0.71391			
108	1.02840	1.12034	0.77133			
109	1.09901	1.21481	0.83337			
110	1.17681	1.31049	0.90040			

TABLE H4

NONDEATH, NONTRANSFER LOSS RATES FROM TEMPORARY DISABILITY

	OFFICER			ENLISTEE		
	Year of Retirement			Year of Retirement		
Age	One	Two	Three	One	Two	Three
16	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
17	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
18	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
19	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
20	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
21	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
22	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
23	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
24	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
25	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
26	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
27	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
28	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
29	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
30	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
31	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
32	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
33	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
34	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
35	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
36	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
37	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
38	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
39	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
40	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
41	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
42	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
43	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
44	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
45	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
46	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
47	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
48	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
49	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
50	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
51	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
52	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
53	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
54	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
55	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
56	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
57	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
58	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
59	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
60	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
61	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
62	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
63	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
64	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248
65	0.02640	0.08809	0.48679	0.17395	0.24334	0.82248

TABLE H5

TRANSFER RATES FROM TEMPORARY DISABILITY TO PERMANENT DISABILITY

	OFFICER Year of Retirement		ENLISTEE Year of Retirement	
Age	One	Two	One	Two
16	0.12808	0.17399	0.06262	0.09470
17	0.12808	0.17399	0.06262	0.09470
18	0.12808	0.17399	0.06262	0.09470
19	0.12808	0.17399	0.06262	0.09470
20	0.12808	0.17399	0.06262	0.09470
21	0.12808	0.17399	0.06262	0.09470
22	0.12808	0.17399	0.06262	0.09470
23	0.12808	0.17399	0.06262	0.09470
24	0.12808	0.17399	0.06262	0.09470
25	0.12808	0.17399	0.06262	0.09470
26	0.12808	0.17399	0.06262	0.09470
27	0.12808	0.17399	0.06262	0.09470
28	0.12808	0.17399	0.06262	0.09470
29	0.12808	0.17399	0.06262	0.09470
30	0.12808	0.17399	0.06262	0.09470
31	0.12808	0.17399	0.06262	0.09470
32	0.12808	0.17399	0.06262	0.09470
33	0.12808	0.17399	0.06262	0.09470
34	0.12808	0.17399	0.06262	0.09470
35	0.12808	0.17399	0.06262	0.09470
36	0.12808	0.17399	0.06262	0.09470
37	0.12808	0.17399	0.06262	0.09470
38	0.12808	0.17399	0.06262	0.09470
39	0.12808	0.17399	0.06262	0.09470
40	0.12808	0.17399	0.06262	0.09470
41	0.12808	0.17399	0.06262	0.09470
42	0.12808	0.17399	0.06262	0.09470
43	0.12808	0.17399	0.06262	0.09470
44	0.12808	0.17399	0.06262	0.09470
45	0.12808	0.17399	0.06262	0.09470
46	0.12808	0.17399	0.06262	0.09470
47	0.12808	0.17399	0.06262	0.09470
48	0.12808	0.17399	0.06262	0.09470
49	0.12808	0.17399	0.06262	0.09470
50	0.12808	0.17399	0.06262	0.09470
51	0.12808	0.17399	0.06262	0.09470
52	0.12808	0.17399	0.06262	0.09470
53	0.12808	0.17399	0.06262	0.09470
54	0.12808	0.17399	0.06262	0.09470
55	0.12808	0.17399	0.06262	0.09470
56	0.12808	0.17399	0.06262	0.09470
57	0.12808	0.17399	0.06262	0.09470
58	0.12808	0.17399	0.06262	0.09470
59	0.12808	0.17399	0.06262	0.09470
60	0.12808	0.17399	0.06262	0.09470
61	0.12808	0.17399	0.06262	0.09470
62	0.12808	0.17399	0.06262	0.09470
63	0.12808	0.17399	0.06262	0.09470
64	0.12808	0.17399	0.06262	0.09470
65	0.12808	0.17399	0.06262	0.09470

TABLE H6

SURVIVOR REMARRIAGE RATES

Age	Rate	Age	Rate
16	0.0100	41	0.0160
17	0.0100	42	0.0160
18	0.0100	43	0.0160
19	0.0100	44	0.0160
20	0.0100	45	0.0125
21	0.0100	46	0.0125
22	0.0100	47	0.0125
23	0.0100	48	0.0125
24	0.0100	49	0.0125
25	0.0100	50	0.0088
26	0.0100	51	0.0088
27	0.0100	52	0.0088
28	0.0100	53	0.0088
29	0.0100	54	0.0075
30	0.0260	55	0.0064
31	0.0260	56	0.0054
32	0.0260	57	0.0046
33	0.0260	58	0.0039
34	0.0260	59	0.0033
35	0.0135	60	0.0028
36	0.0135	61	0.0024
37	0.0135	62	0.0020
38	0.0135	63	0.0017
39	0.0135	64	0.0015
40	0.0160	65	0.0013

TABLE H7

SURVIVOR DEATH RATES

Age	Rate	Age	Rate	Age	Rate
0	0.00587	40	0.00176	80	0.04383
1	0.00035	41	0.00191	81	0.04864
2	0.00023	42	0.00208	82	0.05413
3	0.00018	43	0.00227	83	0.06038
4	0.00014	44	0.00250	84	0.06747
5	0.00013	45	0.00274	85	0.07547
6	0.00011	46	0.00301	86	0.08445
7	0.00010	47	0.00330	87	0.09444
8	0.00009	48	0.00362	88	0.10552
9	0.00008	49	0.00397	89	0.11772
10	0.00007	50	0.00435	90	0.13109
11	0.00007	51	0.00475	91	0.14565
12	0.00010	52	0.00516	92	0.16145
13	0.00013	53	0.00555	93	0.17850
14	0.00016	54	0.00596	94	0.19683
15	0.00020	55	0.00641	95	0.21645
16	0.00024	56	0.00690	96	0.23733
17	0.00028	57	0.00739	97	0.25951
18	0.00041	58	0.00788	98	0.28297
19	0.00046	59	0.00802	99	0.30771
20	0.00051	60	0.00832	100	0.33374
21	0.00056	61	0.00877	101	0.36139
22	0.00061	62	0.00936	102	0.39037
23	0.00065	63	0.01010	103	0.42070
24	0.00067	64	0.01098	104	0.45239
25	0.00070	65	0.01199	105	0.48542
26	0.00073	66	0.01311	106	0.50950
27	0.00077	67	0.01435	107	0.53478
28	0.00081	68	0.01568	108	0.56131
29	0.00086	69	0.01709	109	0.58916
30	0.00091	70	0.01859		
31	0.00096	71	0.02017		
32	0.00102	72	0.02184		
33	0.00109	73	0.02363		
34	0.00116	74	0.02557		
35	0.00124	75	0.02771		
36	0.00132	76	0.03012		
37	0.00142	77	0.03287		
38	0.00152	78	0.03602		
39	0.00164	79	0.03965		

TABLE H8

SPOUSES GENERATED PER OFFICER SPONSOR

Age	Active Nondisabled	Reserve Nondisabled	Active & Reserve Disabled	Age	Active Nondisabled	Reserve Nondisabled	Active & Reserve Disabled
16	N/A	N/A	0.00032	64	0.85571	0.73530	0.65932
17	N/A	N/A	0.00076	65	0.85807	0.74854	0.66613
18	N/A	N/A	0.00178	66	0.86022	0.75991	0.67446
19	N/A	N/A	0.00418	67	0.86211	0.76966	0.68407
20	N/A	N/A	0.00982	68	0.86366	0.77795	0.69462
21	N/A	N/A	0.02308	69	0.86480	0.78490	0.70568
22	N/A	N/A	0.05428	70	0.86545	0.79059	0.71677
23	N/A	N/A	0.12761	71	0.86553	0.79507	0.72741
24	N/A	N/A	0.19566	72	0.86493	0.79836	0.73716
25	N/A	N/A	0.25842	73	0.86359	0.80051	0.74561
26	N/A	N/A	0.31588	74	0.86139	0.80154	0.75246
27	N/A	N/A	0.36803	75	0.85827	0.80149	0.75748
28	N/A	N/A	0.41487	76	0.85413	0.80035	0.76056
29	N/A	N/A	0.45645	77	0.84889	0.79810	0.76163
30	0.61708	N/A	0.49416	78	0.84249	0.79466	0.76065
31	0.65613	N/A	0.52800	79	0.83486	0.78993	0.75760
32	0.68906	N/A	0.55800	80	0.82592	0.78374	0.75243
33	0.71627	N/A	0.58420	81	0.81564	0.77594	0.74508
34	0.73823	N/A	0.60671	82	0.80395	0.76636	0.73548
35	0.75552	N/A	0.62572	83	0.79083	0.75484	0.72352
36	0.76874	N/A	0.64149	84	0.77622	0.74122	0.70907
37	0.77849	N/A	0.65438	85	0.76011	0.72536	0.69203
38	0.78535	N/A	0.66477	86	0.74248	0.70716	0.67232
39	0.78811	N/A	0.67307	87	0.72329	0.68651	0.64990
40	0.79087	N/A	0.67965	88	0.70254	0.66335	0.62477
41	0.79361	N/A	0.68485	89	0.68022	0.63759	0.59700
42	0.79634	N/A	0.68891	90	0.65633	0.60921	0.56666
43	0.79907	N/A	0.69202	91	0.63084	0.57817	0.53383
44	0.80179	N/A	0.69430	92	0.60377	0.54446	0.49858
45	0.80449	N/A	0.69579	93	0.57511	0.50806	0.46095
46	0.80720	N/A	0.69649	94	0.54486	0.46899	0.42098
47	0.80989	N/A	0.69634	95	0.51302	0.42723	0.37867
48	0.81258	N/A	0.69528	96	0.47958	0.38280	0.34549
49	0.81527	N/A	0.69327	97	0.44456	0.34833	0.31383
50	0.81795	N/A	0.69031	98	0.41541	0.31545	0.28455
51	0.82063	N/A	0.68649	99	0.38718	0.28512	0.25870
52	0.82332	N/A	0.68198	100	0.36053	0.25845	0.23492
53	0.82602	N/A	0.67697	101	0.33621	0.23397	0.21331
54	0.82872	N/A	0.67170	102	0.31332	0.21179	0.19377
55	0.83144	N/A	0.66639	103	0.29197	0.19181	0.17597
56	0.83417	N/A	0.66133	104	0.27215	0.17366	0.15981
57	0.83691	N/A	0.65681	105	0.25364	0.15724	0.14515
58	0.83966	N/A	0.65308	106	0.23638	0.14237	0.13183
59	0.84241	0.63352	0.65041	107	0.22031	0.12891	0.11972
60	0.84517	0.65911	0.64902	108	0.20533	0.11672	0.10874
61	0.84790	0.68201	0.64909	109	0.19137	0.10568	0.09875
62	0.85058	0.70225	0.65078	110	0.17836	0.09569	0.08969
63	0.85320	0.71995	0.65419				

Note: "N/A," or "not applicable," appears at ages for which retiree medical coverage eligibility is not available.

TABLE H9

SPOUSES GENERATED PER ENLISTEE SPONSOR

Age	Active Nondisabled	Reserve Nondisabled	Active & Reserve Disabled	Age	Active Nondisabled	Reserve Nondisabled	Active & Reserve Disabled
16	N/A	N/A	0.00043	64	0.77625	0.72181	0.59945
17	N/A	N/A	0.00229	65	0.77922	0.73163	0.60353
18	N/A	N/A	0.01216	66	0.78261	0.74006	0.60898
19	N/A	N/A	0.06456	67	0.78629	0.74715	0.61550
20	N/A	N/A	0.12950	68	0.79009	0.75290	0.62275
21	N/A	N/A	0.19227	69	0.79377	0.75727	0.63033
22	N/A	N/A	0.25122	70	0.79707	0.76023	0.63788
23	N/A	N/A	0.30637	71	0.79969	0.76178	0.64503
24	N/A	N/A	0.35770	72	0.80138	0.76192	0.65144
25	N/A	N/A	0.40522	73	0.80190	0.76074	0.65683
26	N/A	N/A	0.44893	74	0.80108	0.75833	0.66100
27	N/A	N/A	0.48883	75	0.79878	0.75478	0.66374
28	N/A	N/A	0.52495	76	0.79491	0.75015	0.66492
29	N/A	N/A	0.55731	77	0.78940	0.74448	0.66443
30	0.63229	N/A	0.58599	78	0.78217	0.73773	0.66217
31	0.65046	N/A	0.61109	79	0.77320	0.72981	0.65808
32	0.66612	N/A	0.63275	80	0.76242	0.72061	0.65212
33	0.67854	N/A	0.65116	81	0.74981	0.70995	0.64425
34	0.68856	N/A	0.66651	82	0.73532	0.69767	0.63444
35	0.69696	N/A	0.67905	83	0.71893	0.68360	0.62269
36	0.70475	N/A	0.68904	84	0.70064	0.66758	0.60900
37	0.71086	N/A	0.69677	85	0.68050	0.64947	0.59338
38	0.71256	N/A	0.70251	86	0.65857	0.62916	0.57584
39	0.71464	N/A	0.70652	87	0.63492	0.60658	0.55638
40	0.71711	N/A	0.70904	88	0.60965	0.58164	0.53501
41	0.71996	N/A	0.71026	89	0.58287	0.55432	0.51172
42	0.72318	N/A	0.71033	90	0.55465	0.52460	0.48653
43	0.72673	N/A	0.70935	91	0.52510	0.49247	0.45942
44	0.73056	N/A	0.70739	92	0.49426	0.45793	0.43041
45	0.73459	N/A	0.70448	93	0.46218	0.42097	0.39948
46	0.73875	N/A	0.70064	94	0.42888	0.38159	0.37408
47	0.74293	N/A	0.69589	95	0.39438	0.33978	0.34931
48	0.74704	N/A	0.69026	96	0.35867	0.29556	0.32583
49	0.75096	N/A	0.68378	97	0.32176	0.26269	0.30443
50	0.75458	N/A	0.67654	98	0.29236	0.23195	0.28422
51	0.75781	N/A	0.66862	99	0.26460	0.20423	0.26534
52	0.76056	N/A	0.66016	100	0.23909	0.18055	0.24779
53	0.76278	N/A	0.65134	101	0.21656	0.15934	0.23136
54	0.76446	N/A	0.64235	102	0.19594	0.14060	0.21602
55	0.76565	N/A	0.63344	103	0.17727	0.12414	0.20170
56	0.76646	N/A	0.62489	104	0.16044	0.10957	0.18833
57	0.76703	N/A	0.61697	105	0.14518	0.09671	0.17585
58	0.76755	N/A	0.60999	106	0.13137	0.08538	0.16419
59	0.76816	0.64724	0.60421	107	0.11888	0.07536	0.15331
60	0.76900	0.66595	0.59987	108	0.10758	0.06652	0.14315
61	0.77016	0.68269	0.59715	109	0.09735	0.05872	0.13366
62	0.77173	0.69750	0.59616	110	0.08809	0.05183	0.12480
63	0.77375	0.71049	0.59694				

Note: "N/A," or "not applicable," appears at ages for which retiree medical coverage eligibility is not available.

APPENDIX I

GLOSSARY

TERM / ACRONYM	DEFINITION
AL	Actuarial Accrued Liability or Actuarial liability; present value of future retirement benefits attributed to past service.
All Uniformed	Refers to the population containing DoD, Coast Guard (CG), Public Health Service (PHS), and National Oceanic and Atmospheric Administration (NOAA).
CAPER	Comprehensive Ambulatory Provider Encounter Record; workload measure for Direct Care Outpatient services.
CMS	Center for Medicare and Medicaid Services
CPI	Consumer Price Index, or a scale that shows the annual change (trend) in prices for a market basket of goods and services. For the MERHCF valuation, CPI-U (CPI for all urban consumers) is used.
CV	Claim Vector (a.k.a. Claims Age Grading); an array of average costs by age. CVs for USFHP contain average capitation rates or global rates costs by age.
DC	Direct Care; care received at a military treatment facility (MTF).
DEERS	Defense Enrollment Eligibility Reporting System; system that stores demographic and benefit information on military members, their dependents and survivors.
DHA	Defense Health Agency; a component of the Military Health System (MHS), and responsible for shared services, functions, and activities of the MHS and other common clinical and business processes. Prior to October 1, 2013, these activities were managed by TRICARE Management Activity (TMA).
DIEUS	Date of Initial Entry to Uniformed Services.
Direct Care	Medical care received at an MTF.
Discount Rate	The single interest rate that is used to discount all projected benefit payments back to the actuarial valuation date; the rate used to compute the present value of future benefit plan payments. For the MERHCF valuation, set equal to the assumed long term rate of return on Fund investments, which are restricted to US Treasury securities.
DoD	U.S. Department of Defense
Endstrength	Count of military sponsors, usually as of the end of the month or year, unless an average endstrength is defined over a specified period.

TERM / ACRONYM	DEFINITION
FY	Fiscal Year; October 1–September 30.
FYE	Fiscal Year End
Global Rate	A capitated rate, paid monthly, for each covered plan member; one rate (varies by gender and age group) that covers the full cost of providing care provided under USFHP.
HA	Health Affairs; component of Military Health System; partner with Defense Health Agency (DHA).
HORGO	Name of population projection model for the health valuation; health version of GORGO, OACT's population projection program for the Military Retirement Fund.
ID	Identification
IDES	Integrated Disability Evaluation System; method of evaluating disabilities; used by both DoD and the VA, employing the same rating criteria.
ING	Inactive National Guard
IRR	Individual Ready Reserve
MERHCF	Medicare-Eligible Retiree Health Care Fund, or Fund
MRF	Military Retirement Fund (holds assets and disburses funds for military retiree pay)
MTF	Military Treatment Facility; located on or near a military base. Direct care services are provided at MTFs.
NC	Normal Cost; determined on a per capita basis, and multiplied by expected average annual strength to determine annual contribution to the MERHCF for the annual accrual cost.
NDAA	National Defense Authorization Act
Nominal interest rate	Real interest rate adjusted for inflation
Non-Selected Reserves with 20 good years	Reservists who are not in the Selected Reserve and who have completed 20 "good" (or creditable) years toward retirement, but who have not yet reached retirement age. To be eligible for a reserve retirement, one needs 20 qualified years of service commonly known as "good years." In order to complete a "good year", a member of the reserves needs to accumulate at least 50 points per year. Points can be earned as follows: • 365 points for a year of active duty • 15 points for being a member of the reserves

TERM / ACRONYM	DEFINITION
	• 1 point for each Unit Training Assembly (UTA or "drill") period attended • 1 point for each Additional Flight Training Period (AFTP) • 1 point for each day of active duty orders • 1 point for each Inactive Duty Period • 1 point for every 3 credit hours earned upon completion of an accredited correspondence course
Non-USFHP	All TRICARE programs or members other than USFHP or other than members enrolled in USFHP.
OACT	DoD Office of the Actuary (unless stated otherwise)
PC	Purchased Care; care received in civilian settings.
PCM	Primary Care Manager (plan feature of TRICARE Prime)
PCP	Primary Care Provider (plan feature of USFHP)
PEBD	Pay Entry Base Date; set as the initial service or hire date, and adjusted for each break in service. The PEBD is used to determine position on the pay table.
Purchased Care	Medical care received in a commercial setting (not in an MTF).
PVB	Present Value of Future Benefits; also called PVFB.
PVFB	Present Value of Future Benefits; also called PVB.
PVFNC	Present Value of Future Normal Costs
Real interest rate	The difference between the nominal interest rate and CPI; real rate of growth.
RWP	Relative Weighted Product; workload measure for Direct Care Inpatient services.
Selected Reserves	Reserve units and individuals actively participating in training and/or drilling activities who typically must complete 48 drills plus two weeks of annual training each year. Selected Reservists are the first to be activated.
Strength	Military service member head counts (or count of sponsors)
TFL	TRICARE For Life, the medical plan offered to retired members and their eligible spouses, dependents and survivors who are eligible for Medicare.
TRR	TRICARE Retired Reserve, the medical program offered on a nonsubsidized basis to members of the retired Reserve who are under age 60 (i.e., qualified for non-regular retirement) and not

TERM / ACRONYM	DEFINITION
	eligible for the Federal Employees Health benefits (FEHB) program.
TYA	TRICARE Young Adult, the medical program offered on a nonsubsidized basis to unmarried children under age 26 who do not satisfy the eligibility conditions for subsidized TRICARE coverage and who do not have access to employer sponsored health care coverage.
U.S.C.	United States Code; the general and permanent laws of the United States. Published by the Office of the Law Revision Counsel of the U.S. House of Representatives.
UFL	Unfunded Liability; AL minus Assets.
USFHP	US Family Health Plan; a TRICARE medical plan with a managed care design (like TRICARE Prime). USFHP serves Uniformed Services families. Enrollment is required for participation in the plan, and members must reside within the provider service area. Unlike other TRICARE plans, this plan does not coordinate with Medicare (Medicare is not primary payer).
Val	Valuation