



LIFE AND ACCIDENT AND HEALTH COMPANIES/FRATERNAL BENEFIT SOCIETIES - ASSOCIATION EDITION - SEPARATE ACCOUNTS

ANNUAL STATEMENT

FOR THE YEAR ENDED DECEMBER 31, 2022

OF THE CONDITION AND AFFAIRS OF THE SEPARATE ACCOUNTS OF THE

Massachusetts Mutual Life Insurance Company

NAIC Group Code 0435 0435 NAIC Company Code 65935 Employer's ID Number 04-1590850
(Current) (Prior)

Organized under the Laws of Massachusetts, State of Domicile or Port of Entry MA

Country of Domicile United States of America

Type of Separate Accounts Insulated [] Non-Insulated []

Incorporated/Organized 05/15/1851 Commenced Business 08/01/1851

Statutory Home Office 1295 State Street, Springfield, MA, US 01111
(Street and Number) (City or Town, State, Country and Zip Code)

Main Administrative Office 1295 State Street
(Street and Number)
Springfield, MA, US 01111 413-788-8411
(City or Town, State, Country and Zip Code) (Area Code) (Telephone Number)

Mail Address 1295 State Street, Springfield, MA, US 01111
(Street and Number or P.O. Box) (City or Town, State, Country and Zip Code)

Primary Location of Books and Records 1295 State Street
(Street and Number)
Springfield, MA, US 01111 413-788-8411
(City or Town, State, Country and Zip Code) (Area Code) (Telephone Number)

Internet Website Address www.massmutual.com

Statutory Statement Contact Yin Wang, 617-695-4071
(Name) (Area Code) (Telephone Number)
YWang67@massmutual.com 413-226-4086
(E-mail Address) (FAX Number)

OFFICERS

President and Chief Executive Officer Roger William Crandall Treasurer Julieta Giselle Sinisgalli
Secretary Akintokunbo Akinbajo Appointed Actuary Vy Quoc Ho

OTHER

Elizabeth Ward Chicares, Chief Financial Officer Michael Robert Fanning, Head of MassMutual U.S. Melvin Timothy Corbett, Chief Investment Officer
Adnan Omar Ahmed, Head of MassMutual International Geoffrey James Craddock, Chief Risk Officer Susan Marie Cicco, Head of Human Resources & Employee Experience
Michael James O'Connor, General Counsel Sears Andrew Merritt #, Head of Enterprise Technology & Experience

DIRECTORS OR TRUSTEES

Roger William Crandall - Chairman Mark Thomas Bertolini Kathleen Ann Corbet
James Henry DeGraffenreid, Jr. Isabella Davidov Goren Jeffrey Marc Leiden
Laura Jeanne Sen William Taylor Spitz - Lead Director Howard Todd Stitzer
Michelle Kwok Lee Bernard Anthony Harris, Jr. #

State of Massachusetts SS
County of Hampden

The officers of this reporting entity being duly sworn, each depose and say that they are the described officers of said reporting entity, and that on the reporting period stated above, all of the herein described assets were the absolute property of the said reporting entity, free and clear from any liens or claims thereon, except as herein stated, and that this statement, together with related exhibits, schedules and explanations therein contained, annexed or referred to, is a full and true statement of all the assets and liabilities and of the condition and affairs of the said reporting entity as of the reporting period stated above, and of its income and deductions therefrom for the period ended, and have been completed in accordance with the NAIC Annual Statement Instructions and Accounting Practices and Procedures manual except to the extent that: (1) state law may differ; or, (2) that state rules or regulations require differences in reporting not related to accounting practices and procedures, according to the best of their information, knowledge and belief, respectively. Furthermore, the scope of this attestation by the described officers also includes the related corresponding electronic filing with the NAIC, when required, that is an exact copy (except for formatting differences due to electronic filing) of the enclosed statement. The electronic filing may be requested by various regulators in lieu of or in addition to the enclosed statement.

Roger William Crandall
President and Chief Executive Officer

Akintokunbo Akinbajo
Secretary

Julieta Giselle Sinisgalli
Treasurer

Subscribed and sworn to before me this _____ day of _____

- a. Is this an original filing? Yes [] No []
b. If no,
1. State the amendment number.....
2. Date filed
3. Number of pages attached.....

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

ASSETS

	Current Year			Prior Year
	1 General Account Basis	2 Fair Value Basis	3 Total (Cols: 1 + 2)	4 Total
1. Bonds (Schedule D).....		15,717,012,653	15,717,012,653	19,267,821,979
2. Stocks (Schedule D):				
2.1 Preferred stocks		4,500,336	4,500,336	6,423,600
2.2 Common stocks		34,832,112,984	34,832,112,984	52,410,057,461
3. Mortgage loans on real estate (Schedule B)				
4. Real estate (Schedule A):				
4.1 Properties held for the production of income (less \$ encumbrances)				
4.2 Properties held for sale (less \$ encumbrances)				
5. Cash (\$ 72,241,922 Schedule E - Part 1), and cash equivalents (\$675,551,046 , Schedule E - Part 2)		747,792,968	747,792,968	1,209,186,211
6. Short-term investments (Schedule DA)		45,729,103	45,729,103	642,235,465
7. Derivatives (Schedule DB)		203,976,103	203,976,103	32,520,533
8. Other invested assets (Schedule BA)		1,652,403,929	1,652,403,929	1,898,025,267
9. Securities lending reinvested collateral assets (Schedule DL)				
10. Aggregate write-ins for invested assets				
11. Subtotals, cash and invested assets (Lines 1 to 10)		53,203,528,076	53,203,528,076	75,466,270,516
12. Investment income due and accrued		123,864,825	123,864,825	110,353,779
13. Receivables for securities		83,952,948	83,952,948	583,208,819
14. Net adjustment in assets and liabilities due to foreign exchange rates		13	13	10,904
15. Aggregate write-ins for other than invested assets.....		2,458,796	2,458,796	5
16. Total (Lines 11 to 15)		53,413,804,658	53,413,804,658	76,159,844,023
DETAILS OF WRITE-INS				
1001.				
1002.				
1003.				
1098. Summary of remaining write-ins for Line 10 from overflow page				
1099. Totals (Lines 1001 thru 1003 plus 1098)(Line 10 above)				
1501. Miscellaneous		2,458,796	2,458,796	
1502. Foreign income tax recoverable				5
1503.				
1598. Summary of remaining write-ins for Line 15 from overflow page				
1599. Totals (Lines 1501 thru 1503 plus 1598)(Line 15 above)		2,458,796	2,458,796	5

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

LIABILITIES AND SURPLUS

	Current Year			Prior Year
	1 General Account Basis	2 Fair Value Basis	3 Total (Cols. 1 + 2)	4 Total
1. Aggregate reserve for life, annuity and accident and health contracts (Exhibit 3, Line 9999999, Col. 2)		43,509,137,894	43,509,137,894	61,605,149,415
2. Liability for deposit-type contracts (Exhibit 4, Line 9, Col. 1)		9,431,864,216	9,431,864,216	13,671,488,027
3. Interest Maintenance Reserve				
4. Charges for investment management, administration and contract guarantees due or accrued		7,044,404	7,044,404	8,293,086
5. Investment expenses due or accrued (Exhibit 1, Line 24)		47,299	47,299	472,987
6. Investment taxes, licenses and fees due or accrued, excluding federal income taxes (Exhibit 2, Line 8)				
7. Federal and foreign income taxes due or accrued (excluding deferred taxes)				
8. Reserve for future federal income taxes				
9. Unearned investment income				
10. Other transfers to general account due or accrued (net) (including \$ 62,384,049 accrued expense allowances recognized in reserves).....		62,653,062	62,653,062	94,862,150
11. Remittances and items not allocated		175,685,535	175,685,535	112,547,431
12. Derivatives		7,566,123	7,566,123	1,482,965
13. Payable for securities		90,657,584	90,657,584	518,636,607
14. Payable for securities lending				
15. Net adjustment in assets and liabilities due to foreign exchange rates				
16. Aggregate write-ins for liabilities		(1,149,592)	(1,149,592)	(562,065)
17. Total liabilities (including \$ 69,697,466 due or accrued net transfers to or (from) the general account)		53,283,506,525	53,283,506,525	76,012,370,603
18. Contributed surplus		3	3	150,000,000
19. Aggregate write-ins for special surplus funds				
20. Unassigned funds		130,298,130	130,298,130	(2,526,580)
21. Surplus (Lines 18 through 20)		130,298,133	130,298,133	147,473,420
22. Totals		53,413,804,658	53,413,804,658	76,159,844,023
DETAILS OF WRITE-INS				
1601. Derivatives accrued interest on swaps		(1,899,450)	(1,899,450)	(1,544,099)
1602. Claims in course of settlement		(152,739)	(152,739)	(64,639)
1603. Annuitant mortality fluctuation fund		902,597	902,597	1,046,673
1698. Summary of remaining write-ins for Line 16 from overflow page				
1699. Totals (Lines 1601 thru 1603 plus 1698)(Line 16 above)		(1,149,592)	(1,149,592)	(562,065)
1901.				
1902.				
1903.				
1998. Summary of remaining write-ins for Line 19 from overflow page				
1999. Totals (Lines 1901 thru 1903 plus 1998)(Line 19 above)				

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SUMMARY OF OPERATIONS

	1 Current Year	2 Prior Year
1. Transfers to Separate Accounts:		
1.1 Net premiums and annuity considerations for life and accident and health contracts	6,143,970,368	5,172,920,379
1.2 Considerations for supplementary contracts with life contingencies		
1.3 Aggregate write-ins for other transfers to Separate Accounts		
1.4 Totals (Lines 1.1 to 1.3)	6,143,970,368	5,172,920,379
2. Transfers on account of deposit-type contracts (including \$ 1,822,169,279 deposits less \$ 3,760,830,693 withdrawals)	(1,938,661,414)	(1,202,280,029)
3. Net investment income and capital gains and losses	(11,948,714,050)	7,471,951,487
4. Aggregate write-ins for other income	189,178	349,370
5. Totals (Lines 1.4 to 4)	(7,743,215,918)	11,442,941,207
DEDUCT:		
6. Transfers from the Separate Account on account of contract benefits:		
6.1 Death benefits	12,058,815	17,552,133
6.2 Matured endowments		
6.3 Annuity benefits	167,720,289	196,438,345
6.4 Payments on supplementary contracts with life contingencies		
6.5 Accident and health benefits		
6.6 Surrender benefits and withdrawals for life contracts	14,842,597,289	11,178,082,890
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits		
7. Transfers on account of policy loans	19,210,134	19,802,696
8. Net transfer of reserves from or (to) Separate Accounts	(792,160,576)	(250,142,746)
9. Other transfers from the Separate Accounts:		
9.1 Federal and foreign income taxes incurred		
9.2 Change in expense allowances recognized in reserves	(29,862,702)	(9,585,868)
9.3 Aggregate write-ins for other transfers from Separate Accounts	23,295,139	5,208,155
10. Subtotals (Lines 6.1 to 9.3)	14,242,858,388	11,157,355,605
11. Fees associated with charges for investment management, administration and contract guarantees	366,848,837	420,439,340
12. Increase in aggregate reserve for life and accident and health contracts	(18,096,011,521)	(505,922,981)
13. Increase in liability for deposit-type contracts	(4,239,623,811)	373,263,162
14. Increase in reserve for future federal income taxes		
15. Aggregate write-ins for reserves and funds	(112,521)	332,660
16. Totals (Lines 10 to 15)	(7,726,040,628)	11,445,467,786
17. Net gain from operations (including \$ (16,892,263) unrealized capital gains) (Line 5 minus Line 16)	(17,175,290)	(2,526,580)
SURPLUS ACCOUNT		
18. Surplus, December 31, prior year	147,473,420	
19. Net gain from operations (Line 17)	(17,175,290)	(2,526,580)
20. Surplus contributed or (withdrawn) during year	3	150,000,000
21. Change in reserve on account of change in valuation basis, (increase) or decrease		
22. Transfer from Separate Accounts of the change in expense allowances recognized in Line 21		
23. Aggregate write-ins for gains and losses in surplus		
24. Surplus, December 31, current year (Page 3, Line 21)	130,298,133	147,473,420
DETAILS OF WRITE-INS		
01.301.		
01.302.		
01.303.		
01.398. Summary of remaining write-ins for Line 1.3 from overflow page		
01.399. Totals (Lines 01.301 thru 01.303 plus 01.398)(Line 1.3 above)		
0401. Miscellaneous	189,178	349,370
0402.		
0403.		
0498. Summary of remaining write-ins for Line 4 from overflow page		
0499. Totals (Lines 0401 thru 0403 plus 0498)(Line 4 above)	189,178	349,370
06.701.		
06.702.		
06.703.		
06.798. Summary of remaining write-ins for Line 6.7 from overflow page		
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798)(Line 6.7 above)		
09.301. Miscellaneous	23,295,139	5,208,155
09.302.		
09.303.		
09.398. Summary of remaining write-ins for Line 9.3 from overflow page		
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398)(Line 9.3 above)	23,295,139	5,208,155
1501. Change in annuitant mortality fluctuation fund	(144,076)	206,169
1502. Claims in course of settlement	(88,100)	126,491
1503. Miscellaneous	119,655	
1598. Summary of remaining write-ins for Line 15 from overflow page		
1599. Totals (Lines 1501 thru 1503 plus 1598)(Line 15 above)	(112,521)	332,660
2301.		
2302.		
2303.		
2398. Summary of remaining write-ins for Line 23 from overflow page		
2399. Totals (Lines 2301 thru 2303 plus 2398)(Line 23 above)		

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF OPERATIONS BY LINES OF BUSINESS - SUMMARY

	1	2	3	4	5	6	7
	Total	Individual Life	Group Life	Individual Annuities	Group Annuities	Accident and Health	Other Lines of Business
1. Transfers to Separate Accounts:							
1.1 Net premiums and annuity considerations for life and accident and health contracts	6,143,970,368	67,704,092	58,883,102	199,767,954	5,817,615,220		
1.2 Considerations for supplementary contracts with life contingencies		XXX	XXX			XXX	
1.3 Aggregate write-ins for other transfers to Separate Accounts							
1.4 Totals (Lines 1.1 to 1.3)	6,143,970,368	67,704,092	58,883,102	199,767,954	5,817,615,220		
2. Transfers on account of deposit-type contracts (including \$ 1,822,169,279 deposits less \$ 3,760,830,693 withdrawals)	(1,938,661,414)			(19,802)	(1,938,641,612)		
3. Net investment income and capital gains and losses	(11,948,714,050)	(322,713,347)	(3,479,193)	(1,851,024,964)	(9,771,496,546)		
4. Aggregate write-ins for other income	189,178		49,501	139,677			
5. Totals (Lines 1.4 to 4)	(7,743,215,918)	(255,009,255)	55,453,410	(1,651,137,135)	(5,892,522,938)		
DEDUCT:							
6. Transfers from the Separate Account on account of contract benefits:							
6.1 Death benefits	12,058,815	6,909,542	5,149,273			XXX	
6.2 Matured endowments						XXX	
6.3 Annuity benefits	167,720,289	XXX	XXX	156,706,385	11,013,904	XXX	
6.4 Payments on supplementary contracts with life contingencies		XXX	XXX			XXX	
6.5 Accident and health benefits		XXX	XXX	XXX	XXX		
6.6 Surrender benefits and withdrawals for life contracts	14,842,597,289	48,723,520	3,670,911	909,842,182	13,880,360,676	XXX	
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits							
7. Transfers on account of policy loans	19,210,134	19,144,948	(571,994)	74,957	562,223	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	(792,160,576)	(11,778,270)	328,649	5,859,751	(786,570,706)		
9. Other transfers from the Separate Accounts:							
9.1 Federal and foreign income taxes incurred						XXX	
9.2 Change in expense allowances recognized in reserves	(29,862,702)	2,723,854		(32,586,556)		XXX	
9.3 Aggregate write-ins for other transfers from Separate Accounts	23,295,139	80,150		11,466	23,203,523		
10. Subtotals (Lines 6.1 to 9.3)	14,242,858,388	65,803,744	8,576,839	1,039,908,185	13,128,569,620		
11. Fees associated with charges for investment management, administration and contract guarantees	366,848,837	49,601,572	19,819,513	151,878,135	145,549,617		
12. Increase in aggregate reserve for life and accident and health contracts	(18,096,011,521)	(370,326,471)	27,057,058	(2,842,837,126)	(14,909,904,982)		
13. Increase in liability for deposit-type contracts	(4,239,623,811)			(61,908)	(4,239,561,903)	XXX	
14. Increase in reserve for future federal income taxes							
15. Aggregate write-ins for reserves and funds	(112,521)	(88,100)		(24,421)			
16. Totals (Lines 10 to 15)	(7,726,040,628)	(255,009,255)	55,453,410	(1,651,137,135)	(5,875,347,648)		
17. Net gain from operations (including \$ (16,892,263) unrealized capital gains) (Line 5 minus Line 16)	(17,175,290)				(17,175,290)		
18. Policies/certificates in force end of year	663,818	24,128	6,669	97,277	535,744		
DETAILS OF WRITE-INS							
01.301. Miscellaneous	189,178		49,501	139,677			
01.302.							
01.303.							
01.398. Summary of remaining write-ins for Line 1.3 from overflow page							
01.399. Totals (Lines 01.301 thru 01.303 plus 01.398) (Line 1.3 above)	189,178		49,501	139,677			
0401. Miscellaneous							
0402.							
0403.							
0498. Summary of remaining write-ins for Line 4 from overflow page							
0499. Totals (Lines 0401 thru 0403 plus 0498) (Line 4 above)	189,178		49,501	139,677			
06.701.							
06.702.							
06.703.							
06.798. Summary of remaining write-ins for Line 6.7 from overflow page							
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798) (Line 6.7 above)							
09.301. Miscellaneous	23,295,139	80,150		11,466	23,203,523		
09.302.							
09.303.							
09.398. Summary of remaining write-ins for Line 9.3 from overflow page							
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398) (Line 9.3 above)	23,295,139	80,150		11,466	23,203,523		
1501. Change in annuitant mortality fluctuation fund	(144,076)			(144,076)			
1502. Claims in course of settlement	(88,100)	(88,100)					
1503. Miscellaneous	119,655			119,655			
1598. Summary of remaining write-ins for Line 15 from overflow page							
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15 above)	(112,521)	(88,100)		(24,421)			

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF OPERATIONS BY LINES OF BUSINESS - INDIVIDUAL LIFE INSURANCE (b)

	1	2	3	4	5	6	7	8	9	10	11
	Total	Industrial Life	Whole Life	Term Life	Indexed Life	Universal Life	Universal Life with Secondary Guarantees	Variable Life	Variable Universal Life	Credit Life (N/A Fraternal)	Other Individual Life
1. Transfers to Separate Accounts:											
1.1 Net premiums for life contracts (a)	67,704,092	XXX						32,649	67,671,443	XXX	
1.2 Considerations for supplementary contracts with life contingencies	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
1.3 Aggregate write-ins for other transfers to Separate Accounts		XXX							XXX	XXX	
1.4 Totals (Lines 1.1 to 1.3)	67,704,092	XXX						32,649	67,671,443	XXX	
2. Transfers on account of deposit-type contracts (including \$ deposits less \$ withdrawals)		XXX								XXX	
3. Net investment income and capital gains and losses	(322,713,347)	XXX						(230,896)	(322,482,451)	XXX	
4. Aggregate write-ins for other income		XXX								XXX	
5. Totals (Lines 1.4 to 4)	(255,009,255)	XXX						(198,247)	(254,811,008)	XXX	
DEDUCT:											
6. Transfers from the Separate Account on account of contract benefits:											
6.1 Death benefits	6,909,542	XXX							6,909,542	XXX	
6.2 Matured endowments		XXX								XXX	
6.3 Annuity benefits	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.4 Payments on supplementary contracts with life contingencies	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.5 Accident and health benefits	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.6 Surrender benefits and withdrawals for life contracts	48,723,520	XXX						129,425	48,594,095	XXX	
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits		XXX								XXX	
7. Transfers on account of policy loans	19,144,948	XXX						(56,927)	19,201,875	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	(11,778,270)	XXX							(11,778,270)	XXX	
9. Other transfers from the Separate Accounts:											
9.1 Federal and foreign income taxes incurred		XXX								XXX	
9.2 Change in expense allowances recognized in reserves	2,723,854	XXX							2,723,854	XXX	
9.3 Aggregate write-ins for other transfers from Separate Accounts	80,150	XXX							80,150	XXX	
10. Subtotals (Lines 6.1 to 9.3)	65,803,744	XXX						72,498	65,731,246	XXX	
11. Fees associated with charges for investment management, administration and contract guarantees	49,601,572	XXX						14,868	49,586,704	XXX	
12. Increase in aggregate reserve for life and accident and health contracts	(370,326,471)	XXX						(285,613)	(370,040,858)	XXX	
13. Increase in liability for deposit-type contracts		XXX								XXX	
14. Increase in reserve for future federal income taxes		XXX								XXX	
15. Aggregate write-ins for reserves and funds	(88,100)	XXX							(88,100)	XXX	
16. Totals (Lines 10 to 15)	(255,009,255)	XXX						(198,247)	(254,811,008)	XXX	
17. Net gain from operations (including \$ unrealized capital gains) (Line 5 minus Line 16)		XXX								XXX	
18. Policies/certificates in force end of year	24,128	XXX						23	24,105	XXX	
DETAILS OF WRITE-INS											
01.301.		XXX								XXX	
01.302.		XXX								XXX	
01.303.		XXX								XXX	
01.398. Summary of remaining write-ins for Line 1.3 from overflow page		XXX								XXX	
01.399. Totals (Lines 01.301 thru 01.303 plus 01.398) (Line 1.3 above)		XXX								XXX	
0401.		XXX								XXX	
0402.		XXX								XXX	
0403.		XXX								XXX	
0498. Summary of remaining write-ins for Line 4 from overflow page		XXX								XXX	
0499. Totals (Lines 0401 thru 0403 plus 0498) (Line 4 above)		XXX								XXX	
06.701.		XXX								XXX	
06.702.		XXX								XXX	
06.703.		XXX								XXX	
06.798. Summary of remaining write-ins for Line 6.7 from overflow page		XXX								XXX	
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798) (Line 6.7 above)		XXX								XXX	
09.301. Miscellaneous	80,150	XXX							80,150	XXX	
09.302.		XXX								XXX	
09.303.		XXX								XXX	
09.398. Summary of remaining write-ins for Line 9.3 from overflow page		XXX								XXX	
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398) (Line 9.3 above)	80,150	XXX							80,150	XXX	
1501. Claims in Course of Settlement	(88,100)	XXX							(88,100)	XXX	
1502.		XXX								XXX	
1503.		XXX								XXX	
1598. Summary of remaining write-ins for Line 15 from overflow page		XXX								XXX	
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15 above)	(88,100)	XXX							(88,100)	XXX	

(a) Include premium amounts for preneed plans included in Line 1

(b) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF OPERATIONS BY LINES OF BUSINESS - GROUP LIFE INSURANCE (c)
(N/A Fraternal)

	1	2	3	4	5	6	7	8
	Total	Whole Life	Term Life	Universal Life	Variable Life	Variable Universal Life	Credit Life	Other Group Life (a)
1. Transfers to Separate Accounts:								
1.1 Net premiums for life contracts (b)	58,883,102					58,883,102	XXX	
1.2 Considerations for supplementary contracts with life contingencies	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
1.3 Aggregate write-ins for other transfers to Separate Accounts							XXX	
1.4 Totals (Lines 1.1 to 1.3)	58,883,102					58,883,102	XXX	
2. Transfers on account of deposit-type contracts (including \$ deposits less \$ withdrawals)							XXX	
3. Net investment income and capital gains and losses	(3,479,193)					(3,479,193)	XXX	
4. Aggregate write-ins for other income	49,501					49,501	XXX	
5. Totals (Lines 1.4 to 4)	55,453,410					55,453,410	XXX	
DEDUCT:								
6. Transfers from the Separate Account on account of contract benefits:								
6.1 Death benefits	5,149,273					5,149,273	XXX	
6.2 Matured endowments							XXX	
6.3 Annuity benefits	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.4 Payments on supplementary contracts with life contingencies	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.5 Accident and health benefits	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.6 Surrender benefits and withdrawals for life contracts	3,670,911					3,670,911	XXX	
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits							XXX	
7. Transfers on account of policy loans	(571,994)					(571,994)	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	328,649					328,649	XXX	
9. Other transfers from the Separate Accounts:								
9.1 Federal and foreign income taxes incurred							XXX	
9.2 Change in expense allowances recognized in reserves							XXX	
9.3 Aggregate write-ins for other transfers from Separate Accounts							XXX	
10. Subtotals (Lines 6.1 to 9.3)	8,576,839					8,576,839	XXX	
11. Fees associated with charges for investment management, administration and contract guarantees	19,819,513					19,819,513	XXX	
12. Increase in aggregate reserve for life and accident and health contracts	27,057,058					27,057,058	XXX	
13. Increase in liability for deposit-type contracts							XXX	
14. Increase in reserve for future federal income taxes							XXX	
15. Aggregate write-ins for reserves and funds							XXX	
16. Totals (Lines 10 to 15)	55,453,410					55,453,410	XXX	
17. Net gain from operations (including \$ unrealized capital gains) (Line 5 minus Line 16)							XXX	
18. Policies/certificates in force end of year	6,669					6,669	XXX	
DETAILS OF WRITE-INS								
01.301.							XXX	
01.302.							XXX	
01.303.							XXX	
01.398. Summary of remaining write-ins for Line 1.3 from overflow page							XXX	
01.399. Totals (Lines 01.301 thru 01.303 plus 01.398) (Line 1.3 above)							XXX	
0401. Miscellaneous	49,501					49,501	XXX	
0402.							XXX	
0403.							XXX	
0498. Summary of remaining write-ins for Line 4 from overflow page							XXX	
0499. Totals (Lines 0401 thru 0403 plus 0498) (Line 4 above)	49,501					49,501	XXX	
06.701.							XXX	
06.702.							XXX	
06.703.							XXX	
06.798. Summary of remaining write-ins for Line 6.7 from overflow page							XXX	
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798) (Line 6.7 above)							XXX	
09.301.							XXX	
09.302.							XXX	
09.303.							XXX	
09.398. Summary of remaining write-ins for Line 9.3 from overflow page							XXX	
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398) (Line 9.3 above)							XXX	
1501.							XXX	
1502.							XXX	
1503.							XXX	
1598. Summary of remaining write-ins for Line 15 from overflow page							XXX	
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15 above)							XXX	

(a) Includes the following amounts for FEGLI/SGLI: Line 1 , Line 10 , Line 16 , Line 23 , Line 24

(b) Include premium amounts for preneed plans included in Line 1

(c) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF OPERATIONS BY LINES OF BUSINESS - INDIVIDUAL ANNUITIES (a)

	1 Total	Deferred			6 Life Contingent Payout (Immediate and Annuityizations)	7 Other Annuities
		2 Fixed Annuities	3 Indexed Annuities	4 Variable Annuities With Guarantees			5 Variable Annuities Without Guarantees
1. Transfers to Separate Accounts:						
1.1 Net annuity considerations for annuity contracts	199,767,954			199,675,905	92,049	
1.2 Considerations for supplementary contracts with life contingencies		XXX	XXX	XXX	XXX	XXX
1.3 Aggregate write-ins for other transfers to Separate Accounts						
1.4 Totals (Lines 1.1 to 1.3)	199,767,954			199,675,905	92,049	
2. Transfers on account of deposit-type contracts (including \$ deposits less \$ withdrawals)	(19,802)			(19,802)		
3. Net investment income and capital gains and losses	(1,851,024,964)			(1,817,639,704)	(21,720,654)	(11,664,606)
4. Aggregate write-ins for other income	139,677			139,677		
5. Totals (Lines 1.4 to 4)	(1,651,137,135)			(1,617,843,924)	(21,628,605)	(11,664,606)
DEDUCT:						
6. Transfers from the Separate Account on account of contract benefits:						
6.1 Death benefits						
6.2 Matured endowments						
6.3 Annuity benefits	156,706,385			148,356,977	3,070,475	5,278,933
6.4 Payments on supplementary contracts with life contingencies		XXX	XXX	XXX	XXX	XXX
6.5 Accident and health benefits	XXX	XXX	XXX	XXX	XXX	XXX
6.6 Surrender benefits and withdrawals for life contracts	909,842,182			903,713,410	6,018,649	110,123
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits						
7. Transfers on account of policy loans	74,957			74,957		
8. Net transfer of reserves from or (to) Separate Accounts	5,859,751			5,565,940	31,532	262,279
9. Other transfers from the Separate Accounts:						
9.1 Federal and foreign income taxes incurred						
9.2 Change in expense allowances recognized in reserves	(32,586,556)			(32,581,956)	(4,600)	
9.3 Aggregate write-ins for other transfers from Separate Accounts	11,466				11,391	75
10. Subtotals (Lines 6.1 to 9.3)	1,039,908,185			1,025,129,328	9,127,447	5,651,410
11. Fees associated with charges for investment management, administration and contract guarantees	151,878,135			151,320,363	711,097	(153,325)
12. Increase in aggregate reserve for life and accident and health contracts	(2,842,837,126)			(2,794,221,779)	(31,452,656)	(17,162,691)
13. Increase in liability for deposit-type contracts	(61,908)			(61,908)		
14. Increase in reserve for future federal income taxes						
15. Aggregate write-ins for reserves and funds	(24,421)			(9,928)	(14,493)	
16. Totals (Lines 10 to 15)	(1,651,137,135)			(1,617,843,924)	(21,628,605)	(11,664,606)
17. Net gain from operations (including \$ unrealized capital gains) (Line 5 minus Line 16)						
18. Policies/certificates in force end of year	97,277			95,332	1,375	570
DETAILS OF WRITE-INS						
01.301. Miscellaneous	139,677			139,677		
0401. Miscellaneous						
0402. Miscellaneous						
0403. Miscellaneous						
0498. Summary of remaining write-ins for Line 4 from overflow page						
0499. Totals (Lines 0401 thru 0403 plus 0498) (Line 4 above)	139,677			139,677		
06.701. Miscellaneous						
06.702. Miscellaneous						
06.703. Miscellaneous						
06.798. Summary of remaining write-ins for Line 6.7 from overflow page						
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798) (Line 6.7 above)						
09.301. Miscellaneous	11,466				11,391	75
09.302. Miscellaneous						
09.303. Miscellaneous						
09.398. Summary of remaining write-ins for Line 9.3 from overflow page						
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398) (Line 9.3 above)	11,466				11,391	75
1501. Change in annuitant mortality fluctuation fund	(144,076)			(129,583)	(14,493)	
1502. Miscellaneous	119,655			119,655		
1503. Miscellaneous						
1598. Summary of remaining write-ins for Line 15 from overflow page						
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15 above)	(24,421)			(9,928)	(14,493)	

(a) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF OPERATIONS BY LINES OF BUSINESS - GROUP ANNUITIES (a)
(N/A Fraternal)

	1 Total	Deferred				6 Life Contingent Payout (Immediate and Annuityizations)	7 Other Annuities
		2 Fixed Annuities	3 Indexed Annuities	4 Variable Annuities With Guarantees	5 Variable Annuities Without Guarantees		
1. Transfers to Separate Accounts:							
1.1 Net annuity considerations for annuity contracts	5,817,615,220			3,666,162,925	2,151,452,295		
1.2 Considerations for supplementary contracts with life contingencies		XXX	XXX	XXX	XXX		XXX
1.3 Aggregate write-ins for other transfers to Separate Accounts							
1.4 Totals (Lines 1.1 to 1.3)	5,817,615,220			3,666,162,925	2,151,452,295		
2. Transfers on account of deposit-type contracts (including \$ 1,822,169,279 deposits less \$ 3,760,810,891 withdrawals)	(1,938,641,612)				(1,938,641,612)		
3. Net investment income and capital gains and losses	(9,771,496,546)			(2,283,913,475)	(7,487,583,071)		
4. Aggregate write-ins for other income							
5. Totals (Lines 1.4 to 4)	(5,892,522,938)			1,382,249,450	(7,274,772,388)		
DEDUCT:							
6. Transfers from the Separate Account on account of contract benefits:							
6.1 Death benefits							
6.2 Matured endowments	11,013,904			33,345	10,980,559		
6.3 Annuity benefits							
6.4 Payments on supplementary contracts with life contingencies		XXX	XXX	XXX	XXX		XXX
6.5 Accident and health benefits	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.6 Surrender benefits and withdrawals for life contracts	13,880,360,676			693,625,854	13,186,734,822		
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits							
7. Transfers on account of policy loans	562,223				562,223		
8. Net transfer of reserves from or (to) Separate Accounts	(786,570,706)			2,595,187,677	(3,381,758,383)		
9. Other transfers from the Separate Accounts:							
9.1 Federal and foreign income taxes incurred							
9.2 Change in expense allowances recognized in reserves							
9.3 Aggregate write-ins for other transfers from Separate Accounts	23,203,523			2,622,677	20,580,846		
10. Subtotals (Lines 6.1 to 9.3)	13,128,569,620			3,291,469,553	9,837,100,067		
11. Fees associated with charges for investment management, administration and contract guarantees	145,549,617			82,617,705	62,931,912		
12. Increase in aggregate reserve for life and accident and health contracts	(14,909,904,982)			(1,974,662,518)	(12,935,242,464)		
13. Increase in liability for deposit-type contracts	(4,239,561,903)				(4,239,561,903)		
14. Increase in reserve for future federal income taxes							
15. Aggregate write-ins for reserves and funds							
16. Totals (Lines 10 to 15)	(5,875,347,648)			1,399,424,740	(7,274,772,388)		
17. Net gain from operations (including \$ 16,892,263 unrealized capital gains) (Line 5 minus Line 16)	(17,175,290)			(17,175,290)			
18. Policies/certificates in force end of year	535,744			261,543	274,201		
DETAILS OF WRITE-INS							
01.301.							
01.302.							
01.303.							
01.398. Summary of remaining write-ins for Line 1.3 from overflow page							
01.399. Totals (Lines 01.301 thru 01.303 plus 01.398) (Line 1.3 above)							
0401.							
0402.							
0403.							
0498. Summary of remaining write-ins for Line 4 from overflow page							
0499. Totals (Lines 0401 thru 0403 plus 0498) (Line 4 above)							
06.701.							
06.702.							
06.703.							
06.798. Summary of remaining write-ins for Line 6.7 from overflow page							
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798) (Line 6.7 above)							
09.301. Miscellaneous	23,203,523			2,622,677	20,580,846		
09.302.							
09.303.							
09.398. Summary of remaining write-ins for Line 9.3 from overflow page							
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398) (Line 9.3 above)	23,203,523			2,622,677	20,580,846		
1501.							
1502.							
1503.							
1598. Summary of remaining write-ins for Line 15 from overflow page							
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15 above)							

(a) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF OPERATIONS BY LINES OF BUSINESS - ACCIDENT AND HEALTH (a)

	1 Total	Comprehensive (Hospital & Medical)		4 Medicare Supplement	5 Vision Only	6 Dental Only	7 Federal Employees Health Benefits Plan	8 Title XVIII Medicare	9 Title XIX Medicaid	10 Credit A&H	11 Disability Income	12 Long-Term Care	13 Other Health
		2 Individual	3 Group										
1. Transfers to Separate Accounts:													
1.1 Net Premiums for accident and health contracts													
1.2 Considerations for supplementary contracts with life contingencies	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
1.3 Aggregate write-ins for other transfers to Separate Accounts													
1.4 Totals (Lines 1.1 to 1.3)													
2. Transfers on account of deposit-type contracts (including \$ deposits less \$ withdrawals)													
3. Net investment income and capital gains and losses													
4. Aggregate write-ins for other income													
5. Totals (Lines 1.4 to 4)													
DEDUCT:													
6. Transfers from the Separate Account on account of contract benefits:													
6.1 Death benefits	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.2 Matured endowments	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.3 Annuity benefits	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.4 Payments on supplementary contracts with life contingencies	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.5 Accident and health benefits													
6.6 Surrender benefits and withdrawals for life contracts	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits													
7. Transfers on account of policy loans	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
8. Net transfer of reserves from or (to) Separate Accounts													
9. Other transfers from the Separate Accounts:													
9.1 Federal and foreign income taxes incurred	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
9.2 Change in expense allowances recognized in reserves	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
9.3 Aggregate write-ins for other transfers from Separate Accounts													
10. Subtotals (Lines 6.1 to 9.3)													
11. Fees associated with charges for investment management, administration and contract guarantees													
12. Increase in aggregate reserve for life and accident and health contracts	XXX	XXX		XXX		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
13. Increase in liability for deposit-type contracts													
14. Increase in reserve for future federal income taxes													
15. Aggregate write-ins for reserves and funds													
16. Totals (Lines 10 to 15)													
17. Net gain from operations (including \$ unrealized capital gains) (Line 5 minus Line 16)													
18. Policies/certificates in force end of year													
DETAILS OF WRITE-INS													
01.301.													
01.302.													
01.303.													
01.398. Summary of remaining write-ins for Line 1.3 from overflow page													
01.399. Totals (Lines 01.301 thru 01.303 plus 01.398) (Line 1.3 above)													
0401.													
0402.													
0403.													
0498. Summary of remaining write-ins for Line 4 from overflow page													
0499. Totals (Lines 0401 thru 0403 plus 0498) (Line 4 above)													
06.701.													
06.702.													
06.703.													
06.798. Summary of remaining write-ins for Line 6.7 from overflow page													
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798) (Line 6.7 above)													
09.301.													
09.302.													
09.303.													
09.398. Summary of remaining write-ins for Line 9.3 from overflow page													
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398) (Line 9.3 above)													
1501.													
1502.													
1503.													
1598. Summary of remaining write-ins for Line 15 from overflow page													
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15 above)													

NONE

(a) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

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ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

ANALYSIS OF INCREASE IN RESERVES DURING THE YEAR - INDIVIDUAL LIFE INSURANCE (a)

	1	2	3	4	5	6	7	8	9	10	11
	Total	Industrial Life	Whole Life	Term Life	Indexed Life	Universal Life	Universal Life With Secondary Guarantees	Variable Life	Variable Universal Life	Credit Life (N/A Fraternal)	Other Individual Life
1. Reserve December 31 of prior year	1,649,835,356	XXX						2,459,158	1,647,376,198	XXX	
2. Tabular net premiums and considerations for annuities and supplementary contracts with life contingencies	67,704,091	XXX						32,649	67,671,442	XXX	
3. Increase or (decrease) from investment results after provision for federal income taxes	(322,713,347)	XXX						(230,896)	(322,482,451)	XXX	
4. Tabular less actual reserve released		XXX								XXX	
5. Increase in reserve on account of change in valuation basis		XXX								XXX	
5.1 Change in excess of VM-20 deterministic/stochastic reserve over net premium reserve		XXX								XXX	
6. Other increases (net)	(80,149)	XXX						1	(80,150)	XXX	
7. Totals (Lines 1 to 6)	1,394,745,951	XXX						2,260,912	1,392,485,039	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	(11,778,270)	XXX							(11,778,270)	XXX	
9. Tabular cost	42,800,133	XXX						4,868	42,795,265	XXX	
10. Reserves released by death	6,909,542	XXX							6,909,542	XXX	
11. Reserves released by other terminations (net)	48,723,519	XXX						129,424	48,594,095	XXX	
12. Transfers on account of annuity and supplementary contract payments involving life contingencies	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
13. Charges for investment management, administration and contract guarantees	6,801,438	XXX						10,000	6,791,438	XXX	
14. Aggregate write-ins for other decreases in reserves	21,780,702	XXX						(56,927)	21,837,629	XXX	
15. Total deductions (Lines 8 to 14)	115,237,064	XXX						87,365	115,149,699	XXX	
16. Reserve December 31 of current year	1,279,508,887	XXX						2,173,547	1,277,335,340	XXX	
Cash Surrender Value and Policy Loans											
17. CSV ending balance December 31, current year	1,261,325,968	XXX						1,363,366	1,259,962,602	XXX	
18. Amount available for policy loans based upon Line 17 CSV	1,009,060,775	XXX						1,090,693	1,007,970,082	XXX	
DETAILS OF WRITE-INS											
1401. Change in policy loans	19,144,948	XXX						(56,927)	19,201,875	XXX	
1402. Change in surrender charge offset	2,723,854	XXX							2,723,854	XXX	
1403. Claims in course of settlement	(88,100)	XXX							(88,100)	XXX	
1498. Summary of remaining write-ins for Line 14 from overflow page		XXX								XXX	
1499. TOTALS (Lines 1401 thru 1403 plus 1498) (Line 14 above)	21,780,702	XXX						(56,927)	21,837,629	XXX	

(a) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF INCREASE IN RESERVES DURING THE YEAR - GROUP LIFE INSURANCE (a)
(N/A Fraternal)

	1 Total	2 Whole Life	3 Term Life	4 Universal Life	5 Variable Life	6 Variable Universal Life	7 Credit Life	8 Other Group Life
1. Reserve December 31 of prior year	1,653,902,745					1,653,902,745	XXX	
2. Tabular net premiums and considerations	58,883,102					58,883,102	XXX	
3. Increase or (decrease) from investment results after provision for federal income taxes	(3,479,193)					(3,479,193)	XXX	
4. Tabular less actual reserve released							XXX	
5. Increase in reserve on account of change in valuation basis							XXX	
6. Other increases (net)	49,501					49,501	XXX	
7. Totals (Lines 1 to 6)	1,709,356,155					1,709,356,155	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	328,650					328,650	XXX	
9. Tabular cost						XXX	XXX	
10. Reserves released by death	5,149,273					5,149,273	XXX	
11. Reserves released by other terminations (net)	3,670,911					3,670,911	XXX	
12. Transfers on account of annuity and supplementary contract payments involving life contingencies	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
13. Charges for investment management, administration and contract guarantees	19,819,513					19,819,513	XXX	
14. Aggregate write-ins for other decreases in reserves	(571,994)					(571,994)	XXX	
15. Total deductions (Lines 8 to 14)	28,396,353					28,396,353	XXX	
16. Reserve December 31 of current year	1,680,959,802					1,680,959,802	XXX	
Cash Surrender Value and Policy Loans								
17. CSV ending balance December 31, current year	1,681,236,434					1,681,236,434	XXX	
18. Amount available for policy loans based upon line 17 CSV	1,344,989,147					1,344,989,147	XXX	
DETAILS OF WRITE-INS								
1401. Change in policy loans	(571,994)					(571,994)	XXX	
1402.							XXX	
1403.							XXX	
1498. Summary of remaining write-ins for Line 14 from overflow page							XXX	
1499. TOTALS (Lines 1401 thru 1403 plus 1498) (Line 14 above)	(571,994)					(571,994)	XXX	

(a) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF INCREASE IN RESERVES DURING THE YEAR - INDIVIDUAL ANNUITIES (a)

	1 Total	Deferred				6 Life Contingent Payout (Immediate and Annuitizations)	7 Other Annuities
		2 Fixed Annuities	3 Indexed Annuities	4 Variable Annuities With Guarantees	5 Variable Annuities Without Guarantees		
1. Reserve December 31 of prior year	10,793,938,917			10,614,825,728	114,423,330	64,689,859	
2. Tabular net premiums and considerations	199,767,954			199,675,905	92,049		
3. Increase or (decrease) from investment results after provision for federal income taxes	(1,851,024,964)			(1,818,178,154)	(21,182,204)	(11,664,606)	
4. Tabular less actual reserve released							
5. Increase in reserve on account of change in valuation basis							
6. Other increases (net)	170,318			181,784	(11,391)	(75)	
7. Totals (Lines 1 to 6)	9,142,852,225			8,996,505,263	93,321,784	53,025,178	
8. Net transfer of reserves from or (to) Separate Accounts	5,859,751			5,565,940	31,532	262,279	
9. Tabular cost							
10. Reserves released by death .....	.XXX	.XXX	.XXX	.XXX	.XXX	.XXX	.XXX
11. Reserves released by other terminations (net)	909,842,184			903,871,149	5,860,912	110,123	
12. Transfers on account of annuity and supplementary contract payments involving life contingencies	156,706,385			148,597,154	2,830,297	5,278,934	
13. Charges for investment management, administration and contract guarantees	151,878,135			151,326,083	705,377	(153,325)	
14. Aggregate write-ins for other decreases in reserves	(32,536,021)			(32,518,329)	(17,692)		
15. Total deductions (Lines 8 to 14)	1,191,750,434			1,176,841,997	9,410,426	5,498,011	
16. Reserve December 31 of current year	7,951,101,791			7,819,663,266	83,911,358	47,527,167	
Cash Surrender Value and Policy Loans							
17. CSV ending balance December 31, current year	7,846,738,163			7,764,159,890	82,578,273		
18. Amount available for policy loans based upon line 17 CSV	141,840,919			141,840,919			
DETAILS OF WRITE-INS							
1401. Change in surrender charge offset	(32,586,556)			(32,581,956)	(4,600)		
1402. Change in annuitant mortality fluctuation fund	(24,423)			(11,331)	(13,092)		
1403. Change in policy loans	74,958			74,958			
1498. Summary of remaining write-ins for Line 14 from overflow page							
1499. TOTALS (Lines 1401 thru 1403 plus 1498) (Line 14 above)	(32,536,021)			(32,518,329)	(17,692)		

(a) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF INCREASE IN RESERVES DURING THE YEAR - GROUP ANNUITIES (a)
(N/A Fraternal)

	1 Total	Deferred				6 Life Contingent Payout (Immediate and Annuityizations)	7 Other Annuities
		2 Fixed Annuities	3 Indexed Annuities	4 Variable Annuities With Guarantees	5 Variable Annuities Without Guarantees		
1. Reserve December 31 of prior year	47,507,472,398			15,034,523,478	32,472,948,920		
2. Tabular net premiums and considerations	5,817,615,220			3,666,162,925	2,151,452,295		
3. Increase or (decrease) from investment results after provision for federal income taxes	(7,482,477,421)			(2,277,219,406)	(5,205,258,015)		
4. Tabular less actual reserve released							
5. Increase in reserve on account of change in valuation basis							
6. Other increases (net)	(16,509,456)			2,774,264,429	(2,790,773,885)		
7. Totals (Lines 1 to 6)	45,826,100,741			19,197,731,426	26,628,369,315		
8. Net transfer of reserves from or (to) Separate Accounts	(786,570,706)			2,595,187,677	(3,381,758,383)		
9. Tabular cost							
10. Reserves released by death	XXX	XXX	XXX	XXX	XXX	XXX	XXX
11. Reserves released by other terminations (net)	13,880,360,676			693,625,854	13,186,734,822		
12. Transfers on account of annuity and supplementary contract payments involving life contingencies	11,013,903			33,345	10,980,558		
13. Charges for investment management, administration and contract guarantees	116,473,165			82,617,705	33,855,460		
14. Aggregate write-ins for other decreases in reserves	7,256,292			6,694,069	562,223		
15. Total deductions (Lines 8 to 14)	13,228,533,330			3,378,158,650	9,850,374,680		
16. Reserve December 31 of current year	32,597,567,411			15,819,572,776	16,777,994,635		
Cash Surrender Value and Policy Loans							
17. CSV ending balance December 31, current year	32,597,567,412			12,517,622,694	20,079,944,718		
18. Amount available for policy loans based upon line 17 CSV	32,597,567,412			12,517,622,694	20,079,944,718		
DETAILS OF WRITE-INS							
1401. Change in policy loans	562,223				562,223		
1402. Miscellaneous	6,694,069			6,694,069			
1403.							
1498. Summary of remaining write-ins for Line 14 from overflow page							
1499. TOTALS (Lines 1401 thru 1403 plus 1498) (Line 14 above)	7,256,292			6,694,069	562,223		

(a) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company
ANALYSIS OF RESERVES DURING THE YEAR - ACCIDENT AND HEALTH^(a)

	1 Total	Comprehensive		4 Medicare Supplement	5 Vision Only	6 Dental Only	7 Federal Employees Health Benefits Plan	8 Title XVIII Medicare	9 Title XIX Medicaid	10 Credit A&H	11 Disability Income	12 Long-Term Care	13 Other Health
		2 Individual	3 Group										
ACTIVE LIFE RESERVE													
1. Unearned premium reserves													
2. Additional contract reserves (a)													
3. Additional actuarial reserves-Asset/Liability analysis													
4. Reserve for future contingent benefits													
5. Reserve for rate credits													
6. Aggregate write-ins for reserves													
7. Totals (Gross)													
8. Reinsurance ceded													
9. Totals (Net)													
CLAIM RESERVE													
10. Present value of amounts not yet due on claims													
11. Additional actuarial reserves-Asset/Liability analysis													
12. Reserve for future contingent benefits													
13. Aggregate write-ins for reserves													
14. Totals (Gross)													
15. Reinsurance ceded													
16. Totals (Net)													
17. TOTAL (Net)													
18. TABULAR FUND INTEREST													
DETAILS OF WRITE-INS													
0601.													
0602.													
0603.													
0698. Summary of remaining write-ins for Line 6 from overflow page													
0699. TOTALS (Lines 0601 thru 0603 plus 0698) (Line 6 above)													
1301.													
1302.													
1303.													
1398. Summary of remaining write-ins for Line 13 from overflow page													
1399. TOTALS (Lines 1301 thru 1303 plus 1398) (Line 13 above)													

NONE

(a) Indicate if blocks of business in run-off that comprise less than 5% of premiums and less than 5% of reserve and loans liability are aggregated with material blocks of business and which columns are affected.

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT OF NET INVESTMENT INCOME

	1 Collected During Year	2 Earned During Year
1. U.S. Government bonds	(a) 52,163,116	51,780,268
1.1 Bonds exempt from U.S. tax	(a)	
1.2 Other bonds (unaffiliated)	(a) 582,872,529	596,946,177
1.3 Bonds of affiliates	(a)	
2.1 Preferred stocks (unaffiliated)	(b) 273,480	273,480
2.11 Preferred stocks of affiliates	(b)	
2.2 Common stocks (unaffiliated)	3,265,497,704	3,265,396,690
2.21 Common stocks of affiliates		
3. Mortgage loans	(c)	
4. Real estate	(d)	
5. Contract loans		
6. Cash, cash equivalents and short-term investments	(e) 905,600	1,132,970
7. Derivative instruments	(f) (32,408)	16,836
8. Other invested assets		
9. Aggregate write-ins for investment income	5,317,061	5,317,061
10. Total gross investment income	3,906,997,082	3,920,863,482
11. Investment expenses		(g) 1,003,547
12. Investment taxes, licenses and fees, excluding federal income taxes		(g)
13. Interest expense		(h)
14. Depreciation on real estate and other invested assets		(i)
15. Aggregate write-ins for deductions from investment income		
16. Total deductions (Lines 11 through 15)		1,003,547
17. Net investment income (Line 10 minus Line 16)		3,919,859,935
DETAILS OF WRITE-INS		
0901. Miscellaneous	5,317,061	5,317,061
0902.		
0903.		
0998. Summary of remaining write-ins for Line 9 from overflow page		
0999. Totals (Lines 0901 thru 0903 plus 0998) (Line 9, above)	5,317,061	5,317,061
1501.		
1502.		
1503.		
1598. Summary of remaining write-ins for Line 15 from overflow page		
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15, above)		

- (a) Includes \$ 30,562,916 accrual of discount less \$ 21,066,679 amortization of premium and less \$ 39,184,010 paid for accrued interest on purchases.
- (b) Includes \$ accrual of discount less \$ amortization of premium and less \$ paid for accrued dividends on purchases.
- (c) Includes \$ accrual of discount less \$ amortization of premium and less \$ paid for accrued interest on purchases.
- (d) Includes \$ for company's occupancy of its own buildings; and excludes \$ interest on encumbrances.
- (e) Includes \$ 1,279,842 accrual of discount less \$ 518 amortization of premium and less \$ paid for accrued interest on purchases.
- (f) Includes \$ accrual of discount less \$ amortization of premium.
- (g) Includes \$ investment expenses and \$ investment taxes, licenses and fees, excluding federal income taxes, attributable to segregated and Separate Accounts.
- (h) Includes \$ interest on surplus notes and \$ interest on capital notes.
- (i) Includes \$ depreciation on real estate and \$ depreciation on other invested assets.

EXHIBIT OF CAPITAL GAINS (LOSSES)

	1	2	3	4	5
	Realized Gain (Loss) On Sales or Maturity	Other Realized Adjustments	Total Realized Capital Gain (Loss) (Columns 1 + 2)	Change in Unrealized Capital Gain (Loss)	Change in Unrealized Foreign Exchange Capital Gain (Loss)
1. U.S. Government bonds	(351,052,984)		(351,052,984)	(309,222,068)	
1.1 Bonds exempt from U.S. tax					
1.2 Other bonds (unaffiliated)	(380,753,223)	(102,598)	(380,855,821)	(2,269,647,493)	8,220
1.3 Bonds of affiliates					
2.1 Preferred stocks (unaffiliated)				(1,923,264)	
2.11 Preferred stocks of affiliates					
2.2 Common stocks (unaffiliated)	330,070,682	31,814	330,102,496	(12,720,108,790)	(494)
2.21 Common stocks of affiliates					
3. Mortgage loans					
4. Real estate					
5. Contract loans					
6. Cash, cash equivalents and short-term investments	14,698,126		14,698,126		
7. Derivative instruments	(182,248,875)	126,081	(182,122,794)	168,888,094	24,204
8. Other invested assets	9,130,468		9,130,468	(183,017,410)	
9. Aggregate write-ins for capital gains (losses)		(59,621)	(59,621)		(10,891)
10. Total capital gains (losses)	(560,155,805)	(4,324)	(560,160,129)	(15,315,030,931)	21,039
DETAILS OF WRITE-INS					
0901. Capital gain (loss) on foreign currency		(59,621)	(59,621)		(10,891)
0902.					
0903.					
0998. Summary of remaining write-ins for Line 9 from overflow page					
0999. Totals (Lines 0901 thru 0903 plus 0998) (Line 9, above)		(59,621)	(59,621)		(10,891)

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 1 - INVESTMENT EXPENSES

	1 Amount
1. Rent	
2. Salaries and wages	
3. Contributions for benefit plans for employees (a)	
4. Payments to employees under non-funded benefit plans	
5. Other employee welfare	
6. Legal fees and expenses	
7. Fees of public accountants and consulting actuaries	
8. Traveling expenses	
9. Postage, express, telegraph and telephone	
10. Printing and stationery	
11. Cost or depreciation of furniture and equipment	
12. Rental of equipment	
13. Books and periodicals	
14. Bureau and association fees	
15. Insurance, except on real estate	
16. Miscellaneous losses	
17. Collection and bank service charges	1,003,547
18. Sundry general expenses	
19. Real estate expenses	
20. Investment expenses not included elsewhere	
21. Aggregate write-ins for other investment expenses	
22. Investment expenses incurred	1,003,547
Reconciliation with Exhibit 5	
23. Investment expenses unpaid December 31, prior year	475,167
24. Investment expenses unpaid December 31, current year	47,299
25. Investment expenses paid during year (Lines 22 + 23 - 24) (to Exhibit 5, Line 12)	1,431,415
DETAILS OF WRITE-INS	
2101.	
2102.	
2103.	
2198. Summary of remaining write-ins for Line 21 from overflow page	
2199. Totals (Lines 2101 thru 2103 plus 2198) (Line 21 above)	

(a) Includes \$ on account of prior service.

**EXHIBIT 2 - INVESTMENT TAXES, LICENSES AND FEES
(EXCLUDING FEDERAL INCOME TAXES)**

	1 Amount
1. Real estate taxes	
2. State insurance department fees	
3. Other state taxes, including \$ for employee benefits	
4. U.S. Social Security taxes	
5. All other taxes	
6. Taxes, licenses and fees incurred	
Reconciliation with Exhibit 5	
7. Taxes, licenses and fees unpaid December 31, prior year	
8. Taxes, licenses and fees unpaid December 31, current year	
9. Taxes, licenses and fees paid during year (Lines 6 + 7 - 8) (to Exhibit 5, Line 13)	

NONE

EXHIBIT 3 - AGGREGATE RESERVE FOR LIFE, ANNUITY AND ACCIDENT AND HEALTH CONTRACTS

1	2	3	4
Description of Valuation Basis	Total ^(a)	Ordinary	Group
0100001. 58 CSO 4.00% Mod CRVM	2,173,547	2,173,547	
0100002. 80 CSO 5.50% CRVM	25,393,921	25,393,921	
0100003. 80 CSO 5.00% CRVM	322,195	322,195	
0100004. 80 CSO 4.50% CRVM	698,819,190	698,819,190	
0100005. 80 CSO 4.00% CRVM	131,636,074	131,636,074	
0100006. 01 CSO 4.00% CRVM	20,416,845	20,416,845	
0100007. 01 CSO 3.50% CRVM	33,171,368	33,171,368	
0100008. 17 CSO 3.5% CRVM	4,822,596	4,822,596	
0100009. 17 CSO 3.0% CRVM	1,062,931	1,062,931	
0100010. 17 CSO NPR 3.75%	9,823,073	9,823,073	
0100011. 17 CSO NPR 4.50%	219,396	219,396	
0100012. 80 CSO Account Value	1,871,067,018	264,648,771	1,606,418,247
0100013. 01 CSO Account Value	82,887,741	67,725,639	15,162,102
0100014. 17 CSO Account Value	78,652,795	19,273,341	59,379,454
0199999. Life Insurance: Totals	2,960,468,690	1,279,508,887	1,680,959,803
0200001. Deferred Annuity 4.75%-10.00% CARVM	7,872,836,319	7,872,836,319	
0200002. Annuity Reserve 4 % VA Valuation 82	78,265,473	78,265,473	
0200003. Annuity Reserve	32,597,567,412		32,597,567,412
0299999. Annuities: Totals	40,548,669,204	7,951,101,792	32,597,567,412
9999999. Totals (to Page 3, Line 1)	43,509,137,894	9,230,610,679	34,278,527,215

(a) Included in the above table are amounts of deposit-type contracts that originally contained a mortality risk. Amounts of deposit-type contracts that no longer contain a mortality risk in Column 2 are: Life Insurance \$; Annuities \$; Supplementary Contracts with Life Contingencies \$; Accident and Health Contracts \$; Miscellaneous Reserves \$

EXHIBIT 3 - INTERROGATORIES

- 1.1 Has the reporting entity ever issued both participating and non-participating variable life insurance contracts?..... Yes [X] No []
- 2.1 Does the reporting entity at present issue both participating and non-participating variable life insurance contracts?..... Yes [X] No []
- 2.2 If not, state which kind is issued
.....
- 3.1 Is any surrender value promised in excess of the reserve as legally computed? Yes [] No [X] N/A []
- 3.2 If so, the amount of such excess must be included in surrender values in excess of reserves otherwise required and carried in this schedule. Has this been done? Yes [] No [] N/A [X]
Attach a statement of methods employed in the valuation of variable life insurance contracts issued at, or subsequently subject to, an extra premium or in the valuation of contracts otherwise issued on lives classified as substandard for the plan of contract issued or on special class lives (including paid-up variable life insurance).

EXHIBIT 3A - CHANGES IN BASIS OF VALUATION DURING THE YEAR

(Including supplementary contracts set up on a basis other than that used to determine benefits)

1	Valuation Basis		4
Description of Valuation Class	2	3	Increase in Actuarial Reserve Due to Change
	Inferred from	Changed To	
9999999 - Totals (Page 6, Line 5, Analysis of Increase in Reserve)			

NONE

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 4 - DEPOSIT TYPE CONTRACTS

	1	2	3	4	5	6
	Total	Guaranteed Interest Contracts	Annuities Certain	Supplemental Contracts	Dividend Accumulations or Refunds	Premium and Other Deposit Funds
1. Balance at the beginning of the year	13,671,488,027	1,646,757,557				12,024,730,470
2. Deposits received during the year	1,822,169,279					1,822,169,279
3. Investment earnings credited to account	(2,271,843,836)	(222,836,657)				(2,049,007,179)
4. Other net change in reserves	(61,908)					(61,908)
5. Fees and other charges assessed	29,076,453	2,730,950				26,345,503
6. Surrender charges						
7. Net surrender or withdrawal payments	1,849,261,168	1,421,189,950				428,071,218
8. Other net transfer to or (from) general account	1,911,549,725					1,911,549,725
9. Balance at the end of current year (Lines 1+2+3+4-5-6-7-8)	9,431,864,216					9,431,864,216

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 5 - RECONCILIATION OF CASH AND INVESTED ASSETS

DEVELOPMENT OF INCREASE IN CASH		1 Amount
1. Transfers to Separate Accounts on account of:		
1.1 Net premiums and considerations for annuities and supplementary contracts with life contingencies		6,143,970,368
1.2 Aggregate write-ins for other transfers to Separate Accounts		
2. Deposits on deposit-type contract funds and other liabilities without life or disability contingencies		1,822,169,279
3. Investment income collected		3,906,997,084
4. Consideration on disposal of short-term bonds net of purchases		597,804,150
5. Consideration on disposal of investments (excluding short-term bonds)		29,581,255,500
6. Aggregate write-ins for other increases in funds from operations		
7. Total (Lines 1 to 6)		42,052,196,380
8. Cost of investments acquired (excluding short-term bonds)		24,259,060,287
9. Transfers from Separate Accounts on account of contract benefits:		
9.1 Death benefits		14,506,588
9.2 Matured endowments		
9.3 Annuity benefits		167,720,289
9.4 Supplementary contract benefits with life contingencies		
9.5 Accident and health benefits		
9.6 Surrender benefits and withdrawals for life contracts		14,842,597,288
9.7 Policy loans (net)		19,210,134
9.8 Transfers of reserves (net)		(792,160,576)
9.9 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits		
10. Other transfers from Separate Accounts:		
10.1 Federal income taxes		
10.2 Aggregate write-ins for other transfers from Separate Accounts		(56,496,240)
11. Withdrawals on deposit-type contract funds and other liabilities without life or disability contingencies		3,760,830,693
12. Investment expenses (Exhibit 1, Line 25)		1,431,415
12.1 Fees associated with investment management, administration and contract guarantees		368,097,519
13. Investment taxes, licenses and fees, excluding federal income taxes (Exhibit 2, Line 9)		
14. Total (Lines 8 to 13)		42,584,797,398
15. Funds from operations (Line 7 minus Line 14)		(532,601,018)
16. Surplus contributed or (withdrawn) during year		3
17. Aggregate write-ins for other changes in funds		(119,653)
18. Total funds (includes \$ 0 net transfers from general account) (Lines 15 to 17)		(532,720,668)
19. Increase in payable for investments acquired, net of receivable for investments sold		71,327,716
20. Decrease in policy loans		
21. Aggregate write-ins for other reconciling items		(292)
22. Increase in cash (Line 18 to 21)		(461,393,244)
RECONCILIATION BETWEEN YEARS		
23. Cash and invested assets, December 31st of prior year		75,466,270,516
24. Increase in cash (Line 22)		(461,393,244)
25. Cost of invested assets acquired		24,763,497,055
26. Adjusted cost of assets disposed of		31,260,586,694
27. Increase in policy loans		
28. Accrual of discount less amortization of premium		10,739,445
29. Depreciation on real estate and other invested assets		
30. Increase in net unrealized gains		(15,314,999,001)
31. Aggregate write-ins for other reconciling items		
32. Cash and invested assets, December 31st of current year		53,203,528,077
DETAILS OF WRITE-INS		
01.201. Investment transfers GIA to SIA		
01.202.		
01.203.		
01.298. Summary of remaining write-ins for Line 1.2 from overflow page		
01.299. Totals (Lines 01.201 thru 01.203 plus 01.298) (Line 1.2 above)		
0601.		
0602.		
0603.		
0698. Summary of remaining write-ins for Line 6 from overflow page		
0699. Totals (Lines 0601 thru 0603 plus 0698) (Line 6 above)		
09.901.		
09.902.		
09.903.		
09.998. Summary of remaining write-ins for Line 9.9 from overflow page		
09.999. Totals (Lines 09.901 thru 09.903 plus 09.998) (Line 9.9 above)		
10.201. Change in other transfers due or accrued		(101,434)
10.202. Change in remittances and items not allocated		(63,032,977)
10.203. Miscellaneous		6,638,171
10.298. Summary of remaining write-ins for Line 10.2 from overflow page		
10.299. Totals (Lines 10.201 thru 10.203 plus 10.298) (Line 10.2 above)		(56,496,240)
1701. Miscellaneous		(119,653)
1702.		
1703.		
1798. Summary of remaining write-ins for Line 17 from overflow page		
1799. Totals (Lines 1701 thru 1703 plus 1798) (Line 17 above)		(119,653)
2101. Foreign currency gain/Loss		(292)
2102.		
2103.		
2198. Summary of remaining write-ins for Line 21 from overflow page		
2199. Totals (Lines 2101 thru 2103 plus 2198) (Line 21 above)		(292)
3101.		
3102.		
3103.		
3198. Summary of remaining write-ins for Line 31 from overflow page		
3199. Totals (Lines 3101 thru 3103 plus 3198) (Line 31 above)		

EXHIBIT 6 - GUARANTEED INSURANCE AND ANNUITY PRODUCTS

	1	2
	Amount	Percent of Total
1. Aggregate reserve for life, annuity and accident and health contracts (Included in Exhibit 3):		
1.1 Life insurance		
1.2 Annuities		
1.3 Supplementary contracts with life contingencies		
1.4 Accident and health		
1.5 Miscellaneous reserves		
1.6 Total		
2. Liability for deposit-type contracts (included in Exhibit 4):		
2.1 Guaranteed interest contracts		
2.2 Annuities certain		
2.3 Supplemental contracts		
2.4 Dividend accumulations or refunds		
2.5 Premium and other deposit funds		
2.6 Total		
3. Other liabilities (included in Page 3, Lines 4, 10, 13 & 14)		
4. Total liabilities associated with guarantees (Lines 1.6 + 2.6 + 3)		
5. Total liabilities not associated with guarantees	53,283,506,525	100.0
6. Total Separate Accounts liabilities (Lines 4 + 5 = Page 3, Line 17)	53,283,506,525	100.0 %

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

Product Mix

1.01 Identify the product types in the separate account, quantify the assets associated with those products, indicate if there are any guarantees associated with those products, quantify seed money and quantify other fees and expenses due to the general account. For the products (and related assets) that are not registered with the SEC, identify whether the products are considered private placement variable annuity products or private placement life insurance.

Note: A distinct disaggregated product identifier shall be used for each product and shall be used consistently throughout the interrogatory. Disaggregation of reporting shall be such that each product filing or policy form is separately identified. For example, if a company has 5 different separate group annuities, each annuity shall be separately reported. (Companies may eliminate proprietary information however such elimination will require the use of unique reporting identifiers).

Additional Required Surplus Amounts is defined as additional or permanent surplus that is required to be retained in the separate account in accordance with state law or regulation. These amounts should not include reinvested separate account investment proceeds that have not been allocated to separate account contract holders.

1 Product Identifier	Separate Account Assets		4 Guarantees Associated with the Product Yes/No	5 Seed Money	6 Fees and Expenses Due to the General Account	7 Additional Required Surplus Amounts	Not Registered with SEC		
	2 Registered with SEC	3 Not Registered with SEC					Private Placement Variable Annuity	Private Placement Life Insurance	Other (Not PPVA or PPLI)
1.01A0001 Pension Risk Transfer Group Annuities									
1.01A9999 Total Pension Risk Transfer Group Annuities			XXX						
1.01B0001 All Other Group Annuities									
Separate Account Guaranteed Interest Contract		16,228,477,349	YES	130,298,133					16,228,477,349
Supplemental Account		158,411	NO			158,411			158,411
Non-guaranteed Retirement Services SIAs		26,197,753,009	NO						26,197,753,009
Synthetic Guaranteed Interest Contract			YES						
1.01B9999 Total All Other Group Annuities		42,426,388,769	XXX	130,298,133		158,411			42,426,388,769
1.01C0001 Registered Index Linked Annuities Individual Annuities									
1.01C9999 Total Registered Index Linked Annuities Individual Annuities			XXX						
1.01D0001 All Other Individual Annuities									
Individual Variable Annuity	7,958,496,100	427,968	YES						427,968
Individual Immediate Variable Annuity	47,527,219		YES						
1.01D9999 Total All Other Individual Annuities	8,006,023,319	427,968	XXX						427,968
1.01E0001 Life Insurance									
Individual Variable Universal Life	936,007,777	210,178,263	YES						210,178,263
Group Variable Universal Life	61,481,797		YES						
Corporate-owned Life Insurance	147,690,848	56,226,281	YES						
Stable Value Bank-owned Life Insurance		1,569,379,636	YES						1,569,379,636
Exclusive of seed money and unsettled fees and expenses, there are 16 contracts totaling \$96,612,052 that are included as non-insulated. Total separate account assets of the Company are \$53,413,804,658 at December 31, 2022. These 16 non-insulated contracts represent 0.18% of the Company's separate account balance at December 31, 2022. Given the immateriality of the balances, we are disclosing the existence of these 16 non-insulated contracts, but are not preparing a separate green book blank.									
1.01E9999 Total Life Insurance	1,145,180,422	1,835,784,180	XXX						1,779,557,899
1.01F9999 Totals	9,151,203,741	44,262,600,917	XXX	130,298,133		158,411			44,206,374,636

1.02 Did the reporting entity remit seed money, other fees and expenses or additional required surplus amounts to the general account during the current year? Yes [X] No []

1.03 If yes, provide information on the total gross amount of seed money, other fees and expenses or additional required surplus amounts remitted to the general account during the current year (these amounts should not be reflected in the seed money totals in 1.01):

1.031 Seed Money.....\$ 97
1.032 Other Fees and Expenses.....\$
1.033 Additional Required Surplus Amounts . \$

1.04 Did the reporting entity receive seed money from the general account in the current year? Yes [X] No []

1.05 If yes, provide information on the total gross amount of seed money received in the current year: (If amounts were both received and remitted in the current year, include the gross amounts in both 1.031 and 1.051.)

1.051 Seed Money Received.....\$ 100

1.06 Does the reporting entity consider any of the seed money reflected in separate accounts to be insulated from the general account? Yes [] No [X] N/A []

1.07 If yes, provide information on the amount of seed money the reporting entity considers insulated from the general account:

1.071 Insulated Seed Money \$

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

- 1.08 Does the reporting entity have a policy for repatriating seed money or remitting fees and expenses due and additional required surplus amounts to the general account:
- | | | |
|--|---|---|
| | 1.081 Seed Money..... | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| | 1.082 Other Fees and Expenses..... | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| | 1.083 Additional Required Surplus Amounts ... | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |

1.09 Provide detail on the time duration for which seed money, other fees and expenses due to the general account and additional required surplus amounts have been held in the separate account:

	1 Seed Money	2 Fees and Expenses Due to the General Account	3 Additional Required Surplus Amounts
1.091 Under 1 Year			
1.092 1 Year - 3 Years	130,298,133		
1.093 Over 3 Years - 5 Years			
1.094 Over 5 Years			158,411
1.095 Total	130,298,133		158,411

- 1.10 For seed money, other fees and expenses, and additional required surplus amounts held in the separate account, does the reporting entity invest these funds in accordance with investment directives of the general account:
- | | | |
|--|---|--|
| | 1.101 Seed Money..... | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |
| | 1.102 Other Fees and Expenses..... | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |
| | 1.103 Additional Required Surplus Amounts ... | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |
- 1.11 If no, does the reporting entity have stated policy and procedure for the investment of seed money, other fees and expenses, and additional required surplus amounts that are retained with the separate account?
- | | | |
|--|---|--|
| | 1.111 Seed Money..... | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> |
| | 1.112 Other Fees and Expenses..... | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> |
| | 1.113 Additional Required Surplus Amounts ... | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> |

Separate Account Products with General Account Guarantees

- 2.1 Does the reporting entity have products with guarantees provided by the general account? Yes No
- 2.2 Has the separate account collected amounts from the general account within the past five years related to separate account guarantees? Yes No
- 2.3 If yes, provide detail on these guarantees paid by the general account:

	1 Year	2 Amount
2.301 As of December 31, 2022		\$ 4,702,830
2.302 As of December 31, 2021		\$ 2,638,376
2.303 As of December 31, 2020		\$ 6,925,020
2.304 As of December 31, 2019		\$ 8,183,620
2.305 As of December 31, 2018		\$ 6,161,058

- 2.4 To compensate the general account for the risk taken, for any separate account products with general account guarantees, does the separate account remit risk charges to the general account related to separate account guarantees? Yes No
- 2.5 If yes, identify the separate account products with risk charges that are remitted to the general account and whether the risk charge for that product is reviewed and opined upon:

1 Product Identifier with Risk Charges	2 Risk Charge Reviewed and Opined Upon	3 Name and Title of Individual who Provided Opinion on Risk Charges
2.5A00001 Pension Risk Transfer Group Annuities		
2.5B00001 All Other Group Annuities		
Separate Account Guaranteed Interest Contract	Yes	Vy Ho, FSA, MAAA, Head of Insurance Valuation and Apointed Actuary
Synthetic Guaranteed Interest Contract	Yes	Vy Ho, FSA, MAAA, Head of Insurance Valuation and Apointed Actuary
2.5C00001 Registered Index Linked Annuities Individual Annuities		
2.5D00001 All Other Individual Annuities	No; the risk charges associated with this product are reviewed for reasonableness and accuracy by the appropriate actuary, but no formal opinion on these product risk charges is required by the NAIC.	
Individual Variable Annuity	No; the risk charges associated with this product are reviewed for reasonableness and accuracy by the appropriate actuary, but no formal opinion on these product risk charges is required by the NAIC.	
Individual Immediate Variable Annuity		
2.5E00001 Life Insurance		

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

2.6 Provide detail on the risk charges paid to the general account related to separate account guarantees for the past five years:

	1 Year	2 Amount
2.601 As of December 31, 2022		\$ 97,398,789
2.602 As of December 31, 2021		\$ 95,307,042
2.603 As of December 31, 2020		\$ 103,722,568
2.604 As of December 31, 2019		\$ 104,346,980
2.605 As of December 31, 2018		\$ 97,690,286

Investment Directive of Separate Account Activity

- 3.1 Does the reporting entity have products classified within the separate account for which the investment directive is not determined by the contract holder? (Situations in which the investments directive mirrors the general account would not be considered determined by the contract holder; however, having the contract holder select an investment direction from multiple options would meet this criteria.) Yes No
- 3.2 If yes, if these investments would have been included in the general account, would the reporting entity have exceeded the investment limitations imposed on the general account? Yes No N/A
- 3.3 Provide detail on the separate account investment portfolio and state investment limitations. (This includes the combined separate account and general investments, excluding separate account assets with investment direction determined by the contract holder):

1 Investment Type	2 State Investment Limitation	3 Combined Investment (Separate and General Account)

Allocation of Investment Proceeds of Separate Account Activity

- 4.1 Does the reporting entity have separate account assets in which less than 100% of investment proceeds (net of contract fees and assessments) are attributed to a contract holder? (This should identify any situations where there is a ceiling on investment performance results.) Yes No
- 4.2 If yes, provide detail on the net investment proceeds that were attributed to the contract holder, transferred to the general account and reinvested within the separate account:

1 Product Identifier	2 Net Investment Proceeds	3 Attributed to Contract Holder	4 Transferred to General Account	5 Reinvested Within the Separate Account
4.2A00001 Pension Risk Transfer Group Annuities				
4.2A99999 Total Pension Risk Transfer Group Annuities				
4.2B00001 All Other Group Annuities				
Separate Account Guaranteed Interest Contract	2,402,587,604	2,419,762,891		(17,175,287)
Supplemental Account	7,759	7,759		
Non-guaranteed Retirement Services SIAs	7,196,360,894	7,196,360,894		
4.2B99999 Total All Other Group Annuities	9,598,956,257	9,616,131,544		(17,175,287)
4.2C00001 Registered Index Linked Annuities Individual Annuities				
4.2C99999 Total Registered Index Linked Annuities Individual Annuities				
4.2D00001 All Other Individual Annuities				
4.2D99999 Total All Other Individual Annuities				
4.2E00001 Life Insurance				
4.2E99999 Total Life Insurance				
4.2F99999 Totals	9,598,956,257	9,616,131,544		(17,175,287)

- 4.3 For items reinvested within the Separate Account, does the reporting entity invest these assets in accordance with investment directives of the general account? Yes No N/A
- 4.4 If no, does the reporting entity have a stated policy and procedure for the reinvestment of investment proceeds within the separate account? Yes No N/A
- 4.5 Did the reinvestment of investment proceeds within the separate account result with the company having a combined investment portfolio that exceeded the state investment limitations imposed on the general account? Yes No N/A

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

Measurement of Separate Account Assets

5.1 Does the reporting entity report all separate account assets at fair value? Yes [] No []

5.2 For items not reported at fair value, does the reporting entity report separate account assets at amortized cost, and/or under different measurement methods?
 5.21 Amortized Cost Yes [] No []
 5.22 Other Measurement Methods..... Yes [] No []

5.3 If other measurement methods are used, provide explanation on these measurement methods.

5.4 Identify the assets measured at fair value, amortized cost or another measurement method and the percentage of separate account assets measured under each measurement method:

Description	1 Amount	2 Percentage
5.41 Fair Value	\$ 53,413,804,658	100.0 %
5.42 Amortized Cost	\$	%
5.43 Other Measurement Methods	\$	%

5.5 For the assets not measured at fair value, provide a comparison of the reported value to current fair value and identify the unrealized gain or loss that would have been recorded if the assets had been reported at fair value:

1 Assets Held at Amortized Cost	2 Fair Value	3 Unrecorded Unrealized Gain/Loss
5.51... \$	\$	\$

1 Assets Held at Other Measurement Method	2 Fair Value	3 Unrecorded Unrealized Gain/Loss
5.52... \$	\$	\$

Securities Lending Transactions Within Separate Accounts

6.1 Does the reporting entity engage in securities lending transactions with separate account assets? Yes [] No []

6.2 If yes, does the reporting entity have written policies and procedures for such transactions? Yes [] No [] N/A []

6.3 Does the reporting entity obtain approval, or otherwise provide notification to contract holders, regarding securities lending transactions that occur with separate account assets? Yes [] No [] N/A []

6.4 Are all securities lending transactions reported on balance sheet? Yes [] No [] N/A []

6.5 Provide a description of the reporting entity's securities lending transaction program, specifically identifying any variations from the securities lending transaction program administered by the general account.

6.6 Provide detail on the current status of separate account transactions by separate account product:

6.61 Amount of any loaned securities within the separate account and the percentage of separate account assets lent
 6.611 Amount \$
 6.612 Percentage..... %
 6.62 Identify whether securities lent are reported at book value or market value
 6.621 Book Value \$
 6.622 Market Value..... \$

6.63 Detail on collateral received:

6.631 Aggregate Amount Collateral Received
 6.6311 Open\$
 6.6312 30 Days or Less.....\$
 6.6313 31 to 60 Days.....\$
 6.6314 61 to 90 Days.....\$
 6.6315 Greater than 90 Days.....\$
 6.6316 Total Collateral Received....\$

6.632 The aggregate fair value of all securities acquired from the sale, trade or use of the accepted collateral (reinvested collateral) \$

6.633 Narrative discussion about sources and uses of collateral:

6.634 Collateral for transactions that extend beyond one year from the reporting date\$

6.7 For the reporting entity's security lending program state the amount of the following as December 31 of the current year:

6.71 Total fair value of reinvested collateral assets reported on Schedule DL, Parts 1 and 2 (Sum of Schedule DL, Parts 1 and 2, Column 5) \$
 6.72 Total book adjusted/carrying value of reinvested collateral assets reported on Schedule DL, Parts 1 and 2 (Sum of Schedule DL, Parts 1 and 2, Column 6) \$
 6.73 Total payable for securities lending reported on the liability page (Page 3, Line 14, Column 3) \$

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

FHLB Funding Agreements

7.1 Does the reporting entity report Federal Home Loan Bank (FHLB) funding agreements within the separate account? Yes [] No [X]

7.2 Provide detail on the elements that support the classification of FHLB funding agreements within the separate account
.....

7.3 Provide detail regarding the FHLB funding agreements classified within the separate account:

1 Amount of FHLB Stock Purchased or Owned	2 Amount of Collateral Pledged to the FHLB	3 Total Borrowing or Funding Capacity Currently Available	4 Total Reserves Related to FHLB Agreements
\$	\$	\$	\$

7.4 For funding agreements within the separate account, provide a general description on the nature of the agreement, type of funding (lines of credit, borrowed money, etc) and intended use of funding.
.....

Reporting Differences Between GAAP and SAP Financial Statements (This disclosure is applicable to all reporting entities regardless if they file GAAP financial statements)

8.1 Does the reporting entity file GAAP financial statements? Yes [] No [X]

8.2 In accordance with the different separate account reporting requirements between GAAP (SOP 03-1) and statutory accounting, does the reporting entity have products that are classified within the separate account that were, or would have been if GAAP financial statements had been completed, required to be reported within the general account under GAAP financials? Pursuant to SOP 03-1, all of the following conditions must be met to receive separate account reporting classification under GAAP: Yes [X] No [] N/A []

- a. Legal Recognition - The separate account is legally recognized. That is, the separate account is established, approved, and regulated under special rules such as state insurance laws, federal securities laws, or similar foreign laws.
- b. Legally Insulated - The separate account assets supporting the contract liabilities are legally insulated from the general account liabilities of the insurance enterprise (that is, the contract holder is not subject to insurer default risk to the extent of the assets held in the separate account).
- c. Investment Directive - The insurer must, as a result of contractual, statutory, or regulatory requirements, invest the contract holder's funds within the separate account as directed by the contract holder in designated investment alternatives or in accordance with specific investment objectives or policies.
- d. Investment Performance - All investment performance, net of contract fees and assessments, must as a result of contractual, statutory, or regulatory requirements be passed through to the individual contract holder. Contracts may specify conditions under which there may be a minimum guarantee, but not a ceiling, as a ceiling would prohibit all investment performance from being passed through to the contract holder.

8.3 Identify all separate account products and identify whether each product was classified within a separate account for GAAP reporting purposes. (For non-GAAP filers, this disclosure should reflect whether the GAAP classification would have been the same if GAAP financials had been completed.) For products that were (or would have been) reported differently, identify which SOP 03-1 condition prevented separate account GAAP classification for that particular product.

1 Product Identifier	2 Same as GAAP / Condition that Requires GAAP General Account Reporting
Separate Account Guaranteed Interest Contract	GAAP GIA Classification due to Investment Performance
Synthetic Guaranteed Interest Contract	GAAP GIA Classification due to Investment Performance
Stable Value Bank-owned Life Insurance	GAAP GIA Classification due to Investment Performance
Supplemental Account	GAAP GIA Classification due to Investment Performance
Individual Variable Universal Life	Same as GAAP
Group Variable Universal Life	Same as GAAP
Individual Immediate Variable Annuity	Same as GAAP
Corporate-owned Life Insurance	Same as GAAP
Non-guaranteed Retirement Services SIAs	Same as GAAP
Individual Variable Annuity	Same as GAAP

Interest Maintenance Reserve

N O N E

Interest Maintenance Reserve - Amortization

N O N E

Asset Valuation Reserve - Default Component

N O N E

Asset Valuation Reserve - Equity Component

N O N E

Asset Valuation Reserve - Replications (Synthetic) Assets

N O N E

OVERFLOW PAGE FOR WRITE-INS

NONE

Schedule A - Verification - Real Estate

N O N E

Schedule B - Verification - Mortgage Loans

N O N E

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - VERIFICATION BETWEEN YEARS

Other Long-Term Invested Assets

1. Book/adjusted carrying value, December 31 of prior year	1,898,025,267
2. Cost of acquired:	
2.1 Actual cost at time of acquisition (Part 2, Column 8)	
2.2 Additional investment made after acquisition (Part 2, Column 9)	235,744,462
3. Capitalized deferred interest and other:	
3.1 Totals, Part 1, Column 16	
3.2 Totals, Part 3, Column 12	
4. Accrual of discount	374
5. Unrealized valuation increase (decrease):	
5.1 Totals, Part 1, Column 13	(152,976,215)
5.2 Totals, Part 3, Column 9	(34,253,752)
6. Total gain (loss) on disposals, Part 3, Column 19	9,130,468
7. Deduct amounts received on disposals, Part 3, Column 16	303,230,191
8. Deduct amortization of premium and depreciation	36,484
9. Total foreign exchange change in book/adjusted carrying value:	
9.1 Totals, Part 1, Column 17	
9.2 Totals, Part 3, Column 14	
10. Deduct current year's other than temporary impairment recognized:	
10.1 Totals, Part 1, Column 15	
10.2 Totals, Part 3, Column 11	
11. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5+6-7-8+9-10)	1,652,403,929
12. Deduct total nonadmitted amounts	
13. Statement value at end of current period (Line 11 minus Line 12)	1,652,403,929

SCHEDULE D - VERIFICATION BETWEEN YEARS

Bonds and Stocks

1. Book/adjusted carrying value, December 31 of prior year	71,684,303,040
2. Cost of bonds and stocks acquired, Part 3, Column 7	23,837,031,612
3. Accrual of discount	30,562,916
4. Unrealized valuation increase (decrease):	
4.1. Part 1, Column 12	(2,482,161,328)
4.2. Part 2, Section 1, Column 15	(1,923,264)
4.3. Part 2, Section 2, Column 13	(10,490,356,272)
4.4. Part 4, Column 11	(2,326,460,751)
5. Total gain (loss) on disposals, Part 4, Column 19	(401,806,308)
6. Deduction consideration for bonds and stocks disposed of, Part 4, Column 7	29,276,196,284
7. Deduct amortization of premium	21,066,679
8. Total foreign exchange change in book/adjusted carrying value:	
8.1. Part 1, Column 15	
8.2. Part 2, Section 1, Column 19	
8.3. Part 2, Section 2, Column 16	
8.4. Part 4, Column 15	7,726
9. Deduct current year's other than temporary impairment recognized:	
9.1. Part 1, Column 14	
9.2. Part 2, Section 1, Column 17	
9.3. Part 2, Section 2, Column 14	
9.4. Part 4, Column 13	
10. Total investment income recognized as a result of prepayment penalties and/or acceleration fees, Note 5Q, Line 2	1,691,565
11. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9+10)	50,553,625,973
12. Deduct total nonadmitted amounts	
13. Statement value at end of current period (Line 11 minus Line 12)	50,553,625,973

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - SUMMARY BY COUNTRY

Long-Term Bonds and Stocks OWNED December 31 of Current Year

Description		1 Book/Adjusted Carrying Value	2 Fair Value	3 Actual Cost	4 Par Value of Bonds
BONDS					
Governments (Including all obligations guaranteed by governments)	1. United States	2,117,912,987	2,117,912,987	2,522,148,745	2,568,706,842
	2. Canada				
	3. Other Countries	82,949,588	82,949,588	99,698,215	89,530,000
	4. Totals	2,200,862,575	2,200,862,575	2,621,846,960	2,658,236,842
U.S. States, Territories and Possessions (Direct and guaranteed)	5. Totals	14,971,270	14,971,270	16,781,217	13,945,618
U.S. Political Subdivisions of States, Territories and Possessions (Direct and guaranteed)	6. Totals	257,303	257,303	298,782	230,000
U.S. Special Revenue and Special Assessment Obligations and all Non-Guaranteed Obligations of Agencies and Authorities of Governments and their Political Subdivisions	7. Totals	1,917,043,392	1,917,043,392	2,144,253,901	2,140,074,334
Industrial and Miscellaneous, SVO Identified Funds, Unaffiliated Bank Loans, Unaffiliated Certificates of Deposit and Hybrid Securities (unaffiliated)	8. United States	9,625,284,183	9,625,284,183	11,058,057,197	11,075,164,667
	9. Canada	218,488,764	218,488,764	252,662,576	247,309,000
	10. Other Countries	1,740,105,166	1,740,105,166	1,933,323,392	1,932,049,329
	11. Totals	11,583,878,113	11,583,878,113	13,244,043,165	13,254,522,996
Parent, Subsidiaries and Affiliates	12. Totals				
	13. Total Bonds	15,717,012,653	15,717,012,653	18,027,224,025	18,067,009,790
PREFERRED STOCKS					
Industrial and Miscellaneous (unaffiliated)	14. United States	4,500,336	4,500,336	6,360,000	
	15. Canada				
	16. Other Countries				
	17. Totals	4,500,336	4,500,336	6,360,000	
Parent, Subsidiaries and Affiliates	18. Totals				
	19. Total Preferred Stocks	4,500,336	4,500,336	6,360,000	
COMMON STOCKS					
Industrial and Miscellaneous (unaffiliated), Mutual Funds, Unit Investment Trusts, Closed-End Funds and Exchange Traded Funds	20. United States	34,831,116,216	34,831,116,216	40,565,168,663	
	21. Canada	329,885	329,885	298,548	
	22. Other Countries	666,883	666,883	677,246	
	23. Totals	34,832,112,984	34,832,112,984	40,566,144,456	
Parent, Subsidiaries and Affiliates	24. Totals				
	25. Total Common Stocks	34,832,112,984	34,832,112,984	40,566,144,456	
	26. Total Stocks	34,836,613,320	34,836,613,320	40,572,504,456	
	27. Total Bonds and Stocks	50,553,625,973	50,553,625,973	58,599,728,481	

SCHEDULE DA - VERIFICATION BETWEEN YEARS

Short-Term Investments

	1	2	3	4	5
	Total	Bonds	Mortgage Loans	Other Short-term Investment Assets (a)	Investments in Parent, Subsidiaries and Affiliates
1. Book/adjusted carrying value, December 31 of prior year	642,235,465	642,235,465			
2. Cost of short-term investments acquired	504,436,766	504,436,766			
3. Accrual of discount	183,358	183,358			
4. Unrealized valuation increase (decrease)	5,580	5,580			
5. Total gain (loss) on disposals	1,265,979	1,265,979			
6. Deduct consideration received on disposals	1,102,397,527	1,102,397,527			
7. Deduct amortization of premium	518	518			
8. Total foreign exchange change in book/adjusted carrying value					
9. Deduct current year's other than temporary impairment recognized					
10. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9)	45,729,103	45,729,103			
11. Deduct total nonadmitted amounts					
12. Statement value at end of current period (Line 10 minus Line 11)	45,729,103	45,729,103			

(a) Indicate the category of such assets, for example, joint ventures, transportation equipment:

SCHEDULE DB - PART A - VERIFICATION BETWEEN YEARS

Options, Caps, Floors, Collars, Swaps and Forwards

1. Book/adjusted carrying value, December 31, prior year (Line 10, prior year)	35,235,665
2. Cost paid/(consideration received) on additions:	
2.1 Current year paid/(consideration received) at time of acquisition, still open, Section 1, Column 12	
2.2 Current year paid/(consideration received) at time of acquisition, terminated, Section 2, Column 14	1,039,498 1,039,498
3. Unrealized valuation increase/(decrease):	
3.1 Section 1, Column 17	174,787,559
3.2 Section 2, Column 19	(3,814,183) 170,973,376
4. SSAP No. 108 Adjustments	
5. Total gain (loss) on termination recognized, Section 2, Column 22	(135,003,724)
6. Considerations received/(paid) on terminations, Section 2, Column 15	(124,140,961)
7. Amortization:	
7.1 Section 1, Column 19	
7.2 Section 2, Column 21	
8. Adjustment to the book/adjusted carrying value of hedged item:	
8.1 Section 1, Column 20	
8.2 Section 2, Column 23	
9. Total foreign exchange change in book/adjusted carrying value:	
9.1 Section 1, Column 18	
9.2 Section 2, Column 20	24,204 24,204
10. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6+7+8+9)	196,409,980
11. Deduct nonadmitted assets	
12. Statement value at end of current period (Line 10 minus Line 11)	196,409,980

SCHEDULE DB - PART B - VERIFICATION

Futures Contracts

1. Book/Adjusted carrying value, December 31 of prior year (Line 6, prior year).....	
2. Cumulative cash change (Section 1, Broker Name/Net Cash Deposits Footnote - Cumulative Cash Change Column)	
3.1 Add:	
Change in variation margin on open contracts - Highly effective hedges	
3.11 Section 1, Column 15, current year minus	
3.12 Section 1, Column 15, prior year	
Change in variation margin on open contracts - All other	
3.13 Section 1, Column 18, current year minus	(32,371)
3.14 Section 1, Column 18, prior year	2,051,127 (2,083,498) (2,083,498)
3.2 Add:	
Change in adjustment to basis of hedged item	
3.21 Section 1, Column 17, current year to date minus	
3.22 Section 1, Column 17, prior year	
Change in amount recognized	
3.23 Section 1, Column 19, current year to date minus	(32,371)
3.24 Section 1, Column 19, prior year plus	2,051,127
3.25 SSAP No. 108 Adjustments	(2,083,498) (2,083,498)
3.3 Subtotal (Line 3.1 minus Line 3.2)	
4.1 Cumulative variation margin on terminated contracts during the year (Section 2, Column 15)	(47,119,069)
4.2 Less:	
4.21 Amount used to adjust basis of hedged item (Section 2, Column 17)	
4.22 Amount recognized (Section 2, Column 16)	(47,119,069)
4.23 SSAP No. 108 Adjustments	(47,119,069)
4.3 Subtotal (Line 4.1 minus Line 4.2)	
5. Dispositions gains (losses) on contracts terminated in prior year:	
5.1 Total gain (loss) recognized for terminations in prior year	
5.2 Total gain (loss) adjusted into the hedged item(s) for terminations in prior year	
6. Book/Adjusted carrying value at end of current period (Lines 1+2+3.3-4.3-5.1-5.2)	
7. Deduct total nonadmitted amounts	
8. Statement value at end of current period (Line 6 minus Line 7)	

Schedule DB - Part C - Section 1 - Replication (Synthetic Asset) Transactions (RSATs) Open

N O N E

Schedule DB-Part C-Section 2-Reconciliation of Replication (Synthetic Asset) Transactions Open

N O N E

ANNUAL STATEMENT FOR THE YEAR 2022 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - VERIFICATION

Verification of Book/Adjusted Carrying Value, Fair Value and Potential Exposure of all Open Derivative Contracts

		Book/Adjusted Carrying Value Check
1.	Part A, Section 1, Column 14.....	196,409,980
2.	Part B, Section 1, Column 15 plus Part B, Section 1 Footnote - Total Ending Cash Balance .....	.....
3.	Total (Line 1 plus Line 2)	196,409,980
4.	Part D, Section 1, Column 6	203,976,103
5.	Part D, Section 1, Column 7	(7,566,123)
6.	Total (Line 3 minus Line 4 minus Line 5) .....	.....
		Fair Value Check
7.	Part A, Section 1, Column 16	196,409,980
8.	Part B, Section 1, Column 13 .....	.....
9.	Total (Line 7 plus Line 8)	196,409,980
10.	Part D, Section 1, Column 9	203,976,103
11.	Part D, Section 1, Column 10	(7,566,123)
12.	Total (Line 9 minus Line 10 minus Line 11) .....	.....
		Potential Exposure Check
13.	Part A, Section 1, Column 21	16,455,163
14.	Part B, Section 1, Column 20	19,763,250
15.	Part D, Section 1, Column 12	36,218,413
16.	Total (Line 13 plus Line 14 minus Line 15) .....	.....

SCHEDULE E - PART 2 - VERIFICATION BETWEEN YEARS

(Cash Equivalents)

	1 Total	2 Bonds	3 Money Market Mutual funds	4 Other (a)
1. Book/adjusted carrying value, December 31 of prior year	1,119,521,778	892,776,257	226,745,521	
2. Cost of cash equivalents acquired	38,542,460,977	34,015,490,300	4,526,970,677	
3. Accrual of discount	1,096,484	1,096,484		
4. Unrealized valuation increase (decrease)	7,096	7,096		
5. Total gain (loss) on disposals	13,432,147	13,432,147		
6. Deduct consideration received on disposals	39,000,967,436	34,360,656,260	4,640,311,176	
7. Deduct amortization of premium				
8. Total foreign exchange change in book/adjusted carrying value				
9. Deduct current year's other than temporary impairment recognized				
10. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9)	675,551,046	562,146,024	113,405,022	
11. Deduct total nonadmitted amounts				
12. Statement value at end of current period (Line 10 minus Line 11)	675,551,046	562,146,024	113,405,022	

(a) Indicate the category of such investments, for example, joint ventures, transportation equipment: