



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

# ANNUAL STATEMENT

FOR THE YEAR ENDED DECEMBER 31, 2021

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 Pia Denise Flanagan, Head of Operations, CEO Action for Racial Equity.  
Susan Marie Cicco, Head of Human Resources & Employee Experience Michael James O'Connor, General Counsel Gareth Fielding Ross, Head of Enterprise Technology & Experience

### DIRECTORS OR TRUSTEES

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

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 2021 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).....		19,267,821,979	19,267,821,979	21,311,898,658
2. Stocks (Schedule D):				
2.1 Preferred stocks .....		6,423,600	6,423,600	
2.2 Common stocks .....		52,410,057,461	52,410,057,461	51,444,643,591
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 (\$ .....89,664,433 Schedule E - Part 1), and cash equivalents (\$ .....1,119,521,778 , Schedule E - Part 2).....		1,209,186,211	1,209,186,211	592,425,002
6. Short-term investments (Schedule DA).....		642,235,465	642,235,465	315,361,765
7. Derivatives (Schedule DB).....		32,520,533	32,520,533	9,928,029
8. Other invested assets (Schedule BA).....		1,898,025,267	1,898,025,267	1,832,017,109
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).....		75,466,270,516	75,466,270,516	75,506,274,154
12. Investment income due and accrued .....		110,353,779	110,353,779	129,495,769
13. Receivables for securities .....		583,208,819	583,208,819	329,808,092
14. Net adjustment in assets and liabilities due to foreign exchange rates .....		10,904	10,904	7,899
15. Aggregate write-ins for other than invested assets.....		5	5	(10)
16. Total (Lines 11 to 15)		76,159,844,023	76,159,844,023	75,965,585,904
<b>DETAILS OF WRITE-INS</b>				
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. Foreign income tax recoverable .....		5	5	(10)
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)		5	5	(10)

ANNUAL STATEMENT FOR THE YEAR 2021 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) .....		61,605,149,415	61,605,149,415	62,111,072,397
2. Liability for deposit-type contracts (Exhibit 4, Line 9, Col. 1) .....		13,671,488,027	13,671,488,027	13,298,224,865
3. Interest Maintenance Reserve .....				
4. Charges for investment management, administration and contract guarantees due or accrued .....		8,293,086	8,293,086	9,174,928
5. Investment expenses due or accrued (Exhibit 1, Line 24) .....		472,987	472,987	712,869
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 \$ ..... 92,246,751 accrued expense allowances recognized in reserves) .....		94,862,150	94,862,150	102,813,792
11. Remittances and items not allocated .....		112,547,431	112,547,431	132,018,164
12. Derivatives .....		1,482,965	1,482,965	4,524,581
13. Payable for securities .....		518,636,607	518,636,607	308,831,707
14. Payable for securities lending .....				
15. Net adjustment in assets and liabilities due to foreign exchange rates .....				
16. Aggregate write-ins for liabilities .....		(562,065)	(562,065)	(1,787,399)
17. Total liabilities (including \$ ..... 103,155,236 due or accrued net transfers to or (from) the general account) .....		76,012,370,603	76,012,370,603	75,965,585,904
18. Contributed surplus .....		150,000,000	150,000,000	
19. Aggregate write-ins for special surplus funds .....				
20. Unassigned funds .....		(2,526,580)	(2,526,580)	
21. Surplus (Lines 18 through 20) .....		147,473,420	147,473,420	
22. Totals .....		76,159,844,023	76,159,844,023	75,965,585,904
<b>DETAILS OF WRITE-INS</b>				
1601. Derivatives accrued interest on swaps .....		(1,544,099)	(1,544,099)	(2,436,774)
1602. Claims in course of settlement .....		(64,639)	(64,639)	(191,130)
1603. Annuitant mortality fluctuation fund .....		1,046,673	1,046,673	840,505
1698. Summary of remaining write-ins for Line 16 from overflow page .....				
1699. Totals (Lines 1601 thru 1603 plus 1698)(Line 16 above) .....		(562,065)	(562,065)	(1,787,399)
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 2021 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	5,172,920,379	9,054,979,088
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)	5,172,920,379	9,054,979,088
2. Transfers on account of deposit-type contracts (including \$ 3,386,950,444 deposits less \$ 4,589,230,472 withdrawals)	(1,202,280,029)	811,796,591
3. Net investment income and capital gains and losses	7,471,951,487	9,159,794,127
4. Aggregate write-ins for other income	349,370	11,372
5. Totals (Lines 1.4 to 4)	11,442,941,207	19,026,581,178
<b>DEDUCT:</b>		
6. Transfers from the Separate Account on account of contract benefits:		
6.1 Death benefits	17,552,133	12,856,276
6.2 Matured endowments		
6.3 Annuity benefits	196,438,345	175,882,897
6.4 Payments on supplementary contracts with life contingencies		
6.5 Accident and health benefits		
6.6 Surrender benefits and withdrawals for life contracts	11,178,082,890	14,249,138,765
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits		
7. Transfers on account of policy loans	19,802,696	14,817,960
8. Net transfer of reserves from or (to) Separate Accounts	(250,142,746)	(1,730,018,198)
9. Other transfers from the Separate Accounts:		
9.1 Federal and foreign income taxes incurred		
9.2 Change in expense allowances recognized in reserves	(9,585,868)	(21,625,137)
9.3 Aggregate write-ins for other transfers from Separate Accounts	5,208,155	6,282,878
10. Subtotals (Lines 6.1 to 9.3)	11,157,355,605	12,707,335,441
11. Fees associated with charges for investment management, administration and contract guarantees	420,439,340	405,531,185
12. Increase in aggregate reserve for life and accident and health contracts	(505,922,981)	3,485,129,019
13. Increase in liability for deposit-type contracts	373,263,162	2,428,504,422
14. Increase in reserve for future federal income taxes		
15. Aggregate write-ins for reserves and funds	332,660	81,111
16. Totals (Lines 10 to 15)	11,445,467,786	19,026,581,178
17. Net gain from operations (including \$ (1,717,569) unrealized capital gains) (Line 5 minus Line 16)	(2,526,580)	
<b>SURPLUS ACCOUNT</b>		
18. Surplus, December 31, prior year		
19. Net gain from operations (Line 17)	(2,526,580)	
20. Surplus contributed or (withdrawn) during year	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)	147,473,420	
<b>DETAILS OF WRITE-INS</b>		
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	349,370	11,372
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)	349,370	11,372
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	5,208,155	6,282,878
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)	5,208,155	6,282,878
1501. Change in annuitant mortality fluctuation fund	206,169	127,240
1502. Claims in course of settlement	126,491	(46,129)
1503.		
1598. Summary of remaining write-ins for Line 15 from overflow page		
1599. Totals (Lines 1501 thru 1503 plus 1598)(Line 15 above)	332,660	81,111
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 2021 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	5,172,920,379	65,042,769	5,915,933	307,504,279	4,794,457,398		
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)	5,172,920,379	65,042,769	5,915,933	307,504,279	4,794,457,398		
2. Transfers on account of deposit-type contracts (including \$ 3,386,950,444 deposits less \$ 4,589,230,472 withdrawals)	(1,202,280,029)				(1,202,280,029)		
3. Net investment income and capital gains and losses	7,471,951,487	268,939,626	12,274,826	1,489,116,884	5,701,620,151		
4. Aggregate write-ins for other income	349,370		343,183		6,187		
5. Totals (Lines 1.4 to 4)	11,442,941,207	333,982,395	18,533,942	1,796,621,163	9,293,803,707		
DEDUCT:							
6. Transfers from the Separate Account on account of contract benefits:							
6.1 Death benefits	17,552,133	5,694,296	11,857,837			XXX	
6.2 Matured endowments				196,438,345		XXX	
6.3 Annuity benefits	196,438,345	XXX	XXX			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	11,178,082,890	53,685,619	6,631,939	1,377,968,581	9,739,796,751	XXX	
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits							
7. Transfers on account of policy loans	19,802,696	19,637,929	(17,336)	(216,906)	399,009	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	(250,142,746)	(22,886,050)	678,255	24,802,159	(252,737,110)		
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	(9,585,868)	1,929,964		(11,515,832)		XXX	
9.3 Aggregate write-ins for other transfers from Separate Accounts	5,208,155	15,957		191,896	5,000,302		
10. Subtotals (Lines 6.1 to 9.3)	11,157,355,605	58,077,715	19,150,695	1,587,668,243	9,492,458,952		
11. Fees associated with charges for investment management, administration and contract guarantees	420,439,340	48,140,154	19,714,860	178,880,353	173,703,973		
12. Increase in aggregate reserve for life and accident and health contracts	(505,922,981)	227,638,034	(20,331,613)	29,757,891	(742,987,293)		
13. Increase in liability for deposit-type contracts	373,263,162			108,507	373,154,655	XXX	
14. Increase in reserve for future federal income taxes							
15. Aggregate write-ins for reserves and funds	332,660	126,491		206,169			
16. Totals (Lines 10 to 15)	11,445,467,786	333,982,394	18,533,942	1,796,621,163	9,296,330,287		
17. Net gain from operations (including \$ (1,717,569) unrealized capital gains) (Line 5 minus Line 16)	(2,526,580)				(2,526,580)		
18. Policies/certificates in force end of year	666,524	24,119	6,498	106,030	529,877		
<b>DETAILS OF WRITE-INS</b>							
01.301. Miscellaneous	349,370		343,183		6,187		
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)	349,370		343,183		6,187		
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)	349,370		343,183		6,187		
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	5,208,155	15,957		191,896	5,000,302		
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)	5,208,155	15,957		191,896	5,000,302		
1501. Change in annuitant mortality fluctuation fund	206,169			206,169			
1502. Claims in course of settlement	126,491	126,491					
1503. ....							
1598. Summary of remaining write-ins for Line 15 from overflow page							
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15 above)	332,660	126,491		206,169			

**ANNUAL STATEMENT FOR THE YEAR 2021 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)	65,042,769	XXX						35,417	65,007,352	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)	65,042,769	XXX						35,417	65,007,352	XXX	
2. Transfers on account of deposit-type contracts (including \$ deposits less \$ withdrawals)		XXX								XXX	
3. Net investment income and capital gains and losses	268,939,626	XXX						434,566	268,505,060	XXX	
4. Aggregate write-ins for other income		XXX							XXX	XXX	
5. Totals (Lines 1.4 to 4)	333,982,395	XXX						469,983	333,512,412	XXX	
DEDUCT:											
6. Transfers from the Separate Account on account of contract benefits:											
6.1 Death benefits	5,694,296	XXX							5,694,296	XXX	
6.2 Matured endowments		XXX							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	53,685,619	XXX						232,167	53,453,452	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	19,637,929	XXX						(10,106)	19,648,035	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	(22,886,050)	XXX						(203)	(22,885,847)	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	1,929,964	XXX							1,929,964	XXX	
9.3 Aggregate write-ins for other transfers from Separate Accounts	15,957	XXX							15,957	XXX	
10. Subtotals (Lines 6.1 to 9.3)	58,077,715	XXX						221,858	57,855,857	XXX	
11. Fees associated with charges for investment management, administration and contract guarantees	48,140,154	XXX						66,839	48,073,315	XXX	
12. Increase in aggregate reserve for life and accident and health contracts	227,638,034	XXX						181,286	227,456,748	XXX	
13. Increase in liability for deposit-type contracts		XXX							XXX	XXX	
14. Increase in reserve for future federal income taxes		XXX							XXX	XXX	
15. Aggregate write-ins for reserves and funds	126,491	XXX							126,491	XXX	
16. Totals (Lines 10 to 15)	333,982,394	XXX						469,983	333,512,411	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	24,119	XXX						24	24,095	XXX	
<b>DETAILS OF WRITE-INS</b>											
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	15,957	XXX							15,957	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)	15,957	XXX							15,957	XXX	
1501. Claims in course of settlement	126,491	XXX							126,491	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)	126,491	XXX							126,491	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 2021 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	Variable Life	Universal Life	Variable Universal Life	Credit Life	Other Group Life (a)
1. Transfers to Separate Accounts:								
1.1 Net premiums for life contracts (b)	5,915,933					5,915,933	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)	5,915,933					5,915,933	XXX	
2. Transfers on account of deposit-type contracts (including \$ deposits less \$ withdrawals)							XXX	
3. Net investment income and capital gains and losses	12,274,826					12,274,826	XXX	
4. Aggregate write-ins for other income	343,183					343,183	XXX	
5. Totals (Lines 1.4 to 4)	18,533,942					18,533,942	XXX	
DEDUCT:								
6. Transfers from the Separate Account on account of contract benefits:								
6.1 Death benefits	11,857,837					11,857,837	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	6,631,939					6,631,939	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	(17,336)					(17,336)	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	678,255					678,255	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)	19,150,695					19,150,695	XXX	
11. Fees associated with charges for investment management, administration and contract guarantees	19,714,860					19,714,860	XXX	
12. Increase in aggregate reserve for life and accident and health contracts	(20,331,613)					(20,331,613)	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)	18,533,942					18,533,942	XXX	
17. Net gain from operations (including \$ unrealized capital gains) (Line 5 minus Line 16)							XXX	
18. Policies/certificates in force end of year	6,498					6,498	XXX	
<b>DETAILS OF WRITE-INS</b>								
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	343,183					343,183	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)	343,183					343,183	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 2021 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		
1. Transfers to Separate Accounts:						
1.1 Net annuity considerations for annuity contracts	307,504,279			307,257,641	246,638	
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)	307,504,279			307,257,641	246,638	
2. Transfers on account of deposit-type contracts (including \$ deposits less \$ withdrawals)						
3. Net investment income and capital gains and losses	1,489,116,884			1,460,643,615	18,338,442	10,134,827
4. Aggregate write-ins for other income						
5. Totals (Lines 1.4 to 4)	1,796,621,163			1,767,901,256	18,585,080	10,134,827
DEDUCT:						
6. Transfers from the Separate Account on account of contract benefits:						
6.1 Death benefits						
6.2 Matured endowments						
6.3 Annuity benefits	196,438,345			188,147,495	2,259,877	6,030,973
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	1,377,968,581			1,371,946,789	5,919,888	101,904
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits						
7. Transfers on account of policy loans	(216,906)			(216,906)		
8. Net transfer of reserves from or (to) Separate Accounts	24,802,159			24,484,128	(2,691)	320,722
9. Other transfers from the Separate Accounts:						
9.1 Federal and foreign income taxes incurred						
9.2 Change in expense allowances recognized in reserves	(11,515,832)			(11,510,952)	(4,880)	
9.3 Aggregate write-ins for other transfers from Separate Accounts	191,896			180,530		11,366
10. Subtotals (Lines 6.1 to 9.3)	1,587,668,243			1,573,031,084	8,172,194	6,464,965
11. Fees associated with charges for investment management, administration and contract guarantees	178,880,353			178,486,170	824,669	(430,486)
12. Increase in aggregate reserve for life and accident and health contracts	29,757,891			16,086,838	9,570,705	4,100,348
13. Increase in liability for deposit-type contracts	108,507			108,507		
14. Increase in reserve for future federal income taxes						
15. Aggregate write-ins for reserves and funds	206,169			188,657	17,512	
16. Totals (Lines 10 to 15)	1,796,621,163			1,767,901,256	18,585,080	10,134,827
17. Net gain from operations (including \$ unrealized capital gains) (Line 5 minus Line 16)						
18. Policies/certificates in force end of year	106,030			103,939	1,497	594
<b>DETAILS OF WRITE-INS</b>						
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	191,896			180,530		11,366
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)	191,896			180,530		11,366
1501. Change in annuitant mortality fluctuation fund	206,169			188,657	17,512	
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)	206,169			188,657	17,512	

(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 2021 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 Annuitizations)	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	4,794,457,398			2,039,013,273	2,755,444,125		
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)	4,794,457,398			2,039,013,273	2,755,444,125		
2. Transfers on account of deposit-type contracts (including \$ 3,386,950,444 deposits less \$ 4,589,230,472 withdrawals)	(1,202,280,029)				(1,202,280,029)		
3. Net investment income and capital gains and losses	5,701,620,151			149,193,314	5,552,426,837		
4. Aggregate write-ins for other income	6,187				6,187		
5. Totals (Lines 1.4 to 4)	9,293,803,707			2,188,206,587	7,105,597,120		
DEDUCT:							
6. Transfers from the Separate Account on account of contract benefits:							
6.1 Death benefits							
6.2 Matured endowments							
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	9,739,796,751			90,322,051	9,649,474,700		
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits							
7. Transfers on account of policy loans	399,009				399,009		
8. Net transfer of reserves from or (to) Separate Accounts	(252,737,110)			3,102,778,772	(3,355,515,882)		
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	5,000,302				5,000,302		
10. Subtotals (Lines 6.1 to 9.3)	9,492,458,952			3,193,100,823	6,299,358,129		
11. Fees associated with charges for investment management, administration and contract guarantees	173,703,973			85,772,054	87,931,919		
12. Increase in aggregate reserve for life and accident and health contracts	(742,987,293)			(1,088,139,710)	345,152,417		
13. Increase in liability for deposit-type contracts	373,154,655				373,154,655		
14. Increase in reserve for future federal income taxes							
15. Aggregate write-ins for reserves and funds							
16. Totals (Lines 10 to 15)	9,296,330,287			2,190,733,167	7,105,597,120		
17. Net gain from operations (including \$ (1,717,569) unrealized capital gains) (Line 5 minus Line 16)	(2,526,580)			(2,526,580)			
18. Policies/certificates in force end of year	529,877			258,679	271,198		
<b>DETAILS OF WRITE-INS</b>							
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	6,187				6,187		
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)	6,187				6,187		
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	5,000,302				5,000,302		
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)	5,000,302				5,000,302		
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 2021 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		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													
13. Increase in liability for deposit-type contracts	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
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													
<b>DETAILS OF WRITE-INS</b>													
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.

55

ANNUAL STATEMENT FOR THE YEAR 2021 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	1,425,012,540	XXX						2,277,872	1,422,734,668	XXX	
2. Tabular net premiums and considerations for annuities and supplementary contracts with life contingencies	65,042,769	XXX						35,417	65,007,352	XXX	
3. Increase or (decrease) from investment results after provision for federal income taxes	268,942,023	XXX						434,566	268,507,457	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)	(15,957)	XXX							(15,957)	XXX	
7. Totals (Lines 1 to 6)	1,758,981,375	XXX						2,747,855	1,756,233,520	XXX	
8. Net transfer of reserves from or (to) Separate Accounts	(20,067,607)	XXX						(203)	(20,067,404)	XXX	
9. Tabular cost	40,981,658	XXX						56,839	40,924,819	XXX	
10. Reserves released by death	5,694,296	XXX							5,694,296	XXX	
11. Reserves released by other terminations (net)	53,685,619	XXX						232,167	53,453,452	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	7,157,669	XXX						10,000	7,147,669	XXX	
14. Aggregate write-ins for other decreases in reserves	21,694,384	XXX						(10,106)	21,704,490	XXX	
15. Total deductions (Lines 8 to 14)	109,146,019	XXX						288,697	108,857,322	XXX	
16. Reserve December 31 of current year	1,649,835,356	XXX						2,459,158	1,647,376,198	XXX	
<b>Cash Surrender Value and Policy Loans</b>											
17. CSV ending balance December 31, current year	1,643,155,884	XXX						1,539,557	1,641,616,327	XXX	
18. Amount available for policy loans based upon Line 17 CSV	1,314,524,708	XXX						1,231,646	1,313,293,062	XXX	
<b>DETAILS OF WRITE-INS</b>											
1401. Change in policy loans	19,637,929	XXX						(10,106)	19,648,035	XXX	
1402. Change in surrender charge offset	1,929,964	XXX							1,929,964	XXX	
1403. Claims in course of settlement	126,491	XXX							126,491	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)	21,694,384	XXX						(10,106)	21,704,490	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 2021 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	2	3	4	5	6	7	8
	Total	Whole Life	Term Life	Universal Life	Variable Life	Variable Universal Life	Credit Life	Other Group Life
1. Reserve December 31 of prior year .....	1,671,419,140					1,671,419,140	XXX	
2. Tabular net premiums and considerations .....	5,915,933					5,915,933	XXX	
3. Increase or (decrease) from investment results after provision for federal income taxes .....	12,274,826					12,274,826	XXX	
4. Tabular less actual reserve released .....							XXX	
5. Increase in reserve on account of change in valuation basis .....							XXX	
6. Other increases (net) .....	340,784					340,784	XXX	
7. Totals (Lines 1 to 6) .....	1,689,950,683					1,689,950,683	XXX	
8. Net transfer of reserves from or (to) Separate Accounts .....	(2,140,188)					(2,140,188)	XXX	
9. Tabular cost .....						XXX	XXX	
10. Reserves released by death .....	11,857,837					11,857,837	XXX	
11. Reserves released by other terminations (net) .....	6,631,939					6,631,939	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 .....	19,715,686					19,715,686	XXX	
14. Aggregate write-ins for other decreases in reserves .....	(17,336)					(17,336)	XXX	
15. Total deductions (Lines 8 to 14) .....	36,047,938					36,047,938	XXX	
16. Reserve December 31 of current year .....	1,653,902,745					1,653,902,745	XXX	
<b>Cash Surrender Value and Policy Loans</b>								
17. CSV ending balance December 31, current year .....	1,649,816,516					1,649,816,516	XXX	
18. Amount available for policy loans based upon line 17 CSV .....	1,319,853,213					1,319,853,213	XXX	
<b>DETAILS OF WRITE-INS</b>								
1401. Change in policy loans .....	(17,336)					(17,336)	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) .....	(17,336)					(17,336)	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 2021 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 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 .....	10,764,181,026			10,598,588,390	105,003,125	60,589,511	
2. Tabular net premiums and considerations .....	307,504,279			307,264,261	240,018		
3. Increase or (decrease) from investment results after provision for federal income taxes .....	1,489,008,378			1,461,000,399	17,873,152	10,134,827	
4. Tabular less actual reserve released .....							
5. Increase in reserve on account of change in valuation basis .....							
6. Other increases (net) .....	(191,897)			(180,530)		(11,367)	
7. Totals (Lines 1 to 6) .....	12,560,501,786			12,366,672,520	123,116,295	70,712,971	
8. Net transfer of reserves from or (to) Separate Accounts .....	24,802,159			24,484,130	(2,693)	320,722	
9. Tabular cost .....							
10. Reserves released by death .....	.XXX	.XXX	.XXX	.XXX	.XXX	.XXX	.XXX
11. Reserves released by other terminations (net) .....	1,377,968,581			1,372,244,251	5,622,426	101,904	
12. Transfers on account of annuity and supplementary contract payments involving life contingencies .....	196,438,345			188,164,785	2,242,587	6,030,973	
13. Charges for investment management, administration and contract guarantees .....	178,880,353			178,492,503	818,337	(430,487)	
14. Aggregate write-ins for other decreases in reserves .....	(11,526,569)			(11,538,877)	12,308		
15. Total deductions (Lines 8 to 14) .....	1,766,562,869			1,751,846,792	8,692,965	6,023,112	
16. Reserve December 31 of current year .....	10,793,938,917			10,614,825,728	114,423,330	64,689,859	
<b>Cash Surrender Value and Policy Loans</b>							
17. CSV ending balance December 31, current year .....	10,669,939,270			10,556,388,763	113,550,507		
18. Amount available for policy loans based upon line 17 CSV .....	182,416,883			182,416,883			
<b>DETAILS OF WRITE-INS</b>							
1401. Change in surrender charge offset .....	(11,515,832)			(11,510,952)	(4,880)		
1402. Change in policy loans .....	(216,906)			(216,906)			
1403. Change in annuitant mortality fluctuation fund .....	206,169			188,981	17,188		
1498. Summary of remaining write-ins for Line 14 from overflow page .....							
1499. TOTALS (Lines 1401 thru 1403 plus 1498) (Line 14 above) .....	(11,526,569)			(11,538,877)	12,308		

(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 2021 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 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 .....	48,250,459,689			16,027,326,198	32,223,133,491		
2. Tabular net premiums and considerations .....	4,794,457,398			1,400,529,809	3,393,927,589		
3. Increase or (decrease) from investment results after provision for federal income taxes .....	4,082,569,708			116,549,402	3,966,020,306		
4. Tabular less actual reserve released .....							
5. Increase in reserve on account of change in valuation basis .....							
6. Other increases (net) .....	(4,994,114)			(495)	(4,993,619)		
7. Totals (Lines 1 to 6) .....	57,122,492,681			17,544,404,914	39,578,087,767		
8. Net transfer of reserves from or (to) Separate Accounts .....	(252,737,110)			2,345,628,128	(2,598,365,238)		
9. Tabular cost .....							
10. Reserves released by death .....	xxx	xxx	xxx	xxx	xxx	xxx	xxx
11. Reserves released by other terminations (net) .....	9,739,796,751			90,322,002	9,649,474,749		
12. Transfers on account of annuity and supplementary contract payments involving life contingencies .....							
13. Charges for investment management, administration and contract guarantees .....	127,561,633			73,931,306	53,630,327		
14. Aggregate write-ins for other decreases in reserves .....	399,009				399,009		
15. Total deductions (Lines 8 to 14) .....	9,615,020,283			2,509,881,436	7,105,138,847		
16. Reserve December 31 of current year .....	47,507,472,398			15,034,523,478	32,472,948,920		
<b>Cash Surrender Value and Policy Loans</b>							
17. CSV ending balance December 31, current year .....	47,507,472,398			15,034,523,478	32,472,948,920		
18. Amount available for policy loans based upon line 17 CSV .....	47,507,472,398			15,034,523,478	32,472,948,920		
<b>DETAILS OF WRITE-INS</b>							
1401. Change in policy loans .....	399,009				399,009		
1402. ....							
1403. ....							
1498. Summary of remaining write-ins for Line 14 from overflow page .....							
1499. TOTALS (Lines 1401 thru 1403 plus 1498) (Line 14 above) .....	399,009				399,009		

(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 2021 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

**ANALYSIS OF RESERVES DURING THE YEAR - ACCIDENT AND HEALTH<sup>(a)</sup>**

	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										
<b>ACTIVE LIFE RESERVE</b>													
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) .....													
<b>CLAIM RESERVE</b>													
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 .....													
<b>DETAILS OF WRITE-INS</b>													
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 2021 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) 50,121,156	45,274,505
1.1 Bonds exempt from U.S. tax	(a)	
1.2 Other bonds (unaffiliated)	(a) 520,889,066	505,506,797
1.3 Bonds of affiliates	(a)	
2.1 Preferred stocks (unaffiliated)	(b) 256,008	256,008
2.11 Preferred stocks of affiliates	(b)	
2.2 Common stocks (unaffiliated)	4,323,017,995	4,322,947,551
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) 3,361,777	3,351,308
7. Derivative instruments	(f) 558,785	163,615
8. Other invested assets	670,338	670,338
9. Aggregate write-ins for investment income	6,009,551	6,009,551
10. Total gross investment income	4,904,884,676	4,884,179,673
11. Investment expenses		(g) 2,574,760
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)		2,574,760
17. Net investment income (Line 10 minus Line 16)		4,881,604,913
<b>DETAILS OF WRITE-INS</b>		
0901. Miscellaneous	6,009,551	6,009,551
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)	6,009,551	6,009,551
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 \$ 25,530,006 accrual of discount less \$ 68,000,964 amortization of premium and less \$ 33,721,479 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 \$ 2,887,656 accrual of discount less \$ 15 amortization of premium and less \$ 248 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	(51,446,610)		(51,446,610)	(94,608,379)	
1.1 Bonds exempt from U.S. tax					
1.2 Other bonds (unaffiliated)	240,351,596	244	240,351,840	(510,640,020)	(44,248)
1.3 Bonds of affiliates					
2.1 Preferred stocks (unaffiliated)				63,600	
2.11 Preferred stocks of affiliates					
2.2 Common stocks (unaffiliated)	2,659,163,216		2,659,163,216	335,286,360	494
2.21 Common stocks of affiliates					
3. Mortgage loans					
4. Real estate					
5. Contract loans					
6. Cash, cash equivalents and short-term investments	1,228,591		1,228,591		
7. Derivative instruments	(20,701,114)	59,745	(20,641,369)	20,688,462	2,776
8. Other invested assets	6,685,182		6,685,182	6,523,055	
9. Aggregate write-ins for capital gains (losses)		(3,005)	(3,005)		3,005
10. Total capital gains (losses)	2,835,280,861	56,984	2,835,337,845	(242,686,922)	(37,973)
<b>DETAILS OF WRITE-INS</b>					
0901. Capital gain (loss) on foreign currency		(3,005)	(3,005)		3,005
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)		(3,005)	(3,005)		3,005



ANNUAL STATEMENT FOR THE YEAR 2021 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 .....	63,276
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 .....	2,511,484
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 .....	2,574,760
Reconciliation with Exhibit 5	
23. Investment expenses unpaid December 31, prior year .....	712,869
24. Investment expenses unpaid December 31, current year .....	472,987
25. Investment expenses paid during year (Lines 22 + 23 - 24) (to Exhibit 5, Line 12)	2,814,642
<b>DETAILS OF WRITE-INS</b>	
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 <sup>(a)</sup>	Ordinary	Group
0100001. 58 CSO 4.00% Mod CRVM	2,459,159	2,459,159	
0100002. 80 CSO 5.50% CRVM	30,017,907	30,017,907	
0100003. 80 CSO 5.00% CRVM	427,337	427,337	
0100004. 80 CSO 4.50% CRVM	935,165,155	935,165,155	
0100005. 80 CSO 4.00% CRVM	171,274,188	171,274,188	
0100006. 01 CSO 4.00% CRVM	25,652,051	25,652,051	
0100007. 01 CSO 3.50% CRVM	38,481,606	38,481,606	
0100008. 17 CSO 3.5% CRVM	5,478,062	5,478,062	
0100009. 17 CSO 3.0% CRVM	990,311	990,311	
0100010. 17 CSO NPR 3.75%	5,065,736	5,065,736	
0100011. 17 CSO NPR 4.50%	176,914	176,914	
0100012. 80 CSO Account Value	1,964,765,598	335,778,126	1,628,987,472
0100013. 2001 CSO Account Value	103,872,656	84,510,926	19,361,730
0100014. 17 CSO Account Value	19,911,421	14,357,880	5,553,541
0199999. Life Insurance: Totals	3,303,738,101	1,649,835,358	1,653,902,743
0200001. Deferred Annuity 4.75%-10.00% CARVM	10,694,329,670	10,694,329,670	
0200002. Annuity Reserve 4 % VA Valuation 82	99,591,312	99,591,312	
0200003. Annuity Reserve	45,434,760,886	17,935	45,434,742,951
0200004. Group Home Office & Field Plans	2,072,729,446		2,072,729,446
0299999. Annuities: Totals	58,301,411,314	10,793,938,917	47,507,472,397
9999999. Totals (to Page 3, Line 1)	61,605,149,415	12,443,774,275	49,161,375,140

(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
	Changed From	Changed To	
9999999 - Totals (Page 6, Line 5, Analysis of Increase in Reserves)			

NONE

ANNUAL STATEMENT FOR THE YEAR 2021 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 .....	13,298,224,865	1,678,288,060				11,619,936,805
2. Deposits received during the year .....	3,386,950,444					3,386,950,444
3. Investment earnings credited to account .....	1,625,008,480	(2,331,589)				1,627,340,069
4. Other net change in reserves .....	(399,009)					(399,009)
5. Fees and other charges assessed .....	49,066,281	3,301,074				45,765,207
6. Surrender charges .....						
7. Net surrender or withdrawal payments .....	4,589,230,472	25,897,840				4,563,332,632
8. Other net transfer to or (from) general account .....						
9. Balance at the end of current year (Lines 1+2+3+4-5-6-7-8)	13,671,488,027	1,646,757,557				12,024,730,470

ANNUAL STATEMENT FOR THE YEAR 2021 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 .....		5,172,920,378
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 .....		3,386,950,444
3. Investment income collected .....		4,904,214,337
4. Consideration on disposal of short-term bonds net of purchases .....		(326,327,473)
5. Consideration on disposal of investments (excluding short-term bonds) .....		32,243,301,149
6. Aggregate write-ins for other increases in funds from operations .....		
7. Total (Lines 1 to 6) .....		45,381,058,835
8. Cost of investments acquired (excluding short-term bonds) .....		28,671,568,832
9. Transfers from Separate Accounts on account of contract benefits:		
9.1 Death benefits .....		17,552,133
9.2 Matured endowments .....		
9.3 Annuity benefits .....		196,438,345
9.4 Supplementary contract benefits with life contingencies .....		
9.5 Accident and health benefits .....		
9.6 Surrender benefits and withdrawals for life contracts .....		11,178,082,892
9.7 Policy loans (net) .....		19,802,697
9.8 Transfers of reserves (net) .....		(250,142,746)
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 .....		24,030,352
11. Withdrawals on deposit-type contract funds and other liabilities without life or disability contingencies .....		4,589,230,473
12. Investment expenses (Exhibit 1, Line 25) .....		2,814,642
12.1 Fees associated with investment management, administration and contract guarantees .....		421,321,182
13. Investment taxes, licenses and fees, excluding federal income taxes (Exhibit 2, Line 9) .....		
14. Total (Lines 8 to 13) .....		44,870,698,802
15. Funds from operations (Line 7 minus Line 14) .....		510,360,033
16. Surplus contributed or (withdrawn) during year .....		150,000,000
17. Aggregate write-ins for other changes in funds .....		
18. Total funds (includes \$ ..... net transfers from general account) (Lines 15 to 17) .....		660,360,033
19. Increase in payable for investments acquired, net of receivable for investments sold .....		(43,595,829)
20. Decrease in policy loans .....		
21. Aggregate write-ins for other reconciling items .....		(2,996)
22. Increase in cash (Line 18 to 21) .....		616,761,208
<b>RECONCILIATION BETWEEN YEARS</b>		
23. Cash and invested assets, December 31st of prior year .....		75,506,274,154
24. Increase in cash (Line 22) .....		616,761,208
25. Cost of invested assets acquired .....		30,446,426,436
26. Adjusted cost of assets disposed of .....		30,860,982,354
27. Increase in policy loans .....		
28. Accrual of discount less amortization of premium .....		2,790,019
29. Depreciation on real estate and other invested assets .....		
30. Increase in net unrealized gains .....		(244,998,947)
31. Aggregate write-ins for other reconciling items .....		
32. Cash and invested assets, December 31st of current year .....		75,466,270,516
<b>DETAILS OF WRITE-INS</b>		
01.201. ....		
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 remittances and items not allocated .....		19,473,130
10.202. Miscellaneous .....		4,858,785
10.203. Change in other transfers due and accrued .....		(301,578)
10.298. Summary of remaining write-ins for Line 10.2 from overflow page .....		15
10.299. Totals (Lines 10.201 thru 10.203 plus 10.298) (Line 10.2 above) .....		24,030,352
1701. ....		
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) .....		
2101. Foreign currency loss .....		(2,996)
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) .....		(2,996)
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 .....	76,012,370,603	100.0
6. Total Separate Accounts liabilities (Lines 4 + 5 = Page 3, Line 17)	76,012,370,603	100.0 %

ANNUAL STATEMENT FOR THE YEAR 2021 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		19,996,310,846	YES	147,473,420					19,996,310,846
Supplemental Account		3,192,263	NO			3,192,263			3,192,263
Non-guaranteed Retirement Services SIAs		41,884,217,323	NO						41,884,217,323
Synthetic Guaranteed Interest Contract			YES						
1.01B9999 Total All Other Group Annuities		61,883,720,432	XXX	147,473,420		3,192,263			61,883,720,432
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	10,816,905,919	492,781	YES				21,235		471,546
Individual Immediate Variable Annuity	64,689,993		YES						
1.01D9999 Total All Other Individual Annuities	10,881,595,912	492,781	XXX				21,235		471,546
1.01E0001 Life Insurance									
Individual Variable Universal Life	1,220,759,405	337,259,295	YES						337,259,295
Group Variable Universal Life	82,572,907		YES						
Corporate-owned Life Insurance	175,697,437	2,815,218	YES						2,815,218
Stable Value Bank-owned Life Insurance		1,574,930,636	YES						1,574,930,636
1.01E9999 Total Life Insurance	1,479,029,749	1,915,005,149	XXX						1,915,005,149
1.01F9999 Totals	12,360,625,661	63,799,218,362	XXX	147,473,420		3,192,263	21,235		63,799,197,127

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 [ ] No [ X ]

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.....\$ .....

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.....\$ .....150,000,000

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 2021 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  No   
 1.082 Other Fees and Expenses..... Yes  No   
 1.083 Additional Required Surplus Amounts .... Yes  No

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 .....	147,473,420		
1.092 1 Year - 3 Years .....			
1.093 Over 3 Years - 5 Years .....			
1.094 Over 5 Years .....			3,192,263
1.095 Total	147,473,420		3,192,263

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  No  N/A   
 1.102 Other Fees and Expenses..... Yes  No  N/A   
 1.103 Additional Required Surplus Amounts .... Yes  No  N/A

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  No  N/A   
 1.112 Other Fees and Expenses..... Yes  No  N/A   
 1.113 Additional Required Surplus Amounts .... Yes  No  N/A

**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, 2021 .....		\$ 2,638,376
2.302 As of December 31, 2020 .....		\$ 6,925,020
2.303 As of December 31, 2019 .....		\$ 8,183,620
2.304 As of December 31, 2018 .....		\$ 6,161,058
2.305 As of December 31, 2017 .....		\$ 7,568,186

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		
Synthetic Guaranteed Interest Contract .....	Yes .....	Vy Ho, FSA, MAAA, Head of Insurance Valuation and Apointed Actuary .....
Separate Account 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		
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 .....	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.	
2.5E00001 Life Insurance		

ANNUAL STATEMENT FOR THE YEAR 2021 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, 2021		\$ 95,307,042
2.602 As of December 31, 2020		\$ 103,722,568
2.603 As of December 31, 2019		\$ 104,346,980
2.604 As of December 31, 2018		\$ 97,690,286
2.605 As of December 31, 2017		\$ 91,538,349

**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 [ X ] 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 [ X ] 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 [ X ] 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	(237,021,306)	(234,494,726)		(2,526,580)
Supplemental Account	(1,344,926)	(1,344,926)		
Non-guaranteed Retirement Services SIAs	(5,644,478,586)	(5,644,478,586)		
4.2B99999 Total All Other Group Annuities	(5,882,844,818)	(5,880,318,238)		(2,526,580)
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	(5,882,844,818)	(5,880,318,238)		(2,526,580)

- 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 [ X ] 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 [ X ] 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 [ X ] N/A [ ]



ANNUAL STATEMENT FOR THE YEAR 2021 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 [ X ] 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 [ X ]  
 5.22 Other Measurement Methods ..... Yes [ ] No [ X ]

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 .....	\$ 76,159,844,023	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 [ X ]

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

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 [ X ]

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

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 2021 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**

Additional Write-ins for Exhibit 5 Line 10.2

	1 Amount
10.204. Foreign income tax recoverable .....	15
10.297. Summary of remaining write-ins for Line 10.2 from overflow page	15

Schedule A - Verification - Real Estate

**N O N E**

Schedule B - Verification - Mortgage Loans

**N O N E**

ANNUAL STATEMENT FOR THE YEAR 2021 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 .....	1,832,017,109
2. Cost of acquired:	
2.1 Actual cost at time of acquisition (Part 2, Column 8) .....	992,170
2.2 Additional investment made after acquisition (Part 2, Column 9) .....	282,128,849
3. Capitalized deferred interest and other:	
3.1 Totals, Part 1, Column 16 .....	
3.2 Totals, Part 3, Column 12 .....	
4. Accrual of discount .....	436
5. Unrealized valuation increase (decrease):	
5.1 Totals, Part 1, Column 13 .....	29,665,290
5.2 Totals, Part 3, Column 9 .....	(23,142,235)
6. Total gain (loss) on disposals, Part 3, Column 19 .....	6,685,182
7. Deduct amounts received on disposals, Part 3, Column 16 .....	230,233,476
8. Deduct amortization of premium and depreciation .....	88,058
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) .....	1,898,025,267
12. Deduct total nonadmitted amounts .....	
13. Statement value at end of current period (Line 11 minus Line 12) .....	1,898,025,267

**SCHEDULE D - VERIFICATION BETWEEN YEARS**

Bonds and Stocks

1. Book/adjusted carrying value, December 31 of prior year .....	72,756,542,250
2. Cost of bonds and stocks acquired, Part 3, Column 7 .....	28,386,242,828
3. Accrual of discount .....	25,530,006
4. Unrealized valuation increase (decrease):	
4.1. Part 1, Column 12 .....	(267,241,041)
4.2. Part 2, Section 1, Column 15 .....	63,600
4.3. Part 2, Section 2, Column 13 .....	1,265,456,046
4.4. Part 4, Column 11 .....	(1,268,177,044)
5. Total gain (loss) on disposals, Part 4, Column 19 .....	2,848,068,446
6. Deduction consideration for bonds and stocks disposed of, Part 4, Column 7 .....	32,002,150,734
7. Deduct amortization of premium .....	68,000,964
8. Total foreign exchange change in book/adjusted carrying value:	
8.1. Part 1, Column 15 .....	(43,302)
8.2. Part 2, Section 1, Column 19 .....	
8.3. Part 2, Section 2, Column 16 .....	494
8.4. Part 4, Column 15 .....	(946)
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 .....	8,013,401
11. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9+10) .....	71,684,303,040
12. Deduct total nonadmitted amounts .....	
13. Statement value at end of current period (Line 11 minus Line 12) .....	71,684,303,040

ANNUAL STATEMENT FOR THE YEAR 2021 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
<b>BONDS</b>					
Governments (Including all obligations guaranteed by governments)	1. United States .....	4,168,308,685	4,168,308,685	4,267,010,811	4,092,361,329
	2. Canada .....				
	3. Other Countries	124,812,310	124,812,310	124,674,351	110,463,691
	4. Totals	4,293,120,995	4,293,120,995	4,391,685,162	4,202,825,020
U.S. States, Territories and Possessions (Direct and guaranteed)	5. Totals	32,197,902	32,197,902	28,015,166	22,566,434
U.S. Political Subdivisions of States, Territories and Possessions (Direct and guaranteed)	6. Totals	10,430,249	10,430,249	8,844,178	7,755,000
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	1,358,280,267	1,358,280,267	1,354,549,927	1,304,383,059
Industrial and Miscellaneous, SVO Identified Funds, Unaffiliated Bank Loans and Hybrid Securities (unaffiliated)	8. United States .....	11,327,563,294	11,327,563,294	11,039,882,942	10,901,772,017
	9. Canada .....	253,305,339	253,305,339	241,371,101	236,110,718
	10. Other Countries	1,992,923,933	1,992,923,933	1,957,164,043	1,913,388,237
	11. Totals	13,573,792,566	13,573,792,566	13,238,418,086	13,051,270,972
Parent, Subsidiaries and Affiliates	12. Totals				
	13. Total Bonds	19,267,821,979	19,267,821,979	19,021,512,519	18,588,800,485
<b>PREFERRED STOCKS</b>					
Industrial and Miscellaneous (unaffiliated)	14. United States .....	6,423,600	6,423,600	6,360,000	
	15. Canada .....				
	16. Other Countries				
	17. Totals	6,423,600	6,423,600	6,360,000	
Parent, Subsidiaries and Affiliates	18. Totals				
	19. Total Preferred Stocks	6,423,600	6,423,600	6,360,000	
<b>COMMON STOCKS</b>					
Industrial and Miscellaneous (unaffiliated)	20. United States .....	52,402,553,316	52,402,553,316	45,417,845,189	
	21. Canada .....	3,653,235	3,653,235	2,841,633	
	22. Other Countries	3,850,910	3,850,910	3,289,090	
	23. Totals	52,410,057,461	52,410,057,461	45,423,975,912	
Parent, Subsidiaries and Affiliates	24. Totals				
	25. Total Common Stocks	52,410,057,461	52,410,057,461	45,423,975,912	
	26. Total Stocks	52,416,481,061	52,416,481,061	45,430,335,912	
	27. Total Bonds and Stocks	71,684,303,040	71,684,303,040	64,451,848,431	

ANNUAL STATEMENT FOR THE YEAR 2021 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

**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 .....	315,361,765	315,361,765			
2. Cost of short-term investments acquired .....	1,774,857,604	1,774,857,604			
3. Accrual of discount .....	460,614	460,614			
4. Unrealized valuation increase (decrease) .....	(105,070)	(105,070)			
5. Total gain (loss) on disposals .....	546,227	546,227			
6. Deduct consideration received on disposals .....	1,448,885,661	1,448,885,661			
7. Deduct amortization of premium .....	14	14			
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) .....	642,235,465	642,235,465			
11. Deduct total nonadmitted amounts .....					
12. Statement value at end of current period (Line 10 minus Line 11)	642,235,465	642,235,465			

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



ANNUAL STATEMENT FOR THE YEAR 2021 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

**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)		5,403,448
2. Cost paid/(consideration received) on additions:		
2.1 Current year paid/(consideration received) at time of acquisition, still open, Section 1, Column 12	8,401,996	
2.2 Current year paid/(consideration received) at time of acquisition, terminated, Section 2, Column 14	1,151,140	9,553,136
3. Unrealized valuation increase/(decrease):		
3.1 Section 1, Column 17	24,152,108	
3.2 Section 2, Column 19	(1,935,413)	22,216,695
4. SSAP No. 108 Adjustments		
5. Total gain (loss) on termination recognized, Section 2, Column 22		(12,857,329)
6. Considerations received/(paid) on terminations, Section 2, Column 15		(10,916,939)
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	(24,205)	
9.2 Section 2, Column 20	26,981	2,776
10. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6+7+8+9)		35,235,665
11. Deduct nonadmitted assets		
12. Statement value at end of current period (Line 10 minus Line 11)		35,235,665

**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	2,051,127	
3.14 Section 1, Column 18, prior year	(579,850)	2,630,977
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	2,051,127	
3.24 Section 1, Column 19, prior year plus	(579,850)	
3.25 SSAP No. 108 Adjustments		2,630,977
3.3 Subtotal (Line 3.1 minus Line 3.2)		2,630,977
4.1 Cumulative variation margin on terminated contracts during the year (Section 2, Column 15)	(7,784,041)	
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)	(7,784,041)	
4.23 SSAP No. 108 Adjustments		(7,784,041)
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 2021 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.....	35,235,666
2.	Part B, Section 1, Column 15 plus Part B, Section 1 Footnote - Total Ending Cash Balance .....	.....
3.	Total (Line 1 plus Line 2) .....	35,235,666
4.	Part D, Section 1, Column 6 .....	17,760,211
5.	Part D, Section 1, Column 7 .....	(1,482,964)
6.	Total (Line 3 minus Line 4 minus Line 5) .....	18,958,419
		Fair Value Check
7.	Part A, Section 1, Column 16 .....	35,235,666
8.	Part B, Section 1, Column 13 .....	.....
9.	Total (Line 7 plus Line 8) .....	35,235,666
10.	Part D, Section 1, Column 9 .....	17,760,211
11.	Part D, Section 1, Column 10 .....	(1,482,964)
12.	Total (Line 9 minus Line 10 minus Line 11) .....	18,958,419
		Potential Exposure Check
13.	Part A, Section 1, Column 21 .....	119,874,401
14.	Part B, Section 1, Column 20 .....	19,376,074
15.	Part D, Section 1, Column 12 .....	139,250,475
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 .....	412,198,600	408,733,996	3,464,604	
2. Cost of cash equivalents acquired .....	56,127,492,918	45,937,784,583	10,189,708,335	
3. Accrual of discount .....	2,427,042	2,427,042		
4. Unrealized valuation increase (decrease) .....	(7,122)	(7,122)		
5. Total gain (loss) on disposals .....	662,891	662,891		
6. Deduct consideration received on disposals .....	55,423,252,551	45,456,825,133	9,966,427,418	
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) .....	1,119,521,778	892,776,257	226,745,521	
11. Deduct total nonadmitted amounts .....				
12. Statement value at end of current period (Line 10 minus Line 11)	1,119,521,778	892,776,257	226,745,521	

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