



KPMG LLP
Two Financial Center
60 South Street
Boston, MA 02111

Report of Independent Registered Public Accounting Firm

The Board of Directors of Massachusetts Mutual Life Insurance Company and Contract Owners of Massachusetts Mutual Variable Annuity Separate Account 4:

Opinion on the Financial Statements and Financial Highlights

We have audited the accompanying statements of assets and liabilities of Massachusetts Mutual Variable Annuity Separate Account 4 (comprised of the sub-accounts listed in Appendix A to the opinion) (collectively, “the Separate Account”) as of December 31, 2019, the related statements of operations and changes in net assets for each of the years or periods (as described in Appendix A) in the two-year period then ended, and the related notes (collectively, the “financial statements”) and the financial highlights for each of the years or periods in the five-year period then ended. In our opinion, the financial statements and financial highlights present fairly, in all material respects, the financial position of the Separate Account as of December 31, 2019, the results of its operations and the changes in its net assets for each of the years or periods in the two-year period then ended, and the financial highlights for each of the years or periods in the five-year period then ended, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements and financial highlights are the responsibility of the Separate Account’s management. Our responsibility is to express an opinion on these financial statements and financial highlights based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Separate Account in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements and financial highlights are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements and financial highlights, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements and financial highlights. Such procedures also included confirmation of securities owned as of December 31, 2019, by correspondence with the underlying mutual funds or their transfer agent. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements and financial highlights. We believe that our audits provide a reasonable basis for our opinion.

KPMG LLP

We have served as the Separate Account’s auditor since 2004.

Boston, Massachusetts
April 3, 2020

Appendix A

Massachusetts Mutual Variable Annuity Separate Account 4 is comprised of the following sub-accounts and the activities of each sub-account have been included within the accompanying statements of assets and liabilities as of December 31, 2019 and the related statements of operations and changes in net assets for each of the years or periods (as described below) in the two-year period then ended.

Sub-Accounts

BlackRock 60/40 Target Allocation ETF V.I. Sub-Account (Class III) **
Fidelity® VIP Contrafund® Sub-Account (Initial Class)
Fidelity® VIP Contrafund® Sub-Account (Service Class 2)
Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series II) *
Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series I) *
Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series II) *
Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series I) *
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series II) *
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series I) *
Invesco Oppenheimer V.I. Global Sub-Account (Series II) *
Invesco Oppenheimer V.I. Global Sub-Account (Series I) *
Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series II) *
Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series I) *
Invesco Oppenheimer V.I. Government Money Sub-Account *
Invesco Oppenheimer V.I. International Growth Sub-Account (Series II) *
Invesco Oppenheimer V.I. International Growth Sub-Account (Series I) *
Invesco Oppenheimer V.I. Main Street Sub-Account (Series II) *
Invesco Oppenheimer V.I. Main Street Sub-Account (Series I) *
Invesco Oppenheimer V.I. Total Return Bond Sub-Account *

Sub-Accounts

Invesco V.I. Diversified Dividend Sub-Account (Series I)
Invesco V.I. Diversified Dividend Sub-Account (Series II)
Invesco V.I. Health Care Sub-Account (Series I) **
Invesco V.I. Health Care Sub-Account (Series II) **
Invesco V.I. Technology Sub-Account (Series I)
Invesco V.I. Technology Sub-Account (Series II)
Ivy VIP Asset Strategy Sub-Account
MML Aggressive Allocation Sub-Account (Initial Class)
MML Aggressive Allocation Sub-Account (Service Class)
MML Asset Momentum Sub-Account (Service Class I)
MML Balanced Allocation Sub-Account (Initial Class)
MML Balanced Allocation Sub-Account (Service Class)
MML Blend Sub-Account (Initial Class)
MML Blend Sub-Account (Service Class)
MML Blue Chip Growth Sub-Account (Initial Class)
MML Blue Chip Growth Sub-Account (Service Class)
MML Conservative Allocation Sub-Account (Initial Class)
MML Conservative Allocation Sub-Account (Service Class)
MML Core Allocation Sub-Account
MML Dynamic Bond Sub-Account (Service Class I)
MML Equity Sub-Account (Initial Class)
MML Equity Sub-Account (Service Class)
MML Equity Income Sub-Account (Initial Class)
MML Equity Income Sub-Account (Service Class)
MML Equity Index Sub-Account (Class I)
MML Equity Index Sub-Account (Service Class I)
MML Equity Rotation Sub-Account (Service Class I)
MML Focused Equity Sub-Account
MML Foreign Sub-Account (Initial Class)
MML Foreign Sub-Account (Service Class)
MML Fundamental Growth Sub-Account
MML Fundamental Value Sub-Account
MML Global Sub-Account (Class I)
MML Global Sub-Account (Service Class I)
MML Global Sub-Account (Class II)
MML Growth Sub-Account
MML Growth & Income Sub-Account (Initial Class)
MML Growth & Income Sub-Account (Service Class)

Sub-Accounts

MML Growth Allocation Sub-Account (Initial Class)
MML Growth Allocation Sub-Account (Service Class)
MML High Yield Sub-Account
MML Income & Growth Sub-Account (Initial Class)
MML Income & Growth Sub-Account (Service Class)
MML Inflation-Protected and Income Sub-Account (Initial Class)
MML Inflation-Protected and Income Sub-Account (Service Class)
MML International Sub-Account
MML International Equity Sub-Account
MML Large Cap Growth Sub-Account (Initial Class)
MML Large Cap Growth Sub-Account (Service Class)
MML Managed Bond Sub-Account (Initial Class)
MML Managed Bond Sub-Account (Service Class)
MML Managed Volatility Sub-Account (Initial Class)
MML Managed Volatility Sub-Account (Service Class)
MML Mid Cap Growth Sub-Account (Initial Class)
MML Mid Cap Growth Sub-Account (Service Class)
MML Mid Cap Value Sub-Account (Initial Class)
MML Mid Cap Value Sub-Account (Service Class)

Sub-Accounts

MML Moderate Allocation Sub-Account (Initial Class)
MML Moderate Allocation Sub-Account (Service Class)
MML Short-Duration Bond Sub-Account
MML Small Cap Equity Sub-Account (Initial Class)
MML Small Cap Equity Sub-Account (Service Class)
MML Small Cap Growth Equity Sub-Account (Initial Class)
MML Small Cap Growth Equity Sub-Account (Service Class)
MML Small Company Value Sub-Account
MML Small/Mid Cap Value Sub-Account (Initial Class)
MML Small/Mid Cap Value Sub-Account (Service Class)
MML Special Situations Sub-Account (Service Class I)
MML Strategic Emerging Markets Sub-Account
MML Total Return Bond Sub-Account
MML U.S. Government Money Market Sub-Account
Oppenheimer Global Multi-Alternatives Sub-Account***
PIMCO CommodityRealReturn® Strategy Sub-Account
VY® Clarion Global Real Estate Sub-Account

* See Note 2 to the financial statements for the information regarding the merger of this sub-account.

** See Note 2 to the financial statements for the former name of this Sub-Account.

***Effective April 29, 2019 this Sub-Account liquidated and any contract value in the Sub-Account after the close of the New York Stock Exchange on April 29, 2019 was automatically transferred to the MML U.S. Government Money Market Sub-Account.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES

December 31, 2019

	BlackRock 60/40 Target Allocation ETF V.I. Sub-Account (Class III)	Fidelity® VIP Contrafund® Sub-Account (Initial Class)	Fidelity® VIP Contrafund® Sub-Account (Service Class 2)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series II)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series I)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series II)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series I)	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series II)
ASSETS								
Investments								
Number of shares	295,035	6,244,840	5,306,164	219,679	2,699,549	4,458	421,473	231,947
Identified cost	\$ 3,450,272	\$ 192,898,775	\$ 175,052,899	\$ 11,307,178	\$ 139,045,837	\$ 50,837	\$ 5,113,549	\$ 17,282,937
Value	\$ 3,575,830	\$ 232,120,693	\$ 191,552,510	\$ 12,888,593	\$ 161,352,051	\$ 71,725	\$ 6,874,217	\$ 18,022,308
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	-	-	-
Total assets	3,575,830	232,120,693	191,552,510	12,888,593	161,352,051	71,725	6,874,217	18,022,308
LIABILITIES								
Annuitant mortality fluctuation reserve	-	8,967	-	-	3,908	-	1,093	-
Payable to Massachusetts Mutual Life Insurance Company	-	329	1	10	149	14	82	17
Total liabilities	-	9,296	1	10	4,057	14	1,175	17
NET ASSETS	\$ 3,575,830	\$ 232,111,397	\$ 191,552,509	\$ 12,888,583	\$ 161,347,994	\$ 71,711	\$ 6,873,042	\$ 18,022,291
Net Assets:								
Accumulation units - value	\$ 3,575,830	\$ 224,932,557	\$ 191,552,509	\$ 12,888,583	\$ 157,626,267	\$ 71,711	\$ 6,822,375	\$ 18,022,291
Contracts in payout (annuitization) period	-	7,178,840	-	-	3,721,727	-	50,667	-
Net assets	\$ 3,575,830	\$ 232,111,397	\$ 191,552,509	\$ 12,888,583	\$ 161,347,994	\$ 71,711	\$ 6,873,042	\$ 18,022,291
Outstanding units								
Contract owners	274,313	6,319,467	8,336,046	481,175	5,846,107	5,079	417,214	875,114
UNIT VALUE								
Panorama Premier	\$ -	\$ 49.17	\$ -	\$ -	\$ 26.50	\$ -	\$ 16.02	\$ -
Panorama Passage®								
Tier 1	-	36.81	-	-	26.49	-	15.74	-
Tier 2	-	35.84	-	-	25.79	-	15.33	-
Tier 3	-	38.72	-	-	27.86	-	16.53	-
Tier 4	-	37.08	-	-	26.68	-	15.83	-
MassMutual Artistry	-	33.31	-	-	19.47	-	16.20	-
MassMutual Transitions®								
Custom Plan	-	42.16	-	-	29.72	-	17.70	-
Package Plan I	-	42.16	-	-	29.72	-	17.70	-
Package Plan II	-	39.64	-	-	27.94	-	16.65	-
Package Plan III	-	37.93	-	-	26.74	-	15.93	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	BlackRock 60/40 Target Allocation ETF V.I. Sub-Account (Class III)	Fidelity® VIP Contrafund® Sub-Account (Initial Class)	Fidelity® VIP Contrafund® Sub-Account (Service Class 2)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series II)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series I)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series II)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series I)	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series II)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	-	32.95	-	-	25.12	-	13.85	-
Tier 2	-	30.93	-	-	23.57	-	13.00	-
Tier 3	-	29.73	-	-	22.66	-	12.50	-
Tier 4	-	30.88	-	-	23.54	-	12.98	-
Tier 5	-	28.99	-	-	22.09	-	12.18	-
Tier 6	-	27.86	-	-	21.24	-	11.71	-
Tier 7	-	30.52	-	-	23.26	-	12.83	-
Tier 8	-	28.60	-	-	21.80	-	12.02	-
Tier 9	-	-	29.01	22.11	-	12.19	-	25.62
Tier 10	-	-	31.32	23.87	-	13.16	-	27.66
Tier 11	-	-	27.18	20.72	-	11.42	-	24.01
Tier 12	-	-	29.93	22.81	-	12.58	-	26.44
Tier 13	-	-	26.03	19.83	-	-	-	22.99
Tier 14	-	-	27.77	21.16	-	-	-	24.53
MassMutual RetireEase Select SM								
Tier 1	-	21.76	-	-	20.31	-	10.91	-
Tier 2	-	23.18	-	-	21.63	-	11.62	-
MassMutual Transitions Select SM								
Tier 1	-	37.42	-	-	29.03	-	15.53	-
Tier 2	-	-	36.38	28.22	-	15.09	-	32.40
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	-	-	15.13	-	-	-	-	16.20
Tier 2	-	-	14.91	-	-	-	-	15.96
Tier 3	-	-	15.13	-	-	-	-	16.20
MassMutual Capital Vantage SM								
Tier 1	12.86	-	15.10	-	-	-	-	16.16
Tier 2	13.05	-	15.32	-	-	-	-	16.40
Tier 3	12.62	-	14.82	-	-	-	-	15.86
Tier 4	12.86	-	15.10	-	-	-	-	16.16
Tier 5	12.80	-	15.04	-	-	-	-	16.10
Tier 6	13.05	-	15.32	-	-	-	-	16.40

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series I)	Invesco Oppenheimer V.I. Government Money Sub-Account	Invesco Oppenheimer V.I. International Growth Sub-Account (Series II)	Invesco Oppenheimer V.I. International Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. Main Street Sub-Account (Series II)
ASSETS								
Investments								
Number of shares	1,270,332	1,665,141	4,137,625	35,179,655	7,064,874	10,533,828	13,375,323	674,083
Identified cost	\$ 95,132,909	\$ 66,450,596	\$ 150,652,737	\$ 179,789,639	\$ 7,064,874	\$ 25,475,288	\$ 29,290,840	\$ 19,437,284
Value	\$ 106,479,235	\$ 69,852,668	\$ 176,055,952	\$ 174,842,888	\$ 7,064,873	\$ 26,966,599	\$ 32,769,541	\$ 19,582,109
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	31	-	-	-
Total assets	106,479,235	69,852,668	176,055,952	174,842,888	7,064,904	26,966,599	32,769,541	19,582,109
LIABILITIES								
Annuitant mortality fluctuation reserve	2,434	-	4,834	5,472	3,146	-	481	-
Payable to Massachusetts Mutual Life Insurance Company	111	13	154	188	-	10	98	19
Total liabilities	2,545	13	4,988	5,660	3,146	10	579	19
NET ASSETS	\$ 106,476,690	\$ 69,852,655	\$ 176,050,964	\$ 174,837,228	\$ 7,061,758	\$ 26,966,589	\$ 32,768,962	\$ 19,582,090
Net Assets:								
Accumulation units - value	\$ 103,724,403	\$ 69,852,655	\$ 172,069,587	\$ 171,158,344	\$ 6,941,009	\$ 26,966,589	\$ 31,754,918	\$ 19,582,090
Contracts in payout (annuitization) period	2,752,287	-	3,981,377	3,678,884	120,749	-	1,014,044	-
Net assets	\$ 106,476,690	\$ 69,852,655	\$ 176,050,964	\$ 174,837,228	\$ 7,061,758	\$ 26,966,589	\$ 32,768,962	\$ 19,582,090
Outstanding units								
Contract owners	3,582,421	3,054,222	5,325,923	9,820,494	673,998	1,376,480	1,267,445	1,022,590
UNIT VALUE								
Panorama Premier	\$ 23.89	\$ -	\$ 41.11	\$ 22.55	\$ 12.00	\$ -	\$ 36.68	\$ -
Panorama Passage®								
Tier 1	23.54	-	40.51	22.03	10.30	-	23.59	-
Tier 2	22.92	-	39.45	21.45	10.03	-	22.97	-
Tier 3	24.76	-	42.62	23.18	10.84	-	24.82	-
Tier 4	23.71	-	40.81	22.19	10.38	-	23.77	-
MassMutual Artistry	13.24	-	28.49	22.45	10.54	-	17.57	-
MassMutual Transitions®								
Custom Plan	33.67	-	36.97	22.10	10.49	-	28.48	-
Package Plan I	33.67	-	36.97	22.10	10.49	-	28.48	-
Package Plan II	31.66	-	34.77	20.78	9.86	-	26.78	-
Package Plan III	30.29	-	33.27	19.89	9.44	-	25.62	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series I)	Invesco Oppenheimer V.I. Government Money Sub-Account	Invesco Oppenheimer V.I. International Growth Sub-Account (Series II)	Invesco Oppenheimer V.I. International Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. Main Street Sub-Account (Series II)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	29.11	-	28.65	16.42	9.51	-	23.60	-
Tier 2	27.33	-	26.90	15.42	8.92	-	22.15	-
Tier 3	26.27	-	25.85	14.82	8.58	-	21.29	-
Tier 4	27.28	-	26.85	15.39	8.91	-	22.12	-
Tier 5	25.61	-	25.21	14.45	8.36	-	20.76	-
Tier 6	24.61	-	24.23	13.89	8.04	-	19.95	-
Tier 7	26.96	-	26.54	15.21	8.81	-	21.86	-
Tier 8	25.27	-	24.87	14.26	8.25	-	20.48	-
Tier 9	-	25.22	-	-	-	20.76	-	23.47
Tier 10	-	27.23	-	-	-	22.41	-	25.34
Tier 11	-	23.64	-	-	-	19.45	-	21.99
Tier 12	-	26.03	-	-	-	21.42	-	24.22
Tier 13	-	22.63	-	-	-	18.62	-	21.06
Tier 14	-	24.15	-	-	-	19.87	-	22.47
MassMutual RetireEase Select SM								
Tier 1	21.29	-	17.95	13.57	-	-	12.97	-
Tier 2	22.68	-	19.12	14.45	-	-	13.81	-
MassMutual Transitions Select SM								
Tier 1	33.34	-	33.91	17.42	10.15	-	27.99	-
Tier 2	-	32.97	-	-	-	27.19	-	29.72
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	-	14.30	-	-	-	11.79	-	14.79
Tier 2	-	14.09	-	-	-	11.62	-	14.58
Tier 3	-	14.30	-	-	-	11.79	-	14.79
MassMutual Capital Vantage SM								
Tier 1	-	14.27	-	-	-	11.76	-	14.76
Tier 2	-	14.48	-	-	-	11.94	-	14.98
Tier 3	-	14.00	-	-	-	11.54	-	14.49
Tier 4	-	14.27	-	-	-	11.76	-	14.76
Tier 5	-	14.21	-	-	-	11.71	-	14.70
Tier 6	-	14.48	-	-	-	11.94	-	14.98

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	Invesco Oppenheimer V.I. Main Street Sub-Account (Series I)	Invesco Oppenheimer V.I. Total Return Bond Sub-Account	Invesco V.I. Diversified Dividend Sub-Account (Series I)	Invesco V.I. Diversified Dividend Sub-Account (Series II)	Invesco V.I. Health Care Sub-Account (Series I)	Invesco V.I. Health Care Sub-Account (Series II)	Invesco V.I. Technology Sub-Account (Series I)	Invesco V.I. Technology Sub-Account (Series II)
ASSETS								
Investments								
Number of shares	1,107,183	250,715	248,680	524,673	381,906	470,036	272,030	396,272
Identified cost	\$ 29,559,147	\$ 1,931,431	\$ 5,992,274	\$ 13,439,899	\$ 10,712,674	\$ 12,488,328	\$ 5,879,818	\$ 8,572,053
Value	\$ 32,595,452	\$ 1,988,168	\$ 6,771,550	\$ 14,181,916	\$ 11,545,022	\$ 13,391,318	\$ 7,407,376	\$ 10,156,441
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	2	-	-
Total assets	32,595,452	1,988,168	6,771,550	14,181,916	11,545,022	13,391,320	7,407,376	10,156,441
LIABILITIES								
Annuitant mortality fluctuation reserve	1,254	-	-	-	350	-	5	-
Payable to Massachusetts Mutual Life Insurance Company	103	1	76	12	93	-	93	7
Total liabilities	1,357	1	76	12	443	-	98	7
NET ASSETS	\$ 32,594,095	\$ 1,988,167	\$ 6,771,474	\$ 14,181,904	\$ 11,544,579	\$ 13,391,320	\$ 7,407,278	\$ 10,156,434
Net Assets:								
Accumulation units - value	\$ 32,334,877	\$ 1,988,167	\$ 6,535,538	\$ 14,181,904	\$ 11,138,825	\$ 13,391,320	\$ 7,246,042	\$ 10,156,434
Contracts in payout (annuitization) period	259,218	-	235,936	-	405,754	-	161,236	-
Net assets	\$ 32,594,095	\$ 1,988,167	\$ 6,771,474	\$ 14,181,904	\$ 11,544,579	\$ 13,391,320	\$ 7,407,278	\$ 10,156,434
Outstanding units								
Contract owners	1,159,288	129,518	517,444	1,203,871	355,234	424,441	409,274	300,092
UNIT VALUE								
Panorama Premier	\$ 24.47	\$ 15.35	\$ 14.34	\$ -	\$ 32.06	\$ -	\$ 8.24	\$ -
Panorama Passage®								
Tier 1	24.88	-	14.09	-	31.50	-	8.10	-
Tier 2	24.22	-	13.72	-	30.67	-	7.88	-
Tier 3	26.17	-	14.80	-	33.09	-	8.51	-
Tier 4	25.06	-	14.17	-	31.68	-	8.14	-
MassMutual Artistry	22.79	-	13.02	-	28.87	-	8.10	-
MassMutual Transitions®								
Custom Plan	31.55	-	13.91	-	35.65	-	31.73	-
Package Plan I	31.55	-	13.91	-	35.65	-	31.73	-
Package Plan II	29.67	-	13.07	-	33.52	-	29.83	-
Package Plan III	28.39	-	12.51	-	32.08	-	28.55	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	Invesco Oppenheimer V.I. Main Street Sub-Account (Series I)	Invesco Oppenheimer V.I. Total Return Bond Sub-Account	Invesco V.I. Diversified Dividend Sub-Account (Series I)	Invesco V.I. Diversified Dividend Sub-Account (Series II)	Invesco V.I. Health Care Sub-Account (Series I)	Invesco V.I. Health Care Sub-Account (Series II)	Invesco V.I. Technology Sub-Account (Series I)	Invesco V.I. Technology Sub-Account (Series II)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	26.66	-	10.96	-	28.92	-	28.81	-
Tier 2	25.02	-	10.29	-	27.14	-	27.04	-
Tier 3	24.05	-	9.89	-	26.09	-	25.99	-
Tier 4	24.98	-	10.27	-	27.10	-	27.00	-
Tier 5	23.45	-	9.64	-	25.43	-	25.34	-
Tier 6	22.54	-	9.27	-	24.45	-	24.36	-
Tier 7	24.69	-	10.15	-	26.78	-	26.69	-
Tier 8	23.14	-	9.52	-	25.10	-	25.01	-
Tier 9	-	-	-	9.67	-	25.45	-	25.35
Tier 10	-	-	-	10.44	-	27.48	-	27.37
Tier 11	-	-	-	9.06	-	23.85	-	23.75
Tier 12	-	-	-	9.98	-	26.26	-	26.16
Tier 13	-	-	-	8.68	-	22.83	-	22.74
Tier 14	-	-	-	9.26	-	24.37	-	24.27
MassMutual RetireEase Select SM								
Tier 1	19.86	-	8.64	-	23.74	-	25.03	-
Tier 2	21.15	-	9.20	-	25.28	-	26.66	-
MassMutual Transitions Select SM								
Tier 1	30.57	-	12.77	-	33.95	-	38.33	-
Tier 2	-	-	-	12.44	-	33.00	-	37.25
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
MassMutual Capital Vantage SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
Tier 5	-	-	-	-	-	-	-	-
Tier 6	-	-	-	-	-	-	-	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	Ivy VIP Asset Strategy Sub-Account	MML Aggressive Allocation Sub-Account (Initial Class)	MML Aggressive Allocation Sub-Account (Service Class)	MML Asset Momentum Sub-Account (Service Class I)	MML Balanced Allocation Sub-Account (Initial Class)	MML Balanced Allocation Sub-Account (Service Class)	MML Blend Sub-Account (Initial Class)	MML Blend Sub-Account (Service Class)
ASSETS								
Investments								
Number of shares	1,305,605	3,691,811	9,573,213	156,374	10,012,762	41,725,566	2,746,676	7,076,652
Identified cost	\$ 11,800,603	\$ 37,657,476	\$ 98,841,495	\$ 1,738,444	\$ 102,749,773	\$ 424,516,646	\$ 58,820,990	\$ 155,586,700
Value	\$ 12,403,379	\$ 37,508,795	\$ 95,636,403	\$ 1,893,686	\$ 99,026,211	\$ 408,910,546	\$ 62,982,049	\$ 161,858,731
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	2	-	1
Total assets	12,403,379	37,508,795	95,636,403	1,893,686	99,026,211	408,910,548	62,982,049	161,858,732
LIABILITIES								
Annuitant mortality fluctuation reserve	-	-	-	-	-	-	1,145	-
Payable to Massachusetts Mutual Life Insurance Company	19	27	1	-	43	-	98	-
Total liabilities	19	27	1	-	43	-	1,243	-
NET ASSETS	\$ 12,403,360	\$ 37,508,768	\$ 95,636,402	\$ 1,893,686	\$ 99,026,168	\$ 408,910,548	\$ 62,980,806	\$ 161,858,732
Net Assets:								
Accumulation units - value	\$ 12,403,360	\$ 37,508,768	\$ 95,636,402	\$ 1,893,686	\$ 99,026,168	\$ 408,910,548	\$ 61,376,336	\$ 161,858,732
Contracts in payout (annuitization) period	-	-	-	-	-	-	1,604,470	-
Net assets	\$ 12,403,360	\$ 37,508,768	\$ 95,636,402	\$ 1,893,686	\$ 99,026,168	\$ 408,910,548	\$ 62,980,806	\$ 161,858,732
Outstanding units								
Contract owners	943,855	1,821,022	5,325,759	120,799	5,809,475	26,645,694	2,419,280	9,995,211
UNIT VALUE								
Panorama Premier	-	\$ 20.19	\$ -	\$ -	\$ 16.87	\$ -	\$ 22.71	\$ -
Panorama Passage®								
Tier 1	-	19.97	-	-	16.69	-	24.02	-
Tier 2	-	19.59	-	-	16.38	-	23.39	-
Tier 3	-	20.58	-	-	17.20	-	25.27	-
Tier 4	-	19.95	-	-	16.67	-	24.19	-
MassMutual Artistry	-	20.72	-	-	17.32	-	25.03	-
MassMutual Transitions®								
Custom Plan	-	21.30	-	-	17.80	-	29.64	-
Package Plan I	-	21.30	-	-	17.80	-	29.64	-
Package Plan II	-	20.43	-	-	17.08	-	27.87	-
Package Plan III	-	19.83	-	-	16.57	-	26.67	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	Ivy VIP Asset Strategy Sub-Account	MML Aggressive Allocation Sub-Account (Initial Class)	MML Aggressive Allocation Sub-Account (Service Class)	MML Asset Momentum Sub-Account (Service Class I)	MML Balanced Allocation Sub-Account (Initial Class)	MML Balanced Allocation Sub-Account (Service Class)	MML Blend Sub-Account (Initial Class)	MML Blend Sub-Account (Service Class)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	13.55	19.83	-	-	16.57	-	24.61	-
Tier 2	13.17	18.90	-	-	15.80	-	23.10	-
Tier 3	12.94	18.35	-	-	15.34	-	22.20	-
Tier 4	13.17	18.90	-	-	15.80	-	23.06	-
Tier 5	12.80	18.02	-	-	15.06	-	21.65	-
Tier 6	12.57	17.49	-	-	14.62	-	20.81	-
Tier 7	13.08	18.68	-	-	15.61	-	22.79	-
Tier 8	12.71	17.81	-	-	14.88	-	21.36	-
Tier 9	12.89	-	17.73	-	-	14.85	-	21.66
Tier 10	13.36	-	18.82	-	-	15.77	-	23.39
Tier 11	12.53	-	16.90	-	-	14.16	-	20.30
Tier 12	12.98	-	17.99	-	-	15.07	-	22.35
Tier 13	12.13	-	16.18	-	-	13.56	-	19.44
Tier 14	12.48	-	16.98	-	-	14.22	-	20.74
MassMutual RetireEase Select SM								
Tier 1	-	-	-	-	-	-	19.51	-
Tier 2	-	-	-	-	-	-	20.78	-
MassMutual Transitions Select SM								
Tier 1	13.95	20.80	-	-	17.38	-	27.33	-
Tier 2	13.95	-	20.19	-	-	16.92	-	26.57
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	12.12	-	13.48	-	-	12.17	-	13.58
Tier 2	11.95	-	13.28	-	-	11.99	-	13.39
Tier 3	12.12	-	13.48	-	-	12.17	-	13.58
MassMutual Capital Vantage SM								
Tier 1	12.10	-	13.45	15.45	-	12.14	-	13.56
Tier 2	12.27	-	13.65	15.68	-	12.32	-	13.76
Tier 3	11.87	-	13.20	15.17	-	11.92	-	13.30
Tier 4	12.10	-	13.45	15.45	-	12.14	-	13.56
Tier 5	12.05	-	13.40	15.39	-	12.09	-	13.50
Tier 6	12.27	-	13.65	15.68	-	12.32	-	13.76

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Blue Chip Growth Sub-Account (Initial Class)	MML Blue Chip Growth Sub-Account (Service Class)	MML Conservative Allocation Sub-Account (Initial Class)	MML Conservative Allocation Sub-Account (Service Class)	MML Core Allocation Sub-Account	MML Dynamic Bond Sub-Account (Service Class I)	MML Equity Sub-Account (Initial Class)	MML Equity Sub-Account (Service Class)
ASSETS								
Investments								
Number of shares	3,418,288	8,741,802	7,516,991	31,780,708	84,428,381	1,007,383	892,847	3,506,993
Identified cost	\$ 53,757,374	\$ 137,956,493	\$ 74,322,743	\$ 313,544,466	\$ 1,003,751,494	\$ 9,982,898	\$ 23,047,202	\$ 96,516,457
Value	\$ 56,367,569	\$ 137,333,705	\$ 74,794,060	\$ 312,722,161	\$ 989,500,624	\$ 10,144,350	\$ 25,085,404	\$ 97,057,936
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	-	-	7
Total assets	56,367,569	137,333,705	74,794,060	312,722,161	989,500,624	10,144,350	25,085,404	97,057,943
LIABILITIES								
Annuity mortality fluctuation reserve	1,042	-	-	-	-	-	349	-
Payable to Massachusetts Mutual Life Insurance Company	95	8	32	17	135	-	90	-
Total liabilities	1,137	8	32	17	135	-	439	-
NET ASSETS	\$ 56,366,432	\$ 137,333,697	\$ 74,794,028	\$ 312,722,144	\$ 989,500,489	\$ 10,144,350	\$ 25,084,965	\$ 97,057,943
Net Assets:								
Accumulation units - value	\$ 55,168,405	\$ 137,333,697	\$ 74,654,709	\$ 312,722,144	\$ 989,135,664	\$ 10,144,350	\$ 24,282,551	\$ 97,057,943
Contracts in payout (annuitization) period	1,198,027	-	139,319	-	364,825	-	802,414	-
Net assets	\$ 56,366,432	\$ 137,333,697	\$ 74,794,028	\$ 312,722,144	\$ 989,500,489	\$ 10,144,350	\$ 25,084,965	\$ 97,057,943
Outstanding units								
Contract owners	1,289,749	5,915,556	4,480,056	20,930,050	57,034,873	918,215	1,097,055	4,923,227
UNIT VALUE								
Panorama Premier	\$ 48.31	\$ -	\$ 16.38	\$ -	\$ -	\$ -	\$ 18.33	\$ -
Panorama Passage®								
Tier 1	47.59	-	16.21	-	-	-	20.34	-
Tier 2	46.34	-	15.90	-	-	-	19.81	-
Tier 3	49.61	-	16.70	-	-	-	21.40	-
Tier 4	47.51	-	16.19	-	-	-	20.49	-
MassMutual Artistry	50.11	-	16.82	-	23.42	-	21.87	-
MassMutual Transitions®								
Custom Plan	45.84	-	17.29	-	-	-	27.51	-
Package Plan I	45.84	-	17.29	-	-	-	27.51	-
Package Plan II	43.10	-	16.58	-	-	-	25.87	-
Package Plan III	41.25	-	16.09	-	-	-	24.76	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Blue Chip Growth Sub-Account (Initial Class)	MML Blue Chip Growth Sub-Account (Service Class)	MML Conservative Allocation Sub-Account (Initial Class)	MML Conservative Allocation Sub-Account (Service Class)	MML Core Allocation Sub-Account	MML Dynamic Bond Sub-Account (Service Class I)	MML Equity Sub-Account (Initial Class)	MML Equity Sub-Account (Service Class)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	37.88	-	16.09	-	17.86	-	22.79	-
Tier 2	35.55	-	15.34	-	17.07	-	21.39	-
Tier 3	34.17	-	14.89	-	16.60	-	20.56	-
Tier 4	35.50	-	15.34	-	17.07	-	21.36	-
Tier 5	33.32	-	14.62	-	16.32	-	20.05	-
Tier 6	32.02	-	14.19	-	15.86	-	19.27	-
Tier 7	35.08	-	15.16	-	16.88	-	21.11	-
Tier 8	32.88	-	14.45	-	16.14	-	19.78	-
Tier 9	-	33.35	-	14.39	16.50	-	-	20.07
Tier 10	-	36.01	-	15.27	17.46	-	-	21.67
Tier 11	-	31.25	-	13.72	15.77	-	-	18.81
Tier 12	-	34.42	-	14.60	16.69	-	-	20.71
Tier 13	-	29.92	-	13.13	15.10	-	-	18.01
Tier 14	-	31.93	-	13.77	15.80	-	-	19.21
MassMutual RetireEase Select SM								
Tier 1	29.47	-	-	-	-	-	15.48	-
Tier 2	31.38	-	-	-	-	-	16.49	-
MassMutual Transitions Select SM								
Tier 1	44.28	-	16.88	-	18.69	-	25.28	-
Tier 2	-	43.06	-	16.38	18.69	-	-	24.58
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	-	17.23	-	11.88	13.06	11.00	-	13.57
Tier 2	-	16.98	-	11.71	12.87	10.84	-	13.37
Tier 3	-	17.23	-	11.88	13.06	11.00	-	13.57
MassMutual Capital Vantage SM								
Tier 1	-	17.20	-	11.86	13.04	10.98	-	13.54
Tier 2	-	17.45	-	12.03	13.23	11.14	-	13.74
Tier 3	-	16.88	-	11.64	12.79	10.78	-	13.29
Tier 4	-	17.20	-	11.86	13.04	10.98	-	13.54
Tier 5	-	17.12	-	11.81	12.98	10.93	-	13.49
Tier 6	-	17.45	-	12.03	13.23	11.14	-	13.74

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Equity Income Sub-Account (Initial Class)	MML Equity Income Sub-Account (Service Class)	MML Equity Index Sub-Account (Class I)	MML Equity Index Sub-Account (Service Class I)	MML Equity Rotation Sub-Account (Service Class I)	MML Focused Equity Sub-Account	MML Foreign Sub-Account (Initial Class)
ASSETS							
Investments							
Number of shares	14,044,813	7,863,913	1,018,027	1,466,436	140,882	2,707,500	12,684,111
Identified cost	\$ 157,887,820	\$ 89,510,955	\$ 27,446,909	\$ 38,287,956	\$ 1,776,909	\$ 17,570,738	\$ 124,091,978
Value	\$ 157,021,014	\$ 86,738,956	\$ 33,045,152	\$ 45,972,781	\$ 1,741,305	\$ 17,679,975	\$ 128,109,519
Dividends receivable	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	-	-
Total assets	157,021,014	86,738,956	33,045,152	45,972,781	1,741,305	17,679,975	128,109,519
LIABILITIES							
Annuitant mortality fluctuation reserve	1,658	-	-	-	-	-	1,148
Payable to Massachusetts Mutual Life Insurance Company	94	16	77	11	-	52	70
Total liabilities	1,752	16	77	11	-	52	1,218
NET ASSETS	\$ 157,019,262	\$ 86,738,940	\$ 33,045,075	\$ 45,972,770	\$ 1,741,305	\$ 17,679,923	\$ 128,108,301
Net Assets:							
Accumulation units - value	\$ 153,040,533	\$ 86,738,940	\$ 31,604,536	\$ 45,972,770	\$ 1,741,305	\$ 17,679,923	\$ 124,358,593
Contracts in payout (annuitization) period	3,978,729	-	1,440,539	-	-	-	3,749,708
Net assets	\$ 157,019,262	\$ 86,738,940	\$ 33,045,075	\$ 45,972,770	\$ 1,741,305	\$ 17,679,923	\$ 128,108,301
Outstanding units							
Contract owners	5,987,062	4,049,182	1,204,817	1,507,010	113,361	887,636	8,271,919
UNIT VALUE							
Panorama Premier	\$ 31.58	\$ -	\$ 24.34	\$ -	\$ -	\$ 24.55	\$ 14.57
Panorama Passage®							
Tier 1	31.11	-	25.26	-	-	24.38	14.67
Tier 2	30.30	-	24.60	-	-	24.08	14.29
Tier 3	32.44	-	26.57	-	-	24.85	15.43
Tier 4	31.06	-	25.45	-	-	24.36	14.78
MassMutual Artistry	32.76	-	23.12	-	-	24.96	13.76
MassMutual Transitions®							
Custom Plan	29.10	-	33.84	-	-	25.41	17.22
Package Plan I	29.10	-	33.84	-	-	25.41	17.22
Package Plan II	27.36	-	31.81	-	-	24.74	16.19
Package Plan III	26.18	-	30.45	-	-	24.27	15.49

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENT OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Equity Income Sub-Account (Initial Class)	MML Equity Income Sub-Account (Service Class)	MML Equity Index Sub-Account (Class I)	MML Equity Index Sub-Account (Service Class I)	MML Equity Rotation Sub-Account (Service Class I)	MML Focused Equity Sub-Account	MML Foreign Sub-Account (Initial Class)
UNIT VALUE (continued)							
MassMutual Evolution SM							
Tier 1	24.15	-	28.34	-	-	24.27	14.57
Tier 2	22.67	-	26.60	-	-	23.53	13.68
Tier 3	21.79	-	25.57	-	-	23.09	13.15
Tier 4	22.63	-	26.56	-	-	23.53	13.66
Tier 5	21.24	-	24.93	-	-	22.82	12.82
Tier 6	20.42	-	23.96	-	-	22.39	12.32
Tier 7	22.37	-	26.25	-	-	23.35	13.50
Tier 8	20.96	-	24.60	-	-	22.65	12.65
Tier 9	-	21.26	-	24.94	-	23.00	-
Tier 10	-	22.95	-	26.93	-	23.90	-
Tier 11	-	19.92	-	23.38	-	22.30	-
Tier 12	-	21.94	-	25.74	-	23.18	-
Tier 13	-	19.07	-	22.38	-	21.55	-
Tier 14	-	20.35	-	23.88	-	22.22	-
MassMutual RetireEase Select SM							
Tier 1	16.83	-	21.17	-	-	-	8.88
Tier 2	17.92	-	22.55	-	-	-	9.46
MassMutual Transitions Select SM							
Tier 1	26.82	-	32.31	-	-	25.02	16.41
Tier 2	-	26.07	-	31.41	-	25.02	-
MassMutual Equity Edge SM							
Tier 1	-	-	24.73	-	-	-	-
Tier 2	-	-	25.07	-	-	-	-
Tier 3	-	-	25.94	-	-	-	-
Tier 4	-	-	25.94	-	-	-	-
MassMutual Transitions Select SM II							
Tier 1	-	14.51	-	-	-	17.13	-
Tier 2	-	14.30	-	-	-	16.88	-
Tier 3	-	14.51	-	-	-	17.13	-
MassMutual Capital Vantage SM							
Tier 1	-	14.48	-	-	15.14	17.09	-
Tier 2	-	14.69	-	-	15.36	17.34	-
Tier 3	-	14.21	-	-	14.86	16.77	-
Tier 4	-	14.48	-	-	15.14	17.09	-
Tier 5	-	14.42	-	-	15.08	17.02	-
Tier 6	-	14.69	-	-	15.36	17.34	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (continued)

December 31, 2019

	MML Foreign Sub-Account (Service Class)	MML Fundamental Growth Sub-Account	MML Fundamental Value Sub-Account	MML Global Sub-Account (Class I)	MML Global Sub-Account (Service Class I)	MML Global Sub-Account (Class II)	MML Growth Sub-Account	MML Growth & Income Sub-Account (Initial Class)
ASSETS								
Investments								
Number of shares	977,631	1,526,117	1,173,044	444,627	1,347,890	327,724	13,380,736	3,776,052
Identified cost	\$ 10,037,721	\$ 16,349,701	\$ 16,190,668	\$ 5,261,293	\$ 16,072,540	\$ 3,755,477	\$ 181,251,977	\$ 38,578,638
Value	\$ 9,815,418	\$ 14,803,332	\$ 15,050,150	\$ 5,717,903	\$ 17,104,725	\$ 4,316,119	\$ 191,745,945	\$ 73,368,692
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	-	-	-
Total assets	9,815,418	14,803,332	15,050,150	5,717,903	17,104,725	4,316,119	191,745,945	73,368,692
LIABILITIES								
Annuitant mortality fluctuation reserve	-	-	-	-	-	7	-	5,858
Payable to Massachusetts Mutual Life Insurance Company	2	57	48	82	4	9	56	235
Total liabilities	2	57	48	82	4	16	56	6,093
NET ASSETS	\$ 9,815,416	\$ 14,803,275	\$ 15,050,102	\$ 5,717,821	\$ 17,104,721	\$ 4,316,103	\$ 191,745,889	\$ 73,362,599
Net Assets:								
Accumulation units - value	\$ 9,815,416	\$ 14,793,092	\$ 15,050,102	\$ 5,359,507	\$ 17,104,721	\$ 4,315,873	\$ 191,745,889	\$ 72,972,979
Contracts in payout (annuitization) period	-	10,183	-	358,314	-	230	-	389,620
Net assets	\$ 9,815,416	\$ 14,803,275	\$ 15,050,102	\$ 5,717,821	\$ 17,104,721	\$ 4,316,103	\$ 191,745,889	\$ 73,362,599
Outstanding units								
Contract owners	700,188	797,684	1,016,383	266,210	944,518	274,411	8,104,921	2,322,666
UNIT VALUE								
Panorama Premier	-	\$ 23.98	\$ 18.48	\$ -	\$ -	\$ 17.68	\$ -	\$ 32.02
Panorama Passage®								
Tier 1	-	23.82	18.35	-	-	17.13	-	31.54
Tier 2	-	23.53	18.12	-	-	16.68	-	30.71
Tier 3	-	24.28	18.70	-	-	18.02	-	32.88
Tier 4	-	23.80	18.33	-	-	17.25	-	31.49
MassMutual Artistry	-	24.39	18.79	-	-	12.68	40.60	33.22
MassMutual Transitions®								
Custom Plan	-	24.82	19.12	21.96	-	-	-	34.51
Package Plan I	-	24.82	19.12	21.96	-	-	-	34.51
Package Plan II	-	24.17	18.62	20.64	-	-	-	32.56
Package Plan III	-	23.71	18.26	19.76	-	-	-	31.23

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Foreign Sub-Account (Service Class)	MML Fundamental Growth Sub-Account	MML Fundamental Value Sub-Account	MML Global Sub-Account (Class I)	MML Global Sub-Account (Service Class I)	MML Global Sub-Account (Class II)	MML Growth Sub-Account	MML Growth & Income Sub-Account (Initial Class)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	-	23.71	18.26	19.62	-	-	27.78	23.85
Tier 2	-	22.99	17.71	18.41	-	-	26.55	22.39
Tier 3	-	22.56	17.38	17.70	-	-	25.81	21.52
Tier 4	-	22.99	17.71	18.38	-	-	26.55	22.35
Tier 5	-	22.30	17.18	17.26	-	-	25.37	20.98
Tier 6	-	21.87	16.85	16.59	-	-	24.67	20.17
Tier 7	-	22.82	17.58	18.17	-	-	26.25	22.09
Tier 8	-	22.13	17.05	17.03	-	-	25.09	20.70
Tier 9	12.84	22.47	17.31	-	17.34	-	25.66	-
Tier 10	13.86	23.35	17.99	-	18.72	-	27.16	-
Tier 11	12.03	21.79	16.79	-	16.25	-	24.53	-
Tier 12	13.24	22.64	17.44	-	17.89	-	25.96	-
Tier 13	11.52	21.05	16.22	-	15.56	-	23.48	-
Tier 14	12.29	21.71	16.72	-	16.60	-	24.57	-
MassMutual RetireEase Select SM								
Tier 1	-	-	-	15.74	-	-	-	18.72
Tier 2	-	-	-	16.76	-	-	-	19.93
MassMutual Transitions Select SM								
Tier 1	-	24.45	18.83	23.80	-	-	29.06	27.16
Tier 2	15.96	24.45	18.83	-	23.23	-	29.06	-
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	10.39	16.70	13.16	-	14.37	-	17.04	-
Tier 2	10.24	16.46	12.97	-	14.16	-	16.80	-
Tier 3	10.39	16.70	13.16	-	14.37	-	17.04	-
MassMutual Capital Vantage SM								
Tier 1	10.37	16.67	13.14	-	14.34	-	17.01	-
Tier 2	10.52	16.91	13.33	-	14.55	-	17.26	-
Tier 3	10.18	16.36	12.89	-	14.07	-	16.69	-
Tier 4	10.37	16.67	13.14	-	14.34	-	17.01	-
Tier 5	10.33	16.60	13.08	-	14.28	-	16.94	-
Tier 6	10.52	16.91	13.33	-	14.55	-	17.26	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Growth & Income Sub-Account (Service Class)	MML Growth Allocation Sub-Account (Initial Class)	MML Growth Allocation Sub-Account (Service Class)	MML High Yield Sub-Account	MML Income & Growth Sub-Account (Initial Class)	MML Income & Growth Sub-Account (Service Class)	MML Inflation- Protected and Income Sub-Account (Initial Class)	MML Inflation- Protected and Income Sub-Account (Service Class)
ASSETS								
Investments								
Number of shares	2,388,209	56,859,731	109,241,099	4,531,993	2,434,462	3,010,153	13,338,860	4,226,523
Identified cost	\$ 37,069,589	\$ 547,881,647	\$ 1,049,932,018	\$ 44,450,711	\$ 25,156,734	\$ 32,245,796	\$ 137,297,144	\$ 43,038,222
Value	\$ 45,996,904	\$ 514,011,966	\$ 978,800,252	\$ 43,189,894	\$ 24,198,556	\$ 29,439,300	\$ 137,123,481	\$ 43,237,333
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	24	-	-	-	-	-
Total assets	45,996,904	514,011,966	978,800,276	43,189,894	24,198,556	29,439,300	137,123,481	43,237,333
LIABILITIES								
Annuitant mortality fluctuation reserve	-	-	-	112	170	-	1,928	-
Payable to Massachusetts Mutual Life Insurance Company	3	10	-	29	84	2	139	6
Total liabilities	3	10	-	141	254	2	2,067	6
NET ASSETS	\$ 45,996,901	\$ 514,011,956	\$ 978,800,276	\$ 43,189,753	\$ 24,198,302	\$ 29,439,298	\$ 137,121,414	\$ 43,237,327
Net Assets:								
Accumulation units - value	\$ 45,996,901	\$ 514,011,956	\$ 978,723,854	\$ 43,186,033	\$ 23,273,435	\$ 29,439,298	\$ 133,735,995	\$ 43,237,327
Contracts in payout (annuitization) period	-	-	76,422	3,720	924,867	-	3,385,419	-
Net assets	\$ 45,996,901	\$ 514,011,956	\$ 978,800,276	\$ 43,189,753	\$ 24,198,302	\$ 29,439,298	\$ 137,121,414	\$ 43,237,327
Outstanding units								
Contract owners	2,471,418	26,884,888	53,783,791	2,982,701	1,014,616	1,681,966	9,934,572	3,451,539
UNIT VALUE								
Panorama Premier	\$ -	\$ 18.90	\$ -	\$ 17.11	\$ 26.65	\$ -	\$ 14.42	\$ -
Panorama Passage®								
Tier 1	-	18.69	-	16.96	20.52	-	14.20	-
Tier 2	-	18.34	-	16.70	19.98	-	13.83	-
Tier 3	-	19.26	-	17.38	21.59	-	14.81	-
Tier 4	-	18.67	-	16.94	20.67	-	14.18	-
MassMutual Artistry	-	19.40	-	17.48	19.44	-	14.96	-
MassMutual Transitions®								
Custom Plan	-	19.94	-	17.87	26.04	-	15.54	-
Package Plan I	-	19.94	-	17.87	26.04	-	15.54	-
Package Plan II	-	19.12	-	17.28	24.48	-	14.66	-
Package Plan III	-	18.56	-	16.86	23.43	-	14.06	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Growth & Income Sub-Account (Service Class)	MML Growth Allocation Sub-Account (Initial Class)	MML Growth Allocation Sub-Account (Service Class)	MML High Yield Sub-Account	MML Income & Growth Sub-Account (Initial Class)	MML Income & Growth Sub-Account (Service Class)	MML Inflation- Protected and Income Sub-Account (Initial Class)	MML Inflation- Protected and Income Sub-Account (Service Class)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	-	18.56	-	16.86	21.21	-	13.19	-
Tier 2	-	17.69	-	16.22	19.91	-	12.38	-
Tier 3	-	17.17	-	15.84	19.14	-	11.90	-
Tier 4	-	17.69	-	16.22	19.88	-	12.36	-
Tier 5	-	16.87	-	15.61	18.66	-	11.60	-
Tier 6	-	16.37	-	15.24	17.93	-	11.15	-
Tier 7	-	17.48	-	16.07	19.64	-	12.21	-
Tier 8	-	16.67	-	15.46	18.41	-	11.45	-
Tier 9	20.99	-	16.63	15.76	-	18.68	-	11.60
Tier 10	22.66	-	17.65	16.54	-	20.17	-	12.53
Tier 11	19.67	-	15.86	15.16	-	17.50	-	10.87
Tier 12	21.66	-	16.87	15.91	-	19.27	-	11.97
Tier 13	18.83	-	15.18	14.52	-	16.76	-	10.41
Tier 14	20.10	-	15.92	15.09	-	17.88	-	11.11
MassMutual RetireEase Select SM								
Tier 1	-	-	-	-	15.13	-	12.72	-
Tier 2	-	-	-	-	16.11	-	13.55	-
MassMutual Transitions Select SM								
Tier 1	-	19.47	-	17.53	23.90	-	14.04	-
Tier 2	26.39	-	18.94	17.53	-	23.24	-	13.64
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	15.63	-	12.97	12.30	-	14.04	-	10.74
Tier 2	15.40	-	12.78	12.12	-	13.84	-	10.59
Tier 3	15.63	-	12.97	12.30	-	14.04	-	10.74
MassMutual Capital Vantage SM								
Tier 1	15.59	-	12.94	12.28	-	14.01	-	10.72
Tier 2	15.82	-	13.13	12.46	-	14.22	-	10.88
Tier 3	15.30	-	12.70	12.05	-	13.75	-	10.52
Tier 4	15.59	-	12.94	12.28	-	14.01	-	10.72
Tier 5	15.53	-	12.89	12.23	-	13.95	-	10.67
Tier 6	15.82	-	13.13	12.46	-	14.22	-	10.88

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML International Sub-Account	MML International Equity Sub-Account	MML Large Cap Growth Sub-Account (Initial Class)	MML Large Cap Growth Sub-Account (Service Class)	MML Managed Bond Sub-Account (Initial Class)	MML Managed Bond Sub-Account (Service Class)	MML Managed Volatility Sub-Account (Initial Class)	MML Managed Volatility Sub-Account (Service Class)
ASSETS								
Investments								
Number of shares	6,036,315	663,682	1,427,218	1,537,598	9,326,761	20,685,648	7,727,551	2,355,084
Identified cost	\$ 61,000,286	\$ 6,971,396	\$ 15,432,663	\$ 15,965,177	\$ 116,899,999	\$ 258,154,110	\$ 97,703,551	\$ 30,226,756
Value	\$ 61,510,047	\$ 6,643,456	\$ 15,827,844	\$ 16,390,793	\$ 117,810,273	\$ 260,703,023	\$ 101,211,508	\$ 30,590,869
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	-	-	-
Total assets	61,510,047	6,643,456	15,827,844	16,390,793	117,810,273	260,703,023	101,211,508	30,590,869
LIABILITIES								
Annuitant mortality fluctuation reserve	-	-	196	-	1,662	-	1,178	-
Payable to Massachusetts Mutual Life Insurance Company	41	24	81	1	137	3	118	11
Total liabilities	41	24	277	1	1,799	3	1,296	11
NET ASSETS	\$ 61,510,006	\$ 6,643,432	\$ 15,827,567	\$ 16,390,792	\$ 117,808,474	\$ 260,703,020	\$ 101,210,212	\$ 30,590,858
Net Assets:								
Accumulation units - value	\$ 61,510,006	\$ 6,643,432	\$ 15,733,454	\$ 16,390,792	\$ 114,833,250	\$ 260,703,020	\$ 98,647,235	\$ 30,590,858
Contracts in payout (annuitization) period	-	-	94,113	-	2,975,224	-	2,562,977	-
Net assets	\$ 61,510,006	\$ 6,643,432	\$ 15,827,567	\$ 16,390,792	\$ 117,808,474	\$ 260,703,020	\$ 101,210,212	\$ 30,590,858
Outstanding units								
Contract owners	4,069,542	571,549	577,917	896,562	7,123,945	18,130,096	5,894,344	1,951,793
UNIT VALUE								
Panorama Premier	\$ -	\$ -	\$ 21.66	\$ -	\$ -	\$ 13.47	\$ 15.64	\$ -
Panorama Passage®								
Tier 1	-	-	21.86	-	20.33	-	15.37	-
Tier 2	-	-	21.28	-	19.79	-	14.96	-
Tier 3	-	-	22.99	-	21.38	-	16.14	-
Tier 4	-	-	22.01	-	20.48	-	15.46	-
MassMutual Artistry	20.73	10.86	17.81	-	20.55	-	16.19	-
MassMutual Transitions®								
Custom Plan	-	11.01	30.85	-	18.91	-	20.28	-
Package Plan I	-	11.01	30.85	-	18.91	-	20.28	-
Package Plan II	-	10.79	29.01	-	17.78	-	19.07	-
Package Plan III	-	10.64	27.76	-	17.02	-	18.25	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML International Sub-Account	MML International Equity Sub-Account	MML Large Cap Growth Sub-Account (Initial Class)	MML Large Cap Growth Sub-Account (Service Class)	MML Managed Bond Sub-Account (Initial Class)	MML Managed Bond Sub-Account (Service Class)	MML Managed Volatility Sub-Account (Initial Class)	MML Managed Volatility Sub-Account (Service Class)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	15.01	10.64	26.28	-	15.28	-	15.86	-
Tier 2	14.34	10.40	24.67	-	14.35	-	14.89	-
Tier 3	13.94	10.25	23.71	-	13.79	-	14.31	-
Tier 4	14.34	10.40	24.63	-	14.32	-	14.86	-
Tier 5	13.71	10.17	23.12	-	13.44	-	13.95	-
Tier 6	13.33	10.02	22.22	-	12.92	-	13.41	-
Tier 7	14.18	10.34	24.34	-	14.16	-	14.69	-
Tier 8	13.55	10.11	22.81	-	13.27	-	13.77	-
Tier 9	13.86	10.22	-	23.11	-	13.45	-	13.96
Tier 10	14.67	10.52	-	24.95	-	14.53	-	15.08
Tier 11	13.25	9.99	-	21.65	-	12.61	-	13.09
Tier 12	14.02	10.28	-	23.84	-	13.88	-	14.41
Tier 13	12.69	9.74	-	20.73	-	12.07	-	12.53
Tier 14	13.27	9.97	-	22.12	-	12.88	-	13.37
MassMutual RetireEase Select SM								
Tier 1	-	-	23.06	-	14.21	-	11.57	-
Tier 2	-	-	24.56	-	15.13	-	12.32	-
MassMutual Transitions Select SM								
Tier 1	15.70	10.88	32.53	-	16.32	-	17.98	-
Tier 2	15.70	10.88	-	31.58	-	15.87	-	17.48
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	12.92	11.84	-	16.09	-	10.83	-	11.34
Tier 2	12.73	11.67	-	15.86	-	10.67	-	11.17
Tier 3	12.92	11.84	-	16.09	-	10.83	-	11.34
MassMutual Capital Vantage SM								
Tier 1	12.90	11.82	-	16.06	-	10.81	-	11.31
Tier 2	13.09	11.99	-	16.30	-	10.96	-	11.48
Tier 3	12.65	11.60	-	15.76	-	10.60	-	11.10
Tier 4	12.90	11.82	-	16.06	-	10.81	-	11.31
Tier 5	12.84	11.77	-	15.99	-	10.76	-	11.26
Tier 6	13.09	11.99	-	16.30	-	10.96	-	11.48

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Mid Cap Sub-Account (Initial Class)	MML Mid Cap Growth Sub-Account (Service Class)	MML Mid Cap Value Sub-Account (Initial Class)	MML Mid Cap Value Sub-Account (Service Class)	MML Moderate Allocation Sub-Account (Initial Class)	MML Moderate Allocation Sub-Account (Service Class)	MML Short-Duration Bond Sub-Account	MML Small Cap Equity Sub-Account (Initial Class)
ASSETS								
Investments								
Number of shares	5,264,157	7,205,270	13,677,805	5,122,523	29,514,992	168,310,365	3,323,736	2,860,076
Identified cost	\$ 79,436,349	\$ 108,189,752	\$ 150,368,422	\$ 55,800,950	\$ 317,830,259	\$ 1,829,647,153	\$ 32,273,403	\$ 26,499,451
Value	\$ 83,594,807	\$ 108,799,571	\$ 144,984,740	\$ 53,223,011	\$ 310,792,858	\$ 1,752,110,903	\$ 32,173,763	\$ 26,711,731
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	-	-	-
Total assets	83,594,807	108,799,571	144,984,740	53,223,011	310,792,858	1,752,110,903	32,173,763	26,711,731
LIABILITIES								
Annuitant mortality fluctuation reserve	1,819	-	4,239	-	-	-	97	982
Payable to Massachusetts Mutual Life Insurance Company	110	11	212	13	69	102	23	92
Total liabilities	1,929	11	4,451	13	69	102	120	1,074
NET ASSETS	\$ 83,592,878	\$ 108,799,560	\$ 144,980,289	\$ 53,222,998	\$ 310,792,789	\$ 1,752,110,801	\$ 32,173,643	\$ 26,710,657
Net Assets:								
Accumulation units - value	\$ 81,796,287	\$ 108,799,560	\$ 141,060,602	\$ 53,222,998	\$ 310,792,789	\$ 1,752,110,801	\$ 32,170,423	\$ 26,462,676
Contracts in payout (annuitization) period	1,796,591	-	3,919,687	-	-	-	3,220	247,981
Net assets	\$ 83,592,878	\$ 108,799,560	\$ 144,980,289	\$ 53,222,998	\$ 310,792,789	\$ 1,752,110,801	\$ 32,173,643	\$ 26,710,657
Outstanding units								
Contract owners	1,710,217	4,497,792	4,044,150	2,380,279	17,179,709	105,177,875	3,025,222	831,548
UNIT VALUE								
Panorama Premier	\$ 83.50	\$ -	\$ 45.12	\$ -	\$ 17.80	\$ -	\$ 10.83	\$ 39.19
Panorama Passage®								
Tier 1	61.89	-	47.82	-	17.61	-	10.73	35.31
Tier 2	60.26	-	46.56	-	17.28	-	10.57	34.38
Tier 3	65.11	-	50.31	-	18.14	-	11.00	37.15
Tier 4	62.35	-	48.17	-	17.59	-	10.72	35.57
MassMutual Artistry	49.91	-	51.03	-	18.27	-	11.06	34.08
MassMutual Transitions®								
Custom Plan	56.35	-	41.14	-	18.78	-	11.31	33.03
Package Plan I	56.35	-	41.14	-	18.78	-	11.31	33.03
Package Plan II	52.99	-	38.68	-	18.01	-	10.93	31.06
Package Plan III	50.71	-	37.02	-	17.48	-	10.67	29.72

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Mid Cap Sub-Account (Initial Class)	MML Mid Cap Growth Sub-Account (Service Class)	MML Mid Cap Value Sub-Account (Initial Class)	MML Mid Cap Value Sub-Account (Service Class)	MML Moderate Allocation Sub-Account (Initial Class)	MML Moderate Allocation Sub-Account (Service Class)	MML Short-Duration Bond Sub-Account	MML Small Cap Equity Sub-Account (Initial Class)
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	33.58	-	32.37	-	17.48	-	10.67	26.16
Tier 2	31.80	-	30.39	-	16.67	-	10.27	24.56
Tier 3	30.73	-	29.21	-	16.18	-	10.02	23.61
Tier 4	31.80	-	30.34	-	16.67	-	10.27	24.52
Tier 5	30.11	-	28.48	-	15.89	-	9.88	23.01
Tier 6	29.09	-	27.37	-	15.42	-	9.64	22.12
Tier 7	31.38	-	29.98	-	16.47	-	10.17	24.23
Tier 8	29.71	-	28.10	-	15.70	-	9.78	22.71
Tier 9	-	29.82	-	28.50	-	15.66	9.97	-
Tier 10	-	31.92	-	30.77	-	16.63	10.47	-
Tier 11	-	28.23	-	26.71	-	14.93	9.60	-
Tier 12	-	30.50	-	29.41	-	15.89	10.07	-
Tier 13	-	27.03	-	25.57	-	14.30	9.19	-
Tier 14	-	28.55	-	27.29	-	15.00	9.55	-
MassMutual RetireEase Select SM								
Tier 1	29.03	-	22.52	-	-	-	-	19.79
Tier 2	30.92	-	23.99	-	-	-	-	21.07
MassMutual Transitions Select SM								
Tier 1	35.47	-	35.51	-	18.34	-	11.09	30.69
Tier 2	-	34.48	-	34.52	-	17.84	11.09	-
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	-	16.03	-	14.25	-	12.51	10.36	-
Tier 2	-	15.79	-	14.04	-	12.32	10.21	-
Tier 3	-	16.03	-	14.25	-	12.51	10.36	-
MassMutual Capital Vantage SM								
Tier 1	-	15.99	-	14.22	-	12.48	10.34	-
Tier 2	-	16.23	-	14.43	-	12.66	10.49	-
Tier 3	-	15.69	-	13.96	-	12.25	10.15	-
Tier 4	-	15.99	-	14.22	-	12.48	10.34	-
Tier 5	-	15.93	-	14.16	-	12.43	10.29	-
Tier 6	-	16.23	-	14.43	-	12.66	10.49	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Small Cap Equity Sub-Account (Service Class)	MML Small Cap Growth Equity Sub-Account (Initial Class)	MML Small Cap Growth Equity Sub-Account (Service Class)	MML Small Company Value Sub-Account	MML Small/Mid Cap Value Sub-Account (Initial Class)	MML Small/Mid Cap Value Sub-Account (Service Class)	MML Special Situations Sub-Account (Service Class I)	MML Strategic Emerging Markets Sub-Account
ASSETS								
Investments								
Number of shares	2,482,523	6,703,914	1,980,100	1,735,760	9,557,374	2,132,487	64,636	1,241,254
Identified cost	\$ 23,024,120	\$ 89,528,600	\$ 26,604,716	\$ 26,457,004	\$ 112,871,103	\$ 25,731,348	\$ 718,980	\$ 12,779,227
Value	\$ 22,694,631	\$ 94,748,227	\$ 26,026,128	\$ 24,665,153	\$ 105,704,551	\$ 23,286,753	\$ 835,745	\$ 15,739,095
Dividends receivable	-	-	-	-	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	-	-	-	-	-	-	-
Total assets	22,694,631	94,748,227	26,026,128	24,665,153	105,704,551	23,286,753	835,745	15,739,095
LIABILITIES								
Annuitant mortality fluctuation reserve	-	3,179	-	-	1,605	-	-	-
Payable to Massachusetts Mutual Life Insurance Company	2	176	17	31	132	3	-	76
Total liabilities	2	3,355	17	31	1,737	3	-	76
NET ASSETS	\$ 22,694,629	\$ 94,744,872	\$ 26,026,111	\$ 24,665,122	\$ 105,702,814	\$ 23,286,750	\$ 835,745	\$ 15,739,019
Net Assets:								
Accumulation units - value	\$ 22,694,629	\$ 92,056,412	\$ 26,026,111	\$ 24,665,122	\$ 102,637,271	\$ 23,286,750	\$ 835,745	\$ 15,739,019
Contracts in payout (annuitization) period	-	2,688,460	-	-	3,065,543	-	-	-
Net assets	\$ 22,694,629	\$ 94,744,872	\$ 26,026,111	\$ 24,665,122	\$ 105,702,814	\$ 23,286,750	\$ 835,745	\$ 15,739,019
Outstanding units								
Contract owners	1,184,188	2,488,164	1,127,320	1,254,816	3,898,914	1,156,012	56,690	1,150,619
UNIT VALUE								
Panorama Premier	\$ -	\$ 45.77	\$ -	\$ -	\$ 35.50	\$ -	\$ -	\$ -
Panorama Passage®								
Tier 1	-	40.44	-	-	34.97	-	-	-
Tier 2	-	39.38	-	-	34.05	-	-	-
Tier 3	-	42.54	-	-	36.46	-	-	-
Tier 4	-	40.74	-	-	34.91	-	-	-
MassMutual Artistry	-	28.88	-	31.12	36.82	-	-	16.39
MassMutual Transitions®								
Custom Plan	-	44.79	-	-	38.26	-	-	-
Package Plan I	-	44.79	-	-	38.26	-	-	-
Package Plan II	-	42.12	-	-	36.09	-	-	-
Package Plan III	-	40.30	-	-	34.62	-	-	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Small Cap Equity Sub-Account (Service Class)	MML Small Cap Growth Equity Sub-Account (Initial Class)	MML Small Cap Growth Equity Sub-Account (Service Class)	MML Small Company Value Sub-Account	MML Small/Mid Cap Value Sub-Account (Initial Class)	MML Small/Mid Cap Value Sub-Account (Service Class)	MML Special Situations Sub-Account (Service Class I)	MML Strategic Emerging Markets Sub-Account
UNIT VALUE (continued)								
MassMutual Evolution SM								
Tier 1	-	33.34	-	29.92	24.86	-	-	12.83
Tier 2	-	31.29	-	28.67	23.33	-	-	12.26
Tier 3	-	30.08	-	27.92	22.42	-	-	11.92
Tier 4	-	31.24	-	28.67	23.29	-	-	12.26
Tier 5	-	29.32	-	27.47	21.86	-	-	11.72
Tier 6	-	28.19	-	26.75	21.01	-	-	11.39
Tier 7	-	30.88	-	28.37	23.02	-	-	12.12
Tier 8	-	28.93	-	27.18	21.57	-	-	11.58
Tier 9	22.99	-	29.34	27.77	-	21.88	-	11.85
Tier 10	24.82	-	31.68	29.29	-	23.62	-	12.54
Tier 11	21.55	-	27.50	26.61	-	20.51	-	11.32
Tier 12	23.72	-	30.28	28.06	-	22.58	-	11.98
Tier 13	20.63	-	26.33	25.47	-	19.63	-	10.84
Tier 14	22.01	-	28.09	26.59	-	20.95	-	11.34
MassMutual RetireEase Select SM								
Tier 1	-	23.49	-	-	16.38	-	-	-
Tier 2	-	25.02	-	-	17.45	-	-	-
MassMutual Transitions Select SM								
Tier 1	-	40.62	-	31.22	27.17	-	-	13.42
Tier 2	29.78	-	39.48	31.22	-	26.42	-	13.42
MassMutual Equity Edge SM								
Tier 1	-	-	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-	-	-
Tier 3	-	-	-	-	-	-	-	-
Tier 4	-	-	-	-	-	-	-	-
MassMutual Transitions Select SM II								
Tier 1	14.34	-	16.21	14.52	-	13.17	-	14.01
Tier 2	14.14	-	15.97	14.31	-	12.98	-	13.81
Tier 3	14.34	-	16.21	14.52	-	13.17	-	14.01
MassMutual Capital Vantage SM								
Tier 1	14.31	-	16.18	14.49	-	13.14	14.53	13.98
Tier 2	14.53	-	16.41	14.70	-	13.34	14.75	14.19
Tier 3	14.05	-	15.87	14.22	-	12.90	14.26	13.72
Tier 4	14.31	-	16.18	14.49	-	13.14	14.53	13.98
Tier 5	14.25	-	16.11	14.43	-	13.09	14.47	13.93
Tier 6	14.53	-	16.41	14.70	-	13.34	14.75	14.19

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Total Return Bond Sub-Account	MML U.S. Government Money Market Sub-Account	PIMCO Commodity RealReturn® Strategy Sub-Account	VY® Clarion Global Real Estate Sub-Account
ASSETS				
Investments				
Number of shares	3,010,719	75,535,683	1,391,996	1,207,968
Identified cost	\$ 31,133,476	\$ 75,530,231	\$ 10,617,739	\$ 14,534,860
Value	\$ 31,973,838	\$ 75,535,680	\$ 9,034,055	\$ 15,751,903
Dividends receivable	-	-	-	-
Receivable from Massachusetts Mutual Life Insurance Company ...	-	213	-	-
Total assets	31,973,838	75,535,893	9,034,055	15,751,903
LIABILITIES				
Annuitant mortality fluctuation reserve	-	1,671	78	91
Payable to Massachusetts Mutual Life Insurance Company	31	-	103	56
Total liabilities	31	1,671	181	147
NET ASSETS	\$ 31,973,807	\$ 75,534,222	\$ 9,033,874	\$ 15,751,756
Net Assets:				
Accumulation units - value	\$ 31,973,807	\$ 74,788,774	\$ 8,787,214	\$ 15,142,540
Contracts in payout (annuitization) period	-	745,448	246,660	609,216
Net assets	\$ 31,973,807	\$ 75,534,222	\$ 9,033,874	\$ 15,751,756
Outstanding units				
Contract owners	2,936,027	8,074,717	1,661,426	948,461
UNIT VALUE				
Panorama Premier	\$ 11.00	\$ 8.93	\$ 5.36	\$ 16.48
Panorama Passage®				
Tier 1	10.92	8.84	5.29	16.28
Tier 2	10.79	8.67	5.18	15.93
Tier 3	11.13	9.10	5.47	16.85
Tier 4	10.92	8.83	5.28	16.26
MassMutual Artistry	11.19	9.17	5.52	16.98
MassMutual Transitions®				
Custom Plan	11.39	9.42	5.70	17.53
Package Plan I	11.39	9.42	5.70	17.53
Package Plan II	11.08	9.04	5.43	16.71
Package Plan III	10.87	8.77	5.25	16.15

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF ASSETS AND LIABILITIES (Continued)

December 31, 2019

	MML Total Return Bond Sub-Account	MML U.S. Government Money Market Sub-Account	PIMCO Commodity RealReturn® Strategy Sub-Account	VY® Clarion Global Real Estate Sub-Account
UNIT VALUE (continued)				
MassMutual Evolution SM				
Tier 1	10.87	8.77	5.24	16.14
Tier 2	10.55	8.36	4.97	15.28
Tier 3	10.34	8.12	4.80	14.77
Tier 4	10.55	8.36	4.97	15.28
Tier 5	10.23	7.97	4.70	14.47
Tier 6	10.03	7.74	4.54	13.98
Tier 7	10.46	8.26	4.90	15.08
Tier 8	10.15	7.88	4.64	14.28
Tier 9	10.31	8.08	4.79	14.74
Tier 10	10.71	8.58	5.13	15.78
Tier 11	9.99	7.70	4.54	13.96
Tier 12	10.38	8.20	4.90	15.08
Tier 13	9.66	7.37	4.34	13.36
Tier 14	9.96	7.74	4.59	14.12
MassMutual RetireEase Select SM				
Tier 1	-	9.05	5.31	13.06
Tier 2	-	9.29	5.66	13.91
MassMutual Transitions Select SM				
Tier 1	11.21	9.20	5.54	17.05
Tier 2	11.21	9.20	5.54	17.05
MassMutual Equity Edge SM				
Tier 1	-	8.93	-	-
Tier 2	-	-	-	-
Tier 3	-	-	-	-
Tier 4	-	9.20	-	-
MassMutual Transitions Select SM II				
Tier 1	10.69	9.81	-	-
Tier 2	10.54	9.66	-	-
Tier 3	10.69	9.81	-	-
MassMutual Capital Vantage SM				
Tier 1	10.67	9.79	-	-
Tier 2	10.83	9.93	-	-
Tier 3	10.47	9.60	-	-
Tier 4	10.67	9.79	-	-
Tier 5	10.63	9.75	-	-
Tier 6	10.83	9.93	-	-

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS

For The Year Ended December 31, 2019

	BlackRock 60/40 Target Allocation ETF V.I. Sub-Account (Class III)	Fidelity® VIP Contrafund® Sub-Account (Initial Class)	Fidelity® VIP Contrafund® Sub-Account (Service Class 2)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series II)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series I)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series II)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series I)	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series II)
Investment income								
Dividends	\$ 63,619	\$ 1,031,459	\$ 383,073	\$ -	\$ 98,041	\$ 1,436	\$ 155,492	\$ -
Expenses								
Mortality and expense risk fee and administrative charges	15,576	2,831,394	2,252,071	165,124	2,015,235	1,034	78,807	188,124
Net Investment income (loss)	48,043	(1,799,935)	(1,868,998)	(165,124)	(1,917,194)	402	76,685	(188,124)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	21,130	20,486,032	4,165,800	(287,724)	6,138,714	2,285	209,796	20,027
Realized gain distribution	31,781	26,730,567	19,673,650	1,215,071	15,438,471	1,154	110,137	1,950,061
Realized gain (loss)	52,911	47,216,599	23,839,450	927,347	21,577,185	3,439	319,933	1,970,088
Change in net unrealized appreciation/ depreciation of investments	172,192	14,339,328	22,307,326	2,828,645	28,148,314	6,345	642,199	2,552,659
Net gain (loss) on investments	225,103	61,555,927	46,146,776	3,755,992	49,725,499	9,784	962,132	4,522,747
Net increase (decrease) in net assets resulting from operations	273,146	59,755,992	44,277,778	3,590,868	47,808,305	10,186	1,038,817	4,334,623
Capital transactions:								
Transfer of net premiums	2,352,817	2,005,517	20,128,525	258,032	957,594	-	12,626	3,493,349
Transfers due to death benefits	-	(1,287,714)	(988,830)	(160,906)	(1,316,677)	-	(108,365)	(79,387)
Transfers due to annuity benefit payments	-	(639,595)	-	-	(295,422)	-	(7,390)	-
Transfers due to withdrawal of funds	(50,176)	(26,306,517)	(19,660,946)	(1,583,089)	(21,843,667)	(4,505)	(765,392)	(1,646,226)
Transfers due to loans, net of repayments	-	(3,155)	-	-	(2,505)	-	551	-
Transfers due to cost of insurance	-	(651,127)	(147,774)	(13,461)	(545,922)	21	(5,898)	(5,710)
Transfers due to contingent deferred sales charges	-	(1,040)	-	-	(377)	-	(83)	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	97,460	-	-	83,973	-	2,932	-
Transfers between Sub-Accounts and to/from Fixed Account	(51,014)	(13,001,508)	(2,267,590)	(228,902)	(14,225,111)	(1)	(19,821)	746,734
Net increase (decrease) in net assets resulting from capital transactions	2,251,627	(39,787,679)	(2,936,615)	(1,728,326)	(37,188,114)	(4,485)	(890,840)	2,508,760
Total increase (decrease)	2,524,773	19,968,313	41,341,163	1,862,542	10,620,191	5,701	147,977	6,843,383
NET ASSETS, at beginning of the year	1,051,057	212,143,084	150,211,346	11,026,041	150,727,803	66,010	6,725,065	11,178,908
NET ASSETS, at end of the year	\$ 3,575,830	\$ 232,111,397	\$ 191,552,509	\$ 12,888,583	\$ 161,347,994	\$ 71,711	\$ 6,873,042	\$ 18,022,291

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series I)	Invesco Oppenheimer V.I. Government Money Sub-Account	Invesco Oppenheimer V.I. International Growth Sub-Account (Series II)	Invesco Oppenheimer V.I. International Growth Sub-Account (Series I)
Investment income								
Dividends	\$ -	\$ 424,340	\$ 1,558,872	\$ 2,446,735	\$ 6,649,244	\$ 122,182	\$ 181,114	\$ 337,841
Expenses								
Mortality and expense risk fee and administrative charges	1,371,376	857,020	2,124,329	925,238	2,193,467	80,722	321,450	379,862
Net Investment income (loss)	(1,371,376)	(432,680)	(565,457)	1,521,497	4,455,777	41,460	(140,336)	(42,021)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	13,318,154	1,443,645	14,304,507	(1,109,341)	(3,142,770)	-	422,436	1,473,017
Realized gain distribution	13,843,266	9,583,142	24,623,412	-	-	-	1,252,186	1,656,553
Realized gain (loss)	27,161,420	11,026,787	38,927,919	(1,109,341)	(3,142,770)	-	1,674,622	3,129,570
Change in net unrealized appreciation/ depreciation of investments	8,693,739	6,457,530	7,534,847	5,915,099	14,432,197	-	4,435,578	4,578,494
Net gain (loss) on investments	35,855,159	17,484,317	46,462,766	4,805,758	11,289,427	-	6,110,200	7,708,064
Net increase (decrease) in net assets resulting from operations	34,483,783	17,051,637	45,897,309	6,327,255	15,745,204	41,460	5,969,864	7,666,043
Capital transactions:								
Transfer of net premiums	846,960	3,998,368	1,343,993	4,106,953	1,382,765	465,601	1,607,203	270,377
Transfers due to death benefits	(780,422)	(402,402)	(1,130,674)	(316,017)	(1,870,164)	(132,243)	(149,846)	(177,061)
Transfers due to annuity benefit payments	(212,706)	-	(325,379)	-	(341,262)	(9,447)	-	(79,400)
Transfers due to withdrawal of funds	(14,669,535)	(7,102,098)	(19,812,113)	(8,139,311)	(22,400,256)	(1,877,281)	(3,043,515)	(3,166,155)
Transfers due to loans, net of repayments	19,201	-	721	-	(479)	6,721	-	(359)
Transfers due to cost of insurance	(379,813)	(168,620)	(459,844)	(262,142)	(675,617)	14,157	(61,880)	(115,825)
Transfers due to contingent deferred sales charges	(150)	-	(663)	-	(546)	(415)	-	(237)
Transfers due to net charge (credit) to annuitant mortality fluctuation	58,468	-	94,020	-	93,073	2,847	-	17,347
Transfers between Sub-Accounts and to/from Fixed Account	(12,360,018)	(1,841,257)	(10,595,545)	3,005,528	9,654,837	714,026	(985,075)	(1,690,800)
Net increase (decrease) in net assets resulting from capital transactions	(27,478,015)	(5,516,009)	(30,885,484)	(1,604,989)	(14,157,649)	(816,034)	(2,633,113)	(4,942,113)
Total increase (decrease)	7,005,768	11,535,628	15,011,825	4,722,266	1,587,555	(774,574)	3,336,751	2,723,930
NET ASSETS, at beginning of the year	99,470,922	58,317,027	161,039,139	70,206,556	173,249,673	7,836,332	23,629,838	30,045,032
NET ASSETS, at end of the year	\$ 106,476,690	\$ 69,852,655	\$ 176,050,964	\$ 74,928,822	\$ 174,837,228	\$ 7,061,758	\$ 26,966,589	\$ 32,768,962

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	Invesco Oppenheimer V.I. Main Street Sub-Account (Series II)	Invesco Oppenheimer V.I. Main Street Sub-Account (Series I)	Invesco Oppenheimer V.I. Total Return Bond Sub-Account	Invesco V.I. Diversified Dividend Sub-Account (Series I)	Invesco V.I. Diversified Dividend Sub-Account (Series II)	Invesco V.I. Health Care Sub-Account (Series I)	Invesco V.I. Health Care Sub-Account (Series II)	Invesco V.I. Technology Sub-Account (Series I)
Investment income								
Dividends	\$ 144,284	\$ 339,072	\$ 69,198	\$ 194,279	\$ 384,177	\$ 4,470	\$ -	\$ -
Expenses								
Mortality and expense risk fee and administrative charges	223,032	355,970	27,243	74,454	201,762	119,524	162,048	79,523
Net Investment income (loss)	(78,748)	(16,898)	41,955	119,825	182,415	(115,054)	(162,048)	(79,523)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	(81,269)	2,031,625	(72,863)	354,836	560,348	14,228	(1,048,946)	371,991
Realized gain distribution	2,862,220	5,104,342	-	360,544	781,526	248,462	311,373	600,781
Realized gain (loss)	2,780,951	7,135,967	(72,863)	715,380	1,341,874	262,690	(737,573)	972,772
Change in net unrealized appreciation/ depreciation of investments	1,782,839	1,265,119	193,430	582,389	1,633,360	2,701,215	4,223,352	1,127,027
Net gain (loss) on investments	4,563,790	8,401,086	120,567	1,297,769	2,975,234	2,963,905	3,485,779	2,099,799
Net increase (decrease) in net assets resulting from operations	4,485,042	8,384,188	162,522	1,417,594	3,157,649	2,848,851	3,323,731	2,020,276
Capital transactions:								
Transfer of net premiums	1,615,212	207,202	-	135,299	163,728	185,100	219,770	126,743
Transfers due to death benefits	(64,820)	(246,034)	(49,227)	(69,543)	(36,521)	(100,551)	(52,250)	(80,759)
Transfers due to annuity benefit payments	-	(17,022)	-	(22,395)	-	(36,727)	-	(13,965)
Transfers due to withdrawal of funds	(1,435,312)	(3,079,307)	(167,887)	(482,620)	(3,879,312)	(999,953)	(1,983,721)	(709,263)
Transfers due to loans, net of repayments	-	13,983	-	(570)	-	(4,969)	-	815
Transfers due to cost of insurance	(3,949)	(31,480)	-	(6,633)	(2,293)	(15,284)	(6,033)	(11,513)
Transfers due to contingent deferred sales charges	-	(337)	(31)	(6)	-	(165)	-	(84)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	4,303	-	4,519	-	7,858	-	5,546
Transfers between Sub-Accounts and to/from Fixed Account	309,564	(1,631,978)	(29,862)	(464,336)	(204,922)	(25,105)	161,302	26,038
Net increase (decrease) in net assets resulting from capital transactions	420,695	(4,780,670)	(247,007)	(906,285)	(3,959,320)	(989,796)	(1,660,932)	(656,442)
Total increase (decrease)	4,905,737	3,603,518	(84,485)	511,309	(801,671)	1,859,055	1,662,799	1,363,834
NET ASSETS, at beginning of the year	14,676,353	28,990,577	2,072,652	6,260,165	14,983,575	9,685,524	11,728,521	6,043,444
NET ASSETS, at end of the year	\$ 19,582,090	\$ 32,594,095	\$ 1,988,167	\$ 6,771,474	\$ 14,181,904	\$ 11,544,579	\$ 13,391,320	\$ 7,407,278

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	Invesco V.I. Technology Sub-Account (Series II)	Ivy VIP Asset Strategy Sub-Account	MML Aggressive Allocation Sub-Account (Initial Class)	MML Aggressive Allocation Sub-Account (Service Class)	MML Asset Momentum Sub-Account (Service Class I)	MML Balanced Allocation Sub-Account (Initial Class)	MML Balanced Allocation Sub-Account (Service Class)	MML Blend Sub-Account (Initial Class)
Investment income								
Dividends	\$ -	\$ 252,128	\$ 701,564	\$ 1,532,835	\$ 11,125	\$ 2,487,669	\$ 9,417,853	\$ 1,477,989
Expenses								
Mortality and expense risk fee and administrative charges	134,886	160,806	433,410	1,105,512	16,385	1,257,566	5,351,668	727,089
Net Investment income (loss)	(134,886)	91,322	268,154	427,323	(5,260)	1,230,103	4,066,185	750,900
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	709,623	(247,527)	(235,566)	(1,570,531)	13,151	(1,778,522)	(7,423,221)	1,057,206
Realized gain distribution	901,658	480,737	3,182,935	7,977,684	82,458	4,474,621	18,903,620	3,001,460
Realized gain (loss)	1,611,281	233,210	2,947,369	6,407,153	95,609	2,696,099	11,480,399	4,058,666
Change in net unrealized appreciation/ depreciation of investments	1,459,573	1,843,362	3,765,968	10,968,570	399,315	9,658,376	41,306,061	6,115,051
Net gain (loss) on investments	3,070,854	2,076,572	6,713,337	17,375,723	494,924	12,354,475	52,786,460	10,173,717
Net increase (decrease) in net assets resulting from operations	2,935,968	2,167,894	6,981,491	17,803,046	489,664	13,584,578	56,852,645	10,924,617
Capital transactions:								
Transfer of net premiums	89,531	887,307	915,247	5,042,933	51,199	822,191	23,585,504	704,086
Transfers due to death benefits	(5,090)	(68,520)	(10,572)	(377,679)	-	(1,059,605)	(5,526,818)	(811,623)
Transfers due to annuity benefit payments	-	-	-	-	-	-	-	(164,737)
Transfers due to withdrawal of funds	(2,168,617)	(1,586,502)	(2,848,186)	(7,817,189)	(108,009)	(10,426,606)	(56,175,493)	(4,709,066)
Transfers due to loans, net of repayments	-	-	(16,185)	-	-	161	-	10,879
Transfers due to cost of insurance	(3,865)	1,624	(99,361)	(68,304)	-	(676,653)	(1,975,339)	(97,048)
Transfers due to contingent deferred sales charges	-	-	(5)	-	-	-	-	(884)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	-	-	-	-	-	-	18,606
Transfers between Sub-Accounts and to/from Fixed Account	(257,207)	(122,301)	1,501,250	(2,134,615)	80,219	5,251,910	1,032,323	528,310
Net increase (decrease) in net assets resulting from capital transactions	(2,345,248)	(888,392)	(557,812)	(5,354,854)	23,409	(6,088,602)	(39,059,823)	(4,521,477)
Total increase (decrease)	590,720	1,279,502	6,423,679	12,448,192	513,073	7,495,976	17,792,822	6,403,140
NET ASSETS, at beginning of the year	9,565,714	11,123,858	31,085,089	83,188,210	1,380,613	91,530,192	391,117,726	56,577,666
NET ASSETS, at end of the year	\$ 10,156,434	\$ 12,403,360	\$ 37,508,768	\$ 95,636,402	\$ 1,893,686	\$ 99,026,168	\$ 408,910,548	\$ 62,980,806

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	MML Blend Sub-Account (Service Class)	MML Blue Chip Growth Sub-Account (Initial Class)	MML Blue Chip Growth Sub-Account (Service Class)	MML Conservative Allocation Sub-Account (Initial Class)	MML Conservative Allocation Sub-Account (Service Class)	MML Core Allocation Sub-Account	MML Dynamic Bond Sub-Account (Service Class I)	MML Equity Sub-Account (Initial Class)
Investment income								
Dividends	\$ 3,100,730	\$ -	\$ -	\$ 1,978,322	\$ 7,830,240	\$ 23,331,103	\$ 274,456	\$ 485,153
Expenses								
Mortality and expense risk fee and administrative charges	1,813,433	647,645	1,566,365	911,282	4,261,074	13,092,232	95,181	296,446
Net Investment income (loss)	1,287,297	(647,645)	(1,566,365)	1,067,040	3,569,166	10,238,871	179,275	188,707
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	(73,179)	405,776	(348,578)	(1,662,609)	(7,575,750)	12,980,725	1,427	749,881
Realized gain distribution	6,623,292	7,087,372	16,705,052	2,740,736	12,038,400	69,255,848	-	1,256,784
Realized gain (loss)	6,550,113	7,493,148	16,356,474	1,078,127	4,462,650	82,236,573	1,427	2,006,665
Change in net unrealized appreciation/ depreciation of investments	16,815,310	6,405,103	13,746,567	7,402,973	31,647,572	56,642,518	346,144	2,950,898
Net gain (loss) on investments	23,365,423	13,898,251	30,103,041	8,481,100	36,110,222	138,879,091	347,571	4,957,563
Net increase (decrease) in net assets resulting from operations	24,652,720	13,250,606	28,536,676	9,548,140	39,679,388	149,117,962	526,846	5,146,270
Capital transactions:								
Transfer of net premiums	28,306,885	599,469	17,920,830	913,574	16,370,995	27,613,079	2,974,296	185,153
Transfers due to death benefits	(759,035)	(397,075)	(594,311)	(435,446)	(4,488,827)	(6,184,778)	(45,005)	(158,112)
Transfers due to annuity benefit payments	-	(103,503)	-	(12,388)	-	(31,165)	-	(53,342)
Transfers due to withdrawal of funds	(10,775,020)	(5,162,760)	(9,890,716)	(10,938,468)	(51,013,859)	(120,703,201)	(344,139)	(2,317,806)
Transfers due to loans, net of repayments	-	1,770	-	1,349	-	14,964	-	16,384
Transfers due to cost of insurance	(47,055)	(96,492)	(50,196)	(507,759)	(1,464,941)	(6,271,281)	-	(57,173)
Transfers due to contingent deferred sales charges	-	(416)	-	(9)	-	-	-	(138)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	24,967	-	3,148	-	5,696	-	18,777
Transfers between Sub-Accounts and to/from Fixed Account	1,874,532	39,107	1,943,125	4,034,277	7,483,468	961,143	762,486	346,927
Net increase (decrease) in net assets resulting from capital transactions	18,600,307	(5,094,933)	9,328,732	(6,941,722)	(33,113,164)	(104,595,543)	3,347,638	(2,019,330)
Total increase (decrease)	43,253,027	8,155,673	37,865,408	2,606,418	6,566,224	44,522,419	3,874,484	3,126,940
NET ASSETS, at beginning of the year	118,605,705	48,210,759	99,468,289	72,187,610	306,155,920	944,978,070	6,269,866	21,958,025
NET ASSETS, at end of the year	\$ 161,858,732	\$ 56,366,432	\$ 137,333,697	\$ 74,794,028	\$ 312,722,144	\$ 989,500,489	\$ 10,144,350	\$ 25,084,965

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	MML Equity Sub-Account (Service Class)	MML Equity Income Sub-Account (Initial Class)	MML Equity Income Sub-Account (Service Class)	MML Equity Index Sub-Account (Class I)	MML Equity Index Sub-Account (Service Class I)	MML Equity Rotation Sub-Account (Service Class I)	MML Focused Equity Sub-Account	MML Foreign Sub-Account (Initial Class)
Investment income								
Dividends	\$ 1,676,046	\$ 3,576,268	\$ 1,717,767	\$ 884,171	\$ 1,149,404	\$ 3,009	\$ 6,699	\$ 2,272,943
Expenses								
Mortality and expense risk fee and administrative charges	1,200,457	1,961,158	1,075,963	447,557	571,371	16,022	175,527	1,633,343
Net Investment income (loss)	475,589	1,615,110	641,804	436,614	578,033	(13,013)	(168,828)	639,600
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	777,595	5,871,611	(1,050,516)	4,484,017	2,224,443	9,364	(2,184,422)	3,539,573
Realized gain distribution	4,947,171	14,400,377	7,762,803	2,865,640	4,048,456	28,617	337,215	1,885,363
Realized gain (loss)	5,724,766	20,271,988	6,712,287	7,349,657	6,272,899	37,981	(1,847,207)	5,424,936
Change in net unrealized appreciation/ depreciation of investments	13,402,010	12,687,501	10,590,788	902,994	4,403,413	199,355	5,321,730	7,941,866
Net gain (loss) on investments	19,126,776	32,959,489	17,303,075	8,252,651	10,676,312	237,336	3,474,523	13,366,802
Net increase (decrease) in net assets resulting from operations	19,602,365	34,574,599	17,944,879	8,689,265	11,254,345	224,323	3,305,695	14,006,402
Capital transactions:								
Transfer of net premiums	6,706,389	1,087,477	4,776,915	471,599	527,775	70,159	3,164,542	941,022
Transfers due to death benefits	(412,527)	(1,086,408)	(375,312)	(256,839)	(271,227)	-	-	(923,814)
Transfers due to annuity benefit payments	-	(313,693)	-	(276,703)	-	-	-	(279,323)
Transfers due to withdrawal of funds	(9,491,666)	(19,508,804)	(9,422,654)	(5,842,613)	(4,858,285)	(52,309)	(1,070,252)	(17,512,310)
Transfers due to loans, net of repayments	-	253	-	356	-	-	212	969
Transfers due to cost of insurance	(399,000)	(542,262)	(377,941)	(20,905)	(174,466)	-	2,442	(511,222)
Transfers due to contingent deferred sales charges	-	(197)	-	(205)	-	-	-	(64)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	92,785	-	36,550	-	-	-	84,269
Transfers between Sub-Accounts and to/from Fixed Account	(1,923,228)	(5,876,500)	(1,147,099)	(2,645,108)	(1,330,691)	36,723	1,897,869	8,100,781
Net increase (decrease) in net assets resulting from capital transactions	(5,520,032)	(26,147,349)	(6,546,091)	(8,533,868)	(6,106,894)	54,573	3,994,813	(10,099,692)
Total increase (decrease)	14,082,333	8,427,250	11,398,788	155,397	5,147,451	278,896	7,300,508	3,906,710
NET ASSETS, at beginning of the year	82,975,610	148,592,012	75,340,152	32,889,678	40,825,319	1,462,409	10,379,415	124,201,591
NET ASSETS, at end of the year	\$ 97,057,943	\$ 157,019,262	\$ 86,738,940	\$ 33,045,075	\$ 45,972,770	\$ 1,741,305	\$ 17,679,923	\$ 128,108,301

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	MML Foreign Sub-Account (Service Class)	MML Fundamental Growth Sub-Account	MML Fundamental Value Sub-Account	MML Global Sub-Account (Class I)	MML Global Sub-Account (Service Class I)	MML Global Sub-Account (Class II)	MML Growth Sub-Account	MML Growth & Income Sub-Account (Initial Class)
Investment income								
Dividends	\$ 144,438	\$ 54,648	\$ 232,145	\$ 37,767	\$ 54,838	\$ 22,489	\$ 566,898	\$ 672,195
Expenses								
Mortality and expense risk fees and administrative charges	122,796	154,034	170,309	63,754	205,129	47,771	2,313,930	757,278
Net Investment income (loss)	21,642	(99,386)	61,836	(25,987)	(150,291)	(25,282)	(1,747,032)	(85,083)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	(145,497)	(326,200)	(294,936)	211,854	(142,953)	33,609	1,672,272	5,522,284
Realized gain distribution	142,048	2,557,420	1,571,320	179,921	500,867	121,283	22,925,352	6,384,555
Realized gain (loss)	(3,449)	2,231,220	1,276,384	391,775	357,914	154,892	24,597,624	11,906,839
Change in net unrealized appreciation/ depreciation of investments	1,003,675	1,140,270	1,220,745	1,037,749	3,656,323	783,827	21,658,126	6,966,573
Net gain (loss) on investments	1,000,226	3,371,490	2,497,129	1,429,524	4,014,237	938,719	46,255,750	18,873,412
Net increase (decrease) in net assets resulting from operations	1,021,868	3,272,104	2,558,965	1,403,537	3,863,946	913,437	44,508,718	18,788,329
Capital transactions:								
Transfer of net premiums	526,877	2,037,236	1,671,731	42,259	1,915,690	86,452	15,223,124	468,473
Transfers due to death benefits	(154,274)	(7,178)	(106,796)	(48,380)	(18,406)	(20,300)	(1,092,483)	(446,328)
Transfers due to annuity benefit payments	-	(1,461)	-	(24,812)	-	(31)	-	(42,347)
Transfers due to withdrawal of funds	(1,087,729)	(772,024)	(1,610,521)	(680,605)	(2,496,196)	(172,591)	(18,770,012)	(8,116,917)
Transfers due to loans, net of repayments	-	21	359	-	-	(142)	(22,550)	(1,516)
Transfers due to cost of insurance	(24,191)	326	914	(19,424)	(46,045)	-	(600,221)	(99,638)
Transfers due to contingent deferred sales charges	-	-	-	-	-	(121)	-	(316)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	611	-	10,956	-	2	-	16,840
Transfers between Sub-Accounts and to/from Fixed Account	205,070	293,384	429,042	(47,233)	(99,849)	382,365	(5,959,275)	(1,888,680)
Net increase (decrease) in net assets resulting from capital transactions	(534,247)	1,550,915	384,729	(767,239)	(744,806)	275,634	(11,221,417)	(10,110,429)
Total increase (decrease)	487,621	4,823,019	2,943,694	636,298	3,119,140	1,189,071	33,287,301	8,677,900
NET ASSETS, at beginning of the year	9,327,795	9,980,256	12,106,408	5,081,523	13,985,581	3,127,032	158,458,588	64,684,699
NET ASSETS, at end of the year	\$ 9,815,416	\$ 14,803,275	\$ 15,050,102	\$ 5,717,821	\$ 17,104,721	\$ 4,316,103	\$ 191,745,889	\$ 73,362,599

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	MML Growth & Income Sub-Account (Service Class)	MML Growth Allocation Sub-Account (Initial Class)	MML Growth Allocation Sub-Account (Service Class)	MML High Yield Sub-Account	MML Income & Growth Sub-Account (Initial Class)	MML Income & Growth Sub-Account (Service Class)	MML Inflation- Protected and Income Sub-Account (Initial Class)	MML Inflation- Protected and Income Sub-Account (Service Class)
Investment income								
Dividends	\$ 307,225	\$ 11,446,890	\$ 19,537,848	\$ 2,412,973	\$ 460,893	\$ 492,319	\$ 3,272,991	\$ 933,563
Expenses								
Mortality and expense risk fees and administrative charges	513,163	6,572,344	11,876,132	504,446	272,859	356,924	1,769,421	548,685
Net Investment income (loss)	(205,938)	4,874,546	7,661,716	1,908,527	188,034	135,395	1,503,570	384,878
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	2,017,856	10,475,690	1,737,755	(513,435)	173,854	(782,735)	(2,007,838)	(1,017,498)
Realized gain distribution	3,734,294	41,510,815	80,232,504	-	874,162	1,063,492	-	-
Realized gain (loss)	5,752,150	51,986,505	81,970,259	(513,435)	1,048,016	280,757	(2,007,838)	(1,017,498)
Change in net unrealized appreciation/ depreciation of investments	4,836,076	33,540,151	80,413,697	2,476,461	3,452,493	5,080,163	9,764,163	3,323,559
Net gain (loss) on investments	10,588,226	85,526,656	162,383,956	1,963,026	4,500,509	5,360,920	7,756,325	2,306,061
Net increase (decrease) in net assets resulting from operations	10,382,288	90,401,202	170,045,672	3,871,553	4,688,543	5,496,315	9,259,895	2,690,939
Capital transactions:								
Transfer of net premiums	5,785,071	5,339,237	14,997,556	5,998,856	270,832	2,340,640	1,117,735	4,480,483
Transfers due to death benefits	(271,180)	(1,529,300)	(3,096,552)	(263,938)	(190,348)	(233,995)	(1,850,026)	(336,538)
Transfers due to annuity benefit payments	-	-	(2,263)	(574)	(83,618)	-	(305,244)	-
Transfers due to withdrawal of funds	(3,515,917)	(42,098,972)	(103,778,660)	(3,872,436)	(2,022,827)	(2,523,761)	(18,756,163)	(6,401,188)
Transfers due to loans, net of repayments	-	(5,141)	-	(2,837)	3,648	-	(10,131)	-
Transfers due to cost of insurance	(66,959)	(4,240,050)	(5,630,300)	1,308	(37,073)	(40,500)	(534,538)	(113,632)
Transfers due to contingent deferred sales charges	-	(190)	-	-	(375)	-	(32)	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	-	(1,112)	229	25,034	-	92,098	-
Transfers between Sub-Accounts and to/from Fixed Account	(129,602)	(18,071,826)	(9,001,361)	1,464,730	675,415	(35,132)	12,314,609	1,518,047
Net increase (decrease) in net assets resulting from capital transactions	1,801,413	(60,606,242)	(106,512,692)	3,325,338	(1,359,312)	(492,748)	(7,931,692)	(852,828)
Total increase (decrease)	12,183,701	29,794,960	63,532,980	7,196,891	3,329,231	5,003,567	1,328,203	1,838,111
NET ASSETS, at beginning of the year	33,813,200	484,216,996	915,267,296	35,992,862	20,869,071	24,435,731	135,793,211	41,399,216
NET ASSETS, at end of the year	\$ 45,996,901	\$ 514,011,956	\$ 978,800,276	\$ 43,189,753	\$ 24,198,302	\$ 29,439,298	\$ 137,121,414	\$ 43,237,327

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	MML International Sub-Account	MML International Equity Sub-Account	MML Large Cap Growth Sub-Account (Initial Class)	MML Large Cap Growth Sub-Account (Service Class)	MML Managed Bond Sub-Account (Initial Class)	MML Managed Bond Sub-Account (Service Class)	MML Managed Volatility Sub-Account (Initial Class)	MML Managed Volatility Sub-Account (Service Class)
Investment income								
Dividends	\$ 1,620,351	\$ 99,692	\$ 90,420	\$ 61,834	\$ 4,354,846	\$ 8,767,931	\$ 1,635,550	\$ 407,250
Expenses								
Mortality and expense risk fees and administrative charges	761,627	68,125	167,366	176,307	1,467,059	3,283,312	1,297,370	390,199
Net Investment income (loss)	858,724	31,567	(76,946)	(114,473)	2,887,787	5,484,619	338,180	17,051
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	510,970	(68,061)	(387,196)	(196,708)	(851,705)	(1,741,366)	2,643,757	46,512
Realized gain distribution	2,987,202	371,778	1,911,728	1,827,707	-	-	-	-
Realized gain (loss)	3,498,172	303,717	1,524,532	1,630,999	(851,705)	(1,741,366)	2,643,757	46,512
Change in net unrealized appreciation/ depreciation of investments	6,690,165	817,753	2,626,699	1,837,611	7,653,288	16,063,860	6,951,075	2,813,553
Net gain (loss) on investments	10,188,337	1,121,470	4,151,231	3,468,610	6,801,583	14,322,494	9,594,832	2,860,065
Net increase (decrease) in net assets resulting from operations	11,047,061	1,153,037	4,074,285	3,354,137	9,689,370	19,807,113	9,933,012	2,877,116
Capital transactions:								
Transfer of net premiums	2,454,248	1,159,841	181,779	3,688,983	1,149,609	10,318,815	735,111	1,065,432
Transfers due to death benefits	(241,490)	(47,888)	(202,147)	(91,936)	(1,637,188)	(1,884,956)	(761,097)	(207,031)
Transfers due to annuity benefit payments	-	-	(6,748)	-	(251,526)	-	(212,082)	-
Transfers due to withdrawal of funds	(5,897,403)	(404,412)	(1,947,654)	(1,230,296)	(16,207,043)	(32,989,096)	(14,004,484)	(3,280,834)
Transfers due to loans, net of repayments	1,705	-	7,935	-	(5,917)	-	(3,155)	-
Transfers due to cost of insurance	(257,470)	(543)	(19,547)	(5,144)	(380,702)	(1,373,407)	(419,452)	(147,142)
Transfers due to contingent deferred sales charges	-	-	(170)	-	(170)	(75)	(296)	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	-	1,960	-	(19,363)	-	58,766	-
Transfers between Sub-Accounts and to/from Fixed Account	(199,607)	114,017	(541,528)	87,387	7,827,258	16,536,477	6,896,791	1,319,963
Net increase (decrease) in net assets resulting from capital transactions	(4,140,017)	821,015	(2,526,120)	2,448,994	(9,525,042)	(9,392,242)	(7,709,898)	(1,249,612)
Total increase (decrease)	6,907,044	1,974,052	1,548,165	5,803,131	164,328	10,414,871	2,223,114	1,627,504
NET ASSETS, at beginning of the year	54,602,962	4,669,380	14,279,402	10,587,661	117,644,146	250,288,149	98,987,098	28,963,354
NET ASSETS, at end of the year	\$ 61,510,006	\$ 6,643,432	\$ 15,827,567	\$ 16,390,792	\$ 117,808,474	\$ 260,703,020	\$ 101,210,212	\$ 30,590,858

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued) For The Year Ended December 31, 2019

	MML Mid Cap Growth Sub-Account (Initial Class)	MML Mid Cap Growth Sub-Account (Service Class)	MML Mid Cap Value Sub-Account (Initial Class)	MML Mid Cap Value Sub-Account (Service Class)	MML Moderate Allocation Sub-Account (Initial Class)	MML Moderate Allocation Sub-Account (Service Class)	MML Short-Duration Bond Sub-Account	MML Small Cap Equity Sub-Account (Initial Class)
Investment income								
Dividends	\$ 17,189	\$ -	\$ 2,343,586	\$ 717,625	\$ 7,705,794	\$ 39,415,583	\$ 877,443	\$ 123,700
Expenses								
Mortality and expense risk fees and administrative charges	945,631	1,335,109	1,798,227	645,484	3,855,856	22,874,917	362,171	294,425
Net Investment income (loss)	(928,442)	(1,335,109)	545,359	72,141	3,849,938	16,540,666	515,272	(170,725)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	3,225,081	75,254	(4,702,859)	(1,449,968)	2,787,411	(8,168,525)	(93,672)	(56,468)
Realized gain distribution	10,776,125	14,186,832	14,458,779	5,181,581	18,234,185	104,673,927	-	2,221,545
Realized gain (loss)	14,001,206	14,262,086	9,755,920	3,731,613	21,021,596	96,505,402	(93,672)	2,165,077
Change in net unrealized appreciation/ depreciation of investments	7,882,228	12,770,845	24,652,920	7,917,263	22,949,084	157,224,534	353,421	3,755,794
Net gain (loss) on investments	21,883,434	27,032,931	34,408,840	11,648,876	43,970,680	253,729,936	259,749	5,920,871
Net increase (decrease) in net assets resulting from operations	20,954,992	25,697,822	34,954,199	11,721,017	47,820,618	270,270,602	775,021	5,750,146
Capital transactions:								
Transfer of net premiums	591,856	8,319,419	1,124,564	4,670,803	2,308,004	44,475,190	4,828,347	192,318
Transfers due to death benefits	(366,600)	(418,095)	(937,553)	(155,184)	(2,197,148)	(8,476,592)	(420,870)	(273,705)
Transfers due to annuity benefit payments	(194,349)	-	(341,749)	-	-	-	(508)	(18,708)
Transfers due to withdrawal of funds	(7,949,060)	(11,424,523)	(18,654,446)	(5,522,537)	(27,842,530)	(230,383,971)	(5,436,024)	(2,806,611)
Transfers due to loans, net of repayments	4,159	-	4,968	-	(3,523)	-	163	2,935
Transfers due to cost of insurance	(111,621)	(206,235)	(459,683)	(130,856)	(2,362,558)	(10,686,266)	721	(34,306)
Transfers due to contingent deferred sales charges	(1,359)	-	(1,429)	-	(7)	-	-	(303)
Transfers due to net charge (credit) to annuitant mortality fluctuation	34,192	-	84,838	-	-	-	211	(2,268)
Transfers between Sub-Accounts and to/from Fixed Account	(2,929,978)	(2,106,070)	(6,718,743)	(613,538)	2,149,241	(2,995,200)	4,955,519	(129,646)
Net increase (decrease) in net assets resulting from capital transactions	(10,922,760)	(5,835,504)	(25,899,233)	(1,751,312)	(27,948,521)	(208,066,839)	3,927,559	(3,070,294)
Total increase (decrease)	10,032,232	19,862,318	9,054,966	9,969,705	19,872,097	62,203,763	4,702,580	2,679,852
NET ASSETS, at beginning of the year	73,560,646	88,937,242	135,925,323	43,253,293	290,920,692	1,689,907,038	27,471,063	24,030,805
NET ASSETS, at end of the year	\$ 83,592,878	\$ 108,799,560	\$ 144,980,289	\$ 53,222,998	\$ 310,792,789	\$ 1,752,110,801	\$ 32,173,643	\$ 26,710,657

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2019

	MML Small Cap Equity Sub-Account (Service Class)	MML Small Cap Growth Equity Sub-Account (Initial Class)	MML Small Cap Growth Equity Sub-Account (Service Class)	MML Small Company Value Sub-Account	MML Small/Mid Cap Value Sub-Account (Initial Class)	MML Small/Mid Cap Value Sub-Account (Service Class)	MML Special Situations Sub-Account (Service Class I)	MML Strategic Emerging Markets Sub-Account
Investment income								
Dividends	\$ 54,890	\$ -	\$ -	\$ 17,086	\$ 643,843	\$ 84,555	\$ -	\$ 808
Expenses								
Mortality and expense risk fees and administrative charges	273,113	1,230,552	297,507	279,820	1,335,767	282,219	7,493	177,655
Net Investment income (loss)	(218,223)	(1,230,552)	(297,507)	(262,734)	(691,924)	(197,664)	(7,493)	(176,847)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	(528,103)	(2,139,360)	(411,252)	(268,857)	5,032,444	(586,307)	18,818	308,458
Realized gain distribution	1,868,747	16,362,801	4,375,793	3,270,006	12,450,021	2,708,057	-	-
Realized gain (loss)	1,340,644	14,223,441	3,964,541	3,001,149	17,482,465	2,121,750	18,818	308,458
Change in net unrealized appreciation/ depreciation of investments	3,410,403	14,231,752	2,583,821	1,810,489	1,273,499	1,671,298	133,505	2,888,283
Net gain (loss) on investments	4,751,047	28,455,193	6,548,362	4,811,638	18,755,964	3,793,048	152,323	3,196,741
Net increase (decrease) in net assets resulting from operations	4,532,824	27,224,641	6,250,855	4,548,904	18,064,040	3,595,384	144,830	3,019,894
Capital transactions:								
Transfer of net premiums	2,409,137	646,149	3,650,727	2,704,368	780,026	2,345,390	72,574	1,793,029
Transfers due to death benefits	(219,187)	(765,536)	(215,011)	(122,337)	(654,097)	(176,395)	-	(192,291)
Transfers due to annuity benefit payments	-	(201,492)	-	-	(255,812)	-	-	-
Transfers due to withdrawal of funds	(2,372,962)	(13,247,148)	(2,421,982)	(1,627,235)	(13,952,871)	(1,904,858)	(15,077)	(1,469,743)
Transfers due to loans, net of repayments	-	762	-	(3,997)	(2,780)	-	-	755
Transfers due to cost of insurance	(10,528)	(369,155)	(30,616)	(14,126)	(382,430)	(42,655)	-	(16,440)
Transfers due to contingent deferred sales charges	-	(220)	-	-	(13)	-	-	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	54,368	-	-	69,768	-	-	-
Transfers between Sub-Accounts and to/from Fixed Account	(69,857)	(7,676,486)	(488,533)	156,888	1,652,039	275,047	(9,017)	(90,869)
Net increase (decrease) in net assets resulting from capital transactions	(263,397)	(21,558,758)	494,585	1,093,561	(12,746,170)	496,529	48,480	24,441
Total increase (decrease)	4,269,427	5,665,883	6,745,440	5,642,465	5,317,870	4,091,913	193,310	3,044,335
NET ASSETS, at beginning of the year	18,425,202	89,078,989	19,280,671	19,022,657	100,384,944	19,194,837	642,435	12,694,684
NET ASSETS, at end of the year	\$ 22,694,629	\$ 94,744,872	\$ 26,026,111	\$ 24,665,122	\$ 105,702,814	\$ 23,286,750	\$ 835,745	\$ 15,739,019

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued) For The Year Ended December 31, 2019

	MML Total Return Bond Sub-Account	MML U.S. Government Money Market Sub-Account	Oppenheimer Global Multi- Alternatives Sub-Account	PIMCO Commodity RealReturn® Strategy Sub-Account	VY® Clarion Global Real Estate Sub-Account
Investment income					
Dividends	\$ 840,729	\$ 1,236,319	\$ 25,745	\$ 395,402	402,148
Expenses					
Mortality and expense risk fees and administrative charges	345,638	853,495	9,712	116,223	198,024
Net investment income (loss)	495,091	382,824	16,033	279,179	204,124
Net realized and unrealized gain (loss) on investments					
Realized gain (loss) on sale of fund shares	44,377	9,172	(52,512)	(1,242,030)	279,825
Realized gain distribution	-	-	-	-	-
Realized gain (loss)	44,377	9,172	(52,512)	(1,242,030)	279,825
Change in net unrealized appreciation/ depreciation of investments	1,325,845	(9,171)	105,766	1,820,946	2,648,085
Net gain (loss) on investments	1,370,222	1	53,254	578,916	2,927,910
Net increase (decrease) in net assets resulting from operations	1,865,313	382,825	69,287	858,095	3,132,034
Capital transactions:					
Transfer of net premiums	6,878,184	7,178,793	77,299	245,228	244,406
Transfers due to death benefits	(207,413)	(695,051)	-	(25,266)	(96,548)
Transfers due to annuity benefit payments	-	(54,531)	-	(19,829)	(49,653)
Transfers due to withdrawal of funds	(2,032,460)	(24,972,215)	(97,676)	(1,162,008)	(1,750,988)
Transfers due to loans, net of repayments	1,485	11,537	-	635	2,106
Transfers due to cost of insurance	466	(87,585)	251	(35,387)	(45,552)
Transfers due to contingent deferred sales charges	-	(382)	-	(7)	(17)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	16,604	-	4,098	11,761
Transfers between Sub-Accounts and to/from Fixed Account	1,792,124	16,989,570	(2,332,862)	201,011	129,245
Net increase (decrease) in net assets resulting from capital transactions	6,432,386	(1,613,260)	(2,352,988)	(791,525)	(1,555,240)
Total increase (decrease)	8,297,699	(1,230,435)	(2,283,701)	66,570	1,576,794
NET ASSETS, at beginning of the year	23,676,108	76,764,657	2,283,703	8,967,304	14,174,962
NET ASSETS, at end of the year	\$ 31,973,807	\$ 75,534,222	\$ 2	\$ 9,033,874	15,751,756

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS

For The Year Ended December 31, 2018

	BlackRock iShares® Alternative Strategies V.I. Sub-Account (Class III)	BlackRock iShares® Dynamic Allocation V.I. Sub-Account (Class III)	BlackRock iShares® Dynamic Fixed Income V.I. Sub-Account (Class III)	BlackRock iShares® Equity Appreciation V.I. Sub-Account (Class III)	Fidelity® VIP Contrafund® Sub-Account (Initial Class)	Fidelity® VIP Contrafund® Sub-Account (Service Class 2)	Invesco V.I. Diversified Dividend Sub-Account (Series I)	Invesco V.I. Diversified Dividend Sub-Account (Series II)
Investment income								
Dividends	\$ -	\$ 8,531	\$ -	\$ -	\$ 1,718,640	\$ 723,298	\$ 167,430	\$ 364,723
Expenses								
Mortality and expense risk fees and administrative charges	6,786	9,864	4,210	2,978	3,141,958	2,107,407	79,461	230,327
Net Investment income (loss)	(6,786)	(1,333)	(4,210)	(2,978)	(1,423,318)	(1,384,109)	87,969	134,396
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	78,081	13,168	(44,795)	85,884	20,729,684	5,476,975	262,741	422,206
Realized gain distribution	-	15,008	-	-	22,805,553	13,688,350	240,396	585,200
Realized gain (loss)	78,081	28,176	(44,795)	85,884	43,535,237	19,165,325	503,137	1,007,406
Change in net unrealized appreciation/ depreciation of investments	(58,084)	(96,579)	13,456	(107,350)	(57,345,911)	(30,696,695)	(1,197,579)	(2,653,493)
Net gain (loss) on investments	19,997	(68,403)	(31,339)	(21,466)	(13,810,674)	(11,531,370)	(694,442)	(1,646,087)
Net increase (decrease) in net assets resulting from operations	13,211	(69,736)	(35,549)	(24,444)	(15,233,992)	(12,915,479)	(606,473)	(1,511,691)
Capital transactions:								
Transfer of net premiums	84,504	233,922	31,557	75,867	3,201,808	23,122,567	216,457	243,807
Transfers due to death benefits	-	-	-	-	(2,833,015)	(828,135)	(33,895)	(79,285)
Transfers due to annuity benefit payments	-	-	-	-	(614,625)	-	(24,108)	-
Transfers due to withdrawal of funds	(10,780)	(13,409)	(1,642,202)	(1,204,212)	(32,637,790)	(13,513,971)	(484,889)	(1,512,570)
Transfers due to loans, net of repayments	-	-	-	-	(16,076)	-	5,232	-
Transfers due to cost of insurance	-	-	-	-	(694,398)	(152,574)	(7,767)	(4,257)
Transfers due to contingent deferred sales charges	-	-	-	-	(1,130)	-	(24)	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	-	-	-	26,099	-	3,661	-
Transfers between Sub-Accounts and to/from Fixed Account	(1,134,771)	16,260	(26,358)	269,971	(9,311,210)	(380,843)	(528,941)	691,842
Net increase (decrease) in net assets resulting from capital transactions	(1,061,047)	236,773	(1,637,003)	(858,374)	(42,880,337)	8,247,044	(854,274)	(660,463)
Total increase (decrease)	(1,047,836)	167,037	(1,672,552)	(882,818)	(58,114,329)	(4,668,435)	(1,460,747)	(2,172,154)
NET ASSETS, at beginning of the year	1,047,836	884,020	1,672,552	882,818	270,257,413	154,879,781	7,720,912	17,155,729
NET ASSETS, at end of the year	\$ -	\$ 1,051,057	\$ -	\$ -	\$ 212,143,084	\$ 150,211,346	\$ 6,260,165	\$ 14,983,575

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2018

	Invesco V.I. Health Care Sub-Account (Series I)	Invesco V.I. Health Care Sub-Account (Series II)	Invesco V.I. Technology Sub-Account (Series I)	Invesco V.I. Technology Sub-Account (Series II)	Ivy VIP Asset Strategy Sub-Account	MML Aggressive Allocation Sub-Account (Initial Class)	MML Aggressive Allocation Sub-Account (Service Class)	MML Asset Momentum Sub-Account (Service Class I)
Investment income								
Dividends	\$ -	\$ -	\$ -	\$ -	\$ 226,690	\$ 479,054	\$ 1,050,835	\$ 1,458
Expenses								
Mortality and expense risk fees and administrative charges	125,521	177,163	82,709	145,931	171,460	447,294	1,122,028	16,157
Net Investment income (loss)	(125,521)	(177,163)	(82,709)	(145,931)	55,230	31,760	(71,193)	(14,699)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	311,212	(1,210,825)	514,501	361,684	(270,033)	1,281,995	260,515	34,041
Realized gain distribution	1,388,052	1,784,374	321,621	538,449	496,314	1,744,273	4,592,385	149,700
Realized gain (loss)	1,699,264	573,549	836,122	900,133	226,281	3,026,268	4,852,900	183,741
Change in net unrealized appreciation/ depreciation of investments	(1,531,994)	(412,785)	(761,053)	(1,056,607)	(1,101,809)	(6,193,537)	(13,511,866)	(463,365)
Net gain (loss) on investments	167,270	160,764	75,069	(156,474)	(875,528)	(3,167,269)	(8,658,966)	(279,624)
Net increase (decrease) in net assets resulting from operations	41,749	(16,399)	(7,640)	(302,405)	(820,298)	(3,135,509)	(8,730,159)	(294,323)
Capital transactions:								
Transfer of net premiums	176,701	222,589	170,808	181,340	1,667,654	2,258,258	6,206,667	188,990
Transfers due to death benefits	(99,658)	(37,102)	(48,608)	(93,192)	(9,959)	(5,437)	(259,980)	-
Transfers due to annuity benefit payments	(33,150)	-	(12,102)	-	-	-	-	-
Transfers due to withdrawal of funds	(1,351,007)	(1,969,248)	(1,215,104)	(1,491,611)	(1,458,101)	(6,004,153)	(7,034,493)	(43,010)
Transfers due to loans, net of repayments	3,954	-	(310)	-	-	16,669	-	-
Transfers due to cost of insurance	(14,155)	(6,876)	(10,829)	(3,251)	1,507	(82,349)	(79,203)	-
Transfers due to contingent deferred sales charges	(176)	-	(93)	-	-	(5)	-	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	993	-	5,331	-	-	-	-	-
Transfers between Sub-Accounts and to/from Fixed Account	(292,522)	(452,899)	122,607	1,857,458	(31,842)	22,293	2,842,907	10,143
Net increase (decrease) in net assets resulting from capital transactions	(1,609,020)	(2,243,536)	(988,300)	450,744	169,259	(3,794,724)	1,675,898	156,123
Total increase (decrease)	(1,567,271)	(2,259,935)	(995,940)	148,339	(651,039)	(6,930,233)	(7,054,261)	(138,200)
NET ASSETS, at beginning of the year	11,252,795	13,988,456	7,039,384	9,417,375	11,774,897	38,015,322	90,242,471	1,518,813
NET ASSETS, at end of the year	\$ 9,685,524	\$ 11,728,521	\$ 6,043,444	\$ 9,565,714	\$ 11,123,858	\$ 31,085,089	\$ 83,188,210	\$ 1,380,613

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2018

	MML Balanced Allocation Sub-Account (Initial Class)	MML Balanced Allocation Sub-Account (Service Class)	MML Blend Sub-Account (Initial Class)	MML Blend Sub-Account (Service Class)	MML Blue Chip Growth Sub-Account (Initial Class)	MML Blue Chip Growth Sub-Account (Service Class)	MML Conservative Allocation Sub-Account (Initial Class)	MML Conservative Allocation Sub-Account (Service Class)
Investment income								
Dividends	\$ 2,414,842	\$ 9,025,738	\$ 1,347,183	\$ 2,160,355	\$ -	\$ -	\$ 2,045,252	\$ 7,756,239
Expenses								
Mortality and expense risk fees and administrative charges	1,382,718	5,907,802	766,027	1,415,960	664,174	1,254,735	1,001,261	4,735,705
Net Investment income (loss)	1,032,124	3,117,936	581,156	744,395	(664,174)	(1,254,735)	1,043,991	3,020,534
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	(1,005,974)	(4,330,604)	1,545,972	986,561	3,490,799	712,700	(2,815,219)	(8,227,464)
Realized gain distribution	3,968,144	16,702,234	4,357,465	6,640,494	10,506,190	19,580,122	1,600,365	6,777,412
Realized gain (loss)	2,962,170	12,371,630	5,903,437	7,627,055	13,996,989	20,292,822	(1,214,854)	(1,450,052)
Change in net unrealized appreciation/ depreciation of investments	(9,668,770)	(40,932,361)	(9,675,198)	(16,086,761)	(12,196,429)	(21,052,548)	(3,435,101)	(18,104,366)
Net gain (loss) on investments	(6,706,600)	(28,560,731)	(3,771,761)	(8,459,706)	1,800,560	(759,726)	(4,649,955)	(19,554,418)
Net increase (decrease) in net assets resulting from operations	(5,674,476)	(25,442,795)	(3,190,605)	(7,715,311)	1,136,386	(2,014,461)	(3,605,964)	(16,533,884)
Capital transactions:								
Transfer of net premiums	1,386,948	28,698,583	648,968	42,190,012	676,442	24,790,403	1,271,140	18,001,372
Transfers due to death benefits	(1,648,163)	(3,835,271)	(720,532)	(663,604)	(1,302,327)	(470,560)	(3,145,514)	(6,488,833)
Transfers due to annuity benefit payments	(2,507)	-	(155,603)	-	(82,110)	-	(1,990)	-
Transfers due to withdrawal of funds	(11,875,273)	(57,536,512)	(6,886,811)	(5,946,935)	(7,071,886)	(6,474,528)	(11,931,723)	(54,346,067)
Transfers due to loans, net of repayments	(7,268)	-	3,757	-	5,615	-	(1,447)	-
Transfers due to cost of insurance	(707,962)	(2,161,507)	(100,645)	(53,729)	(96,052)	(52,403)	(523,740)	(1,624,976)
Transfers due to contingent deferred sales charges	-	-	(917)	-	(391)	-	(10)	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	102	-	38,504	-	13,924	-	258	-
Transfers between Sub-Accounts and to/from Fixed Account	(2,226,646)	(8,314,389)	740,072	2,676,032	(2,091,921)	6,617,798	5,146,231	(1,575,388)
Net increase (decrease) in net assets resulting from capital transactions	(15,080,769)	(43,149,096)	(6,433,207)	38,201,776	(9,948,706)	24,410,710	(9,186,795)	(46,033,892)
Total increase (decrease)	(20,755,245)	(68,591,891)	(9,623,812)	30,486,465	(8,812,320)	22,396,249	(12,792,759)	(62,567,776)
NET ASSETS, at beginning of the year	112,285,437	459,709,617	66,201,478	88,119,240	57,023,079	77,072,040	84,980,369	368,723,696
NET ASSETS, at end of the year	\$ 91,530,192	\$ 391,117,726	\$ 56,577,666	\$ 118,605,705	\$ 48,210,759	\$ 99,468,289	\$ 72,187,610	\$ 306,155,920

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued) For The Year Ended December 31, 2018

	MML Core Allocation Sub-Account	MML Dynamic Bond Sub-Account (Service Class I)	MML Equity Sub-Account (Initial Class)	MML Equity Sub-Account (Service Class)	MML Equity Income Sub-Account (Initial Class)	MML Equity Income Sub-Account (Service Class)	MML Equity Index Sub-Account (Class I)	MML Equity Index Sub-Account (Service Class I)
Investment income								
Dividends	\$ 17,983,423	\$ 177,628	\$ 464,555	\$ 1,474,295	\$ 3,353,091	\$ 1,428,016	\$ 628,058	\$ 638,157
Expenses								
Mortality and expense risk fees and administrative charges	14,523,185	62,596	324,541	1,257,215	2,237,842	1,111,858	551,271	614,037
Net Investment income (loss)	3,460,238	115,032	140,014	217,080	1,115,249	316,158	76,787	24,120
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	27,636,849	(24,032)	1,628,931	3,116,690	12,819,137	1,577,598	5,817,283	2,579,616
Realized gain distribution	72,049,027	-	3,668,755	13,356,153	17,327,744	8,407,927	1,459,357	1,713,347
Realized gain (loss)	99,685,876	(24,032)	5,297,686	16,472,843	30,146,881	9,985,525	7,276,640	4,292,963
Change in net unrealized appreciation/ depreciation of investments	(165,551,325)	(153,469)	(8,164,351)	(27,104,690)	(48,556,654)	(19,156,024)	(9,095,166)	(6,789,045)
Net gain (loss) on investments	(65,865,449)	(177,501)	(2,866,665)	(10,631,847)	(18,409,773)	(9,170,499)	(1,818,526)	(2,496,082)
Net increase (decrease) in net assets resulting from operations	(62,405,211)	(62,469)	(2,726,651)	(10,414,767)	(17,294,524)	(8,854,341)	(1,741,739)	(2,471,962)
Capital transactions:								
Transfer of net premiums	29,780,244	2,292,479	192,892	6,067,443	1,317,260	4,575,712	366,871	414,948
Transfers due to death benefits	(2,535,575)	(7,295)	(108,946)	(548,571)	(1,781,273)	(233,660)	(255,565)	(284,953)
Transfers due to annuity benefit payments	(30,139)	-	(54,098)	-	(319,121)	-	(258,059)	-
Transfers due to withdrawal of funds	(110,650,088)	(295,430)	(3,004,882)	(8,618,854)	(23,727,025)	(7,666,281)	(8,475,008)	(5,014,348)
Transfers due to loans, net of repayments	14,566	-	(11,942)	-	(7,442)	-	3,439	-
Transfers due to cost of insurance	(6,714,719)	-	(57,890)	(418,904)	(590,002)	(392,141)	(21,946)	(185,751)
Transfers due to contingent deferred sales charges	-	-	(177)	-	(194)	-	(195)	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	(50,707)	-	19,496	-	64,242	-	21,125	-
Transfers between Sub-Accounts and to/from Fixed Account	14,292,669	(68,495)	(123,041)	2,094,047	(1,666,000)	1,703,371	(1,079,261)	(348,011)
Net increase (decrease) in net assets resulting from capital transactions	(75,893,749)	1,921,259	(3,148,588)	(1,424,839)	(26,709,555)	(2,012,999)	(9,698,599)	(5,418,115)
Total increase (decrease)	(138,298,960)	1,858,790	(5,875,239)	(11,839,606)	(44,004,079)	(10,867,340)	(11,440,338)	(7,890,077)
NET ASSETS, at beginning of the year	1,083,277,030	4,411,076	27,833,264	94,815,216	192,596,091	86,207,492	44,330,016	48,715,396
NET ASSETS, at end of the year	\$ 944,978,070	\$ 6,269,866	\$ 21,958,025	\$ 82,975,610	\$ 148,592,012	\$ 75,340,152	\$ 32,889,678	\$ 40,825,319

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued) For The Year Ended December 31, 2018

	MML Equity Rotation Sub-Account (Service Class I)	MML Focused Equity Sub-Account	MML Foreign Sub-Account (Initial Class)	MML Foreign Sub-Account (Service Class)	MML Fundamental Growth Sub-Account	MML Fundamental Value Sub-Account	MML Global Sub-Account (Class I)	MML Global Sub-Account (Service Class I)
Investment income								
Dividends	\$ 10,970	\$ 280,406	\$ 3,332,613	\$ 214,292	\$ 97,985	\$ 203,261	\$ 67,160	\$ 145,802
Expenses								
Mortality and expense risk fees and administrative charges	14,870	126,161	1,912,568	140,802	105,305	166,351	68,618	209,485
Net Investment income (loss)	(3,900)	154,245	1,420,045	73,490	(7,320)	36,910	(1,458)	(63,683)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	34,940	(1,360,328)	5,191,546	190,828	(133,603)	(61,638)	271,327	131,101
Realized gain distribution	199,580	6,125,369	-	-	2,662,012	1,239,951	738,305	1,964,128
Realized gain (loss)	234,520	4,765,041	5,191,546	190,828	2,528,409	1,178,313	1,009,632	2,095,229
Change in net unrealized appreciation/ depreciation of investments	(400,954)	(4,976,985)	(32,294,765)	(2,160,993)	(2,877,599)	(2,819,324)	(1,622,364)	(3,734,004)
Net gain (loss) on investments	(166,434)	(211,944)	(27,103,219)	(1,970,165)	(349,190)	(1,641,011)	(612,732)	(1,638,775)
Net increase (decrease) in net assets resulting from operations	(170,334)	(57,699)	(25,683,174)	(1,896,675)	(356,510)	(1,604,101)	(614,190)	(1,702,458)
Capital transactions:								
Transfer of net premiums	394,973	1,978,099	909,617	621,793	3,454,887	2,377,417	21,909	1,348,127
Transfers due to death benefits	(6,795)	(18,213)	(1,564,454)	(44,031)	(68,244)	(92,144)	(35,976)	(33,479)
Transfers due to annuity benefit payments	-	-	(285,802)	-	(1,397)	-	(37,263)	-
Transfers due to withdrawal of funds	(13,602)	(1,180,738)	(19,556,444)	(1,251,204)	(569,718)	(1,149,579)	(645,387)	(1,879,329)
Transfers due to loans, net of repayments	-	137	6,314	-	137	492	-	-
Transfers due to cost of insurance	-	1,866	(565,587)	(25,003)	(11)	1,517	(19,432)	(46,827)
Transfers due to contingent deferred sales charges	-	-	(74)	-	-	-	-	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	-	58,510	-	564	-	11,970	-
Transfers between Sub-Accounts and to/from Fixed Account	(28,615)	612,838	10,968,678	438,615	1,018,935	667,989	(124,730)	306,833
Net increase (decrease) in net assets resulting from capital transactions	345,961	1,393,989	(10,029,242)	(259,830)	3,835,153	1,805,692	(828,909)	(304,675)
Total increase (decrease)	175,627	1,336,290	(35,712,416)	(2,156,505)	3,478,643	201,591	(1,443,099)	(2,007,133)
NET ASSETS, at beginning of the year	1,286,782	9,043,125	159,914,007	11,484,300	6,501,613	11,904,817	6,524,622	15,992,714
NET ASSETS, at end of the year	\$ 1,462,409	\$ 10,379,415	\$ 124,201,591	\$ 9,327,795	\$ 9,980,256	\$ 12,106,408	\$ 5,081,523	\$ 13,985,581

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued) For The Year Ended December 31, 2018

	MML Global Sub-Account (Class II)	MML Growth Sub-Account	MML Growth & Income Sub-Account (Initial Class)	MML Growth & Income Sub-Account (Service Class)	MML Growth Allocation Sub-Account (Initial Class)	MML Growth Allocation Sub-Account (Service Class)	MML High Yield Sub-Account	MML Income & Growth Sub-Account (Initial Class)
Investment income								
Dividends	\$ 41,432	\$ 478,567	\$ 645,064	\$ 242,772	\$ 9,780,259	\$ 15,838,312	\$ 2,250,889	\$ 438,765
Expenses								
Mortality and expense risk fees and administrative charges	47,906	2,268,356	804,682	442,719	7,259,153	12,963,458	466,635	294,195
Net Investment income (loss)	(6,474)	(1,789,789)	(159,618)	(199,947)	2,521,106	2,874,854	1,784,254	144,570
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	87,816	7,304,196	5,650,297	2,382,461	3,819,327	28,911,513	(523,965)	1,319,566
Realized gain distribution	453,627	19,542,991	-	-	34,925,796	65,895,636	-	5,838,217
Realized gain (loss)	541,443	26,847,187	5,650,297	2,382,461	38,745,123	94,807,149	(523,965)	7,157,783
Change in net unrealized appreciation/ depreciation of investments	(920,133)	(27,863,924)	(9,533,325)	(4,758,831)	(84,117,325)	(180,062,498)	(3,057,997)	(10,373,312)
Net gain (loss) on investments	(378,690)	(1,016,737)	(3,883,028)	(2,376,370)	(45,372,202)	(85,255,349)	(3,581,962)	(3,215,529)
Net increase (decrease) in net assets resulting from operations	(385,164)	(2,806,526)	(4,042,646)	(2,576,317)	(42,851,096)	(82,380,495)	(1,797,708)	(3,070,959)
Capital transactions:								
Transfer of net premiums	104,741	16,969,035	742,836	9,423,976	4,805,536	30,119,148	7,263,488	210,484
Transfers due to death benefits	(18,856)	(583,949)	(1,792,882)	(109,809)	(1,686,140)	(2,643,677)	(212,566)	(352,221)
Transfers due to annuity benefit payments	(24)	-	(41,280)	-	-	(7,066)	(586)	(88,055)
Transfers due to withdrawal of funds	(333,128)	(15,795,684)	(7,559,258)	(1,859,609)	(59,830,803)	(111,528,567)	(3,238,934)	(3,099,658)
Transfers due to loans, net of repayments	5,759	6,055	7,877	-	(21,594)	-	(919)	8,476
Transfers due to cost of insurance	-	(642,651)	(108,731)	(65,173)	(4,406,205)	(5,848,096)	(127)	(36,456)
Transfers due to contingent deferred sales charges	(159)	-	(297)	-	(179)	-	-	(473)
Transfers due to net charge (credit) to annuitant mortality fluctuation	(24)	-	15,524	-	-	(7,489)	243	24,565
Transfers between Sub-Accounts and to/from Fixed Account	(107,992)	(6,432,423)	(1,470,227)	(1,613,617)	(1,621,709)	6,668,933	(441,912)	(330,963)
Net increase (decrease) in net assets resulting from capital transactions	(349,683)	(6,479,617)	(10,206,438)	5,775,768	(62,761,094)	(83,246,814)	3,368,687	(3,664,301)
Total increase (decrease)	(734,847)	(9,286,143)	(14,249,084)	3,199,451	(105,612,190)	(165,627,309)	1,570,979	(6,735,260)
NET ASSETS, at beginning of the year	3,861,879	167,744,731	78,933,783	30,613,749	589,829,186	1,080,894,605	34,421,883	27,604,331
NET ASSETS, at end of the year	\$ 3,127,032	\$ 158,458,588	\$ 64,684,699	\$ 33,813,200	\$ 484,216,996	\$ 915,267,296	\$ 35,992,862	\$ 20,869,071

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2018

	MML Income & Growth Sub-Account (Service Class)	MML Inflation- Protected and Income Sub-Account (Initial Class)	MML Inflation- Protected and Income Sub-Account (Service Class)	MML International Sub-Account	MML International Equity Sub-Account	MML Large Cap Growth Sub-Account (Initial Class)	MML Large Cap Growth Sub-Account (Service Class)	MML Managed Bond Sub-Account (Initial Class)
Investment income								
Dividends	\$ 435,578	\$ 4,822,517	\$ 1,280,315	\$ 500,007	\$ 75,595	\$ 105,071	\$ 55,232	\$ 4,572,005
Expenses								
Mortality and expense risk fees and administrative charges	359,338	2,024,761	596,476	806,921	58,603	180,753	130,814	1,658,966
Net Investment income (loss)	76,240	2,797,756	683,839	(306,914)	16,992	(75,682)	(75,582)	2,913,039
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	562,733	(6,955,939)	(1,845,870)	1,148,471	65,526	449,571	(305,447)	(2,272,563)
Realized gain distribution	6,573,055	-	-	2,002,517	38,042	1,187,005	771,709	-
Realized gain (loss)	7,135,788	(6,955,939)	(1,845,870)	3,150,988	103,568	1,636,576	466,262	(2,272,563)
Change in net unrealized appreciation/ depreciation of investments	(10,889,296)	(27,981)	(143,259)	(12,024,521)	(1,528,167)	(1,946,989)	(922,260)	(3,144,989)
Net gain (loss) on investments	(3,753,508)	(6,983,920)	(1,989,129)	(8,873,533)	(1,424,599)	(310,413)	(455,998)	(5,417,552)
Net increase (decrease) in net assets resulting from operations	(3,677,268)	(4,186,164)	(1,305,290)	(9,180,447)	(1,407,607)	(386,095)	(531,580)	(2,504,513)
Capital transactions:								
Transfer of net premiums	4,173,459	1,112,413	3,346,502	3,368,146	2,064,061	180,123	3,560,280	864,797
Transfers due to death benefits	(134,488)	(1,578,478)	(372,845)	(137,700)	-	(166,270)	(17,292)	(1,342,403)
Transfers due to annuity benefit payments	-	(317,508)	-	-	-	(6,514)	-	(266,460)
Transfers due to withdrawal of funds	(2,309,739)	(22,263,600)	(6,344,429)	(5,172,103)	(275,644)	(2,163,319)	(652,755)	(21,078,587)
Transfers due to loans, net of repayments	-	372	-	(2,213)	-	4,128	-	8,412
Transfers due to cost of insurance	(35,219)	(589,473)	(123,954)	(257,876)	84	(21,501)	(3,653)	(414,139)
Transfers due to contingent deferred sales charges	-	(37)	-	-	-	(195)	-	(186)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	17,506	-	-	-	1,292	-	2,863
Transfers between Sub-Accounts and to/from Fixed Account	(1,265,992)	(2,900,708)	76,603	1,270,104	434,017	(447,331)	725,845	(686,200)
Net increase (decrease) in net assets resulting from capital transactions	428,021	(26,519,513)	(3,418,123)	(931,642)	2,222,518	(2,619,587)	3,612,425	(22,911,903)
Total increase (decrease)	(3,249,247)	(30,705,677)	(4,723,413)	(10,112,089)	814,911	(3,005,682)	3,080,845	(25,416,416)
NET ASSETS, at beginning of the year	27,684,978	166,498,888	46,122,629	64,715,051	3,854,469	17,285,084	7,506,816	143,060,562
NET ASSETS, at end of the year	\$ 24,435,731	\$ 135,793,211	\$ 41,399,216	\$ 54,602,962	\$ 4,669,380	\$ 14,279,402	\$ 10,587,661	\$ 117,644,146

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2018

	MML Managed Bond Sub-Account (Service Class)	MML Managed Volatility Sub-Account (Initial Class)	MML Managed Volatility Sub-Account (Service Class)	MML Mid Cap Growth Sub-Account (Initial Class)	MML Mid Cap Growth Sub-Account (Service Class)	MML Mid Cap Value Sub-Account (Initial Class)	MML Mid Cap Value Sub-Account (Service Class)	MML Moderate Allocation Sub-Account (Initial Class)
Investment income								
Dividends	\$ 8,748,567	\$ 1,405,463	\$ 306,248	\$ -	\$ -	\$ 2,473,218	\$ 650,770	\$ 6,998,631
Expenses								
Mortality and expense risk fees and administrative charges	3,604,714	1,516,741	426,630	987,166	1,266,472	2,054,849	649,625	4,188,812
Net Investment income (loss)	5,143,853	(111,278)	(120,382)	(987,166)	(1,266,472)	418,369	1,145	2,809,819
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	(3,827,867)	8,428,121	141,264	4,831,988	1,637,111	3,914,435	(201,527)	12,579,150
Realized gain distribution	-	-	-	10,702,289	12,765,952	16,948,063	5,255,201	14,960,021
Realized gain (loss)	(3,827,867)	8,428,121	141,264	15,534,277	14,403,063	20,862,498	5,053,674	27,539,171
Change in net unrealized appreciation/ depreciation of investments	(7,010,184)	(14,955,901)	(1,947,332)	(16,520,497)	(16,662,162)	(43,296,259)	(12,189,252)	(51,329,474)
Net gain (loss) on investments	(10,838,051)	(6,527,780)	(1,806,068)	(986,220)	(2,259,099)	(22,433,761)	(7,135,578)	(23,790,303)
Net increase (decrease) in net assets resulting from operations	(5,694,198)	(6,639,058)	(1,926,450)	(1,973,386)	(3,525,571)	(22,015,392)	(7,134,433)	(20,980,484)
Capital transactions:								
Transfer of net premiums	12,141,637	797,576	1,373,655	835,055	11,365,918	1,262,259	5,232,576	2,123,898
Transfers due to death benefits	(832,391)	(1,217,488)	(93,670)	(733,039)	(381,743)	(1,707,272)	(411,270)	(2,045,653)
Transfers due to annuity benefit payments	-	(214,308)	-	(126,681)	-	(274,879)	-	-
Transfers due to withdrawal of funds	(32,784,662)	(15,540,301)	(4,318,393)	(8,426,020)	(9,619,457)	(21,841,932)	(5,520,492)	(40,087,582)
Transfers due to loans, net of repayments	-	5,762	-	(4,522)	-	(24,371)	-	(81,607)
Transfers due to cost of insurance	(1,495,785)	(466,310)	(159,303)	(117,800)	(216,033)	(500,433)	(133,522)	(2,428,177)
Transfers due to contingent deferred sales charges	(69)	(351)	-	(1,303)	-	(1,457)	-	(7)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	35,129	-	(34,000)	-	(14,029)	-	-
Transfers between Sub-Accounts and to/from Fixed Account	5,377,606	(2,177,678)	389,539	(2,663,338)	183,145	3,153,201	1,480,055	2,803,818
Net increase (decrease) in net assets resulting from capital transactions	(17,593,664)	(18,777,969)	(2,808,172)	(11,271,648)	1,331,830	(19,948,913)	647,347	(39,715,310)
Total increase (decrease)	(23,287,862)	(25,417,027)	(4,734,622)	(13,245,034)	(2,193,741)	(41,964,305)	(6,487,086)	(60,695,794)
NET ASSETS, at beginning of the year	273,576,011	124,404,125	33,697,976	86,805,680	91,130,983	177,889,628	49,740,379	351,616,486
NET ASSETS, at end of the year	\$ 250,288,149	\$ 98,987,098	\$ 28,963,354	\$ 73,560,646	\$ 88,937,242	\$ 135,925,323	\$ 43,253,293	\$ 290,920,692

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2018

	MML Moderate Allocation Sub-Account (Service Class)	MML Short-Duration Bond Sub-Account	MML Small Cap Equity Sub-Account (Initial Class)	MML Small Cap Equity Sub-Account (Service Class)	MML Small Cap Growth Equity Sub-Account (Initial Class)	MML Small Cap Growth Equity Sub-Account (Service Class)	MML Small Company Value Sub-Account	MML Small/Mid Cap Value Sub-Account (Initial Class)
Investment income								
Dividends	\$ 36,289,252	\$ 735,650	\$ 145,369	\$ 62,810	\$ -	\$ -	\$ 40,388	\$ 569,270
Expenses								
Mortality and expense risk fees and administrative charges	25,954,133	350,855	336,859	259,921	1,398,514	248,333	267,976	1,552,345
Net Investment income (loss)	10,335,119	384,795	(191,490)	(197,111)	(1,398,514)	(248,333)	(227,588)	(983,075)
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	17,824,231	(180,057)	1,067,859	(83,046)	(4,426,946)	(571,934)	(374,974)	10,323,547
Realized gain distribution	88,381,848	-	3,620,398	2,506,397	11,516,682	2,377,009	1,298,098	12,862,617
Realized gain (loss)	106,206,079	(180,057)	4,688,257	2,423,351	7,089,736	1,805,075	923,124	23,186,164
Change in net unrealized appreciation/ depreciation of investments	(245,352,926)	(212,492)	(7,364,211)	(4,708,715)	(9,020,696)	(3,250,743)	(3,874,060)	(40,476,136)
Net gain (loss) on investments	(139,146,847)	(392,549)	(2,675,954)	(2,285,364)	(1,930,960)	(1,445,668)	(2,950,936)	(17,289,972)
Net increase (decrease) in net assets resulting from operations	(128,811,728)	(7,754)	(2,867,444)	(2,482,475)	(3,329,474)	(1,694,001)	(3,178,524)	(18,273,047)
Capital transactions:								
Transfer of net premiums	67,593,666	5,270,046	253,151	4,065,173	779,527	4,543,322	3,646,221	920,482
Transfers due to death benefits	(7,165,299)	(467,066)	(108,336)	(199,482)	(919,277)	(74,232)	(29,103)	(1,190,204)
Transfers due to annuity benefit payments	-	(520)	(15,145)	-	(194,466)	-	-	(243,361)
Transfers due to withdrawal of funds	(243,366,570)	(5,180,829)	(3,229,787)	(1,398,895)	(14,962,898)	(1,658,349)	(1,449,090)	(16,035,997)
Transfers due to loans, net of repayments	-	82	9,659	-	(281)	-	(4,237)	(5,758)
Transfers due to cost of insurance	(11,807,876)	174	(36,561)	(10,551)	(400,925)	(29,158)	(12,907)	(420,407)
Transfers due to contingent deferred sales charges	-	-	(316)	-	(224)	-	-	(17)
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	211	4,212	-	11,393	-	-	47,050
Transfers between Sub-Accounts and to/from Fixed Account	(33,860,866)	594,121	(542,569)	807,217	(7,237,286)	2,069,157	541,795	2,918,223
Net increase (decrease) in net assets resulting from capital transactions	(228,606,945)	216,219	(3,665,692)	3,263,462	(22,924,437)	4,850,740	2,692,679	(14,009,989)
Total increase (decrease)	(357,418,673)	208,465	(6,533,136)	780,987	(26,253,911)	3,156,739	(485,845)	(32,283,036)
NET ASSETS, at beginning of the year	2,047,325,711	27,262,598	30,563,941	17,644,215	115,332,900	16,123,932	19,508,502	132,667,980
NET ASSETS, at end of the year	\$ 1,689,907,038	\$ 27,471,063	\$ 24,030,805	\$ 18,425,202	\$ 89,078,989	\$ 19,280,671	\$ 19,022,657	\$ 100,384,944

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2018

	MML Small/Mid Cap Value Sub-Account (Service Class)	MML Special Situations Sub-Account (Service Class I)	MML Strategic Emerging Markets Sub-Account	MML Total Return Bond Sub-Account	MML U.S. Government Money Market Sub-Account	Oppenheimer Capital Appreciation Sub-Account (Service)	Oppenheimer Capital Appreciation Sub-Account (Non-Service)	Oppenheimer Conservative Balanced Sub-Account (Service)
Investment income								
Dividends	\$ 57,899	\$ 2,301	\$ -	\$ 384,807	\$ 973,994	\$ -	\$ 600,068	\$ 1,289
Expenses								
Mortality and expense risk fees and administrative charges	291,863	5,653	170,957	273,484	855,121	179,733	2,284,186	1,104
Net Investment income (loss)	(233,964)	(3,352)	(170,957)	111,323	118,873	(179,733)	(1,684,118)	185
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	696,909	37,174	444,175	(99,434)	16,811	(119,928)	17,301,345	2,724
Realized gain distribution	2,449,766	22,225	-	-	-	1,021,673	14,112,734	1,771
Realized gain (loss)	3,146,675	59,399	444,175	(99,434)	16,811	901,745	31,414,079	4,495
Change in net unrealized appreciation/ depreciation of investments	(6,549,721)	(107,871)	(2,231,503)	(301,768)	(16,811)	(1,537,619)	(38,534,862)	(9,973)
Net gain (loss) on investments	(3,403,046)	(48,472)	(1,787,328)	(401,202)	-	(635,874)	(7,120,783)	(5,478)
Net increase (decrease) in net assets resulting from operations	(3,637,010)	(51,824)	(1,958,285)	(289,879)	118,873	(815,607)	(8,804,901)	(5,293)
Capital transactions:								
Transfer of net premiums	2,100,258	123,127	2,620,216	5,687,392	11,757,748	155,602	1,122,664	-
Transfers due to death benefits	(36,551)	-	(27,132)	(128,978)	(574,721)	(63,856)	(1,928,237)	-
Transfers due to annuity benefit payments	-	-	-	-	(56,744)	-	(292,107)	-
Transfers due to withdrawal of funds	(2,440,674)	(16,352)	(1,241,501)	(1,794,036)	(22,877,553)	(1,274,116)	(23,755,690)	(6,747)
Transfers due to loans, net of repayments	-	-	(8,968)	1,518	26,540	-	(7,991)	-
Transfers due to cost of insurance	(40,615)	-	(16,626)	(1,057)	(79,957)	(15,078)	(600,166)	15
Transfers due to contingent deferred sales charges	-	-	-	-	(401)	-	(372)	-
Transfers due to net charge (credit) to annuitant mortality fluctuation	-	-	-	-	14,348	-	30,800	-
Transfers between Sub-Accounts and to/from Fixed Account	869,935	101,721	(53,745)	244,584	21,348,772	(612,052)	(10,160,264)	(1)
Net increase (decrease) in net assets resulting from capital transactions	452,353	208,496	1,272,244	4,009,423	9,558,032	(1,809,500)	(35,591,363)	(6,733)
Total increase (decrease)	(3,184,657)	156,672	(686,041)	3,719,544	9,676,905	(2,625,107)	(44,396,264)	(12,026)
NET ASSETS, at beginning of the year	22,379,494	485,763	13,380,725	19,956,564	67,087,752	13,651,148	195,124,067	78,036
NET ASSETS, at end of the year	\$ 19,194,837	\$ 642,435	\$ 12,694,684	\$ 23,676,108	\$ 76,764,657	\$ 11,026,041	\$ 150,727,803	\$ 66,010

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued) For The Year Ended December 31, 2018

	Oppenheimer Conservative Balanced Sub-Account (Non-Service)	Oppenheimer Discovery Mid Cap Growth Sub-Account (Service)	Oppenheimer Discovery Mid Cap Growth Sub-Account (Non-Service)	Oppenheimer Global Sub-Account (Service)	Oppenheimer Global Sub-Account (Non-Service)	Oppenheimer Global Multi- Alternatives Sub-Account	Oppenheimer Global Strategic Income Sub-Account (Service)	Oppenheimer Global Strategic Income Sub-Account (Non-Service)
Investment income								
Dividends	\$ 149,150	\$ -	\$ -	\$ 495,450	\$ 1,938,951	\$ 4,022	\$ 3,468,885	\$ 9,637,379
Expenses								
Mortality and expense risk fees and administrative charges	85,966	154,508	1,545,187	853,723	2,402,943	30,855	995,595	2,502,305
Net Investment income (loss)	63,184	(154,508)	(1,545,187)	(358,273)	(463,992)	(26,833)	2,473,290	7,135,074
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	215,222	464,172	19,550,448	3,246,899	17,813,101	(10,749)	(1,496,219)	(5,702,132)
Realized gain distribution	176,367	1,728,984	16,937,208	4,621,010	13,708,298	-	-	-
Realized gain (loss)	391,589	2,193,156	36,487,656	7,867,909	31,521,399	(10,749)	(1,496,219)	(5,702,132)
Change in net unrealized appreciation/ depreciation of investments	(931,975)	(3,014,861)	(40,863,069)	(17,241,844)	(57,198,224)	(72,468)	(5,490,225)	(12,759,947)
Net gain (loss) on investments	(540,386)	(821,705)	(4,375,413)	(9,373,935)	(25,676,825)	(83,217)	(6,986,444)	(18,462,079)
Net increase (decrease) in net assets resulting from operations	(477,202)	(976,213)	(5,920,600)	(9,732,208)	(26,140,817)	(110,050)	(4,513,154)	(11,327,005)
Capital transactions:								
Transfer of net premiums	16,890	2,497,029	697,671	8,903,351	1,597,333	383,416	5,895,776	1,491,492
Transfers due to death benefits	(139,727)	(44,360)	(1,018,309)	(260,111)	(1,754,896)	(5,839)	(456,113)	(2,279,454)
Transfers due to annuity benefit payments	(6,896)	-	(206,010)	-	(306,338)	-	-	(326,798)
Transfers due to withdrawal of funds	(677,290)	(1,423,607)	(16,634,014)	(6,294,876)	(25,270,591)	(201,538)	(7,155,776)	(27,062,348)
Transfers due to loans, net of repayments	(908)	-	4,757	-	2,329	-	-	5,034
Transfers due to cost of insurance	(6,872)	(6,254)	(414,059)	(171,621)	(496,923)	400	(269,290)	(728,467)
Transfers due to contingent deferred sales charges	(100)	-	(186)	-	(758)	-	-	(682)
Transfers due to net charge (credit) to annuitant mortality fluctuation	(238)	-	23,277	-	48,477	-	-	31,530
Transfers between Sub-Accounts and to/from Fixed Account	(96,975)	165,274	(7,455,404)	668,866	(1,294,955)	(29,439)	1,383,420	1,610,086
Net increase (decrease) in net assets resulting from capital transactions	(912,116)	1,188,082	(25,002,277)	2,845,609	(27,476,322)	147,000	(601,983)	(27,259,607)
Total increase (decrease)	(1,389,318)	211,869	(30,922,877)	(6,886,599)	(53,617,139)	36,950	(5,115,137)	(38,586,612)
NET ASSETS, at beginning of the year	8,114,383	10,967,039	130,393,799	65,203,626	214,656,278	2,246,753	75,321,693	211,836,285
NET ASSETS, at end of the year	\$ 6,725,065	\$ 11,178,908	\$ 99,470,922	\$ 58,317,027	\$ 161,039,139	\$ 2,283,703	\$ 70,206,556	\$ 173,249,673

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS (Continued)

For The Year Ended December 31, 2018

	Oppenheimer Government Money Sub-Account	Oppenheimer International Growth Sub-Account (Service)	Oppenheimer International Growth Sub-Account (Non-Service)	Oppenheimer Main Street Sub-Account (Service)	Oppenheimer Main Street Sub-Account (Non-Service)	Oppenheimer Total Return Bond Sub-Account	PIMCO Commodity RealReturn® Strategy Sub-Account	VY® Clarion Global Real Estate Sub-Account
Investment income								
Dividends	\$ 108,186	\$ 161,303	\$ 316,337	\$ 139,495	\$ 395,775	\$ 72,527	\$ 220,032	\$ 864,247
Expenses								
Mortality and expense risk fees and administrative charges	89,526	344,979	434,117	198,083	381,623	28,693	143,785	212,578
Net Investment income (loss)	18,660	(183,676)	(117,780)	(58,588)	14,152	43,834	76,247	651,669
Net realized and unrealized gain (loss) on investments								
Realized gain (loss) on sale of fund shares	1	608,458	2,294,080	229,639	1,557,601	(128,093)	(1,748,025)	92,153
Realized gain distribution	-	511,262	715,852	1,359,327	2,976,877	-	-	-
Realized gain (loss)	1	1,119,720	3,009,932	1,588,966	4,534,478	(128,093)	(1,748,025)	92,153
Change in net unrealized appreciation/ depreciation of investments	-	(6,805,333)	(10,522,944)	(3,044,518)	(7,343,714)	29,112	7,916	(2,439,549)
Net gain (loss) on investments	1	(5,685,613)	(7,513,012)	(1,455,552)	(2,809,236)	(98,981)	(1,740,109)	(2,347,396)
Net increase (decrease) in net assets resulting from operations	18,661	(5,869,289)	(7,630,792)	(1,514,140)	(2,795,084)	(55,147)	(1,663,862)	(1,695,727)
Capital transactions:								
Transfer of net premiums	710,555	2,932,988	321,302	2,746,768	236,325	-	181,854	179,713
Transfers due to death benefits	(47,309)	(77,665)	(178,084)	(107,904)	(313,487)	(58,466)	(44,145)	(175,495)
Transfers due to annuity benefit payments	(10,797)	-	(78,866)	-	(15,822)	-	(22,865)	(52,331)
Transfers due to withdrawal of funds	(1,216,070)	(2,487,674)	(3,313,722)	(1,144,297)	(2,767,917)	(183,718)	(1,373,183)	(1,741,330)
Transfers due to loans, net of repayments	-	-	(20,048)	-	(12,968)	-	(893)	(1,361)
Transfers due to cost of insurance	28,160	(62,276)	(119,828)	(4,941)	(33,533)	-	(37,768)	(44,975)
Transfers due to contingent deferred sales charges	(266)	-	(249)	-	(425)	(32)	(7)	(21)
Transfers due to net charge (credit) to annuitant mortality fluctuation	2,482	-	14,881	-	3,899	-	4,047	10,902
Transfers between Sub-Accounts and to/from Fixed Account	460,734	643,756	163,451	(126,751)	(666,159)	(43,825)	19,153	(408,698)
Net increase (decrease) in net assets resulting from capital transactions	(72,511)	949,129	(3,211,163)	1,362,875	(3,570,087)	(286,041)	(1,273,807)	(2,233,596)
Total increase (decrease)	(53,850)	(4,920,160)	(10,841,955)	(151,265)	(6,365,171)	(341,188)	(2,937,669)	(3,929,323)
NET ASSETS, at beginning of the year	7,890,182	28,549,998	40,886,987	14,827,618	35,355,748	2,413,840	11,904,973	18,104,285
NET ASSETS, at end of the year	\$ 7,836,332	\$ 23,629,838	\$ 30,045,032	\$ 14,676,353	\$ 28,990,577	\$ 2,072,652	\$ 8,967,304	\$ 14,174,962

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 4

Notes To Financial Statements

1. ORGANIZATION

Massachusetts Mutual Variable Annuity Separate Account 4 (“the Separate Account”) is a separate investment account of Massachusetts Mutual Life Insurance Company (“MassMutual”) established on July 9, 1998. The Separate Account is registered as a unit investment trust under the Investment Company Act of 1940 (“the 1940 Act”).

MassMutual maintains ten segments within the Separate Account, they are: Panorama Premier, Panorama Passage®, MassMutual Artistry, MassMutual Transitions®, MassMutual EvolutionSM, MassMutual RetireEase SelectSM, MassMutual Transitions SelectSM, MassMutual Equity EdgeSM, MassMutual Transitions SelectSM II and MassMutual Capital Vantage®. Seven of the ten segments within the Separate Account: Panorama Passage®, MassMutual EvolutionSM, MassMutual RetireEase SelectSM, MassMutual Transitions SelectSM, MassMutual EquityEdgeSM, MassMutual Transitions SelectSM II and MassMutual Capital Vantage® have multiple tiers. The unit values of these tiers differ based on the associated expense ratios.

The assets and liabilities of the Separate Account are clearly identified and distinguished from MassMutual’s other assets and liabilities. The Separate Account assets are not chargeable with liabilities arising from any other MassMutual business.

Notes To Financial Statements (Continued)

2. INVESTMENT OF THE SEPARATE ACCOUNT'S ASSETS

As of December 31, 2019, the Separate Account consists of ninety-two sub-accounts which invest in the following mutual funds. All of the funds may not be available to all of the ten segments of the Separate Account:

Sub-Accounts	The sub-account listed in the first column invests in the fund in this column
BlackRock 60/40 Target Allocation ETF V.I. Sub-Account (Class III)	BlackRock 60/40 Target Allocation ETF V.I. Fund(Class III) ^{7,9}
Fidelity® VIP Contrafund® Sub-Account (Initial Class)	Fidelity® VIP Contrafund® Portfolio (Initial Class) ¹
Fidelity® VIP Contrafund® Sub-Account (Service Class 2)	Fidelity® VIP Contrafund® Portfolio (Service Class 2) ¹
Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series II)	Invesco Oppenheimer V.I. Capital Appreciation Fund (Series II) ^{3,10}
Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series I)	Invesco Oppenheimer V.I. Capital Appreciation Fund (Series I) ^{3,10}
Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series II)	Invesco Oppenheimer V.I. Conservative Balanced Fund (Series II) ^{3, 10}
Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series I)	Invesco Oppenheimer V.I. Conservative Balanced Fund (Series I) ^{3, 10}
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series II)	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Fund (Series II) ^{3, 10}
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Fund (Series I) ^{3, 10}
Invesco Oppenheimer V.I. Global Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Fund (Series II) ^{3, 10}
Invesco Oppenheimer V.I. Global Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Fund (Series I) ^{3, 10}
Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Strategic Income Fund (Series I) ^{3, 10}
Invesco Oppenheimer V.I. Government Money Sub-Account	Invesco Oppenheimer V.I. Government Money Fund ^{3, 10}
Invesco Oppenheimer V.I. International Growth Sub-Account (Series II)	Invesco Oppenheimer V.I. International Growth Fund (Series II) ^{3, 10}
Invesco Oppenheimer V.I. International Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. International Growth Fund (Series I) ^{3, 10}
Invesco Oppenheimer V.I. Main Street Sub-Account (Series II)	Invesco Oppenheimer V.I. Main Street Fund® (Series II) ^{3, 10}
Invesco Oppenheimer V.I. Main Street Sub-Account (Series I)	Invesco Oppenheimer V.I. Main Street Fund® (Series I) ^{3, 10}
Invesco Oppenheimer V.I. Total Return Bond Sub-Account	Invesco Oppenheimer V.I. Total Return Bond Fund ^{3, 10}
Invesco V.I. Diversified Dividend Sub-Account (Series I)	Invesco V.I. Diversified Dividend Fund (Series I) ³
Invesco V.I. Diversified Dividend Sub-Account (Series II)	Invesco V.I. Diversified Dividend Fund (Series II) ³
Invesco V.I. Health Care Sub-Account (Series I)	Invesco V.I. Health Care Fund (Series I) ³
Invesco V.I. Health Care Sub-Account (Series II)	Invesco V.I. Health Care Fund (Series II) ^{3, 8}
Invesco V.I. Technology Sub-Account (Series I)	Invesco V.I. Technology Fund (Series I) ^{3, 8}
Invesco V.I. Technology Sub-Account (Series II)	Invesco V.I. Technology Fund (Series II) ³
Ivy VIP Asset Strategy Sub-Account	Ivy VIP Asset Strategy Portfolio ⁶
MML Aggressive Allocation Sub-Account (Initial Class)	MML Aggressive Allocation Fund (Initial Class) ⁴
MML Aggressive Allocation Sub-Account (Service Class)	MML Aggressive Allocation Fund (Service Class) ⁴
MML Asset Momentum Sub-Account (Service Class I)	MML Asset Momentum Fund (Service Class I) ⁴
MML Balanced Allocation Sub-Account (Initial Class)	MML Balanced Allocation Fund (Initial Class) ⁴
MML Balanced Allocation Sub-Account (Service Class)	MML Balanced Allocation Fund (Service Class) ⁴
MML Blend Sub-Account (Initial Class)	MML Blend Fund (Initial Class) ⁴
MML Blend Sub-Account (Service Class)	MML Blend Fund (Service Class) ⁴
MML Blue Chip Growth Sub-Account (Initial Class)	MML Blue Chip Growth Fund (Initial Class) ⁴

Notes To Financial Statements (Continued)

MML Blue Chip Growth Sub-Account (Service Class)	MML Blue Chip Growth Fund (Service Class) ⁴
MML Conservative Allocation Sub-Account (Initial Class)	MML Conservative Allocation Fund (Initial Class) ⁴
MML Conservative Allocation Sub-Account (Service Class)	MML Conservative Allocation Fund (Service Class) ⁴
MML Core Allocation Sub-Account	MML Core Allocation Fund ⁴
MML Dynamic Bond Sub-Account (Service Class I)	MML Dynamic Bond Fund (Service Class I) ⁴
MML Equity Sub-Account (Initial Class)	MML Equity Fund (Initial Class) ⁴
MML Equity Sub-Account (Service Class)	MML Equity Fund (Service Class) ⁴
MML Equity Income Sub-Account (Initial Class)	MML Equity Income Fund (Initial Class) ⁴
MML Equity Income Sub-Account (Service Class)	MML Equity Income Fund (Service Class) ⁴
MML Equity Index Sub-Account (Class I)	MML Equity Index Fund (Class I) ⁴
MML Equity Index Sub-Account (Service Class I)	MML Equity Index Fund (Service Class I) ⁴
MML Equity Rotation Sub-Account (Service Class I)	MML Equity Rotation Fund (Service Class I) ⁴
MML Focused Equity Sub-Account	MML Focused Equity Fund (Initial Class) ⁴
MML Foreign Sub-Account (Initial Class)	MML Foreign Fund (Initial Class) ⁴
MML Foreign Sub-Account (Service Class)	MML Foreign Fund (Service Class) ⁴
MML Fundamental Growth Sub-Account	MML Fundamental Growth Fund (Initial Class) ⁴
MML Fundamental Value Sub-Account	MML Fundamental Value Fund (Initial Class) ⁴
MML Global Sub-Account (Class I)	MML Global Fund (Class I) ⁴
MML Global Sub-Account (Service Class I)	MML Global Fund (Service Class I) ⁴
MML Global Sub-Account (Class II)	MML Global Fund (Class II) ⁴
MML Growth Sub-Account	MML Growth Fund ⁴
MML Growth & Income Sub-Account (Initial Class)	MML Growth & Income Fund (Initial Class) ⁴
MML Growth & Income Sub-Account (Service Class)	MML Growth & Income Fund (Service Class) ⁴
MML Growth Allocation Sub-Account (Initial Class)	MML Growth Allocation Fund (Initial Class) ⁴
MML Growth Allocation Sub-Account (Service Class)	MML Growth Allocation Fund (Service Class) ⁴
MML High Yield Sub-Account	MML High Yield Fund ⁴
MML Income & Growth Sub-Account (Initial Class)	MML Income & Growth Fund (Initial Class) ⁴
MML Income & Growth Sub-Account (Service Class)	MML Income & Growth Fund (Service Class) ⁴
MML Inflation-Protected and Income Sub-Account (Initial Class)	MML Inflation-Protected and Income Fund (Initial Class) ⁴
MML Inflation-Protected and Income Sub-Account (Service Class)	MML Inflation-Protected and Income Fund (Service Class) ⁴
MML International Sub-Account	MML International Fund ⁴
MML International Equity Sub-Account	MML International Equity Fund ⁴
MML Large Cap Growth Sub-Account (Initial Class)	MML Large Cap Growth Fund (Initial Class) ⁴
MML Large Cap Growth Sub-Account (Service Class)	MML Large Cap Growth Fund (Service Class) ⁴
MML Managed Bond Sub-Account (Initial Class)	MML Managed Bond Fund (Initial Class) ⁴
MML Managed Bond Sub-Account (Service Class)	MML Managed Bond Fund (Service Class) ⁴
MML Managed Volatility Sub-Account (Initial Class)	MML Managed Volatility Sub-Account (Initial Class) ⁴
MML Managed Volatility Sub-Account (Service Class)	MML Managed Volatility Fund (Service Class) ⁴
MML Mid Cap Growth Sub-Account (Initial Class)	MML Mid Cap Growth Fund (Initial Class) ⁴
MML Mid Cap Growth Sub-Account (Service Class)	MML Mid Cap Growth Fund (Service Class) ⁴
MML Mid Cap Value Sub-Account (Initial Class)	MML Mid Cap Value Fund (Initial Class) ⁴
MML Mid Cap Value Sub-Account (Service Class)	MML Mid Cap Value Fund (Service Class) ⁴
MML Moderate Allocation Sub-Account (Initial Class)	MML Moderate Allocation Fund (Initial Class) ⁴
MML Moderate Allocation Sub-Account (Service Class)	MML Moderate Allocation Fund (Service Class) ⁴
MML Short-Duration Bond Sub-Account	MML Short-Duration Bond Fund ⁴

Notes To Financial Statements (Continued)

MML Small Cap Equity Sub-Account (Initial Class)	MML Small Cap Equity Fund (Initial Class) ⁴
MML Small Cap Equity Sub-Account (Service Class)	MML Small Cap Equity Fund (Service Class) ⁴
MML Small Cap Growth Equity Sub-Account (Initial Class)	MML Small Cap Growth Equity Fund (Initial Class) ⁴
MML Small Cap Growth Equity Sub-Account (Service Class)	MML Small Cap Growth Equity Fund (Service Class) ⁴
MML Small Company Value Sub-Account	MML Small Company Value Fund ⁴
MML Small/Mid Cap Value Sub-Account (Initial Class)	MML Small/Mid Cap Value Fund (Initial Class) ⁴
MML Small/Mid Cap Value Sub-Account (Service Class)	MML Small/Mid Cap Value Fund (Service Class) ⁴
MML Special Situations Sub-Account (Service Class I)	MML Special Situations Fund (Service Class I) ⁴
MML Strategic Emerging Markets Sub-Account	MML Strategic Emerging Markets Fund ⁴
MML Total Return Bond Sub-Account	MML Total Return Bond Fund ⁴
MML U.S. Government Money Market Sub-Account	MML U.S. Government Money Market Fund ⁴
Oppenheimer Global Multi-Alternatives Sub-Account	Oppenheimer Global Multi-Alternatives Fund/VA ¹¹
PIMCO CommodityRealReturn® Strategy Sub-Account	PIMCO CommodityRealReturn® Strategy Portfolio ⁵
VY® Clarion Global Real Estate Sub-Account	VY® Clarion Global Real Estate Portfolio ²

In addition to the ninety-two sub-accounts, some contract owners may also allocate funds to the Fixed Interest Account (“FIA”), which is part of MassMutual’s general investment account (“General Account”). Because of exemptive and exclusionary provisions in the securities law, interests in the FIA are not registered under the Securities Act of 1933, and the General Account and the FIA are not registered as an investment company under the 1940 Act.

¹ Fidelity Management & Research Company is the investment adviser to this Portfolio.

² Voya Investments, LLC is the investment adviser to this Portfolio.

³ Invesco Advisers, Inc. is the investment adviser to this Fund.

⁴ MML Investment Advisers, LLC is the investment adviser to this Fund.

⁵ Pacific Investment Management Company LLC is the investment adviser to this Portfolio.

⁶ Ivy Investment Management Company is the investment adviser to this Portfolio.

⁷ BlackRock Advisors, LLC is the investment adviser for this Fund.

⁸ Invesco V.I. Health Care was formerly known as Invesco V.I. Global Health Care.

⁹ BlackRock 60/40 Target Allocation ETF V.I. was formerly known as BlackRock iShares® Dynamic Allocation V.I.

¹⁰ Effective after the close of the New York Stock Exchange on May 24, 2019, Invesco Ltd. completed its acquisition of OppenheimerFunds, Inc. The Acquiring Funds/Sub-Accounts assume the accounting and performance history of the corresponding Merging Funds/Sub-Accounts. In connection with that transaction the following Funds/Sub-Accounts merged:

MERGING FUND/SUB-ACCOUNT	ACQUIRING FUND/SUB-ACCOUNT
Fund: Oppenheimer Capital Appreciation Fund/VA Sub-Account: Oppenheimer Capital Appreciation Sub-Account	Fund: Invesco Oppenheimer V.I. Capital Appreciation Fund Sub-Account: Invesco Oppenheimer V.I. Capital Appreciation Sub-Account
Fund: Oppenheimer Conservative Balanced Fund/VA Sub-Account: Oppenheimer Conservative Balanced Sub-Account	Fund: Invesco Oppenheimer V.I. Conservative Balanced Fund Sub-Account: Invesco Oppenheimer V.I. Conservative Balanced Sub-Account
Fund: Oppenheimer Discovery Mid Cap Growth Fund/VA Sub-Account: Oppenheimer Discovery Mid Cap Growth Sub-Account	Fund: Invesco Oppenheimer V.I. Discovery Mid Cap Growth Fund Sub-Account: Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-
Fund: Oppenheimer Global Fund/VA Sub-Account: Oppenheimer Global Sub-Account	Fund: Invesco Oppenheimer V.I. Global Fund Sub-Account: Invesco Oppenheimer V.I. Global Sub-Account
Fund: Oppenheimer Global Strategic Income Fund/VA Sub-Account: Oppenheimer Global Strategic Income Sub-Account	Fund: Invesco Oppenheimer V.I. Global Strategic Income Fund Sub-Account: Invesco Oppenheimer V.I. Global Strategic Income Sub-Account
Fund: Oppenheimer Government Money Fund/VA Sub-Account: Oppenheimer Government Money Sub-Account	Fund: Invesco Oppenheimer V.I. Government Money Fund Sub-Account: Invesco Oppenheimer V.I. Government Money Sub-Account
Fund: Oppenheimer International Growth Fund/VA Sub-Account: Oppenheimer International Growth Sub-Account	Fund: Invesco Oppenheimer V.I. International Growth Fund Sub-Account: Invesco Oppenheimer V.I. International Growth Sub-Account
Fund: Oppenheimer Main Street Fund®/VA Sub-Account: Oppenheimer Main Street Sub-Account	Fund: Invesco Oppenheimer V.I. Main Street Fund® Sub-Account: Invesco Oppenheimer V.I. Main Street Sub-Account
Fund: Oppenheimer Total Return Bond Fund/VA Sub-Account: Oppenheimer Total Return Bond Sub-Account	Fund: Invesco Oppenheimer V.I. Total Return Bond Fund Sub-Account: Invesco Oppenheimer V.I. Total Return Bond Sub-Account

¹¹ Effective April 29, 2019 this Sub-Account liquidated and any contract value in the Sub-Account after the close of the New York Stock Exchange on April 29, 2019 was automatically transferred to the MML U.S. Government Money Sub-Account.

Notes To Financial Statements (Continued)

3. SIGNIFICANT ACCOUNTING POLICIES

The following is a summary of significant accounting policies followed by the Separate Account in preparation of the financial statements in conformity with generally accepted accounting principles. Separate Account Massachusetts Mutual Variable Annuity Separate Account 4 follows the accounting and reporting guidance in FASB Accounting Standards Codification 946.

A. Investment Valuation

Investments in the investment sub-accounts are valued at the closing net asset value of each of the respective underlying funds, which value their investment securities at fair value.

B. Accounting for Investments

Investment transactions are accounted for on a trade-date basis and identified cost is the basis followed in determining the cost of investments sold for financial statement purposes. Dividend income and gains from realized gain distributions are recorded on the ex-distribution date, and they are generally reinvested in the underlying investment sub-accounts.

C. Federal Income Taxes

MassMutual is taxed under federal law as a life insurance company under the provisions of the 1986 Internal Revenue Code, as amended. Under existing federal law, no taxes are payable on net investment income and net realized capital gains attributable to contracts which depend on the Separate Account's investment performance. Accordingly, no provision for federal income tax has been made. MassMutual may, however, make such a charge in the future if an unanticipated change of current law results in a company tax liability attributable to the Separate Account.

D. Contract Charges

See Note 8B for charges associated with the contracts

E. Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

F. Loans

If the certificate is a tax-sheltered annuity ("TSA"), the participants may be able to take a loan under their certificate. All such loans must conform to the requirements of the Internal Revenue Code. There are limitations on the amount of the loan the participants can take, and there is a required loan repayment schedule. When a loan is made, the Separate Account transfers the amount of the loan to MassMutual, thereby decreasing both the investments and net assets of the Separate Account by an equal amount. The contract owner is charged interest on the outstanding loan amount based on the interest rate then in effect.

G. Annuitant Mortality Fluctuation

The Separate Account maintains a reserve as required by regulatory authorities to provide for mortality losses incurred. The reserve is adjusted quarterly for mortality losses and gains and its proportionate

Notes To Financial Statements (Continued)

share of changes in value. Transfers to or from MassMutual are then made quarterly to adjust the Separate Account. Net transfers from the Separate Account to MassMutual totaled \$1,216,739 for the year ended December 31, 2019. Net transfers from the Separate Account to MassMutual totaled \$502,918 for the year ended December 31, 2018. The reserve is subject to a maximum of 3% of the Separate Account's annuity reserves. Any mortality losses in excess of this reserve will be borne by MassMutual. The reserve is not available to owners of the contracts except to the extent necessary to cover mortality losses under the contracts.

H. Annuity Reserves

Annuity reserves are developed by using accepted actuarial methods and are computed using the 1994 MGDB table, except for the MassMutual RetireEase Select SM Segment which uses the Annuity 2000 table.

4. FAIR VALUE OF FINANCIAL INSTRUMENTS

The Separate Account defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In determining fair value, the Separate Account generally uses the market approach as the valuation technique due to the nature of the mutual fund investments offered in the Separate Account. This technique maximizes the use of observable inputs and minimizes the use of unobservable inputs. Investments in mutual funds are valued at the mutual fund's closing net asset value per share on the day of valuation.

Valuation Inputs: Various inputs are used to determine the value of the Separate Account's investments. These inputs are summarized in the three broad levels listed below:

- **Level 1** – quoted prices in active markets for identical securities
- **Level 2** – observable inputs other than Level 1 quoted prices (including, but not limited to, quoted prices for similar securities, interest rates, prepayment speeds and credit risk)
- **Level 3** – unobservable inputs

The net assets of the Separate Account are measured at fair value. All the net assets are categorized as Level 1 as of December 31, 2019. There have been no transfers between levels for the year ended December 31, 2019.

5. RELATED PARTY TRANSACTIONS

A. Sales Agreements

The contracts currently being offered are sold by both registered representatives of MML Investors Services, LLC ("MMLIS"), a subsidiary of MassMutual, and by registered representatives of other broker-dealers who have entered into distribution agreements with MML Strategic Distributors, LLC ("MSD"), a subsidiary of MassMutual. Pursuant to separate underwriting agreements with MassMutual, on its own behalf and on behalf of the Separate Account, MMLIS serves as principal underwriter of the contracts sold by its registered representatives and MSD serves as principal underwriter of the contracts sold by registered representatives of other broker-dealers who have entered into distribution agreements with MSD.

Both MMLIS and MSD are registered with the Securities and Exchange Commission (the "SEC") as broker-dealers under the Securities and Exchange Act of 1934 and are members of the Financial Industry Regulatory Authority ("FINRA"). Commissions for sales of contracts by MMLIS registered representatives are paid on behalf of MMLIS to its registered representatives. Commissions for sales of contracts by registered representatives of other broker-dealers are paid on behalf of MSD to those

Notes To Financial Statements (Continued)

broker-dealers. MMLIS and MSD also receive compensation for their actions as principal underwriters of the contracts.

B. Receivable from/Payable to MassMutual

Certain fees such as cost of insurance fees and mortality and expense risk fees are charges paid between the General Account and the Separate Account.

Notes To Financial Statements (Continued)

6. PURCHASES AND SALES OF INVESTMENTS

The cost of purchases and proceeds from sales investments for the year ended December 31, 2019 were as follows:

	BlackRock 60/40 Target Allocation ETF V.I. Sub-Account (Class III)	Fidelity® VIP Contrafund® Sub-Account (Initial Class)	Fidelity® VIP Contrafund® Sub-Account (Service Class 2)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series II)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series I)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series II)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series I)	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series II)
Cost of purchases.....\$	2,489,390	\$ 31,371,572	\$ 39,938,501	\$ 1,719,999	\$ 16,160,863	\$ 2,598	\$ 307,792	\$ 6,632,916
Proceeds from sales	(157,939)	(46,229,732)	(25,070,473)	(2,398,376)	(39,828,004)	(5,529)	(1,012,217)	(2,362,207)

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series I)	Invesco Oppenheimer V.I. Government Money Sub-Account (Series II)	Invesco Oppenheimer V.I. International Growth Sub-Account (Series II)	Invesco Oppenheimer V.I. International Growth Sub-Account (Series I)
Cost of purchases.....\$	15,635,112	\$ 14,992,079	\$ 31,088,139	\$ 10,416,195	\$ 19,752,833	\$ 1,880,744	\$ 3,323,904	\$ 2,734,680
Proceeds from sales	(30,641,335)	(11,357,610)	(37,917,001)	(10,499,673)	(29,455,087)	(2,650,232)	(4,845,161)	(6,062,176)

	Invesco Oppenheimer V.I. Main Street Sub-Account (Series II)	Invesco Oppenheimer V.I. Main Street Sub-Account (Series I)	Invesco Oppenheimer V.I. Total Return Bond Sub-Account	Invesco V.I. Diversified Dividend Sub-Account (Series I)	Invesco V.I. Diversified Dividend Sub-Account (Series II)	Invesco V.I. Health Care Sub-Account (Series I)	Invesco V.I. Health Care Sub-Account (Series II)	Invesco V.I. Technology Sub-Account (Series I)
Cost of purchases.....\$	5,642,149	\$ 5,660,687	\$ 69,884	\$ 1,180,281	\$ 1,455,356	\$ 1,072,585	\$ 1,079,089	\$ 1,204,658
Proceeds from sales	(2,437,968)	(5,353,923)	(274,934)	(1,606,152)	(4,450,735)	(1,928,884)	(2,590,698)	(1,339,811)

	Invesco V.I. Technology Sub-Account (Series II)	Ivy VIP Asset Strategy Sub-Account	MML Aggressive Allocation Sub-Account (Initial Class)	MML Aggressive Allocation Sub-Account (Service Class)	MML Asset Momentum Sub-Account (Service Class I)	MML Balanced Allocation Sub-Account (Initial Class)	MML Balanced Allocation Sub-Account (Service Class)	MML Blend Sub-Account (Initial Class)
Cost of purchases.....\$	1,977,385	\$ 1,847,918	\$ 6,925,335	\$ 17,217,628	\$ 265,788	\$ 14,569,646	\$ 58,567,588	\$ 7,570,652
Proceeds from sales	(3,555,853)	(2,164,238)	(4,032,048)	(14,167,484)	(165,181)	(14,953,511)	(74,657,585)	(8,338,954)

Notes To Financial Statements (Continued)

6. PURCHASES AND SALES OF INVESTMENTS (Continued)

	MML Blend Sub-Account (Service Class)	MML Blue Chip Growth Sub-Account (Initial Class)	MML Blue Chip Growth Sub-Account (Service Class)	MML Conservative Allocation Sub-Account (Initial Class)	MML Conservative Allocation Sub-Account (Service Class)	MML Core Allocation Sub-Account	MML Dynamic Bond Sub-Account (Service Class I)	MML Equity Sub-Account (Initial Class)
Cost of purchases.....\$	39,842,309	\$ 10,841,425	\$ 38,128,290	\$ 13,466,500	\$ 52,621,079	\$ 124,332,103	\$ 4,268,417	\$ 2,557,434
Proceeds from sales	(13,331,416)	(9,497,333)	(13,660,862)	(16,600,416)	(70,126,658)	(149,432,800)	(741,505)	(3,131,359)
	MML Equity Sub-Account (Service Class I)	MML Equity Income Sub-Account (Initial Class)	MML Equity Income Sub-Account (Service Class)	MML Equity Index Sub-Account (Class I)	MML Equity Index Sub-Account (Service Class I)	MML Equity Rotation Sub-Account (Service Class I)	MML Focused Equity Sub-Account	MML Foreign Sub-Account (Initial Class)
Cost of purchases.....\$	14,236,632	\$ 19,084,143	\$ 15,380,882	\$ 9,568,393	\$ 6,828,740	\$ 195,745	\$ 6,429,375	\$ 15,324,478
Proceeds from sales	(14,333,913)	(29,216,742)	(13,522,350)	(14,799,962)	(8,309,139)	(125,567)	(2,266,136)	(22,899,531)
	MML Foreign Sub-Account (Service Class)	MML Fundamental Growth Sub-Account	MML Fundamental Value Sub-Account	MML Global Sub-Account (Class I)	MML Global Sub-Account (Service Class I)	MML Global Sub-Account (Class II)	MML Growth Sub-Account	MML Growth & Income Sub-Account (Initial Class)
Cost of purchases.....\$	1,216,330	\$ 5,697,522	\$ 4,045,911	\$ 850,108	\$ 3,557,152	\$ 654,464	\$ 39,831,008	\$ 7,942,426
Proceeds from sales	(1,586,881)	(1,688,526)	(2,027,986)	(1,463,367)	(3,951,376)	(282,827)	(29,874,073)	(11,752,313)
	MML Growth & Income Sub-Account (Service Class)	MML Growth Allocation Sub-Account (Initial Class)	MML Growth Allocation Sub-Account (Service Class)	MML High Yield Sub-Account	MML Income & Growth Sub-Account (Initial Class)	MML Income & Growth Sub-Account (Service Class)	MML Inflation- Protected and Income Sub-Account (Initial Class)	MML Inflation- Protected and Income Sub-Account (Service Class)
Cost of purchases.....\$	10,318,504	\$ 60,667,352	\$ 114,810,369	\$ 10,530,335	\$ 2,784,442	\$ 4,335,321	\$ 18,837,392	\$ 7,522,894
Proceeds from sales	(4,988,743)	(74,888,275)	(133,428,945)	(5,296,469)	(3,081,666)	(3,629,186)	(25,266,160)	(7,990,843)

Notes To Financial Statements (Continued)

6. PURCHASES AND SALES OF INVESTMENTS (Continued)

	<u>MML International Sub-Account</u>	<u>MML International Equity Sub-Account</u>	<u>MML Large Cap Growth Sub-Account (Initial Class)</u>	<u>MML Large Cap Growth Sub-Account (Service Class)</u>	<u>MML Managed Bond Sub-Account (Initial Class)</u>	<u>MML Managed Bond Sub-Account (Service Class)</u>	<u>MML Managed Volatility Sub-Account (Initial Class)</u>	<u>MML Managed Volatility Sub-Account (Service Class)</u>
Cost of purchases.....\$	8,713,915	\$ 2,126,761	\$ 2,544,169	\$ 6,706,513	\$ 15,540,036	\$ 35,538,238	\$ 11,333,402	\$ 3,223,169
Proceeds from sales	(9,007,983)	(902,367)	(3,235,647)	(2,544,285)	(22,179,892)	(39,445,903)	(18,705,276)	(4,455,724)
	<u>MML Mid Cap Growth Sub-Account (Initial Class)</u>	<u>MML Mid Cap Growth Sub-Account (Service Class)</u>	<u>MML Mid Cap Value Sub-Account (Initial Class)</u>	<u>MML Mid Cap Value Sub-Account (Service Class)</u>	<u>MML Moderate Allocation Sub-Account (Initial Class)</u>	<u>MML Moderate Allocation Sub-Account (Service Class)</u>	<u>MML Short-Duration Bond Sub-Account</u>	<u>MML Small Cap Equity Sub-Account (Initial Class)</u>
Cost of purchases.....\$	12,187,874	\$ 23,140,770	\$ 18,109,386	\$ 11,330,814	\$ 34,028,815	\$ 188,084,090	\$ 13,982,752	\$ 3,150,610
Proceeds from sales	(13,262,711)	(16,124,545)	(29,004,577)	(7,828,387)	(39,893,282)	(274,936,280)	(9,539,901)	(4,169,231)
	<u>MML Small Cap Equity Sub-Account (Service Class)</u>	<u>MML Small Cap Growth Equity Sub-Account (Initial Class)</u>	<u>MML Small Cap Growth Equity Sub-Account (Service Class)</u>	<u>MML Small Company Value Sub-Account</u>	<u>MML Small/Mid Cap Value Sub-Account (Initial Class)</u>	<u>MML Small/Mid Cap Value Sub-Account (Service Class)</u>	<u>MML Special Situations Sub-Account (Service Class I)</u>	<u>MML Strategic Emerging Markets Sub-Account</u>
Cost of purchases.....\$	4,807,365	\$ 19,181,382	\$ 8,712,502	\$ 6,748,332	\$ 17,321,543	\$ 6,033,934	\$ 100,116	\$ 2,197,144
Proceeds from sales	(3,420,235)	(25,607,737)	(4,139,618)	(2,647,500)	(18,309,759)	(3,027,009)	(59,129)	(2,349,498)
	<u>MML Total Return Bond Sub-Account</u>	<u>MML U.S. Government Money Market Sub-Account</u>	<u>Oppenheimer Global Multi- Alternatives Sub-Account</u>	<u>PIMCO Commodity RealReturn® Strategy Sub-Account</u>	<u>VY® Clarion Global Real Estate Sub-Account</u>			
Cost of purchases.....\$	10,238,901	41,608,733	161,821	1,099,119	1,810,946			
Proceeds from sales	(3,311,408)	(42,839,684)	(2,498,794)	(1,611,409)	(3,162,016)			

Notes To Financial Statements (Continued)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS

The changes in outstanding units for the two years ended December 31, 2019 were as follows:

	BlackRock 60/40 Target Allocation ETF V.I. Sub-Account (Class III)	Fidelity® VIP Contrafund® Sub-Account (Initial Class)	Fidelity® VIP Contrafund® Sub-Account (Service Class 2)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series II)	Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series I)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series II)	Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series I)	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series II)
2019								
Units purchased	189,641	69,290	1,419,698	11,187	44,075	-	939	283,614
Units withdrawn	(12,054)	(863,590)	(839,360)	(73,709)	(967,794)	(340)	(56,007)	(82,102)
Units transferred between Sub-Accounts and to/from the Fixed Account	6	(372,643)	(65,201)	(9,752)	(563,198)	-	(1,028)	647
Net increase (decrease)	<u>177,593</u>	<u>(1,166,943)</u>	<u>515,136</u>	<u>(72,274)</u>	<u>(1,486,917)</u>	<u>(340)</u>	<u>(56,096)</u>	<u>202,159</u>
	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Sub-Account (Series I)	Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series II)	Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series I)	Invesco Oppenheimer V.I. Government Money Sub-Account (Series I)	Invesco Oppenheimer V.I. International Growth Sub-Account (Series II)	Invesco Oppenheimer V.I. International Growth Sub-Account (Series I)
2019 (Continued)								
Units purchased	39,716	331,553	51,327	397,597	84,446	44,577	160,185	15,166
Units withdrawn	(574,727)	(315,390)	(725,975)	(597,553)	(1,462,923)	(192,075)	(180,072)	(147,834)
Units transferred between Sub-Accounts and to/from the Fixed Account	(418,531)	(84,041)	(335,364)	183,604	605,055	71,689	(37,247)	(69,215)
Net increase (decrease)	<u>(953,542)</u>	<u>(67,879)</u>	<u>(1,010,012)</u>	<u>(16,352)</u>	<u>(773,422)</u>	<u>(75,809)</u>	<u>(57,133)</u>	<u>(201,884)</u>
	Invesco Oppenheimer V.I. Main Street Sub-Account (Series II)	Invesco Oppenheimer V.I. Main Street Sub-Account (Series I)	Invesco Oppenheimer V.I. Total Return Bond Sub-Account (Series I)	Invesco V.I. Diversified Dividend Sub-Account (Series I)	Invesco V.I. Diversified Dividend Sub-Account (Series II)	Invesco V.I. Health Care Sub-Account (Series I)	Invesco V.I. Health Care Sub-Account (Series II)	Invesco V.I. Technology Sub-Account (Series I)
2019 (Continued)								
Units purchased	175,511	9,713	-	12,016	14,434	7,121	8,085	10,555
Units withdrawn	(109,465)	(130,272)	(14,333)	(48,130)	(359,475)	(40,819)	(77,472)	(36,289)
Units transferred between Sub-Accounts and to/from the Fixed Account	2,086	(62,497)	(1,978)	(36,696)	(19,259)	(271)	6,417	(5,272)
Net increase (decrease)	<u>68,131</u>	<u>(183,056)</u>	<u>(16,311)</u>	<u>(72,810)</u>	<u>(364,300)</u>	<u>(33,968)</u>	<u>(62,970)</u>	<u>(31,007)</u>
	Invesco V.I. Technology Sub-Account (Series II)	Ivy VIP Asset Strategy Sub-Account (Initial Class)	MML Aggressive Allocation Sub-Account (Initial Class)	MML Aggressive Allocation Sub-Account (Service Class)	MML Asset Momentum Sub-Account (Service Class I)	MML Balanced Allocation Sub-Account (Initial Class)	MML Balanced Allocation Sub-Account (Service Class)	MML Blend Sub-Account (Initial Class)
2019 (Continued)								
Units purchased	2,943	98,698	48,661	518,013	10,949	51,675	2,026,029	31,846
Units withdrawn	(72,251)	(132,535)	(157,042)	(705,473)	(11,172)	(751,487)	(4,286,597)	(239,671)
Units transferred between Sub-Accounts and to/from the Fixed Account	(8,507)	(31,304)	79,963	(46,440)	1,100	335,689	60,045	22,527
Net increase (decrease)	<u>(77,815)</u>	<u>(65,141)</u>	<u>(28,418)</u>	<u>(233,899)</u>	<u>877</u>	<u>(364,123)</u>	<u>(2,200,522)</u>	<u>(185,299)</u>

Notes To Financial Statements (Continued)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS (Continued)

	MML Blend Sub-Account (Service Class)	MML Blue Chip Growth Sub-Account (Initial Class)	MML Blue Chip Growth Sub-Account (Service Class)	MML Conservative Allocation Sub-Account (Initial Class)	MML Conservative Allocation Sub-Account (Service Class)	MML Core Allocation Sub-Account	MML Dynamic Bond Sub-Account (Service Class I)	MML Equity Sub-Account (Initial Class)
2019 (Continued)								
Units purchased	2,186,950	14,769	1,252,468	57,489	1,984,269	1,978,329	373,967	11,847
Units withdrawn	(536,822)	(140,292)	(386,909)	(744,924)	(3,982,691)	(8,189,022)	(64,240)	(122,354)
Units transferred between Sub-Accounts and to/from the Fixed Account	13,622	7,172	(19,589)	251,390	116,375	216,201	617	16,937
Net increase (decrease)	<u>1,663,751</u>	<u>(118,351)</u>	<u>845,970</u>	<u>(436,045)</u>	<u>(1,882,047)</u>	<u>(5,994,492)</u>	<u>310,344</u>	<u>(93,570)</u>

	MML Equity Sub-Account (Service Class)	MML Equity Income Sub-Account (Initial Class)	MML Equity Income Sub-Account (Service Class)	MML Equity Index Sub-Account (Class I)	MML Equity Index Sub-Account (Service Class I)	MML Equity Rotation Sub-Account (Service Class I)	MML Focused Equity Sub-Account	MML Foreign Sub-Account (Initial Class)
2019 (Continued)								
Units purchased	572,428	48,820	426,641	18,812	19,212	11,709	306,026	72,025
Units withdrawn	(572,820)	(893,149)	(489,311)	(261,713)	(200,527)	(7,852)	(106,994)	(1,284,160)
Units transferred between Sub-Accounts and to/from the Fixed Account	(93,101)	(232,217)	(86,845)	(97,852)	(43,951)	(137)	49,220	552,356
Net increase (decrease)	<u>(93,493)</u>	<u>(1,076,546)</u>	<u>(149,516)</u>	<u>(340,752)</u>	<u>(225,266)</u>	<u>3,720</u>	<u>248,252</u>	<u>(659,779)</u>

	MML Foreign Sub-Account (Service Class)	MML Fundamental Growth Sub-Account	MML Fundamental Value Sub-Account	MML Global Sub-Account (Class I)	MML Global Sub-Account (Service Class I)	MML Global Sub-Account (Class II)	MML Growth Sub-Account	MML Growth & Income Sub-Account (Initial Class)
2019 (Continued)								
Units purchased	57,192	161,905	163,886	2,929	169,454	7,328	979,415	17,084
Units withdrawn	(94,883)	(78,808)	(110,948)	(38,382)	(146,613)	(12,577)	(851,095)	(300,163)
Units transferred between Sub-Accounts and to/from the Fixed Account	12,533	17,465	7,247	(4,534)	(22,378)	23,931	(236,456)	(63,095)
Net increase (decrease)	<u>(25,158)</u>	<u>100,562</u>	<u>60,185</u>	<u>(39,987)</u>	<u>463</u>	<u>18,682</u>	<u>(108,135)</u>	<u>(346,174)</u>

	MML Growth & Income Sub-Account (Service Class)	MML Growth Allocation Sub-Account (Initial Class)	MML Growth Allocation Sub-Account (Service Class)	MML High Yield Sub-Account	MML Income & Growth Sub-Account (Initial Class)	MML Income & Growth Sub-Account (Service Class)	MML Inflation- Protected and Income Sub-Account (Initial Class)	MML Inflation- Protected and Income Sub-Account (Service Class)
2019 (Continued)								
Units purchased	422,955	300,417	1,283,599	517,866	14,723	175,355	87,978	425,361
Units withdrawn	(233,929)	(2,695,267)	(6,518,290)	(253,007)	(103,285)	(167,158)	(1,589,248)	(531,945)
Units transferred between Sub-Accounts and to/from the Fixed Account	(9,485)	(1,037,634)	(675,511)	47,905	38,841	7,150	924,600	102,712
Net increase (decrease)	<u>179,541</u>	<u>(3,432,485)</u>	<u>(5,910,202)</u>	<u>312,764</u>	<u>(49,721)</u>	<u>15,347</u>	<u>(576,671)</u>	<u>(3,872)</u>

Notes To Financial Statements (Continued)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS (Continued)

	MML International Sub-Account	MML International Equity Sub-Account	MML Large Cap Growth Sub-Account (Initial Class)	MML Large Cap Growth Sub-Account (Service Class)	MML Managed Bond Sub-Account (Initial Class)	MML Managed Bond Sub-Account (Service Class)	MML Managed Volatility Sub-Account (Initial Class)	MML Managed Volatility Sub-Account (Service Class)
2019 (Continued)								
Units purchased	228,772	123,717	9,302	299,671	70,250	1,013,292	48,854	122,389
Units withdrawn	(462,063)	(66,586)	(85,570)	(121,404)	(1,156,891)	(2,512,273)	(924,097)	(258,555)
Units transferred between Sub-Accounts and to/from the Fixed Account	(40,316)	18,466	(22,608)	2,287	507,733	989,459	411,250	76,516
Net increase (decrease)	<u>(273,607)</u>	<u>75,597</u>	<u>(98,876)</u>	<u>180,554</u>	<u>(578,908)</u>	<u>(509,522)</u>	<u>(463,993)</u>	<u>(59,650)</u>

	MML Mid Cap Growth Sub-Account (Initial Class)	MML Mid Cap Growth Sub-Account (Service Class)	MML Mid Cap Value Sub-Account (Initial Class)	MML Mid Cap Value Sub-Account (Service Class)	MML Moderate Allocation Sub-Account (Initial Class)	MML Moderate Allocation Sub-Account (Service Class)	MML Short-Duration Bond Sub-Account	MML Small Cap Equity Sub-Account (Initial Class)
2019 (Continued)								
Units purchased	15,093	585,095	36,333	395,313	139,009	3,285,111	1,086,005	8,190
Units withdrawn	(195,489)	(438,756)	(628,848)	(236,738)	(1,913,048)	(15,368,442)	(816,570)	(108,640)
Units transferred between Sub-Accounts and to/from the Fixed Account	(67,953)	(108,466)	(205,384)	(39,390)	122,343	(369,316)	121,323	(3,227)
Net increase (decrease)	<u>(248,350)</u>	<u>37,873</u>	<u>(797,899)</u>	<u>119,185</u>	<u>(1,651,696)</u>	<u>(12,452,647)</u>	<u>390,758</u>	<u>(103,677)</u>

	MML Small Cap Equity Sub-Account (Service Class)	MML Small Cap Growth Equity Sub-Account (Initial Class)	MML Small Cap Growth Equity Sub-Account (Service Class)	MML Small Company Value Sub-Account	MML Small/Mid Cap Value Sub-Account (Initial Class)	MML Small/Mid Cap Value Sub-Account (Service Class)	MML Special Situations Sub-Account (Service Class I)	MML Strategic Emerging Markets Sub-Account
2019 (Continued)								
Units purchased	204,885	20,979	255,914	219,444	33,233	227,459	7,042	148,852
Units withdrawn	(147,945)	(413,608)	(123,478)	(110,020)	(592,164)	(137,352)	(3,669)	(143,182)
Units transferred between Sub-Accounts and to/from the Fixed Account	(4,027)	(213,516)	(13,270)	4,945	70,526	4,449	39	(10,233)
Net increase (decrease)	<u>52,913</u>	<u>(606,145)</u>	<u>119,167</u>	<u>114,369</u>	<u>(488,404)</u>	<u>94,556</u>	<u>3,412</u>	<u>(4,563)</u>

	MML Total Return Bond Sub-Account	MML U.S. Government Money Market Sub-Account	Oppenheimer Global Multi- Alternatives Sub-Account	PIMCO Commodity RealReturn® Strategy Sub-Account	VY® Clarion Global Real Estate Sub-Account
2019 (Continued)					
Units purchased	736,983	1,648,532	11,797	47,261	17,200
Units withdrawn	(192,058)	(3,609,517)	(141,453)	(237,753)	(124,378)
Units transferred between Sub-Accounts and to/from the Fixed Account	69,784	1,750,432	(117,338)	39,024	6,478
Net increase (decrease)	<u>614,710</u>	<u>(210,553)</u>	<u>(246,994)</u>	<u>(151,467)</u>	<u>(100,700)</u>

Notes To Financial Statements (Continued)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS (Continued)

	BlackRock iShares® Alternative Strategies V.I. Sub-Account (Class III)	BlackRock iShares® Dynamic Allocation V.I. Sub-Account (Class III)	BlackRock iShares® Dynamic Fixed Income V.I. Sub-Account (Class III)	BlackRock iShares® Equity Appreciation V.I. Sub-Account (Class III)	Fidelity® VIP Contrafund® Sub-Account (Initial Class)	Fidelity® VIP Contrafund® Sub-Account (Service Class 2)	Invesco V.I. Diversified Dividend Sub-Account (Series I)	Invesco V.I. Diversified Dividend Sub-Account (Series II)
2018								
Units purchased	(26)	26,904	(155)	29,737	107,755	1,816,573	20,193	22,689
Units withdrawn	(102,819)	(6,519)	(170,086)	(107,038)	(1,163,790)	(661,238)	(48,830)	(157,909)
Units transferred between Sub-Accounts and to/from the Fixed Account	10,722	-	7,607	6,401	(270,766)	(57,046)	(57,527)	60,321
Net increase (decrease)	<u>(92,123)</u>	<u>20,385</u>	<u>(162,634)</u>	<u>(70,900)</u>	<u>(1,326,801)</u>	<u>1,098,289</u>	<u>(86,164)</u>	<u>(74,899)</u>
	Invesco V.I. Health Care Sub-Account (Series I)	Invesco V.I. Health Care Sub-Account (Series II)	Invesco V.I. Technology Sub-Account (Series I)	Invesco V.I. Technology Sub-Account (Series II)	Ivy Asset Strategy Sub-Account	MML Aggressive Allocation Sub-Account (Initial Class)	MML Aggressive Allocation Sub-Account (Service Class)	MML Asset Momentum Sub-Account (Service Class I)
2018 (Continued)								
Units purchased	8,167	8,824	14,397	6,427	161,654	122,603	682,218	20,519
Units withdrawn	(57,009)	(82,293)	(58,405)	(56,462)	(119,301)	(328,742)	(471,956)	(9,599)
Units transferred between Sub-Accounts and to/from the Fixed Account	(11,420)	(18,121)	(819)	63,391	(15,844)	939	41,013	502
Net increase (decrease)	<u>(60,261)</u>	<u>(91,591)</u>	<u>(44,826)</u>	<u>13,356</u>	<u>26,508</u>	<u>(205,200)</u>	<u>251,275</u>	<u>11,422</u>
	MML Balanced Allocation Sub-Account (Initial Class)	MML Balanced Allocation Sub-Account (Service Class)	MML Blend Sub-Account (Initial Class)	MML Blend Sub-Account (Service Class)	MML Blue Chip Growth Sub-Account (Initial Class)	MML Blue Chip Growth Sub-Account (Service Class)	MML Conservative Allocation Sub-Account (Initial Class)	MML Conservative Allocation Sub-Account (Service Class)
2018 (Continued)								
Units purchased	88,970	2,551,852	31,793	3,547,060	17,554	1,920,177	85,073	1,975,266
Units withdrawn	(905,854)	(4,267,681)	(328,089)	(263,314)	(226,471)	(256,591)	(1,019,830)	(4,932,118)
Units transferred between Sub-Accounts and to/from the Fixed Account	(160,483)	(664,556)	30,381	(48,342)	(58,658)	63,591	335,149	(2,252)
Net increase (decrease)	<u>(977,367)</u>	<u>(2,380,385)</u>	<u>(265,915)</u>	<u>3,235,403</u>	<u>(267,576)</u>	<u>1,727,176</u>	<u>(599,608)</u>	<u>(2,959,104)</u>
	MML Core Allocation Sub-Account	MML Dynamic Bond Sub-Account (Service Class I)	MML Equity Sub-Account (Initial Class)	MML Equity Sub-Account (Service Class)	MML Equity Income Sub-Account (Initial Class)	MML Equity Income Sub-Account (Service Class)	MML Equity Index Sub-Account (Class I)	MML Equity Index Sub-Account (Service Class I)
2018 (Continued)								
Units purchased	2,411,185	248,842	11,304	499,069	59,259	387,680	15,393	15,717
Units withdrawn	(7,565,389)	(82,328)	(146,412)	(581,135)	(1,123,783)	(394,065)	(396,657)	(216,110)
Units transferred between Sub-Accounts and to/from the Fixed Account	738,633	20,254	(4,572)	137,018	(58,023)	58,982	(49,182)	(10,128)
Net increase (decrease)	<u>(4,415,571)</u>	<u>186,768</u>	<u>(139,681)</u>	<u>54,952</u>	<u>(1,122,548)</u>	<u>52,597</u>	<u>(430,445)</u>	<u>(210,521)</u>

Notes To Financial Statements (Continued)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS (Continued)

	MML Equity Rotation Sub-Account (Service Class I)	MML Focused Equity Sub-Account	MML Foreign Sub-Account (Initial Class)	MML Foreign Sub-Account (Service Class)	MML Fundamental Growth Sub-Account	MML Fundamental Value Sub-Account	MML Global Sub-Account (Class I)	MML Global Sub-Account (Service Class I)
2018 (Continued)								
Units purchased	30,080	197,543	63,480	69,836	326,538	248,847	1,907	119,460
Units withdrawn	(9,585)	(64,343)	(1,353,630)	(83,980)	(41,454)	(70,941)	(39,393)	(118,906)
Units transferred between Sub-Accounts and to/from the Fixed Account	2,294	(8,652)	697,909	19,797	(3,111)	(13,684)	(6,330)	11,404
Net increase (decrease)	<u>22,789</u>	<u>124,548</u>	<u>(592,241)</u>	<u>5,652</u>	<u>281,973</u>	<u>164,223</u>	<u>(43,816)</u>	<u>11,958</u>
	MML Global Sub-Account (Class II)	MML Growth Sub-Account	MML Growth & Income Sub-Account (Initial Class)	MML Growth & Income Sub-Account (Service Class)	MML Growth Allocation Sub-Account (Initial Class)	MML Growth Allocation Sub-Account (Service Class)	MML High Yield Sub-Account	MML Income & Growth Sub-Account (Initial Class)
2018 (Continued)								
Units purchased	10,264	1,170,031	27,604	759,271	273,506	2,313,889	641,449	12,365
Units withdrawn	(25,155)	(714,900)	(355,478)	(148,843)	(3,784,789)	(7,210,414)	(281,795)	(157,836)
Units transferred between Sub-Accounts and to/from the Fixed Account	(9,212)	(323,489)	(55,465)	(85,040)	(81,298)	449,883	(8,312)	(14,582)
Net increase (decrease)	<u>(24,104)</u>	<u>131,642</u>	<u>(383,339)</u>	<u>525,389</u>	<u>(3,592,581)</u>	<u>(4,446,643)</u>	<u>351,343</u>	<u>(160,053)</u>
	MML Income & Growth Sub-Account (Service Class)	MML Inflation- Protected and Income Sub-Account (Initial Class)	MML Inflation- Protected and Income Sub-Account (Service Class)	MML International Sub-Account	MML International Equity Sub-Account	MML Large Cap Growth Sub-Account (Initial Class)	MML Large Cap Growth Sub-Account (Service Class)	MML Managed Bond Sub-Account (Initial Class)
2018 (Continued)								
Units purchased	341,516	89,993	344,343	316,011	199,859	9,231	323,840	60,944
Units withdrawn	(148,931)	(1,904,258)	(564,337)	(403,764)	(29,889)	(97,385)	(34,899)	(1,518,288)
Units transferred between Sub-Accounts and to/from the Fixed Account	(67,528)	(237,915)	(6,611)	71,845	13,814	(17,741)	82	(50,440)
Net increase (decrease)	<u>125,057</u>	<u>(2,052,180)</u>	<u>(226,605)</u>	<u>(15,908)</u>	<u>183,784</u>	<u>(105,895)</u>	<u>289,023</u>	<u>(1,507,783)</u>
	MML Managed Bond Sub-Account (Service Class)	MML Managed Volatility Sub-Account (Initial Class)	MML Managed Volatility Sub-Account (Service Class)	MML Mid Cap Growth Sub-Account (Initial Class)	MML Mid Cap Growth Sub-Account (Service Class)	MML Mid Cap Value Sub-Account (Initial Class)	MML Mid Cap Value Sub-Account (Service Class)	MML Moderate Allocation Sub-Account (Initial Class)
2018 (Continued)								
Units purchased	1,141,018	52,773	149,351	21,261	890,632	39,860	425,697	128,972
Units withdrawn	(2,515,562)	(1,054,879)	(297,140)	(236,986)	(383,865)	(760,213)	(252,232)	(2,705,215)
Units transferred between Sub-Accounts and to/from the Fixed Account	302,119	(141,448)	2,070	(71,542)	(50,755)	125,642	38,446	170,748
Net increase (decrease)	<u>(1,072,425)</u>	<u>(1,143,554)</u>	<u>(145,718)</u>	<u>(287,267)</u>	<u>456,013</u>	<u>(594,711)</u>	<u>211,911</u>	<u>(2,405,495)</u>

Notes To Financial Statements (Continued)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS (Continued)

	MML Moderate Allocation Sub-Account (Service Class)	MML Short-Duration Bond Sub-Account	MML Small Cap Equity Sub-Account (Initial Class)	MML Small Cap Equity Sub-Account (Service Class)	MML Small Cap Growth Equity Sub-Account (Initial Class)	MML Small Cap Growth Equity Sub-Account (Service Class)	MML Small Company Value Sub-Account	MML Small/Mid Cap Value Sub-Account (Initial Class)
2018 (Continued)								
Units purchased	5,300,053	576,110	8,852	349,682	26,449	407,391	336,352	36,617
Units withdrawn	(16,748,181)	(803,387)	(113,051)	(72,075)	(494,496)	(62,433)	(75,396)	(658,249)
Units transferred between Sub-Accounts and to/from the Fixed Account	(2,230,891)	262,225	(15,418)	(1,976)	(190,391)	16,489	(11,609)	159,685
Net increase (decrease)	<u>(13,679,018)</u>	<u>34,949</u>	<u>(119,617)</u>	<u>275,630</u>	<u>(658,437)</u>	<u>361,447</u>	<u>249,347</u>	<u>(461,948)</u>
	MML Small/Mid Cap Value Sub-Account (Service Class)	MML Special Situations Sub-Account (Service Class I)	MML Strategic Emerging Markets Sub-Account	MML Total Return Bond Sub-Account	MML U.S. Government Money Market Sub-Account	Oppenheimer Capital Appreciation Sub-Account (Service)	Oppenheimer Capital Appreciation Sub-Account (Non-Service)	Oppenheimer Conservative Balanced Sub-Account (Service)
2018 (Continued)								
Units purchased	205,428	22,902	250,375	619,138	2,421,471	6,884	54,942	-
Units withdrawn	(109,777)	(4,904)	(142,058)	(189,372)	(3,768,777)	(60,871)	(1,150,913)	(560)
Units transferred between Sub-Accounts and to/from the Fixed Account	3,178	(2,554)	(14,624)	(20,914)	2,329,962	(29,092)	(395,157)	-
Net increase (decrease)	<u>98,828</u>	<u>15,444</u>	<u>93,694</u>	<u>408,852</u>	<u>982,656</u>	<u>(83,079)</u>	<u>(1,491,129)</u>	<u>(560)</u>
	Oppenheimer Conservative Balanced Sub-Account (Non-Service)	Oppenheimer Discovery Mid Cap Growth Sub-Account (Service)	Oppenheimer Discovery Mid Cap Growth Sub-Account (Non-Service)	Oppenheimer Global Sub-Account (Service)	Oppenheimer Global Sub-Account (Non-Service)	Oppenheimer Global Multi- Alternatives Sub-Account	Oppenheimer Global Strategic Income Sub-Account (Service)	Oppenheimer Global Strategic Income Sub-Account (Non-Service)
2018 (Continued)								
Units purchased	2,661	226,664	38,124	738,485	59,665	51,227	611,629	88,776
Units withdrawn	(57,503)	(76,000)	(718,213)	(283,370)	(932,117)	(33,665)	(584,000)	(1,817,894)
Units transferred between Sub-Accounts and to/from the Fixed Account	(6,252)	(9,515)	(262,827)	(1,052)	(17,938)	(3,416)	65,348	82,409
Net increase (decrease)	<u>(61,093)</u>	<u>141,149</u>	<u>(942,916)</u>	<u>454,063</u>	<u>(890,390)</u>	<u>14,146</u>	<u>92,977</u>	<u>(1,646,709)</u>
	Oppenheimer Government Money Sub-Account	Oppenheimer International Growth Sub-Account (Service)	Oppenheimer International Growth Sub-Account (Non-Service)	Oppenheimer Main Street Sub-Account (Service)	Oppenheimer Main Street Sub-Account (Non-Service)	Oppenheimer Total Return Bond Sub-Account	PIMCO Commodity RealReturn® Strategy Sub-Account	VY® Clarion Global Real Estate Sub-Account
2018 (Continued)								
Units purchased	69,303	291,128	16,725	230,339	11,798	-	32,578	13,285
Units withdrawn	(121,637)	(144,854)	(152,082)	(81,755)	(129,165)	(16,808)	(262,520)	(140,990)
Units transferred between Sub-Accounts and to/from the Fixed Account	43,648	27,710	18,499	(5,389)	(25,573)	(3,111)	5,016	(32,636)
Net increase (decrease)	<u>(8,686)</u>	<u>173,985</u>	<u>(116,857)</u>	<u>143,196</u>	<u>(142,940)</u>	<u>(19,920)</u>	<u>(224,926)</u>	<u>(160,342)</u>

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS

A. A summary of units outstanding, unit values, net assets, investment income ratios, expense ratios (excluding expenses of the underlying funds) and total return ratios for each of the five years in the period ended December 31, 2019 follows:

	At December 31,			For the Years Ended December 31,							
	Units	Unit Value ³ (Lowest to Highest)		Net Assets	Investment Income Ratio ¹		Expense Ratio ² (Lowest to Highest)		Total Return ³ (Lowest to Highest)		
BlackRock iShares® Alternatives Strategies V.I. Sub-Account (Class III)											
2019	-	\$ -	to \$ -	\$ -	-	- %	-	to	- %	- % to - %	
2018 ⁷	-	11.29	to 11.55	-	-	-	1.00	to 1.80	0.98	to 1.52	
2017	92,123	11.18	to 11.37	1,047,836	2.98	1.00	to 1.80	10.45	to 11.33		
2016	54,350	10.12	to 10.22	555,192	4.32	1.00	to 1.80	4.33	to 5.16		
2015	9,053	9.70	to 9.72	87,946	0.54	1.00	to 1.80	(2.99)	to (2.85)		
BlackRock 60/40 Target Allocation ETF V.I. Sub-Account (Class III)											
2019	274,313	12.62	to 13.05	3,575,830	4.15	1.00	to 1.80	19.06	to 20.02		
2018	96,720	10.60	to 10.87	1,051,057	0.87	1.00	to 1.80	(6.88)	to (6.13)		
2017	76,335	11.38	to 11.58	884,020	2.54	1.00	to 1.80	12.69	to 13.59		
2016	35,649	10.10	to 10.20	363,359	2.71	1.00	to 1.80	4.27	to 5.10		
2015	12,314	9.69	to 9.70	119,445	0.62	1.00	to 1.80	(3.14)	to (3.00)		
BlackRock iShares® Dynamic Fixed Income V.I. Sub-Account (Class III)											
2019	-	-	to -	-	-	-	to -	-	to -		
2018 ⁸	-	9.88	to 10.07	-	-	1.00	to 1.80	(2.29)	to (2.10)		
2017	162,634	10.11	to 10.29	1,672,552	2.52	1.00	to 1.80	1.76	to 2.57		
2016	111,228	9.94	to 10.03	1,115,162	2.42	1.00	to 1.80	1.48	to 2.29		
2015	39,486	9.79	to 9.81	387,172	4.74	1.00	to 1.80	(2.09)	to (1.95)		
BlackRock iShares® Equity Appreciation V.I. Sub-Account (Class III)											
2019	-	-	to -	-	-	-	to -	-	to -		
2018 ⁸	-	11.96	to 12.20	-	-	1.00	to 1.80	(2.34)	to (2.15)		
2017	70,900	12.25	to 12.47	882,818	1.88	1.00	to 1.80	19.41	to 20.36		
2016	59,162	10.26	to 10.36	612,291	2.98	1.00	to 1.80	7.11	to 7.97		
2015	6,772	9.58	to 9.59	64,955	0.45	1.00	to 1.80	(4.21)	to (4.07)		
Fidelity® VIP Contrafund® Sub-Account (Initial Class)											
2019	6,319,467	27.86	to 42.16	232,111,397	0.45	0.95	to 2.60	28.20	to 30.33		
2018	7,486,410	21.73	to 32.34	212,143,084	0.68	0.95	to 2.60	(8.79)	to (7.27)		
2017	8,813,211	23.83	to 34.88	270,257,413	0.98	0.95	to 2.60	18.76	to 20.73		
2016	10,065,234	20.07	to 28.89	256,505,001	0.79	0.95	to 2.60	5.24	to 6.99		
2015	11,133,409	19.07	to 27.00	266,752,622	1.01	0.95	to 2.60	(1.91)	to (0.28)		
Fidelity® VIP Contrafund® Sub-Account (Service Class 2)											
2019	8,336,046	15.32	to 26.03	191,552,509	0.22	1.00	to 3.10	27.27	to 29.97		
2018	7,820,910	11.79	to 20.45	150,211,346	0.45	1.00	to 3.10	(9.51)	to (7.57)		
2017	6,722,621	12.76	to 22.60	154,879,781	0.80	1.00	to 3.10	17.89	to 20.38		
2016	5,476,326	10.60	to 19.17	118,297,754	0.66	1.00	to 3.10	4.45	to 6.66		
2015	4,717,837	9.93	to 18.35	106,079,060	0.86	1.00	to 3.10	(2.65)	to (0.66)		
Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series II)⁹											
2019	481,175	19.83	to 28.22	12,888,583	-	1.15	to 3.10	31.70	to 34.29		
2018	553,449	15.06	to 21.01	11,026,041	-	1.15	to 3.10	(8.84)	to (7.04)		
2017	636,528	16.52	to 22.60	13,651,148	0.01	1.15	to 3.10	22.66	to 25.06		
2016	669,136	13.47	to 18.07	11,507,034	0.11	1.15	to 3.10	(5.40)	to (3.54)		
2015	719,485	14.24	to 18.74	12,694,135	-	1.15	to 3.10	0.12	to 2.09		
Invesco Oppenheimer V.I. Capital Appreciation Sub-Account (Series I)⁹											
2019	5,846,107	21.24	to 29.72	161,347,994	0.06	0.95	to 2.60	32.70	to 34.91		
2018	7,333,024	16.00	to 22.03	150,727,803	0.33	0.95	to 2.60	(8.16)	to (6.63)		
2017	8,824,152	17.42	to 23.59	195,124,067	0.24	0.95	to 2.60	23.59	to 25.64		
2016	10,289,099	14.10	to 18.78	181,883,596	0.42	0.95	to 2.60	(4.71)	to (3.12)		
2015	11,140,031	14.79	to 19.38	204,161,032	0.09	0.95	to 2.60	0.89	to 2.56		

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,				For the Years Ended December 31,			
	Units	Unit Value ³		Net Assets	Investment		Total Return ³	
		(Lowest to Highest)			Income Ratio ¹	Expense Ratio ²	(Lowest to Highest)	(Lowest to Highest)
Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series II)⁹								
2019	5,079	\$ 11.42 to \$ 15.09	\$ 71,711	2.00 %	1.15 % to 2.65 %	14.15 % to 15.88 %		
2018	5,419	10.01 to 13.03	66,010	1.73	1.15 to 2.65	(8.02) to (6.62)		
2017	5,979	10.88 to 13.95	78,036	1.69	1.15 to 2.65	6.11 to 7.71		
2016	6,910	10.25 to 12.95	84,787	2.12	1.15 to 2.65	2.22 to 3.77		
2015	9,360	10.03 to 12.48	112,578	2.05	1.15 to 2.65	(2.06) to (0.58)		
Invesco Oppenheimer V.I. Conservative Balanced Sub-Account (Series I)⁹								
2019	417,214	11.71 to 17.70	6,873,042	2.24	0.95 to 2.60	14.50 to 16.40		
2018	473,310	10.23 to 15.21	6,725,065	1.97	0.95 to 2.60	(7.77) to (6.22)		
2017	534,403	11.09 to 16.22	8,114,383	1.96	0.95 to 2.60	6.46 to 8.22		
2016	630,503	10.42 to 14.99	8,876,450	2.39	0.95 to 2.60	2.57 to 4.27		
2015	703,999	10.16 to 14.37	9,535,222	2.25	0.95 to 2.60	(1.76) to (0.12)		
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series II)⁹								
2019	875,114	16.40 to 22.99	18,022,291	-	1.00 to 3.10	34.77 to 37.63		
2018	672,955	11.92 to 17.06	11,178,908	-	1.00 to 3.10	(9.18) to (7.24)		
2017	531,806	12.85 to 18.78	10,967,039	-	1.00 to 3.10	24.55 to 27.18		
2016	413,368	10.10 to 15.08	7,455,029	-	1.00 to 3.10	(1.03) to 1.06		
2015	418,015	10.00 to 15.24	7,838,962	-	1.00 to 3.10	(0.05) to 3.10		
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Sub-Account (Series I)⁹								
2019	3,582,421	24.61 to 33.67	106,476,690	-	0.95 to 2.60	35.79 to 38.05		
2018	4,535,962	18.13 - 24.39	99,470,922	-	0.95 - 2.60	(8.51) - (6.98)		
2017	5,478,879	19.81 - 26.22	130,393,799	0.03	0.95 - 2.60	25.50 - 27.58		
2016	6,350,802	15.79 - 20.55	119,229,530	-	0.95 - 2.60	(0.29) - 1.37		
2015	7,089,700	15.83 - 20.27	132,434,269	-	0.95 - 2.60	3.87 - 5.60		
Invesco Oppenheimer V.I. Global Sub-Account (Series II)⁹								
2019	3,054,222	14.48 to 22.63	\$ 69,852,655	0.64	1.00 to 3.10	27.44 to 30.15		
2018	3,122,101	11.13 to 17.76	58,317,027	0.76	1.00 to 3.10	(16.05) to (14.26)		
2017	2,668,038	12.98 to 21.15	65,203,626	0.72	1.00 to 3.10	32.17 to 34.97		
2016	2,429,442	9.61 to 16.00	47,830,566	0.77	1.00 to 3.10	(3.20) to (1.15)		
2015	2,296,397	9.73 to 16.53	48,068,966	1.05	1.00 to 3.10	(2.74) to 0.51		
Invesco Oppenheimer V.I. Global Sub-Account (Series I)⁹								
2019	5,325,923	24.23 to 36.97	176,050,964	0.89	0.95 to 2.60	28.41 to 30.54		
2018	6,335,935	18.87 to 28.32	161,039,139	0.99	0.95 to 2.60	(15.42) to (14.01)		
2017	7,226,325	22.31 to 32.94	214,656,278	0.94	0.95 to 2.60	33.17 to 35.38		
2016	8,685,167	16.75 to 24.33	191,007,098	1.07	0.95 to 2.60	(2.48) to (0.86)		
2015	9,468,058	17.18 to 24.54	211,458,450	1.30	0.95 to 2.60	1.28 to 2.96		
Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series II)⁹								
2019	4,957,887	11.12 to 12.97	74,928,822	3.39	1.00 to 3.10	7.23 to 9.51		
2018	4,974,238	10.16 to 12.10	70,206,556	4.56	1.00 to 3.10	(7.47) to (5.49)		
2017	4,881,261	10.75 to 13.07	75,321,693	1.95	1.00 to 3.10	2.81 to 4.99		
2016	4,528,125	10.24 to 12.72	68,620,181	4.57	1.00 to 3.10	3.03 to 5.21		
2015	4,740,022	9.73 to 12.34	69,114,608	5.35	1.00 to 3.10	(5.47) to (2.71)		
Invesco Oppenheimer V.I. Global Strategic Income Sub-Account (Series I)⁹								
2019	9,820,494	13.89 to 22.10	174,837,228	3.80	0.95 to 2.60	7.96 to 9.76		
2018	10,593,916	12.86 to 20.14	173,249,673	4.84	0.95 to 2.60	(6.86) to (5.31)		
2017	12,240,624	13.81 to 21.27	211,836,285	2.29	0.95 to 2.60	3.55 to 5.27		
2016	13,230,514	13.34 to 20.20	218,695,233	5.00	0.95 to 2.60	3.81 to 5.53		
2015	15,133,537	12.85 to 19.14	237,820,282	5.89	0.95 to 2.60	(4.77) to (3.18)		

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,			For the Years Ended December 31,						
	Units	Unit Value ³		Net Assets	Investment			Total Return ³		
		(Lowest to Highest)			Income Ratio ¹	Expense Ratio ²		(Lowest to Highest)		
Invesco Oppenheimer V.I. Government Money Sub-Account⁹										
2019	673,998	\$ 8.04	to \$ 10.49	\$ 7,061,758	1.70 %	0.95 %	to 2.60 %	(0.90)%	to 0.75 %	
2018	749,807	8.11	to 10.41	7,836,332	1.34	0.95	to 2.60	(1.26)	to 0.39	
2017	758,493	8.21	to 10.37	7,890,182	0.38	0.95	to 2.60	(2.18)	to (0.56)	
2016	769,084	8.40	to 10.43	8,057,894	0.01	0.95	to 2.60	(2.55)	to (0.93)	
2015	976,501	8.62	to 10.53	10,336,029	0.01	0.95	to 2.60	(2.56)	to (0.94)	
Invesco Oppenheimer V.I. International Growth Sub-Account (Series II)⁹										
2019	1,376,480	11.94	to 18.62	26,966,589	0.71	1.00	to 3.10	24.05	to 26.68	
2018	1,433,614	9.42	to 15.01	23,629,838	0.60	1.00	to 3.10	(22.02)	to (20.36)	
2017	1,259,629	11.83	to 19.25	28,549,998	1.14	1.00	to 3.10	22.60	to 25.19	
2016	1,142,092	9.45	to 15.70	22,105,225	0.82	1.00	to 3.10	(5.68)	to (3.68)	
2015	1,111,652	9.81	to 16.65	23,682,945	0.90	1.00	to 3.10	(1.89)	to (0.04)	
Invesco Oppenheimer V.I. International Growth Sub-Account (Series I)⁹										
2019	1,267,445	19.95	to 28.48	32,768,962	1.05	0.95	to 2.60	25.30	to 27.39	
2018	1,469,329	15.92	to 22.36	30,045,032	0.86	0.95	to 2.60	(21.50)	to (20.18)	
2017	1,586,186	20.29	to 28.01	40,886,987	1.43	0.95	to 2.60	23.06	to 25.10	
2016	1,727,776	16.48	to 22.39	35,872,901	1.10	0.95	to 2.60	(4.62)	to (3.04)	
2015	1,953,465	17.28	to 23.09	42,333,615	1.17	0.95	to 2.60	0.78	to 2.45	
Invesco Oppenheimer V.I. Main Street Sub-Account (Series II)⁹										
2019	1,022,590	14.98	to 21.06	19,582,090	0.81	1.00	to 3.10	27.72	to 30.43	
2018	954,458	11.49	to 16.49	14,676,353	0.90	1.00	to 3.10	(10.92)	to (9.02)	
2017	811,263	12.62	to 18.51	14,827,618	1.01	1.00	to 3.10	13.09	to 15.48	
2016	578,264	10.93	to 16.37	10,570,828	0.81	1.00	to 3.10	7.91	to 10.19	
2015	350,633	9.92	to 15.17	6,571,579	0.59	1.00	to 3.10	(0.80)	to (0.04)	
Invesco Oppenheimer V.I. Main Street Sub-Account (Series I)⁹										
2019	1,159,288	22.54	to 31.55	32,594,095	1.06	0.95	to 2.60	28.69	to 30.83	
2018	1,342,344	17.52	to 24.12	28,990,577	1.17	0.95	to 2.60	(10.26)	to (8.76)	
2017	1,485,284	19.52	to 26.43	35,355,748	1.25	0.95	to 2.60	13.92	to 15.81	
2016	1,636,217	17.13	to 22.82	33,814,437	1.12	0.95	to 2.60	8.76	to 10.56	
2015	1,773,958	15.75	to 20.64	33,344,658	0.93	0.95	to 2.60	0.68	to 2.35	
Invesco Oppenheimer V.I. Total Return Bond Sub-Account⁹										
2019	129,518	-	- 15.35	1,988,167	3.32	-	- 1.40	-	- 8.00	
2018	145,829	-	- 14.21	2,072,652	3.33	-	- 1.40	-	- (2.41)	
2017	165,749	-	- 14.56	2,413,840	2.43	-	- 1.40	-	- 3.14	
2016	187,107	-	- 14.12	2,642,040	3.70	-	- 1.40	-	- 1.84	
2015	211,390	-	- 13.87	2,931,050	4.06	-	- 1.40	-	- (0.44)	
Invesco V.I. Diversified Dividend Sub-Account (Series I)⁹										
2019	517,444		13.91	6,771,474	2.90		2.60		23.91	
2018	590,254		11.22	6,260,165	2.36		2.60		(8.45)	
2017	676,418		12.26	7,720,912	1.65		2.60		7.55	
2016	736,362		11.40	7,837,640	1.38		2.60		13.73	
2015	683,000		10.02	6,428,727	1.74		2.60		1.10	
Invesco V.I. Diversified Dividend Sub-Account (Series II)										
2019	1,203,871	8.68	to 12.44	14,181,904	2.53	1.15	to 3.10	20.97	to 23.35	
2018	1,568,171	7.17	to 10.09	14,983,575	2.15	1.15	to 3.10	(10.64)	to (8.87)	
2017	1,643,070	8.03	to 11.07	17,155,729	1.50	1.15	to 3.10	5.05	to 7.11	
2016	1,687,179	7.64	to 10.34	16,407,276	1.27	1.15	to 3.10	11.05	to 13.23	
2015	1,432,504	6.88	to 9.13	12,233,723	1.59	1.15	to 3.10	(1.29)	to 0.65	

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,		For the Years Ended December 31,				
	Units	Unit Value ³		Net Assets	Investment		Total Return ³ (Lowest to Highest)
		(Lowest to Highest)			Income Ratio ¹	Expense Ratio ² (Lowest to Highest)	
Invesco V.I. Health Care Sub-Account (Series I)							
2019	355,234	\$ 24.45 to \$ 35.65	\$ 11,544,579	0.04 %	0.95 % to 2.60 %	29.10 % to 31.25 %	
2018	389,202	18.94 to 27.16	9,685,524	-	0.95 to 2.60	(1.70) to (0.05)	
2017	449,464	19.26 to 27.18	11,252,795	0.36	0.95 to 2.60	12.86 to 14.73	
2016	550,239	17.07 to 23.69	12,141,263	-	0.95 to 2.60	(13.73) to (12.30)	
2015	624,469	19.78 to 27.01	15,699,247	-	0.95 to 2.60	0.51 to 2.19	
Invesco V.I. Health Care Sub-Account (Series II)							
2019	424,441	22.83 to 33.00	13,391,320	-	1.15 to 3.10	28.15 to 30.67	
2018	487,410	17.82 to 25.26	11,728,521	-	1.15 to 3.10	(2.47) to (0.54)	
2017	579,001	18.27 to 25.40	13,988,456	0.08	1.15 to 3.10	12.03 to 14.23	
2016	665,130	16.31 to 22.23	14,005,123	-	1.15 to 3.10	(14.37) to (12.69)	
2015	873,197	19.05 to 25.46	20,829,685	-	1.15 to 3.10	(0.25) to 1.71	
Invesco V.I. Technology Sub-Account (Series I)							
2019	409,274	24.36 to 31.73	7,407,278	-	0.95 to 2.60	32.39 to 34.59	
2018	440,280	18.40 to 23.57	6,043,444	-	0.95 to 2.60	(3.02) to (1.40)	
2017	485,107	18.97 to 23.91	7,039,384	-	0.95 to 2.60	31.68 to 33.86	
2016	477,318	14.41 to 17.86	5,520,565	-	0.95 to 2.60	(3.30) to (1.69)	
2015	527,089	14.90 to 18.17	6,455,998	-	0.95 to 2.60	4.07 to 5.80	
Invesco V.I. Technology Sub-Account (Series II)							
2019	300,092	22.74 to 37.25	10,156,434	-	1.15 to 3.10	31.42 to 34.01	
2018	377,907	17.30 to 27.79	9,565,714	-	1.15 to 3.10	(3.76) to (1.85)	
2017	364,551	17.98 to 28.32	9,417,375	-	1.15 to 3.10	30.64 to 33.20	
2016	347,245	13.76 to 21.26	6,782,767	-	1.15 to 3.10	(4.02) to (2.14)	
2015	404,745	14.34 to 21.72	8,025,462	-	1.15 to 3.10	3.31 to 5.34	
Ivy VIP Asset Strategy Sub-Account							
2019	943,855	12.13 to 12.27	12,403,360	2.13	1.00 to 3.10	18.06 to 20.57	
2018	1,008,997	10.18 to 10.27	11,123,858	1.88	1.00 to 3.10	(8.34) to (6.39)	
2017	982,489	10.88 to 11.21	11,774,897	1.59	1.00 to 3.10	14.67 to 17.10	
2016	1,062,865	9.29 to 9.77	11,011,299	0.59	1.00 to 3.10	(5.53) to (3.54)	
2015	1,184,806	9.63 to 10.35	12,900,869	0.34	1.00 to 3.10	(11.15) to (3.72)	
MML Aggressive Allocation Sub-Account (Initial Class)							
2019	1,821,022	17.49 to 21.30	37,508,768	1.99	0.95 to 2.60	20.75 to 22.76	
2018	1,849,440	14.49 to 17.35	31,085,089	1.34	0.95 to 2.60	(10.49) to (8.99)	
2017	2,054,640	16.18 to 19.07	38,015,322	1.11	0.95 to 2.60	15.73 to 17.65	
2016	2,239,323	13.98 to 16.21	35,369,015	1.55	0.95 to 2.60	5.76 to 7.52	
2015	2,429,282	13.22 to 15.07	35,674,422	2.03	0.95 to 2.60	(3.39) to (1.78)	
MML Aggressive Allocation Sub-Account (Service Class)							
2019	5,325,759	13.65 to 16.18	95,636,402	1.71	1.00 to 3.10	19.87 to 22.42	
2018	5,559,658	11.15 to 13.50	83,188,210	1.17	1.00 to 3.10	(11.26) to (9.36)	
2017	5,308,383	12.30 to 15.21	90,242,471	0.96	1.00 to 3.10	14.83 to 17.26	
2016	4,946,142	10.49 to 13.25	73,642,938	1.34	1.00 to 3.10	4.98 to 7.20	
2015	4,734,855	9.79 to 12.62	68,002,165	1.87	1.00 to 3.10	(4.09) to (2.14)	
MML Asset Momentum Sub-Account (Service Class I)							
2019	120,799	15.17 to 15.68	1,893,686	0.68	1.00 to 1.80	35.06 to 36.14	
2018	119,922	11.23 to 11.52	1,380,613	0.09	1.00 to 1.80	(18.42) to (17.76)	
2017	108,500	13.77 to 14.01	1,518,813	1.42	1.00 to 1.80	31.40 to 32.45	
2016	78,083	10.48 to 10.58	824,965	0.85	1.00 to 1.80	7.89 to 8.76	
2015	14,164	9.71 to 9.72	137,680	-	1.00 to 1.80	(2.90) to (2.76)	
MML Balanced Allocation Sub-Account (Initial Class)							
2019	5,809,475	14.62 to 17.80	99,026,168	2.57	0.95 to 2.60	13.75 to 15.65	
2018	6,173,598	12.85 to 15.40	91,530,192	2.29	0.95 to 2.60	(6.93) to (5.38)	
2017	7,150,965	13.81 to 16.27	112,285,437	1.92	0.95 to 2.60	8.63 to 10.43	
2016	7,704,110	12.71 to 14.73	110,199,123	2.28	0.95 to 2.60	3.43 to 5.15	
2015 ⁶	8,867,495	12.29 to 14.01	121,174,809	2.69	0.95 to 2.60	(2.92) to (1.30)	

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,		For the Years Ended December 31,				
	Units	Unit Value ³ (Lowest to Highest)	Net Assets	Investment		Expense Ratio ² (Lowest to Highest)	Total Return ³ (Lowest to Highest)
				Income Ratio ¹			
MML Balanced Allocation Sub-Account (Service Class)							
2019	26,645,694	\$ 12.32 to \$ 13.56	\$ 408,910,548	2.31 %		1.00 % to 3.10 %	13.05 % to 15.45 %
2018	28,846,215	10.67 to 11.99	391,117,726	2.07		1.00 to 3.10	(7.69) to (5.72)
2017	31,226,600	11.32 to 12.99	459,709,617	1.71		1.00 to 3.10	7.82 to 10.11
2016	32,113,847	10.28 to 12.05	438,781,835	2.11		1.00 to 3.10	2.60 to 4.77
2015	32,206,801	9.81 to 11.75	427,863,488	2.54		1.00 to 3.10	(3.65) to (1.85)
MML Blend Sub-Account (Initial Class)							
2019	2,419,280	20.81 to 29.64	62,980,806	2.43		0.95 to 2.60	18.27 to 20.23
2018	2,604,579	17.59 to 24.65	56,577,666	2.11		0.95 to 2.60	(6.81) to (5.25)
2017	2,870,494	18.88 to 26.02	66,201,478	2.11		0.95 to 2.60	12.31 to 14.17
2016	3,185,857	16.81 to 22.79	64,599,999	2.13		0.95 to 2.60	6.62 to 8.39
2015	3,423,305	15.77 to 21.02	64,229,985	2.13		0.95 to 2.60	(2.49) to (0.87)
MML Blend Sub-Account (Service Class)							
2019	9,995,211	13.76 to 19.44	161,858,732	2.20		1.00 to 3.10	17.38 to 19.87
2018	8,331,460	11.47 to 16.56	118,605,705	2.01		1.00 to 3.10	(7.51) to (5.53)
2017	5,096,057	12.15 to 17.90	88,119,240	1.97		1.00 to 3.10	11.47 to 13.83
2016	3,435,697	10.67 to 16.06	60,017,383	1.94		1.00 to 3.10	5.82 to 8.06
2015	2,627,633	9.88 to 15.18	47,553,483	1.92		1.00 to 3.10	(3.22) to (1.25)
MML Blue Chip Growth Sub-Account (Initial Class)							
2019	1,289,749	32.02 to 45.84	56,366,432	-		0.95 to 2.60	26.51 to 28.62
2018	1,408,101	25.31 to 35.64	48,210,759	-		0.95 to 2.60	(0.75) to 0.91
2017	1,675,677	25.51 to 35.32	57,023,079	0.01		0.95 to 2.60	32.74 to 34.94
2016	1,882,269	19.22 to 26.17	47,571,672	-		0.95 to 2.60	(1.68) to (0.04)
2015	2,020,094	19.54 to 26.19	51,367,155	-		0.95 to 2.60	8.25 to 10.05
MML Blue Chip Growth Sub-Account (Service Class)							
2019	5,915,556	17.45 to 29.92	137,333,697	-		1.00 to 3.10	25.60 to 28.27
2018	5,069,585	13.60 to 23.82	99,468,289	-		1.00 to 3.10	(1.44) to 0.66
2017	3,342,409	13.51 to 24.17	77,072,040	-		1.00 to 3.10	31.76 to 34.55
2016	2,352,355	10.04 to 18.35	47,399,149	-		1.00 to 3.10	(2.41) to (0.35)
2015	1,846,448	10.08 to 18.80	42,473,882	-		1.00 to 3.10	0.80 to 7.37
MML Conservative Allocation Sub-Account (Initial Class)							
2019	4,480,056	14.19 to 17.29	74,794,028	2.68		0.95 to 2.60	12.24 to 14.11
2018	4,916,102	12.65 to 15.15	72,187,610	2.52		0.95 to 2.60	(5.99) to (4.41)
2017	5,515,710	13.45 to 15.85	84,980,369	2.17		0.95 to 2.60	6.81 to 8.59
2016	6,405,735	12.59 to 14.59	91,123,910	2.33		0.95 to 2.60	3.08 to 4.79
2015	7,080,010	12.22 to 13.93	96,367,633	2.82		0.95 to 2.60	(2.94) to (1.32)
MML Conservative Allocation Sub-Account (Service Class)							
2019	20,930,050	12.03 to 13.13	312,722,144	2.47		1.00 to 3.10	11.42 to 13.79
2018	22,812,097	10.57 to 11.79	306,155,920	2.26		1.00 to 3.10	(6.65) to (4.66)
2017	25,771,201	11.09 to 12.63	368,723,696	1.97		1.00 to 3.10	6.01 to 8.25
2016	27,042,671	10.25 to 11.91	364,206,497	2.16		1.00 to 3.10	2.27 to 4.43
2015	25,757,742	9.81 to 11.65	338,660,784	2.68		1.00 to 3.10	(3.67) to (1.89)
MML Core Allocation Sub-Account							
2019	57,034,873	13.23 to 15.10	989,500,489	2.39		1.00 to 3.10	14.51 to 16.94
2018	63,029,364	11.31 to 13.19	944,978,070	1.71		1.00 to 3.10	(7.76) to (5.79)
2017	67,444,935	12.01 to 14.30	1,083,277,030	1.41		1.00 to 3.10	11.44 to 13.80
2016	64,956,863	10.55 to 12.83	932,979,667	1.87		1.00 to 3.10	5.65 to 7.89
2015	59,347,906	9.78 to 12.14	807,083,244	1.36		1.00 to 3.10	(4.14) to (2.20)
MML Dynamic Bond Sub-Account (Service Class I)							
2019	918,215	10.78 to 11.14	10,144,350	3.42		1.00 to 1.80	6.59 to 7.45
2018	607,871	10.11 to 10.37	6,269,866	3.31		1.00 to 1.80	(2.11) to (1.32)
2017	421,103	10.33 to 10.51	4,411,076	3.26		1.00 to 1.80	2.26 to 3.08
2016	275,395	10.10 to 10.20	2,803,633	3.26		1.00 to 1.80	2.80 to 3.63
2015	28,823	9.82 to 9.84	283,543	0.36		1.00 to 1.80	(1.75) to (1.61)

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,				For the Years Ended December 31,						
	Unit Value ³		Net Assets	Investment	Income Ratio ¹	Expense Ratio ²		Total Return ³			
	Units	(Lowest to Highest)				(Lowest to Highest)	(Lowest to Highest)	(Lowest to Highest)			
MML Equity Sub-Account (Initial Class)											
2019	1,097,055	\$ 19.27 to \$ 27.51	\$ 25,084,965	2.04 %	0.95 % to 2.60 %	22.69 % to 24.73 %					
2018	1,190,624	15.71 to 22.06	21,958,025	1.77	0.95 to 2.60	(12.32) to (10.85)					
2017	1,330,305	17.91 to 24.74	27,833,264	1.82	0.95 to 2.60	12.83 to 14.70					
2016	1,478,690	15.88 to 21.57	27,122,827	1.72	0.95 to 2.60	9.71 to 11.53					
2015 ⁶	1,601,017	14.47 to 19.34	26,423,971	2.07	0.95 to 2.60	(5.91) to (4.34)					
MML Equity Sub-Account (Service Class)											
2019	4,923,227	13.74 to 18.01	97,057,943	1.82	1.00 to 3.10	21.78 to 24.36					
2018	5,016,720	11.05 to 14.79	82,975,610	1.58	1.00 to 3.10	(12.97) to (11.12)					
2017	4,961,769	12.43 to 16.99	94,815,216	1.67	1.00 to 3.10	11.99 to 14.36					
2016	4,623,570	10.87 to 15.17	82,044,629	1.56	1.00 to 3.10	8.89 to 11.19					
2015	4,116,196	9.78 to 13.93	69,099,138	1.93	1.00 to 3.10	(6.61) to (2.23)					
MML Equity Income Sub-Account (Initial Class)											
2019	5,987,062	20.42 to 29.10	157,019,262	2.28	0.95 to 2.60	23.21 to 25.26					
2018	7,063,608	16.57 to 23.23	148,592,012	1.88	0.95 to 2.60	(11.70) to (10.23)					
2017	8,186,156	18.77 to 25.88	192,596,091	2.14	0.95 to 2.60	13.36 to 15.24					
2016	9,518,731	16.56 to 22.46	194,949,078	2.01	0.95 to 2.60	15.65 to 17.56					
2015	10,985,217	14.32 to 19.10	192,181,207	1.87	0.95 to 2.60	(9.27) to (7.76)					
MML Equity Income Sub-Account (Service Class)											
2019	4,049,182	14.69 to 19.07	86,738,940	2.07	1.00 to 3.10	22.27 to 24.86					
2018	4,198,697	11.77 to 15.60	75,340,152	1.70	1.00 to 3.10	(12.37) to (10.50)					
2017	4,146,101	13.15 to 17.80	86,207,492	1.98	1.00 to 3.10	12.44 to 14.82					
2016	4,106,682	11.45 to 15.83	77,668,627	1.83	1.00 to 3.10	14.86 to 17.29					
2015	3,753,254	9.76 to 13.79	63,274,981	1.70	1.00 to 3.10	(9.94) to (2.36)					
MML Equity Index Sub-Account (Class I)											
2019	1,204,817	23.96 to 33.84	33,045,075	2.57	0.95 to 2.60	27.50 to 29.62					
2018	1,545,569	18.79 to 26.10	32,889,678	1.51	0.95 to 2.60	(7.26) to (5.71)					
2017	1,976,015	20.26 to 27.68	44,330,016	0.94	0.95 to 2.60	18.24 to 20.20					
2016	2,503,591	17.14 to 23.03	46,624,051	1.61	0.95 to 2.60	8.63 to 10.43					
2015	3,284,749	15.78 to 20.86	55,127,031	1.43	0.95 to 2.60	(1.60) to 0.04					
MML Equity Index Sub-Account (Service Class I)											
2019	1,507,010	22.38 to 31.41	45,972,770	2.57	1.15 to 3.10	26.57 to 29.06					
2018	1,732,277	17.68 to 24.34	40,825,319	1.36	1.15 to 3.10	(7.96) to (6.13)					
2017	1,942,798	19.21 to 25.93	48,715,396	0.87	1.15 to 3.10	17.37 to 19.68					
2016	2,014,920	16.37 to 21.66	42,156,829	1.57	1.15 to 3.10	7.81 to 9.93					
2015	2,034,531	15.18 to 19.71	38,684,734	1.52	1.15 to 3.10	(2.37) to (0.45)					
MML Equity Rotation Sub-Account (Service Class I)											
2019	113,361	14.86 to 15.36	1,741,305	0.19	1.00 to 1.80	14.22 to 15.14					
2018	109,641	13.01 to 13.34	1,462,409	0.76	1.00 to 1.80	(10.73) to (10.01)					
2017	86,852	14.57 to 14.83	1,286,782	0.82	1.00 to 1.80	27.38 to 28.40					
2016	27,425	11.44 to 11.55	316,663	1.69	1.00 to 1.80	15.13 to 16.06					
2015	2,973	9.93 to 9.95	29,575	0.02	1.00 to 1.80	(0.65) to (0.51)					
MML Focused Equity Sub-Account											
2019	887,636	21.55 to 25.41	17,679,923	0.05	0.95 to 3.10	25.77 to 28.50					
2018	639,384	17.13 to 19.77	10,379,415	2.82	0.95 to 3.10	(2.11) to 0.03					
2017	514,836	17.50 to 19.77	9,043,125	2.54	0.95 to 3.10	17.91 to 20.46					
2016	389,111	14.84 to 16.41	6,163,329	1.17	0.95 to 3.10	14.16 to 16.63					
2015 ⁶	457,854	13.00 to 14.07	6,339,348	1.40	0.95 to 3.10	(11.93) to (10.02)					
MML Foreign Sub-Account (Initial Class)											
2019	8,271,919	12.32 to 17.22	128,108,301	1.79	0.95 to 2.60	10.26 to 12.10					
2018	8,931,698	11.18 to 15.36	124,201,591	2.25	0.95 to 2.60	(18.07) to (16.70)					
2017	9,523,939	13.64 to 18.44	159,914,007	2.06	0.95 to 2.60	18.62 to 20.59					
2016	11,158,817	11.50 to 15.29	156,153,111	2.02	0.95 to 2.60	(1.16) to 0.48					
2015	12,120,917	11.63 to 15.22	169,934,072	2.76	0.95 to 2.60	(6.63) to (5.08)					

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,					For the Years Ended December 31,					
	Units	Unit Value ³			Net Assets	Investment		Expense Ratio ²		Total Return ³	
		(Lowest to Highest)				Income Ratio ¹	(Lowest to Highest)	(Lowest to Highest)			
MML Foreign Sub-Account (Service Class)											
2019	700,188	\$ 10.52	to \$ 11.52	\$ 9,815,416	1.52 %	1.00 %	to 3.10 %	9.34 %	to 11.66 %		
2018	725,345	9.43	to 10.53	9,327,795	2.00	1.00	to 3.10	(18.61)	to (16.87)		
2017	719,693	11.34	to 12.94	11,484,300	1.85	1.00	to 3.10	17.76	to 20.25		
2016	751,624	9.43	to 10.99	10,230,593	1.76	1.00	to 3.10	(1.90)	to 0.18		
2015	831,677	9.41	to 11.20	11,398,372	2.71	1.00	to 3.10	(7.42)	to (5.87)		
MML Fundamental Growth Sub-Account											
2019	797,684	21.05	to 24.82	14,803,275	0.44	0.95	to 3.10	29.26	to 32.07		
2018	697,122	16.29	to 18.80	9,980,256	1.16	0.95	to 3.10	(2.43)	to (0.30)		
2017	415,149	16.69	to 18.85	6,501,613	1.01	0.95	to 3.10	23.44	to 26.12		
2016	298,369	13.52	to 14.95	4,030,111	0.55	0.95	to 3.10	0.38	to 2.56		
2015	196,105	13.47	to 14.58	2,797,767	0.58	0.95	to 3.10	2.68	to 4.91		
MML Fundamental Value Sub-Account											
2019	1,016,383	16.22	to 19.12	15,050,102	1.71	0.95	to 3.10	18.75	to 21.33		
2018	956,198	13.66	to 15.76	12,106,408	1.56	0.95	to 3.10	(13.31)	to (11.41)		
2017	791,976	15.75	to 17.79	11,904,817	1.83	0.95	to 3.10	11.29	to 13.70		
2016	586,038	14.16	to 15.65	8,339,048	1.20	0.95	to 3.10	9.61	to 11.99		
2015 ⁵	519,426	12.91	to 13.97	7,073,271	1.04	0.95	to 3.10	(6.14)	to (4.10)		
MML Global Sub-Account (Class I)											
2019	266,210	16.59	to 21.96	5,717,821	0.68	0.95	to 2.60	27.24	to 29.36		
2018	306,197	13.04	to 16.97	5,081,523	1.12	0.95	to 2.60	(11.87)	to (10.39)		
2017	350,013	14.79	to 18.94	6,524,622	1.21	0.95	to 2.60	20.99	to 22.99		
2016	386,442	12.22	to 15.40	5,876,396	1.16	0.95	to 2.60	4.80	to 6.54		
2015	447,293	11.66	to 14.45	6,410,226	1.14	0.95	to 2.60	(3.89)	to (2.29)		
MML Global Sub-Account (Service Class I)											
2019	944,518	14.55	to 15.56	17,104,721	0.35	1.00	to 3.10	26.30	to 28.98		
2018	944,055	11.28	to 12.32	13,985,581	0.94	1.00	to 3.10	(12.61)	to (10.74)		
2017	932,097	12.64	to 14.10	15,992,714	1.10	1.00	to 3.10	20.18	to 22.72		
2016	824,746	10.30	to 11.73	12,126,653	1.02	1.00	to 3.10	4.08	to 6.28		
2015	737,898	9.69	to 11.27	10,640,884	0.73	1.00	to 3.10	(4.63)	to (3.09)		
MML Global Sub-Account (Class II)											
2019	274,411	12.68	to 16.68	4,316,103	0.60	1.18	to 1.65	28.45	to 29.05		
2018	255,730	9.82	to 12.98	3,127,032	1.12	1.18	to 1.65	(11.06)	to (10.64)		
2017	279,833	10.99	to 14.60	3,861,879	1.21	1.18	to 1.65	22.27	to 22.84		
2016	279,376	8.95	to 11.94	3,199,295	1.15	1.18	to 1.65	5.78	to 6.28		
2015	272,832	8.42	to 11.29	3,042,505	1.13	1.18	to 1.65	(2.97)	to (2.51)		
MML Growth Sub-Account											
2019	8,104,921	17.26	to 23.48	191,745,889	0.32	1.00	to 3.10	26.25	to 28.93		
2018	8,213,057	13.39	to 18.60	158,458,588	0.28	1.00	to 3.10	(3.70)	to (1.65)		
2017	8,081,415	13.61	to 19.32	167,744,731	0.30	1.00	to 3.10	23.90	to 26.52		
2016	7,943,777	10.76	to 15.59	136,717,100	0.21	1.00	to 3.10	5.69	to 7.92		
2015	7,525,113	9.97	to 14.75	125,050,050	0.69	1.00	to 3.10	(0.32)	to 3.16		
MML Growth & Income Sub-Account (Initial Class)											
2019	2,322,666	20.17	to 34.51	73,362,599	0.94	0.95	to 2.60	28.71	to 30.85		
2018	2,668,840	15.67	to 26.38	64,684,699	0.85	0.95	to 2.60	(7.65)	to (6.10)		
2017	3,052,179	16.97	to 28.09	78,933,783	0.92	0.95	to 2.60	20.53	to 22.53		
2016	3,454,803	14.08	to 22.93	72,981,281	1.05	0.95	to 2.60	5.99	to 7.75		
2015	3,828,340	13.28	to 21.28	75,205,174	1.15	0.95	to 2.60	(2.09)	to (0.46)		

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,				For the Years Ended December 31,						
	Unit Value ³		Net Assets	Investment	Income Ratio ¹	Expense Ratio ²		Total Return ³			
	Units	(Lowest to Highest)				(Lowest to Highest)	(Lowest to Highest)				
MML Growth & Income Sub-Account (Service Class)											
2019	2,471,418	\$ 15.82 to \$ 18.83	\$ 45,996,901	0.76 %	1.00 %	to 3.10 %	27.79 %	to 30.51 %			
2018	2,291,878	12.12 to 14.74	33,813,200	0.71	1.00	to 3.10	(8.37)	to (6.41)			
2017	1,766,489	12.95 to 16.08	30,613,749	0.78	1.00	to 3.10	19.66	to 22.19			
2016	1,516,385	10.60 to 13.44	23,199,559	0.85	1.00	to 3.10	5.20	to 7.43			
2015	1,200,044	9.87 to 12.78	18,797,162	0.97	1.00	to 3.10	(2.88)	to (1.31)			
MML Growth Allocation Sub-Account (Initial Class)											
2019	26,884,888	16.37 to 19.94	514,011,956	2.27	0.95	to 2.60	18.10	to 20.06			
2018	30,317,373	13.86 to 16.61	484,216,996	1.76	0.95	to 2.60	(9.31)	to (7.79)			
2017	33,909,954	15.29 to 18.01	589,829,186	1.49	0.95	to 2.60	13.10	to 14.98			
2016	36,689,881	13.52 to 15.66	556,965,915	1.90	0.95	to 2.60	4.82	to 6.56			
2015	39,202,730	12.89 to 14.70	560,532,042	2.39	0.95	to 2.60	(3.26)	to (1.65)			
MML Growth Allocation Sub-Account (Service Class)											
2019	53,783,791	13.13 to 15.18	978,800,276	2.03	1.00	to 3.10	17.24	to 19.73			
2018	59,693,993	10.97 to 12.95	915,267,296	1.53	1.00	to 3.10	(9.95)	to (8.03)			
2017	64,140,636	11.93 to 14.38	1,080,894,605	1.26	1.00	to 3.10	12.28	to 14.66			
2016	67,568,784	10.40 to 12.81	1,001,300,773	1.66	1.00	to 3.10	3.96	to 6.16			
2015	71,299,878	9.80 to 12.32	1,003,379,241	2.18	1.00	to 3.10	(3.99)	to (2.01)			
MML High Yield Sub-Account											
2019	2,982,701	14.52 to 17.87	43,189,753	6.00	0.95	to 3.10	8.45	to 10.80			
2018	2,669,937	13.39 to 16.13	35,992,862	6.18	0.95	to 3.10	(6.50)	to (4.46)			
2017	2,318,594	14.32 to 16.88	34,421,883	7.05	0.95	to 3.10	4.60	to 6.87			
2016	1,814,841	13.69 to 15.80	26,901,271	7.19	0.95	to 3.10	12.72	to 15.16			
2015	1,708,634	12.14 to 13.72	22,858,526	6.47	0.95	to 3.10	(4.40)	to (2.32)			
MML Income & Growth Sub-Account (Initial Class)											
2019	1,014,616	17.93 to 26.04	24,198,302	1.99	0.95	to 2.60	21.24	to 23.26			
2018	1,064,337	14.79 to 21.13	20,869,071	1.74	0.95	to 2.60	(13.96)	to (12.52)			
2017	1,224,390	17.19 to 24.15	27,604,331	1.65	0.95	to 2.60	14.43	to 16.33			
2016	1,362,608	15.02 to 20.76	26,577,770	1.78	0.95	to 2.60	13.42	to 15.30			
2015	1,502,734	13.25 to 18.01	25,603,280	1.87	0.95	to 2.60	(2.66)	to (1.04)			
MML Income & Growth Sub-Account (Service Class)											
2019	1,681,966	14.22 to 16.76	29,439,298	1.78	1.00	to 3.10	20.35	to 22.90			
2018	1,666,619	11.57 to 13.93	24,435,731	1.59	1.00	to 3.10	(14.64)	to (12.82)			
2017	1,541,562	13.27 to 16.31	27,684,978	1.52	1.00	to 3.10	13.65	to 16.05			
2016	1,231,768	11.43 to 14.36	20,617,145	1.56	1.00	to 3.10	12.56	to 14.94			
2015	1,085,648	9.95 to 12.75	16,899,723	1.72	1.00	to 3.10	(3.39)	to (0.53)			
MML Inflation-Protected and Income Sub-Account (Initial Class)											
2019	9,934,572	11.15 to 15.54	137,121,414	2.38	0.95	to 2.60	5.53	to 7.29			
2018	10,511,243	10.56 to 14.49	135,793,211	3.09	0.95	to 2.60	(3.84)	to (2.23)			
2017	12,563,423	10.99 to 14.82	166,498,888	3.30	0.95	to 2.60	0.56	to 2.23			
2016	12,945,199	10.92 to 14.49	168,517,535	2.36	0.95	to 2.60	2.52	to 4.22			
2015	14,833,791	10.66 to 13.91	185,830,534	1.10	0.95	to 2.60	(4.04)	to (2.44)			
MML Inflation-Protected and Income Sub-Account (Service Class)											
2019	3,451,539	10.41 to 10.88	43,237,327	2.22	1.00	to 3.10	4.76	to 6.98			
2018	3,455,411	9.94 to 10.17	41,399,216	2.86	1.00	to 3.10	(4.57)	to (2.53)			
2017	3,682,017	10.41 to 10.43	46,122,629	3.07	1.00	to 3.10	(0.17)	to 1.94			
2016	3,768,338	10.23 to 10.43	47,031,894	2.09	1.00	to 3.10	1.71	to 3.86			
2015	3,940,287	9.85 to 10.26	47,814,632	1.01	1.00	to 3.10	(4.65)	to (1.48)			
MML International Sub-Account											
2019	4,069,542	12.69 to 13.09	61,510,006	2.74	1.00	to 3.10	18.58	to 21.09			
2018	4,343,149	10.70 to 10.81	54,602,962	0.82	1.00	to 3.10	(16.18)	to (14.39)			
2017	4,359,057	12.62 to 12.76	64,715,051	0.82	1.00	to 3.10	27.64	to 30.35			
2016	4,560,968	9.68 to 10.00	52,316,709	1.16	1.00	to 3.10	(0.16)	to 1.95			
2015	4,780,197	9.50 to 10.02	54,170,932	0.91	1.00	to 3.10	(7.84)	to (5.01)			

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,				For the Years Ended December 31,						
	Unit Value ³		Net Assets	Investment	Income Ratio ¹	Expense Ratio ²		Total Return ³			
	Units	(Lowest to Highest)				(Lowest to Highest)	(Lowest to Highest)	(Lowest to Highest)			
MML International Equity Sub-Account											
2019	571,549	\$ 9.74 to \$ 11.01	\$ 6,643,432	1.79 %	0.95 % to 3.10 %	20.55 % to 23.17 %					
2018	495,952	8.08 to 8.94	4,669,380	1.59	0.95 to 3.10	(26.38) to (24.77)					
2017	312,168	10.98 to 11.88	3,854,469	1.76	0.95 to 3.10	26.20 to 28.94					
2016	98,906	8.70 to 9.21	931,432	1.70	0.95 to 3.10	4.68 to 6.95					
2015	162,216	8.31 to 8.61	1,395,293	0.23	0.95 to 3.10	(8.00) to (5.99)					
MML Large Cap Growth Sub-Account (Initial Class)											
2019	577,917	22.22 to 30.85	15,827,567	0.58	0.95 to 2.60	28.60 to 30.74					
2018	676,794	17.28 to 23.60	14,279,402	0.63	0.95 to 2.60	(4.79) to (3.19)					
2017	782,688	18.15 to 24.38	17,285,084	0.37	0.95 to 2.60	30.09 to 32.25					
2016	891,625	13.95 to 18.43	15,027,089	0.13	0.95 to 2.60	(2.93) to (1.32)					
2015	972,773	14.37 to 18.68	16,674,788	-	0.95 to 2.60	2.42 to 4.13					
MML Large Cap Growth Sub-Account (Service Class)											
2019	896,562	16.30 to \$ 20.73	16,390,792	0.46	1.00 to 3.10	27.64 to 30.35					
2018	716,008	12.50 to 16.24	10,587,661	0.56	1.00 to 3.10	(5.46) to (3.44)					
2017	426,985	12.95 to 17.18	7,506,816	0.24	1.00 to 3.10	28.96 to 31.69					
2016	239,844	9.83 to 13.32	3,605,074	-	1.00 to 3.10	(3.55) to (1.51)					
2015	208,322	9.98 to 13.81	3,500,375	-	1.00 to 3.10	(0.18) to 1.60					
MML Managed Bond Sub-Account (Initial Class)											
2019	7,123,945	12.92 to 18.91	117,808,474	3.67	0.95 to 2.60	6.99 to 8.77					
2018	7,702,853	12.08 to 17.39	117,644,146	3.44	0.95 to 2.60	(3.01) to (1.38)					
2017	9,210,636	12.45 to 17.63	143,060,562	3.15	0.95 to 2.60	2.02 to 3.71					
2016	9,792,140	12.21 to 17.00	147,103,492	2.81	0.95 to 2.60	0.12 to 1.78					
2015	10,976,835	12.19 to 16.70	162,466,573	2.80	0.95 to 2.60	(3.30) to (1.69)					
MML Managed Bond Sub-Account (Service Class)											
2019	18,130,096	10.96 to 12.07	260,703,020	3.46	1.00 to 3.10	6.19 to 8.45					
2018	18,639,618	10.11 to 11.37	250,288,149	3.23	1.00 to 3.10	(3.73) to (1.68)					
2017	19,712,043	10.28 to 11.81	273,576,011	2.94	1.00 to 3.10	1.25 to 3.40					
2016	18,648,805	9.94 to 11.66	255,334,043	2.61	1.00 to 3.10	(0.63) to 1.47					
2015	17,304,346	9.80 to 11.74	240,006,415	2.65	1.00 to 3.10	(4.02) to (2.00)					
MML Managed Volatility Sub-Account (Initial Class)											
2019	5,894,344	13.41 to 20.28	101,210,212	1.62	0.95 to 2.60	9.03 to 10.84					
2018	6,358,338	12.30 to 18.30	98,987,098	1.20	0.95 to 2.60	(7.15) to (5.59)					
2017	7,501,892	13.25 to 19.38	124,404,125	1.26	0.95 to 2.60	6.24 to 8.01					
2016	8,129,791	12.47 to 17.95	125,435,320	1.74	0.95 to 2.60	1.03 to 2.71					
2015	8,921,793	12.34 to 17.47	134,713,231	1.76	0.95 to 2.60	0.36 to 2.03					
MML Managed Volatility Sub-Account (Service Class)											
2019	1,951,793	11.48 to 12.53	30,590,858	1.37	1.00 to 3.10	8.21 to 10.51					
2018	2,011,443	10.39 to 11.58	28,963,354	0.95	1.00 to 3.10	(7.84) to (5.88)					
2017	2,157,161	11.04 to 12.56	33,697,976	1.04	1.00 to 3.10	5.45 to 7.69					
2016	2,218,201	10.25 to 11.91	32,568,807	1.53	1.00 to 3.10	0.27 to 2.39					
2015 ⁶	2,279,987	10.01 to 11.88	33,182,620	1.56	1.00 to 3.10	(0.38) to 0.08					
MML Mid Cap Growth Sub-Account (Initial Class)											
2019	1,710,217	29.09 to 56.35	83,592,878	0.02	0.95 to 2.60	27.93 to 30.05					
2018	1,958,567	22.74 to 43.33	73,560,646	-	0.95 to 2.60	(4.70) to (3.10)					
2017	2,245,834	23.86 to 44.72	86,805,680	0.03	0.95 to 2.60	21.62 to 23.64					
2016	2,524,036	19.62 to 36.17	79,181,316	-	0.95 to 2.60	3.57 to 5.29					
2015	2,771,617	18.95 to 34.35	83,239,769	-	0.95 to 2.60	4.04 to 5.77					
MML Mid Cap Growth Sub-Account (Service Class)											
2019	4,497,792	16.23 to 27.03	108,799,560	-	1.00 to 3.10	27.01 to 29.71					
2018	4,459,919	12.51 to 21.28	88,937,242	-	1.00 to 3.10	(5.45) to (3.43)					
2017	4,003,907	12.96 to 22.51	91,130,983	-	1.00 to 3.10	20.68 to 23.24					
2016	3,514,218	10.51 to 18.65	71,215,184	-	1.00 to 3.10	2.80 to 4.97					
2015	3,224,695	10.01 to 18.14	66,933,690	-	1.00 to 3.10	0.15 to 3.34					

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,				For the Years Ended December 31,					
	Unit Value ³		Net Assets	Investment Income Ratio ¹	Expense Ratio ²		Total Return ³			
	Units	(Lowest to Highest)			(Lowest to Highest)	(Lowest to Highest)	(Lowest to Highest)			
MML Mid Cap Value Sub-Account (Initial Class)										
2019	4,044,150	\$ 27.37 to \$ 41.14	\$ 144,980,289	1.62 %	0.95 % to 2.60 %	25.82 % to 27.91 %				
2018	4,842,049	21.75 to 32.16	135,925,323	1.50	0.95 to 2.60	(15.24) to (13.82)				
2017	5,436,760	25.67 to 37.32	177,889,628	1.55	0.95 to 2.60	8.84 to 10.65				
2016	6,226,253	23.58 to 33.73	184,615,243	1.57	0.95 to 2.60	20.08 to 22.07				
2015	7,429,027	19.64 to 27.63	180,891,281	1.89	0.95 to 2.60	(3.98) to (2.39)				
MML Mid Cap Value Sub-Account (Service Class)										
2019	2,380,279	14.43 to 25.57	53,222,998	1.44	1.00 to 3.10	24.97 to 27.62				
2018	2,261,094	11.31 to 20.46	43,253,293	1.33	1.00 to 3.10	(15.97) to (14.18)				
2017	2,049,183	13.18 to 24.35	49,740,379	1.41	1.00 to 3.10	8.07 to 10.36				
2016	1,782,027	11.94 to 22.53	44,150,408	1.48	1.00 to 3.10	19.12 to 21.64				
2015	1,457,283	9.82 to 18.92	32,963,955	1.74	1.00 to 3.10	(4.60) to (1.84)				
MML Moderate Allocation Sub-Account (Initial Class)										
2019	17,179,709	15.42 to 18.78	310,792,789	2.52	0.95 to 2.60	15.54 to 17.46				
2018	18,831,405	13.35 to 15.99	290,920,692	2.12	0.95 to 2.60	(7.92) to (6.38)				
2017	21,236,900	14.50 to 17.08	351,616,486	1.79	0.95 to 2.60	10.43 to 12.26				
2016	23,743,681	13.13 to 15.21	351,322,644	2.08	0.95 to 2.60	4.15 to 5.88				
2015	25,711,819	12.60 to 14.37	360,342,353	2.32	0.95 to 2.60	(3.19) to (1.58)				
MML Moderate Allocation Sub-Account (Service Class)										
2019	105,177,875	12.66 to 14.30	1,752,110,801	2.26	1.00 to 3.10	14.75 to 17.18				
2018	117,630,522	10.81 to 12.46	1,689,907,038	1.88	1.00 to 3.10	(8.60) to (6.65)				
2017	131,309,540	11.58 to 13.63	2,047,325,711	1.58	1.00 to 3.10	9.55 to 11.87				
2016	139,446,724	10.35 to 12.44	1,969,560,365	1.88	1.00 to 3.10	3.34 to 5.53				
2015	141,229,826	9.81 to 12.04	1,923,028,021	2.19	1.00 to 3.10	(3.89) to (1.94)				
MML Short-Duration Bond Sub-Account										
2019	3,025,222	9.19 to 11.31	32,173,643	3.11	0.95 to 3.10	0.99 to 3.19				
2018	2,634,464	9.10 to 10.96	27,471,063	2.75	0.95 to 3.10	(1.82) to 0.33				
2017	2,599,515	9.26 to 10.92	27,262,598	2.47	0.95 to 3.10	(0.82) to 1.33				
2016	2,606,803	9.34 to 10.78	27,104,043	2.00	0.95 to 3.10	(0.57) to 1.58				
2015	1,981,811	9.40 to 10.61	20,479,215	2.08	0.95 to 3.10	(2.40) to (0.28)				
MML Small Cap Equity Sub-Account (Initial Class)										
2019	831,548	22.12 to 33.03	26,710,657	0.47	0.95 to 2.60	23.22 to 25.27				
2018	935,224	17.95 to 26.37	24,030,805	0.49	0.95 to 2.60	(12.51) to (11.04)				
2017	1,054,841	20.52 to 29.64	30,563,941	0.83	0.95 to 2.60	11.44 to 13.29				
2016	1,204,534	18.41 to 26.16	30,878,286	1.05	0.95 to 2.60	15.19 to 17.10				
2015	1,338,615	15.98 to 22.34	29,368,550	0.83	0.95 to 2.60	(8.06) to (6.53)				
MML Small Cap Equity Sub-Account (Service Class)										
2019	1,184,188	14.53 to 20.63	22,694,629	0.26	1.00 to 3.10	22.30 to 24.89				
2018	1,131,275	11.63 to 16.87	18,425,202	0.32	1.00 to 3.10	(13.16) to (11.31)				
2017	855,645	13.11 to 19.42	17,644,215	0.69	1.00 to 3.10	10.61 to 12.96				
2016	631,631	11.61 to 17.56	13,279,472	0.85	1.00 to 3.10	14.33 to 16.75				
2015	582,740	9.94 to 15.36	11,155,140	0.68	1.00 to 3.10	(8.74) to (0.56)				
MML Small Cap Growth Equity Sub-Account (Initial Class)										
2019	2,488,164	28.19 to 44.79	94,744,872	-	0.95 to 2.60	30.88 to 33.06				
2018	3,094,310	21.54 to 33.66	89,078,989	-	0.95 to 2.60	(7.33) to (5.78)				
2017	3,752,747	23.24 to 35.73	115,332,900	-	0.95 to 2.60	19.67 to 21.66				
2016	4,504,045	19.42 to 29.37	114,360,455	-	0.95 to 2.60	9.86 to 11.68				
2015	5,264,907	17.68 to 26.30	120,557,605	-	0.95 to 2.60	(7.53) to (6.00)				

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,				For the Years Ended December 31,					
	Unit Value ³		Net Assets	Investment Income Ratio ¹	Expense Ratio ²		Total Return ³			
	Units	(Lowest to Highest)			(Lowest to Highest)	(Lowest to Highest)	(Lowest to Highest)			
MML Small Cap Growth Equity Sub-Account (Service Class)										
2019	1,127,320	\$ 16.41 to \$ 26.33	\$ 26,026,111	- %	1.00 % to 3.10 %	29.90 % to 32.66 %				
2018	1,008,153	12.37 to 20.27	19,280,671	-	1.00 to 3.10	(8.03) to (6.06)				
2017	646,706	13.17 to 22.03	16,123,932	-	1.00 to 3.10	18.78 to 21.29				
2016	559,854	10.86 to 18.55	12,968,514	-	1.00 to 3.10	9.04 to 11.35				
2015	511,015	9.75 to 17.01	11,374,847	-	1.00 to 3.10	(8.22) to (2.48)				
MML Small Company Value Sub-Account										
2019	1,254,816	14.70 to 25.47	24,665,122	0.08	1.00 to 3.10	21.43 to 24.01				
2018	1,140,446	11.85 to 20.98	19,022,657	0.19	1.00 to 3.10	(15.86) to (14.06)				
2017	891,099	13.79 to 24.93	19,508,502	0.48	1.00 to 3.10	8.03 to 10.31				
2016	612,066	12.50 to 23.08	14,305,376	0.41	1.00 to 3.10	28.14 to 30.85				
2015	504,061	9.56 to 18.01	10,034,823	0.14	1.00 to 3.10	(8.53) to (4.44)				
MML Small/Mid Cap Value Sub-Account (Initial Class)										
2019	3,898,914	21.01 to 38.26	105,702,814	0.61	0.95 to 2.60	17.19 to 19.14				
2018	4,387,318	17.93 to 32.11	100,384,944	0.46	0.95 to 2.60	(17.12) to (15.73)				
2017	4,849,266	21.64 to 38.11	132,667,980	0.50	0.95 to 2.60	10.54 to 12.37				
2016	5,653,797	19.57 to 33.91	138,163,724	0.55	0.95 to 2.60	21.90 to 23.92				
2015	6,739,936	16.06 to 27.37	133,194,000	0.71	0.95 to 2.60	(7.96) to (6.43)				
MML Small/Mid Cap Value Sub-Account (Service Class)										
2019	1,156,012	13.34 to 19.63	23,286,750	0.39	1.00 to 3.10	16.32 to 18.78				
2018	1,061,456	11.23 to 16.88	19,194,837	0.26	1.00 to 3.10	(17.73) to (15.97)				
2017	962,628	13.36 to 20.51	22,379,494	0.30	1.00 to 3.10	9.63 to 11.96				
2016	886,931	11.93 to 18.71	19,564,381	0.32	1.00 to 3.10	21.03 to 23.58				
2015	858,472	9.66 to 15.46	15,923,597	0.50	1.00 to 3.10	(8.62) to (3.44)				
MML Special Situations Sub-Account (Service Class I)										
2019	56,690	14.26 to 14.75	835,745	-	1.00 to 1.80	21.29 to 22.27				
2018	53,278	11.76 to 12.06	642,435	0.41	1.00 to 1.80	(6.83) to (6.08)				
2017	37,834	12.62 to 12.84	485,763	-	1.00 to 1.80	16.47 to 17.40				
2016	23,898	10.83 to 10.94	261,283	0.54	1.00 to 1.80	13.48 to 14.39				
2015	10,346	9.55 to 9.56	98,920	-	1.00 to 1.80	(4.52) to (4.38)				
MML Strategic Emerging Markets Sub-Account										
2019	1,150,619	10.84 to 14.19	15,739,019	0.01	1.00 to 3.10	21.36 to 23.93				
2018	1,155,182	8.93 to 11.45	12,694,684	-	1.00 to 3.10	(15.28) to (13.47)				
2017	1,061,488	10.55 to 13.23	13,380,725	-	1.00 to 3.10	29.77 to 32.51				
2016	947,781	8.13 to 9.99	8,983,421	0.24	1.00 to 3.10	2.88 to 5.05				
2015 ⁶	844,443	7.90 to 9.51	7,591,791	0.86	1.00 to 3.10	(16.97) to (4.95)				
MML Total Return Bond Sub-Account										
2019	2,936,027	9.66 to 11.39	31,973,807	3.02	0.95 to 3.10	5.34 to 7.63				
2018	2,321,318	9.17 to 10.58	23,676,108	1.76	0.95 to 3.10	(3.41) to (1.29)				
2017	1,912,466	9.49 to 10.72	19,956,564	1.84	0.95 to 3.10	(0.40) to 1.76				
2016	1,691,159	9.53 to 10.53	17,462,137	1.68	0.95 to 3.10	(0.82) to 1.33				
2015	1,533,107	9.61 to 10.39	15,732,127	3.17	0.95 to 3.10	(3.10) to (0.99)				
MML U.S. Government Money Market Sub-Account										
2019	8,074,717	7.37 to 9.42	75,534,222	1.69	0.95 to 3.10	(1.40) to 0.75				
2018	8,285,272	7.48 to 9.35	76,764,657	1.34	0.95 to 3.10	(1.77) to 0.37				
2017	7,302,616	7.61 to 9.32	67,087,752	0.35	0.95 to 3.10	(2.70) to (0.59)				
2016	7,886,513	7.83 to 9.37	72,659,675	-	0.95 to 3.10	(2.94) to (0.84)				
2015	8,011,374	8.06 to 9.45	74,519,144	0.01	0.95 to 3.10	(3.05) to (0.94)				
Oppenheimer Global Multi-Alternatives Sub-Account										
2019 ¹⁰	2	8.54 to 9.51	-	1.11	0.95 to 3.10	2.36 to 3.08				
2018	246,995	8.34 to 9.22	2,283,703	0.17	0.95 to 3.10	(6.27) to (4.22)				
2017	232,850	8.90 to 9.63	2,246,753	0.79	0.95 to 3.10	(2.86) to (0.76)				
2016	179,042	9.16 to 9.70	1,736,290	1.31	0.95 to 3.10	0.34 to 2.51				
2015	142,078	9.13 to 9.46	1,340,687	0.08	0.95 to 3.10	(6.81) to (4.78)				

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,			For the Years Ended December 31,						
	Units	Unit Value ³		Net Assets	Investment		Expense Ratio ²		Total Return ³	
		(Lowest to Highest)			Ratio ¹	(Lowest to Highest)	(Lowest to Highest)			
PIMCO CommodityRealReturn® Strategy Sub-Account										
2019	1,661,426	\$ 4.34 to	\$ 5.70	\$ 9,033,874	4.33 %	0.95 % to	3.10 %	7.95 % to	10.30 %	
2018	1,812,893	4.02 to	5.16	8,967,304	1.98	0.95 to	3.10	(16.84) to	(15.02)	
2017	2,037,819	4.84 to	6.08	11,904,973	10.98	0.95 to	3.10	(1.06) to	1.09	
2016	2,151,246	4.89 to	6.01	12,471,316	1.01	0.95 to	3.10	11.37 to	13.79	
2015	2,168,257	4.39 to	5.28	11,086,242	4.52	0.95 to	3.10	(27.94) to	(26.37)	
VY® Clarion Global Real Estate Sub-Account										
2019	948,461	13.36 to	17.53	15,751,756	2.58	0.95 to	3.10	20.55 to	23.17	
2018	1,049,161	11.09 to	14.23	14,174,962	5.26	0.95 to	3.10	(11.55) to	(9.61)	
2017	1,209,503	12.53 to	15.74	18,104,285	3.51	0.95 to	3.10	7.14 to	9.46	
2016	1,330,784	11.70 to	14.38	18,270,700	1.09	0.95 to	3.10	(2.44) to	(0.33)	
2015	1,451,985	11.99 to	14.43	20,135,679	3.05	0.95 to	3.10	(4.27) to	(2.19)	

¹The investment income ratios represent the dividends, excluding distributions of capital gains, received by the sub-accounts from the underlying mutual fund, net of management fees assessed by the fund manager, divided by the average net assets. These ratios exclude those expenses, such as mortality and expense charges, that are assessed against contract owner accounts either through reductions in the unit values or the redemption of units. The recognition of investment income by the sub-accounts is affected by the timing of the declaration of dividends by the underlying fund in which the sub-account invests.

²The expense ratios represent the annualized contract expenses of the Separate Account, consisting primarily of mortality and expense charges, for each period indicated. The ratios include only those expenses that result in a direct reduction of unit values. Charges made directly to contract owner accounts through the redemption of units and expenses of the underlying fund have been excluded.

³The total returns are for the periods indicated, including changes in the value of the underlying fund, and the expenses assessed through the reduction of unit values. These ratios do not include any expenses assessed through the redemption of units. Investment options with a date notation indicate the effective date of that investment option in the variable account. The total return is calculated for each period indicated from the effective date through the end of the reporting period. As the total return is presented as a range of minimum to maximum values, based on the product grouping representing the related minimum and maximum expense ratio amounts, some individual contract total returns and unit values are not within the ranges presented.

⁴ For the period January 1, 2014 through April 27, 2014. Effective April 28, 2014, MML China Fund merged into MML Foreign Fund.

⁵ For the period May 1, 2014 through December 31, 2014. Effective May 1, 2014, this fund became available as an investment option in the Separate Account.

⁶ For the period of October 26, 2015, through December 31, 2015. Effective October 26, 2015, these funds became available as an investment option in the Separate Account.

⁷For the period January 1, 2018 through March 29, 2018. Effective March 29, 2018 this Sub-Account after the close of the New York Stock Exchange on March 29, 2018 was automatically transferred to the MML U.S. Government Money Market Sub-Account.

⁸For the period January 1, 2018 through August 31, 2018. Effective August 31, 2018 this Sub-Account liquidated and any contract value in the Sub-Account after the close of the New York Stock Exchange on August 31, 2018 was automatically transferred to the MML U.S. Government Money Market Sub-Account.

⁹ Effective after the close of the New York Stock Exchange on May 24, 2019, Invesco Ltd. completed its acquisition of OppenheimerFunds, Inc. See Note 2 to the financial statements for information regarding the merger of this Sub-Account.

¹⁰For the period January 1, 2019 through April 29, 2019. Effective April 29, 2019 this Sub-Account liquidated and any contract value in the Sub-Account after the close of the New York Stock Exchange on April 29, 2019 was automatically transferred to the MML U.S. Government Money Market Sub-Account.

Notes To Financial Statements (Continued)

8. Financial Highlights (Continued)

- B.** The Separate Account assesses charges associated with the contract. These charges are either assessed as a direct reduction in unit values or through a redemption of units for all contracts contained within the Separate Account. The assessment of charges is based on the actual product and additional benefits or riders purchased.

Mortality and Expense Risk Charge*	This charge is equal, on an annual basis, to 0.80% - 1.60% of the daily value of the assets invested in each fund.
This charge is assessed through a reduction in unit values.	
Administrative Charge	This charge is equal, on an annual basis, to 0.15% of the daily value of the assets invested in each fund.
This charge is assessed through a reduction in unit values.	
Administrative Contract Maintenance Charge	\$0 - \$40 per contract, annually.
This charge is assessed through the redemption of units.	
Contingent Deferred Sales Charge/Surrender Charge	0% - 8%
This charge is assessed through the redemption of units.	
Payment Protector Charge	This charge is equal, on an annual basis, to 0.00% - 0.50% of the daily value of the assets invested in each fund.
This charge is assessed through a reduction in unit values.	
Additional Death Benefit Options	
These charges are annualized and are assessed through either a reduction in unit values or the redemption of units.	
A. Reset Death Benefit**	0.00% - 0.20%
B. Ratchet Death Benefit***	0.00% - 0.70%
C. 5% roll Up Death Benefit	0.00% - 0.40%
D. Basic Death Benefit with Combination Feature	0.00% - 0.45%
E. Return of Purchase Payment	0.00% - 0.35%

Notes To Financial Statements (Continued)

8. Financial Highlights (Continued)

Rider Charges	
These charges are annualized and are assessed through either a reduction in unit values or the redemption of units.	
A. Equalizer Benefit	0.00% - 0.50%
B. Nursing Home Waiver	0.00% - 0.05%
C. Earnings Enhancement Benefit	0.00% - 0.30%
D. 10% / 20% Free Withdrawal Amount	0.00% - 0.25%
E. 15% / 30% Free Withdrawal Amount	0.00% - 0.15%
F. Guaranteed Minimum Income Benefit (GMIB)	0.00% - 0.80%
G. Guaranteed Minimum Accumulation Benefit (GMAB)	0.00% - 1.40%
H. Guaranteed Minimum Withdrawal Benefit (GMWB)	0.00% - 0.95%

- * The Panorama Premier segment charges its contract owners a mortality and expense risk charge equal, on an annual basis, to 1.25% of the daily value of the assets invested in each fund. Subject to state availability, certificates issued on or after September 10, 2001 will receive an increase in the certificate value allocated to the fund by 0.15% on each certificate anniversary.
- ** For Panorama Passage the charge for the Reset Death Benefit is 0.10% on an annual basis of the daily value of the certificate value allocated to the funds and the fixed accounts, unless the charge exceeds the maximum charge, in which case, the charge is the maximum charge. The maximum charge is 0.20% on an annual basis of the daily value of the certificate value allocated to the funds.
- *** The Ratchet Death Benefit is 0.25% for Panorama Passage and 0.15% for Panorama Premier on an annual basis of the daily value of the certificate value allocated to the funds and the fixed accounts, unless that charge exceeds the maximum, in this case the charge is the maximum charge. The maximum charge is 0.35% if age 60 or less at certificate issue, 0.50% if age 61 through age 70 at certificate issue, and 0.70% if age 71 or older at certificate issue, of the certificate value allocated to the funds.

Certain contracts may offer credits which will result in the purchase of units.

9. SUBSEQUENT EVENTS

The spread of the coronavirus, causing increased cases of COVID-19, around the world in the first quarter of 2020 has caused significant volatility in U.S. and international markets. There is significant uncertainty around the breadth and duration of business disruptions related to COVID-19, as well as its impact on the U.S. and international economies and, as such, MassMutual is actively monitoring the extent of the impact to its operations.

The Separate Account's management has reviewed events occurring through April 3, 2020, the date the financial statements were issued, and no subsequent events occurred requiring accrual or disclosure.