

Performance Update

As of April 30, 2019

Variable Universal Life (VUL)

variable life insurance

- Not a bank or credit union deposit or obligation
- Not insured by any federal government agency
- Not FDIC or NCUA-insured
- Not guaranteed by any bank or credit union
- May go down in value

Variable Universal Life (VUL)

VUL is a permanent life insurance policy that combines death benefit protection with the opportunity to accumulate policy value through investments in a separate account with underlying investment funds, and a guaranteed principal account. This report gives information only about the performance of the investment options available through the policy. It does not give, and should not be understood to give, information about the overall performance of any VUL policy. **It is strongly urged that you request a current illustration of policy values from your financial representative to see how policy charges can impact the performance of your policy.** The illustration will reflect the deduction of mortality and expense risk charges, premium expense charges, surrender charges, and the monthly administrative, face amount, and insurance charges, as well as any applicable rider charges specific to your policy. To request an illustration, simply contact your personal financial representative, or click on "contact us" on our web site, or call the MassMutual Customer Service Center at (800) 272-2216, Monday – Friday, 8 a.m. to 8 p.m. Eastern Time.

The investment performance figures in this report are based on actual historical performance of the investment options for the periods shown, including for those time periods that begin prior to this policy's availability date. In most states, the policy first became available on February 8, 1999. For periods of one year or less, the total return is not annualized. For periods greater than one year, the average annual total return for the time periods is shown.

Past performance is no indication of future results. This update contains the most recent month-end performance. Since performance changes daily, the current performance may be lower or higher than the performance reflected in this update. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. For the most recent month-end performance information, visit our website at www.massmutual.com or call the MassMutual Customer Service Center at (800) 272-2216, Monday – Friday, 8 a.m. to 8 p.m. Eastern Time.

Investing involves risk, including the loss of principal. Each investment choice underlying the policy has broad risks that apply to all investment choices, such as market risk, as well as specific risks inherent in particular types of investment choices that may subject your policy to greater risk and volatility than the general market.

This material must be preceded or accompanied by the [current prospectuses for the VUL insurance policy and the prospectuses \(or summary prospectuses, if available\) for its underlying investment choices](#). Before purchasing a policy, investors should carefully consider the investment objectives, risks, charges and expenses of the policy and its underlying investment choices. Please read the prospectuses carefully before investing or sending money. Please note that VUL is closed to new business. Existing policy owners, however, may continue to make premium payments under existing policies.

Interest Rates — Guaranteed Principal Account

The following are effective annual rates used to credit interest on amounts in the Guaranteed Principal Account. These rates do not apply to any policy loan amounts.

Current Interest Rate as of: 6/1/18 3.00%; 7/1/18 3.00%; 8/1/18 3.00%; 9/1/18 3.00%; 10/1/18 3.00%; 11/1/18 3.00%; 12/1/18 3.00%; 1/1/19 3.00%; 2/1/19 3.00%; 3/1/19 3.00%; 4/1/19 3.00%; 5/1/19 3.00%.

Market Indices as of April 30, 2019

	YTD	1 Year	3 Years	5 Years	10 Years
S&P 500 Index	18.25%	13.49%	14.87%	11.63%	15.32%
Morgan Stanley Capital International World Index	16.47%	6.48%	11.39%	7.31%	11.58%
Russell 2000 Total Return Index	18.48%	4.61%	13.60%	8.63%	14.10%
Bloomberg Barclays U.S. Aggregate Bond Index	2.97%	5.29%	1.90%	2.57%	3.72%

Market indices have been provided for informational purposes only; they are unmanaged and reflect no fees or expenses. Individuals cannot invest directly in an index.

The Standard & Poor's 500 Index is an unmanaged measure of common stock total return performance in the U.S.

The Morgan Stanley Capital International World Index is an unmanaged measure of total return performance in the global securities market.

The Russell 2000 Total Return Index is a broad based, unmanaged index comprised of 2000 of the smallest U.S. domiciled company common stocks (on the basis of capitalization) that are traded in the United States on the New York Stock Exchange, the American Stock Exchange, and NASDAQ.

The Bloomberg Barclays U.S. Aggregate Bond Index is an unmanaged index of U.S. corporate bond issues, U.S. Government Securities and mortgage-backed securities.

Total Returns for each fund are the actual historical rates and are net of all fund management fees and other operating expenses. These returns do not reflect the Separate Account Mortality and Expense Risk Charges or policy charges. Policy charges include: premium expense charges, surrender charges, and the monthly administrative, face amount, and insurance charges. If these charges were deducted, the returns would be significantly lower.

Asset Category	Investment Fund	Fund Inception Date	Endnotes	Cumulative YTD	Average Annual				
					1 Year	3 Years	5 Years	10 Years	Since Inception
Money Market	MML U.S. Government Money Market (Initial Class)	12/16/1981	1	0.64%	1.66%	0.78%	0.49%	0.24%	3.89%
	<i>7-day yield: 1.96%</i>								
Fixed Income	MML Inflation-Protected and Income (Initial Class)	8/30/2002		3.50%	0.40%	0.96%	1.25%	3.44%	3.55%
	MML Managed Bond (Initial Class)	12/16/1981		2.80%	1.55%	1.41%	1.88%	3.89%	7.08%
	Oppenheimer Total Return Bond (Non-Service)	4/3/1985		3.87%	1.83%	1.30%	2.28%	6.17%	5.14%
	Oppenheimer Global Strategic Income (Non-Service)	5/3/1993		5.79%	-2.76%	1.75%	1.32%	5.50%	5.40%
Balanced	American Funds Insurance Series® Asset Allocation (Class 2)	8/1/1989	2	12.05%	5.79%	9.33%	7.19%	11.03%	8.28%
	Janus Henderson Balanced (Service)	9/13/1993	2	11.52%	10.84%	11.03%	7.68%	10.31%	9.64%
	MML Blend (Initial Class)	2/3/1984		10.93%	5.23%	9.07%	7.28%	11.02%	8.76%
Large Cap Value	American Century VP Income & Growth (Class I)	10/30/1997		14.87%	5.62%	12.06%	8.15%	13.52%	6.82%
	American Century VP Value (Class I)	5/1/1996		15.37%	4.99%	8.69%	7.21%	12.41%	8.61%
	MML Equity (Initial Class)	12/31/1973	3	15.61%	3.43%	9.84%	6.97%	12.29%	10.00%
	T. Rowe Price Equity Income	3/31/1994		15.28%	4.16%	10.47%	6.73%	12.40%	9.20%
Large Cap Blend	American Funds Insurance Series® Growth-Income (Class 2)	2/8/1984	2	15.61%	8.56%	14.49%	11.04%	14.23%	11.18%
	Fidelity® VIP Contrafund® (Initial Class)	1/3/1995		19.26%	9.91%	13.49%	10.18%	14.31%	11.08%
	Invesco V.I. Diversified Dividend (Series I)	3/1/1990	4	13.67%	5.37%	6.23%	7.07%	12.66%	7.92%
	MFS® Investors Trust (Initial Class)	10/9/1995		19.63%	12.45%	14.45%	10.65%	13.93%	8.33%
	MML Equity Index (Class II)	5/1/1997	5	18.11%	11.34%	13.93%	10.96%	14.83%	7.73%
Large Cap Growth	Oppenheimer Main Street (Non-Service)	7/5/1995		20.59%	13.69%	12.07%	10.12%	13.98%	8.89%
	Goldman Sachs Strategic Growth (Institutional)	4/30/1998	6	21.88%	15.91%	18.09%	13.50%	15.44%	6.76%
	Janus Henderson Forty (Institutional)	5/1/1997	7	22.05%	18.25%	19.21%	16.34%	15.66%	11.81%
	MML Blue Chip Growth (Initial Class)	5/1/2006		20.75%	14.35%	21.49%	16.17%	18.08%	11.14%
	Oppenheimer Capital Appreciation (Non-Service)	4/3/1985		22.52%	15.61%	15.80%	11.51%	13.67%	10.18%
Small / Mid Cap Value	T. Rowe Price Blue Chip Growth	12/29/2000		20.75%	14.49%	21.46%	16.14%	18.08%	7.80%
	Franklin Small Cap Value VIP (Class 2)	5/1/1998	2	15.48%	1.44%	10.62%	6.22%	12.92%	7.72%
Small / Mid Cap Blend	DWS Small Cap Index VIP (Class A)	8/22/1997	***	17.22%	3.34%	12.57%	7.95%	13.62%	7.30%
	MML Small Cap Equity (Initial Class)	6/1/1998		17.02%	4.52%	11.87%	8.28%	14.37%	6.45%
Small / Mid Cap Growth	MFS® New Discovery (Initial Class)	5/1/1998		26.46%	17.91%	20.70%	11.35%	16.78%	9.23%
	MML Small Cap Growth Equity (Initial Class)	5/3/1999		24.80%	14.74%	18.40%	11.37%	15.71%	9.07%
	Oppenheimer Discovery Mid Cap Growth (Non-Service)	8/15/1986		24.28%	14.02%	16.46%	13.09%	16.34%	9.64%
	T. Rowe Price Mid-Cap Growth	12/31/1996		20.51%	14.85%	16.12%	13.29%	17.22%	11.57%
International / Global	Janus Henderson Global Research (Institutional)	9/13/1993		18.14%	6.97%	12.65%	7.95%	11.97%	8.32%
	Oppenheimer Global (Non-Service)	11/12/1990		21.63%	3.85%	14.58%	8.71%	13.14%	10.01%
	Oppenheimer International Growth (Non-Service)	5/13/1992		17.24%	-6.32%	4.54%	1.82%	9.62%	6.92%
	Templeton Foreign VIP (Class 2)	5/1/1992	2	9.34%	-9.49%	3.21%	-1.66%	6.15%	6.27%
Specialty	Invesco V.I. Health Care (Series I)	5/21/1997	**	8.54%	11.42%	7.45%	6.22%	12.80%	8.39%
	Invesco V.I. Technology (Series I)	5/20/1997		23.04%	15.16%	22.46%	14.69%	15.53%	6.70%
	MML Managed Volatility (Initial Class)	5/1/2000	8	6.89%	2.58%	4.73%	3.86%	8.78%	3.56%

Endnotes

- 1 An investment in the Fund is neither insured nor guaranteed by the Federal Deposit Insurance Corporation or by any other government agency. Although the Fund seeks to maintain a stable net asset value per share, it is possible to lose money by investing in the Fund.
The yield quotation more closely reflects the current earnings of the Fund than the total return quotation. It is an annualized rate based on results over the last seven days of the period.
 - 2 The fund established a new class of shares, which is available with this policy, after it began its initial investment operations. The performance for the period prior to offering the new class shows the historical returns for the original class of shares, which were not subject to a 12b-1 fee. The performance shown from the inception date of the class available with this policy includes the fees and expenses of that share class, including a 12b-1 fee. A 12b-1 fee reduces a fund's performance.
 - 3 Although the MML Equity Fund commenced operations on 9/15/1971, the information necessary to calculate returns is available only for 1974 and later years.
 - 4 Effective April 29, 2011, Invesco V.I. Financial Services Fund merged into Invesco V.I. Dividend Growth Fund. Performance prior to that day reflects performance of the Invesco V.I. Financial Services Fund and performance on and after that date reflects performance of the Invesco V.I. Dividend Growth Fund.
 - 5 The fund established a new class of shares, which is available with this policy, after it began its initial investment operations. The performance for the period prior to May 1, 2000 shows the historical returns for Class I shares. Performance for periods after May 1, 2000 shows the historical returns for the share class available with this policy and reflects the fees and expenses of that share class.
 - 6 The Fund may participate in the Initial Public Offering (IPO) market. The market value of IPO shares may fluctuate considerably due to factors such as the absence of a prior public market, unseasoned trading, the small number of shares available for trading, and limited information about the issuer.
 - 7 The portfolio is classified as "non-diversified", meaning it has the ability to take larger positions in a smaller number of issuers than a "diversified" fund. Non-diversified portfolios may experience greater price volatility.
 - 8 Formerly known as MML Large Cap Value Fund. The Fund's name, investment objective, and investment strategy changed on April 29, 2013. The performance results prior to April 29, 2013 would not necessarily have been achieved had the Fund's current strategy been in effect during that period.
- * * Formerly known as as Invesco V.I. Global Health Care.
* * * Formerly known as Deutsche Small Cap Index VIP.

Variable Universal Life (VUL) (Policy Form P2-98 in most states and P2-98NC in North Carolina) is individual, participating, flexible premium, adjustable, variable life insurance and was issued by Massachusetts Mutual Life Insurance Company (MassMutual), Springfield, MA 01111-0001, in California and New York. Dividends are not expected to be paid. VUL was issued in all other states and the District of Columbia by C.M. Life Insurance Company (C.M. Life), Enfield, CT 06082, a wholly owned subsidiary of MassMutual. The policy issued by C.M. Life is non-participating. VUL was not offered in Puerto Rico. We no longer offer VUL for sale to the public. Policy owners may continue, however, to make premium payments to their VUL policies.

Principal Underwriters:

MML Investors Services, LLC
MML Strategic Distributors, LLC

Subsidiaries of Massachusetts Mutual Life Insurance Company, 1295 State Street, Springfield, MA 01111-0001

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