



MassMutual Mid Cap Growth Fund - 2Q22 Review

Subadvised by:

T. Rowe Price Associates, Inc.
T. Rowe Price Investment Management, Inc.
Frontier Capital Management Co. LLC

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2021 Firm Overview

Massachusetts Mutual Life Insurance Company

\$459.5 billion¹ assets under management

170 Years

Protecting financial
futures

153rd

Consecutive
dividend payout

\$1.85 billion²

Estimated 2022
dividend payout

Rooted in a commitment to protect and provide, MassMutual's long-term investment philosophy has helped us provide **financial and retirement security to millions of people.**

¹ As of 12/31/21. Assets Under Management (AUM) include assets and certain external investment funds managed by MassMutual subsidiaries, including Barings.

² Dividends apply to eligible participating policyowners, are determined annually, subject to change, and are not guaranteed.

Firm Overview

MassMutual Funds¹

\$45.7 billion ²assets managed

Protecting Financial Futures

Build offerings based on a long-term investment philosophy that focuses on protecting assets

Diverse Fund Offerings

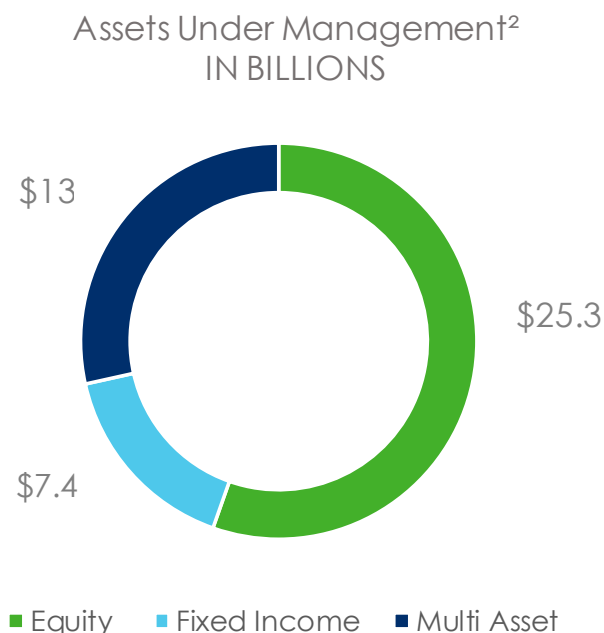
Over 100 funds, including multiple target retirement suites

Partnerships with Top Tier Managers

Strategic relationships with over 20 leaders in various asset classes

Multi-managed Investment Solutions

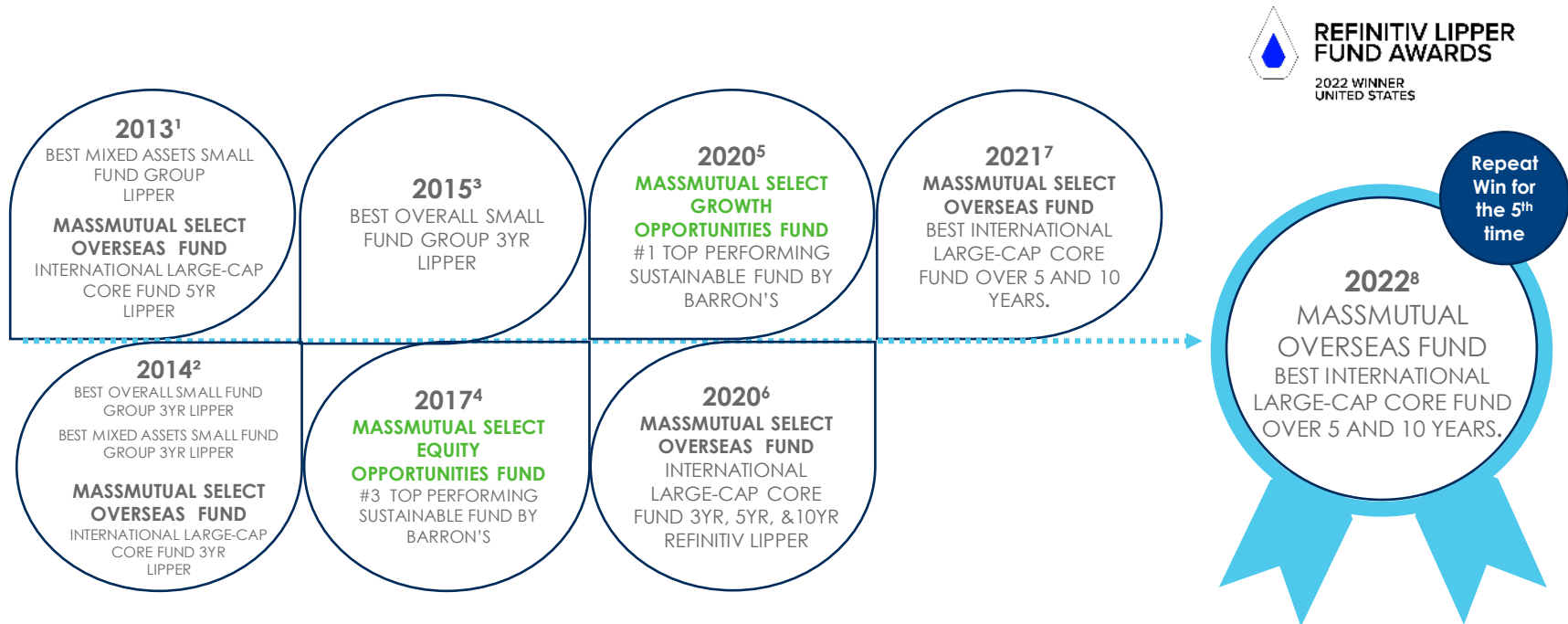
Notable firm pairings to manage risk and provide long-term consistent results



¹ The MassMutual Funds are advised by MML Investment Advisers, LLC and sponsored by Massachusetts Mutual Life Insurance Company. Principal Underwriter: MML Distributors, LLC. (MMLD), 1295 State St., Springfield, MA 01111. Member FINRA and SIPC (www.FINRA.org and www.SIPC.org). Investment advisory services provided to the Funds by MML Investment Advisers, LLC (MML Investment Advisers). MMLD and MML Investment Advisers are subsidiaries of Massachusetts Mutual Life Insurance Company (MassMutual), Springfield, MA 01111-0001.

² As of 6/30/2022. Numbers have been rounded to one decimal place.

A History of Award-Winning Results...



MassMutual Funds has one core focus: to deliver consistent returns for our retirement investors. We are honored to be recognized for the **third consecutive year**, and the 11th time in the last decade, for industry leading outcomes achieved from our fund complex.

Investment Management Solutions

Manager selection and oversight expertise

Investment Management Solutions

Andrea Anastasio

Head of Investment Management Solutions
22 Years experience

Investments

Manager Research

Wale Adedokun
Head of Manager Research
11 Years experience

Phil Connor, CFA
Investment Director
31 Years experience

Laurie Goodreau, CFA
Investment Director
31 Years experience

Michael Friedman, CFA
Investment Director & ESG Lead
22 Years experience

Jason Marino, CFA, CAIA
Investment Director
20 Years experience

Multi-Asset Class Solutions

Rick Schultz, CFA, CAIA
Head of Multi-Asset Class Solutions
18 Years experience

Mike Abata, CFA
Asset Allocation Consultant
31 Years experience

Asset Allocation Consultant
Open

Investment Product Strategy

Portfolio Strategy and Analytics

David Selbovitz, CFA, CAIA
Head of Portfolio Strategy and Analytics
14 Years experience

Gary Lowe, CFA
Asset Allocation Consultant
24 Years experience

Roxanne Podgurski
RFP Consultant
15 Years experience

Evan Cianchette
Institutional Investment Consultant
8 Years experience

Product Intelligence and Innovation

Evan Woods, CFA
Head of Product Intelligence and Innovation
16 Years experience

Product Specialist
Open

Product Management

Doug Steele, CFA
Head of Product Management
25 Years experience

Brian Pelkola
Product Management Consultant
14 Years experience

Meredith Ulrich
Strategic Consultant
13 Years experience

Fund Administration Renee Hitchcock

Investment Operations Donna Champagne

DCIO Strategic Accounts & Consultant Relations Sean De Lacy

DCIO National Sales Andy Beck

Intermediary Wealth Sales Tony Grigonis

Shared Services

Legal

Compliance

Marketing

Finance

Technology

The MassMutual Approach

Philosophy & Process

We believe active management utilizing specialized, autonomous investment managers, supported by disciplined portfolio construction and ongoing monitoring, can lead to consistent performance over the long-term which is a key differentiator in the retirement space.

We deliver investment solutions leveraging independent, institutional asset managers with the goal of consistent outperformance. Our investment philosophy cascades from three main ideas:

1

Suite of Customized Products

Engineered to help meet long term investment objectives

Recognition of how menu options are selected

Appreciation of how investors behave

2

Manager Selection

Record of strong performance

Organizational strength

Portfolio diversification

Philosophical alignment

3

Risk Management and Oversight

Daily performance monitoring

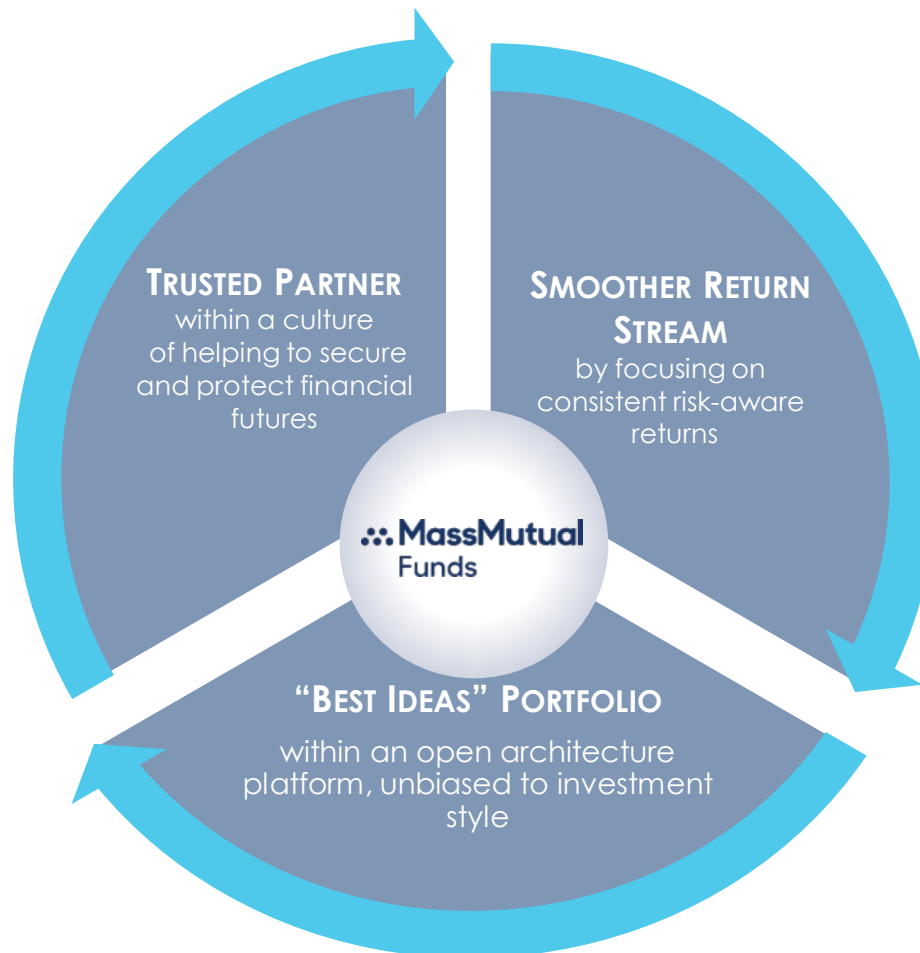
Quarterly portfolio review

Annual onsite visits

Seamless manager adjustments

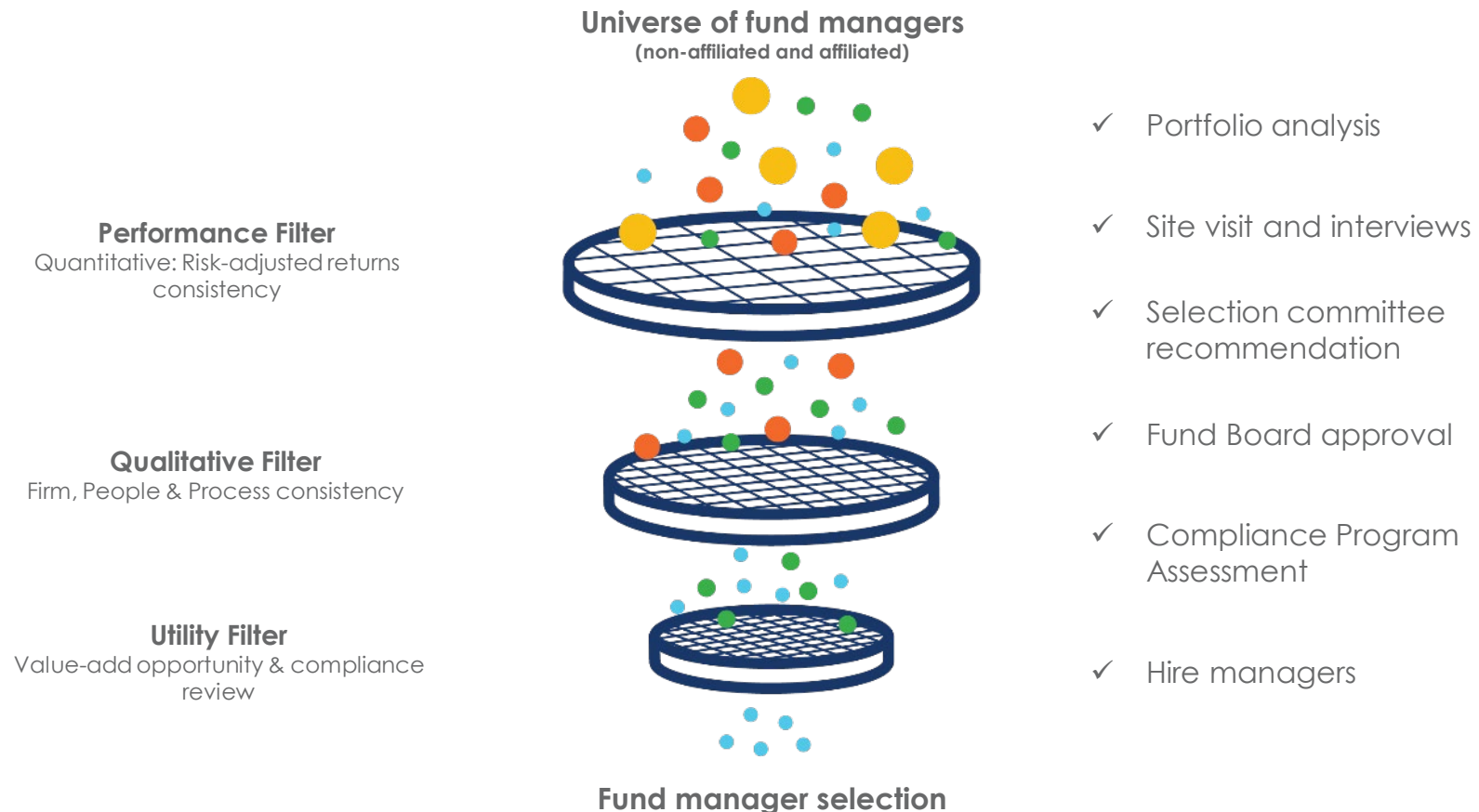
1 Suite of Customized Products

MassMutual Funds offer the advantage of investment solutions with focused products that strive to deliver consistent peer outperformance.



2 Manager Selection

MassMutual Funds are built on a broad array of **world class and specialized fund managers**. The MassMutual investment research team has **decision power to add or remove managers** with greater objectivity with the goal of less disruption, while additional managers can increase capacity for closed strategies.



2 We Partner with Quality Institutional Managers

Multiple manager structure of independent investment firms provides additional **diversification benefits and risk management** to help create consistent, strong returns.



HARRIS ASSOCIATES



T.RowePrice®

BlackRock



J.P.Morgan
Asset Management



WELLINGTON
MANAGEMENT®



ALLIANCEBERNSTEIN®



BostonPartners



WESTFIELD
CAPITAL MANAGEMENT



3 Risk Management and Oversight

Robust Fund Oversight

Daily Performance Monitoring

- Dashboards that contain key valuation and portfolio metrics for each subadvisor
- Access to portfolio performance, holdings and buy/sell activity
- Oversight to ensure adherence to the prescribed mandate

Quarterly Review

- Quarterly individual scoring of managers by the research team
- Review of account management process and performance
- Team evaluation each quarter identify trends and areas for deeper review

Annual Onsite Meetings

- Discuss any changes at the firm or on the management team
- Review investment process, portfolio positioning and performance
- Meet with new staff and senior management to talk about product development and trends
- Spend time with traders and review their execution process

Seamless Manager Adjustments

Reasons for a change in subadvisor may include

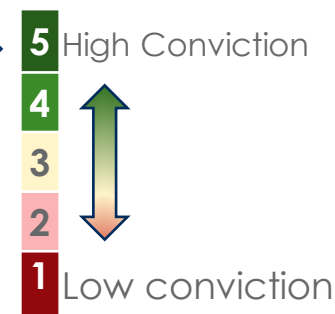
- Concerns over qualitative and/or quantitative issues
- Changes in investment personnel at the subadvisor
- Failure to adhere to the prescribed investment mandate
- Concerns over subadvisor resources

3 A look into our quarterly investment review

QIR Process



Ratings Scale



Fund Overview

MassMutual Mid Cap Growth Fund

Fund Details

Morningstar Fund Category: Mid-Cap Growth

Fund Inception Date: 5/31/2000

of Stock Holdings: 199

Fund Net Assets: 5.49 Billion

Benchmark: Russell MidCap® Growth Index

Fund Objective: This Fund seeks growth of capital over the long-term.

Strategy

Target Allocation

T. Rowe Price U.S. Mid-Cap Growth Equity Strategy	75%
Frontier Capital Mid Cap Growth Strategy	25%

Fund Benefits

Growth at a reasonable price solution

- Strategic allocation to time-tested mid cap growth strategies combined to provide a style-pure, conservative mid cap growth option

Seeks to reduce risk in a dynamic, secular growth driven opportunity set

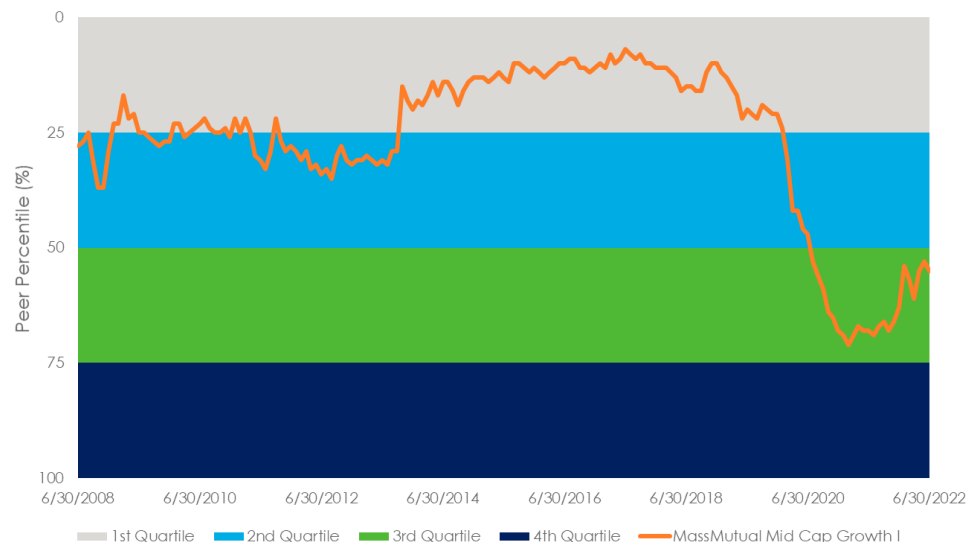
- Historical results show upside market participation with a risk profile below both the index and peer group

Delivering industry leading results

- Attractive peer relative results over its long history, enabling clients to stay invested and realize the positive effects of compounding

DELIVERING RESULTS ACROSS MARKET ENVIRONMENTS

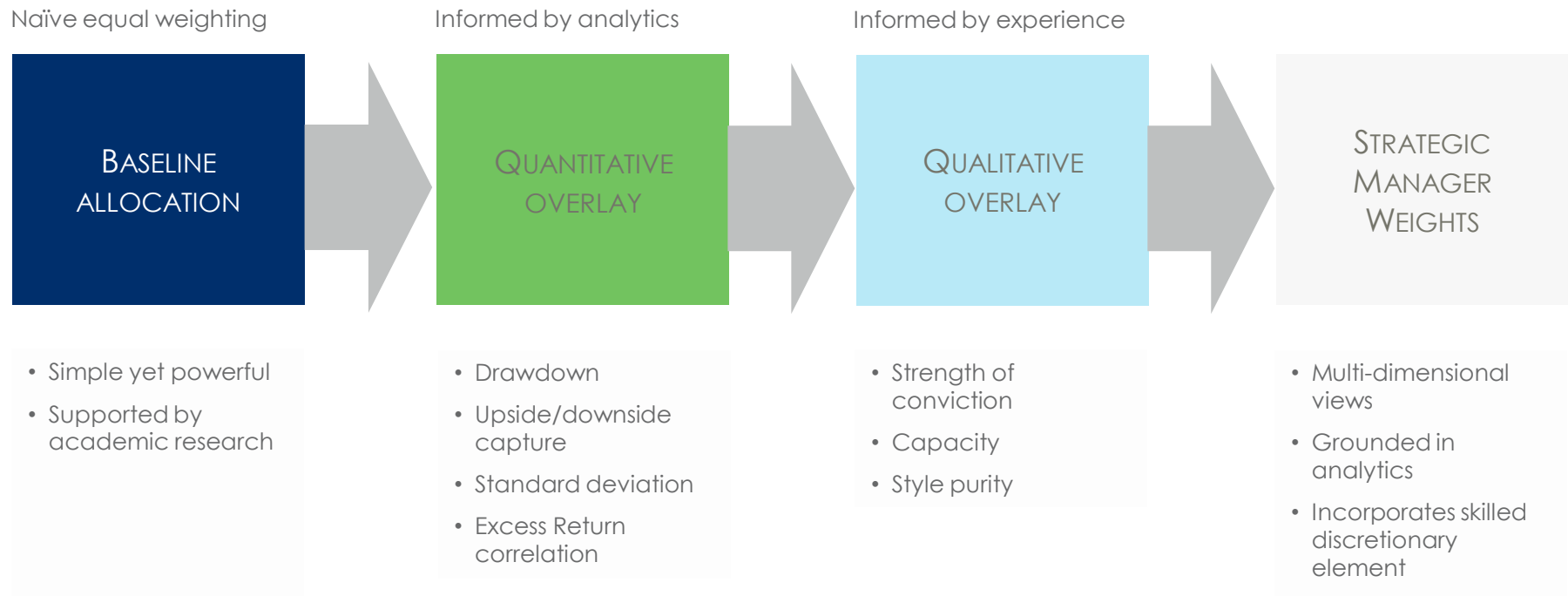
Rolling 5-Year Alpha vs. Morningstar Mid-Cap Growth Peers



Source: Morningstar Direct as of 6/30/2022

Portfolio Construction

We believe that a successful portfolio construction process should be academically intuitive, empirically valid, and repeatedly applied. Our multi-manager structure of independent investment firms provides additional **diversification benefits and risk management** to help create consistent, strong returns.



Subadviser Overview



U.S. Mid-Cap Growth Equity Strategy

Benchmark: Russell MidCap® Growth

Style: Fundamental

Investment Philosophy

- A measured approach to mid-cap investing may produce attractive returns with moderate risk
- Invest in stocks of medium-sized companies possessing above-average earnings growth rates
- Seeks to lower risk through a broadly diversified portfolio of companies with reasonable valuations and proven business models

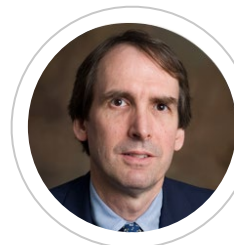
Investment Approach

- Seek companies in high-growth sectors of the economy with high-performing business strategies, sound management teams and strong financial resources
- Long-term orientation allows for compounding of high earnings growth

Portfolio Construction

- Invest in 120-160 stocks
- Sector and industry weightings are a residual of bottom-up stock selection process
- Thoughtful 3-5% cash position

Portfolio Management

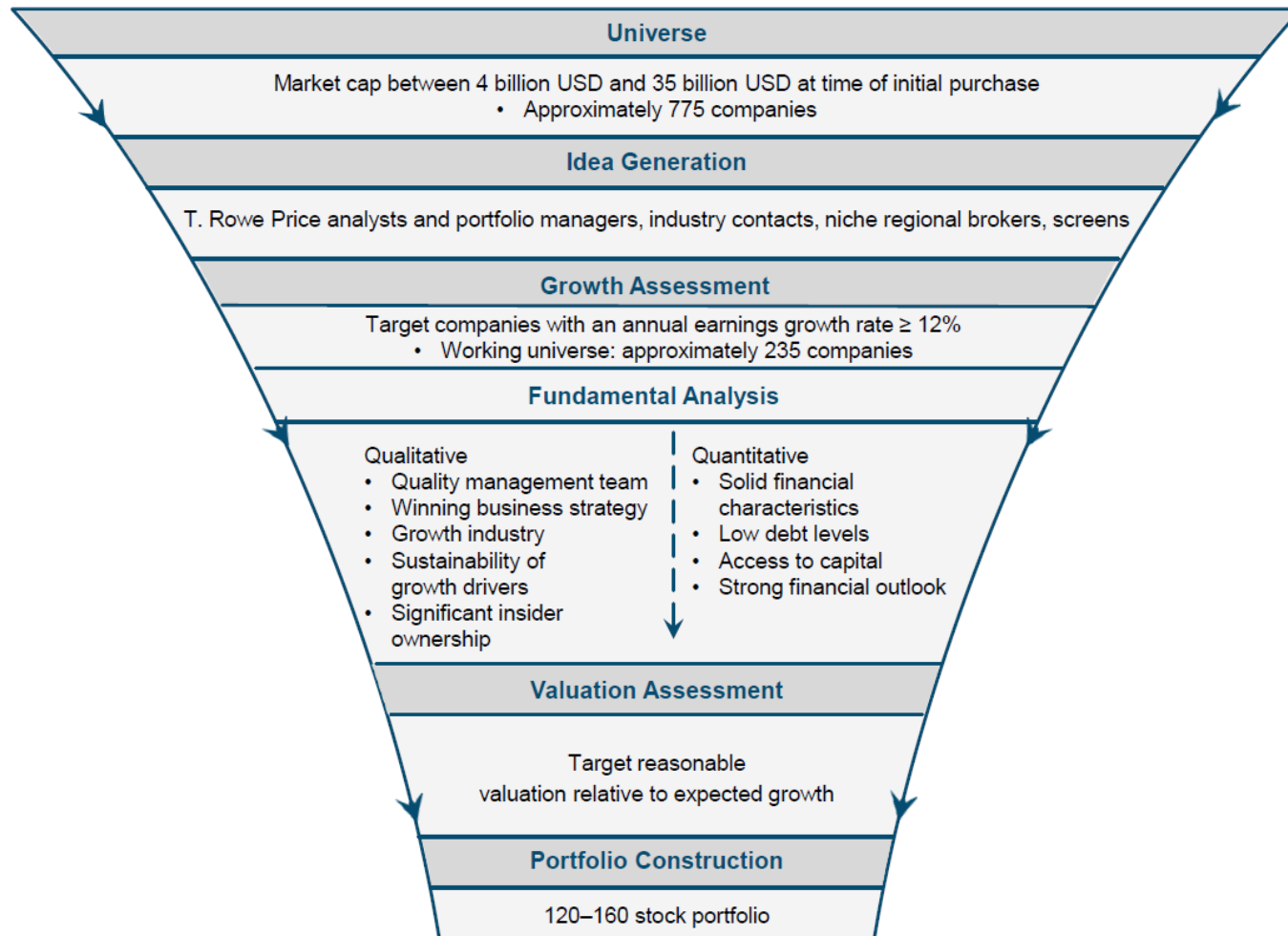


Brian W.H. Berghuis, CFA

- Lead Portfolio Manager
- Joined the industry in 1984
- Joined T. Rowe Price in 1986
- B.A., Princeton University
- M.B.A., Harvard Business School

Subadviser Overview

Investment Process



Subadvisor Overview



Mid Cap Growth Strategy

Benchmark: Russell MidCap® Growth

Style: Fundamental

Investment Philosophy

- Employs a growth at a reasonable price (GARP) approach to identify the best risk/reward investment ideas in the U.S. mid-cap universe, owning companies that possess above-average earnings growth potential and that are available at reasonable valuations

Investment Approach

- Dedicated small- and mid-cap analysts develop detailed earnings models through a combination of company contacts, industry research, and competitive analysis
- Concentrate on companies with prospects for improving business with multiple levers to drive shareholder value
- Buy and sell decisions based on the Portfolio Managers' view of the risk and reward of each holding as well as the holding's impact on the overall risk profile of the portfolio

Portfolio Construction

- Approximately 85 stocks
- Stock, sector, and industry level diversification with no more than 5% of the portfolio in any single security and 20% in any one industry
- Fully invested, with cash as a residual

Portfolio Management



Christopher J. Scarpa

- Partner, Vice President, Portfolio Manager
- Managed strategy since 2010
- Joined Frontier in 2001
- Joined the industry in 1990

- M.B.A., Harvard University
- B.A., Tufts University



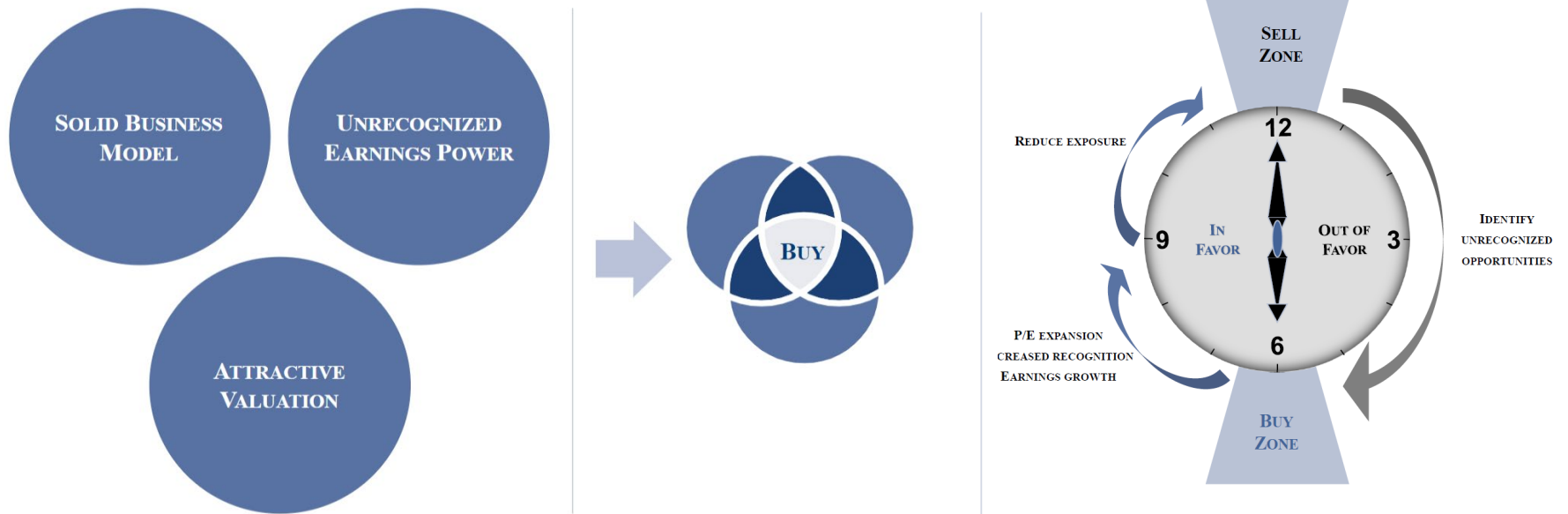
Ravi Dabas

- Partner, Portfolio Manager
- Managed strategy since 2019
- Joined Frontier in 2007
- Joined the industry in 1998

- M.B.A., University of Pennsylvania
- M.S., University of Houston
- B.E., Delhi College of Engineering

Subadviser Overview

Investment Process



Portfolio Oversight

Multiple manager structure of independent investment firms provides additional **diversification benefits and risk management** to create consistent, strong returns. MassMutual Mid Cap Growth's conservative profile enables investors to participate in secular growth opportunities while taking a thoughtful approach to risk management

Why do these managers work?

US Mid-Cap Growth Equity Strategy

- ✓ Since inception portfolio management team, delivering industry leading results for nearly 3 decades
- ✓ Focus on companies with strong earnings growth trading at attractive valuations
- ✓ Low relative risk profile has minimized total risk, market risk, and downside risk



Mid Cap Growth Strategy

- ✓ Boutique approach specializing on small and mid cap stocks
- ✓ Focus on above average growth with unrecognized earnings power
- ✓ Enhanced capacity with a similar approach and risk/return profile

Performance

As of June 30, 2022

TICKER: MEFZX | Share Class Inception: 11/15/2010

Morningstar Category: Mid-Cap Growth

Overall Morningstar Rating: ★★★★★

Overall Morningstar Rating: ★★★★★	QTD		YTD	1 Year	3 Year	5 Year	10 Year			
MassMutual Mid Cap Growth Fund I	-17.70	-27.08	-23.74	4.02	8.11	11.98				
Russell MidCap® Growth Index	-21.07	-31.00	-29.57	4.25	8.88	11.50				
Morningstar Category Average Return	-	-	-28.58	5.04	8.69	10.82				
Morningstar Category Rank	-	-	28	65	61	23				
# Funds in Category	-	-	586	532	493	380				
Morningstar Rating				★★★	★★★	★★★★★				
Calendar Year Returns	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
MassMutual Mid Cap Growth Fund I	14.71	36.31	13.00	5.95	6.19	24.66	-3.10	32.22	26.20	15.01
Russell MidCap® Growth Index	15.81	35.74	11.90	-0.20	7.33	25.27	-4.75	35.47	35.59	12.73
Category Average Return	14.07	34.93	7.00	-0.95	6.03	23.91	-6.65	32.52	39.26	13.05

Overall Morningstar Rating: For each investment with at least a three-year history, Morningstar calculates a Morningstar Rating™ based on how an investment ranks on a Morningstar Risk-Adjusted Return measure against other investments in the category. This measure takes into account variations in an investment's monthly performance after adjusting for sales loads (except for load-waived A shares), redemption fees, and the risk-free rate, placing more emphasis on downward variations and rewarding consistent performance. The top 10% of investments in each category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars and the bottom 10% receive 1 star. The **Morningstar Category Rank** is based on the fund's total-return percentile rank relative to all funds that have the same category for the same time period. The highest (or most favorable) percentile rank is 1%, and the lowest (or least favorable) percentile rank is 100%.

Morningstar total return includes both income and capital gains or losses and is not adjusted for sales charges. The top-performing fund in a category will always receive a rank of 1. The percentile rank by category figures allow for a direct comparison of a fund's performance within its Morningstar Category. Rankings in the top 50% of the peer group are highlighted in green. Rankings in the 3rd quartile of the peer group are in yellow. Rankings in the 4th quartile of the peer group are in red. **Morningstar Rating** for an investment is derived from a weighted average of the ratings for the three-, five- and ten-year (if applicable) time periods. ©2022 Morningstar, Inc. All Rights Reserved. The information contained herein: (1) is proprietary to Morningstar and/or its content providers; (2) may not be copied or distributed; and (3) is not warranted to be accurate, complete or timely. Neither Morningstar nor its content providers are responsible for any damages or losses arising from any use of this information.

Performance shown is past performance. Past performance does not guarantee future results. The investment return and the principal value of an investment will fluctuate; so an investor's shares, when redeemed, may be worth more or less than their original cost. For more current information, including a list of the fund's holdings and month-end performance, please call 1-866-444-2601. You cannot invest directly in an index.

Investors should consider funds' objectives, risks, fees, and expenses carefully before investing. This and other information can be found in the funds' prospectuses or summary prospectuses, which are available from MassMutual by calling 1-866-444-2601. Please read them carefully before investing.

Portfolio Overview

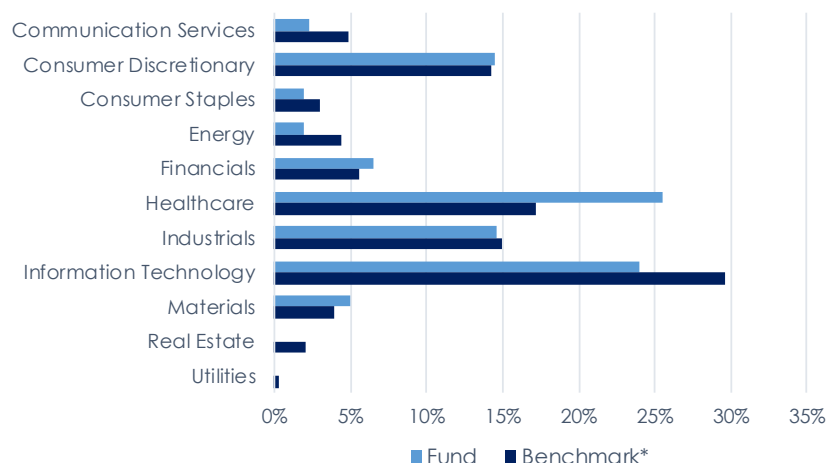
Top Ten Holdings

Holding	Sector	Percentage
Hologic Inc	Health Care	2.49%
Microchip Technology Inc	Information Technology	2.16%
Catalent Inc	Health Care	2.09%
Textron Inc	Industrials	1.97%
Ball Corp	Materials	1.96%
Agilent Technologies Inc	Health Care	1.87%
Teleflex Inc	Health Care	1.81%
Dollar General Corp	Consumer Discretionary	1.62%
Ingersoll Rand Inc	Industrials	1.61%
KLA Corp	Information Technology	1.54%

Risk/Return Statistics†

	Fund	Benchmark*
Standard Deviation	18.92	20.33
Information Ratio	-0.19	-
Alpha	-0.16	-
Beta	0.91	1.00
R2	0.96	1.00
Tracking Error	4.09	-
Sharpe Ratio	0.45	0.47
Upside Capture	88.94	100.00
Downside Capture	88.44	100.00
Batting Average	43.33	-
Top 10 Holdings %	21.25	11.74

Sector Allocation



Portfolio Characteristics

	Fund	Benchmark*
Market Cap (\$ MM)	21,262	21,484
Price-to-earnings	22.25	24.19
Price-to-book	14.99	18.13
Hist 3 Yr EPS Growth (%)	27.59	22.35
Dividend Yield (%)	0.53	0.73
Turnover (%)	44	-

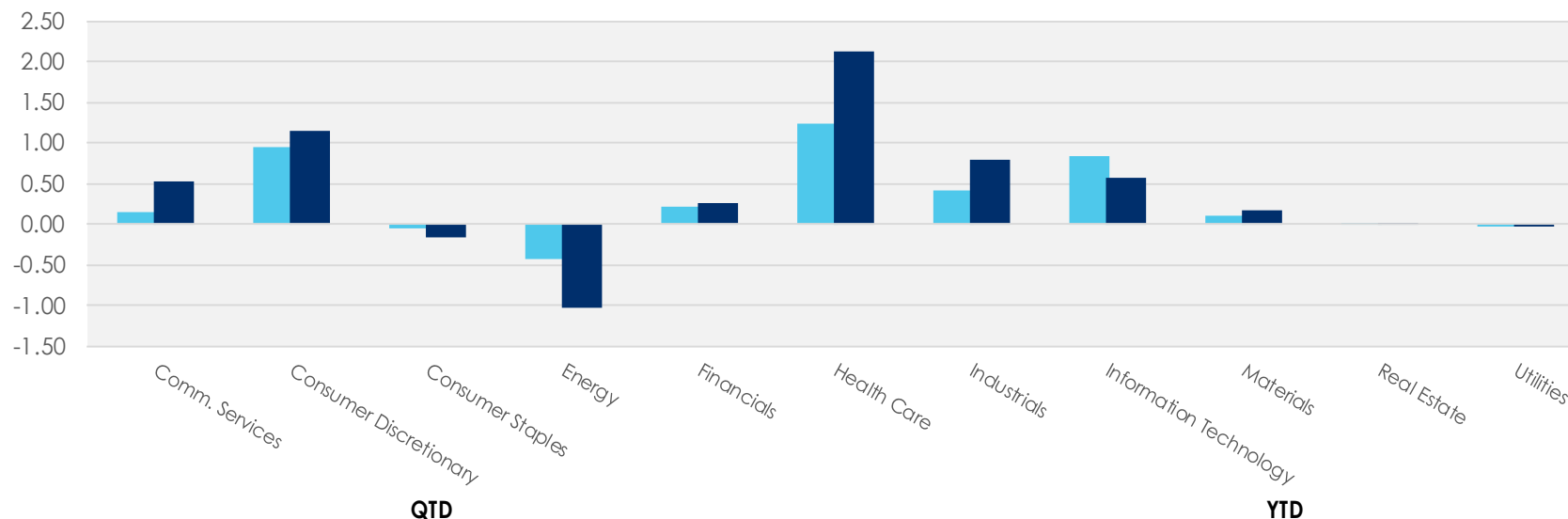
*Russell MidCap® Growth Index

†Risk statistics are calculated over a five year period, computed monthly.

Portfolio Analysis

Portfolio Attribution: Describes how fund manager stock and sector weighting decisions affected returns.

■ QTD ■ YTD



Top 5 Contributors

	Fund Weight (%)	Portfolio Contribution
Dollar General Corp	1.42	0.13
argenx SE ADR	0.54	0.09
Treehouse Foods Inc	0.31	0.07
Black Knight Inc Class A	0.64	0.06
Seagen Inc Ordinary Shares	0.31	0.06

Top 5 Detractors

	Fund Weight (%)	Portfolio Contribution
Marvell Technology Inc	1.82	-0.81
Teleflex Inc	1.88	-0.63
Microchip Technology Inc	2.28	-0.52
Ball Corp	2.06	-0.52
RIVIAN AUTOMOTIVE INC LOCKUP TC3ZOCL40	0.31	-0.43

Top 5 Contributors

	Fund Weight (%)	Portfolio Contribution
Zynga Inc Class A	0.04	0.11
Alkermes PLC	0.35	0.08
Assurant Inc	0.83	0.07
Acadia Healthcare Co Inc	0.80	0.07
Dollar Tree Inc	0.67	0.07

Top 5 Detractors

	Fund Weight (%)	Portfolio Contribution
RIVIAN AUTOMOTIVE INC LOCKUP TC3ZOCL40	0.74	-1.27
Marvell Technology Inc	1.95	-1.13
Burlington Stores Inc	1.36	-0.84
Microchip Technology Inc	2.31	-0.78
KKR & Co Inc Ordinary Shares	1.48	-0.61

Fund Weightings are shown as an average for the time period. For a complete listing of fund holdings, visit massmutualfunds.com or please call 1-866-444-2601. The mention of individual stocks and other securities in this document does not constitute investment advice.

Tickers and Expenses

Share Class	Ticker	Gross Exp. Ratio	Net Exp. Ratio*	Inception Date
I	MEFZX	0.70%	0.65%	11/15/2010
R5	MGRFX	0.80%	0.75%	5/31/2000
SVC	MEFYX	0.90%	0.85%	5/31/2000
ADM	MMELX	1.00%	0.95%	5/31/2000
A	MEFAX	1.25%	1.20%	5/31/2000
R4	MEFFX	1.15%	1.10%	4/1/2014
R3	MEFNX	1.40%	1.35%	12/30/2002

*The expenses in the above table reflect a contractual agreement by MML Advisers to cap the fees and expenses of the Fund through January 31, 2024. Please refer to the Funds prospectus for more information.

Appendix

MassMutual Mid Cap Growth Fund

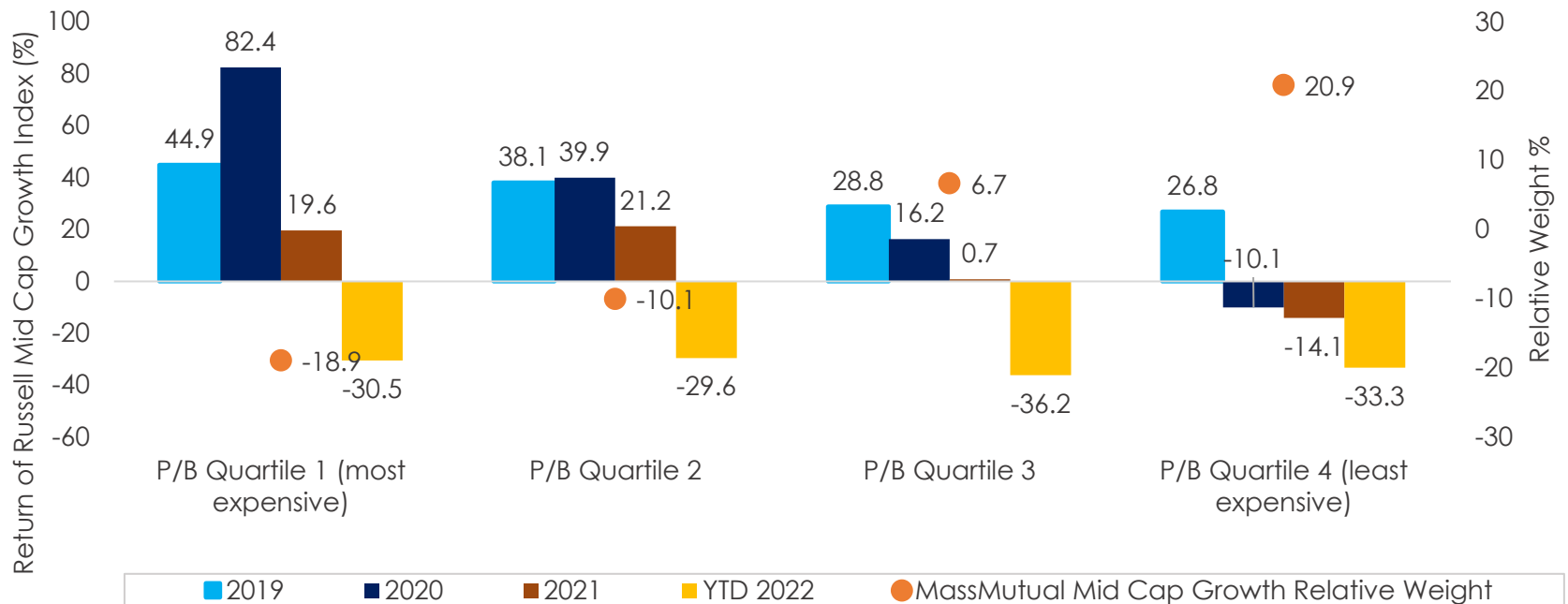
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As of June 30, 2022

Russell Mid Cap Growth Return by Valuation Quartile

- Higher interest rates continue to pressure secular growth.
- The breadth of market participation and volatility within has enabled stock selection to generate meaningful excess returns

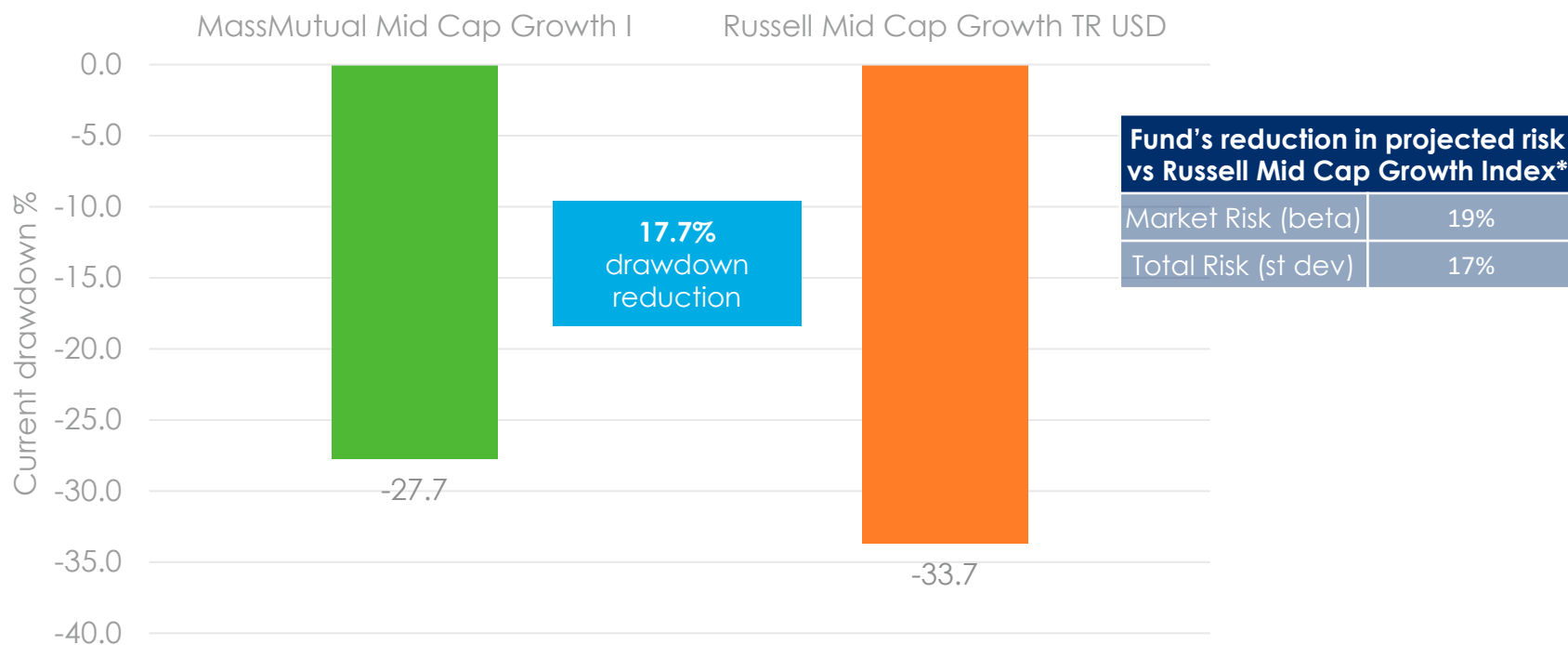


Index: Russell Midcap® Growth Index

Source: Morningstar Direct as of 6/30/22. Excludes cash, private investments.

The Reduced Risk Profile of Quality Growth Has Provided Meaningful Downside Protection

- The quality growth stylistic bias of the Fund provides an over 15% reduction in relative risk
- The Fund has outperformed the index by 6% since the start of the current drawdown (November 2021), reducing the realized drawdown for investors by nearly 18%



Source: Morningstar Direct, MassMutual as of 6/30/22

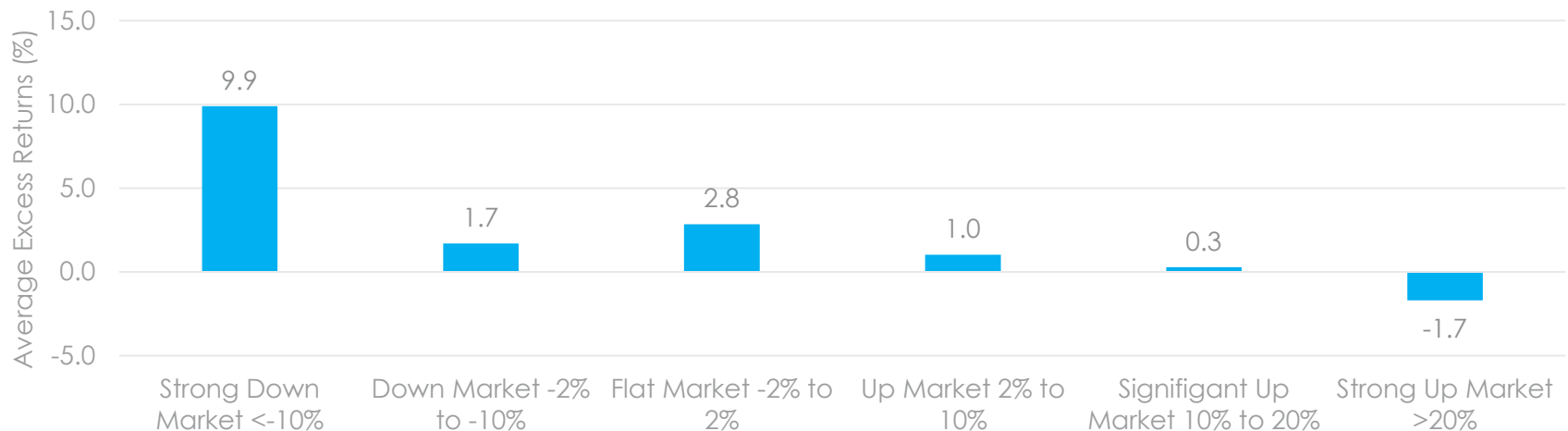
* 1 year projected risk



Outperforming in Most Market Environments

- Given the quality and valuation aware orientation, the Fund has outperformed in flat to down markets and most normal up market periods
- The Fund has been challenged in strong up markets where euphoria overtakes fundamentals

Rolling 1 Year Excess Returns in Varying Russell Mid Cap Growth Return Regimes

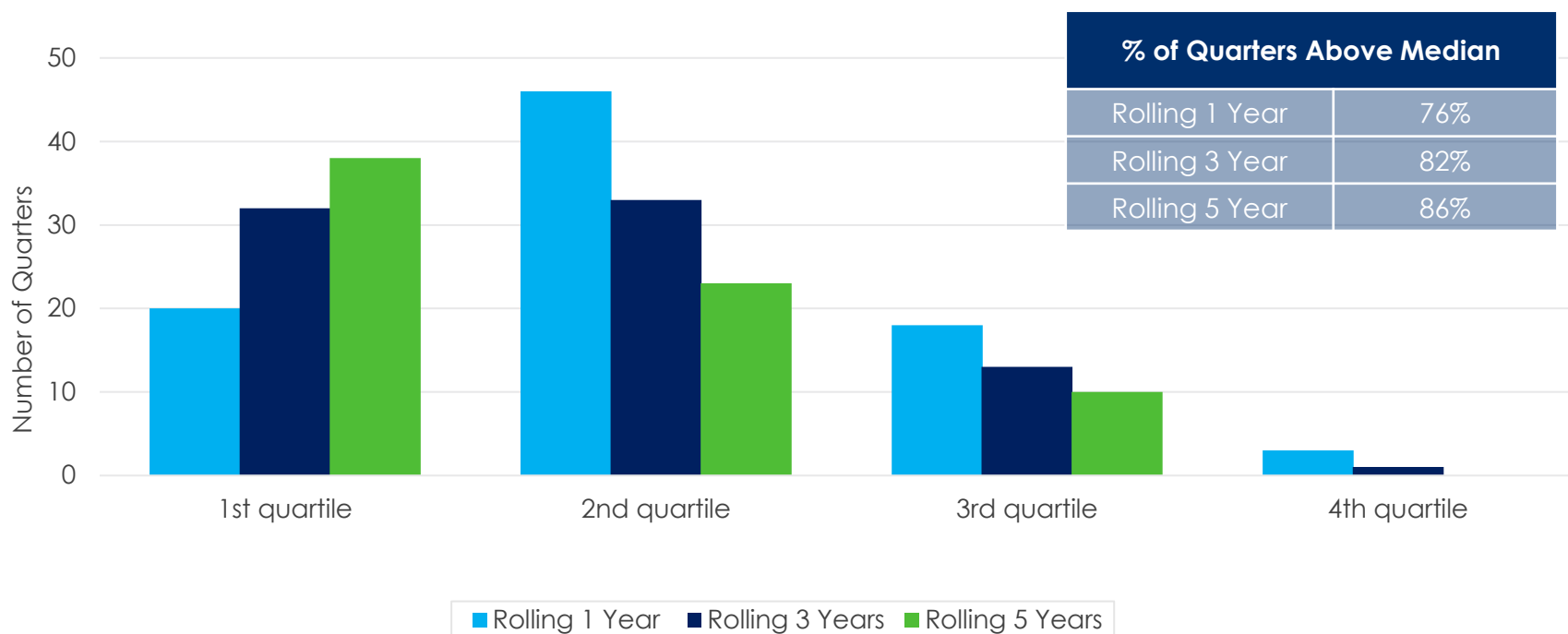


Number of Periods	14	7	6	9	24	27
Batting Average	100%	86%	83%	44%	58%	33%
Average Excess Return	9.9	1.7	2.8	1.0	0.3	-1.7

Index: Russell Midcap® Growth Index
Source: Morningstar Direct as of 6/30/22

High Efficacy Approach to Mid Cap Growth Investing

- Short term weakness has been long term opportunity.
- Consistent above median returns for two decades.



Source: Morningstar Direct, since inception through 6/30/22

Disclosures

Russell MidCap® Growth Index measures the performance of the mid-cap growth segment of the U.S. equity universe. It includes Russell Midcap Index companies with higher price-to-book ratios and higher forecasted growth values. It is market-capitalization weighted. The Index does not reflect any deduction for fees, expenses, or taxes and cannot be purchased directly by investors.

Performance data given represents past performance and does not guarantee future results. Current performance may be lower or higher than return data quoted herein. For more current information, including month-end performance, please call 1-866-444-2601. The investment return and the principal value of an investment will fluctuate; so an investor's shares, when redeemed, may be worth more or less than their original cost. Investment portfolio statistics change over time. Returns shown do not reflect the impact of plan fees, which will reduce performance. Investment portfolio statistics change over time. You cannot invest directly in an index.

Investors should carefully consider investment objectives, risks, charges and expenses. This and other important information is contained in the fund prospectuses and summary prospectuses, which can be obtained from www.MassMutual.com/mmfunds and should be read carefully before investing.

Principal Underwriter: MML Distributors, LLC. (MMLD), 1295 State St., Springfield, MA 01111. Member FINRA and Member SIPC (www.FINRA.org and www.SIPC.org). Investment advisory services provided to the Funds by MML Investment Advisers, LLC (MML Investment Advisers). MMLD and MML Investment Advisers are subsidiaries of Massachusetts Mutual Life Insurance Company (MassMutual), Springfield, MA 01111-0001.

Disclosures

The investments included in the exhibits shown in this presentation have been chosen in response to information provided to the MassMutual representative by the requesting financial intermediary. The exhibits pertain to either a specific client case or are of particular relevance to the business of the financial intermediary. MassMutual has not considered any financial and investment objectives, risk tolerance, or the suitability of an investment option when screening available funds for any client. The information contained herein should not be construed as a recommendation, nor should it be relied upon as investment, legal or tax advice.

Risk Characteristics: **Standard Deviation** is a statistical measurement, which for a mutual fund depicts how widely the returns varied over a certain period of time. When a fund has a high standard deviation, performance is wide, implying greater volatility. **Information Ratio** measures the performance of an investment compared to a benchmark index, after adjusting for its additional risk. **Alpha** is a measure of the difference between a fund's actual returns and its expected performance, given its level of risk as measured by beta. A positive alpha figure indicates the fund has performed better than its beta would predict. In contrast, a negative alpha indicates the fund's underperformance, given the expectations established by the fund's beta. **Beta** is a measure of sensitivity to market movements. The beta of the market is 1.00. A beta of 1.10 shows that the fund's excess return is expected to be 10% better than the market's excess return in an up market or 10% worse in a down market. A beta of .85 indicates that the fund's excess return is expected to perform 15% less than the market's excess return during up markets and 15% greater during down markets. **R-squared (R²)** measures the degree of relationship between the performance of the fund and that of the index. The higher the R², the more related the fund's performance is to its index. **Tracking Error** is also known as active risk and is the degree to which the strategy differed from its index or benchmark. The higher the Tracking Error, the more the fund deviated from its index. **Sharpe Ratio** measures risk adjusted performance; it is calculated as the real total return of the fund (total return-risk free rate) divided by the risk of the fund (standard deviation). **Upside/downside capture** shows whether a given fund has outperformed--gained more or lost less than--a broad market benchmark during periods of market strength and weakness, and if so, by how much. An upside capture ratio over 100 indicates a fund has generally outperformed the benchmark during periods of positive returns for the benchmark. A downside capture ratio of less than 100 indicates that a fund has lost less than its benchmark in periods when the benchmark has been in the red. **Batting Average** is a measure of a manager's ability to consistently beat its benchmark over the trailing five-year period.

The selection and monitoring of investments for a plan remains the responsibility of the plan fiduciary, which shall in no instance be MassMutual. Exhibits may include different share classes for comparison purposes. Performance will vary among different share classes of the same fund.

Russell Midcap Growth Index measures the performance of the mid-cap growth segment of the U.S. equity universe. It includes Russell Midcap Index companies with higher price-to-book ratios and higher forecasted growth values. It is market-capitalization weighted. The Index does not reflect any deduction for fees, expenses, or taxes and cannot be purchased directly by investors.

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Disclosure



The awarded performance represents past performance and should not be considered indicative of future results.. For more current information, including month-end performance, please call 1-866-444-2601.

Investors should consider funds' objectives, risks, fees, and expenses carefully before investing. This and other information can be found in the funds' prospectuses or summary prospectuses, which are available from MassMutual by calling 1-866-444-2601. Please read them carefully before investing. The Refinitiv Lipper Fund Awards, granted annually, highlight funds and fund companies that have excelled in delivering consistently strong risk-adjusted performance relative to their peers. Prior to 2018 Lipper Fund Awards were awarded by Thomas Financial and Reuters Group.

The Refinitiv Lipper Fund Awards are based on the Lipper Leader for Consistent Return rating, which is a risk-adjusted performance measure calculated over 36, 60 and 120 months. The fund with the highest Lipper Leader for Consistent Return (Effective Return) value in each eligible classification wins the Refinitiv Lipper Fund Award. For more information, see lipperfundawards.com Although Refinitiv Lipper makes reasonable efforts to ensure the accuracy and reliability of the data contained herein, the accuracy is not guaranteed by Refinitiv Lipper.

The merit of the winners is based on objective, quantitative criteria. The influential and prestigious Refinitiv Lipper Fund Awards are based on our Lipper Leaders Rating for Consistent Return. Individual classifications of three, five, and 10-year periods, as well as fund families with high average scores for the three-year period, are also recognized. The awards are based on Refinitiv Lipper's proven proprietary methodology, which can be viewed [here](#).

¹ The Award for Best Mixed Assets Small Fund Group, awarded to MassMutual RetireSMART target date fund series, ranking #1 out of 37 eligible contenders, includes companies with under \$43 billion or less under management as of 11/30/12. MassMutual Select Overseas Fund (Class S: MOSSX) ranked #1 Lipper's International Large-Cap Core Funds category for the 5-year period. All awards are based on performance as of November 30, 2012.

² Lipper Mixed Assets Small Fund Group award, in which fund groups must have at least three mixed-asset funds, MassMutual Funds ranked #1 out of 37 eligible companies. To qualify for the Overall Small Fund Group award, fund groups must have at least three mixed-asset funds, three equity funds and three fixed-income funds. MassMutual Funds ranked #1 out of 26 eligible companies. Small Fund Groups are defined as having less than \$50.7 billion in assets under management. MassMutual Select Overseas Fund (Class Z: MOSZX) ranked #1 out of 42 qualified funds, which comprised 135 share classes in Lipper's International Large-Cap Core Funds category. All awards are based on performance as of November 30, 2013.

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⁴ 2017 Barron's: <https://www.barrons.com/articles/the-top-performing-sustainable-funds-1507350787>

⁵ 2020 Barron's: <https://www.barrons.com/articles/barrons-100-top-sustainable-funds-51611309600>

⁶ Refinitiv Lipper has recognized MassMutual Select Overseas Fund as a top-performing fund out of 20 funds over three-years (Class I: MOSZX), 18 funds over five-years (Class I: MOSZX), and 15 funds over 10-years (Class R5: MOSSX) for the period ended 11/30/2019.

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Risk/Return Statistics: Standard Deviation is a statistical measurement, which for a mutual fund depicts how widely the returns varied over a certain period of time. When a fund has a high standard deviation, performance is wide, implying greater volatility. **Information Ratio** measures the performance of an investment compared to a benchmark index, after adjusting for its additional risk. **Alpha** is a measure of the difference between a fund's actual returns and its expected performance, given its level of risk as measured by beta. A positive alpha figure indicates the fund has performed better than its beta would predict. In contrast, a negative alpha indicates the fund's underperformance, given the expectations established by the fund's beta. **Beta** is a measure of sensitivity to market movements. The beta of the market is 1.00. A beta of 1.10 shows that the fund's excess return is expected to be 10% better than the market's excess return in an up market or 10% worse in a down market. A beta of .85 indicates that the fund's excess return is expected to perform 15% less than the market's excess return during up markets and 15% greater during down markets. **R-squared (R²)** measures the degree of relationship between the performance of the fund and that of the index. The higher the R², the more related the fund's performance is to its index. **Tracking Error** is also known as active risk and is the degree to which the strategy differed from its index or benchmark. The higher the Tracking Error, the more the fund deviated from its index. **Sharpe Ratio** measures risk adjusted performance; it is calculated as the real total return of the fund (total return-risk free rate) divided by the risk of the fund (standard deviation). **Upside/downside capture** shows whether a given fund has outperformed—gained more or lost less than—a broad market benchmark during periods of market strength and weakness, and if so, by how much. An upside capture ratio over 100 indicates a fund has generally outperformed the benchmark during periods of positive returns for the benchmark. A downside capture ratio of less than 100 indicates that a fund has lost less than its benchmark in periods when the benchmark has been in the red. **Batting Average** is a measure of a manager's ability to consistently beat its benchmark over the trailing five-year period.

Portfolio Characteristics: Market Cap is the value of a company, calculated by multiplying the total number of shares by the present share price. In addition to the size of a company (Large, Mid, and Small), there are 3 general styles of an investment (Value, Core, and Growth). **Price-to-earnings** is the measure of the share price relative to the annual net income earned by the firm per share. **Price-to-book** compares a firm's market capitalization to its book value. **Historical 3-Year EPS Growth** is a measure of the fund's holdings weighted average earnings per share (EPS) rate over the last three years. **Turnover** is a measure of how quickly securities in a fund are either bought or sold by the fund's managers, over a given period of time. The selection and monitoring of investments for a plan remains the responsibility of the plan fiduciary, which shall in no instance be MassMutual. Exhibits may include different share classes for comparison purposes. Performance will vary among different share classes of the same fund.

Russell 2000 Growth Index measures the performance of the small-cap growth segment of the U.S. equity universe. It includes Russell 2000 Index companies with higher price-to-book ratios and higher forecasted growth values. It is market-capitalization weighted. The Index does not reflect any deduction for fees, expenses, or taxes and cannot be purchased directly by investors.

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