

# BRINGING TRANSPARENCY TO ROBO INVESTING

EDITION 12

## *The Robo Report*<sup>TM</sup> Second Quarter 2019



**W**e are proud to publish the 12th edition of *The Robo Report*<sup>TM</sup> including *The Robo Ranking*<sup>TM</sup> covering the second quarter of 2019. This report is a continuation of an ongoing study that monitors the most well-known robo advisors. We strive to provide a reliable resource for both investors and professionals interested in the digital advice industry.

### *Highlights:*

- *3rd Edition of The Robo Ranking*<sup>TM</sup> highlights Fidelity Go and Vanguard as Best Overall Robos. (Robo Ranking pg. 4)
- *Wealthfront and Personal Capital stand out in ranking for Best Robo for Digital Financial Planning.* (Robo Ranking pg. 6)
- *Betterment and SoFi's comprehensive platforms and low minimums win awards for Best Robo for First-Time Investors.* (Robo Ranking pg. 7)
- *Cash accounts are spreading across independent digital advisors.* (Robo News pg. 9)
- *Subscription pricing introduced at Schwab is gaining traction.* (Robo News pg. 10)
- *Fidelity Go and SigFig holding their place as long-term outperformers.* (Market Commentary pg. 12)
- *SRI Portfolios showing positive signs of strong performance.* (Market Commentary pg. 12)



## *The Executive Summary*

2019 has been a year of continued evolution in the digital advice industry. This edition of *The Robo Report*™ also contains *The Robo Ranking*™, the most comprehensive analysis of digital advice products, containing both qualitative factors, such as access to advisors and financial planning features, as well as the performance reporting of our portfolios held at each one of these products. Below are highlights of our most comprehensive report to date. Additionally, we will be releasing three articles based on our research throughout the third quarter. Topics of these research reports are the tax efficiency of our portfolios, an in-depth look at our socially responsible investing (SRI) portfolios, and a comprehensive analysis of the growth of the industry. We look forward to sharing these with our subscribers over the coming weeks.

### *The Robo Ranking*™

Fidelity, Vanguard, and SigFig scored the top three spots in our semi-annual *Robo Ranking*™. Fueled by strong performance, these three providers have quality platforms that can help customers with financial planning and provide access to live advisors at some service level. Wealthfront and Personal Capital continue to lead the group for digital financial planning tools. SoFi, new to our ranking this edition, placed second to Betterment for Best for First-Time Investors with their free-to-use service. Both platforms are robust, have no minimums, and have an ever-increasing breadth of financial products. Read more details about these providers and others in the *Robo Ranking*™ section of this report.

### *Cash — The New Battlefront*

In the first half of 2019, we saw Wealthfront's market-leading APY on their cash account create a strong inflow of assets. A little more than two months after Wealthfront's FDIC-insured cash account went live, they announced it had already

attracted north of \$1 billion in assets. Although it appears Betterment's cash product, which was live during the first half of the year, did not have as much success, Betterment was hard at work modifying their offering. Announced in late July, Betterment's cash product now carries FDIC insurance and has a more competitive rate than Wealthfront's. In addition, Betterment will launch a spending account with a debit card later this year. Wealthfront has also expressed ambitions to provide a product that can help users with day-to-day cash flows. Adding to recent cash vehicle announcements, Personal Capital also launched a savings account offering at the end of the second quarter.

### *Subscription Pricing Off to a Promising Start*

After announcing subscription pricing for their hybrid model in the first quarter, Schwab Intelligent Portfolios Premium has reported some successful first signs for the new pricing model. The hybrid platform attracted \$1 billion in the second quarter, with 37% of those clients new-to-firm. After announcing Merrill Guided Investing with an advisor earlier in the quarter, a hybrid robo product, Merrill Lynch recently commented that they were also considering a switch to subscription pricing.

### *SRI Shows Early Signs of Outperformance*

The leaderboards for YTD and 1-year trailing performance both show promising signs for SRI portfolios. Morgan Stanley SRI and Wealthsimple SRI both won categories over these shorter time frames. A more in-depth research article on SRI portfolios will be published by Backend Benchmarking later this month.

# The Robo Ranking™

## Bringing Transparency to Robo Investing

### The Executive Summary

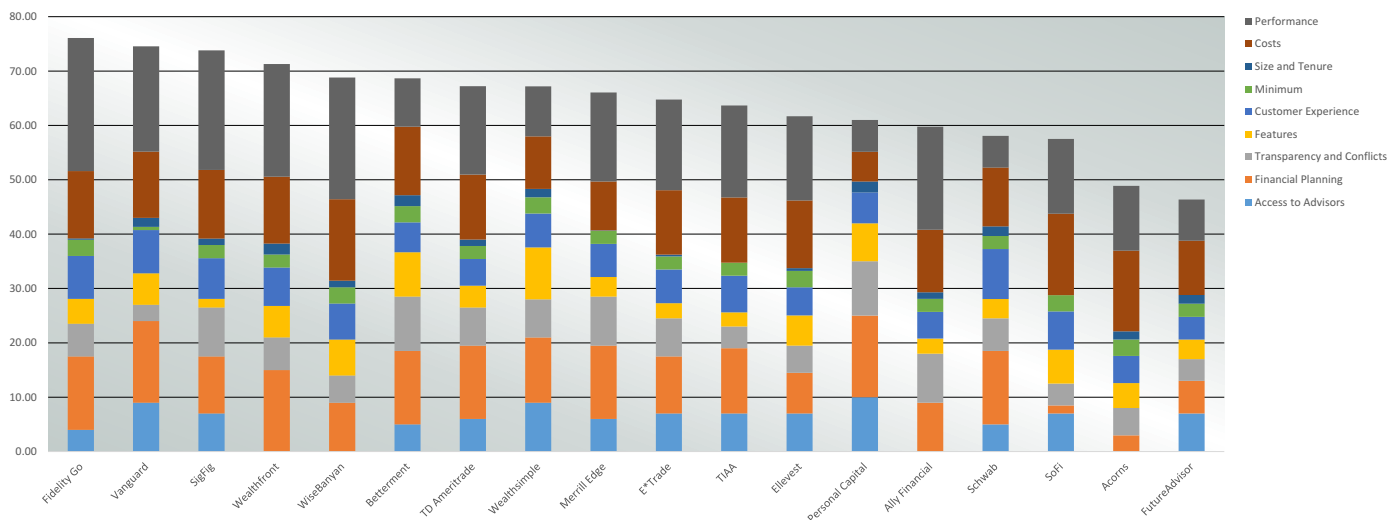
*The Robo Ranking™* goes well beyond performance and grades the robos across more than 45 specific metrics. We scored each robo on various high-level categories, such as features, financial planning, customer experience, access to live advisors, transparency and conflicts of interest, size and tenure, account minimums, costs, and performance. Each metric where we grade the robos is specific and unambiguous.

We believe *The Robo Ranking™* is a powerful tool to help those seeking a digital advice product find the best providers. Although we rank each robo with an overall score, we also acknowledge the differences in individual investors and their situations. To aid different types of investors in finding a product that is right

for them, we created sub-rankings to help investors understand areas where different products excel. Once an investor has identified their needs, the sub-rankings can help them select a provider that stands out in the areas that are most important to them.

Performance is partly based on Backend Benchmarking's innovative method to compare globally diversified portfolios called Normalized Benchmarking. A methodology of Normalized Benchmarking can be found on our [website](#). The details of how we created the scores and ranking can be found on our [website](#) and at the back of this report. Please refer to our methodology section to review any changes to our scoring methods since our last edition.

### Robo Ranking



## Robo Ranking

Robo Name	Access to Advisors	Financial Planning	Transparency and Conflicts	Features	Customer Experience	Minimum	Size and Tenure	Costs	Performance	Total
Fidelity Go	4.00	13.50	6.00	4.60	7.87	3.00	0.25	12.39	24.46	76.07
Vanguard	9.00	15.00	3.00	5.80	7.93	0.60	1.67	12.18	19.35	74.53
SigFig	7.00	10.50	9.00	1.60	7.48	2.40	1.20	12.63	21.98	73.79
Wealthfront	0.00	15.00	6.00	5.80	7.06	2.40	2.00	12.29	20.75	71.30
WiseBanyan	0.00	9.00	5.00	6.60	6.62	3.00	1.20	15.00	22.38	68.80
Betterment	5.00	13.50	10.00	8.16	5.49	3.00	2.00	12.60	8.92	68.67
TD Ameritrade	6.00	13.50	7.00	4.00	4.92	2.40	1.17	11.95	16.26	67.20
Wealthsimple	9.00	12.00	7.00	9.54	6.24	3.00	1.52	9.68	9.19	67.17
Merrill Edge	6.00	13.50	9.00	3.61	6.10	2.40	0.08	8.97	16.38	66.04
E*Trade	7.00	10.50	7.00	2.80	6.19	2.40	0.33	11.87	16.66	64.75
TIAA	7.00	12.00	4.00	2.60	6.74	2.40	0.00	12.00	16.93	63.67
Ellevest	7.00	7.50	5.00	5.55	5.17	3.00	0.53	12.42	15.50	61.68
Personal Capital	10.00	15.00	10.00	7.00	5.67	0.00	2.00	5.48	5.85	61.00
Ally Financial	0.00	9.00	9.00	2.80	4.89	2.40	1.20	11.51	18.97	59.77
Schwab	5.00	13.50	6.00	3.56	9.20	2.40	1.75	10.85	5.82	58.08
SoFi	7.00	1.50	4.00	6.25	7.02	3.00	0.00	15.00	13.75	57.52
Acorns	0.00	3.00	5.00	4.60	5.00	3.00	1.52	14.85	11.91	48.88
FutureAdvisor	7.00	6.00	4.00	3.60	4.19	2.40	1.60	9.99	7.57	46.35
MAX	10.00	15.00	10.00	10.00	10.00	3.00	2.00	15.00	25.00	100.00

Produced by Backend Benchmarking for BackendB.com

## Robo Ranking

### ■ Best Overall Robo

**Winner: Fidelity Go**

**Runner-Up: Vanguard**

**Honorable Mention: SigFig**

Fidelity Go continues to perform well in our *Robo Ranking™*, earning the title of Best Overall Robo for the second consecutive ranking. With a portfolio constructed using proprietary Fidelity Flex mutual funds, our Fidelity Go account has steadily outperformed in terms of their performance above the Normalized Benchmark and Sharpe ratio. Portfolio performance, low costs, and a strong digital planning platform have propelled them to our top spot. While the 0.35% management fee for their digital-only service is slightly higher than many of

their competitors, the underlying Fidelity Flex mutual funds carry 0.00% expense ratios, making the all-in cost at Fidelity in line with low-cost alternatives. For investors looking for account-specific advice and financial planning, Fidelity offers a hybrid robo solution, combining their Fidelity Go tools with live advisors in their service called Personalized Planning and Advice. This service is priced at 0.50%, and, similar to their base Fidelity Go offering, the 0.50% fee for Personalized Planning and Advice is an all-in cost. For those comfortable working exclusively with online financial planning tools, they will find that Fidelity's can independently model different goals and help users determine variables, such as retirement spending and college tuition costs. Although they lack some features like automated tax-loss harvesting, Fidelity

has an all-around quality platform, low all-in costs, and a strong performing portfolio.

Vanguard is the runner-up for Best Overall Robo in this edition of *The Robo Ranking*<sup>™</sup>. Strong performance, low fees, and an approach centered around live advisors continue to make Vanguard Personal Advisor Services a compelling choice for investors. While Vanguard lacks the high-tech, streamlined online experience of some of its digital advice competitors, their human-powered advice teams can provide customized quality service at a considerably low price. Custom financial plans can incorporate complex financial situations, multiple retirement income streams, and the incorporation of accounts held outside of Vanguard. Although minimums are higher, with a minimum investment of \$50,000, costs are relatively low given the value provided. With a management fee of 0.30%, Vanguard undercuts most competitors when comparing service models that provide access to live advisors. Vanguard's simple portfolio, holding just five ETFs in our account, is an expression of their low-cost indexing approach, which has delivered consistent performance and helped them perform well in this ranking. Vanguard is a great choice for those looking for an advisor-centric experience while keeping costs to a minimum.

SigFig was awarded honorable mention for Best Overall Robo in this version of *The Robo Ranking*<sup>™</sup>. SigFig stands out as one of the lowest cost providers, especially when considering they provide live advice to any client with over \$10,000 in managed assets. To further entice new clients, the first \$10,000 in assets is managed at no cost, making them a great entry point to professionally managed money for individuals unable to meet traditional advisor minimums. Their retirement planner strikes a balance between being simple to use while also offering more advanced modeling options for those who want to adjust underlying assumptions. While the retirement planner is a quality tool, they do not currently offer online planning tools specific to other goals, like saving for a child's education. Another standout feature available to SigFig clients is the ability to aggregate outside accounts and receive some automated advice if potential problem areas are identified. SigFig is a good all-around platform backed by a portfolio that has consistently performed near the top of the field over the previous two-year period.

## ■ *Best Robo for Performance at a Low Cost*

**Winner: Fidelity Go**

**Runner-Up: WiseBanyan**

We awarded the Best Robo for Performance at a Low Cost to the top-performing robos over the prior two-year period: Fidelity Go and WiseBanyan. Fidelity Go is unique among robo advisors in that its 0.35% management fee is an all-in cost; all funds held by Fidelity Go come with zero internal operating expenses. Therefore, while robos like Vanguard and Wealthfront have lower management fees, Fidelity Go's cost is right in-line with other leading providers when including the average weighted expense ratio of the funds held in our portfolios.

WiseBanyan placed second for Best Robo for Performance at a Low Cost. In addition to having the second best performance, there is no management fee for investors in their most basic service plan for taxable accounts, regardless of account size. In addition, WiseBanyan offers a la carte pricing for additional services like tax-loss harvesting. While taxable accounts carry no management fee, investors are required to purchase the tax-efficiency package in their IRA accounts at WiseBanyan. Even including this cost, WiseBanyan's fee of 0.24% for its IRAs is on par with other inexpensive products. While Schwab also offers free management of taxable accounts at its lowest service level, WiseBanyan does not mandate a high cash balance in their models, which could hinder long-term performance.

## ■ *Best Robo for Complex Financial Planning Needs*

**Winner: Vanguard**

**Runner-Up: Personal Capital**

**Honorable Mentions: Ellevest & Wealthsimple**

Digital-only platforms currently lack the high degree of sophistication and customization needed for complex financial planning. Therefore, investors looking for more personalized advice and tailored portfolio allocations still need to work with live advisors. In order to justify the level of customization



being offered, such services typically have higher investment minimums than digital-only products.

Due to its position as one of the largest asset managers in the world, Vanguard can build comprehensive plans with live advice for all of its robo clients for a low fee of 0.30%, a sizable discount compared to similar offerings that offer live advice. At Vanguard, all planning centers around the direct client-advisor relationship. Working with an advisor, users can plan for multiple long-term investment goals and receive a complete illustration of their financial life by building a personal financial plan encompassing all of an investor's various accounts. While their digital planning tools are not as robust as those offered by Personal Capital, their individualized approach, available to all clients, stands out. For those with complex planning needs, Vanguard is a quality option due to their emphasis on the human experience and their low costs.

Personal Capital also excels in this category due to their best-of-class digital planning tools. Their free digital planning tools are flexible and can handle a broad set of income and spending goals. For when the digital planning tool falls short, all Personal Capital investors have access to live advisors to handle complex planning needs. Through their tiered service model, the level of portfolio customization and advice services offered increases with the amount of assets under management. For those investing more than \$1,000,000 with Personal Capital in their Private Client service, they offer custom portfolios that include individual stocks and bonds that are more often offered at a traditional wealth manager. The biggest detriment to Personal Capital is its high fee, which starts at 0.89%. Fees aside, Personal Capital is one of the few advisors in our ranking with a perfect score in financial planning.

Both Wealthsimple and Ellevest earned honorable mentions for complex financial planning. Investors in their highest service levels, Wealthsimple Generation and Ellevest Private Wealth, receive individualized planning and investment services comparable to those offered by Personal Capital's Private Client offering. Ellevest, which specifically caters to women investors, also has the unique feature of offering career coaching to help their clients navigate salary negotiations and other career challenges. Wealthsimple, on the other hand, provides live advisors to all of their clients, regardless of service level.

Both platforms also have better accessibility, as Vanguard and Personal Capital require \$50,000 and \$100,000 minimum investments, respectively.

## ■ *Best Robo for Digital Financial Planning*

**Winner: Wealthfront**

**Runner-Up: Personal Capital**

**Honorable Mention: Betterment**

The best digital planning experiences continue to be offered by independent robo advisors. Wealthfront and Personal Capital stand above their peers by offering robust planning tools to clients and prospective clients alike. Both of these tools can handle complex, multi-goal plans that show users the interaction of all of their goals in a single unified plan. These free digital planners also leverage automated account aggregation and provide users with a comprehensive view of their financial picture, regardless of where their assets are held.

Wealthfront provides tools to model six different planning scenarios: retirement, saving for college, buying a home, large one-time expenses, income windfalls, and taking extended time off work to travel. Whenever adding a new goal, Wealthfront has built a robust tool that walks users through the variables that are included in their analysis, projecting how the new goal will impact each of their other investing and spending goals. For example, their extended travel goal considers your current income, net worth, and estimated travel costs to help users determine the potential impact on their holistic financial plan. Once set up, all goals are plotted along the net worth timeline for easy visualization.

Like Wealthfront, Personal Capital's planning tool can model a broad set of goals in a unified plan. They are able to factor seven different types of income events and ten different spending goals into their analysis. While Wealthfront guides users through the planning process, providing recommendations along the way for each goal, Personal Capital's tools are primarily driven by user input. For example, Personal Capital's home purchase tool takes in the down payment and age at which the purchase will occur, but does not adjust spending to account for a change in the cost of living due to mortgage payments, property taxes, etc. In

contrast, Wealthfront's tool considers a user's current housing costs, income, where they want to purchase, the length of the mortgage, and other variables to give users a range of home values they can afford. Once selected, Wealthfront then shows how homeownership will affect a user's net worth over time by plotting it in its unified plan. Therefore, while Personal Capital offers a wider breadth of planning options, we gave the edge to Wealthfront as the Best Robo for Digital Financial Planning due to their more dynamic, data-driven planning tools.

While their digital planning tools may not be as powerful, Betterment also deserves an honorable mention in this category. With Betterment, investors can build multiple financial goals with different risk tolerances that factor in assets held in outside accounts. Betterment then provides recommendations to help investors achieve each independent goal. In our opinion, Betterment lags behind Wealthfront and Personal Capital because: One, there is no way to view a unified plan taking into account the interaction between each independent goal; and two, Betterment's tools are only available to paying clients.

### ■ *Best Robo for First-Time Investors*

**Winner: Betterment**

**Runner-Up: SoFi**

Betterment wins the award for Best Robo for First-Time Investors. With no investment minimum and a 0.25% annual fee, their digital-only product is a strong choice for first-time investors. Betterment's single-goal financial planning tools make it easy for first-time investors to plan for future financial success. In addition, Betterment offers various financial planning packages that provide personal consultations with a financial planner on an as-needed basis, so users only have to pay for personalized professional help as they see fit. It is important to recognize that, as a client's assets grow, so do their financial planning and management needs. Betterment's tiered service model is very attractive since an investor can always upgrade to the premium service levels as their needs grow, without having to change advisors.

While SoFi does not have the best score in our ranking, they are certainly another attractive option for first-time investors. With no account minimum, no

management fees, and free access to career counseling and live financial advisors, SoFi Invest is compelling for a cost-conscious, first-time investor, regardless of account size. With SoFi's primary business built around consumer lending, SoFi sees investment management as an important financial service offering to strengthen its client relationships. Additionally, it serves as a great way to cross-sell current clients. As many SoFi customers start their relationship by consolidating student loans, a logical next step is to begin saving and investing once debt is under control. In addition to lending and investment services, SoFi also offers a free checking and high-interest savings account through SoFi Money and free budget tracking and planning with SoFi Relay, as well as various insurance offerings. With its wide breadth of financial services offered, SoFi is positioning itself as a comprehensive provider for all of its users' financial needs.

### ■ *Best Robo from an Incumbent Financial Institution*

**Winner: Fidelity Go**

**Runner-Up: Vanguard**

Fidelity Go and Vanguard are awarded the Best Robos from an Incumbent Financial Institution. While our analysis indicates that independent robo advice providers offer the most robust online platforms, Fidelity and Vanguard offer a high-quality service for those who would rather entrust their money to more established institutions.

Fidelity Go stands out for one of the more robust digital planning experiences from an incumbent financial institution. With consistent investment performance and its all-in annual fee of 0.35%, it is our top pick among established financial institutions. If enrolled in their Personalized Planning and Advice service with 0.50% all-in management fee, account holders can work with a live advisor to address their investment and planning needs that are not covered by Fidelity Go's digital tools. For its strong performance, transparent all-in fee structure, and strong digital planning tools when compared to other incumbents, Fidelity Go is the Best Robo from an Incumbent Financial Institution.

Even though Vanguard offers less advanced digital planning tools, they make up for it by focusing

their offering around access to live advisors for all their robo clients. For those with more than \$500K in assets, Vanguard even offers dedicated advisors to assist in financial planning. Despite

the shortcomings of their web platform, unlimited access to live advisors for 0.30% annually makes Vanguard the runner-up Best Robo from an Incumbent Financial Institution.

## Robo Ranking Facts

	2-Year Annualized Return	2-Year Return Above/Below Normalized Benchmark	2-Year Sharpe Ratio	Account Minimum	Advisory Fee	Average Weighted Expense Ratio
Acorns <sup>1</sup>	6.00%	-0.78%	0.54	No minimum	\$1/month for Acorns Core (free for college students); \$2/month for Core + Acorns Later, \$3/month for Acorns Core + Acorns Later + Acorns Spend. For balances above \$1 million, \$100/month per \$1 million in AUM	0.09%
Ally Financial <sup>9</sup>	6.33%	-0.25%	0.61	\$100	0.30% annually	0.07%
Betterment <sup>27</sup>	5.81%	-1.09%	0.51	Digital: No minimum; Premium: \$100,000	Digital: 0.25%, 0.15% above \$2M; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above \$2M	0.08%
E*Trade (ETF) <sup>21</sup>	6.27%	-0.37%	0.58	\$500	0.30% annually	0.10%
Ellevest <sup>15</sup>	5.97%	-0.65%	0.59	Digital: No minimum; Premium: \$50,000	Digital: 0.25%; Premium: 0.50% (access to live advisors and executive coaches)	0.07%
Fidelity Go <sup>33</sup>	7.26%	0.57%	0.72	Digital Only: No Minimum Personalized Planning & Advice: \$25,000	Digital only: 0.35% annually Personalized Planning & Advice: 0.50%	0.00%
FutureAdvisor <sup>3</sup>	5.14%	-1.36%	0.50	\$5,000	0.50% annually	0.08%
Merrill Edge <sup>31</sup>	6.02%	-0.68%	0.61	Guided Investing: \$5,000; Guided Investing with an Advisor: \$20,000	Guided Investing: 0.45% annually (digital only); Guided Investing with an Advisor: 0.85% annually	0.07%
Personal Capital <sup>4</sup>	5.61%	-1.75%	0.46	\$100,000	0.89% annually for the first \$1 million; lower at different tiers over \$1 million	0.11%
Schwab <sup>5</sup>	5.18%	-1.78%	0.46	Intelligent Portfolios: \$5,000; Intelligent Portfolios: Premium: \$25,000	Intelligent Portfolio: No fee (digital only); Intelligent Portfolio Premium: \$300 initial planning fee, \$30/month subscription	0.21%
SigFig <sup>6</sup>	6.87%	0.13%	0.64	\$2,000	No fee for the first \$10k; 0.25% annually for balance over \$10k	0.07%
SoFi <sup>17</sup>	5.84%	-0.48%	0.54	\$1	No management fee	0.05%
TD Ameritrade <sup>10</sup>	6.71%	-0.34%	0.57	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.05%
TIAA <sup>7</sup>	6.27%	-0.42%	0.59	\$5,000	0.30% annually	0.07%
Vanguard <sup>4,A</sup>	6.46%	-0.18%	0.61	\$50,000	0.30% annually for the first \$5 million; lower at different tiers over \$5 million	0.07%
Wealthfront <sup>22,B</sup>	6.92%	0.02%	0.62	\$500	0.25% annually	0.11%
Wealthsimple <sup>11</sup>	5.68%	-0.96%	0.50	Basic: No minimum; Black: \$100,000	Basic: 0.50% fee on accounts less than \$100k; Black: 0.40% on accounts greater than \$100k	0.11%
WiseBanyan <sup>8</sup>	7.00%	0.15%	0.65	No minimum	No fee for basic package; add-on packages, such as tax-loss harvesting, come at additional cost	0.09%

*Produced by Backend Benchmarking for BackendB.com*





## Robo News

- *Betterment launches savings account with a market-leading rate and plans to offer debit card soon.*
- *JP Morgan Chase launches You Invest Portfolios, entering the digital advice market.*
- *SoFi continues to aggressively expand product offerings.*
- *Subscription pricing takes off at Schwab, Merrill Edge may be next to follow.*

This has been another busy quarter for digital advice, with a mix of new products, technological advancements, and funding announcements.

### *Betterment announces an industry-leading rate of 2.69% on a newly launched savings account.*

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*Although not live yet, Betterment also announced plans to launch a debit card product later this year.*

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This quarter has seen a continued increase in independent digital advisors expanding into banking services. The biggest news on this front is the recent announcement by Betterment. Betterment has reconfigured its cash savings product by launching an FDIC-insured savings account, offering \$1 million in FDIC insurance coverage and a remarkable 2.69% APY interest rate for customers who have an investing account and join the checking account waitlist. Previously, cash savings at Betterment were invested in an ultra-conservative bond portfolio. Although not live yet, Betterment also announced plans to launch a debit card product later this year. This follows news that Personal Capital launched a high-yield cash account in June, which comes with a 2.30% APY (2.35% APY for current Personal Capital clients) and FDIC insurance covering deposits up to \$1.25M. It has also announced Savings Planner, a tool to help users plan annual retirement savings, build an emergency fund, and pay down debt. These new initiatives have helped push their AUM past \$10B, adding \$2B in the first half of 2019 alone. Cash accounts have proven successful at Wealthfront, who announced an excess of \$1B in customer deposits in just over two months after their savings account launch. As of June, Wealthfront's cash account

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*Cash accounts have proven successful at Wealthfront, who announced an excess of \$1B in customer deposits in just over two months after their savings account launch.*

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currently offers what was an industry-high of 2.57% APY and is FDIC-insured through partner banks for up to \$1M. Wealthfront has also expressed ambitions to expand its cash features to automate bill payment, receive direct deposits, and issue debit cards.

Additionally, Betterment continues to improve its Betterment for Advisors platform, announcing that advisors will soon have access to the Dimensional Fund Advisors (DFA) family of funds. Betterment also announced a partnership with Optum Bank, making its technology available to a total of three million of the bank's HSA customers who have over \$9B held in HSA accounts.

### *SoFi continues the aggressive expansion of financial services offered.*

SoFi made headlines this quarter, starting with the introduction of four proprietary ETFs in April and May. The first two ETFs, announced in early April, are broad, index-based funds tracking 500 large-cap and 500 mid-cap U.S.-listed companies. These two ETFs were immediately implemented into their robo portfolios amid questions of whether the trades were in the best interest of the clients due to potential tax consequences. The following two ETFs, which have not been included in the

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*SoFi raised \$500M from private equity firms and a sovereign wealth fund, Qatar Investment Authority, at an estimated \$4.3B valuation.*

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automated investing portfolios thus far, focus on the gig economy and tracking 50 of the largest U.S.-listed companies. SoFi continues to expand its revenue channels, announcing partnerships with two fintech insurance firms to offer homeowners, renters, and auto insurance. Additionally, SoFi now offers its customers no-commission trading. SoFi raised \$500M from private equity firms and a sovereign wealth fund, Qatar Investment Authority, at an estimated \$4.3B valuation.

Wealthsimple also recently closed a round of funding this past quarter, led by German financial services giant Allianz. Wealthsimple raised a total of \$75M (\$100M CAD) seeking to expand into cash management services and ultimately become a primary financial partner for clients. Wealthsimple has offered a no-commission trading platform to Canadian customers since March and expects to launch a similar platform to U.S. customers in the future.

### *Products and Offerings continue to Proliferate*

Perhaps the biggest news this quarter was the launch of JP Morgan Chase's You Invest Portfolios. You Invest originally launched as a self-directed trading platform, but has now released its anticipated managed portfolios offering. JP Morgan Chase joins Wells Fargo, U.S. Bank, Bank of America, among other institutions to have an automated digital advice offering.

Merrill Lynch joined a long-standing trend of implementing service levels with access to live advisors, introducing "Merrill Guided Investing with an advisor." While this service launched using a traditional asset based fee of 0.85%, Merrill is already considering switching to a subscription pricing model following Charles Schwab's lead. Schwab announced, a promising start to its subscription pricing model, attracting \$1 billion in assets in the first quarter.

### *Contradicting outlooks emerge from Vanguard and Fidelity on white label digital advice products for advisors.*

Vanguard indicated that they are in the beginning stages of building out capabilities to provide advisors with the technology used in their Personal Advisor Services. On the other hand, TD Ameritrade will not be providing a white label digital investing platform for financial advisors. TD made the decision based on a lack of demand and advisor adoption, doubting the robo's ability to survive as a stand-alone product, and instead is considering it part of the technology stack that provides automation of services.

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*TD made the decision based on a lack of demand and advisor adoption, doubting the robo's ability to survive as a stand-alone product, and instead is considering it part of the technology stack that provides automation of services.*

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In other white label digital advice provider news, JemStep announced the launch of the Jemstep Advisor Pro App on Salesforce's enterprise cloud marketplace, AppExchange. The app is available to all financial advisory firms using Jemstep Advisor Pro to help wealth management firms provide investors with personalized service and 24/7 access.

### *Europe and the U.S. both see a closure of a digital advice product.*

Two robos have closed operations entirely. In May, Investec announced the closure of their digital advice product, Click and Invest, after citing poor attraction for its product. Qplum, an actively managed robo in the U.S., also announced closure in May.



## Market Commentary

- *SRI portfolios show early signs of outperformance.*
- *Fidelity Go, SigFig, and WiseBanyan post strong performance.*
- *Schwab holds on to the 3-year top fixed income performance.*
- *Betterment's large allocations internationally help their fixed income while creating a drag on equity returns.*

## Taxable Top Performers

### Year-to-Date Top Performers

	Best	2nd	3rd
Total Portfolio	TIAA Active	Prudential	WiseBanyan
Equity	Wealthsimple SRI	TIAA Active	Morgan Stanley SRI
Fixed Income	E*Trade	Wells Fargo	WiseBanyan

### 1-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Wealthsimple SRI	WiseBanyan	Morgan Stanley SRI
Equity	Wealthsimple SRI	Morgan Stanley SRI	Fidelity Go
Fixed Income	E*Trade	Ally Financial	Wells Fargo

### 2-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Fidelity Go	WiseBanyan	SigFig
Equity	Fidelity Go	SigFig	WiseBanyan
Fixed Income	Ally Financial	Wealthfront	Betterment

### 3-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	SigFig	WiseBanyan	E*Trade
Equity	SigFig	Vanguard	WiseBanyan
Fixed Income	Schwab	WiseBanyan	E*Trade

\*Net of Fees Returns as of: 6/30/2019

\*\*Total Portfolio winners are based on the portfolio's return above/below the Normalized Benchmark

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## *Markets Return to Growth in 2019*

After faltering at the end of last year, U.S. and global markets have returned to a period of strong growth in 2019, with the S&P 500 returning 4.30% in the second quarter. While this was considerably less than the first quarter's return of 13.65%, due largely in part to markets rebounding sharply following a December selloff, the combined return marks the best first half-year performance for domestic markets since 1997. Many trends from the first quarter continued into the second

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*Growth has experienced a multi-year dominance, outperforming value YTD, as well as over the trailing one-, two-, and three-year periods.*

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quarter, as mid-cap continued its outperformance and growth once again outperformed value. Growth has experienced a multi-year dominance, outperforming value YTD, as well as over the trailing one-, two-, and three-year periods.

Broadly speaking, international equities slightly underperformed their U.S. counterparts during the second quarter, though returns were predominantly positive across both developed and emerging markets. When looking at the trailing one-, two-, and three-year periods, domestic markets have outperformed international by larger margins.

With a more dovish Federal Reserve hinting at looming interest rate cuts, fixed income markets posted relatively robust returns for the quarter. Declining yields across all maturities played a major role in the positive quarterly performance. Longer-dated bonds continued to lead their shorter-maturity counterparts, with investment-grade issues largely faring better than high-yield offerings. Municipal bonds underperformed their corporate equivalents, though minimal dispersion down the credit scale existed when compared to corporates.

### *SRI Portfolios Show Recent Outperformance*

Two socially responsible investing (SRI) portfolios have appeared in our leaderboard for both YTD and one-year trailing returns. This trend of SRI portfolios outperforming comparable non-SRI portfolios was seen in a majority of the equity portions of our SRI portfolios. The Morgan Stanley SRI and Wealthsimple SRI equity portfolios

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*Equally impressive results were seen over a one-year period, where Morgan Stanley and Wealthsimple's SRI equity portfolios returned 2.76% and 4.76% above their corresponding non-SRI portfolios...*

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showed strong growth, outperforming their non-SRI counterparts by over 2% YTD. Equally impressive results were seen over a one-year period, where Morgan Stanley and Wealthsimple's SRI equity portfolios returned 2.76% and 4.76% above their corresponding non-SRI portfolios, respectively, earning them the first and second place in equity-only performance and first and third place respectively for total return above/below the Normalized Benchmark for the one-year period. The TIAA SRI equity portfolio also performed well, returning 1.60% above its comparable non-SRI portfolio over the prior year. Wealthsimple SRI's fixed income holdings in a taxable muni bond fund and a mortgage-backed security helped their total portfolio achieve the best one-year trailing total return above/below the benchmark performance.

### *Fidelity Go, SigFig, and WiseBanyan Portfolios Lead over Longer Periods*

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*Looking longer-term, Fidelity Go and SigFig continue to show strong performance over two- and three-year time periods...*

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Looking longer-term, Fidelity Go and SigFig continue to show strong performance over two- and three-year time periods when looking at the total return above/below the Normalized Benchmark. Our Fidelity Go accounts do not yet have a three-year return, but have managed to lead in both total return above the Normalized Benchmark and equity performance over a two-year period, and placed third for equity performance in the one-year trailing time frame. Fidelity Go's lower-than-average international allocation has also helped their equities outperform.

SigFig led the three-year returns, for both total returns above the Normalized Benchmark and

equity-only performance, as well as placing second in the equity-only two-year return category. Although their equity portfolio has a higher-than-average international allocation, they have a near equal weight between developed and emerging markets within international holdings. This is contrary to most portfolios we have observed, which hold far higher allocations in developed markets than emerging markets. In the two- and three-year trailing time frame, emerging markets have outperformed developed markets, helping bolster SigFig's performance. SigFig's small allocation to emerging markets debt has also contributed to overall return.

WiseBanyan has also emerged as a consistent leader. They placed in the top three for equity performance in the one-, two-, and three-year periods. Like SigFig and Vanguard, WiseBanyan keeps its equity allocation simple; they use a single domestic equity fund and two international funds. Additionally, they have an allocation to a REIT, which outperformed domestic equities YTD and over the trailing one-year period. WiseBanyan's fixed income portfolio holds a large allocation to an investment-grade corporate bond fund that has helped strengthen their fixed income and total portfolio returns.

### *Equity Value and International Underperforms*

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*The amount of international holdings is one of the largest differences we see between our portfolios.*

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The amount of international holdings is one of the largest differences we see between our portfolios. Those with larger allocations to international holdings have typically performed in the middle or bottom half of the group. Morgan Stanley's Active and Regular portfolios both hold more than half of their equities internationally. YTD, the Morgan Stanley passive portfolio was one of the lowest performers compared to their Normalized Benchmark. Morgan Stanley Active, however, appeared to navigate general international underperformance over the year by using actively managed funds. Our Morgan Stanley Active portfolio was in the top ten for total return above/below the benchmark.

Another area that we see setting portfolios apart is whether they tilt toward value holdings. Conventional wisdom has slightly favored value for a long time, but over the past three years growth has led.

Portfolios exhibiting a tilt toward value have lagged behind their peers during this period.

For example, FutureAdvisor has a large-cap value fund combined with a neutral weight fund in its domestic equity holdings, leading them to perform in the bottom half of portfolios when measured against its Normalized Benchmark for the one-, two-, and three-year periods.

Schwab's portfolio holds 45% of equity internationally, which has held them back. Additionally, their portfolio holds a value tilt, which has contributed to their underperformance. Betterment is another portfolio with both larger-than-average international holdings and dedicated value exposure. Last year they made tactical shifts to reduce both the amount of value and international, which was well-timed. YTD, their dedicated mid-cap exposure also helped level out their performance. Despite large international and value holdings, their performance has been around the middle of the pack across the time periods analyzed. Strong fixed income performance has also helped balance out poor performance in international funds.

### *Fixed Income Rewards Risk*

During periods of persistently low rates and high confidence, those portfolios holding international, longer maturity, and corporate issues have been rewarded.

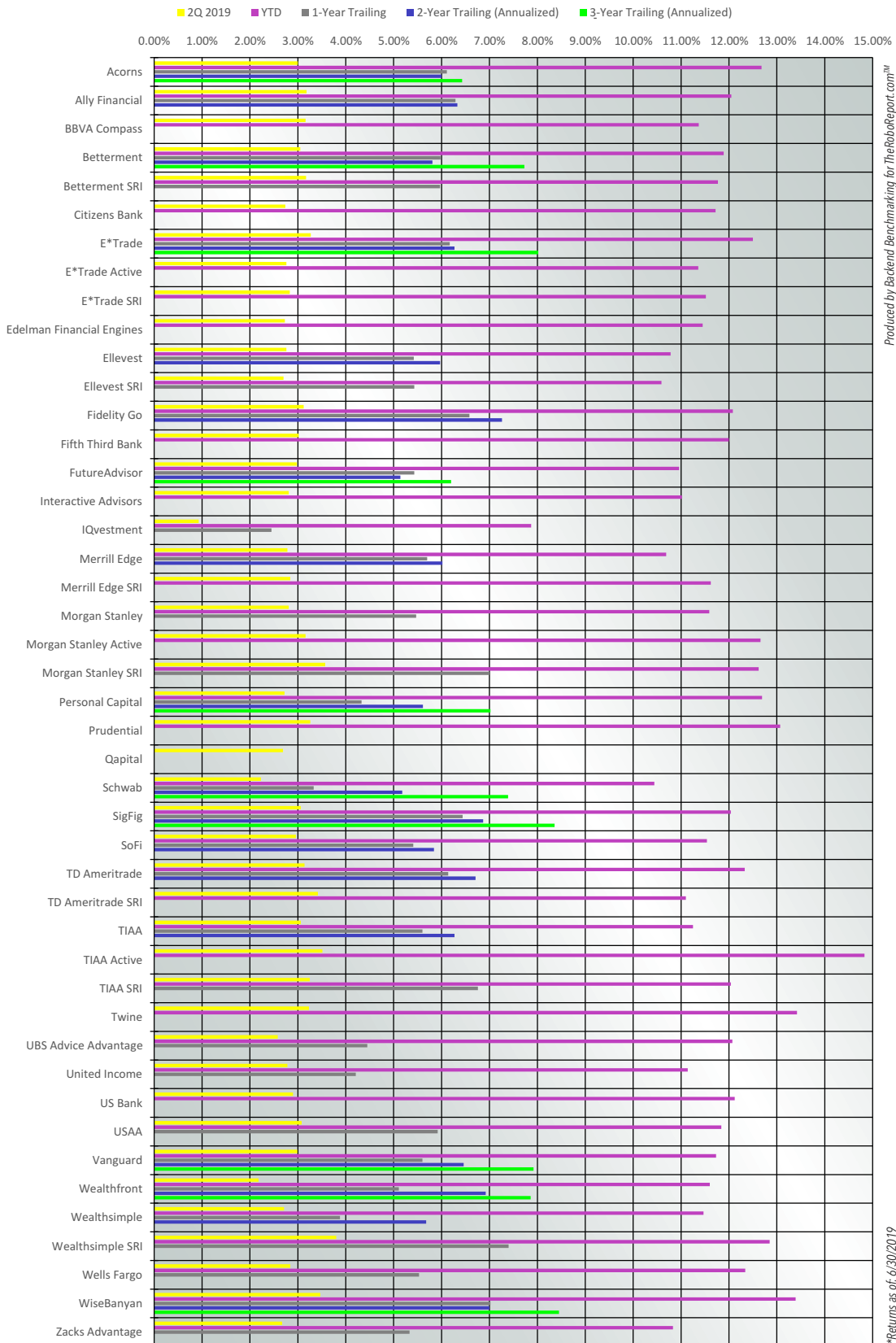
Schwab's fixed income has held onto the top spot for three-year performance by taking a more risk-on approach. Holding high-yield and international debt has helped them over the long run.

Ally Financial won the two-year fixed income category and placed second in the one-year. Their portfolio holds longer-term maturities, a significant international fixed income position, and no dedicated short-term holdings, which led to their outperformance.

Betterment holds nearly half of their fixed income in international holdings, which has helped them perform consistently over the different time periods. Large allocations abroad in their fixed income holdings have helped balance out the downward performance drag caused by large equity international holdings.



## Taxable Account Performance



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\*Returns as of: 6/30/2019

## Charts and Tables

### Funding and AUM Statistics

Robo	Raised to Date (Millions)	Last Funding Amount (Millions)	Last Funding Date	Post-Money Valuation at Last Funding Round (Millions)	AUM (in millions)	Clients	Source of AUM and Clients Figures
Acorns	\$207	\$105	Jan, 2019	\$860	\$1,149	4,500,000 Accounts	Recent ADV & Company Reports
Ally Invest Advisors	N/A	N/A	N/A	Acquired TradeKing for \$294 Million June, 2016	\$176	11,400	Recent ADV
Betterment	\$275	\$70	Jul, 2017	\$800	\$17,600	419,543	Company Representative and Recent ADV
Ellevest	\$78	\$33	Mar, 2019	Unknown	\$283	22,824	Recent ADV
FutureAdvisor	N/A	N/A	N/A	Acquired by BlackRock for \$152 Million August, 2015	\$1,192	12,285	Recent ADV
Personal Capital	\$265	\$50	Feb, 2019	Unknown	\$10,000	20,000	Company Representative
Schwab Intelligent Portfolio Products	N/A	N/A	N/A	N/A	\$41,000	315,000 Accounts (# of clients unavailable)	AUM from Company Representative and # of Accounts from Spring '19 Business Update
SigFig	\$117	\$50	June, 2018	\$471	\$485	11,168	Recent ADV
SoFi Invest	N/A	N/A	N/A	N/A	\$79	19,057	Recent ADV
Swell	\$30	\$30	Feb, 2018	N/A	\$33	14,122	Recent ADV
TD Ameritrade Selective and Essential Portfolios	N/A	N/A	N/A	N/A	\$19,900	Unknown	Company Representative
T Rowe Price ActivePlus Portfolios	N/A	N/A	N/A	N/A	\$355	Unknown	Company Representative
United Income	\$16	\$10	Aug, 2018	\$65	\$722	666	Recent ADV
Vanguard Personal Advisor Services	N/A	N/A	N/A	N/A	\$140,000	Unknown	Company Representative
Wealthfront	\$205	\$75	Jan, 2018	\$500 <sup>△</sup>	\$15,000	221,142	Website & Recent ADV
Wealthsimple	\$267 (CAD)	\$100 (CAD)	May, 2019	Unknown	\$89 (U.S.)	14,869 (U.S.)	Recent ADV
WiseBanyan	N/A	N/A	N/A	Acquired by Axos Financial for undisclosed amount in Oct, 2018	\$179	23,659	Recent ADV

\*all funding and valuation amounts are estimates

\*\*sources: Crunchbase, Pitchbook, News Media

△ This valuation number has been disputed

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## Taxable Returns

	Total									
	2Q 2019	2Q 2019 Return Above/Below Benchmark	YTD	YTD Return Above/Below Benchmark	1-Year Trailing	1-Year Trailing Return Above/Below Benchmark	2-Year Trailing (Annualized)	2-Year Trailing Return Above/Below Benchmark (Annualized)	3-Year Trailing (Annualized)	3-Year Trailing Return Above/Below Benchmark (Annualized)
Acorns <sup>1</sup>	3.00%	-0.22%	12.68%	0.56%	6.11%	-0.10%	6.00%	-0.78%	6.43%	-1.83%
Ally Financial <sup>9</sup>	3.18%	-0.03%	12.05%	0.04%	6.29%	0.07%	6.33%	-0.25%	-	-
BBVA Compass <sup>7</sup>	3.16%	-0.06%	11.37%	-0.75%	-	-	-	-	-	-
Betterment <sup>27</sup>	3.05%	-0.22%	11.89%	-0.78%	5.98%	-0.17%	5.81%	-1.09%	7.73%	-0.81%
Betterment SRI <sup>27</sup>	3.17%	-0.05%	11.77%	-0.35%	5.97%	-0.24%	-	-	-	-
Citizens Bank <sup>7</sup>	2.74%	-0.52%	11.72%	-0.84%	-	-	-	-	-	-
E*Trade (ETF) <sup>21</sup>	3.27%	0.05%	12.50%	0.38%	6.17%	-0.04%	6.27%	-0.37%	8.02%	-0.02%
E*Trade Active <sup>23</sup>	2.76%	-0.47%	11.36%	-0.87%	-	-	-	-	-	-
E*Trade SRI <sup>23</sup>	2.83%	-0.40%	11.52%	-0.71%	-	-	-	-	-	-
Edelman Financial Engines <sup>4</sup>	2.73%	-0.65%	11.45%	-1.54%	-	-	-	-	-	-
Ellevest <sup>15</sup>	2.76%	-0.42%	10.78%	-0.90%	5.42%	-0.83%	5.97%	-0.65%	-	-
Ellevest SRI <sup>15</sup>	2.70%	-0.48%	10.59%	-1.08%	5.43%	-0.81%	-	-	-	-
Fidelity Go <sup>33</sup>	3.12%	-0.11%	12.08%	-0.15%	6.58%	0.38%	7.26%	0.57%	-	-
Fifth Third Bank <sup>7</sup>	3.02%	-0.20%	12.00%	-0.12%	-	-	-	-	-	-
FutureAdvisor <sup>3</sup>	2.98%	-0.21%	10.96%	-0.66%	5.43%	-0.88%	5.14%	-1.36%	6.20%	-1.60%
Interactive Advisors <sup>24</sup>	2.81%	-0.36%	11.02%	-0.55%	-	-	-	-	-	-
IQvestment <sup>19</sup>	0.93%	-2.26%	7.87%	-3.92%	2.45%	-3.79%	-	-	-	-
Merrill Edge <sup>31</sup>	2.78%	-0.37%	10.69%	-0.83%	5.70%	-0.64%	6.02%	-0.68%	-	-
Merrill Edge SRI <sup>31</sup>	2.84%	-0.37%	11.62%	-0.39%	-	-	-	-	-	-
Morgan Stanley <sup>12</sup>	2.81%	-0.50%	11.59%	-1.12%	5.47%	-0.73%	-	-	-	-
Morgan Stanley Active <sup>3</sup>	3.16%	-0.10%	12.66%	0.10%	-	-	-	-	-	-
Morgan Stanley SRI <sup>7</sup>	3.57%	0.25%	12.62%	0.30%	7.00%	0.71%	-	-	-	-
Personal Capital <sup>4</sup>	2.72%	-0.62%	12.69%	-0.97%	4.33%	-1.70%	5.61%	-1.75%	7.02%	-2.40%
Prudential <sup>126</sup>	3.26%	0.04%	13.07%	0.95%	-	-	-	-	-	-
Qcapital <sup>30</sup>	2.69%	-0.59%	-	-	-	-	-	-	-	-
Schwab <sup>5</sup>	2.23%	-1.02%	10.44%	-2.01%	3.33%	-2.84%	5.18%	-1.78%	7.39%	-1.25%
SigFig <sup>6</sup>	3.06%	-0.18%	12.04%	-0.30%	6.44%	0.25%	6.87%	0.13%	8.36%	0.12%
SoFi <sup>17</sup>	2.96%	-0.26%	11.54%	-0.58%	5.41%	-0.80%	5.84%	-0.48%	-	-
TD Ameritrade <sup>10</sup>	3.14%	-0.15%	12.33%	-0.67%	6.14%	0.03%	6.71%	-0.34%	-	-
TD Ameritrade SRI <sup>10,C</sup>	3.42%	0.14%	11.10%	-1.79%	-	-	-	-	-	-
TIAA <sup>7</sup>	3.06%	-0.17%	11.25%	-0.98%	5.60%	-0.60%	6.27%	-0.42%	-	-
TIAA Active <sup>7</sup>	3.51%	0.17%	14.83%	1.28%	-	-	-	-	-	-
TIAA SRI <sup>7</sup>	3.25%	0.03%	12.04%	-0.08%	6.76%	0.55%	-	-	-	-
Twine (John Hancock) <sup>3</sup>	3.23%	-0.07%	13.42%	0.31%	-	-	-	-	-	-
UBS Advice Advantage <sup>7</sup>	2.58%	-0.71%	12.07%	-0.93%	4.45%	-1.66%	-	-	-	-
United Income <sup>16</sup>	2.78%	-0.43%	11.14%	-0.87%	4.21%	-2.01%	-	-	-	-
US Bank <sup>28</sup>	2.90%	-0.32%	12.12%	0.00%	-	-	-	-	-	-
USAA <sup>7</sup>	3.08%	-0.15%	11.84%	-0.39%	5.92%	-0.28%	-	-	-	-
Vanguard <sup>4,A</sup>	2.99%	-0.23%	11.73%	-0.39%	5.60%	-0.61%	6.46%	-0.18%	7.92%	-0.12%
Wealthfront <sup>22,B</sup>	2.18%	-1.09%	11.60%	-1.07%	5.11%	-1.04%	6.92%	0.02%	7.86%	-0.68%
Wealthsimple <sup>11</sup>	2.71%	-0.51%	11.47%	-0.65%	3.88%	-2.33%	5.68%	-0.96%	-	-
Wealthsimple SRI <sup>11</sup>	3.80%	0.58%	12.85%	0.73%	7.40%	1.19%	-	-	-	-
Wells Fargo <sup>14</sup>	2.84%	-0.41%	12.34%	-0.11%	5.53%	-0.64%	-	-	-	-
WiseBanyan <sup>8</sup>	3.47%	0.21%	13.39%	0.83%	7.02%	0.86%	7.00%	0.15%	8.45%	0.01%
Zacks Advantage <sup>4</sup>	2.67%	-0.55%	10.83%	-1.29%	5.33%	-0.79%	-	-	-	-

\*Net of Fees Returns as of: 6/30/2019

\*\*Some accounts have not been open long enough for 1 year, 2 year, or 3 year trailing returns

\*\*\*SRI indicates the account is invested in a Socially Responsible Investing portfolio, also known as "Impact Investing"

\*\*\*\*Active indicates the account is invested in an active strategy with either actively managed funds or its own active manager. For these providers, the active strategy is distinct from their passive and/or SRI strategies. Other accounts may use actively managed products within their portfolios.

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## Taxable Returns (continued from previous page)

	Equity					Fixed Income				
	2Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	2Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Acorns <sup>1</sup>	2.92%	16.90%	5.54%	8.07%	9.57%	3.13%	6.46%	7.03%	2.50%	1.28%
Ally Financial <sup>9</sup>	3.32%	16.10%	4.08%	7.42%	-	3.16%	6.56%	8.56%	4.17%	-
BBVA Compass <sup>7</sup>	3.37%	15.39%	-	-	-	2.98%	5.86%	-	-	-
Betterment <sup>27</sup>	3.19%	15.43%	5.11%	6.54%	10.36%	2.80%	6.07%	7.39%	4.08%	2.57%
Betterment SRI <sup>27</sup>	3.38%	15.92%	4.78%	-	-	2.85%	6.18%	7.61%	-	-
Citizens Bank <sup>7</sup>	2.87%	15.32%	-	-	-	2.56%	5.47%	-	-	-
E*Trade (ETF) <sup>21</sup>	3.10%	16.34%	4.31%	7.80%	11.45%	3.59%	7.80%	9.32%	3.92%	2.70%
E*Trade Active <sup>23</sup>	3.11%	15.58%	-	-	-	2.36%	4.98%	-	-	-
E*Trade SRI <sup>23</sup>	3.22%	15.91%	-	-	-	2.36%	4.98%	-	-	-
Edelman Financial Engines <sup>4</sup>	2.75%	15.14%	-	-	-	2.65%	4.89%	-	-	-
Ellevest <sup>15</sup>	3.38%	16.34%	5.31%	7.88%	-	1.92%	4.19%	5.15%	2.98%	-
Ellevest SRI <sup>15</sup>	3.30%	16.06%	5.62%	-	-	1.90%	4.10%	4.98%	-	-
Fidelity Go <sup>33</sup>	3.68%	16.88%	6.27%	9.20%	-	2.30%	5.07%	6.34%	4.02%	-
Fifth Third Bank <sup>7</sup>	3.56%	16.65%	-	-	-	2.24%	5.11%	-	-	-
FutureAdvisor <sup>3</sup>	3.11%	15.85%	5.16%	6.49%	9.43%	2.78%	5.66%	6.01%	3.23%	1.77%
Interactive Advisors <sup>24</sup>	2.59%	15.40%	-	-	-	3.01%	6.05%	-	-	-
IQvestment <sup>19</sup>	0.15%	10.47%	-1.13%	-	-	2.19%	5.23%	6.52%	-	-
Merrill Edge <sup>31</sup>	3.33%	16.19%	5.47%	7.97%	-	2.38%	5.11%	6.24%	3.33%	-
Merrill Edge SRI <sup>31</sup>	3.14%	16.36%	-	-	-	2.86%	5.77%	-	-	-
Morgan Stanley <sup>12</sup>	3.04%	15.46%	4.38%	-	-	2.41%	5.16%	7.73%	-	-
Morgan Stanley Active <sup>3</sup>	3.45%	17.10%	-	-	-	2.74%	5.90%	-	-	-
Morgan Stanley SRI <sup>7</sup>	4.18%	17.72%	7.14%	-	-	2.59%	4.90%	6.41%	-	-
Personal Capital <sup>4</sup>	2.76%	15.45%	3.83%	6.78%	8.84%	2.68%	5.53%	5.93%	2.33%	1.95%
Prudential <sup>26</sup>	3.67%	17.71%	-	-	-	2.79%	6.79%	-	-	-
Qapital <sup>30</sup>	2.55%	-	-	-	-	3.34%	-	-	-	-
Schwab <sup>5</sup>	2.38%	14.14%	2.30%	6.19%	9.62%	2.72%	6.29%	6.75%	3.79%	3.82%
SigFig <sup>6</sup>	3.21%	16.40%	6.04%	8.73%	12.03%	2.89%	6.02%	7.23%	3.87%	2.68%
SoFi <sup>17</sup>	3.42%	16.33%	4.86%	7.92%	-	2.17%	4.45%	5.59%	3.35%	-
TD Ameritrade <sup>10</sup>	3.39%	16.28%	5.34%	8.11%	-	2.74%	5.48%	7.11%	3.07%	-
TD Ameritrade SRI <sup>10,C</sup>	3.62%	16.51%	-	-	-	3.07%	5.85%	-	-	-
TIAA <sup>7</sup>	3.35%	15.35%	4.64%	8.09%	-	2.61%	5.50%	7.19%	3.21%	-
TIAA Active <sup>7</sup>	3.82%	18.18%	-	-	-	2.74%	6.42%	-	-	-
TIAA SRI <sup>7</sup>	3.57%	16.34%	6.24%	-	-	2.77%	5.69%	7.22%	-	-
Twine (John Hancock) <sup>3</sup>	3.46%	16.58%	-	-	-	2.71%	6.82%	-	-	-
UBS Advice Advantage <sup>7</sup>	2.86%	15.80%	3.94%	-	-	2.43%	5.58%	6.56%	-	-
United Income <sup>16</sup>	2.94%	15.09%	2.18%	-	-	2.62%	5.47%	6.38%	-	-
US Bank <sup>28</sup>	3.06%	15.64%	-	-	-	2.69%	7.26%	-	-	-
USAA <sup>7</sup>	3.36%	16.32%	5.23%	-	-	2.70%	5.58%	7.18%	-	-
Vanguard <sup>4,A</sup>	3.60%	16.57%	5.51%	8.45%	11.79%	1.97%	4.43%	5.73%	3.36%	2.03%
Wealthfront <sup>22,B</sup>	2.13%	15.45%	4.11%	8.19%	10.73%	2.30%	5.12%	7.18%	4.09%	2.24%
Wealthsimple <sup>11</sup>	2.82%	15.58%	2.53%	6.99%	-	2.57%	5.77%	5.98%	3.59%	-
Wealthsimple SRI <sup>11</sup>	4.46%	18.19%	7.29%	-	-	2.84%	5.50%	7.60%	-	-
Wells Fargo <sup>14</sup>	2.92%	16.07%	4.48%	-	-	3.05%	7.53%	8.35%	-	-
WiseBanyan <sup>8</sup>	3.57%	16.85%	6.18%	8.62%	11.60%	3.30%	7.41%	8.06%	3.85%	2.76%
Zacks Advantage <sup>4</sup>	3.22%	16.24%	6.00%	-	-	2.07%	4.40%	5.33%	-	-

\*Net of Fees Returns as of: 6/30/2019

\*\*Some accounts have not been open long enough for 1 year, 2 year, or 3 year trailing returns

\*\*\*SRI indicates the account is invested in a Socially Responsible Investing portfolio, also known as "Impact Investing"

\*\*\*\*Active indicates the account is invested in an active strategy with either actively managed funds or its own active manager. For these providers, the active strategy is distinct from their passive and/or SRI strategies. Other accounts may use actively managed products within their portfolios.

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## Retirement Returns

	Total Portfolio									
	2Q 2019	2Q 2019 Return Above/Below Benchmark	YTD	YTD Return Above/Below Benchmark	1-Year Trailing	1-Year Trailing Return Above/Below Benchmark	2-Year Trailing (Annualized)	2-Year Trailing Return Above/Below Benchmark (Annualized)	3-Year Trailing (Annualized)	3-Year Trailing Return Above/Below Benchmark (Annualized)
Ally Financial IRA <sup>9</sup>	3.24%	-0.20%	15.28%	-0.33%	4.27%	-1.29%	7.21%	-0.96%	-	-
Betterment IRA <sup>27</sup>	3.29%	-0.06%	14.19%	-0.65%	5.60%	0.03%	6.78%	-1.05%	9.76%	-0.83%
E*Trade IRA <sup>21</sup>	3.07%	-0.45%	16.12%	-0.12%	4.23%	-1.31%	7.55%	-0.89%	-	-
Fidelity Go IRA <sup>33</sup>	3.57%	0.25%	15.14%	0.55%	6.55%	0.97%	8.25%	0.53%	-	-
Honest Dollar (Goldman Sachs) IRA <sup>3</sup>	3.09%	-0.44%	15.61%	-0.76%	-	-	-	-	-	-
Merrill Edge IRA <sup>31</sup>	3.20%	-0.18%	14.64%	-0.46%	5.55%	-0.02%	7.04%	-0.91%	-	-
Morgan Stanley IRA <sup>7</sup>	2.93%	-0.29%	13.11%	-0.72%	5.15%	-0.43%	-	-	-	-
Personal Capital IRA <sup>4</sup>	2.67%	-0.82%	15.09%	-0.90%	4.13%	-1.42%	6.78%	-1.55%	9.01%	-2.43%
Schwab IRA <sup>20</sup>	1.93%	-1.53%	13.17%	-2.56%	1.45%	-4.11%	5.75%	-2.47%	9.41%	-1.88%
SigFig IRA <sup>6</sup>	2.34%	-1.07%	14.61%	-0.74%	5.49%	-0.08%	7.05%	-1.01%	10.07%	-0.92%
SoFi IRA <sup>18</sup>	3.40%	-0.15%	16.31%	-0.19%	4.88%	-0.65%	-	-	-	-
Swell IRA <sup>3</sup>	4.70%	1.15%	20.85%	4.35%	-	-	-	-	-	-
T Rowe Price IRA <sup>13</sup>	3.55%	0.00%	17.26%	0.76%	5.24%	-0.29%	-	-	-	-
TD Ameritrade IRA <sup>10</sup>	3.35%	0.05%	14.73%	0.27%	5.87%	0.29%	7.45%	-0.21%	-	-
TIAA IRA <sup>7</sup>	3.28%	-0.08%	13.91%	-1.06%	4.95%	-0.62%	7.61%	-0.28%	-	-
United Income IRA <sup>16</sup>	2.68%	-0.85%	14.17%	-2.20%	0.88%	-4.66%	-	-	-	-
USAA IRA <sup>7</sup>	3.27%	-0.26%	15.80%	-0.57%	4.99%	-0.55%	-	-	-	-
Wealthsimple IRA <sup>2</sup>	2.83%	-0.41%	13.56%	-0.40%	4.01%	-1.57%	6.48%	-0.96%	-	-
Wells Fargo IRA <sup>14</sup>	2.53%	-0.88%	14.33%	-1.02%	2.90%	-2.67%	-	-	-	-
WiseBanyan IRA <sup>25</sup>	3.63%	0.20%	15.57%	0.09%	5.61%	0.05%	8.07%	-0.04%	11.10%	0.01%
Zacks Advantage IRA <sup>4</sup>	2.87%	-0.57%	14.71%	-0.90%	4.17%	-1.39%	-	-	-	-

\*Net of Fees Returns as of: 6/30/2019

\*\*Some accounts have not been open long enough for 1 year, 2 year, 3 year returns, others have no fixed income holdings thus no fixed income returns.

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## Retirement Returns (continued from previous page)

	Equity					Fixed Income				
	2Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	2Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Ally Financial IRA <sup>9</sup>	3.32%	16.09%	3.99%	7.45%	-	3.07%	6.49%	8.49%	4.35%	-
Betterment IRA <sup>27</sup>	3.34%	15.48%	5.23%	7.17%	10.82%	3.02%	6.54%	7.90%	4.08%	2.76%
E*Trade IRA <sup>21</sup>	3.09%	16.33%	4.32%	7.74%	-	-	-	-	-	-
Fidelity Go IRA <sup>33</sup>	3.70%	16.93%	6.35%	9.12%	-	2.93%	5.99%	7.64%	3.32%	-
Honest Dollar (Goldman Sachs) IRA <sup>3</sup>	3.12%	15.91%	-	-	-	-	-	-	-	-
Merrill Edge IRA <sup>31</sup>	3.36%	16.08%	5.46%	7.67%	-	2.93%	6.53%	7.58%	2.63%	-
Morgan Stanley IRA <sup>7</sup>	3.08%	15.42%	4.60%	-	-	2.35%	5.12%	7.69%	-	-
Personal Capital IRA <sup>4</sup>	2.67%	15.50%	4.09%	6.93%	9.35%	3.04%	5.69%	5.35%	1.87%	1.34%
Schwab IRA <sup>20</sup>	2.05%	14.16%	1.56%	6.14%	10.05%	-	-	-	-	-
SigFig IRA <sup>6</sup>	2.12%	15.16%	4.73%	7.38%	10.78%	4.31%	10.48%	12.53%	4.20%	3.72%
SoFi IRA <sup>18</sup>	3.41%	16.32%	4.90%	-	-	-	-	-	-	-
Swell IRA <sup>3</sup>	4.78%	20.69%	-	-	-	-	-	-	-	-
T Rowe Price IRA <sup>13</sup>	3.55%	17.26%	5.24%	-	-	-	-	-	-	-
TD Ameritrade IRA <sup>10</sup>	3.44%	16.50%	5.84%	8.39%	-	3.14%	6.05%	7.53%	2.96%	-
TIAA IRA <sup>7</sup>	3.36%	15.41%	4.59%	8.14%	-	2.69%	5.57%	7.27%	3.19%	-
United Income IRA <sup>16</sup>	2.72%	14.42%	0.97%	-	-	-	-	-	-	-
USAA IRA <sup>7</sup>	3.35%	16.29%	5.23%	-	-	-	-	-	-	-
Wealthsimple IRA <sup>2</sup>	2.92%	15.88%	3.40%	7.20%	-	2.52%	5.21%	6.52%	3.60%	-
Wells Fargo IRA <sup>14</sup>	2.56%	15.17%	2.52%	-	-	3.09%	8.31%	9.12%	-	-
WiseBanyan IRA <sup>25</sup>	3.64%	16.34%	5.34%	8.41%	11.84%	3.41%	7.35%	7.75%	3.92%	2.96%
Zacks Advantage IRA <sup>4</sup>	3.00%	15.68%	4.53%	-	-	-	-	-	-	-

\*Net of Fees Returns as of: 6/30/2019

\*\*Some accounts have not been open long enough for 1 year, 2 year, 3 year returns, others have no fixed income holdings thus no fixed income returns.

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## Taxable Account Facts

Portfolio	Account Minimum	Advisory Fee	Average Weighted Expense Ratio	Initial Target Asset Allocation (Equities/Fixed Income/Miscellaneous/Cash)	Current Asset Allocation (Equities/Fixed Income/Miscellaneous/Cash)	Initial Domestic/International Equity Split	Current Domestic/International Equity Split	Tax Efficiency Ratio (% Muni Bonds of Overall Fixed Income)
Acorns	No minimum	\$1/month for Acorns Core (free for college students); \$2/month for Core + Acorns Later, \$3/month for Acorns Core + Acorns Later + Acorns Spend. For balances above \$1 million, \$100/month per \$1 million in AUM	0.09%	61%/39%/0%/0%	62%/38%/0%/0%	84%/16%	78%/22%	0%
Ally Financial	\$100	0.30% annually	0.07%	59%/39%/0%/2%	61%/37%/0%/3%	59%/41%	60%/40%	0%
BBVA Compass	\$10,000	0.75% annually	0.13%	57%/39%/3%/1%	56%/38%/3%/2%	63%/37%	63%/37%	0%
Betterment	Digital: No minimum; Premium: \$100,000	Digital: 0.25%, 0.15% above \$2M; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above \$2M	0.08%	65%/35%/0%/0%	65%/35%/0%/0%	49%/51%	57%/43%	36%
Betterment SRI	Digital: No minimum; Premium: \$100,000	Digital: 0.25%, 0.15% above \$2M; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above \$2M	0.13%	60%/40%/0%/0%	60%/40%/0%/0%	50%/50%	52%/48%	59%
Citizens Bank	\$5,000	0.50% annually	0.08%	64%/36%/0%/1%	65%/33%/0%/1%	54%/46%	56%/44%	0%
E*Trade (ETF)	\$500	0.30% annually	0.10%	60%/39%/0%/1%	59%/39%/0%/1%	75%/25%	65%/35%	0%
E*Trade Active	\$500	0.30% annually	0.09%	61%/35%/0%/3%	60%/39%/0%/1%	65%/35%	65%/35%	100%
E*Trade SRI	\$500	0.30% annually	0.13%	61%/35%/0%/4%	60%/39%/0%/1%	65%/35%	65%/35%	100%
Edelman Financial Engines	\$5,000	1.75% annually on accounts under \$400,000. Lower at different tiers over \$400,000	0.11%	67%/30%/0%/3%	67%/30%/0%/3%	80%/20%	81%/19%	0%
Ellevest	Digital: No minimum; Premium: \$50,000	Digital: 0.25%; Premium: 0.50% (access to live advisors and executive coaches)	0.07%	62%/36%/0%/2%	55%/43%/0%/1%	71%/29%	61%/39%	95%
Ellevest SRI	Digital: No minimum; Premium: \$50,000	Digital: 0.25%; Premium: 0.50% (access to live advisors and executive coaches)	0.17%	56%/43%/0%/1%	51%/48%/0%/1%	63%/37%	63%/37%	83%
Fidelity Go	Digital: No minimum; Personalized Planning and Advice: \$25,000	Digital only: 0.35% Personalized Planning and Advice: 0.50%	0.00%	61%/39%/0%/0%	61%/39%/0%/1%	71%/29%	70%/30%	100%
Fifth Third Bank	\$5,000	0.50% annually	0.20%	60%/40%/0%/1%	61%/38%/0%/1%	70%/30%	71%/29%	100%
FutureAdvisor	\$5,000	0.50% annually	0.08%	58%/41%/0%/1%	56%/43%/0%/1%	49%/51%	70%/30%	0%
Interactive Advisors <sup>24</sup>	Interactive Advisor Portfolios: \$5,000; Manager Portfolios: \$10,000–\$120,000	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.13%	55%/44%/0%/0%	54%/45%/0%/1%	55%/45%	55%/45%	31%
IQvestment	\$1,000	\$9.95 per month	0.04%	57%/38%/0%/5%	57%/38%/0%/5%	90%/10%	92%/8%	0%
Merrill Edge	Guided Investing: \$5,000; Guided Investing with an Advisor: \$20,000	Guided Investing: 0.45% annually (digital only); Guided Investing with an Advisor: 0.85% annually	0.07%	60%/39%/0%/1%	54%/40%/0%/6%	66%/34%	80%/20%	81%
Merrill Edge SRI	Guided Investing: \$5,000; Guided Investing with an Advisor: \$20,000	Guided Investing: 0.45% annually (digital only); Guided Investing with an Advisor: 0.85% annually	0.29%	59%/37%/0%/4%	57%/36%/0%/7%	65%/35%	76%/24%	9%
Morgan Stanley	\$5,000	0.35% annually	0.08%	65%/30%/0%/5%	62%/36%/0%/3%	45%/55%	45%/55%	0%
Morgan Stanley Active	\$5,000	0.35% annually	0.37%	64%/35%/0%/1%	63%/36%/0%/1%	44%/56%	45%/55%	0%
Morgan Stanley SRI	\$5,000	0.35% annually	0.49%	64%/35%/0%/1%	58%/41%/0%/1%	56%/44%	61%/39%	11%

\*Current Allocations as of: 6/30/2019

\*\*Due to rounding, may not add to 100%

\*\*\*Average weighted expense ratio calculations exclude cash holdings from the portfolio.

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## Taxable Account Facts (continued from previous page)

Portfolio	Account Minimum	Advisory Fee	Average Weighted Expense Ratio	Initial Target Asset Allocation (Equities/Fixed Income/Miscellaneous/Cash)	Current Asset Allocation (Equities/Fixed Income/Miscellaneous/Cash)	Initial Domestic/International Equity Split	Current Domestic/International Equity Split	Tax Efficiency Ratio (% Muni Bonds of Overall Fixed Income)
Personal Capital	\$100,000	0.89% annually for the first \$1 million; lower at different tiers over \$1 million	0.11%	69%/25%/5%/1%	70%/24%/4%/1%	70%/30%	70%/30%	0%
Prudential	\$5,000	0.79% annually for first \$100K; lower at different tiers above \$100K	0.09%	60%/38%/0%/2%	60%/38%/0%/2%	80%/20%	80%/20%	0%
Qapital	\$10	Complete: \$6 per month; Master: \$12 per month for additional non-investing features	0.14%	67%/29%/0%/4%	67%/29%/0%/4%	70%/30%	70%/30%	0%
Schwab	Intelligent Portfolio: \$5,000; Intelligent Advisory: \$25,000	Intelligent Portfolio: No fee (digital only); Intelligent Portfolio Premium: \$300 initial planning fee, \$30/month subscription	0.21%	61%/23%/5%/10%	61%/26%/2%/11%	51%/49%	55%/45%	56%
SigFig	\$2,000	No fee for the first \$10k; 0.25% annually for balance over \$10k	0.07%	62%/37%/0%/1%	61%/38%/0%/1%	58%/42%	59%/41%	0%
SoFi	\$1	No management fee	0.05%	52%/48%/0%/0%	60%/40%/0%/0%	67%/33%	68%/32%	65%
TD Ameritrade	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.05%	65%/33%/0%/1%	67%/31%/0%/2%	65%/35%	59%/41%	0%
TD Ameritrade SRI	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.15%	67%/29%/0%/3%	70%/28%/0%/2%	59%/41%	58%/42%	0%
TIAA	\$5,000	0.30% annually	0.07%	61%/37%/0%/2%	60%/39%/0%/1%	71%/29%	64%/36%	0%
TIAA Active	\$5,000	0.30% annually	0.63%	73%/26%/0%/1%	73%/25%/0%/1%	66%/34%	61%/39%	0%
TIAA SRI	\$5,000	0.30% annually	0.29%	60%/39%/0%/1%	59%/39%/0%/1%	71%/29%	64%/36%	8%
Twine (John Hancock)	\$100	0.60% annually	0.08%	69%/29%/0%/2%	68%/28%/0%/4%	64%/36%	65%/35%	0%
UBS Advice Advantage	\$10,000	0.75% annually	0.08%	68%/27%/0%/5%	69%/26%/0%/5%	59%/41%	61%/39%	81%
United Income	Self Service: \$10,000; Full Service: \$300,000	Self Service: 0.50% annually; Full Service (Access to live advisors): 0.80% to 0.45% depending on account balances	0.18%	59%/40%/0%/1%	61%/37%/0%/2%	51%/49%	58%/42%	0%
US Bank	\$5,000	0.24% annually	0.22%	60%/39%/0%/1%	60%/39%/0%/1%	59%/41%	59%/41%	33%
USAA	\$2,000	0.50% annually	0.05%	66%/32%/0%/1%	61%/38%/0%/1%	63%/37%	63%/37%	0%
Vanguard <sup>A</sup>	\$50,000	0.30% annually for the first \$5 million; lower at different tiers over \$5 million	0.07%	60%/40%/0%/0%	63%/37%/0%/0%	60%/40%	63%/37%	100%
Wealthfront <sup>B</sup>	\$500	0.25% annually	0.11%	65%/35%/0%/0%	65%/34%/0%/1%	67%/33%	66%/34%	100%
Wealthsimple	Basic: No minimum; Black: \$100,000	Basic: 0.50% fee on accounts less than \$100k; Black: 0.40% on accounts greater than \$100k	0.11%	60%/40%/0%/0%	60%/39%/0%/0%	66%/34%	68%/32%	54%
Wealthsimple SRI	Basic: No minimum; Black: \$100,000	Basic: 0.50% fee on accounts less than \$100k; Black: 0.40% on accounts greater than \$100k	0.24%	60%/40%/0%/0%	60%/39%/0%/0%	69%/31%	69%/31%	0%
Wells Fargo	\$10,000	0.50% annually; discounted to 0.40% if subscribed to other specific Wells Fargo products	0.17%	63%/34%/0%/3%	62%/34%/0%/4%	77%/23%	76%/24%	0%
WiseBanyan	No minimum	No fee for basic package; add-on packages, such as tax-loss harvesting, come at additional cost	0.09%	64%/36%/0%/0%	64%/36%/0%/0%	62%/38%	63%/37%	0%
Zacks Advantage	\$25,000	0.70% on accounts less than \$100K; 0.50% on accounts between \$100K and \$250K; 0.35% on accounts \$250K and above	0.10%	57%/34%/0%/9%	61%/34%/0%/6%	72%/28%	71%/29%	39%

<sup>A</sup>Current Allocations as of: 6/30/2019.

<sup>B</sup>Due to rounding, may not add to 100%

<sup>C</sup>Average weighted expense ratio calculations exclude cash holdings from the portfolio.

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## Retirement Account Facts

Portfolio	Account Minimum	Advisory Fee	Average Weighted Expense Ratio	Initial Target Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Current Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Initial Domestic/ International Equity Split	Current Domestic/ International Equity Split
Ally Financial IRA	\$100	0.30% annually	0.06%	93%/5%/0%/2%	93%/5%/0%/3%	60%/40%	61%/39%
Betterment IRA	Digital: No minimum; Premium: \$100,000	Digital: 0.25%, 0.15% above \$2M; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above \$2M	0.07%	87%/13%/0%/0%	87%/13%/0%/0%	47%/53%	56%/44%
E*Trade IRA	\$500	0.30% annually	0.13%	98%/0%/0%/2%	99%/0%/0%/1%	75%/25%	65%/35%
Fidelity Go IRA	Digital Only: No Minimum Personalized Planning and Advice: \$25,000	Digital Only; 0.35% Personalized Planning and Advice: 0.50%	0.00%	85%/14%/0%/1%	85%/14%/0%/1%	71%/29%	70%/30%
Honest Dollar (Goldman Sachs) IRA	No minimum	0.25% annually	0.06%	99%/0%/0%/1%	98%/0%/0%/2%	68%/32%	69%/31%
Merrill Edge IRA	Guided Investing: \$5,000; Guided Investing with an Advisor: \$20,000	Guided Investing: 0.45% annually (digital only); Guided Investing with an Advisor: 0.85% annually	0.06%	89%/9%/0%/2%	87%/8%/0%/5%	64%/36%	71%/29%
Morgan Stanley IRA	\$5,000	0.35% annually	0.08%	79%/15%/0%/6%	78%/21%/0%/1%	47%/53%	46%/54%
Personal Capital IRA	\$100,000	0.89% annually for the first \$1 million; lower at different tiers over \$1 million	0.09%	91%/3%/2%/4%	94%/3%/3%/1%	69%/31%	70%/30%
Schwab IRA	Intelligent Portfolio: \$5,000; Intelligent Advisory: \$25,000	Intelligent Portfolio: No fee (digital only); Intelligent Portfolio Premium: \$300 initial planning fee, \$30/month subscription	0.18%	94%/0%/0%/6%	94%/0%/0%/6%	54%/46%	54%/46%
SigFig IRA	\$2,000	No fee for the first \$10k; 0.25% annually for balance over \$10k	0.09%	91%/9%/0%/0%	89%/10%/0%/0%	45%/55%	47%/53%
SoFi IRA	\$1	No management fee	0.02%	100%/0%/0%/0%	100%/0%/0%/0%	66%/34%	68%/32%
Swell IRA	\$50	0.75% annually	0.00%	100%/0%/0%/0%	99%/0%/0%/1%	79%/21%	77%/23%
T Rowe Price IRA <sup>13</sup>	\$50,000	No Advisory Fee	0.80%	100%/0%/0%/0%	100%/0%/0%/0%	63%/37%	63%/37%
TD Ameritrade IRA	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.05%	83%/15%/0%/1%	86%/12%/0%/2%	65%/35%	62%/38%
TIAA IRA	\$5,000	0.30% annually	0.07%	88%/11%/0%/1%	87%/11%/0%/2%	72%/28%	63%/37%
United Income IRA	Self Service: \$10,000; Full Service \$300,000	Self Service: 0.50% annually; Full Service (Access to live advisors): 0.80% to 0.45% depending on account balances	0.25%	99%/0%/0%/1%	98%/0%/0%/2%	51%/49%	56%/44%
USAA IRA	\$2,000	0.50% annually	0.05%	99%/0%/0%/1%	97%/0%/0%/3%	59%/41%	62%/38%
Wealthsimple IRA	Basic: No minimum; Black: \$100,000	Basic: 0.50% fee on accounts less than \$100k; Black: 0.40% on accounts greater than \$100k	0.08%	80%/20%/0%/0%	80%/20%/0%/0%	66%/34%	68%/32%
Wells Fargo IRA	\$10,000	0.50% annually; discounted to 0.40% if subscribed to other specific Wells Fargo products	0.14%	91%/7%/0%/2%	90%/7%/0%/3%	67%/33%	68%/32%
WiseBanyan IRA	No minimum	No fee for basic package; add-on packages, such as tax-loss harvesting, come at additional cost	0.05%	92%/8%/0%/0%	91%/8%/0%/0%	60%/40%	60%/40%
Zacks Advantage IRA	\$25,000	0.70% on accounts less than \$100K; 0.50% on accounts between \$100K and \$250K; 0.35% on accounts \$250K and above	0.09%	93%/0%/0%/7%	95%/0%/0%/5%	62%/38%	63%/37%

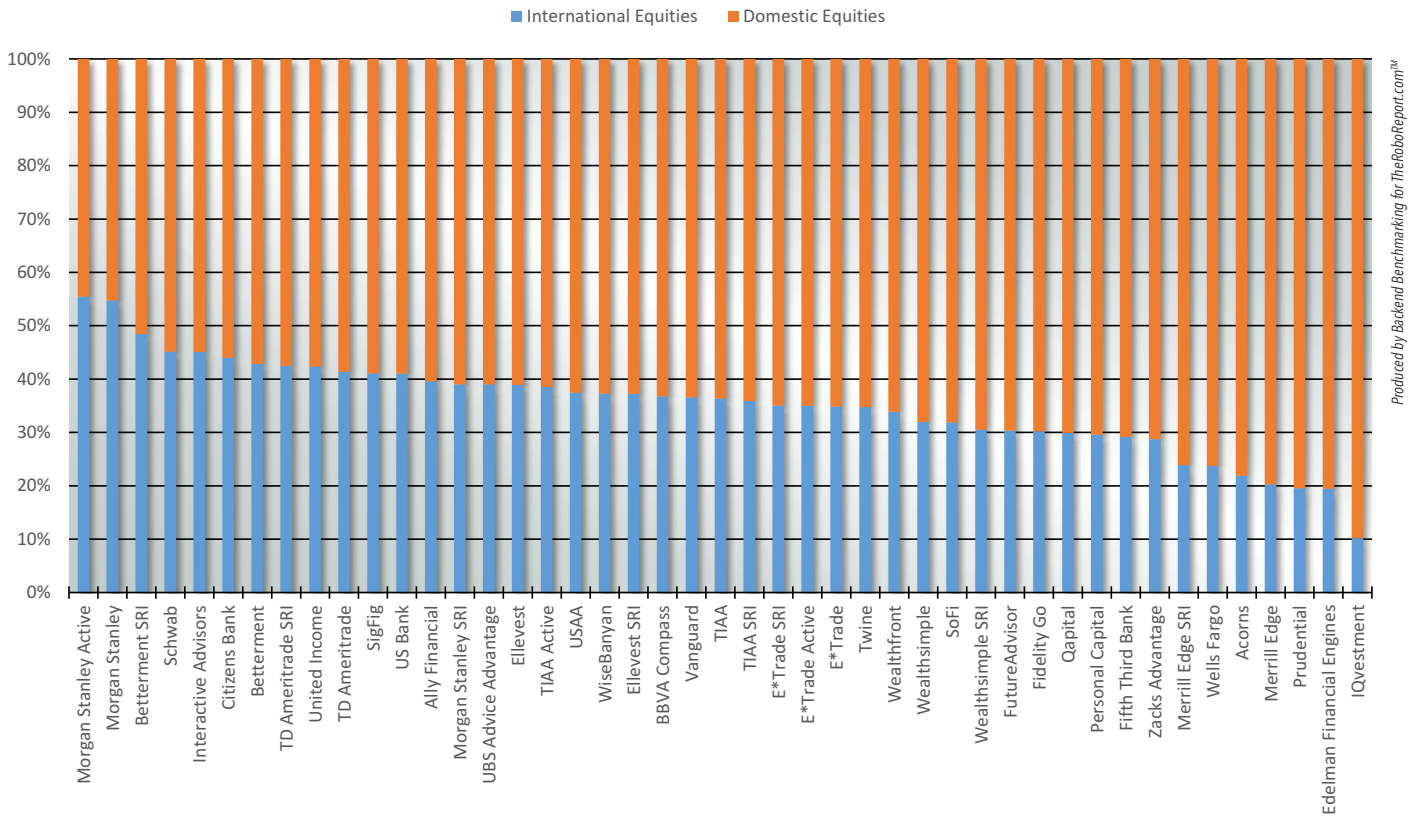
\*Current Allocations as of: 6/30/2019

\*\*Due to rounding, may not add to 100%

\*\*\*Average weighted expense ratio calculations exclude cash holdings from the portfolio.

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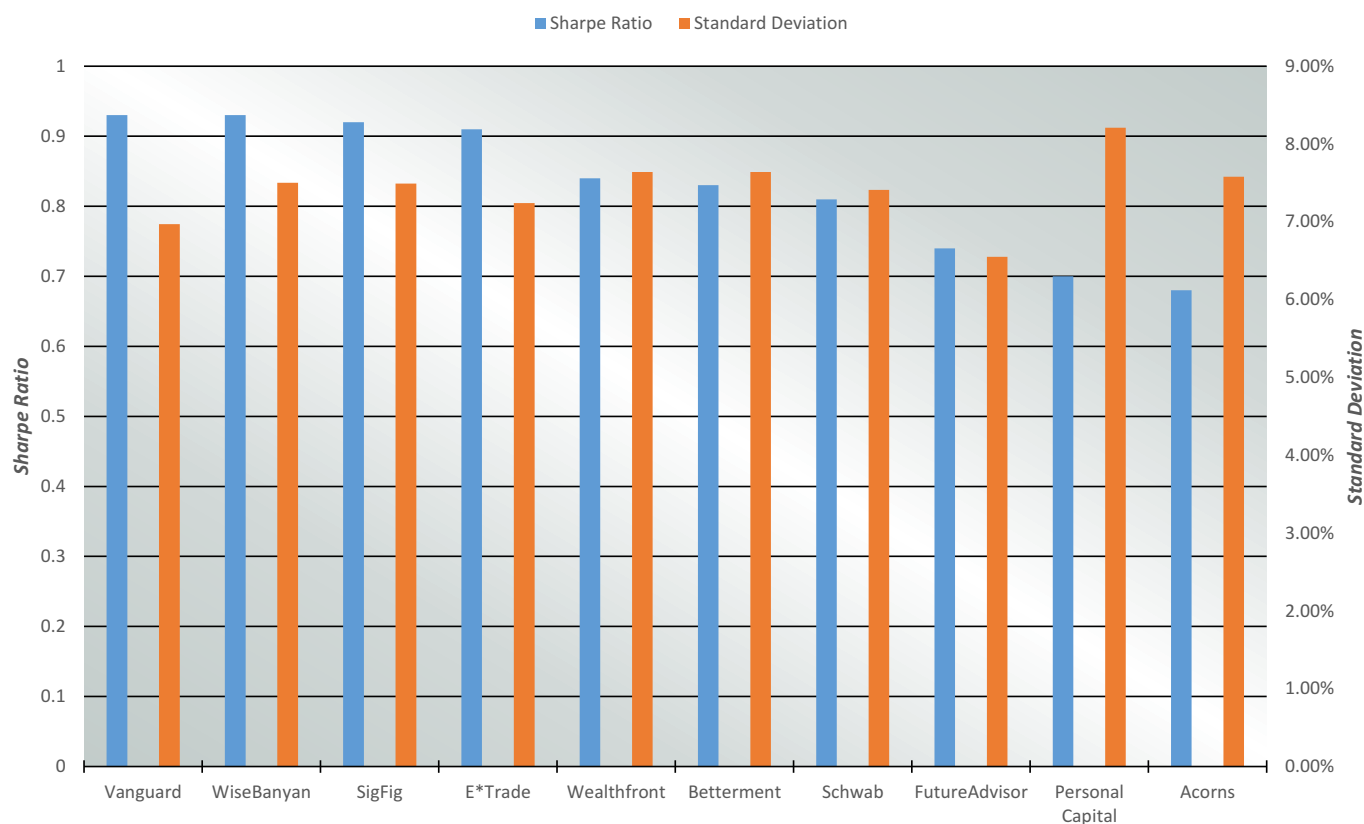
## International Allocation of Total Equity for Taxable Robos





## Taxable Risk/Return Charts and Tables

### Taxable Robos with 3-Year History (Sharpe Ratio and Standard Deviation)



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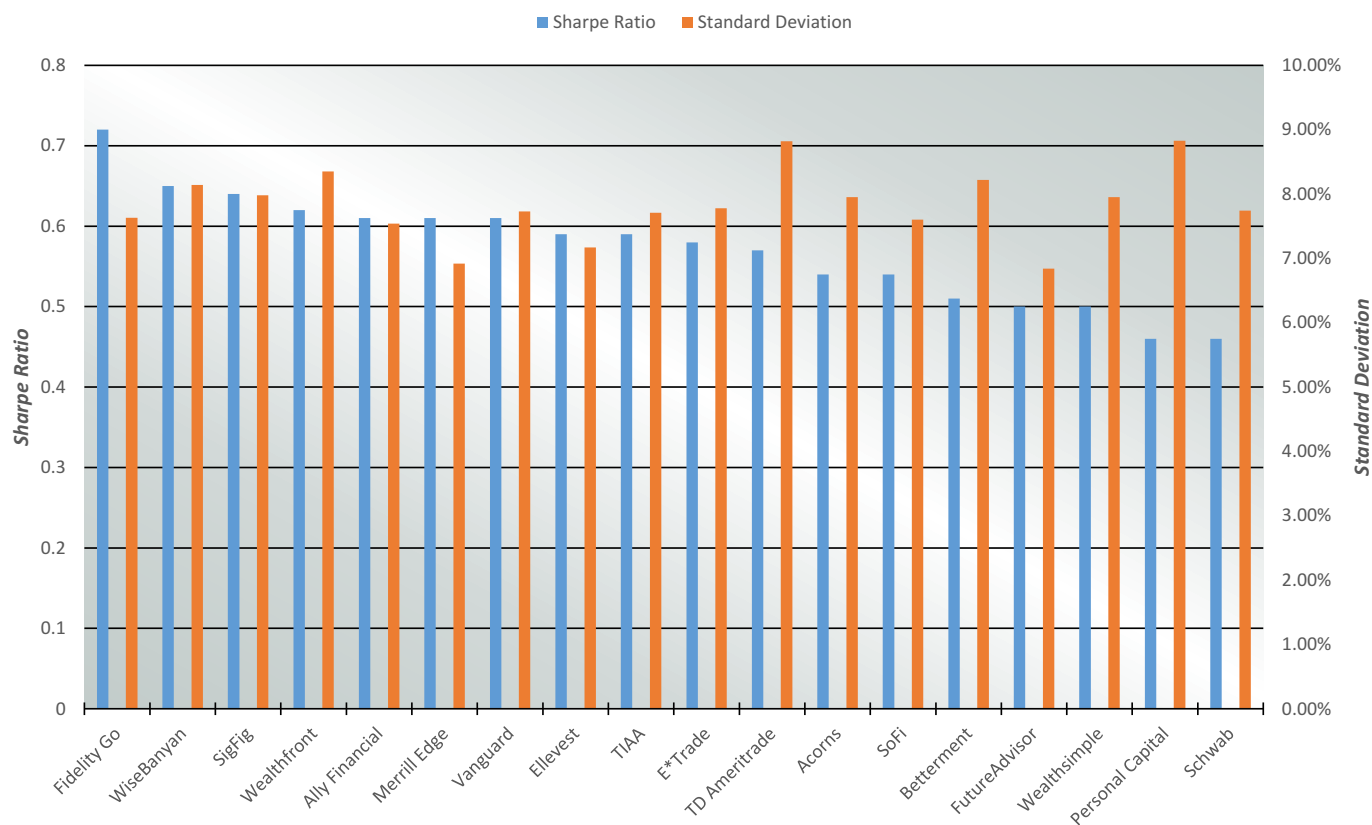
	Acorns	Betterment	E*Trade	FutureAdvisor	Personal Capital	Schwab	SigFig	Vanguard
Annualized StdDev, %	7.58%	7.64%	7.24%	6.55%	8.21%	7.41%	7.49%	6.97%
Sharpe Ratio	0.68	0.83	0.91	0.74	0.70	0.81	0.92	0.93

	Wealthsimple	WiseBanyan
Annualized StdDev, %	7.64%	7.50%
Sharpe Ratio	0.84	0.93

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## Taxable Robos with 2-Year History (Sharpe Ratio and Standard Deviation)



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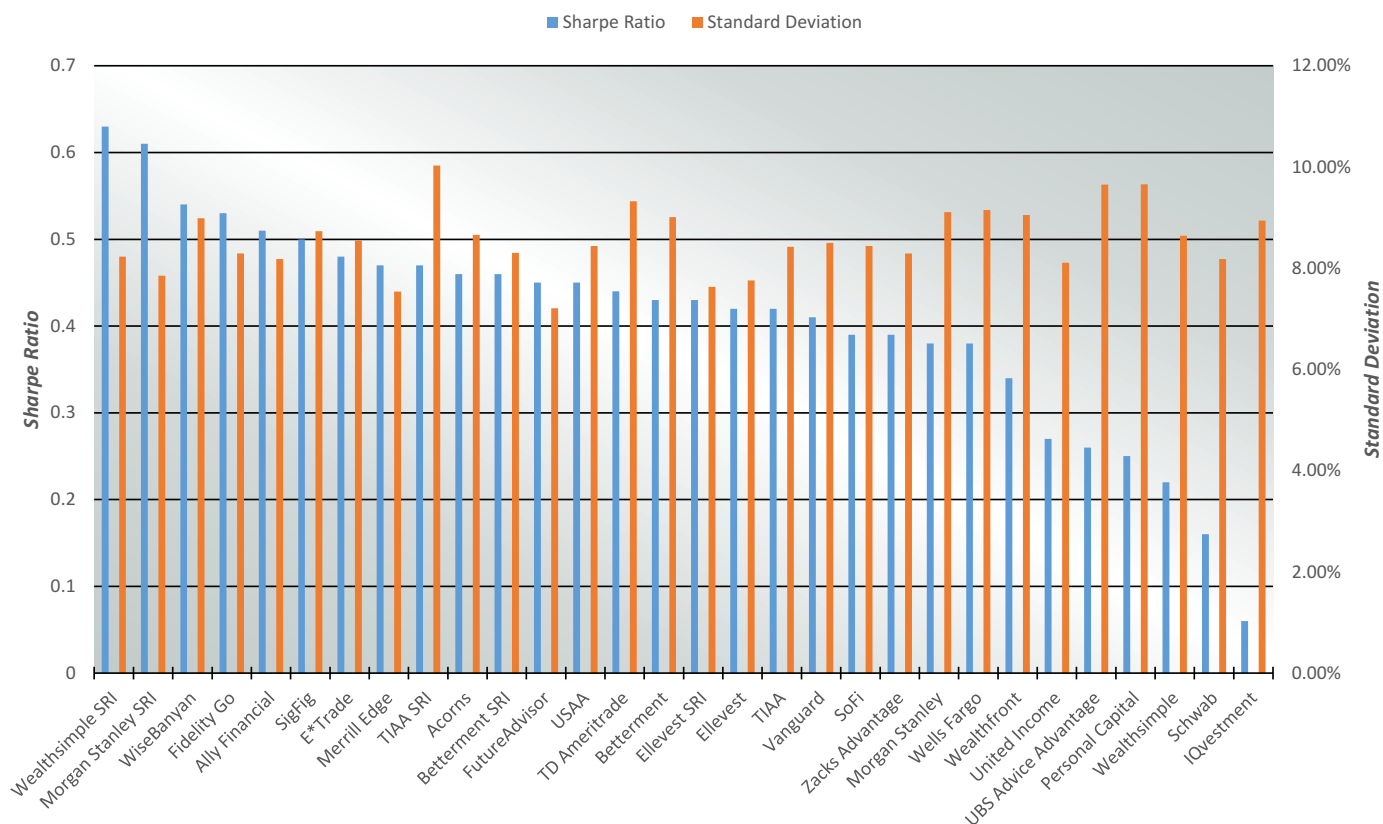
	Acorns	Ally Financial	Betterment	E*Trade	Ellevest	Fidelity Go	FutureAdvisor	Merrill Edge
Annualized StdDev, %	7.95%	7.54%	8.22%	7.78%	7.17%	7.63%	6.84%	6.92%
Sharpe Ratio	0.54	0.61	0.51	0.58	0.59	0.72	0.50	0.61

	Personal Capital	Schwab	SigFig	SoFi	TD Ameritrade	TIAA	Vanguard	Wealthfront
Annualized StdDev, %	8.83%	7.74%	7.98%	7.60%	8.82%	7.71%	7.73%	8.35%
Sharpe Ratio	0.46	0.46	0.64	0.54	0.57	0.59	0.61	0.62

	Wealthsimple	WiseBanyan
Annualized StdDev, %	7.95%	8.14%
Sharpe Ratio	0.50	0.65

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## Taxable Robos with 1-Year History (Sharpe Ratio and Standard Deviation)



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	Acorns	Ally Financial	Betterment	Betterment SRI	E*Trade	Ellevest	Ellevest SRI	Fidelity Go
Annualized StdDev, %	8.66%	8.18%	9.01%	8.30%	8.55%	7.76%	7.63%	8.29%
Sharpe Ratio	0.46	0.51	0.43	0.46	0.48	0.42	0.43	0.53

	FutureAdvisor	IQvestment	Merrill Edge	Morgan Stanley	Morgan Stanley SRI	Personal Capital	Schwab	SigFig
Annualized StdDev, %	7.21%	8.94%	7.54%	9.11%	7.85%	9.66%	8.18%	8.73%
Sharpe Ratio	0.45	0.06	0.47	0.38	0.61	0.25	0.16	0.50

	SoFi	TD Ameritrade	TIAA	TIAA SRI	UBS Advice Advantage	United Income	USAA	Vanguard
Annualized StdDev, %	8.44%	9.32%	8.42%	10.03%	9.65%	8.11%	8.44%	8.50%
Sharpe Ratio	0.39	0.44	0.42	0.47	0.26	0.27	0.45	0.41

	Wealthfront	Wealthsimple	Wealthsimple SRI	Wells Fargo	WiseBanyan	Zacks Advantage
Annualized StdDev, %	9.05%	8.64%	8.23%	9.15%	8.99%	8.29%
Sharpe Ratio	0.34	0.22	0.63	0.38	0.54	0.39

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## Retirement Risk/Return Charts and Tables

### Trailing 3-Year Risk/Return Statistics of Retirement Robos

	Betterment IRA	Personal Capital IRA	Schwab IRA	SigFig IRA	WiseBanyan IRA
Annualized StdDev, %	10.26%	10.66%	10.71%	10.95%	10.77%
Sharpe Ratio	0.82	0.73	0.76	0.80	0.90

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### Trailing 2-Year Risk/Return Statistics of Retirement Robos

	Ally Financial IRA	Betterment IRA	E*Trade IRA	Fidelity Go IRA	Merrill Edge IRA	Personal Capital IRA	Schwab IRA	SigFig IRA
Annualized StdDev, %	12.01%	11.13%	12.99%	10.74%	11.35%	11.61%	11.44%	11.76%
Sharpe Ratio	0.49	0.48	0.48	0.62	0.49	0.47	0.39	0.48

	TD Ameritrade IRA	TIAA IRA	Wealthsimple IRA	WiseBanyan IRA
Annualized StdDev, %	11.21%	11.28%	10.43%	11.85%
Sharpe Ratio	0.53	0.54	0.48	0.56

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### Trailing 1-Year Risk/Return Statistics of Retirement Robos

	Ally Financial IRA	Betterment IRA	E*Trade IRA	Fidelity Go IRA	Merrill Edge IRA	Morgan Stanley IRA	Personal Capital IRA	Schwab IRA
Annualized StdDev, %	13.23%	12.19%	14.48%	11.85%	12.41%	11.19%	12.69%	12.48%
Sharpe Ratio	0.21	0.32	0.20	0.40	0.31	0.30	0.20	-0.01

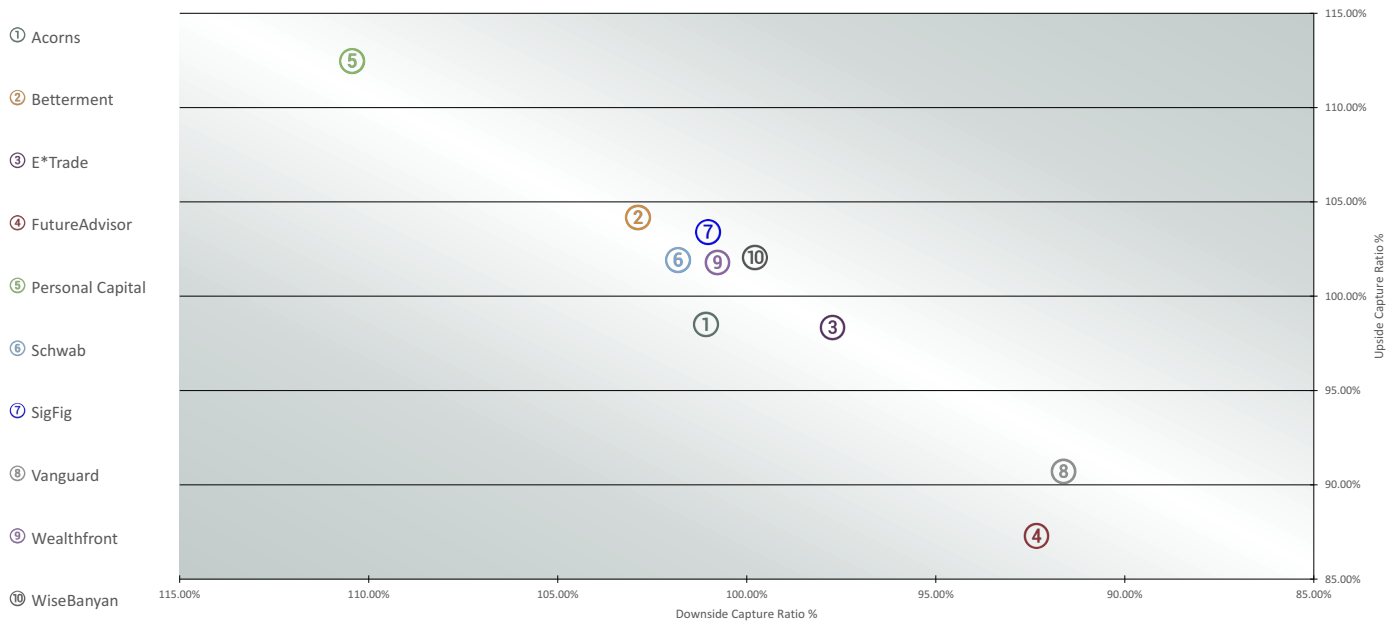
	SigFig IRA	SoFi IRA	T Rowe Price IRA	TD Ameritrade IRA	TIAA IRA	United Income IRA	USAA IRA	Wealthsimple IRA
Annualized StdDev, %	12.84%	14.41%	16.11%	12.36%	12.19%	13.95%	13.97%	11.45%
Sharpe Ratio	0.30	0.24	0.26	0.34	0.27	-0.03	0.25	0.20

	Wells Fargo IRA	WiseBanyan IRA	Zacks Advantage IRA
Annualized StdDev, %	13.07%	13.13%	13.30%
Sharpe Ratio	0.11	0.31	0.20

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## Taxable Upside/Downside Capture Ratios

### Upside/Downside Capture Ratio 3-Year History of Taxable Robos



### Upside/Downside Capture Ratio 3-Year History of Taxable Robos

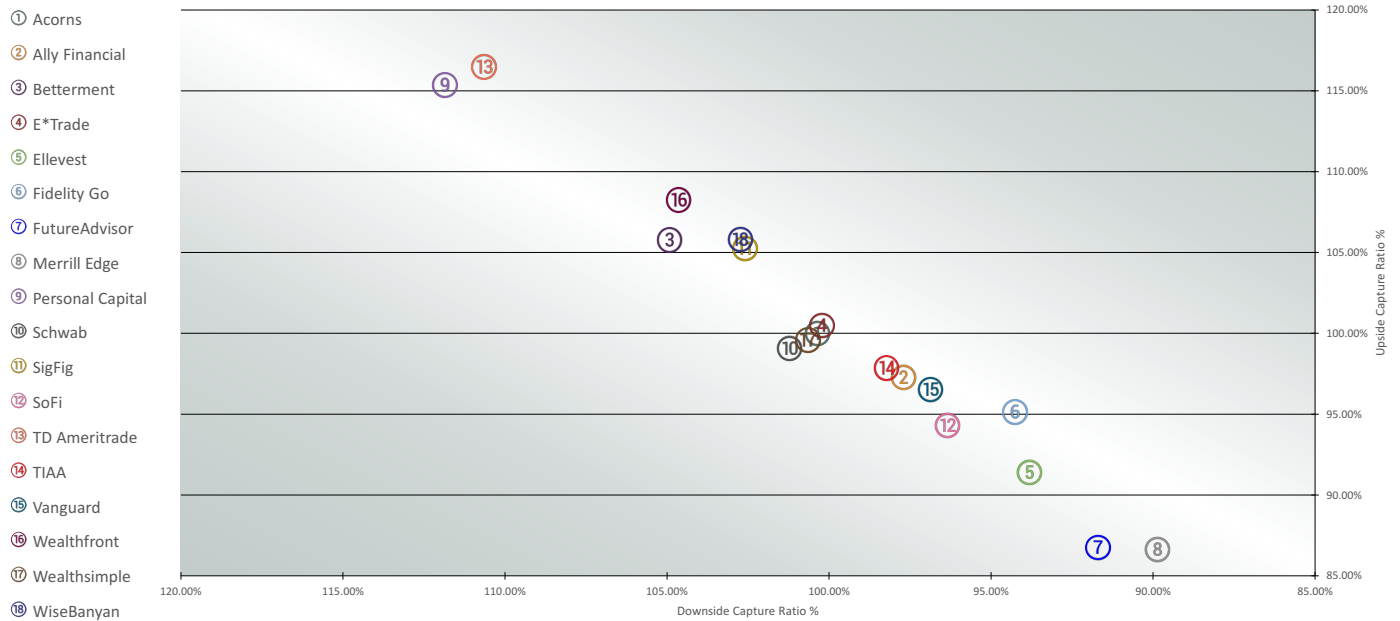
	Acorns	Betterment	E*Trade	FutureAdvisor	Personal Capital	Schwab	SigFig
Up Market Capture Ratio, %	98.52%	104.18%	98.34%	87.30%	112.47%	101.92%	103.40%
Down Market Capture Ratio, %	101.08%	102.88%	97.73%	92.34%	110.44%	101.82%	101.02%

	Vanguard	Wealthfront	WiseBanyan
Up Market Capture Ratio, %	90.72%	101.79%	102.05%
Down Market Capture Ratio, %	91.62%	100.78%	99.79%

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## Upside/Downside Capture Ratio 2-Year History of Taxable Robos



## Upside/Downside Capture Ratio 2-Year History of Taxable Robos

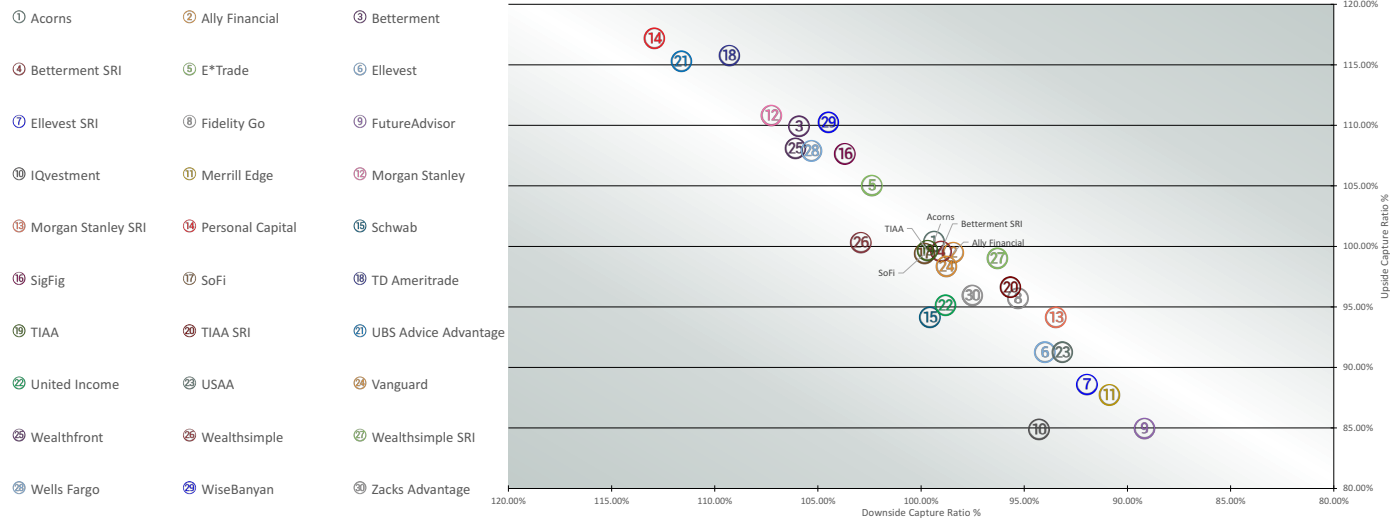
	Acorns	Ally Financial	Betterment	E*Trade	Ellevest	Fidelity Go	FutureAdvisor	Merrill Edge
Up Market Capture Ratio, %	100.00%	97.29%	105.78%	100.48%	91.41%	95.13%	86.74%	86.63%
Down Market Capture Ratio, %	100.36%	97.70%	104.92%	100.22%	93.82%	94.26%	91.70%	89.87%

	Personal Capital	Schwab	SigFig	SoFi	TD Ameritrade	TIAA	Vanguard	Wealthfront
Up Market Capture Ratio, %	115.36%	99.08%	105.25%	94.31%	116.49%	97.85%	96.52%	108.26%
Down Market Capture Ratio, %	111.86%	101.22%	102.59%	96.35%	110.65%	98.23%	96.87%	104.64%

	Wealthsimple	WiseBanyan
Up Market Capture Ratio, %	99.58%	105.81%
Down Market Capture Ratio, %	100.65%	102.74%

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## Upside/Downside Capture Ratio 1-Year History of Taxable Robos



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## Upside/Downside Capture Ratio 1-Year History of Taxable Robos

	Acorns	Ally Financial	Betterment	Betterment SRI	E*Trade	Ellevest	Ellevest SRI	Fidelity Go
Up Market Capture Ratio, %	100.39%	99.47%	109.92%	99.57%	105.01%	91.27%	88.57%	95.71%
Down Market Capture Ratio, %	99.38%	98.45%	105.92%	99.04%	102.40%	94.01%	91.97%	95.31%

	FutureAdvisor	IQvestment	Merrill Edge	Morgan Stanley	Morgan Stanley SRI	Personal Capital	Schwab	SigFig
Up Market Capture Ratio, %	84.94%	84.87%	87.73%	110.80%	94.14%	117.19%	94.14%	107.64%
Down Market Capture Ratio, %	89.18%	94.29%	90.88%	107.27%	93.48%	112.94%	99.58%	103.71%

	SoFi	TD Ameritrade	TIAA	TIAA SRI	UBS Advice Advantage	United Income	USAA	Vanguard
Up Market Capture Ratio, %	99.39%	115.74%	99.63%	96.64%	115.29%	95.14%	91.27%	98.33%
Down Market Capture Ratio, %	99.83%	109.30%	99.69%	95.68%	111.62%	98.82%	93.17%	98.78%

	Wealthfront	Wealthsimple	Wealthsimple SRI	Wells Fargo	WiseBanyan	Zacks Advantage
Up Market Capture Ratio, %	108.09%	100.29%	99.01%	107.89%	110.24%	95.94%
Down Market Capture Ratio, %	106.10%	102.93%	96.31%	105.32%	104.50%	97.53%

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## Retirement Upside/Downside Capture Ratios

### Upside/Downside Capture Ratio 3-Year History of Retirement Robos

	Betterment IRA	Personal Capital IRA	Schwab IRA	SigFig IRA	WiseBanyan IRA
Up Market Capture Ratio, %	95.49%	98.61%	100.02%	105.42%	100.52%
Down Market Capture Ratio, %	97.17%	100.17%	100.59%	103.19%	98.83%

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### Upside/Downside Capture Ratio 2-Year History of Retirement Robos

	Ally Financial IRA	Betterment IRA	E*Trade IRA	Fidelity Go IRA	Merrill Edge IRA	Personal Capital IRA	Schwab IRA	SigFig IRA
Up Market Capture Ratio, %	104.37%	95.91%	115.68%	88.46%	96.81%	100.22%	95.88%	105.19%
Down Market Capture Ratio, %	102.58%	98.10%	108.28%	91.64%	98.35%	100.68%	99.24%	103.22%

	TD Ameritrade IRA	TIAA IRA	Wealthsimple IRA	WiseBanyan IRA
Up Market Capture Ratio, %	95.54%	95.34%	85.74%	103.53%
Down Market Capture Ratio, %	97.11%	96.80%	91.91%	101.17%

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### Upside/Downside Capture Ratio 1-Year History of Retirement Robos

	Ally Financial IRA	Betterment IRA	E*Trade IRA	Fidelity Go IRA	Merrill Edge IRA	Morgan Stanley IRA	Personal Capital IRA	Schwab IRA
Up Market Capture Ratio, %	104.06%	96.41%	118.83%	89.18%	96.90%	83.72%	98.62%	91.28%
Down Market Capture Ratio, %	102.29%	97.14%	109.03%	92.18%	97.45%	90.28%	99.68%	98.32%

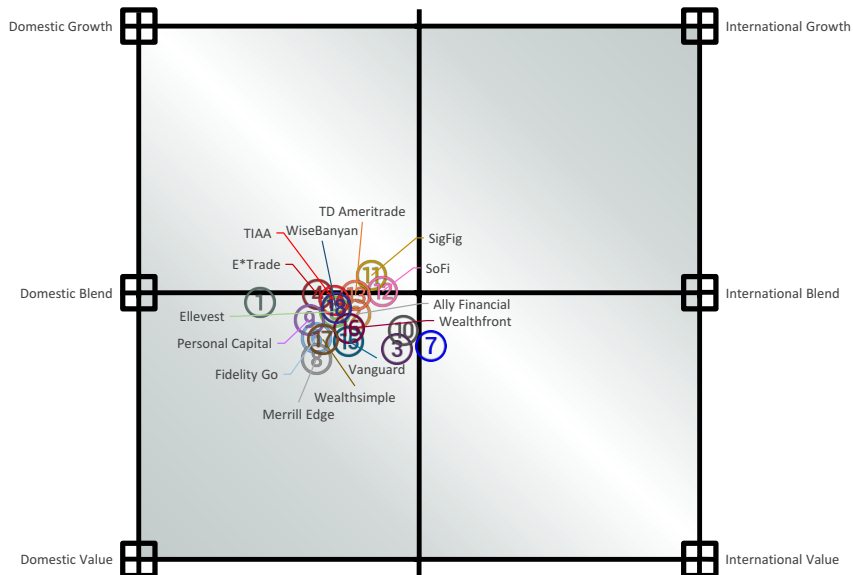
	SigFig IRA	SoFi IRA	T Rowe Price IRA	TD Ameritrade IRA	TIAA IRA	United Income IRA	USAA IRA	Wealthsimple IRA
Up Market Capture Ratio, %	103.14%	118.20%	112.92%	96.49%	91.58%	110.99%	98.64%	85.73%
Down Market Capture Ratio, %	100.73%	108.22%	105.59%	96.93%	95.11%	108.51%	98.89%	92.65%

	Wells Fargo IRA	WiseBanyan IRA	Zacks Advantage IRA
Up Market Capture Ratio, %	99.77%	104.49%	103.43%
Down Market Capture Ratio, %	101.42%	101.29%	102.07%

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## Trailing 2-Year Style Maps for Taxable Robos

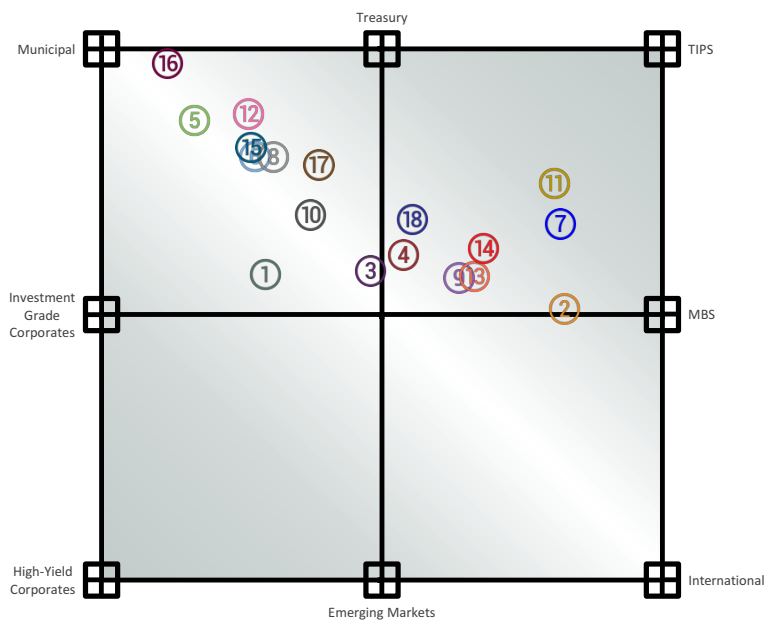
### Equity Style Map



- ① Acorns
- ② Ally Financial
- ③ Betterment
- ④ E\*Trade
- ⑤ Ellevest
- ⑥ Fidelity Go
- ⑦ FutureAdvisor
- ⑧ Merrill Edge
- ⑨ Personal Capital
- ⑩ Schwab
- ⑪ SigFig
- ⑫ SoFi
- ⑬ TD Ameritrade
- ⑭ TIAA
- ⑮ Vanguard
- ⑯ Wealthfront
- ⑰ Wealthsimple
- ⑱ WiseBanyan

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### Fixed Income Style Map



- ① Acorns
- ② Ally Financial
- ③ Betterment
- ④ E\*Trade
- ⑤ Ellevest
- ⑥ Fidelity Go
- ⑦ FutureAdvisor
- ⑧ Merrill Edge
- ⑨ Personal Capital
- ⑩ Schwab
- ⑪ SigFig
- ⑫ SoFi
- ⑬ TD Ameritrade
- ⑭ TIAA
- ⑮ Vanguard
- ⑯ Wealthfront
- ⑰ Wealthsimple
- ⑱ WiseBanyan

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## Normalized Benchmark

### Equity Portfolio

Category	Asset Type	Ticker	Name	Current Taxable Benchmark Weight	Current Retirement Benchmark Weight
Equity	Domestic	VTI	Vanguard Total Stock Market ETF	62%	62%
Equity	International	VXUS	Vanguard Total International Stock ETF	38%	38%

\*Benchmark weights updated at the end of each calendar year. Benchmark updates do not affect performance prior to update.

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### Bond Portfolio

Category	Asset Type	Ticker	Name	Current Taxable Benchmark Weight	Current Retirement Benchmark Weight
Fixed Income	Multi-Sector US	AGG	iShares Core US Aggregate Bond ETF	37%	26%
Fixed Income	Investment-Grade Corporates	LQD	iShares iBoxx \$ Investment Grade Corporate Bond ETF	6%	6%
Fixed Income	High-Yield Corporates	JNK	SPDR Bloomberg Barclays High Yield Bond ETF	3%	2%
Fixed Income	International Developed	IGOV	iShares International Treasury Bond ETF	4%	3%
Fixed Income	International Emerging Markets	EMB	iShares J.P. Morgan USD Emerging Markets Bond ETF	3%	6%
Fixed Income	Municipals	MUB	iShares National Muni Bond ETF	28%	3%
Fixed Income	TIPS	TIP	iShares TIPS Bond ETF	4%	3%
Fixed Income	Short-Term Treasuries (0-3 Year Maturity)	VGSH	Vanguard Short-Term Treasury ETF	4%	0%
Fixed Income	Intermediate-Term Treasuries (3-10 Year Maturity)	VGIT	Vanguard Intermediate-Term Treasury ETF	2%	3%
Fixed Income	Long-Term Treasuries (10+ Year Maturity)	VGLT	Vanguard Long-Term Treasury ETF	0%	0%
Fixed Income	Securitized	VMBS	Vanguard Mortgage-Backed Securities ETF	2%	1%
Fixed Income	Cash	FDRXX	Fidelity® Government Cash Reserves	7%	48%

\*Benchmark weights updated at the end of each calendar year. Benchmark updates do not affect performance prior to update.

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## Taxable Benchmark Returns

	2Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Acorns Normalized Benchmark	3.22%	12.12%	6.21%	6.78%	8.26%
Ally Financial Normalized Benchmark	3.21%	12.01%	6.22%	6.58%	-
BBVA Compass Normalized Benchmark	3.22%	12.12%	-	-	-
Betterment Normalized Benchmark	3.27%	12.67%	6.15%	6.90%	8.54%
Betterment SRI Normalized Benchmark	3.22%	12.12%	6.21%	-	-
Citizens Bank Normalized Benchmark	3.26%	12.56%	-	-	-
E*Trade Normalized Benchmark	3.22%	12.12%	6.21%	6.64%	8.04%
E*Trade Active Normalized Benchmark	3.23%	12.23%	-	-	-
E*Trade SRI Normalized Benchmark	3.23%	12.23%	-	-	-
Edelman Financial Engines Normalized Benchmark	3.38%	12.99%	-	-	-
Ellevest Normalized Benchmark	3.18%	11.68%	6.25%	6.62%	-
Ellevest SRI Normalized Benchmark	3.18%	11.67%	6.24%	-	-
Fidelity Go Normalized Benchmark	3.23%	12.23%	6.20%	6.69%	-
Fifth Third Bank Normalized Benchmark	3.22%	12.12%	-	-	-
FutureAdvisor Normalized Benchmark	3.19%	11.62%	6.31%	6.50%	7.80%
Interactive Advisors Normalized Benchmark	3.17%	11.57%	-	-	-
IQvestment Normalized Benchmark	3.19%	11.79%	6.24%	-	-
Merrill Edge Normalized Benchmark	3.15%	11.52%	6.34%	6.70%	-
Merrill Edge SRI Normalized Benchmark	3.21%	12.01%	-	-	-
Morgan Stanley Normalized Benchmark	3.31%	12.71%	6.20%	-	-
Morgan Stanley Active Normalized Benchmark	3.26%	12.56%	-	-	-
Morgan Stanley SRI Normalized Benchmark	3.32%	12.32%	6.29%	-	-
Personal Capital Normalized Benchmark	3.34%	13.66%	6.03%	7.36%	9.42%
Prudential Normalized Benchmark	3.22%	12.12%	-	-	-
Qcapital Normalized Benchmark	3.28%	-	-	-	-
Schwab Normalized Benchmark	3.25%	12.45%	6.17%	6.96%	8.64%
SigFig Normalized Benchmark	3.24%	12.34%	6.19%	6.74%	8.24%
SoFi Normalized Benchmark	3.22%	12.12%	6.21%	6.32%	-
TD Ameritrade Normalized Benchmark	3.29%	13.00%	6.11%	7.05%	-
TD Ameritrade SRI Normalized Benchmark	3.28%	12.89%	-	-	-
TIAA Normalized Benchmark	3.23%	12.23%	6.20%	6.69%	-
TIAA Active Normalized Benchmark	3.34%	13.55%	-	-	-
TIAA SRI Normalized Benchmark	3.22%	12.12%	6.21%	-	-
Twine Normalized Benchmark	3.30%	13.11%	-	-	-
UBS Advice Advantage Normalized Benchmark	3.29%	13.00%	6.11%	-	-
United Income Normalized Benchmark	3.21%	12.01%	6.22%	-	-
US Bank Normalized Benchmark	3.22%	12.12%	-	-	-
USAA Normalized Benchmark	3.23%	12.23%	6.20%	-	-
Vanguard Normalized Benchmark	3.22%	12.12%	6.21%	6.64%	8.04%
Wealthfront Normalized Benchmark	3.27%	12.67%	6.15%	6.90%	8.54%
Wealthsimple Normalized Benchmark	3.22%	12.12%	6.21%	6.64%	-
Wealthsimple SRI Normalized Benchmark	3.22%	12.12%	6.21%	-	-
Wells Fargo Normalized Benchmark	3.25%	12.45%	6.17%	-	-
WiseBanyan Normalized Benchmark	3.26%	12.56%	6.16%	6.85%	8.44%
Zacks Advantage Normalized Benchmark	3.22%	12.12%	6.12%	-	-

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## Retirement Benchmark Returns

	2Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Ally Financial IRA Normalized Benchmark	3.44%	15.61%	5.56%	8.17%	-
Betterment IRA Normalized Benchmark	3.35%	14.84%	5.57%	7.83%	10.59%
E*Trade IRA Normalized Benchmark	3.52%	16.24%	5.54%	8.44%	-
Fidelity Go IRA Normalized Benchmark	3.32%	14.59%	5.58%	7.72%	-
Honest Dollar IRA Normalized Benchmark	3.53%	16.37%	-	-	-
Merrill Edge IRA Normalized Benchmark	3.38%	15.10%	5.57%	7.95%	-
Morgan Stanley IRA Normalized Benchmark	3.22%	13.83%	5.58%	-	-
Personal Capital IRA Normalized Benchmark	3.49%	15.99%	5.55%	8.33%	11.44%
Schwab IRA Normalized Benchmark	3.46%	15.73%	5.56%	8.22%	11.29%
SigFig IRA Normalized Benchmark	3.41%	15.35%	5.57%	8.06%	10.99%
SoFi IRA Normalized Benchmark	3.55%	16.50%	5.53%	-	-
Swell IRA Normalized Benchmark	3.55%	16.50%	-	-	-
T Rowe Price IRA Normalized Benchmark	3.55%	16.50%	5.53%	-	-
TD Ameritrade IRA Normalized Benchmark	3.30%	14.46%	5.58%	7.66%	-
TIAA IRA Normalized Benchmark	3.36%	14.97%	5.57%	7.89%	-
United Income IRA Normalized Benchmark	3.53%	16.37%	5.54%	-	-
USAA IRA Normalized Benchmark	3.53%	16.37%	5.54%	-	-
Wealthsimple IRA Normalized Benchmark	3.24%	13.96%	5.58%	7.44%	-
Wells Fargo IRA Normalized Benchmark	3.41%	15.35%	5.57%	-	-
WiseBanyan IRA Normalized Benchmark	3.43%	15.48%	5.56%	8.11%	11.09%
Zacks Advantage IRA Normalized Benchmark	3.44%	15.61%	5.56%	-	-

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## Robo Ranking Methodology

### *How We Rank the Robos*

*The robo advisors are ranked on a comprehensive set of criteria. The final robo score is made up of a qualitative score of their services, platform, company, and features, and a quantitative score based primarily on the costs and performance of the portfolio. A small portion of the quantitative score is based on the minimum investment and size and tenure of the robo advice product. When looking at the qualitative aspects of the service, we focus on five categories: financial planning, user interface and customer experience, product features, access to live advisors, and transparency and conflicts of interest.*

*In this issue of The Robo Ranking™, we re-allocated points to place a greater emphasis on the qualitative scores - especially financial planning - while reducing the weight attributed to portfolio performance. In addition, we adjusted our performance scoring methodology, allocating points based on under-/outperformance compared to the average robo in the ranking. Lastly, we made adjustments and additions to the features for which we award points. As all robos begin to offer automatic deposits and rebalancing as baseline functionality, additional points are earned for newer, unique features. Therefore, we are now awarding points for cash management features, like a high-interest savings account or checking account services; smart dividend reinvestment, where dividends are automatically reinvested across the entire portfolio, not just the security issuing the dividend; and tax location strategies.*

*Below, we give examples of what earned points in each category.*

#### **Financial Planning:**

Here we graded the platforms on the quality of financial planning services offered. Robos that allowed users to build or create single or multi-goal financial plans were awarded points. Other financial planning tool features that earned points were those that allowed for “what if” scenarios; helped users calculate retirement spending needs, including social security benefit estimates; allowed for the inclusion of pension or other retirement income; and offered suggestions on appropriate monthly saving goals. In this issue of the rankings, points were awarded if their planning tools had specific functionality. For example, if the single-goal planning tool could: One, model future account values or spending; two, accept a user input of an account value or spending goal; and three, show either a likelihood of success or changes, then all points were awarded. If only some of these features were present, then partial points were awarded.

#### **User Interface and Customer Experience:**

Here we evaluated the user interface and the digital customer experience. We looked at the ease of getting to basic account information and general accessibility of the site. We measured the number of clicks required to access basic account and portfolio information, and used third-party software to produce an “accessibility score.” Points were also awarded to platforms that had good content and articles on basic personal finance and investing topics. During onboarding, we looked to see if the on-line process took less than 30 minutes from start to account opening, and if the onboarding questionnaire took into account a user’s comfort with investing and inquired or mentioned whether the user has an emergency fund. We also scored robos that had the ability to aggregate held-away accounts for a holistic financial picture. Availability of live chat options and mobile apps also helped robos score higher in this category.

### Product Features:

Robos were awarded points for different types of features. Tax-loss harvesting, tax efficiency, tax location strategies, smart dividend reinvestment, ability to trade fractional shares, cash management features, types of accounts offered, access to impact or other themed portfolios, and the ability of a robo to customize a portfolio to a specific customer situation were the features we looked for in this category. We also included a field for unique and additive features that were not explicit in our scoring. This unique and additive features criteria was a small portion of the overall features score.

### Transparency and Conflicts of Interest:

In this category, we looked for things like whether or not users could easily compare their portfolios to relevant benchmarks to help them understand performance. We also awarded points for platforms that made their models available before account opening, and further points if they also published the performance of their models to prospective customers. Availability of white papers and other information on how portfolios are constructed were also awarded points. We also awarded points to those portfolios that did not rely entirely on proprietary products or chose no proprietary products when constructing their portfolios.

### Access to Live Advisors:

Robos with access to live advisors, or the ability to upgrade to a product that has live advisors, earned points. Robos earned more points if there was a dedicated live advisor option, if they required their advisors to hold CFPs, and if live advisors were made available to all service levels. Partial points were awarded to firms that had products or programs with live advisors if those programs were not part of the digital advice offering. In this issue of *The Robo Ranking*<sup>™</sup>, more points were awarded to robo advisors that made live advisors available for no additional cost at their lowest service level.

### Account Minimum:

Robos earned points for having lower investment minimums.

### Costs:

We scored costs on the sum of the management fee and average-weighted expense ratio rather than scoring these two components separately. This method better reflects the true cost incurred by clients. Additionally, we consider a cash allocation as a cost if the cash holding is earning less than 1.95% APY. If a cash position was earning 1.95% or more, robos received full points in this section. Robos with cash positions that are earning less than 1.95% received less than full points in this category. The cash allocation had a much smaller impact than management fees and weighted expense ratios.

### Performance:

We used two metrics to grade a robo's performance. The first was the Sharpe ratio, which is a measure of risk-adjusted returns. The second was their return above/below the Normalized Benchmark. This measurement method reduces the impact of different equity/bond allocations in the portfolio. The method of using a Normalized Benchmark was created by the team at *The Robo Ranking*<sup>™</sup> and is explained in detail in the Normalized Benchmarking section on the website.

### Size and Tenure:

This score is based on the AUM and age of the robo advice products. Large amounts of AUM and older products are less likely to be discontinued in the future, forcing a client to change providers or products, which can be disadvantageous to the client. Robos that do not publish their AUM specific to the robo advice product only received the points available for the age of the robo. We encourage robo advisors and their parent companies to release AUM data for their different products in the interest of transparency to the investor.





## ■ ■ ■ Disclosures:

- <sup>1</sup> These accounts were funded with more than the minimum amount required to establish an account. Had the accounts been funded with more assets, they would be charged a flat dollar fee up to \$1,000,000. Because the fee is a flat dollar amount, a higher account balance would have the result of increasing reflected performance, while a lower account balance would have the result of decreasing reflected performance. In December of 2018 a \$1 fee was not recorded. Performance has been updated to include this fee as of Q1 2019.
- <sup>2</sup> This account has no minimum required to establish an account, but had the account been funded with more assets, it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance.
- <sup>3</sup> These accounts were funded with more than the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level.
- <sup>4</sup> This account was funded with the minimum or more than the minimum amount required to establish an account at the time of opening. Had the account been funded with more assets it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance.
- <sup>5</sup> This account was funded with more than the minimum in order to take advantage of tax-loss harvesting. Tax-loss harvesting may result in better or worse performance compared to similarly positioned accounts that are not enrolled in tax-loss harvesting. This account is enrolled in their digital only "Intelligent Portfolios", thus it is not charged an advisory fee. If one were to upgrade to "Intelligent Advisory" which introduces access to live advisors, a subscription fee would be levied, which would decrease reflected performance.
- <sup>6</sup> These accounts were funded with the minimum amount required to establish an account. At balances less than \$10,000, there is no advisory fee. Had the account been funded with \$10,000 or more, an asset-based advisory fee would be levied, which would decrease reflected performance.
- <sup>7</sup> These accounts were funded with the minimum amount required to establish an account at the time of opening. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level.
- <sup>8</sup> These accounts have no minimum required to establish an account. There is no advisory fee on these accounts. Had additional service packages, such as tax-loss harvesting, been added, the lesser of an asset-based fee or flat dollar fee would have been assessed. These fees would decrease the reflected performance.
- <sup>9</sup> This account was funded with the minimum investment amount at the time. At the time of opening, the account had a 0.25% management fee. Due to changes in the service at the end of the 1st quarter 2017, new accounts are charged a 0.30% management fee. The fee on our account was grandfathered in and remains at 0.25%. The higher advisory fee would have the result of decreasing reflected performance.
- <sup>10</sup> These accounts were funded with the minimum amount required to establish an account. This account is enrolled in their digital only "Essential Portfolios" and is charged an asset-based advisory fee. If one were to upgrade to "Selective Portfolios" which introduces access to live advisors, a higher asset-based advisory fee schedule would apply, which would decrease reflected performance.
- <sup>11</sup> This account has no minimum required to establish an account, but had the account been funded with more assets, it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance. A special request was made for an allocation of 60% equities and 40% fixed income or close to it, but this allocation was not one of the standard models at the time of account opening. At the time of account opening the closest standard models offered were in the range of 50/50 or 75/25 equity to fixed income split.
- <sup>12</sup> These accounts were funded with more than the minimum amount required to establish an account. Due to the flat advisory fee, performance is not affected by the accounts' asset levels. In previous reports we reported the performance of two accounts that were combined to achieve a 60/40 allocation. Due to our introduction of Normalized Benchmarking we are no longer reporting the combined account, but just the account with the closest to a 60/40 allocation as we could achieve at this provider.
- <sup>13</sup> These accounts were funded with less than the minimum investment through an agreement between BackEnd Benchmarking and the provider. There is no advisory fee levied regardless of the amount of assets invested.
- <sup>14</sup> This account was funded with the minimum amount required to establish an account. A flat, asset-based advisory fee is levied on the account. Had we subscribed to additional, specific, Wells Fargo Products the account would be eligible for a lower asset-based advisory fee. A lower advisory fee would have the result of increasing reflected performance.
- <sup>15</sup> This account has no minimum required to establish an account and is enrolled in the Digital Only plan. If the account was enrolled in the premium service with access to live advisors, there would be a higher asset-based advisory fee. The higher advisory fee would have the result of decreasing reflected performance.
- <sup>16</sup> This account is enrolled in the Self Service plan. If the account was enrolled in the Full Service Plan, the fee would be higher or lower depending on the level of assets in the account. The higher/lower advisory fee would have the result of decreasing/increasing reflected performance.
- <sup>17</sup> This account was funded with more than the minimum amount required to establish an account. This account will not be charged an advisory fee through 2019. In previous reports we reported the performance of two accounts that were combined to achieve a 60/40 allocation. Due to our introduction of Normalized Benchmarking we are no longer reporting the combined account, but only the account with the closest to a 60/40 allocation as we could achieve at this provider.
- <sup>18</sup> This account was funded with more than the minimum amount required to establish an account. This account will not be charged an advisory fee through 2019.
- <sup>19</sup> These accounts were funded with the minimum required to establish an account. Had the account been funded with a greater amount, it would still be charged the same flat dollar fee. Because the fee is a flat dollar amount, a higher account balance would have the result of increasing reflected performance, while a lower account balance would have the result of decreasing reflected performance. The fee was waived for the first year starting in June 2018. Had a fee been levied, reflected performance would have been lower. Due to a miscategorization of a security as fixed income in 3Q 2018 a correction was made to the 3Q 2018 report. In Q1 2019, a transaction resulting from an acquisition of a company held by the IQvestment portfolio was incorrectly recorded. This resulted in a miscalculation of performance and incorrectly awarding IQvestment the top performing equity YTD award. A correction was made to the Q1 2019 report. This robo advisor changed their name from iZERO to IQvestment in January 2019.
- <sup>20</sup> This account was funded with the minimum required to establish an account. This account is enrolled in their digital only "Intelligent Portfolios", thus it is not charged an advisory fee. If one were to upgrade to "Intelligent Advisory" which introduces access to live advisors, a subscription fee would be levied, which would decrease reflected performance.
- <sup>21</sup> These accounts were funded with more than the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. Fee was waived for the first year. Had a fee been levied, reflected performance would have been lower.
- <sup>22</sup> These accounts were funded with more than the minimum amount required to establish an account. There is currently no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. Previously, the fee was only assessed on balances in excess of \$10,000.
- <sup>23</sup> These accounts were funded with the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. Fee was waived for an initial promotional period. Had a fee been levied, reflected performance would have been lower.
- <sup>24</sup> Interactive Advisors is registered as an advisor under the name of Covestor Ltd. and is part of the Interactive Brokers Group. This account was funded with the minimum required to open an account and is invested in their Asset Allocation portfolio. It is charged an asset-based fee. There is no fee schedule on this account; therefore performance is not affected by the account's asset levels. Previously, the account was charged a lower asset-based fee; the increase took effect starting March 2019. Interactive Advisors offers multiple strategies with different sets of fees, including Smart Beta, index-tracking and model ETF portfolios, in addition to the Asset Allocation portfolios. Interactive Advisors also offers a marketplace for actively managed portfolios for which it charges higher fees (0.5-1.5%), part of which it remits to the portfolio managers supplying the data underlying those strategies.
- <sup>25</sup> Originally, there was no advisory fee on these accounts. Had additional service packages, such as tax-loss harvesting, been added, the lesser of an asset-based fee or flat dollar fee would have been assessed. In June 2018, one package was activated, resulting in a fee on these accounts. This fee decreases the reflected performance.
- <sup>26</sup> This account was enrolled in Prudential's Strategic Portfolios. It was funded with the minimum required to open an account. Had the account been funded with more assets it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance. Prudential also offers Reserve Portfolios for short-term investing, which have a lower account minimum and fee. However, the Reserve Portfolios do not allow asset-allocation customization based on individual demographic and risk tolerance.
- <sup>27</sup> This account has no minimum required to establish an account and is enrolled in the Digital Only plan. If more was invested, the account would be assessed a lower asset-based fee, which would increase reflected performance. If the account was enrolled in the premium service with access to live advisors, there would be a higher asset-based advisory fee. The higher advisory fee would have the result of decreasing reflected performance. All balances above \$2 million are charged a lower asset-based advisory fee. A lower advisory fee would have the result of increasing reflected performance. The 2018 end-of-year statement for Betterment did not include dividends received near the end of 2018, these dividends first appeared on the March 31st, 2019 statement. These dividends are reflected as of the *Q1 2019 Robo Report*<sup>™</sup> but were not reflected in performance reported in the *Q4 2018 Robo Report*<sup>™</sup>.
- <sup>28</sup> These accounts were funded with the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. Fee was waived for an initial promotional period. Had a fee been levied, reflected performance would have been lower. As of March 27, 2019, the management fee has been lowered. The lower advisory fee will increase reflected performance.



- <sup>30</sup> These accounts were funded with more than the minimum amount required to establish an account. The account is charged a flat dollar fee subscription at its service level. Had the accounts been enrolled in different service packages, they could be assessed a higher subscription fee. Because the fee is a flat dollar amount, a higher account balance would have the result of increasing reflected performance, while a lower account balance would have the result of decreasing reflected performance.
- <sup>31</sup> These accounts were funded with the minimum amount required to establish an account at the time of opening. This account is enrolled in their digital only "Guided Investing" and is charged an asset-based advisory fee. If one were to upgrade to "Guided Investing with an advisor" which introduces access to live advisors, a higher asset-based advisory fee schedule would apply, which would decrease reflected performance.
- <sup>32</sup> This account has no minimum required to establish an account and is enrolled in the Digital Only plan. If the account was enrolled in the premium service with access to live advisors, there would be a higher asset-based advisory fee. The higher advisory fee would have the result of decreasing reflected performance. All balances above \$2 million are charged a lower asset-based advisory fee. A lower advisory fee would have the result of increasing reflected performance.
- <sup>33</sup> This account has no minimum required to establish an account and is enrolled in the Digital Only plan. If the account was enrolled in the premium service with access to live advisors, there would be a higher asset-based advisory fee. The higher advisory fee would have the result of decreasing reflected performance.
- <sup>A</sup> On June 19th, 2017, Vanguard removed Backend Benchmarking's primary Vanguard account from the Vanguard Personal Advisor Services program. As of June 20th, 2017, the primary account was replaced by a secondary account with the same risk profile as the primary account. The returns for the secondary account have been linked to the original primary account. Asset type and allocation between the two accounts at the time of the switch were very close but not identical.
- <sup>B</sup> In the 1st Quarter of 2018 Wealthfront liquidated the positions in the account used for the 4th Quarter 2017 and previous editions of this report. A different account was used for this report and is labeled "Wealthfront (Risk 4.0)". The performance numbers from the previous account are available in the addendum labeled as "Wealthfront (Risk 3.0)". The risk scores and thus allocations of the two accounts are different and labeled as such. Asset type and allocation between the two accounts at the time of the switch were close but not identical. The difference of equity allocation between the accounts on 12/31/2017 was approximately 5.4%.
- <sup>C</sup> Due to the down market in December 2018, this account engaged in repeated tax loss harvesting on one of its asset types. All alternative securities were exhausted for this asset type, so to prevent a wash sale, the entire position, representing approximately 31% of the portfolio, was liquidated and held as cash for a 1 month period, during which time the market experienced a large upswing. Because this portfolio missed the market upswing, its performance versus the normalized benchmark is lower.

In previous reports the initial target asset allocation was calculated as the asset allocation at the end of the first month after the account was opened. In the Q3 2018 report we adjusted our method to calculate the initial target asset allocation as of the end of the trading day after all initial trades were placed in the accounts. This adjustment has caused some portfolio's initial target allocation to be updated from previous reports. These updates did not change any initial target allocations of equity, fixed income, cash, or other by more than 1%.

Prior to Q3 2018, due to technological limitations of our portfolio management system, some accounts which contained fractional shares had misstated the quantity of shares when transactions quantities were smaller than 1/1000th of a share in a position as a result of purchases, sales, or dividend reinvestments. This had a marginal effect on historical performance of the accounts. The rounding of position quantities caused by this limitation has been resolved, and quantities have been adjusted to reflect the full position to the 1/1,000,000th of a share as of the end of Q3 2018. Therefore, this rounding of fractional shares will not be necessary in the future.

This report represents Backend Benchmarking's research, analysis and opinion only; the period tested was short in duration and may not provide a meaningful analysis; and, there can be no assurance that the performance trend demonstrated by Robos vs indices during the short period will continue. Backend Benchmarking is under common ownership and control with Condor Capital Management, an SEC registered investment adviser. A copy of Condor's disclosure Brochure is available at [www.condorcapital.com](http://www.condorcapital.com). Condor Capital initiated a position in Schwab and TD Ameritrade in one of the strategies used in many of their discretionary accounts on 5/30/2017 and 5/31/2017. As of 6/30/2019 the total size of the position was 37,017 shares of Schwab common stock and 33,750 shares of TD Ameritrade common stock.



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