BRINGING TRANSPARENCY TO ROBO INVESTING

EDITION 16

The Robo Report™ Second Quarter 2020

We are proud to publish the 16th edition of the *Robo Report*™, covering the second quarter of 2020, and the fifth edition of the *Robo Ranking*™. This *Report* is a continuation of an ongoing study that monitors well known robo advisors. We strive to provide a reliable resource for both investors and professionals interested in the digital advice industry.

Highlights:

- *SigFig moves past Fidelity Go as Best Overall Robo due to strong performance (pg. 7)*
- *SRI study shows marginal improvement to Sustainability Scores, significantly higher fees, but promising performance (pg. 22)*
- *Top robos grow 38% year-over-year as industry moves beyond $600 billion (pg. 27)*
- *New account openings and engagement surge during COVID (pg. 28)*
- *Empower acquires Personal Capital for approximately $1 billion, representing the largest B2C robo acquisition to date (pg. 29)*
- *Interview with Axos CEO Gregory Garrabrants (pg. 33)*

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Executive Summary

This edition of the *Robo Report™* also contains the *Robo Ranking™*, the most comprehensive analysis of digital advice products. The *Ranking* includes both qualitative factors, such as access to advisors and financial planning features, as well as the performance of our accounts held at each one of these providers.

SigFig Wins Best Overall Robo, Followed by TD Ameritrade and Fidelity Go

Propelled by strong performance, access to live advisors, and a quality digital platform, SigFig won this edition of the *Robo Ranking* as the top robo advisor. While Schwab, Personal Capital, Wealthfront, and Betterment have some of the best digital platforms and top-notch digital planners, performance has held these providers back from being contenders for our Best Overall Robo award. However, all four have received awards in this *Ranking* for the qualitative categories where they shine. Fidelity Go and Vanguard have both won previous versions of this ranking. Fidelity Go placed third this time for Best Overall Robo, while Vanguard is first for those investors with complex financial planning needs.

Robo Advisors Continue Growth and Consolidation

The robo advice industry has continued to grow into 2020, further solidifying its now permanent place in the financial services landscape. While Vanguard and Schwab continue to be leaders in terms of AUM, Betterment and Wealthfront have added customers and assets at a strong pace. We now estimate that robo advisors collectively manage $631 billion in assets. In 2019, we estimate the top five robo advice providers grew their AUM by 38%, on average. The industry, marked by closures and acquisitions, saw one of its three major independent providers, Personal Capital, acquired by retirement plan administrator Empower. Underpinned by a fantastic suite of digital tools that services more than two million users, Personal Capital's acquisition price was far above what is normally paid for an RIA.

While COVID-19 has caused widespread disruption in the markets, economies, and everyone's lives, digital advice providers were well positioned to transfer to remote work, as they are natively built for digital communication with clients. Early reports show a surge in account openings at digital advice providers during the volatile first half of the year.

Robos Rebalance, Harvest Losses, and Weather Market Storm

Robo advice providers typically take a passive, long-term approach to investing and look to add value by methodically rebalancing. However, not all firms took advantage of the March lows to do so. While Schwab, Personal Capital, Edelman, and others had timely trades from bonds to stocks, notable firms like Vanguard did not rebalance at all during the period. Many also took the extra step to execute tax-loss harvesting trades. TD Ameritrade, Wealthfront, and Schwab turned over more than 100% of their portfolios this year, for example. SigFig noticeably did not harvest tax losses in our account, nor did Citizens Bank, while UBS made a small tax-loss trade. These are related because Citizens and UBS use SigFig's technology to run their robo advice platforms. While robo portfolios are generally passive in nature, one active manager, Titan Invest, stood above the rest, outperforming its benchmark by a wide margin. SigFig is proving itself as a top long-term performer, while Wealthsimple was one of the best performers this year because of its defensive positions going into 2020.

SRI Portfolios Shine in Performance but Fall Short in Sustainability Score Improvement

This quarter, we dove deeper into our SRI portfolios. Using Morningstar's Portfolio Sustainability Score, we looked at the weighted average scores of the equities in each of our SRI portfolios and then compared that rating to the non-SRI portfolio at the same provider. Improvements to scores were minimal, with the average portfolio improving its weighted Sustainability Score by just 1.54 points. These paltry improvements in scores were accompanied by higher costs as the underlying funds' expense ratios tend to be significantly higher. The bright side, however, is that SRI portfolios have outperformed their passive counterparts. Seven of eight portfolios we track with a 1-year track record outperformed their passive counterpart at the same provider, while all five with a 2-year track record outperformed.

The Robo Ranking™

Bringing Transparency to Robo Investing

We are excited to publish our fifth edition of the *Robo Ranking™*. *The Robo Ranking™* is the only comprehensive ranking of robo advisors. It examines not only the features and services but also portfolio performance that is sourced from real accounts tracked by Backend Benchmarking. Robo advisors have taken the advice industry by storm, with the larger independent providers continuing to show strong growth and innovative features, and robo advice technology being adopted across banks, brokerages, and other traditional advice firms. Robo advice providers are proving attractive to individual investors in large part due to their significantly lower minimums and costs. Since these products are relatively new to the investment landscape, there is little information available to investors. Here at Backend Benchmarking, our goal is to bring transparency to the digital advice industry to empower investors to seek the best products and services.

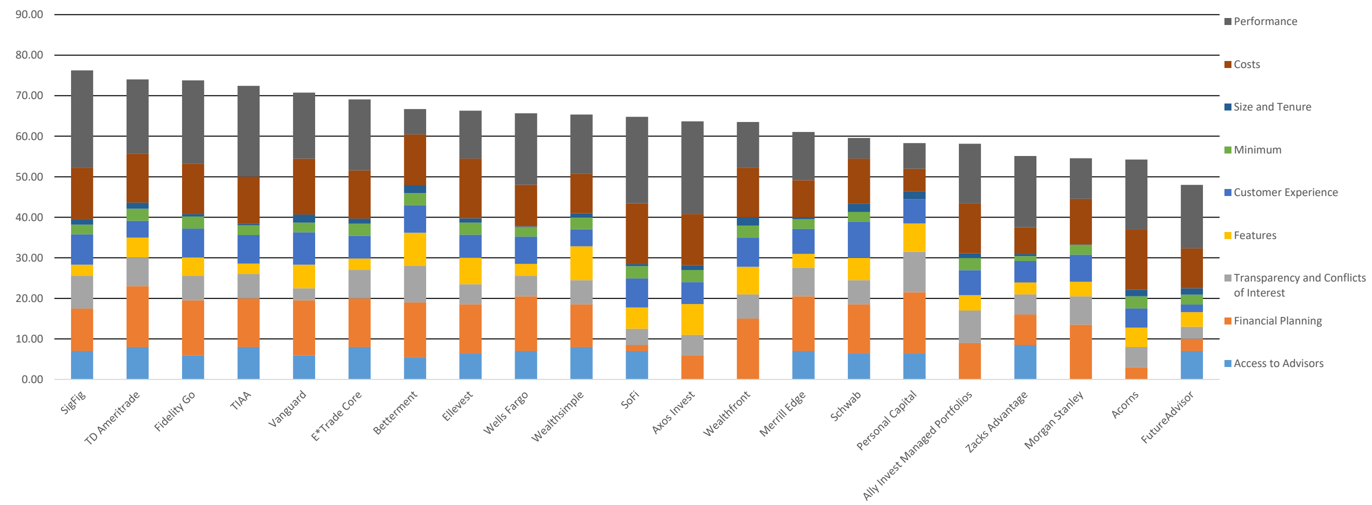
Introduction

The *Robo Ranking™* grades robo advisors across more than 45 specific metrics and is the only examination that includes real and reliable performance data. 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 that we grade is specific and unambiguous.

The *Robo Ranking* is a powerful tool to help those investors who are considering using a digital advisor. Although we rank and give each robo an overall score, we also acknowledge the differences in individual investors and their situations. To help different types of investors find a product that is right for them, we created sub-rankings to help understand areas where different products excel. Once investors have identified their needs, the category rankings can help them select a provider that stands out in the areas that are most important to them. In this edition, we have added Merrill Edge's Guided Investing and Wells Fargo's Intuitive Investor.

The performance score 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 at the end of the report, as well as on our website. Please refer to our methodology section to review any changes to our scoring methods since our last issue.

Robo Ranking Scores



Robo Name	Access to Advisors	Financial Planning	Transparency and Conflicts	Features	Customer Experience	Minimum	Size and Tenure	Costs	Performance	Total
SigFig	7.00	10.50	8.00	2.80	7.48	2.40	1.40	12.61	24.06	76.24
TD Ameritrade	8.00	15.00	7.00	5.00	4.12	3.00	1.50	12.04	18.36	74.02
Fidelity Go	6.00	13.50	6.00	4.60	7.12	3.00	0.58	12.39	20.60	73.79
TIAA	8.00	12.00	6.00	2.60	7.03	2.40	0.33	11.69	22.37	72.43
Vanguard	6.00	13.50	3.00	5.80	8.00	2.40	2.00	13.75	16.30	70.75
E*Trade Core	8.00	12.00	7.00	2.80	5.62	3.00	1.27	11.91	17.48	69.07
Betterment	5.50	13.50	9.00	8.17	6.80	3.00	2.00	12.50	6.23	66.69
Ellevest	6.50	12.00	5.00	6.55	5.64	3.00	1.07	14.74	11.79	66.28
Wells Fargo	7.00	13.50	5.00	3.00	6.72	2.40	0.17	10.27	17.61	65.66
Wealthsimple	8.00	10.50	6.00	8.34	4.17	3.00	1.00	9.68	14.65	65.34
SoFi	7.00	1.50	4.00	5.25	7.19	3.00	0.53	15.00	21.31	64.78
Axos Invest	0.00	6.00	5.00	7.60	5.40	3.00	1.20	12.60	22.87	63.67
Wealthfront	0.00	15.00	6.00	6.80	7.18	3.00	2.00	12.29	11.25	63.51
Merrill Edge	7.00	13.50	7.00	3.47	6.16	2.40	0.42	9.21	11.91	61.07
Schwab	6.50	12.00	6.00	5.53	8.89	2.40	2.00	11.17	5.11	59.59
Personal Capital	6.50	15.00	10.00	7.00	5.96	0.00	2.00	5.51	6.35	58.32
Ally Invest Managed Portfolios	0.00	9.00	8.00	3.80	6.15	3.00	1.20	12.29	14.69	58.13
Zacks Advantage	8.50	7.50	5.00	2.93	5.29	1.20	0.50	6.63	17.56	55.12
Morgan Stanley	0.00	13.50	7.00	3.60	6.68	2.40	0.08	11.30	10.00	54.57
Acorns	0.00	3.00	5.00	4.80	4.72	3.00	1.60	14.85	17.27	54.24
FutureAdvisor	7.00	3.00	3.00	3.60	1.89	2.40	1.60	9.84	15.69	48.02
Maximum	**10**	**15**	**10**	**10**	**10**	**3**	**2**	**15**	**25**	**100**

Produced by Backend Benchmarking for BackendB.com

Best Overall Robo Advisor

- **Winner: SigFig**
- **Runner-up: TD Ameritrade**
- **Honorable Mention: Fidelity Go**

The *Robo Ranking* has a new Best Overall Robo Advisor, as SigFig has taken the top spot from Fidelity Go. SigFig won because of its record of strong performance, low fees, and access to advisors at lower asset levels than many other providers. Over the 2.5-year analysis period used for this *Ranking*, SigFig had the best performance relative to its Normalized Benchmark and the best risk-adjusted performance measured by the Sharpe ratio. Its resulting performance score drove it to the top of the *Ranking*. However, SigFig has many attractive features beyond performance.

SigFig won because of its record of strong performance, low fees, and access to advisors at lower asset levels than many other providers.

With a $2,000 account minimum and a $10,000 minimum for access to live advisors, SigFig is widely accessible to new investors and can provide live advice at a low minimum with an affordable fee. SigFig only charges 0.25% annually and there is no management fee on the first $10,000 invested.

But even at its lower tier, SigFig offers customers strong digital tools. Its built-in retirement planner allows users to adjust retirement and investing variables, such as where a user will retire, standard of living in retirement, risk profile of the user's investment strategy, life expectancy, and more. SigFig also offers several unique features. Users can link external brokerage accounts and SigFig will analyze the portfolio and flag issues, such as high fees and improper diversification across and within asset types. At its premium level, SigFig is one of the only providers that flexibly handles unrealized taxable gains on securities transferred in from an outside account. One noted detriment to SigFig is, despite advertising tax-loss harvesting, we did not witness SigFig take advantage of the recent market volatility to execute any tax-loss harvesting trades. Strong risk-adjusted performance, affordable access to live advisors, and strong digital tools are why SigFig has claimed the top spot.

TD Ameritrade moved up to the runner-up position for Best Overall in this *Ranking*. TD received a perfect score in the Financial Planning category and most of the points for the Access to Advisors category. Clients can call or visit a TD financial consultant found across its network of local branches. These professionals will create a comprehensive financial plan. We note that this financial planning service is not native to Essential or Selective portfolios itself, but is available to all TD customers via branch representatives, in-person or over the phone. However, this is still an old-school approach to providing advice. TD's website does not have the suite of digital tools or user experience that we have come to expect in today's digital providers.

TD received a perfect score in the Financial Planning category.

Another area that TD does well is cost. TD offers its Essential Portfolios service for a low fee of 0.30% and has underlying fund fees of only 0.05%. Low fees, combined with a low minimum, strong performance, and the access to advisors, make TD a compelling offering for most investors. Unfortunately, there is a large unknown as to how Schwab will eventually integrate Essential and Selective Portfolios after the planned acquisition. We suggest potential new clients hold off choosing TD until they can understand clearly what the acquisition will mean for their portfolio and service.

Fidelity Go, after being ranked the best robo three consecutive times, has dropped to third place. Fidelity Go constructs its portfolios with its proprietary Fidelity Flex mutual funds. Although we acknowledge the conflict of interest in a provider relying on proprietary funds, this account has steadily outperformed in terms of performance vs. the Normalized Benchmark and Sharpe ratio. Fidelity Go has a competitive annual management fee of 0.35% and the Fidelity Flex funds do not have any underlying expense ratios, making 0.35% an all-in cost. We have always been an advocate for transparency and like the fact that clients can easily and clearly understand the all-in cost of Fidelity Go. Clients can upgrade to the Personalized Planning and Advice level, but the fees jump to 0.50%, and the minimum increases from $10 to $25,000. This 0.50% fee and increased minimum, although not the lowest on the market, is competitive with other "hybrid-advice" offerings. With this higher-tier service, account holders can work with an advisor to address investment and planning needs that are not covered by Fidelity Go's digital tools. Consistent performance, a competitive fee structure, and useful digital planning tools are the hallmark of a good robo advisor and why we ranked Fidelity Go third in the Best Overall Robo category.

Fidelity Go has a competitive annual management fee of 0.35% and the Fidelity Flex funds do not have any underlying expense ratios, making 0.35% an all-in cost.

Best Robo for Performance at a Low Cost

- **Winner: SigFig**
- **Runner-Up: Axos Invest**

The *Robo Ranking* performance score is based on the account's Sharpe ratio and performance compared to the account's Normalized Benchmark. This *Ranking* uses data from the last two and a half years.

SigFig wins the Best Robo for Performance at a Low Cost award. It took the top spot in performance with an annualized return of 0.38% above its Normalized Benchmark, while the average robo underperformed its Benchmark by -1.11%. Additionally, SigFig's Sharpe ratio was 0.26, while the group average was 0.16, meaning SigFig not only had compelling returns but had an efficient level of risk taken to achieve those returns. SigFig's portfolio benefited from a few major factors. First, its stock portfolio avoided a value tilt and an international tilt which were both detrimental. Second, its bond allocation was predominantly allocated to high-quality fixed-income ETFs, including a large allocation to a Barclays Aggregate ETF and allocations to US TIPS ETFs. These choices helped bolster the higher Sharpe ratio as high quality bonds offer diversification benefits when paired with stocks.

SigFig took the top spot in performance with an annualized return of 0.38% above its Normalized Benchmark, while the average robo underperformed its Benchmark by -1.11%.

From a fee perspective, SigFig is a competitive offering with a 0.25% management fee and 0.07% in underlying fund fees. SigFig lacks the digital features of Wealthfront or Personal Capital, and its financial planning offering does not score at the top of the pack, but its compelling performance cannot be overstated. This robo is recommended for those that are looking for an efficient portfolio, low expenses, and a strong track record of performance.

Axos Invest (formerly WiseBanyan) placed second for Best Robo for Performance at a Low Cost. In this *Ranking* and in previous ones, Axos has consistently been a top performer and only charges 0.24% annually, which is on par with other inexpensive products. It is one of only two robos to outperform its Normalized Benchmark and has the second-best Sharpe ratio, meaning that it is providing superior returns when adjusting for the risk of the portfolio. Over the 2.5-year period analyzed for this *Ranking*, the total portfolio returned 4.38% annually, beating the average portfolio's return of 3.22%.

Axos Invest's product is a digital-only platform, meaning there is no access to live advisors for clients. Unlike most other digital planning tools, Axos clients work through a series of modules, answering questions about their financial lives that cover a broad set of topics, including student loans, mortgages, and budgeting. The software then delivers advice on areas that it believes the client should focus on next, many of which are not directly related to investments. This approach covers a wider breadth of personal finance topics than many other tools and can help clients identify important areas of their holistic financial picture that need to be addressed. Unfortunately, the downside to this method is it does not produce a comprehensive, integrated, and multi-goal plan. For those seeking a robo advisor with a strong performance track record, Axos is a quality choice. However, its tool might not be robust enough for those with more complex financial planning needs.

For those seeking a robo advisor with a strong performance track record, Axos is a quality choice.

Best Robo for Complex Financial Planning Needs

- **Winner: Vanguard Personal Advisor Services**
- **Runner-up: Personal Capital**
- **Honorable Mention: Wealthsimple and Ellevest**

Investors with complex financial planning needs benefit from the ability to work with a live planner and should consider robo advisors with access to human advisors.

Although many providers offer more robust planning services at a higher-fee service tier or a-la-carte planning packages, Vanguard's Personal Advisor Services includes planning with a live advisor for just a 0.30% management fee. Personal Advisor Services championed the hybrid-advice model early and centers the planning experience around live advisors. Working with an advisor, users can plan for multiple long-term investment goals and receive a comprehensive illustration of their assets. While Vanguard's digital planning tools at the Personal Advisor Services level are not as feature-rich or flexible as those offered by Personal Capital, the runner-up in this category, its individualized approach stands out. What Personal Advisor Services lacks in an intuitive user interface it makes up for with its traditional approach to delivering high-quality advice through live planners.

Vanguard's Personal Advisor Services includes planning with a live advisor for just a 0.30% management fee.

The runner-up in this category, Personal Capital, combines a traditional, live-advisor approach with best-in-class digital planning tools. Its free digital planning tools are flexible and can handle a broad set of income and spending goals. Additionally, Personal Capital has a 'Retirement Paycheck' feature that will help users determine a tax-efficient withdrawal strategy as they transition from earning a salary to relying on assets to supplement their income during retirement. When an investor needs help beyond the digital planning tools, Personal Capital's team of live advisors and planners is there to bridge the gap.

Personal Capital also offers access to multiple portfolio strategies including direct indexing and SRI-themed portfolios. Those investing more than $1,000,000 with Personal Capital's Private Client service can receive custom portfolios that include individual stocks and bonds, as well as the option of gaining exposure to private equity.

Personal Capital was one of the few advisors in our ranking with a perfect score in the financial planning category.

The biggest detriment to Personal Capital is its fees, which currently start at 0.89%. When compared to other digital advice providers, this fee is high but is still lower than typical traditional advisors. Fees aside, Personal Capital was one of the few advisors in our ranking with a perfect score in the financial planning category and is well-suited to help clients with complex needs.

Both Wealthsimple and Ellevest earned honorable mentions for their complex financial planning capabilities. At their highest service levels, Wealthsimple Generation and Ellevest Private Wealth investors receive individualized planning and investment services comparable to those offered by Personal Capital's Private Client offering. Ellevest, which caters to female investors, also has the unique feature of offering career coaching to help clients navigate salary negotiations and other career challenges. Ellevest recently changed to a subscription model and now offers live planning sessions to their non-Private Wealth clients for an additional fee. Additionally, Wealthsimple provides access to live advisors to all of their clients, regardless of service level. But, those who wish to build a full financial plan with a Wealthsimple planner will need a minimum investment of $100,000 and must be signed up for Wealthsimple Black. Wealthsimple can provide comprehensive plans, but the planning portal and the regular client portal are not currently integrated.

Best Robo for First-Time Investors

- **Winner: Betterment**
- **Runner-up: Wealthsimple**
- **Honorable Mention: SoFi**

Betterment once again wins the award for Best Robo for First-Time Investors. Betterment has no investment minimum, making it accessible to all customers. Its annual management fee of 0.25% is low and, thus, is a prudent option. Additionally, Betterment stands out with financial planning tools that are easy to understand and compare an investor's options intuitively. The user interface allows an investor to create specific portfolios that correspond to separate goals. The goal forecaster shows how a one-time deposit, a change in recurring deposits, or even a change in time horizon can influence the outcome. The outcomes themselves show a range of possibilities so that the investor can understand the risks and manage their expectations. Finally, for those new to understanding investment risk, there is a sliding scale feature that displays how modifying the allocation to stocks increases the likelihood of achieving your goal but comes with increased volatility.

Betterment stands out with financial planning tools that are easy to understand and compare an investor's options intuitively.

Betterment offers access to CFPs, for both one-time financial planning sessions or unlimited access with Betterment Premium. A new investor can benefit from having a one-time consultation to create a clear plan and ask questions. As the investor's assets grow over time, their financial planning needs may become more complex and Betterment Premium is a natural next step. The CFP designation is the industry standard for financial planning, and Betterment is one of the only robos to specify this credential as part of their offering.

Additionally, Betterment Everyday offers a high-yield cash account where investors can use their reserves to earn more interest than they would in a checking account. Betterment also offers socially-responsible investing, income-oriented investing, and smart-beta investing. These strategies may be interesting to new investors still exploring what makes sense for them. With no investment minimum, competitive fees, clear financial planning tools, CFPs, and different investing options to explore, Betterment is our top choice for the first-time investor.

Wealthsimple is a new addition to this category. Its Basic tier is a compelling offering with no account minimum to encourage accessibility, options for SRI or Halal investing, roundups to facilitate extra savings, and access to financial experts without additional cost.

Access to a portfolio review with a financial expert at the lowest tier, without additional cost, makes asking questions and starting a dialogue with a professional easy for a first-time investor. Common behavioral pitfalls like trading when emotions are high, misjudging one's risk capacity, or failure to stay the course, can all be mitigated with the assistance of an expert.

SoFi receives an honorable mention in this category. SoFi has no minimum or management fee and offers access to expert advice. While SoFi originally began as a provider of consumer lending and student debt management, it views investment management as an important complement. Once customers pay down their student loans, they can begin saving, planning, and investing in-house with SoFi. SoFi Money offers high-interest saving and budgeting tools to support day-to-day personal finance needs. With SoFi, a new investor has an expert to call with questions, the knowledge that they are getting a great deal on their investing, and access to other financial tools and resources in the same place.

Best Robo for Digital Financial Planning

- **Winner: Wealthfront**
- **Runner-Up: Personal Capital**
- **Honorable Mention: Schwab**

High-quality financial planning has traditionally been reserved for wealthy individuals. The advent of digital advice has lowered barriers for professional money management and democratized financial services. Wealthfront, Personal Capital, and Schwab have all embraced this trend and offer robust planning tools.

These companies offer tools that can handle complex, multi-goal plans and show users the interaction of all their goals in a single, unified plan. Automated account aggregation available at these robos provides users with a comprehensive view of their financial picture, regardless of where their assets are held. Wealthfront and Personal Capital provide their planning tools for free to non-clients. Historically, independent robo advisors have offered the best digital financial planning experiences. However, Schwab's upgrade of its financial planning tools at the premium service level earned them an honorable mention in this category.

Schwab deserves an honorable mention in this category, after it revamped its financial planning experience in 2019.

Wealthfront once again takes the top spot for best digital planning tools. Its platform can capably model six different planning scenarios: retirement, saving for college, buying a home, large one-time expenses, income windfalls, and taking extended time from work to travel. Whenever adding a new goal, Wealthfront has built an intuitive questionnaire that walks users through the variables that are considered in the analysis, projecting how a new goal will impact each of their other investing and spending goals. For example, the extended travel goal considers users' current income, net worth, and estimated travel costs to help them determine the potential impact on their holistic financial plan. Once set up, all goals are plotted along a timeline for easy visualization.

Wealthfront has also taken steps in recent months to bolster its financial planning platform. Wealthfront is developing a platform called "Self-Driving Money," aimed at further reducing the friction of saving and meeting financial goals. Self-Driving Money is still evolving but Wealthfront has built the first steps. Users can now deposit paychecks into their Wealthfront cash accounts. According to Wealthfront, it will soon take that paycheck and automatically split it optimally across paying bills, saving, and investing. Wealthfront has also hinted at a platform to help users acquire mortgages, which will likely take into consideration a user's overall planning needs. We rate Wealthfront as the best robo advisor for digital financial planning based on what is currently available on the platform, and we are also excited to see what new features will be released in the future.

Wealthfront is developing a platform called "Self-Driving Money" aimed at further reducing the friction of saving and meeting financial goals.

Like Wealthfront, Personal Capital's planning tool can model a broad set of goals in a unified plan. Personal Capital provides users with a retirement planner, savings planner, investment checkup tool, and retirement fee analyzer. Using the retirement analysis tool, individuals can factor seven different types of income events and ten different spending goals covering a wide range of client needs. However, there are limitations to the tools provided. For example, Personal Capital's home purchase tool takes into consideration the down payment and age at which the purchase will occur, but does not adjust spending to account for a change in the user's mortgage payments, property taxes, etc.

In contrast, Wealthfront's tool considers users' 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. Wealthfront then shows how homeownership will affect a user's net worth over time by plotting it in its unified plan. While Personal Capital offers a wider breadth of planning options, Wealthfront wins as the Best Robo for Digital Financial Planning due to its more dynamic, data-driven planning tools. Notably, both platforms provide their planning tools for free to users without needing to open and contribute to an account. Regardless of whether a user needs a simple single-goal plan, or a complex multi-goal plan, either planner is capable of producing a quality plan.

Both platforms provide their planning tools for free to users without needing to open an account.

Schwab deserves an honorable mention in this category after it revamped its financial planning experience in 2019 and introduced a set of features to help retirees with income during retirement in 2020. The planning experience is significantly upgraded at the Premium service tier, but only limited functionality is available at the digital-only service tier. Within the Premium platform, investors can build multiple financial goals with different risk tolerances that factor in assets held in outside accounts. The new tool also allows for 16 different goals, including starting a business, leaving an inheritance, and anticipated healthcare needs, among others. Additionally, Schwab allows users to customize the importance of each goal, ranking them between needs, wants, and wishes. The tool then walks users through a questionnaire that factors in all available money sources, including Social Security, pensions, insurance, stock options, etc. They allow a user to allocate certain accounts towards specific goals. After assessing risk tolerance, the planning tool runs a Monte Carlo simulation, helping users understand the probability of successfully achieving their goals. This tool is powered by Money Guide Pro, a leading planning software commonly used by financial professionals. When combined with a scheduled call with a financial planner, Schwab's platform provides significant value. Unfortunately, this level of planning is not available until clients have over $25,000 in invested assets on the platform and have signed up for the Premium service tier.

Schwab allows users to customize the importance of each goal, ranking between needs, wants, and wishes.

Robo Ranking Facts (Results as of 06/30/2020)

	2.5-Year Annualized Return	2.5-Year Return vs. Normalized Benchmark	2-Year Sharpe Ratio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio
Acorns[1]	3.49%	-0.88%	0.18	No minimum	$1/mo for Acorns Invest; $3/mo for Invest + Acorns Late + Acorns Spend; $5/mo for Acorns Family (includes family services). For balances above $1 million contact Acorns directly.	0.09%
Ally Financial[9]	3.22%	-1.16%	0.16	$100	0.30% annually; Also offer a 'Cash-enhanced' portfolio with 30% invested in cash and no management fee	0.06%
Axos Invest[8]	4.38%	0.08%	0.23	No minimum	0.24% annually	0.09%
Betterment[27]	1.80%	-2.48%	0.07	Digital: No minimum; Premium: $100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above $2M	0.09%
E*Trade[21]	3.54%	-0.83%	0.18	$500	0.30% annually	0.09%
Ellevest[15]	2.90%	-1.53%	0.14	Digital: No minimum; Private Client: $1 million	$1/mo, $5/mo, $9/mo - all of which offer investing, debit card, and increased access to discounts for coaching and financial planning based on tier level	0.07%
Fidelity Go[33]	3.88%	-0.47%	0.21	Digital Only: No minimum; Personalized Planning & Advice: $25,000	Digital Only: for balances less than $10,000 there is no fee, for balances between $10,000 - $49,999.99 it is $3/mo, for balances $50,000 and above it is 0.35% annually. Personalized Planning & Advice: 0.50% annually	0.00%
FutureAdvisor[3]	3.34%	-1.09%	0.17	$5,000	0.50% annually	0.07%
Merrill Edge[31]	2.83%	-1.35%	0.13	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%
Morgan Stanley[12]	2.65%	-1.69%	0.12	$5,000	0.35% annually	0.08%
Personal Capital[4]	1.72%	-2.40%	0.07	$100,000	0.89% annually for the first $1 million; lower at different tiers over $1 million	0.11%
Schwab[5]	0.81%	-3.56%	0.02	Intelligent Portfolios: $5,000; Intelligent Portfolios Premium: $25,000	Intelligent Portfolios: No fee (digital only); Intelligent Portfolios Premium: $300 initial planning fee, $30/mo subscription	0.19%
SigFig[6]	4.71%	0.38%	0.26	$2,000	No fee for the first $10k; 0.25% annually for balance over $10k	0.07%
SoFi[17]	4.03%	-0.39%	0.22	No minimum	No management fee	0.04%
TD Ameritrade[10]	3.62%	-0.61%	0.18	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; 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[7]	4.20%	-0.15%	0.23	$5,000	0.30% annually	0.07%
Vanguard[4,A]	3.42%	-0.95%	0.17	Vanguard Personal Advisor Services: $50,000; Vanguard Digital Advisor: $3,000	Vanguard Personal Advisor Services 0.30% annually for the first $5 million; lower at different tiers over $5 million. Vanguard Digital Advisor Services all-in fee capped at 0.20% annually.	0.07%
Wealthfront[22,B]	2.77%	-1.51%	0.13	$500	0.25% annually	0.11%
Wealthsimple[11]	3.20%	-1.17%	0.16	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%
Wells Fargo[14]	3.52%	-0.80%	0.18	$5,000	0.35% annually; discounted to 0.30% if subscribed to other specific Wells Fargo products	0.13%
Zacks Advantage[29]	3.49%	-0.81%	0.18	$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%

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Returns are net of fees and from 12/31/2017 - 06/30/2020. The weighted average expense ratio calculations exclude cash holdings from the portfolio.

Taxable Top Performers

1-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Titan Invest	Morgan Stanley Robotics	Wealthsimple SRI
Equity	Titan Invest	Morgan Stanley Robotics	Morgan Stanley Genomics
Fixed Income	Wealthsimple	SigFig	FutureAdvisor

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2-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Wealthsimple SRI	SigFig	Morgan Stanley SRI
Equity	Morgan Stanley SRI	Wealthsimple SRI	SoFi
Fixed Income	Wealthsimple	E*Trade Core	SigFig

Produced by Backend Benchmarking for BackendB.com

3-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	SigFig	Axos Invest	TIAA
Equity	SoFi	Fidelity Go	Axos Invest
Fixed Income	Wealthsimple	SigFig	E*Trade Core

Produced by Backend Benchmarking for BackendB.com

4-Year Trailing Top Performers

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

Produced by Backend Benchmarking for BackendB.com

Returns are net of fees and are as of 6/30/2020.
Total Portfolio winners are based on the portfolio's return vs. the Normalized Benchmark.

Performance Commentary

- *Robos bounce back after a tumultuous first quarter*
- *Titan shines by making tactical moves and holding the right stocks*
- *SigFig and Axos remain as top long-term performers*
- *SigFig is the top performer across the board over the 4-year period*
- *Robos engage in tax-loss harvesting and rebalancing to different extents, sometimes falling short of expectations*

Markets Overview

Following a less than rosy start to the year, the second quarter of 2020 was marked by a strong rebound across financial markets. While the ongoing coronavirus pandemic is still present, certain parts of the country experienced a steady decline in new daily cases and began the early stages of their reopening plans. This, in addition to large-scale adjustments to the new normal under quarantine and vaccine development, has pushed the unemployment rate down and bolstered U.S. retail sales. Domestic equities responded positively to this news, with the S&P 500 Index gaining 20.54% during the quarter—the best quarterly return on record since 1998—and was only down 3.09% through the first half of the year. Similar to the first quarter, certain sectors—healthcare, technology, and consumer staples—fared better than the rest.

The fixed-income space continued to be guided by the Federal Reserve's accommodative policy measures and investors' desire for safe havens in a tumultuous equity market. With the Fed's discount rate now sitting at zero percent, Treasury yields remained at historically low levels; the U.S. 10-Year Treasury Note ended the quarter yielding a measly 0.66%. Additionally, while the Fed signaled an unwillingness to push rates into negative territory, further monetary policies aimed to lessen the economic impact of COVID-19 were instituted, including the purchase of corporate bonds. As a result, both investment-grade and high-yield corporate bonds rallied during the quarter, outpacing municipal issues, which have lagged in part due to uncertainties over municipal revenue sources.

Robo Advisors Rebound

After a very difficult first quarter, robo advisors rebounded with the market in the second quarter. The average portfolio returned 19.66% on its equity holdings and 4.15% on its fixed-income holdings in the second quarter. When looking at year-to-date performance, many of the top performing portfolios were those that ran a unique strategy.

> *The average portfolio returned 19.66% on its equity holdings and 4.15% on its fixed income holdings in the second quarter.*

Titan Invest, which regards itself as a robo that brings hedge fund-like management to the masses, was the top performer over the second quarter, the year-to-date period, and the 1-year trailing period ending on June 30th. Its portfolio also had the best equity performance over the period. This is due in part to its purchase of an inverse S&P 500 fund in March. This is a strategy that we have only witnessed at Titan and it proved quite timely. While the S&P

> *While the S&P 500 was down 3.09% for the first half of 2020, Titan Invest's portfolio increased in value by 11.51%.*

500 was down 3.09% for the first half of 2020, Titan Invest's portfolio increased in value by 11.51%. Titan's performance was also bolstered by its holding of individual securities, such as Amazon, Microsoft, Netflix, and Apple. Although certain segments of the market lagged, the aforementioned tech giants drove the broad market higher with their strong performance. Titan is also notably one of the few taxable portfolios we hold that is a 100% equity strategy.

Year-to-date, robos' equity holdings returned -7.78% on average. While the average robo underperformed the S&P 500, the S&P 500 is a large-cap index, and large-caps were one of the strongest performing areas of the market during this period. Robos hold diversified assets and typically have exposure to international equities as well as mid- and small-cap. We also expect our robo universe to be less volatile than the market, as our taxable robos are positioned around a 60% equity allocation.

Wealthsimple Continues Strong All Around Performance

Amongst the moderately positioned group (60% equity) of taxable portfolios, Wealthsimple was a strong performer both when compared to the Normalized Benchmark and when looking at only equity or fixed-income performance. Our standard and SRI Wealthsimple portfolios placed third and fourth, respectively, when compared to the Normalized Benchmark over the first half of 2020. The standard portfolio was the top fixed-income performer. We attribute this performance to two choices.

First, the standard portfolio stood out because the entirety of its fixed-income holdings are investment-grade, with nearly two-thirds being long-duration U.S. Treasury bonds. Long-duration treasuries offer downside protection as rates fall and uncertainty increases. The portfolio's fixed income returned 12.99% since the beginning of the year and 13.12% over the 1-year trailing period. Second, Wealthsimple purchased minimum volatility international equity funds towards the end of 2019. In the extreme volatility earlier this year, these funds provided downside protection. They did, however, damper performance in the second quarter when equity markets rebounded.

What Drove Robo Performance?

Across our robo portfolios and the market generally, there are a few clear trends over both the short and long term that have driven performance. In equity markets, growth stocks have both weathered the pandemic well and proven to be long-term winners. Domestic has provided superior returns in the last four years. While domestic large-cap stocks slightly underperformed mid- and small-cap peers in the second quarter, they are still the leader YTD. In fact, within domestic markets, large-cap stocks have outperformed consistently over the past four years. See the indices return chart for year-to-date and 3-year returns.

Consequently, portfolios with equity tilts towards growth, domestic, large cap, or some combination of those factors, posted superior returns. It is worth noting that outside of themed portfolios and Titan Invest, growth tilts are not commonly seen in our universe. Quite a few providers have a distinct value tilt to their portfolios, while most are neutral towards growth and value, often holding market-weighted funds.

Consequently, portfolios with equity tilts towards growth, domestic, large cap, or some combination of those factors, posted superior returns.

In the first half of 2020, the top three equity performers, as measured by returns vs. the Normalized Benchmark, were Titan Invest, Morgan Stanley Robotics, Data, and AI portfolio, and the Morgan Stanley Genomics and Biomedicine portfolio. Titan, discussed above, has a growth tilt via its selection of individual holdings. The Morgan portfolios are themed portfolios. Its Robotics portfolio relies on a group of themed ETFs that focus on robotics, cloud computing, and innovation, with the resulting portfolio having a heavy growth tilt.

The story is similar for the Morgan Stanley Genomics portfolio. It holds the ARK Genomic Revolution ETF (ticker: ARKG), which according to ETF.com, was the top performing ETF in the first half of 2020. Other biotech ETFs it holds have had outsized gains when compared to the broad market and even other growth stock ETFs. In fact, five of the top ten year-to-date equity performers were themed Morgan Stanley portfolios. Relative to the standard Morgan Stanley portfolio, these outperforming themed portfolios have a larger allocation to growth stocks.

In fact, five of the top ten year-to-date equity performers were themed Morgan Stanley portfolios.

Where Portfolios Fell Short

Schwab was the worst equity performer over the first half of the year. In terms of value-growth and domestic-international spectrums, it falls on the opposite side of the top performers, tilting towards value and international holdings. Its equity holdings returned -13.45% over the period, or 6.75% below the average robo. However, even when looking at Schwab's Domestic Focus portfolio, which removes some of the international holdings, it was still the third-worst equity performer at a 12.60% loss.

As we have mentioned in several previous reports, Schwab's portfolio has the largest allocation to cash amongst robos. While this may be a buffer in a down market, other holdings, like treasuries, can provide better downside protection. In the second quarter, stocks and bonds were up across the board and Schwab had roughly 10% of its portfolio in cash, creating a drag on performance.

Long-Duration Fixed Income Pays Off

In the fixed-income space, long-duration bonds performed better than short-duration bonds over the year-to-date, 1-year, 2-year, and 3-year periods across both treasuries and corporate bonds. The main driver was the Fed mostly holding rates low, raising them to only cut them again this year, and continuing to buy fixed-income assets like corporate bonds. Corporate bonds have outperformed municipals as a whole. After long-term treasuries, long-term corporates have been strong performers. Holding the Barclays Agg provides significant exposure to treasuries, and portfolios with ETFs that track the Barclays US Aggregate Bond Index, including second- and third-placed year-to-date top performers JP Morgan You Invest and SigFig, saw their fixed-income holdings perform well.

3-Year and 4-Year Performance Winners: SigFig Takes the Top Spot Across the Board

After leading performance relative to the Normalized Benchmark in the last *Robo Report* over the 3-year trailing period, SigFig has also claimed the top 4-year equity and fixed income performance spots for the period ending June 30, 2020. SigFig's equity holdings returned 9.40% annually, while its fixed income returned 4.29% annually. We attribute SigFig's strong performance to holding more emerging markets than developed as a percentage of its international holdings and its choice to rely on simple total stock market ETFs, which are heavily allocated to the large caps that have performed so well.

After leading performance relative to the Normalized Benchmark in the last Robo Report over the 3-year trailing period, SigFig has also claimed the top 4-year equity and fixed income performance spots.

Over the 3-year period for which we have data on more robos, Axos Invest and TIAA placed second and third, respectively, for performance compared to their Normalized Benchmarks. SoFi was the top equity performer over the period, with a 6.82% annualized return, and Wealthsimple was the top fixed income performer, primarily driven by its exceptional performance in the past year, with a 6.67% annualized return. The average 3-year equity and fixed income returns were 5.12% and 4.34%, respectively.

Over the 1- and 2-year periods, the robo advisors' bond holdings outperformed the equity holdings by 4% to 5% annually, giving credence to the importance of asset class diversification.

The average 3-year equity and fixed income returns were 5.12% and 4.34%, respectively.

A Review of Tax-Loss Harvesting Trades

The last six months have given us an opportunity to take a close look at how different providers implement tax-loss harvesting (TLH) strategies. On the surface, many robos describe their TLH services similarly but, in practice, we are seeing meaningful differences in execution. To measure TLH, we track a specific set of accounts that were opened and funded at the same time and receive monthly deposits. While at the same providers, these TLH accounts are separate from those included in the primary *Robo Report* study.

As of the end of June, our TD Ameritrade, Schwab, and Wealthfront accounts stood out for having significant TLH trades. TD Ameritrade turned its portfolio over 127% during the six-month period, while Schwab and Wealthfront turned over their portfolios 124% and 110%, respectively. Meanwhile, other TLH providers include Axos Invest, Morgan Stanley, and Wealthsimple, which exhibited portfolio turnover rates of 69%, 51%, and 37%, respectively. Betterment had a more modest turnover rate of 25% but was still very active in harvesting losses. These firms are clearly executing their TLH strategies and providing some tax alpha to clients.

As of the end of June, our TD Ameritrade, Schwab, and Wealthfront accounts stood out for having significant TLH trades.

On the other hand, our TLH accounts held at SigFig, Citizens Bank, and UBS show little or no activity during the period. Citizens Bank and UBS leverage SigFig's technology to power their robo advisors. So, we are not surprised to see these results clustered together. SigFig and Citizens Bank demonstrated zero TLH trades in spite of the market sell-off in the first quarter. Similarly, UBS showed only one trade that we identified as TLH. We will continue to monitor these providers closely but so far they have left much to be desired in terms of TLH trades.

Rebalancing

The first half of this year served as an interesting case study to see how our robo accounts implemented rebalancing strategies; equity markets declined sharply in March but rebounded by the end of June, giving robos an opportunity for timely rebalancing trades. Many of the top robo advisors rebalanced during the dip. Schwab, Wealthfront, Edelman, Betterment, Personal Capital, and TD Ameritrade all had notable rebalances from bonds to stocks during the lows. Schwab, for example, had a significant rebalance from US TIPS to international equities on March 23rd, the lowest point of the first half of 2020. Similarly, Personal Capital and Edelman had a pair of rebalances from US investment-grade bonds to international equities during the decline. Another popular trade was selling municipal bonds and buying stocks, which Betterment and Wealthfront capitalized on during March lows. TD Ameritrade moved from bonds to stocks on March 25th, but only implemented one trade to seize the opportunity. While well-timed, it was one of the only rebalancing trades we have seen in that account to date.

Many of our top robo advisors rebalanced during the dip. Schwab, Wealthfront, Edelman, Betterment, Personal Capital, and TD Ameritrade all had notable rebalances from bonds to stocks during the lows.

Although the vast majority of firms we track executed rebalancing trades in the first half of the year, some were less well-timed. Fidelity Go made a large trade on March 17th that resulted in the sale of investment-grade bonds and the purchase of US and international stocks. However, Fidelity went on to rebalance in the other direction during the first week of April. This still proved to be a profitable move, but Fidelity's disciplined approach caused it to miss out on the rally from April to June. Merrill Lynch rebalanced from municipal bonds to stocks, but did so in a less aggressive way; its mid-March rebalances included selling bonds in a timely fashion, but holding some of the proceeds until April when it finally purchased stocks.

Other providers did not display the level of adept rebalancing that one might hope for in an automated service. The juggernaut Vanguard did not rebalance during the entire six-month period, opting only for dividend reinvestments. Personal Capital also showed minimal trading activity during the period from February to the end of the second quarter. Neither Ally nor Acorns rebalanced during the entire first half of the year. Acorns does do an efficient job using smart dividends to keep its assets in line, but if investors are looking for an opportunistic stance during a downturn, they would be disappointed.

Robo Advisor Average Returns

	2Q 2020	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	4-Year Trailing (Annualized)
Equity	19.66%	-7.78%	0.13%	2.66%	5.12%	7.65%
Fixed Income	4.15%	3.56%	5.74%	6.23%	4.34%	3.35%
Total Portfolio	13.25%	-2.93%	2.82%	4.28%	5.07%	6.27%

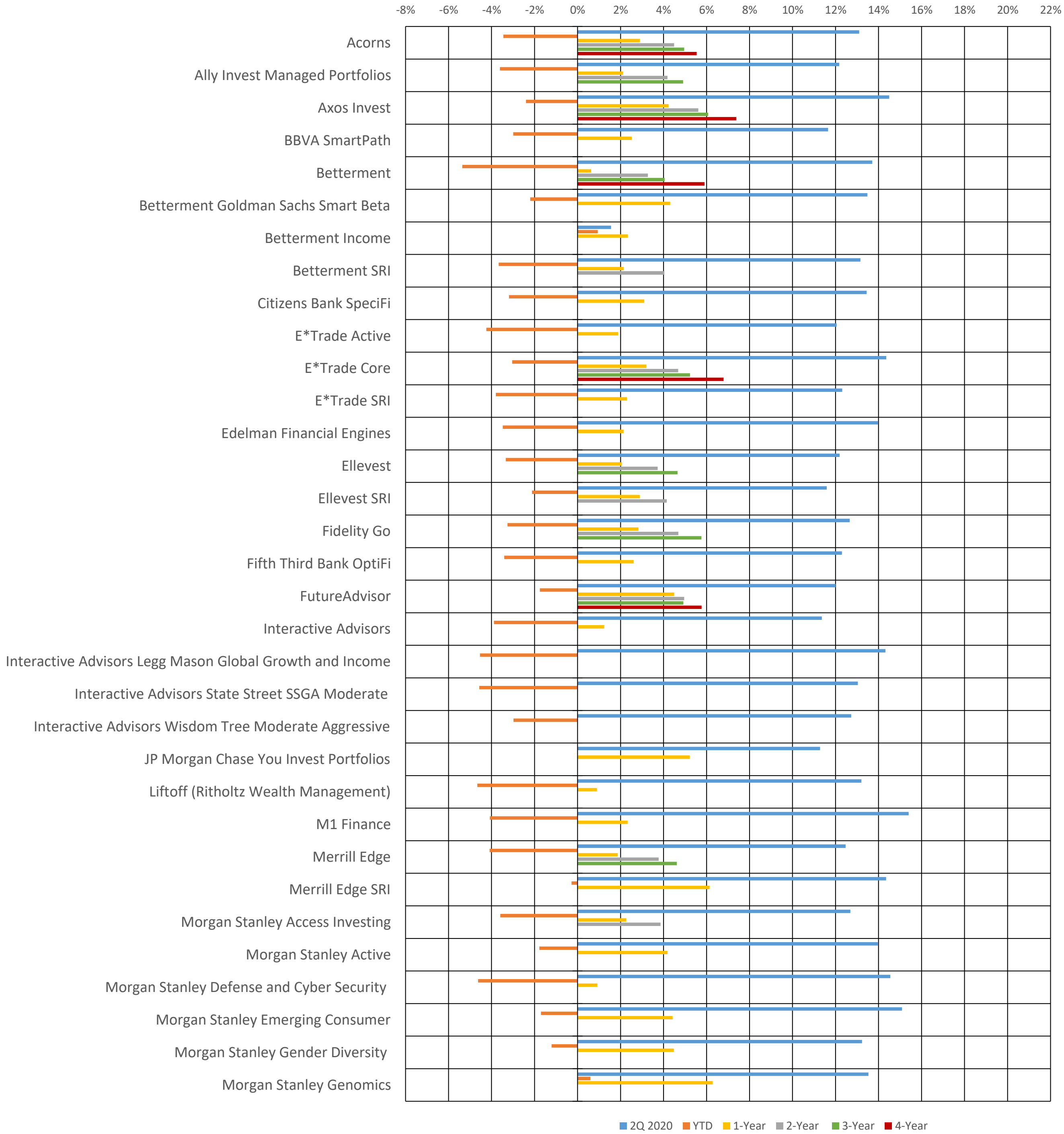
Produced by Backend Benchmarking for BackendB.com

Index Returns

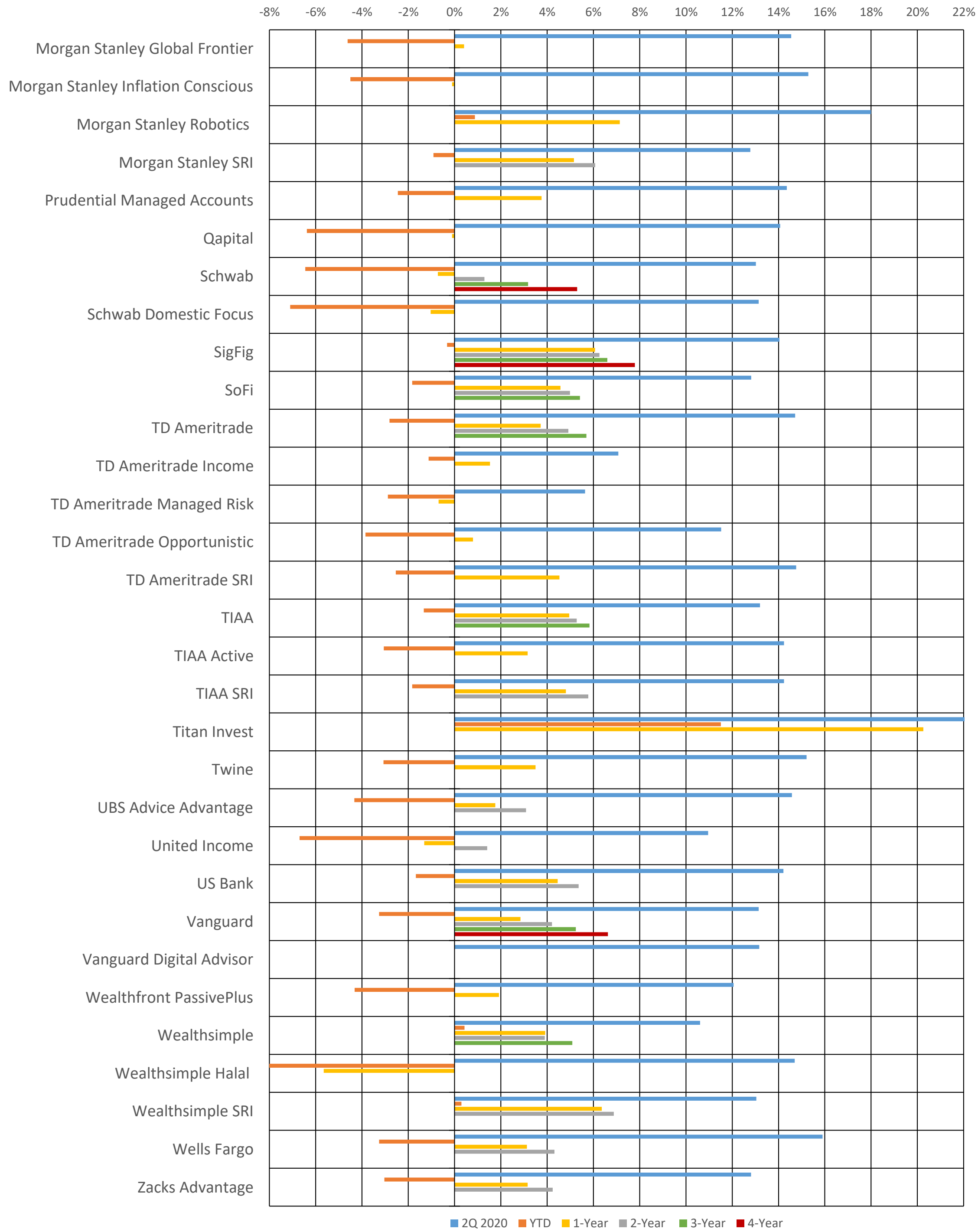
	Index	YTD	3-Year (Annualized)
Domestic	Russell 3000	-3.48%	11.07%
International Emerging Markets	MSCI Emerging Markets	-9.70%	2.29%
International Developed Markets	MSCI EAFE	-11.03%	1.40%
Value	Russell 3000 Value	-16.75%	1.41%
Growth	Russell 3000 Growth	8.98%	21.72%
Large Cap	Russell 1000	-2.81%	11.80%
Small Cap	Russell 2000	-12.99%	2.02%
US Aggregate Bond	Barclays U.S. Aggregate	6.14%	5.61%
Intermediate Corporate Bonds	Barclays Intermediate Corp.	4.23%	5.31%
Municipal Bonds	Barclays Municipal	0.91%	4.60%

Produced by Backend Benchmarking for BackendB.com

Taxable Account Performance



Taxable Account Performance (continued from previous page)



SRI Commentary

- *Socially Responsible Investing continues to garner interest; 2019 net fund flows nearly four times greater than 2018 flows*
- *Portfolio Sustainability metrics only slightly improved by choosing conscientious options in spite of significant difference in fund fees*
- *SRI performance shows promise, as majority of portfolios outperform standard portfolios*

SRI Portfolios: Unexpected Returns, Higher Fees, and Marginal Social Impact

Socially Responsible Investing (SRI), also known as Environmental, Social, Governance (ESG) investing, has grown rapidly in popularity in recent years. Asset managers have created new mutual funds and ETFs to support the growing investor demand, and digital advisors continue to roll out SRI-themed options. The basic idea is compelling: use your money to create a positive impact in the world through conscientiously selected investments. However, this space is not without controversy. There are growing concerns about the extent to which social impact is actually being achieved. Additionally, the underlying SRI funds generally have higher fees, which can be significant.

Robo advisors offer a unique way to track and compare the success of SRI portfolios. Performance of a socially responsible option from a given provider may be compared with the performance of its non-SRI counterpart. Backend Benchmarking does extensive research into robo advisors by opening and funding real accounts at different providers and analyzing their portfolios and performance. We recently conducted a study of SRI-themed portfolios offered by eight leading digital advisors. While we have witnessed a trend of SRI portfolios outperforming their non-SRI peers, the Sustainability Scores of the SRI portfolios leave much to be desired.

The Sustainability Scores of the SRI portfolios leave much to be desired.

To conduct our study, we relied on Morningstar's Portfolio Sustainability Score of individual funds. With this metric, a lower score corresponds to lower ESG Risks of the underlying companies, meaning that lower scores are better. Morningstar's guidelines explain that a score above 30 is a High ESG Risk, 20-30 is Medium Risk, and below 20 is Low Risk. Our analysis used a weighted average of the Sustainability Scores for the equity funds in our SRI portfolios and the non-SRI portfolios at the same provider. Lastly, because most of our SRI portfolios only hold SRI-themed funds in the equity portion of the portfolio, this analysis is limited to the equities of each portfolio.

Across the board, Portfolio Sustainability Scores in SRI-themed accounts were not significantly better than their non-SRI counterparts, with an average difference of only 1.54 points. Of the providers analyzed, the weighted average Sustainability Scores of the equities in the non-SRI portfolios ranged from 24.3 to 25.5, while the SRI equity portfolios ranged from 22.1 to 24.0. Every portfolio, both SRI and non-SRI, fell squarely in the Medium ESG Risk category.

Portfolio Sustainability Scores in SRI-themed accounts were not significantly higher than their non-SRI counterparts, with an average difference of only 1.54 points.

Both TD Ameritrade and Wealthsimple allocated 100% of their SRI portfolios' equity holdings to ESG-themed funds, which led to 1.9 and 1.2 point improvements to their respective Sustainability Scores but did not move either out of the Medium ESG Risk category. Other providers, such as Betterment, E*Trade, and Ellevest, only implemented ESG-themed funds for a portion of their SRI portfolios. Betterment allocated 43% of its equity holdings to ESG funds, which resulted in an overall improvement of only 1.5 points in its Sustainability Score. E*Trade's and Ellevest's SRI portfolios allocated 70% and 57%, respectively, resulting in a 1.7 and 1.1 point improvement.

Despite the similarity in portfolio composition, there was a significant increase in the expenses of the funds held in the SRI portfolios. Paltry Sustainability Score improvements combined with higher fees raise questions about how much impact signing up for an SRI-themed portfolio has beyond increasing investing costs. While our analysis shows early signs of SRI portfolios' outperformance, the question remains: Are investors being sold SRI portfolios in name only and paying higher fees for nominal improvements in SRI scores?

Despite the similarity in portfolio composition, there was a significant increase in the expenses of the funds held in the SRI portfolios.

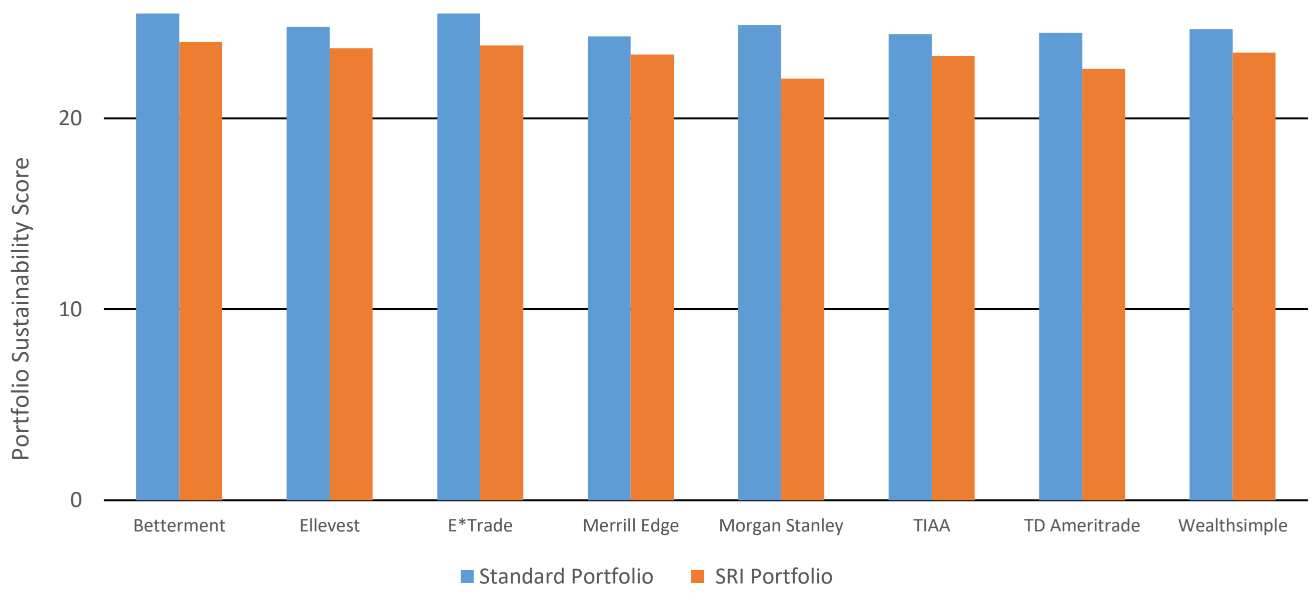
Driven by Consumer Demand, Portfolio Managers Navigate a Difficult Landscape

Despite the disappointing improvement in SRI scores, we acknowledge the difficult landscape portfolio managers must navigate given the still nascent market for SRI ETFs and mutual funds.

According to Morningstar, 2019 net flows into SRI ETFs and mutual funds grew to nearly four times their 2018 net flows. Prior to that, between 2016 and 2018, assets invested in ESG-themed mutual funds grew 34%, according to a study by USSIF. ESG-themed ETFs grew from $5 billion in cumulative net flows as of the end of 2017 to over $40 billion by the end of 2018, according to EPRF Global.

According to Morningstar, 2019 net flows into SRI ETFs and mutual funds grew to nearly four times their 2018 net flows.

Weighted Average Portfolio Sustainability Score
(Equity Portion of Portfolio)



Working with available fund options and attempting to meet consumer demand, portfolio managers have made compromises between dedication to SRI values and quality portfolio construction.

Measurement of ESG factors can be inconsistent, and the underlying data on companies frequently is of low quality. SRI funds often have higher costs, and options in many asset classes are limited. Additionally, SRI ETFs often have less liquidity than other commonly held indexed ETFs.

ESG Holdings Result in Higher Fees

In our SRI study, we noted that investing in a robo advisor's SRI portfolio caused a substantial increase in the underlying fund expenses. The average expense ratio for equity funds increased from 0.07% to 0.24%. Morgan Stanley had the greatest improvement in its ESG score (2.8 points), but consumers who chose its SRI portfolio realized an increase of 0.45% in the underlying expense ratio of the funds. Similarly, TD Ameritrade's SRI portfolio improved its sustainability score by 1.9 points but incurred an increase in fees of 0.28%. There is clearly a premium cost to SRI-themed portfolios despite the marginal difference in ESG impact.

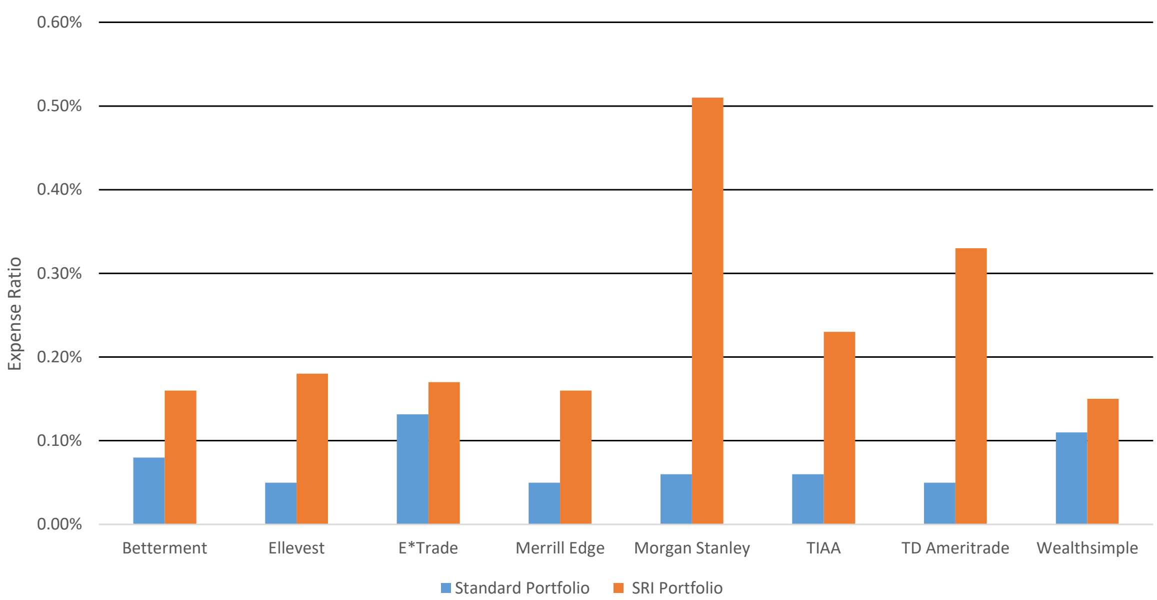
The average expense ratio for equity funds increased from 0.07% to 0.24%

Promising Performance

The good news is that in the year-to-date, 1-year, and 2-year periods covered by our analysis, the majority of the equity portions of the SRI portfolios outperformed their non-SRI counterparts. Year-to-date, six of our eight SRI portfolios' equities outperformed despite their higher fees. Morgan Stanley SRI and Wealthsimple SRI equities outperformed their counterparts by 4.73% and 3.34%, respectively. When looking at 1-year returns, seven of the eight SRI portfolios outperformed. The average SRI outperformance was by 2.9%. E*Trade, the sole SRI underperformer, was within half a percentage point of its non-SRI version. Notably, all five of our SRI portfolios with a 2-year track record outperformed their non-SRI counterpart by an average of 2.6%.

One contributing factor to this outperformance is that SRI portfolios tend to have less value exposure than their non-SRI counterparts. This has boded well in recent years. For example, over

Weighted Average Expense Ratios
(Equity Portion of Portfolio)

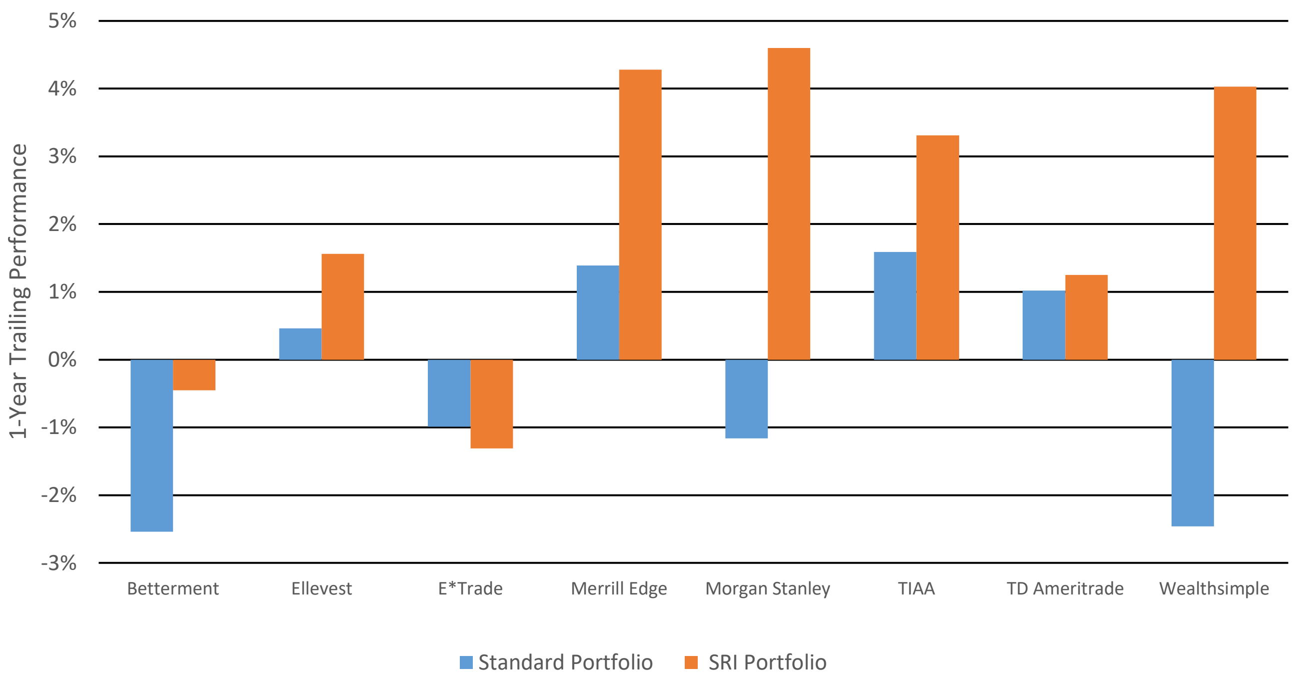


a 1-year period ending June 30, 2020, the Russell 3000 Growth Index returned 21.94%, while the Russell 3000 Value Index returned -9.44%. Many of the providers have a significant value tilt in their non-SRI portfolio, while the SRI portfolios tend to be more evenly distributed between growth and value.

When looking at specific accounts, we see Wealthsimple SRI had significantly more exposure to growth equities than the standard Wealthsimple account, contributing to its more than 6% relative outperformance. Similarly, while both Betterment portfolios are value-tilted, the SRI version has a more modest tilt towards value, helping drive the equities to outperform more than 2% over the 1-year period. Acknowledging the limited time horizon of the analysis, higher net-of-fees performance is an encouraging sign for the industry and may inspire others to embrace sustainable investing themes.

However, the minimal improvements in ESG scores between SRI and non-SRI portfolios is disconcerting for investors. Despite how firms market these portfolios, investors should not blindly assume that they are making a significant positive impact by joining the sustainable investing trend.

1-Year Trailing Performance Comparison
(Equity Portion of Portfolio)



SRI vs. Standard Portfolios

Portfolio Name	Weighted Average Sustainability Score of Equity Funds in Portfolio	Weighted Average Expense Ratio of Equity Funds in Portfolio	YTD Performance (Equity)	1-Year Performance (Equity)	2-Year Performance (Equity)
Betterment	25.49	0.08%	-10.23%	-2.54%	1.22%
Betterment SRI	24.00	0.16%	-8.28%	-0.45%	2.13%
Ellevest	24.78	0.05%	-7.56%	0.46%	2.86%
Ellevest SRI	23.67	0.18%	-6.42%	1.56%	3.57%
E*Trade	25.48	0.13%	-8.67%	-0.99%	
E*Trade SRI	23.82	0.17%	-9.44%	-1.31%	
Merrill Edge	24.30	0.05%	-7.71%	1.39%	
Merrill Edge SRI	23.35	0.16%	-4.72%	4.28%	
Morgan Stanley	24.89	0.06%	-8.87%	-1.16%	1.57%
Morgan Stanley SRI	22.09	0.51%	-4.14%	4.60%	5.86%
TD Ameritrade	24.47	0.05%	-7.22%	1.02%	
TD Ameritrade SRI	22.58	0.33%	-7.47%	1.25%	
TIAA	24.41	0.06%	-6.92%	1.59%	3.10%
TIAA SRI	23.26	0.23%	-5.93%	3.31%	4.76%
Wealthsimple	24.67	0.11%	-7.74%	-2.46%	0.00%
Wealthsimple SRI	23.45	0.15%	-4.40%	4.03%	5.65%

Produced by Backend Benchmarking for BackendB.com

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized.

Industry Trends and Outlook

- *Top robos grow 38% year-over-year as industry surpasses $600 billion under management*
- *New account openings and client engagement surge during COVID-19*
- *Independent players have an uphill battle, with Motif the most recent to shut doors*
- *Empower acquires Personal Capital for approximately $1 billion, representing the largest B2C robo acquisition to date*
- *Wealthfront's Self-Driving Money unfolds, bringing together day-to-day finances with investment goals*
- *Retirement income strategies, direct indexing, and fractional shares evolve robo technology to the next level*

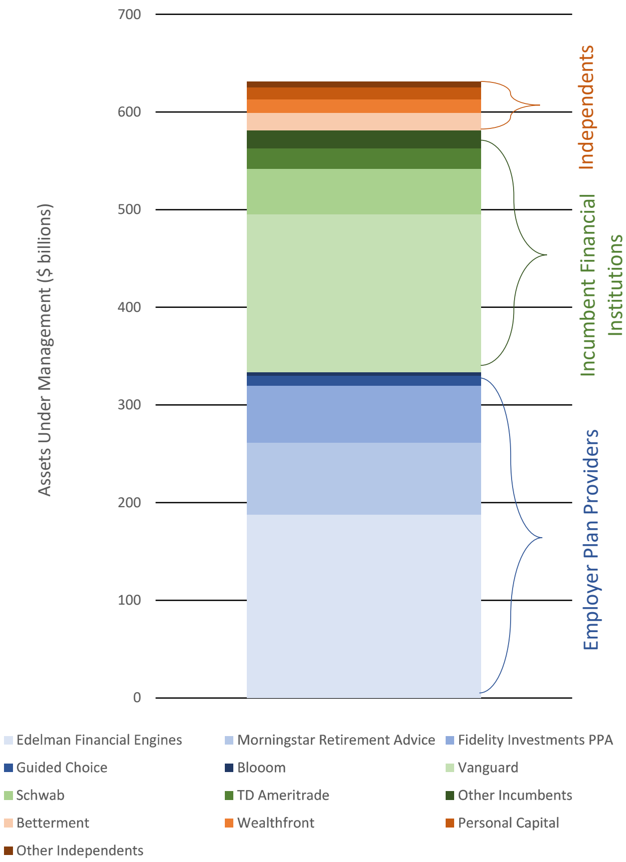
A Snapshot of Automated Investing

At the end of 2019, we estimate that robo advisors had approximately $631 billion of assets under management (AUM). Of this $631 billion, $247 billion is invested with incumbent financial institutions, $50 billion with independent robos, and $334 billion with robo retirement providers. Compared to the size of the market figure published last year by Backend Benchmarking, this year's estimate now includes two additional workplace retirement providers—Morningstar Retirement Advice and Fidelity Investments PPA at Work, which together total $131 billion.

Our "Top 5" group of Vanguard, Schwab, Betterment, Wealthfront, and Personal Capital, experienced a 38% year-over-year increase through the end of 2019.

Our "Top 5" group of Vanguard, Schwab, Betterment, Wealthfront, and Personal Capital experienced a 38% year-over-year increase through the end of 2019. The asset growth at these providers has been supported by the tailwind of strong market returns in 2019, during which the S&P 500 returned over 30%. But this does not explain the entirety of the asset growth. Vanguard headlines this move, growing from approximately $115 billion in 2018 to $161 billion in 2019. Personal Advisor Services continues to be the industry

2020 Digital Advice Market AUM



leader with its hybrid-advisor offering. Vanguard may increase its dominance in terms of AUM if its newly launched Digital Advisor product is as successful as Personal Advisor Services.

Schwab's robo products grew from $33 billion to $47 billion. This was supported by Schwab's popular decision to move to a subscription-fee model with Intelligent Portfolios Premium when it rolled out last year. Personal Capital grew over 50% from its 2018 AUM of $8 billion to over $12 billion in 2019. Personal Capital benefits from having exceptional tools and a clear value proposition to mass-affluent clients looking for a modern approach. We expect Personal Capital to accelerate its strong growth in the wake of its acquisition by Empower Financial.

Betterment and Wealthfront consistently add a few billion dollars to their AUM each year. For this analysis, we excluded the high-yield cash accounts that have become popular at Betterment and Wealthfront. These account for roughly $5-$10 billion in additional assets at each provider. With interest rates near zero, it is possible that the growth in these accounts declines as yields on cash are less attractive. Overall, the leading robo advice providers have continued their strong run into 2020. One might have expected this momentum to halt due to the pandemic, but this was not the case.

Robos Benefit from COVID-19

While the COVID-19 crisis sparked a period of historic market volatility, digital advice providers appear to be faring well in the crisis. They may even be seeing net benefits. Reports claim that new client sign-ups and activity held strong and, in many cases, increased during the months when markets were the most volatile this year.

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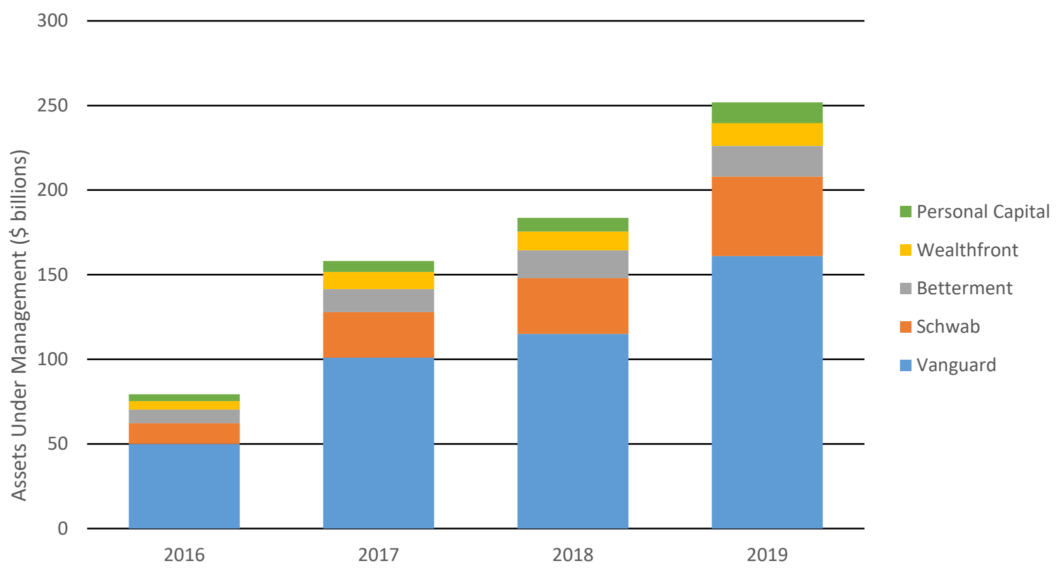
Bloomberg reported that TD Ameritrade's new account openings for its automated investment offering surged 150% compared to the same period last year; Schwab told Bloomberg that March was one of the best months for flows it has ever had. Independent robos have also reported surges in new accounts during the first half of the year. Wealthfront announced account sign-ups are up 68% since the sell-off began, while Betterment reported a first-quarter increase for account openings of 25% over last year.

Schwab told Bloomberg that March was one of the best months for flows it has ever had.

AUM Growth at Selected Providers



Robos were well positioned to take advantage of this crisis since they are naturally prepared for remote work and virtual client communication as opposed to business models that rely on in-person meetings. Also, digital advice providers have been effectively communicating with clients about their investments via online videos, emails, and reports. Titan Invest recently shared with us that 75% of their subscribers engage with their weekly emails that cover timely, relevant investing topics.

Additionally, we are seeing early signs that robos may be effectively mitigating behavioral shortfalls common with individual investors. Historically, studies have shown how the average investor's timing is a significant detractor from performance, i.e. selling at market lows and buying at market highs. We are seeing some early evidence that robo clients are bucking the trend of panic selling and are instead remaining invested as the market recovers.

Industry Closures and Consolidation

While the pandemic will likely accelerate the adoption of robo advice technology and benefit the established players, the digital advice industry is maturing and independent players who have not reached sufficient scale will continue to have an uphill battle. Most recently, Motif closed its doors. Motif, founded in 2010, was an early innovator in trading and thematic investing. It raised a significant sum of $126 million during its operations. It had an interesting approach to thematic investing but did not reach scale in time. After it recently shut down its service, Motif's technology was acquired by Schwab, and its clients were acquired by Folio, which was subsequently bought by Goldman Sachs.

The digital advice industry is maturing and independent players who have not reached sufficient scale will continue to have an uphill battle.

TD Ameritrade and E*Trade are also in the process of being acquired by Schwab and Morgan Stanley, respectively. Both mergers, although larger in purpose than digital advice, do represent further consolidation amongst digital advice providers. After an explosion of products and offerings in the past five years, the field of robo advice products is now slimming as the industry matures and consolidates.

Most incumbent firms have already acquired, or developed in-house, automated offerings making competition difficult for new independents. FutureAdvisor, WiseBanyan, and TradeKing are examples of notable independents that were acquired by large institutions. Meanwhile companies like Hedgeable, qPlum, and LearnVest (purchased by Northwestern Mutual and later shut down), are examples of robos that did not survive. Despite difficulties, there is still an appetite amongst investors. M1 raised $33 million this June, but growing will be significantly more difficult than it was in the first part of the decade.

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While many firms have made acquisitions or built their own robos, we are also starting to see signs of direct B2C offerings being repositioned within firms. TIAA noticeably no longer lets users sign up for their digital advice managed portfolios directly on the site, as the website now requests a call be made to a service representative before account opening. FutureAdvisor, acquired by BlackRock in 2015, pivoted towards being a B2B provider of robo advice. Although individuals can still sign up on its website directly, the landing page has clearly been redesigned to de-emphasize new account sign-ups. We were also surprised to see that users can no longer aggregate outside accounts on the platform once signed in.

Empower Acquires Personal Capital

The trend of consolidation continues with Empower's purchase of Personal Capital for approximately $1 billion, representing the largest acquisition we have seen to date. Empower is paying a significant premium over a typical RIA acquisition. Personal Capital has $12 billion in AUM and some of the best online planning and outside account aggregation tools in the market, which they make available for free to both clients and non-clients alike. This free platform has more than 2.5 million users and tracks more than $771 billion in household assets, according to a press release about the acquisition. The technology platform and large user base are clearly driving the premium paid. Empower is the second largest retirement plan provider in the country, with over nine million clients. Similar to the merger between Edelman and Financial Engines in 2018, we anticipate synergies that involve the retirement plan provider gaining access to the wealth manager's services, while the wealth manager gains access to a new client base. In this case, Empower could offer its clients a service that includes Personal Capital's digital tools and financial advisors, while Personal Capital gains access to millions of new prospective clients. The Empower-Personal Capital relationship will likely provide a significant advantage to Personal Capital in capturing rollover IRA assets at the appropriate points in Empower's clients' lifecycle.

We anticipate synergies that involve the retirement plan provider gaining access to the wealth manager's services, while the wealth manager gains access to a new client base.

Investing Becomes Democratized & Goldman's Strategy

While many independents struggle to survive, the incumbent firms have adopted robo technology into their line-ups to attract more clients. Firms like Schwab, Vanguard, and Merrill Lynch have already expanded their financial advice product suite and have been accumulating new clients with lower minimums. These are clients that have historically been left out of traditional advice relationships. Large financial firms are adopting robo advice to expand the types of clients they serve, not necessarily to compete with existing traditional advisors. Providers are striving for a continuum of advice within their firms. Robo advice is being positioned to help clients who are just starting out investing and saving or those with smaller account balances. As investors' wealth grows, firms are positioning themselves to be able to graduate clients to higher-service products with more planning, complex capabilities, and higher fees. Some firms are implementing a three-tiered approach with digital-only robo advice for the smallest and most cost-conscious individuals, hybrid-advice for those that prefer the ability to work with a live advisor or have more complex financial planning needs, and a traditional advice offering.

Goldman Sachs, traditionally serving only high-net-worth and ultra-high-net-worth clients, purchased the RIA United Capital and rebranded it with the Goldman name this year. United Capital will represent its middle advice tier, servicing the mass affluent through high-net-worth individuals. Although it delayed the launch of its long-awaited robo until 2021, it is likely this product will target younger and less wealthy clients. Goldman is a late example of how incumbent firms are offering different tiers of investment advice to accommodate investors earlier in their lifecycle. Time will tell if Goldman has a "last-mover advantage" when getting into the industry this late.

Goldman is a late example of how incumbent firms are offering different tiers of investment advice to accommodate investors earlier in their lifecycle.

New Technologies

While Goldman is still building out the tiered-advice model seen at most other major providers, independent robos continue to develop and launch innovative products and services to stay a step ahead of the slower moving incumbent firms. A big part of Wealthfront's current strategy of being a top provider is its "Self-Driving Money" vision. Self-Driving

Self-Driving Money is a step towards the integration of day-to-day spending and savings with long-term investing and goal planning.

Money is a step towards the integration of day-to-day spending and savings with long-term investing and goal planning. Financial Planning reports on an interview with CEO Andy Rachleff where he describes his vision for "machine deep learning... to figure out what you spend. And then we use optimization techniques to make sure you have the right amount." In an interview with This Week in Startups, Andy described it as: "You'll be able to directly deposit your paycheck with us. We'll automatically pay your bills and then we'll take the remaining money and route it to the most appropriate situation and goals." In June, Wealthfront announced three features that make up this service: debit cards, automatic bill pay, and direct deposit. Accompanying direct deposits, Wealthfront also said in a recent client email that "You could get your paycheck up to two days early and start earning interest sooner." While some of the more advanced features of the product appear to still be unreleased, automated management of day-to-day finances is a promising new technology for individuals.

Wealthfront is not the only fintech provider focused on spending and saving accounts. Betterment, Acorns, Stash, Wealthsimple, Ellevest, Personal Capital, and others have all launched some form of FDIC-insured cash accounts. By adding savings and checking account products, fintech platforms are increasingly competing with traditional banks.

Retirement Income

Another area where we are seeing an increase in products and features is helping retirement investors efficiently create income from their investments. Earlier this year, Schwab launched Intelligent Income, which looks across an investor's taxable and tax-advantaged accounts to optimize for tax consequences and required minimum distributions (RMDs). Similarly, United Income created a "retirement paycheck," which pulls together income streams from different accounts into one check. United Income also monitors things like Social Security benefits and Medicare as part of its holistic approach. Personal Capital also has a "retirement paycheck" feature to help clients determine tax-efficient withdrawal strategies. Betterment's BlackRock Income Model has a different approach to generating income which gives investors cash each month by investing in income-producing assets in a professionally managed portfolio. All three approaches are examples of robos innovating to offer services to improve after-tax returns and help retirees spend confidently and appropriately.

Membership Pricing

While flat-fee pricing has been around for years, it has not gained significant traction amongst traditional advisors. Robo advisors may finally popularize flat-fee pricing in financial advice. Ellevest recently adopted membership pricing. Its new Money Membership model is priced between $1 and $9 per month. Although investing starts at the $1 mark, access to CFPs and career coaches become more accessible through discounts as high as 50% at the highest tier. Last year, Schwab decided to offer access to unlimited CFP guidance for a flat fee of $300 upfront and $30 per month thereafter. It was reported that there was a strong positive initial reaction to the membership pricing around the time it was launched. This quarter, Fidelity also announced a change in pricing in which Fidelity Go clients will now be charged no fee for assets less than $10,000, a flat fee for assets between $10,000 and $50,000 and an AUM-based fee above $50,000. This trend seems to be gaining traction and is a clear departure from the older way of asset-based fee.

Robo advisors may finally popularize flat-fee pricing in financial advice.

Micro-investing apps also rely on membership pricing. Acorns and Stash are two firms that target the micro-investor. Instead of charging an asset-based fee, they use a membership fee, possibly solving the problem of being profitable with small investors. Acorns charges between $1 and $5 per month, while Stash charges between $1 and $9 per month. It is worth noting that while $1 a month will not break an investor's budget, this can often represent a very high management fee depending on the size of the accounts. For example, according to a recent ADV, Acorns has an average account size of $600. If charged the minimum $1 a month, this represents a 2% annual fee. A user with just $100 in their account at Acorns has an effective management fee of 12% if enrolled in their most basic package.

...$1 per month will not break an investor's budget, but this can represent a very high management fee as a percentage of assets.

Direct Indexing

When looking at the next wave of investing and trading technologies, direct indexing is a feature in which we expect to see continued innovation and product developments. Direct indexing is the idea that, instead of using an index fund, one can recreate the index using individual securities or fractional shares of individual securities. Benefits include tax-loss harvesting at the individual security level, managing concentrated stock positions by excluding securities that a client already holds, and creating customized baskets that exclude stocks for environmental, social, or governance reasons. A spokesman shared that Schwab purchased the technology from Motif in part to bolster its direct indexing capability. Folio's direct indexing capabilities may have also been attractive to Goldman Sachs, who purchased them earlier this year. While direct indexing is not a new concept, when combined with fractional shares, the strategy can be implemented with much smaller accounts.

Fractional Shares

Fractional shares trading plays an important role for robo advice to democratize professional money management by allowing low-balance accounts to be invested in globally diversified portfolios of ETFs. Leveraging this technology, micro-investing services like Acorns and Stash have helped millions of people take their first step in investing. Larger firms are now adopting fractional shares as well. Goldman's recent purchase of Folio now gives them this capability. Schwab released fractional share trading to their self-directed investors earlier this year. While fractional share technology is not new, it opens the door for a greater implementation of direct indexing.

Leveraging this technology, micro-investing services like Acorns and Stash have helped millions of people take their first step in investing.

Robo Interview with Greg Garrabrants

We had the privilege of speaking with Axos Financial CEO, Greg Garrabrants. Topics included its acquisition and integration of robo advisor WiseBanyan, clients' reaction to the pandemic, and the future he sees for both Axos Invest and the industry as a whole. Below are selected excerpts from the conversation we had.

How have the clients at Axos Invest responded to the market volatility?

Actually, it has been surprisingly calm. Our managed portfolio customers did not engage, by and large, in any form of panic selling. So therefore, we didn't see, which is what you'd hope not to see, is at the absolute bottom of the market a bunch of selling and pushing to cash allocations and then missing an upturn. We actually saw that the nature of the customer and the focus on [the] long-term... were helpful. So we did not see any real behavioral change of any substance or materiality as a result of the market volatility.

Can you talk to me about the decision behind purchasing WiseBanyan? What were the driving factors behind the acquisition?

Our belief is, over time, most of finance is going to become increasingly digital. [The] utilization of data to provide relevant and personalized recommendations is going to be very critical to the success of financial institutions over the longer term. So our decision to buy WiseBanyan is based on the fact that we have, we think, a best-in-class digital bank offering and digital lending set of platforms and we wanted to round out the services so that we could offer clients very high-value banking, lending products, and also managed portfolio products as well.

What are the primary goals of Axos Invest within the larger company?

We hope to become one of the world's best digital financial institutions that provides excellent customer service with strong value propositions. Meaning low cost, whether it's lower asset management fees, or lower fee structures, or better rates for our customers on various lending products by utilizing digital platforms to reduce costs. And so, the long-term goal of the company is obviously continued growth of its customer base, and we want to continue to deepen the relationships we have with our customers by providing them more value-added products. We also think of ourselves not only as someone who does retail, but really somebody who also distributes through a variety of intermediary channels. We do have a clearing company and that clearing company works with broker-dealers and those broker-dealers have RIA platforms, and we have an RIA custody business as well. So over time, we think that there is going to be a demand for RIAs to utilize a robo advising platform as well. We think that there will be long-term opportunities there.

Were there any gaps between expectations and results to the WiseBanyan integration and rebranding to Axos Invest?

No, I don't think so. We always viewed the acquisition of WiseBanyan as a long-term investment. We clearly wanted to make sure that we maintained some of the features and functionality of the WiseBanyan platform, but at the same time integrated that platform from a single sign on perspective and from a seamlessness of account opening perspective between the banking and securities side. So we've been taking that as a set of goals and projects and whittling away at those. We are going to continue to invest in the platform and we have some neat ideas on how to make the offering more attractive over time and we are going to continue to execute those.

Can you share any features or exciting developments with me that are on the roadmap?

More broadly, we continue to believe that the ability for customers to integrate goals into their investing platform and status, to be able to link it to banking and savings goals so that customers that sign up for a checking account and have direct deposit can easily allocate certain funds to the market and make sure that they are saving in accordance with goals they set forth in either platform, either the banking or securities platform. Those are just a few of things we are thinking about as we try to work on the behavioral side of the investing model for people and try to help them with the goal of getting some emergency savings and a little bit of space so that they can feel a little more comfortable in situations when they have an unexpected event. Obviously the recent events that we have had in respect to the pandemic... highlights the need to really focus on having maybe a little bit longer term than financial advisors would have otherwise thought... We have spent some time on some of the goal items to make sure they are prominent on both sides of our platform.

What have you learned about the digital advice industry through this process?

I think there is this huge opportunity for growth. I do believe that the revenue streams and the benefit to the customer is clearly there, from a lower cost and the ease of use. The ability to make money on the platforms really does require a broad and integrated products set. I don't know if that's a learning [event], but I would say that the hypothesis has been reaffirmed to me. Given the cost of customer acquisition, given the revenue stream that is generated from those customers, it is critical that we optimize the products that we can sell to those customers across the board to make the business as profitable as possible and allow us to improve our products.

I think it is difficult to be an independent robo advisor. As a business model, it makes a lot more sense as an integrated platform.

You see that from these guys that say they are going to form a bank or start a bank or offer bank-like products. I do believe that kind of model is going to be increasingly common, or be the primary model.

What do Axos Invest clients care the most about?

We do surveys. They care a lot about user experiences. They do like the goal-setting features, they like the disciplined nature of some of the automated contribution features so they are contributing on a dollar cost averaging basis regularly to their goals. I think that helps, from a behavioral perspective, make the model work. I do think that's one of the real benefits that these managed portfolios platforms have, particularly if they are hooked up to direct deposit... They are not really trying to time the market, which is why I think we didn't have this huge set of withdrawals as the market turned and I think that is clearly... demonstrating a reasonable benefit in a relatively short period of time with the market rebound that we have had from the lows.

What do you see that will be the long-term impacts of digital advice on the financial services industry?

I would view it this way. When we started our direct bank, I would always get a set of folks that would say, "You guys will take over the world because you have lower cost structures and will be able to offer better deals and traditional banks won't exist, etc." I think some of the guys that were drinking the Kool-Aid too much would say, "Well, we are going to take the place of human [bankers] and we are going to be able to get a 40% market share in 5 years." I think it really becomes more of a subtle type of inclusion of an interesting way of interacting, and I think that the technology will continue to improve. I think you will see robo advisors move to hybrid models... I see it becoming an increasing part of the landscape but I don't see some sort of revolution where financial advisors go away. I think it is going to become more where the robo advisory tool kit becomes part of a staged plan that incorporates different types of customer service in a lifecycle that allows folks to get started on a path, make progress, and then have a set of more complex needs answered over a lifecycle.

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	Dec, 2019	$860	$1,822	2,954,678	Recent ADV
Ally Invest Advisors	N/A	N/A	N/A	Acquired TradeKing for $294 million in June, 2016	$277	32,933	Recent ADV
Axos Invest	N/A	N/A	N/A	Acquired WiseBanyan for undisclosed amount in Oct. 2018	$206	32,202	Recent ADV
Betterment	$275	$70	Aug, 2017	$800	$18,100	660,195	Recent ADV
Ellevest	$78	$33	Mar, 2019	Unknown	$581	47,697	Recent ADV
FutureAdvisor	N/A	N/A	N/A	Acquired by BlackRock for $152 million in August, 2015	$1,135	18,862	Recent ADV
Personal Capital	$265	$50	Feb, 2019	Unknown	$12,300	22,000	Company Website
Qapital	$47	$30	April, 2018	Unknown	$12	21,894	Recent ADV
Schwab Intelligent Portfolio Products	N/A	N/A	N/A	N/A	$45,900	355,000 accounts	Company Website
SigFig	$120	$50	June, 2018	$471	$835	18,090 accounts	Recent ADV
SoFi Invest	N/A	N/A	N/A	N/A	$138	34,075	Recent ADV
TD Ameritrade Essential, Selective, and Personalized 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	N/A	N/A	N/A	Acquired by Capital One for undisclosed amount in Aug. 2019	$1,199	1,606	Recent ADV
Vanguard Personal Advisor Services	N/A	N/A	N/A	N/A	$172,000	Unknown	News Media
Wealthfront	$205	$75	Jan, 2018	$500	$13,500	247,041	Recent ADV & Website
Wealthsimple	$267 (CAD)	$100 (CAD)	May, 2019	Unknown	$6,000 CAD***	Unknown	Company Website 2018

All funding and valuation amounts are estimates
Sources: Crunchbase, Pitchbook, News Media
****AUM figure includes cash assets held in savings account products*

Produced by Backend Benchmarking for BackendB.com

Taxable Returns: Total Performance

	2Q 2020	2Q 2020 Return vs. Benchmark	YTD	YTD Return vs. Benchmark	1-Year	1-Year Return vs. Benchmark	2-Year	2-Year Return vs. Benchmark	3-Year	3-Year Return vs. Benchmark	4-Year	4-Year Return vs. Benchmark
Acorns[1]	13.10%	-0.63%	-3.45%	-2.17%	2.90%	-2.01%	4.49%	-1.07%	4.96%	-1.19%	5.54%	-1.87%
Ally Financial[9]	12.17%	-1.39%	-3.61%	-2.44%	2.11%	-2.85%	4.18%	-1.41%	4.91%	-1.13%	-	-
Axos Invest[8]	14.50%	0.09%	-2.40%	-0.68%	4.23%	-0.48%	5.62%	0.19%	6.07%	-0.06%	7.38%	-0.11%
BBVA Compass[7]	11.65%	-1.75%	-2.99%	-1.93%	2.52%	-2.49%	-	-	-	-	-	-
Betterment[27]	13.71%	-0.86%	-5.36%	-3.52%	0.63%	-4.02%	3.27%	-2.13%	4.05%	-2.09%	5.91%	-1.64%
Betterment Goldman Sachs Smart Beta[32]	13.48%	-0.25%	-2.20%	-0.92%	4.31%	-0.60%	-	-	-	-	-	-
Betterment SRI[27]	13.16%	-0.57%	-3.67%	-2.39%	2.14%	-2.77%	4.04%	-1.52%	-	-	-	-
CitiGroup[40]	13.62%	-0.28%	-	-	-	-	-	-	-	-	-	-
Citizens Bank[7]	13.45%	-0.96%	-3.19%	-1.47%	3.10%	-1.61%	-	-	-	-	-	-
E*Trade Active[23]	12.05%	-1.85%	-4.24%	-2.85%	1.89%	-2.97%	-	-	-	-	-	-
E*Trade[21]	14.36%	0.63%	-3.04%	-1.76%	3.20%	-1.71%	4.68%	-0.88%	5.23%	-0.83%	6.79%	-0.46%
E*Trade SRI[23]	12.31%	-1.59%	-3.80%	-2.41%	2.30%	-2.56%	-	-	-	-	-	-
Edelman Financial Engines[4]	13.98%	-0.93%	-3.48%	-1.41%	2.14%	-2.40%	-	-	-	-	-	-
Ellevest[38]	12.19%	-0.87%	-3.34%	-2.50%	2.06%	-3.05%	3.73%	-1.95%	4.65%	-1.46%	-	-
Ellevest SRI[38]	11.59%	-0.63%	-2.12%	-1.80%	2.89%	-2.44%	4.15%	-1.63%	-	-	-	-
Fidelity Go[33]	12.66%	-1.24%	-3.26%	-1.87%	2.83%	-2.03%	4.69%	-0.84%	5.76%	-0.32%	-	-
Fifth Third Bank[7]	12.30%	-1.43%	-3.41%	-2.13%	2.61%	-2.30%	-	-	-	-	-	-
FutureAdvisor[3]	12.01%	-1.22%	-1.75%	-0.80%	4.49%	-0.57%	4.96%	-0.72%	4.92%	-1.10%	5.77%	-1.34%
Interactive Advisors[24]	11.36%	-1.36%	-3.89%	-3.26%	1.24%	-3.96%	-	-	-	-	-	-
Interactive Advisors Legg Mason Global Growth and Income[24]	14.32%	-0.93%	-4.54%	-2.24%	-	-	-	-	-	-	-	-
Interactive Advisors State Street SSGA Moderate[24]	13.04%	-1.70%	-4.57%	-2.62%	-	-	-	-	-	-	-	-
Interactive Advisors Wisdom Tree Moderate Aggressive[24]	12.73%	-2.35%	-2.98%	-0.80%	-	-	-	-	-	-	-	-
JP Morgan Chase You Invest[7]	11.28%	-0.77%	0.00%	0.21%	5.22%	-0.15%	-	-	-	-	-	-
Liftoff (Ritholtz Wealth Management)[3]	13.20%	-0.53%	-4.66%	-3.38%	0.90%	-4.01%	-	-	-	-	-	-
M1 Finance[34]	15.40%	0.66%	-4.08%	-2.13%	2.33%	-2.27%	-	-	-	-	-	-
Merrill Edge[31]	12.47%	-1.43%	-4.09%	-2.63%	1.87%	-2.45%	3.77%	-1.55%	4.62%	-1.28%	-	-
Merrill Edge SRI[31]	14.35%	0.20%	-0.28%	0.91%	6.14%	1.20%	-	-	-	-	-	-
Morgan Stanley[12]	12.69%	-1.55%	-3.59%	-1.98%	2.27%	-2.49%	3.86%	-1.62%	-	-	-	-
Morgan Stanley Active[3]	13.97%	-0.44%	-1.78%	-0.06%	4.18%	-0.53%	-	-	-	-	-	-

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized.

Produced by Backend Benchmarking for BackendB.com

Taxable Returns: Total Performance (continued from previous page)

	2Q 2020	2Q 2020 Return vs. Benchmark	YTD	YTD Return vs. Benchmark	1-Year	1-Year Return vs. Benchmark	2-Year	2-Year Return vs. Benchmark	3-Year	3-Year Return vs. Benchmark	4-Year	4-Year Return vs. Benchmark
Morgan Stanley Defense and Cyber Security[7]	14.55%	-0.70%	-4.63%	-2.33%	0.92%	-3.51%	-	-	-	-	-	-
Morgan Stanley Emerging Consumer[7]	15.09%	-0.16%	-1.70%	0.60%	4.42%	-0.01%	-	-	-	-	-	-
Morgan Stanley Gender Diversity[7]	13.23%	-0.50%	-1.21%	0.07%	4.48%	-0.43%	-	-	-	-	-	-
Morgan Stanley Genomics[7]	13.53%	0.98%	0.60%	1.13%	6.29%	1.05%	-	-	-	-	-	-
Morgan Stanley Global Frontier[7]	14.55%	-0.53%	-4.62%	-2.44%	0.41%	-4.08%	-	-	-	-	-	-
Morgan Stanley Inflation Conscious[7]	15.29%	1.39%	-4.50%	-3.11%	-0.11%	-4.97%	-	-	-	-	-	-
Morgan Stanley Robotics[7]	18.00%	2.75%	0.88%	3.18%	7.14%	2.71%	-	-	-	-	-	-
Morgan Stanley SRI[7]	12.78%	-0.45%	-0.91%	0.04%	5.16%	0.10%	6.08%	0.41%	-	-	-	-
Personal Capital[4]	14.34%	-1.58%	-5.39%	-2.62%	0.48%	-3.71%	2.39%	-2.72%	3.87%	-2.39%	5.35%	-2.66%
Prudential[26]	14.36%	0.63%	-2.45%	-1.17%	3.76%	-1.15%	-	-	-	-	-	-
Qapital[30]	14.07%	-0.84%	-6.38%	-4.31%	-0.11%	-4.65%	-	-	-	-	-	-
Schwab[5]	13.02%	-1.09%	-6.45%	-4.92%	-0.72%	-5.52%	1.29%	-4.20%	3.18%	-3.02%	5.30%	-2.29%
Schwab Domestic Focus[5]	13.14%	-1.43%	-7.10%	-5.26%	-1.03%	-5.68%	-	-	-	-	-	-
SigFig[6]	14.04%	-0.03%	-0.32%	1.18%	6.07%	1.26%	6.26%	0.76%	6.60%	0.51%	7.79%	0.42%
SoFi[17]	12.82%	-0.91%	-1.83%	-0.55%	4.58%	-0.33%	4.99%	-0.57%	5.42%	-0.43%	-	-
TD Ameritrade[10]	14.72%	-0.36%	-2.81%	-0.63%	3.72%	-0.77%	4.92%	-0.38%	5.70%	-0.49%	-	-
TD Ameritrade SRI[10,C]	14.76%	-0.49%	-2.54%	-0.76%	4.53%	-0.32%	-	-	-	-	-	-
TIAA[7]	13.20%	-0.70%	-1.33%	0.06%	4.96%	0.10%	5.28%	-0.25%	5.83%	-0.25%	-	-
TIAA Active[7]	14.24%	0.34%	-3.06%	-1.67%	3.16%	-2.01%	-	-	-	-	-	-
TIAA SRI[7]	14.24%	0.51%	-1.83%	-0.55%	4.81%	-0.10%	5.78%	0.22%	-	-	-	-
Twine (John Hancock)[3]	15.21%	-0.04%	-3.07%	-0.77%	3.50%	-0.93%	-	-	-	-	-	-
UBS Advice Advantage[7]	14.58%	-0.84%	-4.33%	-2.43%	1.76%	-3.03%	3.09%	-2.36%	-	-	-	-
United Income[16]	10.96%	-2.60%	-6.70%	-5.53%	-1.31%	-6.27%	1.41%	-4.18%	-	-	-	-
US Bank[28]	14.21%	0.98%	-1.67%	-0.72%	4.46%	-0.62%	5.36%	-0.31%	-	-	-	-
Vanguard[4,A]	13.14%	-0.59%	-3.26%	-1.98%	2.85%	-2.06%	4.21%	-1.35%	5.24%	-0.82%	6.63%	-0.62%
Vanguard Digital Advisor[7]	13.17%	-0.23%	-	-	-	-	-	-	-	-	-	-
Wealthfront[22,B]	14.74%	0.17%	-4.31%	-2.47%	1.70%	-2.95%	3.39%	-2.01%	5.15%	-0.99%	6.28%	-1.27%
Wealthfront PassivePlus[22]	12.06%	-1.00%	-4.32%	-3.48%	1.92%	-3.19%	-	-	-	-	-	-
Wealthsimple[11]	10.61%	-3.12%	0.43%	1.71%	3.92%	-0.99%	3.90%	-1.66%	5.09%	-0.97%	-	-
Wealthsimple SRI[11]	13.04%	-0.69%	0.30%	1.58%	6.36%	1.45%	6.88%	1.32%	-	-	-	-
Wells Fargo[14]	15.90%	1.66%	-3.26%	-1.65%	3.13%	-1.63%	4.32%	-1.15%	-	-	-	-
Zacks Advantage[29]	12.81%	-0.92%	-3.03%	-1.75%	3.16%	-1.75%	4.24%	-1.27%	-	-	-	-

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized.

Produced by Backend Benchmarking for BackendB.com

Non 60/40 Target Allocation Taxable Returns

	Total						Equity			Fixed Income			
	2Q 2020	2Q 2020 Return vs. Benchmark	YTD	YTD Return vs. Benchmark	1-Year Trailing	1-Year Return vs. Benchmark	2Q 2020	YTD	1-Year Trailing	2Q 2020	YTD	1-Year Trailing	%Equity
Betterment Income[27]	1.56%	-2.12%	0.94%	-3.07%	2.34%	-3.88%	-	-	-	1.56%	0.94%	2.34%	0%
TD Ameritrade Income[35]	7.08%	-0.11%	-1.12%	-3.59%	1.53%	-4.62%	14.72%	-10.53%	-6.33%	5.06%	2.22%	4.13%	23%
TD Ameritrade Managed Risk[35]	5.64%	-0.54%	-2.88%	-5.82%	-0.69%	-6.90%	*^	*^	*^	*^	*^	*^	8%
TD Ameritrade Opportunistic[10]	11.52%	-0.03%	-3.85%	-3.94%	0.80%	-4.79%	*^	*^	*^	*^	*^	*^	48%
Titan Invest[3]	32.13%	11.66%	11.51%	17.72%	20.26%	18.07%	32.20%	11.71%	20.57%	-	-	-	100%
Wealthsimple Halal[11]	14.70%	-5.77%	-9.81%	-3.60%	-5.65%	-7.84%	14.75%	-9.85%	-5.65%	-	-	-	100%

Produced by Backend Benchmarking for BackendB.com

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**^These portfolios hold balanced funds. The nature of these funds limits our ability to accurately breakdown equity and fixed income performance individually.*

Taxable Returns: Equity and Fixed Income Performance

	Equity						Fixed Income					
	2Q 2020	**YTD**	**1-Year**	**2-Year**	**3-Year**	**4-Year**	**2Q 2020**	**YTD**	**1-Year**	**2-Year**	**3-Year**	**4-Year**
Acorns[1]	19.38%	-7.90%	0.48%	2.98%	5.48%	7.22%	4.70%	4.27%	6.86%	6.95%	3.93%	2.65%
Ally Financial[9]	19.76%	-8.94%	-1.20%	1.41%	4.46%	-	3.18%	5.50%	7.60%	8.08%	5.30%	-
Axos Invest[8]	19.73%	-6.20%	2.31%	4.22%	6.47%	9.20%	5.56%	3.79%	6.55%	7.30%	4.74%	3.70%
BBVA Compass[7]	17.77%	-10.54%	-3.17%	-	-	-	3.85%	6.39%	8.53%	-	-	-
Betterment[27]	18.87%	-10.23%	-2.54%	1.22%	3.43%	6.99%	4.25%	2.03%	4.24%	5.80%	4.13%	2.98%
Betterment Goldman Sachs Smart Beta[32]	18.17%	-6.55%	1.85%	-	-	-	6.79%	3.35%	6.54%	-	-	-
Betterment Income[27]	-	-	-	-	-	-	1.56%	0.94%	2.34%	-	-	-
Betterment SRI[27]	19.15%	-8.28%	-0.45%	2.13%	-	-	4.33%	1.96%	4.25%	5.92%	-	-
CitiGroup[40]	*^	-	-	-	-	-	*^	-	-	-	-	-
Citizens Bank[7]	19.70%	-7.14%	0.99%	-	-	-	3.44%	4.94%	7.07%	-	-	-
E*Trade Active[23]	18.37%	-10.11%	-1.94%	-	-	-	2.78%	2.34%	4.41%	-	-	-
E*Trade[21]	20.19%	-8.67%	-0.99%	1.62%	4.79%	8.20%	6.36%	5.64%	8.71%	9.02%	5.50%	4.17%
E*Trade SRI[23]	18.82%	-9.44%	-1.31%	-	-	-	2.78%	2.33%	4.40%	-	-	-
Edelman Financial Engines[4]	19.99%	-9.18%	-1.80%	-	-	-	3.66%	5.63%	7.42%	-	-	-
Ellevest[38]	19.39%	-7.56%	0.46%	2.86%	5.35%	-	3.34%	0.74%	2.39%	3.76%	2.78%	-
Ellevest SRI[38]	19.99%	-6.42%	1.56%	3.57%	-	-	3.09%	1.07%	2.65%	3.81%	-	-
Fidelity Go[33]	19.78%	-7.06%	1.48%	3.85%	6.56%	-	1.91%	-0.48%	1.63%	3.96%	3.22%	-
Fifth Third Bank[7]	19.60%	-6.77%	1.77%	-	-	-	1.86%	0.37%	2.31%	-	-	-
FutureAdvisor[3]	18.86%	-8.85%	-0.07%	2.51%	4.26%	6.98%	3.45%	6.37%	8.81%	7.40%	5.06%	3.49%
Interactive Advisors[24]	18.47%	-11.55%	-4.50%	-	-	-	4.51%	4.67%	6.98%	-	-	-
Interactive Advisors Legg Mason Global Growth and Income[24]	16.26%	-8.12%	-	-	-	-	12.11%	5.11%	-	-	-	-
Interactive Advisors State Street SSGA Moderate [24]	18.24%	-8.39%	-	-	-	-	4.18%	2.37%	-	-	-	-
Interactive Advisors Wisdom Tree Moderate Aggressive[24]	*^	*^	-	-	-	-	*^	*^	-	-	-	-
JP Morgan Chase You Invest[7]	19.16%	-7.77%	0.38%	-	-	-	3.66%	6.47%	8.31%	-	-	-
Liftoff (Ritholtz Wealth Management)[3]	18.89%	-10.10%	-2.58%	-	-	-	4.49%	0.79%	2.82%	-	-	-
M1 Finance[34]	19.96%	-8.50%	-0.73%	-	-	-	8.56%	4.86%	8.29%	-	-	-
Merrill Edge[31]	19.46%	-7.71%	1.39%	3.41%	5.73%	-	2.71%	0.42%	2.41%	4.31%	3.02%	-
Merrill Edge SRI[31]	20.76%	-4.72%	4.28%	-	-	-	4.27%	2.34%	4.90%	-	-	-

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**^These portfolios hold balanced funds. The nature of these funds limits our ability to accurately breakdown equity and fixed income performance individually.*

Taxable Returns: Equity and Fixed Income Performance *(continued from previous page)*

	Equity						Fixed Income					
	2Q 2020	YTD	1-Year	2-Year	3-Year	4-Year	2Q 2020	YTD	1-Year	2-Year	3-Year	4-Year
Morgan Stanley[12]	18.93%	-8.87%	-1.16%	1.57%	-	-	3.06%	5.33%	7.57%	7.65%	-	-
Morgan Stanley Active[3]	20.28%	-6.25%	1.59%	-	-	-	4.18%	4.93%	7.42%	-	-	-
Morgan Stanley Defense and Cyber Security[7]	20.22%	-8.98%	-2.22%	-	-	-	4.21%	5.00%	7.50%	-	-	-
Morgan Stanley Emerging Consumer[7]	20.72%	-5.34%	2.41%	-	-	-	4.17%	4.79%	7.20%	-	-	-
Morgan Stanley Gender Diversity[7]	20.38%	-4.64%	3.28%	-	-	-	3.61%	3.57%	5.57%	-	-	-
Morgan Stanley Genomics[7]	22.86%	-3.41%	4.97%	-	-	-	4.11%	4.60%	6.96%	-	-	-
Morgan Stanley Global Frontier[7]	20.00%	-9.43%	-3.38%	-	-	-	4.20%	4.99%	7.50%	-	-	-
Morgan Stanley Inflation Conscious[7]	22.89%	-11.94%	-6.80%	-	-	-	4.28%	5.15%	7.60%	-	-	-
Morgan Stanley Robotics[7]	24.92%	-1.39%	6.49%	-	-	-	4.21%	5.01%	7.52%	-	-	-
Morgan Stanley SRI[7]	20.07%	-4.14%	4.60%	5.86%	-	-	3.59%	3.58%	5.59%	6.00%	-	-
Personal Capital[4]	19.51%	-9.03%	-1.72%	1.02%	3.87%	6.10%	3.75%	2.78%	4.26%	5.09%	2.97%	2.52%
Prudential[26]	19.57%	-7.49%	0.99%	-	-	-	5.99%	3.35%	5.77%	-	-	-
Qapital[30]	18.66%	-11.65%	-3.97%	-	-	-	5.39%	3.99%	7.05%	-	-	-
Schwab[5]	18.55%	-13.45%	-5.80%	-1.83%	2.04%	5.54%	5.04%	2.90%	5.27%	6.01%	4.28%	4.18%
Schwab Domestic Focus[5]	19.18%	-12.60%	-4.50%	-	-	-	3.36%	2.71%	5.00%	-	-	-
SigFig[6]	20.06%	-6.60%	1.89%	3.95%	6.40%	9.40%	4.50%	6.77%	9.26%	8.24%	5.64%	4.29%
SoFi[17]	20.58%	-4.49%	4.66%	4.76%	6.82%	-	2.90%	2.40%	4.35%	4.97%	3.68%	-
TD Ameritrade[10]	19.95%	-7.22%	1.02%	3.16%	5.69%	-	3.25%	4.81%	7.16%	7.13%	4.42%	-
TD Ameritrade Opportunistic[10]	18.13%	-10.73%	-3.47%	-	-	-	5.07%	1.73%	3.57%	-	-	-
TD Ameritrade SRI[10,C]	19.83%	-7.47%	1.25%	-	-	-	3.21%	4.95%	7.19%	-	-	-
TIAA[7]	19.86%	-6.92%	1.59%	3.10%	5.88%	-	3.44%	5.23%	7.76%	7.48%	4.71%	-
TIAA Active[7]	19.85%	-9.37%	-1.83%	-	-	-	5.92%	4.45%	7.66%	-	-	-
TIAA SRI[7]	20.22%	-5.93%	3.31%	4.76%	-	-	5.47%	2.50%	4.97%	6.09%	-	-
Titan Invest[3]	32.20%	11.71%	20.57%	-	-	-	-	-	-	-	-	-
Twine (John Hancock)[3]	19.81%	-6.52%	1.80%	-	-	-	5.28%	3.06%	5.47%	-	-	-
UBS Advice Advantage[7]	19.56%	-8.71%	-0.93%	1.48%	-	-	3.80%	1.33%	3.40%	4.97%	-	-
United Income[16]	16.56%	-12.21%	-4.82%	-1.38%	-	-	2.84%	1.94%	3.71%	5.04%	-	-
US Bank[28]	22.87%	-4.46%	4.04%	4.87%	-	-	2.88%	1.44%	3.63%	5.28%	-	-
Vanguard[4,A]	20.59%	-6.13%	2.28%	3.88%	6.35%	9.34%	2.52%	1.93%	3.80%	4.76%	3.51%	2.47%
Vanguard Digital Advisor[7]	20.23%	-	-	-	-	-	3.78%	-	-	-	-	-
Wealthfront[22,B]	20.84%	-9.12%	-1.45%	1.29%	4.88%	7.55%	3.73%	3.29%	5.48%	6.33%	4.55%	3.04%
Wealthfront PassivePlus[22]	19.34%	-7.41%	0.25%	-	-	-	4.29%	3.33%	5.52%	-	-	-
Wealthsimple[11]	15.84%	-7.74%	-2.46%	0.00%	3.74%	-	3.26%	12.99%	13.12%	9.49%	6.67%	-
Wealthsimple SRI[11]	20.28%	-4.40%	4.03%	5.65%	-	-	3.41%	6.46%	8.30%	7.95%	-	-
Wells Fargo[14]	22.44%	-6.73%	1.76%	3.11%	-	-	5.71%	1.79%	4.48%	6.39%	-	-
Zacks Advantage[29]	20.34%	-6.39%	2.49%	4.23%	-	-	2.28%	1.88%	3.74%	4.53%	-	-

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized.

Produced by Backend Benchmarking for BackendB.com

Retirement Returns: Total Performance

	Total Portfolio											
	2Q 2020	2Q 2020 Return vs. Benchmark	YTD	YTD Return vs. Benchmark	1-Year	1-Year Return vs. Benchmark	2-Year	2-Year Return vs. Benchmark	3-Year	3-Year Return vs. Benchmark	4-Year	4-Year Return vs. Benchmark
Ally Financial IRA[9]	18.62%	-0.48%	-7.82%	-2.29%	-0.46%	-2.90%	1.88%	-2.11%	4.59%	-1.63%	-	-
Axos Invest IRA[25]	18.77%	-0.15%	-5.71%	-0.30%	2.22%	-0.28%	3.90%	-0.12%	6.09%	-0.12%	8.81%	-0.07%
Betterment IRA[27]	17.15%	-0.89%	-7.82%	-3.03%	-0.78%	-3.61%	2.36%	-1.83%	4.20%	-1.94%	7.02%	-1.58%
E*Trade IRA[21]	19.89%	-0.10%	-8.66%	-2.49%	-1.12%	-3.20%	1.52%	-2.27%	4.58%	-1.70%	-	-
Fidelity Go IRA[33]	17.27%	-0.42%	-4.47%	0.07%	3.20%	0.24%	4.86%	0.60%	6.54%	0.43%	-	-
Honest Dollar (Goldman Sachs) IRA[3]	18.52%	-1.64%	-7.95%	-1.65%	0.46%	-1.54%	-	-	-	-	-	-
Merrill Edge IRA[31]	17.78%	-1.14%	-7.09%	-1.95%	0.85%	-1.60%	3.17%	-0.81%	4.93%	-1.14%	-	-
Morgan Stanley IRA[7]	15.04%	-1.58%	-5.57%	-1.74%	1.11%	-2.20%	3.11%	-1.82%	-	-	-	-
Personal Capital IRA[4]	18.50%	-1.12%	-8.23%	-2.32%	-1.15%	-3.38%	1.45%	-2.43%	4.07%	-2.19%	6.37%	-2.69%
Principal SimpleInvest IRA[7]	18.91%	16.13%	-	-	-	-	-	-	-	-	-	-
Schwab IRA[20]	16.89%	-2.39%	-13.30%	-7.64%	-6.12%	-8.49%	-2.41%	-6.36%	1.64%	-4.60%	5.30%	-3.69%
SigFig IRA[6]	17.63%	-1.12%	-7.86%	-2.58%	0.15%	-2.42%	2.78%	-1.28%	4.70%	-1.50%	7.50%	-1.32%
SoFi IRA[18]	20.58%	0.24%	-4.47%	1.96%	4.70%	2.77%	4.79%	1.08%	-	-	-	-
T Rowe Price IRA[13]	21.03%	0.69%	-6.28%	0.15%	1.41%	-0.52%	3.31%	-0.40%	-	-	-	-
TD Ameritrade IRA[10]	17.44%	-0.07%	-5.31%	-0.89%	2.35%	-0.67%	4.10%	-0.19%	5.73%	-0.36%	-	-
TIAA IRA[7]	17.51%	-0.71%	-4.98%	-0.07%	2.83%	0.06%	3.89%	-0.27%	6.00%	-0.16%	-	-
United Income IRA[16]	17.98%	-2.18%	-11.21%	-4.91%	-3.90%	-5.90%	-1.54%	-5.30%	-	-	-	-
Wealthsimple IRA[2]	13.33%	-3.47%	-2.85%	1.10%	1.62%	-1.63%	2.81%	-1.60%	4.84%	-1.18%	-	-
Wells Fargo IRA[14]	20.44%	1.69%	-7.02%	-1.74%	0.41%	-2.16%	1.64%	-2.42%	-	-	-	-
Zack's Advantage IRA[4]	19.40%	0.30%	-6.31%	-0.78%	1.60%	-0.84%	2.87%	-1.12%	-	-	-	-

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized. *Produced by Backend Benchmarking for BackendB.com*

Retirement Returns: Equity and Fixed Income Returns

	Equity						Fixed Income					
	2Q 2020	YTD	1-Year	2-Year	3-Year	4-Year	2Q 2020	YTD	1-Year	2-Year	3-Year	4-Year
Ally Financial IRA[9]	19.83%	-8.95%	-1.24%	1.34%	4.47%	-	3.49%	4.68%	6.79%	7.64%	5.16%	-
Axos Invest IRA[25]	20.05%	-6.66%	1.68%	3.49%	6.12%	9.21%	5.51%	4.69%	7.47%	7.61%	5.09%	4.07%
Betterment IRA[27]	18.85%	-10.13%	-2.53%	1.28%	3.84%	7.32%	5.32%	3.63%	5.92%	6.91%	4.69%	3.54%
E*Trade IRA[21]	20.18%	-8.82%	-1.15%	1.55%	4.69%	-	-	-	-	-	-	-
Fidelity Go IRA[33]	19.96%	-6.58%	1.93%	4.12%	6.67%	-	2.77%	6.43%	8.65%	8.14%	5.07%	-
Honest Dollar (Goldman Sachs) IRA[3]	18.76%	-8.09%	0.35%	-	-	-	-	-	-	-	-	-
Merrill Edge IRA[31]	19.32%	-7.92%	0.92%	3.17%	5.37%	-	4.65%	-6.87%	-4.50%	1.36%	0.20%	-
Morgan Stanley IRA[7]	18.86%	-8.54%	-0.76%	1.88%	-	-	3.05%	5.20%	7.41%	7.55%	-	-
Personal Capital IRA[4]	19.49%	-8.89%	-1.57%	1.22%	4.02%	6.51%	4.13%	2.73%	4.18%	4.76%	2.63%	2.04%
Principal SimpleInvest IRA[7]	19.39%	-	-	-	-	-	-	-	-	-	-	-
Schwab IRA[20]	18.13%	-14.23%	-6.64%	-2.62%	1.70%	5.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SigFig IRA[6]	18.59%	-8.44%	0.10%	2.39%	4.90%	8.01%	-	-	-	-	-	-
SoFi IRA[18]	20.59%	-4.46%	4.72%	4.81%	-	-	-	-	-	-	-	-
T Rowe Price IRA[13]	21.03%	-6.25%	1.44%	3.33%	-	-	0.00%	0.00%	0.00%	0.00%	-	-
TD Ameritrade IRA[10]	20.04%	-6.68%	1.72%	3.76%	6.12%	-	3.90%	3.89%	6.21%	6.86%	4.03%	-
TIAA IRA[7]	19.82%	-6.81%	1.69%	3.13%	5.95%	-	-	-	-	-	-	-
United Income IRA[16]	18.17%	-11.95%	-4.53%	-1.82%	-	-	0.00%	0.00%	0.00%	0.00%	-	-
Wealthsimple IRA[2]	16.10%	-8.10%	-2.65%	0.33%	3.81%	-	3.45%	19.92%	19.09%	12.63%	8.52%	-
Wells Fargo IRA[14]	21.80%	-8.04%	-0.16%	1.17%	-	-	-	-	-	-	-	-
Zack's Advantage IRA[4]	20.30%	-6.68%	1.66%	3.08%	-	-	-	-	-	-	-	-

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized. *Produced by Backend Benchmarking for BackendB.com*

Taxable Accounts Facts

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial 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 Invest; $3/month for Invest + Acorns Late + Acorns Spend; $5/mo for Acorns Family (includes family services). For balances above $1 million contact Acorns directly.	0.09%	61%/39%/0%/0%	60%/40%/0%/0%	84%/16%	79%/21%	0%
Ally Financial	$100	0.30% annually; Also offer Cash-enhanced portfolio with 30% invested In cash and no management fee	0.06%	59%/39%/0%/2%	59%/39%/0%/2%	59%/41%	60%/40%	0%
Axos Invest	No minimum	0.24% annually	0.09%	64%/36%/0%/0%	64%/36%/0%/0%	62%/38%	63%/37%	0%
BBVA Compass	$10,000	0.75% annually	0.12%	59%/35%/3%/3%	53%/41%/3%/3%	63%/37%	62%/38%	0%
Betterment	Digital: No minimum; Premium: $100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above $2M	0.09%	65%/35%/0%/0%	66%/34%/0%/0%	49%/51%	57%/43%	37%
Betterment Goldman Sachs Smart Beta	Digital: No minimum; Premium: $100,000	Digital: 0.25%, 0.15% above $2M; Premium: 0.40% (unlimited chat and calls with advisor), 0.10% discount on balance above $2M	0.12%	60%/40%/0%/0%	61%/39%/0%/0%	57%/43%	69%/31%	28%
Betterment Income	Digital: No minimum; Premium: $100,000	Digital: 0.25%, 0.15% above $2M; Premium: 0.40% (unlimited chat and calls with advisor), 0.10% discount on balance above $2M	0.18%	0%/100%/0%/0%	0%/100%/0%/0%	100%/0%	69%/31%	0%
Betterment SRI	Digital: No minimum; Premium: $100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above $2M	0.15%	60%/40%/0%/0%	60%/40%/0%/0%	50%/50%	50%/50%	59%
CitiGroup	$1,500	0.55% annually	0.17%	61%/36%/0%/3%	62%/35%/0%/3%	72%/28%	76%/24%	1%
Citizens Bank	$2,000	0.50% annually	0.07%	64%/36%/0%/1%	65%/34%/0%/1%	54%/46%	57%/43%	0%
E*Trade Active	$500	0.30% annually	0.12%	61%/35%/0%/3%	60%/39%/0%/1%	65%/35%	65%/35%	100%
E*Trade	$500	0.30% annually	0.09%	60%/39%/0%/1%	61%/38%/0%/1%	75%/25%	65%/35%	0%
E*Trade SRI	$500	0.30% annually	0.14%	61%/35%/0%/4%	60%/39%/0%/1%	67%/33%	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%	68%/28%/0%/5%	80%/20%	75%/25%	1%

Current allocations as of 6/30/2020. Due to rounding, may not add to 100%.
Weighted average expense ratio calculations exclude cash holdings from the portfolio.

Produced by Backend Benchmarking for BackendB.com

Taxable Accounts Facts *(continued from previous page)*

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial 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)
Ellevest	Digital: No minimum; Private Client: $1 million	$1/mo, $5/mo, $9/mo - all of which offer investing, debit card, and increased access to discounts for coaching and financial planning based on tier level	0.07%	62%/36%/0%/2%	58%/41%/0%/1%	71%/29%	60%/40%	95%
Ellevest SRI	Digital: No minimum; Premium: $50,000	Digital: 0.25%; Premium: 0.50% (access to live advisors and executive coaches) New tiered fee model: $1/mo, $5/mo, $9/mo - all of which offer investing, debit card, and increased access to discounts for coaching and financial planning based on tier level	0.17%	56%/43%/0%/1%	46%/53%/0%/1%	63%/37%	67%/33%	84%
Fidelity Go	Digital Only: No Minimum; Personalized Planning & Advice: $25,000	Digital Only: for balances less than $10,000 there is no fee, for balances between $10,000 - $49,999.99 it is $3/mo, for balances $50,000 and above it is 0.35% annually. Personalized Planning & Advice: 0.50% annually	0.00%	61%/39%/0%/0%	59%/41%/0%/1%	71%/29%	70%/30%	100%
Fifth Third Bank	$5,000	0.50% annually	0.19%	60%/40%/0%/1%	60%/39%/0%/1%	70%/30%	70%/30%	100%
FutureAdvisor	$5,000	0.50% annually	0.07%	58%/41%/0%/1%	54%/44%/0%/1%	49%/51%	71%/29%	0%
Interactive Advisors	$100 minimum. Some portfolio selections require a higher minimum.	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.13%	54%/46%/0%/0%	55%/43%/0%/1%	55%/45%	54%/46%	32%
Interactive Advisors Legg Mason Global Growth and Income	Interactive Advisor Portfolios: $100 and up depending on portfolios	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.48%	69%/29%/0%/2%	69%/30%/0%/1%	79%/21%	70%/30%	0%
Interactive Advisors State Street SSGA Moderate	Interactive Advisor Portfolios: $100 and up depending on portfolios	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.27%	64%/31%/2%/3%	58%/38%/2%/2%	66%/34%	61%/39%	0%
Interactive Advisors Wisdom Tree Moderate Aggressive	Interactive Advisor Portfolios: $100 and up depending on portfolios	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.32%	54%/30%/14%/2%	52%/33%/9%/6%	62%/38%	62%/38%	1%

Current allocations as of 6/30/2020. Due to rounding, may not add to 100%.
Weighted average expense ratio calculations exclude cash holdings from the portfolio.

Produced by Backend Benchmarking for BackendB.com

Taxable Accounts Facts *(continued from previous page)*

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial 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)
JP Morgan Chase You Invest	$500	0.35% annually	0.10%	50%/48%/0%/2%	53%/45%/0%/2%	55%/45%	59%/41%	0%
Liftoff (Ritholtz Wealth Management)	$5,000	0.40% annually	0.08%	60%/40%/0%/0%	61%/39%/0%/0%	57%/43%	56%/44%	35%
M1 Finance	$100 minimum for taxable accounts, $500 minimum for retirement accounts	No advisory fee	0.05%	66%/34%/0%/0%	63%/36%/0%/1%	61%/39%	62%/38%	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%	63%/32%/0%/5%	66%/34%	79%/21%	67%
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	0.26%	59%/37%/0%/4%	64%/33%/0%/3%	65%/35%	79%/21%	7%
Morgan Stanley	$5,000	0.35% annually	0.08%	65%/30%/0%/5%	65%/34%/0%/1%	45%/55%	48%/52%	0%
Morgan Stanley Active	$5,000	0.35% annually	0.39%	64%/35%/0%/1%	65%/34%/0%/1%	44%/56%	51%/49%	0%
Morgan Stanley Defense and Cyber Security	$5,000	0.35% annually	0.44%	64%/29%/0%/8%	70%/29%/0%/1%	58%/42%	59%/41%	0%
Morgan Stanley Emerging Consumer	$5,000	0.35% annually	0.48%	64%/29%/0%/8%	70%/29%/0%/1%	57%/43%	39%/61%	0%
Morgan Stanley Gender Diversity	$5,000	0.35% annually	0.45%	60%/37%/0%/3%	62%/37%/0%/1%	68%/32%	69%/31%	10%
Morgan Stanley Genomics	$5,000	0.35% annually	0.42%	49%/45%/0%/6%	55%/44%/0%/1%	56%/44%	60%/40%	0%
Morgan Stanley Global Frontier	$5,000	0.35% annually	0.58%	66%/29%/0%/5%	70%/29%/0%/1%	40%/60%	42%/58%	0%
Morgan Stanley Inflation Conscious	$5,000	0.35% annually	0.44%	58%/30%/3%/9%	63%/33%/3%/1%	63%/37%	61%/39%	0%
Morgan Stanley Robotics	$5,000	0.35% annually	0.47%	66%/28%/0%/5%	71%/27%/0%/1%	52%/48%	56%/44%	0%
Morgan Stanley SRI	$5,000	0.35% annually	0.49%	64%/35%/0%/1%	60%/39%/0%/1%	56%/44%	63%/37%	11%
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%	69%/26%/4%/1%	70%/30%	71%/29%	0%
Prudential	$5,000	0.79% annually for first $100K; lower at different tiers above $100K	0.08%	60%/38%/0%/2%	64%/34%/0%/2%	80%/20%	80%/20%	0%

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Produced by Backend Benchmarking for BackendB.com

Taxable Accounts Facts *(continued from previous page)*

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial 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)
Qapital	$10	Complete: $6 per month; Master: $12 per month for additional non-investing features	0.14%	67%/29%/0%/4%	68%/29%/0%/3%	70%/30%	69%/31%	0%
Schwab	Intelligent Portfolios: $5,000; Intelligent Portfolios Premium: $25,000	Intelligent Portfolios: No fee (digital only); Intelligent Portfolios Premium: $300 initial planning fee, $30/month subscription	0.19%	61%/23%/5%/10%	56%/32%/2%/10%	51%/49%	52%/48%	53%
Schwab Domestic Focus	Intelligent Portfolios: $5,000; Intelligent Portfolios Premium: $25,000	Intelligent Portfolios: No fee (digital only); Intelligent Portfolios Premium: $300 initial planning fee, $30/month subscription	0.12%	65%/25%/0%/11%	61%/27%/0%/12%	78%/22%	74%/26%	60%
SigFig	$2,000	No fee for the first $10k; 0.25% annually for balance over $10k	0.07%	62%/37%/0%/1%	64%/35%/0%/1%	58%/42%	59%/41%	0%
SoFi	No minimum	No management fee	0.04%	52%/48%/0%/0%	60%/40%/0%/0%	67%/33%	70%/30%	65%
TD Ameritrade	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; 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%	72%/27%/0%/2%	65%/35%	64%/36%	0%
TD Ameritrade Income	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.62%	21%/78%/0%/1%	23%/76%/0%/1%	72%/38%	54%/46%	0%
TD Ameritrade Managed Risk	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	1.25%	9%/49%/41%/1%	8%/51%/40%/1%	29%/71%	17%/83%	0%
TD Ameritrade Opportunistic	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.13%	43%/53%/0%/4%	48%/51%/0%/1%	53%/47%	59%/41%	0%
TD Ameritrade SRI	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.26%	67%/29%/0%/3%	73%/26%/0%/1%	59%/41%	61%/39%	0%

Current allocations as of 6/30/2020. Due to rounding, may not add to 100%.
Weighted average expense ratio calculations exclude cash holdings from the portfolio.

Produced by Backend Benchmarking for BackendB.com

Taxable Accounts Facts *(continued from previous page)*

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial 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)
TIAA	$5,000	0.30% annually	0.07%	61%/37%/0%/2%	60%/38%/0%/2%	71%/29%	64%/36%	0%
TIAA Active	$5,000	0.30% annually	0.64%	73%/26%/0%/1%	62%/37%/0%/1%	66%/34%	61%/39%	0%
TIAA SRI	$5,000	0.30% annually	0.34%	60%/39%/0%/1%	61%/38%/0%/1%	71%/29%	62%/38%	4%
Titan Invest	$100	1% annually	0.03%	100%/0%/0%/0%	96%/0%/4%/0%	100%/0%	100%/0%	4%
Twine (John Hancock)	$5	0.60% annually	0.07%	69%/29%/0%/2%	69%/29%/0%/2%	64%/36%	64%/36%	0%
UBS Advice Advantage	$10,000	0.75%-1.25% annually	0.15%	68%/27%/0%/5%	71%/27%/0%/2%	59%/41%	58%/42%	78%
United Income	$300,000	0.99% annually, lower at different tiers above $1 million	0.17%	59%/40%/0%/1%	62%/37%/0%/1%	51%/49%	56%/44%	0%
US Bank	$5,000	0.24% annually	0.15%	60%/39%/0%/1%	59%/38%/0%/3%	59%/41%	70%/30%	92%
Vanguard	Vanguard Personal Advisor Services: $50,000 ; Vanguard Digital Advisor: $3,000	Vanguard Personal Advisor Services 0.30% annually for the first $5 million; lower at different tiers over $5 million. Vanguard Digital Advisor Services all-in fee capped at 0.20% annually	0.07%	60%/40%/0%/0%	63%/37%/0%/0%	60%/40%	66%/34%	100%
Vanguard Digital Advisor	$3,000	Vanguard Personal Advisor Services 0.30% annually for the first $5 million; lower at different tiers over $5 million. Vanguard Digital Advisor Services all-in fee capped at 0.20% annually	0.05%	58%/38%/0%/4%	60%/36%/0%/3%	59%/41%	61%/39%	0%
Wealthfront	$500	0.25% annually	0.11%	65%/35%/0%/0%	67%/32%/0%/0%	67%/33%	67%/33%	100%
Wealthfront PassivePlus	$500	0.25% annually	0.15%	45%/35%/19%/0%	48%/33%/19%/0%	60%/40%	62%/38%	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%	61%/39%/0%/0%	66%/34%	42%/58%	34%
Wealthsimple Halal	Basic: No minimum; Black: $100,000	Basic: 0.50% fee on accounts less than $100k; Black: 0.40% on accounts greater than $100k	0.00%	100%/0%/0%/0%	100%/0%/0%/0%	58%/42%	53%/47%	34%
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	0.14%	60%/40%/0%/0%	61%/39%/0%/0%	69%/31%	47%/53%	18%
Wells Fargo	$5,000	0.35% annually; discounted to 0.30% if subscribed to other specific Wells Fargo products	0.13%	63%/34%/0%/3%	65%/32%/0%/3%	77%/23%	77%/23%	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	0.09%	57%/34%/0%/9%	63%/33%/0%/4%	72%/28%	84%/16%	93%

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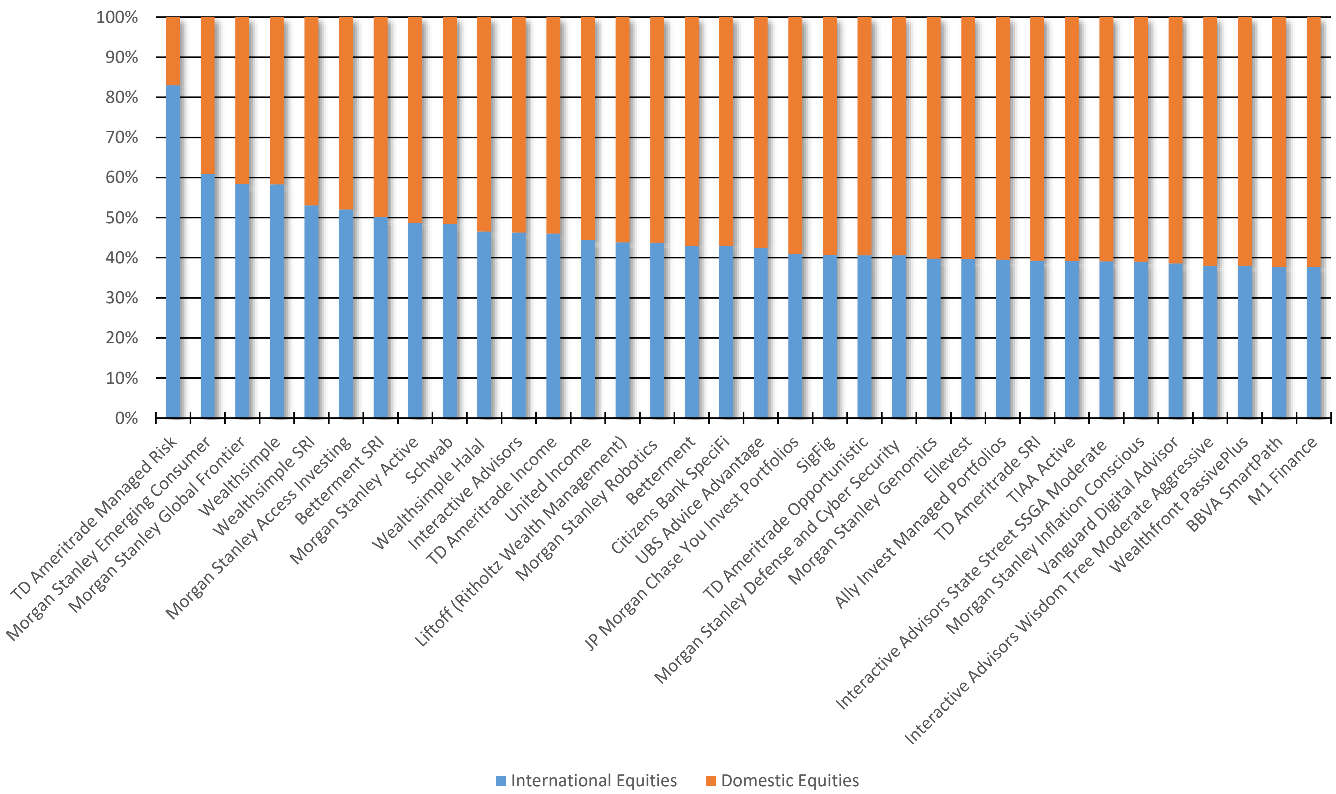
Retirement Account Facts

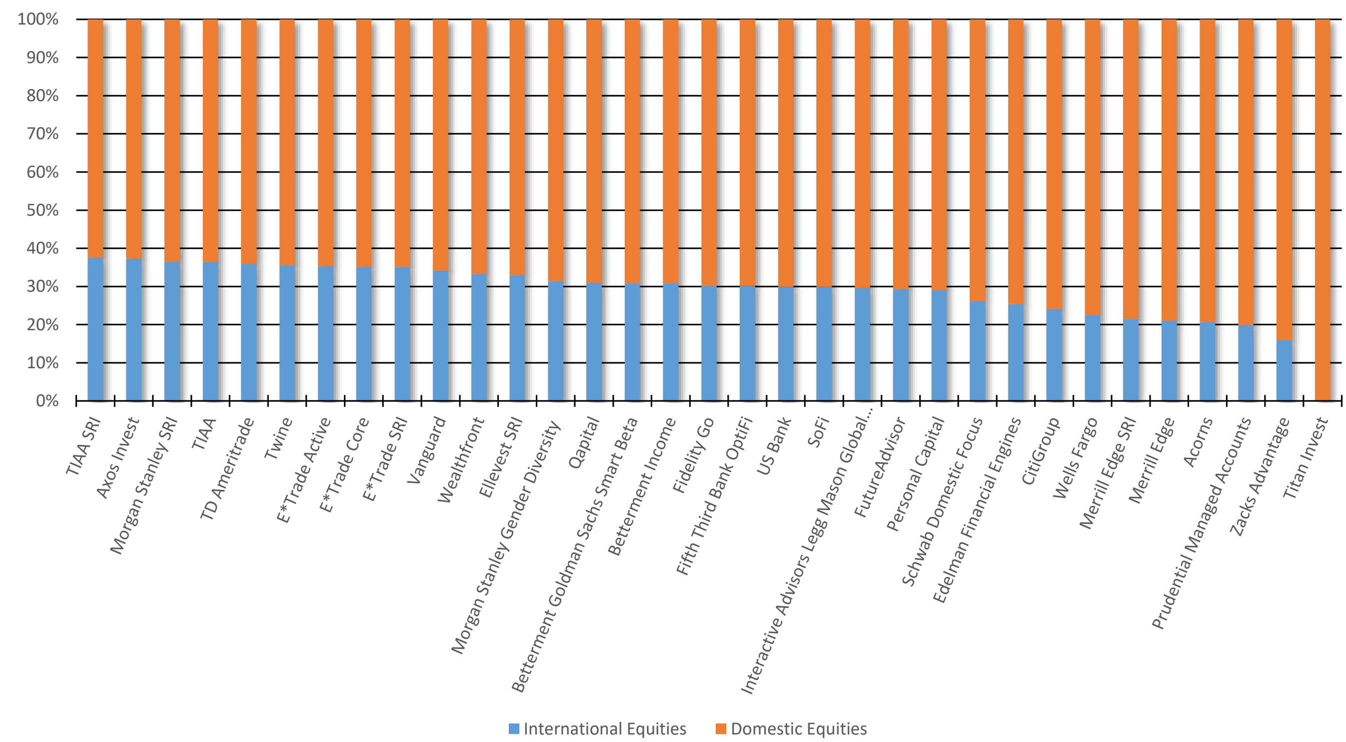
Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Current Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Initial Domestic/ International Equity Split	Current Domestic/ International Equity Split
Ally Financial IRA	$100	0.30% annually; Also offer Cash-enhanced portfolio with 30% invested In cash and no management fee	0.05%	93%/5%/0%/2%	94%/4%/0%/2%	60%/40%	61%/39%
Axos Invest IRA	No minimum	0.24% annually	0.05%	92%/8%/0%/0%	91%/8%/0%/0%	60%/40%	61%/39%
Betterment IRA	Digital: No minimum; Premium: $100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above $2M	0.06%	87%/13%/0%/0%	88%/12%/0%/0%	47%/53%	57%/43%
E*Trade IRA	$500	0.30% annually	0.12%	98%/0%/0%/2%	98%/0%/0%/2%	75%/25%	64%/36%
Fidelity Go IRA	Digital Only: No minimum; Personalized Planning & Advice: $25,000	Digital Only: for balances less than $10,000 there is no fee, for balances between $10,000 - $49,999.99 it is $3/mo, for balances $50,000 and above it is 0.35% annually. Personalized Planning & Advice: 0.50% annually	0.00%	85%/14%/0%/1%	86%/14%/0%/0%	71%/29%	70%/30%
Honest Dollar (Goldman Sachs) IRA	$1,000	0.25% annually	0.05%	99%/0%/0%/1%	98%/0%/0%/2%	68%/32%	72%/28%
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	0.05%	89%/9%/0%/2%	92%/4%/0%/5%	64%/36%	74%/26%
Morgan Stanley IRA	$5,000	0.35% annually	0.07%	79%/15%/0%/6%	79%/20%/0%/1%	47%/53%	49%/51%
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%	93%/3%/3%/1%	69%/31%	70%/30%
Principal SimpleInvest IRA	$1,000	0.40% annually	0.46%	98%/0%/0%/2%	98%/0%/0%/2%	64%/36%	64%/36%
Schwab IRA	Intelligent Portfolios: $5,000; Intelligent Portfolios Premium: $25,000	Intelligent Portfolios: No fee (digital only); Intelligent Portfolios Premium: $300 initial planning fee, $30/month subscription	0.19%	94%/0%/0%/6%	93%/0%/0%/7%	54%/46%	51%/49%
SigFig IRA	$2,000	No fee for the first $10k; 0.25% annually for balance over $10k	0.08%	91%/9%/0%/0%	90%/10%/0%/0%	45%/55%	47%/53%
SoFi IRA	No minimum	No management fee	0.02%	100%/0%/0%/0%	100%/0%/0%/0%	66%/34%	70%/30%
T Rowe Price IRA[13]	$50,000	No advisory fee	0.79%	100%/0%/0%/0%	100%/0%/0%/0%	63%/37%	65%/35%
TD Ameritrade IRA	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; 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%/13%/0%/1%	65%/35%	62%/38%
TIAA IRA	$5,000	0.30% annually	0.07%	88%/11%/0%/1%	87%/12%/0%/1%	72%/28%	62%/38%
United Income IRA	$300,000	0.99% annually	0.25%	99%/0%/0%/1%	99%/0%/0%/1%	51%/49%	56%/44%
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	0.11%	80%/20%/0%/0%	80%/20%/0%/0%	66%/34%	42%/58%
Wells Fargo IRA	$5,000	0.35% annually, discounted to 0.30% if subscribed to other specific Wells Fargo products	0.12%	91%/7%/0%/2%	93%/5%/0%/2%	67%/33%	70%/30%
Zack's 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	0.08%	93%/0%/0%/7%	96%/0%/0%/4%	62%/38%	85%/15%

Current allocations as of 06/30/2020. Due to rounding, may not add to 100%.
Weighted average expense ratio calculations exclude cash holdings from the portfolio.

Produced by Backend Benchmarking for BackendB.com

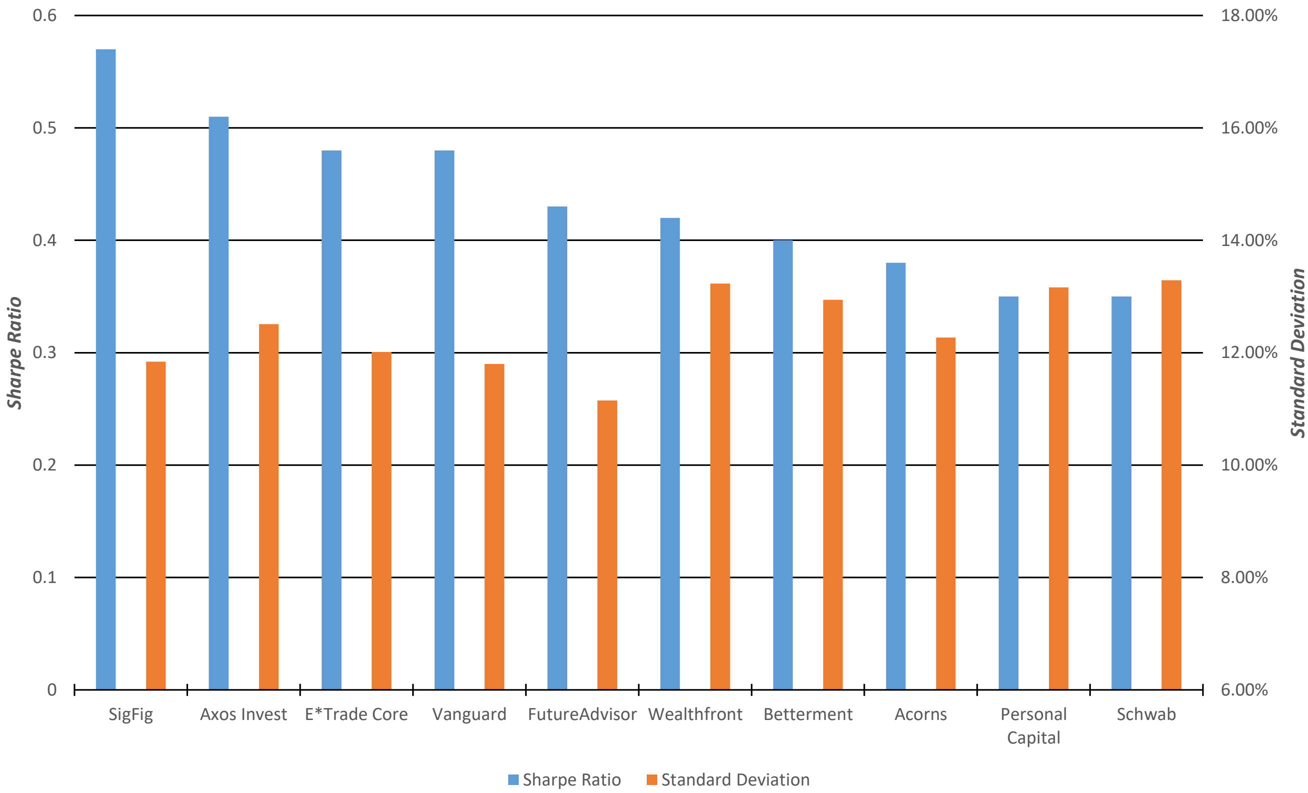
International Allocation of Total Equity for Taxable Robos





Taxable Risk/Return Charts and Tables

4-Year Risk/Return Statistics of Taxable Robos

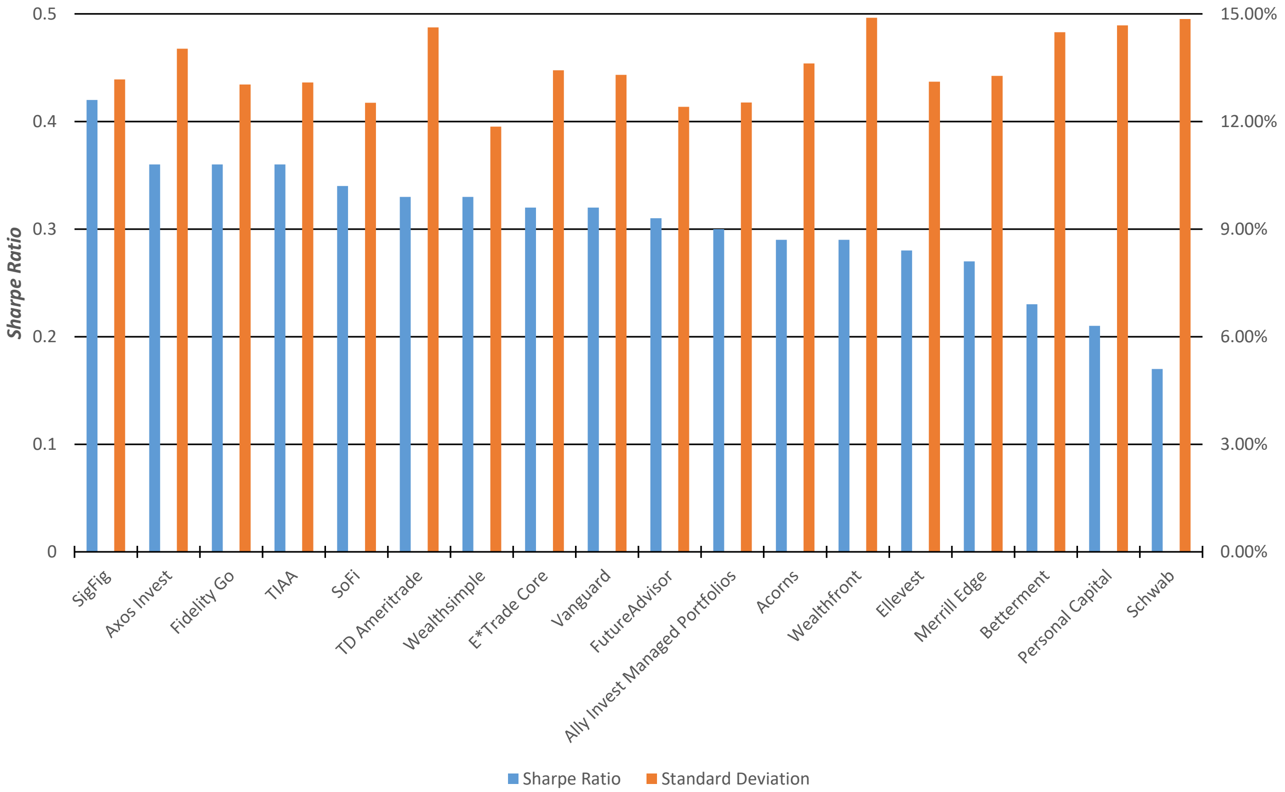


	Acorns	Axos Invest	Betterment	E*Trade Core	FutureAdvisor	Personal Capital	Schwab	SigFig
Standard Deviation	12.27%	12.51%	12.94%	12.01%	11.15%	13.16%	13.29%	11.84%
Sharpe Ratio	0.38	0.51	0.4	0.48	0.43	0.35	0.35	0.57

	Vanguard	Wealthfront
Standard Deviation	11.80%	13.23%
Sharpe Ratio	0.48	0.42

This analysis was produced by Backend Analytics with the help of Markov Process International, Inc.

3-Year Risk/Return Statistics of Taxable Robos



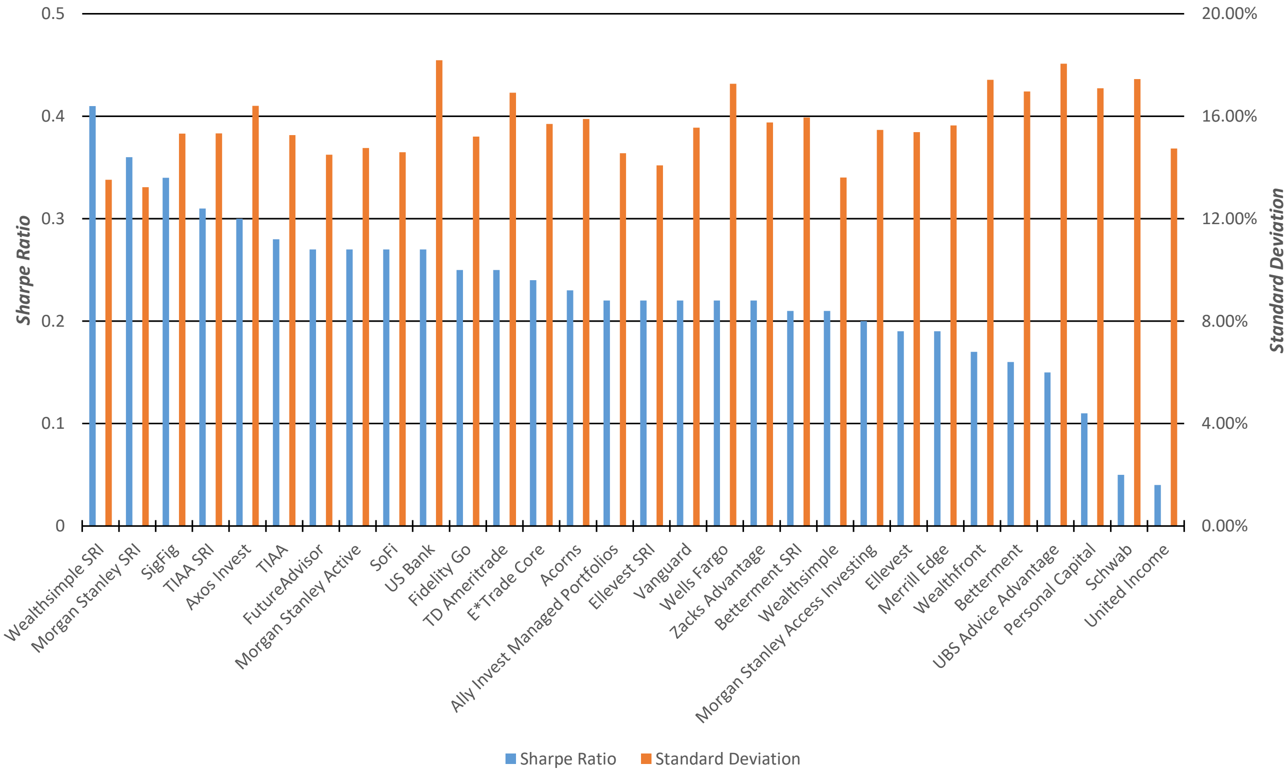
	Acorns	Ally Invest Managed Portfolios	Axos Invest	Betterment	E*Trade Core	Ellevest	Fidelity Go	FutureAdvisor
Standard Deviation	13.62%	12.53%	14.03%	14.49%	13.43%	13.11%	13.03%	12.41%
Sharpe Ratio	0.29	0.3	0.36	0.23	0.32	0.28	0.36	0.31

	Merrill Edge	Personal Capital	Schwab	SigFig	SoFi	TD Ameritrade	TIAA	Vanguard
Standard Deviation	13.27%	14.68%	14.86%	13.17%	12.52%	14.62%	13.09%	13.30%
Sharpe Ratio	0.27	0.21	0.17	0.42	0.34	0.33	0.36	0.32

	Wealthfront	Wealthsimple
Standard Deviation	14.89%	11.86%
Sharpe Ratio	0.29	0.33

This analysis was produced by Backend Analytics with the help of Markov Process International, Inc.

2-Year Risk/Return Statistics of Taxable Robos



	Acorns	Ally Invest Managed Portfolios	Axos Invest	Betterment	Betterment SRI	E*Trade Core	Ellevest	Ellevest SRI
Standard Deviation	15.89%	14.56%	16.41%	16.97%	15.95%	15.70%	15.38%	14.08%
Sharpe Ratio	0.23	0.22	0.3	0.16	0.21	0.24	0.19	0.22

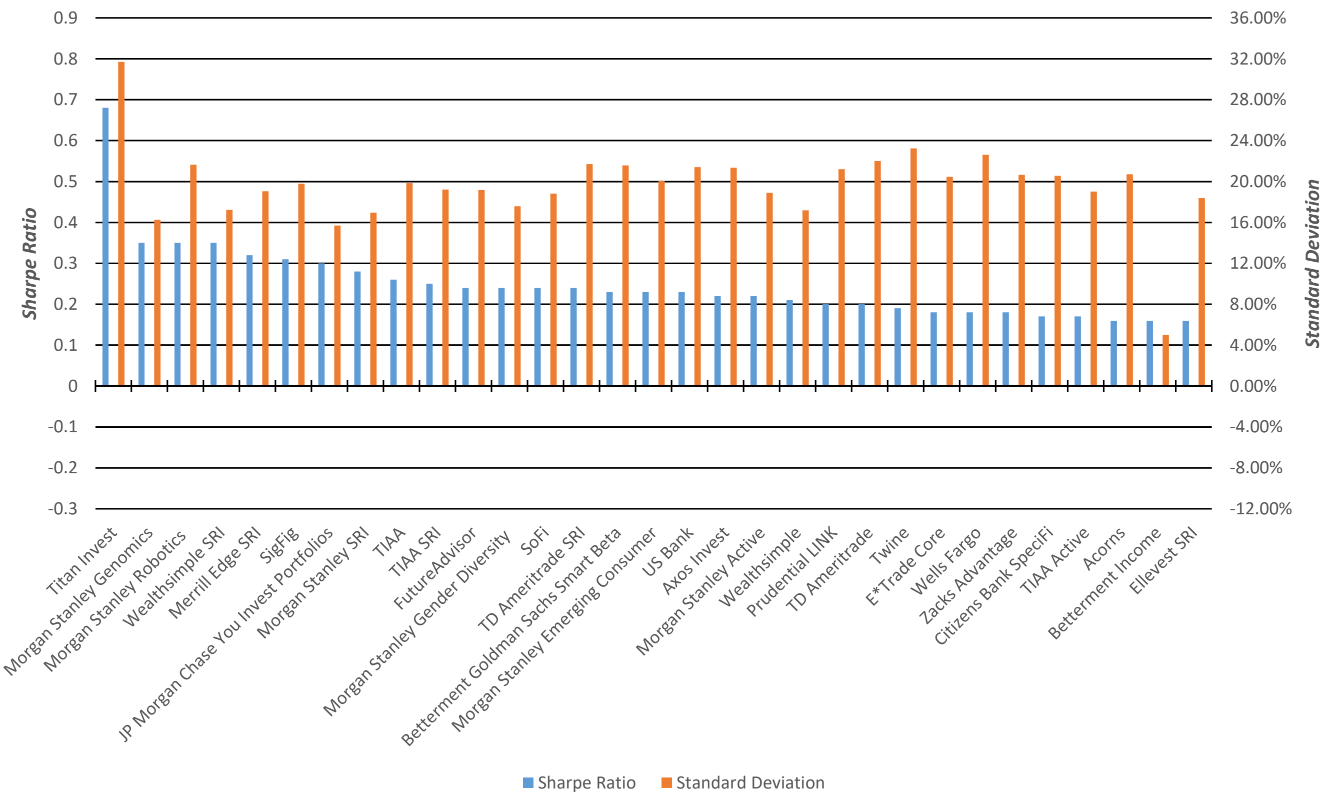
	Fidelity Go	FutureAdvisor	Merrill Edge	Morgan Stanley Access Investing	Morgan Stanley Active	Morgan Stanley SRI	Personal Capital	Schwab
Standard Deviation	15.20%	14.50%	15.64%	15.47%	14.76%	13.23%	17.09%	17.45%
Sharpe Ratio	0.25	0.27	0.19	0.2	0.27	0.36	0.11	0.05

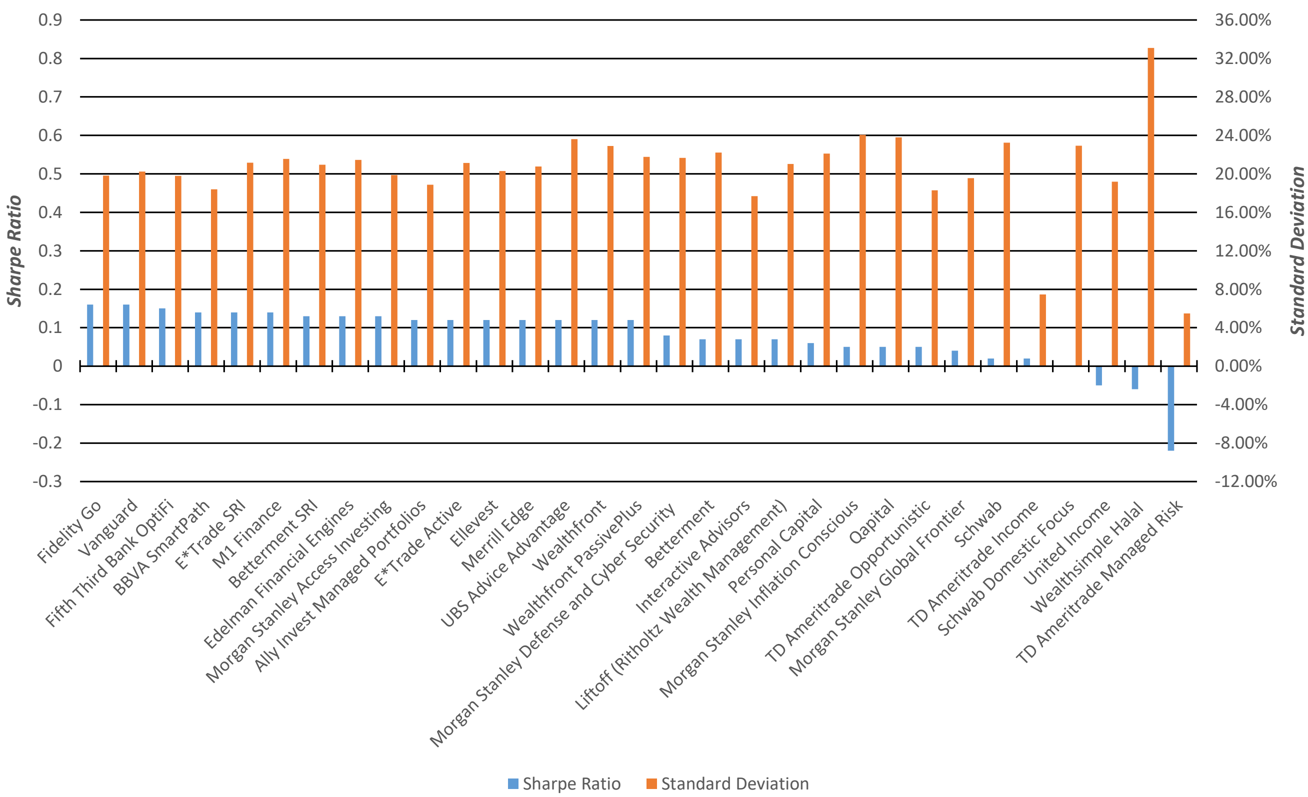
	SigFig	SoFi	TD Ameritrade	TIAA	TIAA SRI	UBS Advice Advantage	US Bank	Vanguard
Standard Deviation	15.32%	14.59%	16.92%	15.26%	15.33%	18.05%	18.19%	15.55%
Sharpe Ratio	0.34	0.27	0.25	0.28	0.31	0.15	0.27	0.22

	Wealthfront	Wealthsimple	Wealthsimple SRI	Wells Fargo	Zacks Advantage
Standard Deviation	17.42%	13.61%	13.52%	17.27%	15.76%
Sharpe Ratio	0.17	0.21	0.41	0.22	0.22

This analysis was produced by Backend Analytics with the help of Markov Process International, Inc.

1-Year Risk/Return Statistics of Taxable Robos





1-Year Risk/Return Statistics of Taxable Robos (continued from previous page)

	Acorns	Ally Invest Managed Portfolios	Axos Invest	BBVA SmartPath	Betterment	Betterment Goldman Sachs Smart Beta	Betterment Income	Betterment SRI
Standard Deviation	20.71%	18.87%	21.36%	18.39%	22.21%	21.57%	5.00%	20.94%
Sharpe Ratio	0.16	0.12	0.22	0.14	0.07	0.23	0.16	0.13

	Citizens Bank SpeciFi	E*Trade Active	E*Trade Core	E*Trade SRI	Edelman Financial Engines	Ellevest	Ellevest SRI	Fidelity Go
Standard Deviation	20.57%	21.12%	20.47%	21.17%	21.45%	20.29%	18.37%	19.81%
Sharpe Ratio	0.17	0.12	0.18	0.14	0.13	0.12	0.16	0.16

	Fifth Third Bank OptiFi	FutureAdvisor	Interactive Advisors	JP Morgan Chase You Invest Portfolios	Liftoff (Ritholtz Wealth Management)	M1 Finance	Merrill Edge	Merrill Edge SRI
Standard Deviation	19.79%	19.17%	17.68%	15.69%	21.03%	21.56%	20.77%	19.05%
Sharpe Ratio	0.15	0.24	0.07	0.3	0.07	0.14	0.12	0.32

	Morgan Stanley Access Investing	Morgan Stanley Active	Morgan Stanley Defense and Cyber Security	Morgan Stanley Emerging Consumer	Morgan Stanley Gender Diversity	Morgan Stanley Genomics	Morgan Stanley Global Frontier	Morgan Stanley Inflation Conscious
Standard Deviation	19.87%	18.90%	21.66%	20.03%	17.57%	16.27%	19.55%	24.07%
Sharpe Ratio	0.13	0.22	0.08	0.23	0.24	0.35	0.04	0.05

	Morgan Stanley Robotics	Morgan Stanley SRI	Personal Capital	Prudential LINK	Qapital	Schwab	Schwab Domestic Focus	SigFig
Standard Deviation	21.64%	16.96%	22.12%	21.21%	23.80%	23.25%	22.93%	19.80%
Sharpe Ratio	0.35	0.28	0.06	0.2	0.05	0.02	0	0.31

	SoFi	TD Ameritrade	TD Ameritrade Income	TD Ameritrade Managed Risk	TD Ameritrade Opportunistic	TD Ameritrade SRI	TIAA	TIAA Active
Standard Deviation	18.81%	22.00%	7.46%	5.48%	18.30%	21.71%	19.85%	19.02%
Sharpe Ratio	0.24	0.2	0.02	-0.22	0.05	0.24	0.26	0.17

	TIAA SRI	Titan Invest	Twine	UBS Advice Advantage	United Income	US Bank	Vanguard	Wealthfront
Standard Deviation	19.21%	31.69%	23.25%	23.61%	19.18%	21.39%	20.25%	22.89%
Sharpe Ratio	0.25	0.68	0.19	0.12	-0.05	0.23	0.16	0.12

	Wealthfront PassivePlus	Wealthsimple	Wealthsimple Halal	Wealthsimple SRI	Wells Fargo	Zacks Advantage
Standard Deviation	21.77%	17.18%	33.09%	17.24%	22.61%	20.66%
Sharpe Ratio	0.12	0.21	-0.06	0.35	0.18	0.18

This analysis was produced by Backend Analytics with the help of Markov Process International, Inc.

Retirement Risk/Return

4-Year Risk/Return Statistics of Retirement Robos

	Axos Invest IRA	Betterment IRA	Personal Capital IRA	Schwab IRA	SigFig IRA
Standard Deviation	17.34%	16.70%	17.66%	18.06%	17.37%
Sharpe Ratio	0.49	0.4	0.36	0.3	0.42

This analysis was produced by Backend Analytics with the help of Markov Process International, Inc.

3-Year Risk/Return Statistics of Retirement Robos

	Ally Invest IRA	Axos Invest IRA	Betterment IRA	E*Trade Core IRA	Fidelity Go IRA	Merrill Edge IRA	Personal Capital IRA	Schwab IRA
Standard Deviation	20.28%	19.46%	18.69%	21.42%	17.73%	19.29%	19.80%	20.19%
Sharpe Ratio	0.24	0.31	0.22	0.23	0.35	0.26	0.21	0.1

	SigFig IRA	TD Ameritrade IRA	TIAA Personal Portfolios IRA	Wealthsimple IRA
Standard Deviation	19.36%	18.16%	18.49%	15.15%
Sharpe Ratio	0.24	0.3	0.31	0.27

This analysis was produced by Backend Analytics with the help of Markov Process International, Inc.

2-Year Risk/Return Statistics of Retirement Robos

	Ally Invest IRA	Axos Invest IRA	Betterment IRA	E*Trade Core IRA	Fidelity Go IRA	Merrill Edge IRA	Morgan Stanley IRA	Personal Capital IRA
Standard Deviation	23.66%	22.66%	21.77%	24.98%	20.65%	22.50%	19.02%	23.11%
Sharpe Ratio	0.12	0.2	0.13	0.11	0.24	0.16	0.15	0.09

	Schwab IRA	SigFig IRA	SoFi IRA	T Rowe Price ActivePlus Portfolios IRA	TD Ameritrade IRA	TIAA Personal Portfolios IRA	United Income IRA	Wells Fargo IRA
Standard Deviation	23.63%	22.51%	22.88%	25.47%	21.10%	21.45%	24.33%	23.59%
Sharpe Ratio	-0.06	0.15	0.23	0.18	0.2	0.19	-0.02	0.11

	Zack's Advantage IRA
Standard Deviation	23.83%
Sharpe Ratio	0.16

This analysis was produced by Backend Analytics with the help of Markov Process International, Inc.

1-Year Risk/Return Statistics of Retirement Robos

	Ally Invest IRA	Axos Invest IRA	Betterment IRA	E*Trade Core IRA	Fidelity Go IRA	Honest Dollar IRA	Merrill Edge IRA	Morgan Stanley IRA
Standard Deviation	30.70%	29.20%	28.24%	32.18%	26.66%	32.15%	29.26%	24.43%
Sharpe Ratio	0.09	0.17	0.06	0.08	0.19	0.13	0.12	0.1

	Personal Capital IRA	Schwab IRA	SigFig IRA	SoFi IRA	T Rowe Price ActivePlus Portfolios IRA	TD Ameritrade IRA	TIAA Personal Portfolios IRA	United Income IRA
Standard Deviation	30.07%	30.95%	29.09%	28.94%	32.19%	27.13%	27.74%	31.42%
Sharpe Ratio	0.06	-0.1	0.1	0.25	0.16	0.16	0.18	-0.02

	Wells Fargo IRA	Zack's Advantage IRA
Standard Deviation	30.66%	30.92%
Sharpe Ratio	0.12	0.15

This analysis was produced by Backend Analytics with the help of Markov Process International, Inc.

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	65%	62%
Equity	International	VXUS	Vanguard Total International Stock ETF	35%	38%

Produced by Backend Benchmarking for BackendB.com

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

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	29%	24%
Fixed Income	Investment-Grade Corporates	LQD	iShares iBoxx $ Investment Grade Corporate Bond ETF	10%	3%
Fixed Income	High-Yield Corporates	JNK	SPDR Bloomberg Barclays High Yield Bond ETF	2%	5%
Fixed Income	International Developed	IGOV	iShares International Treasury Bond ETF	6%	4%
Fixed Income	International Emerging Markets	EMB	iShares J.P. Morgan USD Emerging Markets Bond ETF	4%	7%
Fixed Income	Municipals	MUB	iShares National Muni Bond ETF	26%	0%
Fixed Income	TIPS	TIP	iShares TIPS Bond ETF	5%	6%
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	4%	4%
Fixed Income	Long-Term Treasuries (10+ Year Maturity)	VGLT	Vanguard Long-Term Treasury ETF	1%	4%
Fixed Income	Securitized	VMBS	Vanguard Mortgage-Backed Securities ETF	1%	1%
Fixed Income	Cash	FDRXX	Fidelity® Government Cash Reserves	8%	42%

Produced by Backend Benchmarking for BackendB.com

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

Taxable Normalized Benchmark Returns

	2Q 2020	YTD	1-Year	2-Year	3-Year	4-Year
Acorns Normalized Benchmark	13.73%	-1.28%	4.91%	5.56%	6.15%	7.41%
Ally Invest Managed Portfolios Normalized Benchmark	13.56%	-1.17%	4.96%	5.59%	6.04%	-
Axos Invest Normalized Benchmark	14.41%	-1.72%	4.71%	5.43%	6.13%	7.49%
BBVA SmartPath Normalized Benchmark	13.40%	-1.06%	5.01%	-	-	-
Betterment Normalized Benchmark	14.57%	-1.84%	4.65%	5.40%	6.14%	7.55%
Betterment Goldman Sachs Smart Beta Normalized Benchmark	13.73%	-1.28%	4.91%	-	-	-
Betterment Income Normalized Benchmark	3.68%	4.01%	6.22%	-	-	-
Betterment SRI Normalized Benchmark	13.73%	-1.28%	4.91%	5.56%	-	-
CitiGroup Normalized Benchmark	13.90%	-	-	-	-	-
Citizens Bank SpeciFi Normalized Benchmark	14.41%	-1.72%	4.71%	-	-	-
E*Trade Active Normalized Benchmark	13.90%	-1.39%	4.86%	-	-	-
E*Trade Core Normalized Benchmark	13.73%	-1.28%	4.91%	5.56%	6.06%	7.25%
E*Trade SRI Normalized Benchmark	13.90%	-1.39%	4.86%	-	-	-
Edelman Financial Engines Normalized Benchmark	14.91%	-2.07%	4.54%	-	-	-
Ellevest Normalized Benchmark	13.06%	-0.84%	5.11%	5.68%	6.11%	-
Ellevest SRI Normalized Benchmark	12.22%	-0.32%	5.33%	5.78%	-	-
Fidelity Go Normalized Benchmark	13.90%	-1.39%	4.86%	5.53%	6.08%	-
Fifth Third Bank OptiFi Normalized Benchmark	13.73%	-1.28%	4.91%	-	-	-
FutureAdvisor Normalized Benchmark	13.23%	-0.95%	5.06%	5.68%	6.02%	7.11%
Interactive Advisors Normalized Benchmark	12.72%	-0.63%	5.20%	-	-	-
Interactive Advisors Legg Mason Global Growth and Income Normalized Benchmark	15.25%	-2.30%	-	-	-	-
Interactive Advisors State Street SSGA Moderate Normalized Benchmark	14.74%	-1.95%	-	-	-	-
Interactive Advisors Wisdom Tree Moderate Aggressive Normalized Benchmark	15.08%	-2.18%	-	-	-	-
JP Morgan Chase You Invest Portfolios Normalized Benchmark	12.05%	-0.21%	5.37%	-	-	-
Liftoff (Ritholtz Wealth Management) Normalized Benchmark	13.73%	-1.28%	4.91%	-	-	-
M1 Finance Normalized Benchmark	14.74%	-1.95%	4.60%	-	-	-
Merrill Edge Normalized Benchmark	13.90%	-1.46%	4.32%	5.32%	5.90%	-
Merrill Edge SRI Normalized Benchmark	14.15%	-1.19%	4.94%	-	-	-
Morgan Stanley Access Investing Normalized Benchmark	14.24%	-1.61%	4.76%	5.48%	-	-
Morgan Stanley Active Normalized Benchmark	14.41%	-1.72%	4.71%	-	-	-
Morgan Stanley Defense and Cyber Security Normalized Benchmark	15.25%	-2.30%	4.43%	-	-	-
Morgan Stanley Emerging Consumer Normalized Benchmark	15.25%	-2.30%	4.43%	-	-	-
Morgan Stanley Gender Diversity Normalized Benchmark	13.73%	-1.28%	4.91%	-	-	-
Morgan Stanley Genomics Normalized Benchmark	12.55%	-0.53%	5.24%	-	-	-
Morgan Stanley Global Frontier Normalized Benchmark	15.08%	-2.18%	4.49%	-	-	-
Morgan Stanley Inflation Conscious Normalized Benchmark	13.90%	-1.39%	4.86%	-	-	-
Morgan Stanley Robotics Normalized Benchmark	15.25%	-2.30%	4.43%	-	-	-
Morgan Stanley SRI Normalized Benchmark	13.23%	-0.95%	5.06%	5.67%	-	-

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized. *Produced by Backend Benchmarking for BackendB.com*

Taxable Normalized Benchmark Returns *(continued from previous page)*

	2Q 2020	YTD	1-Year	2-Year	3-Year	4-Year
Personal Capital Normalized Benchmark	15.92%	-2.77%	4.19%	5.11%	6.26%	8.01%
Prudential LINK Normalized Benchmark	13.73%	-1.28%	4.91%	-	-	-
Qapital Normalized Benchmark	14.91%	-2.07%	4.54%	-	-	-
Schwab Normalized Benchmark	14.11%	-1.53%	4.80%	5.49%	6.20%	7.59%
Schwab Domestic Focus Normalized Benchmark	14.57%	-1.84%	4.65%	-	-	-
SigFig Normalized Benchmark	14.07%	-1.50%	4.81%	5.50%	6.09%	7.37%
SoFi Normalized Benchmark	13.73%	-1.28%	4.91%	5.56%	5.85%	-
TD Ameritrade Normalized Benchmark	15.08%	-2.18%	4.49%	5.30%	6.19%	-
TD Ameritrade Income Normalized Benchmark	7.19%	2.47%	6.15%	-	-	-
TD Ameritrade Managed Risk Normalized Benchmark	6.18%	2.94%	6.21%	-	-	-
TD Ameritrade Opportunistic Normalized Benchmark	11.55%	0.09%	5.59%	-	-	-
TD Ameritrade SRI Normalized Benchmark	15.25%	-1.78%	4.85%	-	-	-
TIAA Normalized Benchmark	13.90%	-1.39%	4.86%	5.53%	6.08%	-
TIAA Active Normalized Benchmark	13.90%	-1.39%	5.17%	-	-	-
TIAA SRI Normalized Benchmark	13.73%	-1.28%	4.91%	5.56%	-	-
Titan Invest Normalized Benchmark	20.47%	-6.21%	2.19%	-	-	-
Twine Normalized Benchmark	15.25%	-2.30%	4.43%	-	-	-
UBS Advice Advantage Normalized Benchmark	15.42%	-1.90%	4.79%	5.45%	-	-
United Income Normalized Benchmark	13.56%	-1.17%	4.96%	5.59%	-	-
US Bank Normalized Benchmark	13.23%	-0.95%	5.08%	-	-	-
Vanguard Normalized Benchmark	13.73%	-1.28%	4.91%	5.56%	6.06%	7.25%
Vanguard Digital Advisor Normalized Benchmark	13.40%	-	-	-	-	-
Wealthfront Normalized Benchmark	14.57%	-1.84%	4.65%	5.40%	6.14%	7.55%
Wealthfront PassivePlus Normalized Benchmark	13.06%	-0.84%	5.11%	-	-	-
Wealthsimple Normalized Benchmark	13.73%	-1.28%	4.91%	5.56%	6.06%	-
Wealthsimple Halal Normalized Benchmark	20.47%	-6.21%	2.19%	-	-	-
Wealthsimple SRI Normalized Benchmark	13.73%	-1.28%	4.91%	5.56%	-	-
Wells Fargo Normalized Benchmark	14.24%	-1.61%	4.76%	5.47%	-	-
Zacks Advantage Normalized Benchmark	13.73%	-1.28%	4.91%	5.51%	-	-

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized.

Produced by Backend Benchmarking for BackendB.com

Retirement Normalized Benchmark Returns

	2Q 2020	YTD	1-Year	2-Year	3-Year	4-Year
Ally Invest IRA Normalized Benchmark	19.10%	-5.53%	2.44%	3.99%	6.22%	-
Axos Invest IRA Normalized Benchmark	18.92%	-5.41%	2.50%	4.02%	6.21%	8.88%
Betterment IRA Normalized Benchmark	18.04%	-4.79%	2.83%	4.19%	6.14%	8.60%
E*Trade Core IRA Normalized Benchmark	19.99%	-6.17%	2.08%	3.79%	6.28%	-
Fidelity Go IRA Normalized Benchmark	17.69%	-4.54%	2.96%	4.26%	6.11%	-
Honest Dollar IRA Normalized Benchmark	20.16%	-6.30%	2.00%	-	-	-
Merrill Edge IRA Normalized Benchmark	18.92%	-5.14%	2.45%	3.98%	6.07%	-
Morgan Stanley IRA Normalized Benchmark	16.62%	-3.83%	3.31%	4.93%	-	-
Personal Capital IRA Normalized Benchmark	19.62%	-5.91%	2.23%	3.88%	6.26%	9.06%
Principal SimpleInvest IRA Normalized Benchmark	2.78%	-	-	-	-	-
Schwab IRA Normalized Benchmark	19.28%	-5.66%	2.37%	3.95%	6.24%	8.99%
SigFig IRA Normalized Benchmark	18.75%	-5.28%	2.57%	4.06%	6.20%	8.82%
SoFi IRA Normalized Benchmark	20.34%	-6.43%	1.93%	3.71%	-	-
T Rowe Price ActivePlus Portfolios IRA Normalized Benchmark	20.34%	-6.43%	1.93%	3.71%	-	-
TD Ameritrade IRA Normalized Benchmark	17.51%	-4.42%	3.02%	4.29%	6.09%	-
TIAA Personal Portfolios IRA Normalized Benchmark	18.22%	-4.91%	2.77%	4.16%	6.16%	-
United Income IRA Normalized Benchmark	20.16%	-6.30%	2.00%	3.76%	-	-
Wealthsimple IRA Normalized Benchmark	16.80%	-3.95%	3.25%	4.41%	6.02%	-
Wells Fargo IRA Normalized Benchmark	18.75%	-5.28%	2.57%	4.06%	-	-
Zack's Advantage IRA Normalized Benchmark	19.10%	-5.53%	2.44%	3.99%	-	-

Returns are net of fees and are as of 6/30/2020. All returns for periods longer than one year are annualized. *Produced by Backend Benchmarking for BackendB.com*

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 made a few adjustments on how we scored different categories. First, instead of allocating points based on if a provider made a live advisor available at the lowest level, we adjusted that metric to award points based on the minimum at which live advisors are made available. Lower minimums for live advisors scored more points. Second, we removed the metric of whether or not onboarding could be completed in less than 30 minutes, as every robo in the *Ranking* scored those points. Instead, we changed the metric to score whether or not a robo's financial planning tool integrates directly with the investment portal. Lastly, we awarded full points to any advisor who had a minimum of $500 or less. Previously, the bar was set at $10 or less.

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

Updates from the Previous Report:

In this issue of the *Robo Ranking*, we made two changes to our Methodology. First, we are now rewarding half points instead of full points for Financial Planning scores where a higher-service tier is required in order to benefit from the criteria. Second, we are now rewarding half points instead of full points for Access to Live Advisors scores where a higher-service tier is required to access advisors.

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, the single-goal planning tool was awarded full points if it can model future account values or spending, accept a user input of an account value or spending goal, and show either a likelihood of success or changes. If only some of these features were present, then partial points were awarded. Half-point scores were awarded if fulfilling the criteria required a higher-service tier.

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 onboarding questionnaire took into account a user's comfort with investing and inquired 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 a user could easily compare their portfolio 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 awarded points. Additionally, we 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 advisors to hold CFPs, and the minimums at which live advisors are made available. Full points were awarded if these advisors were available at the lowest-service tier while half points were awarded if advisors required a higher-service tier.

Account Minimum:

Robos earned points for having lower investment minimums.

Costs:

We scored costs on the sum of the management fee and weighted-average 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 0.20% APY. If a cash position was earning 0.20% or more, robos received full points in this section. Robos with cash positions that are earning less than 0.20% 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* 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. 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.

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Last updated: 7/1/2020

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Disclosures

1 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.

2 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.

3 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.

4 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.

5 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.

6 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.

7 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.

8 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.

9 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 Q1 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.

10 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.

11 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.

12 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.

13 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.

14 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.

15 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.

16 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. Recently, this provider changed its fee schedule, but our account was grandfathered in at the previous, lower fee for the size of the account. New accounts would be subject to the new fee schedule, which would decrease reflected performance at most account size levels.

17 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.

18 This account was funded with more than the minimum amount required to establish an account. This account was not be charged an advisory fee through 2019.

20 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.

21 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.

22 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.

23 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.

24 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.

25 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.

26 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 shortterm 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.

27 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* but were not reflected in performance reported in the Q4 2018 *Robo Report*.

28 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.

29 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. After opening, this provider changed its fee schedule, raising the fee for the asset level of the account, but our account was grandfathered in at the previous, lower fee. New accounts would be subject to the new fee schedule, which may change reflected performance.

30 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.

31 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.

32 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.

33 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. Prior to August 2020, this account was assessed a 0.35% annual management fee As of August 2020, the provider changed the fee structure such that accounts under $10,000 are not charged a management fee. Our account is under this threshold and will therefore not be charged a management fee starting in August of 2020. This will have the result of increasing reflected performance.

34 This account was funded with more than the minimum required to establish an account. There is no management fee levied. Therefore, performance is not affected by the account's asset level. This platform has numerous different portfolio strategies. We chose the "moderately aggressive" strategy. Different portfolio strategies have different allocations which could increase or decrease reflected performance.

35 These accounts were funded with the minimum amount required to establish an account. This account is enrolled in their "Selective Portfolios" and is charged an asset-based advisory fee. These specific portfolios are only offered at the "Selective Portfolios" level, which charges a higher asset-based advisory fee due to access to live advisors than the "Essential Portfolios." Additionally, these portfolios hold balanced funds. Due to the nature of these funds and limits in our portfolio management system, we cannot accurately track equity and fixed income performance individually at the portfolio level. Total portfolio performance is unaffected by holding balanced funds.

36 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. This platform has numerous different portfolio strategies. We chose the "60/40 classic" option. Different portfolio strategies have different allocations which could increase or decrease reflected performance.

37 These accounts were funded with the minimum amount required to establish an account. This account is enrolled in their "Selective Portfolios" and is charged an asset-based advisory fee. These specific portfolios are only offered at the "Selective Portfolios" level, which charges a higher asset-based advisory fee due to access to live advisors than the "Essential Portfolios."

38 These accounts were opened when the provider charged 0.25% annual management fee. Recently, the fee structure changed to be a flat monthly fee. However, our account was grandfathered into the old fee structure. This change may have the result of increasing/decreasing reflected performance based on account size.

39 This account charges a flat 0.15% annual management fee and caps the underlying fund fees at 0.05% so that the all-in fee never exceeds 0.20% annually. The same fee is charged at all asset levels.

40. This account charges 0.55% annually. However, those with a Citi Gold or Priority account (required balances of $50,000 and $200,000 respectively)

will not be charged a management fee, which would increase reflected performance.

A On June 19, 2017, Vanguard removed Backend Benchmarking's primary Vanguard account from the Vanguard Personal Advisor Services program. As of June 20, 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.

B 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%.

C 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 portfolios' initial target allocations 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 transaction 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.

At certain custodians, a combination of the custodian providing us a limited number of digits on fractional shares and fractional cent transactions' rounding errors are introduced into our tracking. Starting March 31, 2020, we implemented a new process at quarter end to enter small transactions to eliminate any rounding errors that have built up to more than a full cent. These transactions are small and do not have an appreciable effect on performance.

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. Condor Capital initiated a position in Schwab and JP Morgan Chase in one of the strategies used in many of their discretionary accounts on 5/30/2017 and 1/2/2001, respectively. As of 06/30/2020 the total size of the position was 39,488 shares of Schwab common stock and 17,911 shares of JP Morgan Chase common stock.

For more information, please contact BackendBenchmarking at Info@BackendB.com

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