

Digital attention during coronavirus market volatility

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- Turbulence for investors was a hallmark of the first quarter of 2020. Market highs were quickly followed by significant drops.
- Investors appear to use specific digital channels for different tasks. Investors' device preferences did not seem to change during the quarter.
- Digital attention already was on the rise in 2020 but market volatility further fueled the increase.

In the first quarter of 2020, global markets experienced unusual market volatility. During the quarter, outbreaks of the novel coronavirus grew into a global pandemic. U.S. markets reached a peak on February 19, 2020, as measured by the Standard & Poor's 500 Index, and subsequently fell 34%, bottoming out on March 23, 2020. Research shows that market conditions influence investors' digital attention and trading behavior.¹ As this paper goes into production, markets have largely rebounded.

This research note examines changes in digital attention and online behavior among Vanguard U.S. retail investors during the first quarter of 2020. Today, the vast majority of Vanguard investor contacts are online. We begin by looking at how often investors visited the Vanguard website or mobile app before and after February 19.

Then, if they have visited the website, we look at what activities investors have engaged in online and how that has changed with increased market volatility.

Our study uses a representative sample of 17,000 self-directed, web-registered investors with balances since December 31, 2017.² We refer to these as continuous investors. While all clients in the study sample have the ability to log on (i.e., are web-registered), not everyone does. In the first quarter of 2020, 64% of our study sample visited the Vanguard website or mobile app at least once, compared with 61% during the first quarter of 2019.

¹ See the 2020 Vanguard research note *U.S. Household Trading: Coronavirus Market Volatility*, available at vanguard.com. Also see Sicherman, Nachum, George Loewenstein, Duane J. Seppi, Stephen P. Utkus, 2016. Financial Attention, *The Review of Financial Studies*, 29(4): 863–897, available at <https://doi.org/10.1093/rfs/hhv073>.

² As of December 31, 2019, the median investor in our study sample was 55 years old, with account tenure of 16 years, with one account and two holdings. The median account balance was \$79,000.

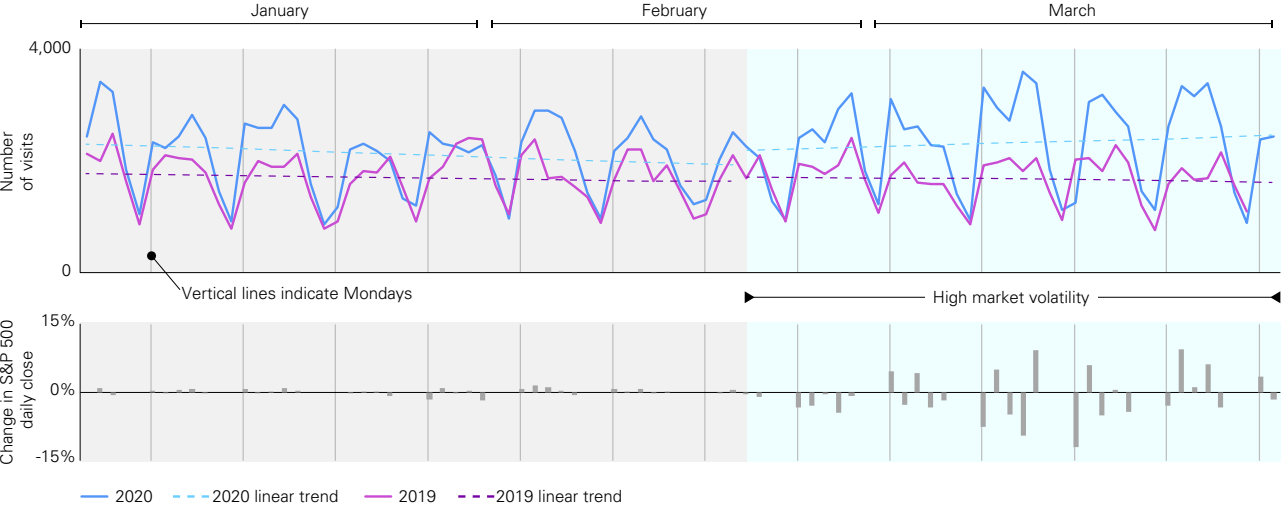
We compare digital attention, measured by the number of daily visits³ to the Vanguard website or mobile app, in the pre-peak period (January 1 to February 19) with that of the post-peak period (February 20 to March 31) for 2020. We use the first quarter of 2019, adjusted for the day of the week,⁴ as a benchmark (see Figure 1).

During the pre-peak period, digital attention in 2020 was already higher than during the same time in 2019 as the market was rising. Attention increased even more during the market volatility that resulted from the coronavirus pandemic. Spikes in daily visits align with large changes in the S&P 500 daily close. Digital attention was cyclical across the week. Between 2019 and 2020, there is very

little change in attention on weekends or days when the market is closed. Instead, we see “ramp-ups” in attention on Mondays.

For the pre- versus post-peak periods in 2020, the average number of daily visits increased by 10% (see Figure 2). In 2019, daily visits declined by 1% during the same timeframe. Year over year, attention increased by 38% in the post-peak period (compared with 24% in the pre-peak period).

Figure 1. Number of daily visits in the first quarter of 2019 and 2020
Representative sample of 17,000 continuous Vanguard U.S. self-directed retail investors



Note: Data for the first quarter of 2019 are shifted by one day to adjust for day of the week.
Source: Vanguard, 2020.

³ Each unique visit is counted. For example, if an investor visits in the morning and then visits again in the afternoon, that equates to two visits.
⁴ Data for the first quarter of 2019 are shifted by one day to adjust for the day of the week and its impact on attention.

The March-over-March period saw the largest increase, 44%. However, changes in attention varied week to week. For example, attention increased by almost 70% for March 23–27, 2020, compared with the corresponding week in 2019.⁵

We can also measure attention by the average daily number of investors who visit the Vanguard website or mobile app. Overall, patterns for the longer pre- and post-peak periods are similar to the number of daily visits, although changes are more muted because the same clients are logging on multiple times on the same day. Only 8% of retail investors visited the Vanguard website or mobile app on any given day.

Figure 2. Average daily visits during the first quarter of 2019 and 2020

Representative sample of 17,000 continuous Vanguard U.S. self-directed retail investors

		Visits			Proportion of clients		
		2019	2020	% change	2019	2020	% change
Pre-peak period	January	1,735	2,142	23%	6.8%	7.8%	15%
	February 1-19	1,632	2,037	25	6.6	7.4	12
Post-peak period	February 20-29	1,774	2,176	23	7.0	7.8	11
	March	1,635	2,358	44	6.3	8.1	29
Pre-peak period		1,696	2,102	24	6.7	7.6	13
Post-peak period		1,671	2,313	38	6.5	8.1	25

Note: Data for the first quarter of 2019 are shifted by one day to adjust for day of the week.

Source: Vanguard, 2020.

⁵ March over March, logins to the Vanguard website or mobile app increased by 64% for all retail clients. Our sample is biased toward more tenured investors. New investors—those with less than three months of tenure—log in more frequently.

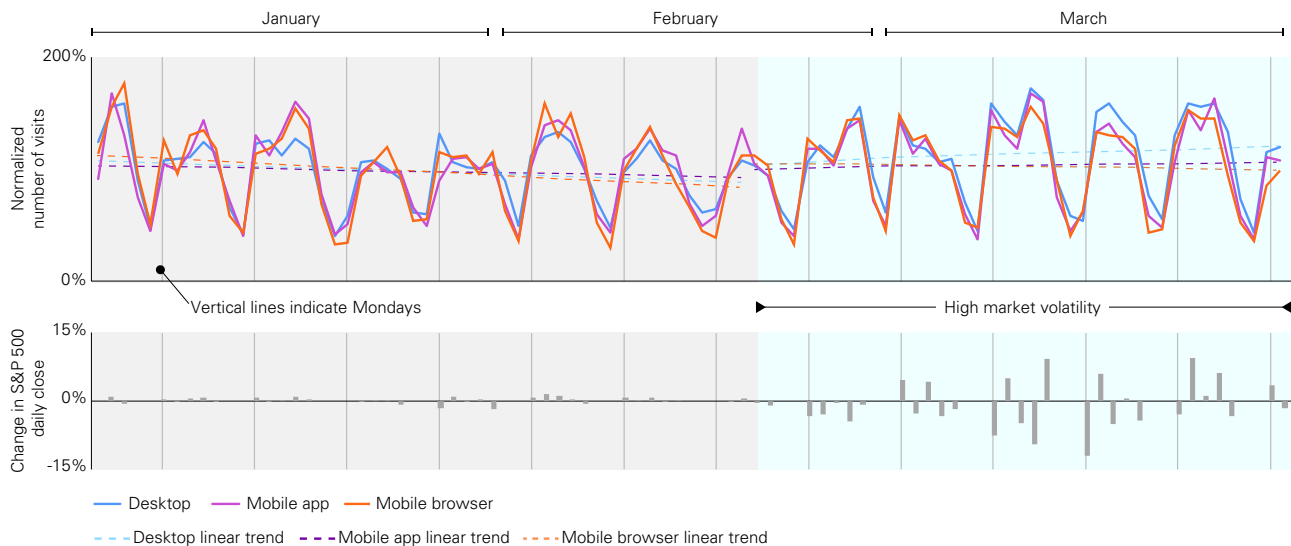
Investors are able to access Vanguard online through multiple channels: via desktop, mobile app, or mobile browser. Approximately 60% of visits take place via desktop, 30% via mobile app, and 10% via mobile browser. **Figure 3** shows the normalized number of daily visits to see scaled changes in digital attention by channel—there are no changes. Attention increased proportionately by channel.

We note that digital attention is dominated by the desktop channel.⁶ Two-thirds of investors used only the desktop channel to access Vanguard online, while about 20% of investors used some combination of desktop and mobile channel. About 15% of investors used only mobile channels to access Vanguard online. Comparing the pre- versus post-peak periods, there is no shift in how investors used different channels. This suggests that investors’ device preferences remained static during this period.

What are investors doing when they access the website? Vanguard investors are able to access thousands of webpages through the retail website and mobile app. This enables investors to look at important information and perform common activities and tasks such as checking their account information or managing a trade.

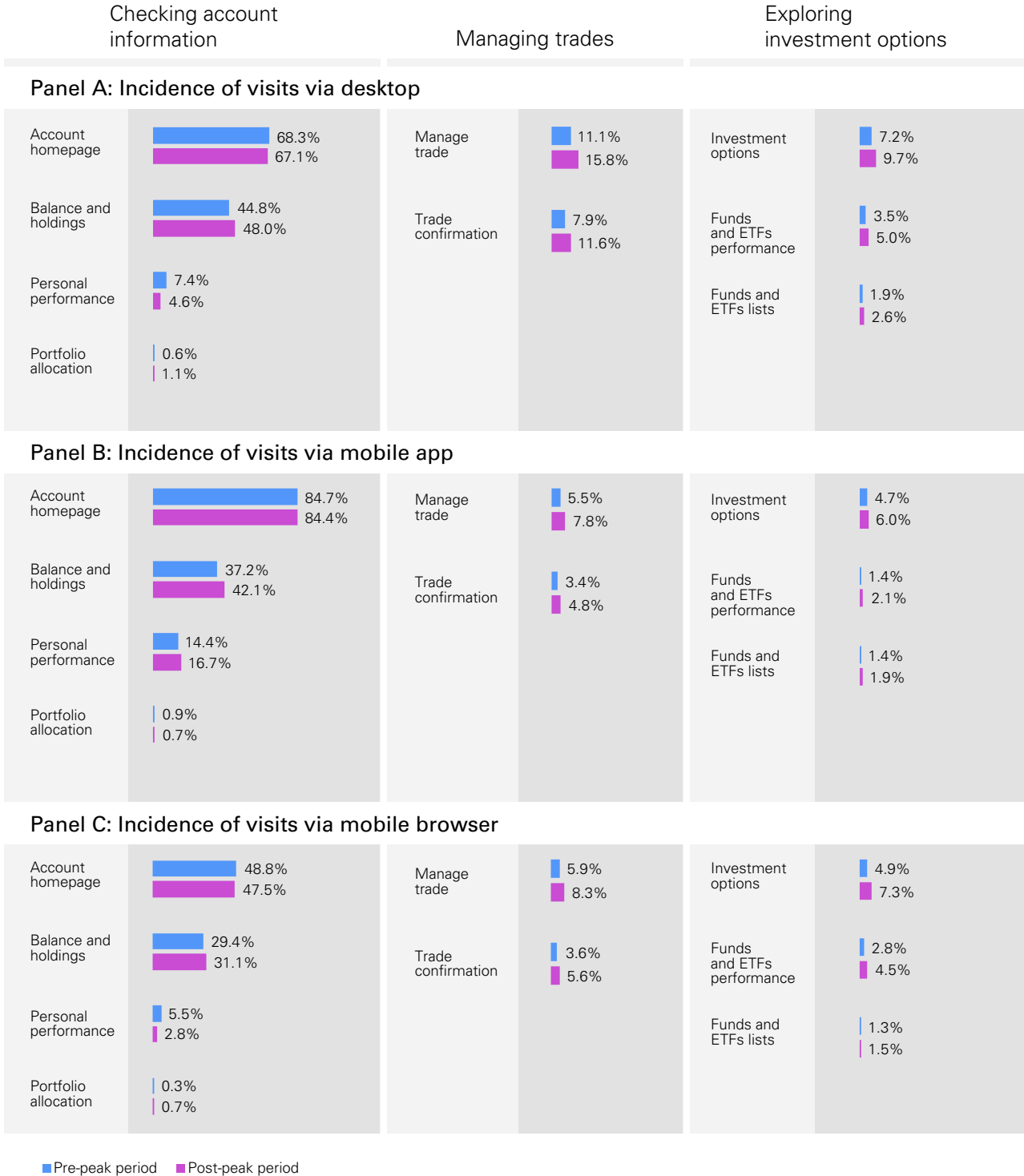
In this study, online behavior is measured as the incidence of visits where an investor accessed at least one webpage related to a given task or activity. Through cookies, we can associate activity to a specific investor even when the investor isn’t logged on. We focus on some of the most important and common activities performed online in the first quarter of 2020 (see **Figure 4**). We group similar activities together. For example, Vanguard’s website has many fund-information pages but we group the accessing of all fund pages as one activity.

Figure 3. Normalized number of daily visits in the first quarter of 2020 by channel
Representative sample of 17,000 continuous Vanguard U.S. self-directed retail investors



Note: The number of daily visits is normalized to show scaled changes in digital attention by channel.
Source: Vanguard, 2020.

Figure 4. Incidence of visits for different activities
 Representative sample of 17,000 continuous Vanguard U.S. self-directed retail investors



Note: For incidence of visits, we counted a visit when at least one webpage related to given activity was accessed.
 Source: Vanguard, 2020.

Overall, it appears investors may prefer to perform different activities in different channels. For example, investors checked their account homepage on 85% of visits via mobile app, compared with 68% of visits via desktop.⁷ On the other hand, visits to explore investment options were more prevalent via desktop. And managing trades was twice as common via desktop as via mobile app.

Very few visits (~1%) were spent checking portfolio allocation. Instead, investors looked at their detailed balance and holdings information, in concentrations ranging from 45% of visits via desktop to 29% via mobile browser. Allocation is an important aspect of investing: Research shows that portfolio asset allocation is responsible for about 90% of investment returns.⁸ The small percentage of visits to check portfolio allocation could be because many investors have just one account at Vanguard and likely have accounts with other financial institutions. So their Vanguard account might be just one part of their total portfolio.

Investors were most likely to access information about personal performance via a mobile app, but less than 20% of visits included this activity. There were only small changes in the percentage of those looking at personal performance by channel pre- and post-peak. The dominance of balance checking over personal performance suggests investors are most interested in current wealth.

Overall, market volatility spurred more visits to manage trade but did not seem to affect which device investors chose to use—visits to manage trade increased across all channels.

But not all visits to manage a trade led to an actual execution, and trade execution varies by channel. For example, in the post-peak period, 15.8% of visits via desktop were spent managing trades, but only 11.6% of visits saw a trade confirmation. For the mobile app, in the post-peak period, 7.8% of visits were spent managing trades but only 4.8% saw a confirmation.

Less than 10% of visits typically are spent exploring investment options, regardless of channel. However, in the post-peak period, these visits increased regardless of channel.

A key takeaway is that digital attention was already increasing in 2020 as the market was rising but that market volatility further fueled this increase. Visits to Vanguard online remain dominated by the desktop channel, but we see preferences for activity by device type and the type of information consumed. Market volatility led to increased visits to explore investment options and manage trades. Fundamental measures such as asset allocation and personal performance saw very little activity.

⁷ While the homepage is the default, when an investor logs in, the investor has the option of overriding this default and setting another page as the landing destination.

⁸ See the 2017 Vanguard research paper *The Global Case for Strategic Asset Allocation and an Examination of Home Bias*, available at [vanguard.com](https://www.vanguard.com).

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