

Consumer Behavior in a Health Crisis: What Happened with Cash?

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Summary:

In the United States, COVID-19 cases and currency in circulation both surged in March 2020. Did consumer choice play a role in the increase in currency in circulation? With fewer opportunities to shop and pay in person, why would consumers hold more cash? Data from the fall 2019 Survey and Diary of Consumer Payment Choice and interim rapid-response surveys in spring and late summer 2020 give some insights into consumer cash holdings and payments behavior.

Key findings:

1. U.S. consumers increased their cash holdings at the time of the pandemic lockdowns. More consumers held at least some cash, and almost half of consumers had more than \$100 in spring and late summer 2020, compared to one-third in fall 2019.
2. In spring, just one-third of consumers reported making an in-person payment, compared to almost everyone in fall 2019. People who paid in person, however, were about as likely to use cash in the spring as they had been in the previous fall.
3. Payments of unemployment benefits appear to have affected cash holdings for some consumers.
4. Similar to the behavior of some consumers in advance of hurricanes, some consumers reported getting precautionary amounts of cash.

JEL classification: D9, D14, E42

Key words: COVID-19, cash, U.S. currency in circulation, consumer behavior

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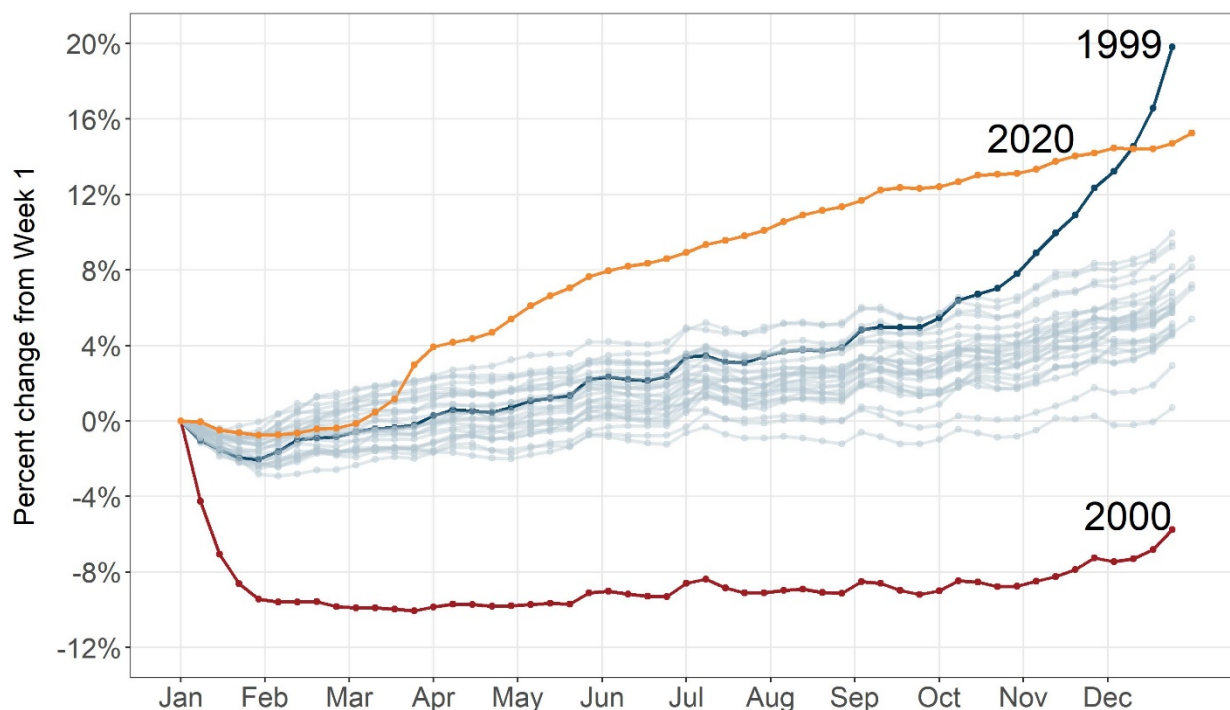
Introduction

In the United States, COVID-19 cases and currency in circulation (CIC) both surged in March 2020. However, it appears that cash transactions by consumers at in-person points of sale declined, while cash holdings increased from prior periods. Did consumer choice play a role in the increase in CIC? If not for spending, why would consumers want to hold more cash?

Characteristics of Currency in Circulation

In recent years in the United States, CIC has increased steadily by about 4 or 5 percent over the previous year. However, this pattern was upended during the early weeks of the coronavirus pandemic, when CIC in April 2020 jumped by 9.3 percent compared to April 2019. An increase of this magnitude had not been seen since the time of the Y2K preparations in late 1999, when November 1999 CIC exceeded November 1998 CIC by 12.8 percent.¹ Figure 1 shows the weekly percentage change in CIC for each year since 1991, relative to the baseline of week one in the respective year. (Each line in figure 1 represents a year.) Most years follow a similar pattern, shown in light blue. Notice the increase in CIC during the runup to Y2K in 1999, the subsequent removal of much of that increase in 2000, and the unusual pattern in the COVID-19 year of 2020.

Figure 1: Percentage Changes in Currency in Circulation



Note: Data depict percentage changes in currency in circulation from the first week of January 1991 through the end of 2020. Source: Federal Reserve Bank of St. Louis

CIC consists of U.S. currency held domestically and abroad, with most CIC estimated to be held abroad (Judson 2017, [New York Fed 2013](#)). Domestically, consumers, businesses, and government hold

¹ For data on U.S. currency in circulation, see Federal Reserve Statistical Release, H.4.1, Factors Affecting Reserve Balances at <https://www.federalreserve.gov/releases/h41/current/>.

currency for spending and as a stock of funds. Financial institutions hold vault cash, a component of CIC, in order to anticipate customer needs, which tend to increase in times of market volatility. Judson (2017) states that demand for U.S. dollar banknotes “consistently increases at times of crisis both within and outside the United States.” Between March and April 2020, vault cash at depository institutions increased 14 percent and again by 15 percent between April and May.² This increase implies that financial institutions were stocking up on cash to enable them to meet expected demand from customers, based on financial institutions’ experiences in prior periods of uncertainty. Around this time, for example, a bank in the financial center of midtown Manhattan temporarily ran out of [\\$100 bills](#) (but not cash) because there were so many large withdrawals. In another example of emergency preparation, financial institutions in hurricane zones typically seek to increase cash holdings in advance of storms. The increase in vault cash at the onset of the pandemic appears to have been an element of the increase in CIC.

Consumers Increased Cash Holdings in Spring 2020

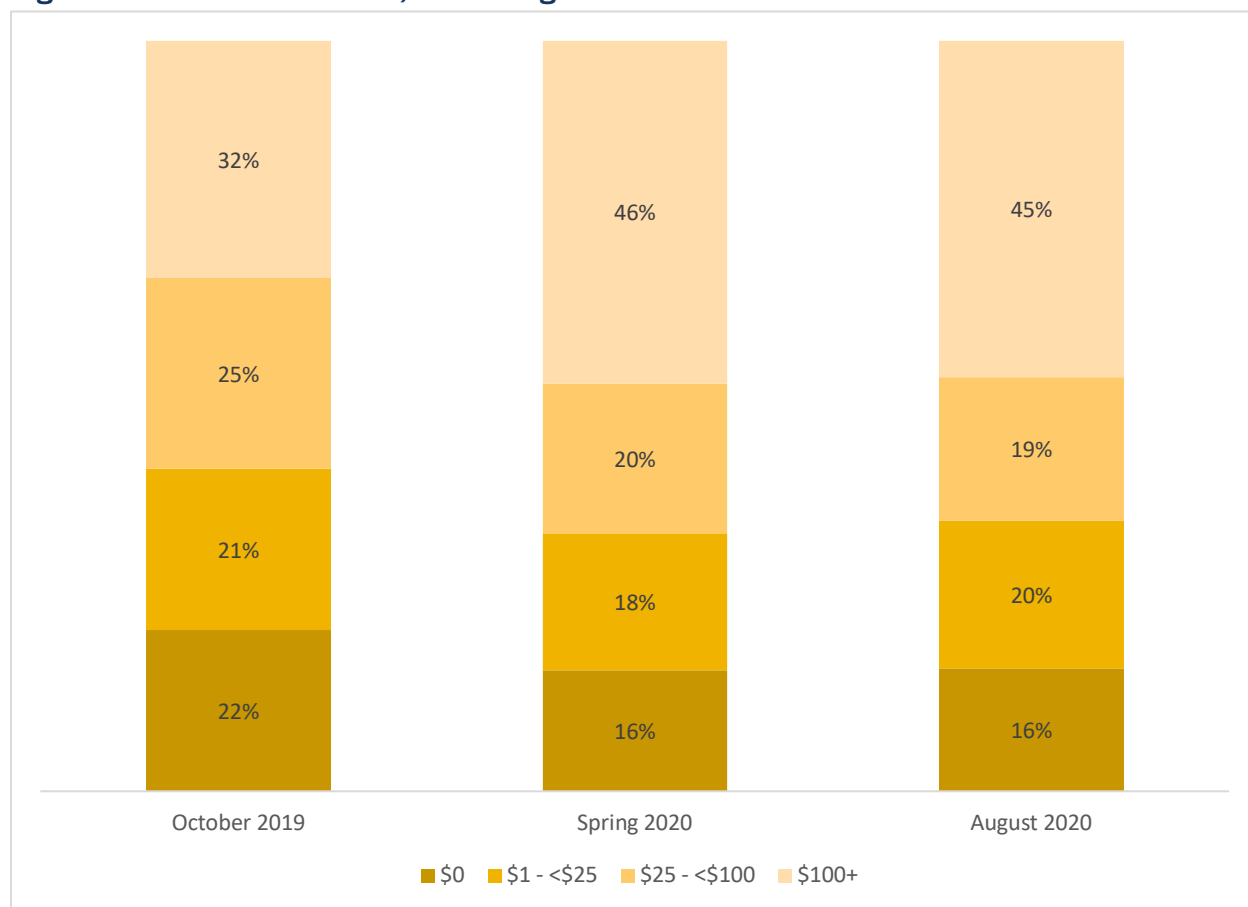
Consumers also seem to have played a role in the increase in CIC. The Federal Reserve has surveyed consumers about their payments practices every fall since 2008. Most recently, in 2019, the survey asked a nationally representative sample of U.S. consumers to report aspects of payments behavior including the payments instruments they own or have set up and the payments they make in specific situations (Foster et al. 2020, Greene and Stavins 2020). We asked this same group of consumers questions about cash holdings and shopping in a survey conducted at the start of the pandemic (between April 15 and May 12, which we’ll refer to as “spring” in this article) and again in August 2020 (between August 5 and September 2, or “August” hereafter). This makes it possible to compare consumer payment behavior before the start of the pandemic to behavior at two points during the pandemic.

Compared to their cash holdings in October 2019, more consumers had at least some cash, and consumers overall held more cash by dollar value in spring 2020 and again in August. In October 2019, 22 percent of consumers said they had no cash (neither on their person nor stored elsewhere). That share dropped to 15 percent in spring 2020 and remained there in August 2020, a statistically significant difference.

Compared to their holdings in October 2019, more than half of consumers had more cash in the spring (57 percent) and also in August (53 percent). In spring and August, about one third reported holding less. The median value of all consumer cash holdings—that is, the sum of cash available for spending (pocket, purse, or wallet) and cash for savings or an emergency stock (stored elsewhere, such as in the home, office, or car)—was \$70 in spring 2020 and \$62 in August 2020, compared to \$40 in October 2019. That change represents a 55 percent increase even five months into the pandemic. Figure 2 shows a simplified distribution of cash holdings: fewer consumers had less than \$25 (including fewer consumers with zero) and more consumers—almost half—had \$100 or more in spring and August 2020.

² Federal Reserve statistical release H.3, Aggregate Reserves of Depository Institutions and the Monetary Base, is available at <https://www.federalreserve.gov/releases/h3/current/> (discontinued as of September 24, 2020).

Figure 2: Value of Cash Held, Percentages of U.S. Consumers



Source: 2019 Diary of Consumer Payment Choice, 2020 Understanding Coronavirus in America

This change in the amount of cash consumers held is notable because consumer behavior related to cash had been quite stable. Since 2015, the mean amount of cash immediately available for spending (pocket, purse, or wallet) has ranged from \$58 to \$71; in spring 2020, it was \$78 and in August 2020, it totaled \$73. The mean value of cash “elsewhere” (perhaps reserved for savings or an emergency) was between \$120 and \$293 from 2015 to 2019; it quadrupled from \$120 in October 2019 to \$480 in spring 2020 and increased again, to \$518, in August 2020.

Consumer Cash Holdings Are Related to Expectations of Cash Use

The increase in consumer holdings of cash at the start of the pandemic—when, presumably, U.S. consumers were expecting to have fewer opportunities to shop in person—is somewhat surprising, because evidence indicates that consumer cash holdings are related to expectations of cash use. Although cash use differs across countries, the association between use and holdings tends to hold true around the globe. A 2014 comparison of cash use across countries in North America and Western Europe found that cash is used most in Austria and Germany—50 percent of the time—and about 25 percent of the time in Canada, France, and the United States. In the countries where people used more cash for payments, people held more cash, compared to countries where cash was used less often for payments (Bagnall et al. 2014).

If not for use, what factors could be behind the increase in consumer cash holdings?

- Some consumers could have had more money due to economic impact payments and increased unemployment benefits under the CARES Act.
- Some consumers could have withdrawn extra cash as a precautionary measure in a time of fear and uncertainty.
- Some consumers could have lost planned opportunities to use cash.

More money. In general, the amount of money a person carries correlates with their income (Greene and Schuh 2014, Greene 2020, Kim et al. 2020a). Taking out more cash is also associated with having more cash available, so the ability to take out more cash would depend upon bank account balances or income being received. A second runup in CIC occurred between late April and late May, when people were receiving economic stimulus payments and expanded unemployment benefits under the CARES Act. In this case, having more funds available could have led more people to take out cash. And, in fact, people who had received unemployment insurance benefits in the 14 days prior to answering the spring survey were more likely to have more cash in their wallets and were more likely to have at least \$1 in cash stored at home, compared to other people in spring 2020.

Safety net. Some consumers behaved differently from their normal practice in response to the pandemic. In spring, 12 percent of consumers reported that they proactively got more cash in response to the public health emergency. The holdings of these people who got extra cash were three and a half times their holdings reported in October 2019, averaging \$852 total cash in spring 2020 compared to \$238 in October 2019. In October 2019, these consumers were not that different from other consumers; that is, they did not tend to hold more cash than others, as measured by their holdings at that time.³ This finding leads us to conclude that these consumers, as they stated, were indeed reacting to news of the pandemic. By August 2020, only 5 percent of consumers reported getting extra cash, and their holdings were not appreciably different from the holdings of consumers who did not get extra.

The behavior of those who got extra cash at the start of the pandemic is analogous to that of consumers in the predicted path of natural disasters such as hurricanes. In both instances—health crisis and weather crisis—most people do not take action to get extra cash. Survey research in the aftermath of hurricanes Matthew (2016) and Harvey/Irma (2017) found that some people in areas within the predicted path of the hurricane got cash in preparation: 10 percent of consumers in the path got cash in advance of Hurricane Matthew and 18 percent in advance of hurricanes Harvey/Irma.⁴ While this share may not seem particularly large, people who got cash as part of hurricane prep got more cash than typical of U.S. consumers' everyday practices. The 2016 Survey of Consumer Payment Choice and the 2017 Diary of Consumer Payment Choice⁵ found that the median amount of a cash withdrawal by U.S. consumers was \$60.⁶ Before Hurricane Matthew, people in the path who withdrew extra cash took out a median of \$250, and before Harvey/Irma, \$200, which means that some people getting a lot of cash—more than three times what is typical—rather than most people getting a bit more cash seems to be

³ For more detail on cash withdrawals in October 2019 and March/April/May 2020, see Kim et al. (2020b).

⁴ Unpublished data from the Survey of Consumer Payment Choice are available upon request.

⁵ In 2017, the question about cash withdrawals was moved from the Survey of Consumer Payment Choice to the Diary of Consumer Payment Choice.

⁶ Table 5, Greene and Stavins (2018) and unpublished data from the 2017 Diary of Consumer Payment Choice. Data are available upon request.

what happens before a hurricane. (The spring COVID survey was limited in that we did not directly ask respondents how much extra cash they got. The large increase in cash holdings among those who got extra cash is a proxy for the value of extra cash they got.)

No spending opportunities. Conditions were changing rapidly at the start of the pandemic, and some consumers could have been slow to adjust. Many of these changes were not under their control or determined by their preferences. Cash obtained in early March in the expectation of dining out later in the month, for example, could still have been sitting in consumers' wallets or at home during the spring survey period. Our survey data suggest that such a build-up of cash would be due to consumers' changing mix of activities and not to retailers' refusal to accept cash. In March 2020, various retailers announced that, in fear of transmission of COVID-19, they were discouraging the use of cash at the in-person point of sale—or even rejecting cash outright. In practice, few consumers encountered this difficulty. Of the U.S. consumers who reported making an in-person payment between March 10 and their spring survey response date, 7 percent said that a merchant had refused to accept cash (Kim et al. 2020b).⁷ In August 2020, 6 percent of consumers said that when they made in-person payments, the merchants always asked them to use a debit or credit card instead of cash.

Consumer Shopping Behavior Underlies Cash Use

In the United States, cash is typically popular for transactions of small dollar value. About half of payments of less than \$10 reported in the Diary of Consumer Payment Choice in 2019 were paid with cash (47 percent). Overall, in October 2019, 26 percent of consumer transactions were in cash and 35 percent of in-person payments (the highest share, followed by debit cards at 32 percent) were in cash. Health and safety issues during the pandemic have the potential to affect these behaviors. Two questions about making a cash payment could be relevant to virus transmission:

1. Is one likely to contract COVID-19 by touching paper cash that has been touched by an infected person?
2. Because cash payments are hand-to-hand, does another person's proximity create a risk of infection?

Not only scientific facts related to these questions would come into play here; so would an individual's beliefs and fears. In April 2020, the Bank for International Settlements (BIS) reported that internet searches pertaining to "cash" and "virus" were at record highs (Auer et al. 2020). Search interest was highest in countries where more small-denomination bank notes (that is, those used for everyday transactions) were in circulation relative to gross domestic product. Those countries included Australia, Canada, and the United States. The BIS paper also reported that "scientists note the probability of transmission via banknotes is low when compared with other frequently touched objects." In the United States, the [Centers for Disease Control](#) advised people that, if possible, they "use touchless payment (pay without touching money, a card, or a keypad)." And a number of retailers discouraged the use of cash beginning in March and April 2020.

Consumers have three ways of moving away from cash to pay. First, they can shop in person less often. Second, when they pay in person, they can use alternative payment instruments.

⁷ This is similar to the 12 percent of Canadians, surveyed between April 3 and April 22, 2020, who reported that a merchant refused to accept cash (Chen et al. 2020).

Third, they can avoid cash as a side effect of choosing to pay remotely, by moving payments to mail, voice call, online, or mobile channels. We see two of these three behaviors in the data.

First, fewer people made in-person payments. During the spring survey period, 34 percent of U.S. consumers reported that they had made at least one in-person payment since March 10, 2020.⁸ By August, that number had increased to 60 percent of consumers making at least one in-person payment in the past 30 days. For comparison, in the 2019 Survey of Consumer Payment Choice 96 percent of U.S. consumers reported making an in-person payment for retail goods or services at least once in a “typical month.”⁹ This finding suggests that consumers actively cut back on making in-person payments as a result of their own preferences or external constraints. Making an in-person payment in spring 2020 was not particularly related to people’s likelihood of being out and about. Employed people who worked away from home were about as likely to have made an in-person payment than those who worked from home (34 percent versus 32 percent, respectively, not statistically significant).¹⁰

Second, people who shopped in person were as likely to use cash in spring and August 2020 as during October 2019. Of people who paid in person at least once in the prior 30 days, 57 percent used cash at least once in October 2019, 59 percent in spring 2020, and 72 percent in August. People in lower-income households generally are more likely to use cash for payments (Shy 2020). Of people who paid in person in spring 2020, two thirds of those with annual household income less than \$40,000 made at least one cash payment, compared to half of those with annual household income of \$75,000 or more.

Third, in spring, one quarter of consumers reported that they had switched to paying online or by phone for payments they previously would have made in person; that increased to four in 10 consumers in August.¹¹ The payee seems to have affected consumers’ propensity to switch. Consumers reported switching for retailers that traditionally have been cash-heavy operations and thus consumers had more opportunity to change behavior. In the 2019 Diary of Consumer Payment Choice, 35 percent of payments at restaurants and for fast food were in cash, and 30 percent of grocery purchases¹² were in cash. Of consumers who switched in spring (26 percent of all consumers), 58 percent said they switched to online payments for restaurants and fast food and 34 percent for grocery stores. (This question was not asked in August.)

⁸ Consumers responded all through the survey period. At the far ends of the response spectrum, some consumers reported for the month from March 10 to April 15, 2020; others for the two months from March 10 to May 12, 2020.

⁹ Calculated from table 4, 2019 Survey of Consumer Payment Choice, the share of consumers making at least one payment for retail goods (93 percent) or for retail services (87 percent) https://www.frbatlanta.org/-/media/documents/banking/consumer-payments/survey-of-consumer-payment-choice/2019/tables_scpc2019.pdf. This is not exactly comparable: the COVID survey asked about a specific time period, which ranges from one to two months, based upon response date; the Survey of Consumer Payment Choice asked about a “typical” month, not a specific time period.

¹⁰ People defined to have worked from home reported that they had worked from home at least once in the past seven days.

¹¹ At the far ends of the response spectrum, some consumers reported for the month from March 10 to April 15; others for the two months from March 10 to May 12.

¹² Grocery purchases include those at pharmacies and convenience stores.

Will Short-Term Behavior Changes Take Root?

Cash has been an enduringly popular payment instrument and store of value in the United States. Myriad aspects of consumer behavior have changed as people take precautions to avoid spreading or catching COVID-19. In the United States, some consumers increased their holdings of cash in the early days of the pandemic. At this update in January 2021, U.S. CIC growth had slowed but was still increasing by an average of \$4 billion per week in December (including by almost \$10 billion in each of the last two weeks of December). During the pandemic, opportunities to use cash have declined, and some consumers have switched to online payments. Will consumers return to old habits when the health crisis abates? Or will new habits accelerate the shift away from paper payment instruments? Results of both the 2020 Survey of Consumer Payment Choice and the Diary of Consumer Payment Choice are being tabulated now, providing a third data point for consumer payments during the pandemic (October 2020).

Appendix: About the Surveys

From April 15 through May 12, 2020, and again from August 5 to September 2, 2020, the Federal Reserve Banks of Atlanta, Boston, and San Francisco included questions about cash use in a [coronavirus survey](#) conducted by the Understanding America Study at the University of Southern California. Kevin Foster and Marcin Hitczenko (of the Federal Reserve Bank of Atlanta) and Laura Kim and Shaun O'Brien (in the Cash Product Office at the Federal Reserve Bank of San Francisco) designed the cash questions. You can download the full datasets [here](#).¹³ Respondents to the spring and August 2020 surveys also responded to the 2019 Diary of Consumer Payment Choice (conducted in October 2019), and the analysis in this article is based on the subset of respondents in each COVID survey wave who also participated in the 2019 Diary of Consumer Payment Choice.

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¹³ The spring 2020 survey is UAS 240, and the August 2020 survey is UAS 256. Access requires registration with the UAS data site.

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