



The 2019 Diary of Consumer Payment Choice

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Abstract

In October 2019, almost half of all payments (43 percent) U.S. consumers made were for groceries, gas, and shopping, both in person and online. The distribution was different by value, as 40 percent of payments were for financial services, including mortgages, credit card bills, other loan payments, insurance, investments, and so on. The most commonly used payment instruments were debit cards, cash, and credit cards, which jointly accounted for 80 percent of all payments by number and 37 percent by value. By value, about 40 percent of consumer payments were made via ACH payments, executed either through online banking bill payment or by providing a bank routing number and account number to the payee. The average amount of cash a U.S. consumer held in his or her pocket, purse, or wallet was \$60 (the median was \$24).

This paper describes key results from the 2019 Diary of Consumer Payment Choice (DCPC), the sixth in a series of diary surveys that measure payment behavior through the daily recording of the spending of U.S. consumers. The DCPC is the only diary survey of U.S. consumer payments with data and results that are available to the public free of charge.

JEL Classifications: D12, D14, E42

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Acknowledgments appear on the first page of this report. The primary authors are responsible for any errors in the report.

This paper presents preliminary analysis and results intended to stimulate discussion and critical comment. The views expressed herein are those of the authors and do not indicate concurrence by the Federal Reserve Bank of Boston, the Federal Reserve Bank of Atlanta, the principals of the Board of Governors, or the Federal Reserve System.

This report, which may be revised, is available at www.frbatlanta.org/banking-and-payments/consumer-payments/research-data-reports.aspx.

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1. Introduction

The 2019 Diary of Consumer Payment Choice (DCPC) is the sixth official study conducted by the Federal Reserve Banks of Atlanta, Boston, and San Francisco to gain a comprehensive understanding of the cash and noncash payment behavior of U.S. adult consumers (ages 18 and older).¹ This report contains results for 2019 and includes estimates of the number, value, and average value of payments that all U.S. adult consumers made using U.S. payment instruments. It also includes estimates of cash held on person (pocket, purse, or wallet) and stored cash by denomination of currency.²

The DCPC collects data on individual payments from daily records kept by consumers, including the dollar values of payments. Because this daily recording method differs from the recall method used by the Survey of Consumer Payment Choice (SCPC), estimates from the two surveys are not directly comparable. For more information about the SCPC, see Foster, Greene, and Stavins (2019, 2020); and Greene and Stavins (2018). Past reports on the DCPC include Greene and Stavins (2018, 2019) and Greene and Schuh (2017).

This report focuses on estimates of the *level* of consumer payment use in 2019—that is, the number and value of consumer payments—and changes from 2018 to 2019. Tables 1–9 report results for 2015 through 2019.

- Number and dollar value of payments by type of payment instrument and by merchant type (Tables 1, 2, and 5)
- Number and dollar value of purchases and bills by type of payment instrument (Tables 3 and 4)
- Cash holdings on person and stored elsewhere (Tables 6 and 7)
- Consumer characteristics, including income and demographics (Table 8 and 9)

Year-to-year results may not be comparable due to questionnaire changes. Due to fewer respondents in 2015, we have less power to detect changes when comparing 2015 to later years, when the numbers of respondents were more similar (Table A). In addition, the calendar periods when respondents recorded their payments are aligned for 2016, 2017, 2018, and 2019 (October), while the 2015 calendar period

¹ The first official study was the 2012 Diary of Consumer Payment Choice (DCPC), which is described in detail in Greene, Schuh, and Stavins (2018).

² The 2019 DCPC was conducted before the coronavirus pandemic. The 2020 DCPC, planned for October 2020, will collect information in the COVID-19 environment. For supplementary findings from spring 2020, see Kim et al. 2020b.

was different (mid-October to mid-November). Each year’s questionnaire includes modest changes, so the reader should exercise caution when interpreting estimates of changes in payment behavior.

Table A: Number of DCPC respondents

<u>Survey year</u>	<u>Number of respondents</u>
2015	1,016
2016	2,848
2017	2,793
2018	2,873
2019	3,016

All DCPC data, along with technical documentation, are available to the public free of charge.

Throughout the paper, small discrepancies in the estimates may exist due to rounding. The data may be revised in the future should important new information or analysis warrant doing so.

The remainder of this report is organized as follows. Section 2 provides an overview of the number and value of payments for 2019 and describes changes relative to 2018. Section 3 reports estimates of the level of consumer payment use by payment instrument and describes the implied changes in payment instrument use from 2018 to 2019. Section 4 shows how payment instrument choice for purchases differs from bills. Section 5 reports to whom consumers paid: consumers, businesses, or government. Section 6 focuses on the use of cash and electronic devices, Section 7 on cash holdings, and Section 8 on the speed of payments. Section 9 concludes the report. An appendix summarizes the underlying survey methodology.

2. Number and value of payments

U.S. consumers made on average 39 payments for the month,³ or 1.3 payments per day (Table 1). Notably, on average, 21 percent of consumers reported making zero payments on any of their three reporting days.

U.S. consumers made on average \$4,236 worth of payments for the month (median \$310 [some respondents reported no payments on some days]). Consumer *payments* are not the same as consumer (or household) *expenditures*, so the estimated value of consumer payments (and its growth rate) should not be compared with data on expenditures. Dividing the value of payments by the number of payments yields an average value per consumer payment of \$110 (Table 2).

³ All the data reported in this paper refer to October 2019, unless specified otherwise.

The number of consumer payments decreased about 10 percent (that is, by four payments) compared with October 2018 (43 payments per consumer per month) and is lower than the number of payments reported in October of all the prior years covered by this report, 2015 through 2018. The total value of payments increased by \$308 (8 percent) from \$3,999 in 2018 and exceeds the total values reported for all the prior years of this report. The average dollar value of a payment increased from \$92 in 2018 to \$110 in 2019, an increase that is not statistically significant (Table 2). With the exception of 2017, the total value of payments increased in each year from 2015 through 2019.

3. Number and value of payments by instrument

U.S. consumers made more than half of their payments with payment cards (debit, credit, and prepaid): 55 percent, or 21 payments. They used paper instruments (cash, checks, and money orders) for 31 percent, or 12 payments; electronic methods for 11 percent or 4 payments⁴; and other methods⁵ for 2 percent, or 1 payments (Table 1). Compared with 2018, the volume shares of cards and electronic instruments increased and the volume shares of paper instruments declined; however, these changes are not statistically significant.

Although cards were used more frequently than electronic payments, the total value of payments made electronically exceeded that of payments made by cards: \$1,696 compared to \$1,303. By value, payments using electronic instruments were 40 percent of the monthly total, compared to 31 percent for cards and 23 percent for paper instruments (Table 1). The increase in the value share of electronic payments from October 2018 was not statistically significant.

Debit cards, cash, and credit cards remain the most commonly used ways to pay,⁶ with debit cards used most by number of payments (Table 1). Thirty-one percent of payments were with debit cards, 26 percent with cash, and 24 percent with credit cards.⁷ Altogether, consumers made about 80 percent of

⁴ The electronic payment instruments are defined as follows. Bank account number payment (BANP): a payment made by providing a bank account number to a third party, such as an employer or a utility company. The number can be given on websites, paper forms, and so on. Online banking bill payment (OBBP): a payment made from a bank's online banking website or online mobile app that accesses funds from a customer's checking or savings account to pay a bill or to pay other people. This payment does not require the customer or the bank to disclose his or her bank account number to a third party.

⁵ Other methods include income deduction, PayPal, account-to-account transfers (using apps such as Zelle and Venmo), and mobile payments.

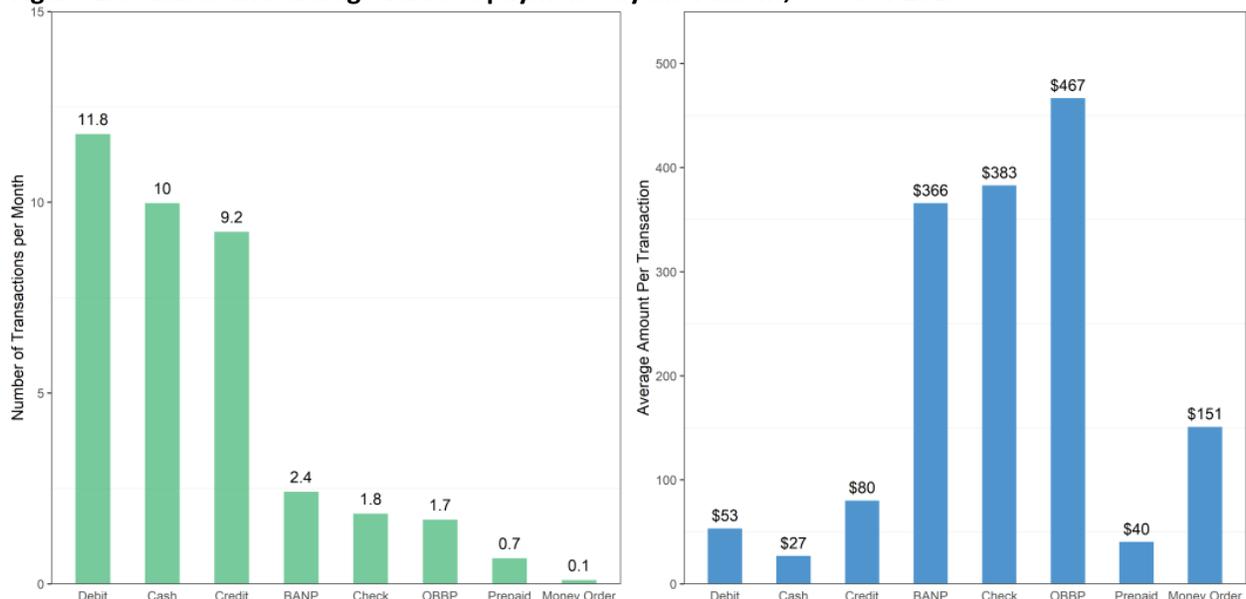
⁶ Debit, cash, and credit are also the three most frequently used payment instruments by consumers in the SCPC. See Foster, Greene, and Stavins (2020).

⁷ This finding differs from the results of the SCPC, a recall survey, which finds that credit or charge card payments slightly exceed cash payments by number.

their payments using debit cards, cash, and credit cards, a result also found by the SCPC (Foster, Greene, Stavins 2020).

The distribution by value is different. Cash, debit, and credit payments accounted for 36 percent of the value of their payments: 6 percent in cash, 16 percent in debit cards, and 14 percent in credit cards (Table 1). The difference between the distribution by volume and by value reflects that consumers tend to use cash and payment cards more often, but for relatively low-value payments, and they tend to use checks and electronic payments less often, but for relatively high-value payments (Figures 1 and 2). For example, U.S. consumers on average made fewer electronic-instrument payments than cash payments (four compared with 10), but they used electronic payments for transactions that were higher in average value than cash transactions (\$417 compared with \$27). The average value when using payment cards fell between the two, at \$60 (Tables 1 and 2).

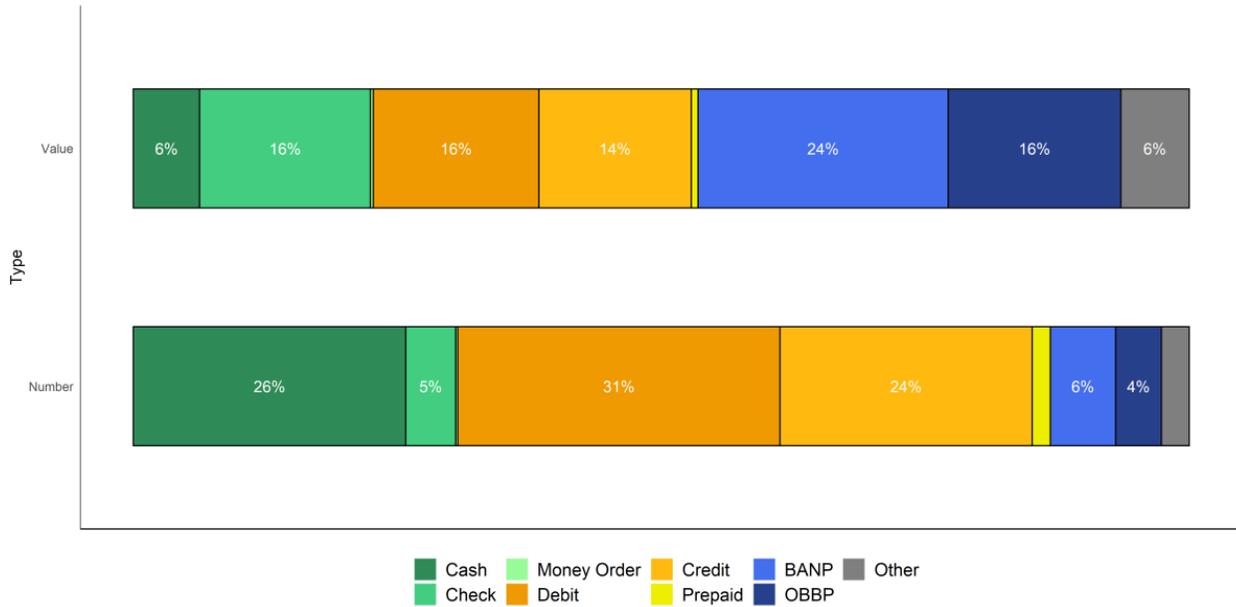
Figure 1: Number and average value of payments by instrument, October 2019



Note: Payment instruments are ranked left to right by number of transactions per month. OBBP: online banking bill pay. BANP: bank account number payment. Other includes PayPal, account-to-account transfers, mobile payments, and deductions from income.

Source: 2019 Diary of Consumer Payment Choice, Tables 1 and 2.

Figure 2: Percentage shares of payments by number and value, October 2019

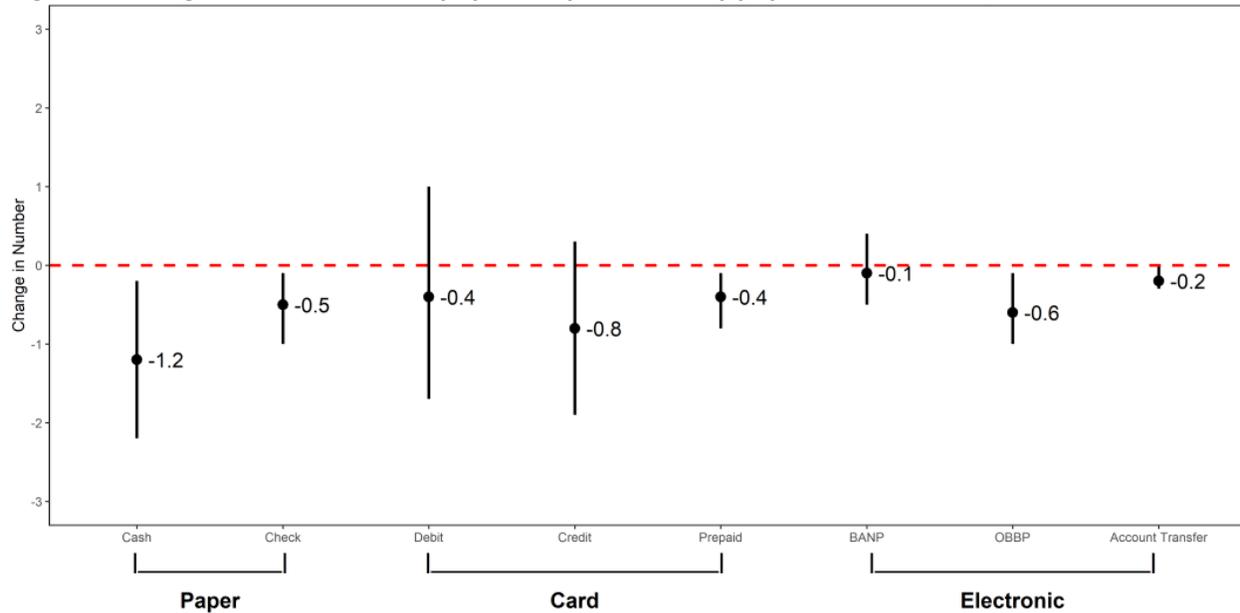


Source: 2019 Diary of Consumer Payment Choice, Table 1.

Changes in the number and value of payments by instrument

As noted above, the overall number of U.S. consumer payments decreased from 2018 to 2019 and the value increased. The change in the number of all payments is statistically significant, reflected in statistically significant decreases in the number of payments with paper instruments (cash and check) and also prepaid card and OBBP (Table 1 and Figure 3). The decline in the use of paper instruments is primarily in cash, a statistically significant decline from 11 payments per month to 10. No payment instrument showed an increase in the number of payments per month (Figure 3).

Figure 3: Changes in the number of payments per month by payment instrument, 2018 to 2019



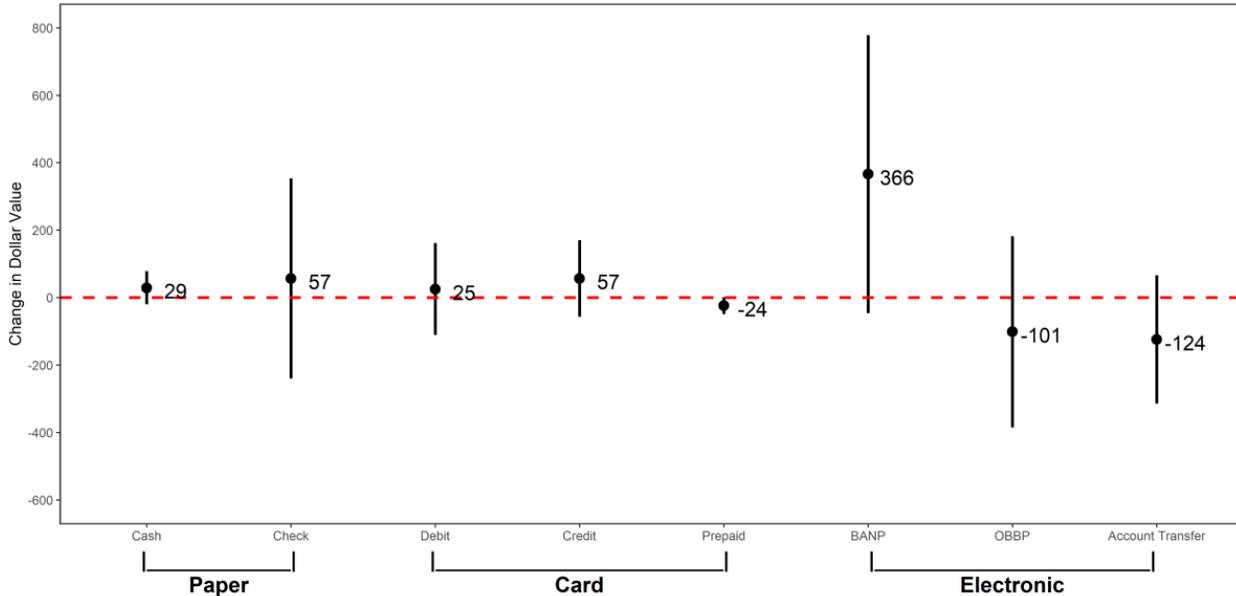
Notes: The vertical lines depict the 95 percent confidence intervals of the changes in the number of payments between 2018 and 2019, and the numbered dots depict the point estimates. Confidence intervals that lie entirely above or below the horizontal zero line indicate changes that are statistically significantly different from zero. Money orders are omitted from this figure.

Source: 2018 and 2019 Diary of Consumer Payment Choice

The increase in the total dollar value of payments was not statistically significant from 2018 to 2019.

Examining each payment instrument separately, no payment type showed a significant change in total dollar value from 2018 to 2019 (Figure 4).

Figure 4: Changes in the total dollar value of payments per month by payment instrument, 2018 to 2019



Notes: The vertical lines depict the 95 percent confidence intervals of the changes in the total dollar value of payments between 2018 and 2019, and the numbered dots depict the point estimates. Confidence intervals that lie entirely above or below the horizontal zero line indicate changes that are statistically significantly different from zero. Money orders are omitted from this figure.

Source: 2018 and 2019 Diary of Consumer Payment Choice

4. Purchases and bills

U.S. consumers on average made 31 purchases and eight bill payments per month (Tables 3a and 4).⁸

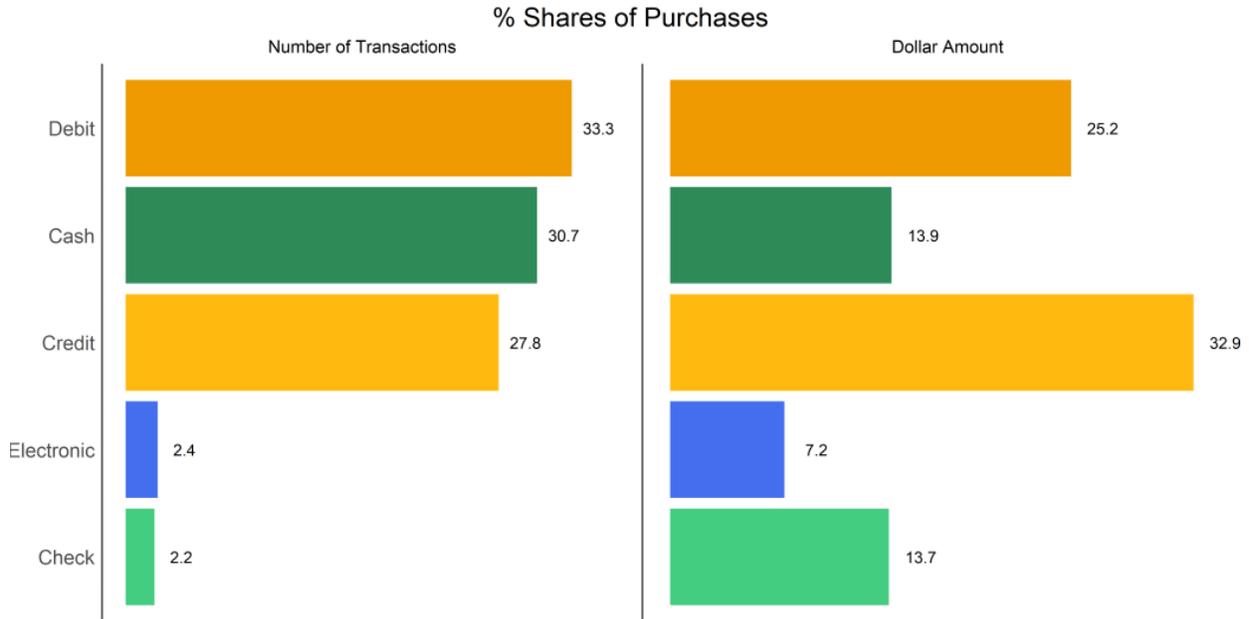
Purchases include goods and services, bought in person and online, as well as payments to another person—for example, as a gift or allowance. All payments, including bill payments, include only payments made by the individual survey respondent and exclude any payments made by other members of the household.

Purchases (both online and in person) accounted for 80 percent of all payments by number and 37 percent by value. Debit card was the most commonly used payment method for purchases, accounting for 33 percent of purchases by number, closely followed by cash (31 percent) and credit cards (28 percent) (Tables 1 and 3 and Figure 5). In terms of dollar value, however, credit cards captured the highest share of purchases, 33 percent, followed by debit cards and cash. The dollar-value relationship

⁸ Changes in the questionnaire design in 2017 make the purchases/bills splits from prior years not comparable. Therefore, only cross-sectional data is included in this section.

to payment instrument choice described above pertains here: average dollar values for cash, debit, and credit purchases were, respectively and in ascending order, \$23, \$38, and \$60 (Table 3a).

Figure 5: Payment instrument use for purchases, shares by number and value

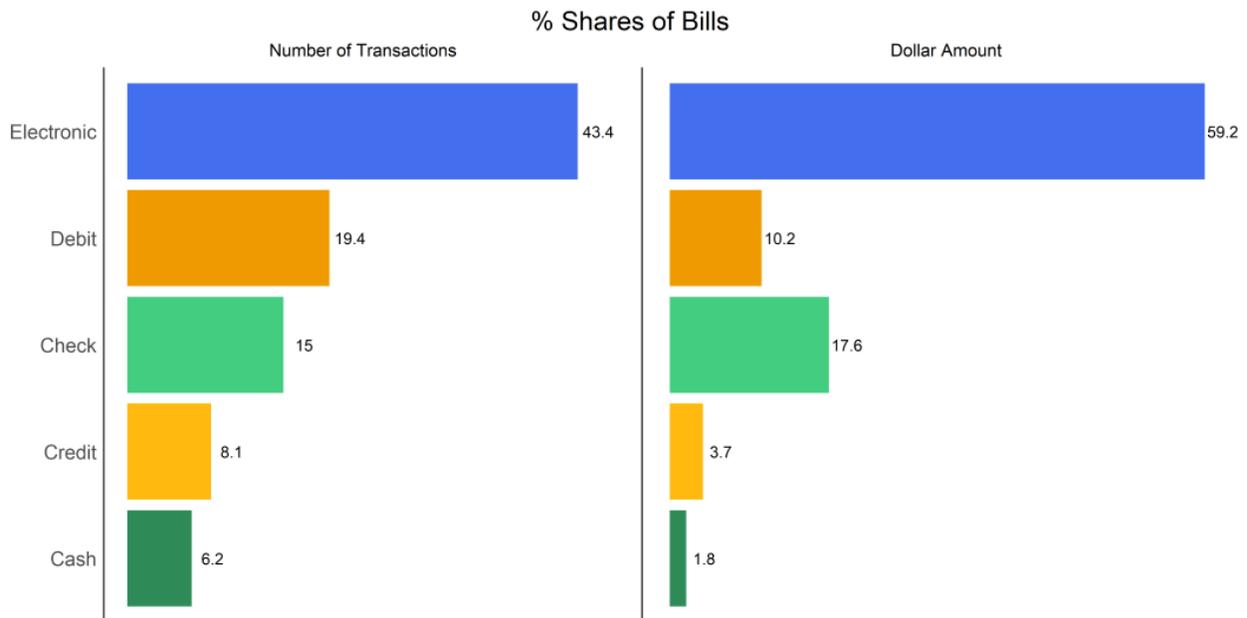


Note: Shares do not sum to 100 because less common payment instruments are omitted.

Source: 2019 DCPC

Bill payments accounted for 20 percent of all payments by number and 63 percent by value. Electronic payment methods and debit cards are most commonly used for bill paying: 24 percent of bills by number were paid by BANP, 19 percent by OBBP, and 19 percent by debit card, totaling 6 in 10 of all bill payments for the three methods (Table 4 and Figure 6). In addition, 15 percent of bill payments were made with a paper check. More than half the value of all bills (59 percent) was paid using electronic payments (BANP and OBBP).

Figure 6: Payment instrument use for bills, shares by number and value



Note: Shares do not sum to 100 because less common payment instruments are omitted.

Source: 2019 DCPC

5. Payees

Of the average 39 payments per month that U.S. consumers reported, 13 were for everyday purchases (groceries, pharmacies, stores, and online shopping); eight were for food consumed away from home (including restaurants, bars, and fast food), four were at gas stations, and three were related to financial services companies (including insurance; IRA and mutual funds; credit card, mortgage, and other loan payments) (Table 5).

The remaining payments were for services related to housing (rent, utilities, communications), for medical and education expenses, for other services and recreation, and for charitable donations. Consumers made two payments per month to another person, defined in the questionnaire as “friends, family, co-workers, or a person you pay for goods or services.”

By number, shopping (including grocery stores, convenience stores, pharmacies, and other physical stores as well as online shopping) represented 33 percent of all payments; by value, 15 percent (Table 5). Similarly, the purchase of food consumed away from home was 21 percent of payments by number and just 4 percent by value, reflecting the relatively low average dollar value of such payments. In contrast, payments to financial services companies, which include not only loan repayments but also transfers to another account and purchases of financial assets, are a small share of all payments by

number—8 percent—but the greatest share of any payee type by value: 40 percent. Shy (2020) examines the payment instruments consumers used in October 2019 to pay the different payee types.

6. Use of cash and electronic devices

Consumer payment diaries make it possible to track detailed use and management of cash, transaction by transaction, during the course of a day. The DCPC reflects two important differences between cash and other payment methods. First, cash payments account for a relatively large proportion of the *number* of payments, as mentioned above. Of the total number of payments, 26 percent on average involved cash. A second difference is that cash payments account for a relatively small proportion of the *value* of payments. Of a consumer's total payment value, only 6 percent on average was funded using cash. The average value of a cash payment was \$27, compared with \$235 for the average value of all other payments, and the average cash *purchase* was even lower in value, at \$23 (Tables 2 and 3). (For details on cash use in 2018, see Kumar and O'Brien 2019; for 2019, see Kim et al. 2020a; for spring 2020, Kim et al. 2020b.)

Of course, it is not possible to make cash payments with electronic devices (computer, tablet, mobile phone), so we could consider these electronic means of making payments the alternative means to paying with cash. In 2019, 24.6 percent of all payments were made using electronic devices; 9.4 percent of all payments were made using a mobile phone.

7. Cash holdings

The DCPC obtains data on consumers' holdings of cash on their person (pocket, purse, or wallet) and stored elsewhere (home, car, office, and such). The data on cash holdings were collected every night during the diary recording period; the data on stored cash were collected on the first and final nights of the survey. For both measures, respondents were asked to count the exact number of bills held by denomination, and the online questionnaire automatically summed the dollar values of cash holdings by denomination and in total. Respondents did not report holdings of coins.

A U.S. consumer carried \$60 of cash each day on average, statistically unchanged from cash holdings in 2016, 2017, and 2018. By value, about half of the cash on person was in the form of \$20 bills and one-quarter was in \$100 bills (Table 6). Eighty percent of consumers carried at least \$1 at the beginning of at least one of their diary days. Of the consumers without cash at the start of the diary (one-quarter of respondents), two-thirds stated that they usually do not carry cash.

Fewer consumers store cash elsewhere; just 22 percent of consumers had at least \$1 stored elsewhere. For all consumers, the average value of cash stored elsewhere was \$120. Among the subset of consumers who had some stored cash, the average value of that cash was about \$1,100. As one might expect, most of the value of stored cash was carried in \$100 bills: more than three-quarters of the value of stored cash. (As documented elsewhere [Judson 2017, Greene, and Schuh 2017], by value, most currency in circulation is not stored with U.S. consumers.)

Consumers also were asked about their holdings and use of pennies. Three-quarters of consumers keep pennies they receive in change; the remainder leave them in charity boxes or tip jars or with the cashier. Of consumers who keep their pennies, 37 percent use them for purchases, 30 percent take them to a coin kiosk, 18 percent deposit them at a bank, and 10 percent give them to family members.

8. Speed of payments

The night before their first diary day, consumers reported their preferences for paying bills and for making purchases. For their preferred method of bill payment, 7 percent of consumers said “speed” was the reason for their choice. For their preferred method of purchases and nonbills, 6 percent of consumers chose speed as the most important consideration. Greene and Stavins (forthcoming), using 2017 DCPC data, found that many consumers choose the catch-all category of “convenience” as their reason for preferring a particular payment instrument. Schuh and Stavins (2016) found that some aspects of speed—speed at the time of payment and speed of payment deduction—had a statistically significant influence on the adoption of some payment instruments, but not as much influence as other characteristics of payment instruments.

Consumers who answered that they chose their preferred payment instruments due to “speed” were asked to define the aspect of speed that was important for their choice. Of the share of responses for bills and purchases related to speed, about half defined speed as “speed at the time of payment.” For purchases separately, about two-thirds defined the important aspect of speed as “speed at the time of payment.”

All consumers, whether or not they cited speed as a reason for payment instrument choice, were asked if they had heard of faster payments, defined as payments that “allow individuals and businesses to send and receive payments within seconds at any time of the day, on any day of the year, such that the receiver of a payment can use the funds almost instantly.” Three-quarter of U.S. consumers reported that they had not heard of faster payments, further defined to survey respondents as “If you make a payment, whether to pay a bill or to pay a friend, money will leave your account immediately. If you receive a payment, money will be in your account and available to you immediately.”

The one-quarter of consumers who reported hearing of faster payments answered follow-up questions. Of those, about two-thirds had heard of PayPal and approximately one-third had heard of another method, including Venmo, Zelle, and a bank’s mobile app.

9. Conclusion

Data from the 2019 Diary of Consumer Payment Choice show that consumers use debit cards, cash, and credit cards for most of their payments by number. In particular, consumers tend to use cash and cards for lower-value transactions, and electronic payments for higher-value transactions. The average dollar value of an electronic payment, for example, is \$417, compared to a \$60 average dollar value for card transactions. Debit cards are the most commonly used payment instrument by number for purchases, accounting for one-third of purchases, and electronic methods linked to a bank account are used for more than four in 10 bill payments by number. By value, debit cards, credit cards, and prepaid cards represent almost 60 percent of purchases. Also by value, electronic methods account for more than half of bill payments.

Appendix A: Overview of survey methodology

This section provides a brief overview of the key elements of the DCPC methodology for 2019. A complete Technical Appendix will be published later in 2020. In the interim, [Angrisani, Foster, and Hitczenko \(2018\)](#) contains technical information about the DCPC.

Sampling frame and samples

The 2019 DCPC was implemented with representative samples from the Understanding America Study (UAS), managed by the University of Southern California (USC) Dornsife Center for Economic and Social Research (CESR) (Table B).

Table B: Overview of samples, 2015–2019

	2015	2016	2017	2018	2019
UAS available panel	2,140	4,776	4,759	4,718	5,228
Number of unique respondents*	1,087	3,047	2,871	2,992	3,154
Respondents completing all DCPC days**	1,016	2,848	2,793	2,873	3,016
Number of longitudinal panelists***	--	799	2,226	2,276	2,388

Notes: Longitudinal panelists participate in multiple years. *Completed at least one day. **Completed at least four days (“night before” plus three diary days). ***Participated in at least one previous DCPC.

Source: Federal Reserve Bank of Atlanta

Questionnaires

The DCPC is an online survey administered to diary respondents (“diarists”) over three consecutive days. It also includes a prediary online survey. Diarists can record their payments, cash management, and related information for each assigned day using some form of memory aid of their choosing. Examples of memory aids include a long-form or short-form paper aid or a receipt bag provided by the survey vendor. Diarists enter the data—from their memory aid or by recall—into a 10- to 15-minute online survey each night. Most of the online questionnaire collects information about payments and related data. Each day, it also includes questions specific to that day, such as income received, cash withdrawals and deposits, and so forth. Together, the whole process is expected to take no more than 30 minutes per day to complete, and respondents receive a \$20-per-day incentive. The prediary online survey takes about 10 minutes, and respondents receive \$10, for a total incentive of \$70 per diarist.

Prior to starting the DCPC, all diarists are required to take the 30-minute online Survey of Consumer Payment Choice (SCPC), for which they receive an incentive of \$20 upon completion. A respondent may complete the SCPC any time from its release in the middle of September to the first day of the assigned diary period. For 2017, the DCPC questionnaire was changed to help respondents in reporting the payee

and identifying bill payments. These changes mean that results for the breakdowns of bills and purchases are not comparable between 2016 and 2017/2018. All questionnaires are posted online.

Diary implementation

Diarists are randomly chosen to begin participating in the DCPC each day throughout the defined sample period for the year. Thus, each new diary wave contains a small sample of respondents (an average of 87 per day in 2018) that is, on average, representative of all U.S. consumers. Diary waves are staggered to start two days before the official beginning of the DCPC and end two days after the official end date. This way, each day contains approximately one-third of respondents who are completing each day of the diary (one, two, or three) and every day-specific group of questions occurs on each day of the month. As a result of this implementation strategy, DCPC data provide aggregate estimates that are representative of all U.S. consumers on average for each day of the sample period (day-of-the-month weights) and, under certain assumptions about temporal trends, for the sum of all days in the sample period (monthly weights), usually the month of October.

In addition, the data provide strong evidence that payment behavior is heavily influenced by a weekly cycle, with different behaviors on different days of the week. As a result, a hybrid approach for the estimates generates estimates for each day of the week by pooling across the relevant monthly data and then aggregates these to generate estimates for any particular period of time. (Also see Angrisani, Foster, and Hitczenko [2017]; Angrisani, Foster, and Hitczenko [2018]; and Angrisani, Foster, and Hitczenko [forthcoming].)

Data preprocessing

All DCPC survey responses reported here have been analyzed for errors, inconsistencies, and influential outlier effects. Where necessary, the DCPC data have been cleaned and adjusted using statistical methods similar to methods used previously and reported in earlier SCPC and DCPC technical appendices. Because consumer payments and cash management behavior exhibit significant day-of-the-week effects, and calendar months can vary notably across years in their composition of days of the week, the raw data contain seasonal fluctuations. The results for this report use revised sampling weights that attempt to adjust for differences in consumer payment behaviors across days of the week within each year.

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