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2021 Methods-of-Payment Survey Report

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Abstract

We present results from the 2021 Methods-of-Payment (MOP) Survey, including updated payment shares based on a three-day shopping diary. We highlight long-term trends observed across previous MOP surveys from 2009, 2013 and 2017. We also review patterns of the management and use of cash, the adoption and use of payment cards, and the use of alternative payment methods across different demographic groups. Using other survey and data sources, we provide additional context for these results with respect to the COVID-19 pandemic.

Topics: Bank notes; Digital currencies and fintech; Financial services; Coronavirus disease (COVID-19)
JEL codes: D83, E41

Résumé

Nous présentons les résultats de l'enquête sur les modes de paiement de 2021, y compris les parts des paiements actualisées au moyen de journaux d'achats de trois jours. Nous faisons ressortir les tendances à long terme observées dans les enquêtes de 2009, 2013 et 2017. Nous analysons aussi les tendances, parmi différents groupes démographiques, dans la gestion et l'utilisation de l'argent comptant, l'adoption et l'utilisation des cartes de paiement, et l'utilisation d'autres modes de paiement. À l'aide d'autres enquêtes et sources de données, nous situons ces résultats dans le contexte de la pandémie de COVID-19.

Sujets : Billets de banque; Maladie à coronavirus (COVID-19); Monnaies numériques et technologies financières; Services financiers
Codes JEL : D83, E41

1 Introduction

In this paper, we present the main findings from the 2021 Methods-of-Payment (MOP) Survey. The MOP measures the use of cash, payment cards and alternative payment methods at the point of sale in Canada using a consumer-focused survey and a three-day payments diary. The Bank of Canada has been conducting the MOP every four years since 2009, which allows us to document trends in payment behaviour and cash management over the past 12 years. At the same time, the Bank's Currency Department has expanded the scale of its consumer survey research program, allowing us to supplement this long-term view with some detailed, recent data. These data provide insight into how much the COVID-19 pandemic has been a factor behind recent changes in the use of cash.

One of the Bank's five core functions is to design, issue and distribute currency. To fulfill this function, staff at the Bank research the use of both cash and private digital currencies. The two topics are linked, particularly against the background of discussions around a central bank digital currency (CBDC). In a February 2020 speech, Deputy Governor Timothy Lane outlined two scenarios under which the Bank would consider issuing a CBDC (Lane, 2020). The first scenario is the transformation to a cashless society. The second scenario is the widespread use of an alternative digital currency in Canada.

Total demand for cash in Canada has been stable for decades and even increased during the COVID-19 pandemic. At the same time, use of cash at the point of sale has been declining. Results from the MOP survey provide detailed consumer-level data that give context to these trends. As with previous iterations (Arrango and Welte, 2012; Henry et al., 2015, 2018b), this survey report is largely descriptive but provides the foundation for conducting future in-depth research to inform policy.

Key insights from the 2021 MOP are as follows:

- **Decline in number of cash payments, but stable dollar value shares.** The share of purchases where cash was used fell to 22% in 2021, a decline of 11 percentage points from 2017. This continues a decline dating back to 2009 when cash was still the dominant method of payment, at 54%, and 2013 when the cash volume share was 44%. Cash is no longer dominant even for transactions of under $15, accounting for just over one-third of the volume share, which was similar to that of credit cards. The share of cash purchases by dollar value was 14% in 2021, similar to the 15% observed in 2017.

- **Increased use of contactless payments.** Results show that 66% of in-person debit card payments and 82% of in-person credit card payments were made using the contactless tap-and-go feature. This has contributed to the volume share of credit card payments increasing (displacing cash), while their value share has only increased six percentage points since 2017 (to 62%) because these types of payments are restricted in value for security reasons.

- **Fewer cash withdrawals, but more cash held.** The number of withdrawals at automated banking machines (ABMs) fell to below two times per month in 2021 (less than once every two weeks), whereas the amount of cash withdrawn and held by

consumers have both risen by $20 every four years since 2013.[1] In 2021, the average ABM withdrawal was for $160, and the average Canadian held $127 in cash in their wallet, purse or pockets.

- **The COVID-19 pandemic accelerated demand for cash.** The demand for cash in Canada has grown steadily along with the overall growth in the economy for many decades (Engert and Huynh, 2022). But demand for cash increased sharply at the onset of the pandemic. Bank surveys showed a similar increase for consumer holdings of cash, particularly when case counts were high or rising. The acceleration in the demand for cash persisted throughout 2021 but showed signs of potential moderation beginning in the second half of 2022.

- **Pandemic restrictions affected the use of cash for payments.** The COVID-19 pandemic reduced the level of in-person activity in general and the number of in-person payments specifically. These effects were still being felt in late 2021 when the MOP was in the field. This reduction particularly affected the volume of cash payments as estimated from the MOP since cash is primarily used in person. Evidence from complementary surveys shows that cash use for payments was relatively stable from 2017 to early 2020 but fell sharply due to the pandemic.

The report is structured as follows: Section 2 reviews the history of the MOP and reviews recent survey work by the Bank. Sections 3 to 5 focus on long-term payment trends dating back to 2009 and look primarily at results from the MOP. Section 3 documents the payment methods Canadians had available to them in 2021, while section 4 discusses how these payment methods were used. Section 5 presents results on how Canadians view cash relative to other payment methods. Section 6 covers the impact of the COVID-19 pandemic on the estimates presented from the 2021 MOP. Section 7 offers concluding remarks.

2 Consumer survey research program

We give a brief and high-level overview of the consumer-focused surveys conducted by the Economic Research and Analysis (ERA) team in the Currency Department (CUR) at the Bank. **Table 1** shows a timeline of these surveys with their basic features. CUR-ERA researches the use of cash and digital currencies. This research informs the process of producing and distributing bank notes. The background in this section provides relevant context for the discussion of results that follows.

2.1 History of the Methods-of-Payment Survey

The first MOP was conducted in 2009. A defining feature of this study was combining a survey questionnaire (SQ) with a diary survey instrument (DSI). The DSI is a payments diary where respondents record all of their purchases and cash withdrawals for three days. This allows for calculating shares of transactions by both volume and value for different

[1] Research by Chen et al. (2021c) explains how the network of bank branches and ABMs affects the number of cash withdrawal trips consumers make.

methods of payment. The focus of the MOP is consumer payments for goods and services at the point of sale rather than recurring or pre-authorized payments (such as rent or mortgage and bill payments), payments made for business expenses, or donations and gifts. Bagnall et al. (2016) demonstrate that the type of payments captured by the MOP diary can be aggregated to closely match national-level consumption expenditures as documented by the Organisation for Economic Co-operation and Development (OECD).[2]

While the DSI's structure has remained fairly consistent across editions of the MOP, content in the SQ has changed over time depending on the relevance of contemporaneous research and policy questions. In particular, the SQ underwent a major overhaul between 2009 and 2013. Certain comparisons dating to 2009 therefore have associated caveats. The core components of the SQ were mostly preserved from 2013 to the current version of the MOP, although recent survey work by the Bank also influenced the 2021 instrument (see section 2.3).

In terms of methodology, the MOP was conducted as a mixed-mode survey from 2009 to 2017, combining paper-based and online modes. The 2021 MOP, however, was conducted as a fully online survey, following a broad trend in the survey industry. Cost considerations and the difficulty of recruiting respondents from paper-based survey panels also motivated this change. The 2021 MOP instrument is device-agnostic, meaning that participants can complete the survey on any device with access to the internet, ranging from desktop and laptop computers to tablets and smartphones.

We aim to obtain at least 2,000 diary responses to the MOP to ensure the unweighted sample is representative of key demographics of age, gender and region. Following data collection, we calibrate the sample to match national-level statistics of other variables such as income, education, employment and marital status. We also perform quality checks on key variables and clean and edit the data to produce the final estimates. See Appendices A and B for further details. Because some respondents complete the SQ but not the full three days of the diary, SQ responses outnumber those for the DSI ones (**Table 1**).[3]

2.2 Bitcoin Omnibus Survey

In December 2016, CUR-ERA conducted the first Bitcoin Omnibus Survey (BTCOS) to measure levels of awareness and ownership among Canadians of the most popular private digital currency—Bitcoin. It was developed as a distinct monitoring tool from the MOP because in 2016:

- the level of Bitcoin adoption was quite low
- most consumers were not using Bitcoin as a method of payment

The survey instrument was therefore quite short, consisting of only five questions. Over time, the scope evolved due to a growing interest in understanding more about the motivations and

[2]See the Diary-to-Aggregate-Expenditure-Ratio row of Table 2 in Bagnall et al. (2016). A ratio of one indicates that aggregated diary estimates exactly match the national-level statistic reported by the OECD. The DSI for the MOP achieved a ratio of 0.99.

[3]See Arrango and Welte (2012), Henry et al. (2015), Henry et al. (2018b) and Chen et al. (2018) for further information.

behaviours of Bitcoin owners. In 2021, the BTCOS consisted of 16 questions. Conducted as an online survey, the BTCOS has a sample size of around 2,000 respondents for each edition of the survey.[4]

2.3 Recent Bank payment surveys and the COVID-19 pandemic

After the 2017 MOP, the Bank identified a need to conduct payment surveys more frequently than the four-year MOP cycle. With this in mind, the Bank fielded a pilot Cash Alternative Survey (CAS) in August 2019. The CAS consisted of a survey questionnaire—no diary component—with elements borrowed from the MOP. It also covered topics such as Canadians' plans to go cashless, their experiences with merchant acceptance of cash and their use of newer, digital alternative methods of payment. The August 2019 CAS also marked the transition to a fully online mode of survey collection. Plans for subsequent waves of the CAS were accelerated due to the onset of the COVID-19 pandemic. Specifically, the April 2020 CAS was launched to collect data during the first wave of COVID-19 cases.

Against this background, CUR-ERA further increased efforts to conduct surveys that gauged how Canadians were responding to the pandemic in relation to their use and management of cash as well as their payment behaviour (**Chart 1**). The Cash Pulse Survey (CPS) was conducted in July 2020, not long after the April 2020 CAS, using a condensed version of the CAS questionnaire. Follow-ups to the initial CAS were conducted in November 2020, April 2021 and August 2021. The November 2020 CAS also included a three-day diary that helped to pre-test the updated DSI for the 2021 MOP. The redesign of the 2021 MOP SQ and DSI was also informed by lessons learned and content from the CAS and CPS.[5]

2.4 The Canadian Financial Monitor

Finally, we use data from a syndicated survey conducted by our survey partner Ipsos, called the Canadian Financial Monitor (CFM). Syndicated means that Ipsos designs and conducts this particular survey and sells the data to a variety of clients, including the Bank. The CFM covers topics outside of the narrow scope of cash and payments, but it includes a limited set of questions on these topics. One of the advantages of these data is that they are collected on an ongoing monthly basis at an individual level dating back to 2018.[6] Therefore, CFM provides insights for before and during the COVID-19 pandemic. The CFM data have been used previously to conduct economic research (Chen et al., 2016; Felt, 2020). CUR-ERA has also worked collaboratively with Ipsos to refine parts of the survey instrument and to develop the weighting methodology used to produce estimates from the survey (Felt and Laferrière, 2020).

[4] See Henry et al. (2018a), Henry et al. (2019), Henry et al. (2020), Balutel et al. (2022c) and Balutel et al. (2022b) for more information. The BTCOS has also been used for economic research (Balutel et al., 2022d,e).

[5] For further details on the surveys conducted during the COVID-19 pandemic, see Chen et al. (2020, 2021a,b), and Chen et al. (2022).

[6] A household version of the CFM dates back to 1999 and was collected using a paper-based methodology. The individual CFM was introduced in 2018 and converted to an online survey.

3 What is in your wallet?

In this section, we present results from the 2021 MOP SQ. The SQ complements the DSI component of the MOP by capturing information on the methods of payment available to Canadians. This includes the amount and denominations of cash they hold, how they obtain cash, what payment cards they can access and what payment alternatives to cash and cards they use. We compare the results with those from previous MOP surveys when possible.

3.1 Cash

The average amount of cash Canadians hold in their wallets, purses or pockets (*cash on hand*) rose steadily since 2009 and by roughly $20 every four years from 2013 to 2021 (**Table 2**). In 2021, Canadians reported holding an average of $127 in cash on hand. The growth since 2009 well outpaced a 2% rate of inflation.[7] The growth in cash holdings also mirrors aggregate-level growth in the value of bank notes in circulation in Canada over this time period.[8] At the same time, the share of Canadians who report that they do not hold any cash also increased substantially in 2021. One-quarter of Canadians reported having no cash on hand in 2021, up from about one-tenth in 2017. In other words, fewer Canadians are holding cash, but those who hold cash tend to have higher amounts.

In terms of *other cash holdings*—i.e., cash held in locations other than a purse, wallet or pocket, such as at home or in a vehicle—the median amount reported was $200 in 2021, essentially unchanged from 2017. Almost 80% of Canadians reported not holding any other cash. The last two columns of **Table 2** report the percentages of Canadians receiving different types of cash transfers in the past week. The results show that 4% of Canadians reported being paid in cash by their employer or business in the past week, similar to previous years. By contrast, the share of Canadians who received cash from a friend or family member jumped to 13% in 2021, well above the 4% observed in 2017.

Demographic profiles of cash management follow similar and persistent patterns as those observed in past years:

- men tend to hold more cash than women do
- cash holdings increase with income levels
- respondents with lower financial literacy tend to hold more cash

The highest average cash on hand was observed among 18 to 34 year-olds at $149. This group was also the most likely to have received cash from friends or family (21%) or to be paid in cash (6%) in the past week.

The MOP measures cash holdings by asking respondents to count the number of bills of each denomination they are holding (we do not consider coins). **Table 3** shows the percentages of Canadians who held at least one bank note for each of the five denominations.

[7] The inflation adjustment factors and resulting dollar values using the year 2009 as a base would be $81 nominal × 0.95 adjustment = $77 in 2013; $106 nominal × 0.77 adjustment = $82 in 2017; and $127 nominal × 0.70 = $89 in 2021.

[8] See Bank of Canada note liabilities.

The percentages are calculated among those who reported having cash on hand. The 2021 results show an increased likelihood of holding both low-value ($5 to $20 notes) and high-value denominations ($50 and $100) compared with 2017. This is a reversal of previous declines in holdings of low-value denominations from 2013 to 2017, particularly for the $5 note. In contrast, the results show a continued trend of increased holdings of high-value denominations. In 2021, 12% of Canadians holding cash had a $100 note and almost one-quarter (23%) had a $50 note.

Between 2018 and 2020, five major banks in Canada started offering ABMs that could provide bank notes of various denominations.[9] Depending on the bank and ABM, consumers could either request a particular mix of denominations based on the amount they intended to withdraw or the machine predetermined the mix. This change also meant that $100 notes in particular were more accessible than before because they were not previously distributed from ABMs.

Respondents with low financial literacy were the most likely demographic group of those considered to hold a $100 note, at 22%, confirming a similar finding by Huynh et al. (2019). Respondents in Quebec were the least likely, at only 8%. Less variation was observed in $50 note holdings, which ranged from 19% to 27% among most demographic groups considered, with the exception being respondents from Quebec at 15%. With respect to the $20 note, respondents aged 55 and older were most likely to have at least one (78%), along with respondents with high financial literacy (also 78%). Little variation appeared across demographic groups with respect to holdings of $5 and $10 notes.

Finally, **Table 4** shows the cash withdrawal behaviours of Canadians. We note that the survey questions used to measure cash withdrawals have changed substantially over time. For the 2021 MOP (as well as the more recent CAS and CPS), the SQ asked respondents about the number of cash withdrawals they made in the past week and the total value of cash withdrawn.[10] These changes were made to reduce recall bias by shortening the recall period to the past week (from the past month) as well as to remove ambiguity around the term "typical withdrawal" by simply asking about the actual amount withdrawn. For comparability of 2021 results with previous years, we make appropriate conversions as described in the table notes.

Consistent with increases in cash holdings over time, we find that Canadians withdrew more cash on average in 2021 compared with previous years, both at the ABM and bank teller. The increase in the average value of an ABM withdrawal of roughly $20 every four years from 2013 to 2021 exactly mirrors increases in cash holdings. An average ABM withdrawal was $160 in 2021. This estimate is similar to data on ABM withdrawals sourced from the Automated Clearing Settlement System (Dahlhaus and Welte, 2021). Based on visiting an ABM in the past week, Canadians obtained cash at roughly the same rate as in 2017 (28% in 2021 compared with 27% in 2017). However, Canadians made fewer trips to the ABM and bank teller each month. Canadians visited an ABM 1.7 times per month in 2021 and made a withdrawal from a bank teller 0.4 times per month, or about five times per year.

[9] The five major banks are Bank of Montreal, Canadian Imperial Bank of Commerce, Toronto-Dominion Bank, Royal Bank of Canada and Scotiabank.

[10] In 2009, respondents could answer based on either a weekly or monthly time frame. In 2013 and 2017, we asked respondents to report the number of cash withdrawals they made over the past month and the value of a typical cash withdrawal.

3.2 Payment cards

Aside from cash, the other commonly used methods of payment at the point of sale in Canada are debit and credit cards. **Table 5** shows the ownership rates of these instruments for 2009, 2013, 2017 and 2021, along with demographic breakdowns from the 2021 MOP. The *% linked* columns in the table report the percentages of respondents with at least one card who say they have linked a card to either an online payment account or a mobile payment app. This reflects a new question added to the 2021 MOP SQ. Finally, the last two columns of **Table 5** show ownership of two other types of payment cards, namely:

- store-branded prepaid cards, which are loaded with funds that may be used only at the store indicated on the card
- prepaid credit cards, which are loaded with funds that can be used at various locations because the payment is processed through credit card networks

As in previous years, debit card ownership is nearly universal among adult Canadians, with 98% reporting owning at least one card. Credit card ownership dipped slightly to 87% in 2021, down two percentage points from 2017 but still higher than the 82% observed in 2013. Estimates of debit and credit card ownership are consistent with results from the World Bank's 2021 Global Findex study, which found 96% and 83% ownership, respectively.[11] The slightly lower ownership rates from the Global Findex study are likely explained by the fact that the sample considered Canadians aged 15 and older, whereas the MOP sample consisted of Canadians aged 18 and up.

Responses to the MOP showed a drastic decline in reported ownership of both types of prepaid cards in 2021. Ownership of store-branded prepaid cards had been consistent at 27% in both 2013 and 2017, but dropped to just 7% in 2021. Ownership of prepaid credit cards rose from 12% to 21% between 2013 and 2017 but fell to 7% in 2021. The survey questions used to measure these ownership rates did not change significantly over the last three versions of the MOP. One possible explanation is that the COVID-19 pandemic has had a significant impact on prepaid card ownership, combined with the increasing prevalence of digital forms of these cards (**Table 7**).

Demographic profiles of credit card ownership show expected patterns. Respondents with low financial literacy were the demographic category with the lowest observed ownership rate at 68%. Younger respondents have likely not yet established a credit history and therefore were also observed to have relatively lower credit card ownership (76%). In contrast, highly educated and high-income individuals were extremely likely to have a credit card (97% and 94% ownership, respectively). Debit card ownership varies less across the different demographic categories, although respondents with low financial literacy were less likely to hold a debit card, at 91%.

In terms of linking debit and credit cards to online payment accounts or mobile apps, age is the most decisive demographic factor of those considered. Canadians aged 18 to 34 were almost twice as likely (30%) to link a debit card to one of these technologies compared with 35 to 54 year-olds (17%). Only 8% of those over the age of 55 linked one or more of their debit cards. For credit cards, 50% of those aged 18 to 34 have linked at least one of

[11] See The Global Findex Database 2021 for more information (Demirgüç-Kunt et al., 2022).

their cards to an online account or mobile app. The rate at which Canadians link their debit cards to online accounts or mobile apps increases as their income and education levels go up. In contrast, for credit cards, the rate decreases with increased income and education levels. Canadians with low financial literacy were more likely to link both debit and credit cards than their counterparts with medium and high financial literacy, notably for credit cards.

Finally, **Table 6** documents certain costs associated with debit and credit card ownership. In the first column, we show the percentage of debit card owners who have a monthly fee associated with their main bank account. We ask respondents to report such a fee even if it is usually waived or refunded. Overall, 63% reported having such a fee. The second column shows that a further 61% actually paid the fee in the last month, whereas 31% had the fee waived or refunded. Possible reasons for the fee being waived or refunded include maintaining a minimum balance or having a specially designated account such as a student or seniors account. Only 5% of those with an account fee were unable to pay the fee in the past month.

The fourth column of **Table 6** shows the percentages of credit card owners who "revolved" on their card in the past month. That means they charged an amount to their credit card but did not pay off the entire balance and therefore were subject to an interest charge. Revolving behaviour can be due to a lack of liquidity for resolving the credit card balance—i.e., using the credit card intentionally as a loan—or, more specifically, because consumers prioritize payments of other monthly fixed expenses, such as mortgage or rent (Greene and Stavins, 2022).

Overall, 27% of credit card owners revolved in the past month with particularly high rates of revolving among low financial literacy and low-income respondents (39% and 38%, respectively). This overall figure is broadly in line with the Global Findex study that finds 21% of credit card users have revolved in the past year.[12] Evidence from the Federal Reserve Bank of Atlanta's Diary of Consumer Payment Choice in the United States shows relatively higher rates of revolving in the past month, at 42% of credit card owners in 2021.[13]

3.3 Alternatives to cash and cards

Finally, the SQ provides some evidence about the adoption of certain alternative methods of payment. **Table 7** shows the percentages of Canadians who have used various payment alternatives in the past week to make a purchase at a store or business, either in-person or online. These findings are not directly comparable with past results because previous versions of the MOP asked about use in the past year. We show only results from 2021.

Interac e-Transfer was used by roughly one-quarter of Canadians in the past week. Online payment accounts such as PayPal were used by 18% of Canadians. The level of cryptocurrency use in the past week for making payments was negligible, at just 1%. We know from the 2021 BTCOS survey that Bitcoin ownership was 13% in 2021, and just 9% of owners

[12] One might expect the Global Findex number to be higher because it considers the past year (whereas the MOP considers the past month) and consumers would have more opportunity to revolve in a given year. The base of the calculation used in the Global Findex results is not clear because respondents can refuse to answer both the question about use of credit card in the past year and the question about paying off all credit card balances in the past year.

[13] See 2021 Diary of Consumer Payment Choice Tables and Foster et al. (2022).

reported holding Bitcoin primarily to make payments. We might therefore expect that 13% $\times$ 9% = 1.2% of Canadians use Bitcoin for making payments on a regular basis, which aligns with the observed share in the MOP.

Mobile payment apps were distinguished into four separate categories: bank account management apps, digital wallet apps, payment account apps and store-branded prepaid apps. Bank account management apps allow users to bank online, including making Interac e-Transfers. These apps were the most used mobile app in the past week, at 15%, followed by digital wallet apps at 9%. Payment account apps and store-branded prepaid apps were used at similar rates of 5% and 4% respectively.

Surveys conducted by the Bank between April 2020 and August 2021 show about 40% of Canadians sent an Interac e-Transfer in the past week, compared with the 26% observed in the 2021 MOP. However, survey design could explain this difference. Specifically, the response option "bank account management app" was first offered in the 2021 MOP. Previously, respondents would report any e-Transfer made using either a computer or smartphone under the response option "Interac e-Transfer." With the introduction of the "bank account management app" response option, respondents in the 2021 MOP could distinguish between different types of e-Transfers. Indeed, combining the rate of "Interac e-Transfer" responses (26%) with that of "bank account management apps" (15%), we arrive at a number (41%) from the 2021 MOP that aligns more closely with the other survey evidence.

4 How do Canadians pay?

In this section we discuss results from the 2021 MOP DSI, wherein respondents record their actual payment choices at the point of sale over three days. The DSI covers typical retail payments made by consumers, both in-person and online. We inform respondents not to include bill payments, donations or business expenses. The key statistics that summarize the choice of payment methods are the payment shares, of which we report two types: (1) the volume share and (2) the value share. The volume share is the share of purchases for which a given payment method was used relative to the total number of purchases reported in the DSI. The value share is the share of Canadian dollars spent using a given payment method, relative to the total dollar amount spent. By observing both types of payment shares, we obtain a more holistic view of the choices Canadians make at the point of sale.

First, we discuss the overall payment shares and compare them with results from previous MOP diaries as well as the diary conducted with the November 2020 CAS. We also describe the volume and value of payments in terms of the number of transactions conducted per person per day, as well as the mean and median dollar value of purchases by method of payment. We then discuss how the characteristics of a purchase relate to payment choice. These characteristics include the demographic group of the respondent, the amount of the purchase and the type of store or business where the purchase occurs. Finally, we discuss how the cash share in particular has changed since 2009.

4.1 Overall volume and value of payments

Table 8 and **Chart 2** provide the payment shares, in terms of volume and value, for the 2009 to 2021 MOP surveys as well as the November 2020 CAS. While cash remained an important payment method in 2021, with a volume share of 22%, use has been declining consistently since 2009 when cash accounted for 54% of transactions made. Despite a decrease to 9% of the value of transactions in 2020, cash accounted for 14% of the value of transactions in 2021, similar to the 2017 value share of 15%.

Debit cards accounted for 28% of transactions and 23% of the value of transactions in 2021, compared with 26% and 26%, respectively, in 2017. Contactless debit card transactions rose from 50% of in-person debit volume in 2017 to 67% in 2021; the value share of such debit card payments rose from 20% in 2017 to 50% in 2021.[14]

The decrease in cash use over time has corresponded with an increase in credit card use. Overall, credit cards accounted for 39% of the volume of retail transactions in 2017, and this volume share rose to 48% in 2021. However, the value share increased by a relatively smaller amount, up six percentage points from 2017 to 62% in 2021. Contactless payments continued to dominate credit card transactions, having been used in over 80% of in-person transactions in 2021.

In 2021, we included mobile payments as an alternative calculation of the payment shares for the first time. They were not included previously for two reasons. First, mobile payments accounted for a tiny share of payments in past years, whereas recent evidence shows rising use among Canadians. Second, and perhaps more importantly, including mobile payments as a distinct method of payment can be somewhat misleading due to data limitations. In the DSI, we are not able to determine whether a payment made with a mobile app is from a retailer-specific app, a mobile banking app or a digital wallet (which would constitute an underlying debit or credit card payment).

With these caveats in mind, we find that mobile payments accounted for 4% of all purchases and 5% of the value share in 2021. Including mobile app payments as a separate category of payment method tended to lower both the volume and value shares of cash, debit and credit by roughly one percentage point; the exception is the value share of credit cards, which is three percentage points lower when separating out mobile app payments.

Cash transactions are usually of small value, but the median transaction value in nominal terms has increased steadily since 2009, rising from $8 in 2009 to $12 in both 2020 and 2021. The average value of a cash transaction rose to $29 in 2021, which reflected an increase from both 2020 ($22) and 2017 ($20). In contrast, the median value of a debit card transaction has stayed constant at $25 since 2017, and the median credit card transaction increased slightly to $36 in 2021. Contactless cards are still primarily used for lower-value transactions.[15] The median value of both contactless credit and debit card transactions increased between 2017 and 2021 by about $4 to $30 and $20, respectively. These trends explain why the increased volume share taken by credit card payments is not associated with a substantially higher value share.

While cash transaction values have increased, the number of transactions made has de-

[14] Since contactless payments must be conducted in-person, we report the volume and value shares of both contactless debit and credit cards by excluding online purchases.

[15] Note that contactless cards were not commonplace in 2009.

creased over time. Over the three-day period covered by our survey, the median number of cash transactions made by respondents was one in 2021, compared with two in 2017 and three in 2009. The median number of debit transactions made has similarly decreased, from two to one between 2017 to 2021. However, the number of credit card purchases has remained unchanged.We note that the decrease in transactions in 2020 and 2021 could be attributed to a lack of in-person shopping opportunities due to COVID-19 (see section 6 for further details).

4.2 Demographics

Table 9 and **Table 10** show payment shares among different demographic groups, calculated from the 2021 MOP DSI. In 2021, cash was used more often in Ontario, British Columbia and the Atlantic provinces and by those aged 55 or older, those earning up to $45,000 a year, men and those without a post-secondary education. Cash was used for a relatively larger portion of the value share in Ontario and British Columbia and by those aged 34 or younger, those earning up to $45,000 a year, men and those without a post-secondary education.

For debit cards, both the volume and value shares are highest in the Prairies and the Atlantic provinces. They are used more often by those aged 34 or younger, those earning $45,000 or less, women and those without a post-secondary education.

Credit cards had the highest volume and value shares in Quebec. The volume and value shares are also higher among those aged 35 to 54, those earning $85,000 or more, men and those with a university degree.

The volume share of contactless payment methods is largely consistent across demographic groups. The only exceptions are a higher share of contactless debit transactions among those with high financial literacy (80% of all debit card payments, in contrast with 64% for those with medium or low financial literacy), and a lower share of contactless credit transactions in the Atlantic provinces (68%, compared with the other regions at approximately 81% to 84%).

The value share of contactless payment methods varies more noticeably across demographic groups. The value share of contactless debit transactions is lowest in the Prairies, among the 18 to 34 age group, those earning $85,000 or more and those with low financial literacy. The value share of contactless credit transactions is lowest in the Atlantic provinces at 39%, in contrast with the other regions, which range between 64% and 67%.

Mobile payments saw significant use among the 18 to 34 age group, with a volume share of 8% and value share of 13%. The volume share was also relatively higher in British Columbia, among those with low financial literacy or for those without a post-secondary education. The value share of mobile payments was particularly large for those making $45,000 or less a year, accounting for 13% of purchases compared with 5% among those making between $45,000 and $85,000 a year, and 3% for those making over $85,000 a year.

4.3 Type of goods and services

Volume and value shares for each type of good or service are broken down by method of payment in **Table 11a** and **Table 11b**.

Table 11a, which breaks down the volume of retail payments, shows that cash did not dominate in any of the categories considered, but that its volume share was highest for meals and professional and personal services, at 34% and 31%, respectively. In contrast, cash was used the least for health care, gas and personal attire at 8% for each category. Debit cards were not the dominant payment method for any category either but were used most to make purchases related to health care and gas. Credit cards were the most used payment method for all types of goods and services, in particular personal attire at 65% and travel and parking at 60%. Mobile payments stood out in the entertainment category with 7% of purchases made, and the stored value card category was also used most for entertainment, at 5%.

Since cash was used primarily for small-value purchases in 2021, **Table 11b** shows it had the smallest value share in all but three categories in which debit cards had the smallest share. These three categories were hobby and sporting goods (cash value share of 20%), professional and personal services (18%) and other (20%).[16] Credit cards, in contrast, had the largest value share in all of the categories considered. Mobile payments accounted for a significant percentage of the value of entertainment-related purchases, with a value share of 29%.

4.4 Transaction value

Table 12a and **Table 12b** show that cash was still used mostly for small-value transactions in 2021 and that its share decreased as the transaction value increased. Among transactions recorded in the DSI below $15, cash accounted for 34% of the volume and 29% of the value. In contrast, among transactions above $50, cash accounted for just 10% of the volume and 11% of the value. While debit cards did not capture the largest share in any of the transaction ranges considered, their share was highest in the $15 to $25 category with about 34% for both value and volume. Above $15, however, credit cards dominated in both volume and value. The use of contactless debit and credit cards were most common for transactions below $25 and decreased with higher transaction values. Contactless debit and credit payments combined were nevertheless used more often than cash for transaction values above $25.

4.5 Cash shares over time

Chart 3 to **Chart 5** show the percentage changes in the cash volume and value shares from 2009–13, 2013–17 and 2017–21 for various characteristics. These charts illustrate areas where cash use is falling particularly fast and where cash use is relatively more stable or even increasing. Categories have been harmonized where possible to make the most consistent comparisons across time. For example, age categories are based on year of birth (as opposed to age at the time of the survey) so that the percentage changes reflect differences across the same age cohorts. Overall, in volume terms, cash has fallen by about 10 percentage points every four years, which means that the percentage declines were increasing across the three periods. The decline in value terms was smaller from 2017 to 2021 (14%) compared with the previous period (35%).

[16] The other category includes a variety of purchases and was usually selected by respondents when they felt that the categories provided as response options did not apply to their particular purchase.

Chart 3 focuses on changes in the cash shares by different demographic categories. From 2017–21, the largest decrease in cash use was among those in the Western provinces—British Columbia, Alberta, Manitoba and Saskatchewan—with an observed decline of roughly 50%.[17] The next largest declines in this period were for those with a university education and young Canadians (defined as those born between 1975 and 1991). For several demographic groups, the rate of decline was stable or decreasing in the first two periods followed by a sharp increase in the period 2017–21, including for young Canadians, women, those with a post-secondary education or those with a high income. The cash value shares actually increased among certain groups in the period 2017–21, including for the Atlantic provinces and Ontario or those with low financial literacy.

Chart 4 and **Chart 5** show similar changes in the cash shares for categories defined by the type of purchase and transaction value of the purchase, respectively. Hobby and sporting goods, along with the personal attire category, saw the largest decline in cash use from 2017–21. Cash volume shares declined the least in the durable goods and the professional and personal services categories. Value shares were essentially unchanged in the other category and for groceries and drugs. The rate of decrease in the cash volume share from 2017–21 was relatively high for purchases below $15 compared with previous periods and relatively low for above $50 compared with previous periods. The cash value share for purchases above $50 increased by about 18% from 2017–21.

Charts 3 to **5** represent long-term trends using data solely from the MOP studies. However, **Chart 2** also indicates that cash shares have been fairly stable during the COVID-19 pandemic, based on the estimates from the November 2020 CAS diary. Furthermore, in section 6.2 we expand on how the pandemic affected the cash volume share in particular due in large part to a reduction in the number of in-person payments.

5 Views of cash and cards

In this section we examine Canadians' perceptions about the use of cash and payment cards. First, we look at views about various payment features and how these views have changed over time. We then discuss results from the 2021 MOP that show how Canadians think their use of cash will evolve in the future.

5.1 Payment features

Chart 6 shows Canadians' perceptions of cash, debit, credit and contactless card payments[18] and the following four features:

- acceptance—how widely accepted each method of payment is
- cost—how costly each method of payment is to use
- ease of use—how easy or hard it is to use each method of payment

[17] These provinces were collapsed into a single category to make comparisons dating back to the 2009 MOP.
[18] The term is described in the survey instrument as the "contactless feature of a debit or credit card."

- security—how risky or secure it is to use each method of payment

Overall, Canadians held positive views of cash in 2021. Over 85% of respondents saw cash as being "often to always accepted" at the point of sale. Compared with debit and credit cards, cash is seen as the cheapest method of payment with over 50% reporting it as having very low cost. By contrast, only 15% of respondents rated credit cards similarly. While cash is seen as easy to use overall, respondents in 2021 tended to rate its ease of use as similar to that of debit and credit cards, whereas previously cash was rated more favourably. Finally, cash was rated as "secure or very secure" to use by 70% of Canadians in 2021, which was identical to the ratings given to both debit and credit cards.

Perceptions have changed about the payment methods considered when comparing results from 2013 and 2017 with more recent evidence. Most notably, consumers' perceptions of contactless card payments have evolved from being largely uncertain to largely positive. Over 90% of Canadians in 2021 said that contactless card payments were "often" to "always accepted" at the point of sale, even higher than cash and similar to both debit and credit cards. This reflects the fact that payment card terminals are almost universally equipped with readers to accept contactless payments, combined with the increased use (and therefore familiarity) of contactless cards by consumers.

Ease-of-use ratings for the contactless feature are higher than for credit and debit cards individually, which is to be expected since "tap-and-go" is much easier then inserting a chip and entering a PIN code. Finally, concerns over the security of using contactless technology to make payments have mostly abated. In 2013, 32% of Canadians rated contactless payments as "risky" or "very risky," though the bulk of respondents (43%) were unsure about how to rate the technology. In 2021, however, only 11% of respondents held negative views of contactless payments (i.e, risky or very risky), whereas 60% viewed it positively (i.e., secure or very secure).

Shifts in views of cash have been more subtle when comparing 2013 and 2017 with more recent evidence. Overall, ratings of cash have remained positive, but the portion of respondents who assigned the highest positive rating to cash has fallen sharply for both acceptance and ease of use, while negative ratings for these features have increased slightly. These changes may be due, at least in part, to the COVID-19 pandemic. Speculation at the onset of the pandemic was that cash may have helped spread the virus; subsequent scientific evidence has shown that "...surface transmission is not the main route by which SARS-CoV-2 spreads, and the risk is considered to be low."[19] Some businesses discouraged or even refused to accept cash early in the pandemic. Indeed, 12% of consumers reported not being able to use cash at a store or business in April 2020. This number dropped to just 3% as of November 2021.

5.2 Plans to go cashless

The 2021 MOP asked respondents for their views about their future use of cash. Specifically, the question in the survey was: "Do you currently have any plans to stop using cash in the future?" Results from this question are shown in **Table 13**, which also contains breakdowns

[19] Quote taken from the Centers for Disease Control and Prevention's Scientific Brief: SARS-CoV-2 and Surface (Fomite) Transmission for Indoor Community Environments. See also Tamele et al. (2021).

by demographic categories. Overall, 79% of Canadians said they have no plans to stop using cash in the future. Eight percent reported that they have future plans to stop using cash but are still using it. While 14% reported that they have already stopped using cash (we refer to them as being "cashless"), this seems to conflict to some degree with their actual behaviour. By cross-referencing this question with the question on cash holdings (**Table 2**), we see that half of those who say they are already cashless do in fact carry some amount of cash in their wallet, purse or pockets. This suggests that while they may not use cash to make payments on a regular basis, they do carry some for precautionary or other purposes.

In terms of demographics, there is a clear difference between young and old Canadians. While 87% of those aged 55 and above have no plans to stop using cash, 71% of adults under the age of 35 said the same. Respondents from Quebec were more likely to report being cashless (19%), while those from the Atlantic provinces were less likely (11%). Interestingly, while actual cash use patterns varied with levels of financial literacy (see section 4), the percentage of those with no plans to go cashless was very similar across the three categories of low, medium and high financial literacy.

What do Canadians mean when they say they are cashless or plan to stop using cash in the future? In the 2021 MOP, we asked a follow-up question to obtain additional insights. Respondents were asked to select from the following options to indicate whether they have stopped or plan to stop:

- using cash to pay for things
- holding cash in their wallet, purse or pockets
- holding other cash (e.g., in their car or house)
- using cash to transfer money to family or friends
- other

Chart 7a and **Chart 7b** show the results of these questions using a graphical technique called an upset plot. Because respondents can choose more than one response option, an upset plot shows how many respondents chose each option at least once (left side horizontal bars) and every subset of possible response patterns (right side vertical bars).

Among the 663 respondents who reported being cashless, almost all of them (532) said they have stopped using cash to pay for things. The next most popular choice was no longer holding cash in their wallet, purse or pockets, selected by 368 of the respondents. Roughly half of those currently cashless indicated that they have stopped holding other cash or using cash for person-to-person transfers. Looking at the detailed response patterns, we see that a plurality of respondents (159) selected all four options (excluding the other category). This suggests they really consider themselves to have stopped using cash across all of its possible functions. The next two highest response patterns were single selections of using cash to pay for things (117 respondents) and holding cash in their wallet, purse or pockets (56 respondents).

Chart 7b shows results from the 332 respondents who said they still use cash but have plans to stop using it at some point in the future. These respondents were more likely to consider a specific function of cash when reporting their plans to stop using it. Specifically,

186 of the respondents chose only one of the four uses, and these accounted for the four most popular response patterns. Plans to stop using cash to pay for things was again the most often selected response option, chosen by 184 respondents.

6 COVID-19 and recent cash trends

In this final section, we discuss how the COVID-19 pandemic has affected Canadians' use of cash. We consider both aggregate-level network data and findings from other surveys to provide context to results discussed previously. First, we review evidence of increased cash demand. Demand for cash has both non-transactional (i.e., precautionary or store of value) and transactional (i.e., for payments and person-to-person transfers) components. It can also be affected by supply factors such as access to, or prevalence of, ABMs.[20] Precautionary motives appear to be behind much of the increased demand during the pandemic. Second, we more closely examine certain factors associated with the pandemic that affected the demand for cash in daily transactions. While the 2021 MOP shows that cash use for payments at the point of sale has continued to decline over the long-term, situating these results in the context of the COVID-19 pandemic is important.

6.1 Cash demand, access and use during the pandemic

As previously documented, (Chen et al., 2020, 2021a,b, 2022) aggregate cash demand increased substantially due to the COVID-19 pandemic. **Chart 8** shows the total value of bank notes in circulation from 2018 to 2022 using data from the Bank Note Distribution System. We extend previous estimates of counterfactual values of notes in circulation to show what the levels would have been if the pandemic had not happened (dashed lines in the figure). As has been noted, the period from March to July 2020—the start of the pandemic—witnessed the largest increase in the demand for cash. While the rate of growth slowed following this point in time, cash demand remained strong even into mid-2022. The average year-over-year increase from 2021 to 2022 (data up to the end of July) was 46% higher than it would have been if the pandemic had not happened.

That being said, some indicators suggest that pandemic-related demand for cash may be starting to moderate. **Chart 9a** and **Chart 9b** show the net value of withdrawals for denominations typically used for transactions ($5 to $20 notes) and for high-value denominations ($50 and $100 notes), respectively. Even more so in 2022 than earlier in the pandemic, **Chart 9a** shows that the actual level of net withdrawals for transactional notes is well below the estimated counterfactuals. **Chart 9b** shows that the large differences between actual and counterfactual estimates for high-value notes observed early in the pandemic mostly disappeared in 2022. Additionally, starting about midway through 2022, there have been increasingly longer periods of negative net withdrawals, indicating that high-value notes are coming out of circulation.

[20] Engert et al. (2019) also discuss the role of foreign versus domestic demand for Canadian bank notes in recent decades. Limited data is available and no known research exists to suggest that foreign demand played a role in increased cash demand during the pandemic.

Survey evidence from consumers confirms the increased demand for cash during the pandemic observed at the aggregate level. **Chart 10a** and **Chart 10b** show estimates of cash holdings taken from the CAS, CPS and MOP surveys throughout the pandemic. Dashed vertical lines in each chart represent the date of the peak number of COVID-19 cases for each of the first four waves. Cash on hand estimates fluctuate along with the number of COVID-19 cases. Estimates taken during periods of rising case counts tend to be higher than those taken during periods when the case counts were falling. The highest average cash on hand of $171 was observed from the April 2021 CAS, which was in the field during the peak number of cases for the third wave of the pandemic (**Chart 1**). Other cash holdings were particularly high leading up to the peaks of the second and fourth waves, but were interestingly somewhat lower for the April 2021 CAS. The results for the third wave may suggest that consumers depleted their other cash reserves following the second and third waves, which were only about four months apart.

Chart 11 shows the percentages of Canadians who did not hold any cash on hand or other cash. The estimates mirror the patterns in cash holding amounts in the sense that when holdings are high, the share of Canadians not holding any cash also tends to be high. **Chart 11** also shows that the pandemic affected the likelihood of making an ABM withdrawal in the past week. Pandemic-related restrictions help explain these trends. Consumers were less likely to visit an ABM when restrictions were tightest or when case counts were high. Those who did venture out tended to withdraw and hold high amounts of cash, meaning they could wait longer to make another withdrawal.

Nevertheless, the 2021 MOP estimate of 28% of Canadians making an ABM withdrawal in the past week lines up closely with the 27% observed from the 2017 MOP, well before the pandemic. However, the monthly number of ABM withdrawals was lower in 2021 relative to previous years (see **Table 2** and the discussion in section 3.1). Chart 1 from Chen and Felt (2022) shows that access to cash, as measured by the number of ABMs in Canada, temporarily declined at the start of the pandemic. This was due to a decline in the number of privately owned, white-label ABMs, while the number of ABMs affiliated with a financial institution was stable from late 2019 to early 2022. The number of white-label ABMs rebounded quickly and subsequently showed continued growth into 2022.

Finally, evidence from Interac network data further demonstrates increased cash demand and that this demand has persisted into 2022. **Chart 12a** and **Chart 12b** show data on ABM cash withdrawals and debit card purchases conducted on the Interac network.[21] These data include all withdrawals made at an ABM owned by the same financial institution that issued the card used and withdrawals made at ABMs owned by financial institutions other than the card used, such as white-label ABMs. The cash-card ratio presented in **Chart 12a** represents the number of ABM cash withdrawals divided by the number of debit card purchases, while **Chart 12b** shows the average value of an ABM withdrawal.

Pre-pandemic, the cash-card ratio was about 0.10, meaning that one ABM withdrawal was made for every nine debit card purchases. This ratio dropped to around 0.07 when the pandemic hit and has fluctuated around this lower level well into 2022. Corresponding to this decline, the data also show an increase in the average value of an ABM withdrawal by about $55 to $235 during the pandemic (**Chart 12b**). In other words, Canadians are making

[21] These figures extend calculations from Dahlhaus and Welte (2021) to the end of May 2022.

fewer trips to an ABM but are compensating by withdrawing more cash during a given visit. Ardizzi et al. (2020) find similar results for cash withdrawals and card payments in Italy. These results also align with our findings based on the MOP data discussed in section 3.1 and suggest that at least some of the observed changes from the 2017 MOP results may be attributed to the COVID-19 pandemic.

Turning to cash use, the 2021 MOP survey directly asked respondents how the COVID-19 pandemic has affected their use of cash. Among those who said they still use cash, **Table 14** shows that 56% reported the same (54%) or increased (2%) use of cash compared with before the pandemic, while 44% reported a decreased use of cash.[22] The remaining columns show the cash volume and value shares from the 2021 MOP DSI based on responses to this question. Overall, respondents from the Atlantic provinces were most likely to say that the pandemic has led to an increased or same use of cash, at 67%, followed by those with low financial literacy (66%) or a high school education (60%). Respondents from Quebec were most likely to say their use of cash had decreased.

Observed behaviour in terms of cash shares estimated from the DSI seems to align with respondents' reported behaviour to use more or less cash. Those who say the pandemic decreased their use of cash had a cash volume share of 17%, whereas those who said the pandemic did not affect (or increased) their use of cash had a volume share of 26%. Similarly, the value shares were different between the two groups, at 9% and 17%, respectively. Some of the highest cash shares discussed in this report are observed among those who said their use of cash stayed the same or increased due to the pandemic. For example, these respondents, who were also low-income earners, had a cash volume share of 35% and value share of 25%.

Finally, we comment on the use of cash during the COVID-19 pandemic as it relates to the adoption and use of private digital currencies such as Bitcoin. Balutel et al. (2022a) and Balutel et al. (2022b) document the results from the 2021 BTCOS, which was conducted in December 2021 after the MOP. While the level of Bitcoin ownership in Canada rose to 13% in 2021 (from 5% in previous years), this increase did not represent a shift away from cash toward digital currency alternatives for making payments. To the contrary, the authors show that Canadians currently view and use Bitcoin primarily as an investment product. The rise in Bitcoin ownership was associated with an overall increase in savings and investment more broadly during the pandemic, together with more widely available user-friendly platforms for buying Bitcoin. Additionally, **Chart 13**, taken directly from Balutel et al. (2022b), shows that Bitcoin owners actually tend to hold much higher amounts of cash than non-owners. This extends a previous finding from 2017 and 2018, which is analyzed in more detail in Balutel et al. (2022d).

6.2 Number and composition of payments

The COVID-19 pandemic affected the way Canadians shop and pay for things. One key reason for this was that public health restrictions reduced the level of in-person economic activity. Evidence from a variety of sources shows that this reduction in activity happened abruptly at the onset of the pandemic and persisted into early 2022. For example, data from commercial real estate company Avison Young show that foot traffic to their retail properties

[22] Respondents could also answer "not applicable," which accounted for 4% of responses to this question.

dropped by 80% in early April of 2020 and had recovered to only 77% of pre-pandemic levels by the end of November 2021.[23] Statistics Canada data show that the number of active businesses in the retail trade, accommodation and food services and other services categories had also not yet returned to pre-pandemic levels by the end of 2021 (**Chart 14**).

A similar story can be seen in **Chart 15** and **Chart 16** that show more directly relevant survey evidence on retail payments from the CFM. The CFM allows us to estimate the number of in-person and online retail purchases made by Canadian consumers each month. It also allows us to compare the pre-pandemic period to the COVID-19 pandemic for this particular metric (**Chart 15**).[24] Once again, the CFM data show a noticeable decline in the number of in-person purchases at the beginning of the pandemic, whereas the number of online purchases increased slightly. The lower level of in-person shopping persisted to the end of 2021, with an estimated 18 monthly purchases observed in November compared with an average of 21 before the pandemic.

Because cash purchases are made almost exclusively in person, this reduction of in-person shopping has naturally decreased cash use at the point of sale as measured by the CFM (**Chart 16**). The volume share of cash estimated from the CFM was 28% in the year leading up to the pandemic, and this compares similarly with the 33% observed from the 2017 MOP DSI. The diary-based estimates of cash volume shares during the pandemic from the November 2020 CAS and the 2021 MOP were both 22%, compared with a 19% average estimated from the CFM. A naive back-of-the-envelope calculation shows that, had a payment diary survey been conducted just before the pandemic, a reasonable estimate of the cash share could be

$$32\% = 28\% \times (22\% \div 19\%),$$

in late 2019 to early 2020. In other words, the CFM survey evidence suggests that cash use for payments was likely quite stable from 2017 to 2020, but significantly decreased when the COVID-19 pandemic hit.

An additional factor affecting cash payments during the pandemic was businesses steering consumers away from using cash or encouraging the use of contactless payments over concern about virus transmission. **Table 15** shows the rates of various incidents reported in the previous week by consumers when making payments. At the start of the pandemic, 12% of consumers reported actually being unable to use cash at a store or business; however, this fell to just 3% as of November 2021. Similar trends were observed for reports of signs saying cash is not accepted or hearing news reports about businesses not accepting cash. In contrast, around 15% of consumers reported throughout the pandemic that they saw a sign that cash is still accepted, but other methods of payment are preferred.

Evidence from the Bank's 2021–22 Merchant Acceptance Survey (MAS) indicates that the actual level of cash acceptance by small and medium-sized businesses in Canada remained very high in 2021 (Welte and Wu, 2022). Results from the MAS show that 97% of such businesses accept cash as a method of payment, compared with 94% and 96% in 2015 and

[23] Source: The Vitality Index; AVANT by Avison Young.

[24] For the CAS, CPS and MOP surveys conducted during the pandemic, we can also convert weekly purchase estimates to monthly and line up the results against the CFM. The estimates from the CAS, CPS and MOP tend to be higher for the number of in-person purchases. The CFM estimates may be subject to recall bias as respondents have more difficulty remembering small-value purchases they made over the past month. See Appendix C for further details.

2018 respectively. However, it seems the pandemic prompted small businesses in particular to add card-acceptance capabilities. The share of businesses accepting debit and credit cards was 88% for both in 2021, up from 67% and 68%, respectively, in 2018. Therefore, consumers had more opportunities to use cards during the pandemic than they had previously, when they could shop in-person.

A final consideration with respect to the impact of COVID-19 on payments is related to fraud. The overall incidence of fraud and scams increased in 2021 as fraudsters exploited uncertainty due to the pandemic and increased online activity by consumers.[25] According to the Canadian Anti-Fraud Centre, identity fraud and extortion were the two most reported types of fraud in 2020 and 2021. The number of reports of each nearly doubled in 2021, from 17,390 to 30,361 and from 16,970 to 30,849, respectively.

Table 16 shows reported incidences of payment-related fraud from the 2017 and 2021 MOP SQ, along with median dollar amounts where available. In some cases, the levels of fraud were similar or lower than in 2017. For example, identity theft and experiences with compromised data while using credit cards were both 1% in 2021, compared with 4% and 8%, respectively, in 2017. However, rates of identify theft through mobile apps were 4% overall. This is a notably high level given that mobile payments accounted for just 4% of payments (**Table 8**) and were used by at most 15% of Canadians in the previous week (**Table 7**). There was also an uptick in reported experiences of having personal data compromised while banking online.

7 Conclusion

This paper documents results from the 2021 MOP Survey. From the SQ, we find that while fewer Canadians are holding cash, those who do have cash tended to hold higher amounts over time. This is associated with fewer trips to obtain cash, but larger amounts withdrawn for a given trip, on average. Debit and credit card ownership were fairly stable from 2017 to 2021, and Canadians generally have high access to bank accounts and credit cards. Based on use in the past week, a nontrivial percentage of Canadians reported experiences with alternative payment methods, such as mobile apps or Interac e-Transfer.

Based on the DSI, we find that cash use in terms of volume declined across many dimensions, including for most demographic groups, purchase types and transaction value ranges. However, the dollar amount spent using cash remained stable compared with 2017. Finally, views about the features of cash have changed somewhat in recent years, though cash is still viewed quite positively in terms of acceptance, cost, ease of use and security. Most Canadians have no plans to stop using cash in the future.

Of course, these changes have not taken place in a vacuum. The COVID-19 pandemic has undoubtedly contributed to at least some portion of the differences observed between the 2021 MOP and past iterations of the survey. Uncertainty due to the pandemic drove increased demand for cash over and above the stable level of growth observed in past decades. Data from the Interac network highlight the sudden and persistent changes to cash versus

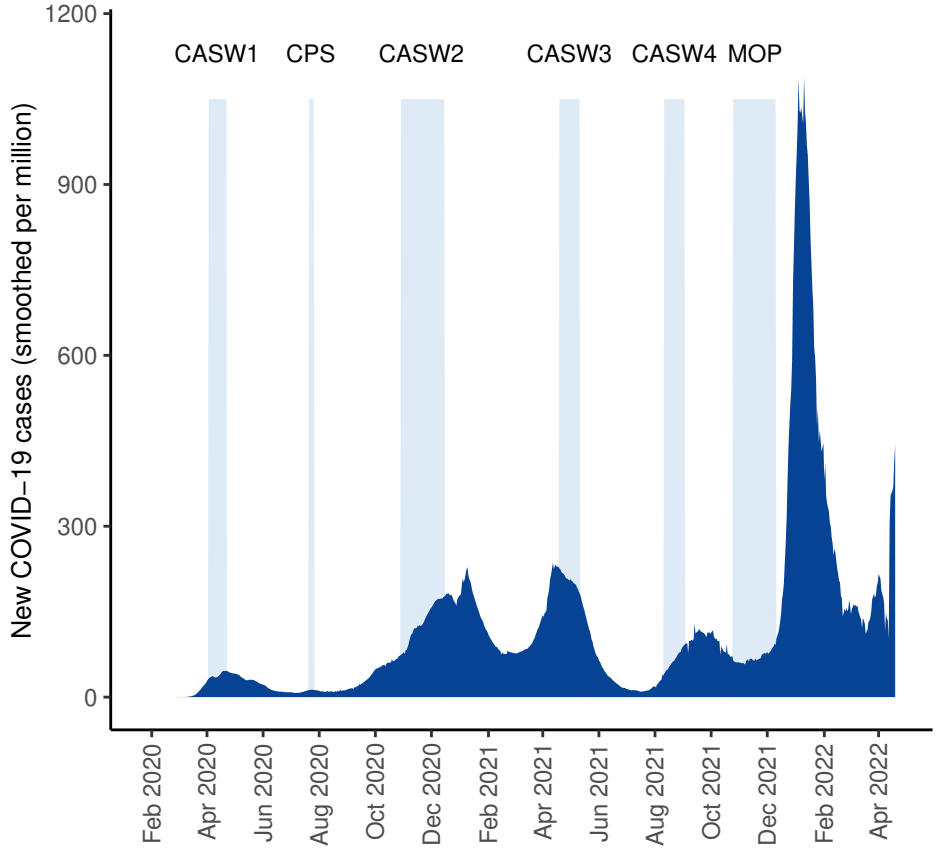
[25] For example, see RCMP seeing 'significant increase' in fraudulent activity in Canada since 2020; and Understanding fraud trends during COVID-19.

debit card activity. Canadians during the pandemic made fewer in-person purchases, which particularly affected the volume share of cash.

Going forward, CUR-ERA plans to conduct annual survey updates. Monitoring developments more frequently is important to better understand how views and use of cash are evolving with the pandemic. Additionally, developments in the payments landscape in general are ongoing and fast-changing. For example, as of October 6, 2022, merchants in Canada can charge a fee of up to 2.4% for credit card transactions. While rewards programs have made credit cards more popular (Arango et al., 2015; Felt et al., 2021), the new transaction fees could change the cost-benefit analysis consumers face when they choose to pay with a credit card. Consumers' decisions will ultimately depend on how willing merchants are to adopt pricing strategies that differentiate between methods of payment (Huynh et al., 2022). The Bank's ongoing surveys of consumers and merchants will address these and other relevant topics as necessary.

Charts

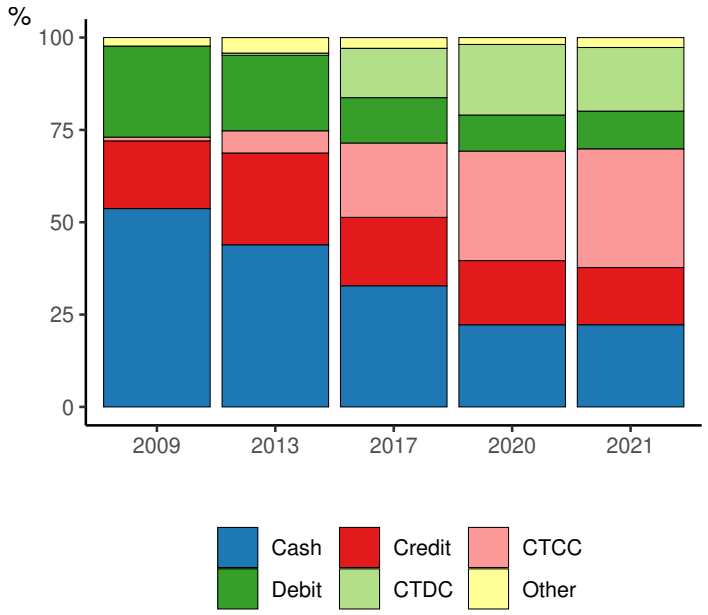
Chart 1: Bank of Canada surveys and COVID-19 cases



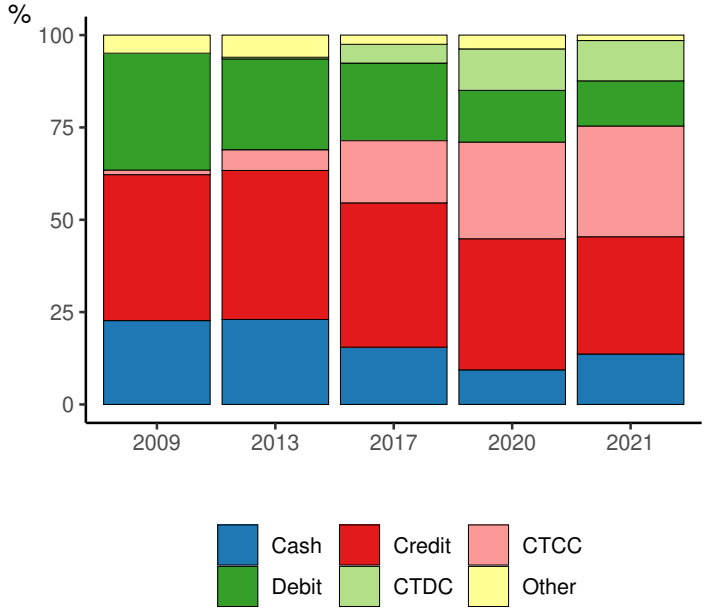
Note: This chart plots new cases per million of COVID-19 in Canada (dark blue) along with days when various payments surveys of the Currency Department's Economic Research and Analysis team were in the field (light blue). The various waves of the Cash Alternative Survey (CAS), aside from the November 2020 CAS (CASW2), consisted of a survey questionnaire. The Cash Pulse Survey (CPS) was an abbreviated version of the April 2020 CAS (CASW1). Field work took longer to complete for the CASW2 and MOP because both contained a survey questionnaire and a diary survey instrument.

Chart 2: Payment shares over time from payment diary studies

a. Volume shares

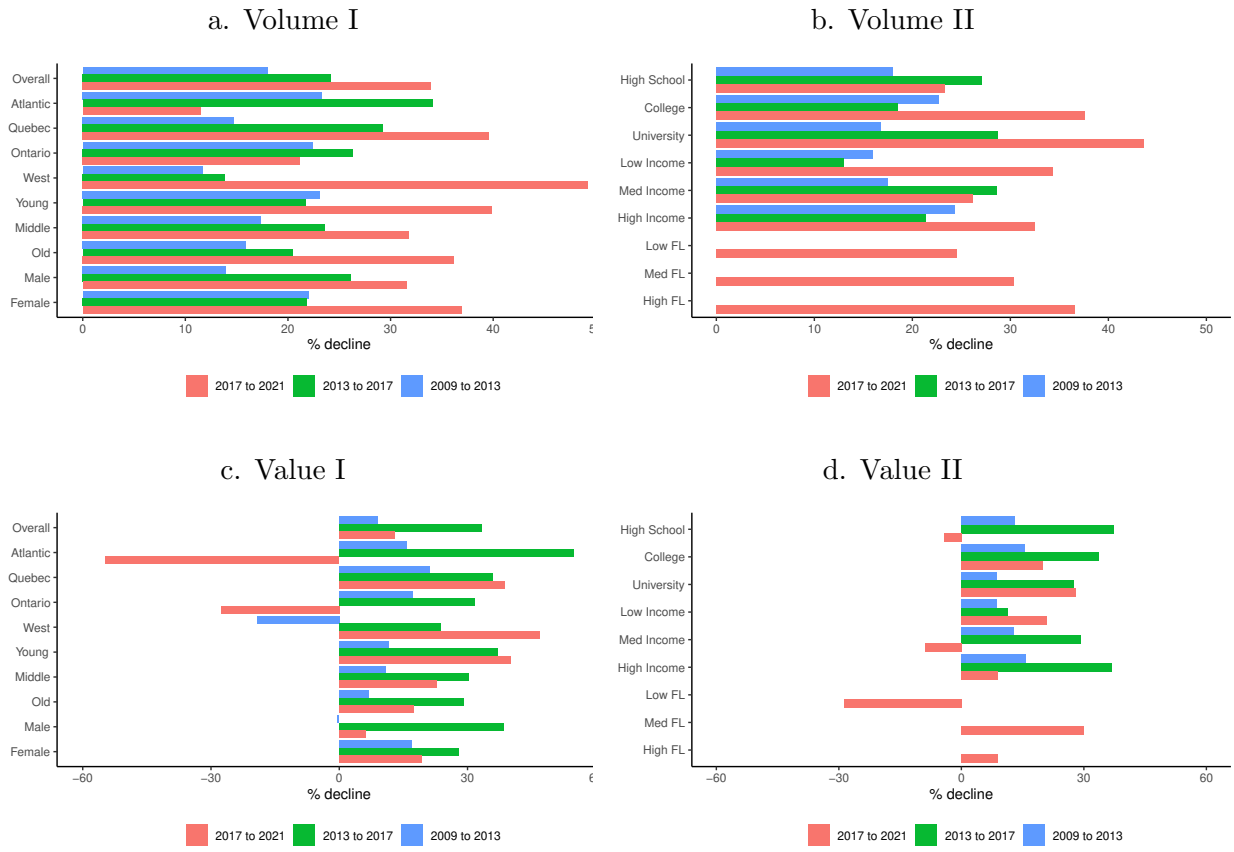


b. Value shares



Note: This chart shows the share of transactions by method of payment. Panel a shows the shares according to the number of transactions, while panel b shows the shares according to the dollar value of transactions. CTDC means contactless debit card payments. CTCC means contactless credit card payments. Data are from the 2009, 2013, 2017 and 2021 Methods-of-Payment diary survey instrument (DSI) and the November 2020 Cash Alternative Survey DSI (DSI weights used).

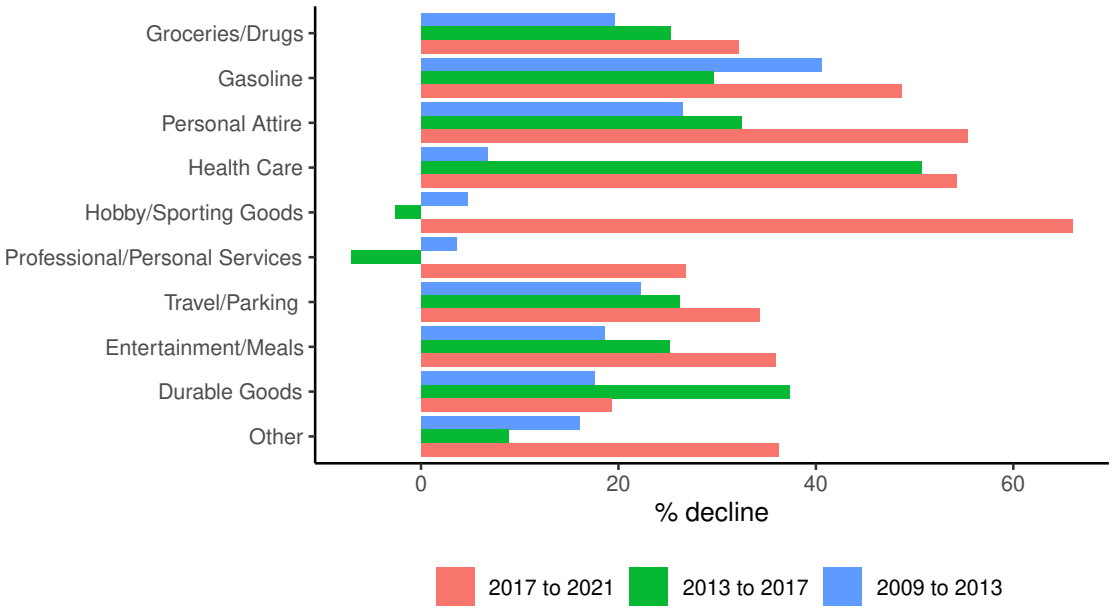
Chart 3: Percent changes in cash shares over time, by demographics



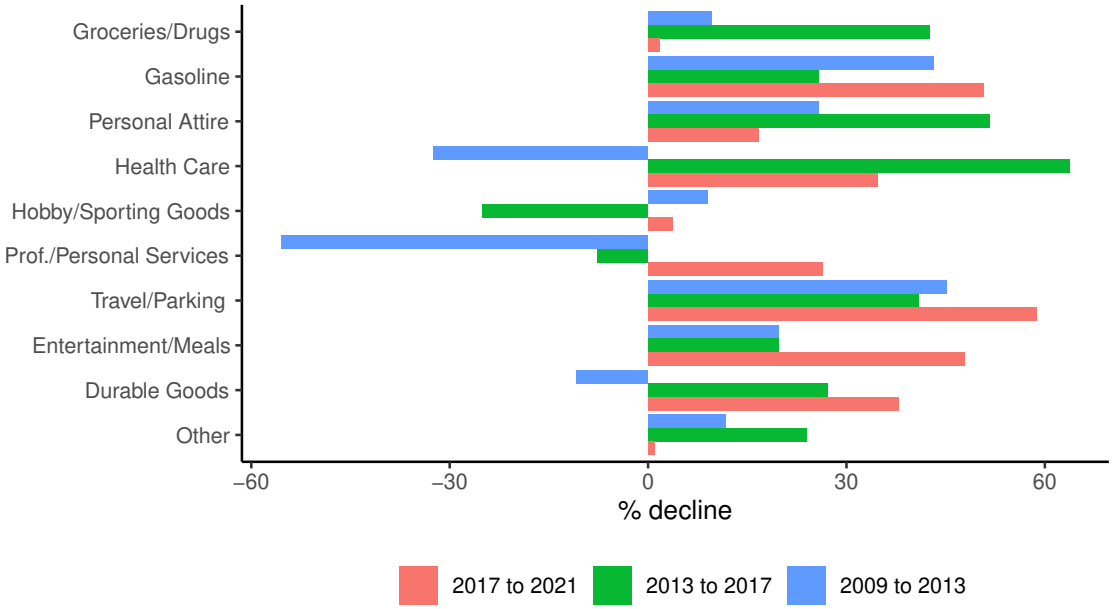
Note: This chart shows the percentage declines (positive values) or increases (negative values) in the cash shares for both volume (panels a and b) and value (panels c and d) across 2009 to 2013, 2013 to 2017 and 2017 to 2021, according to various demographic categories.

Chart 4: Percent changes in cash shares over time, by type of purchase

a. Volume



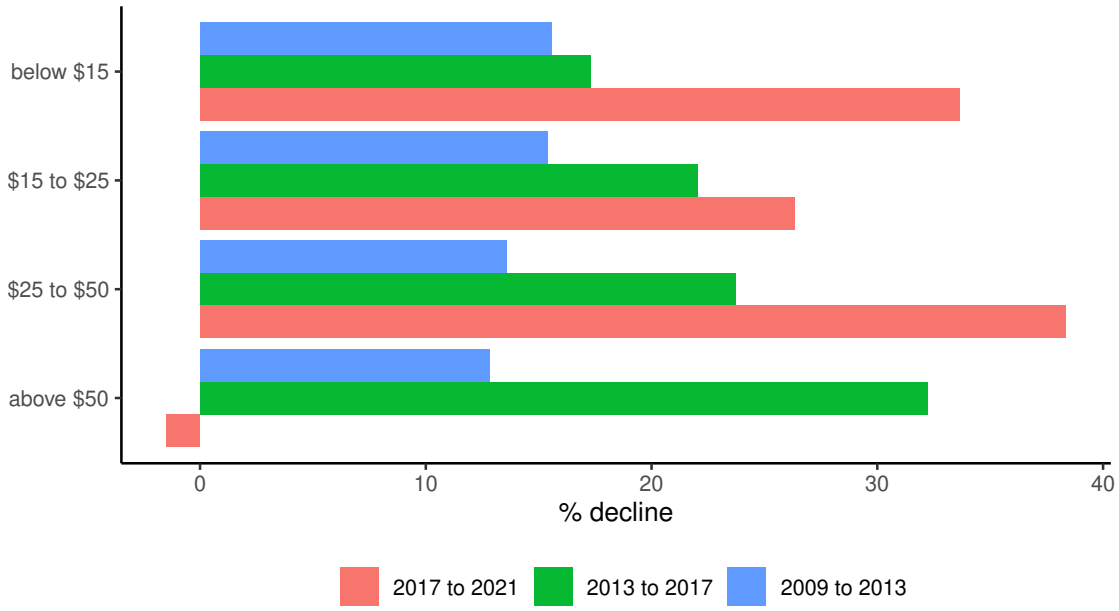
b. Value



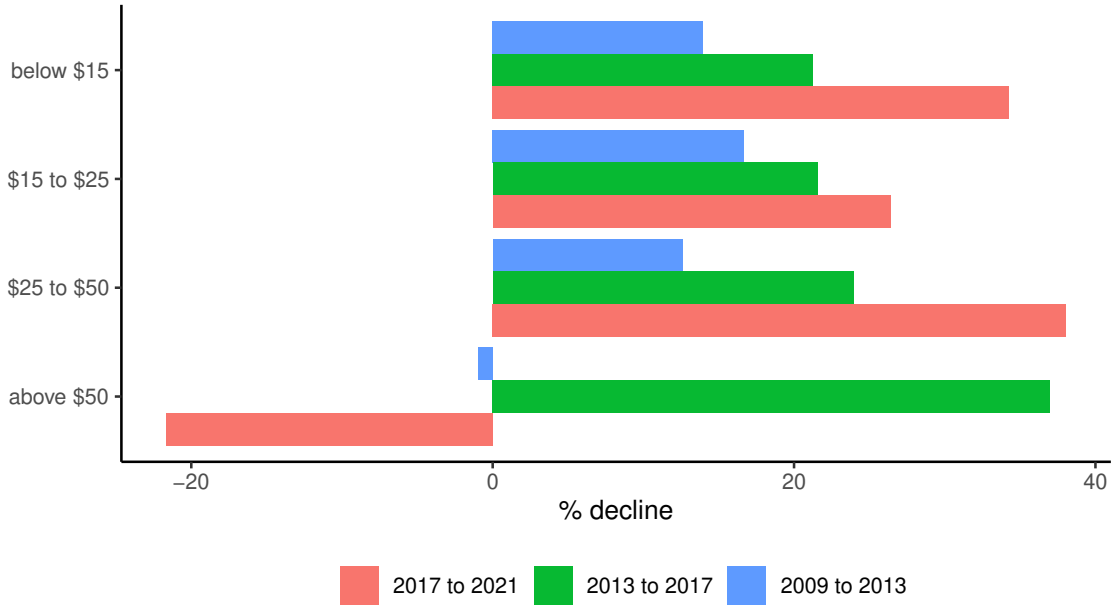
Note: This chart shows the percentage declines (positive values) or increases (negative values) in the cash shares for both volume (panel a) and value (panels b) across 2009 to 2013, 2013 to 2017 and 2017 to 2021, according to various purchase type categories.

Chart 5: Percent changes in cash shares over time, by transaction value

a. Volume



b. Value

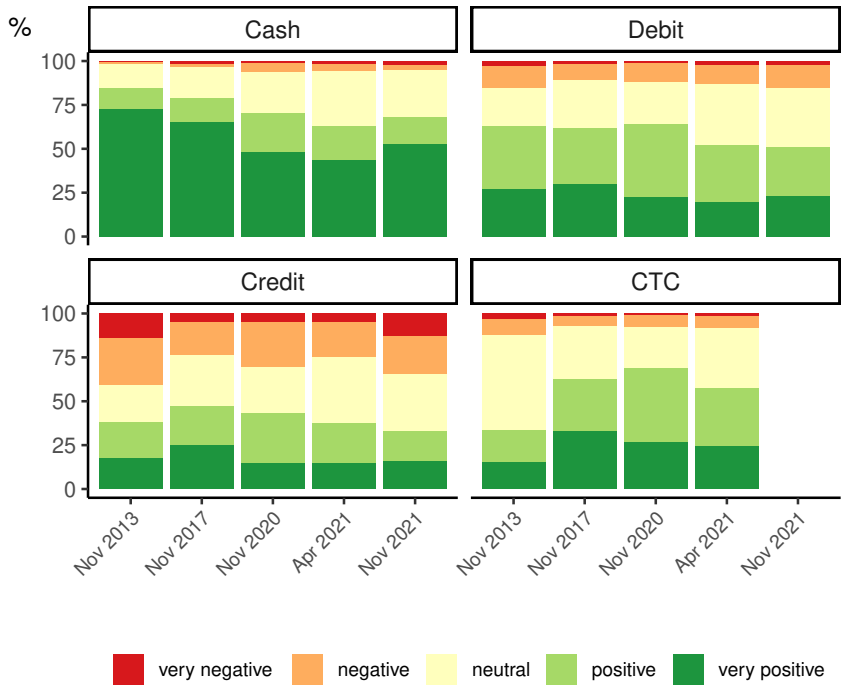


Note: This chart shows the percentage declines (positive values) or increases (negative values) in the cash shares for both volume (panel a) and value (panels b) across 2009 to 2013, 2013 to 2017 and 2017 to 2021, according to various transaction value categories.

Chart 6: Perceptions of payment features

a. Acceptance

b. Cost



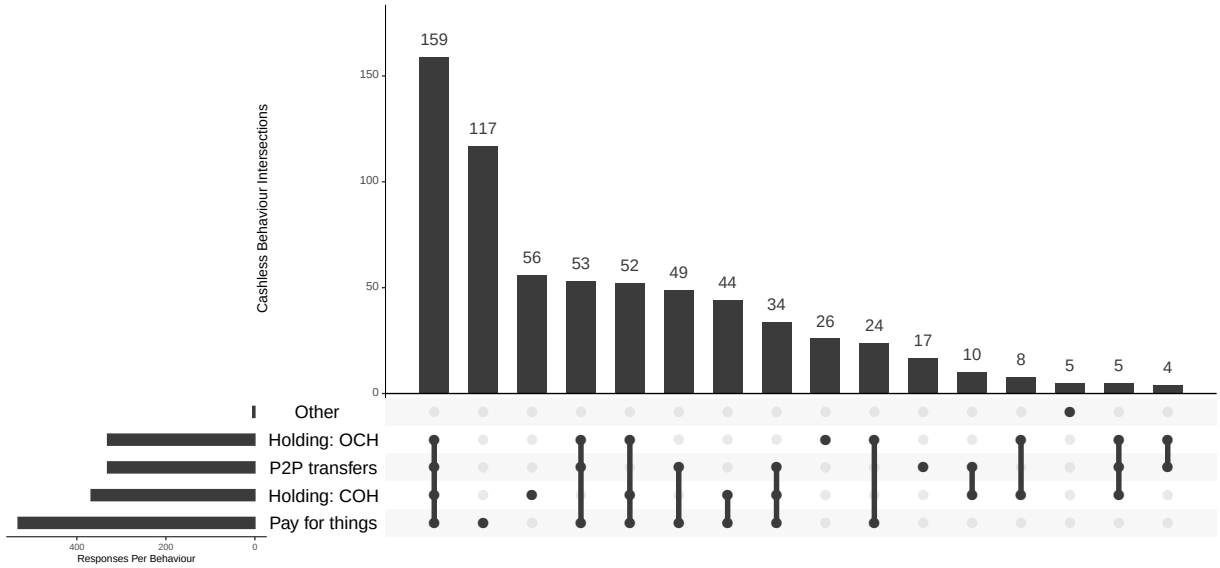
c. Ease of use

d. Security

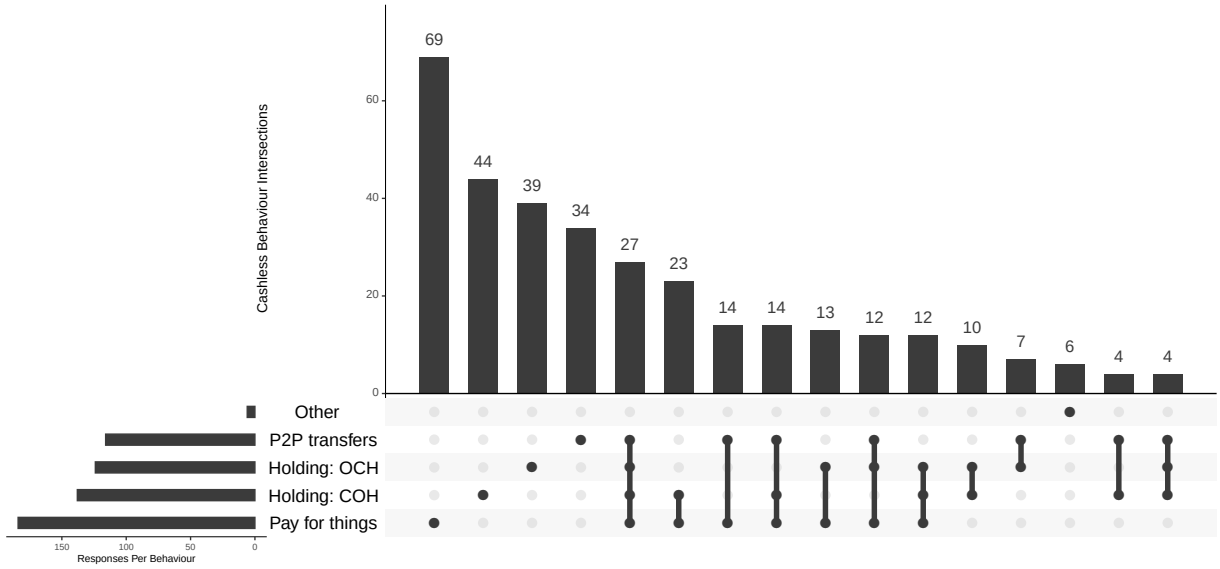
Note: These graphs show the ratings of various payment features on a scale of 1 (very negative) to 5 (very positive). Definitions of the individual features are provided in Appendix F. CTC is the contactless feature of a credit or debit card. Data are from the 2013, 2017 and 2021 Methods-of-Payment surveys and the November 2020 and April 2021 Cash Alternative Surveys.

Chart 7: Upset plots of cashless behaviour

a. Currently cashless

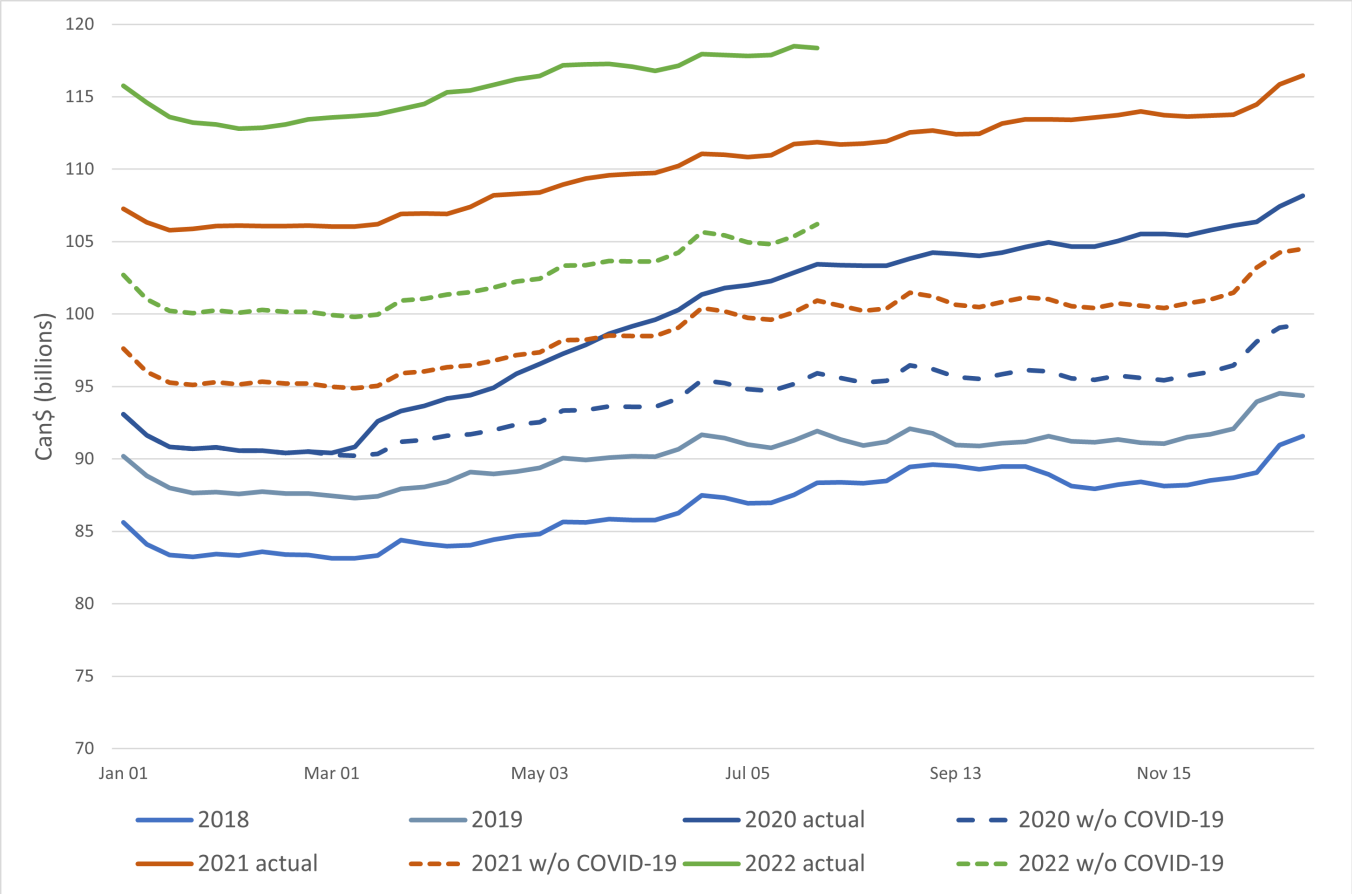


b. Future plans to go cashless



Note: Among those who report being cashless, or who plan to stop using cash in the future, the 2021 Methods-of-Payment Survey asks which specific activities they have stopped or plan to stop. These upset plots show how often respondents selected each behaviour at least once (left panel of horizontal bars), along with counts of the detailed response patterns for all possible selections (right panel of vertical bars). Panel a shows responses for those who report being currently cashless, while panel b shows responses for those who say they plan to stop using cash. "Pay for things" means using cash to pay for things. "Holding: COH" means holding cash in my wallet, purse or pockets. "Holding: OCH" means holding other cash (e.g., in my car or home). "P2P transfers" means using cash to transfer money to friends or family.

Chart 8: Total value of bank notes in circulation, 2018–22

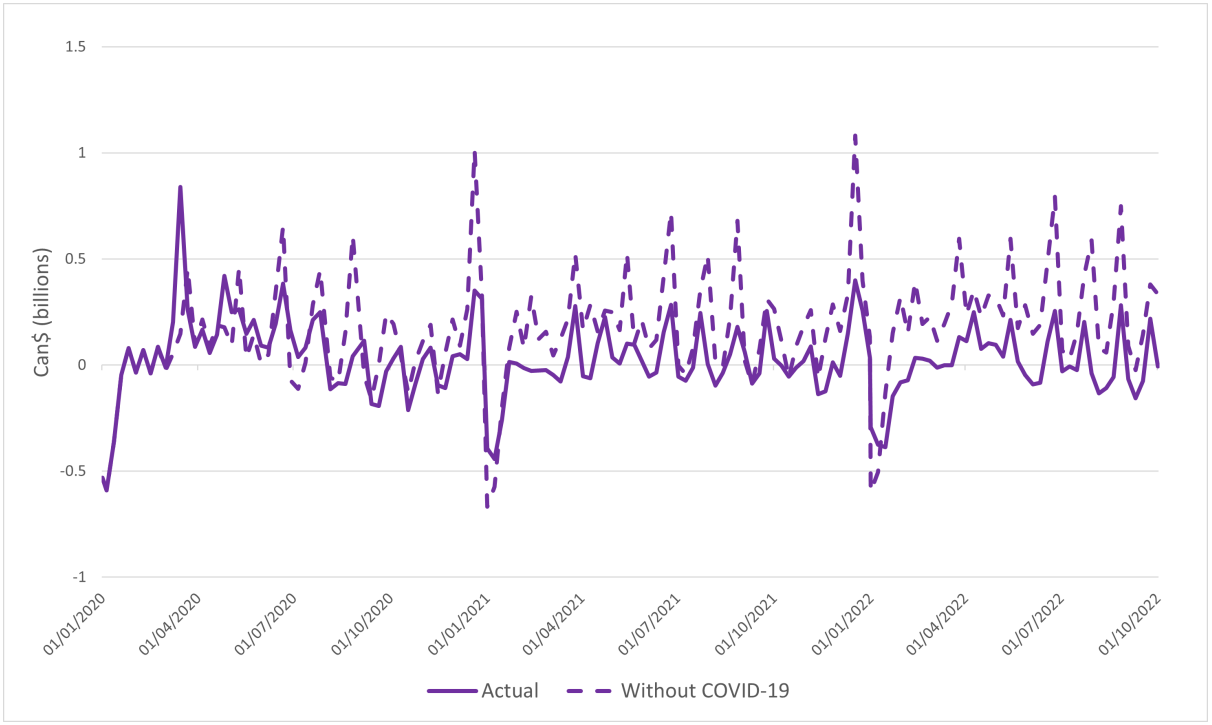


Note: "Without COVID-19" counterfactual estimates are constructed using average weekly growth rates from 2017–19.

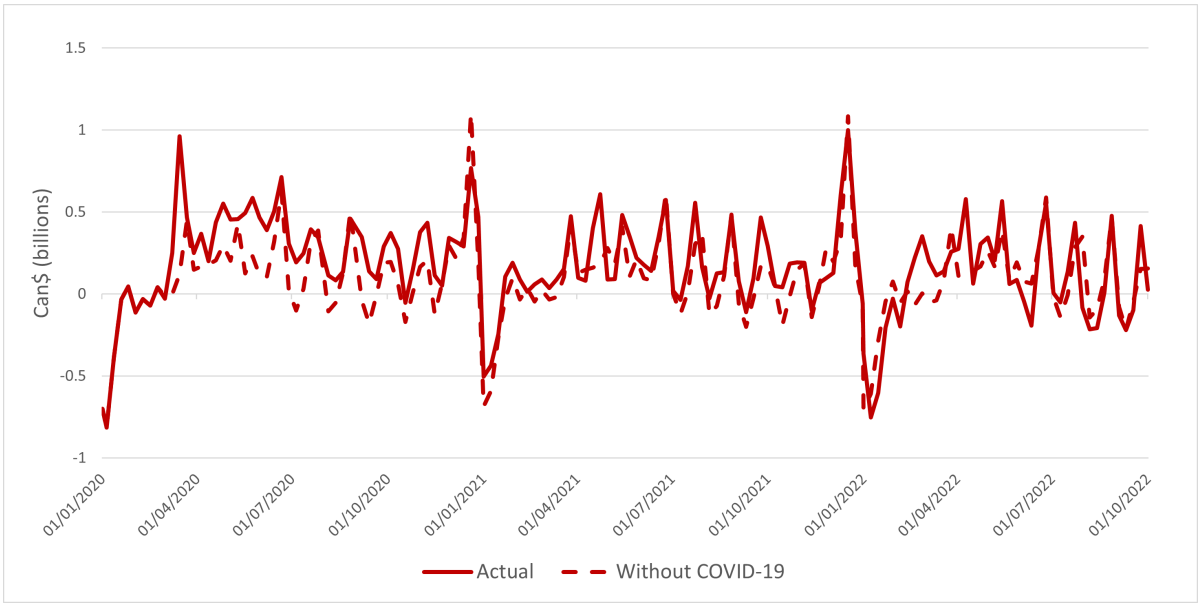
Sources: Bank of Canada and Bank of Canada calculations Last observation: July 2022

Chart 9: Net bank note withdrawals from the Bank of Canada, 2020–22

a. $5 to $20



b. $50 to $100

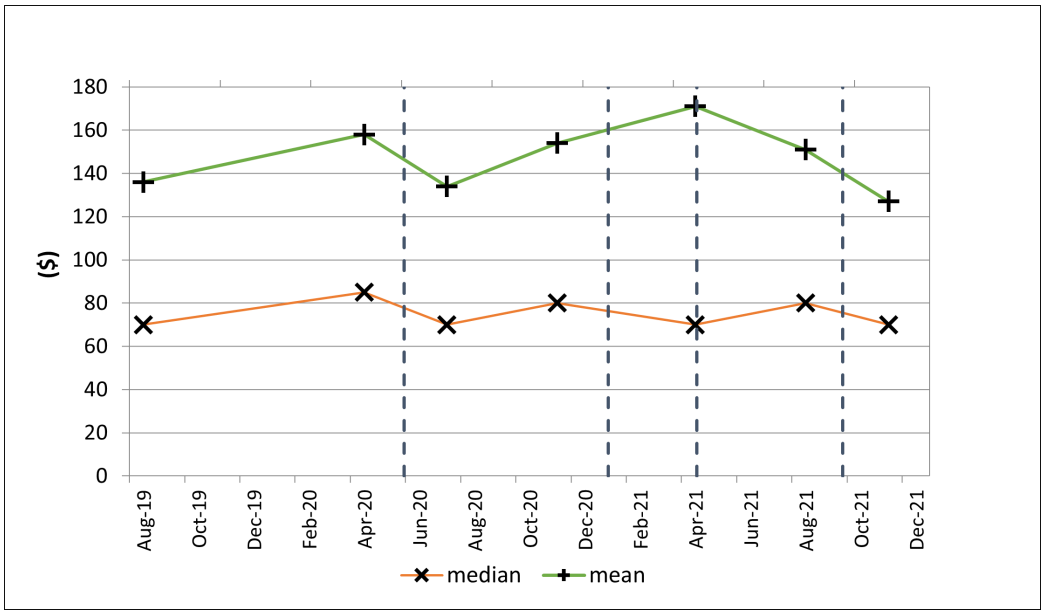


Note: "Without COVID-19" refers to a counterfactual scenario where net withdrawals are based on the average weekly change in notes outstanding from 2017–19.

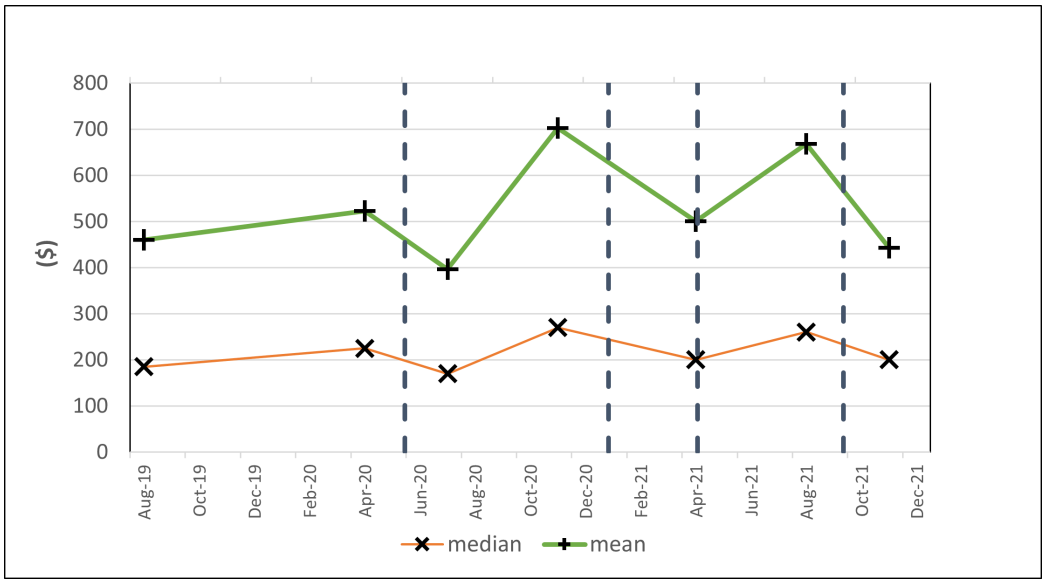
Sources: Bank of Canada and Bank of Canada calculations Last observation: October 2022

Chart 10: Consumer cash holdings during the COVID-19 pandemic

a. Cash on hand



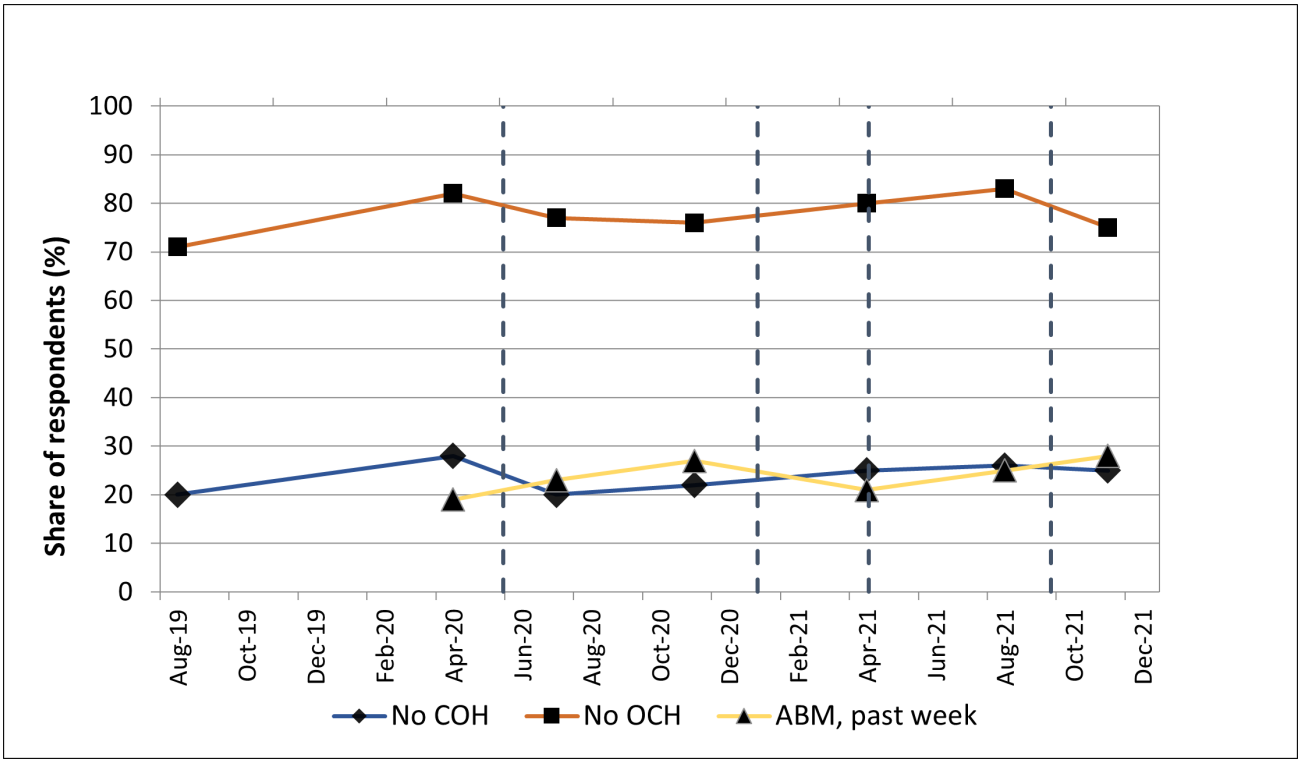
b. Other cash



Note: Vertical dashed lines indicate the timing of peaks of the various waves of the pandemic based on active case counts. "Cash on hand" is the amount of cash in a respondent's wallet, purse or pockets. "Other cash" is defined as cash held outside of a bank in "your car, house, or another safe place." For more about data sources, see Table 1.

Source: Bank of Canada

Chart 11: Cash management during the COVID-19 pandemic

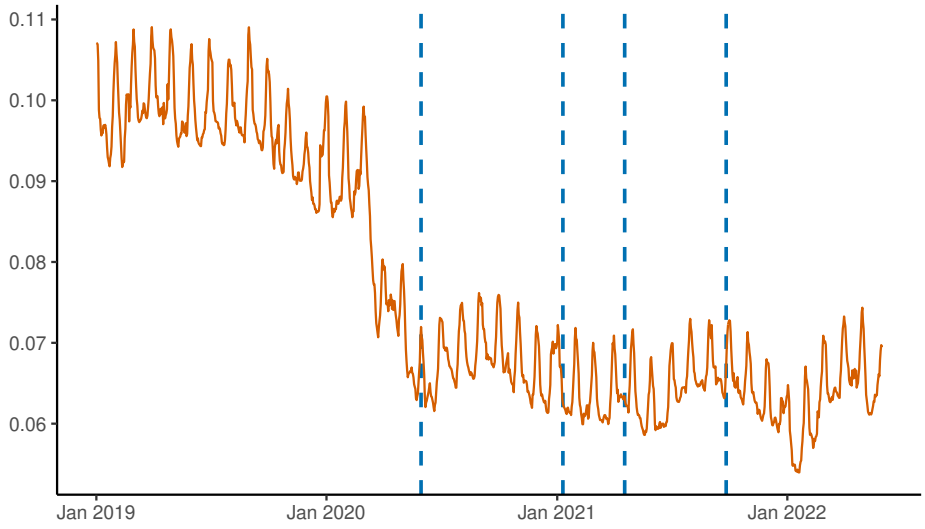


Note: This chart shows the share of Canadians holding zero cash and withdrawing cash in the past week. Vertical dashed lines indicate the timing of peaks of the various waves of the pandemic based on active case counts. COH is cash on hand, defined as cash held in a respondent's "wallet, purse or pockets." OCH is other cash holdings, defined as cash held outside of a bank in "your car, house, or another safe place." For more about data sources, see Table 1.

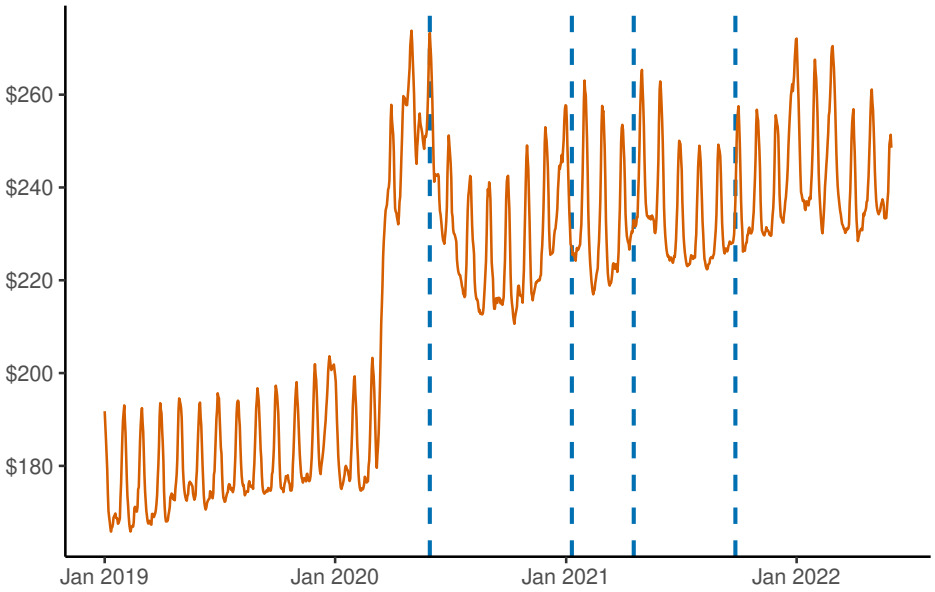
Sources: Bank of Canada

Chart 12: Interac data on ABM cash withdrawals and debit card payments

a. Cash-card ratio, number of transactions



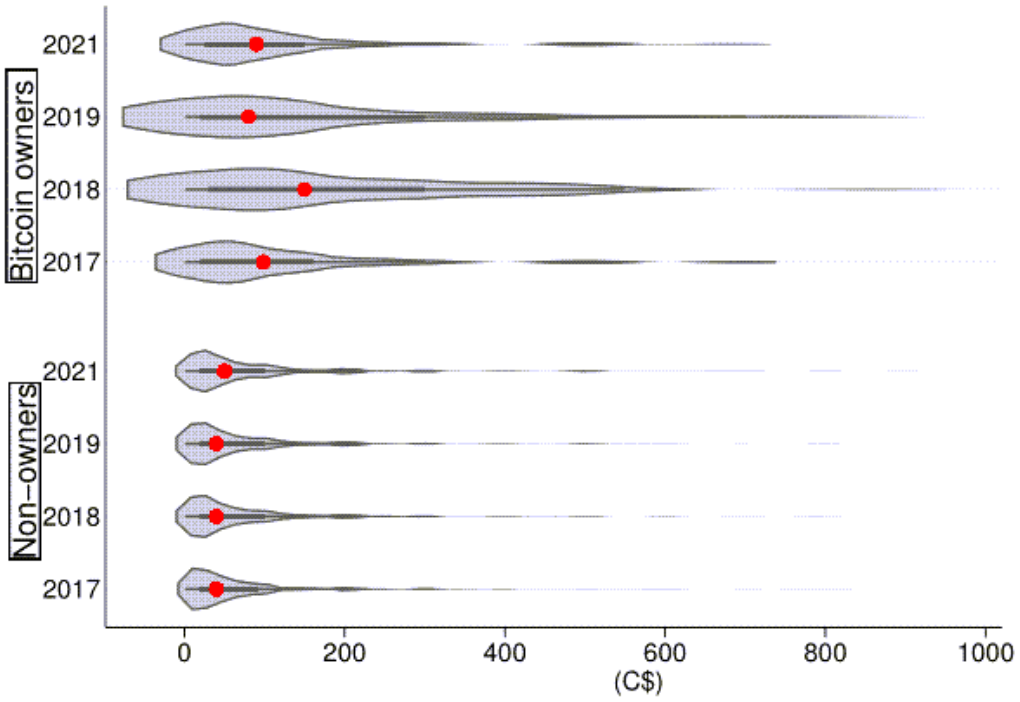
b. Average value of an ABM withdrawal



Note: This chart extends calculations from Dahlhaus and Welte (2021). Cash-card ratio is the number of ABM withdrawals divided by the number of debit card payments made over the Interac network. Vertical dashed lines indicate the timing of peaks of the various waves of the pandemic according to active case counts.

Source: Interac Last observation: May 31, 2022

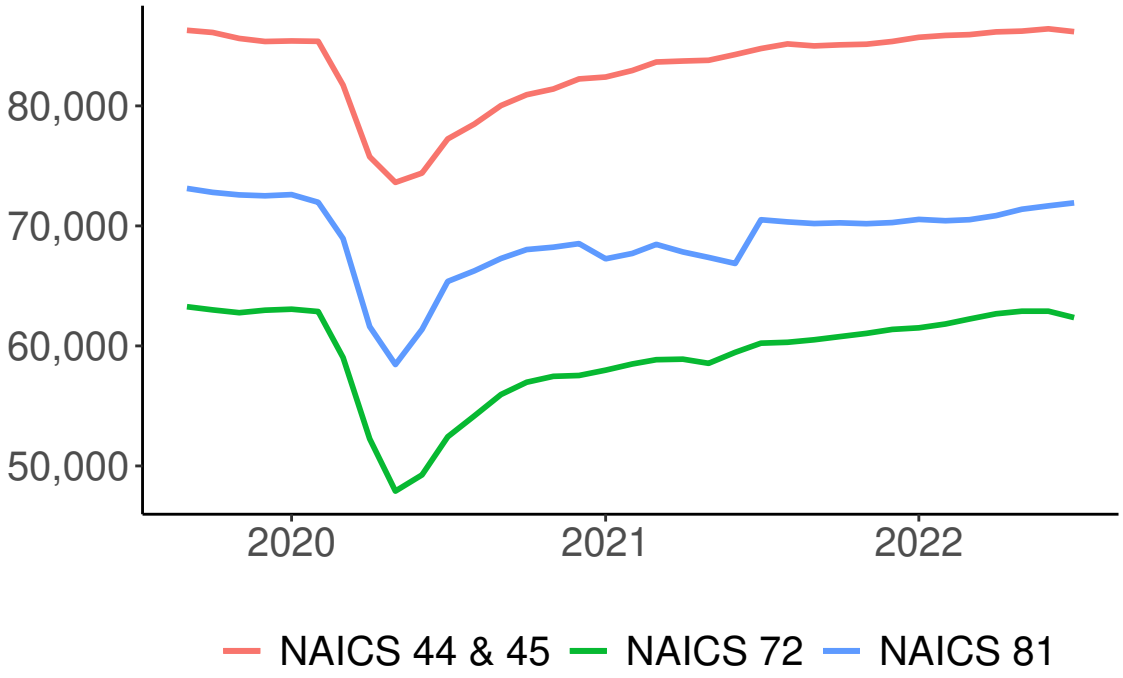
Chart 13: Cash on hand and Bitcoin ownership in Canada



Note: This figure is called a violin plot of cash on hand for Bitcoin owners and non-owners over the period 2017–2021. Cash on hand is defined as the reported amount of cash in a respondent's "wallet, purse or pocket." For each year and ownership category, the violin plot shows the distribution of cash on hand estimated via kernel density (in grey): the vertical grey height indicates the amount of people in the sample holding the given amount of cash. The red dot indicates the median value of cash on hand.

Source: Bitcoin Omnibus Survey

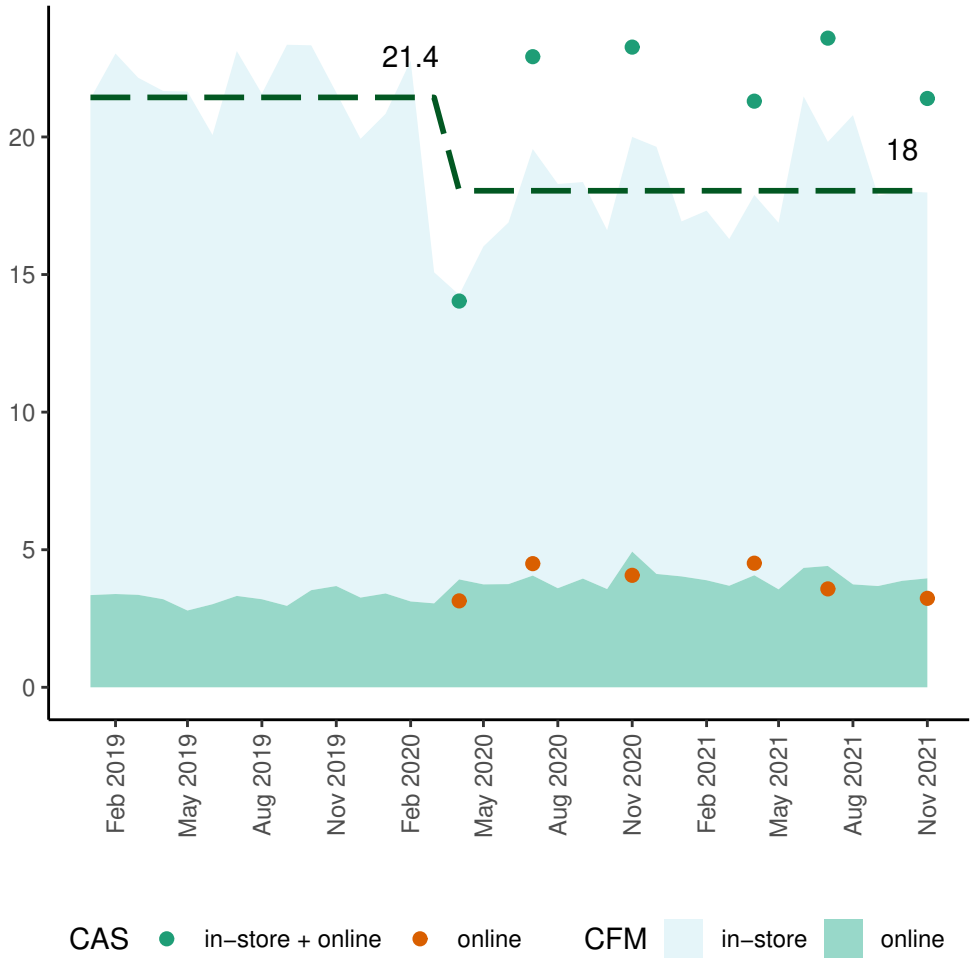
Chart 14: Number of active businesses in Canada



Note: "NAICS 44 & 45" are retail trade. "NAICS 72" is accommodation and food services. "NAICS 81" is other services (except public administration).

Source: Statistics Canada - Table 33-10-0270-01

Chart 15: Average monthly purchases



Note: This chart shows estimates of the average monthly number of purchases made by Canadian consumers, both in-person and online. CAS is Cash Alternative Survey but represents data from other Bank of Canada surveys conducted during the pandemic (for more, see Table 1). These survey questionnaires asked about purchases made in the past week, and estimates are converted to monthly. CFM is the Canadian Financial Monitor Survey. This survey questionnaire asks about purchases made in the past month. Dashed horizontal lines indicate the average number of monthly purchases (both in-person and online) before and during the pandemic. See Appendix C for further details.

Chart 16: Cash volume share estimates

Note: This chart shows estimates of the cash volume share at the point-of-sale. CAS is Cash Alternative Survey but represents data from other Bank of Canada surveys conducted during the pandemic (for more, see Table 1). Share estimates are based on purchases conducted in the past week. DSI is diary survey instrument. DSI estimates are based on the three-day payments conducted with the Cash Alternative Survey in November 2020, and the 2021 Methods-of-Payment Survey. CFM is the Canadian Financial Monitor Survey. Share estimates are based on purchases conducted in the past month. Dashed horizontal lines indicate the average cash volume shares before and during the pandemic from the CFM. See Appendix C for further details.

Tables

Table 1: Bank of Canada consumer survey research program

Date	**Survey**	**Acronym**	**N – survey**	**N – diary**	**Mode**
Nov. 2009	Methods-of-Payment	MOP	6,868	3,405	Paper + online
Nov. 2013	Methods-of-Payment	MOP	3,663	2,599	Paper + online
Dec. 2016	Bitcoin Omnibus Survey	BTCOS	1,997		Online
Nov. 2017	Methods-of-Payment	MOP	3,123	2,187	Paper + online
Dec. 2017	Bitcoin Omnibus Survey	BTCOS	2,623		Online
Dec. 2018	Bitcoin Omnibus Survey	BTCOS	1,987		Online
Aug. 2019	Cash Alternative Survey	CASW0	2,235		Online
Dec. 2019	Bitcoin Omnibus Survey	BTCOS	1,987		Online
Apr. 2020	Cash Alternative Survey	CASW1	4,192		Online
Jul. 2020	Cash Pulse Survey	CPS	1,998		Online
Nov. 2020	Cash Alternative Survey	CASW2	3,893	2,084	Online
Apr. 2021	Cash Alternative Survey	CASW3	2,565		Online
Aug. 2021	Cash Alternative Survey	CASW4	3,500		Online
Nov. 2021	Methods-of-Payment	MOP	4,725	2,866	Online

Note: This table documents basic features of the consumer-focused payment surveys conducted by the Bank of Canada. The Currency Department's Economic Research and Analysis team (CUR-ERA) designed the surveys, which were implemented in collaboration with survey partner Ipsos.

Table 2: Cash management

		Cash on hand		**Other cash**		**Paid in cash**	**Family/friends**
		mean $	% zero cash	median $	% zero cash	%	%
	2009	72	5	100	47		5
	2013	81	6	300	65	5	4
	2017	106	11	215	56	3	4
	2021	127	25	200	78	4	13
REGION	AT	137	27	150	79	3	11
	QC	111	26	180	81	4	14
	ON	127	23	270	75	3	14
	PR	143	28	220	81	3	15
	BC	128	25	200	79	5	8
AGE	18-34	149	36	185	76	6	21
	35-54	110	31	200	80	3	14
	55+	126	13	300	78	2	7
GENDER	Male	140	24	255	77	4	11
	Female	114	26	200	80	4	15
EDUCATION	High school	129	28	205	81	4	13
	College	127	25	200	79	4	13
	University	124	21	205	73	3	12
INCOME	$45K	114	31	120	84	5	15
	$45K-$85K	126	23	225	77	4	15
	$85K+	134	23	220	76	3	11
FIN. LIT.	Low	135	36	160	80	6	17
	Med	130	28	200	82	3	16
	High	123	19	250	75	3	10

Note: "Cash on hand" is the amount of cash in a respondent's wallet, purse or pockets. "Other cash" is the amount of cash not held in a bank, but stored elsewhere such as at home, in a car, etc. The "Paid in cash" and "Family/friends" columns show the percentages of respondents who reported receiving cash at least once in the past week. These categories were combined in a single question in 2009. Demographic breakdowns are from the 2021 Methods-of-Payment Survey and the categories are described in Appendix D.

Table 3: Cash on hand, by denomination

		$100 %	**$50** %	**$20** %	**$10** %	**$5** %
	2009	5	14	83	56	75
	2013	4	11	71	48	62
	2017	9	17	68	47	54
	2021	12	23	73	50	65
REGION	AT	17	23	65	44	67
	QC	8	15	76	49	61
	ON	12	27	72	49	66
	PR	14	24	75	52	69
	BC	13	25	74	55	63
AGE	18-34	19	28	65	51	65
	35-54	11	20	72	45	63
	55+	9	23	78	53	67
GENDER	Male	13	27	74	50	65
	Female	11	19	72	50	65
EDUCATION	High school	13	22	72	51	63
	College	11	23	71	51	68
	University	12	25	76	48	66
INCOME	$45K	11	20	68	48	64
	$45K-$85K	12	20	73	52	64
	$85K+	12	25	75	49	66
FIN. LIT.	Low	22	26	57	44	60
	Med	12	22	72	51	66
	High	9	23	78	51	66

Note: This table shows the percentages of respondents holding a given denomination, among those who reported having a positive amount of cash on hand. "Cash on hand" is defined as cash held in a respondent's wallet, purse or pockets. Results from 2009 and 2013 are calculated from the diary (there was no such question in the survey questionnaire (SQ)), while 2017 and 2021 results are from the SQ. Demographic breakdowns are from the 2021 Methods-of-Payment Survey and the categories are described in Appendix D.

Table 4: Cash withdrawals

		ABM			Bank teller		
		mean #	% made w/d	avg. $	mean #	% made w/d	avg. $
	2009	4.3	44	113	1.6	15	236
	2013	2.7	37	118	0.7	6	236
	2017	2.3	27	140	0.6	3	289
	2021	1.7	28	160	0.4	6	341
REGION	AT	1.9	35	134	0.2	3	213
	QC	1.8	32	160	0.4	6	342
	ON	1.9	30	164	0.5	6	262
	PR	1.2	23	169	0.3	6	364
	BC	1.1	19	152	0.3	6	551
AGE	18-34	1.8	25	149	0.6	8	260
	35-54	1.7	29	145	0.3	4	204
	55+	1.5	29	179	0.3	6	475
GENDER	Male	1.9	33	171	0.5	7	336
	Female	1.4	24	146	0.3	4	349
EDUCATION	High school	1.8	30	148	0.5	7	356
	College	1.7	29	157	0.3	5	277
	University	1.4	25	185	0.3	5	370
INCOME	$45k	1.9	30	155	0.7	7	273
	$45k-$85k	1.7	28	149	0.4	8	312
	$85k+	1.6	29	174	0.3	5	395
FIN. LIT.	Low	2.2	30	135	0.8	10	185
	Med	1.7	29	144	0.4	7	472
	High	1.5	27	180	0.2	4	344

Note: This table shows measures of cash withdrawals made from either an automated banking machine (ABM) or at a bank teller. The "mean #" columns show the average number of withdrawals made in the past month. The 2021 numbers are converted to monthly by multiplying by 4.345, which is the average number of weeks in a month. The "% made w/d" columns reflects the percentage of respondents who made a withdrawal in the past week. In 2009, 2013 and 2017, we consider a respondent to have made withdrawal in the past week if they made at least three withdrawals in the past month. The "avg. $" columns show the average value of a withdrawal. In 2009, 2013 and 2017, the average was based on a question that asks about a "typical withdrawal." In 2021, the average was calculated based on the total amount withdrawn in the past week divided by the number of withdrawals made. Demographic breakdowns are from the 2021 Methods-of-Payment Survey and the categories are described in Appendix D.

Table 5: Payment card ownership

		Debit		Credit		SVC-S	SVC-M
		% own	% linked	% own	% linked	% own	% own
	2009	97		80		23	
	2013	98		82		27	12
	2017	99		89		27	21
	2021	98	17	87	31	7	7
REGION	AT	97	17	77	28	5	6
	QC	98	14	89	27	8	5
	ON	98	18	87	33	8	8
	PR	99	22	84	34	7	7
	BC	97	15	90	28	7	9
AGE	18-34	95	30	76	50	12	9
	35-54	99	17	90	35	8	8
	55+	100	8	92	15	4	6
GENDER	Male	99	18	88	33	8	7
	Female	98	16	86	28	7	8
EDUCATION	High school	97	20	76	25	8	5
	College	99	17	92	31	7	8
	University	99	13	97	38	7	11
INCOME	$45K	96	21	72	26	9	5
	$45K-$85K	99	17	86	30	6	7
	$85K+	99	16	94	35	8	9
FIN. LIT.	Low	91	24	68	44	12	6
	Med	99	19	84	27	7	7
	High	100	13	95	30	6	8

Note: This table shows the rates of payment card ownership for debit, credit and stored-value cards (SVC), also known as prepaid cards. SVC-S denotes store-branded prepaid cards and SVC-M denotes prepaid Visa, MasterCard or Amex cards. The "% linked" columns show the percentages of respondents who have linked at least one card to an online payment account or mobile app, among those who have at least one debit or credit card. Demographic breakdowns are from the 2021 Methods-of-Payment Survey and the categories are described in Appendix D.

Table 6: Bank account details and credit card revolving

		Monthly account fee	**Conditional on monthy account fee:**			**CC revolver**
			Paid fee	**Fee waived / refunded**	**Fee unpaid**	
		%	%	%	%	%
	2021	63	61	31	5	27
REGION	AT	74	66	26	5	29
	QC	65	60	25	12	29
	ON	61	58	36	3	23
	PR	62	68	26	4	33
	BC	59	59	37	3	24
AGE	18-34	57	68	26	2	29
	35-54	72	64	28	6	33
	55+	59	53	38	6	19
GENDER	Male	62	59	33	5	23
	Female	64	63	29	5	30
EDUCATION	High school	61	67	24	5	33
	College	65	63	29	6	28
	University	63	50	44	4	16
INCOME	$45K	61	72	21	4	38
	$45K-$85K	63	63	29	5	29
	$85K+	65	57	36	6	22
FIN. LIT.	Low	61	77	15	3	39
	Med	60	68	23	6	33
	High	65	52	41	5	19

Note: The first four columns show characteristics relating to fees on the main bank account reported by respondents. Column 1 shows the percentages of respondents who report having a "monthly account fee" on their main bank account, regardless of whether they paid the fee. Conditional on having an account fee, Columns 2–4 report the percentages of respondents based on their status with respect to paying that fee in the past month. The final column shows the percentages of respondents with a credit card who had a balance owning last month and did not pay off the full amount. Demographic breakdowns are from the 2021 Methods-of-Payment Survey and the categories are described in Appendix D.

Table 7: Alternative payment methods

		eTrans	**OnlinePA**	**Crypto**	**Mobile payment app**			
					BA	DW	PA	SB
		%	%	%	%	%	%	%
	2021	26	18	1	15	9	5	4
REGION	AT	32	20	1	11	6	6	5
	QC	28	16	1	13	6	4	1
	ON	26	18	1	16	10	5	5
	PR	26	19	1	16	10	6	5
	BC	24	19	1	14	11	7	6
AGE	18-34	34	23	2	22	15	8	6
	35-54	30	19	1	16	10	6	5
	55+	18	13	0	9	4	3	3
GENDER	Male	24	17	1	14	11	6	4
	Female	29	18	1	16	7	5	5
EDUCATION	High school	23	15	1	13	8	5	3
	College	30	20	1	18	8	6	5
	University	28	20	1	14	12	5	7
INCOME	$45K	24	15	1	13	6	5	3
	$45K-$85K	25	18	1	16	8	4	3
	$85K+	29	20	1	16	12	6	6
FIN. LIT.	Low	23	14	1	17	6	7	4
	Med	28	19	1	15	9	6	4
	High	27	19	1	13	10	4	5

Note: This table shows the percentages of respondents who have used the indicated payment method in the past week to make a purchase at a store or business. eTrans–Interac e-Transfer; OnlinePA–an online payment account not affiliated with a particular bank, e.g., PayPal; Crypto–cryptocurrency; BA–bank account management app; DW–digital wallet app, e.g., Apple Pay or Google Pay; PA–payment account app; SB–store-branded prepaid app. Demographic breakdowns are from the 2021 Methods-of-Payment Survey and the categories are described in Appendix D.

Table 8: Composition of payments, by MOP

	Cash	**Debit**	**CTDC**	**Credit**	**CTCC**	**Mobile**	**SVC**	**Cheque**
VOLUME SHARES								
2009	53.7	24.7	-	19.3	*5.0*	-	1.4	0.8
2013	43.9	21.1	*2.9*	30.8	*19.3*	-	3.3	0.9
2017	32.8	25.7	*52.0*	38.6	*52.0*	-	2.3	0.6
2020	22.2	28.9	*69.2*	47.0	*77.7*	-	1.6	0.2
2021	22.3	27.5	*67.0*	47.6	*82.0*	-	2.2	0.5
2021 (w/ mobile)	21.4	26.5	*67.0*	45.8	*82.0*	3.7	2.1	0.5
VALUE SHARES								
2009	22.7	31.7	-	40.7	*2.9*	-	1.0	3.9
2013	23.0	25.1	*1.8*	45.9	*12.1*	-	2.5	3.5
2017	15.5	26.1	*19.5*	55.9	*30.1*	-	1.8	0.7
2020	9.4	25.3	*47.9*	61.6	*56.4*	-	2.2	1.5
2021	13.6	23.2	*50.1*	61.7	*63.3*	-	1.2	0.2
2021 (w/ mobile)	13.0	22.2	*50.1*	58.9	*63.3*	4.5	1.2	0.2
MEDIAN PURCHASE ($)								
2009	8	29	-	40	-	-	5	-
2013	9	27	14	34	20	-	8	-
2017	10	25	16	35	26	-	12	25
2020	12	25	21	37	30	-	17	20
2021	12	25	20	36	30	34	12	10
MEAN PURCHASE ($)								
2009	17	51	-	84	-	-	27	-
2013	19	45	26	63	36	-	28	-
2017	20	44	26	62	42	-	34	50
2020	22	46	31	70	47	-	73	68
2021	29	40	30	61	44	59	27	22
MEDIAN # PURCHASES								
2009	3	3	-	2	-	-	2	-
2013	2	2	1	2	2	-	1	-
2017	2	2	2	2	2	-	1	1
2020	1	2	2	2	2	-	1	1
2021	1	1	2	2	2	1	1	1
MEAN # PURCHASES								
2009	4	3	-	3	-	-	2	-
2013	3	3	2	3	2	-	2	-
2017	2	3	2	3	2	-	2	1
2020	2	2	2	3	2	-	2	1
2021	2	2	2	2	2	2	1	1

Note: Shares are calculated among both in-person and online purchases. CTDC refers to contactless debit cards and CTCC refers to contactless credit cards. SVC are either store-branded stored-value cards or prepaid credit cards branded by Visa, Mastercard or Amex. CTDC and CTCC shares, indicated in italics, are reported as a fraction of the total volume or value of in-person debit and credit card purchases, respectively. Estimates are from the 2021 Methods-of-Payment Diary Survey Instrument and diary weights were used.

Table 9: Payment shares, volume by socio-demographics

		Cash %	**Debit** %	**CTDC** %	**Credit** %	**CTCC** %	**Mobile** %	**Other** %
REGION	AT	23.8	33.3	*65.6*	31.0	*68.3*	7.1	4.8
	QC	19.4	22.7	*69.2*	55.3	*84.0*	0.9	1.7
	ON	24.9	26.9	*66.8*	43.4	*82.7*	2.3	2.5
	PR	15.0	30.8	*64.6*	47.1	*81.2*	4.9	2.2
	BC	21.8	23.4	*67.9*	42.9	*82.3*	8.4	3.5
AGE	18-34	20.1	28.9	*64.8*	39.5	*86.6*	8.5	2.9
	35-54	16.6	28.5	*67.0*	48.3	*80.7*	3.1	3.4
	55+	26.2	23.3	*68.2*	47.5	*81.1*	1.3	1.7
GENDER	Male	22.6	24.3	*63.6*	46.5	*81.3*	4.1	2.5
	Female	20.2	28.9	*70.0*	45.1	*82.8*	3.2	2.7
EDUCATION	High school	26.3	34.1	*66.4*	31.5	*81.2*	6.0	2.1
	College	21.4	28.0	*67.9*	46.8	*81.9*	1.2	2.6
	University	15.3	15.3	*66.6*	62.9	*82.6*	3.3	3.3
INCOME	$45K	28.8	39.2	*69.8*	25.9	*83.6*	4.0	2.1
	$45K-$85K	22.8	27.2	*65.0*	42.1	*80.0*	5.4	2.5
	$85K+	18.7	20.3	*64.4*	55.7	*82.7*	2.8	2.5
FIN. LIT.	Low	26.3	37.1	*80.4*	26.4	*88.6*	7.9	2.3
	Med	24.7	32.0	*63.9*	36.7	*80.4*	3.8	2.8
	High	19.0	21.8	*64.4*	53.9	*81.8*	2.7	2.5

Note: These tables show the volume shares of transactions by method of payment, according to characteristics of the respondent. Shares are calculated among both in-person and online purchases. Demographic categories are described in Appendix D. CTDC refers to contactless debit cards and CTCC refers to contactless credit cards. Other includes store-branded stored-value cards, prepaid credit cards issued by Visa, Mastercard or Amex, and cheques. CTDC and CTCC shares, indicated in italics, are reported as a fraction of the total of in-person debit and credit card purchases, respectively. Estimates are from the 2021 Methods-of-Payment Diary Survey Instrument and diary weights were used.

Table 10: Payment shares, value by socio-demographics

		Cash %	**Debit** %	**CTDC** %	**Credit** %	**CTCC** %	**Mobile** %	**Other** %
REGION	AT	13.1	23.6	*53.3*	41.4	*38.7*	19.8	2.0
	QC	8.7	19.5	*61.7*	68.1	*64.1*	2.2	1.4
	ON	18.3	23.6	*46.1*	55.1	*65.6*	1.8	1.1
	PR	5.1	27.0	*41.6*	63.6	*64.7*	2.7	1.6
	BC	16.4	16.9	*51.4*	56.1	*66.5*	9.1	1.5
AGE	18-34	17.1	23.8	*38.5*	44.6	*81.6*	13.2	1.3
	35-54	8.5	21.9	*51.7*	65.4	*57.4*	2.5	1.8
	55+	14.6	21.5	*55.0*	61.2	*63.2*	1.6	1.1
GENDER	Male	14.0	20.4	*48.3*	59.6	*62.4*	4.7	1.3
	Female	12.1	23.8	*51.5*	58.2	*64.2*	4.3	1.5
EDUCATION	High school	18.6	28.6	*50.4*	42.5	*62.4*	9.1	1.2
	College	11.5	22.8	*50.3*	62.6	*63.2*	1.3	1.8
	University	8.5	14.5	*49.3*	72.9	*64.0*	2.9	1.2
INCOME	$45K	19.8	36.3	*54.2*	29.1	*66.4*	12.9	2.0
	$45K-$85K	17.2	23.2	*52.6*	53.3	*64.1*	5.2	1.2
	$85K+	9.5	17.0	*46.7*	69.5	*62.9*	2.5	1.4
FIN. LIT.	Low	25.4	32.1	*65.0*	31.9	*79.3*	9.4	1.2
	Med	12.2	27.4	*50.7*	51.2	*65.5*	7.3	1.9
	High	11.2	18.4	*45.5*	66.6	*61.1*	2.6	1.2

Note: These tables show the value shares of transactions by method of payment, according to characteristics of the respondent. Shares are calculated among both in-person and online purchases. Demographic categories are described in Appendix D. CTDC refers to contactless debit cards and CTCC refers to contactless credit cards. Other includes store-branded stored-value cards, prepaid credit cards issued by Visa, Mastercard or Amex, and cheques. CTDC and CTCC shares, indicated in italics, are reported as a fraction of the total value of in-person debit and credit card purchases, respectively. Estimates are from the 2021 Methods-of-Payment Diary Survey Instrument and diary weights were used.

Table 11: Payment shares, by type of good or service

a. Volume shares

	Cash %	**Debit** %	**CTDC** %	**Credit** %	**CTCC** %	**Mobile** %	**Other** %
Groceries/Drugs	15.3	25.5	*66.6*	56.2	*87.2*	1.2	1.7
Gas	8.7	25.1	*45.5*	64.1	*70.4*	1.0	1.0
Personal attire	11.2	18.5	*66.7*	65.4	*77.0*	2.1	2.8
Health care	11.5	21.3	*63.6*	62.8	*79.5*	2.2	2.2
Hobby / Sporting goods	16.8	17.9	*58.6*	56.0	*80.4*	4.9	4.3
Prof./ Personal services	30.1	18.9	*46.2*	46.9	*64.3*	3.5	0.7
Travel / Parking	27.5	11.8	*77.8*	54.9	*29.7*	2.9	2.9
Entertainment	19.0	11.9	*50.0*	57.1	*88.6*	6.5	5.4
Meals	23.6	24.2	*80.0*	43.4	*89.9*	3.6	5.1
Durable goods	12.8	15.9	*77.3*	63.3	*76.2*	4.5	3.5
Other	31.0	21.3	*68.3*	41.0	*74.5*	2.7	3.9

b. Value shares

	Cash %	**Debit** %	**CTDC** %	**Credit** %	**CTCC** %	**Mobile** %	**Other** %
Groceries/drugs	13.8	27.6	*45.7*	56.4	*78.1*	1.3	0.9
Gas	6.1	31.1	*33.6*	59.7	*70.4*	1.0	2.1
Personal Attire	5.4	13.8	*45.2*	78.2	*55.1*	1.6	1.0
Health Care	3.5	16.0	*68.6*	71.8	*51.0*	2.2	6.4
Hobby / sporting goods	19.5	11.8	*46.8*	59.8	*58.0*	7.0	2.0
Prof./personal services	17.7	15.9	*22.6*	62.3	*37.5*	4.0	0.2
Travel / parking	5.0	26.1	*4.3*	65.0	*9.7*	3.8	0.0
Entertainment	4.4	10.6	*57.6*	53.1	*94.9*	29.4	2.5
Meals	15.3	33.0	*78.6*	46.7	*82.7*	3.3	1.7
Durable goods	6.1	6.6	*77.1*	69.1	*39.6*	16.0	2.2
Other	20.1	18.4	*56.5*	57.5	*43.0*	3.1	0.9

Note: These tables show the volume (panel a) and value (panel b) shares of transactions by method of payment, according to the type of good or service purchased. Shares are calculated among both in-person and online purchases. CTDC refers to contactless debit cards and CTCC refers to contactless credit cards. Other includes store-branded stored-value cards, prepaid credit cards issued by Visa, Mastercard or Amex, and cheques. CTDC and CTCC shares, indicated in italics, are reported as a fraction of the total volume or value of in-person debit and credit card purchases, respectively. Estimates are from the 2021 Methods-of-Payment Diary Survey Instrument and diary weights were used.

Table 12: Payment shares, by transaction amount

a. Volume shares

	Cash %	**Debit** %	**CTDC** %	**Credit** %	**CTCC** %	**Mobile** %	**Other** %
below $15	34.4	24.7	*78.1*	33.3	*89.2*	3.3	4.3
$15 to $25	24.2	33.8	*72.9*	38.5	*87.7*	1.8	1.7
$25 to $50	12.9	27.8	*66.6*	52.4	*85.3*	4.9	2.0
above $50	10.4	23.2	*46.9*	60.8	*70.9*	4.2	1.4

b. Value shares

	Cash %	**Debit** %	**CTDC** %	**Credit** %	**CTCC** %	**Mobile** %	**Other** %
below $15	29.4	27.7	*74.6*	35.8	*89.5*	3.3	3.8
$15 to $25	23.8	34.3	*73.0*	38.5	*87.4*	1.8	1.6
$25 to $50	12.8	26.8	*64.2*	53.4	*85.1*	4.9	2.2
above $50	10.8	19.4	*39.1*	64.0	*55.3*	4.8	1.0

Note: These tables show the volume (panel a) and value (panel b) shares of transactions by method of payment, according to the amount of the purchase. Shares are calculated among both in-person and online purchases. CTDC refers to contactless debit cards and CTCC refers to contactless credit cards. Other includes store-branded stored-value cards, prepaid credit cards issued by Visa, Mastercard or Amex, and cheques. CTDC and CTCC shares, indicated in italics, are reported as a fraction of the total volume or value of in-person debit and credit card purchases, respectively. Estimates are from the 2021 Methods-of-Payment Diary Survey Instrument and diary weights were used.

Table 13: Plans to go cashless

		No plans	**Cashless**		**Within**	**More than**
			Reported	Actual	**5 years**	**5 years**
		%	%	%	%	%
	2021	79	14	7	6	2
REGION	AT	85	11	5	3	1
	QC	70	19	9	9	2
	ON	81	12	5	5	2
	PR	83	12	7	4	1
	BC	81	14	8	4	2
AGE	18-34	71	19	10	7	3
	35-54	77	16	9	6	2
	55+	87	8	3	5	1
GENDER	Male	75	15	8	7	2
	Female	83	12	6	4	1
EDUCATION	High school	80	12	7	5	2
	College	81	13	7	5	1
	University	75	17	7	7	1
INCOME	$45K	80	12	6	5	3
	$45K-$85K	81	12	5	6	1
	$85K+	75	16	8	7	2
FIN. LIT.	Low	77	12	6	8	3
	Med	80	12	8	5	2
	High	79	15	7	5	1

Note: This table shows the distribution of responses to the question "Do you currently have any plans to stop using cash in the future?" Reported is respondents who say they have already stopped using cash. Actual is respondents who say they have already stopped using cash and who report holding $0 in cash on hand (see Table 2).

Table 14: Impact of COVID-19 on cash use: stated vs. revealed preferences

		Distribution (%)		**Cash volume share (%)**		**Cash value share (%)**	
		Increased or same	Decreased	Increased or same	Decreased	Increased or same	Decreased
	2021	56	44	26	17	17	9
REGION	AT	67	33	26	21	9	21
	QC	50	50	23	17	13	5
	ON	55	45	32	17	26	10
	PR	64	36	16	13	6	4
	BC	53	47	28	17	23	11
AGE	18-34	58	42	24	17	23	10
	35-54	56	44	17	17	10	7
	55+	54	46	34	17	20	9
GENDER	Male	57	43	28	17	19	9
	Female	55	45	24	17	16	8
EDUCATION	High school	60	40	33	19	24	13
	College	53	47	24	19	14	8
	University	52	48	18	13	12	6
INCOME	$45K	56	44	35	22	25	12
	$45K-$85K	56	44	28	18	27	9
	$85K+	53	47	24	14	12	7
FIN. LIT.	Low	66	34	30	24	34	16
	Med	54	46	31	18	16	8
	High	54	46	23	15	14	8

Note: This table relates stated perceptions about the impact of COVID-19 on cash use with actual use of cash as measured by the 2021 Methods-of-Payment diary survey instrument. Stated perceptions are derived from responses to the question: "Compared to before the COVID-19 pandemic began, how has your use of cash changed?" Actual cash use is measured in terms of volume and value shares of purchases made over the three days of the diary, both overall and among various demographic categories. Demographic breakdowns are from the 2021 Methods-of-Payment Survey and the categories are described in Appendix D.

Table 15: Consumer reports of cash acceptance during COVID-19

	No issue	**Cash not preferred**	**Unable to use cash**	**Sign saying cash not accepted**	**News report**	**Not sure**
	%	%	%	%	%	%
Apr 2020	43	14	12	22	16	5
Jul 2020	58	15	9	16	6	4
Nov 2020	57	17	9	17	5	3
Apr 2021	68	13	7	10	4	4
Aug 2021	79	9	4	5	2	4
Nov 2021	75	15	3	3	1	5

Note: This table shows the percentages of Canadians reporting that a merchant steered them away from using, or refused, cash, or hearing news reports about businesses not accepting cash. Rows do not add up to 100% since respondents may select multiple options. "Cash not preferred" means the respondent saw a sign that cash is accepted, but other payment methods were preferred. "News report" means the respondent heard a news report that businesses were not accepting cash.

Table 16: Fraud related to payment use

	2017 MOP		**2021 MOP**	
	incidence (%)	median amount ($)	incidence (%)	median amount ($)
Cash				
counterfeit	3	185	n/a	n/a
lost or stolen	9	50	7	50
unsafe amount	17	300	n/a	n/a
Debit				
fraudulent charges	5	150	5	140
ID theft	2		1	
data compromised	5		3	
Credit				
fraudulent charges	13	300	10	200
ID theft	4		1	
data compromised	8		1	
Online bank account				
ID theft	3		3	
data compromised	3		5	
Mobile payment app				
ID theft	1		4	
data compromised	1		1	

Note: This table shows reported rates of fraud experienced by consumers in the past year. When consumers reported incurring fraudulent charges, we followed up by asking about the amount of loss. The 2021 MOP did not include the questions on cash regarding receiving counterfeit bank notes ("counterfeit") or the amount of cash that would make one feel unsafe to carry around ("unsafe amount").

Appendix

This appendix describes the key methodological components of the 2021 Methods-of-Payment (MOP) Survey, including survey design, data collection and data quality. We also provide a list of important definitions and variables in the last section. Methodology for the 2021 MOP Survey is based on the previous studies in 2009, 2013 and 2017, as well as the 2020 Cash Alternative Survey (CAS).

A Data collection

This section describes the process of recruiting respondents for the 2021 MOP Survey and ensuring that the sample is representative of the Canadian population.

A.1 Recruitment and sampling

The sampling strategy for the 2021 MOP Survey was based on the approach used in 2017. We constructed nested sampling targets with respect to region by gender and by age based on population totals from the 2021 Canadian Census.

Recruitment for the survey comes from three proprietary frames maintained by our survey partner, Ipsos, to obtain what we refer to as three panels: the iSay panel, the Ampario panel and the return-to-sample (RTS) panel.[26] Additional respondents were recruited to boost frames in which sampling targets were not met. Respondents were recruited via email and completed an internet-based survey instrument. Quota sampling was used to obtain the required number of respondents, as pre-specified by the nested sampling targets.

Respondents were offered both pecuniary and non-pecuniary incentives to complete the survey. Specifically, the package of incentives included:

- an advanced email from Governor Tiff Macklem inviting respondents to complete the survey and explaining its importance for the work of the Bank of Canada
- an accompanying email from Managing Director of the Currency Department Maureen Carroll, thanking respondents in advance for completing the survey and reminding them of its importance
- a reminder email following receipt of the survey link
- a $20 financial reward for completing both the SQ and the DSI

Certain hard-to-reach demographic groups were identified in advance and offered an additional $20 (for a total of $40) to complete the survey to help compensate for particularly low response rates.

[26] Respondents in the RTS panel previously completed a past versions of the CAS, the Candian Financial Monitor (CFM) or the Digital Wallet and Payments Trends (DWPT).

A.2 Weighting strategy

Building on the methodology from Chen et al. (2018), we conducted extensive analysis to create a set of sample weights for the 2021 survey. Weights ensure that the final sample is representative of the target population and help correct for coverage and non-response bias.

For the 2021 MOP Survey, the target population was Canadians aged 18 and older in the 10 provinces, and we obtained population level counts from both the 2021 Canadian Census and the 2020 Canadian Internet Use Survey (CIUS). The CIUS is used to calibrate the proportion of our sample having internet access. **Table A.1** shows the effect of the weighting procedure on key demographic variables.

Table A.1: Effects of weighting on sample composition in the 2021 MOP Survey

	Unweighted	**Weighted**
AGE		
18-34	0.215	0.282
35-54	0.373	0.323
55+	0.412	0.395
GENDER		
Male	0.459	0.494
Female	0.541	0.506
INCOME		
<$45K	0.296	0.218
$45K-$85K	0.328	0.275
$85K+	0.376	0.507

Note: The table shows demographic profiles in the 2021 Method-of-Payment Survey with respect to age, gender and income, both before and after applying the sample weights.

Key components of the weighting process include choosing the set of calibration variables to use, deciding whether and how much to trim the weights and incorporating adjustments for post-stratification and non-response. The main criterion for selecting the final set of weights was how well the set shifted the sample toward the population in terms of demographics not used as calibration variables and the Statistics Canada cross-validation questions. We also strive to maintain consistency with the methodology used in past surveys. We obtain the final weights by raking on gender, age, region, education, marital status, employment status in February 2020 (before the COVID-19 pandemic) and household income without any non-response adjustment; the weights are trimmed at five times their mean.

Separate sets of raking weights are obtained for the SQ sample and the DSI subsample. This differs from the approach adopted in past MOP surveys, where DSI weights were obtained by simply rescaling the SQ weights to rebalance the mode effect between paper-based and online responses. By contrast, similar to the November 2020 CAS, the 2021 MOP DSI was completely online. We perform a thorough sensitivity analysis to verify that this modification of the DSI weighting approach did not substantially affect our final DSI estimates or the changes between 2017 and 2021 estimates.

The final sample size and other summary statistics related to the survey can be found in **Table 1**. In total, we collected 4,725 SQs and 2,866 DSIs. More SQs were collected because some participants completed the questionnaire but not the three-day diary. The DSI contains a total of 7,800 purchases and 315 cash withdrawals. On average, respondents spent a total of 19 minutes filling out the SQ.

B Data quality

As in most surveys, the raw data contain some extreme, inconsistent and missing values. Collaboration with Ipsos and cross-validation of results with similar surveys were key to addressing issues of data quality. This collaboration includes measures to detect issues during data collection and editing of the raw data.

B.1 Data validation

Cross-validation analysis shows that our weighted estimates correspond with the results of other surveys, which demonstrates validity. For instance, **Table B.2** reports the proportion of Canadians who report experiencing a cybersecurity incident within the past three months, based on responses to a Statistics Canada survey conducted in 2020 and responses to our 2021 MOP Survey. Our results are similar to those reported by Statistics Canada. The 2021 MOP finds that the majority of Canadians had not experienced a cybersecurity incident within the given timeframe, but 34% had received fraudulent or spam emails. Statistics Canada also has these as the most reported categories, with 34% of Canadians not reporting any incidents and 49% reporting that they had received fraudulent or spam emails.

Table B.2: Data validation with Statistics Canada - Experienced cybersecurity incident within past 3 months

	2021 MOP	**Statistics Canada**
Virus/Computer infection	0.052	0.100
Identity fraud	0.015	0.042
Received fraudulent emails or spam	0.338	0.493
Hacked accounts	0.034	0.068
Website asking for personal info	0.098	0.200
Fraudulent payment card use	0.132	0.070
Loyalty program points fraud	0.022	0.015
Asked to pay a cyber ransom	0.022	0.039
Other cyber security incident	0.023	0.027
No incident	0.597	0.339

Note: The table compares estimates from the 2021 Methods-of-Payment Survey with estimates produced from Statistics Canada's 2020 Canadian Internet Use Survey.

Table B.3 provides our second measure of survey validity, which is the distribution of devices Canadians used to access the internet within the past three months. Again, our

estimates are comparable to those reported by Statistics Canada. In both surveys, the most widely used device was a smartphone (78% of respondents in 2021 compared with 81% of respondents in 2020), followed by laptop (65% in 2021 and 64% in 2020) and tablet (44% in 2021 and 45% in 2020).

Table B.3: Data validation with Statistics Canada - Device used to access internet within past 3 months

	2021 MOP	**Statistics Canada**
Smartphone	0.782	0.810
Laptop	0.649	0.640
Tablet	0.437	0.448
Desktop computer	0.500	0.393
Media streaming device	0.118	0.234
SmartTV	0.257	0.355
Internet-connected wearable smart device	0.057	0.139
Connected vehicle device	0.046	0.083
Other device	0.023	0.189
No device	0.011	0.078

Note: The table compares estimates from the 2021 Methods-of-Payment Survey with estimates produced from Statistics Canada's 2020 Canadian Internet Use Survey.

Our final measure of survey validity looks at various government benefits received by respondents as a result of COVID-19. **Table B.4** compares responses from the 2021 MOP to estimates from Statistics Canada's 2021 Labour Force Survey. Results are again similar. The most common form of benefit received was employment insurance regular benefits (6% of respondents in the MOP and 3% of respondents in the Labour Force Survey).

Table B.4: Data validation with Statistics Canada - Received payment for benefits

	2021 MOP	**Statistics Canada**
Employment insurance regular benefit	0.064	0.029
Other employment insurance benefit	0.020	0.009
CRB	0.044	0.011
CRSB	0.010	0.001
CRCB	0.007	0.001
Social insurance from province/territories	0.043	0.021
None	0.843	-

Note: The table compares estimates from the 2021 Methods-of-Payment Survey with estimates produced from Statistics Canada's 2021 Labour Force Survey.

B.2 Payment diary cash identity

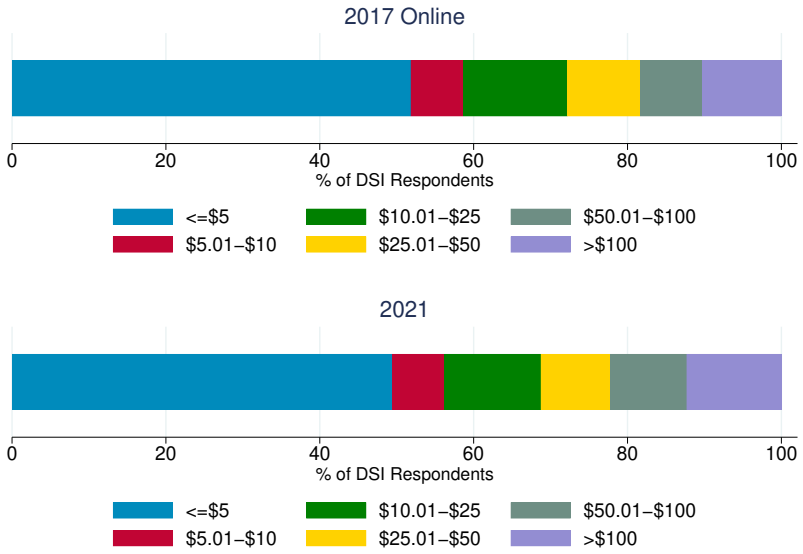
The cash identity is used as a measure of data quality for the DSI. Since the DSI tracks a respondent's cash flow (i.e., their cash holdings at the start), we can obtain an error measure for the accuracy of cash reporting by comparing how much cash they receive and spend during the diary with their cash holdings at the end. If all sections of the DSI that include cash are recorded perfectly, then the cash identity should be satisfied for each respondent:

$$Cash_{end} = Cash_{start} - Cash_{spent} + Cash_{received}$$

$$Cash_{end=}Cash_{start} - Cash_{purchases} + [Cash_{withdrawal} + Cash_{cashback}]$$

When equality is not obtained, the difference is the respondent's absolute error. We compare the error of respondents in aggregate in **Chart B.1**, which shows the performance of the cash identity for the 2017 DSI (top) and the 2021 DSI (bottom). We note a slight decline in the 2021 performance relative to 2017. The fraction of respondents who recorded an error of less than or equal to $5 decreased, while the fraction who recorded an error of greater than $100 increased.

Chart B.1: Cash identity error: 2017 and 2021 MOP DSI



Note: This chart shows the distribution of errors in the cash identity for the 2017 and 2021 Methods-of-Payment surveys.

One source of variation between the 2017 and 2021 cash identity performances could be modifications to the cash identity components. In the 2017 DSI, respondents were asked about charitable donations, person-to-person transfers and additional means of receiving and using cash. In the 2021 DSI, respondents were not directly asked about those means of

receiving and using cash. The other modification in the 2021 DSI was a new question that asks respondents about receiving cash-back for debit purchases at the point of sale.

Note that **Chart B.1** includes the online sample of the 2017 MOP survey respondents so that it is comparable with the 2021 MOP, which was conducted wholly online. When the MOP was previously conducted with both offline and online samples, the offline sample of respondents performed substantially better in the cash identity in 2013 (Henry et al. (2015)) and in 2017 (Henry et al. (2018b)). That is, respondents who recorded their diary on paper tended to generate a smaller absolute error. Since an improvement was not detected among online respondents relative to 2017, this suggests there could still be an accuracy trade-off between online and offline versions of the survey.

C Estimates from the Canadian Financial Monitor

Here we provide a detailed description of the Canadian Financial Monitor (CFM) survey as background for the estimates presented in **Chart 15** and **Chart 16**, discussed in section 6.2.

The CFM is a syndicated wealth survey conducted by Ipsos since 1999. The survey has been conducted online since January 2018, with a methods-of-payment module added in April 2018. This module asks respondents about their cash holdings, payment card ownership and usage and the adoption of new payment innovations. The statistics used in **Chart 15** and **Chart 16** are obtained from a question that asks respondents how many times in the past month they used cash and other methods of payments to make in-store and online purchases. Each respondent is weighted according to the methodology outlined by Felt and Laferrière (2020).

In **Chart 15**, we calculate the mean monthly number of in-store and online purchases from January 2019 to November 2021. In this figure, we apply a top-only 99% winsorization to online and in-store purchases per respondent to account for extreme values of monthly purchases. In **Chart 16**, we calculate the cash volume share by dividing the number of cash purchases by the total purchases across all respondents for each month from January 2019 to November 2021.

The Cash Alternative Surveys comprise a series of six survey questionnaires conducted during 2020 and 2021: CAS Wave 1 in April 2020, Cash Pulse Survey in July 2020, CAS Wave 2 in November 2020, CAS Wave 3 in April 2021, CAS Wave 4 in July 2021 and the MOP in November 2021. These surveys contained a pseudo-diary in which respondents estimated their number of in-store and online purchases by payment method in the prior week. Each respondent is weighted according to the methodologies outlined by Chen et al. (2020), Chen et al. (2021a) and in this report. **Chart 15** shows estimates of the average monthly number of purchases made by Canadian consumers, both in-person and online. For each of the six surveys, we apply a top-only 99% winsorization to the online and in-store purchases per respondent to account for large, extreme values of weekly purchases. We then calculate weighted averages of in-store and online purchases per respondent and multiply them by four to obtain a monthly estimate for each survey. **Chart 16** shows the cash volume estimates, which we calculate by dividing the number of cash purchases by the total purchases across all respondents within each of the six surveys.

D Demographic categories

Table D.5 describes the demographic categories considered in this report along with the raw counts associated with observations from the SQ and DSI.

Table D.5: Description and counts of demographic variables, 2021 MOP

	Description	Sample Size		
		SQ Respondents	DSI Respondents	DSI Purchases
REGION	Describes the region of Canada where the respondent is located.	4,725	2,866	7,800
AT	Resident of an Atlantic province (New Brunswick, Newfoundland and Labrador, Nova Scotia, Prince Edward Island).	312	183	564
QC	Resident of Quebec.	962	564	1,473
ON	Resident of Ontario.	1,926	1,176	3,276
PR	Resident of a Prairie province (Alberta, Manitoba, Saskatchewan).	859	528	1,384
BC	Resident of British Columbia.	666	415	1,103
AGE	Describes the age cohort of the respondent.	4,725	2,866	7,800
18-34	Ages between 18 and 34 years old.	1,016	498	1,132
35-54	Ages between 35 and 54 years old.	1,760	1,113	3,048
55+	Ages older than 55 years old.	1,949	1,255	3,620
GENDER	Describes the gender of the respondent.	4,695	2,866	7,800
Male	Respondent is a Male.	2,155	1,309	3,794
Female	Respondent is a Female.	2,540	1,557	4,006
EDUCATION	Describes the highest level of educational attainment by the respondent.	4,725	2,866	7,800
High school	Began or graduated from primary school or high school.	935	491	1,172
College	Began or graduated from college / CEGEP / Trade School.	1,549	929	2,462
University	Began or attained a University undergraduate degree or University graduate degree.	2,241	1,446	4,166
INCOME	Describes the respondent's annual household income before taxes.	4,266	2,601	7,240
$45K	Respondent's annual household income is less than $45,000.	1,261	693	1,640
$45K-$85K	Respondent's annual household income is greater than $45,000 and less than $85,000.	1,401	872	2,464
$85K+	Respondent's annual household income is greater than 85,000.	1,604	1,036	3,136
FINANCIAL LITERACY	Describes the score calculated from the respondent's answers to the financial literacy questions. See Appendix E.	4,725	2,866	7,800
Low	Obtained a score of 0 or less.	713	297	605
Med	Obtained a score of 1 or 2.	1,422	824	2,007
High	Obtained a score of 3.	2,590	1,745	5,188

E Financial literacy measures

In this section, we document how the financial literacy categories of high, medium, and low are constructed. A set of three knowledge-testing questions are asked of respondents that contain a single correct answer as well as the option to respond "don't know." The questions are shown in **Table E.6**.

Table E.6: Financial literacy questions (MOP SQ)

Financial literacy score component	**Explanation**
Question 1: interest	Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have left in the account if you left the money to grow? **More than $102 (correct answer)** Exactly $102 Less than $102 Do not know
Question 2: inflation	Imagine the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with this money in this account? More than today Exactly the same **Less than today (correct answer)** Do not know
Question 3: risk	Please tell me whether this statement is true or false. "Buying a single company's stock usually provides a safer return than a mutual fund of stocks." True **False (correct answer)** Do not know

These financial literacy questions are taken from the "Big Three" of Lusardi and Mitchell (2014). We compute a financial literacy score as the number of correct answers minus the number of incorrect answers ("don't know" responses do not contribute to the score). Financial literacy is then classified as high (score= 3), medium (score= 1, 2), or low (score<= 0).

Distributions of each financial literacy category from the 2017 MOP, November 2020 CAS and 2021 MOP are shown in **Table E.7**. **Table E.8** shows the distribution of responses to each individual question from the 2021 MOP.

Table E.7: Distribution of financial literacy categories, 2017/2020/2021

		2017 MOP			**2020 CAS**			**2021 MOP**		
		Low %	*Medium* %	*High* %	*Low* %	*Medium* %	*High* %	*Low* %	*Medium* %	*High* %
	Overall	23	35	42	20	33	48	18	33	50
REGION	AT	32	44	25	27	37	36	21	36	43
	QC	29	34	38	21	35	44	19	35	46
	ON	24	30	46	20	31	49	19	29	52
	PR	18	36	46	18	33	48	18	33	49
	BC	15	42	43	15	30	55	12	35	53
AGE	18-34	37	35	28	32	36	32	33	36	31
	35-54	23	34	43	21	32	47	16	31	53
	55+	14	35	52	10	30	60	9	31	60
GENDER	Male	21	30	50	16	29	56	14	27	59
	Female	26	39	35	24	36	40	21	38	41
EDUCATION	High school	26	38	36	28	37	34	25	41	34
	College	23	36	41	17	34	50	16	32	52
	University	19	28	53	10	24	66	9	20	71
INCOME	$45K	30	42	28	32	37	31	28	42	30
	$45K-$85K	24	36	40	19	35	46	22	33	46
	$85K+	18	29	53	13	29	58	10	27	63

Note: This table shows the weighted percentages for each category of financial literacy. Data are from the 2017 Methods-of-Payment Survey, November 2020 Cash Alternative Survey and 2021 Methods-of-Payment Survey. See **Table D.5** for descriptions of the demographic categories.

Table E.8: Distribution of responses to financial literacy questions, 2021 MOP

		Interest		**Inflation**		**Risk**	
		Correct	*Don't Know*	*Correct*	*Don't Know*	*Correct*	*Don't Know*
		%	%	%	%	%	%
	Overall	87	6	70	11	64	28
REGION	AT	84	8	70	13	52	39
	QC	88	5	65	11	63	28
	ON	88	6	69	10	65	27
	PR	87	6	71	10	63	27
	BC	88	7	77	9	69	26
AGE	18-34	81	9	51	17	48	37
	35-54	89	6	70	11	68	25
	55+	91	5	83	6	71	23
GENDER	Male	91	4	76	7	72	20
	Female	84	9	64	15	56	35
EDUCATION	High school	80	11	59	17	54	37
	College	91	4	72	9	65	27
	University	95	2	84	4	79	15
INCOME	$45K	78	12	57	17	47	42
	$45K-$85K	86	6	66	12	62	29
	$85K+	94	2	79	6	75	18

Note: This table shows the weighted percentages for financial literacy question from the 2021 Methods-of-Payments Survey. See **Table D.5** for descriptions of the demographic categories.

F Key definitions

Table F.9: Definitions of payment instruments (MOP SQ)

Concept	**Definition**
Cash	Coins and bank notes
Debit card	Card issued by a bank that gives the holder electronic access to a bank account for making payments and withdrawals from an automated banking machine.
Credit card	Card allowing a holder to purchase goods and services on credit, both in person and online, and pay the credit card company later
Stored-value card issued by VISA/MasterCard/ Amex	Card that comes loaded with funds at the time of purchase and features the Visa, Mastercard or Amex logo. It can be used to purchase goods and services both in person and online.
Store-branded stored-value card	Card issued by a retailer that can only be used at stores belonging to the retailer. It can usually be reloaded with funds. E.g., Tim Hortons TimCard, Walmart gift card
Contactless payment (tap-and-go)	Feature found on most credit and debit cards. It allows the user to pay by waving or tapping the card over a terminal without entering a PIN, swiping or inserting the card.
Interac e-Transfer	A method of transferring money from yourself to another person using an email address or a mobile phone number
Online payment account	Account not affiliated with any particular bank but that can be loaded with funds and used to make purchases or transfer money on the internet. It can be loaded using a credit card or by linking to a bank account. E.g., PayPal
Mobile payment application	Application on a smartphone, such as an iPhone or Android phone, that allows the user to make purchases
Cryptocurrency	A digital currency and payment method where accounts and transactions are listed in a public, shared database and often secured through special protocols, called cryptography. E.g., Bitcoin

Table F.10: Definitions of payment instrument attributes (MOP SQ)

Concept	**Definition**
Ease	How easy or hard it is to use the method of payment in Canada
Cost	How costly it is to use the method of payment in Canada, taking fees, interest payments, etc. into consideration
Security	How risky or secure it is to use the method of payment in Canada, in the respondent's opinion
Acceptance	How widely accepted the method of payment is in the respondent's community (2017 and 2021 MOP) or in Canada (2013 MOP)

Table F.11: Definitions of cash-related variables (MOP SQ)

Concept	**Definition**
Cash on hand	Amount of cash in the respondent's purse, wallet or pockets at the time of the survey
Other cash holdings/cash in store	Amount of cash the respondent's household keeps in locations other than a purse, wallet or pockets, such as at home or in a vehicle

Table F.12: Definitions of transaction types (MOP DSI)

Concept	**Definition**
Purchase	Any good or service purchased from a store, business, institution or government service (in-person or online); or purchased from another person. Does not include pre-authorized payments, bill payments, business expenses or donations/gifts.
Person-to-person transaction	A transaction between two individuals where the payee is not receiving the payment on behalf of a business, store, institution or government service.
Online purchase	Any good or service bought online via the internet using a computer or smartphone.

Table F.13: Examples of types of goods and services purchased (MOP DSI)

Type of purchase	**Example**
Groceries/drugs	Food, alcohol, tobacco, cleaning products, prescriptions
Gas	Gasoline for private transport vehicles
Personal attire	Clothing, accessories, cosmetics
Health care	Doctor, dentist, hospital bills
Hobby/sporting goods	Craft supplies, tools, toys, sports equipment, books, newspapers
Professional services	Lawyer, mechanic, spa services, haircut
Travel/parking	Hotel, taxi or ride-sharing services, plane, train, paid parking, public transit
Meals	Restaurants, cafeterias, bars, coffee shops
Entertainment	Movies, outings, concerts, admission for swimming pools, museums, zoos, galleries
Durable goods	Electronics, furniture, appliances, automobile, household accessories

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