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2022 Methods-of-Payment Survey Report: Cash Use Over 13 Years

by Chris Henry, Doina Rusu and Matthew Shimoda

Currency Department
Bank of Canada
chenry@bankofcanada.ca, drusu@bankofcanada.ca,
mshimoda@bankofcanada.ca

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Abstract

We present results from the 2022 Methods-of-Payment Survey, including updated payment shares based on a three-day shopping diary. We highlight long-term trends in cash holdings, management and use observed across results from previous surveys in 2009, 2013 and 2017. We also review recent trends relating to the COVID-19 pandemic using data from 2020 and 2021. We assess various factors associated with long-term trends in cash use.

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

Résumé

Nous présentons les résultats de l'enquête sur les modes de paiement de 2022, 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 en ce qui concerne la détention, la gestion et l'utilisation de l'argent comptant. Nous examinons aussi des tendances plus récentes en lien avec la pandémie de COVID-19 à l'aide de données de 2020 et 2021. Enfin, nous étudions divers facteurs associés aux tendances à long terme quant à l'utilisation de l'argent comptant.

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

1 Introduction

This paper reports the main findings from the Bank of Canada's Methods-of-Payment (MOP) Survey for 2022. This survey measures Canadians' adoption, use at the point of sale and perceptions of payment methods. Notably, the survey's findings about cash use inform one of the Bank's core functions—the design, production and distribution of Canada's bank notes. Other findings from the MOP survey include changes in the use of emerging payment alternatives, such as digital currencies. Results regarding the use of both cash and alternative payments are also relevant for the possibility of a central bank digital currency (CBDC) in Canada (see Lane (2020, 2021)).

For the first time since the survey's origin in 2009, the 2022 MOP survey was conducted only one year after the previous version.The results are, for the most part, similar to 2021 (Henry et al., 2022). Therefore, this report mainly provides updates to key metrics. Additionally, while the 2021 report focused on the COVID-19 pandemic and its effects on cash use and payments, this report looks at long-term factors affecting cash use. Key findings from the 2022 MOP include:

- **Measures of cash management are similar to results for 2021.** The amount of cash Canadians held was essentially unchanged from the 2021 MOP survey at $130, even though inflation reached a four-decade high. Canadians visited an automated banking machine (ABM) or a bank to withdraw cash at rates similar to those in 2021. The average amount of an ABM cash withdrawal was $156 in 2022, compared with $154 in 2021.

- **Cash use since the onset of the COVID-19 pandemic has been stable.** Cash was used for 22% of all purchases in 2022, accounting for 12% of the value of purchases. While the cash share declined between 2009 and 2017, Henry et al. (2022) show that cash use was relatively stable from 2017 until just before the pandemic. At the onset of the pandemic, the share of purchases made with cash fell sharply, reaching 21% in November 2020. This level has not changed much since.

- **The share of online purchases has risen sharply in recent years.** The MOP three-day payments diary shows that an increasing share of purchases are made online, reaching just under 15% in the past three years compared with under 5% in 2013 and 2017. This trend is consistent with data from Statistics Canada that indicate a sharp rise in e-commerce activity during the pandemic. However, the long-term decline in cash use observed since the first MOP survey in 2009 is mostly due to other important factors, such as increased consumer demand for and merchant acceptance of credit cards.

The remaining sections of this report are as follows. Section 2 briefly describes the MOP and other surveys about payment methods that the Bank has conducted recently. Section 3 reviews both long- and short-term trends in ownership of payment instruments. Section 4 discusses results from the MOP payments diary. Section 5 assesses long-term factors influencing payment choices. Finally, section 6 concludes.

2 Methods-of-Payment Survey

This section provides a brief overview of the MOP and other recent consumer payments surveys considered in this report.[1] Table 1 shows a timeline of these surveys and their basic features, including sample size and survey mode.

First conducted in 2009, the MOP consists of two main components: the survey questionnaire (SQ) and the diary survey instrument (DSI). Key questions from the SQ ask respondents about their cash holdings and management, their ownership of various payment instruments and their access to financial services (i.e., their main bank account and credit card). The content of the SQ also reflects timely policy questions and measures the emergence of new payment methods as they become available.[2]

The DSI is a payments diary where respondents record all of their purchases and cash withdrawals for three days. Respondents are asked to describe various features of each payment including the amount, where it was made, the payment method(s) used and whether it was online or in-person. The types of payments recorded in the DSI are purchases of goods and services at the point of sale. Respondents are advised not to include recurring or pre-authorized payments (such as rent or mortgage and bill payments), payments made for business expenses, or donations and gifts.

The MOP was conducted on a four-year cycle from 2009 until 2021 when it switched to being conducted on an annual basis. Also in 2021, the MOP became an exclusively online survey that participants can complete on any device with internet access. Typically, we aim to obtain at least 4,000 SQ responses and 2,000 DSI responses. The number of SQ responses always exceeds the number of DSI responses since respondents can start the DSI only after completing the SQ (**Table 1**).[3] Both sample sizes are large enough to fill quotas stratified by age, gender and province. The samples are then calibrated to match the Canadian population across key demographics.[4]

2.1 Additional consumer surveys and the COVID-19 pandemic

The Bank conducted additional surveys to complement the MOP starting in 2019. With the onset of the COVID-19 pandemic, these surveys also served as tools to monitor and understand how consumers responded to the pandemic in terms of their cash use and payment behaviours. These surveys took two formats:

- The Cash Alternative Survey (CAS) is similar to the MOP SQ, but introduced new topics such as Canadians' plans to go cashless and their experiences with cash accep-

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[1]Further details can be found in section 2 of Henry et al. (2022). The Economic Research and Analysis team in the Currency Department at the Bank designed these surveys and conducted the fieldwork in collaboration with survey partner Ipsos.

[2]Recent examples include adding questions about the ownership of payment cards linked to a mobile app or online payment account. Some novel payment alternatives covered in the SQ include Interac e-Transfer, digital currencies and mobile payments.

[3]The DSI target of 2,000 responses was not achieved in 2022 due to issues with retaining respondents after they completed the SQ. Since the onset of the COVID-19 pandemic, the US Census Bureau has also observed a lower response rate in the Current Population Survey Annual Social and Economic Supplement.

[4]See **Appendix A** for further details.

tance at the point of sale. The November 2020 CAS also included a payments diary similar to that in the MOP.

- The Cash Pulse Survey (CPS) is a shortened version of the CAS focusing on key cash metrics.

3   What is in your wallet?

In this section we discuss the methods of payment Canadians have available to them. These are typically cash and payment cards, such as debit or credit. However, recent payment innovations might not exist physically inside a wallet. For example, over one-third of Canadians use a mobile app to make purchases. The results in this section come from the SQ portion of the 2022 MOP. We compare results with previous MOP surveys since 2009 to document long-term trends and include estimates from the CAS and CPS series of surveys to discuss recent trends during the COVID-19 pandemic.

3.1   Long-term trends in cash management

Cash holdings in the MOP are separated into two types: *cash on hand* and *other cash holdings*. Cash on hand is the cash that Canadians hold in their wallets, purses or pockets. Consumers are most likely to use this cash for purchases. The first column of **Table 2** shows the average amount of cash on hand held by Canadians who hold some amount of cash. From 2009 until 2021, average cash on hand increased between each survey at a much faster rate than inflation. While average cash on hand also increased nominally by \$3 to \$130 in 2022, the inflation-adjusted values show a decrease in real terms.[5]

The second column in **Table 2** shows the percentage of Canadians with no cash on hand. This measure has increased consistently since 2009—reaching 25% of Canadians in 2021— and suggests a long-term trend of fewer Canadians holding cash to make payments. The 2022 estimate of 21% is not directly comparable with prior estimates because of a new "Prefer not to answer" option, which 10% of respondents selected. Respondents who did not have this option in previous surveys may have entered zero if they did not wish to disclose their cash holdings, potentially inflating the estimate of Canadians with no cash on hand. Future surveys will continue to include the "Prefer not to answer" option to discern whether this trend has reversed.

The final two columns of **Table 2** show similar measures for other cash holdings, which is any cash held outside wallets, purses or pockets, such as at home or in a vehicle. This cash is more likely to be used as a store of value rather than for purchases. For 2022, the estimated median value for other cash is \$200, which is the same as in 2021. While the median value of other cash increased between 2009 and 2017, it has been relatively stable

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[5]We use Statistics Canada monthly (not seasonally adjusted) estimates for consumer price index to produce inflation-adjusted estimates of cash on hand. The resulting values for 2022 using 2009 as a base year are \$130 nominal x 0.66 adjustment = \$86. In previous surveys, the inflation adjustment factors and resulting dollar values are \$81 nominal $\times$ 0.93 adjustment = \$76 in 2013; \$106 nominal $\times$ 0.86 adjustment = \$91 in 2017; and \$127 nominal $\times$ 0.75 = \$95 in 2021.

since 2017.[6] The percentage of Canadians with no other cash holdings is much higher than the percentage with no cash on hand, but shows a similar rise over time. MOP results show the percentage of Canadians not holding any other cash increased from 47% in 2009 to 78% in 2021. In 2022, an estimated 82% of Canadians had no other cash, but, as noted previously, the "Prefer not to answer" option may have influenced this result.

Cash withdrawals from ABMs, bank tellers and cash-back through debit card purchases are presented in **Table 3**. Columns 1, 4 and 7 show the average number of withdrawals made in the past month from each channel. In general, the average number of withdrawals has declined since 2009. As of 2022, ABM withdrawals are the most common method (1.8 times per month), followed by teller withdrawals (0.4 times per month) and cash-back (0.3 times per month). Columns 2, 5 and 8 show that the percentage of Canadians who made a withdrawal in the past week also declined between 2009 and 2017. Interestingly, the share of Canadians making a withdrawal in the past week has been relatively stable across all channels between 2017 and 2022, particularly for ABM withdrawals. Meanwhile, average withdrawal values have increased over time for ABM withdrawals while tending to fluctuate for the other channels. Column 3 shows that the average ABM withdrawal value has steadily increased each year, from $113 in 2009 to $156 in 2022. Column 6 shows that the average value withdrawn through a teller increased until 2021, but fell to $226 in 2022. And column 9 shows a similar spike in the average value of a cash-back withdrawal to $72 in 2021 and falling to $54 in 2022, which is more consistent with past years.[7]

3.2 COVID-19 cash trends

How have cash holdings shifted during the COVID-19 pandemic, and have those shifts persisted into 2022? In **Chart 1**, we observe short-term trends since August 2019 using results from the CAS, CPS and MOP surveys. **Chart 1a** shows that the percentage of Canadians with no cash on hand and no other cash peaked in April 2020 and in July 2021 just before case counts reached their peaks for the first and fouth waves, respectively. The share of Canadians with no cash on hand appears to have declined since July 2021, but we cannot state this decisively due to the change in methodology.[8] **Chart 1b** shows that average cash on hand and median other cash corresponded to rising or falling case counts. As of 2022, average cash on hand is slightly lower and median other cash is slightly higher than pre-pandemic levels recorded in 2019. These results suggest that the pandemic may have temporarily affected the amount of cash held by Canadians, but any permanent changes are relatively small.

We can also observe how the COVID-19 pandemic affected perceptions of being cashless and if these changes in sentiment are permanent. **Chart 2** shows the percentage of Canadians since 2019 who are planning to go cashless. Responses are divided into three categories: no plans to go cashless, will eventually go cashless and are already cashless. The percentage of Canadians claiming they are cashless peaked at 19% in April 2020. Since then, the percentage

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[6]We use median as the statistic for other cash to account for large outliers in the data.

[7]The methodology for calculating withdrawal estimates changed in 2021 because of adjustments to the question about cash withdrawals. Estimates in **Table 3** reflect our best efforts to harmonize these changes, making the results comparable. See the table notes for more details.

[8]The November 2022 MOP survey includes the "Prefer not to answer" option for cash holdings.

fluctuated before falling to 13% in November 2022, which is slightly higher than the 10% observed before the pandemic in 2019. Meanwhile, 80% of Canadians in 2022 said they have no plans to stop using cash, which is only about 2 percentage points lower than before the pandemic.

3.3 Cards

Payment cards are the most popular method of payment that Canadians commonly hold. **Table 4** displays the rate of debit and credit ownership captured by MOP surveys since 2009. In 2022, debit card ownership remained nearly universal among adult Canadians, with 98% reporting they own a debit card. Meanwhile, credit card ownership has increased over time, reaching a high of 90% in 2022, an increase of 10 percentage points since 2009.

The *% linked* columns show the percentages of Canadians with at least one card who say they have linked a card to either an online payment account or a mobile payment app.[9] Among Canadians with a debit card, 20% have linked it, which is 3 percentage points higher than 2021. Meanwhile, ownership of a linked credit card is at 36%, which is 5 percentage points higher than in 2021. Linking a payment card seems to be more popular for credit card owners than debit card owners in 2022, and is growing at a faster rate since 2021.

The final two columns of **Table 4** describe ownership of stored-value cards (SVCs). These cards include:

- store-branded prepaid cards (SVC-S) that are loaded with funds that may be used only at the store indicated on the card

- prepaid credit cards (SVC-M) that are loaded with funds that can be used at various locations because credit card networks process the payment

Both of these cards experienced a substantial drop in ownership between 2017 and 2021. These rates appear to have held steady in 2022 at 8% for SVC-S and 9% for SVC-M.

Table 5 features estimates that describe the costs associated with owning a debit or credit card. In 2022, 63% of respondents with a bank account reported having an account fee, down 10 percentage points since 2017. Over that period, the share of bank account holders with fees under $5 has declined, while the shares have increased for those with fees between $5 and $15, and over $15. However, some bank account holders forego paying the fee if the bank waives or refunds it. Indeed, 31% of Canadians with a monthly fee had it waived in 2022, which is similar to 2021 but notably lower than the 44% recorded in 2017. In sum, while fewer Canadians have a main bank account with a fee than in 2017, those who do have a fee are more likely to have paid it in the past month and these fees have increased.

The final column of **Table 5**, *Revolver*, shows the percentage of credit card owners who revolved on their credit card debt in the past month. A revolver is a credit card owner who does not pay off their entire monthly balance and are subject to an interest charge. Consumers often revolve on their credit card debt because they lack enough liquidity to resolve the full balance. Revolvers may instead decide to use a credit card intentionally as a loan or to prioritize payments of other fixed monthly expenses like a mortgage or rent

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[9]This was a new addition in the 2021 MOP survey.

([Greene and Stavins](), [2022]()). In 2022, 27% of Canadians with a credit card revolved their debt in the past month, the same as in 2021. This is the lowest share of credit card revolvers recorded in the MOP, but still somewhat higher than the estimate in the Global Findex study of 21% who revolved in the past year.[10]

3.4   Alternatives to cash and cards

Finally, responses in the SQ section of the MOP provide evidence about the adoption of alternative payment methods, which have grown in popularity over the last decade. These include Interac e-Transfer, online payment accounts, digital currencies and payments via a mobile app. **Chart 3a** shows the percentage of Canadians who have used these payment methods to make a purchase at a store or business, either in-person or online, at least once in the past year.[11]

Interac e-Transfer is the alternative method with the highest rate of adoption, having been used by 51% of Canadians in the past year. This is lower than the 57% of Canadians in 2017 who reported using e-Transfer to make a purchase in the past year. However, the 2022 survey also included the option of "Bank Account Management App" as a payment method while the 2017 survey did not. Some respondents in 2022 may have selected this option instead of, or in addition to, the e-Transfer option since the app allows users to send an e-Transfer.[12] About 32% of Canadians have used an online payment account such as PayPal in the past year. Meanwhile, only 2% of Canadians have used a digital currency, such as Bitcoin. Results from the 2022 Bitcoin Omnibus Survey show that 10% of Canadians owned Bitcoin in 2022, and just 11% of owners reported holding bitcoins primarily to make payments ([Balutel et al.](), [2023]()). We might therefore expect that $10\% \times 11\% = 1.1\%$ of Canadians use Bitcoin for making payments on a regular basis, which aligns with the results from the MOP.

The survey questionnaire includes four types of mobile apps: bank account management apps (e.g., TD Bank or Scotiabank app), digital wallet apps (e.g., Apple Pay or Google Pay), payment account apps (e.g., PayPal accessed through an app or PayMe Tap) and store-branded prepaid card apps (e.g., Starbucks app). Overall, 37% of Canadians made purchases in the past year using one these four types of apps. Bank account management apps have the highest adoption rate at 21% and allow users to access payments services like Interac e-Transfers through a mobile device. The next highest are digital wallet apps at 18% of Canadians.[13] Finally, 9% and 8% of Canadians have used payment account apps and SVC

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[10]Note that the base of the calculation used in the Global Findex study is not clear because respondents can refuse to answer both the question about credit card use in the past year and the question about paying off all credit card balances in the past year.

[11]These findings are not comparable with the 2021 MOP survey because respondents in 2021 were asked if they had used these payment methods in the past week. Use in the past year is a more reliable way to estimate adoption because someone may have adopted a payment method but did not use it in the past week to make a purchase.

[12]Assuming that "Bank Account Management App" always means an e-Transfer from a mobile phone, the estimate for Interac e-Transfer would increase from 51% to 56%. This is not a realistic assumption, however, since these apps can be used in other ways besides making e-Transfers. The survey instrument can be improved to more accurately capture these types of payments.

[13][Felt et al.]() ([2023]()) provide an in-depth analysis of mobile payments in Canada, using data from the Digital

apps, respectively, in the past year.

Chart 3b shows the adoption of payment alternatives using an upset plot, which visualizes how many respondents chose each option at least once, and every subset of possible response patterns. The first seven bars represent respondents who selected only one alternative payment method. The highest bar is e-Transfer (909 respondents), indicating that many e-Transfer adopters have only used e-Transfer and no other alternative methods. The next highest is payment account (320 respondents) followed by the mobile apps. Among respondents who used two alternatives, the most common selection is e-Transfer and payment account (526 respondents), followed by combinations of e-Transfer and various mobile apps. These results indicate that:

- many Canadians who adopted one payment alternative are open to using others

- a sizeable portion of Canadians have restricted their use to only one payment alternative with the most common being e-Transfer

4 How do you pay?

In this section we discuss results from the 2022 MOP DSI. Respondents record their actual payment choices at the point of sale over three days in the DSI, which typically covers retail payments, both in-person and online. We inform respondents not to include bill payments, donations or business expenses in their DSI entries.[14]

The key statistics that summarize the choice of payment methods are:

- the volume share, which 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, which 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. In 2022, we updated the methodology for calculating the payment shares for all years considered to better reflect the range of payment methods available to Canadians (see Appendix E for more).

4.1 Long-term trends in payment shares

Chart 4 shows the volume and value shares for each method of payment using data from all MOP diaries dating back to 2009, as well as the November 2020 CAS. This calculation

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Wallet and Payments Trends survey. They estimate that 15% of the overall population has used Apple Pay, Google Pay or Samsung Pay in the past three months.

[14]These guidelines help exclude transactions that may entail different decision-making than the immediate purchases of goods and services. For example, Kosse (2021) notes that bill payments often have a recurrent nature that allows for planning, and that the average amount of a bill payment is higher than a purchase. More importantly, bills can be paid using a different set of payment methods than those commonly used at the point of sale, such as online banking and automatic or pre-authorized debits.

considers transactions made with the most popular payment methods—cash, debit and credit accounted for over 90% of transactions in 2022—and any other methods that can be used in a retail transaction, such as Interac e-Transfer, mobile payments and digital currencies. We highlight the subset of transactions made with the contactless feature of debit or credit cards. Finally, we include both in-person and online payments in the calculation.

Cash remained an important payment method in 2022 with a volume share of 22%. This was essentially unchanged since the onset of the COVID-19 pandemic—the cash volume shares from the November 2020 CAS and the 2021 MOP were both 21%. However, these figures reflect a longer-term decline in the volume share of cash. The share fell from 54% in 2009 to 33% in 2017, but was relatively stable from 2017 until early 2020 (Henry et al., 2022). The pandemic is an influential event associated with a sudden decline in the volume share of cash. In value terms, the cash share was 12% in 2022, almost the same as in 2021. The cash value share was stable between 2009 and 2013 at 23%, and dropped to 15% in 2017. The cash value share had dipped below 9% early on in the COVID-19 pandemic.

Debit cards accounted for 21% of all transactions and 19% of the value of transactions in 2022, compared with 26% and 21%, respectively, in 2021. Most debit card transactions were contactless in 2022, and contactless payments accounted for just under half of the value of all debit card purchases. The volume share of debit card purchases ranged between a low of 20% in 2013 and high of 26% in 2021. Contactless debit card transactions grew from 5% in 2017 to 10% in 2020, but have been relatively stable over 2021 and 2022.

Credit cards were the most dominant payment method that Canadians used in 2022, making up 48% of all transactions and 59% of the total value. Over two-thirds of all credit card transactions were contactless in 2022, which was the same as in 2021. The volume and value shares of payments made with credit cards has steadily increased at each observation between 2009 and 2022. During this time, the share of payments made by contactless credit cards also increased, growing quickly from 6% in 2013 to 19% in 2017 and reaching 28% in 2020. This growth then slowed over 2021 and 2022.

Chart 4 also shows the share of payments made with alternatives to cash and cards. This category of payment methods includes cheques, SVCs (both store-branded and prepaid credit cards), Interac e-Transfer, online payment accounts such as PayPal, cryptocurrency and coupon or store points. In total, these payment methods accounted for 9% of the volume and 10% of the value of purchases in 2022.[15] The shares in this category were relatively stable between 2013 and 2017 (5% for volume and 8% for value), but increased between 2017 and 2020. The shares have not changed substantially since 2020, with the volume share increasing by only 2 percentage points and the value share decreasing by 1 percentage point.[16]

Finally, **Chart 5** provides additional context for the results outlined in this section by showing the average dollar value of purchases for the three main payment methods, as well as for in-person and online payments. The average value of a cash transaction was $32 in 2022. This result is similar to findings from the 2021 survey, but an increase from previous

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[15]The biggest contributors to this category were mobile payments and online payment accounts, comprising 2.7% and 1.8% of the transaction volume in 2022, respectively. SVCs accounted for 2.5% of transaction volumes.

[16]This resulted in part from a decline in the value of the average mobile payment recorded in the DSI. Cubides and O'Brien (2023) similarly find that the use of mobile payments in the United States decreased between 2020 and 2022.

years, including 2020 when the average cash purchase was $22. The value of card payments shows a u-shaped pattern between 2020 and 2022: average debit and credit purchases were relatively high in 2020 ($46 for debit and $70 for credit), dipped in 2021 and rebounded in 2022 ($49 for debit and $68 for credit). The average value of online purchases has the same pattern. This finding is likely due to pandemic-related trends in the types of purchases that were made during the 2021 survey. That version of the MOP was in the field during a period of rapidly rising case counts associated with the Omicron variant (see section 4.2 for further discussion).

4.2   COVID-19 trends in consumer spending

In this section, we discuss findings from the DSI, focusing on trends in consumer spending behaviours related to the COVID-19 pandemic. Early in the pandemic, public-health restrictions decreased the level of in-person shopping, which affected the types of purchases Canadians were making. The volume and value of online purchases increased sharply at the onset of the pandemic, a change that persisted into 2022. Both of these factors affected what payment methods consumers chose, especially the use of cash. To focus on the effects of the pandemic, we compare data from the 2017 MOP DSI with information that participants supplied in payments diaries since November 2020.

Chart 6 shows the composition of purchases for 2017 and between 2020 and 2022 according to the dollar amount spent. The bars denote the percentage of the total value of expenditures made within each purchase category.

Changes in the composition of spending from 2020 to 2022 are consistent with the waning effects of the pandemic. For example, the value share of gasoline purchases increased from 5% in 2020 to 8% in 2021 and 2022, similar to 2017 levels. Spending on travel and parking doubled from 1% to 2% over this period, while entertainment and meals—including restaurants and outings such as movies, concerts and admission to swimming pools—rose from 10% to 14%. Results from the DSI show that spending on durable goods was high (13%) at the start of the pandemic. This finding is consistent with overall increases in Canada's household savings rate in 2020, which translated into increased wealth, including in the form of consumer goods. The value share for durable goods captured in the DSI subsequently decreased in both 2021 and 2022, reaching 9% in 2022. Finally, Canadians spent relatively more on costs related to health care in 2022 (6% value) compared with earlier in the pandemic (3% in 2020 and 2021). This may reflect a catching-up effect since Canadians couldn't easily access non-emergency health care services early in the pandemic. In 2020 and 2021, many health care providers were overburdened as they dealt with cases of COVID-19 and adjusted to pandemic protocols.

For each type of purchase, Chart 7 shows the share of transactions made online for both volume (panel a) and value (panel b). Overall, the pandemic accelerated the shift to online shopping (Chart 8). Results from the MOP DSI show that the volume share of online shopping increased from 3% in 2017 to 12% in 2020 (6% to 20% in value terms), a shift that persisted over 2021 and 2022. Chart 7a shows that the pandemic impacted spending on groceries and entertainment, including meals. For example, the share of grocery purchases made online increased from 1% in 2017 to 4% in 2020. Meanwhile, online spending on entertainment and meals rose from 2% to 13% in the same period. The value share for

online shopping has increased for most categories when comparing findings in 2017 with data over 2020–22.

5 Long-term factors affecting cash use for payments

In this section we assess factors that may explain trends in the use of cash for payments in Canada since 2009. With the 2022 MOP, we now have data from six surveys and payment diaries—three prior to the COVID-19 pandemic and three since its onset. On one hand, the share of cash transactions declined substantially from 54% in 2009 to 22% in 2022. On the other hand, the cash volume share has remained essentially the same since 2020. Using complementary survey data from the Canadian Financial Monitor, Henry et al. (2022) show that the cash volume share was relatively stable between 2017 and early 2020, but fell sharply at the onset of the pandemic. Finally, the value share of purchases made with cash has been more stable over time, declining notably between 2013 and 2017 but only slightly thereafter (with the exception of early in the pandemic).

5.1 Digitalization of the economy

One possible explanation for declining cash use could be that consumers are making more purchases online. In general, cash cannot be used for such purchases. As the digital economy expands, consumers may have relatively fewer opportunities to use cash.[17] [18]

    Chart 8 presents data from Statistics Canada showing the total annual dollar values of retail purchases from 2013 to 2021 and for the subset of online purchases (left axis). Retail purchases are defined as those in the North American Industry Classification System (NAICS) category 44-45. The right axis of **Chart 8** shows that online purchases accounted for just 1% of the value of all retail purchases in 2013. Online purchases grew slowly over the next six years, reaching 4% in 2019. However, the COVID-19 pandemic had a significant impact on this trend. While retail sales were stable from 2019 to 2020, the share of online purchases doubled to 8%. Growth of in-person purchases resumed in 2021 as did online purchases. As a result, the value share of online purchases reached 9%.

    Chart 8 also overlays estimates of the volume and value shares of purchases made online as estimated from the MOP DSI. These estimates follow a pattern similar to the aggregate data from Statistics Canada. However, the value share estimates are noticeably higher. For example, data from the DSI indicate that online purchases accounted for 20% of the value of all purchases in 2021, compared with 9% in the aggregate data. The difference reflects the fact that the DSI captures day-to-day purchases and may not cover the full range of businesses included in the NAICS 44-55 category.

    Interestingly, the MOP data suggest that the growth in online purchases is not a primary driver of the observed decline in cash use. **Chart 9** breaks out payment volume shares

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[17]The digitalization of the economy has potentially wide-ranging implications. See the Bank of Canada's Staff Discussion Paper series on digitalization (Chernoff and Galassi, 2023; Mollins and Taskin, 2023; Chu et al., 2023).

[18]Purchases can be complex, and it is not inconceivable for an online purchase to be made in cash. For example, respondents in the DSI report purchases made on platforms such as Facebook Marketplace. They classify these as online purchases but pay in cash since they were required to pick up the item in-person.

by method of payment into offline or in-person (panel a) and online (panel b) purchases. Focusing on in-person transactions, we find the same trends in cash use as those for the overall DSI statistics that include online purchases (**Chart 4**). Even in recent years when online transactions accounted for roughly 15% of all purchases, the cash share estimates for offline transactions are only a few percentage points higher than the overall estimates in **Chart 4**. In other words, including online purchases in the calculation does not substantially lower the share of cash transactions.

Conversely, the share of credit cards used for online transactions has been relatively stable since 2009, ranging from 57% to 65% (with the exception of the 52% recorded in 2013). The share of all retail transactions using credit cards has grown, largely because of in-person purchases made with contactless credit cards.

In sum, recent increases in online spending appear to have minimally impacted the overall estimated level of cash use. This is in part because the size of the digital economy has historically been relatively small. However, cash use could decline further if the online share of purchases were to become dominant.

5.2   Transaction size

Cash exists in the form of bank notes and coins that have fixed denominations. The composition of payments relative to Canadian bank note denominations has shifted over time (**Chart 10**). This change could be due to various factors such as inflation, an increasing share of online purchases or other changes in the retail landscape (e.g., increased popularity of big-box stores where consumers can purchase a range of goods in a single transaction).

Chen et al. (2019) show that the value of a purchase can influence the decision to pay with cash. Purchases below a denominational threshold are relatively more likely to be paid with cash compared with purchases just above a threshold. The intuition is simple: a purchase just above a denominational threshold will result in larger amounts of change given to the consumer, known as the "burden of coins."

Chart 10 shows that purchases under $20 accounted for almost 60% of all recorded diary purchases in 2009, but just 40% in 2022. This represents fewer opportunities where lower value denominations like $5 and $10 bank notes could be used for convenient cash payments. Conversely, consumers had more opportunities to use $50 and $100 notes, as the share of purchases above $20 but below $100 increased by more than 10 percentage points over the same time period.

This shift in the composition of purchases by dollar value is broadly consistent with several other known trends. Bank data on notes in circulation (NIC) show that demand for high-value notes drove the overall sustained growth in NIC since about 1980. In contrast, demand for low-value notes has declined (Engert and Huynh, 2022). The MOP data further show that consumers holding cash are more likely to have $50 and $100 notes since 2018 when ABMs began dispensing those denominations.[19] Finally, increased use of $50 and $100 notes for cash purchases could partially explain why the average value of a cash transaction increased compared with 2009, 2013 and 2017. This in turn resulted in a relatively slower decline in

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[19]See Table 3 in Henry et al. (2022) and the discussion in section 3.1. Among respondents holding cash in 2022, 22% held $50 notes and 12% held $100 notes. Both shares are similar to 2021.

the cash value share, not including 2020. While consumers are making fewer cash purchases, those transactions they do make tend to use bank notes with higher denominations.

5.3   Demand-side factors

Demand-side factors refer to the shares of Canadians using cash and cards, and how this has changed over time. **Chart 2** shows that 13% of Canadians in 2022 reported that they have stopped using cash, up slightly from the 10% observed prior to the pandemic in 2019. However, around half of those who say they are cashless still report carrying some amount of cash on them, suggesting that the share of Canadians who are truly cashless is under 10%.

Since 2009, the percentage of Canadians holding some amount of cash on hand decreased from 95% to 79% in 2022. The 2022 estimate aligns with the 80% of respondents to the MOP SQ who reported using cash at least once in the past year to make a purchase. By contrast, we observe an increase of 10 percentage points in the share of Canadians owning a credit card, from 80% in 2009 to 90% in 2022. Debit card ownership was basically stable over this period. These findings are consistent with a falling cash volume share since more Canadians can use a credit card for purchases and fewer have cash readily available.

Changes in adoption over time are partially reflected in Canadians' perceptions about the features of different payment methods (**Figure 11**). Comparing 2013 and 2017 with more recent years, Canadians have a less positive view of cash regarding its ease of use, acceptance by merchants, cost and security. The biggest change over this period was Canadians' views on paying with the contactless, or tap-and-go, feature of cards. Especially compared with 2013, consumers in recent years rate contactless card as widely accepted and easy to use, though slightly less secure than cash or chip-and-PIN cards.

5.4   Supply-side factors

Finally, two key supply-side factors are relevant to the use of cash for payments:

- Acceptance of cash by merchants—consumers cannot use cash where only card or digital payments are accepted. Conversely, alternative payment methods must be widely accepted to be widely used.

- Accessibility of cash—that is, how easily can consumers obtain cash to use for transactions.

The Bank has conducted surveys measuring the acceptance of cash and other payment methods by small and medium-sized businesses (Welte and Wu, 2023; Welte et al., *Forthcoming*). The results of these surveys show that nearly all such merchants in Canada accept cash with the percentage actually increasing from 94% in 2015 to 97% in 2022. In contrast, roughly two-thirds of these merchants accepted debit and credit cards as late as 2018. That figure jumped to almost 90% in 2021 and remained at that level in 2023. Further, analysis from Technology Strategies International Inc. (2023) shows that the number of terminals equipped for contactless payments grew rapidly over the past 13 years. In 2009, there were just 40,000 such terminals. The number soared to 250,000 in 2013. This fast growth continued into 2020 (905,119 terminals) but slowed in 2021 and 2022, suggesting that contactless terminals may be reaching market saturation.

Evidence from the MOP aligns with these facts about merchant acceptance. Several iterations of the DSI (2009, 2021 and 2022) asked respondents to identify whether the business did *not* accept any of the three main payment methods (cash, debit or credit) for a given transaction (**Chart 12a**).[20] In 2009, respondents reported only a handful of transactions where cash was refused at the point of sale, compared with 15% of purchases where credit cards and 9% of debit cards were not accepted. More recent data from 2021 and 2022 suggest that cash and card refusal rates have converged at around 3%. The percentage of cash-only stores—that accept only cash as a method of payment—also decreased over time, from 6% in 2009 to 2% in 2022 (**Chart 12b**).

Consumers have had more opportunities to use cards, and contactless ones in particular, since 2009. This increased acceptance of cards is associated with a rise in the levels of credit card use, although the share of debit card payments has been fairly stable between 2009 and 2022 (**Chart 4b**). For both debit and credit cards, the share of contactless purchases grew rapidly from 2013 to 2022 and now accounts for the majority of card purchases.

The second key supply-side factor relevant for cash use is access to cash. Chen and Felt (2022) study Canadians' access to cash by their distance to the nearest ABM. The authors find that "almost all Canadians (97%) have access to at least one ABM in their community," and that "Canadians generally have good access to cash through ABMs."[21] The pandemic had a negative but temporary impact on access to cash. A small percentage (8%) of rural Canadians live in a community without an ABM available for making cash withdrawals. Compared with urban centres, these communities tend to have higher proportions of white-label ABMs, which charge a fee to withdraw cash.

Measures of ABM withdrawals from the MOP are consistent with the assessment that Canadians continue to have good access to cash (**Table 3**). While consumers have been visiting ABMs less frequently over time—the average number of withdrawals each month fell by about half from 2009 to 2017—the percentage of Canadians making a withdrawal in the past week has remained essentially unchanged since 2017 at just under 30%.

6 Conclusion

In this paper we document key results from the 2022 MOP survey. While previous versions of the MOP were conducted on a four-year cycle since 2009, the 2022 version was only one year removed from the 2021 MOP. Together with the November 2020 CAS, we now have observations from six surveys and payment diaries for the period 2009 to 2022—three from before the COVID-19 pandemic and three since its onset. Results from the 2022 MOP survey are by and large similar to those from 2021.

Canadians continue to withdraw and use cash on a regular basis, and it remains a relevant payment method. The level of cash use fell just after the onset of the pandemic but has

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[20]Note that estimates from the MOP DSI include purchases at businesses of any size, whereas estimates from the Bank's Merchant Acceptance Survey are for small and medium-sized businesses.

[21]These results may actually understate the extent of access to cash since making a cash withdrawal may link to other necessary shopping trips (see Chen and Xiao (*Forthcoming*)). However, other relevant factors besides proximity should also be considered. For example, white-label ABMs charge a fee for accessing cash. Future changes in the composition of bank-provided and white-label ABMs could affect access to cash even if the overall number of ABMs remains high.

remained essentially stable since. The pandemic also corresponds with an increasing share of purchases being made online, which has implications for cash use in the future. However, the long-term decline in cash use observed since the first MOP survey in 2009 is primarily associated with the rising share of consumers using and merchants accepting credit cards, as well as the convenience of tap-and-go payments. The Bank will conduct the MOP survey annually to monitor the use of cash and alternative payment options.

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
Aug. 2022	Cash Pulse Survey	CPS	2,002		Online
Nov. 2022	Methods-of-Payment	MOP	5,607	1,779	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 designed the surveys, which were implemented in collaboration with survey partner Ipsos

Table 2: Cash holdings: 2009 to 2022

	Cash on hand		Other cash	
	Mean $	% zero cash	Median $	% zero cash
2009	72	5.1	100	47.3
2013	81	6.2	300	64.7
2017	106	11.1	215	56.2
2021	127	25.1	200	78.2
2022*	130	20.9	200	82.5

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. Mean cash on hand is calculated only with respondents who report a positive amount. The asterisk (*) signifies that 10% of respondents selected "Prefer not to answer" when asked about their cash holdings in the 2022 survey. These respondents were excluded from the *% zero cash* calculations.

Table 3: Cash withdrawals:2009 to 2022

	ABM			Bank teller			Cash-back		
	Mean #	% made w/d	Avg. $	Mean #	% made w/d	Avg. $	Mean #	% made w/d	Avg. $
2009	4.3	50.0	113	1.6	18.1	236	1.9	19.9	60
2013	2.7	37.0	118	0.7	8.7	236	0.7	8.3	43
2017	2.3	27.0	140	0.6	3.1	289	0.9	7.9	56
2021*	1.7	28.1	154	0.4	5.8	334	0.2	5.3	72
2022*	1.8	28.7	156	0.4	5.5	226	0.3	7.8	54

Note: This table shows measures of cash withdrawals made from automated banking machines (ABMs), through a bank teller or cash-back using a debit card. The *mean #* columns show the average number of withdrawals made in the past month. The 2021 and 2022 estimates are converted to monthly by multiplying by 4.345, which is the average number of weeks in a month. The *% made w/d* columns reflect the percentage of respondents who made a withdrawal in the past week. The asterisk (*) signifies that there were changes to the cash withdrawal questions, most notably in 2021 and 2022, compared with prior years. 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. In 2021 and 2022, the question asked directly about withdrawals made in the past week. The *avg. $* columns show the average value of a withdrawal. In 2009, 2013 and 2017, the average was based on a question that asked about a "typical withdrawal." In 2021 and 2022, the average was calculated based on the total amount withdrawn in the past week divided by the number of withdrawals made.

Table 4: Card ownership: 2009 to 2022

	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
2022	98	20	90	36	8	9

Note: This table shows the ownership rates of debit, credit and stored-value cards (SVC), also known as prepaid cards. The *% own* columns show the percentage of respondents that own at least one debit and credit card respectively. The *% linked* columns show the percentages of respondents who have at least one debt or credit card and have linked at least one card to an online payment account or mobile app. SVC-S denotes store-branded prepaid cards and SVC-M denotes prepaid Visa, MasterCard or Amex cards. The two type of prepaid cards were included as a single category in 2009.

Table 5: Bank account details and credit card revolving

| | Bank account | | | | | Credit card |
	Account fee %	Fee waived %	<$5	Fee amount $5-$15	>$15	Revolver %
2009	59					38
2013						30
2017	73	44	32	45	23	30
2021	66	32	20	53	27	27
2022	63	31	16	54	29	27

Note: *Account fee* is the percentage of respondents with a bank account who report having a monthly account fee. *Fee waived* is the percentage of respondents who reported that the fee was waived or refunded in the last month, conditional on having a bank account with a monthly fee. *Fee amount* is the share of respondents with a bank account fee who report that the monthly fee on their bank account is within a given interval. Respondents who reported "Don't know/not sure" answers are not included in the estimate. *Revolver* is the share of credit card holders that had a balance owning last month and did not pay off the full amount.

Charts

Chart 1: Trends in cash holdings during the COVID-19 pandemic

a. % No cash holdings

b. Average cash holdings
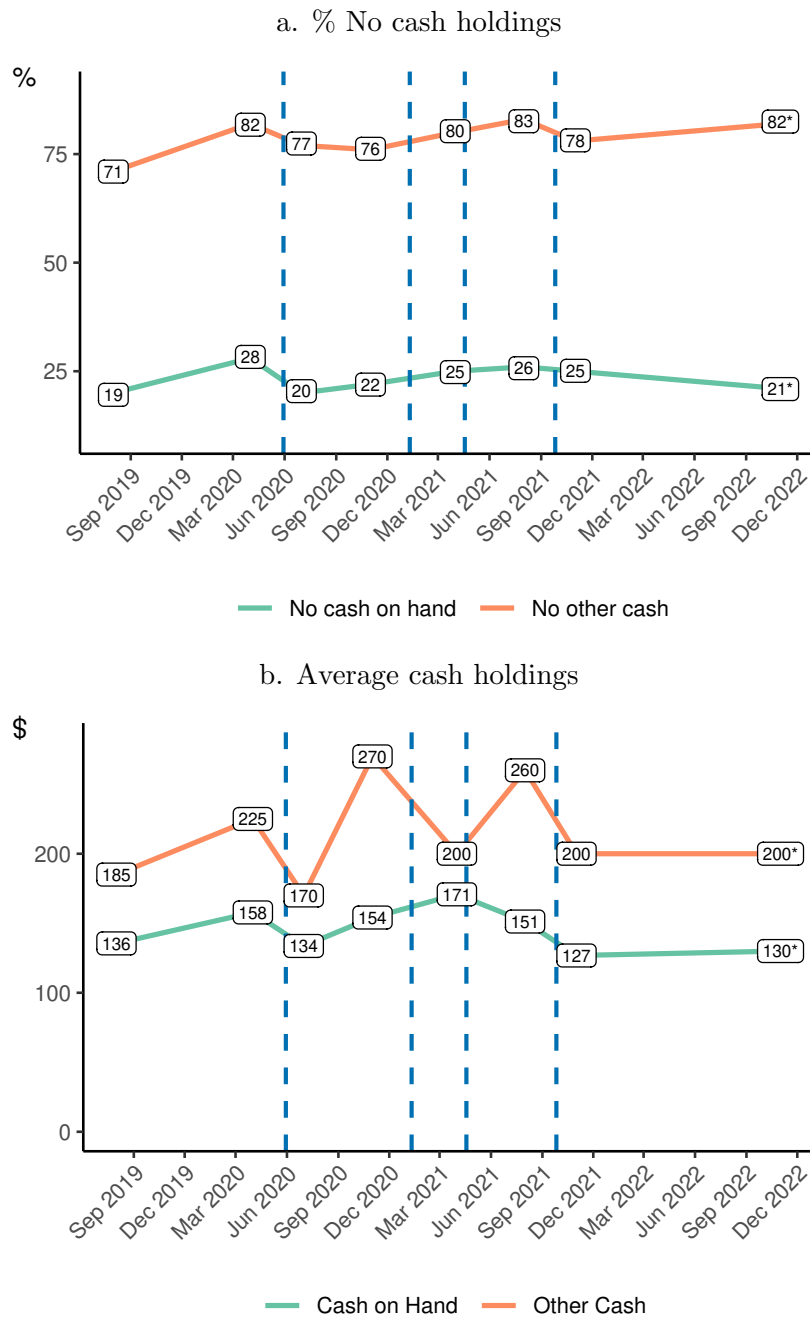
Note: Vertical dashed lines indicate peaks of the pandemic waves based on active case counts. *Cash on hand* is the mean cash held in a respondent's wallet, purse or pockets. *Other cash* is the median cash held outside of a bank in "your car, house, or another safe place." The asterisk (*) indicates respondents had the option to select "Prefer not to answer." For more about data sources, see **Table 1**.

Chart 2: Plans to go cashless during the COVID-19 pandemic
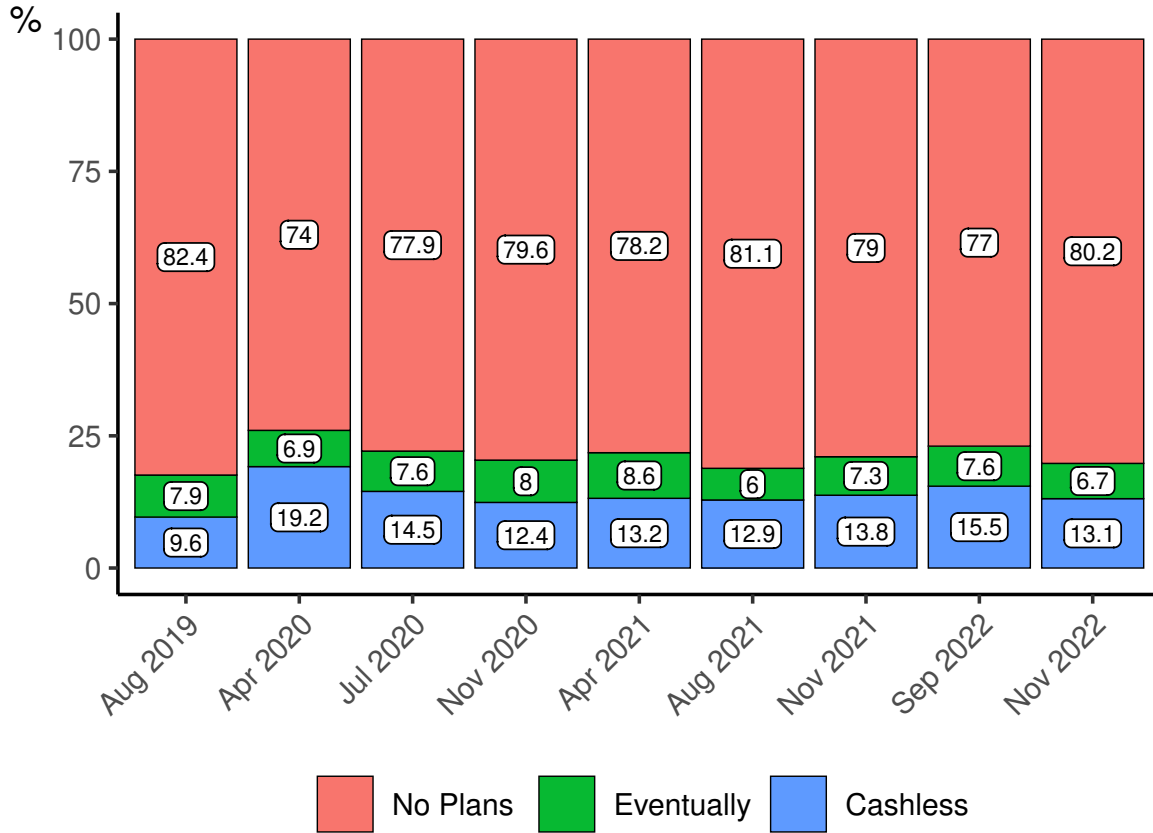
Note: This figure shows the distribution of responses to the question, "Do you currently have any plans to stop using cash in the future?" *No plans* indicates the respondent answered, "No, I do not have any plans to stop using cash." *Eventually* indicates the respondent answered, "Yes, in the next 2 years," "Yes, 2 to 5 years from now" or "Yes, more than 5 years from now." *Cashless* indicates the respondent answered, "Yes, I have already stopped using cash." For more about data sources, see **Table1**.

Chart 3: Adoption of alternatives to cash and cards

a. Use of payment alternatives in the past year
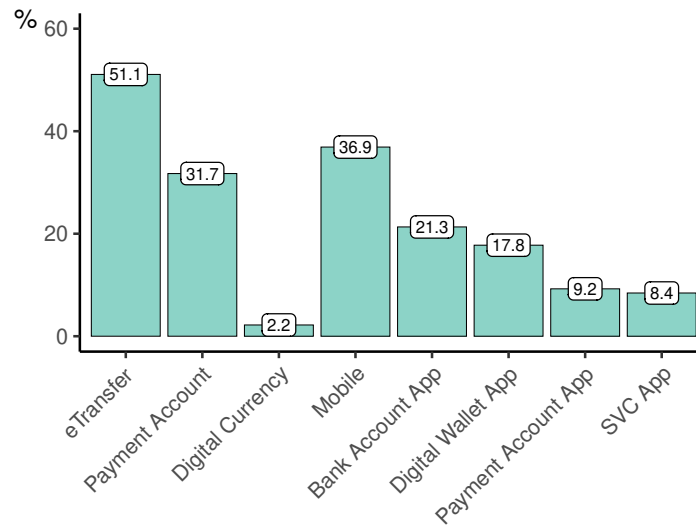
b. Upset plot of payment alternatives use
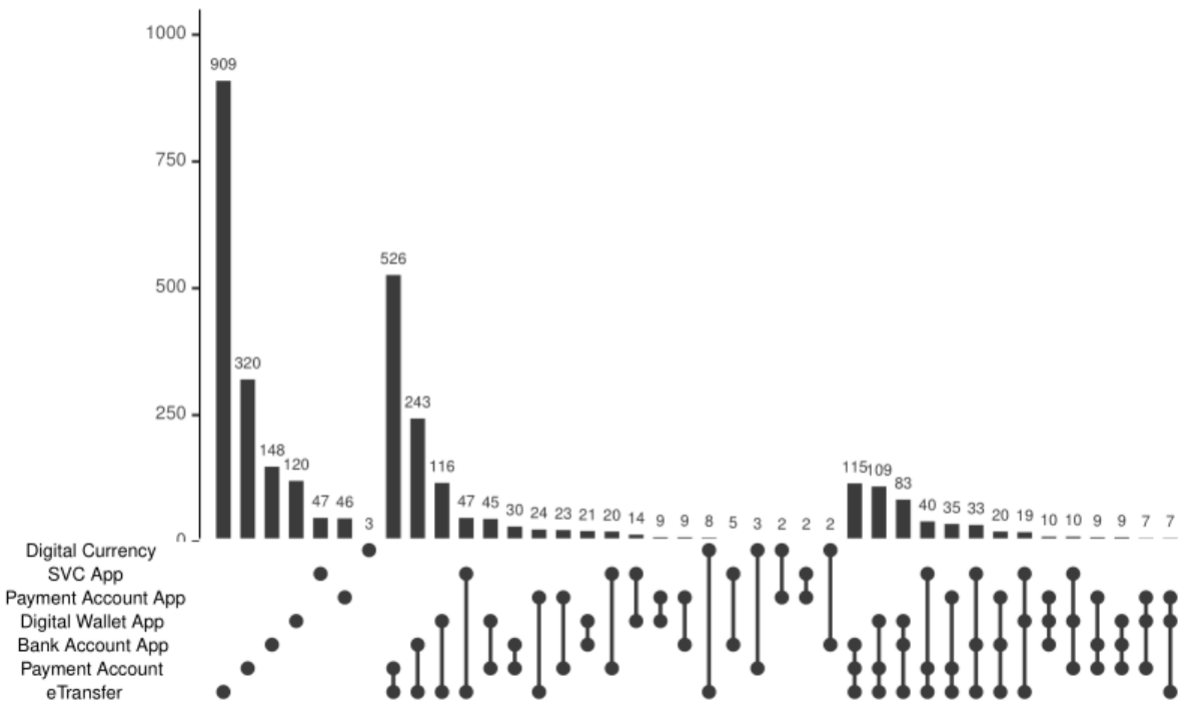
Note: This figure shows responses to a question about use of payment methods in the past year to make a purchase at a store or business. Panel a shows the percentages of respondents having used each indicated method of payment. *Mobile* is the percentage of Canadians who have used at least one of the following: Bank account app, digital wallet app, payment account app or SVC app. Panel b shows an upset plot of alternative payment methods used in the past year. Upset plots show counts of the detailed response patterns for all possible selections (i.e., each subset of possible payment alternatives used in the past year).

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Chart 4: Payment shares over time from payment diary studies

a. Volume shares

Year	Cash	Credit	CTCC	Debit	CTDC	Other
2009	53.7	18.3		24.7		2.3
2013	43.5	24.5	5.9	20.2		5.3
2017	32.8	17.7	19.2	12.1	13.1	5.3
2020	21	16.4	27.9	9.3	18	7.4
2021	21.1	14.7	30.4	9.7	16.3	7.8
2022	21.6	15.2	32.8	7.9	13.5	9.1

Cash · Debit · Credit · CTDC · CTCC · Other

b. Value shares

Year	Cash	Credit	CTCC	Debit	CTDC	Other
2009	22.7	39.5		31.7		4.9
2013	22.8	39.8	5.5	23.8		7.7
2017	15.1	36.6	15.8	20.2	4.9	7.5
2020	8.7	33	24.2	13	10.4	10.7
2021	12.6	29.3	27.6	11.3	10.1	9.1
2022	12.5	31.5	27.1	9.7	9.4	9.9

Cash · Debit · Credit · CTDC · CTCC · Other

Note: This chart shows shares 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, 2021 and 2022 Methods-of-Payment diary survey instrument (DSI) and the November 2020 Cash Alternative Survey DSI (DSI weights used).

Chart 5: Average transaction values from payment diary studies

a. By method of payment
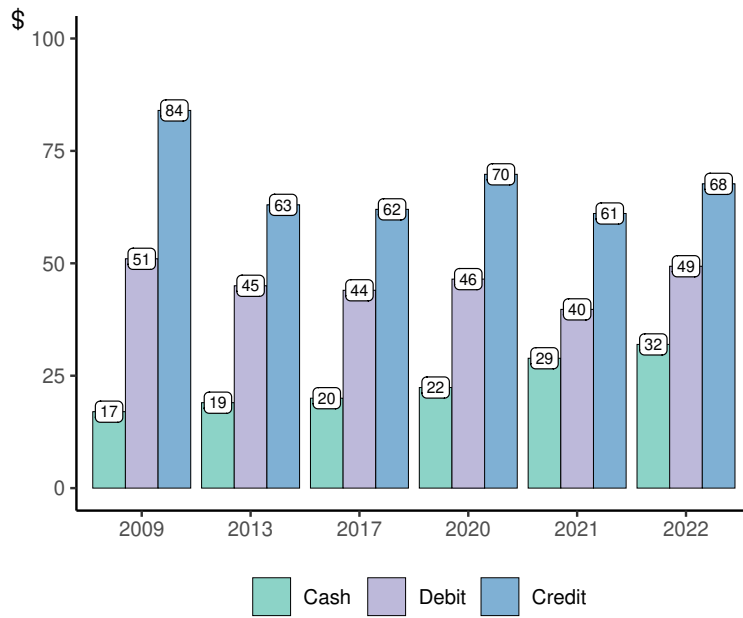
b. Online versus offline
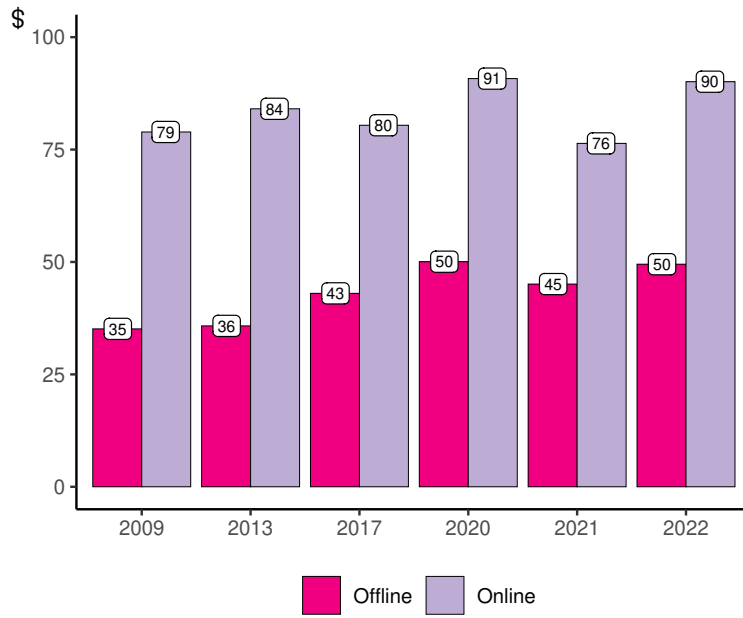
Note: This chart shows the average dollar value of various types of purchases. Panel a shows the averages by method of payment, while panel b shows the averages for offline (in-person) and online transactions.

Chart 6: Impact of COVID-19 on consumer spending in the DSI by category of purchase
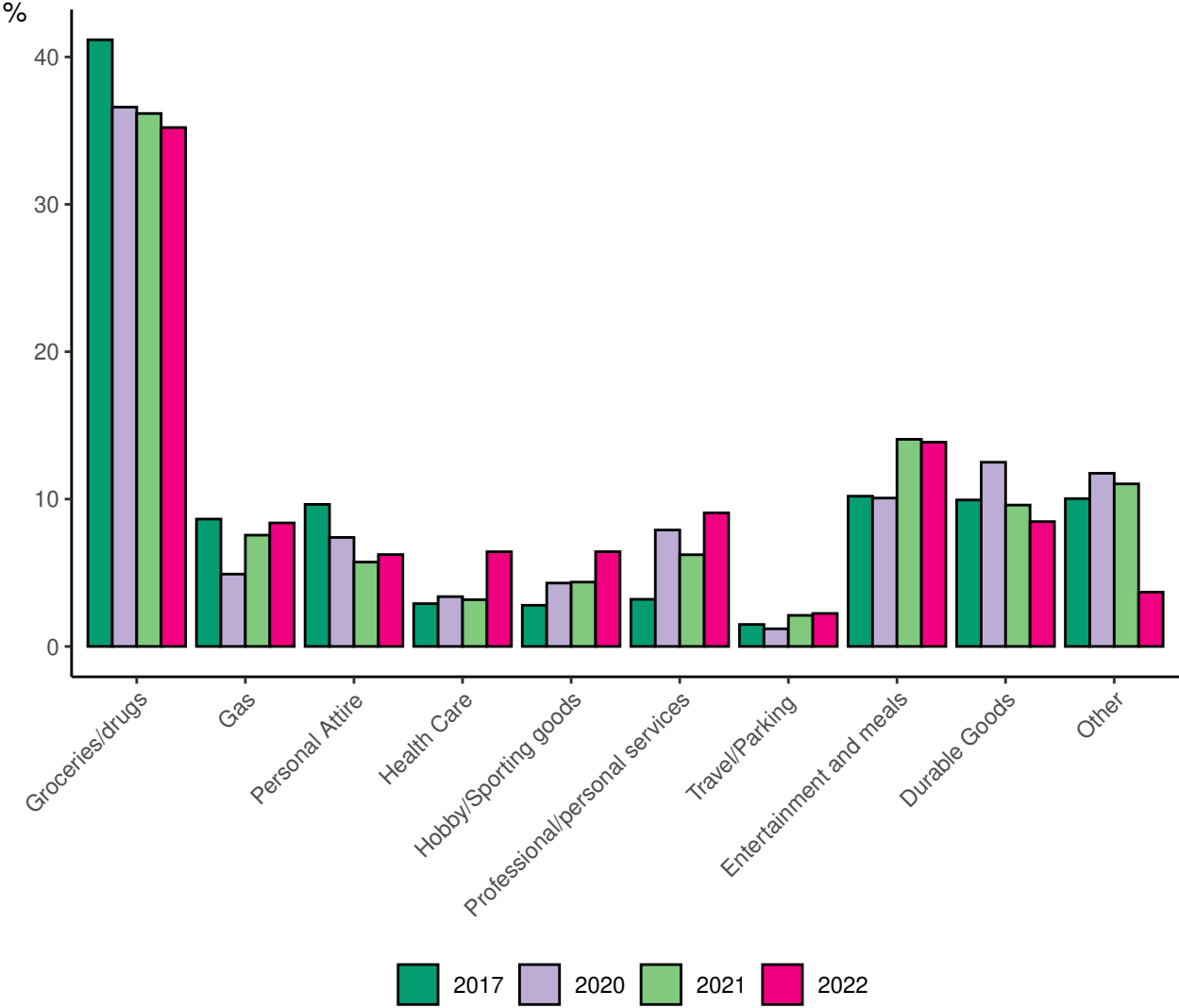
Note: This chart shows the composition of purchases in the 2017, 2020, 2021 and 2022 payment diaries according to dollar values. The bars represent the share of spending allocated to a given purchase category. Data are from the 2017, 2021 and 2022 Methods-of-Payment diary survey instrument (DSI) and the November 2020 Cash Alternative Survey DSI (DSI weights used).

Chart 7: Impact of COVID-19 on online transactions by purchase type

a. Online share by volume
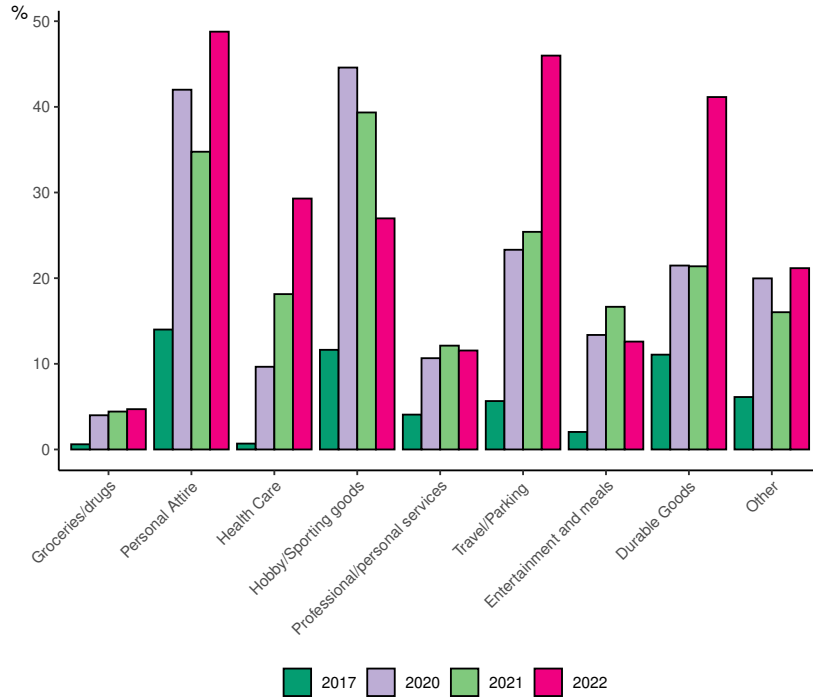
b. Online share by value
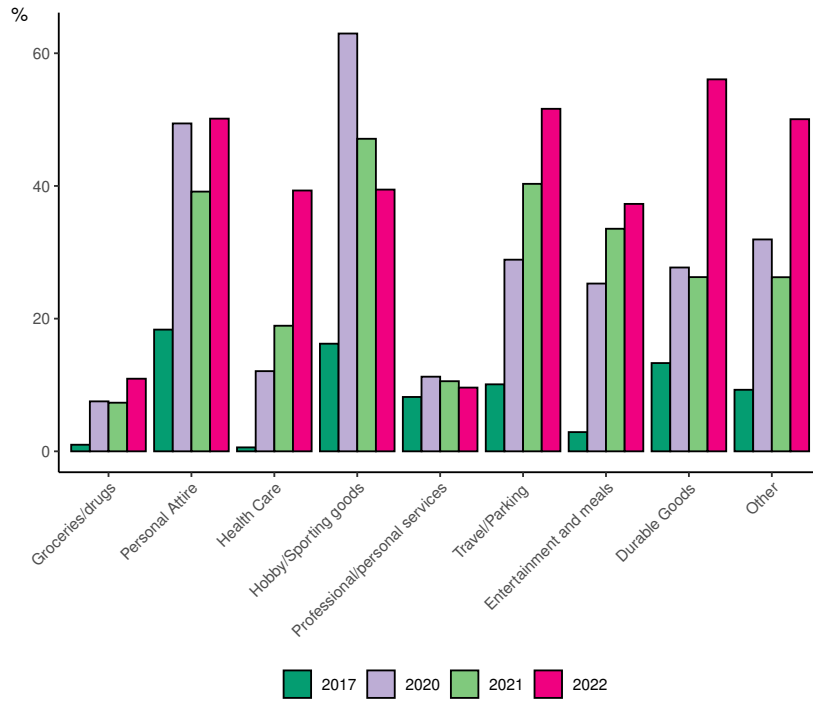
Note: This chart shows the share of purchases made online compared with all purchases, broken down by spending category. Panel a shows the number of purchases made online. Panel b shows the dollar value shares. Data are from the 2017, 2021 and 2022 Methods-of-Payment diary survey instruments (DSIs) and the November 2020 Cash Alternative Survey DSI (DSI weights used).

Chart 8: Online purchases: aggregate data versus MOP
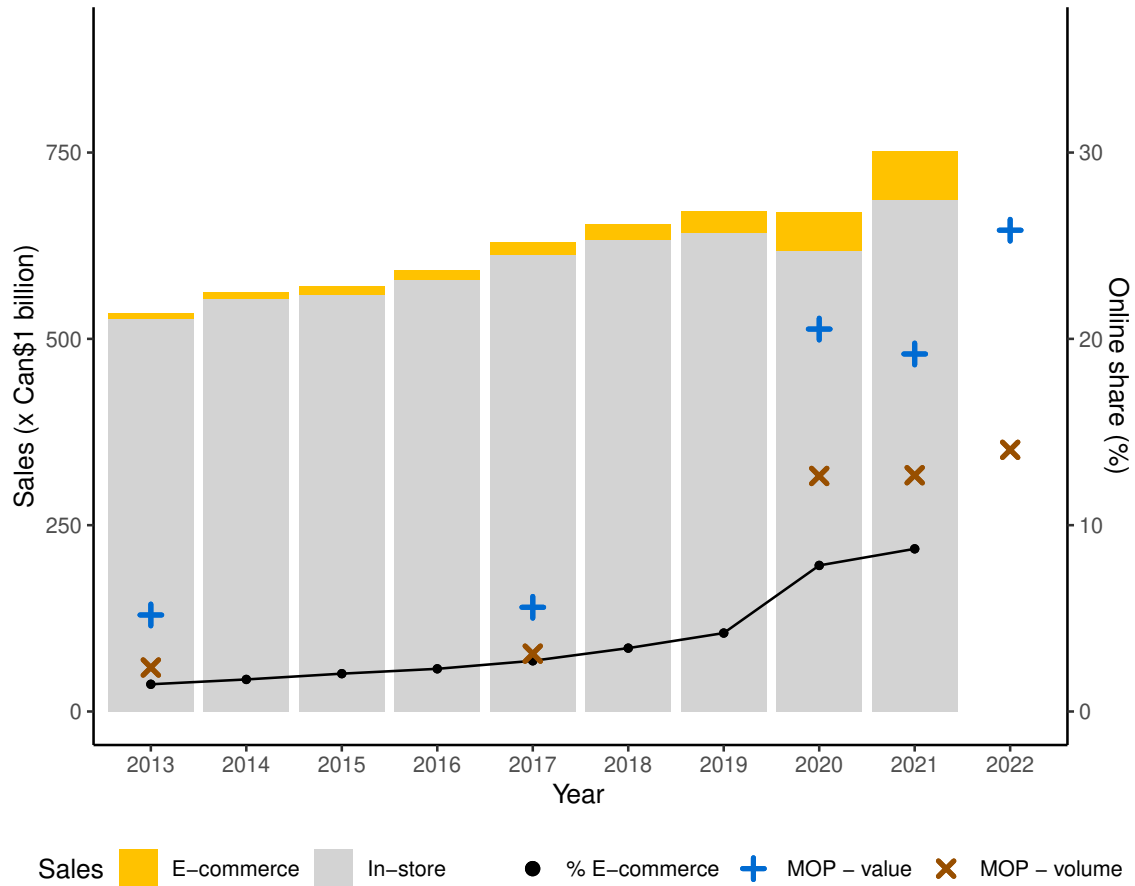
Note: This chart shows measures of retail shopping at the aggregate level based on Statistics Canada data and Bank of Canada estimates from payment diaries. Statistics Canada data are sourced from Table 20-10-0065-01, and reflect the dollar values of retail sales for any business classified as NAICS 44-45. Overlaid in brown and blue crosses are the share of purchases in volume and value, respectively, from the 2013, 2017, 2021 and 2022 MOP and November 2020 CAS payments diaries.

Chart 9: Online and offline payment volume shares over time

a. Offline

Cash   Debit   Credit   Other

b. Online

Cash   Debit   Credit   Other
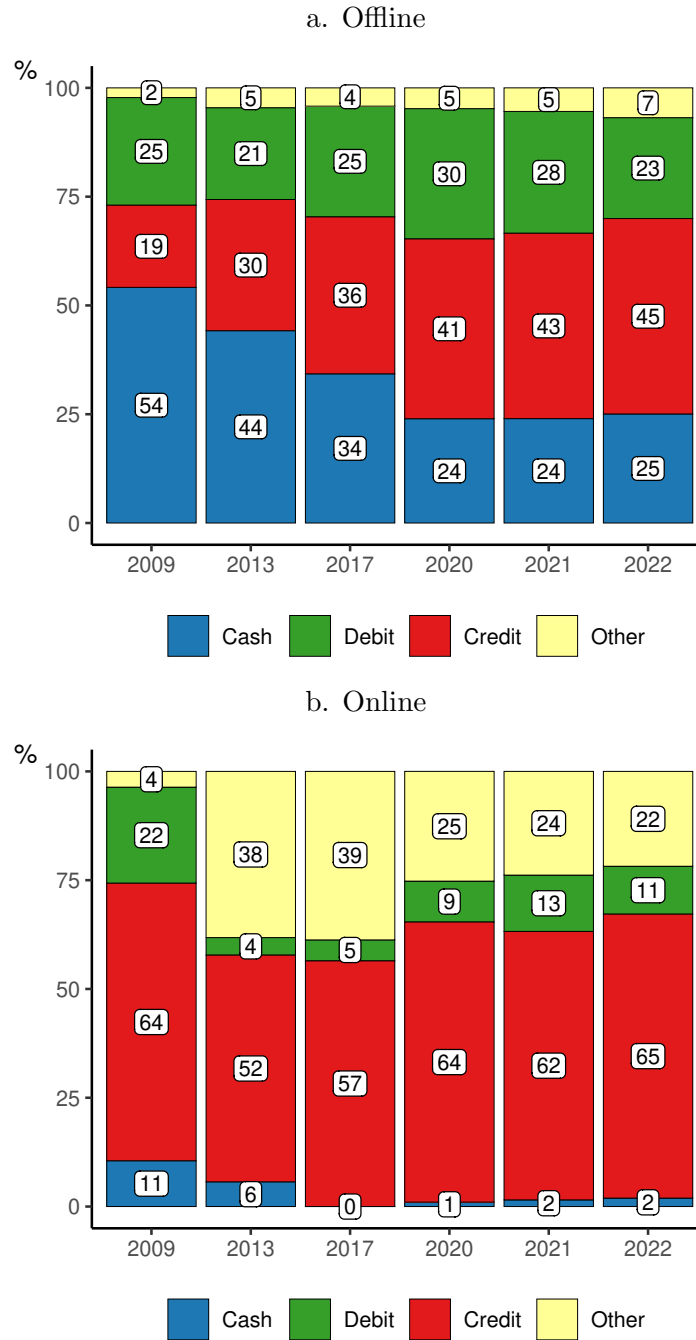
Note: This chart shows the volume share of transactions by method of payment. Panel a shows the shares for transactions conducted in-person, i.e., offline. Panel b shows the shares for purchases made online. *Other* includes Interac e-Transfer, online payment accounts (e.g., PayPal), mobile payments, digital currencies and stored-value cards. Data are from the 2009, 2013, 2017, 2021 and 2022 Methods-of-Payment diary survey instrument (DSI) and the November 2020 Cash Alternative Survey DSI (DSI weights used).

Chart 10: Composition of purchases in payment diaries by transaction size

%

Year	<$20	$20–$50	$50–$100	>$100
2009	57.5	24.1	11.2	7.2
2013	54.2	25.6	12.6	7.6
2017	48.3	28.4	13.8	9.5
2020	43.3	28.8	15.5	12.4
2021	43.1	28.6	17.3	10.9
2022	39.6	29.3	18.7	12.3

■ <$20   ■ $20–$50   ■ $50–$100   ■ >$100
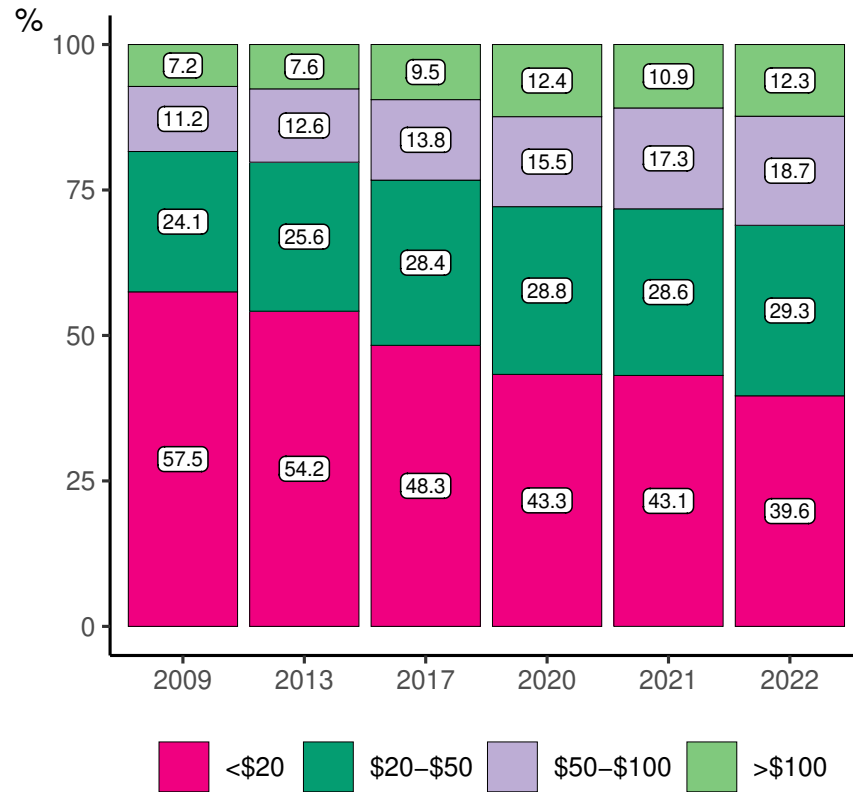
Note: This chart shows the percentage of transactions made within the indicated dollar value ranges. Data are from the 2009, 2013, 2017, 2021 and 2022 Methods-of-Payment diary survey instrument (DSI) and the November 2020 Cash Alternative Survey DSI (DSI weights used).

Chart 11: Perceptions of payment features

a. Acceptance

Legend: very negative, negative, neutral, positive, very positive

b. Cost

Legend: very negative, negative, neutral, positive, very positive

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c. Ease of use

very negative   negative   neutral   positive   very positive

d. Security

very negative   negative   neutral   positive   very positive
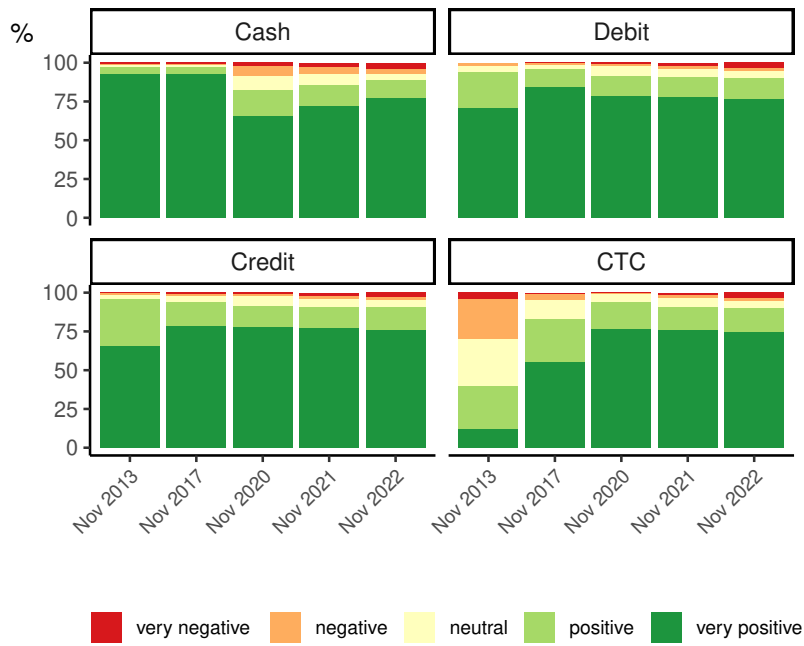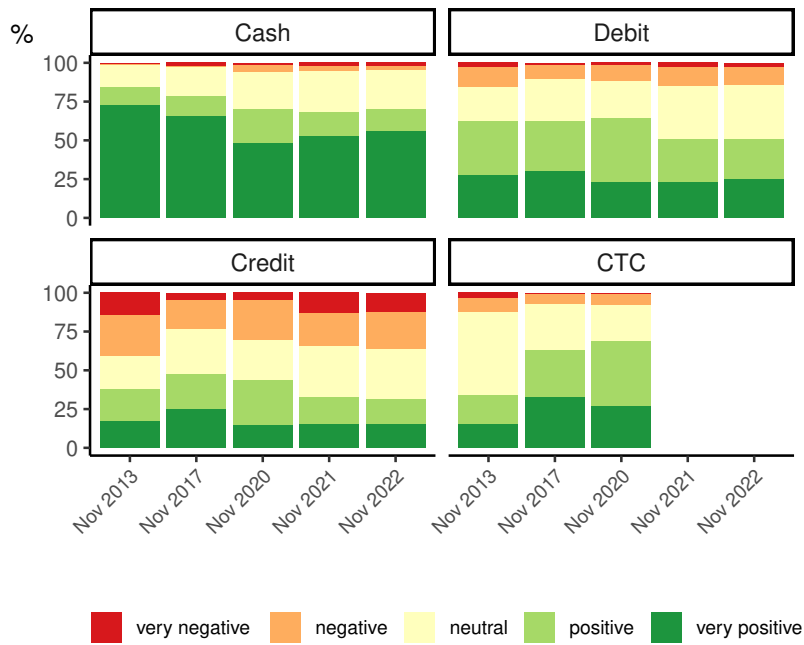
Note: These charts show the ratings of various payment features on a scale of 1 (very negative) to 5 (very positive). Definitions of the individual features are provided in Appendix D. *CTC* is the contactless feature of a credit or debit card. Data are from the 2013, 2017, 2021 and 2022 Methods-of-Payment surveys and the November 2020 Cash Alternative Survey.

Chart 12: Consumer reports of cash and card acceptance at the point of sale

a. Cash or card refusal at the point of sale

%

20 -

15 - 15.3

10 -

9.2

5 -
3.3 3.6 2.8   2.9 2.8 3.2

0 - 0.4

2009   2021   2022

■ Cash   ■ Debit   ■ Credit

b. Cash-only acceptance

%

15 -

10 -

5 - 6.1

2.5   3.5

1.3   1.7

0 -

2009   2013   2017   2021   2022
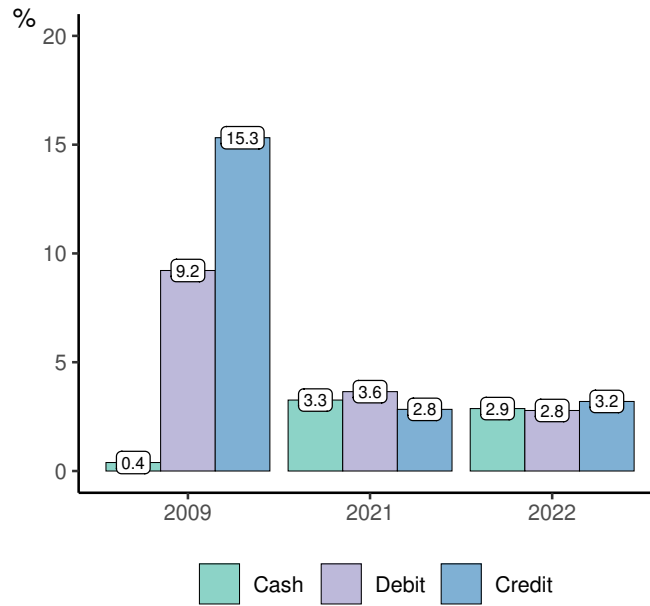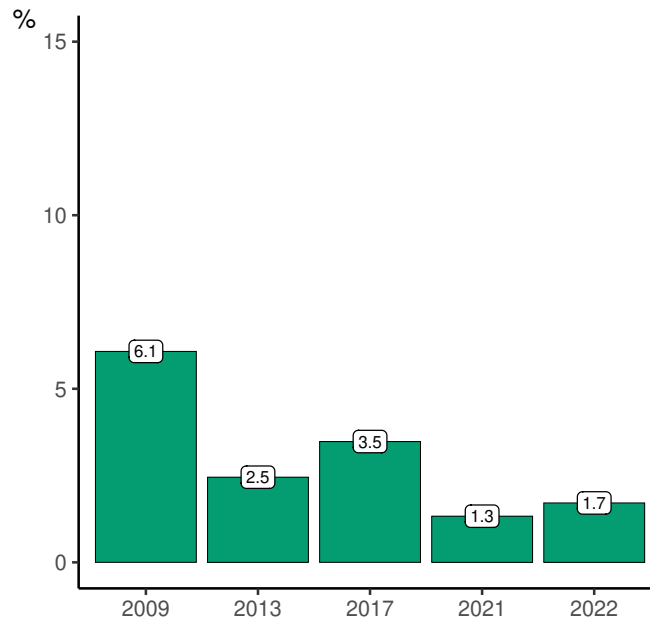
Note: These charts show levels of payment acceptance at the point of sale, as noted by consumers when they record details of their purchases in the payments diaries. Panel a shows the percentage of in-store purchases recorded in the diary for which cash, debit or credit were not accepted at the point of sale. This question was asked only for in-store purchases in the 2009, 2021 and 2022 Methods-of-Payment surveys. Panel b shows the percentage of in-store purchases recorded in the diary for which cash was the only method of payment accepted at the point of sale.

Appendix

This appendix describes the key methodological components of the 2022 Methods-of-Payment (MOP) Survey, including survey design, data collection and data quality. We also provide a list of important definitions and variables. Methodology for the 2022 MOP Survey is based on previous MOP surveys in 2009, 2013, 2017 and 2021 as well as the 2020 Cash Alternative Survey (CAS).

A   Data collection

This section describes the process of recruiting respondents for the 2022 MOP Survey and ensuring that the sample is representative of the Canadian population.

A.1   Recruitment and sampling

The sampling strategy for the 2022 MOP Survey was based on the approach used since 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.[22] 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 advance 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.

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[22]Respondents in the RTS panel previously completed a past version of the CAS, the Canadian 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 2022 survey. Weights ensure that the final sample is representative of the target population and help correct for coverage and non-response bias.

For the 2022 MOP Survey, the target population was Canadians aged 18 and older in the 10 provinces, and we obtained population level counts from the 2021 Canadian Census. **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 2022 MOP Survey

	Unweighted	**Weighted**
AGE		
18-34	24.70	28.10
35-54	32.10	32.00
55+	43.20	39.90
GENDER		
Male	45.98	49.41
Female	54.02	50.59
INCOME		
<$40K	25.62	19.04
$40K-$80K	34.93	28.38
>$100K	39.45	52.58

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 and household income with estimates obtained from the 2021 Canadian Census; 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 some of the previous 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, the 2022 MOP DSI was completely online like the November 2021 MOP. 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 2022 estimates.

The final sample size and other summary statistics related to the survey can be found in **Table 1**. In total, we collected 5,607 SQs and 1,779 DSIs. More SQs were collected because some participants completed the questionnaire but not the three-day diary. The DSI contains a total of 4,743 purchases and 163 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. **Table B.2** reports the proportion of Canadians who report experiencing a cybersecurity incident within the past three months, based on responses to the 2020 Canadian Internet Use Survey (CIUS) conducted by Statistics Canada and responses to the 2021 and 2022 MOP surveys. Overall, Statistics Canada estimates are similar to estimates from the MOP. Results from the 2022 MOP show that the most frequently reported cybersecurity incident was fraudulent or spam emails, the same as in the 2021 MOP and the 2020 CIUS. Furthermore, the second-most reported incident was a website asking for personal information, the same as in the 2020 CIUS.

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

	2022 MOP	2021 MOP	Statistics Canada
Virus/Computer infection	0.061	0.052	0.100
Identity fraud	0.024	0.015	0.042
Fraudulent emails/spam	0.332	0.338	0.493
Hacked accounts/fraudulent emails	0.046	0.034	0.068
Website asking for personal information	0.100	0.098	0.200
Fraudulent payment card use	0.005	0.132	0.070
Loyalty program points fraud	0.019	0.022	0.015
Asked to pay a cyber-ransom	0.022	0.022	0.039
Other cyber security incident	0.018	0.023	0.027
No incident	0.590	0.597	0.339

Note: The table compares estimates from the 2021 and 2022 Methods-of-Payment (MOP) Survey with estimates produced from Statistics Canada's 2020 Canadian Internet Use Survey.

Table B.3 provides a second measure of validity, which is the distribution of devices Canadians used to access the internet within the past three months. These estimates are also comparable with those reported by Statistics Canada. In both the 2022 MOP and the 2020 CIUS, the most widely used device was a smartphone. This is followed by a laptop (64% in both the 2022 MOP and 2020 CIUS) and a tablet (41% in the 2022 MOP and 45% in the CIUS).

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

	2022 MOP	2021 MOP	Statistics Canada
Smartphone	0.805	0.782	0.810
Laptop	0.640	0.649	0.640
Tablet	0.412	0.437	0.448
Desktop computer	0.464	0.500	0.393
Media streaming device	0.119	0.118	0.234
Smart TV	0.264	0.257	0.355
Internet-connected wearable smart device	0.069	0.057	0.139
Connected vehicle device	0.047	0.046	0.083
Other device	0.021	0.023	0.189
No device	0.005	0.011	0.078

Note: The table compares estimates from the 2021 and 2022 Methods-of-Payment (MOP) Survey with estimates produced from Statistics Canada's 2020 Canadian Internet Use Survey (CIUS).

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 of the diary), 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 2021 DSI (top) and the 2022 DSI (bottom).

The cash identity results in 2021 and 2022 are very similar, with close to half of diary respondents in both surveys having a cash identity error of $5 or less. This similarity is expected since both surveys were conducted exclusively online and both surveys asked about the same sources of cash.

Chart B.1: Cash identity error: 2021 and 2022 MOP DSI

2021

% of DSI Respondents

■ <=$5	■ $10.01–$25	■ $50.01–$100
■ $5.01–$10	■ $25.01–$50	■ >$100

2022

% of DSI Respondents

■ <=$5	■ $10.01–$25	■ $50.01–$100
■ $5.01–$10	■ $25.01–$50	■ >$100
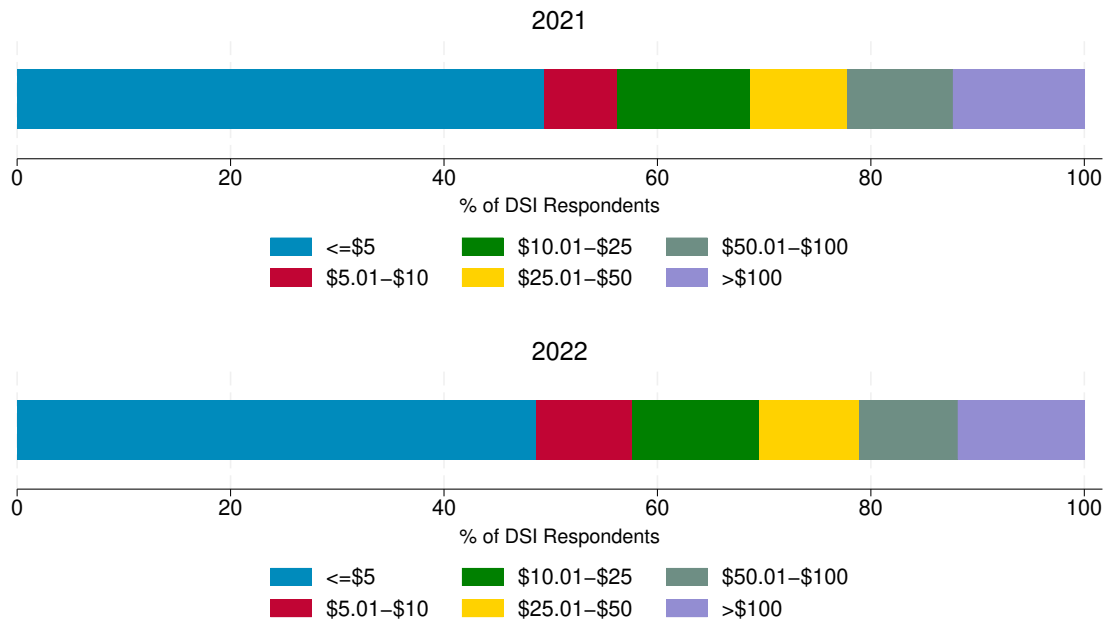
Note: This chart shows the distribution of errors in cash identity for the diary survey instrument (DSI) for the 2021 and 2022 Methods-of-Payment (MOP) surveys.

C   Financial literacy measures

In this section, we document how the financial literacy categories of high, medium and low are constructed. Respondents are asked three knowledge-testing questions that contain a single correct answer as well as the option to respond "don't know." The questions are shown in **Table C.4**.

Table C.4: 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 November 2020 CAS, 2021 MOP and 2022 MOP are shown in **Table C.5**. **Table C.6** shows the distribution of responses to each individual question from the 2022 MOP.

Table C.5: Distribution of financial literacy categories, 2020–22

| | | 2020 CAS | | | 2021 MOP | | | 2022 MOP | | |
		Low %	*Medium* %	*High* %	*Low* %	*Medium* %	*High* %	*Low* %	*Medium* %	*High* %
	Overall	20	33	48	18	33	50	18	32	50
REGION	AT	27	37	36	21	36	43	17	38	44
	QU	21	35	44	19	35	46	20	34	46
	ON	20	31	49	19	29	52	19	31	50
	PR	18	33	48	18	33	49	18	35	47
	BC	15	30	55	12	35	53	12	28	60
AGE	18-34	32	36	32	33	36	31	30	36	35
	35-54	21	32	47	16	31	53	16	31	53
	55+	10	30	60	9	31	60	11	31	58
GENDER	Male	16	29	56	14	27	59	15	27	58
	Female	24	36	40	21	38	41	21	37	41
EDUCATION	HS	28	37	34	25	41	34	25	38	37
	College	17	34	50	16	32	52	17	32	51
	Uni.	10	24	66	9	20	71	9	24	67
INCOME	<$45K	32	37	31	28	42	30	28	36	36
	$45K-$85K	19	35	46	22	33	46	18	35	47
	$85K+	13	29	58	10	27	63	12	29	59

Note: This table shows the weighted percentages for each category of financial literacy. Data are from the November 2020 Cash Alternative Survey (CAS), 2021 and 2022 Methods-of-Payment (MOP) surveys.

Table C.6: Distribution of responses to financial literacy questions, 2022 MOP

		Interest		Inflation		Risk	
		Correct %	Don't Know %	Correct %	Don't Know %	Correct %	Don't Know %
	Overall	87	6	72	10	61	29
REGION	AT	86	5	72	10	57	31
	QU	86	7	69	11	59	31
	ON	87	6	71	10	62	28
	PR	86	7	73	10	58	33
	BC	92	3	81	7	70	24
AGE	18-34	80	8	58	13	51	31
	35-54	89	6	73	10	63	30
	55+	90	5	82	7	67	27
GENDER	Male	90	4	77	6	69	21
	Female	84	8	67	13	54	37
EDUCATION	HS	81	9	64	15	51	37
	College	90	5	73	8	61	31
	Uni.	93	3	84	4	76	16
INCOME	<$45K	79	10	62	14	50	38
	$45K-$85K	87	6	71	10	60	31
	$85K+	92	3	79	6	70	21

Note: This table shows the weighted percentages for financial literacy question from the 2022 Methods-of-Payments (MOP) Survey.

D   Key definitions

Table D.7: 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 D.8: 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, 2021 and 2022 MOP) or in Canada (2013 MOP)

Table D.9: 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 D.10: 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 D.11: 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

E   Updated payment share methodology

In this section, we describe the methodology used to calculate the payment shares presented in section 4, and compare it with the previous calculation used for the MOP survey reports from 2009 to 2021.

The volume and value shares are calculated from the payments diary. When respondents record a purchase, they specify which payment method was used to complete the transaction by selecting at least one option from a pre-determined list. The methodology previously used to calculate the payment shares excluded certain alternative payment methods from the "Other" category. This was done for two key reasons. First, the calculation preserved a consistent comparison across time with the 2009 MOP by including only options available to respondents in 2009 (**Table** E.12). Second, certain payment options may obscure the underlying payment method that is actually being used to complete the transaction. For example, mobile apps and online payment accounts may be linked to credit cards or bank accounts. These payments would contribute to the "Other" category even if they truly represented credit or debit card payments. To avoid this ambiguity, we previously calculated the payment shares among responses that explicitly stated the underlying payment method.

Table E.12: Payment methods included in the "Other" category according to methodology used

Methodology	Included 'Other' payment methods
Previous	Personal cheque
	Stored-value card
	Other (please specify)
Current	Personal cheque
	Stored-value card
	Other (please specify)
	Interac e-transfer
	Mobile payment app
	Online payment account
	Bitcoin or other digital currency
	Redeemed coupon or store points

Since 2020, we have observed an increase in the share of purchases made with alternative methods of payments, along with an increasing share of purchases reported being made online. Consequently, we decided to update the methodology for calculating the payment shares by including all other methods of payment alongside the ones previously reported in the "Other" category. This approach represents a shift in terms of measuring the method of payment (e.g., mobile payment app) versus the actual underlying method (e.g., a credit card linked to a mobile app). Given the emerging importance of these methods of payments, we feel that tracking them is important going forward, as well as maintaining a consistent "Other" category that includes all non-cash, non-card payments.

Table E.13 compares the two methodologies, showing the difference in the resulting payment shares. Including additional payment options in the "Other" category affects cash

shares the least. The cash volume and value shares are essentially the same from 2009 to 2017, and within 1.5 percentage points in from 2020 to 2022. The previous methodology tended to overestimate both the debit and credit card shares, particularly between 2020 and 2022, with the credit card share being most affected.

Table E.13: Comparing payment shares between previous and current methodologies

Volume shares		2009	2013	2017	2020	2021	2022
Cash	*Previous*	53.7	43.9	32.8	22.2	22.3	23.1
	Current	53.7	43.5	32.8	21.0	21.1	21.6
	Difference	0.0	-0.4	0.0	-1.2	-1.2	-1.5
Debit	*Previous*	24.7	21.1	25.7	28.9	27.5	24.2
	Current	24.7	20.2	25.2	27.3	26.0	22.6
	Difference	0.0	-0.9	-0.5	-1.6	-1.5	-1.6
Credit	*Previous*	19.3	30.8	38.6	47.0	47.6	50.6
	Current	19.3	30.4	36.9	44.3	45.1	47.2
	Difference	0.0	-0.4	-1.7	-2.7	-2.5	-3.4
Other	*Previous*	2.2	4.2	2.9	1.8	2.7	2.1
	Current	2.3	5.3	5.3	7.4	7.8	8.7
	Difference	0.1	1.1	2.4	5.6	5.1	6.6
Value shares							
Cash	*Previous*	22.7	23.0	15.5	9.4	13.6	12.1
	Current	22.7	22.8	15.1	8.7	12.6	11.2
	Difference	0.0	-0.2	-0.4	-0.7	-1.0	-0.9
Debit	*Previous*	31.7	25.1	26.1	25.3	23.2	21.7
	Current	31.7	24.2	25.1	23.4	21.4	19.9
	Difference	0.0	-0.9	-1.0	-1.9	-1.8	-1.8
Credit	*Previous*	40.7	45.9	55.9	61.6	61.7	64.9
	Current	40.7	45.3	52.4	57.2	56.9	59.8
	Difference	0.0	-0.6	-3.5	-4.4	-4.8	-5.1
Other	*Previous*	4.9	6.0	2.5	3.7	1.5	1.3
	Current	4.9	7.7	7.5	10.7	9.1	9.0
	Difference	0.0	1.7	5.0	7.0	7.6	7.7

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