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# Cash and COVID-19: The effects of lifting containment measures on cash demand and use

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We would like to dedicate this paper to the essential workers at the Bank of Canada, including colleagues who work in the Bank Note Distribution System, the Agency Operations Centres in Montréal and Toronto and in the regional offices. Their work has helped ensure that bank notes remain accessible to Canadians.

# Abstract

We conduct a follow-up to Chen et al. (2020) and study demand for and use of cash after the containment measures imposed at the beginning of the COVID-19 pandemic were relaxed during the summer of 2020. We find that bank notes in circulation continued to rise in July due to ongoing cash withdrawals and decreased cash deposits in the Bank Note Distribution System. The probability of consumers using cash for payments increased in July compared with April 2020. As well, consumer cash holdings, measured as the median value of cash on hand, returned to August 2019 levels.



*Bank topic: Bank notes; Central bank research; Coronavirus disease (COVID-19); Digital currencies and fintech; Econometric and statistical methods*
*JEL codes: C, C1, C9, C12, E, E4, O, O5, O5*

# Introduction

Drawing on data from the Bank Note Distribution System (BNDS) and from the April 2020 Cash Alternative Survey (CAS), Chen et al. (2020) analyze the impact of COVID-19 on cash demand and methods of payment in April 2020, early in the pandemic. In this paper, we update that analysis using more recent data from the BNDS and from a follow-up Cash Pulse Survey (CPS) conducted in July 2020. The July 2020 CPS coincided with the lifting of certain public health protocols (containment measures) that had restricted opportunities for in-person shopping. As a result, that survey provides insight into how the use of cash and digital payments changed as people began to move around more freely and as businesses reopened.

The Bank of Canada will continue to monitor how COVID-19 affects cash demand and methods of payment, with additional surveys in late 2020 and spring 2021. We plan to publish further reports in this series as more data become available.

# Insights from the Bank Note Distribution System

In this section, we summarize recent evidence concerning the demand for bank notes based on data extracted from the BNDS.

## The Bank Note Distribution System

The Bank supplies financial institutions with the bank notes they need to meet public demand through the BNDS. More specifically, the Bank distributes bank notes to financial institutions at distribution centres located in regional distribution points (RDPs) across Canada. The RDPs roughly correspond to the provinces of Canada. So, for example, the Toronto RDP can be considered the main supply centre of bank notes for Ontario. Financial institutions can withdraw notes from the BNDS to meet the demand for cash, or they can deposit surplus notes. The same distribution system is used to return bank notes that are considered unfit for further circulation. (See Bilkes [1997] for more details on the BNDS.)

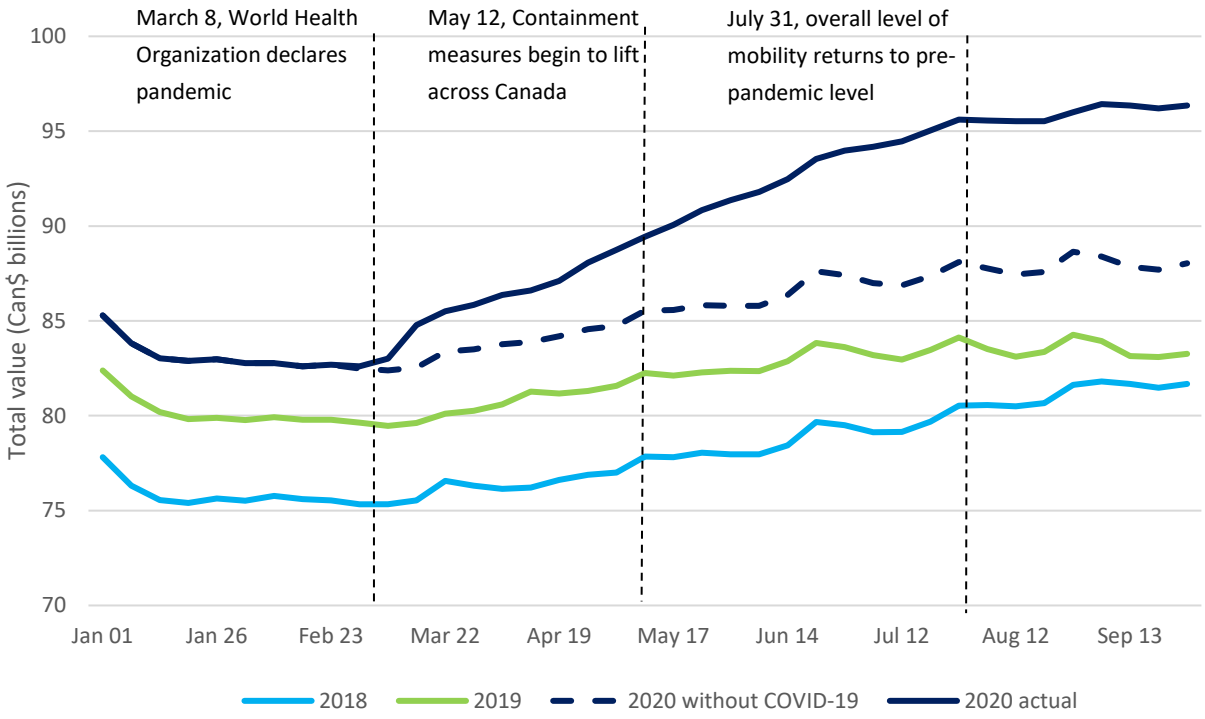
## The effect of the pandemic on bank notes in circulation

**Chart 1** shows the value of notes in circulation (NIC) from 2018 to 2020. We see that NIC increased significantly in the early months of the pandemic, and growth of NIC slowed materially only in July. As a result, the value of NIC in late September reached $96.4 billion, which was $13.1 billion (16 percent) more than in the corresponding week in 2019.

To gauge the impact of the pandemic on NIC, we construct a simple projection (or counterfactual) of 2020 NIC based on what could have been expected if the COVID-19 shock had not occurred. That is, we calculate what the path of NIC would have been after early March if NIC had increased at the average of weekly growth rates experienced from 2017 to 2019. **Chart 1** (dashed line) presents the result. This suggests the pandemic added about $8.4 billion

to NIC by late September compared with what could have been expected in a typical year (about $4.7 billion).[1]

**Chart 1: Notes in circulation by year**




Note: Authors' calculations of "2020 without COVID-19" refers to a counterfactual scenario for 2020, constructed using the average growth rate of notes in circulation from 2017 to 2019. The timing indicated by the vertical dashed lines is from Cavalli et al. (2020).

The change in NIC equals the value of net note withdrawals from the Bank (withdrawals of bank notes less deposits made to the Bank). **Chart 2a** and **Chart 2b** show net note withdrawals in 2020 grouped by denomination. Small-denomination bank notes include $5, $10 and $20, and large-denomination notes include $50 and $100. The small denominations typically are best suited for transactions, while the large denominations are usually seen as playing more of a store-of-value role, although demand for the $50 notes might increasingly be considered to have a transactions motive.[2]

[1] We calculate the value of notes in circulation with data on withdrawals and deposits of bank notes drawn from the BNDS, using the formula $NIC_t = NIC_{t=1990,week\,1} + \sum \Delta NIC_j$, where $\Delta NIC_j = W_j - D_j$ is the net withdrawal made by BNDS members in period $j$. The value of NIC reported on the Bank's website is consistently greater than the value generated with this formula by a small margin (since the early 2000s). Our calculations focus on the standard operations of the BNDS, whereas the Bank's website reflects accounting reconciliation of all bank notes, including mutilated notes, adjustments to deposits by financial institutions for incorrect quantities, and counterfeit notes.

[2] This is also suggested by the growing availability of $50 notes in automated bank machines. For a discussion of the evolution of cash demand for transactions and as a store of value, see Engert, Fung and Segendorf (2019).

In **Chart 2a** and **Chart 2b,** we illustrate the contributions of the demand for small- and large-denomination bank notes during the pandemic. To do that, we construct counterfactuals of weekly net note withdrawals showing what could have been expected if the pandemic had not happened (dashed lines in the chart). We see that the extraordinary demand for bank notes since March appears to have been mainly driven by demand for large denomination notes, suggesting that store-of-value motives were important.

**Chart 2a: Net bank note withdrawals from the Bank of Canada in 2020, small denomination notes**

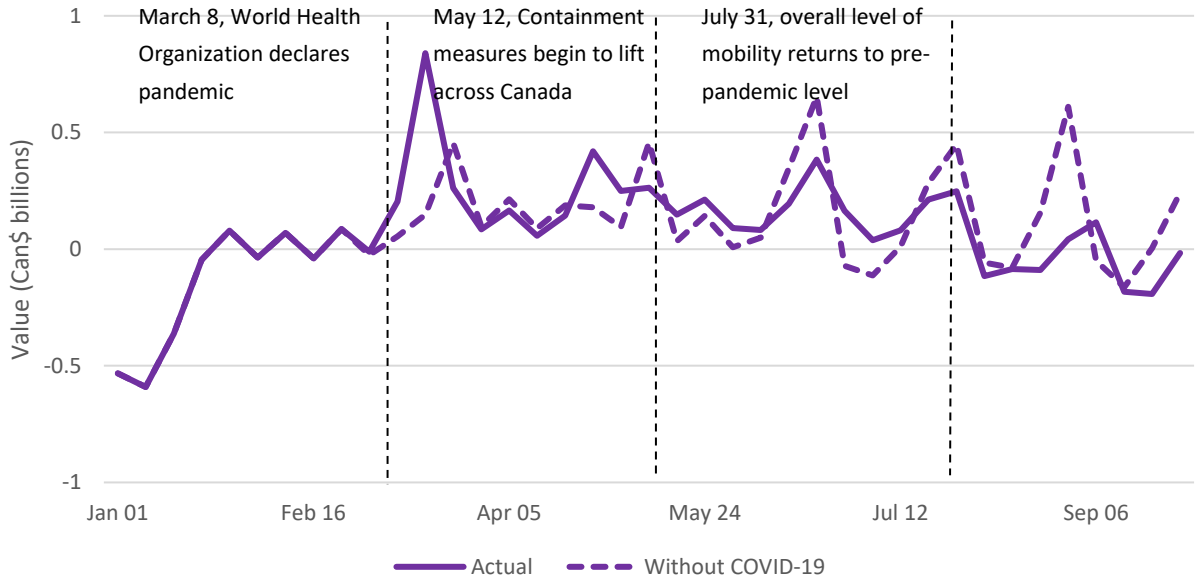
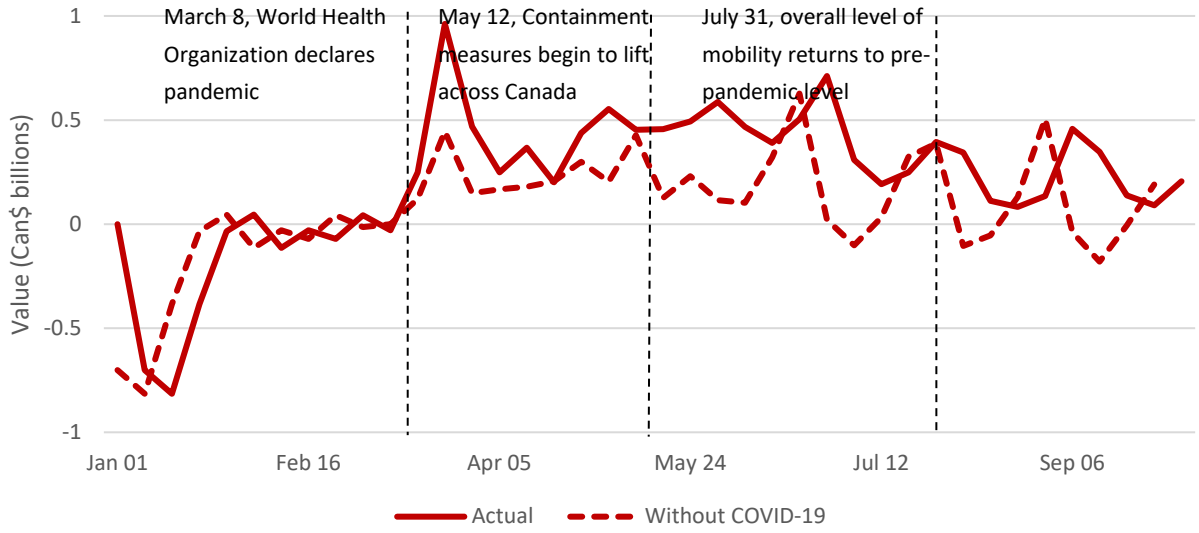



**Chart 2b: Net bank note withdrawals from the Bank of Canada in 2020, large denomination notes**




Note: "Without COVID-19" refers to a counterfactual scenario where net withdrawals for 2020 are based on the average weekly change in notes outstanding

from 2017 to 2019. The dashed vertical lines refer to the three milestones noted in **Chart 1**.

As noted above, the change in NIC is the difference between bank notes withdrawn from the Bank and notes deposited to the Bank in the previous period. We can break down the growth of NIC into those components, as shown in **Chart 3a** and **Chart 3b**. We see that there was a sharp spike in withdrawals of bank notes early in the pandemic. By July, however, weekly cash withdrawals from the Bank had returned to amounts more consistent with pre-pandemic experience.

Deposits of bank notes have been persistently low for a somewhat longer period (**Chart 3b**). A few factors could contribute to this. In the early months of the pandemic, lockdown provisions reduced opportunities for in-person shopping that are necessary for spending cash, which slowed the turnover (or velocity) of cash in the economy. Persistently low deposits of bank notes to the Bank could also be related to a reduced capacity of participants in the cash ecosystem to handle notes or transport them, given, for example, physical distancing protocols. Related to this, as containment measures were relaxed and opportunities to shop in person increased, merchants may have accumulated cash. All this suggests that a substantial stock of bank notes has accrued in the economy and could return to the Bank over time when conditions (fully) normalize. Neverthess, NIC could remain at an unusually high level given the extraordinary growth experienced earlier.

**Chart 3a: Weekly bank note withdrawals from the Bank of Canada**

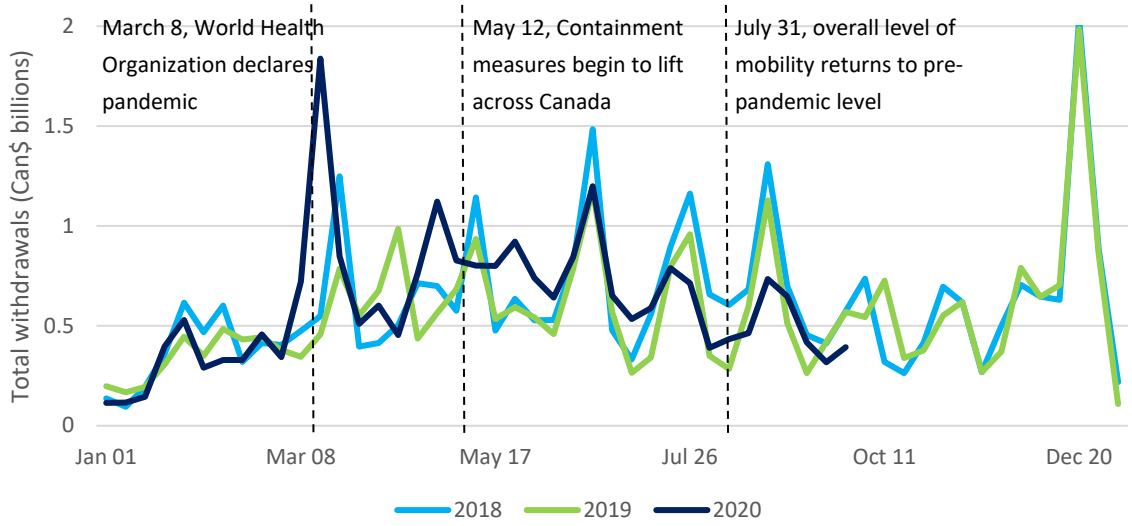
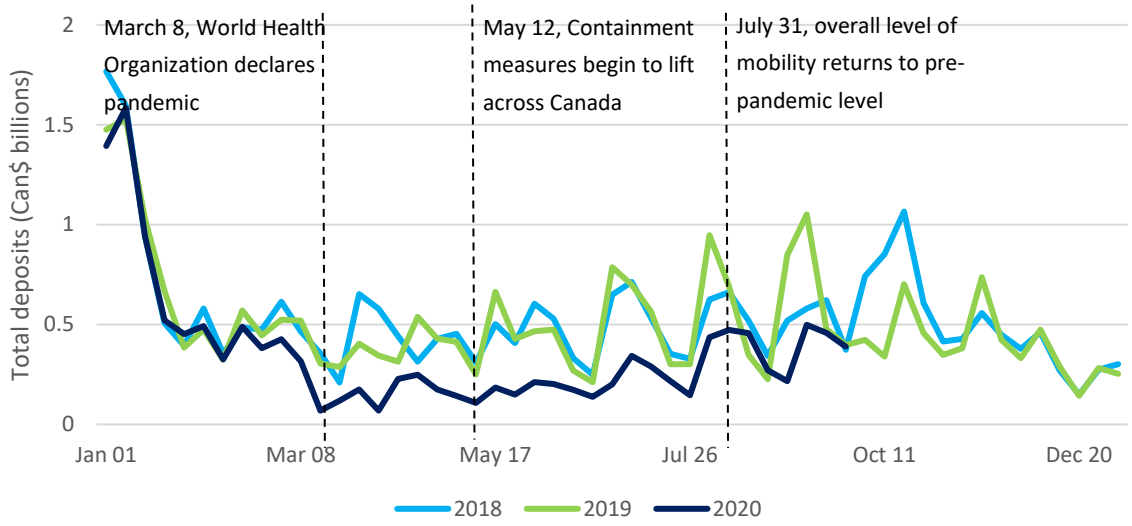


**Chart 3b: Weekly bank note deposits to the Bank of Canada**




Note: The dashed, vertical lines refer to the three milestones noted in **Chart 1**.

In sum, the main insights from BNDS data in this period are as follows.

- NIC increased sharply during the pandemic from March through September 2020, particularly in the early months of this period. Cash outstanding increased from $83 billion just before the pandemic to more than $96 billion in late September. The pandemic almost doubled the increase of NIC that could have been expected over this period in a typical year.
- The increase in NIC during the pandemic was driven more by large-denomination bank notes than by small-denomination notes, suggesting that precautionary or store-of-value considerations were important for cash demand over this period.
- Early in the pandemic, cash withdrawals from the Bank supported this increase. Withdrawals normalized by mid-summer, but deposits of cash returning to the Bank tended to remain abnormally low into the autumn.

## Insights from the 2020 Cash Pulse Survey

Consumer spending declined significantly during the COVID-19 pandemic. Given physical distancing and other containment protocols, spending shifted toward online transactions and away from in-person purchases.[3] These changes in consumer behaviour related to the pandemic could either be temporary or long-lasting. Part of the Bank's work to assess these developments involves a series of surveys to gauge the use of cash and other methods for payments.

[3] For more on these considerations, see Schembri (2020), Bank of Canada (2020a) and Statistics Canada (2020b).

Bank staff therefore conducted the April 2020 CAS in the spring to gauge Canadians' early responses to the pandemic with regard to the demand for cash and the use of various payment methods, including cash (Chen et al. 2020). As part of the Bank's ongoing monitoring and analysis of the effects of the pandemic, we conducted a follow-up July 2020 CPS in the summer. The questions in this July survey were a subset of the April survey. Throughout the design of the questionnaire and sampling strategy, we collaborated with our survey provider, Ipsos, and with Statistics Canada.

## A few words on methodology

The July 2020 CPS was conducted between July 21 and 26, 2020, yielding 1,998 respondents aged 18 or older. Respondents were selected to match the Canadian population with respect to age, gender and province following a non-probability quota sampling. Respondents were drawn from two sources: a proprietary online panel and ads on web pages (known as river sampling).

To minimize bias caused by differences in behaviour between our sample and the Canadian population, we compute weights to ensure that the sample matches certain demographic characteristics of the Canadian population. The weighting methodology used in the July 2020 CPS has undergone extensive testing and analysis and is designed to minimize selection bias. The survey weights were computed on November 12, 2020. In the appendix, we validate our weighted estimates by comparing them with other information sets, including the results from a probability-sampled Statistics Canada survey. (Chen et al. [2020] provide additional information on methodological and related considerations.)

## Key takeaways

The main lessons from the July 2020 CPS include the following.

- Canadians who hold cash reported having $70 in cash on hand (median) in the July 2020 CPS, down from $85 in the April 2020 CAS. This represents a return to pre-pandemic cash holdings (which were $70 in the October 2019 CAS).
- Use of nearly all payment methods increased in July compared with April, but the largest increase concerned cash use. In this regard, 54 percent of Canadians reported using cash for transactions in July, up from 36 percent in April. This increase coincided with the lifting of pandemic containment measures in the months just before the July 2020 CPS.
- A large majority of Canadians (78 percent) reported in the July 2020 CPS that they have no plans to go cashless in the next five years. Further, the share of respondents who do not intend to become cashless has increased from that reported in the April 2020 CAS (74 percent).

## Core measures of cash use

**Table 1** shows that cash holdings rose in April but have since returned to pre-pandemic levels. We estimate that Canadians who hold cash held a median of $70 in their cash on hand and

$170 in their other cash holdings.[4] We use the median here because the distribution of cash holdings is characterized by some very large positive values and a mass at zero, which reduces the usefulness of the mean as a representative measure of the distribution.

The proportion of Canadians who report holding zero cash on hand decreased from 28 percent in April to 20 percent in July, and the proportion with zero other cash holdings decreased from 82 percent to 77 percent. This suggests that the spikes in individuals' cash holdings observed in March and April were a temporary response to the pandemic.

**Table 1: Canadians' cash on hand and other cash holdings**

| | Cash on hand ($) | | | Other cash holdings ($) | | |
|---|---|---|---|---|---|---|
| | CAS | CAS | CPS | CAS | CAS | CPS |
| | Aug 2019 | Apr 2020 | July 2020 | Aug 2019 | Apr 2020 | July 2020 |
| Median | 70 | 85 | 70 | 185 | 225 | 170 |
| Mean | 136 | 158 | 134 | 460 | 523 | 396 |
| % of Canadians holding zero cash | | | | | | |
| Share (%) | 20 | 28 | 20 | 71 | 82 | 77 |

Note: The mean estimates are winsorized at the 99th percentile in 2019 and 2020. CAS is the Cash Alternative Survey, and CPS is the Cash Pulse Survey.

Compared with withdrawals in April, more Canadians withdrew cash during the survey week in July (**Table 2**). For example, 23 percent of Canadians reported that they withdrew cash from an automated bank machine (ABM) in July, up from 19 percent in April. As well, 73 percent of Canadians reported in the July 2020 CPS that they did **not** withdraw cash from an ABM or bank teller in the week before the survey, a decrease from 77 percent in April.

[4] "Cash on hand" is the amount of cash in the respondent's purse, wallet or pocket. "Other cash holdings" is the amount of cash the respondent's household keeps in locations other than a purse, wallet or pocket, such as at home or in a vehicle.

**Table 2: Proportion of Canadians who withdrew cash in the previous week (%)**

| | CAS<br>Apr 2020 | CPS<br>July 2020 |
|---|---|---|
| Only automated bank machine (ABM) | 19 | 23 |
| Only teller | 2 | 2[E] |
| ABM and teller | 2 | 2[E] |
| Did not withdraw from either ABM or teller | 77 | 73 |

Note: We follow Statistics Canada's guidelines on data reliability using the coefficient of variation (CV), defined as the standard error divided by the mean (Statistics Canada 2016, Section 7). "E" indicates "use with caution" (CV between 16.5 and 33 percent). CAS is the Cash Alternative Survey, and CPS is the Cash Pulse Survey.

Canadians' use of almost all payment methods increased between April and July, and the most significant increase concerned the use of cash. The outcomes reported in **Table 3,** which includes both online and in-store payments, correspond to a rebound of economic activity accompanying the relaxation of containment measures across the country (Bank of Canada 2020b). More specifically, a significant share of Canadians, 54 percent, reported using cash during the July 2020 CPS survey week, compared with 36 percent early in the pandemic. Our estimates for cash use are less than those for debit use (62 percent) and credit use (67 percent), indicating that Canadians continue to rely heavily on these electronic payment methods. A smaller (but steady) share of respondents used Interac e-Transfer (38 percent) during the survey period.[5]

[5] A future report will discuss results from the collection of payment diaries (currently in the field) and provide volume and value shares of various methods of payment. This work will also provide a breakdown of online and in-store purchases.

**Table 3: What methods of payment were used in the past week? (% of Canadians; includes online and in-store payments)**

| | CAS<br>Apr 2020 | CPS<br>July 2020 |
|---|---|---|
| Cash | 36 | 54 |
| Debit | 52 | 62 |
| Tap and go | 38 | 46 |
| Chip and PIN | 38 | 48 |
| Credit | 62 | 67 |
| Tap and go | 48 | 56 |
| Chip and PIN | 38 | 45 |
| Interac e-Transfer | 38 | 38 |
| Mobile | 8 | 12 |
| Prepaid card | 11 | 12 |

Note: Respondents could select multiple answers, so the shares do not sum to 100. The overall measures of debit and credit use include Canadians who made at least one transaction with tap and go, chip and personal identification number (PIN) or both in the week before they responded to the survey. CAS is the Cash Alternative Survey, and CPS is the Cash Pulse Survey.

Consistent with the relaxation of containment measures, more Canadians made an in-store purchase, and made more purchases overall, during the survey week in July compared with April (**Table 4**). Most significantly, the percentage of Canadians who made an in-person purchase for entertainment or meals more than doubled, from 19 to 44 percent.

**Table 4: Percent of Canadians who made an in-store purchase, and average number of purchases, by purchase type**

| | CAS, Apr 2020 | | CPS, July 2020 | |
|---|---|---|---|---|
| | Made purchase (%) | # purchases | Made purchase (%) | # purchases |
| Overall | 83 | 3.8 | 94 | 5.1 |
| Of which: | | | | |
| Groceries or prescriptions | 78 | 1.9 | 88 | 1.9 |
| Entertainment or meals | 19 | 2.2 | 44 | 2.1 |
| Gasoline | 39 | 1.4 | 58 | 1.5 |
| Health care, excluding prescriptions | 13 | 1.8 | 22 | 1.4 |

Note: Made purchase (%) and number of purchases are calculated for in-store purchases only, across all payment types. CAS is the Cash Alternative Survey, and CPS is the Cash Pulse Survey.

Fewer Canadians experienced a merchant refusing to accept cash in our July survey compared with their experiences in April (**Table 5**). In this regard, for example, 9 percent reported in the July 2020 CPS that they were unable to use cash at a merchant's point of sale, compared with 12 percent in the April 2020 CAS. Further, 58 percent of Canadians stated in the July 2020 CPS they did **not** see, hear or experience a merchant refusing to accept cash, up 15 percentage points from the April 2020 CAS.

**Table 5: Consumer reports of merchant acceptance of cash (% Canadians)**

| | CAS Apr 2020 | CPS July 2020 |
|---|---|---|
| I did not hear, see or experience a merchant refusing to accept cash | 43 | 58 |
| I saw a sign that stated a merchant was not accepting cash | 22 | 16 |
| I saw a sign that stated cash was accepted but other payment methods were preferred | 14 | 15 |
| I heard news reports that merchants stated cash was not accepted | 16 | 6 |
| I was not able to use cash at a merchant's point of sale | 12 | 9 |

Note: Respondents could select multiple responses, so the shares do not sum to 100. CAS is the Cash Alternative Survey, and CPS is the Cash Pulse Survey.

## Expectations about future cash use

A large majority of Canadians, 78 percent, reported in the July 2020 CPS that they have **no** plans to go cashless (**Table 6**). This represents a small increase from the result in April (74 percent, in the April 2020 CAS). The share of Canadians stating that they are already cashless decreased to 14 percent in July (from 19 percent in April). Further, of the respondents who reported that they are already cashless, more than half had cash on hand, so their stated behaviour was not consistent with their actual behaviour. Adjusting for this effect, the share of Canadians who stated in the July 2020 CPS that they are already cashless and actually hold no cash is 6 percent. (This is shown in parentheses in the first column of **Table 5**.) This outcome is evident across all three surveys shown in the table, which suggests that some respondents systematically overestimate the extent to which they are already cashless.

**Table 6: Canadians' planned future cash use (%)**

| | Already cashless | Within 5 years | More than 5 years | No plans |
|---|---|---|---|---|
| CAS, Aug 2019 | 10 (4) | 6 | 2[E] | 82 |
| CAS, Apr 2020 | 19 (10) | 6 | 1[E] | 74 |
| CPS, July 2020 | 14 (6) | 7 | 1[E] | 78 |

Note: Respondents could select only one option, so the estimates sum to 100 (excluding the estimates in parentheses). The estimate in parentheses is the share of Canadians who stated that they are already cashless and reported zero cash on hand, so stated and actual behaviours are aligned. "E" indicates "use with caution" as per Statistic Canada's guidelines on data reliability (see Statistics Canada 2016, Section 7). CAS is the Cash Alternative Survey, and CPS is the Cash Pulse Survey.

## Conclusions and next steps

Cash outstanding in Canada increased sharply from March through September 2020, and the pandemic significantly increased the demand for bank notes. This phenomenon has also been seen in other advanced economies, including Australia, Germany, New Zealand, the United Kingdom and the United States.[6] The extraordinary increase in NIC during this period was driven more by large-denomination notes than by small-denomination notes, suggesting that store-of-value was an important factor in these developments. It also appears that a substantial stock of bank notes may have accumulated in the economy in recent months as deposits of notes to the Bank of Canada have been unusually low over much of this period. Some of these bank notes could return to the Bank over time when conditions normalize, but it seems likely that NIC will remain elevated.

To understand cash use with the lifting of containment measures, Bank staff conducted the 2020 Cash Pulse Survey in July. Survey results indicate that individual Canadians' holdings of cash on hand returned to their pre-pandemic levels from the heightened balances seen in the April 2020

[6] For more on this, see Bank of England (2020), Deutsche Bundesbank (2020), Foster and Greene (2021) and Hawkesby (2020).

Cash Alternative Survey. Use of nearly all payment methods (measured by the percentages of Canadians using them) increased during the July survey period compared with April. The largest increase concerned the use of cash to make payments.

Our estimates indicate that over half of Canadians (54 percent) used cash as a form of payment during the July survey period, which was less than the proportion using debit (62 percent) and credit methods (67 percent). So while electronic methods continue to dominate, a large percentage of Canadians also used cash for payments, and that share has increased since the spring. Finally, a large majority of Canadians (78 percent) reported that they have no plans to go cashless in the next five years.

Bank staff are conducting another survey of methods of payment (which was launched in November 2020), and a follow-up survey is planned for spring 2021. These surveys will support the Bank's ongoing analysis of the effects of the pandemic on cash demand and methods of payment.

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## Appendix: Testing and cross-validation of estimates from the July 2020 Cash Pulse Survey

Our general survey methodology has undergone extensive testing and analysis. We collaborated with Statistics Canada and our survey provider, Ipsos, throughout the design of our questionnaire and sampling strategy. We also employ the survey weighted methodology developed in Henry et al. (2019). To reduce total survey error, as suggested by Groves and Lyberg (2010), we use data cleaning and editing rules, such as analyzing the potential for straightliner respondents and transcription errors. Further details of these methods are available in the appendix of Chen et al. (2020).

The weighted estimates we use correspond with other surveys, which provides evidence of validity. For instance, our July 2020 Cash Pulse Survey (CPS) estimates of payment shares in a typical month are compatible with the findings in Statistics Canada's 2018 Digital Economy Survey (DES) and the April 2020 Cash Alternative Survey (CAS, **Table A-1**). (The focus on a typical month reduces the importance of the time lag between the DES and the CPS.)

**Table A-1: Payment shares in a typical month (% payment shares)**

| | 2018 DES | CAS, April 2020 | CPS, July 2020 |
|---|---|---|---|
| Cash and cheque | 21 | 23 | 23 |
| Debit, credit and online banking | 76 | 72 | 71 |
| Other | 3 | 6 | 6 |

Note: The 2018 DES estimates correspond to the 2018 Digital Economy Survey (Statistics Canada 2018).CAS is the Cash Alternative Survey, and CPS is the Cash Pulse Survey.

**Table A-2** reports precautions taken by Canadians to reduce the risk of exposure to COVID-19 based on responses to a recent Statistics Canada survey and to our CPS. We find that 92 percent reported actively practicing physical distancing, 84 percent took steps to improve their cleanliness (particularly through hand washing), and 48 percent took measures to improve their general preparedness, including stocking up on food and medicine. These results are qualitatively similar to those in Statistics Canada's Canadian Perspectives Survey Series 4 in July 2020 on COVID-19.[7]

[7] This table was computed with a special tabulation from Statistics Canada.

**Table A-2: Precautions taken by Canadians for COVID-19 (%)**

| | Statistics Canada | CPS, July 2020 |
|---|---|---|
| Preparation | 53 | 48 |
| Planning | 38 | 29 |
| Physical distancing | 96 | 92 |
| Cleanliness | 94 | 84 |
| Wore a mask | 84 | 77 |

Note: Respondents could select multiple responses, so the shares do not sum to 100. Column 1 is from the Canadian Perspectives Survey Series 4 conducted in July 2020 (Statistics Canada 2020a). CPS is the Cash Pulse Survey conducted in July 2020 by the Bank of Canada.

In particular, both surveys find that making plans for caring or communicating with family, friends or others was the least common precaution taken, while physical distancing was the most common. Future work will further explore how best to compare and integrate data from probability and non-probability surveys (Wu and Thompson 2020).

Finally, we also surveyed Canadians' financial literacy in the 2020 CPS and compared the results with those from other surveys. As can be seen in **Table A-3**, our estimates are comparable to those of the 2019 CAS and 2020 CAS. As a test for the stability of the sample collection, the almost unchanged financial literacy measures across the three surveys indicate that our survey methodologies are generally consistent. Hence, trends that emerge in these data most likely would be driven by changes in respondent behaviours.

**Table A-3: Canadians' financial literacy, by demographic (%)**

| | | CAS, August 2019 | | | CAS, April 2020 | | | CPS, July 2020 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low | Medium | High | Low | Medium | High | Low | Medium | High |
| Overall | | 18 | 35 | 47 | 20 | 35 | 45 | 21 | 37 | 42 |
| Gender | Male | 14 | 29 | 58 | 16 | 31 | 53 | 17 | 29 | 54 |
| | Female | 23 | 41 | 36 | 23 | 39 | 37 | 24 | 45 | 31 |
| Age | 18–34 | 30 | 35 | 35 | 32 | 37 | 31 | 31 | 41 | 28 |
| | 34–54 | 19 | 36 | 45 | 19 | 36 | 44 | 20 | 39 | 40 |
| | 55+ | 10 | 33 | 57 | 11 | 33 | 56 | 13 | 33 | 54 |
| Education | High school | 24 | 41 | 35 | 27 | 40 | 33 | 27 | 40 | 33 |
| | College | 16 | 35 | 49 | 17 | 35 | 47 | 18 | 42 | 40 |
| | University | 11 | 25 | 64 | 11 | 28 | 61 | 13 | 28 | 59 |
| Region | British Columbia | 15[E] | 32 | 53 | 16 | 37 | 47 | 16[E] | 41 | 43 |
| | Prairies | 23 | 39 | 39 | 19 | 38 | 43 | 21 | 38 | 40 |
| | Ontario | 18 | 35 | 47 | 19 | 35 | 46 | 19 | 36 | 45 |
| | Quebec | 18 | 31 | 51 | 23 | 33 | 44 | 22 | 37 | 41 |
| | Atlantic | 20[E] | 41 | 38 | 26 | 34 | 41 | 34 | 34 | 32 |

Note: We use the "Big Three" financial literacy questions from Lusardi and Mitchell (2011), which test respondents' understanding of compound interest, inflation and diversifying risk. In each year, we compute our score measure as the number of correct answers minus incorrect answers, while assigning a score of zero when respondents selected "don't know." Low corresponds to a score of 0, medium corresponds to a score of 1 or 2, and high corresponds to a perfect score of 3. This methodology has been used in Henry, Huynh and Welte (2018) and Henry et al. (2019), in addition to Huynh, Nicholls and Nicholson (2020 and Chen et al. (2020). E indicates "use with caution." CAS is the Cash Alternative Survey, and CPS is the Cash Pulse Survey.

For additional discussion of methodological considerations relevant to our survey work, see the appendices in Chen et al. (2020). In addition to reporting the economic significance of changes over different surveys, we assess the statistical significance of changes following Chen and Shen (2019) by using bootstrap resampling variance: most changes are both economically and statistically significant.