

Staff Discussion Paper/Document d'analyse du personnel 2018-17

2017 Methods-of-Payment Survey Report



by Christopher S. Henry, Kim P. Huynh and Angelika Welte

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December 2018

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Acknowledgements

We owe a debt of gratitude to the survey team at the Bank of Canada and Ipsos for their positive and productive contributions to bringing this project to fruition; Bank of Canada: Chiyoung Ahn, Gradon Nicholls, Mitchell Nicholson, Kerry Nield, Geneviève Vallée and Julia Zhu for their hard work and input on the statistics embedded in this survey report; Ipsos: Shelley Edwards and Lisa Cannini, who worked with us to implement this survey. We thank Jonathan Chiu, Hiroshi Fujiki, Ben Fung, Ted Garanzotis and Charles M. Kahn for their comments and suggestions on our paper. We thank Annamaria Lusardi and Helmut Stix for sharing their knowledge and encouraging us to pursue research on financial literacy. We acknowledge the assistance of Darcy Bowman, Caroline Michaud and Iona Trottier for helping us with the early planning stages of this project. We are grateful to Maren Hansen for advising us on the finer points of writing for a general audience; the readability of this paper is a Grade 9 level, based on the Flesch-Kincaid Grade Level formula.

Abstract

As the sole issuer of bank notes, the Bank of Canada conducts Methods-of-Payment (MOP) surveys to obtain a detailed and representative snapshot of Canadian payment choices, with a focus on cash usage. The 2017 MOP Survey is the third iteration. This paper finds that the overall cash volume and value shares are 33 per cent and 15 per cent, respectively. These results highlight the ongoing decrease of cash usage in terms of volume and value compared with 2009 (54 per cent and 23 per cent, respectively) and 2013 (44 per cent and 23 per cent, respectively). Consumers still rate cash as an easy-to-use, low-cost, secure and widely accepted payment method, and it is commonly used among respondents who are aged 55 and above, have an income of less than \$45,000, have only a high school education, or have a low rate of financial literacy. The paper also provides comprehensive details on Canadians' adoption and use of payment innovations such as contactless credit and debit cards, as well as mobile and online payments.

Bank topics: Bank notes, Digital Currencies, Financial services
JEL codes: D83, E41

Résumé

En tant que seule autorité habilitée à émettre des billets de banque au pays, la Banque du Canada réalise des enquêtes sur les modes de paiement. Celles-ci lui fournissent un aperçu détaillé et représentatif des méthodes de paiement privilégiées par les Canadiens, en mettant l'accent sur leur utilisation de l'argent comptant. L'enquête de 2017, la troisième du genre, révèle que les paiements en espèces représentent 33 % du volume et 15 % de la valeur de l'ensemble des transactions. Ces résultats mettent en évidence le recul constant de l'usage de l'argent comptant, sur les plans tant du volume que de la valeur, comparativement à 2009 (54 % et 23 %, respectivement) et à 2013 (44 % et 23 %). Les consommateurs considèrent encore l'argent liquide comme un mode de paiement facile à utiliser, peu coûteux, sûr et largement accepté. Son utilisation est répandue parmi les répondants de 55 ans et plus, ceux dont le revenu est inférieur à 45 000 \$, ou encore ceux qui n'ont pas fait d'études postsecondaires ou qui manquent de connaissances financières. L'étude dresse également un portrait complet de l'adoption et de l'utilisation, par les Canadiens, des innovations en matière de paiement, telles que les cartes de crédit et de débit sans contact ainsi que les paiements mobiles et en ligne.

Sujets : Billets de banque, Monnaies numériques, Services financiers
Codes JEL : D83, E41

1 Introduction

The Bank of Canada, as the sole issuer of bank notes, is interested in understanding how Canadian consumers use cash and alternative methods of payment, such as debit and credit cards. This paper is part of an ongoing research program of the Bank of Canada to monitor and understand trends in how Canadians make payments. In this paper, we present the major findings from the 2017 Methods-of-Payment (MOP) Survey. Previous MOP surveys were conducted in 2009 and 2013; see [Arango and Welte \(2012\)](#) and [Henry, Huynh and Shen \(2015\)](#). As with those previous surveys, the focus of the 2017 MOP Survey is to understand consumer cash usage at the point of sale (POS) compared with debit and credit cards and alternative payment methods in Canada.

The Bank of Canada conducts MOP surveys in order to understand Canadian consumer payment behaviour in terms of (i) adoption and usage of various types of payment instruments, such as contactless debit and credit cards, stored-value cards, mobile payments and more; (ii) a granular view of consumer cash management, such as withdrawals, cash holdings and other uses of cash beyond typical retail purchases; (iii) the demographic and POS characteristics of payment patterns; and (iv) a comparison of respondents' subjective assessments of various payment instruments.¹ In addition, we have introduced a module for financial literacy and improved the section for payment fraud and security. This report is descriptive and includes many charts and tables. It is meant to provide the background for future research on cash demand and usage, as well as adoption of payment innovations. Research is ongoing to understand and explain these results.

We provide the following key insights from the 2017 MOP Survey:

1. Shares of cash volume (33 per cent) and value (15 per cent) continue to decrease, compared with 2009 (54 per cent and 23 per cent, respectively) and 2013 (44 per cent and 23 per cent, respectively). Cash is still dominant for low-value transactions (less than \$15). The share of cash volume is the highest among respondents who are aged 55, have an income of less than \$45,000, and have a high school education or less.
2. Usage of contactless payment cards has increased substantially. Over half of the transaction volumes of both debit cards and credit cards is contactless, compared with only 3 per cent and 19 per cent in 2013, respectively.
3. The average cash on hand is \$105, compared with \$84 in 2013. The average number of cash withdrawals from an automated banking machine (ABM) is around two times

¹The MOP survey consists of a survey questionnaire (SQ) and a three-day diary survey instrument (DSI). The diary methodology was developed to measure cash payments, which are difficult to track. A similar methodology has been used in several countries; see [Bagnall et al. \(2016\)](#) and [Esselink and Hernández \(2017\)](#). More details are available in the Appendix.

in a month, while bank teller withdrawals are made less than once a month.

This paper is organized as follows: Section 2 introduces the measurement of financial literacy in the MOP survey. Section 3 provides a description of what respondents held in their wallets, and Section 4 discusses the payment choices of respondents. Section 5 presents the results of consumer assessments of various payment methods. Finally, Section 6 concludes.

2 Financial literacy

New to the 2017 MOP Survey is the addition of questions related to financial literacy. Financial literacy has been shown to be an important factor in many areas of financial decision making, including planning for retirement, savings, indebtedness and more; see [Lusardi, Michaud and Mitchell \(2017\)](#). Previous results from MOP surveys indicate that respondents with a high school education or less are more likely to use cash compared with other educational attainment groups; see [Arango et al. \(2012\)](#) and [Fung, Huynh and Stuber \(2015\)](#). [Campbell \(2006\)](#) also finds a strong connection between educational attainment and certain financial behaviours. However, standard demographic variables, such as age or education, may not necessarily correlate with financial literacy and hence financial decision making. For example, [Agarwal et al. \(2009\)](#) find a relationship between age and financial literacy where financial literacy mistakes decrease until the age of 50 and then increase thereafter.

To address this shortcoming, we add the “Big Three” financial literacy questions proposed by [Mitchell and Lusardi \(2011\)](#) into the 2017 MOP survey questionnaire (SQ); see **Table 1**. The first question is a simple interest rate calculation. The second question measures an understanding of inflation. Finally, the third and usually most challenging question tests the concept of risk diversification. These questions are included in surveys in many countries; see, e.g., [Lusardi and Mitchell \(2011\)](#).

2.1 Performance on the “Big Three” questions

Table 2 shows the results of the financial literacy questions from the 2017 MOP Survey. The interest rate question was answered best among the three, with 83 per cent of respondents answering correctly. Performance on the other two questions, however, was not as good. The inflation question was answered correctly by fewer than two-thirds of respondents (64 per cent), and only 58 per cent answered the risk question correctly. Overall, only 42 per cent of respondents answered all three questions correctly. Canada performs worse on

this measure than Germany (53 per cent) and the Netherlands (46 per cent), but better than Japan (27 per cent) and the United States (30 per cent); see [Lusardi and Mitchell \(2011\)](#).

We calculate two scores to measure the overall performance of respondents on the three questions combined: $score_1$ is simply the total number of correct answers; $score_2$ is the sum of correct answers minus the sum of incorrect answers, not counting *Don't know* responses.² On average our respondents answered 2.1 questions correctly out of 3 and scored 1.6 using the second scoring metric. We use $score_2$ because one-third of respondents selected *Don't know* for the risk question. Therefore, while the percentage of correct answers is similar for the inflation and risk questions, the performance on the inflation question is actually worse. Uncertainty in answering has also been shown to be important for explaining gender differences in financial literacy. While women answered incorrectly more often for all three questions, the proportion of *Don't know* responses is noticeably higher among women for the inflation and risk questions. This finding is observed in other countries; see [Bucher-Koenen et al. \(2017\)](#).

Table 3 compares the financial literacy of various demographic groups based on $score_2$: *Low* indicates scores of less than or equal to zero, *Medium* indicates scores of 1 or 2, and *High* indicates perfect scores of 3. Overall, we find that 23 per cent of respondents have low financial literacy, while 35 per cent and 42 per cent obtained medium and high levels, respectively. There are stark differences in financial literacy among different demographic groups. Ontario and the Prairies have the greatest proportion of high-financial-literacy respondents at 46 per cent. The youngest age group, 18 to 34, has the greatest proportion of low-financial-literacy respondents at 37 per cent, while for ages 55 and above this proportion is only 13 per cent. Respondents who had higher incomes or levels of education were more likely to have high financial literacy. In terms of gender, females have a slightly higher proportion of respondents with low financial literacy, 26 per cent, compared with males, 21 per cent.

3 What's in your wallet?

In this section, we examine the range of methods that Canadians have available to them for making payments, including cash, cards and alternatives. Results in this section come from the SQ.

²The reason for calculating $score_2$ in this way is that it penalizes respondents who guess or are overconfident, since answering *Don't know* contributes a value of 0 to the score.

3.1 Cash

The 2017 MOP SQ asks about several aspects of cash management, including cash holdings, transfers and withdrawals. **Table 4** shows that, on average, respondents in 2017 held \$105 of cash in their wallet, purse or pockets, up from \$84 in 2013. Accounting for inflation, this translates to respondents holding roughly \$20 more on their person in 2017.

Respondents from British Columbia reported having the highest average cash on hand, at \$165. Cash on hand is also positively correlated with income and negatively correlated with financial literacy. In contrast, other cash holdings, including at home, in a vehicle or elsewhere, declined across years, with the median falling from \$300 in 2013 to \$210 in 2017. While respondents received cash transfers from their friends and family at roughly the same rate in 2017 as in 2013 (16 per cent in 2013 versus 15 per cent in 2017), the incidence of being paid in cash by an employer fell by a third (11 per cent in 2013 versus 7 per cent in 2017). Those aged 18 to 34 were especially likely to report being paid in cash or receiving cash transfers from their friends or family.

Higher levels of cash on hand reflect changes in which denominations Canadians hold. **Table 5** shows the proportion of respondents holding each denomination. The proportion with a \$20 bank note declined slightly, from 71 per cent in 2013 to 68 per cent in 2017. There is a more noticeable shift from holdings of transactional notes to high-value notes. The proportion of respondents that held a \$5 bank note fell 8 percentage points from 62 per cent in 2013 to 54 per cent in 2017. In contrast, holdings of both \$100 and \$50 bank notes increased from 2013 to 2017 (from 4 per cent to 9 per cent for \$100 bank notes and from 11 per cent to 17 per cent for \$50 bank notes). This shift coincides with the increased availability of \$50 notes in ABMs. From a demographic perspective, we observe that younger respondents (18 to 34) are more likely to hold \$100 notes than older respondents. Those with low financial literacy are twice as likely to hold \$100 notes compared with the overall sample.

Respondents reported making 2.3 ABM withdrawals per month on average in 2017, down from 2.7 in 2013; see **Table 6**. The composition of cash withdrawals by region is notable: respondents from Ontario and Quebec reported making 2.6 withdrawals per month, whereas respondents from other regions reported making 2.0 or fewer. Respondents with low financial literacy reported making 2.7 withdrawals per month. The number of monthly bank teller withdrawals is essentially unchanged at 0.6, whereas cash-back withdrawals increased from 0.7 to 0.9 times per month from 2013 to 2017. Finally, an average ABM cash withdrawal was for \$140, an increase of roughly \$20 from 2013. The value of an average cash withdrawal, both from bank tellers and via cash back, also increased in 2017.

3.2 Payment cards

Payment cards are the most popular alternative to cash, and measuring card ownership and adoption is important for understanding consumer payment choice. In the 2017 MOP SQ, we asked respondents about certain details of their main bank account and credit card, i.e., the account and credit card used most often for day-to-day purchases. In addition, respondents reported how many payment cards of each type they own and whether they used these cards to make a purchase.

3.2.1 Card ownership

Debit card ownership is almost universal in Canada; see **Table 7**. Almost all respondents (99 per cent) reported having a bank account with an associated debit card that they use for making purchases, and this holds across all demographic characteristics. Credit card ownership is also quite high, with 89 per cent of respondents having at least one credit card in 2017, up from 82 per cent in 2013. These findings are exactly in line with household-level results from Statistics Canada's most recent Survey of Financial Security, where 99 per cent of households reported having a chequing or savings account, and 89 per cent reported having a credit card.³ In the MOP survey, we find that credit card ownership is lowest among Canadians making less than \$45,000 a year (77 per cent) and those with low financial literacy (79 per cent).

On average, respondents hold 1.4 debit cards, which is an increase from 1.1 in 2013. More debit cards are held by respondents from Atlantic Canada (1.9 cards) and those with low financial literacy (1.7 cards). Among credit card owners, the number of credit cards held on average did not change much over time: 2.0 cards in 2017 versus 1.9 cards in 2013. As would be expected, older, higher-income, higher-educated and more financially literate Canadians hold more credit cards, on average.

3.2.2 Bank account and credit card features

In the 2017 MOP SQ, we made significant changes to the bank account section to focus on the fees paid by Canadians for maintaining and using their bank accounts. For this reason, we do not compare results with the 2013 MOP Survey. **Table 8** shows that, overall, 73 per cent of respondents reported having a fee associated with their main bank account. There are noticeable differences across geographic regions, with British Columbia having the lowest incidence of reported bank account fees (67 per cent) and Quebec having the highest (79 per cent).

³Calculations, provided by Statistics Canada, are based on the number of households having a chequing or savings account and a credit card, respectively.

However, these fees are not always charged, for reasons such as maintaining a minimum balance or having multiple products with the same financial institution. Indeed, among those respondents having a fee on their account, just over half (56 per cent) actually paid the fee in the previous month. In terms of making debit card transactions, such as purchases or ABM withdrawals, 58 per cent of respondents reported having an unlimited number of free debit card transactions associated with their account. Further, many accounts allow for a certain number of free transactions, and only 16 per cent of respondents reported having paid a fee for making debit card transactions in the previous month.

For credit cards, the MOP SQ was largely unchanged over time, and results on credit card features and spending are shown in **Table 9** and **Table 10**, respectively. There appears to have been a sharp increase in the proportion of credit cards with an annual fee. In 2013, 21 per cent of credit card owners reported having an annual fee on their card, and this rose 16 percentage points to 37 per cent in 2017. Corresponding to this increase is an increase in rewards: 84 per cent of respondents said their main credit card had an associated rewards program in 2017 versus 73 per cent in 2013. It is less common to have a low interest rate (less than 5 per cent) and a low credit limit (\$2,000 or less) in 2017 compared with 2013. The reported rate of credit card revolving—i.e., not paying off the full amount of the previous month's credit card balance—did not change much over time (30 per cent in 2017 versus 28 per cent in 2013).

3.2.3 Adoption of payment cards

Finally, we discuss how likely respondents were to adopt debit and credit cards for making payments, as measured by use in the past year at a retailer or business; see **Table 11**. Note that the 2017 MOP Survey distinguishes between chip-and-pin and contactless technologies. Chip-and-pin card transactions were made by a large majority of our overall sample, with similar levels of adoption for both debit (84 per cent) and credit (87 per cent) cards. There was no specific measure of this in the 2013 MOP Survey, so it is not possible to compare adoption of chip-and-pin technology across years. However, we can compare adoption of contactless technology across time. We observe rapid growth in this payment technology among the Canadian population. The likelihood of adopting the contactless feature of a debit card increased almost fivefold, from 9 per cent in 2013 to 44 per cent in 2017. A similarly impressive growth was observed for contactless credit cards, starting from a relatively higher level of adoption in 2013 (33 per cent) and almost doubling to 61 per cent in 2017.

For contactless debit (known as Interac Flash), age and region are important associated demographic factors, with adoption higher among young people and respondents from Ontario. Particularly low adoption in Quebec (28 per cent) may be related to the fact that one of the major financial institutions in the province has not joined the Interac Flash network.

In contrast, contactless credit card adoption was essentially flat across age groups, whereas income and education showed more variation.

3.3 Alternative payments

In addition to cash and cards, consumers can use a wide range of alternative methods of payment. These include more novel payment innovations, for example digital currencies such as Bitcoin, as well as other methods that have been around for a longer time, such as prepaid cards. Here, we again measure adoption of these instruments as the percentage of Canadians who have used a given payment method at least once in the past year. In the 2017 MOP SQ, two questions measure adoption of payment alternatives:⁴ (i) whether respondents had used a given payment method to make a purchase at a retailer or business in the past year, and (ii) whether they had used a given method to make a person-to-person (P2P) transfer in the past year. Results from these questions are shown in **Table 12** and **Table 13**, respectively.

Compared with 2013, we observe noticeable increases in the adoption of alternative payment methods, other than store-branded prepaid cards, for making point-of-sale purchases; see **Table 12**. Adoption of mobile payment apps almost tripled, an increase largely driven by an increase in adoption *among* smartphone owners (from 13 per cent in 2013 to 24 per cent in 2017). Over half (54 per cent) of Canadians used an online payment account, such as PayPal, to make a purchase in the past year; a similar proportion (57 per cent) adopted Interac e-Transfer. Finally, adoption of digital currency remains low among the Canadian population, with only 4 per cent of Canadians having used in it the past year to make a purchase from a retailer or business. This finding is consistent with the Bank of Canada's recent Bitcoin Omnibus Survey,⁵ which measured 5 per cent Bitcoin ownership in Canada.

In a broad sense, the adoption of alternative payment methods is associated with younger age groups, higher income and higher levels of education. Age in particular has a strong association with the use of alternative payment methods, with respondents aged 18 to 34 having among the highest adoption rates for all of the methods considered. It is notable that levels of financial literacy are also related to the adoption of alternative payment methods. For example, respondents with low financial literacy are among the most likely to have adopted a mobile payment app, at 25 per cent, and are also likely to have adopted digital currency, at 8 per cent.

⁴In 2013 a single question was asked about the use of payment methods to make a purchase; in 2017, we wanted to distinguish more clearly between payments made to a retailer or business—i.e., point-of-sale payments—and person-to-person transfers. Given the slight rephrasing of the question, there is still a high degree of comparability across time when considering POS payments.

⁵See [Henry, Huynh and Nicholls \(2017\)](#); [Henry, Huynh and Nicholls \(2018a\)](#); [Henry, Huynh and Nicholls \(2018b\)](#); [Henry, Huynh and Nicholls \(Forthcoming\)](#).

In terms of making P2P transfers, respondents adopted Interac e-Transfer most widely “to give money to another person”; see **Table 13**. Over half of Canadians (54 per cent) used it for such a purpose at least once in the past year. Interac e-Transfer was adopted for P2P transactions most often by respondents aged 18 to 34. Low financial literacy is also associated with adoption of newer payment technologies—mobile payments and digital currencies—for making P2P transfers. Finally, there is a noticeable gender difference among respondents using an online payment account for P2P transfers, with males noticeably more likely to adopt (35 per cent) than females (23 per cent).

4 How do you like to pay?

Up to this point we have discussed results from the MOP SQ. Now we turn our focus to consumer retail payment choices observed in the diary survey instrument (DSI). **Chart 1** shows payment shares calculated from the MOP DSI and the Canadian Financial Monitor (CFM) surveys from 2009 to 2017. The CFM is a household-level wealth survey that includes questions about payments; it can be used to derive payment shares based on recall data. In contrast, the DSI allows us to observe actual shopping behaviour, which we can analyze by transaction characteristics as well as demographics.

Table 14 provides the payment shares, in terms of volume and value, for the 2009, 2013 and 2017 MOP surveys. While cash remained an important payment method in the 2017 survey, with a volume share of 33 per cent and a value share of 15 per cent, it has declined since 2013 by 11 and 8 percentage points in volume and value, respectively. Debit cards accounted for 26 per cent of both transaction volume and value in 2017, compared with 21 per cent of the volume and 25 per cent of the value in 2013. The debit volume share remained stable, while the value share increased. Contactless debit card transactions rose from just 3 per cent of debit volume in 2013 to 52 per cent in 2017. Their value share in 2013 was 2 per cent of all debit card payments, while it was 19 per cent in 2017. Most of the decrease in cash usage corresponded with an increase in credit card usage. Credit cards accounted for 56 per cent of the value and 39 per cent of the volume of retail transactions in the 2017 survey, up from 46 per cent of the value and 31 per cent of the volume in 2013. Contactless credit card payments further increased from 19 per cent of credit card payments in 2013 to 52 per cent in 2017 in terms of volume, and their value share amounted to 30 per cent of credit card payments, compared with 12 per cent in 2013.

Cash transactions are usually of small value, and the median transaction value has increased steadily since 2009, with a median value of \$8 in 2009, \$9 in 2013 and \$10 in 2017. In contrast, the median value of a debit card transaction decreased to \$25 in 2017 from \$27 in 2013, while the median credit card transaction increased to \$35 in 2017 from \$34 in 2013.

Growth in the volume of debit and credit card transactions is associated with an increase in contactless transactions from 2013 to 2017. Contactless cards are primarily used for small-value transactions with an upper limit of usually \$100.⁶ The median value of contactless transactions increased between 2013 and 2017. While the median value of a contactless debit card transaction was \$14 in 2013, it was \$16 in 2017. For contactless credit cards, the median value increased over this time from \$20 to \$26.

4.1 Transaction characteristics

Table 15 and **Table 16** show that cash is used mostly for small-value transactions and that its share decreases as the transaction value increases. Among transactions recorded in the DSI below \$15, cash accounted for 53 per cent of the volume and 46 per cent of the value. In contrast, among transactions above \$50, cash accounted for just 12 per cent of the volume and 10 per cent of the value. While debit cards did not capture the largest share in any of the considered transaction ranges, their share was highest in the \$15 to \$25 category, with about 30 per cent for both value and volume. Above \$15, however, credit cards dominated in terms of volume and value. In contrast, the use of contactless debit and credit cards was most common for transactions below \$15 and decreased with higher transaction values. Combined, contactless payments were used more often than cash for transaction values above \$15.

Chart 2 and **Chart 3** show changes in payment shares at different transaction values from 2009 to 2017. The share of transactions conducted with cash has fallen over time in each of the categories. The most notable decline is for small-value transactions, where cash shares declined at the expense of both debit and credit cards. In contrast, growth in credit card shares was responsible for the decline in cash shares for transactions above \$50.

4.2 Type of goods and services

The transactions for each type of good or service are broken down by method of payment in **Table 17** and **Table 18**; see **Table 29** for examples of each type of good and service.

Table 17, which breaks down the volume of retail payments, shows that cash had the largest volume share for three of the categories, namely professional/personal services and hobby/sporting goods (each with 44 per cent of the transactions made in cash), as well as entertainment/meals (with 41 per cent made in cash). In contrast, cash accounted for fewer transactions than each of the other payment methods in the categories of groceries/drugs, gasoline, personal attire and health care. Debit cards did not take the top spot for any type of good and were least used for health care, professional services, travel/parking and durable

⁶Note that contactless card were not commonplace in 2009.

goods. Credit cards were the dominant payment method for groceries/drugs (39 per cent), gasoline (51 per cent), personal attire (64 per cent), health care (65 per cent) and durable goods (58 per cent).

Since cash was primarily used for small-value purchases, it had the smallest value share in most categories, except for three in which debit cards had the smallest share. These categories are entertainment/meals (cash value share of 30 per cent), professional (27 per cent) and travel/parking (10 per cent). Credit cards, on the other hand, had the largest value share in all of the categories considered.

Charts 4 to 7 show changes over time in payment shares for selected types of goods. There was a noticeable decline in the volume share of travel/parking transactions conducted with cash, associated with an increased credit card share for this category. In contrast, cash volume and value shares for the hobby/sporting goods category have remained relatively stable over time. In categories where cash was less frequently used, there has been a steady increase in the volume of credit card transactions at the expense of cash; see **Chart 5**. In value terms, credit cards have become dominant for making travel/parking purchases at the expense of both debit cards and cash.

4.3 Demographics

Table 19 and **Table 20** show payment shares for different demographic groups, calculated from respondents' DSIs. Cash was used more often and for a relatively larger portion of the value in Quebec and the Atlantic provinces, by those 55 years old or older, by those earning \$45,000 or less, by males and by those without post-secondary education. For debit, the volume and value shares were highest in the Atlantic provinces, as well as among those aged 35 to 54, high earners, females and those without post-secondary education. Finally, credit cards had the highest volume and value shares in British Columbia, for those 55 years and older and for those having an income above \$85,000. Credit card usage increased with the level of education. While females used credit cards relatively more often than males, males and females had about the same credit card value shares.

The use of payment methods varies noticeably across demographic groups and often with differing trends for contactless debit versus contactless credit. For example, respondents in the Atlantic provinces used contactless debit for a greater proportion of their debit card transactions than the rest of Canadians. However, they used contactless credit cards less intensively. As another example, those with an income below \$45,000 used contactless debit for 40 per cent of their debit card transactions, while those earning \$85,000 or more used it for 56 per cent. In contrast, the share of contactless credit card transactions decreased with income. A possible explanation is that high earners use their credit cards more often and for high-value transactions where contactless payments are not accepted because of a

transaction limit of less than \$100.

With respect to age, however, the use of both contactless debit and contactless credit cards followed a similar pattern. Among the 18-to-34 and 35-to-54 age groups, contactless debit cards were used for 56 per cent and 50 per cent of all debit card purchases, respectively. In comparison, those aged 55 and above used the contactless feature for 52 per cent of their debit card purchases. The 18-to-34 age group made most of their credit card purchases using the contactless feature (64 per cent) while 35-to-54-year-olds used it for 54 per cent of their credit card transactions, and those 55 years or older used it for 44 per cent.

5 Respondent assessments of payment methods

This section discusses respondents' assessments of payment methods in terms of ease of use, cost, security and acceptance. These self-reported assessments were made on a five-point Likert scale, with the exception of acceptance, which used a seven-point scale in 2017. Results, which come from the SQ, are reported in **Charts 8 to 11**.

5.1 Acceptance

Chart 8 illustrates respondents' assessments of how widely retailers accepted each method of payment. Respondents reported that cash is almost universally accepted, with no changes from 2013, while debit cards witnessed a small increase in acceptance and credit cards witnessed a small decrease. There was a notable change in how the acceptance of contactless payments was viewed. Positive ratings of contactless card acceptance more than doubled from 40 per cent in 2013 to over 80 per cent in 2017. This result for contactless payments is not surprising, as both the number of terminals that accept contactless cards and the number of contactless card users have almost doubled during this period.⁷

5.2 Ease of use

Chart 9 displays respondents' assessments of the ease of use of cash, debit cards, credit cards and the contactless feature of debit and credit cards. Respondents perceived that all of these payment methods are relatively easy to use, with over 80 per cent giving a positive rating of either *Easy* or *Very easy* to use. Cash, debit cards and credit cards decreased slightly in their ease-of-use assessment compared with 2013, while contactless cards increased from about 50 per cent to 85 per cent. The increase in perceived ease of use for contactless cards may

⁷[Technology Strategies International \(2017\)](#) reports that about 230,000 terminals accepted contactless cards in 2013, while in 2016 it was 449,500 terminals; the number of contactless card users increased from 9.0 million to 15.9 million in that same period.

be because consumers are gaining more experience in using these instruments, as witnessed by the increased adoption and share of contactless payments. Another explanation is the wider availability of merchant terminals accepting contactless payments.

5.3 Cost

Chart 10 shows the perceptions of cost from 2013 to 2017. Cash dominated the other payment methods, with 80 per cent of respondents stating that cash had either low or very low costs. There was a slight decrease in this perception for cash compared with 2013. The perception of cost for debit cards remained relatively the same across these years. However, the proportion of respondents stating that credit cards are a low- or very-low-cost method increased compared with 2013. In addition, contactless payments were viewed more favourably in terms of costs, with an increase in the proportion of respondents giving a positive rating from 35 per cent in 2013 to 65 per cent in 2017. This increase may partly explain why credit cards were perceived more favourably for cost. For example, contactless cards allow consumers to make small-value transactions, which were previously not accepted or which faced a minimum-value convenience charge.

5.4 Security

Chart 11 provides respondents' assessments of the risk or security of using various payment methods. Interestingly, cash, debit cards and credit cards are similar in terms of ratings of security, with about 75 per cent of respondents stating that these methods are secure or very secure. The perception of the security of cash decreased from 2013, while that of debit and credit cards increased. There was a large improvement in perceptions of security for contactless payments, with an increase from 25 per cent in 2013 to about 55 per cent in 2017. Overall, respondents found that debit and credit cards are becoming as secure as cash.

To assess whether these perceptions match with reality, we compare them with aggregate statistics on the volume and value of fraud for cash, debit and credit in Canada. Bank note counterfeiting levels were low in 2017, with 11 counterfeit notes detected per million of genuine notes in circulation (ppm).⁸ The Bank of Canada reports the total face value of counterfeits passed in Canada in 2017 as \$1.2 million.⁹ For debit cards, Interac reports that \$7.9 million was lost to debit card fraud in 2017.¹⁰ The Canadian Bankers Association (CBA) puts the total financial loss due to credit card fraud at \$800 million in 2017.¹¹ The

⁸Bank of Canada, *Annual Report* (2017): 30.

⁹Bank of Canada, "The Economic Impact of Counterfeiting in Canada," March 2018.

¹⁰Interac, "Statistics: Fraud." Available at www.interac.ca/en/fraud.html.

¹¹Canadian Bankers Association, "Focus: Credit Cards: Statistics and Facts." Available at www.cba.ca/credit-cards.

CBA also reports an increase of 71 per cent in the number of accounts that faced credit card fraud in the period from 2008 to 2014.¹² Finally, the Canadian Anti-Fraud Centre reports that, from 2012 to 2014, there was an increase of 20 per cent in identity fraud.¹³ These aggregate statistics suggest that fraud is lowest for cash, followed by debit cards and then credit cards.

The worrying trend of increased fraud motivated us to introduce explicit survey questions to the 2017 MOP SQ regarding experiences with various types of payment fraud and security risks. For cash, respondents reported whether they had experienced receiving a counterfeit bank note, had had cash lost or stolen, or had ever felt unsafe carrying a certain amount of cash. For debit and credit cards, respondents reported whether the use of these cards had subjected them to fraudulent charges, identity theft or compromised personal data in the past year. Experiences with identity theft and data breaches are also asked about in the SQ in relation to online bank account payments and the use of mobile payment apps. Note that the statistics are based on recalled and self-reported incidents over a period of a year.¹⁴

Results from these questions are shown in **Table 21**. In terms of cash, about 3 per cent of respondents reported receiving a counterfeit note in the past year.¹⁵ The median self-reported amount received in counterfeits was \$185. Having cash lost or stolen was experienced by 9 per cent of respondents, but the median amount was lower, at \$50. Finally, 17 per cent of respondents reported feeling uncomfortable carrying \$100 or less in cash on their person; at the median, respondents reported feeling unsafe carrying \$300 or more in cash.

Fraudulent charges on a debit card were reported by 5 per cent of respondents, for a median amount of \$150.¹⁶ Data breaches related to debit card use were experienced by

¹²The largest growth in credit card fraud occurred in card-not-present (CNP) transactions, with an increase of 157 per cent from 2008 to 2014. The cross-country comparison finds that CNP fraud increased by 49 per cent from 2014 to 2015. See Us Payments Forum, “Card-Not-Present Fraud around the World,” March 2017. Available at www.uspaymentsforum.org/wp-content/uploads/2017/03/CNP-Fraud-Around-the-World-WP-FINAL-Mar-2017.pdf.

¹³Canadian Anti-Fraud Centre, “Annual Statistical Report 2014,” May 2015. Available at www.antifraudcentre-centreantifraude.ca/reports-rapports/2014/ann-ann-eng.htm#a28.

¹⁴Research by Blascak et al. (2016) shows that alerts indicating identity theft have small and negative transitory effects on outcomes. However, the experience leads to a heightened awareness of fraud.

¹⁵We conduct two back-of-the-envelope calculations to validate the counterfeiting statistics. For the first, we note that the Canadian Census records an adult population of roughly 28 million for 2017. So, if 3 per cent of Canadians find one counterfeit note, this would imply an estimate of roughly 840,000 counterfeits passed. This estimate is about 30 times higher than the actual number of counterfeits reported in the 2017 Bank of Canada *Annual Report*. There are many possible reasons why respondents may over-report the level of counterfeiting. For example, they may mistake worn or old notes for counterfeits, or they experience recall bias, remembering receiving a counterfeit earlier in time. Second, we note that in the 2009 MOP Survey about 14 per cent of respondents reported receiving a counterfeit in the past year, when counterfeiting was at 45ppm. Therefore, the ratio of self-reported counterfeits to the official level of ppm tracks well over the two survey periods.

¹⁶Note that the number of fraudulent charges does not necessarily reflect the amount of loss incurred, as debit and credit cards each have associated zero-liability policies.

5 per cent of respondents. Identity theft was rarer at 2 per cent. Incidences of fraud were higher for credit cards, with 13 per cent of respondents having experienced fraudulent charges. Additionally, credit card fraud was more expensive for consumers, with a median amount of \$300. Data breaches on credit cards (8 per cent) were twice as likely as identity theft (4 per cent). Finally, respondents reported that for online accounts the rates of identity theft and data compromise were both 3 per cent, while for mobile payment apps they were both 1 per cent.

It is worth noting that, prior to the survey implementation (October to December 2017), Equifax announced a major data breach affecting approximately 143 million US consumers.¹⁷ For Canada, news reports estimated that up to 100,000 Canadian account holders may also have been affected.¹⁸ On September 17, 2017, the Office of the Privacy Commissioner of Canada announced an investigation.¹⁹ About a month after the data breach, Equifax Canada revised its estimate and said approximately 8,000 Canadians were affected by the data breach.²⁰ These events may help explain the heightened awareness of payment fraud observed in the 2017 MOP Survey.

Overall, reported experiences of counterfeit cash, as well as debit and credit card fraud, are consistent on a qualitative scale with aggregate numbers. Financial damage from counterfeit cash was the smallest, followed by that from debit card fraud; credit card fraud was reported as the costliest type of fraud. While self-reported survey data may overestimate statistics on payment fraud in Canada, they reveal that Canadians are aware of which payment methods bear lower and higher risks of fraud.

6 Conclusion and implications

This paper discusses the results of the 2017 MOP Survey. From the SQ, we observe that Canadians hold more cash on average compared with 2013. Debit card ownership was almost universal in Canada in 2017, and credit card ownership increased to almost 90 per cent. Adoption of contactless payments, both debit and credit, rose dramatically. From the DSI,

¹⁷The data breach was announced on September 7, 2017. Equifax, “Equifax Announces Cyber Security Incident Involving Consumer Information,” September 7, 2017. Available at www.equifaxsecurity2017.com/2017/09/07/equifax-announces-cybersecurity-incident-involving-consumer-information.

¹⁸M. Braga, “100,000 Canadian Victims: What We Know about the Equifax Breach—And What We Don’t,” Canadian Broadcasting Corporation, September 19, 2017. Available at www.cbc.ca/news/technology/equifax-canada-breach-sin-cybersecurity-what-we-know-1.4297532.

¹⁹Office of the Privacy Commissioner of Canada, “OPC Launches Investigation into Equifax Breach,” September 15, 2017. Available at www.priv.gc.ca/en/opc-news/news-and-announcements/2017/an_170915.

²⁰Office of the Privacy Commissioner of Canada, “Information for Canadians about the Equifax Data Breach,” October 19, 2017. Available at www.priv.gc.ca/en/opc-news/news-and-announcements/2017/equifax-breach-171019.

we observe that the share of cash transactions continued to decline in both volume and value terms, while there was a substantial increase in the share of contactless payments. Measures of financial literacy and experiences with payment fraud provided additional dimensions for understanding cash usage and payment behaviour beyond traditional demographic factors and consumer assessments.

Engert, Fung and Hendry (2018) discuss problems that might arise because of a “cashless society.” While countries such as Sweden are facing a more drastic decline in cash—including in the value of bank notes in circulation (see Segendorf and Wretman 2015)—our results suggest that the trend away from cash at the point of sale may also be a reality in Canada. In examining implications for the central bank and potential policy responses, it is crucial to understand the who and why of cash usage, which is the purpose of these MOP surveys.

One of the major motivations behind the 2017 MOP Survey is to continue conducting economic research related to understanding the demand for cash versus alternative methods of payment. In designing the survey instruments, we included updates that will help us to answer specific research questions, for example, consumer payment choice with network effects in two-sided markets. In addition, we aim to perform more detailed and rigorous analysis related to financial literacy in the future. In conducting survey-based research, it is important to recognize the continuing decline in survey response rates across the world; see Miller (2017). An equally important consideration is evaluating how best to cost-effectively collect timely and quality data on cash and payments using non-probability samples; see Dutwin and Buskirk (2017).

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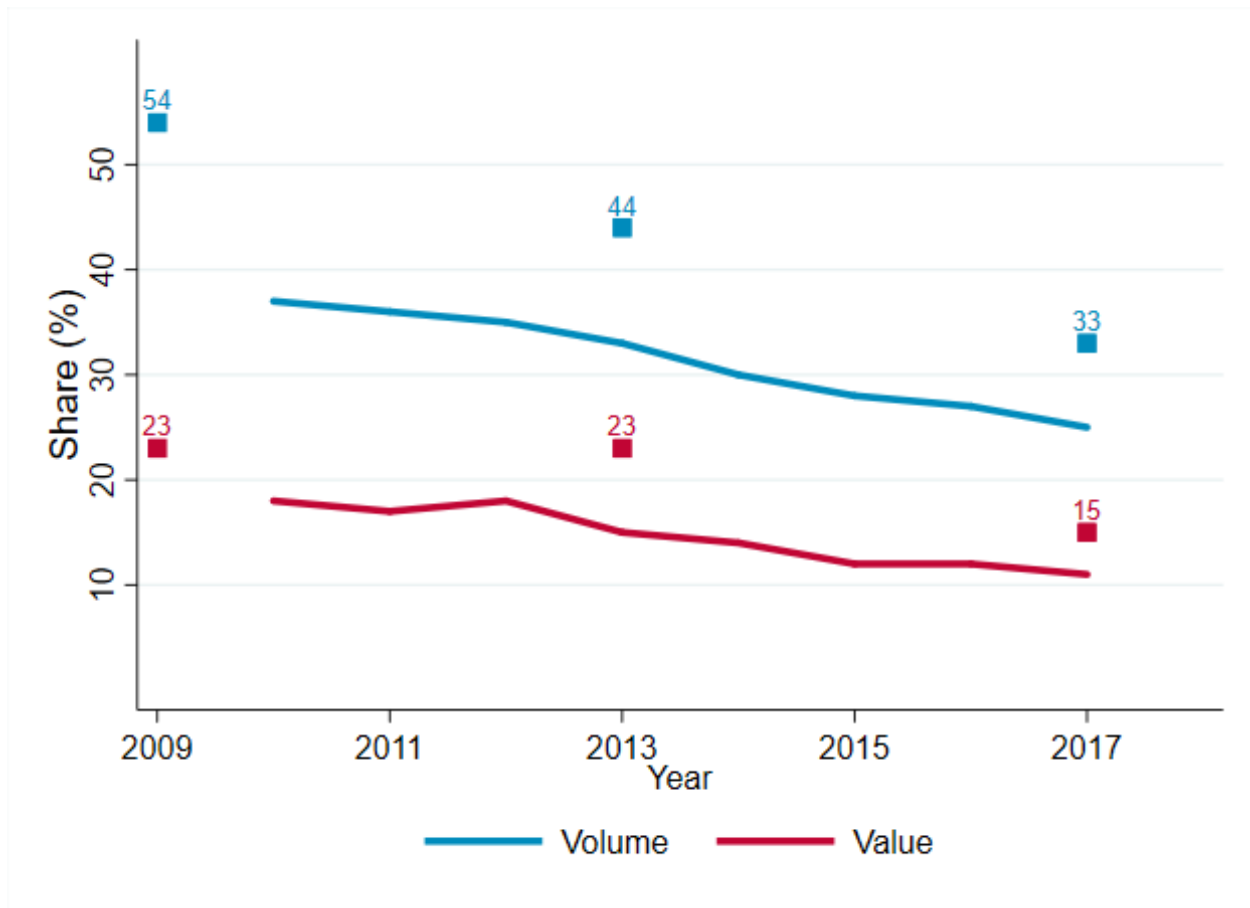
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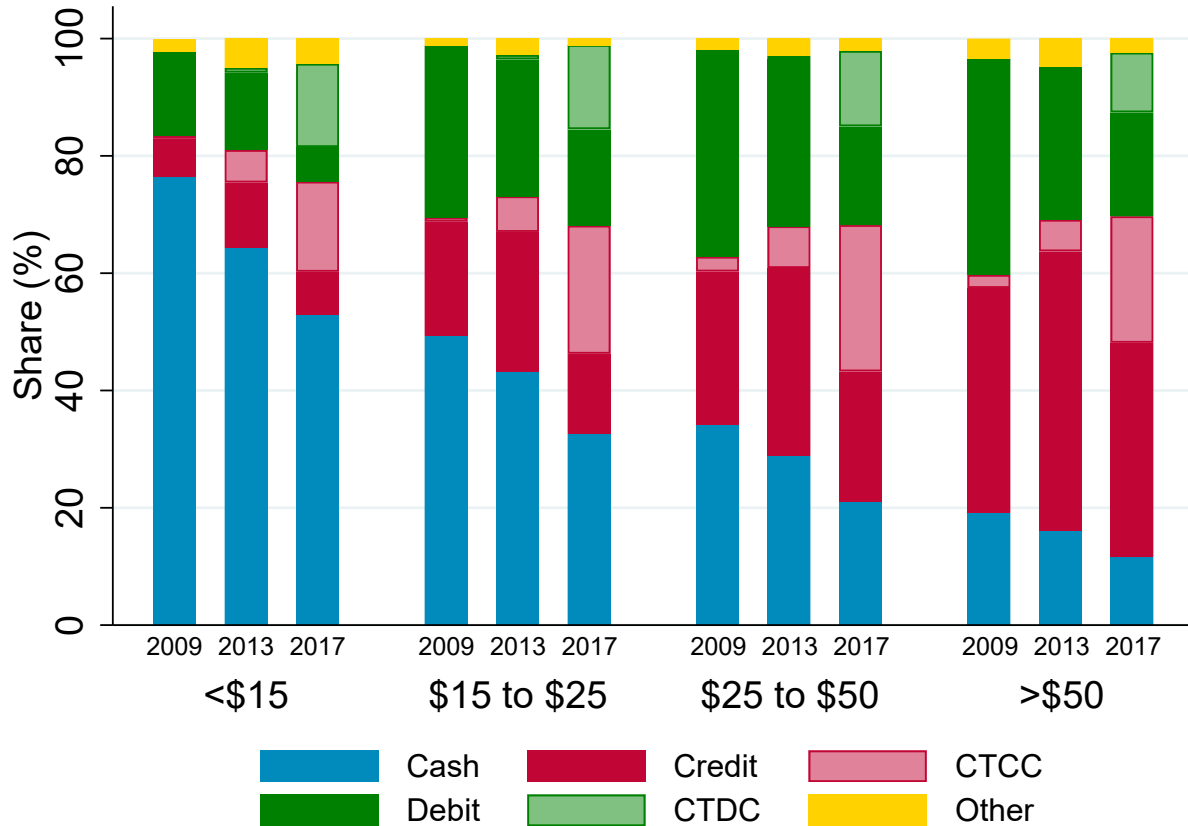
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Chart 1: Cash shares over time from the MOP and the CFM



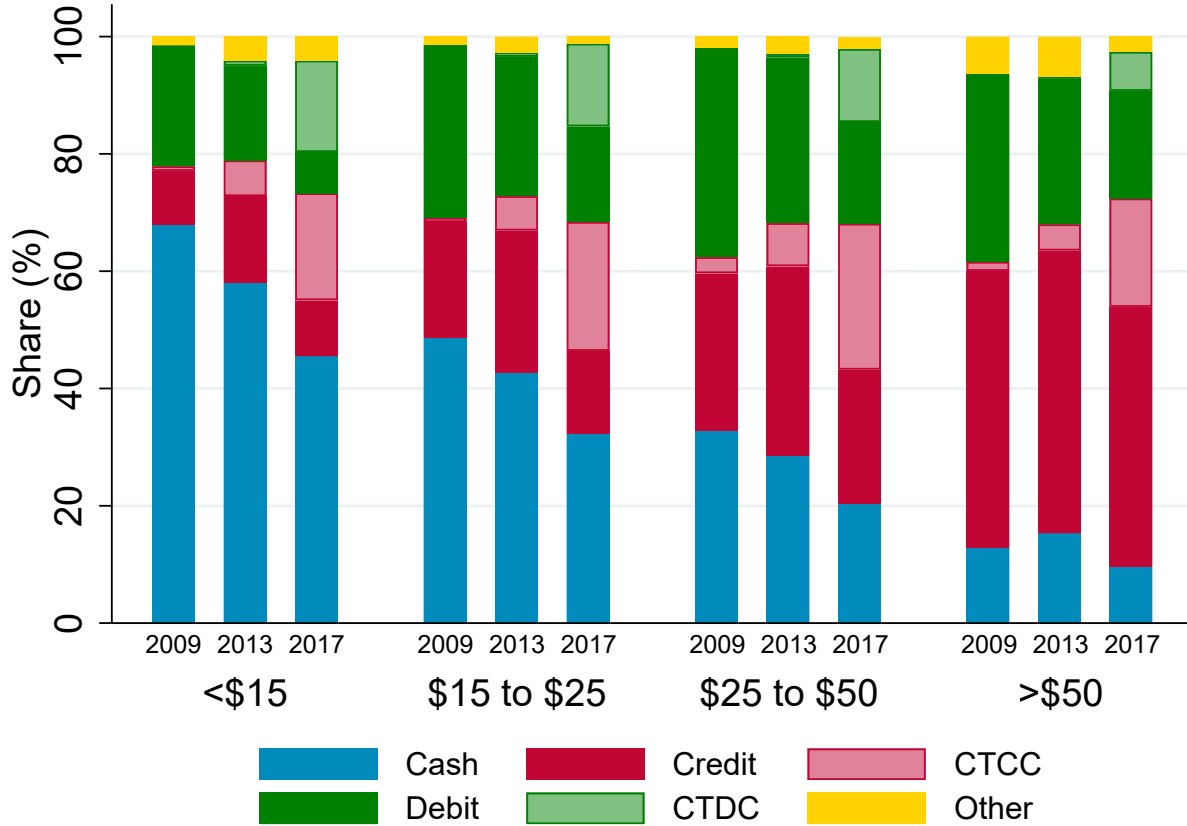
Note: Estimated cash payment shares over time from the 2009, 2013 and 2017 MOP surveys are represented by dots. Estimated cash shares from the 2009 to 2017 Canadian Financial Monitor (CFM) surveys are represented by lines. The CFM is a household-level wealth survey with a section on payments, from which payment shares can be derived using recall-based survey questions.

Chart 2: Payment shares over time: volume, by transaction value



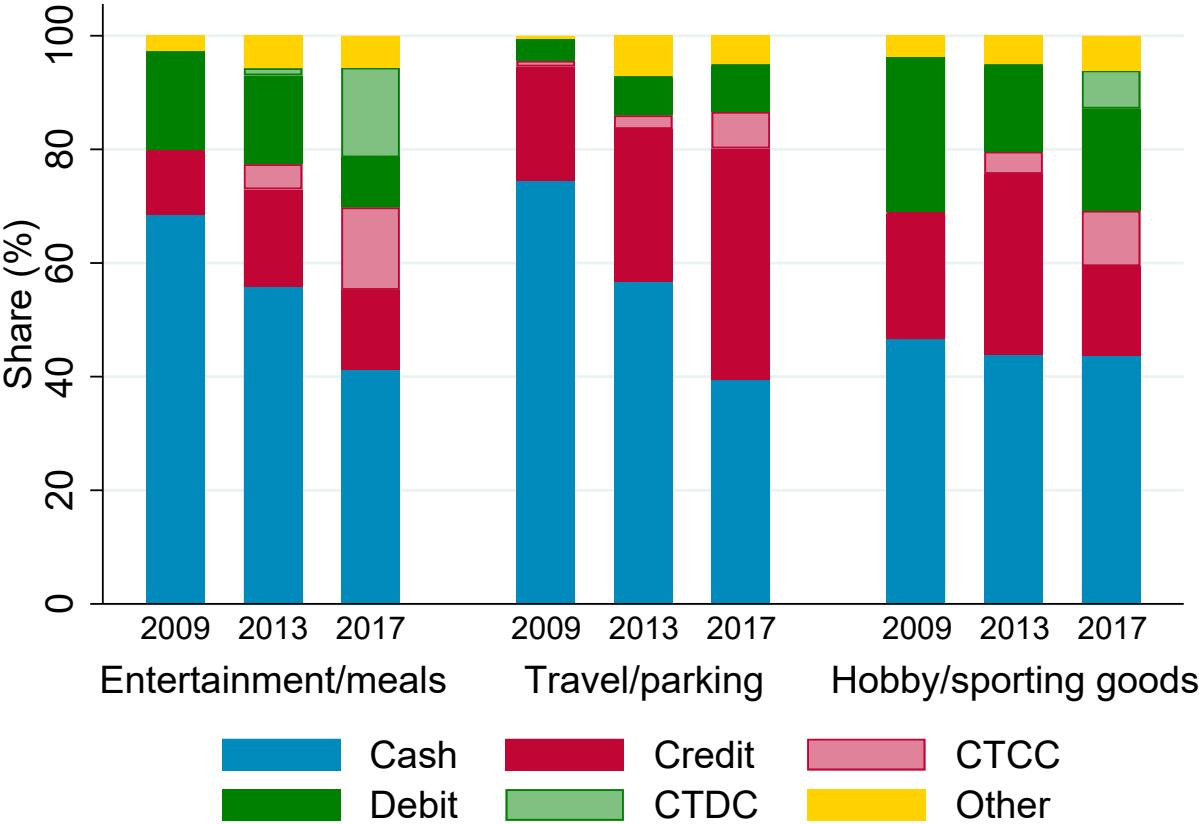
Note: The chart breaks down the total volume of transactions by method of payment over time, according to the value range of the transaction. CTDC refers to contactless debit cards, and CTCC refers to contactless credit cards. Data are from the 2009 MOP DSI (DSI weights used), 2013 MOP DSI (SQ weights used) and 2017 MOP DSI (DSI weights used).

Chart 3: Payment shares over time: value, by transaction value



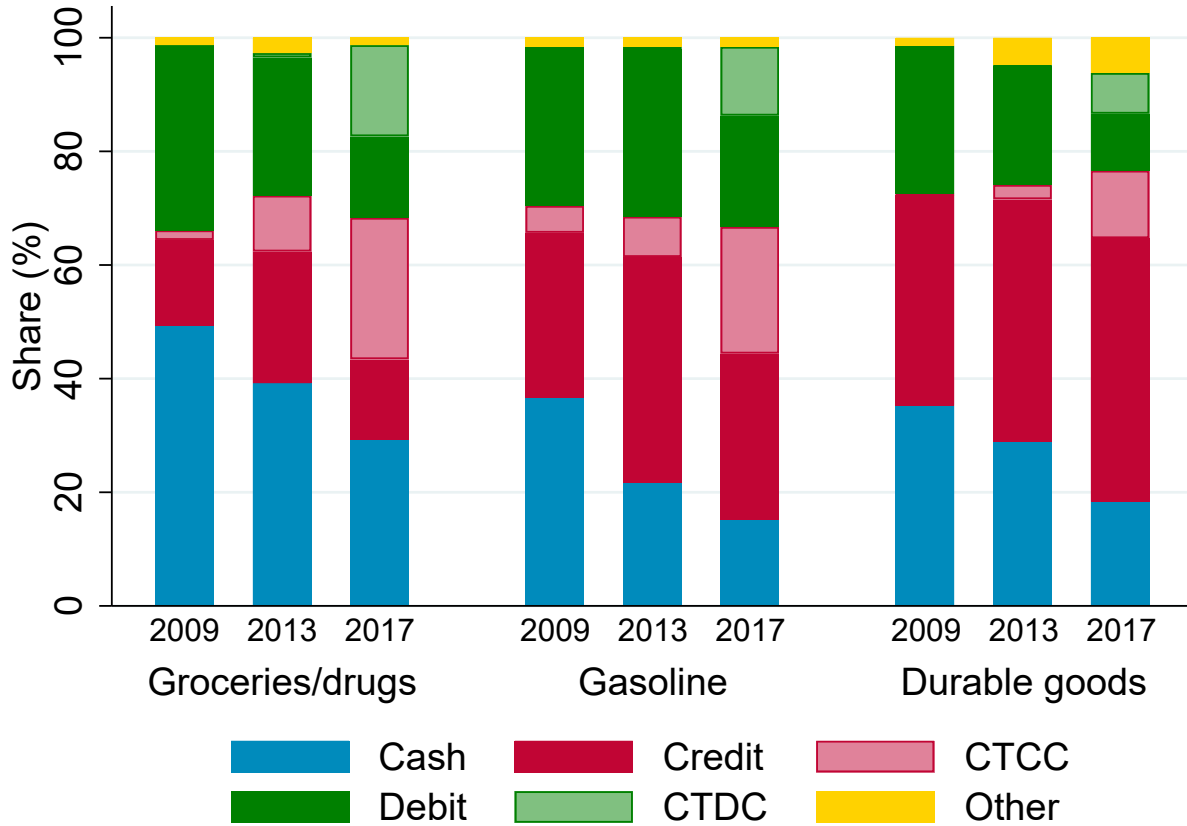
Note: The chart breaks down the total value of transactions by method of payment over time, according to the value range of the transaction. CTDC refers to contactless debit cards, and CTCC refers to contactless credit cards. Data are from the 2009 MOP DSI (DSI weights used), 2013 MOP DSI (SQ weights used) and 2017 MOP DSI (DSI weights used).

Chart 4: Payment shares over time: volume, by type of good and service



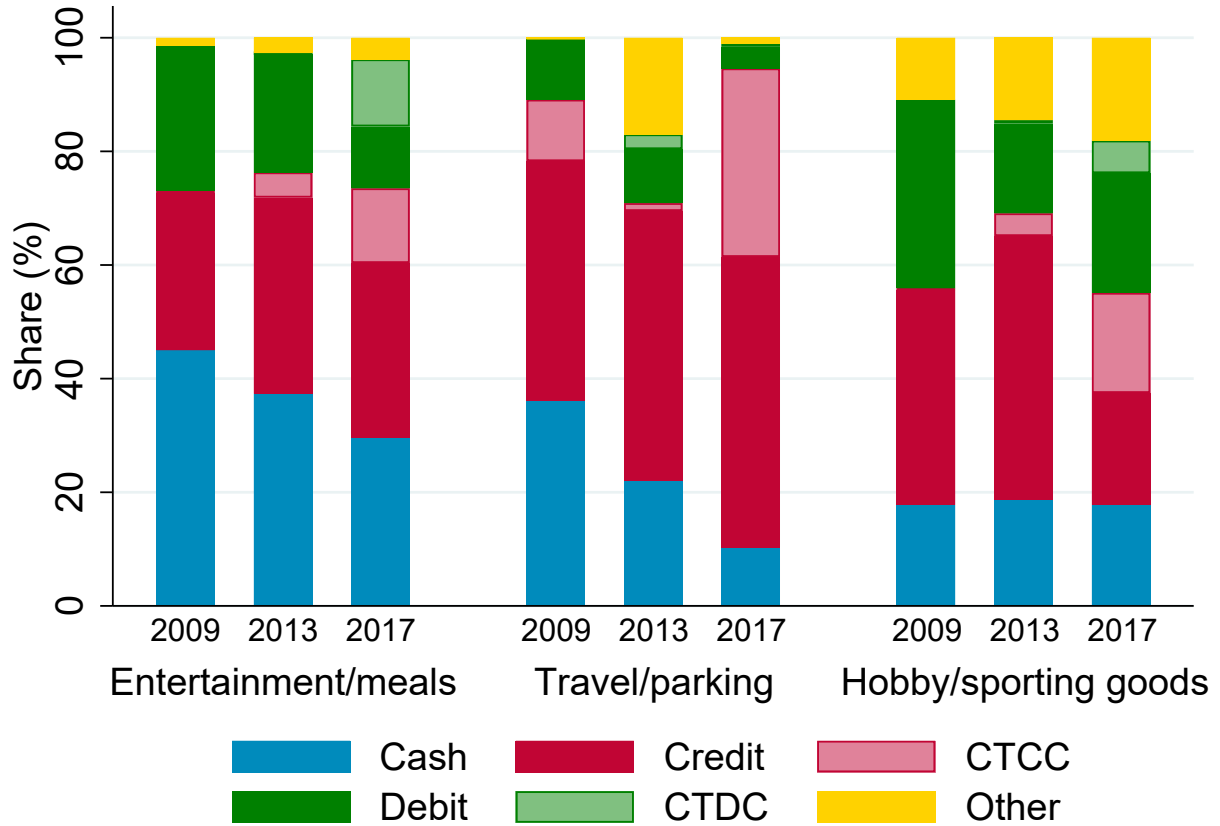
Note: The chart breaks down the total volume of transactions by method of payment over time, for different categories of goods. The categories shown are ones where cash was used more often. CTDC refers to contactless debit cards, and CTCC refers to contactless credit cards. Data are from the 2009 MOP DSI (DSI weights used), 2013 MOP DSI (SQ weights used) and 2017 MOP DSI (DSI weights used).

Chart 5: Payment shares over time: volume, by type of good and service



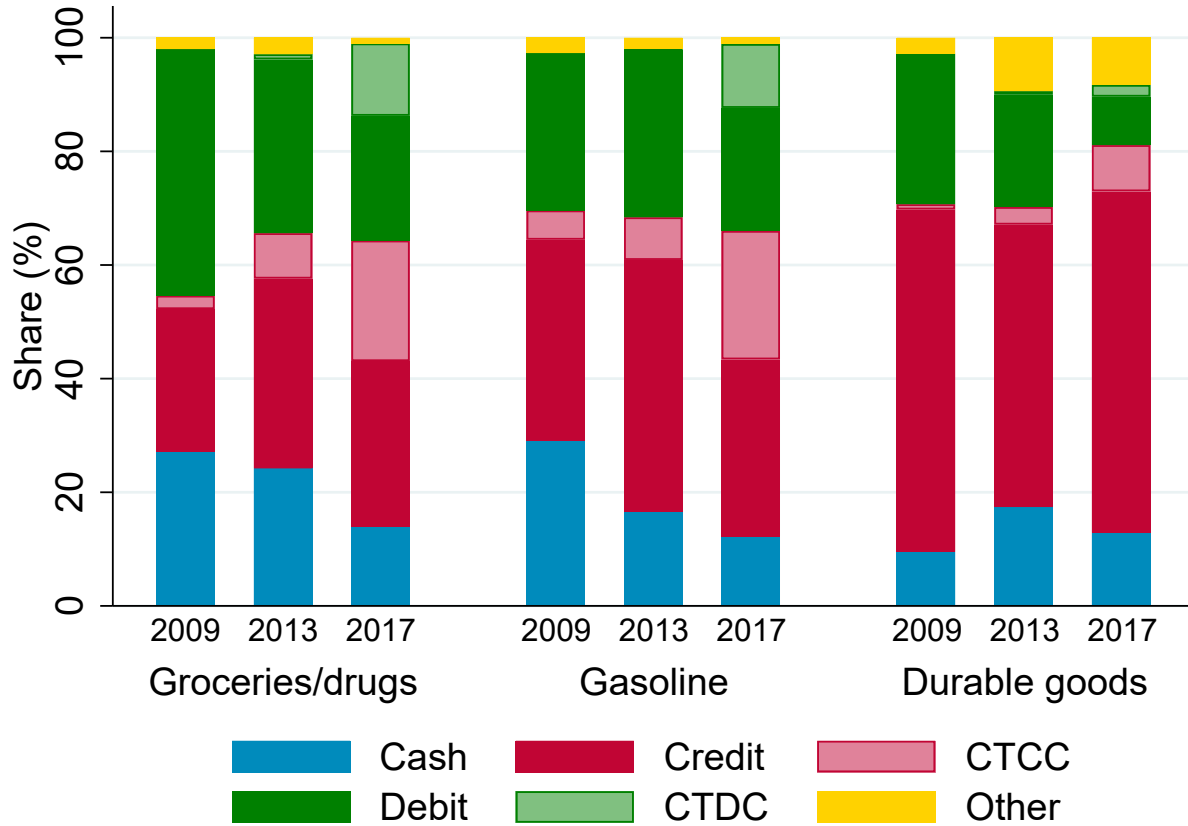
Note: The chart breaks down the total volume of transactions by method of payment over time, for different categories of goods. The categories shown are ones where cash was used less often. CTDC refers to contactless debit cards, and CTCC refers to contactless credit cards. Data are from the 2009 MOP DSI (DSI weights used), 2013 MOP DSI (SQ weights used) and 2017 MOP DSI (DSI weights used).

Chart 6: Payment shares over time: value, by type of good and service



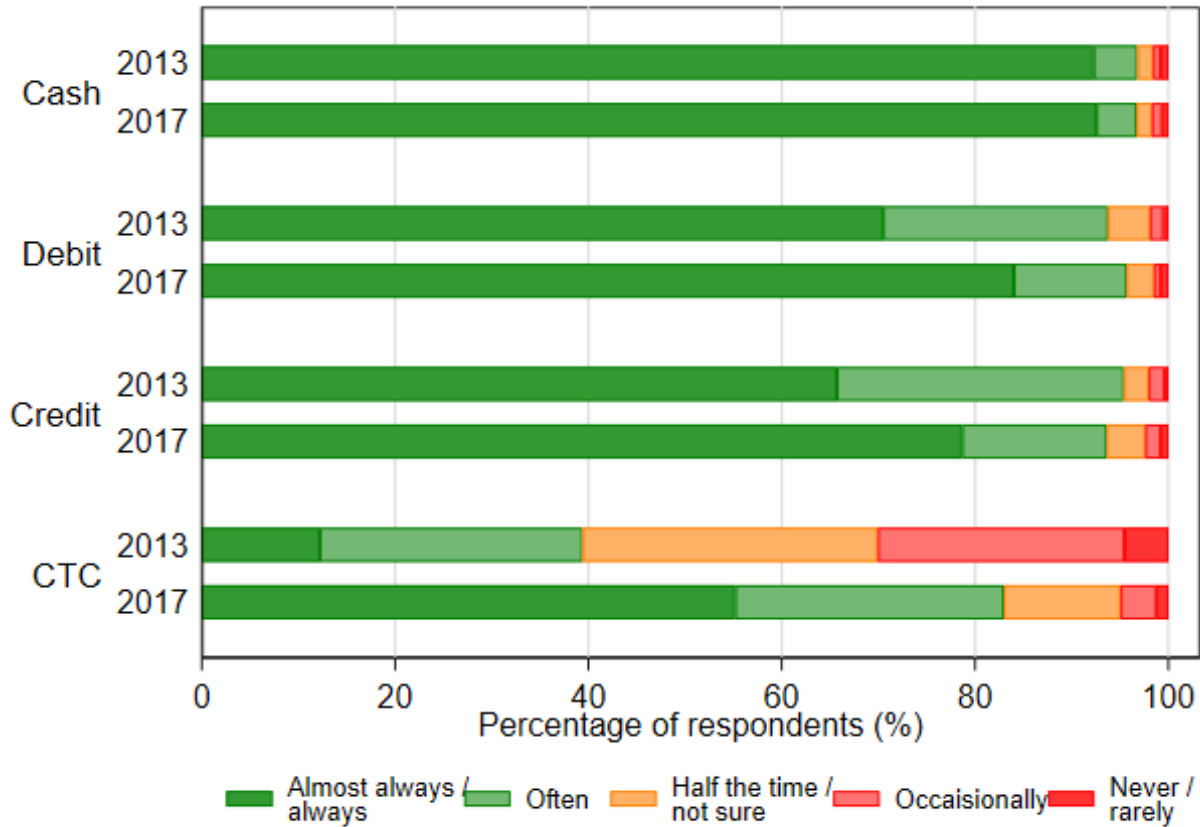
Note: The chart breaks down the total value of transactions by method of payment over time, for different categories of goods. The categories shown are ones where cash was used more often. CTDC refers to contactless debit cards, and CTCC refers to contactless credit cards. Data are from the 2009 MOP DSI (DSI weights used), 2013 MOP DSI (SQ weights used) and 2017 MOP DSI (DSI weights used).

Chart 7: Payment shares over time: value, by type of good and service



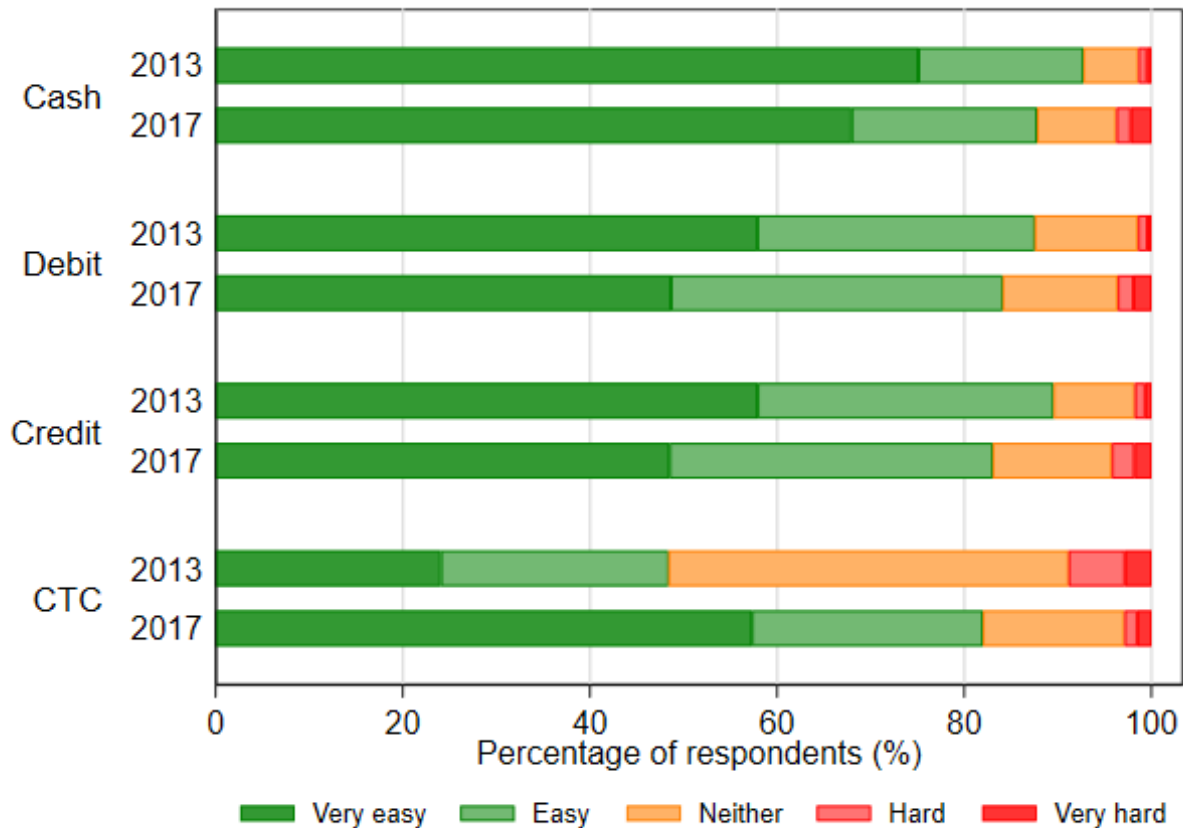
Note: The chart breaks down the total value of transactions by method of payment over time, for different categories of goods. The categories shown are ones where cash was used less often. CTDC refers to contactless debit cards, and CTCC refers to contactless credit cards. Data are from the 2009 MOP DSI (DSI weights used), 2013 MOP DSI (SQ weights used) and 2017 MOP DSI (DSI weights used).

Chart 8: Perceptions of payment methods: acceptance, 2013 versus 2017



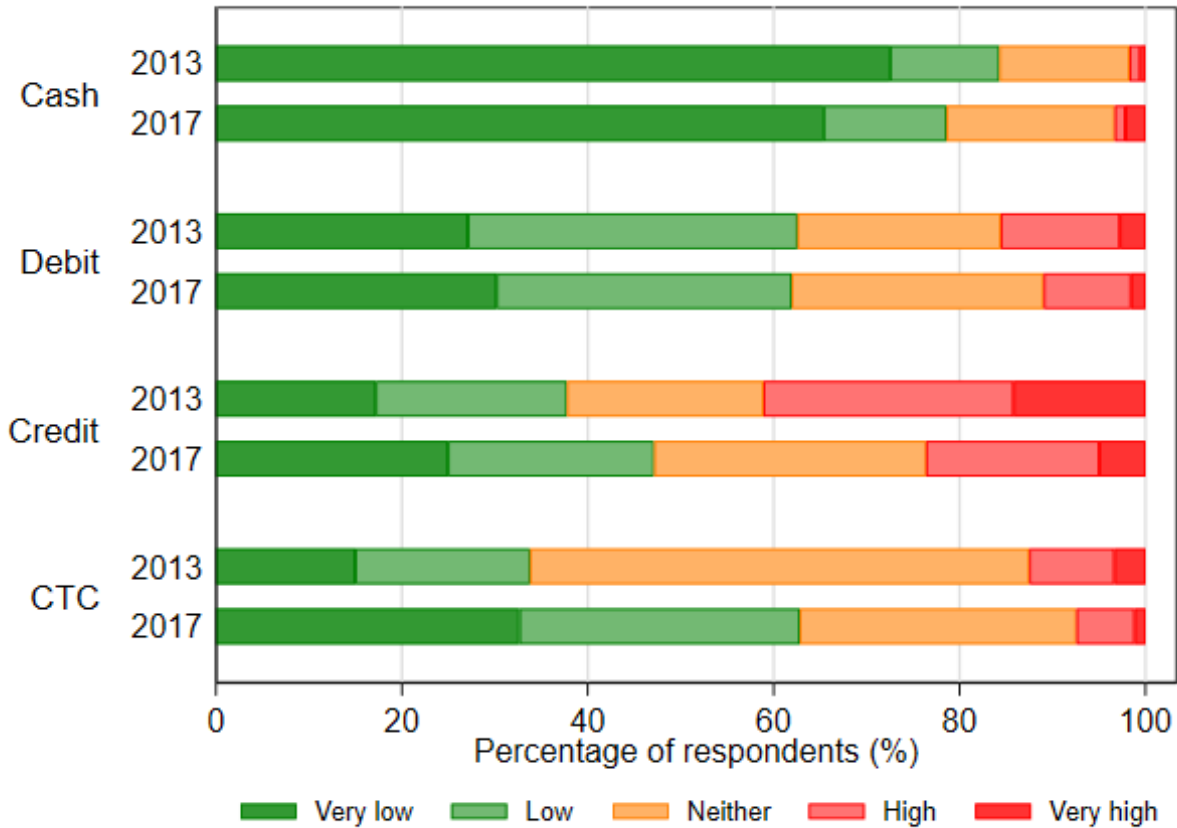
Note: Respondents were asked to rank how widely accepted each method of payment is. In 2013 a four-point scale with a “Not sure” option was used; in 2017 a seven-point scale was used. In 2013 the question was phrased in terms of acceptance “in Canada,” whereas in 2017 this was changed to “in your community.” To compare across time we (i) assume that “Not sure” from 2013 equates to “Half the time” from 2017 and (ii) collapse the top and bottom two categories from the seven-point scale used in 2017. This graph shows the proportion of responses in each category by method of payment. CTC is the contactless feature of a credit or debit card. Data are from the 2013 and 2017 MOP SQ, and SQ weights are used.

Chart 9: Perceptions of payment methods: ease, 2013 versus 2017



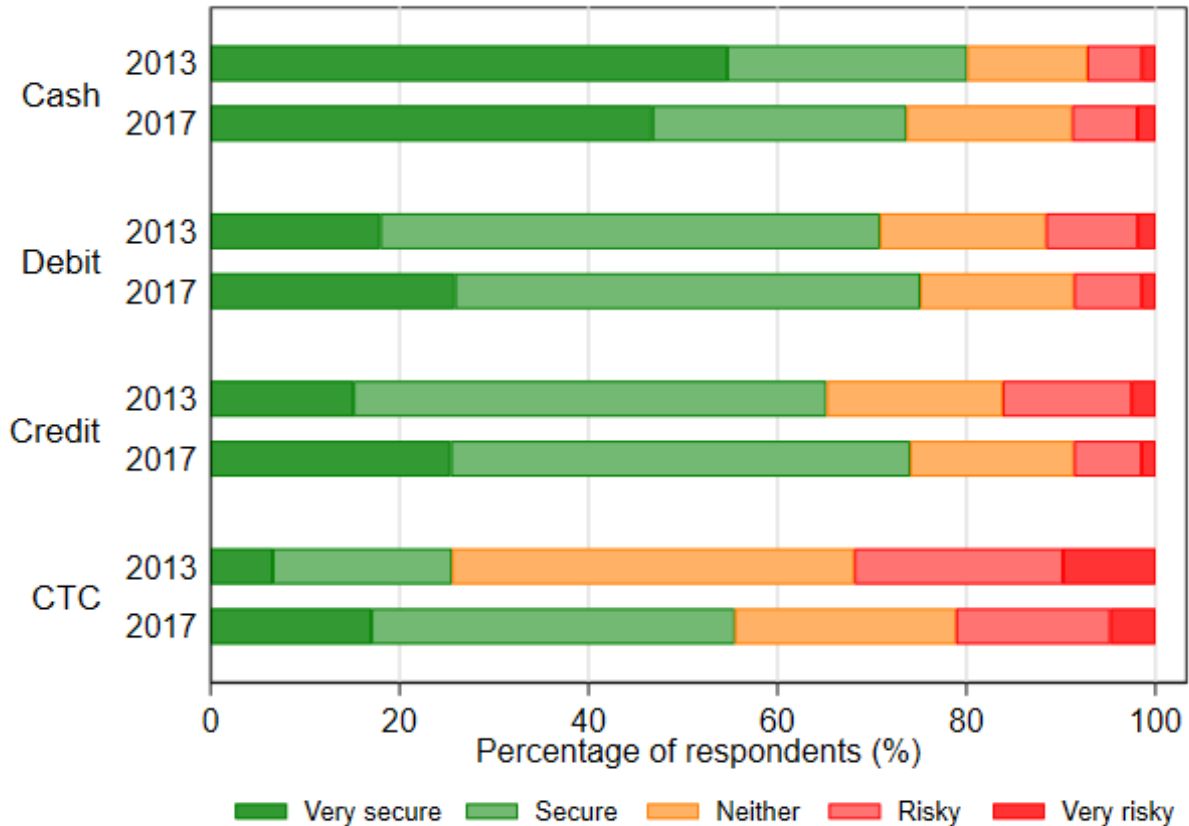
Note: Respondents were asked to rank how easy or hard each method of payment is to use, on a scale of 1 (very hard) to 5 (very easy). Respondents were encouraged to select the middle category if they were unsure. This graph shows the proportion of responses in each category, by method of payment. CTC is the contactless feature of a credit or debit card. Data are from the 2013 and 2017 MOP SQ, and SQ weights are used.

Chart 10: Perceptions of payment methods: cost, 2013 versus 2017



Note: Respondents were asked to rank how costly each method of payment is to use, on a scale of 1 (very high cost) to 5 (very low cost). Respondents were encouraged to select the middle category if they were unsure. This graph shows the proportion of responses in each category by method of payment. CTC is the contactless feature of a credit or debit card. Data are from the 2013 and 2017 MOP SQ, and SQ weights are used.

Chart 11: Perceptions of payment methods: security, 2013 versus 2017



Note: Respondents were asked to rank how risky or secure each method of payment is to use, on a scale of 1 (very risky) to 5 (very secure). Respondents were encouraged to select the middle category if they were unsure. This graph shows the proportion of responses in each category by method of payment. CTC is the contactless feature of a credit or debit card. Data are from the 2013 and 2017 MOP SQ, and SQ weights are used.

Table 1: Financial literacy questions

Concept	Question	Response options
Interest	<i>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?</i>	More than \$102 Exactly \$102 Less than \$102 Do not know
Inflation	<i>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?</i>	More than today Exactly the same Less than today Do not know
Risk	<i>Please tell me whether or not this statement is true or false: Buying a single company's stock usually provides a safer return than a mutual fund of stocks.</i>	True False Do not know

Note: This table shows the “Big Three” financial literacy questions included in the 2017 MOP Survey. Correct responses are highlighted in bold. The questions were developed by [Mitchell and Lusardi \(2011\)](#).

Table 2: Results of the financial literacy questions

	Interest		Inflation		Risk		<i>Score</i> ₁ <i>mean</i>	<i>Score</i> ₂ <i>mean</i>
	<i>Correct</i>	<i>Don't know</i>	<i>Correct</i>	<i>Don't know</i>	<i>Correct</i>	<i>Don't know</i>		
2017	0.83	0.07	0.64	0.13	0.58	0.34	2.1	1.6
<i>REGION</i>								
Atlantic	0.73	0.14	0.54	0.14	0.44	0.47	1.7	1.2
Quebec	0.79	0.07	0.58	0.16	0.54	0.36	1.9	1.4
Ontario	0.85	0.05	0.66	0.11	0.61	0.31	2.1	1.7
Prairies	0.88	0.06	0.67	0.10	0.59	0.37	2.1	1.8
British Columbia	0.86	0.06	0.71	0.13	0.64	0.29	2.2	1.9
<i>AGE</i>								
18–34	0.79	0.10	0.44	0.18	0.46	0.41	1.7	1.1
35–54	0.84	0.05	0.64	0.13	0.60	0.34	2.1	1.7
55+	0.86	0.05	0.79	0.09	0.65	0.28	2.3	2.0
<i>INCOME</i>								
Less than \$45K	0.78	0.08	0.56	0.18	0.46	0.46	1.8	1.3
\$45K–\$85K	0.81	0.08	0.62	0.15	0.56	0.37	2.0	1.6
\$85K or more	0.89	0.04	0.70	0.07	0.67	0.24	2.3	1.9
<i>GENDER</i>								
Male	0.87	0.04	0.70	0.08	0.62	0.29	2.2	1.8
Female	0.80	0.09	0.58	0.17	0.54	0.39	1.9	1.5
<i>EDUCATION</i>								
High school	0.80	0.08	0.59	0.16	0.53	0.38	1.9	1.5
College / tech. school	0.85	0.06	0.61	0.13	0.59	0.35	2.1	1.6
University	0.87	0.05	0.74	0.06	0.65	0.27	2.3	1.9

Note: This table shows results from the three financial literacy questions included in the 2017 MOP Survey. For each question, the left column shows the proportion answering correctly, while the right column shows the proportion answering *Don't know*. See Table 1 for the full questions. *Score*₁ is calculated by summing up the number of correct answers out of three; *score*₂ is calculated by summing up correct answers and subtracting incorrect answers, with *Don't know* responses contributing zero. Data are from the 2017 MOP SQ, and SQ weights are used.

Table 3: Financial literacy and demographics

	Financial Literacy		
	<i>Low</i>	<i>Medium</i>	<i>High</i>
<i>OVERALL</i>	0.23	0.35	0.42
<i>REGION</i>			
Atlantic	0.32	0.44	0.25
Quebec	0.29	0.34	0.38
Ontario	0.23	0.30	0.46
Prairies	0.18	0.36	0.46
British Columbia	0.15	0.42	0.44
<i>AGE</i>			
18–34	0.37	0.35	0.28
35–54	0.23	0.34	0.44
55+	0.13	0.35	0.52
<i>INCOME</i>			
Less than \$45K	0.30	0.42	0.28
\$45K–\$85K	0.24	0.36	0.40
\$85K or more	0.18	0.29	0.53
<i>GENDER</i>			
Male	0.21	0.30	0.50
Female	0.26	0.39	0.35
<i>EDUCATION</i>			
High school	0.26	0.38	0.36
College/tech. school	0.23	0.36	0.41
University	0.19	0.28	0.53

Note: This table shows the distribution of respondents by financial literacy levels and various demographic categories. Rows may not sum exactly to one, due to rounding. Ratings of financial literacy are based on $score_2$, which sums the number of correct answers minus the number of incorrect answers, with zero assigned to *Don't know* responses. *Low* financial literacy refers to scores less than or equal to zero; *Medium* refers to scores of 1 or 2; *High* refers to perfect scores of 3. Data are from the 2017 MOP SQ, and SQ weights are used.

Table 4: Cash management

	Cash on hand <i>mean in \$</i>	Other cash <i>median in \$</i>	Employer/business <i>proportion</i>	Family/friends <i>proportion</i>
2013	84	300	0.11	0.16
2017	105	210	0.07	0.15
<i>REGION</i>				
Atlantic	79	300	0.05	0.14
Quebec	98	200	0.08	0.12
Ontario	99	250	0.07	0.17
Prairies	91	220	0.07	0.16
British Columbia	165	350	0.07	0.17
<i>AGE</i>				
18–34	118	250	0.13	0.30
35–54	96	200	0.07	0.15
55+	104	200	0.03	0.05
<i>INCOME</i>				
Less than \$45K	67	200	0.08	0.16
\$45K–\$85K	99	200	0.07	0.15
\$85K or more	132	300	0.07	0.16
<i>GENDER</i>				
Male	121	260	0.09	0.17
Female	89	200	0.05	0.14
<i>EDUCATION</i>				
High school	106	200	0.07	0.15
College/tech. school	95	200	0.08	0.15
University	114	300	0.06	0.16
<i>FINANCIAL LITERACY</i>				
High	94	240	0.04	0.13
Medium	101	200	0.05	0.14
Low	131	220	0.16	0.23

Note: This table shows several measures related to cash management behaviour. *Cash on hand* is the mean amount of cash in a respondent’s wallet, purse or pockets. *Other cash* is the median amount of cash stored elsewhere, such as at home or in a vehicle. The columns *Employer/business* and *Family/friends* are the proportions of respondents who reported receiving cash at least once in a typical month from these sources. Data are from the 2013 and 2017 MOP SQ, and SQ weights are used.

Table 5: Cash holdings by denomination

	\$100	\$50	\$20	\$10	\$5
2013	0.04	0.11	0.71	0.48	0.62
2017	0.09	0.17	0.68	0.47	0.54
<i>REGION</i>					
Atlantic	0.07	0.14	0.63	0.45	0.47
Quebec	0.07	0.16	0.75	0.47	0.51
Ontario	0.07	0.18	0.68	0.46	0.56
Prairies	0.08	0.14	0.65	0.47	0.52
British Columbia	0.15	0.23	0.66	0.52	0.56
<i>AGE</i>					
18–34	0.15	0.18	0.55	0.44	0.48
35–54	0.08	0.17	0.69	0.46	0.52
55+	0.05	0.17	0.78	0.52	0.59
<i>INCOME</i>					
Less than \$45K	0.06	0.13	0.66	0.48	0.52
\$45K–\$85K	0.08	0.17	0.68	0.47	0.54
\$85K or more	0.10	0.20	0.70	0.47	0.54
<i>GENDER</i>					
Male	0.10	0.21	0.71	0.52	0.53
Female	0.07	0.14	0.66	0.43	0.54
<i>EDUCATION</i>					
High school	0.07	0.17	0.66	0.49	0.56
College/tech. school	0.08	0.14	0.69	0.44	0.53
University	0.12	0.22	0.71	0.49	0.51
<i>FINANCIAL LITERACY</i>					
High	0.05	0.18	0.72	0.48	0.55
Medium	0.08	0.15	0.67	0.47	0.54
Low	0.17	0.19	0.64	0.47	0.49

Note: This table shows the proportion of respondents holding a particular denomination, among those who reported having a positive amount of cash on hand, i.e., cash in their wallet, purse or pockets. Results for 2013 are from the 2013 MOP DSI, while 2017 results are from the 2017 MOP SQ.

Table 6: Cash withdrawals

	Mean # times per month			Mean amount in \$		
	<i>ABM</i>	<i>Bank teller</i>	<i>Cash-back</i>	<i>ABM</i>	<i>Bank teller</i>	<i>Cash-back</i>
2013	2.7	0.7	0.7	118	236	43
2017	2.3	0.6	0.9	140	289	56
<i>REGION</i>						
Atlantic	1.8	0.5	1.0	103	305	39
Quebec	2.6	0.3	1.9	156	275	65
Ontario	2.6	0.7	0.7	136	268	63
Prairies	1.7	0.7	0.3	150	308	34
British Columbia	2.0	0.8	0.3	139	323	53
<i>AGE</i>						
18–34	1.9	0.7	0.7	110	355	58
35–54	2.7	0.5	1.2	145	335	57
55+	2.2	0.7	0.7	157	245	55
<i>INCOME</i>						
Less than \$45K	2.1	0.8	1.2	146	234	52
\$45K–\$85K	2.4	0.6	0.8	143	253	56
\$85K or more	2.4	0.6	0.7	137	366	59
<i>GENDER</i>						
Male	2.6	0.7	0.8	137	355	58
Female	2.0	0.6	1.0	144	228	55
<i>EDUCATION</i>						
High school	2.2	0.7	0.9	154	301	62
College/tech. school	2.4	0.5	0.8	130	179	38
University	2.3	0.6	0.9	135	391	71
<i>FINANCIAL LITERACY</i>						
High	2.1	0.4	0.6	142	249	51
Medium	2.4	0.6	0.9	141	251	41
Low	2.7	1.1	1.4	137	420	79

Note: This table shows the average number of cash withdrawals in a typical month and the average value of a typical withdrawal, via different channels. In the calculation of average number of withdrawals, the highest 0.5 per cent of values are replaced with the 99.5th percentile, except for ABM withdrawals where the highest 1 per cent of values are replaced with the 99th percentile. In the calculation of the average value of withdrawals, the highest 2 per cent of values are replaced with the 98th percentile. Data are from the 2013 and 2017 MOP SQ, and SQ weights are used.

Table 7: Payment card ownership

	Debit cards		Credit cards	
	<i>ownership</i>	<i># cards</i>	<i>ownership</i>	<i># cards</i>
2013	0.98	1.1	0.82	1.9
2017	0.99	1.4	0.89	2.0
<i>REGION</i>				
Atlantic	0.99	1.9	0.82	1.8
Quebec	0.99	1.2	0.89	1.8
Ontario	1.00	1.5	0.89	2.2
Prairies	0.98	1.2	0.90	1.9
British Columbia	1.00	1.3	0.90	2.2
<i>AGE</i>				
18–34	0.99	1.5	0.81	1.6
35–54	1.00	1.4	0.92	2.1
55+	0.99	1.2	0.91	2.3
<i>INCOME</i>				
Less than \$45K	0.99	1.3	0.77	1.6
\$45K–\$85K	1.00	1.4	0.90	2.0
\$85K or more	0.99	1.4	0.95	2.3
<i>GENDER</i>				
Male	0.99	1.3	0.87	2.0
Female	1.00	1.5	0.90	2.1
<i>EDUCATION</i>				
High school	0.99	1.2	0.83	1.8
College/tech. school	1.00	1.5	0.93	2.1
University	1.00	1.7	0.94	2.4
<i>FINANCIAL LITERACY</i>				
High	0.99	1.4	0.95	2.4
Medium	0.99	1.2	0.87	1.8
Low	0.99	1.7	0.79	1.8

Note: This table shows measures of payment card ownership. The *ownership* column is the proportion of respondents with at least one credit or debit card. A respondent is considered to own a debit card if he or she reported having access to a non-zero number of debit cards, or provided information for a main bank account. The *# cards* column is the average number of credit or debit cards belonging to respondents. In the calculation of the average number of cards held, the highest 0.5 per cent of values are replaced with the 99.5th percentile. Data are from the 2013 and 2017 MOP SQ, and SQ weights are used.

Table 8: Main bank account fees

	Account fees		Transactional fees	
	<i>Fee on account</i>	<i>Paid fee</i>	<i>Unlimited transactions</i>	<i>Paid fee</i>
2017	0.73	0.56	0.58	0.16
<i>REGION</i>				
Atlantic	0.77	0.50	0.67	0.18
Quebec	0.79	0.61	0.44	0.21
Ontario	0.72	0.53	0.57	0.15
Prairies	0.72	0.61	0.65	0.14
British Columbia	0.67	0.56	0.67	0.14
<i>AGE</i>				
18–34	0.71	0.56	0.52	0.30
35–54	0.77	0.63	0.58	0.12
55+	0.71	0.49	0.61	0.10
<i>INCOME</i>				
Less than \$45K	0.73	0.59	0.49	0.19
\$45K–\$85K	0.75	0.60	0.56	0.15
\$85K or more	0.73	0.52	0.64	0.15
<i>GENDER</i>				
Male	0.75	0.54	0.55	0.19
Female	0.72	0.59	0.60	0.13
<i>EDUCATION</i>				
High school	0.69	0.59	0.58	0.17
College/tech. school	0.76	0.62	0.57	0.16
University	0.77	0.47	0.58	0.16
<i>FINANCIAL LITERACY</i>				
High	0.72	0.51	0.61	0.08
Medium	0.72	0.61	0.58	0.16
Low	0.78	0.60	0.51	0.33

Note: This table shows the proportion of respondents having and paying fees associated with their main bank account (*Account fees*), as well as for making transactions using their debit card (*Transaction fees*). For account fees: *Fee on account* means having a fee associated with their main bank account, i.e., the bank account used most often for day-to-day purchases; *Paid fee* means the account fee was paid in the past month and is conditional on having an account fee. For transaction fees: *Unlimited transactions* is the proportion of respondents who have an unlimited number of free debit card transactions (purchases, in-network withdrawals, etc.) associated with their account; *Paid fee* indicates the proportion who paid a fee when making a debit card transaction in the past month, among all respondents who have a debit card. Data are from the 2017 MOP SQ, and SQ weights are used.

Table 9: Main credit card features

	Annual fee	Rewards	Low interest rate	High interest rate
2013	0.21	0.73	0.12	0.10
2017	0.37	0.84	0.08	0.08
<i>REGION</i>				
Atlantic	0.36	0.82	0.17	0.08
Quebec	0.39	0.85	0.06	0.08
Ontario	0.34	0.85	0.08	0.09
Prairies	0.37	0.86	0.10	0.07
British Columbia	0.41	0.81	0.09	0.09
<i>AGE</i>				
18–34	0.44	0.87	0.18	0.09
35–54	0.38	0.79	0.05	0.07
55+	0.31	0.88	0.05	0.09
<i>INCOME</i>				
Less than \$45K	0.21	0.82	0.11	0.11
\$45K–\$85K	0.37	0.82	0.07	0.08
\$85K or more	0.44	0.87	0.09	0.07
<i>GENDER</i>				
Male	0.39	0.86	0.10	0.07
Female	0.35	0.83	0.07	0.09
<i>EDUCATION</i>				
High school	0.31	0.84	0.10	0.08
College/tech. school	0.39	0.81	0.07	0.10
University	0.42	0.88	0.08	0.08
<i>FINANCIAL LITERACY</i>				
High	0.36	0.90	0.05	0.08
Medium	0.35	0.79	0.10	0.08
Low	0.41	0.80	0.14	0.08

Note: This table shows the proportion of respondents who reported having various features associated with their main credit card, i.e., the credit card they use most often for day-to-day purchases. *Annual fee* indicates that the credit card has an annual fee. *Rewards* indicates that the credit card has a rewards program. *Low interest rate* is an interest rate below 5 per cent, while *High interest rate* is an interest rate of at least 20 per cent. Data are from the 2013 and 2017 MOP SQ, and SQ weights are used.

records in the raw data were data-capture errors. For example, respondents attempted to “void” unused space in the diary, which was then picked up by the scanner as a transaction with many missing fields. These transactions were dropped from the data set before analysis.

3. **Logical inconsistencies:** An example of a logical inconsistency would be a respondent who recorded having no credit cards but later in the SQ provided information on their main credit card, indicating that they do have one. There were a small number of such inconsistencies in the SQ and DSI, and these were handled on a case-by-case basis.
4. **Store name:** The store name verbatim file itself required editing due to variations in spelling and text-capture errors. As an example, respondents may have either spelled out “Real Canadian Superstore” or used the abbreviation “RCSS.” Further, “RCSS” could be captured mistakenly as “HCSS.” Text matching reduced the number of different store names by about half.

D.4 Data validation

Here we compare key estimates from the 2017 MOP Survey to estimates derived from external network data sources. The goal of this exercise is to validate our survey estimates. The network-based estimates come from several different data sources, and we would not expect the estimates to align exactly. However, it would be concerning if the MOP estimates were very far off.

We use data from the following sources: (i) The 2018 Canadian Payments Forecast from [Technology Strategies International \(2018\)](#) provides estimates of cash volume and value based on an independent survey, as well as aggregate statistics on cash withdrawals from ABMs and cash-back transactions. (ii) [The Nilson Report \(2018\)](#), which is a payment card industry newsletter, reports aggregate numbers for debit and credit card transactions in Canada for 2017. (iii) The Canadian Bankers Association²² provides aggregate volume and value statistics on credit card transactions from the largest banks and credit unions in Canada. (iv) The Interac Association²³ covers the entire network of debit card transactions.

Table 24 uses this data to compare payment shares calculated from the MOP survey. The implied value share of cash derived from network data is 11 per cent, compared with 15 per cent in the MOP survey. The volume share of cash is 33 per cent, which is identical to the MOP estimate. For debit cards, the calculation from network data implies a value share of 29 per cent, higher than the 26 per cent from the MOP survey; the volume share of debit is 36 per cent, noticeably above the 26 per cent in the MOP survey. Lastly, the

²²Canadian Bankers Association. Available at www.cba.ca.

²³Interac. Available at www.interac.ca.

calculation of the value share of credit cards gives 60 per cent, while it is 56 per cent in the MOP survey. The volume share of credit is 32 per cent, while it is 39 per cent in the MOP survey.

For the average transaction value, Technology Strategies International reports around \$18, somewhat lower than the \$20 in the MOP survey. Combining the remaining three data sources, the average value of a debit card transaction is \$42, slightly below the \$44 in the MOP survey. The network data for credit cards imply an average transaction value of \$96, while the MOP estimate is markedly lower at \$62.

Table 24: Data validation with external sources

		2017 MOP Survey	Network data
Payment shares—volume	Cash	33	33
	Debit	26	36
	Credit	39	32
Payment shares—value	Cash	15	11
	Debit	26	29
	Credit	56	60
Average transaction value	Cash	20	18
	Debit	44	42
	Credit	62	96

Note: This table compares estimates from the 2017 MOP Survey with estimates produced from external network data, as described above.

E Variable list

Table 25: 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 ATM
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 that 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 some 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. E.g., MasterCard PayPass, Visa payWave, Interac Flash
Interac e-Transfer	Account affiliated with a bank that can be used to send money to other bank accounts
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, BlackBerry or Android phone, that allows the user to make purchases
Digital currency	Currency available only in digital form. E.g., Bitcoin

Table 26: 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 MOP) / in Canada (2013 MOP)

Table 27: 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 28: Definitions of transaction types (MOP DSI)

Concept	Definition
Purchase	Buying something, paying for a service, or making a financial gift or donation. This does not include pre-authorized payments
Person-to-person transaction	Transactions between two private individuals
Online payment	Payment made for an online transaction

Table 29: 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, toys, sports equipment, books, newspapers
Professional services	Lawyer, mechanic, spa services, haircut
Travel/parking	Taxi, plane, train, hotel parking
Entertainment/meals	Movies, restaurants, outings
Durable goods	Electronics, furniture, appliances, automobile, household accessories
Other	Lottery tickets, insurance payments, fees paid for public services

Table 30: 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 or not 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
Financial literacy score 1 ($score_1$)	Number of correct responses (disregarding <i>Don't know</i> responses)
Financial literacy score 2 ($score_2$)	Number of correct responses minus number of incorrect responses (disregarding <i>Don't know</i> responses)

Table 31: Credit card attributes (MOP SQ)

Concept	Definition
Annual fees	Fees associated with ownership and usage of a credit card
Rewards	Earned for using certain types of credit cards. This includes cash back as well as programs where points can be redeemed for gas, gift cards, groceries, merchandise from a catalogue, purchases at a store or travel services
Interest rate	Charged for an unpaid balance on a credit card. For comparison, interest rates are divided into <i>Low interest rate</i> (less than 20 per cent) and <i>High interest rate</i> (20 per cent or higher)
Revolver	A respondent who did not pay off the full balance of their credit card