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Bitcoin Awareness, Ownership and Use: 2016–20

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Abstract

Since 2016, the Bank of Canada has conducted annual surveys to monitor awareness, adoption and usage of Bitcoin and other cryptocurrencies (Henry et al. 2018, 2019a, 2019b). This report incorporates results from the 2019 Bitcoin Omnibus Survey and the November 2020 Cash Alternative Survey. We find that between 2018 and 2020, the level of Bitcoin awareness and ownership among Canadians remained stable: nearly 90% of the population were aware of Bitcoin, while only 5% owned it. We find that about half of Bitcoin owners stated they usually obtained their bitcoins through mobile or web exchanges, while one-fifth used mining. Bitcoin owners were susceptible to certain risks, as evidenced by the fact that about half of current and past owners stated they had been affected by events such as price crashes, losing access to funds, scams or data breaches. The most commonly cited reasons for owning Bitcoin were related to its use for investment or based on interest in the technology. Bitcoin owners displayed greater knowledge about the Bitcoin network than non-owners, yet they scored lower on questions testing financial literacy.

Topics: Bank notes; Digital currencies and fintech; Econometrics and statistical methods

JEL codes: E4, C12, O51

1. Introduction

The Bank of Canada, as the sole issuer of Canadian bank notes, has developed a comprehensive survey program with the goal of understanding the demand for and use of cash and other payment methods. As technology evolves, so does the way Canadians make payments. For instance, between 2013 and 2020, the share of transactions made in cash at the point of sale declined from 44% to 22%—although cash is still widely used for small-value transactions and within certain demographic groups (Chen, Engert et al. 2021).

In an increasingly digital economy, questions have arisen as to whether the Bank should issue a digital alternative to cash in the form of a central bank digital currency (CBDC). In a 2020 speech, Bank of Canada Deputy Governor Tim Lane highlighted two scenarios that could warrant the launch of a CBDC:

- where the use of physical cash is reduced or eliminated
- where cryptocurrencies see more widespread use as a method of payment, store of value and unit of account (Lane 2020; see also Bank of Canada 2020)

Furthermore, given the Bank's role in maintaining financial stability, its 2019 *Financial System Review* identified the evolution of the cryptoasset market as an emerging financial vulnerability that should be closely monitored. Currently, Bitcoin and other cryptocurrencies are in early stages of adoption, and the size of this market is not big enough to pose significant risks to the financial system. However, this may change quickly, and it is therefore important to monitor developments regularly.

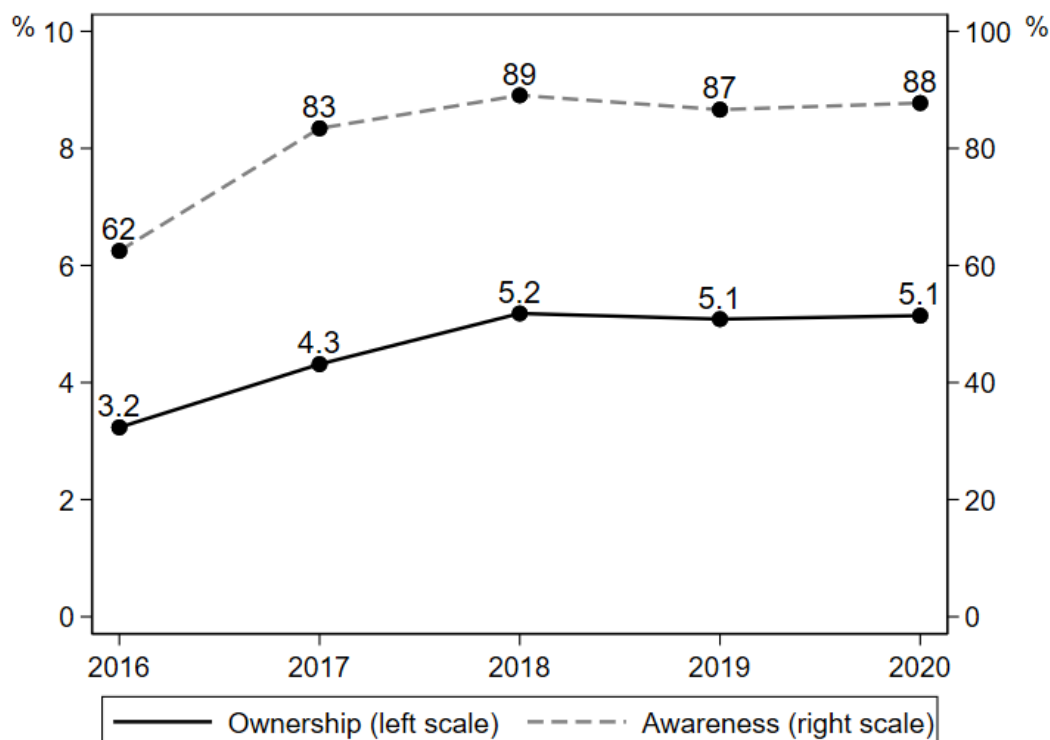
Given these considerations, the Bank has conducted a series of surveys on cryptocurrencies—focusing on Bitcoin given its prominence in the market—as part of a broader survey program on cash and payments. These surveys, referred to as the Bitcoin Omnibus Survey (BTCOS), were conducted annually between 2016 and 2019. The BTCOS allows us to measure awareness, ownership and holdings patterns of cryptocurrencies in the four years before the COVID-19 pandemic, and it also contains specialized questions aimed at Bitcoin owners about their usage habits.

This study also uses data from the Bank's November 2020 Cash Alternative Survey (CAS). The focus of the CAS was to better understand the demand for and use of cash and other methods during the COVID-19 pandemic. Thus, while we can observe overall trends in Bitcoin adoption and awareness up to 2020, we monitor more detailed cryptocurrency behaviours only up to 2019. Together, the data from BTCOS and CAS allow us to observe any significant changes in awareness and ownership of Bitcoin during the first year of the pandemic.

Overall, survey results from the BTCOS and CAS show that the level of awareness of Bitcoin among Canadians remained stable from 2018 to 2020. Specifically, 87% of Canadians in the 2019 BTCOS and 88% of Canadians in the 2020 CAS reported having heard of Bitcoin

compared with 89% of Canadians in the 2018 BTCOS. Similarly, the share of Canadians who owned Bitcoin remained around 5% from 2018 to 2020, compared with 4% in 2017 and 3% in 2016 (**Chart 1**). We observed some changes in the demographic profile of Bitcoin owners in terms of gender, age and income level. However, Bitcoin ownership remained concentrated among young, educated men with high household income and low financial literacy.

Chart 1: Bitcoin ownership and awareness, 2016–20



Note: This chart plots yearly estimates of the share of Canadians who owned Bitcoin and who were aware of Bitcoin from 2016 to 2020. For legibility, ownership is scaled from 0% to 10%, while awareness is scaled from 0% to 100%.

Source: Bank of Canada

Last observation: November 2020

The main reasons Bitcoin owners cited for owning bitcoins in the 2019 BTCOS were investment-related (39% of owners). However, technology-related reasons for owning Bitcoin (31%) were more prevalent in 2019 than they were in the 2018 survey (22%). In addition, the share of Canadians who reported using Bitcoin for transactions and transfers a few times a month or more decreased from 2018 to 2019. In the 2019 BTCOS, about half of Bitcoin owners reported they usually obtained their bitcoins through exchanges on a website or mobile app. A further one-fifth reported using mining, while remaining Bitcoin owners were split among other sources, such as from Bitcoin automated teller machines (ATMs) or directly from other people.

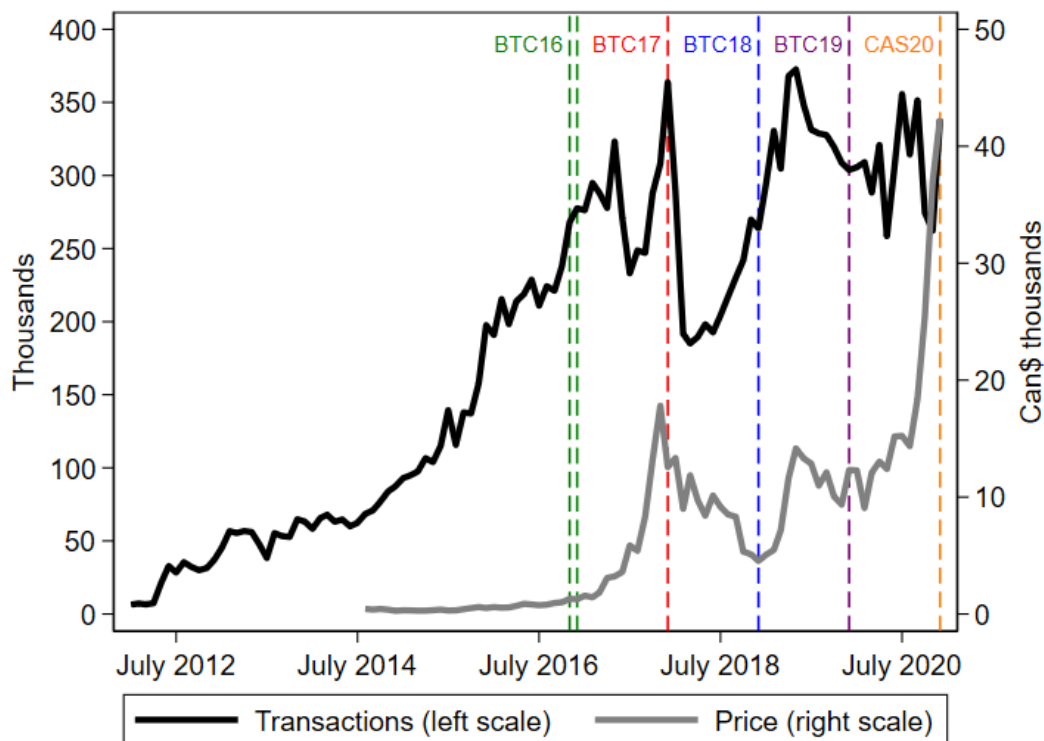
On average, Bitcoin owners in 2019 were more knowledgeable than non-owners about the properties of Bitcoin. Despite this, more than 20% of owners showed low Bitcoin

knowledge—that is, they did not answer any of three knowledge questions correctly. Given that investment was the most common reason owners cited for owning Bitcoin, we see that many owners may be trying to profit from cryptocurrencies without fully understanding the technology. This is of concern given the risks associated with cryptocurrency—about half of past and current owners in 2019 stated in 2019 they had been affected by events such as price crashes, losing access to funds, scams or data breaches.

Chart 2 provides context for the Bitcoin market during the periods when we conducted our surveys. The 2018 BTCOS took place when the price of Bitcoin was the lowest it had been since 2017. In contrast, the 2019 BTCOS and 2020 CAS were conducted during steady increases in Bitcoin prices. Furthermore, while prices approximately quadrupled in 2020, this growth did not translate into a greater number of transactions.

The remainder of the paper is structured as follows: section 2 describes the design and methodology of the 2019 BTCOS and November 2020 CAS; section 3 discusses Canadians' awareness and ownership of Bitcoin; section 4 examines the characteristics and behaviour of Bitcoin owners more closely; and section 5 briefly summarizes our findings.

Chart 2: Number and price of Bitcoin transactions, 2012–20 (monthly average)



Note: Daily number and price of Bitcoin transactions were averaged in each month. The data series for price starts on August 2014. Green vertical lines indicate when the first two iterations of the Bank of Canada Bitcoin Omnibus Survey (BTCOS) were conducted in 2016, the red vertical line indicates the third iteration in 2017, the blue vertical line indicates the fourth iteration in 2018, and the purple line indicates the fifth BTCOS iteration in 2019. The orange vertical line represents the Bank's Cash Alternative Survey (CAS) conducted in November 2020.

Sources: Bitcoin.com and Yahoo! Finance

Last observation: November 2020

2. Data

Early iterations of the BTCOS (Henry, Huynh and Nicholls 2018, 2019a and 2019b) provided not only valuable information about trends in Bitcoin awareness, ownership and usage but also lessons learned to improve future surveys. One reason for doing subsequent iterations is to gain a deeper understanding of how ownership of Bitcoin changes over time. A number of factors can affect Bitcoin adoption:

- price volatility (**Chart 2**)
- the type of investor (long- or short-term goals, low or high tolerance for risk, educational background in finance)
- the COVID-19 pandemic
- developments in financial technology
- acceptance of bitcoins by merchants
- risks related to cryptocurrency incidents

The most recent iteration of BTCOS was conducted in December 2019. The 2020 CAS focused on the demand and usage of cash during the COVID-19 pandemic, but it also contained two questions on awareness and ownership of digital payment methods. Together, these surveys enable us to monitor trends in awareness and ownership of Bitcoin as we entered the first year of the pandemic. This section provides information on the design and weighting procedures for the 2019 BTCOS and 2020 CAS.

2.1 Survey design

The design of the 2019 BTCOS was very similar to that of the 2018 survey (see Henry, Huynh and Nicholls 2019b for details). The following changes were made to the questionnaire:

- We added a question to assess respondents' awareness of stablecoins,¹ following Facebook's announcement of its digital currency project Libra (now known as Diem) in June 2019.
- We added questions about how respondents obtained Bitcoin and the potential incidents they faced while holding it. This question was motivated by two incidents that occurred in Canada with cryptocurrency exchanges: in October 2018, Edmonton-based Maple Change lost US\$6 million of users' funds (Bambrough 2018); and in January 2019, QuadrigaCX lost access to clients' funds after the sudden death of its founder, resulting in losses of approximately Can\$215 million (Ernst and Young 2019).

¹ A stablecoin is a cryptocurrency designed to have a relatively stable price by being pegged to a commodity or currency or by having its supply regulated by an algorithm.

- In the survey's questions about owning altcoins (cryptocurrencies other than Bitcoin), we expanded the list to include Binance Coin as well as the stablecoins Tether, USD Coin and Dai. We also added Libra as a way to identify low-quality responses.²

Our 2020 data on Bitcoin awareness and ownership are from the November 2020 CAS. This survey had a more general focus on the demand for and use of cash during the COVID-19 pandemic. As a result, it collected only limited information about Bitcoin.

To compare the key findings on Bitcoin from 2016 to 2020, we combine the 2019 BTCOS and November 2020 CAS with results from previous iterations of the BTCOS already published (Henry, Huynh and Nicholls 2018, 2019a and 2019b). Final sample sizes were 1,997 in 2016; 2,623 in 2017; 1,987 in 2018 and 1,987 in 2019. These samples included 58, 117, 99 and 89 Bitcoin owners each year, respectively. In the November 2020 CAS, the total number of respondents was 3,893, including 181 Bitcoin owners.

2.2 Survey methodology

The BTCOS and CAS recruit participants from two sources. The first is an opt-in panel—that is, participants voluntarily choose to join a panel and are invited to complete various surveys in exchange for rewards. The second is internet recruitment through advertisements on websites. In this case, participants can complete an individual survey but do not have to join a panel. The goal of internet recruitment is to capture segments of the population missed in panels—particularly hard-to-reach groups such as young men. This is especially important for studies of cryptocurrencies because young men are the most frequent owners of Bitcoin and other cryptocurrencies.

Because we use these two respondent sources, we evaluate the impact of mixing these sources on our final estimates. Technical issues during data collection led to the 2019 BTCOS having a roughly 2:1 ratio of internet to panel respondents, a reversal from previous iterations of the BTCOS and the November 2020 CAS, where this ratio was roughly 1:2. In a separate appendix, available upon request, we investigate the impact that sample composition has on survey estimates and adjust the composition using weights.³

The weighting procedure for both the 2019 BTCOS and November 2020 CAS samples follows the methodology used in the 2018 BTCOS (Henry, Huynh and Nicholls 2019b). We use a raking procedure, outlined in Deville, Sarndal and Sautory (1993), to adjust the final sample for differences between the demographic composition of our sample and the Canadian population. Specifically, the procedure yields survey weights that match the sample to the

² Given that Libra is not a real coin but a project for a coin, answering “yes” to its ownership will suggest a false or not thoughtful answer.

³ We keep the current composition (37% panel respondents and 63% internet respondents) for the 2019 BTCOS sample and settle on a similar mix (30% and 70%, respectively) for the 2020 CAS.

2016 Canadian Census with respect to the demographics of age, gender, region, education, marital status, employment and household income.

3. Bitcoin awareness and ownership

This section presents trends in Canadians' awareness and ownership of Bitcoin from 2016 to 2020. In addition, using conditional analysis, we identify the demographic characteristics associated with Bitcoin awareness and ownership.

3.1 Canadians' awareness of Bitcoin

We measure the level of Bitcoin awareness among Canadians⁴ using the survey question, "Have you heard about Bitcoin?" Awareness has increased since 2016. In that year, 62% of Canadians said they heard about Bitcoin. This was followed by a jump to 83% in 2017 and 89% in 2018 (**Table 1**). In 2019 and 2020, the levels of awareness remained virtually unchanged, at 87% and 88%, respectively.

Overall, the level of awareness increased across all demographics over the 2016–20 period. At the same time, we observe persistent patterns in demographics. Specifically, we see the highest levels of awareness (above 90%) among Canadians who were male, had a university degree, were not employed (unemployed or not in labour force), were financially literate and had relatively high household income (\$70,000 and above). From a geographic perspective, residents of Quebec were least likely to have heard of Bitcoin.

⁴ All percentages reported in the paper are based on survey responses that have been weighted to be representative of the Canadian population (2016) with respect to key demographic characteristics.

Table 1: Percentage of Canadians who were aware of Bitcoin, 2016–20

	2016	2017	2018	2019	2020
Overall	62	83	89	87	88
<i>Gender:</i>					
Male	72	90	93	93	92
Female	54	77	85	81	83
<i>Age:</i>					
18–34	69	87	91	88	86
35–54	58	82	88	84	86
55 and older	62	82	88	88	91
<i>Education:</i>					
High school or less	55	76	84	82	82
College	59	85	90	88	90
University	78	93	95	92	94
<i>Income:</i>					
Below \$30,000	49	74	87	77	79
\$30,000–69,999	61	82	88	84	86
\$70,000 and above	69	87	91	91	91
<i>Labour force:</i>					
Employed	64	85	90	88	87
Unemployed	74	80	90	75	91
Not in labour force	58	81	87	87	90
<i>Region:</i>					
British Columbia	74	93	94	89	91
Prairies	66	84	89	88	93
Ontario	64	85	92	90	91
Quebec	49	75	84	78	75
Atlantic	65	80	83	88	88
<i>Financial literacy:</i>					
Low			80	78	76
Medium			90	86	88
High			94	94	95

Note: The sample size is 1,997 in 2016; 2,623 in 2017; 1,987 in 2018; 1,987 in 2019 and 3,893 in 2020. The sample consists of 58 Bitcoin owners in 2016, 117 in 2017, 99 in 2018, 89 in 2019, and 181 in 2020. Financial literacy scores are calculated based on the responses to the three financial literacy questions according to Lusardi and Mitchell (2014) (Appendix, **Table A-2**). Financial literacy scores are computed by summing the correct answers and subtracting the incorrect answers, while “don’t know” answers do not contribute to the measure. As a result, knowledge scores take values from -3 to 3. Based on these indexes, three knowledge levels were defined as follows: low (score ≤ 0), medium (score = 1 or score = 2) and high (score = 3). The Prairies region includes Alberta, Saskatchewan and Manitoba. The Atlantic region includes New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. All estimates are calculated using survey weights.

We further analyze Bitcoin awareness using a logistic regression framework conditional on demographic characteristics and financial literacy. **Table 2** presents the results. The first column provides the results of a pooled logistic regression for the years 2018–20, and subsequent columns present the results of independent logistic regressions for each year. **Chart 3** plots the marginal effects for the year-specific regressions to show the dynamics in the parameters across the three years.

Overall, we find lower Bitcoin awareness among female Canadians and those from Quebec. Conversely, we estimate Canadians are more likely to be aware of Bitcoin as their levels of education, income or financial literacy increase. These findings are consistent with descriptive results presented in **Table 1**.

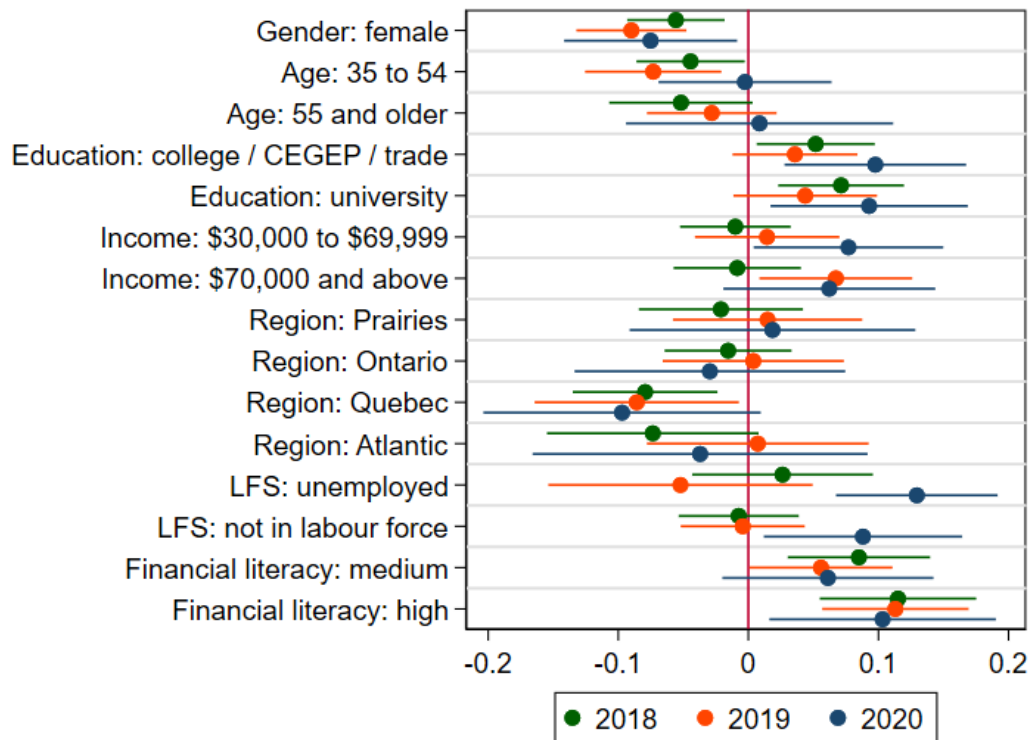
Panos, Karkkainen and Atkinson (2020) get similar results using microdata from 15 countries to study financial literacy and attitudes toward cryptocurrencies. Their results show that financially literate investors are more likely to be aware of cryptocurrencies but less likely to own them. This suggests that the relationship between a person’s financial literacy and their attitudes toward cryptocurrencies is determined by their perceptions of the financial risk associated with cryptocurrency investments relative to alternative investment vehicles.

Table 2: Marginal effects on the probability of awareness of Bitcoin, 2018–20

Variables	Pooled	2018	2019	2020
<i>Gender:</i>				
Female	-0.0703*** (0.0151)	-0.0557*** (0.0204)	-0.0899*** (0.0232)	-0.0752** (0.0376)
<i>Age:</i>				
35–54	-0.0463*** (0.0162)	-0.0444** (0.0215)	-0.0731*** (0.0268)	-0.00258 (0.0368)
55 and older	-0.0305* (0.0164)	-0.0518* (0.0284)	-0.0281 (0.0231)	0.00861 (0.0526)
<i>Education:</i>				
College / CEGEP / trade	0.0548*** (0.0158)	0.0518** (0.0235)	0.0358 (0.0258)	0.0976** (0.0422)
University	0.0639*** (0.0176)	0.0713*** (0.0264)	0.0437 (0.0283)	0.0929** (0.0463)
<i>Income:</i>				
\$30,000–\$69,999	0.0165 (0.0164)	-0.0100 (0.0215)	0.0144 (0.0291)	0.0770** (0.0391)
\$70,000 and above	0.0376** (0.0169)	-0.00854 (0.0257)	0.0673** (0.0298)	0.0622 (0.0469)
<i>Region:</i>				
Prairies	0.00727 (0.0241)	-0.0211 (0.0361)	0.0148 (0.0370)	0.0185 (0.0843)
Ontario	-0.00575 (0.0230)	-0.0156 (0.0257)	0.00375 (0.0368)	-0.0296 (0.0856)
Quebec	-0.0802*** (0.0242)	-0.0793*** (0.0302)	-0.0858** (0.0399)	-0.0971 (0.0838)
Atlantic	-0.0280 (0.0296)	-0.0735* (0.0431)	0.00724 (0.0465)	-0.0371 (0.0937)
<i>Labour force:</i>				
Unemployed	0.0184 (0.0253)	0.0262 (0.0394)	-0.0522 (0.0602)	0.129*** (0.0412)
Not in labour force	0.0174 (0.0151)	-0.00741 (0.0253)	-0.00434 (0.0259)	0.0881** (0.0419)
<i>Financial literacy:</i>				
Medium	0.0726*** (0.0178)	0.0850*** (0.0262)	0.0558** (0.0273)	0.0612 (0.0435)
High	0.116*** (0.0199)	0.115*** (0.0300)	0.113*** (0.0288)	0.103** (0.0473)
Observations	5,288	1,743	1,800	1,745

Note: The marginal effects are estimated via a logistic regression. Column 1 shows the effect of each variable on the probability of awareness of Bitcoin over the period 2018–20; columns 2 to 4 present the results by year, starting in 2018. Marginal effects are measured relative to the following benchmark group: people who are male, aged 18 to 34, from British Columbia, high-school educated, employed, with low financial literacy and a household income below \$30,000. The Prairies region includes Alberta, Saskatchewan and Manitoba. The Atlantic region includes New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. Weighted bootstrap standard errors are in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Chart 3: Marginal effects on the probability of Bitcoin awareness, 2018–20



Note: The horizontal lines represent 95% confidence intervals. LFS is labour force status. The Prairies region includes Alberta, Saskatchewan and Manitoba. The Atlantic region includes New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador.

Source: Bank of Canada

Last observation: November 2020

3.2 Canadians' ownership of Bitcoin

Table 3 presents Bitcoin ownership in Canada between 2016 and 2020, overall and across demographic groups. The average share of Canadians who own Bitcoin increased from 3% in 2016 to around 5% since 2018. Ownership remained stable between 2018 and November 2020, despite the impacts of the COVID-19 pandemic.

Differences in Bitcoin ownership across demographic groups tell a compelling story. Overall, we observe that most demographics followed the same patterns across years. In particular, Canadians who were young, male, employed, and had a university degree, high household income and relatively low financial literacy were more likely to own Bitcoin.

Table 3: Percentage of Canadians who owned Bitcoin, 2016–20

	2016	2017	2018	2019	2020
Overall	3.2	4.3	5.2	5.1	5.1
<i>Gender:</i>					
Male	4.4	6.6	6.7	8.1	8.3
Female	2.2	2.1	3.7	2.2	2.1
<i>Age:</i>					
18–34	9.1	11.1	10.5	7.8	11.0
35–54	1.6	3.2	4.9	6.7	5.6
55 and older	0.5	0.5	1.7	1.7	0.6
<i>Education:</i>					
High school or less	3.8	3.7	2.3	3.3	3.7
College	1.5	3.1	5.7	4.3	5.1
University	4.3	6.7	9.1	8.7	7.4
<i>Income:</i>					
Below \$30,000	3.1	4.3	2.8	3.7	4.3
\$30,000–69,999	3.9	5.6	4.8	3.8	4.9
\$70,000 and above	3.7	4.3	7.0	6.6	5.4
<i>Labour force:</i>					
Employed	3.9	6.1	7.1	6.8	7.3
Unemployed	7.3	1.9	5.2	0.9	3.8
Not in labour force	1.5	1.5	1.9	2.3	1.8
<i>Region:</i>					
British Columbia	2.8	5.2	6.3	5.3	5.1
Prairies	2.1	4.1	6.0	3.9	7.6
Ontario	2.5	3.9	5.2	6.2	5.0
Quebec	5.5	5.1	4.6	4.4	3.9
Atlantic	3.2	3.1	2.8	3.8	3.3
<i>Financial literacy:</i>					
Low			7.3	7.5	8.4
Medium			4.7	2.9	5.3
High			4.1	5.0	5.3

Note: This table reports the percentage of Canadians who answered “Yes” to “Do you currently have or own Bitcoin?” The sample size is 1,997 in 2016; 2,623 in 2017; 1,987 in 2018; 1,987 in 2019 and 3,893 in 2020. Financial literacy scores are calculated based on the responses of the three financial literacy questions according to Lusardi and Mitchell (2014) (Appendix, Table A-2) and were added in the BTCOS starting in 2018. Financial literacy scores are computed by summing the correct answers and subtracting the incorrect answers, and “don’t know” answers do not contribute to the measure. As a result, knowledge scores take values from -3 to 3. Based on these indexes, three knowledge levels were defined as follows: low (score ≤ 0), medium (score = 1 or score = 2) and high (score = 3). The Prairies region includes Alberta, Saskatchewan and Manitoba. The Atlantic region includes New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. All estimates are calculated using survey weights.

The gender gap in Bitcoin ownership was highest in 2018 and 2019. In every year except for 2018, about 2% of women reported owning Bitcoin, while among men, ownership nearly doubled from 4.4% in 2016 to 8.3% in 2020.⁵ Another pattern that stands out concerns financial literacy. Individuals who scored lower on the three financial literacy questions

⁵ Auer and Tercero-Lucas (2021) also find evidence of a widening gender gap in terms of cryptocurrency ownership in the United States. More broadly, using data from 28 major economies, Chen, Doerr et al. (2021) find that men are more likely than women to use financial technology products and services.

showed higher rates of ownership (above 7% for low literacy compared with 4% to 5% for high literacy).

These results reveal interesting facts, specifically that Canadians who are financially literate are more likely to be aware of Bitcoin but less likely to own it. Fujiki (2020) provides a more detailed look at financial literacy: in contrast to our findings, Japanese cryptocurrency owners score higher on financial literacy questions and have more financial education at school compared with non-owners. But they are less financially literate with respect to other indicators related to money management, financial troubles and credit card use.

Table 4 presents the results of the marginal effects of demographic characteristics and financial literacy on Canadian's Bitcoin ownership for the years 2018–20 and for the pooled data, using a logistic regression. For a better visualization, **Chart 4** shows the graphical representation of these results.

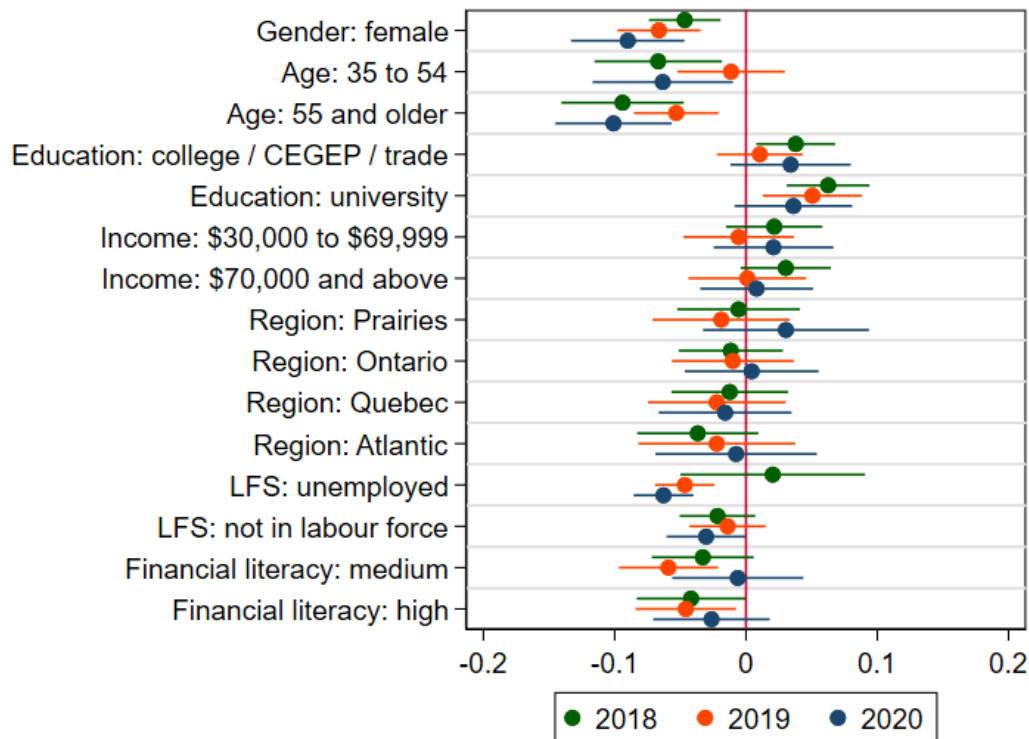
Overall, marginal effects are consistent with descriptive findings already discussed. We find that the probability of Bitcoin ownership decreases with being female, older and unemployed, but increases with education. Furthermore, Bitcoin ownership is higher among those with low financial literacy, as coefficient estimates for medium and high financial literacy are statistically significant relative to the benchmark (low financial literacy score).

Table 4: Marginal effects on the probability of Bitcoin ownership, 2018–20

Variables	Pooled	2018	2019	2020
<i>Gender:</i>				
Female	-0.0619*** (0.00981)	-0.0466*** (0.0138)	-0.0663*** (0.0172)	-0.0901*** (0.0240)
<i>Age:</i>				
35–54	-0.0440*** (0.0120)	-0.0668** (0.0261)	-0.0113 (0.0216)	-0.0634** (0.0290)
55 and older	-0.0810*** (0.0118)	-0.0940*** (0.0248)	-0.0531*** (0.0167)	-0.101*** (0.0268)
<i>Education:</i>				
College / CEGEP / trade	0.0250** (0.0104)	0.0379** (0.0164)	0.0106 (0.0198)	0.0340 (0.0295)
University	0.0515*** (0.0122)	0.0626*** (0.0178)	0.0506** (0.0212)	0.0361 (0.0256)
<i>Income:</i>				
\$30,000–\$69,999	0.00952 (0.0123)	0.0215 (0.0211)	-0.00551 (0.0225)	0.0210 (0.0254)
\$70,000 and above	0.0120 (0.0128)	0.0303 (0.0191)	0.00102 (0.0236)	0.00809 (0.0247)
<i>Region:</i>				
Prairies	0.000229 (0.0149)	-0.00564 (0.0241)	-0.0188 (0.0310)	0.0305 (0.0360)
Ontario	-0.00757 (0.0131)	-0.0116 (0.0206)	-0.00998 (0.0286)	0.00437 (0.0294)
Quebec	-0.0177 (0.0153)	-0.0123 (0.0237)	-0.0222 (0.0321)	-0.0159 (0.0289)
Atlantic	-0.0225 (0.0162)	-0.0367 (0.0259)	-0.0222 (0.0357)	-0.00751 (0.0372)
<i>Labour force:</i>				
Unemployed	-0.0329** (0.0140)	0.0204 (0.0410)	-0.0466*** (0.0115)	-0.0628*** (0.0137)
Not in labour force	-0.0202** (0.00945)	-0.0217 (0.0153)	-0.0140 (0.0159)	-0.0303 (0.0186)
<i>Financial literacy:</i>				
Medium	-0.0373*** (0.0120)	-0.0329* (0.0173)	-0.0590*** (0.0199)	-0.00625 (0.0290)
High	-0.0414*** (0.0112)	-0.0419** (0.0212)	-0.0458** (0.0191)	-0.0262 (0.0233)
Observations	5,288	1,743	1,800	1,745

Note: The marginal effects are estimated through a logistic regression. Column 1 shows the effect of each variable on the probability of having heard of Bitcoin over the period 2018–20; columns 2 to 4 present the results by year, starting from 2018. Marginal effects are measured relative to the following benchmark group: people who are male, aged 18 to 34, from British Columbia, high-school educated, employed, with a household income below \$30,000 and low financial literacy. The Prairies region includes Alberta, Saskatchewan and Manitoba. The Atlantic region includes New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. Weighted bootstrap standard errors are in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Chart 4: Marginal effects on the probability of Bitcoin ownership, 2018–20



Note: The horizontal lines represent confidence intervals by survey years. LFS is labour force status. The Prairies region includes Alberta, Saskatchewan and Manitoba. The Atlantic region includes New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador.

Source: Bank of Canada

Last observation: November 2020

4 Profile of Bitcoin owners

In this section, we look more deeply at Bitcoin owners. We first report what Bitcoin owners know about Bitcoin relative to what the overall Canadian population knows. We then provide estimates of Bitcoin holdings. We also outline the main reasons for owning Bitcoin and how often people use it to pay for goods or services and to make person-to-person transactions. We then look at the changes in the share and holdings of bitcoins of past Bitcoin owners. Lastly, we look at how Bitcoin owners obtain Bitcoin and the incidents they have faced when using it.

4.1 Knowledge about Bitcoin

This section analyzes the state of Canadian's knowledge about the properties of Bitcoin, exploring the differences between Bitcoin owners and non-owners found in the BTCOS samples.

The questions relating to how much people know about Bitcoin are reported in the Appendix (**Table A-1**) and discussed further in Henry, Huynh and Nicholls (2019a; 2019b). We compute the knowledge score by summing the correct answers and subtracting the incorrect answers,

while “don’t know” responses are assigned zero. As a result, knowledge scores take values from -3 to 3. Based on these indexes, we define three knowledge levels: low (score ≤ 0), medium (score = 1 or score = 2) and high (score = 3).

The average levels of Bitcoin knowledge among Canadian non-owners did not change substantially between 2018 and 2019. The share of individuals with low Bitcoin knowledge was about 60%, and only 6% answered all three Bitcoin questions correctly (**Table 5**). As expected, Bitcoin owners were more likely than non-owners to give a correct answer. However, in 2018 and in 2019, only around 30% of Bitcoin owners had high knowledge.

The lack of knowledge did not stop people from buying Bitcoin, as 19% of Bitcoin owners in 2018 and 28% in 2019 were classified as having low Bitcoin knowledge.

Table 5: Canadians’ knowledge about Bitcoin, 2017–19 (%)

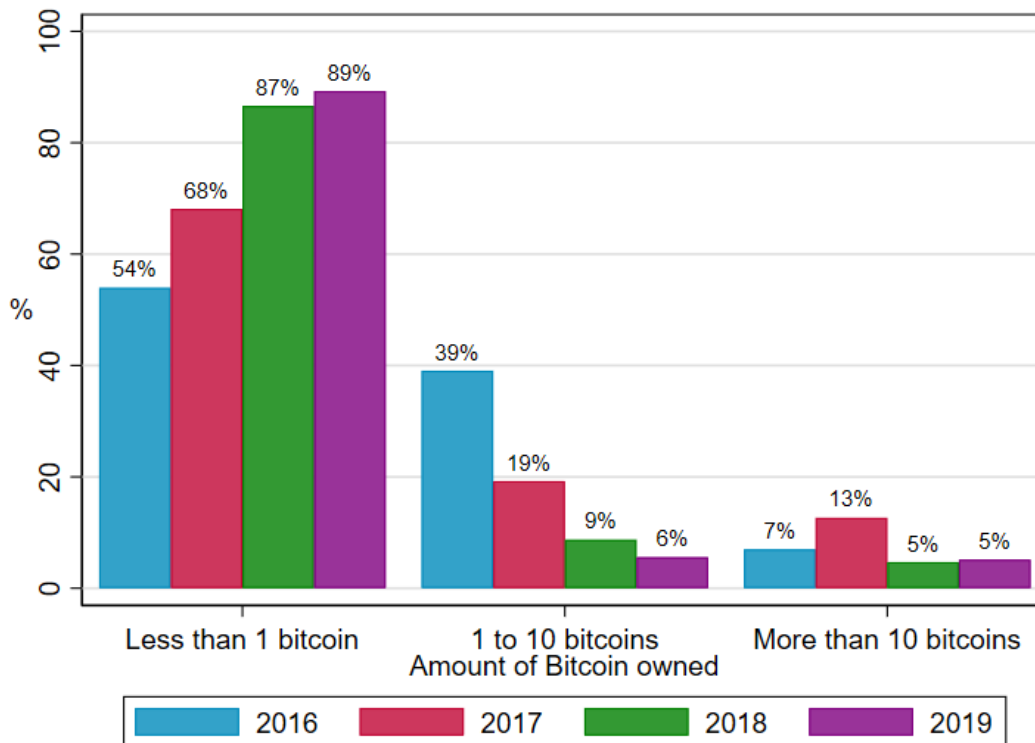
	2017		2018		2019	
	Overall	Owners	Overall	Owners	Overall	Owners
Low	55	24	61	19	60	28
Medium	38	49	33	52	34	41
High	6	27	6	29	6	31

Note: The table reports the share of Canadians in each category of Bitcoin knowledge. The sample consists of 117 Bitcoin owners in 2017, 99 in 2018 and 89 in 2019. All estimates are calculated using survey weights.

4.2. How much Bitcoin do owners hold?

In 2018 and 2019, Bitcoin owners were asked to provide the value in Canadian dollars of the bitcoins they currently held. From 2018 to 2019, the median value of Bitcoin holdings decreased sharply, from around \$500 to \$250. To compare the holdings across years, we grouped 2018 and 2019 numbers in ranges presented in **Chart 5**. Over the period, we see a decreasing proportion of Canadians who reported holding 1 to 10 bitcoins (from 39% in 2016 to 6% in 2019) and 10 or more bitcoins (from 13% in 2017 to 5% in 2018 and 2019). Concurrently, the share of holders with less than 1 bitcoin has increased from 54% in 2016 to 68% in 2017, 87% in 2018 and 89% in 2019.

Chart 5: Bitcoin holdings, 2016–19



Note: In 2018 and 2019, surveyed Bitcoin owners were asked to report their holdings as a continuous range, denominated in Canadian dollars. For comparability across years, in 2018 and 2019, we used the prevailing price when the survey was conducted to convert Canadian dollars to Bitcoin. The sample consists of 58 Canadians aged 18 or older who reported they owned Bitcoin in 2016, 117 in 2017, 99 in 2018 and 89 in 2019. All estimates are calculated using survey weights.

Source: Bank of Canada

Last observation: December 2019

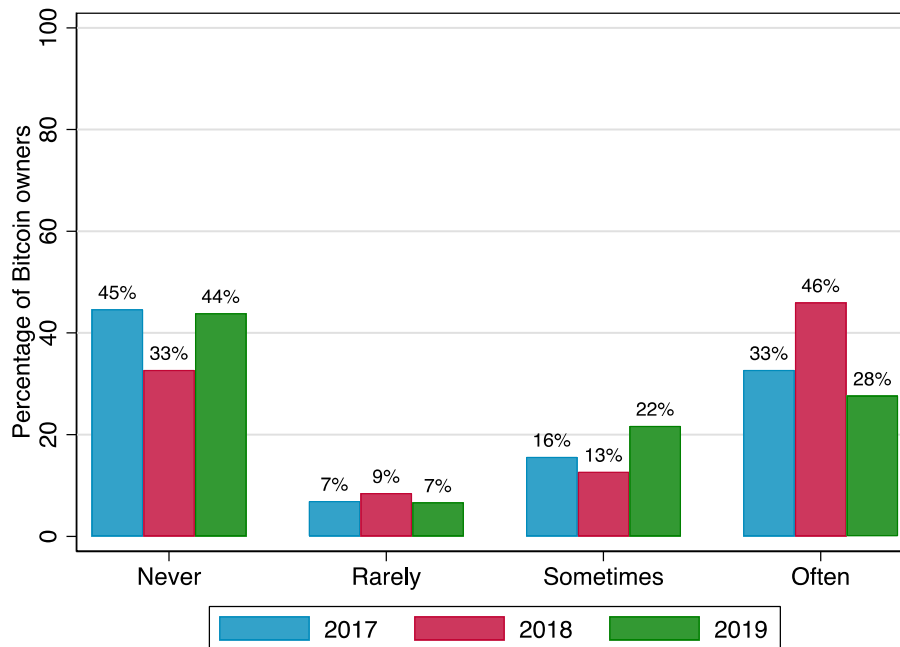
4.3. Reasons for owning (or not owning) Bitcoin

As noted in the introduction, widespread use of cryptocurrencies is one potential trigger condition for the Bank to issue a CBDC in Canada. This makes it important to understand how and why cryptocurrencies are used.

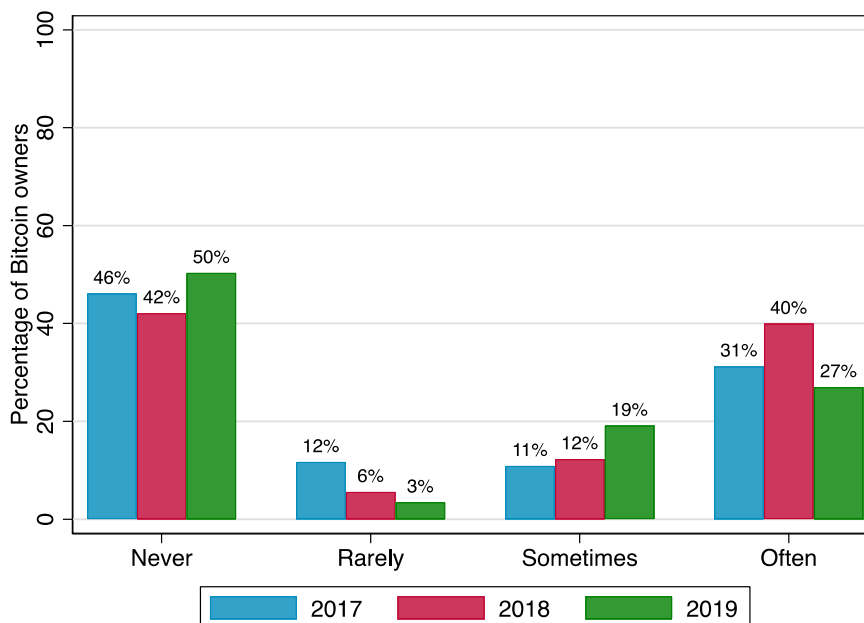
The 2017 to 2019 BTCOS surveys asked Bitcoin owners how often they use their Bitcoin holdings to pay for goods and services (**Chart 6**, panel a) and how often they used them to send money to other people (**Chart 6**, panel b). From 2018 to 2019, the proportion of Bitcoin owners who never used their holdings to buy goods and services or to make person-to-person transfers increased (from 33% to 44% for purchases, and from 42% to 53% for transfers). Consequently, the share of Bitcoin owners who tend to use bitcoins at least a few times a month ("often") decreased for both types of transactions.

Chart 6: Frequency of Bitcoin use, 2017–19

a. Buying goods and services



b. Making person-to-person transfers



Note: "Rarely" consists of surveyed Bitcoin owners who used bitcoins for transactions at most once a year, not on a regular basis. "Sometimes" consists of those who used bitcoins between a few times a year to once a month. "Often" consists of those who used bitcoins at least a few times a month. The sample consists of 117 Bitcoin owners in 2017, 99 in 2018 and 89 in 2019. All estimates are calculated using survey weights.

Source: Bank of Canada

Last observation: December 2019

In addition, Bitcoin owners were asked to indicate their primary reason for holding Bitcoin, and non-owners who are aware of Bitcoin were asked to provide their main reason for not owning Bitcoin. In **Table 6**, we group owners' reasons for owning Bitcoin into four categories: payments, investment, anonymity/trust and technology. In 2019, Canadians cited investment as the most common reason (39% of owners) for owning Bitcoin, followed by technology (31% of owners), payments (15% of owners) and anonymity/trust (15% of owners). These results are broadly similar to those of the 2018 BTCOS.

Table 6: Main reasons for owning Bitcoin, 2016–19 (%)

Grouping	Response options	2016	2017	2018	2019
Payments	I use it to buy goods and services on the internet in Canada/elsewhere.				
	I use it to buy goods and services in physical stores in Canada/elsewhere.	45	23	19	15
	I use it to make remittances or other international payments.				
Investment	It is an investment.	6	56	40	39
Anonymity/trust	It allows me to make payments anonymously.				
	I do not trust banks.	16	5	19	15
	I do not trust the government or the Canadian dollar.				
Technology	I am interested in new technologies.				
	It uses secure blockchain technology to prevent loss and fraud.	33	16	22	31
	It is a cost saving technology.				

Note: The table reports the percentage of surveyed Bitcoin owners who chose each category as their primary reason for owning Bitcoin in 2016, 2017, 2018 and 2019. The sample consists of 58 Canadians aged 18 or older who reported owning Bitcoin in 2016, 117 in 2017, 99 in 2018 and 89 in 2019. All estimates are calculated using survey weights.

Canadians who were aware of Bitcoin but did not own any were asked to select their main reason for not owning Bitcoin; 27% stated that a lack of knowledge or understanding of Bitcoin technology was the main reason, followed by the fact that their current methods of payment meet their needs (22%) and a lack of trust in private currencies that are not backed by the government (15%) (see **Table 7**). Other main reasons—related to price volatility, lack of acceptance as a method of payment, lack of belief in the future survival of the Bitcoin system, cyber theft and lack of regulation—each represent less than 10% of Canadians who were aware of Bitcoin but didn't own any. We observed a similar pattern across 2016–19.

Table 7: Main reasons for not owning Bitcoin, 2016–19 (%)

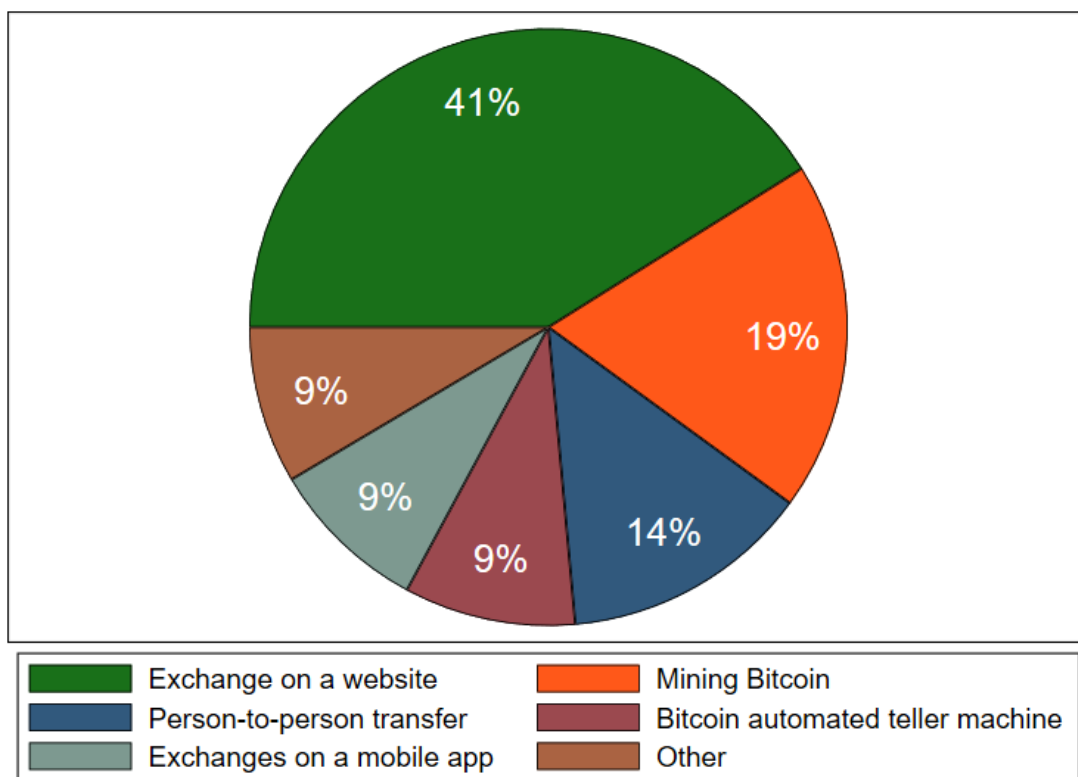
	2016	2017	2018	2019
I do not understand/know enough about technology.	28	32	30	27
It is not widely accepted as a method of payment.	7	5	5	5
My current payment methods meet all my needs.	32	23	20	22
The value of Bitcoin varies too much.	4	5	7	7
It is not easy to acquire/use.	6	6	4	4
I do not trust a private currency that is not backed by the government.	13	10	11	15
I am concerned about cyber theft.	4	3	6	5
I am concerned about lack of oversight from regulatory bodies.	4	3	3	4
I use alternative digital currencies instead.	0	0	0	1
I do not believe the Bitcoin system will survive in the future.	2	8	11	8
Other		4	3	3

Note: This table provides the percentage of Canadians who had heard of Bitcoin but did not own any, including those who used to own Bitcoin in the past. They responded to the prompt "Please name the main reason for not owning any Bitcoin." All estimates are calculated using survey weights.

4.4 How do owners obtain Bitcoin?

The 2019 BTCOS added a new question addressed to Bitcoin owners: “What is the most common way you obtain Bitcoin?” We present the results in **Chart 7**. In 2019, about half of owners used cryptocurrency exchanges, either on a website (41%) or through a mobile app (9%). Of the rest, 19% mined their own bitcoins, 9% obtained bitcoins through ATMs, 14% obtained them from friends or family (person-to-person transfers) and 9% used other channels. Our results suggest that most Bitcoin owners use exchanges to get their bitcoins, but also that Canadians have a variety of access options.

Chart 7: Most common methods to obtain Bitcoin, 2019



Note: The sample consists of 89 Canadians aged 18 or older who reported they owned Bitcoin in 2019. All estimates are calculated using survey weights.

Source: Bank of Canada

Last observation: December 2019

To understand how Bitcoin access is distributed across different demographic characteristics, we collapse Bitcoin access options into three groups: Bitcoin mining, cryptocurrency exchanges (web and mobile) and other methods (ATMs, person-to-person transfers and “other”).⁶ **Table 8** compares the most common access methods by demographics.

Table 8: Most common methods for obtaining Bitcoin by demographics, 2019 (%)

Variables	Other	Web/mobile exchanges	Mining
<i>Gender:</i>			
Male	32	46	22
Female	28	63	9
<i>Age:</i>			
18–34	28	63	9
35–54	34	38	28
55 and older	33	48	19
<i>Education:</i>			
High school or less	56	22	22
College	12	63	26
University	28	59	14
<i>Income:</i>			
Below \$30,000	12	52	36
\$30,000–69,999	26	41	33
\$70,000 and above	38	49	13
<i>Region:</i>			
British Columbia	24	59	17
Prairies	44	29	27
Ontario	26	53	21
Quebec	38	55	7
Atlantic	37	27	37
<i>Labour force:</i>			
Employed	33	48	19
Unemployed	0	41	59
Not in labour force	28	50	22
<i>Financial literacy:</i>			
Low	51	30	19
Medium	16	73	11
High	14	63	23
<i>Bitcoin knowledge:</i>			
Low	25	59	16
Medium	49	43	8
High	13	51	36

Note: This table reports the percentage of surveyed Bitcoin owners for each demographic who answered the question, “What is the most common way you obtain Bitcoin?” The sample sizes for the three groupings are: other—22 observations; web/mobile exchanges—48 observations; and mining—19 observations. “Other” includes automated teller machines, person-to-person exchanges and other options. The Prairies region includes Alberta, Saskatchewan and Manitoba. The Atlantic region includes New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. All estimates are calculated using survey weights.

⁶ We need to group the Bitcoin access options in order to increase the number of observations per group because the sample of Bitcoin owners is not large.

When we compare the results across the three choices for obtaining Bitcoin (web/mobile exchanges, mining, and other), we observe that web/mobile exchanges were the preferred options to access bitcoins in most demographic categories. Notable exceptions were owners with low education or low financial literacy, who preferred other methods to either exchanges or mining. Compared with men, women were more likely to acquire bitcoins through web or mobile exchanges and less likely to use mining. Similarly, the youngest age group (18 to 34) was more likely than older age groups to use exchanges, while less likely to use mining.⁷

4.5. Crypto alternatives to Bitcoin

In addition to owning Bitcoin, some Canadians own “altcoins” (a colloquial name for other cryptocurrencies). **Table 9** presents ownership of altcoins by Canadians in 2018 and 2019. According to the 2018 and 2019 BTCOS, altcoin ownership was very low in Canada, at about 3% for Ethereum and BTC Cash, 2% for Litecoin and below 1% for other cryptocurrencies. The growth rate is also very small—only Ethereum registered an increase, from 1.9% in 2018 to 3.4% in 2019. In addition, about half of altcoin owners were also Bitcoin owners.

Table 9: Ownership of altcoins, 2018–19 (%)

	2018	2019
Ethereum (ETH)	1.9	3.4
Bitcoin Cash (BCH)	2.9	3.6
Litecoin (LTC)	1.9	2.3
Ripple (XRP)	1.0	0.9
Ethereum Classic (ETC)	0.6	-
Dash (DASH)	0.7	-
Binance Coin (BNB)	-	1.7
Tether (USDT)	-	0.5
USD Cash (USDC)	-	0.3
Dai (DAI)	-	0.1
Other	0.7	0.8

Note: The table reports the percentage of Canadians aware of Bitcoin who owned altcoins in 2018 and 2019. The empty cells reflect that the 2019 BTCOS added Binance Coin, Tether, USD Cash and Dai to the response options for the question, “Do you have any of the following digital currencies?” and eliminated Ethereum Classic and Dash. All estimates are calculated using survey weights.

Stablecoins are a type of cryptocurrency whose price is pegged to another currency or commodity, with the goal of providing price stability. We find that awareness of stablecoins is still very uncommon. For instance, only 5% of Canadians who had heard of Bitcoin had also

⁷ We also conduct a conditional analysis to see if there are significant differences when comparing access via “mining” and “other” means with the benchmark exchanges on websites and through mobile apps. We use a multinomial logit methodology (Cosslett 1981), and the results suggest that individuals who obtain Bitcoin using other means differ in education, income, labour force status and financial knowledge when they are compared with the ones obtaining their Bitcoin using exchanges on websites and through mobile apps. At the same time, individuals who are obtaining their Bitcoin using mining are not different in demographics from those obtaining their Bitcoin using exchanges on websites and through mobile apps.

heard of stablecoins. **Table 9** suggests that ownership of stablecoins is even lower: just a fraction of a percent stated they owned the stablecoins Tether, USD Coin and Dai.

4.6 Cryptocurrency risks and incidents

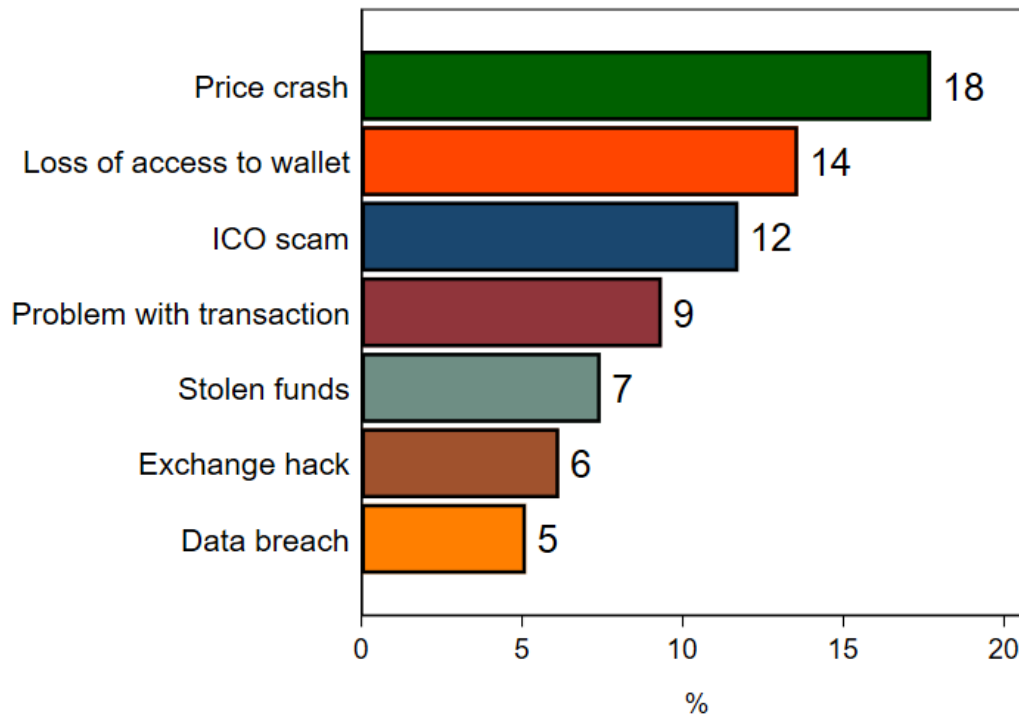
Studying the financial and security risks faced by Bitcoin owners in conjunction with how they obtain Bitcoin (section 4.4) is important when it comes to understanding their adoption decisions. The adoption decision balances ease of use with associated risks.⁸ These risks include financial risks, such as those caused by volatility in the cryptocurrency market, technological issues and security risks to personal data. Furthermore, cryptocurrency users can be subject to fraudulent events—between 2017 and 2020, cryptocurrency frauds in Canada increased more than 400% (RCMP 2021). With all this in mind, the 2019 BTCOS asked current and past Bitcoin owners to report whether they experienced any incidents related to cryptocurrency risks while holding Bitcoin (**Chart 8**).

We find that about half of past and current Bitcoin owners reported one or more such incidents. The most common incident reported (18% of past and current owners) was a loss of substantial value due to a cryptocurrency price crash (we note that price volatility was also the most common reason past Bitcoin owners gave for not holding Bitcoin at the time of the survey). In terms of issues related to the technology, 14% of past and current owners stated they lost access to their personal cryptocurrency wallets, while 9% had problems with a purchase made in cryptocurrency. In terms of security, 6% stated an exchange holding their funds had been hacked, and 5% stated their personal data held on an exchange had been compromised. Past and current owners also reported several incidents of fraud: 12% had participated in an initial coin offering that ended up being a scam,⁹ while 7% had had their funds stolen by an exchange.

⁸ Kahn, Rivadeneyra and Wong (2021) show that customers will take little care about risks when liability is shared. Even when managing their balances individually and facing the entire risk of loss, they will still prefer the easier access found in using wallets, reusing addresses and relying on password aggregation programs.

⁹ Initial coin offerings (similar to initial public offerings) are a blockchain-based alternative for entrepreneurs to raise funds (e.g., see Howell, Niessner and Yermack 2020). Some have been the subject to scams (e.g., see United States Department of Justice 2020).

Chart 8: Cryptocurrency risks and incidents, 2019



Note: In 2019, 84 Bitcoin owners out of 177 reported incidents (35 past and 49 current Bitcoin owners). The total number of reported incidents was 121, as respondents chose all options that apply to them. The chart reports the proportion of past and current Bitcoin owners who experienced each type of incident. Respondents were asked, "Have any of the following incidents happened to you?" and could choose the following (in order of appearance in the chart): "A price crash caused my cryptocurrency to lose substantial value"; "Lost access to my personal cryptocurrency wallet"; "I participated in an initial coin offering and it turned out to be a scam"; "Experienced problems with a purchase made using cryptocurrencies"; "The cryptocurrency exchange stole my funds"; "The cryptocurrency exchange holding my funds was hacked"; and "My personal data held by cryptocurrency exchanges were compromised." ICO stands for initial coin offering. All estimates are calculated using survey weights.

Source: Bank of Canada

Last observation: December 2019

Next, we collapse the incidents reported by current and past Bitcoin owners into three groups: loss of access to wallet and problems with transactions (group one—access problems), exchange hacks, initial coin offering scams, stolen funds and data breaches (group two—scams or hacks) and price crashes (group three—price crashes). **Table 10** reports the types of incidents reported by demographic characteristics.

We find that owners in certain demographic groups appear more likely to report scams or hacking incidents; these include men, those aged 54 or younger, those with higher incomes (\$70,000 and above), employed owners, and those with low financial literacy. Young owners and those with low literacy were also more likely than their older and higher-literacy counterparts to report access problems. Price crashes, in contrast, were most commonly

experienced by owners with a high level of education or financial literacy and by those with a high income level. Incidents of all three types were more common among owners with medium or high levels of Bitcoin knowledge compared to those with low knowledge.¹⁰

Table 10: Demographic profile by incidents faced by Bitcoin owners, 2019 (%)

Variables	Access problems	Scams or hacks	Price crashes
<i>Gender:</i>			
Male	16	29	16
Female	26	18	21
<i>Age:</i>			
18–34	22	30	16
35–54	20	24	23
55 and older	7	12	10
<i>Education:</i>			
High school or less	15	29	10
College	22	22	19
University	21	26	24
<i>Income:</i>			
Below \$30,000	7	20	1
\$30,000–69,999	17	21	19
\$70,000 and above	23	32	23
<i>Region:</i>			
British Columbia	11	23	16
Prairies	39	38	18
Ontario	20	20	18
Quebec	12	31	21
Atlantic	24	28	12
<i>Labour force:</i>			
Employed	21	29	21
Unemployed	32	10	0
Not in labour force	9	17	9
<i>Financial literacy:</i>			
Low	23	44	17
Medium	17	11	9
High	16	10	26
<i>Bitcoin knowledge:</i>			
Low	10	18	12
Medium	19	33	18
High	31	22	25

Note: The sample sizes for the three groupings are as follows: access problems—32 observations; scams or hacks—43 observations; and price crashes—32 observations. The Prairies region includes Alberta, Saskatchewan and Manitoba. The Atlantic region includes New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. All estimates are calculated using survey weights.

¹⁰ We estimated a multinomial logit model (Cosslett 1981) and found that, relative to the benchmark group (scamming and hacking), the patterns are similar to the ones described in Table 10. It is worth emphasizing that, compared with Bitcoin owners from the benchmark group, Bitcoin owners who are not in the labour force are less likely to have access problems, while those who have high Bitcoin knowledge are more likely to have access problems. Alternatively, Bitcoin owners who are unemployed are less likely than benchmark group owners to be subject to price crashes, while those with high financial knowledge are more likely to be subject to price crashes.

5 Conclusions

Using survey data, we study the awareness and ownership of Bitcoin in Canada between 2016 and 2020. We find that since 2018, Canadians' awareness and ownership of Bitcoin have been stable: nearly 90% of Canadians stated they had heard of Bitcoin and around 5% owned it. While the demographic composition of ownership has shifted over time, Bitcoin owners are consistently more likely to be young, male, and have higher education. Ownership of other cryptocurrencies remained low, with ownership of stablecoins particularly rare. Even among those who had heard of Bitcoin, only 5% had also heard of stablecoins.

The main reason for owning Bitcoin in 2019, as reported by Canadians, remained investment, followed closely by reasons related to technology. The share of Canadians in 2019 who owned Bitcoin because of payments fell, and Canadians were less likely than in 2018 to say they had used Bitcoin in the past year for purchases or person-to-person transfers. In contrast, non-owners stated that their main reasons for *not* owning Bitcoin included a lack of knowledge about the technology, a lack of trust in private digital currencies and the fact that their existing methods of payment meet their current needs.

With specialized surveys on Bitcoin and other cryptocurrencies, we can dig deeper into the usage habits of cryptocurrency owners. For example, Bitcoin owners have held fewer bitcoins in their wallets over time, though this is concurrent with rising Canadian-dollar prices per bitcoin. Bitcoin users varied in how they usually accessed the cryptocurrency. About half said they used mobile app or web exchanges to buy Bitcoin, while one-fifth said they mostly mined. Access to Bitcoin through ATMs was less common, at about 9%.

Cryptocurrency users can be susceptible to financial and security risks. About 18% of past and current Bitcoin owners stated they had lost money as a result of a price crash. Furthermore, 14% of Canadians stated they had lost access to their personal wallets and 12% had participated in an initial coin offering that ended up being a scam. The interaction between financial literacy and participation in the market for cryptoassets is an important area to explore. While Bitcoin owners are more knowledgeable than non-owners about Bitcoin technology, they also perform worse on tests of financial literacy, despite having higher education levels.

While ownership and use of Bitcoin and other cryptocurrencies remain at low levels, it is important to continue to monitor trends as the market and technologies develop. This will allow the Bank to make informed policy decisions related to currency and financial stability.

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Appendix

Table A-1: Bitcoin knowledge questions

Question	Response options
The total supply of Bitcoin is fixed.	True / False
Bitcoin is backed by a government.	True/ False
All Bitcoin transactions are recorded on a distributed ledger that is publicly accessible.	True / False

Note: The table reports the three Bitcoin knowledge questions, which were asked in the 2017, 2018 and 2019 BTCOS. The correct answers are in bold.

Table A-2: Financial literacy questions

Question	Response options
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 / Exactly \$102/ Less than \$102/ Do not know
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 / Do not know
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 / Do not know

Note: The table reports the three financial literacy questions that were asked for the first time in the 2018 BTCOS. The correct answers are in bold.