

Tracking Heterogeneous Spending Patterns with Credit Card Microdata

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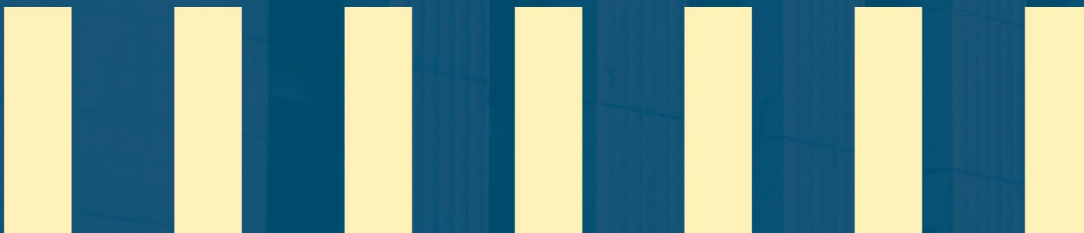
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Introduction

Timely and granular spending data are essential for understanding turning points in the economy. In this paper, we introduce a measure of account-level credit card spending, constructed using microdata on credit card balances and payments from TransUnion's anonymized credit bureau database.¹ Our measure is available at a higher frequency and with much greater granularity than other metrics: we capture monthly spending for approximately 80% of adults in Canada² with the potential to view changes in the economy with a lag of less than one month, and can disaggregate spending by age, geographic location and credit history. When linked to the Office of the Superintendent of Financial Institutions' real estate secured lending database, we can further examine spending by regulatory mortgage underwriting characteristics, supporting agile monitoring of granular spending dynamics.

We find that our measure of credit card spending:

- Is a real-time measure of spending that co-moves with aggregate consumption data published by Statistics Canada, without being subject to data revisions.
- Reflects spending heterogeneity across consumers by age group and mortgage holding status. For instance, spending has grown most slowly for younger consumers since early 2022.
- Provides an early warning signal of financial stress, with spending declining on average before consumers become delinquent on their mortgage, especially for consumers who end up having longer-lasting payment delinquency issues.

Measuring credit card spending

Credit cards serve two primary purposes for most consumers: a transaction function that allows them to pay for goods and services without using cash or other immediate funds, and a credit function that allows individuals to borrow (Adams et al. 2022). The transaction function represents most of the value of typical retail payments made by Canadian consumers, estimated at 58.5% in 2025 (Felt, Pacouloute and Welte 2026). Additionally, credit card ownership is broad-based, with about nine in 10 Canadian adults holding at least one card in recent years (Felt, Pacouloute and Welte 2026).

¹ To protect the privacy of Canadians, TransUnion did not provide any personal information to the Bank of Canada. The TransUnion dataset was anonymized, meaning it does not include information that identifies individual Canadians, such as names, social insurance numbers or addresses.

² TransUnion's consumer credit database contains the profiles of nearly every credit-active consumer in Canada, amounting to more than 30 million files (TransUnion 2026). We can calculate credit card spending for the vast majority of these individuals, amounting to approximately 80% of adults in Canada.

Together, widespread ownership of credit cards and their intensity of use for payments make them a valuable source of disaggregated and high-frequency consumption data.

To construct our measure of spending, we use data from TransUnion, a credit bureau that provides anonymized loan-level data for the near-universe of consumer loans in Canada (TransUnion 2026). Each month of data represents a “snapshot” of accounts taken on a particular date, with a rich set of variables reported to TransUnion. From these, we focus on balances and payments. We build upon Ganong and Noel (2020), decomposing credit card i 's balance in month t , $B_{i,t}$, into the identity:

$$B_{i,t} = (1 + r)(B_{i,t-1} - \text{Payments}_{i,t}) + \text{Spending}_{i,t} + \varepsilon_{i,t}$$

$$r = \begin{cases} \frac{0.20}{12} \approx 1.67\%, & \text{if } (B_{i,t-1} - \text{Payments}_{i,t}) > 0 \\ 0, & \text{otherwise} \end{cases}$$

where $\text{Spending}_{i,t}$ is new spending charged to card i in month t , and $\text{Payments}_{i,t}$ is the amount of the previous month's balance that has been paid off. The term $(B_{i,t-1} - \text{Payments}_{i,t})$ captures the revolving balance that is not paid off and is carried over to the next month, on which the borrower incurs an interest charge. If $(B_{i,t-1} - \text{Payments}_{i,t})$ is positive, then the revolving balance is subject to an interest rate charge r , calibrated to be an annualized 20%.³ Of course, if the revolving balance is zero, no interest is paid. The term $\varepsilon_{i,t}$ captures all other factors that determine credit card balances, such as balance transfers from other credit cards, prepayments, cash-back rewards and cash advances. As these factors are infrequent and in small amounts, we assume that they are, on average and netted out, zero. Re-arranging the definition above yields our measure of the flow of spending on credit card i in month t :

$$\text{Spending}_{i,t} \approx B_{i,t} - [(1 + r)(B_{i,t-1} - \text{Payments}_{i,t})]$$

Consumer-level spending is calculated by summing $\text{Spending}_{i,t}$ across all active credit card accounts held by the same individual.

³ Data from the A4 Report on New and Existing Lending, a regulatory return of Canadian financial institutions, shows that volume-weighted average interest rates incurred on credit cards have been around 20% per annum since 2016 (Bank of Canada 2026a).

Validation against other spending measures

To assess the representativeness of our spending measure, we compare it to two sources of household spending data published by Statistics Canada:

1. Household consumption data published in the Canadian System of Macroeconomic Accounts (CSMA), adjusted to exclude spending categories that are not typically charged to credit cards, such as rent and vehicle purchases.⁴
2. Household spending microdata from the Survey of Household Spending (SHS).

A known challenge in directly interpreting credit card spending growth as consumption growth is the potential change in the data coverage and the substitution toward credit cards as a method of payment (Felt, Pacouloute and Welte 2026). Indeed, the raw total credit card spending from TransUnion has grown faster than consumption in our sample period. Accordingly, we display total credit card spending scaled both by the number of consumers for whom we can calculate spending out of the total adult population, as well as the share of value-weighted spending conducted with credit cards at point-of-sale, from Payments Canada's Canadian Payment Methods and Trends Report (Payments Canada 2024, 2025) (**Chart 1**, dashed yellow line, **Table 1**).⁵ Alternatively, simple average consumer-level spending from TransUnion (**Chart 1**, black line, **Table 1**) is even more closely related with consumption data from Statistics Canada (**Chart 1**, blue line, **Table 1**). These patterns suggest that fluctuations from the average credit card user may better approximate aggregate consumption growth, while total credit card spending may be more affected by heterogeneous changes in payment methods.⁶ This is consistent with Aladangady, Gabriel and Wix (2026) in the United States.

Overall, we find that both measures of credit card spending from TransUnion closely co-move with the adjusted consumption data from Statistics Canada (**Chart 1**, **Table 1**). Our measures perform well in capturing the seasonal variation in the consumption series, as well as the sharp decline in spending during the COVID-19 pandemic, and subsequent recovery.

⁴ We construct the adjusted Statistics Canada consumption series as Household Final Consumption Expenditure excluding the following categories: Paid Rental Fees for Housing, Imputed Rental Fees for Housing, New Passenger Cars, New Trucks/Vans/Sport Utility Vehicles, Used Motor Vehicles, Other Vehicles, University Education, Other Education, and Insurance and Financial Services.

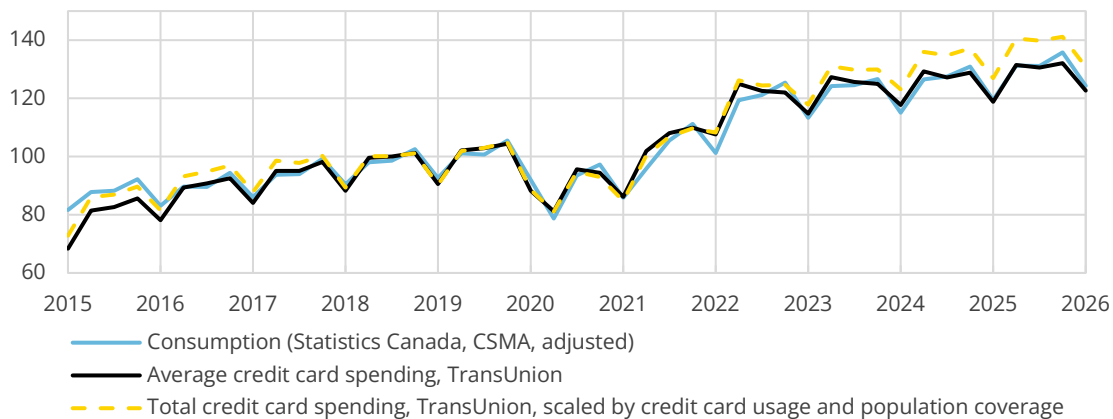
⁵ We interpolate annual estimates of the share of payments performed using credit cards to quarterly frequency. The 2024 annual value is carried forward to subsequent quarters, introducing a possible bias at the end of our sample if the use of payment methods continued to change.

⁶ The remaining differences between the adjusted total growth of credit card spending and consumption growth may be driven by unobserved heterogeneous correlations between spending level of each individual and changes in relative propensity to use credit cards over time.

Credit card spending may be a useful predictor of quarterly consumption data that is not yet available. First, credit card spending is final, whereas the quarterly national accounts are subject to multiple rounds of revision. So, credit card data could potentially add value as a signal of the final estimates of consumption (Felber and Beyeler 2023). Second, credit card data may prove useful at a higher monthly frequency. Following data improvements in 2020, preliminary findings suggest a correlation of 0.55 in the post-pandemic sample between changes in log credit card spending and changes in log monthly retail sales excluding auto dealers one month later.⁷

Chart 1: TransUnion credit card spending data tracks the dynamics of consumption data from Statistics Canada

Quarterly data, nominal, index: 2019 average = 100



Source: TransUnion, Statistics Canada, Payments Canada, Bank of Canada calculations

Last observation: 2026Q1

Table 1: TransUnion credit card spending correlates with consumption growth at different frequencies

Pearson correlation	Consumption (Statistics Canada, CSMA, adjusted)	
	Q/Q log difference	Y/Y log difference
Average credit card spending, TransUnion	0.91	0.92
Total credit card spending, TransUnion, scaled by credit card usage and population coverage	0.92	0.93

⁷ In this paper, we generally apply a two-month lag to the TransUnion data, as the best fit for the complete database. However, in the post-pandemic period, a one-month lag better fits monthly retail sales data excluding auto dealers from Statistics Canada, so ongoing monitoring would be more appropriate for forecasting one-month ahead.

To validate our measure on a microeconomic level, we compare it to data from the 2019 SHS, approximating the total amounts that households spent using credit cards in that year.⁸ To do this, we take total consumption reported for each SHS household i , and subtract spending categories for which a credit card is not typically used.⁹ We then multiply the remaining spending by age-group-specific coefficients from the Bank of Canada's Methods-of-Payment Survey (MOP) (Henry, Shimoda and Zhu 2022):¹⁰

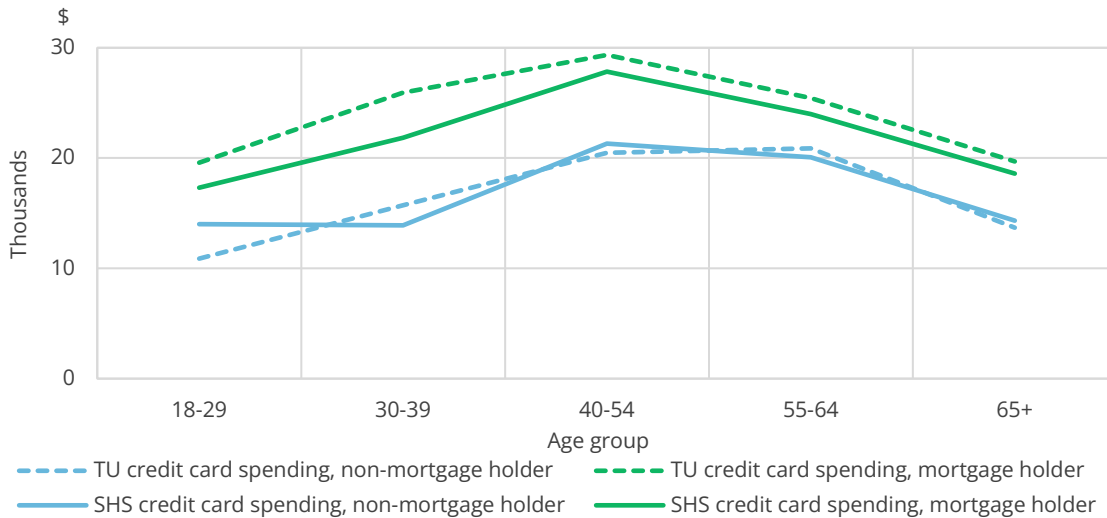
$$SHS \text{ Credit Card Spending}_i = \beta_{age}(C_i - H_i - A_i)$$

- β_{age} = the percentage of total consumer spending performed using credit cards, by age group
- C_i = total current household consumption
- H_i = total expenditure for shelter
- A_i = purchase of automobiles, vans and trucks, and recreational vehicles

Chart 2 compares annual per-capita spending in 2019 from TransUnion to data constructed from the SHS, by age group and mortgage-holding status. We find that these moments broadly match, suggesting that our measure captures spending patterns well across demographic groups.

Chart 2: Credit card spending from TransUnion matches estimated SHS credit card spending by age and mortgage-holding status

Annual data, nominal, 2019 sample



Source: TransUnion, Statistics Canada, Bank of Canada calculations

⁸ The SHS provides data on household spending, whereas credit card spending derived from TransUnion data is at the level of the individual, making the comparison imperfect.

⁹ The excluded categories are: Total expenditure for shelter (SH001), Purchase of recreational vehicles (RV020), and Purchase of automobiles, vans and trucks (TR004).

¹⁰ We use the 2021 MOP survey to be as comparable to the 2019 SHS as possible.

Heterogeneity in spending and signs of financial stress

Our measure provides a timely, disaggregated view of consumer spending that complements publicly available data. This is intended to improve the Bank's ability to assess both the outlook for real activity and the extent to which weakness is concentrated among financially vulnerable consumers. Because spending often adjusts quickly when consumers face financial strain, the measure can provide an early signal of emerging stress or precautionary behaviour. In this section, we present three examples of what our measure can reveal: weaker spending growth for younger consumers, spending reduction around mortgage delinquency, and differential spending by income.

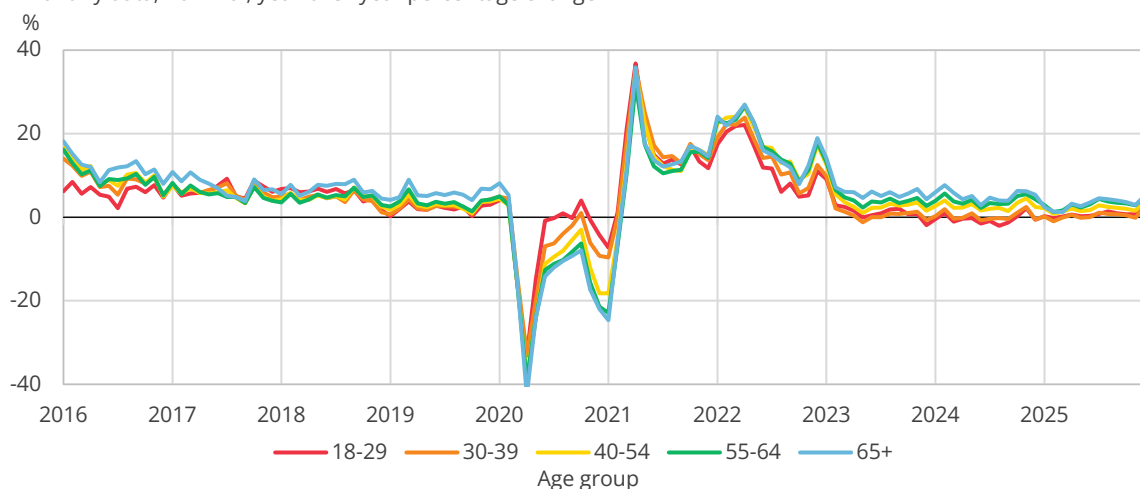
Has recent credit card spending differed by age?

In **Chart 3**, we show nominal per-capita spending growth by age group from 2016 to 2025. We make several observations:

- Spending growth was broadly similar across age groups in the period before the COVID-19 pandemic.
- Younger consumers, from ages 18–39, had stronger spending growth during the COVID-19 pandemic from 2020 to 2021.
- Spending growth became weaker for younger consumers around early 2022 and has remained persistently weaker for these groups since then.

Chart 3: Per-capita spending growth has been weakest for younger consumers in recent years

Monthly data, nominal, year-over-year percentage change



Source: TransUnion, Bank of Canada calculations

Last observation: December 2025

The pattern of weaker spending growth among younger consumers post-pandemic points to several avenues for investigation. To what extent did shocks during this period—such as fluctuations in interest rates, labour market outcomes, or household formation—have differential impacts by age? Our measure opens the door to future work examining how these or other factors drive compositional changes in consumption growth over the business cycle. Since inflation rates vary across households (Kaplan and Schulhofer-Wohl 2017), spending dynamics across demographic groups could also reflect both changes in real consumption and differential exposures to inflation.

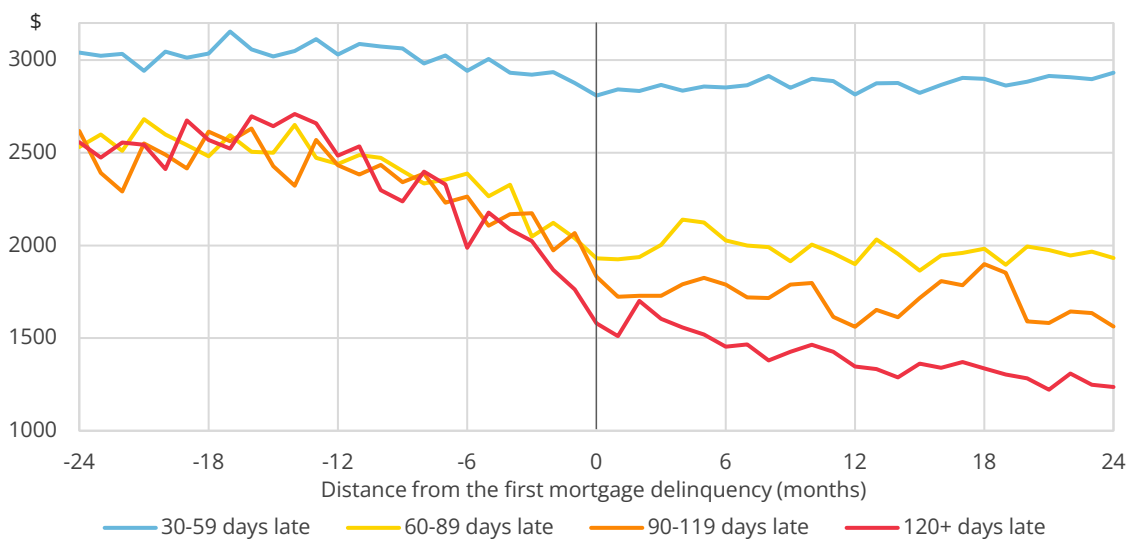
As noted above, changes in our measure over time should also be interpreted alongside shifts in consumers' propensities to pay using credit cards. The share of typical retail spending performed with credit cards, as measured in the MOP survey, is estimated to have risen from 45.3% in 2013 to 58.5% in 2025 (Bank of Canada 2026b). Differences in propensities to spend using credit cards between demographic groups, including age, appear to have been small and mostly time-invariant.

Credit card spending around mortgage delinquency

Second, we examine how credit card spending evolves around periods of financial stress. Zhao, Xiao and Witts (2026) show that sharp declines in spending are associated with mortgage delinquency up to six months in the future. We extend this analysis by examining real per-capita spending in the two years before and after a consumer misses a mortgage payment (**Chart 4**). We consider spending separately for consumers who eventually become 30–59, 60–89, 90–119, or 120 or more days late at some point later in the sample.

Chart 4: Consumers reduce their credit card spending before missing mortgage payments, with larger reductions among consumers who enter deeper arrears

Monthly data, per-capita spending, constant 2025 dollars



Consumers in the groups that become 60 or more days late begin to spend less on their credit cards about one year before their first mortgage delinquency. Among these consumers, spending remains persistently lower after mortgage delinquency, and declines by more for those who eventually enter deeper delinquency. Spending remains more stable for the group that only ever becomes 30–59 days late.

The declines in credit card spending observed could reflect a combination of two factors. First, some reductions could be associated with lower *overall* spending due to income loss or decreased discretionary spending to meet debt obligations.

Alternatively, since credit card utilization rates tend to rise prior to mortgage delinquency (Zhao, Xiao and Witts 2026), many consumers are likely forced to reduce their credit card spending because they reach their limits. These consumers' overall spending may diverge from their spending on credit cards if they are able to continue financing their consumption with other sources of credit or debit card balances. On average, consumers who become 60 or more days late also experience declining credit card limits in the two years following mortgage delinquency, suggesting they could face continued challenges accessing credit. Overall, these patterns suggest that our measure provides useful information for investigating interactions between consumption dynamics and consumer financial stress.

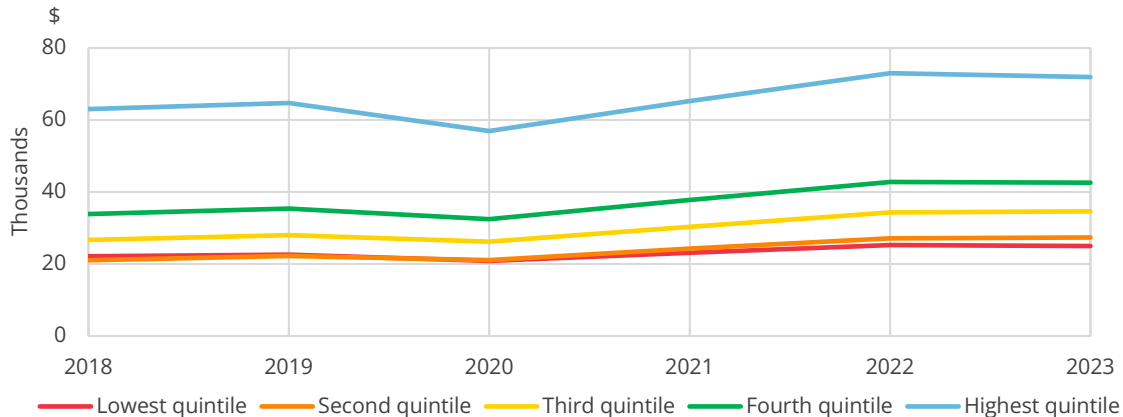
Linking credit card spending to household income at mortgage origination

In **Chart 5**, we examine real annual per-capita credit card spending for groups of consumers according to their mortgage qualifying income, focusing on consumers who originated at least one mortgage between 2018 and 2023. To obtain qualifying incomes, we match TransUnion data at the loan level to anonymized regulatory mortgage data compiled by the Office of the Superintendent of Financial Institutions' (OSFI) real estate secured lending (RESL1) database,¹¹ using the matching algorithm developed by Khan and Xu (2022).

¹¹ The Bank of Canada uses loan-level data from an anonymized real estate secured loans database compiled by OSFI. For the exercise in Chart 5, we use RESL1, a previous version of this dataset with information on the flow of new mortgages. Staff have also linked TransUnion data to RESL2, an enhanced version that includes details about the stock of residential mortgage loans and home equity lines of credit. For information on RESL2, see Aboud et al. (2025).

Chart 5: Consumers with higher mortgage qualifying incomes have higher credit card spending

Annual data, per-capita spending, constant 2025 dollars



Source: TransUnion, Regulatory filings of Canadian banks, Statistics Canada, Bank of Canada calculations

Last observation: 2023

We classify consumers into quintiles based on their qualifying income in the first year that they are observed originating a mortgage during this period.¹² Once they are classified, consumers remain in that quintile for as long as we observe them in the sample, including in periods before mortgage origination. Because we only observe consumers' incomes at origination, our analysis is an imperfect proxy for consumers' incomes in other periods.

Unsurprisingly, we find that credit card spending rises with qualifying income, with particularly high spending among consumers in the highest quintile. Spending also declined the most between 2019 and 2020 for consumers in the highest quintile.

Linking credit card spending data from TransUnion to RESL data can support further analyses of spending behaviour across consumers with different regulatory characteristics, such as loan-to-value ratios, loan-to-income ratios, loan terms or interest rate types.

¹² The thresholds for the income quintiles were estimated using total income levels reported by Statistics Canada in the 2021 Census of Population (Statistics Canada 2023) and income dynamics observed from Statistics Canada Table 36-10-0587-01 (Statistics Canada 2026c). Incomes reported in the regulatory filings of Canadian banks include the incomes of guarantors and co-borrowers, if applicable.

Conclusion

In this paper, we introduce a high-frequency, nationally representative measure of credit card spending derived from anonymized TransUnion credit bureau data. Our measure provides a close guide to aggregate consumption dynamics from Statistics Canada data, without being subject to data revisions. It can also be disaggregated by a rich set of demographic characteristics and credit histories, enabling the Bank of Canada to track spending across many different groups of consumers.

We find that credit card spending growth has varied by age groups in recent years and has been weakest among younger consumers beginning in early 2022. Additionally, we document that credit card spending begins to decline about one year before a consumer misses a mortgage payment and falls by more for those who enter deeper arrears. Examining spending by regulatory mortgage underwriting characteristics can shed further light on financially vulnerable groups' contribution to aggregate consumption growth.

More broadly, this work also opens the door to more detailed analyses, such as estimating the effects of monetary policy on consumer spending or spending responses to movements in house prices.

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