Credit Card and Payday Loan Borrowing: Evidence in the SCF 2010-2019*

Tsung-Hsien Li

This version: July 2022

[Check here for the latest version]

Abstract

Unsecured borrowing plays an important role for consumers in smoothing consumption. Each year, almost 40% of U.S. households have credit card debts and 4% borrow using a high-cost payday loan. This paper aims to explore the similarities and differences between both types of borrowers. Using the Survey of Consumer Finances (SCF) from 2010 to 2019, I document that: (1) credit card borrowers are middle-aged, upper-middle-class, with some college exposure, and financially literate; (2) payday loan borrowers are young, low-income and low-wealth, less educated, and less financially literate; and (3) payday loan borrowers lack the financial knowledge of inflation and risk diversification, but not of interest compound.

Keywords: Consumer Credit, Credit Card, Payday Loan, Financial Literacy

JEL Classifications: D14, G51, G53

*Ph.D. candidate in economics at the University of Mannheim (email: tsung-hsien.li@gess.uni-mannheim.de, tsunghsien1124@gmail.com; website: https://tsunghsien1124.github.io/). I am extremely grateful to my main advisor Michèle Tertilt for her guidance and support. I acknowledge financial support from the "Stiftung Geld und Währung".

1 Introduction

Unsecured borrowing plays an important role for consumers in smoothing consumption. There are two popular consumer loans in the United States: credit cards and payday loans. A credit card is granted with a line of credit that allows its holder to borrow liquidity repeatedly at annual interest rates between 10 to 30 percent. Exhausting the credit line and failing in repayment affect cardholders' credit scores.[1] Credit cards are one ubiquitous product among the mainstream financial services (MFS): 70% of U.S. households have a credit card, and almost 40% of them borrow money using their cards.

On the other hand, a payday loan is a short-term small-amount unsecured loan with a duration of a few weeks for a typically small amount of $300. Crucially, it carries enormous interest costs corresponding to annualized rates of several hundred percent (Stegman, 2007). Payday loans are one of the popular products among alternative financial services (AFS): there are more storefronts of payday lenders than fast-food chain restaurants (Karger, 2005) and around 4% of households take up a payday loan in the U.S. Compared to credit cards, borrowing or defaulting on payday loans usually does not affect credit scores.[2]

Given the similarities and differences in liquidity provision between credit cards and payday loans, plus their popularity in the U.S., it is essential to better understand the heterogeneity across credit card and payday loan borrowers. To this end, this paper attempts to understand: (1) what type of households borrow using credit cards or payday loans? (2) in which dimensions do credit card borrowers differ from payday loan borrowers? To address these questions, I identify credit card and payday loan borrowers using the Survey of Consumer Finances (SCF) from 2010 to 2019. I then compare credit card borrowers with payday loan borrowers in terms of their life-cycle profile, income, net worth, education, and financial literacy.[3]

I document that: (1) most credit card borrowers are middle-aged, upper-middle-class, with some college exposure, and financially literate; (2) payday loan borrowers are often

[1] A credit score is a statistic computed by credit bureaus to measure a person's creditworthiness or default risk. In the U.S., people do care about their scores because they affect their credit access, mortgage rates, and even job application prospects.

[2] For example, Consumer Financial Protection Bureau (2017) states that payday lenders in the U.S. usually do not report to credit bureaus. Bhutta, Skiba, and Tobacman (2015) also empirically show that payday loan borrowing has no impact on credit scores.

[3] The focus of the paper is narrowly the comparison between credit card and payday loan borrowers. See, for example, Livshits (2015) and Exler and Tertilt (2020) for surveys on the general topics.

young, low-income and low-wealth, less educated, and less financially literate; and (3) although payday loan borrowers have a relatively lower degree of financial literacy than credit card borrowers, this lack of financial knowledge results from misunderstanding inflation and risk diversification, not interest compound.

The rest of the paper is organized as follows. Section 2 provides a brief introduction to the SCF and an overview of the average fractions of credit card and payday loan borrowers. Section 3 presents the evidence in the SCF 2010-2019. Section 4 concludes with potential avenues for further research.

2 Data

The SCF is a triennial cross-sectional survey of U.S. households. It contains information on demographic characteristics and great details on financial positions. In addition to credit card borrowing, payday loan usage has also been collected since 2010. Therefore, I use the SCF from 2010 to 2019, the latest available survey, to study the household borrowing behavior of credit cards and payday loans. To this end, I identify credit card borrowers as the survey respondents with a total balance still owed on their credit cards after the last payments.[4] Payday loan borrowers refer to the households who took up a payday loan over the past 12 months proceeding to the survey. The exact survey questions used to construct the variables in the paper are summarized in Appendix A. All reported statistics are weighted using the survey weights in the following discussions.

Table 1 reports the fraction of credit card and payday loan borrowers in the SCF from 2010 to 2019. The column "Average" shows the average fractions over 2010-2019. Overall, 36.3% of households have credit card debts, and 3.6% of households take up a payday loan in the U.S. These figures are undoubtedly high, especially given the high-interest costs for payday loans, which can be up to several hundred percentage points. Conditional on households aged from 20 to 60,[5] both fractions of credit card and payday loan borrowers increase further to 40.1% and 4.4%, respectively.

[4] I focus on credit cards issued by banks only and exclude those cards for specific purposes, such as store and fuel cards.

[5] The age restriction excludes retirement and childhood for the comparison purpose since many papers in the consumer finance literature focus on the working life of households, e.g., Chatterjee, Corbae, Nakajima, and Ríos-Rull (2007) and Livshits, MacGee, and Tertilt (2007).

Variable (in %)	2010	2013	2016	2019	Average
All households					
Credit card	34.10	32.55	38.57	40.00	36.30
Payday loan	3.85	4.15	3.42	2.80	3.55
Households aged 20-60					
Credit card	37.94	35.66	42.47	44.27	40.08
Payday loan	4.78	5.08	4.12	3.64	4.40

Table 1: Borrower Fraction over the SCF 2010-2019

Notes: All statistics are weighted with the SCF survey weights. The upper panel "All households" reports the average borrower fractions among all respondents in the survey. The bottom panel "Households aged 20-60" shows the results conditional on the households with household heads aged between 20 and 60. This subgroup constitutes around 70% of total respondents in each survey year.

3 Results

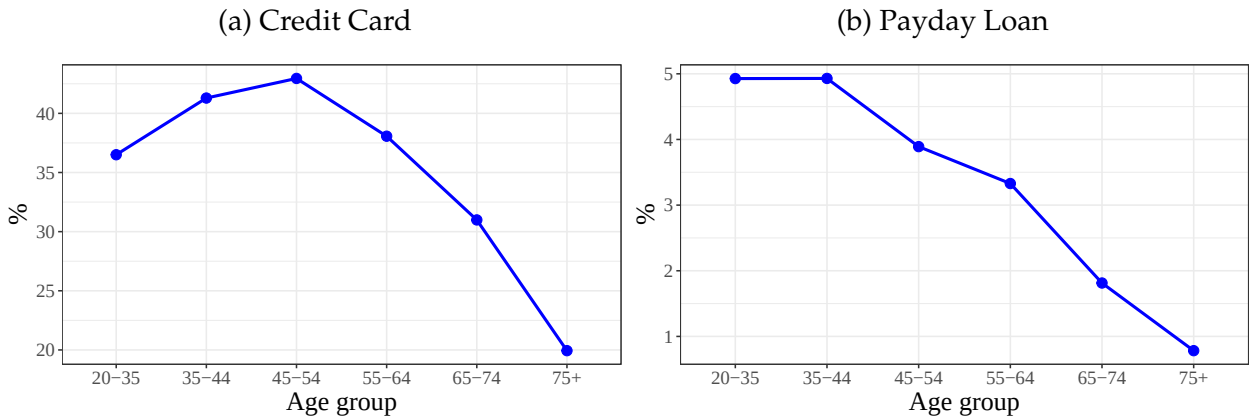
In this section, I document the properties of credit card and payday loan borrowers in terms of age, income and net worth, as well as education and financial literacy. For brevity, I present here only the unweighted average results over the SCF 2010-2019 waves and leave the results across each survey year in Appendix B.

3.1 Life Cycle

Figure 1a and 1b display the fractions of credit card and payday loan borrowers over life cycles, respectively. In particular, I divide households into the age groups of (20-34, 35-44, 45-54, 55-64, 65-74, and 75+) and then compute the average fraction of credit card and payday loan borrowers for each age bin. Note that the SCF is a repeated cross-sectional survey. Therefore, these figures are not exactly the true life-cycle patterns. However, averaging the results using the SCF waves from 2010 to 2019 should filter out year-specific noises and thus yields a good proxy for the stationary life-cycle patterns.

Focusing first on Figure 1a, one can see that the life-cycle pattern of credit card borrowers is hump-shaped. This finding is consistent with Exler and Tertilt (2020). The fraction of households with any credit card debt is around 36% at the beginning of the life cycle. The fraction then increases steadily to over 45% until age 45-54. After that, it gradually decreases to around 20% after the age of 75. On the other hand, the life-cycle pattern of payday loan borrowing in Figure 1b exhibits a decreasing relationship with age. The frac-

Figure 1: Average Fraction of Borrowers by Age Group over the SCF 2010-2019



Notes: All statistics are weighted with the SCF survey weights. The average fraction of credit card borrowers is computed as the average of the fraction of households with a negative balance on their credit cards in each age bin over the SCF 2010-2019. The average fraction of payday loan borrowers is computed as the average of the fraction of households who took up a payday loan over the last year in each age bin over the SCF 2010-2019.

tion of households who took up at least a payday loan remains around 5% up to age 44 and then decreases to less than 1% towards the end of the life cycle.

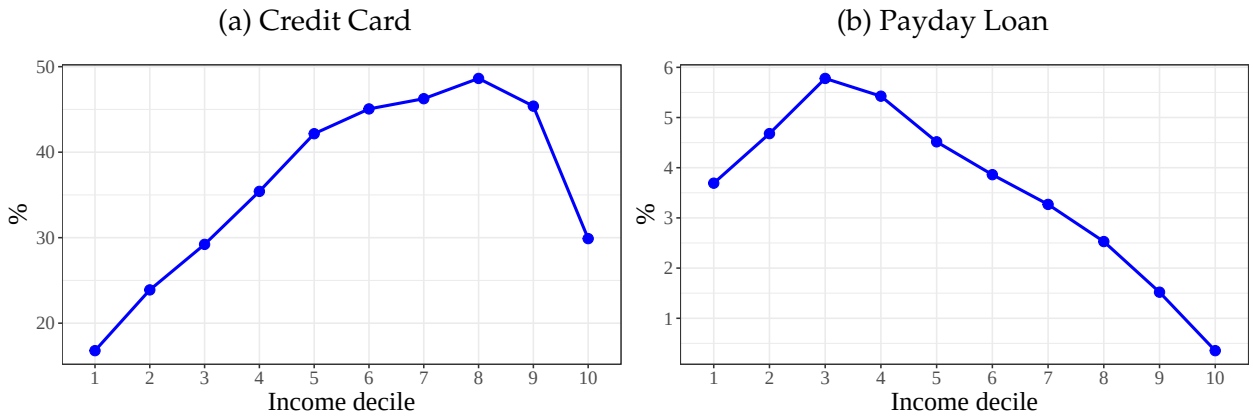
The difference between the life-cycle patterns of credit card and payday loan borrowers could result from the fact that the youth often have not built up their credit scores or even processed a credit card. Refer to Appendix B.1 for the fraction of credit card holders by age group. As (partially) excluded from the mainstream financial markets, younger people turn to payday lenders to borrow against their future income to smooth consumption.

3.2 Income and Wealth

First of all, Figure 2 shows the average fractions of borrowers for each income decile over the SCF 2010-2019, where Figure 2a presents the results of credit cards and Figure 2b illustrates the ones of payday loans. Income is measured as the pre-tax sum of wages, interest, dividends, realized capital gains, and miscellaneous sources of income for all household members.

In Figure 2a, the fraction of credit card borrowers among the lowest income decile is the lowest at around 17%, compared to near 50% for the eighth decile. The fraction remains high at 45% among the ninth decile but slumps to near 30% for the richest decile. On the contrary, as seen in Figure 2b, the fraction of payday loan borrowers for the poorest

Figure 2: Average Fraction of Borrowers by Income Decile over the SCF 2010-2019



Notes: All statistics are weighted with the SCF survey weights. The average fraction of credit card borrowers is computed as the average of the fraction of households with a negative balance on their credit cards in each income decile over the SCF 2010-2019. The average fraction of payday loan borrowers is computed as the average of the fraction of households who took up a payday loan over the last year in each income decile over the SCF 2010-2019.

decile is around 4% and increases to the highest at nearly 6% among the third decile. The fraction of households who took up a payday loan then monotonically decreases sixfold to less than 0.5% for the richest decile.

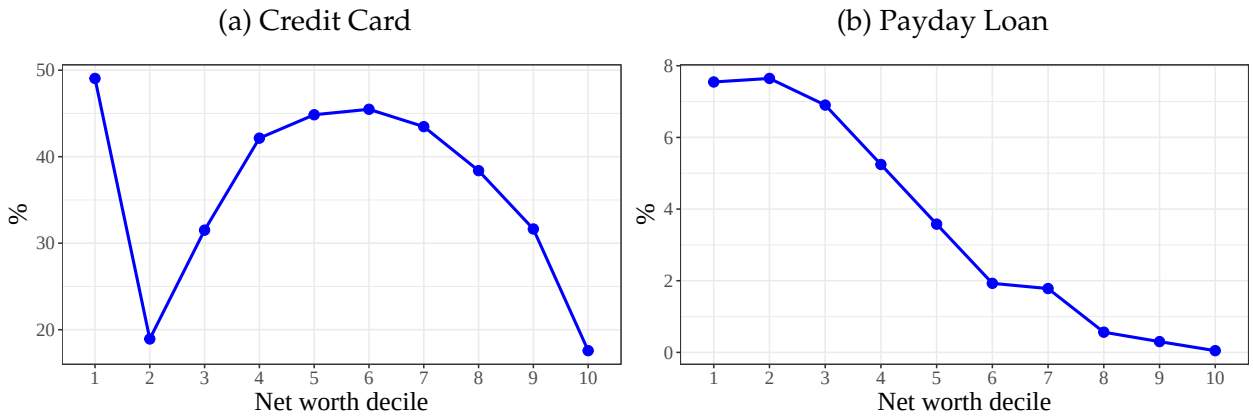
It is surprising to observe the hump-shaped borrowing patterns across income deciles for both credit cards and payday loans, as one may expect that the poorest are most likely to borrow. However, poor households can be excluded selectively from consumer credit markets due to relatively higher interest costs charged by lenders. For example, less than 40% of the poorest households possess a credit card, as illustrated in Appendix B.1.

Second, the average fractions of credit card and payday loan borrowers for each net worth decile from the SCF 2010 to 2019 are presented in Figure 3a and 3b, respectively. Net worth denotes the net financial position of gross assets and liabilities.[6] The results are robust with net worth octile or duo-decile, and see Appendix B.4 for details.

Surprisingly, Figure 3a shows that the relationship between credit card borrowing and net worth is not monotonically decreasing. The peak of the fraction of credit card borrowers occurs in the lowest net worth decile, almost 50% of which have negative balances owed on their credit cards since the last payments. The fraction then drops dramatically to less than 20% for the second decile and then increases steadily to 45% among the fifth

[6] Total assets include financial assets (e.g., liquid assets, certificates of deposit, saving bonds) and non-financial assets (such as vehicles). Total liabilities contain mortgages, home equity loans, credit card debts, and other debts. Refer to the SCF Bulletin for details.

Figure 3: Average Fraction of Borrowers by Net Worth Decile over the SCF 2010-2019



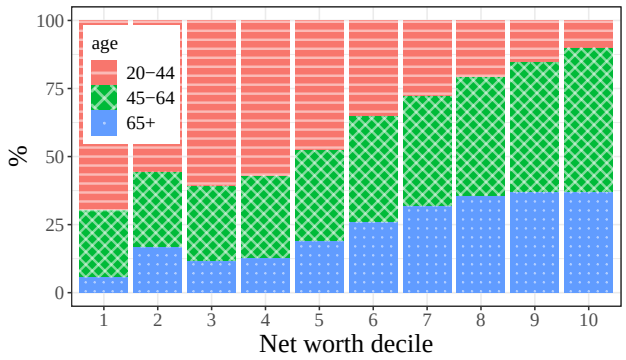
Notes: All statistics are weighted with the SCF survey weights. The average fraction of credit card borrowers is computed as the average of the fraction of households with a negative balance on their credit cards in each net worth decile over the SCF 2010-2019. The average fraction of payday loan borrowers is computed as the average of the fraction of households who took up a payday loan over the last year in each net worth decile over the SCF 2010-2019.

and sixth deciles. The fraction then decreases smoothly to below 20% for the richest decile. On the other hand, Figure 3b indicates that the fraction of payday loan borrowers is decreasing with net worth as expected: from the highest at 8% among the first decile to the lowest of nearly 0% for the last decile.

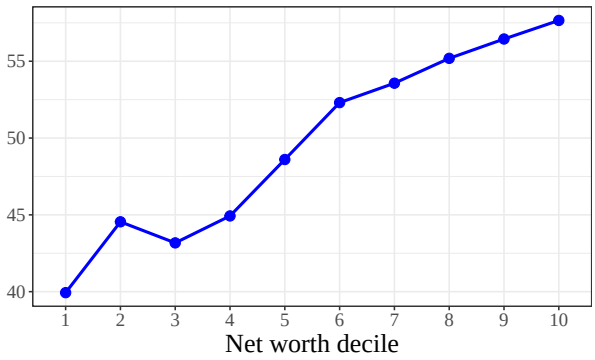
So, why is there a slump in the fraction of credit card borrowers for the second net worth decile, i.e., the second least wealthy households? This is because many credit card borrowers among the second net worth decile are relatively older and, unlike younger households who would like to borrow much against their future income to smooth consumption, older households borrow less due to the near end of their life cycle. Figure 4a plots the age distribution of credit card holders for each net worth decile, and Figure 4b reports the average age of credit card borrowers among each net worth decile. First, the age distribution of credit card holders in the second poorest decile is relatively more right-skewed, i.e., more middle-aged and older households, compared to the overall distributional pattern in age across net worth deciles. Second, the average age of credit card borrowers for the second net worth decile spikes to a higher level, deviating from the gradual upward age trend with net worth.

Figure 4: Age of Credit Card Holders and Borrowers by Net Worth Decile

(a) Age Distribution of Credit Card Holders



(b) Average Age of Credit Card Borrowers



Notes: All statistics are weighted with the SCF survey weights. I decompose the credit card holders among each net worth decile into the age groups of (20-44, 45-64, 65+) and denote them as young, middle-aged, and older credit card holders, respectively. The average age of credit card borrowers for each net worth decile is computed as the average age of households with a negative balance on their credit cards in each net worth decile over the SCF 2010-2019.

3.3 Education and Financial literacy

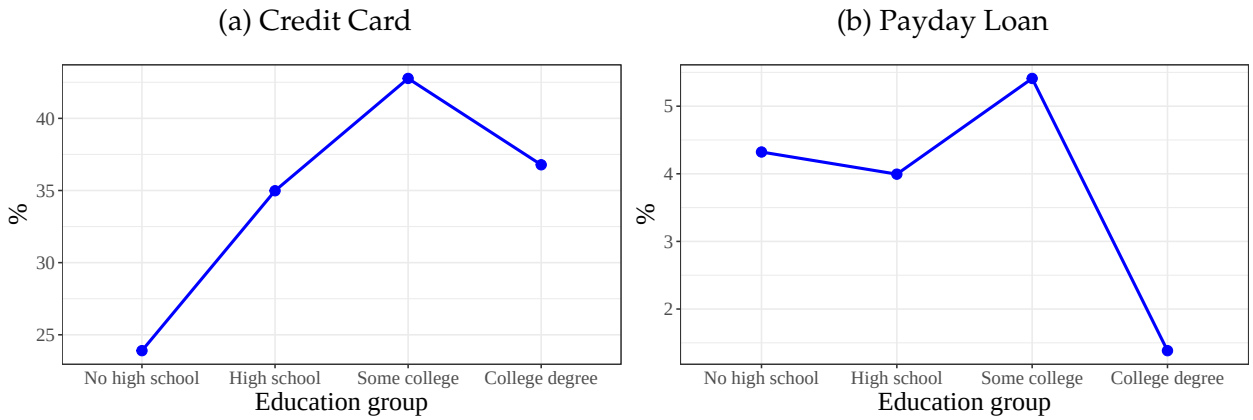
Figure 5a and 5b visualize the average fractions of credit card and payday loan borrowers by education groups in the SCF from 2010 to 2019, respectively. I divide households into the education groups of (no high school, high school, some college, and college degree).

Among those with no high school, the fraction of credit card borrowers is around 25%. The fraction increases to over 45% for those who attended some college. The fraction then falls to around 37% for those with college degrees. On the other hand, the fraction of payday loan borrowers among those with a high school degree is around 4%. The fraction then reaches the highest at 5.5% for those who attended some college. Lastly, the fraction for those with a college degree falls to less than 1.5%. The results indicate that payday loan borrowers are less educated than credit card borrowers.

The "Big Three" financial literacy questions were introduced to the 2016 SCF wave. These questions are meant to measure the financial knowledge regarding interest rate, inflation, and risk diversification. Refer to the Appendix A for the exact survey questions. Table 2 reports the average correctness rates for the three questions over the SCF 2016-2019, conditional on all households, credit card borrowers, and payday loan borrowers.

In Table 2, one can first see that the correctness rates for all questions by credit card borrowers are not significantly lower than total households. The similar accuracy implies

Figure 5: Average Fraction of Borrowers by Education over the SCF 2010-2019



Notes: All statistics are weighted with the SCF survey weights. The average fraction of credit card borrowers is computed as the average of the fraction of households with a negative balance on their credit cards in each education bin over the SCF 2010-2019. The average fraction of payday loan borrowers is computed as the average of the fraction of households who took up a payday loan over the last year in each education bin over the SCF 2010-2019.

Variable (in %)	**Q1: Interest Rate**	**Q2: Inflation**	**Q3: Risk Diversification**
Total households	79.02	76.56	61.69
Credit card borrowers	78.95	77.15	61.02
Payday loan borrowers	75.23	68.11	47.54

Table 2: Correctness Rates for Big 3 Questions over the SCF 2016-2019

Notes: All statistics are weighted with the survey weights. The correctness rate is computed as the fraction of households correctly answering the respective question in each group.

that households in credit card debt are not financially illiterate compared to other households. In contrast, payday loan borrowers did an excellent job answering the first question about the interest calculation, but performed poorly in answering the questions of inflation and risk diversification. Compared to credit card borrowers, the correctness rates for these two questions by payday loan borrowers fall by 9.04% and 13.48%, respectively.

The results suggest that although payday loan borrowers are less financially literate, they lack financial knowledge in specific aspects:[7] they do understand the concept of compound interest to the extent of the other households; however, they are deficient in the knowledge of inflation and risk diversification. This evidence contrasts with the common argument that payday loans harm consumers because most borrowers *ex-ante* do not

[7] The result is aligned with Kim and Lee (2018). They use the National Financial Capability Study to explore the relationship between payday loan usage and financial literacy and find that they are negatively associated.

understand how expensive a payday loan can escalate *ex-post*.

4 Conclusion

Unsecured borrowing plays an essential role for consumers in smoothing consumption. Credit cards and payday loans are two popular loan choices in the U.S.: almost 40% of them borrow on their credit cards, and around 4% of households take up a payday loan. To better understand the characteristics of credit card and payday loan borrowers, I identify them using the SCF 2010-2019 and then compare both types of borrowers in terms of life-cycle profile, income, net worth, education, and financial literacy.

The findings are threefold. First, most credit card borrowers are middle-aged, upper-middle-class, with some college exposure, and financially literate. Second, payday loan borrowers are young, low-income and low-wealth, less educated, and less financially literate. Third, although payday loan borrowers are less financially literate, they lack the financial knowledge of inflation and risk diversification, but not of interest compound.

In the future, a natural extension is to explore the properties of credit card and payday loan borrowers from other perspectives. For instance, how do the two types of borrowers differ in the search effort for liquidity? Did they confront higher expenses before the survey year than expected initially? Is the borrowing behavior of credit cards and payday loans associated with the marital status of households or other household attributes? These questions are included in the SCF and thus can be easily employed. In addition, other surveys can complement the evidence found in the SCF. For example, the National Financial Capability Study collects information on financial capability and thus could be complementary to the analysis of financial literacy in the paper.

References

BHUTTA, N., P. M. SKIBA, AND J. TOBACMAN (2015): "Payday Loan Choices and Consequences," *Journal of Money, Credit and Banking*, 47, 223–260.

CHATTERJEE, S., D. CORBAE, M. NAKAJIMA, AND J.-V. RÍOS-RULL (2007): "A Quantitative Theory of Unsecured Consumer Credit with Risk of Default," *Econometrica*, 75, 1525–1589.

CONSUMER FINANCIAL PROTECTION BUREAU (2017): "I heard that taking out a payday loan can help rebuild my credit or improve my credit score. Is this true?" Available at: https://www.consumerfinance.gov/ask-cfpb/i-heard-that-taking-out-a-payday-loan-can-help-rebuild-my-credit-or-improve-my-credit-score-is-this-true-en-1611/ (Accessed: 04.11.2021).

EXLER, F. AND M. TERTILT (2020): "Consumer Debt and Default: A Macro Perspective," *Oxford Research Encyclopedia of Economics and Finance*.

KARGER, H. (2005): *Shortchanged: Life and Debt in the Fringe Economy*, San Francisco: Berrett-Koehler.

KIM, K. T. AND J. LEE (2018): "Financial literacy and use of payday loans in the United States," *Applied Economics Letters*, 25, 781–784.

LIVSHITS, I. (2015): "Recent Developments in Consumer Credit and Default Literature," *Journal of Economic Surveys*, 29, 594–613.

LIVSHITS, I., J. MACGEE, AND M. TERTILT (2007): "Consumer Bankruptcy: A Fresh Start," *American Economic Review*, 97, 402–418.

STEGMAN, M. A. (2007): "Payday Lending," *Journal of Economic Perspectives*, 21, 169–190.

A Related Survey Questions in the SCF

A.1 Credit Card and Payday Loan Borrowers

X413: After the last payment(s) (was/were) made, what was the total balance still owed on (this account/all these accounts)?

X7973: Do you (or anyone in your family living here) have a credit card such as a Visa, MasterCard, Discover, or American Express card that allows you to carry a balance from month to month that you can pay off over time?

X7063: During the past year, have you (or anyone in your family living here) taken out a "payday loan," that is, borrowed money that was supposed to be repaid in full out of your next paycheck?

A.2 Financial Literacy

X7558: Do you think that the following statement is true or false: buying a single company's stock usually provides a safer return than a stock mutual fund?

X7559: 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 in the account if you left the money to grow: more than $102, exactly $102, or less than $102?

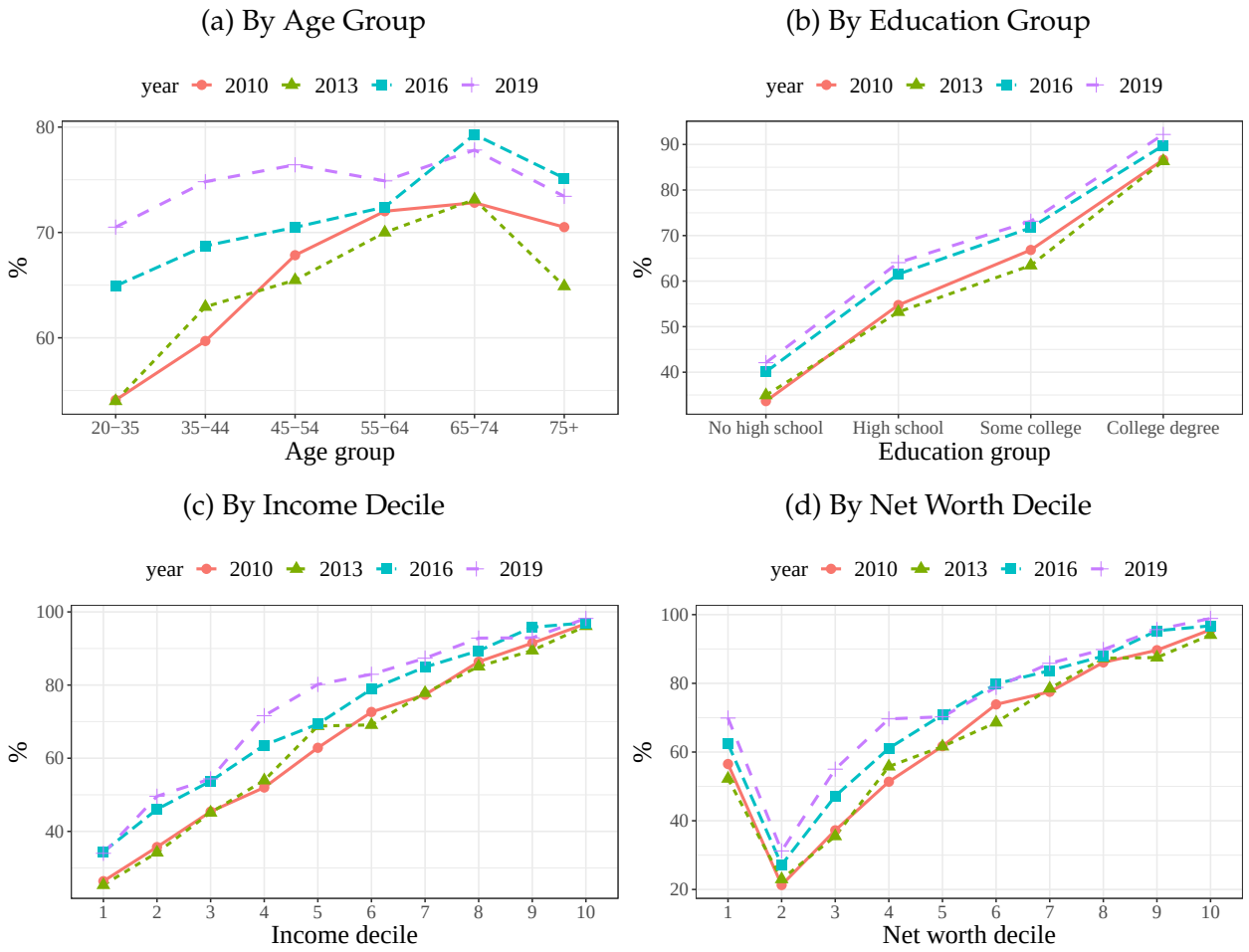
X7560: Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than today, exactly the same as today, or less than today with the money in this account?

B More Results in the SCF

B.1 Credit Card Holders

The results of the fraction of credit card holders from the SCF 2010 to 2019 by age group, education group, income decile, and net worth decile are in Figure 6.

Figure 6: Fraction of Credit Card Holders over the SCF 2010-2019



Notes: All statistics are weighted with the SCF survey weights. The fraction of credit card holders is computed as the fraction of households possessing at least a credit card in each group for each survey year.

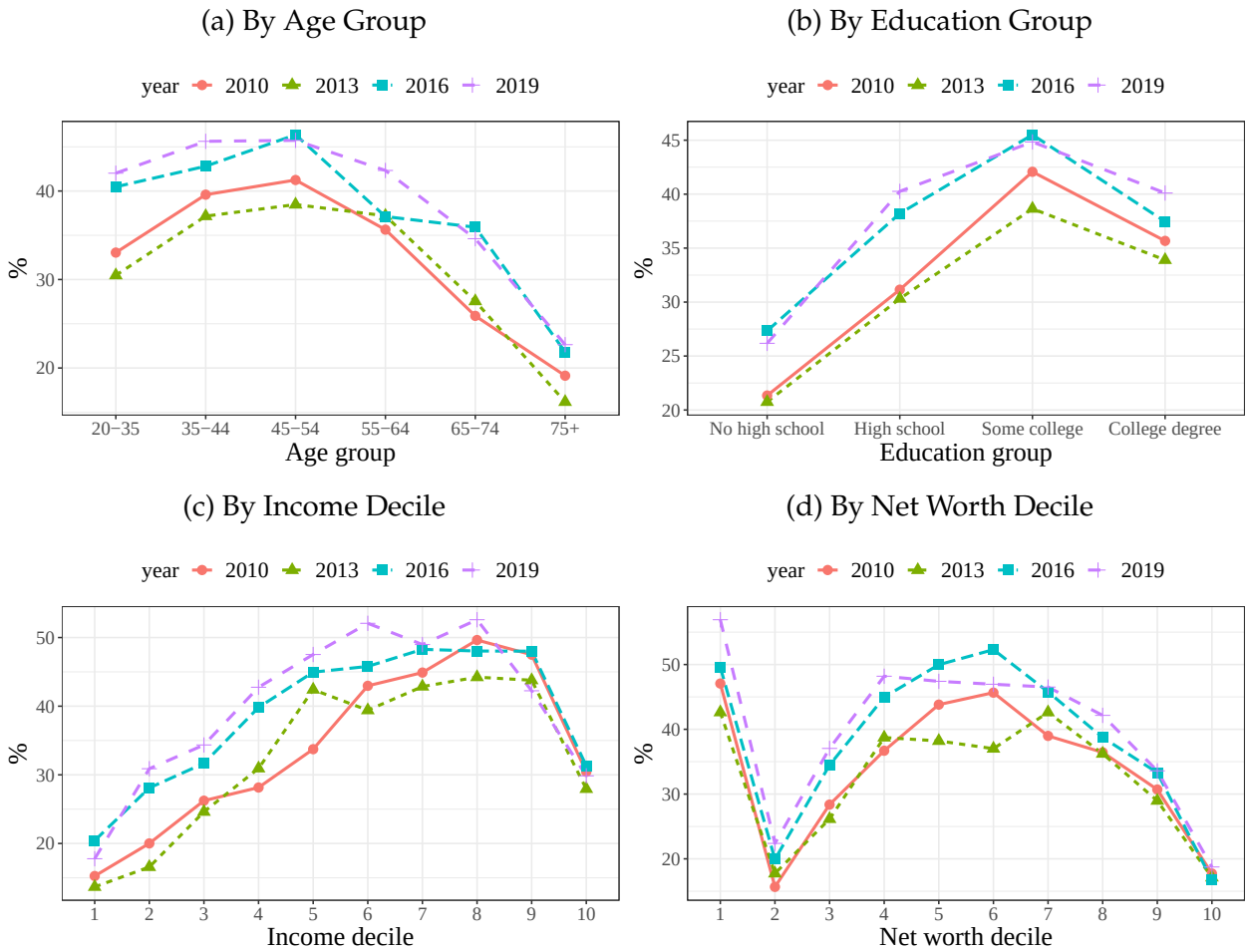
B.2 Credit Card Borrowers

The results of the fraction of credit card borrowers from the SCF 2010 to 2019 by age group, education group, income decile, and net worth decile are in Figure 7.

B.3 Payday Loan Borrowers

The results of the fraction of payday loan borrowers from the SCF 2010 to 2019 by age group, education group, income decile, and net worth decile are in Figure 8.

Figure 7: Fraction of Credit Card Borrowers over the SCF 2010-2019

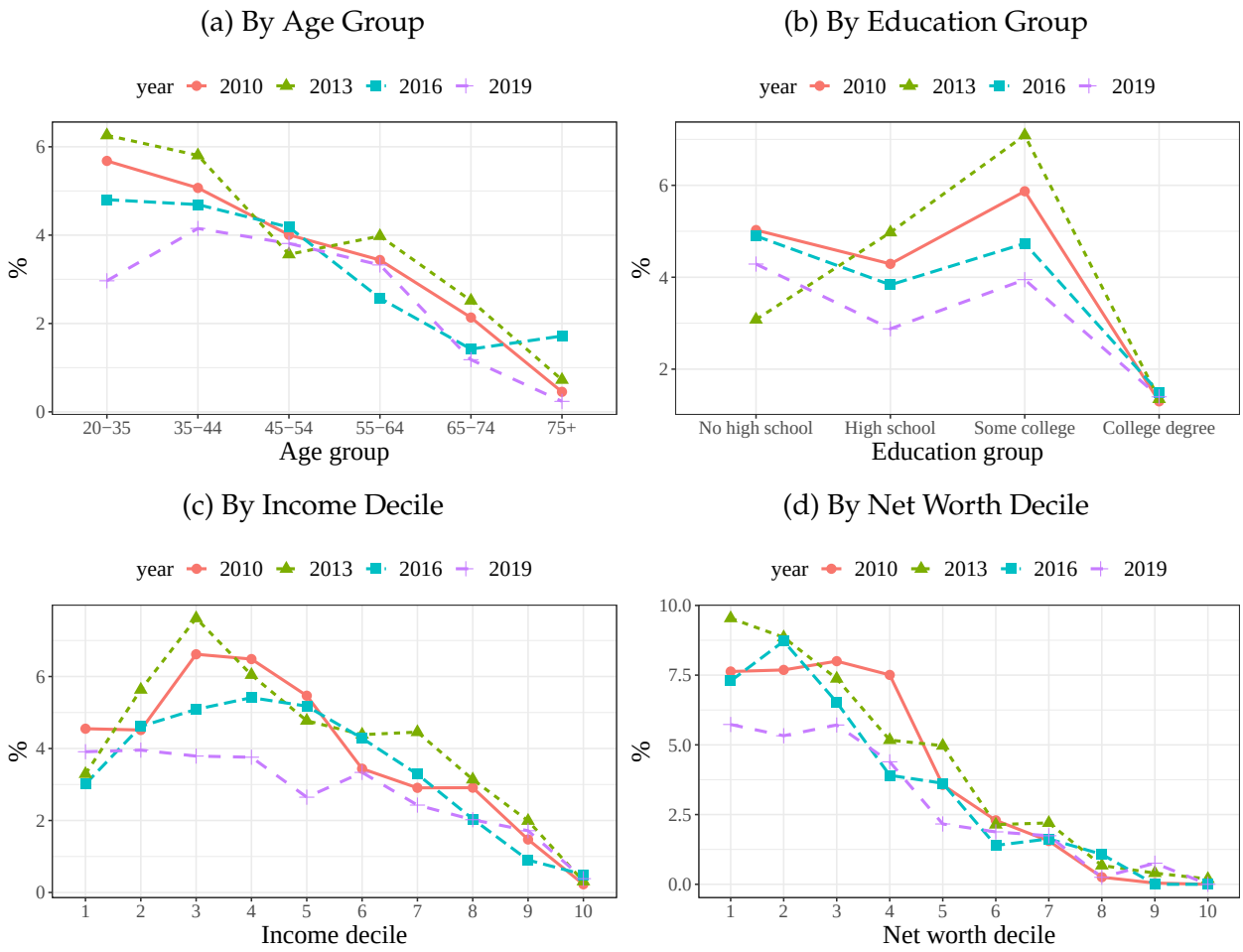


Notes: All statistics are weighted with the SCF survey weights. The fraction of credit card borrowers is computed as the fraction of households with a negative balance on their credit cards in each group for each survey year.

B.4 Net Worth Octile and Duo-Decile

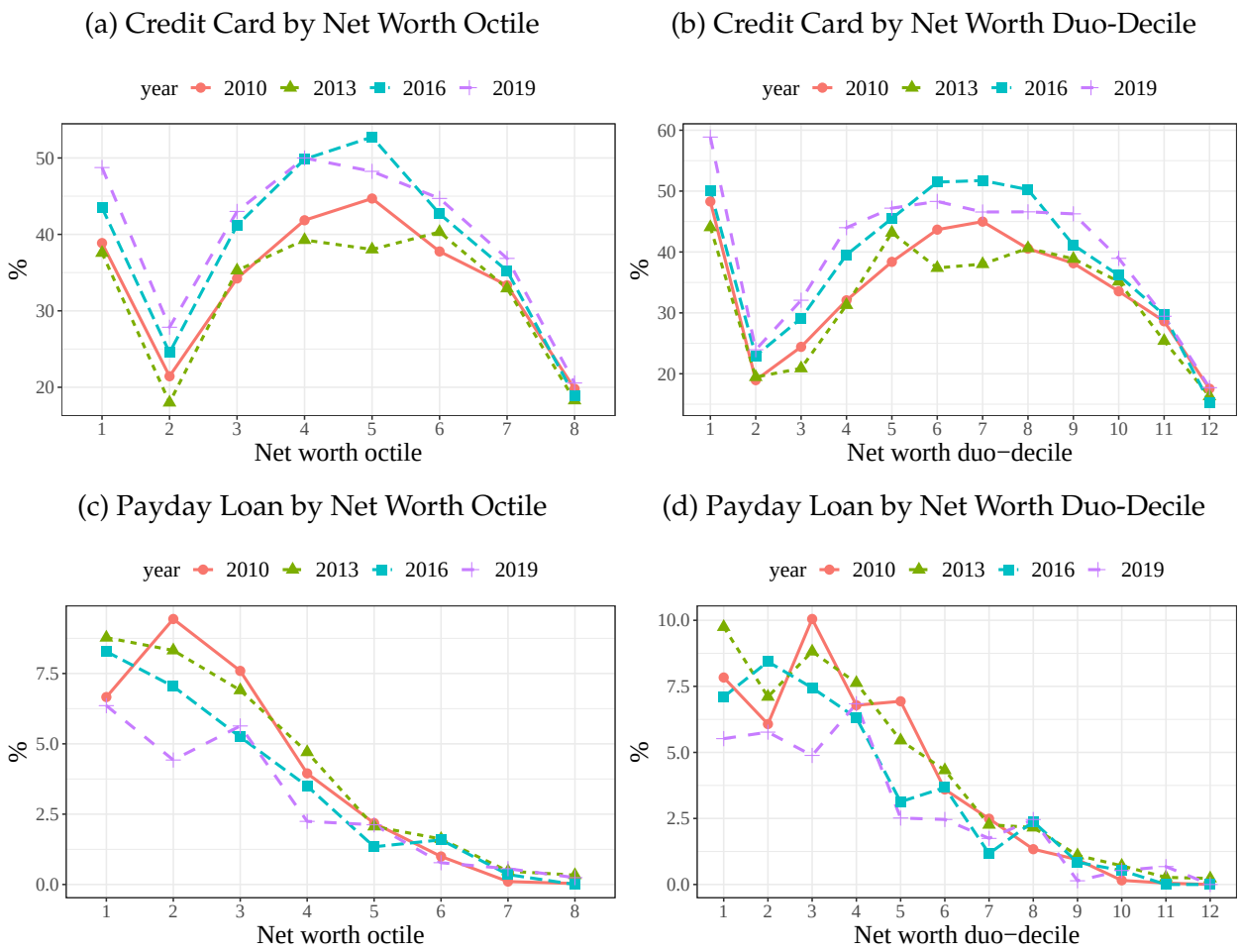
The fractions of credit card and payday loan borrowers for each net worth octile and duo-decile from the SCF 2010 to 2019 are presented in Figure 9. One can observe that the patterns of credit card and payday loan borrowing by net worth decile in Figure 3 are also preserved under the octile and duo-decile of net worth.

Figure 8: Fraction of Payday Loan Borrowers over the SCF 2010-2019



Notes: All statistics are weighted with the SCF survey weights. The fraction of payday loan borrowers is computed as the fraction of households who took up a payday loan over the last year in each group for each survey year.

Figure 9: Fraction of Borrowers by Net Worth over the SCF 2010-2019



Notes: All statistics are weighted with the SCF survey weights. The fraction of credit card borrowers is computed as the fraction of households with a negative balance on their credit cards in each net worth group for each survey year. The fraction of payday loan borrowers is defined as the fraction of households who took up a payday loan over the last year in each net worth group for each survey year.