

BROOKINGS

Report

Revolving debt's challenge to financial health and one way to help consumers pay it off

Jennifer Tescher and Corey Stone Tuesday, June 7, 2022

Executive Summary

Credit cards offer consumers convenience as both a payment vehicle and a source of short-term credit. Revolving credit permits consumers to enjoy immediate purchase of goods and services (in the absence of funds or in lieu of tapping savings), to make large ticket purchases without having to save for them in advance, and to smooth consumption in the face of short-term income and expense shocks. But the nature of revolving credit also makes it easy for some to rack up high balances that can become difficult to pay off.

The roughly half of U.S. families who revolved credit card debt^[1] paid an estimated \$111 billion in fees and interest in 2021. That figure approaches the amount of interest paid by all households on auto loans and leases.^[2] A large subset of credit card revolvers carry their debt for protracted periods, sapping their ability to save, using up available credit lines, and, when excessive card debt leads to delinquency or default, leaving them unable to access less expensive forms of long-term credit.

Policymakers have explored ways to help consumers reduce or avoid protracted credit card indebtedness to help them save on interest expense, build liquidity cushions, and leave more of their credit lines available for emergencies. Regulators in the U.S., U.K., Canada, and Australia have initiated enhanced disclosures, tinkered with choice architectures with respect to card repayment amounts, and experimented with automated repayment options that could help accelerate paydowns.

Yet no national regulator has yet homed in on the core structural problem: low minimum payment amounts. Under the formula prevailing in the U.S., cardholders need only pay 1 percent of the principal balance plus interest and fees to be deemed current on their accounts. Mandating higher minimum payment amounts could help overcome common behavioral and cognitive biases that prolong indebtedness. Today, many borrowers significantly underestimate how long it will take them to pay off their debt if they only pay the minimum, while disclosures that merely illustrate the savings from making larger payments have had little effect.

With interest rates on the rise, large card issuers robustly profitable,^[3] and card delinquency and charge-off rates at historic lows,^[4] now is an opportune time to help the most vulnerable credit card holders deleverage.

The extent of credit card revolving and who revolves

As the most commonly held form of credit, credit cards command an outsized share of consumer spending and borrowing in the U.S.^[5] Eighty-three percent of American adults responding to the Federal Reserve Board's 2020 Survey of Household Decision-making reported holding one or more credit cards, with the average adult holding three.^[6] Collectively, U.S. consumers charged \$2.3 trillion on their credit cards in 2019.^[7]

Credit card holders differ greatly in their behavior. Some are “transactors,” who use cards for convenience, free float, and to gain reward points and cash-back (on a tax-free basis, no less), making their use of their cards personally profitable. They pay off their balances in full each month. Transactor accounts owed just 7 percent of outstanding credit card balances in June of 2020 but were responsible for 40 percent of credit card purchase volume in that month.^[8]

The remainder are “revolvers,” who incur interest by carrying unpaid balances from one month to the next. Of the more than 83 percent of U.S. families that carry credit cards,^[9] a majority revolve at least one of their cards at least some point during the year. The Federal Reserve's latest triennial snapshot of household finances found just over 45 percent of *all*

US families reported revolving balances on one or more of their credit cards at the time of the survey, with the median revolving family owing \$2,700 in unpaid balances and the average revolving family owing \$6,270.^[10] These families paid roughly \$111 billion in interest and fees in 2021.^[11]

Revolving behavior is distributed across the spectrums of wealth and income. While revolvers at the lower ends of the wealth and income spectrums owe less than their wealthier or higher-earning counterparts, they have far less in the way of liquid assets or discretionary income relative to the amounts they owe^[12] (See Table 1).

**Table 1: Revolved Credit Card Balances By Family Income Percentile
—from 2019 SCF**

Income Percentile	Bottom 20%	20 – 39.9%	40 – 59.9%	60 – 79.9%	80 – 89.9%	90 – 100%
Percent Carrying Unpaid Balances	30.5%	45.8%	55.0%	56.8%	45.9%	32.2%
Average Owed	\$3,830	\$4,650	\$4,910	\$6,990	\$9,780	\$12,600
Median Owed	\$1,100	\$1,900	\$2,400	\$3,600	\$5,000	\$6,000
Median Owed/ Median Monthly Income ^[13]	81%	64%	49%	45%	40%	25%
Median Funds in Transaction (Bank) Accounts	\$810	\$2,050	\$4,320	\$10,000	\$20,000	\$70,000

Median

Owed/Median 136% 93% 56% 36% 25% 9%

Liquid Assets

White, Black, and Hispanic families revolved balances on credit cards at roughly similar rates. But this reflects the intersection of two facts: fewer Black and Hispanic families than white families hold credit cards, and those that do revolve balances at substantially higher rates than white families. (See Table 2) Likewise, while Black and Hispanic revolvers owed somewhat less than white revolvers, they were more likely to lack sufficient assets to readily pay off what they owed.

Table 2: Credit Card Revolved Balances and Balances Owed By Family Race & Ethnicity—from 2021 SHED and 2019 SCF

	White Non-Hispanic	Black Non-Hispanic	Hispanic	Other/Asian ^[14]
Share of Adults with Credit Cards ^[15]	87%	72%	76%	92%
Share of Cardholders Carrying Unpaid Balances	44%	73%	64%	30%
Share of All Families Reporting Unpaid Balances	44.5%	47.7%	49.9%	43.7%
Average Owed	\$6,940	\$3,940	\$5,510	\$6,320
Median Owed	\$3,200	\$1,300	\$1,900	\$2,400
Median Owed/ Median Funds in Transaction Accounts	39%	86%	97%	48%

The problem with revolving: Sustained and costly indebtedness

Consumers' revolving credit card balances^[16] accounted for roughly 15 percent of all non-mortgage consumer debt but accounted for the largest share of non-mortgage interest and fees paid. That's because credit card borrowing is much more expensive than auto loans and government student loans, the two largest categories of non-mortgage debt. The interest rate charged on revolved credit card balances at the close of 2020 averaged 16.3 percent,^[17] compared to roughly 5 percent on new car loans,^[18] 7 percent for used car loans, and from 4.6 percent to 7.2 percent on federal student loans.^[19] Moreover, most credit card agreements have variable interest rates leaving consumers exposed to higher interest charges when interest rates rise, as they are currently.

Credit card debt is structured to be repaid flexibly, with low minimum payments, but with the ability to make principal payments of varying sizes with no penalties for repaying balances in full. That makes credit cards useful for dealing with cash shortfalls or unexpected expenses. Tapping credit cards is the most frequent means chosen for dealing with emergency expenses by consumers who can't or won't fund them with cash.^[20]

Some consumers who revolve credit card balances do so only for short periods. Others revolve for sustained periods, even years. Costs mount the longer revolving is prolonged, whether as a result of making minimum-only payments or adding to balances by making additional purchases – or both. Researchers at the Consumer Financial Protection Bureau (CFPB) found the median length of a revolving “episode” to be 9 months for borrowers with prime credit scores and 13 months for borrowers with subprime credit scores. For credit card holders with the lowest credit scores, only one in 20 pays off their balance in a given month. In a significant share of long borrowing episodes, the amount owed increased beyond the amount initially borrowed before being paid down. Overall, the CFPB found: “cardholders that have held onto debt for longer are more likely to remain in debt.”^[21]

Accounts held by “heavy revolvers” (who carried unpaid balances in more than half of all months) accounted for about 40 percent of all outstanding balances over the 18 months beginning in January of 2019 but paid 85 percent of finance charges.^[22]

The most troubling cases of extended credit card borrowing are cardholders who are chronically cash-strapped, struggle to pay their monthly bills, and resort to tapping their cards to fill the gap when cash is short. These borrowers end up carrying balances—and high interest costs—year after year. They may pay down portions of their balances with their tax refunds (aggregate card balances predictably shrink during tax season), but by the end of the year many have racked up debts on new purchases.

A deep dive on the minimum payment formula

Spending on immediate consumption—whether on discretionary items or necessities—bears an important role in how some cardholders slip into long episodes of debt. But cardholders’ slowness to repay their debt when they have cash available is also a factor behind prolonged borrowing. Here is where the minimum payment formula matters.

The minimum payment formula most U.S. card issuers currently use is the greater of 1 percent of end-of-month balances or a floor amount, generally \$25 or \$35. This paves an unhealthily slow path toward repaying credit card debt. An example illustrates the problem: If a cardholder with a \$3,000 balance at an APR of 18 percent made *level* payments equal to the initial minimum payment amount shown on her statement, it would take 5-years and cost \$1,571 in interest. However, most cards do not work like that, as the 1 percent minimum is tied to a fixed percentage of end-of-month balances, which means the minimum principal payment amount *declines* each month^[23] along with balances owed, thus continually slowing the rate of repayment. A \$3,000 credit card balance with a payment floor of \$35 and the same APR would take 11.5 years to pay off by making only minimum payments and cost \$3,154 in interest in this scenario. Using the declining minimum monthly payment more than doubles the time in debt and costs almost twice as much in interest compared to the 5-year installment loan. This example

assumes the interest rate is constant over the 5 years, which is not a guarantee, and no new purchases on the card. Increases in interest rates or additional purchases would both lengthen the period of debt and increase total interest costs.

Low minimum payments didn't always characterize the U.S. credit card industry. In the days of early consumer adoption and rapid growth during the 1980s and early 1990s minimum payment amounts were substantially higher—typically 5 percent outstanding balances plus interest and fees.^[24] As issuers introduced low-rate introductory offers, reward points, and risk-based pricing to compete for the most creditworthy customers, one of the ways the industry made up for lost revenue was by reducing minimum payment requirements, generating more persistent revolving balances and increasing interest charges.

One early card executive, interviewed in a documentary about the industry's evolution, claims credit for persuading issuers to lower the principal portion of minimum payments to 2 percent outstanding balances.^[25] Some issuers took this even further, lowering it to 1 percent and even to below zero, in which payments were of insufficient size to cover all of the interest incurred in a month and resulting in “negative amortization.”

Ironically, today's prevailing formula resulted partly from guidance that federal financial regulators introduced in 2003 to put an end to negatively amortizing credit. The guidance, issued on grounds of safety and soundness for the banks offering the credit cards, required issuers to establish “minimum payments that will amortize the current balance over a reasonable period of time.”^[26] Payments of 1 percent of balances plus interest and fees weren't mandated explicitly, but for better or worse, they have generally been accepted by regulators as meeting the “reasonable period” standard.

More recently, a disclosure component of the Credit CARD Act of 2009 was intended to encourage consumers to pay more than the minimum. It required issuers to include in monthly statements a table showing the length of time it would take to pay off the then-existing balance and the total cost if the consumer consistently paid only the minimum, as

well as an alternative calculation with a monthly payment set at a level to pay off the balance in three years. This mandated disclosure seems to have had only a modest effect on borrowers' repayment behavior. ^[27]

How low minimum payments may exploit behavioral and cognitive biases

Researchers have sought to better understand what leads some card revolvers to make only the minimum payments when doing so leads to protracted indebtedness and interest costs. Some credit card borrowers are slow to pay down their debt because they are cash-constrained. And revolvers at the low ends of the wealth and income spectrums are the ones most likely to need to expand their borrowing in the face of unanticipated expenses or income loss. But many heavy revolvers are not so constrained, at least not all of the time.

Cognitive and behavioral factors also limit how much and how quickly borrowers repay—in some cases, despite strong stated intentions by borrowers to make paying down their debt a priority.^[28] These factors help explain why mandated disclosures have had little effect on payment behavior.

The most important behavioral bias appears to be borrowers' "anchoring" to the minimum payment amount that issuers provide and viewing that as a cue to what they ought to pay. Large portions of revolvers—about three in 10 of all credit card accounts and as many as half of all card revolvers—make monthly debt repayments regularly at or near the minimum payment amount.^[29] A large portion of payers who were anchoring their payment amounts to the minimum did so even when it was demonstrated that they had sufficient extra liquidity to pay down their card balances more quickly.^[30]

Anchoring may be exacerbated by deep misperceptions on the part of some consumers about how long it takes to amortize card debt. A survey of a subset of U.K. cardholders that had enrolled in automatic monthly payments set at the minimum payment amount were asked to estimate the time it would take to pay off a hypothetical loan balance if they were only to repay the minimum each month and spend no more on the card. Ninety-four

percent estimated a shorter period than the correct answer (18 years and 9 months), and 59 percent were wildly off, estimating pay-off within 5 years, with 34 percent estimating they would be debt free within 3 years.^[31]

Consumers may underestimate how much of each card payment goes to interest rather than to principal. This may lead them to de-prioritize credit card payments relative to payments on other debts (like mortgages or auto loans) where payments are larger but interest costs are less. For example, the interest portion of the first payment due on a \$15,000, 5-year car loan at an APR of 5 percent (\$62) is less than that on a credit card balance of \$5,000 at an APR of 18 percent (\$75), even though the entire payment amount on the former is larger than the latter (\$283 vs. \$125).

Another such behavioral factor is over-optimism: Many expect not to borrow on their credit card accounts but end up carrying balances anyway, and then when they do borrow, they expect to pay down their debt more quickly than they do in actuality. Over optimism can also lead to selecting cards with higher interest rates relative to fees or rewards based on the false predicate of not being likely to revolve debt.^[32]

The “endowment effect” is another such bias. One study found that unless card revolvers have significant household savings, many will be reluctant to use large portions of their available cash to pay off card debt because they want to retain some cash on hand for emergencies, even when faster paydowns would save them money that could replenish their savings and free up credit that they could tap should emergencies arise.^[33]

Solution: Raise the minimum payment formula

To help revolving cardholders pay down their debt more quickly, increase the minimum payment formula. There are a number of approaches issuers could take to implement this. One would be to raise the principal portion in the prevailing formula as a percentage of end-of-statement-period-balances. For example, raising the formula from 1 percent to 2 percent (i.e., back to where it was in the late 1990s) would shorten the time to pay off a \$3,000 balance at 18 percent interest from 11.5 years to 7.8 years and save \$1,339 in interest for someone making only the minimum payments and no new purchases. The

province of Quebec adopted this approach more aggressively when the provincial legislature passed a law to gradually raise its prevailing minimum payment rate from 2 percent to 5 percent of principal by 2025.^[34]

There are drawbacks to this percentage approach. Because issuers are required to assess a consumer's ability to make the required minimum payments at full credit-line utilization before issuing a credit card account, changing the minimum formula in this way could reduce access to credit among some who need it. At the same time, for those currently paying the minimum payment because that is all they can afford, bumping the minimum payment to 2 percent (or more) of the outstanding balance could strain their budgets and increase defaults.^[35] A final drawback to a minimum percentage-of-balances formula, whether set at 1, 2, or 5 percent, is that payments decline with balances and thus prolong time in debt as compared to fixed installments.

An approach that would eliminate declining payments would be to set the minimum principal portion of payments 1 percent of the total credit *line* rather than the month-end balance. This would hold the principal portion of minimum payments constant (assuming no new charges) and at an amount equal to that which was found to be affordable to the borrower at the time of account opening. This approach would affect borrowers that were at or close to full utilization the least. Conversely, it would affect borrowers tapping their credit lines for small amounts the most, encouraging them to pay off their debts quickly rather than allowing them to accumulate.

A third approach is to treat each new purchase as if the consumer were taking out a new installment loan with a fixed term (with the monthly minimum payment equaling the sum of the installments due). This is the approach taken by Upgrade, the start-up card issuer launched in 2018.^[36] It harkens back to installment loans with fixed payment terms that once prevailed before credit cards came to dominate retail sales finance. Chase, American Express, and Citibank, among other credit card offers, now offer their card customers a similar ability to convert existing balances or new purchases to installment structures, suggesting this approach may appeal to consumers who want to increase their likelihood of paying down open-ended revolving credit in a timely way. Similarly, the recent growth of “By Now, Pay Later” products, which enable consumers to pay off purchases in a small

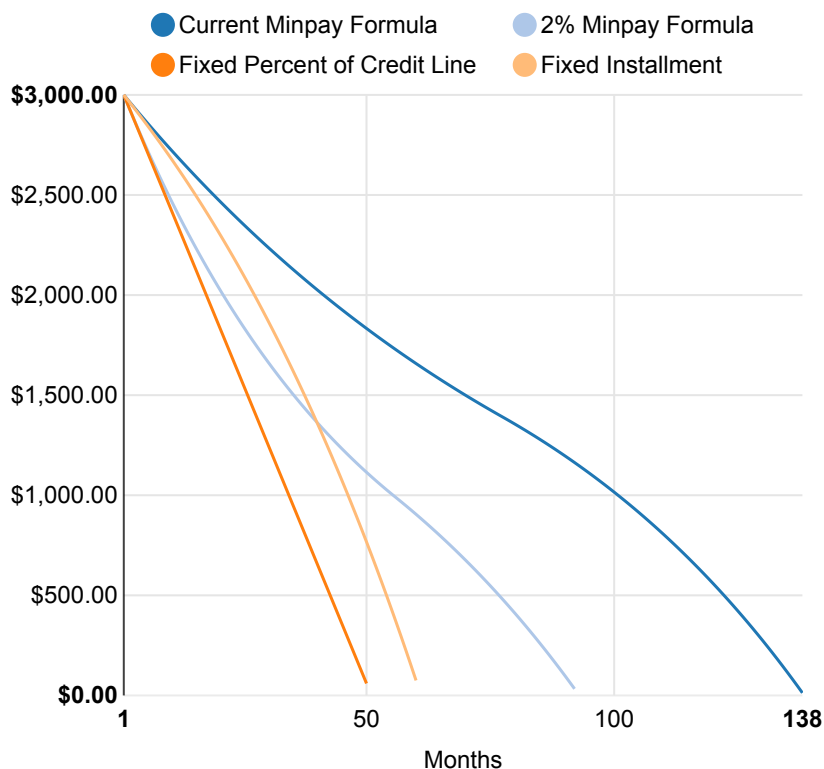
number (typically four) of fixed installments, may reflect some consumers' preference for fixed payments and terms, although it is unclear to what extent consumers are putting their BNPL installment payments on their credit card and revolving those balances.

Table 3 and the accompanying graph illustrate the interest costs and time-in-debt were a consumer to pay just the minimum under the each of these approaches against a \$3,000 debt with no new purchases.

Table 3: Cost and Term Length of Carrying \$3,000 in Revolving Credit Card Debt at 18% APR While Making Only the Minimum Payment

Minimum Payment Formula:	Prevailing Formula: (Greater of \$35 or Interest + 1% of EOM Balance)	2X Prevailing Formula (Interest + 2% of EOM Balance)	Minimum = 1% of Credit Line (e.g. of \$6,000) + Interest	Fixed Installments Tied to Each Purchase Amount
Initial Pmt. Amt.	\$75	\$105	\$95	\$76.18
Term to Pay In Full	11.5 Years	7.8 Years	4.25 Years	5.0 Years
Total Interest Expense	\$3,154	\$1,815	\$1,373	\$1,600
Savings vs. Prevailing Formula		\$1,339	\$1,781	\$1,554

Balance Trajectories Paying off \$3,000 of Credit Card Debt Under Different Minimum Payment Formulas



A path to regulatory action

It is unlikely issuers would adopt any of these approaches without some regulatory pressure, given the close tie between interest revenue and time-in-debt. Both the federal prudential bank regulators and the CFPB have authority to weigh in on this question; they should use it.

Roughly half^[37] of credit card revolvers make monthly payments at or close to the minimum amounts and thus account for the majority of revolving credit card balances at any given time. For these consumers the current prevailing minimum payment formula simply does not meet the “reasonable period” standard regulators set under their 2003 guidance. Interventions to raise minimums could be further justified on safety-and-soundness grounds: Faster debt paydown by consumers reduces risk by encouraging increased consumer savings, expanding households’ unused credit, enhancing their resilience in the face of economic shocks, and possibly lowering credit losses in the event of cyclical downturns.

Separately, the CFPB could invoke its authority to prevent unfair, deceptive, and abusive acts and practices (“UDAAPs”) to alter issuers’ minimum payment practices. The justification would be that requiring consumers to make only the current low minimum payment amounts takes unreasonable advantage of their lack of understanding of the costs of card revolving. This falls under the Bureau’s authority to prohibit abusive acts or practices. Further evidence to support regulatory action in this space is the failure of disclosures to have a meaningful impact on payment amounts as demonstrated through the disclosure required in the CARD Act.

Both the prudential regulators and the CFPB should intervene in ways that maximize chances of reducing high cost card indebtedness and minimize unintended consequences. The greatest uncertainty stems from the fact that mandating higher minimum credit card payment amounts would not prevent consumers from adding back to their debt by making new card purchases. That outcome might be especially likely when using the percentage-of-balance approach to increasing payment amounts: The most liquidity-constrained and over-extended borrowers could experience reduced flexibility and see their payments absorb larger portions of discretionary income, possibly increasing the need to reborrow. (However, such borrowers might be least affected if minimum payment amounts were tied to, say, 1 percent of their credit lines: i.e., cardholders who were closest to utilizing all of their available credit would see their minimum payment amounts change little from the prevailing 1-percent-of-balance formula.)

Research is mixed as to what outcomes to expect. On the one hand, a recent American study found that consumers paid down their debts more quickly when portions of their debt were associated with specific purchases.^[38] On the other hand, a Financial Conduct Authority experiment in the U.K. found that consumers who accepted an option to set automated card repayments at higher levels did not reduce their overall debt as compared to a control group whose payments were set at the minimum.^[39] By making the relationship between spending and monthly payment amounts more salient, the installment loan option may result in sustained reductions in card spending as well as debt. Quebec’s new law offers another opportunity to assess the impacts of increasing minimum payments.

Given that the research is mixed and that issuer pushback to mandated changes will be vigorous, perhaps the best approach would be for regulators to require issuers to adopt new choice architectures. For example, they could require that when opening a new account and at periodic intervals thereafter, consumers select a minimum payment formula based on the time and cost it would take them to pay down the account at full utilization and with the current minimum set as a floor. This would enable consumers to set guardrails for themselves and might be more effective at reducing indebtedness over the long term.

Mandating such a “forced choice” would parallel the approach the Federal Reserve Board took with respect to debit card overdraft when it restricted banks from charging overdrafting fees on debit card transactions unless the banks provided consumers with a choice and opted into debit card overdraft.^[40] Such choice architecture likewise would follow the recommendations of leading behavioral scientists who suggest helping consumers overcome behavioral biases without overriding their preferences.^[41] Even if the approach failed to reduce long-term indebtedness it would, at a minimum, provide valuable new evidence and insights to consumers’ preferences and subsequent efforts to reduce indebtedness.

Whether it is by issuers creating new payment default options, by regulators mandating new choice architectures, or by simply prescribing a new minimum payment formula, it is time for our financial system to change minimum payment amounts. The link between low minimums and prolonged indebtedness—and compromised financial health—is quite clear.

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Footnotes

1. 1 Federal Reserve Board. “2019 Survey of Consumer Finance Chartbook.” November 4, 2021. https://www.federalreserve.gov/econres/scf/dataviz/scf/chart/#series:Credit_Card_Balances;demographic:all;population:1;units:have.
2. 2 Financial Health Network. “2022 Financial Health Spend Report.” April 28, 2022. <https://finhealthnetwork.org/research/finhealth-spend-report-2022/>.
3. 3 Annualized return on assets of credit card banks was 5.32% for credit card banks in 2021 vs. ROA of 1.23% for all federally insured banks in that year. Table III-A in: Federal Deposit Insurance Corporation. “Quarterly Banking Profile: Fourth Quarter 2021.” 2022. <https://www.fdic.gov/analysis/quarterly-banking-profile/fdic-quarterly/2022-vol16-1/fdic-v16n1-4q2021.pdf>.
4. 4 Delinquency rates were about 2.7% of outstanding card balances pre-pandemic, dropping to 1.7% by q3, 2021. These statistics understate the percentages of accounts that are delinquent and of cardholders or households who are delinquent on one or more of their cards: Federal Reserve Economic Data. “Delinquency Rate on Credit Card Loans, All Commercial Banks.” May 20, 2022. <https://fred.stlouisfed.org/series/DRCCLACBS>.
5. 5 As of 2012, revolving credit card accounts represented nearly 60 percent of consumer trade lines on US consumers’ credit reports, and thus constituted the most important means by which consumers build their credit histories on which credit scores and lenders’ assessments of creditworthiness are based: Consumer Financial Protection Bureau. “Key Dimensions and Processes in the U.S. Credit Reporting System: A review of how the nation’s largest credit bureaus manage consumer data.” December 2012. https://files.consumerfinance.gov/f/201212_cfpb_credit-reporting-white-paper.pdf.
6. 6 Includes both general purpose cards and store cards: Federal Reserve. “Economic Well-Being of U.S. Households in 2020 - May 2021.” May 24, 2022. <https://www.federalreserve.gov/publications/2021-economic-well-being-of-us-households-in-2020-banking-and-credit.htm>.
7. 7 Consumer Financial Protection Bureau. “The Consumer Credit Card Market.” Accessed June 1, 2022. https://files.consumerfinance.gov/f/documents/cfpb_consumer-credit-card-market-report_2021.pdf.
8. 8 Characterizing individual credit card accounts (as opposed to cardholders), roughly 40% of accounts behave as transactors, 30% are “light revolvers,” whose cardholder rolled over debt in 6 or fewer months of the preceding 12, and 40% are “heavy revolvers,” whose cardholders paid interest in more than 6 months of the year and accounted for 75% of outstanding credit card balances: Adams, Robert M., and Vitaly M. Bord. “The Effects of the COVID-19 Shutdown on the Consumer Credit Card Market: Revolvers versus Transactors.” Federal Reserve, October 21, 2020. <https://doi.org/10.17016/2380-7172.2792>.
9. 9 83% of US adults have one or more credit cards and 50% of adults carried an unpaid balance at least once in last 12 months. Family or household statistics for both card ownership and revolving are likely higher as a revolving family need only one family member to hold a card and revolve: Federal Reserve. “Economic Well-Being of U.S. Households in 2020 – May 2021.” May 24, 2022. <https://www.federalreserve.gov/publications/2021-economic-well-being-of-us-households-in-2020-banking-and-credit.htm>.
10. 10 2019 SCF supra. (These self-reported statistics likely understate both the extent of revolving and amounts owed, as respondents are often reluctant to disclose behavior that might be viewed negatively.) 45% of survey respondents report carrying a balance. This percentage has fluctuated over the last two decades from a high of 46% of families in 2007 just prior to the 2008-9 financial crisis, and bottoming out at 38% in the 2013 SCF. The percentage of credit card accounts that revolve is considerably higher—approximately 60% in recent years according the CFPB’s 2021 Credit Card Market Report. The percentage of balances that revolve is higher still.
11. 11 Financial Health Network 2022 Spend Study supra. This figure is down roughly 10% from the prior year and likely reflects that fact that some households experienced both spending constraints and government cash infusions that enabled them to pay down some of their card debt.
12. 12 In an earlier analysis, Mann analyzed credit card borrowing patterns among LMI households using the underlying SCF data in 2004. Mann, Ronald J. “Patterns of Credit Card Use Among Low and Moderate Income Households.” Columbia University, Accessed June 1, 2022. <http://www.columbia.edu/~mr2651/CreditCardsforthePoor.pdf>.

13. 13 Statistics reflect median monthly income and median liquid assets for all families in each income percentile, including those that do not hold revolving debt.
14. 14 Headings are those used by the Survey of Consumer Finance. The “Other” category in the Survey of Consumer Finance “consists of a very racially/ethnically diverse set of families, including those identifying as Asian, American Indian, Alaska Native, Native Hawaiian, Pacific Islander, other race, and all respondents reporting more than one racial identification.” See: Bhutta, et al *supra*. In contrast, the Survey of Household Economics and Decisioning (the source for the first two rows of Table 2) categorizes adults as white, Black, Hispanic, or Asian.
15. 15 Top two rows are from SHED *supra* and reflect survey results for individual adult respondents. Rows further down represent household responses to the SCF *supra*.
16. 16 About \$655 billion out of a total of \$975 billion as of the end of 2020: Federal Reserve Board. “Consumer Credit – G-19.” May 6, 2022. <https://www.federalreserve.gov/releases/g19/current/>.
17. 17 *Ibid*.
18. 18 *Ibid*.
19. 19 *Ibid*.
20. 20 Among respondents to an annual Federal Reserve survey asking consumers how they would cover an unexpected \$400 expense with cash, borrowing on credit cards was the most frequent answer after paying with cash. In 2020 64% of all respondents said they could pay with cash. 15% would pay with a credit card. At 9%, borrowing from family or friends was the 3rd most preferred emergency funding source: Federal Reserve Board. “Economic Well-Being of U.S. Households in 2020 - May 2021.” Accessed June 1, 2022. <https://www.federalreserve.gov/publications/2021-economic-well-being-of-us-households-in-2020-dealing-with-unexpected-expenses.htm>. See also: Traub, Amy and Catherine Ruetschlin. “The Plastic Safety Net: 2012 national Survey on Credit Card Debt of Low- and Middle-Income Households.” Demos, May 22, 2013. <https://www.demos.org/research/plastic-safety-net-2012-national-survey-credit-card-debt-low-and-middle-income-households>. For example, among surveyed households carrying credit card debt, 47% of and 45% of households attributed portions of their current credit card debt to medical expenses and car repairs, respectively.
21. 21 Consumer Financial Protection Bureau Office of Research. “Data Point: Credit Card Revolvers.” July 2019. https://files.consumerfinance.gov/f/documents/bcfp_data-point_credit-card-revolvers.pdf.
22. 22 Adams and Bord, *supra*.
23. 23 This is also true of the 3-year payment amount mandated under the CARD Act disclosure.
24. 24 PBS Frontline. “Secret History of the Credit Card.” Accessed June 1, 2022. <https://www.pbs.org/wgbh/pages/frontline/shows/credit/etc/script.html>.
25. 25 *Ibid*. See also: Senate Committee on Banking, Housing, and Urban Affairs, 109th U.S. Congress. “Testimony of Travis B. Plunkett, Legislative Director of the Consumer Federation of America, Examining the Current Legal and Regulatory Requirements and Industry Practices for Credit Card Issuers With Respect to Consumer Disclosures and Marketing Efforts.” May, 17, 2005. <http://banking.senate.gov/index.cfm?Fuseaction=Hearings.Detail&hearingID=154>.
26. 26 Office of the Comptroller of the Currency, et. al. “Credit Card Lending: Account Management and Loss Allowance Guidance.” January 8, 2003. <https://www.federalreserve.gov/boarddocs/press/bcreg/2003/20030108/attachment.pdf>.
27. 27 One effort to measure the impact of the disclosures found that fewer than 1% of accounts adopted the alternative, higher payment included on statements. One reason the authors give for the low impact is that growing portions of cardholders receive their credit card bills—and make payments on them—online. They are thus unlikely to view the suggested higher payment amount that is mandated on the paper statement or that requires clicking through to its electronic equivalent: Wang, Jialan and Benjamin J. Keys. “Minimum Payments and Debt Paydown in Consumer Credit Cards.” NBER Working Paper 22742, October 2016. <http://www.nber.org/papers/w22742>. In another paper the same authors found that while a few consumers increased their regular payment amounts, others who were making larger-than-the-minimum payments actually reduced their payment amounts: Wang, Jialan, and Benjamin J. Keys. “Perverse Nudges: Minimum Payments and Debt Paydown in Consumer Credit Cards.” Wharton Public Policy Initiative Issue Briefs, 2014. <https://repository.upenn.edu/pennwhartonppi/25>.
28. 28 In answer to the question “Which of the below areas will be your biggest financial priority over the next 6 months?” paying off debt was chosen most frequently: by 36% of respondents in December, 2020 survey

- and 28% in March 2021 survey: Marcus by Goldman Sachs. “Survey Results: The Consumer Sentiment Study.” April 12, 2021. <https://www.marcus.com/us/en/media/blogs/consumer-sentiment-study>.
29. 29 Wang and Keys, NBER Working Paper *supra* at 3.
30. 30 Ibid. Also: Guttman-Kenney, Benedict, Jesse Leary and Neil Stewart. “Occasional Paper No. 43: Weighing Anchor on Credit Card Debt.” UK Financial Conduct Authority, July 26, 2018. <https://www.fca.org.uk/publications/occasional-papers/occasional-paper-no-43-weighing-anchor-credit-card-debt>.
31. 31 Adams, Paul, Benedict Guttman-Kenney, Lucy Hayes, Stefan Hunt, David Laibson, and Neil Stewart. “Occasional Paper No. 44: The Conflict Between Consumer Intentions, Beliefs, and Actions to Pay Down Credit Card Debt.” UK Financial Conduct Authority, July 26, 2018. <https://www.fca.org.uk/publications/occasional-papers/occasional-paper-no-44-conflict-between-consumer-intentions-beliefs-and-actions-pay-down-credit>.
32. 32 One study of how consumers choose from among credit card offers with different interest rates and annual fees found that consumers who had unrealistic beliefs about themselves and their capabilities were both more likely to end up selecting a card that had a low or no annual fee and a higher interest rate, based on the unrealistic assumption that they would not end up revolving debt: Yang, Sha, Livia Markoczy, and Min Qui. “Unrealistic Optimism in Consumer Credit Card Adoption.” *Journal of Economic Psychology* 28, no. 2 (April 2007): 170 – 185. <https://www.sciencedirect.com/science/article/abs/pii/S0167487006000444>.
33. 33 Middlewood, Brianna, Caroline Ratcliffe, and Grant Guillory. “Balancing Savings and Debt: Findings from an Online Experiment.” Consumer Financial Protection Bureau Office of Research, January 2021. https://files.consumerfinance.gov/f/documents/cfpb_balancing-savings-and-debt_report_2021-01.pdf.
34. 34 Reuters. “Quebec rolls out new credit card rules aimed at lowering high household debt.” August 2, 2019. <https://www.reuters.com/article/canada-economy-consumercredit/quebec-rolls-out-new-credit-card-rules-aimed-at-lowering-high-household-debt-idUSL2N24Y14P>.
35. 35 The authors have heard from some industry experts that when federal regulators issued guidance 2003 that caused some issuers to increase their minimum payment amounts, there was a short term spike in defaults. However, we have been unable to find evidence to this effect.
36. 36 Rathnew, Sara. “Upgrade Cash Rewards Card Review: Charge Like a Credit Card, Pay Off Like a Loan.” Nerdwallet, May 18, 2022. <https://www.nerdwallet.com/reviews/credit-cards/upgrade-card>.
37. 37 It is difficult to assess from available data how many families who revolve one or more credit cards are consistently making payments at or near the minimum. Wang and Keys NBER Working Paper *supra* (at 3) using account level data from the CFPB’s Credit Card Database find “29% of all credit card accounts “pay exactly or close to (i.e. within \$50) of the minimum in most months. The remainder either pay in full most of the time or make a mix of intermediate payment amounts.” Given the CFPB’s finding (also using account-level data from the CCDB) that roughly two-thirds of active credit card accounts revolve a balance at one point during the year (“DataPoint: Credit Card Revolvers” *supra* at 6), minimum payers would represent just under half of revolving accounts. Adams and Bord *supra* (see footnote 9) find about 70% of card accounts revolve at some point during the year but that the 40% of accounts (and 57% of all revolvers) who are “heavy revolvers” (i.e. carry balances for more than 6 months of the past 12) and who account for 75% of all card balances and the vast majority of revolved balances, are likely heavily comprised of minimum-payers. Based on some reasonable assumptions, it is likely that a majority of households that revolve debt at some point during the year are minimum payers on at least one of their accounts (as the average household holds multiple accounts). These households likely hold the majority of “heavy revolver” accounts and thus account for the majority of credit card balances revolved and of fees and interest paid.
38. 38 Norton, Michael, Grant Donnelly, Cait Lamberton, Stephen Bush, and Zoe Chance. “‘Repayment-by-Purchase’ Helps Consumers to Reduce Credit Card Debt,” Harvard Business School Working Paper, December 6, 2020. <https://hbswk.hbs.edu/item/repayment-by-purchase-helps-consumers-to-reduce-credit-card-debt>.
39. 39 FCA Occasional Paper 44 *supra*.
40. 40 Federal Reserve Board Press Release. “Federal Reserve announces final rules prohibiting institutions from charging fees for overdrafts on ATM and one-time debit card transactions.” November 12, 2009. <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20091112a.htm>.

41. 41 Thaler, Richard H. and Cass R. Sunstein. *Nudge*. Yale University Press: 2008.