Crypto Exposure and Household Financial Conditions

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Are crypto asset gains leading to households taking on more leverage? This brief provides an overview of the potential for systemic financial risks to arise from changes in household balance sheets due to crypto exposure. Using Internal Revenue Service data on households reporting crypto assets when filing annual taxes, the authors document that crypto exposure increased almost three times from 2020 to 2021, the most recent years of publicly available tax data. Zip codes with the highest crypto exposure, as measured in 2021, saw the largest increase in mortgage and auto loan originations and balances over subsequent years. The increase in borrowing is especially striking among low-income households in high-crypto exposure areas, where the share of consumers with mortgages increased by over 250%, and average mortgage balances increased by over 150% between 2020 and 2024. However, as of Q1 2024, increased use of leverage among these groups has not resulted in higher delinquency rates.

1. INTRODUCTION

As the digital asset market has grown from a total market capitalization of $10 billion in 2014 to $2.66 trillion as of Q1 2024, household exposure has increased in concert.[2] The increasing activity among retail investors has generated concerns among policy-makers and regulators because of the extreme volatility of crypto asset prices, extensive use of leverage, and minimal legal recourse or consumer protections associated with crypto assets.[3] Recent research has found that crypto investors resemble the general population and has documented increased discretionary consumption and housing expenditure patterns following digital asset sales.[4] However, little is known about how

crypto asset markets affect household debt balances and delinquencies.

This brief analyzes the relationship between households' crypto asset market activity and household debt in the form of mortgages, auto loans, and credit card balances to shed light on potential financial stability risks. The connections between crypto-asset markets and household financial conditions may be important if gains in crypto lead to increases in leverage in the household sector. This can create financial vulnerabilities if crypto prices crash. Studying mortgage debt is important because outstanding balances are large at $17.69 trillion.[5] An economic or asset market downturn could have worrying spillovers through the mortgage market via rising defaults or foreclosures.[6]

Auto and credit card debt are also of interest as these debt segments are large and relatively risky, with $1.6 and $1.1 trillion in outstanding debt and 4.41% and 10.69% delinquency rates, respectively. Banks and nonbank financial institutions have large exposures to these consumer debt segments.[7] They have consumer debt on their balance sheets and are indirectly exposed through loans to entities that originate consumer debt or investments in asset-backed securities collateralized by consumer debt.[8] Additionally, delinquencies in these consumer debt segments are potential early indicators of distress, particularly for young low-income households.[9]

The first part of the brief documents the distribution of crypto exposures across geographic regions and income levels using the latest publicly available Internal Revenue Service (IRS) data. The adoption of crypto assets increased sharply during the COVID-19 pandemic, with 4.1% of tax filers reporting a crypto-taxable event in 2021 compared to just 1.4% in 2020. The data on tax filers are consistent with estimates from prior research, which found that more than 3% of individuals in the United States held crypto assets in 2021.[4] This growth highlights that crypto assets have become a substantial component of household wealth, presenting new risks and vulnerabilities for the financial system.

The second part of the brief looks at how debt levels and delinquency rates have changed for locations based on their exposure to crypto assets. We generate a definition of crypto exposure based on the most recent 2021 IRS Tax Filing data using taxable events as an indicator and hold this measure fixed for households. The main analysis then tracks the change from 2020 to 2024 in household financial conditions using credit data and compares households in areas with high versus low crypto exposure. This analysis shows that household debt growth is positively correlated with crypto exposure, with the highest mortgage debt growth concentrated among low-income households. So far, delinquencies have not increased in areas with higher crypto exposure.

2. MEASURING CRYPTO EXPOSURE FOR HOUSEHOLDS

This brief uses two primary sources of data. The first dataset is publicly available zip code-level summaries of tax returns from the IRS, using the most recent release on 2021 tax returns. This dataset is released annually and provides total counts of tax filers, dollar amounts of reported income, tax credits, and deductions for each zip code. Importantly, the number of tax filers reporting a taxable event involving crypto assets is separately reported. Selling crypto assets or making a purchase with crypto assets triggers a taxable event, requiring individuals to report capital gains or losses. Crypto assets received as mining rewards or as payment to a business are taxed as income. This dataset provides the near-universe of tax filers that report crypto asset tax events.[10] The data are further broken down within zip code by the tax filers' gross income: low-income (less than $50 thousand per year), middle-income (between $50-$100 thousand per year), and high-income (greater than $100 thousand per year).

The main analysis merges the 2021 IRS data with Equifax's consumer credit panel, which includes mortgage and consumer finance accounts for a representative sample of U.S. consumers. We focus on the period from January 2020 to January 2024. To ensure that the pre-period does not coincide with the period where we measure crypto exposure, the analysis uses 2020 as the baseline year for households in the Equifax data. This is crucial because household debt take-up may happen concurrently with crypto tax events. Comparisons are fixed to the month of January to avoid seasonality in household debt. In addition, January 2020 has the added benefit of being slightly before the COVID-19 pandemic, allowing us to comment on the run-up in household debt during COVID-19 and how that correlates with crypto exposure.

We group consumer accounts based on their zip code and reported income at the beginning of the tax year to match the IRS income categories. We then track those same accounts over the next several years. Merging the credit panel with the IRS data on crypto tax events allows us to examine behavior over time for a constant set of zip code-by-income group categories.[11] We focus on three types of household debt:

mortgage-related debt, auto debt, and bank card debt. The latter is primarily credit card debt. The outcomes we study are changes in average mortgage, auto, and card debt balances; changes in the share of consumers with active mortgages and auto loans; and changes in 30+ day delinquency rates on each type of debt.

2.1 Crypto Exposure in the IRS Data

Before turning to the main analysis, we present several facts about crypto exposure. **Figure 1a** shows that, on average, reported tax events involving cryptocurrencies are strongly positively related to household income. This relationship is consistent with similar relationships between income and other investment activity. For example, high-income households are three times more likely to participate in the stock market.[12]

Figure 1b shows that households reporting crypto tax events are also more likely to report capital gains to the IRS. This is natural because a portion of crypto tax events are capital gains. Although the data do not provide information about the level of capital gains, we note that the crypto asset market had a return of over 300% in 2020, compared to a 16% increase in the S&P 500 index in the same year. Therefore, households selling crypto in 2020-2021 may have received a significant windfall that could allow or motivate them to take on more debt.[13]

Figure 1c shows the relationship between age and propensity to report crypto tax events. Crypto exposure declines with the share of filers that are at least 60 years old, consistent with the common perception that the crypto market is more popular among younger investors. Monitoring younger demographics may be particularly important given that serious delinquencies have recently ticked up disproportionately for this age group, and financial distress is extremely persistent over the life cycle for consumers.[9]

2.2 Distribution of Crypto Taxable Events

Throughout the analysis, we define "high-crypto" zip codes as those with greater than 6% of households reporting a crypto tax event, "mid-crypto" zip codes as those with between 2% and 6% of households reporting a crypto tax event, and "low-crypto" zip codes as those with less than 2% of households reporting a crypto tax event.
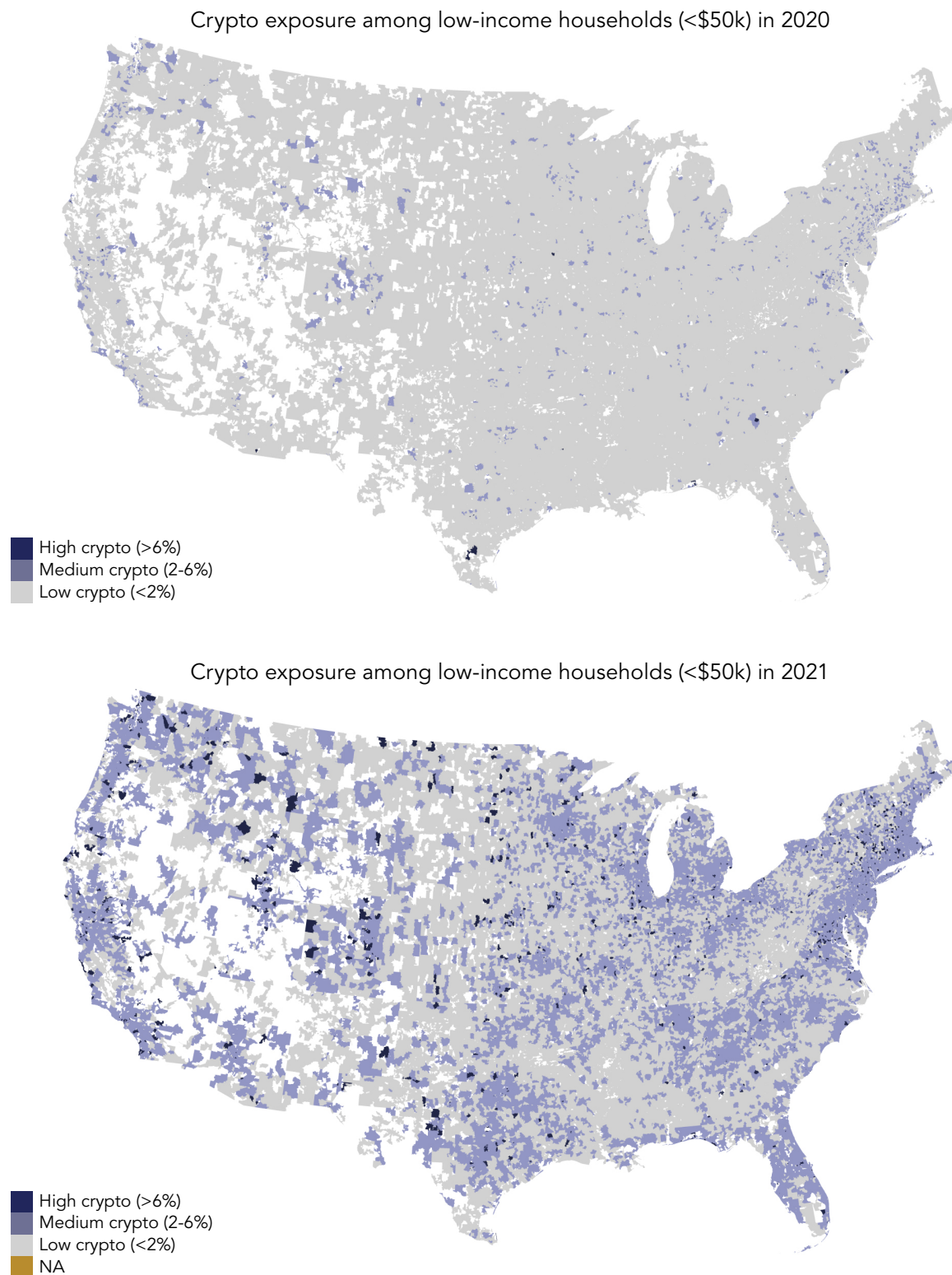
Figure 1. Relationship for Crypto Tax Events with (a) Income, (b) All Capital Gains Reporting, and (c) Age, 2020 and 2021
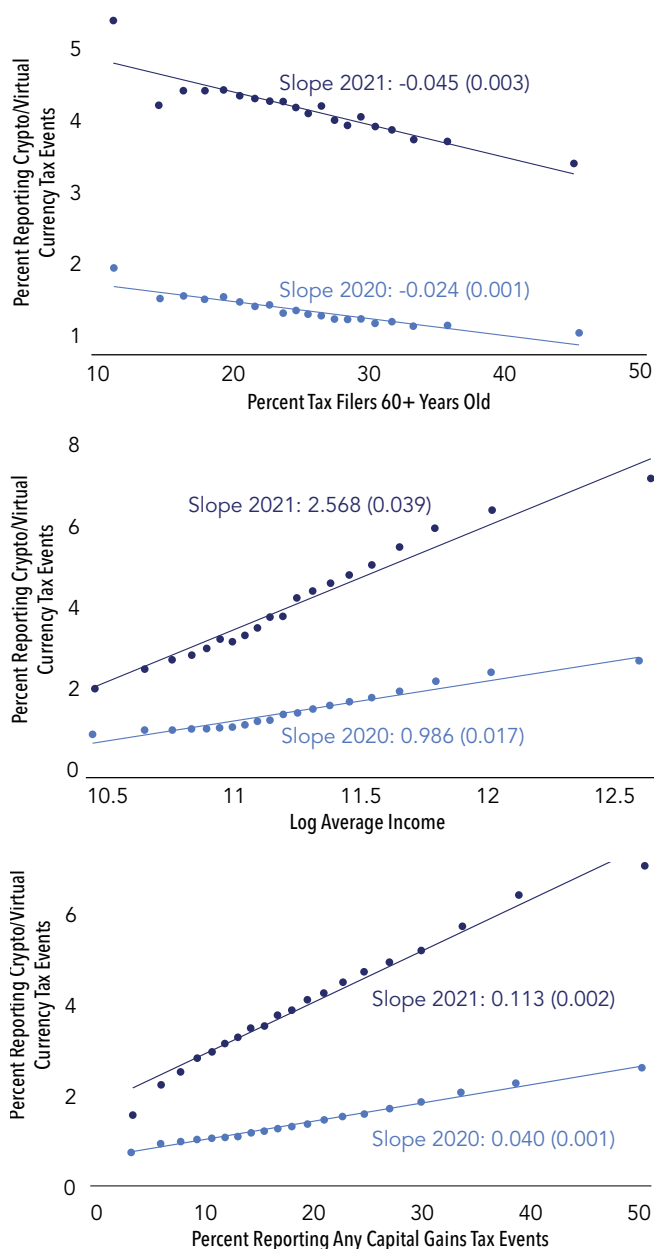
Note: Binned scatter plots split all U.S. zip codes into 20 groups across the distribution of the variable on the x-axis. Panel (a) shows the relationship between wage and salary income with the percentage of tax filers reporting a crypto tax event. Panel (b) shows the relationship between the percentage of tax filers reporting any capital gains and the percentage reporting a crypto tax event. Crypto tax events are a subset of all filers reporting capital gains. Panel (c) shows the relationship between the percentage of tax filers that are 60+ years old with the percentage reporting a crypto tax event.

Crypto exposure among low-income households (<$50k) in 2020

High crypto (>6%)
Medium crypto (2-6%)
Low crypto (<2%)

Crypto exposure among low-income households (<$50k) in 2021

High crypto (>6%)
Medium crypto (2-6%)
Low crypto (<2%)
NA

Note: Maps plot all U.S. zip codes based on the percentage of tax filers reporting a crypto tax event. Zip codes with no reported IRS data are in dark gray. Zip codes with few or no crypto events are in light gray. Zip codes in light green are those where 2 to 6 percent of tax filers report a crypto event, and zip codes in dark green are those where more than 6 percent of tax filers report a crypto event.

Sources: Internal Revenue Service (IRS), SOI Tax Stats - Individual Income Tax Statistics - ZIP Code Data (SOI), Authors' Analysis
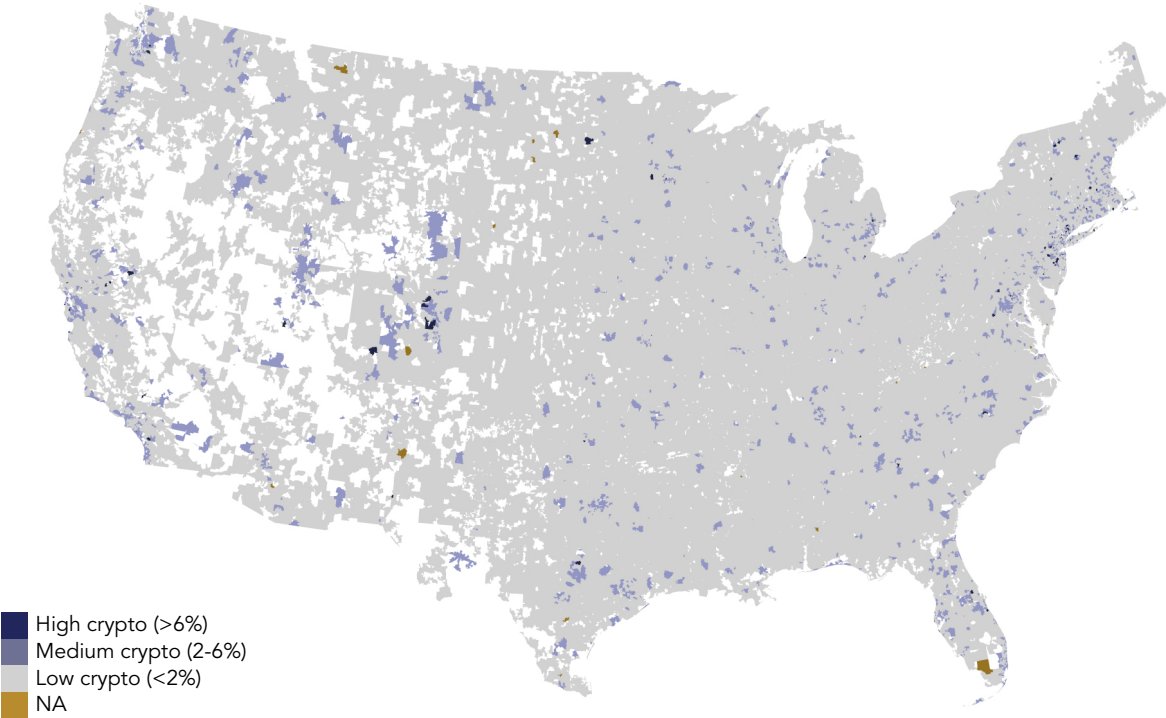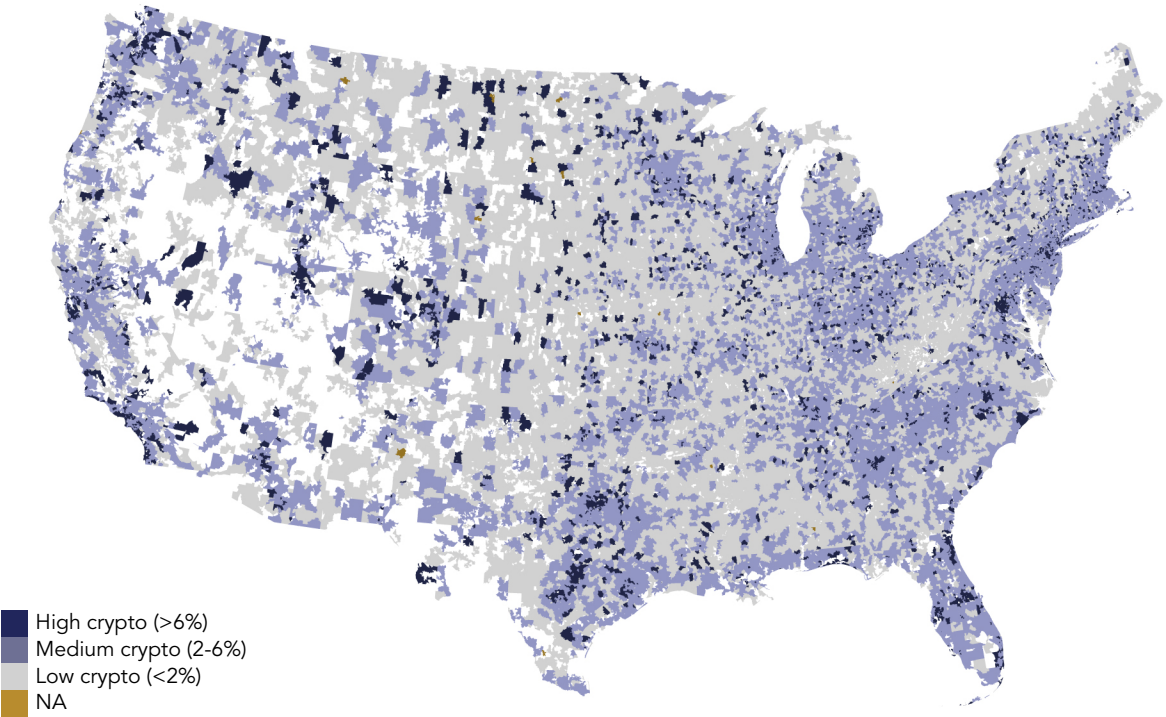
Crypto exposure among medium-income households ($50-100k) in 2020

High crypto (>6%)
Medium crypto (2-6%)
Low crypto (<2%)
NA

Crypto exposure among medium-income households ($50-100k) in 2021

High crypto (>6%)
Medium crypto (2-6%)
Low crypto (<2%)
NA

Crypto exposure among high-income households ($100k+) in 2020

High crypto (>6%)
Medium crypto (2-6%)
Low crypto (<2%)
NA

Crypto exposure among high-income households ($100k+) in 2021

High crypto (>6%)
Medium crypto (2-6%)
Low crypto (<2%)
NA

Figure 2 shows the geographic distribution of crypto exposures in 2020 and 2021 across income groups. The figures illustrate the sharp growth in exposure to crypto assets. In 2020, only 0.08% of U.S. zip codes had over 6% of households reporting crypto exposures, and by 2021, that number increased to 6.3%. The share of urban zip codes, and over 6% of households reporting crypto exposures, rose from 0.14% in 2020 to 12.7% in 2021, while the share remained near zero among rural zip codes in 2020 and 2021. In rural areas, low-income filers had higher exposure to crypto than high-income filers, while middle-income filers had the highest share.

Exposure to crypto assets increased across the income distribution, but the biggest increases occurred among high-income earners. While the percentage of low-income households reporting crypto exposures increased from 1.1% in 2020 to 2.9% in 2021, high-income households reporting crypto exposures increased from 1.9% in 2020 to 6.4% in 2021. This is consistent with the correlations shown in **Figure 1a**. Crypto exposures are generally clustered in urban, tech-centric cities on both coasts. These findings are consistent with existing literature that uses bank transaction data and finds transaction volumes are concentrated in populous states such as New York and California.[4]

3. CRYPTO SALES AND HOUSEHOLD DEBT

In this section, we link reported crypto tax events in 2021 at the zip code level with average household debt balances in the credit panel data separately for the low, mid, and high-income groups. Although the most recent iteration of the IRS data only covers up until 2021, Equifax's consumer credit panel allows for tracking of households' mortgage debt, auto debt, and credit card debt between 2020 and 2024.

Figure 3 shows the percentage of tax filers in 2021 that fall into each income and crypto category, along with the percentage of tax filers reporting a crypto exposure in each category and the average income in each category of the credit data. Most tax filers reside in zip codes reporting crypto exposures between 2% and 6% and are either low- or middle-income. Consistent with prior work indicating that early crypto adoption was more prevalent among highly educated individuals, the analysis shows that high crypto exposure in 2021 is associated with higher income growth over the 2020-2024 period.[4]

Figure 3. Summary Statistics on Tax Filers Across Different Income (low: <$50k, mid: $50k-$100k, high: >$100k) and Crypto (low: <2%, mid: 2%-6%, high: >6%) Categories

Income Category	Crypto Category	Percent of Tax Filers	Percent of Filers with Crypto Sales	Average Income (Jan 2020)	Average Income (Jan 2024)	Change in Average Income (percent)
Low-Income	Low-Crypto	12.0	1.3	$32,174	$35,950	11.7
Low-Income	Mid-Crypto	40.2	3.4	$32,411	$37,886	16.9
Low-Income	High-Crypto	1.1	7.1	$31,597	$40,644	28.6
Mid-Income	Low-Crypto	1.9	0.3	$61,796	$65,134	5.4
Mid-Income	Mid-Crypto	17.1	4.3	$64,567	$70,000	8.4
Mid-Income	High-Crypto	5.0	7.5	$67,185	$74,865	11.4
High-Income	Low-Crypto	1.5	0.1	$112,724	$113,305	0.5
High-Income	Mid-Crypto	8.9	4.9	$113,429	$116,027	2.3
High-Income	High-Crypto	12.3	8.6	$115,859	$120,922	4.4

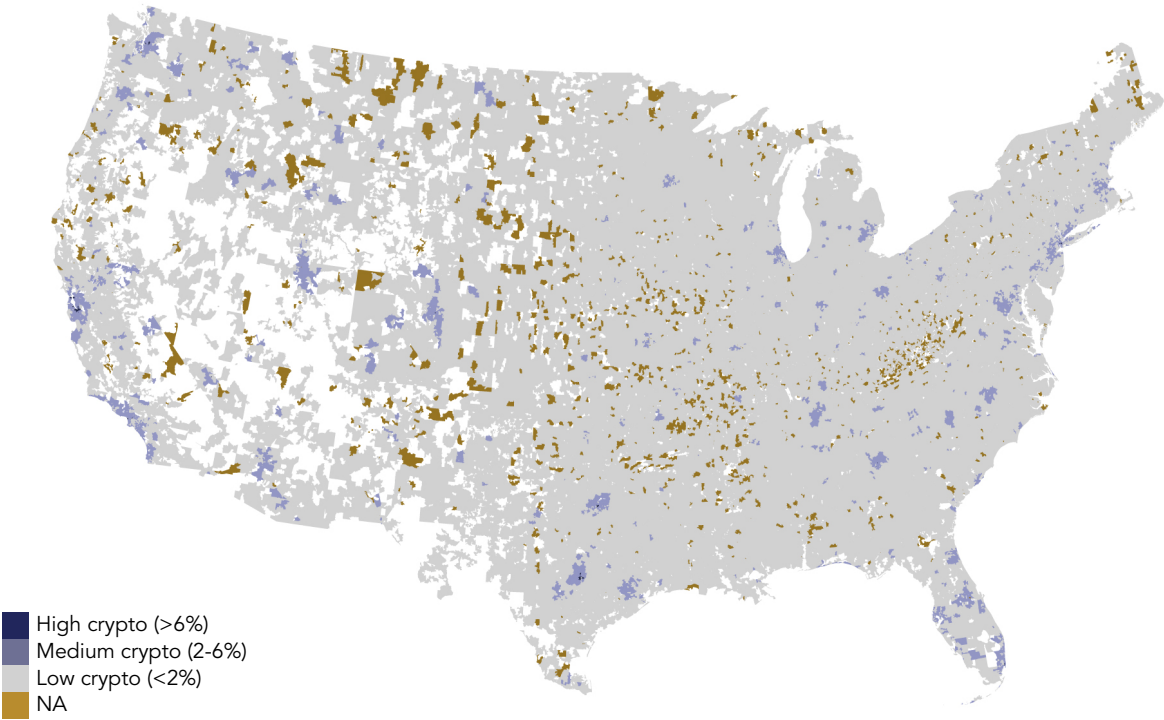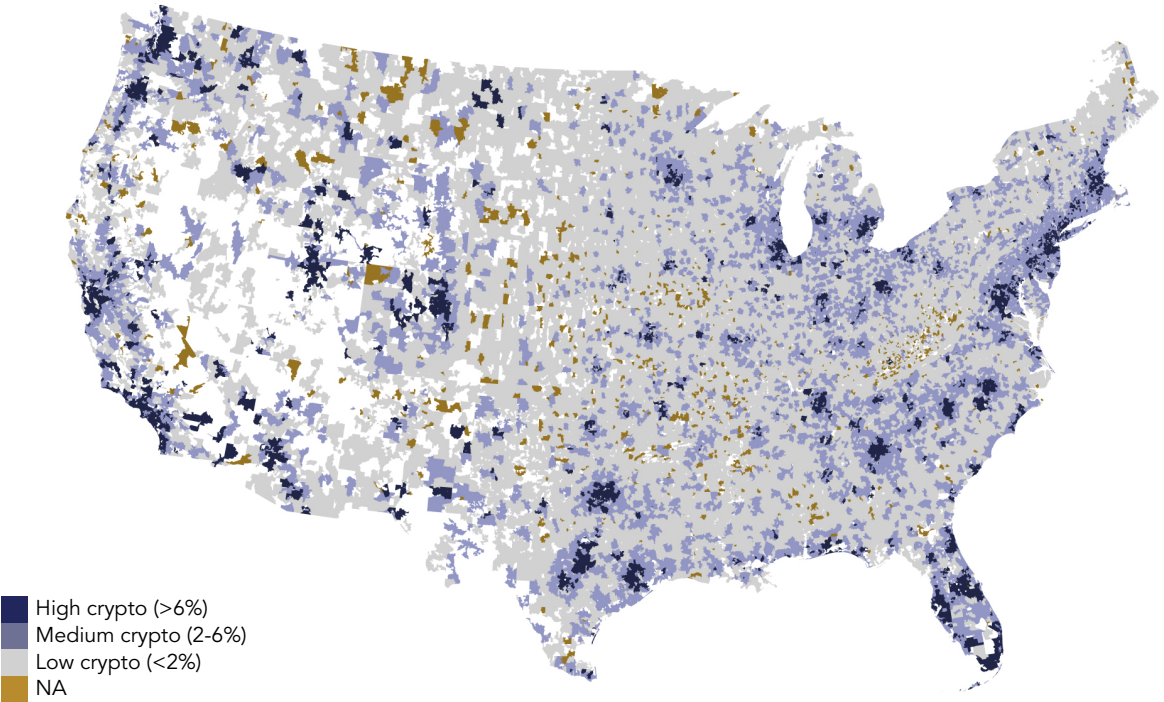Sources: Internal Revenue Service (IRS), SOI Tax Stats - Individual Income Tax Statistics - ZIP Code Data (SOI), Equifax Information Services LLC, Authors' Analysis

3.1 Crypto Sales and Mortgage Debt

In this section, we document that mortgage origination increased in regions with higher crypto exposure, especially among low- and middle-income households[14]. As of Q1 2024, U.S. households owed almost $13 trillion in mortgage and housing debt, making up over 75% of total consumer debt.[15] Aggregate mortgage debt increased by more than 25% relative to Q1 2020.[16] From a financial stability standpoint, it is important to understand whether that surge in debt levels is concentrated among groups that have higher propensities to default during crisis periods.[17] Accumulation of debt among households with high leverage or elevated debt service payments relative to income could present a financial system vulnerability—a weakness in the financial system that could make the stability of the system more susceptible to adverse events.

For low-income households, average mortgage debt balances and mortgage-holding rates sharply increased in zip codes with high crypto exposure. This indicates that low-income households may be using crypto gains to take out new mortgages and to take out larger mortgages. **Figure 4a** shows that for low-income households in high-crypto exposure zip codes, the

mortgage holder rate nearly quadrupled from 4.1% in January 2020 to 15.4% in January 2024. The average balance per mortgage increased by over 150% from $171,773 in 2020 to $443,123 in 2024, suggesting that crypto sales may have supported access to larger mortgages through bigger down payments. Low-income, mid-crypto access areas also saw significant, albeit less sizeable, increases in both mortgage holder rates (57.9% increase) and average mortgage balances (82.9% increase).

The average income of the low-income group in high-crypto exposure areas is $40,664, implying a mortgage debt-to-income ratio of 0.53 for mortgage holders in this group under even the most generous assumptions.[18] This debt-to-income ratio is well above the generally recommended benchmark of 0.36, and even exceeds the 0.43 necessary to qualify for certain conventional loans. It is particularly concerning because higher debt-to-income ratios are positively correlated with future default rates, especially during periods of turmoil such as the 2008 financial crisis.[17] In contrast to high-crypto exposure areas, as of 2024, low-income households in low-crypto exposure zip codes had an average balance per mortgage of $136,481 and an average income of

Figure 4a. Mortgage Holder Rates, Mortgage Balances, and Mortgage Delinquencies in January 2020 and January 2024 Split by income (low: <$50k, mid: $50k-$100k, high: >$100k) and Crypto (low: <2%, mid: 2%-6%, high: >6%) Categories

Income Category	Crypto Category	Mortgage Holder Rate (Jan 2020, percent)	Mortgage Holder Rate (Jan 2024, percent)	Change in Mortgage Holder Rate (percent)	Average Mortgage Balance (Jan 2020)	Average Mortgage Balance (Jan 2024)	Change in Average Mortgage Balance (percent)	Mortgage Delinquency (Jan 2020, percent)	Mortgage Delinquency (Jan 2024, percent)	Change in Mortgage Delinquency (percent)
Low	Low	14.6	18.5	26.6	$86,011	$136,481	58.7	10.6	6.8	-35.9
Low	Mid	11.4	18.0	57.9	$132,853	$242,936	82.9	8.4	4.3	-48.4
Low	High	4.1	15.4	273.8	$171,773	$443,123	158.0	5.8	1.6	-71.7
Mid	Low	54.9	49.3	-10.2	$137,472	$155,442	13.1	2.0	1.6	-22.9
Mid	Mid	62.2	58.3	-6.2	$185,776	$213,644	15.0	2.1	1.5	-30.2
Mid	High	60.2	59.0	-2.0	$237,548	$299,237	26.0	1.7	1.1	-33.2
High	Low	78.5	63.4	-19.2	$323,681	$352,862	9.0	0.7	0.6	-6.2
High	Mid	81.3	68.8	-15.5	$381,451	$419,583	10.0	0.6	0.5	-11.3
High	High	83.2	74.3	-10.7	$515,802	$589,546	14.3	0.5	0.4	-11.3

Sources: Internal Revenue Service (IRS), SOI Tax Stats - Individual Income Tax Statistics - ZIP Code Data (SOI), Equifax Information Services LLC, Authors' Analysis

$35,950, implying a debt-to-income ratio of 0.19 for that group, which is well below the recommended debt-to-income ratio for conventional loans.[19] This is evidence that a significant portion of the post-2021 rebound in households' mortgage debt-to-income ratios may be attributable to areas with higher crypto exposure and that high crypto exposure may be associated with behavior that may contribute to financial instability.[20]

Because crypto capital gains events are a subset of capital gains events reported to the IRS, it is possible that the observed increase in household debt among the high-crypto exposure group is driven by the group with high capital gains. To test this, we further divide the low-income group by capital gains in addition to crypto tax events. **Figure 4b** shows summary statistics based on this additional cut of the data. Note that only two crypto exposure categories (low: less than 4%, high: greater than or equal to 4%) and capital gains categories (low: less than 15%, high: greater than or equal to 15%) are considered due to data limitations. Unsurprisingly, the group with high crypto exposure and high capital gains saw the biggest increases in mortgage holder rates and changes in mortgage balances. Interestingly, though, the high-crypto, low capital gains group saw larger mortgage take-up and debt increases than the low-crypto, high capital gains group. Crypto exposure is correlated with higher debt, even conditional on the rate of overall capital gains reported to the IRS.

Middle-income households in high-crypto exposure areas also saw an increase in average mortgage balance, while mortgage holder rates remained relatively similar. **Figure 4a** shows that when comparing among middle-income households, those residing in high-crypto exposure areas saw the largest relative increase in average mortgage balances. High-income households show relatively less heterogeneity in mortgage balance changes across crypto exposure categories, although the largest change in balances was still among the high-crypto exposure group. Among these households, crypto exposures may make up a small percentage of income and wealth, and thus, such exposures may have less impact on their ability to access mortgage financing.

Figure 4a shows that delinquency for mortgage holders dropped across the board between 2020 and 2024, with most of the decrease occurring among low-income households.[21] Within income groups, there is little difference in absolute changes in mortgage delinquency rates across crypto categories. For example, mortgage delinquency dropped by 4.2% among low-income households in high-crypto exposure areas compared to 3.8% in low-crypto areas. However, baseline delinquency rates in 2020 are lower for high-crypto access groups, leading to a larger percentage drop for these groups. Among high-income households, delinquency rates barely changed between 2020 and 2024, regardless of crypto access. As of Q1 2024, delinquency rates on single-family residential mortgages are near 15-year lows, around 1.7%.[22] It is possible that the groupings of individuals imposed by the data mask some heterogeneity that could lead to higher distress in the event

Figure 4b. Mortgage Holder Rates, Mortgage Balances, and Mortgage Delinquencies in January 2020 and January 2024 Among the Low-income (<50k) Group, Split by Crypto (low: <4%, high: >4%) and Capital Gains (low:<15%, high:>15%) Categories

Income Category	Crypto Category	Capital Gains Category	Percent of Tax Filers	Average Income (Jan 2020)	Mortgage Holder Rate (Jan 2020, percent)	Mortgage Holder Rate (Jan 2024, percent)	Change in Mortgage Holder Rate (percent)	Average Mortgage Balance (Jan 2020)	Average Mortgage Balance (Jan 2024)	Change in Average Mortgage Balance (percent)
Low	Low	Low	40.4	$32,182	13.6	19.0	39.8	$101,180	$170,442	68.5
Low	Low	High	3.5	$34,366	9.2	16.0	74.0	$118,200	$223.808	89.3
Low	High	Low	5.9	$31,735	8.6	17.1	98.4	$134,633	$271,371	101.6
Low	High	High	3.5	$32,742	4.2	13.6	227.2	$159,548	$421,521	164.2

that aggregate delinquency rates rise. Still, there is little evidence of distress in areas with higher crypto exposure as of early 2024.

3.2 Crypto Sales and Auto Debt

Total auto loan debt has increased significantly in recent years, over $1.6 trillion as of Q1 2024. More worryingly, delinquencies on auto loans ticked up in 2023, with 2.7% of auto loans flowing into serious delinquency in Q4 2023.[23] In this section, we study how crypto exposure correlates with increases in auto debt since 2020 and examine how it interacts with recent increases in auto delinquency rates.

A large portion of the variation in changes in auto debt between 2020 and 2024 was related to income, with auto debt increasing more for low-income households than middle- and high-income households. However, within income groups, changes in auto debt also line up with crypto exposure. Among low-income households, average auto debt balances increased by the largest percentage in areas with high-crypto exposure, though growth in dollar amounts was similar. **Figure 5** shows that average auto debt balances increased by

52% between 2020 and 2024 for low-income households in high-crypto exposure areas, compared to 38% for low-income households in low-crypto exposure areas. Among low-income households, auto loan holder rates also showed a slightly higher percentage increase for the high-crypto exposure group compared to the low-crypto group. This could suggest that crypto income or windfall gains allowed some low-income consumers to finance auto purchases.

For the sample of middle-income and high-income households, average auto loan balances decreased between 2020 and 2024. Further splitting by crypto exposure areas reveals a similar pattern to the low-income group whereby the higher crypto exposure zip codes saw less shrinkage of auto loan balances in percentage terms. For example, **Figure 5** shows that among middle-income households, those in the high-crypto exposure category saw average auto loan balances increase by 3.1%, compared to an 8.5% decrease for the low-crypto category.

Figure 5 shows that delinquency rates on auto loans were little changed (in absolute terms) for the middle- and high-income groups across all crypto exposure

Figure 5. Auto Loan Holder Rates, Auto Loan Balances, and Auto Loan Delinquencies in January 2020 and January 2024 Split by Income (low: <$50k, mid: $50k-$100k, high: >$100k) and Crypto (low: <2%, mid: 2%-6%, high: >6%) Categories

Income Category	Crypto Category	Auto Loan Holder Rate (Jan 2020, percent)	Auto Loan Holder Rate (Jan 2024, percent)	Change in Auto Loan Holder Rate (percent)	Average Auto Loan Balance (Jan 2020)	Average Auto Loan Balance (Jan 2024)	Change in Average Auto Loan Balance (percent)	Auto Loan Delinquency (Jan 2020, percent)	Auto Loan Delinquency (Jan 2024, percent)	Change in Auto Loan Delinquency (percent)
Low	Low	38.4	39.4	2.5	$6,417	$8,859	38.1	3.8	4.1	8.7
Low	Mid	35.8	36.5	1.8	$5,547	$7,782	40.3	2.5	2.6	2.4
Low	High	29.6	31.0	5.0	$4,325	$6,576	52.0	1.4	1.3	-6.4
Mid	Low	55.2	45.6	-17.5	$14,114	$12,912	-8.5	0.9	0.8	-12.3
Mid	Mid	49.6	40.5	-18.3	$10,874	$10,515	-3.3	0.8	0.7	-15.2
Mid	High	43.8	35.9	-18.1	$9,305	$9,591	3.1	0.6	0.5	-18.7
High	Low	56.7	44.2	-21.9	$19,597	$15,900	-18.9	0.3	0.3	-9.4
High	Mid	55.3	42.5	-23.2	$16,941	$14,243	-15.9	0.3	0.2	-18.3
High	High	50.6	38.7	-23.4	$14,493	$12,957	-10.6	0.2	0.2	-22.0

Sources: Internal Revenue Service (IRS), SOI Tax Stats - Individual Income Tax Statistics - ZIP Code Data (SOI), Equifax Information Services LLC, Authors' Analysis

categories. Interestingly, among low-income households, auto loan delinquency increased in the low- and mid-crypto exposure zip codes, while they decreased in the high-crypto exposure zip codes. This suggests that this group could potentially use crypto sales or income to fund auto payments. Overall, there is little evidence in early 2024 that crypto activity is systematically correlated with higher risks in the auto loan segment.

3.3 Crypto Sales and Credit Card Debt

Credit card debt has swelled to an all-time high in 2024, topping $1 trillion for the first time in mid-2023.[24] Credit card delinquency rates have also ticked above pre-pandemic levels and sit at just over 3% as of Q1 2024.[25] It is an open question if crypto exposure is correlated with increases in credit card debt and whether it has contributed to the recent rise in delinquencies.

Figure 6 shows that the majority of card balance increases originate from the low-income group, where card balances increased 45-50%. In contrast, average card balances in the mid- and high-income groups were relatively stable. Further segmenting by crypto

exposure categories reveals little difference between changes in card balances across crypto exposure categories for low-income households. This is notably different from the correlations documented for mortgage and auto loans, where debt sharply increased with crypto exposure. Crypto sales or income may allow access to larger mortgage and auto loans through bigger down payments. Still, down payments are not relevant for credit card lending. For middle- and high-income households, consumers in high-crypto exposure zip codes saw an increase in average card balances. In contrast, those in low-crypto exposure zip codes saw a decline in average card balances.

While credit card delinquencies rose between 2020 and 2024, differences across crypto exposure categories were relatively small. The most notable difference is among the low-income group, where card delinquencies increased by less for those living in high-crypto exposure zip codes than those living in low-crypto exposure zip codes. This suggests that households with crypto exposure may have used crypto gains as a buffer to mitigate credit card distress. Overall, little evidence exists that exposure to crypto-asset markets has contributed to the recent surge in delinquency rates among low-income consumers.

Figure 6. Credit Card Balances and Delinquencies in January 2020 and January 2024 Split by Income (low: <$50k, mid: $50k-$100k, high: >$100k) and Crypto (low: <2%, mid: 2%-6%, high: >6%) Categories

Income Category	Crypto Category	Avg. Card Balance (Jan 2020)	Avg. Card Balance (Jan 2024)	Change in Avg. Card Balance (percent)	Card Delinquency (Jan 2020, percent)	Card Delinquency (Jan 2024, percent)	Change in Card Delinquency (percent)
Low	Low	$2,067	$3,014	45.8	5.4	6.7	23.7%
Low	Mid	$2,682	$3,981	48.4	4.8	5.8	19.6%
Low	High	$3,343	$4,900	46.6	3.5	3.8	7.5%
Mid	Low	$5,627	$5,553	-1.3	1.4	1.7	17.4%
Mid	Mid	$6,211	$6,506	4.8	1.5	1.8	17.4%
Mid	High	$6,804	$7,354	8.1	1.4	1.6	13.0%
High	Low	$7,630	$7,154	-6.2	0.5	0.7	22.5%
High	Mid	$8,711	$8,613	-1.1	0.6	0.7	31.1%
High	High	$8,993	$9,433	4.9	0.5	0.7	30.2%

Sources: Internal Revenue Service (IRS), SOI Tax Stats - Individual Income Tax Statistics - ZIP Code Data (SOI), Equifax Information Services LLC, Authors' Analysis

4. CONCLUSION

The considerable increase in usage of crypto assets, the values of which are substantially more volatile than other asset classes, could present a financial stability risk if there are spillovers onto household balance sheets or sectors in the real economy. This brief analyzes one of those channels: the connection between crypto activity and household debt positions. Specifically, it links household credit panel data with reporting of crypto exposures to the IRS based on zip codes and income groupings.

This brief documents that over the 2020 to 2024 period, low-income consumers have significantly increased their debt usage and debt balances. That increase has been particularly large in areas with higher crypto exposure. The magnitude of debt increases has been especially large for mortgage debt. Low-income consumers in high-crypto exposure areas are disproportionately more likely to take out a mortgage, and the average mortgage size is large relative to pre-2020 average income.

With the caveat that this brief presents correlational evidence on crypto exposures, the results show there is little or no evidence of higher levels of distress in mortgage, auto, or credit card debt among consumers in high-crypto exposure neighborhoods. If anything, delinquency rates remain relatively low in high-crypto exposure areas. This is particularly true of mortgage debt, where low-income, high-crypto exposure consumers' mortgage delinquency rates are 1.6%. In contrast, the largest portion of low-income households in mid-crypto exposure neighborhoods have mortgage delinquency rates of 4.3%.

While there is little evidence of current distress among households with crypto exposure, the results in this brief suggest that consumers' debt and consumption are correlated with their crypto exposure. An important takeaway for future monitoring is the increased debt balances and leverage among low-income households with crypto exposure. Rising distress in this group could cause future financial stress, especially if exposure to these types of high-leverage, high-risk consumers is concentrated in systemically important institutions.

Endnotes

1   Samuel Hughes, Research Economist, Office of Financial Research (Samuel.hughes@ofr.treasury.gov), Francisco Ilabaca, Research Economist, Office of Financial Research (francisco.ilabaca@ofr.treasury.gov), Jacob Lockwood, Research Analyst, Office of Financial Research (jacob.lockwood@ofr.treasury.gov), and Kevin Zhao, Research Economist, Office of Financial Research (kevin.zhao@ofr.treasury.gov). The authors thank Mark Paddrik, Will Larson, Thomas Ruchti, Mark Carey, and Stacey Schreft for their comments and assistance.

2   Market capitalization numbers are according to Coinmarketcap.com. A 2021 report by the Federal Reserve Bank of San Francisco estimated that as many as 1 in 8 Americans had bought cryptocurrencies. The report can be found at https://www.frbsf.org/news-and-media/speeches/leadership/2021/12/retail-trends-in-crypto/.

3   Since 2014, Bitcoin monthly returns have a standard deviation of 22%, compared to 4.5% in the stock market. See 2022 FSOC Report on Digital Asset Financial Stability Risks and Regulation. https://home.treasury.gov/news/press-releases/jy0986 , and 2022 Executive Order on Ensuring Responsible Development of Digital Assets https://www.whitehouse.gov/briefing-room/presidential-actions/2022/03/09/executive-order-on-ensuring-responsible-development-of-digital-assets/.

4   Previous research, in particular work by Darren Aiello, Scott Baker, Tetyana Balyuk, Marco Di Maggio, Mark J. Johnson, Jason D. Kotter, "The Effects of Cryptocurrency Wealth on Household Consumption and Investment," NBER Working Paper no. 31445, October 2023 (https://www.nber.org/papers/w31445), and "Who Invests in Crypto? Wealth, Financial Constraints, and Risk Attitudes," NBER Working Paper no. 31859 (https://www.nber.org/papers/w31856) utilize consumer transaction data for U.S. households to provide some evidence on the drivers of crypto investing. Work by Michael Weber, Bernardo Candia, Olivier Coibion, Yuriy Gorodnichenko, "Do You Even Crypto, Bro? Cryptocurrencies in Household Finance," NBER Working Paper no. 31284, May 2023 (https://www.nber.org/papers/w31284) employ large-scale household surveys to study cryptocurrency investment decisions and motives relative to other financial assets. Altogether, these studies provide early estimates of crypto assets on household's balance sheets, and our results are consistent with their findings.

5   See Quarterly Report on Household Debt and Credit, May 2024, by the Federal Reserve Bank of New York, available at https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC_2024Q1.

6   As of Q1 2024, aggregate risks in the United States appear muted with delinquency rates of only 0.6%.

7   Large banks hold $850 billion in credit card and $410 billion in auto loans directly on their balance sheet. Large banks have expanded their credit card business by 47% since 2015 (See H.8 Assets and Liabilities of Commercial Banks in the United States, Federal Reserve Board).

8   Asset-backed securities are a large market with $100-200 billion in annual issuance and $2 billion in average daily trading volume (See US Asset-Backed Securities Statistics (July 2024), SIFMA) available at https://www.sifma.org/resources/research/us-asset-backed-securities-statistics/.

9   From a financial stability standpoint, it may be especially important to monitor younger households because serious delinquencies have recently ticked up disproportionately for this group (see NY Fed Household Debt and Credit Report for 2024 Q1) and financial distress is extremely persistent over the life cycle, as shown in Kartik Athreya, José Mustre-del-Río, Juan M Sánchez, "The Persistence of Financial Distress," The Review of Financial Studies, Volume 32, Issue 10, October 2019 (https://academic.oup.com/rfs/article/32/10/3851/5305595).

10   IRS disclosure protection excludes zip codes with fewer than 100 returns (or that only cover a single building), and censor tax items with fewer than 20 reporting tax filers.

11   While this dataset is useful for its wide coverage and detail, we note some limitations: accounts track consumer IDs, which often refer to individuals, making it challenging to compare to tax filing units or households in IRS data; incomes in credit registry data are often self-reported by consumers, which may introduce measurement error though it is unclear which direction is most concerning (under-reporting when consumers are slow to update raises or job switching, or over-reporting when consumers fail to report unemployment or non-employment spells); and consumer zip code locations may also be measured with error, because they are based on a combination of self-reporting, billing addresses, and utility or marketing data.

12   See for instance Julie Bennett and YiLi Chien, "The Large Gap in Stock Market Participation Between Black and White Households" Federal Reserve Bank of St. Louis Economic Synopses No. 7, 2022 (https://research.stlouisfed.org/publications/economic-synopses/2022/03/28/the-large-gap-in-stock-market-participation-between-black-and-white-households).

13   In addition, households may be more willing to spend their crypto asset gains. Aiello et al (2023a) estimated households' marginal propensity to consume out of crypto gains to be more than double that of their marginal propensity to consume out of equity gains.

14   As of now, neither Freddie Mac nor Fannie Mae recognizes cryptocurrency as an eligible source of funds in the loan origination process. Cryptocurrency also may not be included in the calculation of a borrower's assets. See Bulletin 2021-36: Guide Bulletin 2021-36 (freddiemac.com)

15   See Federal Reserve Bank of New York – Center for Microeconomic Data's Household Debt and Credit Report available at https://www.newyorkfed.org/microeconomics/hhdc.

16   U.S. consumers took advantage of low rates to originate over 500,000 mortgages each quarter of 2021 at large banks alone, resulting in the highest per quarter dollar value of mortgage originations since at least 2013. See data on Large Bank Consumer Mortgage Originations: New Originations by the Federal Reserve Bank of Philadelphia, available at https://fred.stlouisfed.org/series/RCMFLOORIG.

17   See for instance Mian, A., & Sufi, A. (2009). The Household Leverage-Driven Recession of 2007 to 2009. University of Chicago Booth School of Business and NBER, (http://ssrn.com/abstract1463596).

18   Assuming a 30-year fixed mortgage originated in January 2021 (the trough of mortgage interest rates during this period), a $440,000 loan at 2.75% implies a monthly payment of $1,800. An annual income of $40,500 is equivalent to a monthly gross income of $3,375, resulting in a debt-to-income ratio of $1,800/$3,375 = 0.53 on mortgage debt alone. This is one place where the Equifax credit panel limits the analysis of mortgages: the credit data tracks consumer IDs, while a household may buy a mortgage with multiple incomes (e.g. a married couple), which may not be accounted for accurately in some cases in the credit data.

19   A $136,500 loan at 2.75% implies a monthly payment of $560. An annual income of $36,000 is equivalent to a monthly gross income of $3,000, resulting in a debt-to-income ratio of $560/$3,000 = 0.19 on mortgage debt alone.

20   See Household Debt Service and Financial Obligations Ratios, compiled by the Federal Reserve Board and available online at https://www.federalreserve.gov/releases/housedebt/default.htm.

21   Forbearance programs (CARES Act) reduced aggregate mortgage delinquencies in 2020-2022 but had almost entirely concluded out by 2024. See CFPB report on COVID-related forbearance https://www.consumerfinance.gov/about-us/blog/office-of-research-blog-how-are-mortgages-with-covid-related-forbearance-performing-in-2023/.

22   See Charge-Off and Delinquency Rates on Loans and Leases at Commercial Banks, compiled by the Federal Reserve Board and available online at https://www.federalreserve.gov/releases/chargeoff/default.htm.

23   A report by the Federal Reserve Bank of New York's Center for Microeconomic Data found that credit card and auto loan transitions into delinquency are still rising above pre-pandemic levels as of Q1 2024. Report available at https://www.newyorkfed.org/newsevents/news/research/2024/20240206.

24   See data on Consumer Loans, under Assets and Liabilities of Commercial Banks in the United States collected by the Board of Governors of the

Federal Reserve System. Available at https://www.federalreserve.gov/releases/h8/.

25   See Charge-Off and Delinquency Rates on Loans and Leases at Commercial Banks, compiled by the Federal Reserve Board and available online at https://www.federalreserve.gov/releases/chargeoff/default.htm.