2023 Q2 Credit Risk Review

Trends and Early Risk Indicators in Consumer Credit

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2nd Order solutions

Executive Summary – State of the US Consumer Credit

There are both headwinds and tailwinds for consumer credit risk:

- **Headwinds**
  - Delinquencies increasing or elevated across all asset classes, driven by prime/superprime worsening partially offset by subprime slightly improving.
  - High interest rates and elevated used car prices cause record car payments. Recent vintages of used-auto loans much worse than pre-pandemic.
  - Increased balances led to higher minimum payments due across all vantage bands. This trend is expected to continue as student loan payments resume.
  - Student loans deferral expirations impending; cards expected to be most impacted as they fall lower in the payment hierarchy historically.
- **Tailwinds**
  - Subprime delinquencies in cards and personal loans decreasing/flattening in recent months, attributed mostly to 2023's tightening of underwriting standards and possible macro improvements.
  - Unemployment remaining low at 3.6% despite rate increases; historically, it is the primary driver for the increase in consumer credit risk, especially for prime customers.
  - Personal savings rates rise from historic lows; consumers maintain a savings buffer from past years.

Executive Summary - Credit Cards

Credit Cards

- While 60+ delinquencies are up YOY, they are roughly flat to slightly down in the last few months.
- Delinquency rates for subprime and near prime buckets have actually decreased in the last couple of months.
    - Some of this may be due to the tightening of credit by players in this space, but not all.
- We continue to see an increase in balances as consumers borrow more but they are still within the pre-pandemic trendlines.
- Card origination volumes have been dropping as of April 2023 as lenders tightened their underwriting, with a sharper decrease in subprime originations.
- Average credit limit is back to pre-pandemic levels for near prime and prime customers. Moreover, average credit limit has exceeded pre-pandemic averages for prime plus and super prime buckets.

Executive Summary - Personal Loans & Mortgages

Personal Loans

- Increase in personal loan delinquencies which have trended above pre-pandemic levels.
- But subprime has flattened in the most recent months, likely driven by credit tightening standards.
- We continue to see a tightening of underwriting standards with an increase in both average origination FICO and Income.
- Average origination loan amounts and durations are also higher than pre-pandemic levels.

Mortgages

- Slight increase in delinquencies but well below pre-pandemic levels.
- Similarly, originations increasing slightly but still well below pre-pandemic levels due to high interest rate and low inventory.

Executive Summary – Auto Loans

Auto Loans

- Auto delinquencies increased in the last couple of months and overall trending higher than pre-pandemic levels.
- Recent vintage performance varies significantly between new and used auto loans and leases, with recent ones having lower delinquencies than pre-pandemic averages, and used auto loans having significantly higher delinquencies.
- Rising auto interest rates and vehicle prices are driving up the payment amounts. The share of $1,000+ monthly payments reached a new all-time peak in Q2 2023.
- Most of the consumers who agreed to a $1,000+ loan in Q2 signed up for longer terms and higher APR loans.
- Subprime share of auto loan originations has reached decade lows due to high prices and tightening of underwriting standards. Auto originations balances remain elevated due to high vehicle prices.
- Given the higher interest rates and elevated prices for used cars, average LTV remains high for used auto loans, while within pre-pandemics levels for new auto loans.

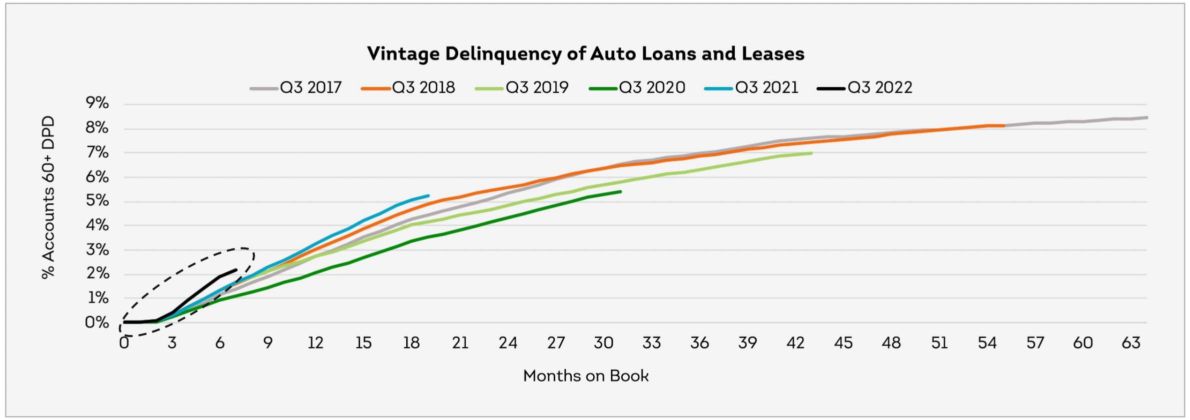
Executive Summary – Student Loans

Student Loans

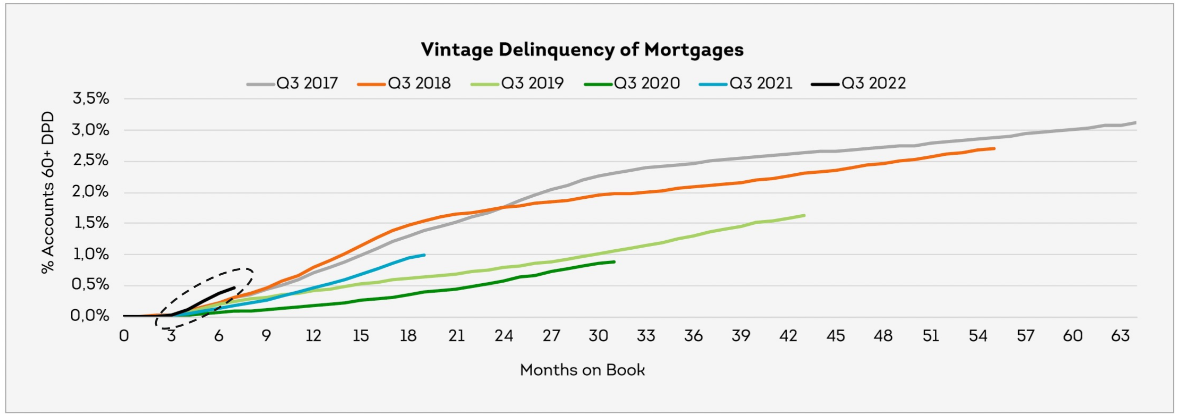
- Student loans are the largest source of U.S. household debt besides mortgages, totaling $1.75T. Federal student loans have been deferred since March 2020, but payments will be due again starting in October of 2023.
- There are reasons to believe the SL repayment will cause severe issues:
  - Across credit-risk scores, Student Loan ("SL") borrowers have taken on significant additional debt over the last 3 years
  - SL Borrowers' delinquencies have been rising on other assets.
  - SL borrowers perform worse on their other loans than non-SL borrowers.
  - Servicing confusion: 3.5 years of payment suspension and change of payment plans will lead to borrower confusion and unknown payment behavior across asset classes.
- But we explore mitigating factors from Equifax data that are not being reported:
  - The data suggests SL and non-SL borrowers took on similar amounts of increased debt during the pandemic, which is mostly explained by being younger and newer to credit.
  - The uptick in delinquencies is similar to non-SL borrowers with similar credit scores.
- Student Loans are higher in the payment priority than credit cards, but lower than other loans suggesting the biggest impact may be to card portfolios

Recent vintages are still experiencing higher delinquencies compared to previous years

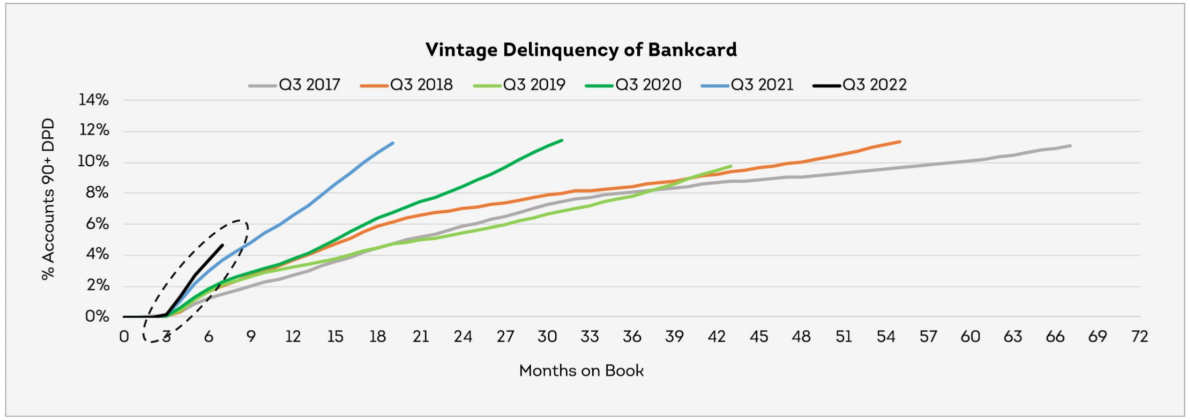
AUTO



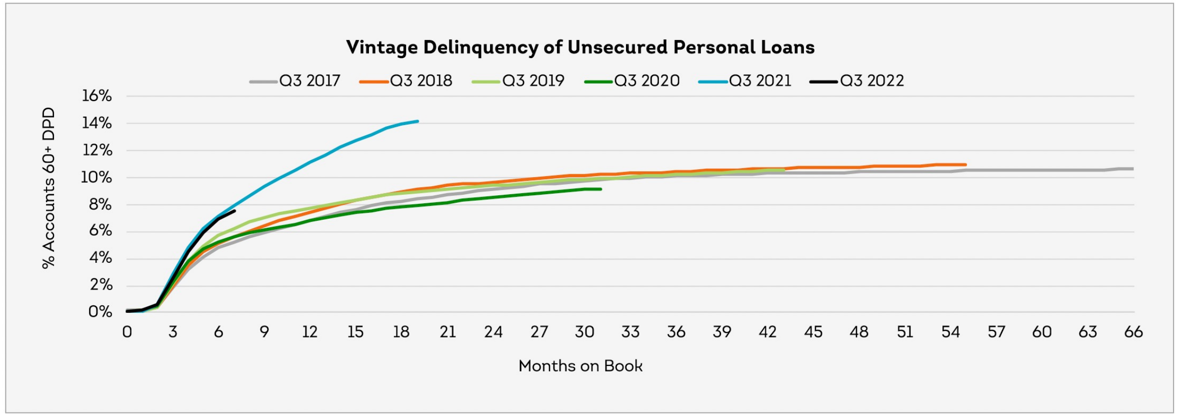
MORTGAGE



BANKCARD



UNSECURED PERSONAL LOAN



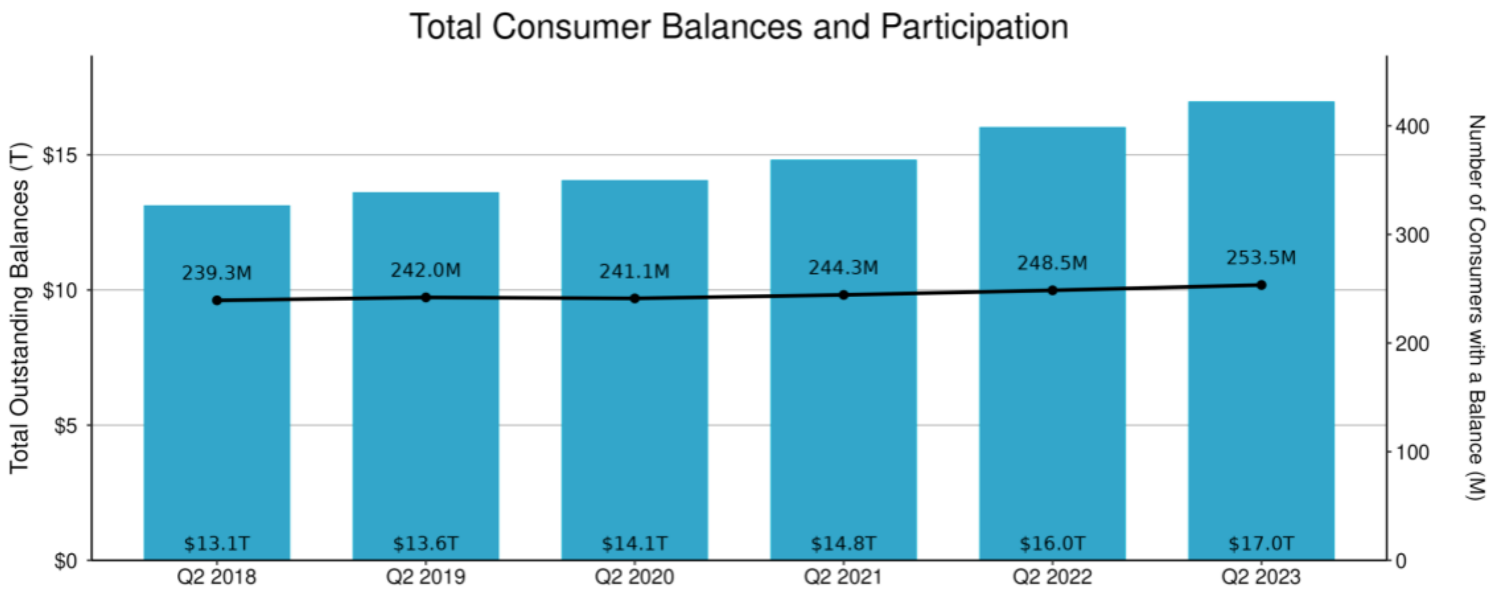
Source: Transunion, data as of June 30, 2023

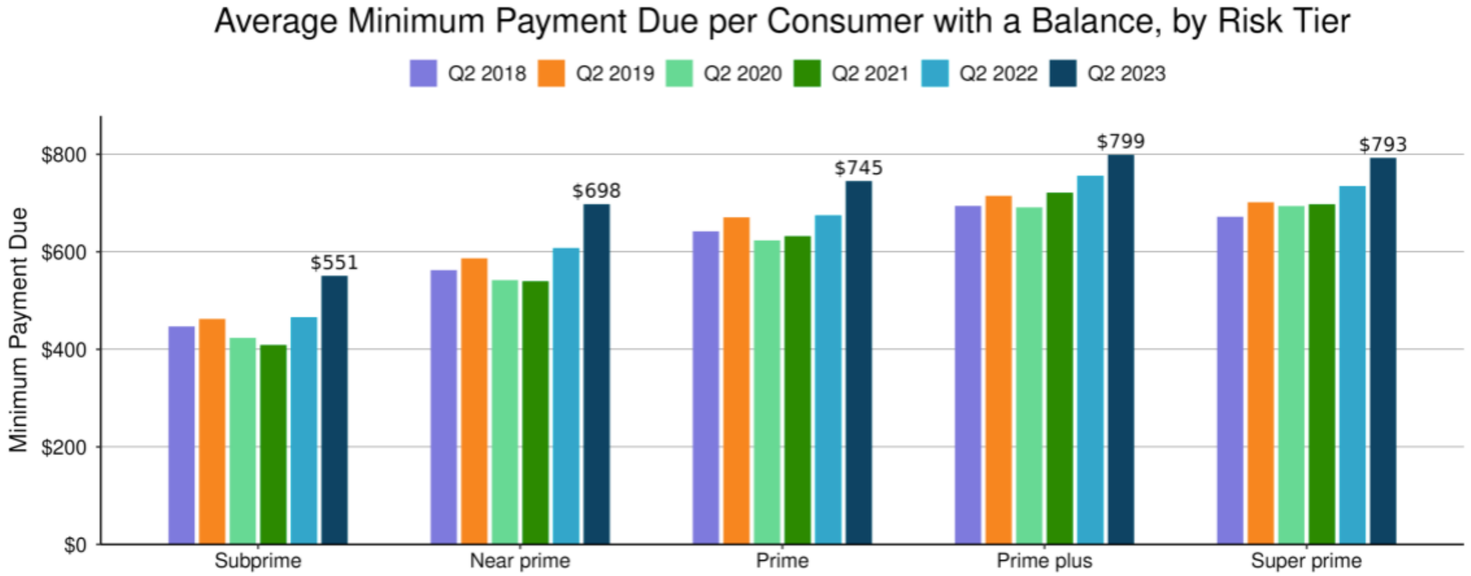
2nd Order solutions

- **State of the Consumer**
- Credit Card
- Personal Loan
- Auto
- Student Loan
- Mortgage

Total consumer balances continue to increase in Q2 2023

There are higher minimum payments, partially driven by inflation, due for consumers across all vantage scores





Source: Transunion, data as of June 30, 2023

- State of the Consumer
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- Personal Loan
- Auto
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- Mortgage

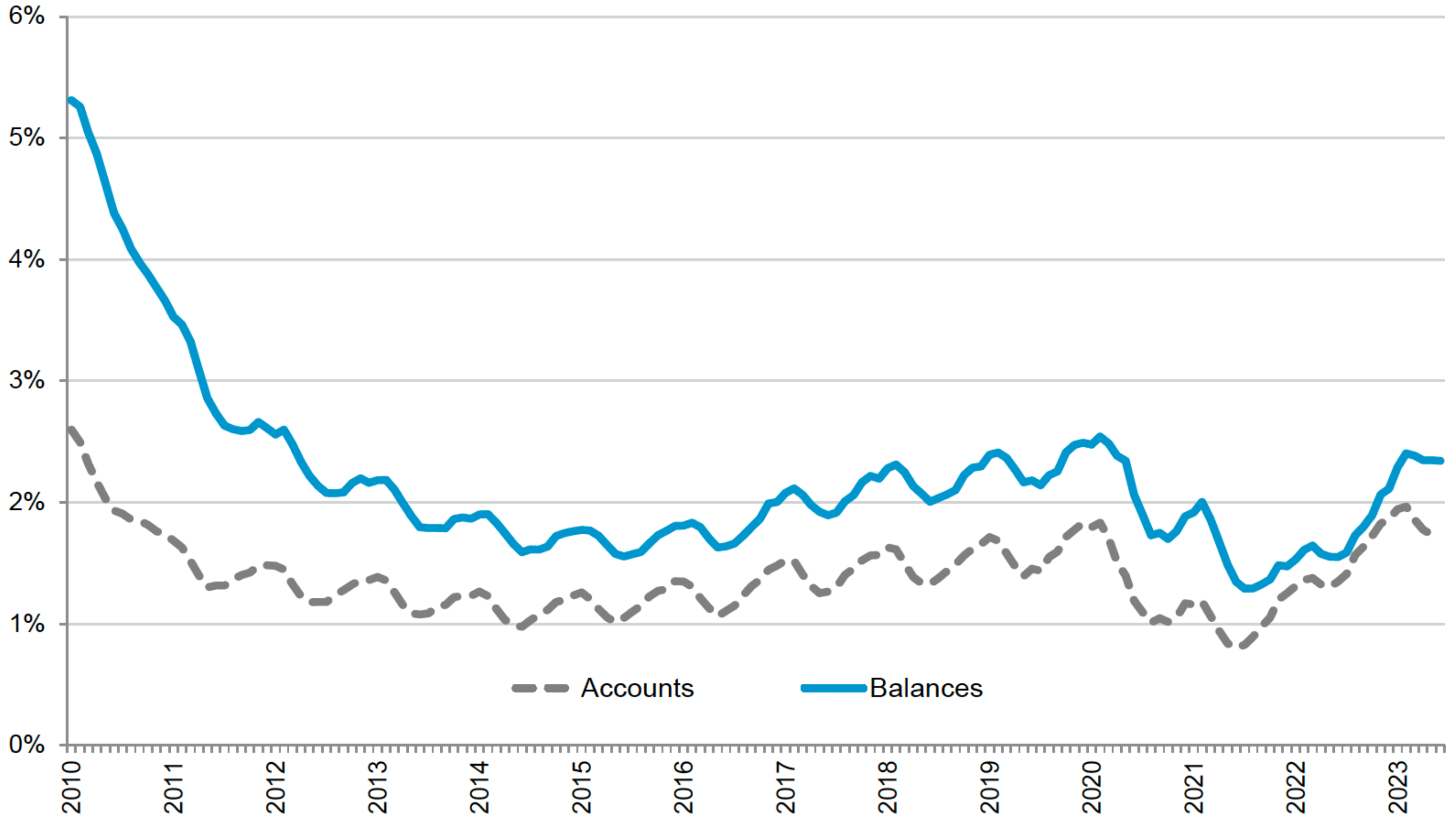
Slight drop in Card Delinquencies in most recent months. Flattening of balance delinquencies

This trend is in line with historical seasonality cycles

Severe Delinquency Rate

60+ Days Past Due

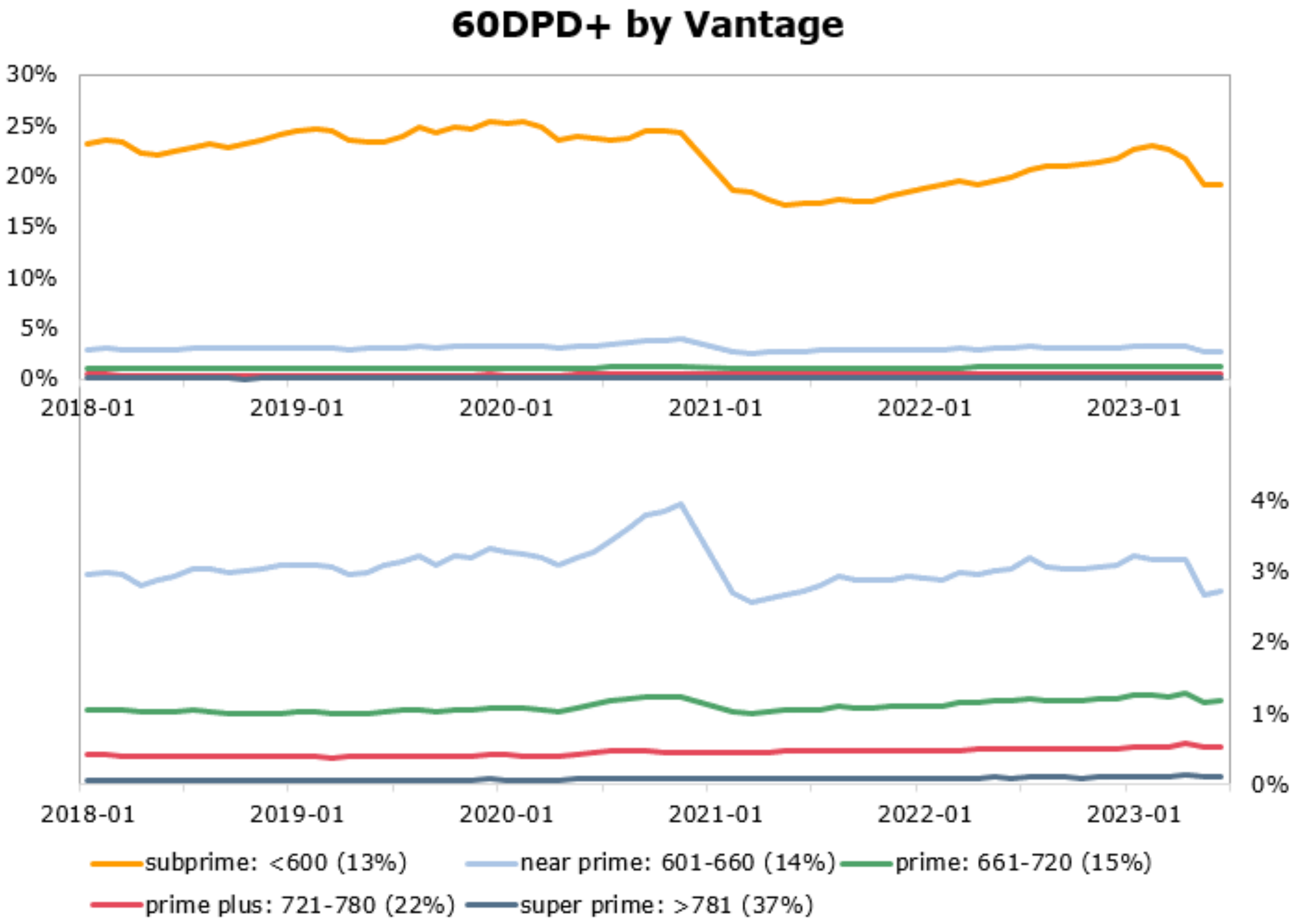
Percent of Accounts and Balances; NSA; Excludes Severe Derogatory and Bankruptcy



Source: Equifax Inc.

Data as of June 2023

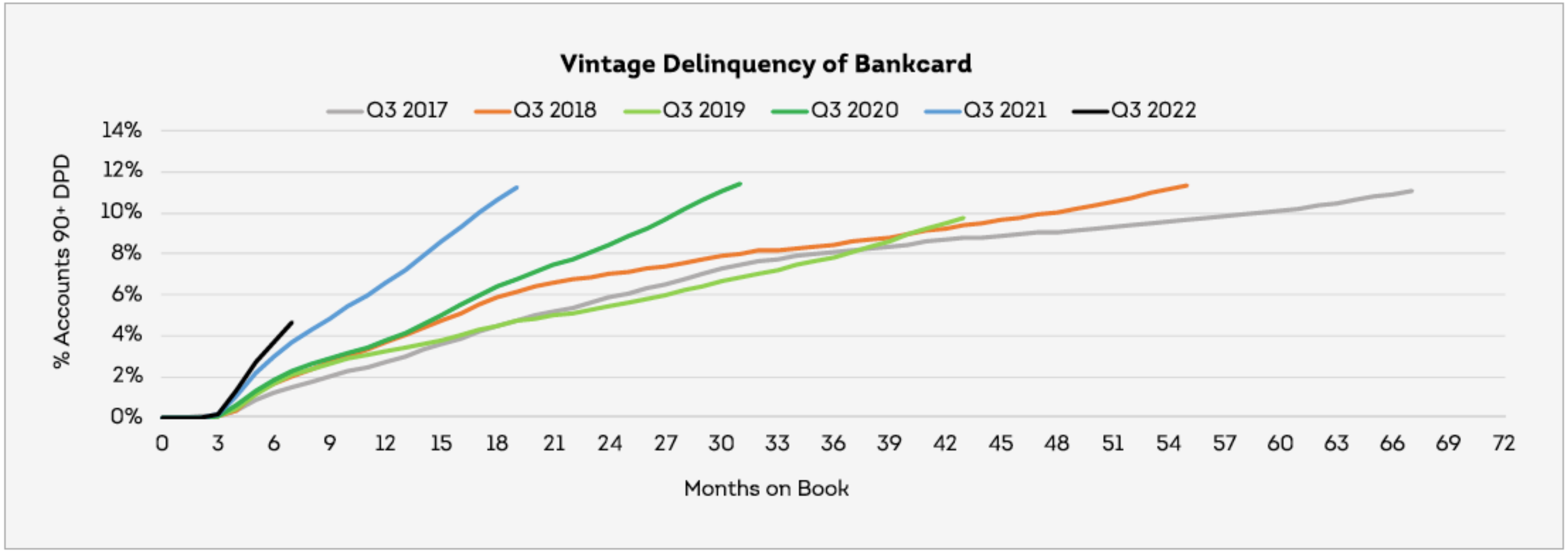
Delinquency rates for subprime and near prime buckets dropped slightly in the last couple of months



Source: 2OS, Equifax Ignite. Data as of June 30, 2023.
Vantage buckets are lagged 3 months from the performance date. For more details on methodology, see appendix.

Although the overall delinquency rates have dropped slightly, recent vintages are still performing worse than previous years

It's too early to see flattening to slight decrease of recent vintages



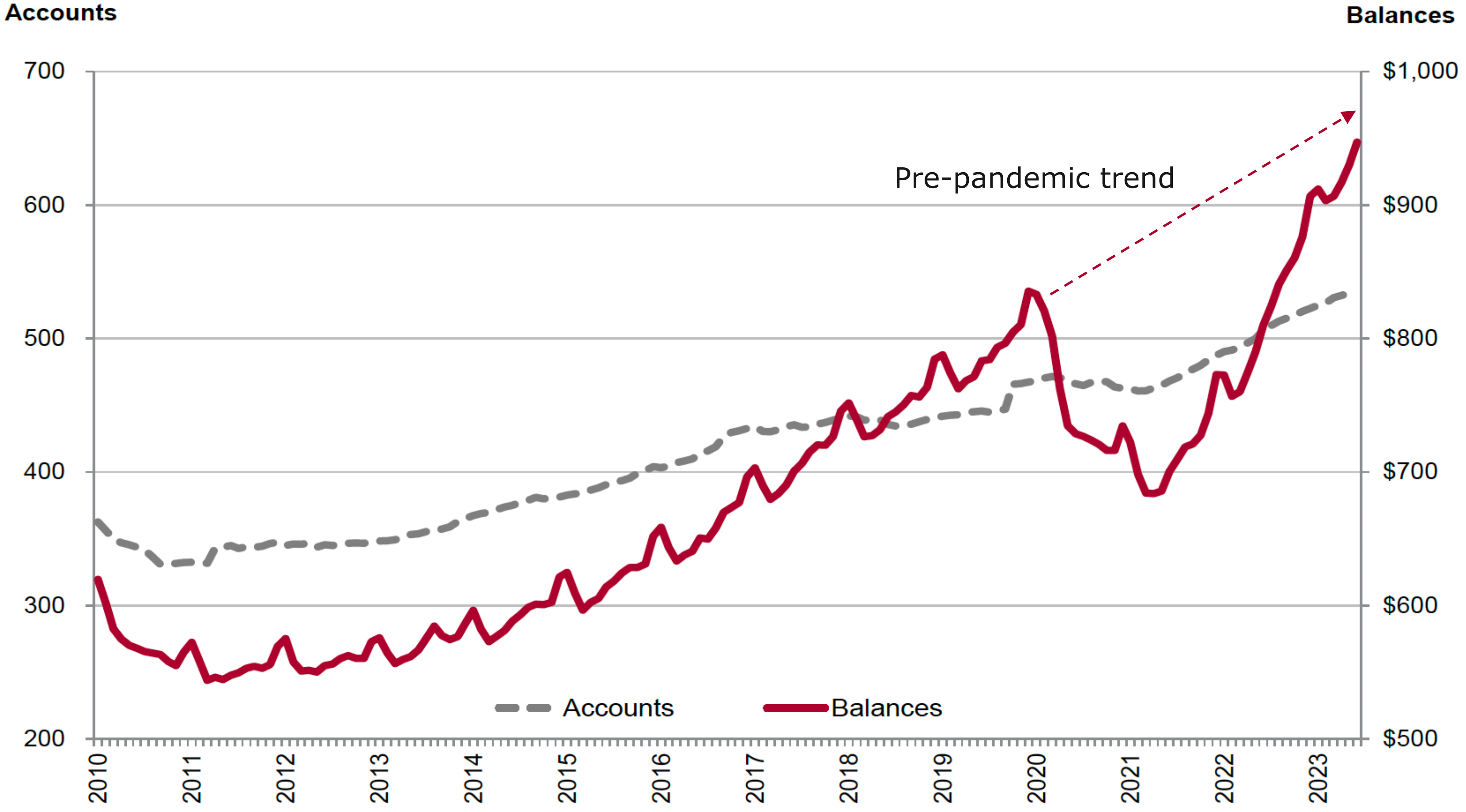
Source: Transunion, data as of June 30, 2023

Credit card balances are high but within pre-pandemic trendline

Outstanding balances increased 17% YoY and accounts increased 5.9%

Outstanding Loans

Number of Accounts in Millions; NSA
Balances in $Billions; NSA



Source: Equifax Inc.

Data as of June 2023

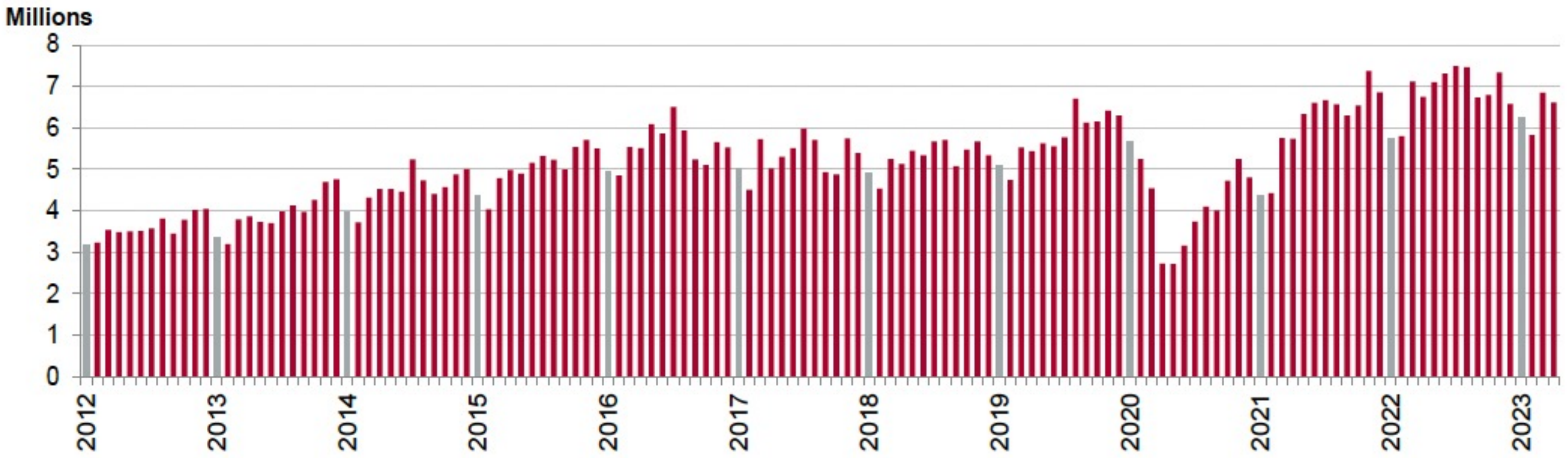
Credit card issuers continue to tighten underwriting

YTD subprime originations have decreased 14% YoY

CC Originations

Bankcard Originations: Accounts

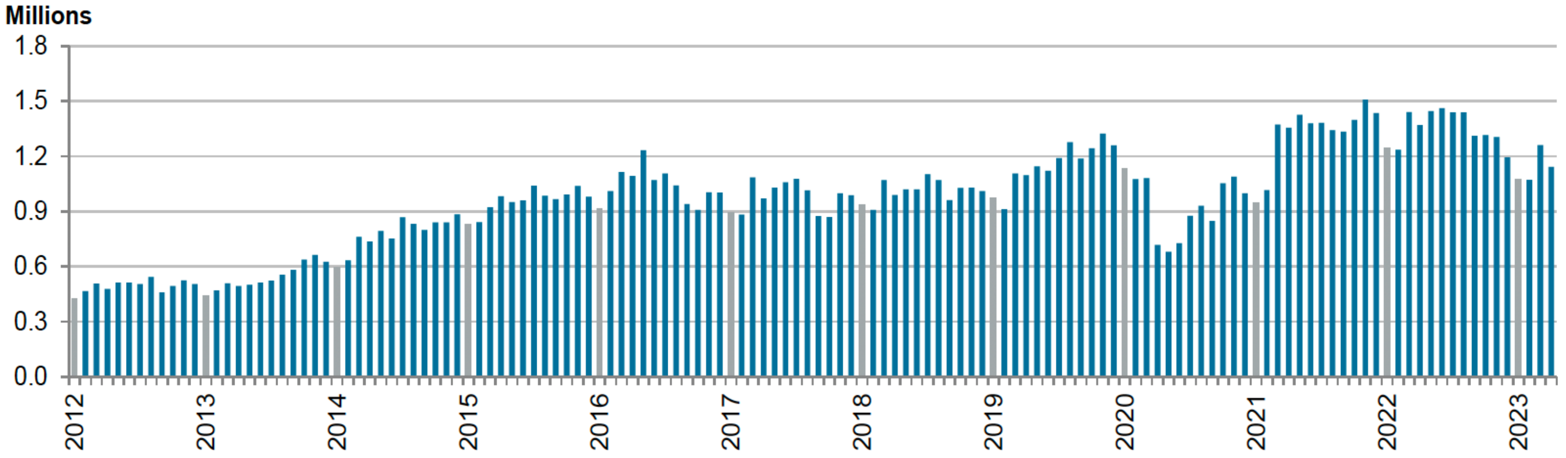
Number of Accounts in Millions; NSA



Subprime Bankcard Originations: Accounts

Number of Accounts in Millions; NSA

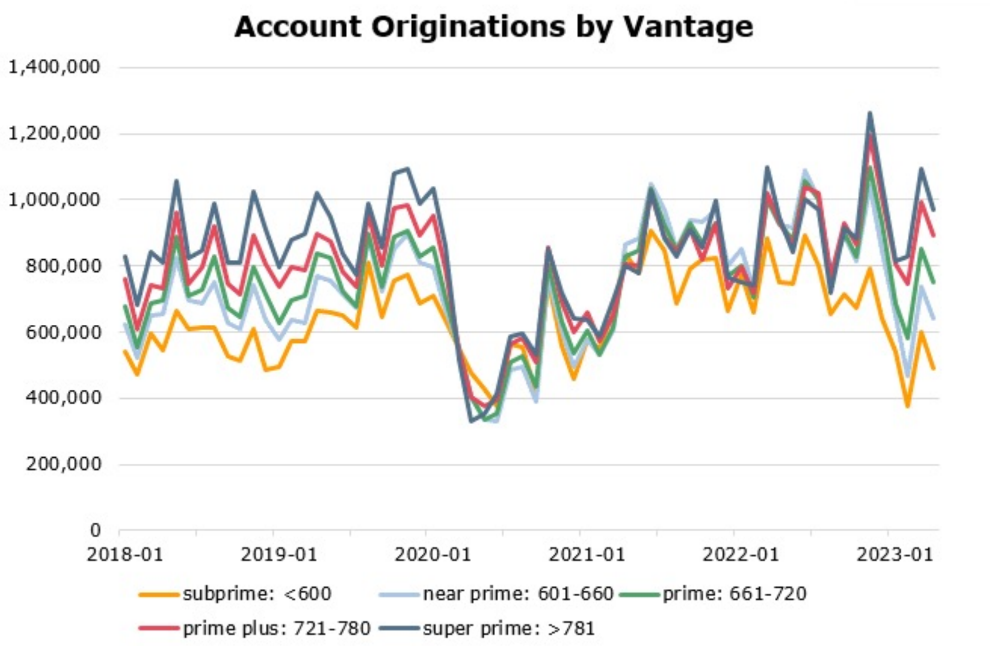
Subprime accounts defined as those with borrower's origination VantageScore® 3.0 credit score less than 620

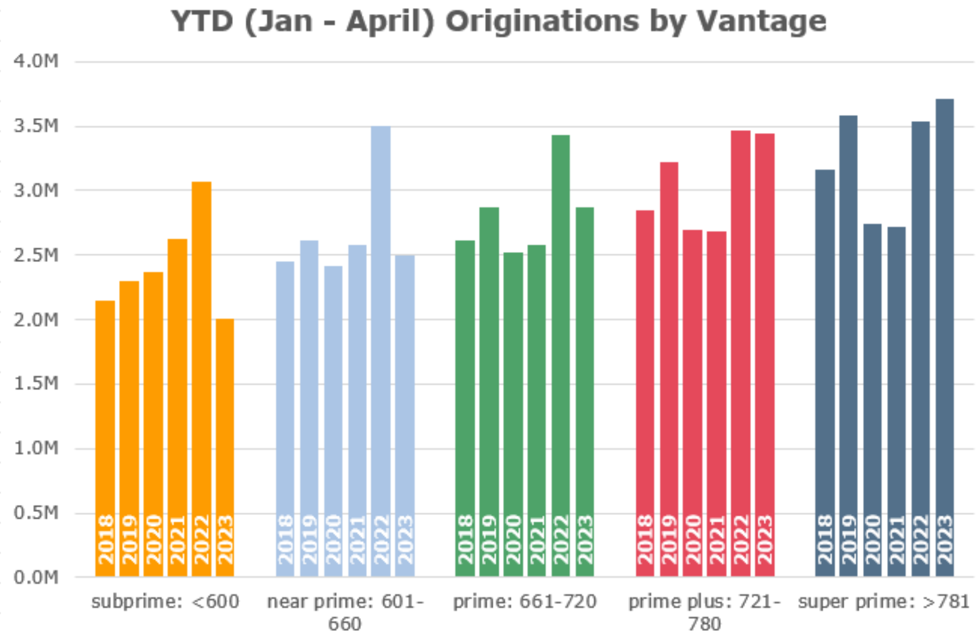


Source: Equifax, originations through April 2023 reported as of June 2023

YTD account originations have significantly decreased for subprime due to tightening

Near prime and prime customers are near pre-pandemic averages





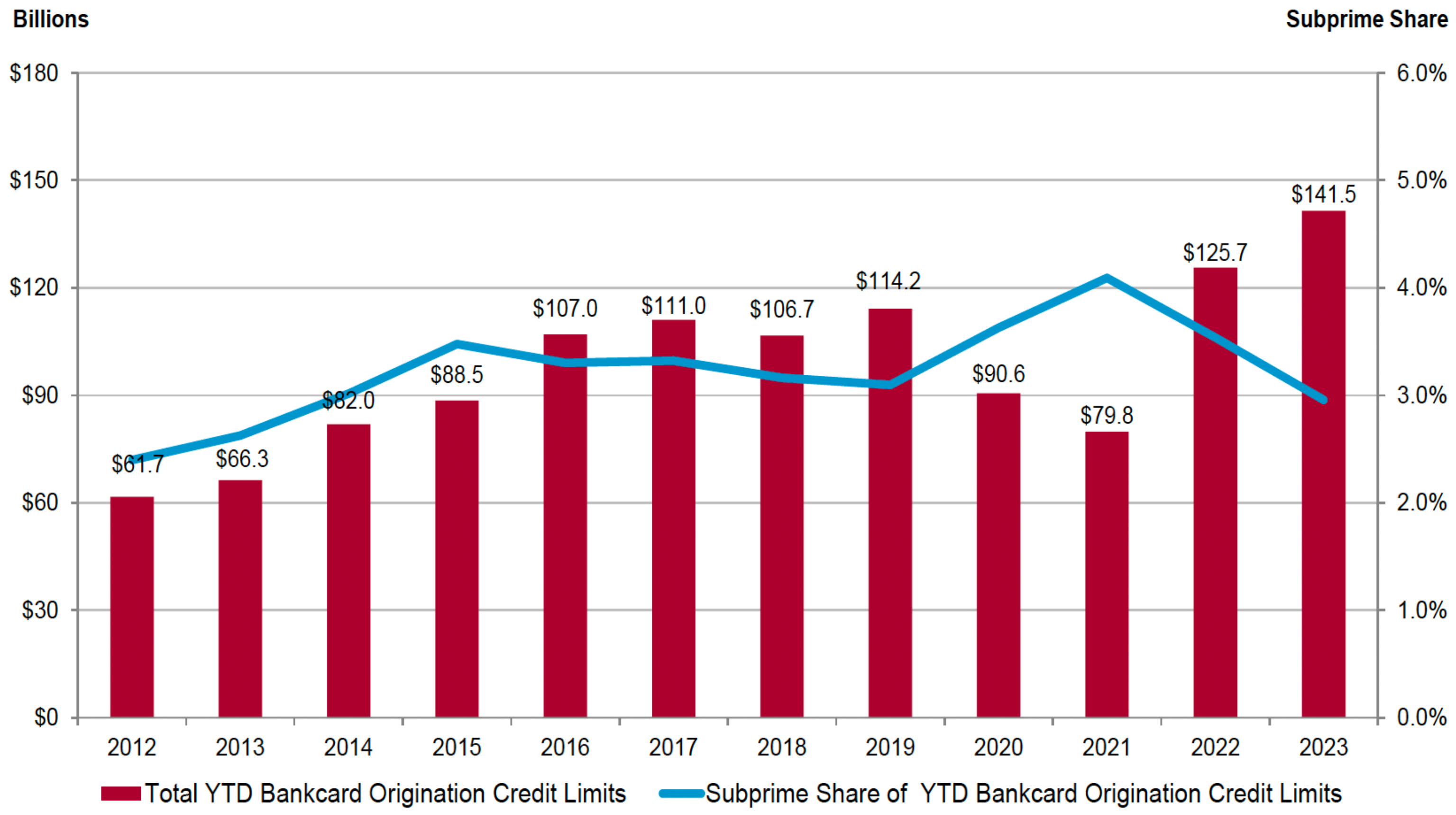
Source: 2OS, Equifax Ignite. Originations through April 2023 reported as of June 2023.
Vantage buckets are lagged 3 months from the archive date. For more details on methodology, see appendix.

Credit card issuers continue to tighten underwriting

Although origination credit limits continue to rise, the share of subprime credit limit is decreasing.

YTD Bankcard Origination Credit Limits

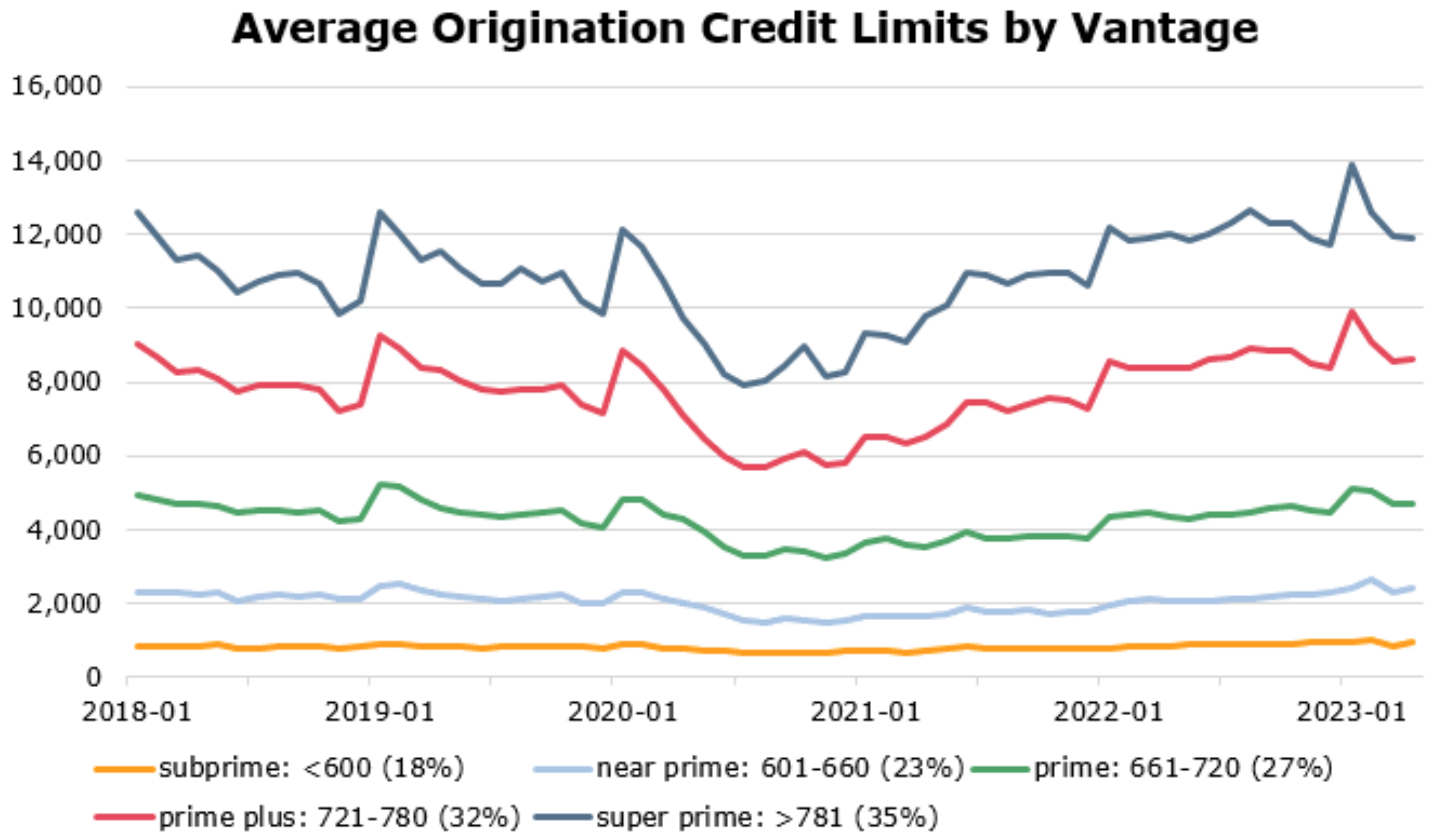
Year-to-Date Total Credit Limits in $Billions; Subprime Share of Total Origination Credit Limits (%); NSA
Subprime accounts defined as those with borrower's origination VantageScore® 3.0 credit score less than 620



Source: Equifax, originations through April 2023 reported as of June 2023

Average credit limit is near pre-pandemic levels for near prime and prime consumers

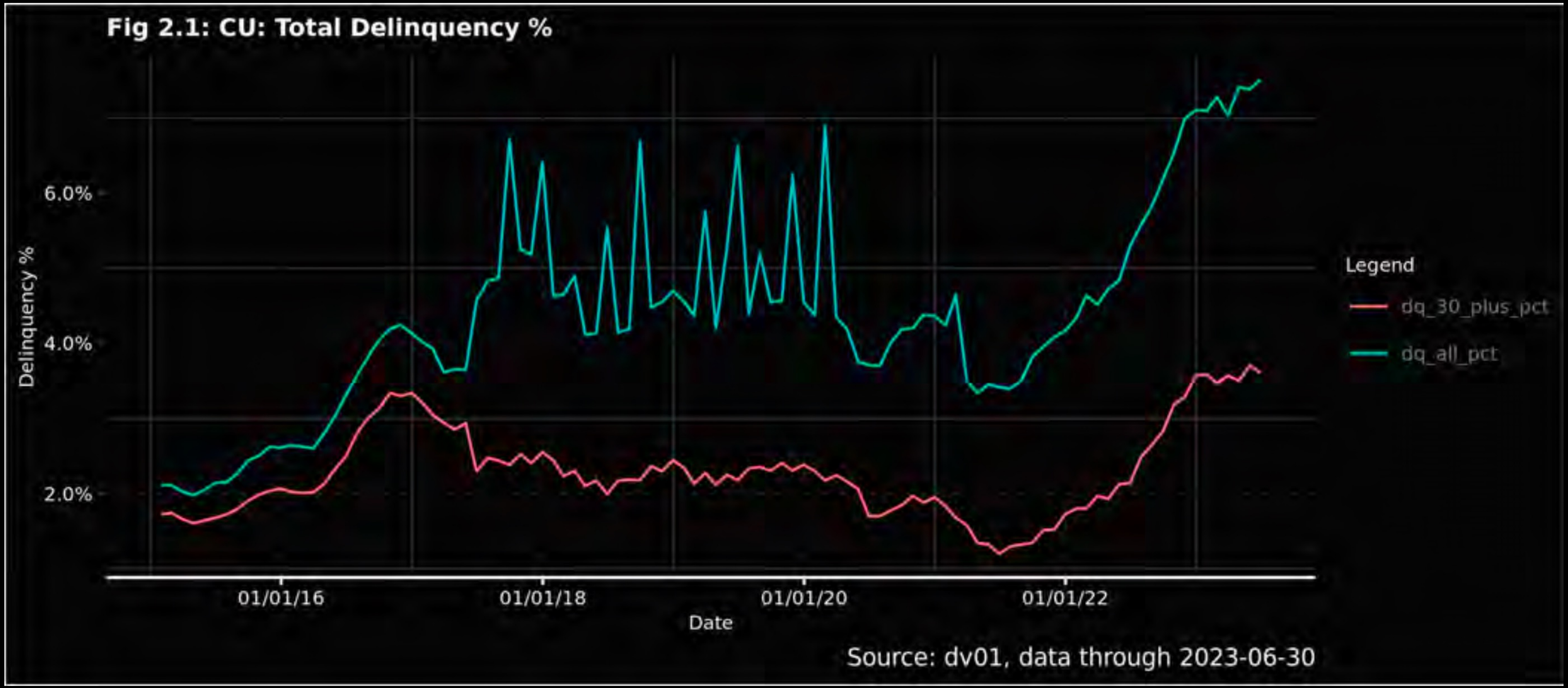
Credit limit has exceeded pre-pandemic averages for prime plus and super prime groups



Source: 2OS, Equifax Ignite. Originations through April 2023 reported as of June 2023.
Vantage buckets are lagged 3 months from the archive date. For more details on methodology, see appendix.

- State of the Consumer
- Credit Card
- Personal Loan
- Auto
- Student Loan
- Mortgage

We continue to see slight increases in Personal Loan delinquencies

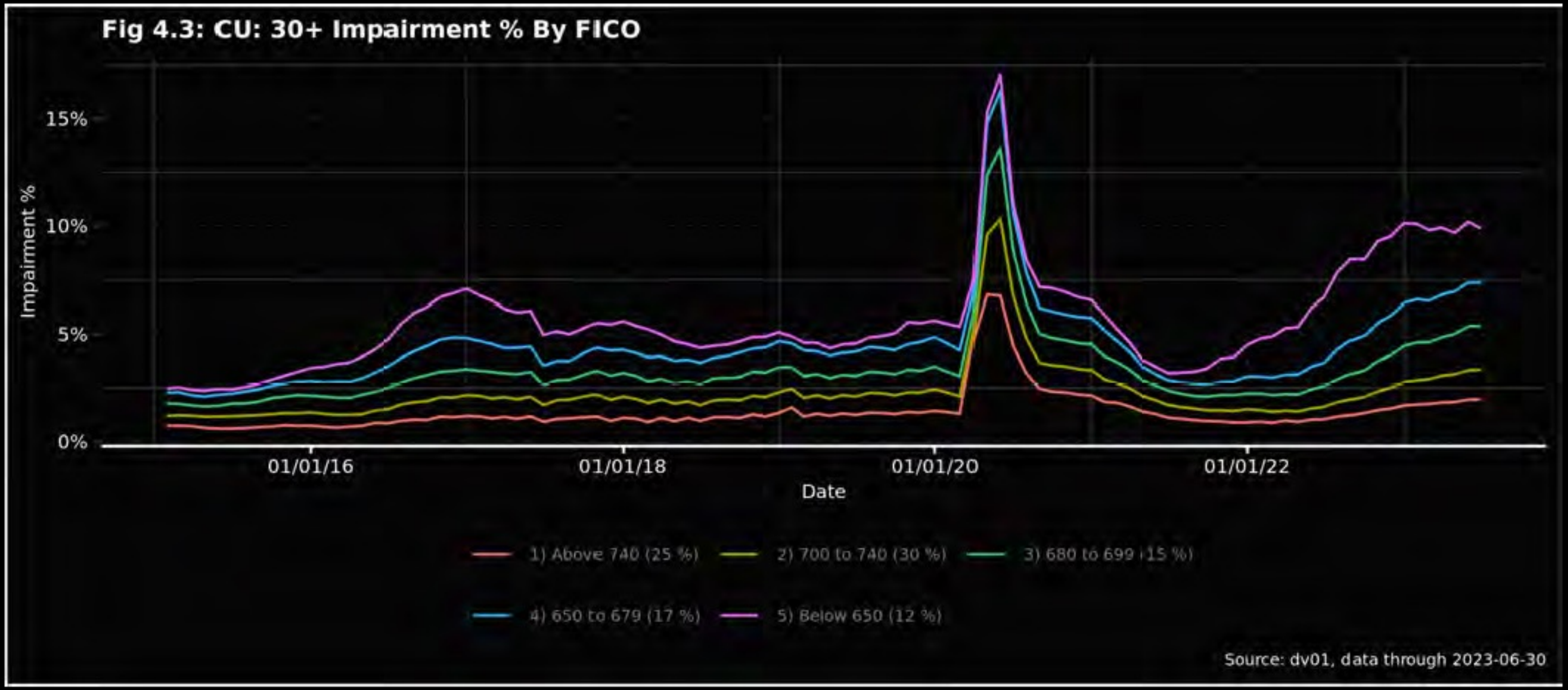


Source: dv01, data as of June 30, 2023

Subprime delinquencies have flattened up in recent months

Increase in delinquencies across all other FICO segments

Impairment = Delinquencies + Modification



Source: dv01, data as of June 30, 2023

Tightening in Underwriting

Avg PL origination FICO continues to rise; the origination subprime concentration continues to decrease well below pre-pandemic levels.

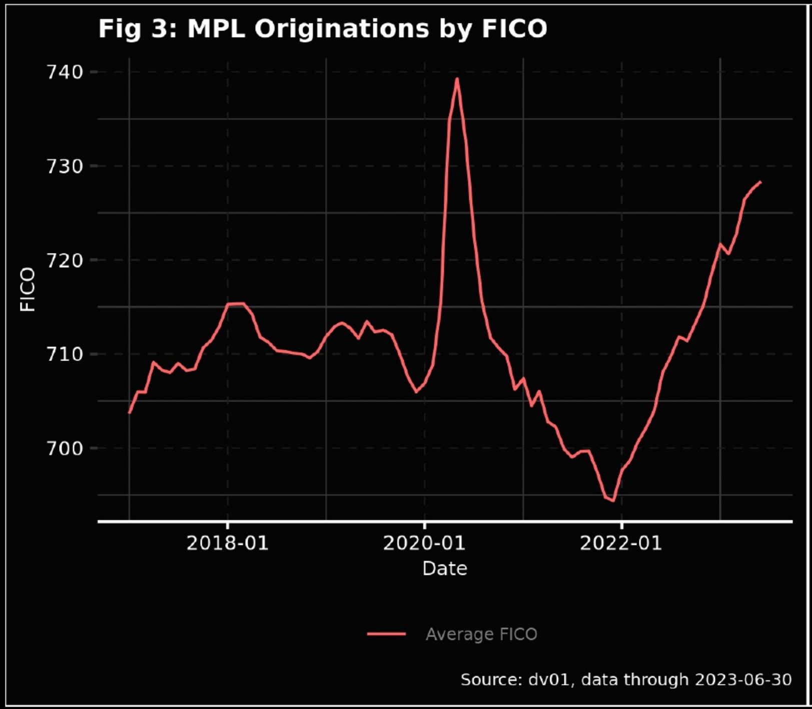


Fig 3: MPL Originations by FICO

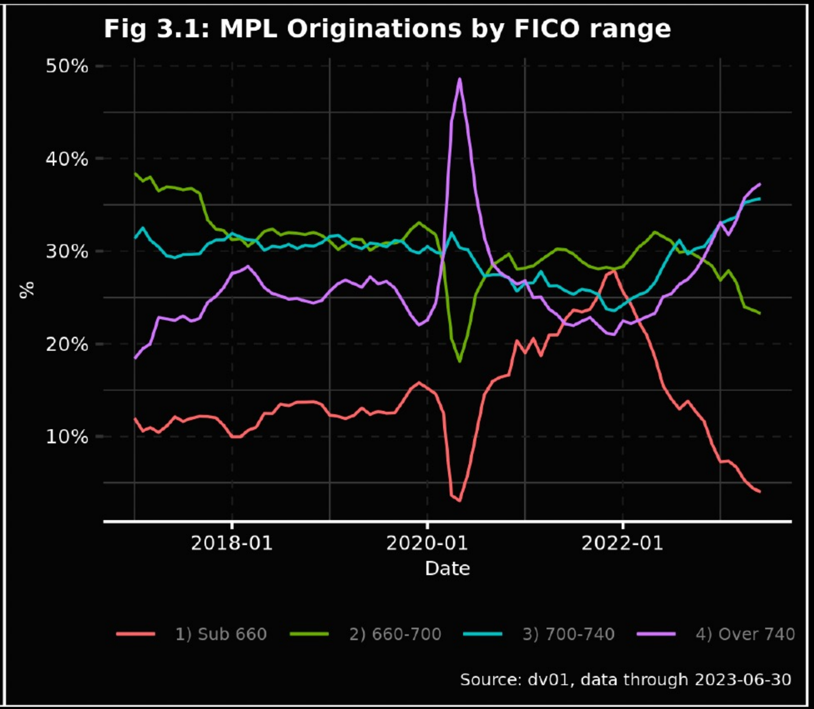
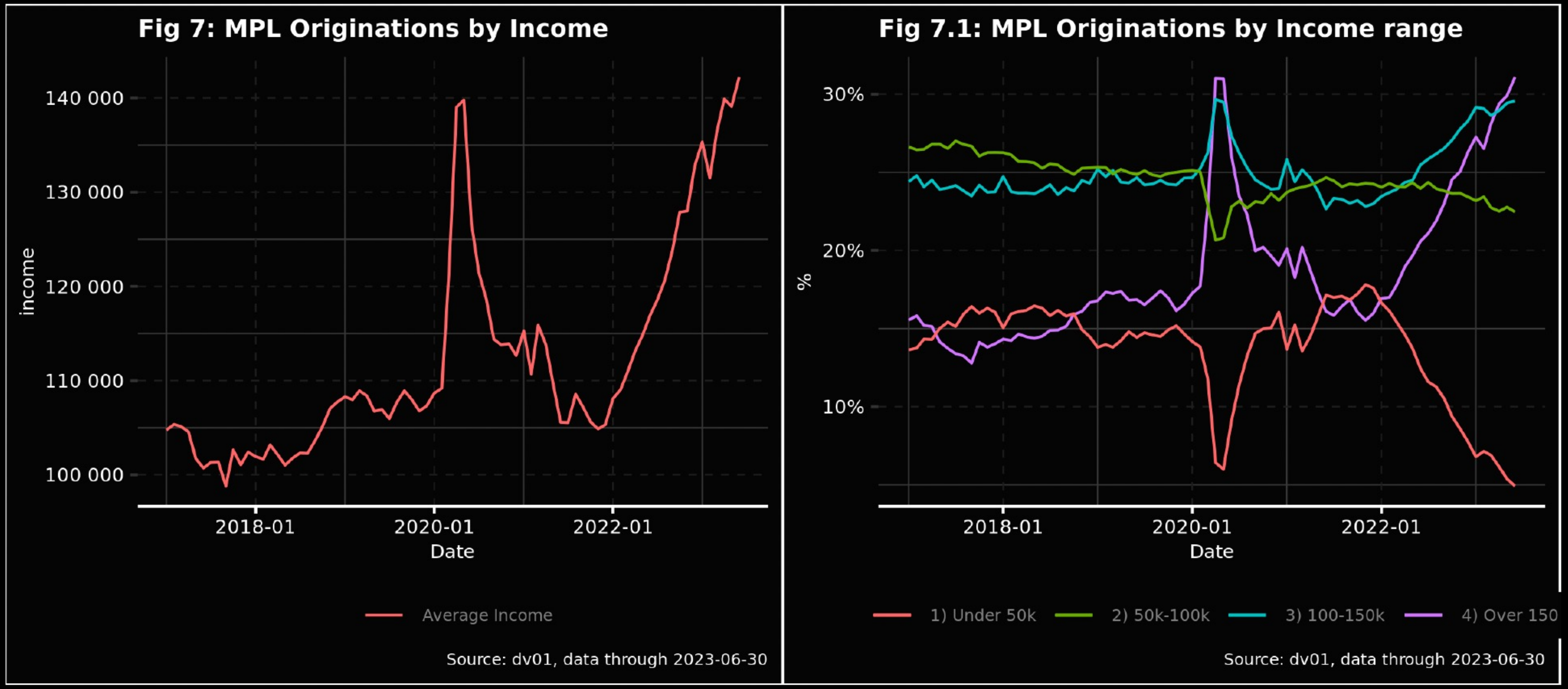


Fig 3.1: MPL Originations by FICO range

Source: dv01, data as of June 30, 2023

Tightening in Underwriting

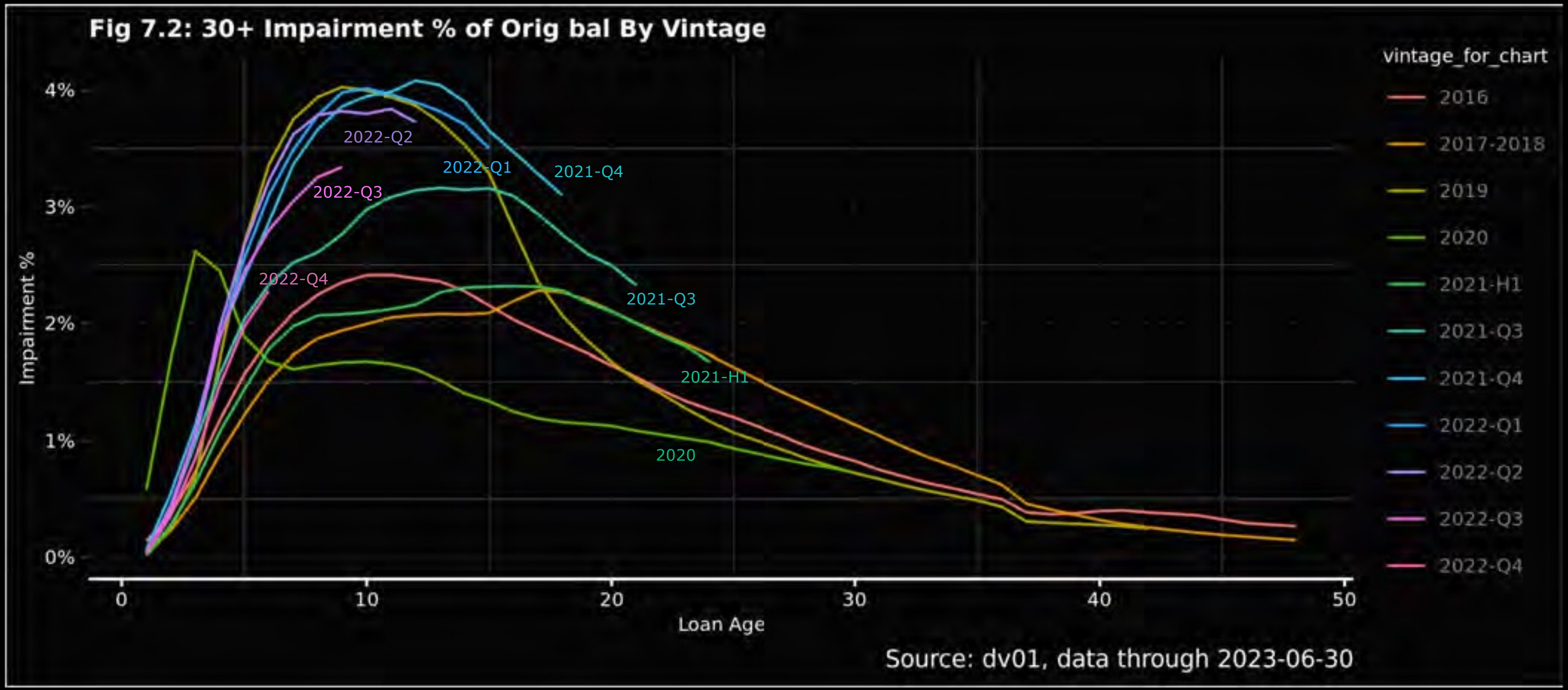
Avg PL origination income is now well above pre-COVID levels and loans to sub-$50K income continue to drop.



Source: dv01, data as of June 30, 2023

Tightening in underwriting is leading to better performance in more recent vintages

Impairment = DQ + Modification

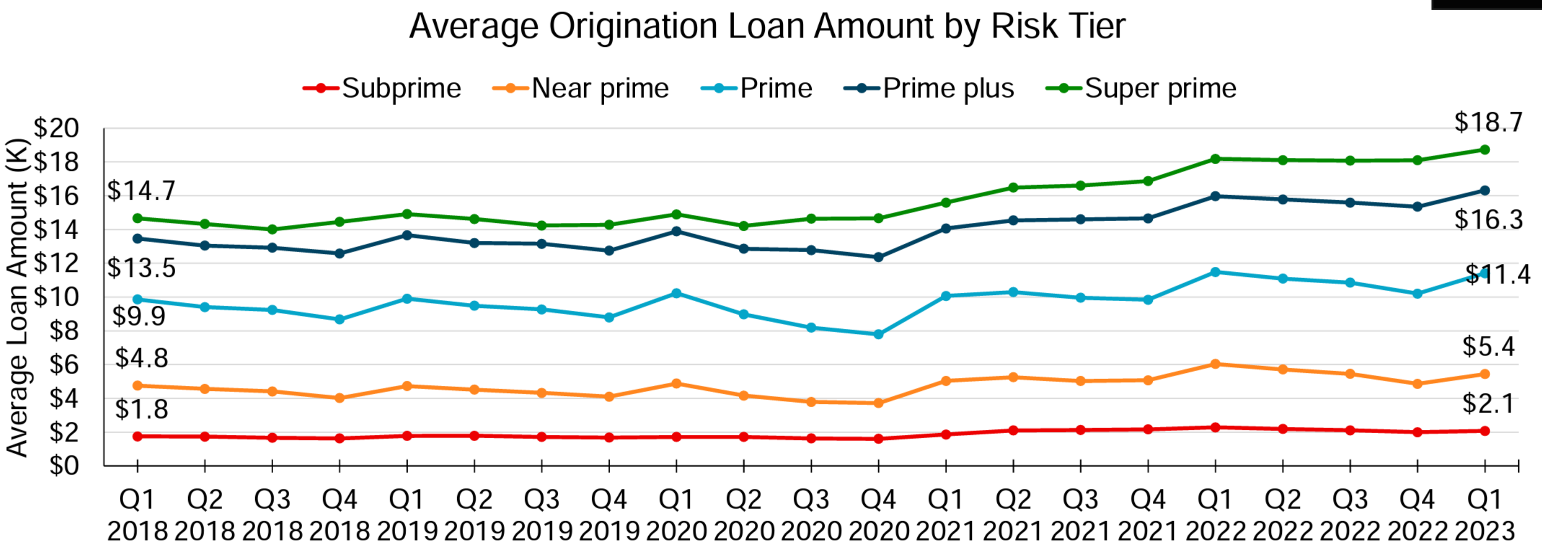


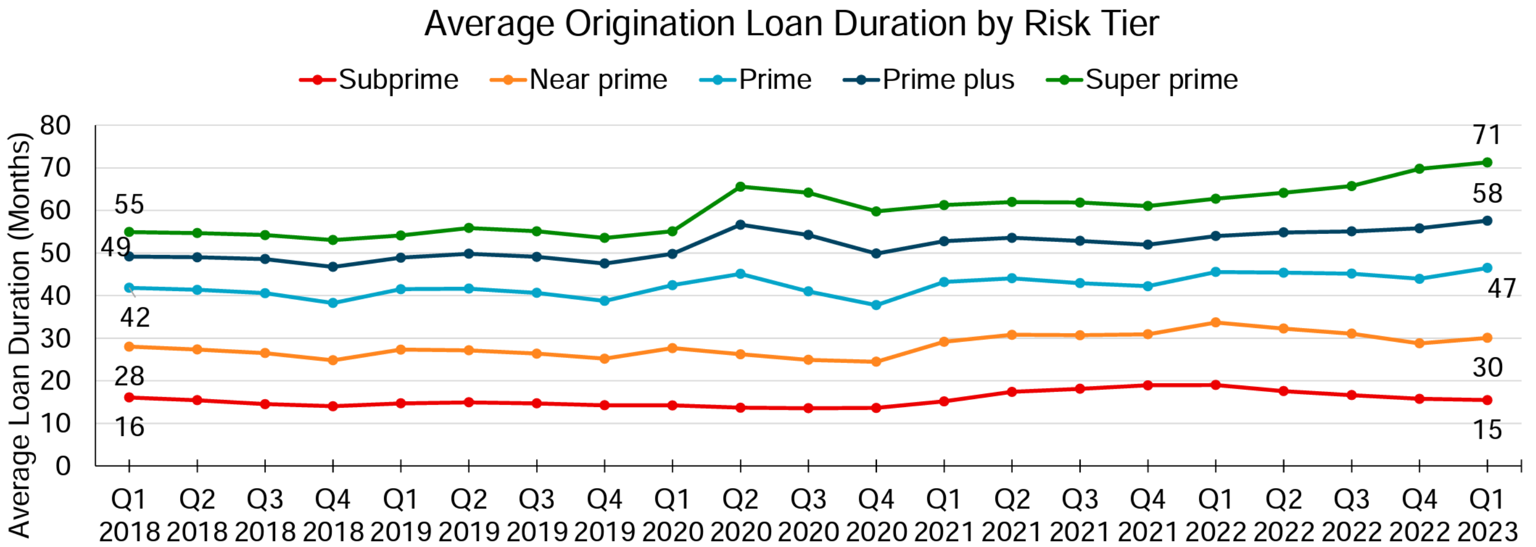
Lenders who tightened more heavily in 2022 are seeing better performance

Source: dv01, data as of June 30, 2023

Average origination loan amounts and durations are higher than pre-pandemic levels

Most of the increase is seen in prime, prime plus and super prime risk tiers.



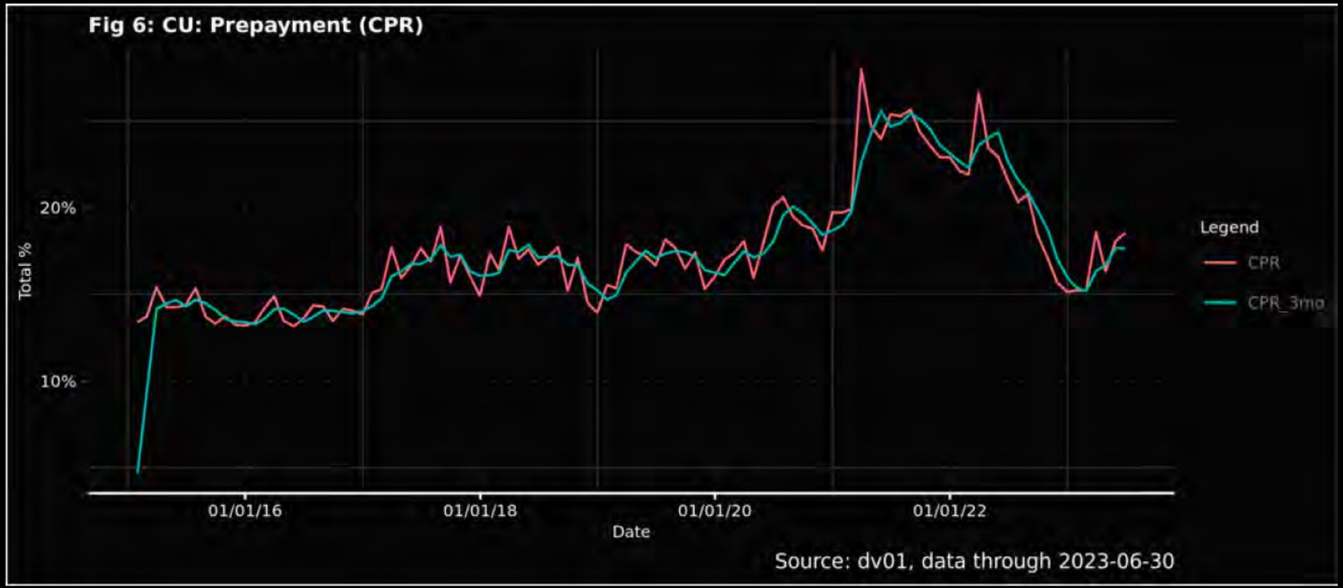


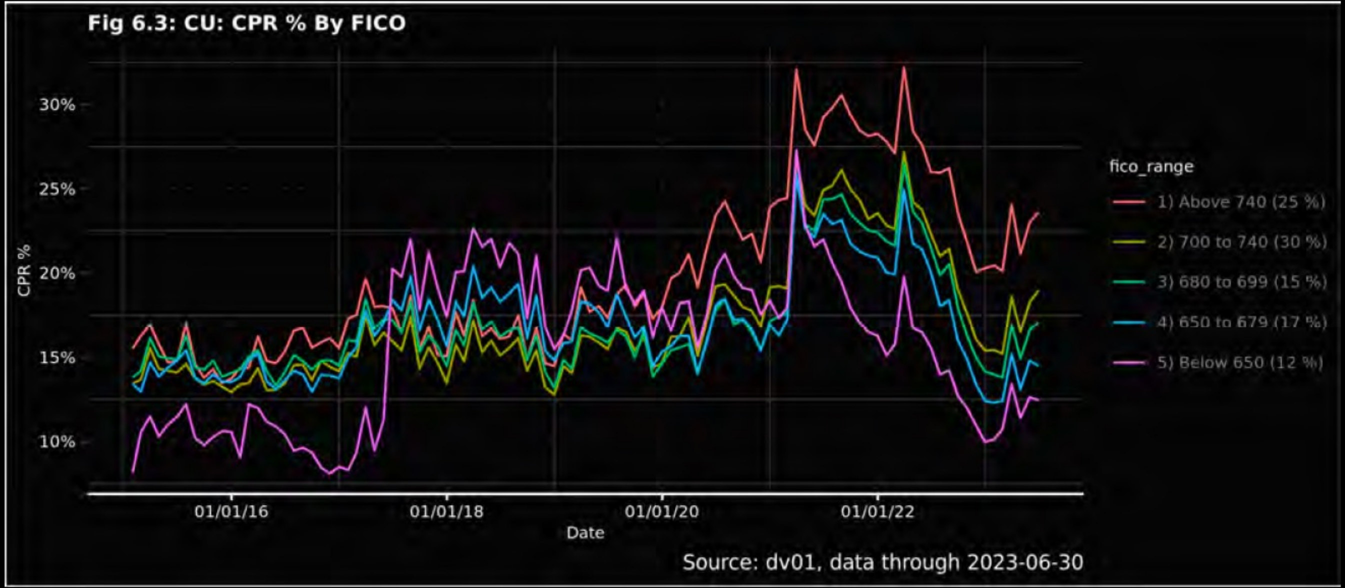
NOTE: Consumers' risk tiers is determined at the end of the quarter prior to origination to approximate risk tier at time of origination

Source: Transunion

Prepayments rose in June in line with seasonal trends; they are mostly back to pre-COVID levels

Loans below 680 FICO are still below pre-COVID prepayment trends





Source: dv01, data as of June 30, 2023

- State of the Consumer
- Credit Card
- Personal Loan
- Auto
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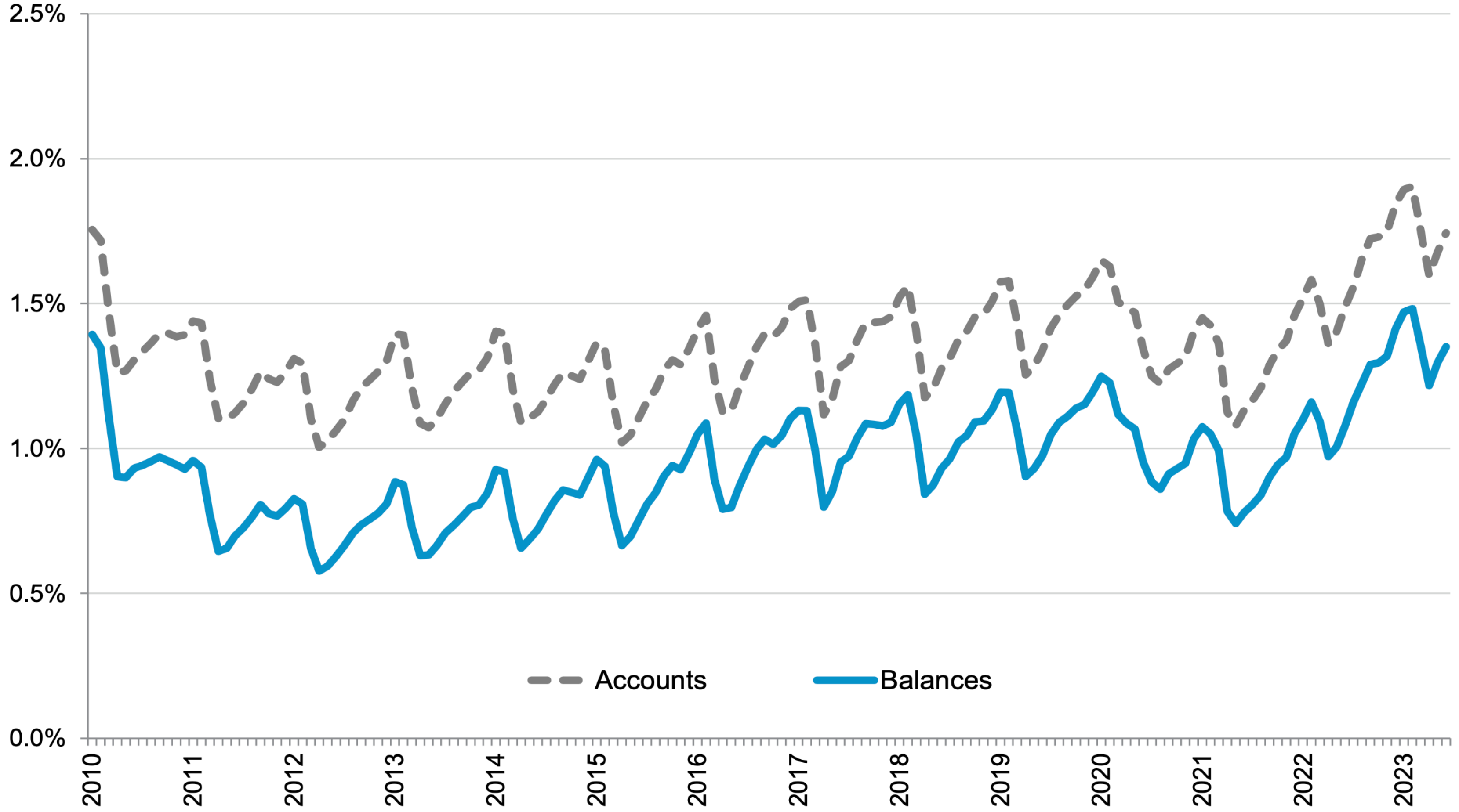
- Mortgage

Auto delinquencies increased and trending slightly above pre-pandemic levels

Severe Delinquency Rate

60+ Days Past Due
Percent of Accounts and Balances; NSA; Excludes Severe Derogatory and Bankruptcy



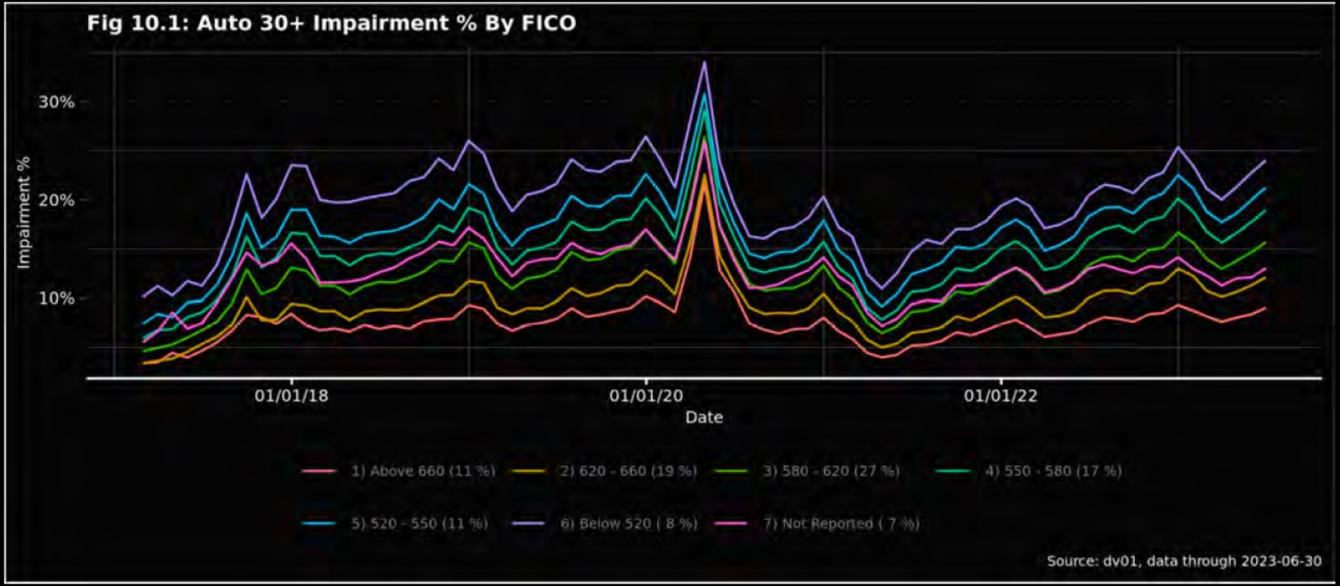
Source: Equifax Inc.

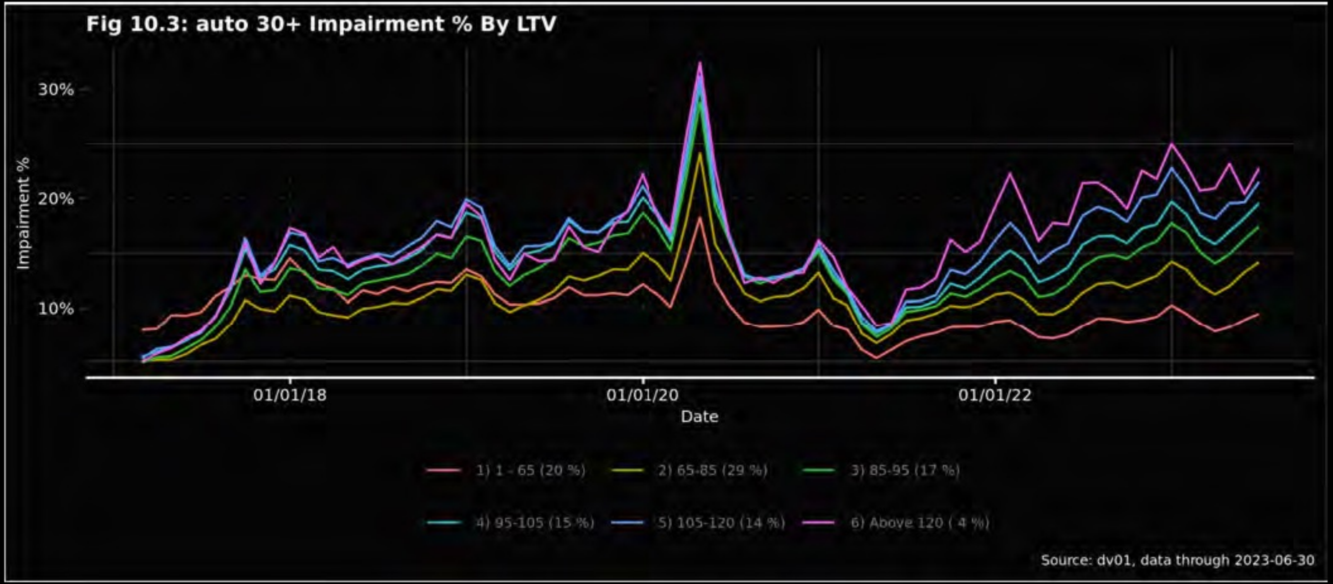
Data as of June 2023

Delinquencies increased across the board but within pre-pandemic levels

LTV continues to be a key risk differentiator post-COVID

Impairment = DQ + Modification

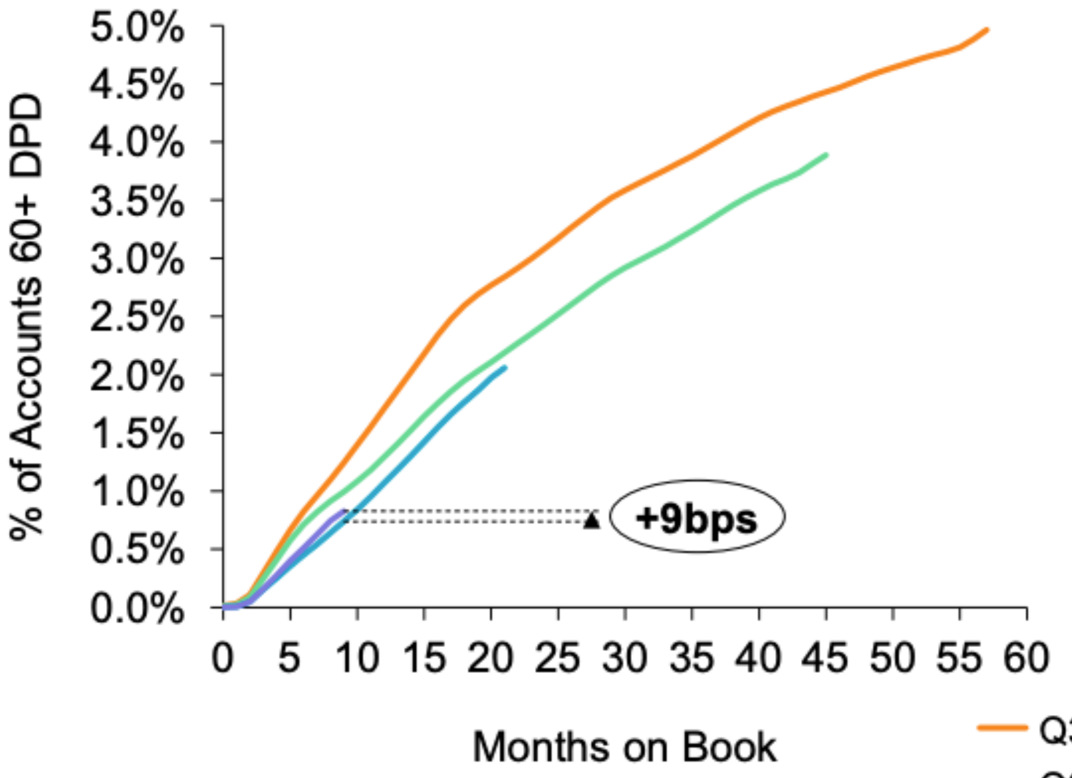




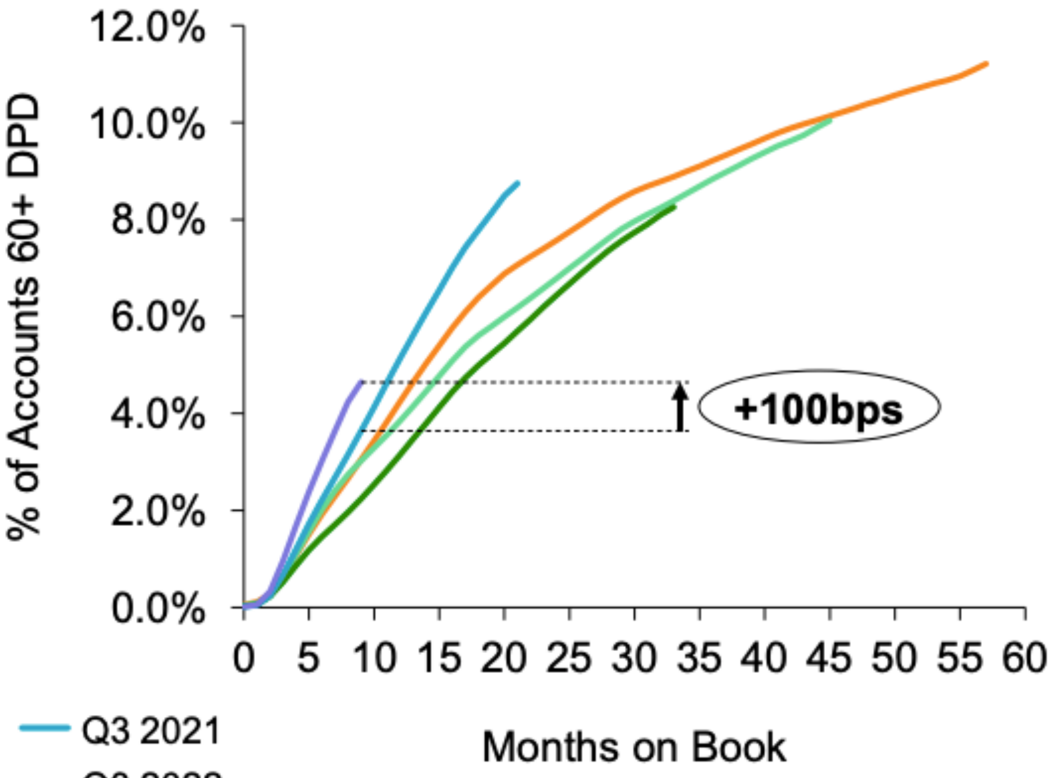
Source: dv01 Subprime Auto, data as of June 30, 2023

The performance of Used Auto continues to worsen in recent vintages, while New Auto has improved compared to pre-pandemic

Vintage Delinquency of New Auto Loans and Leases



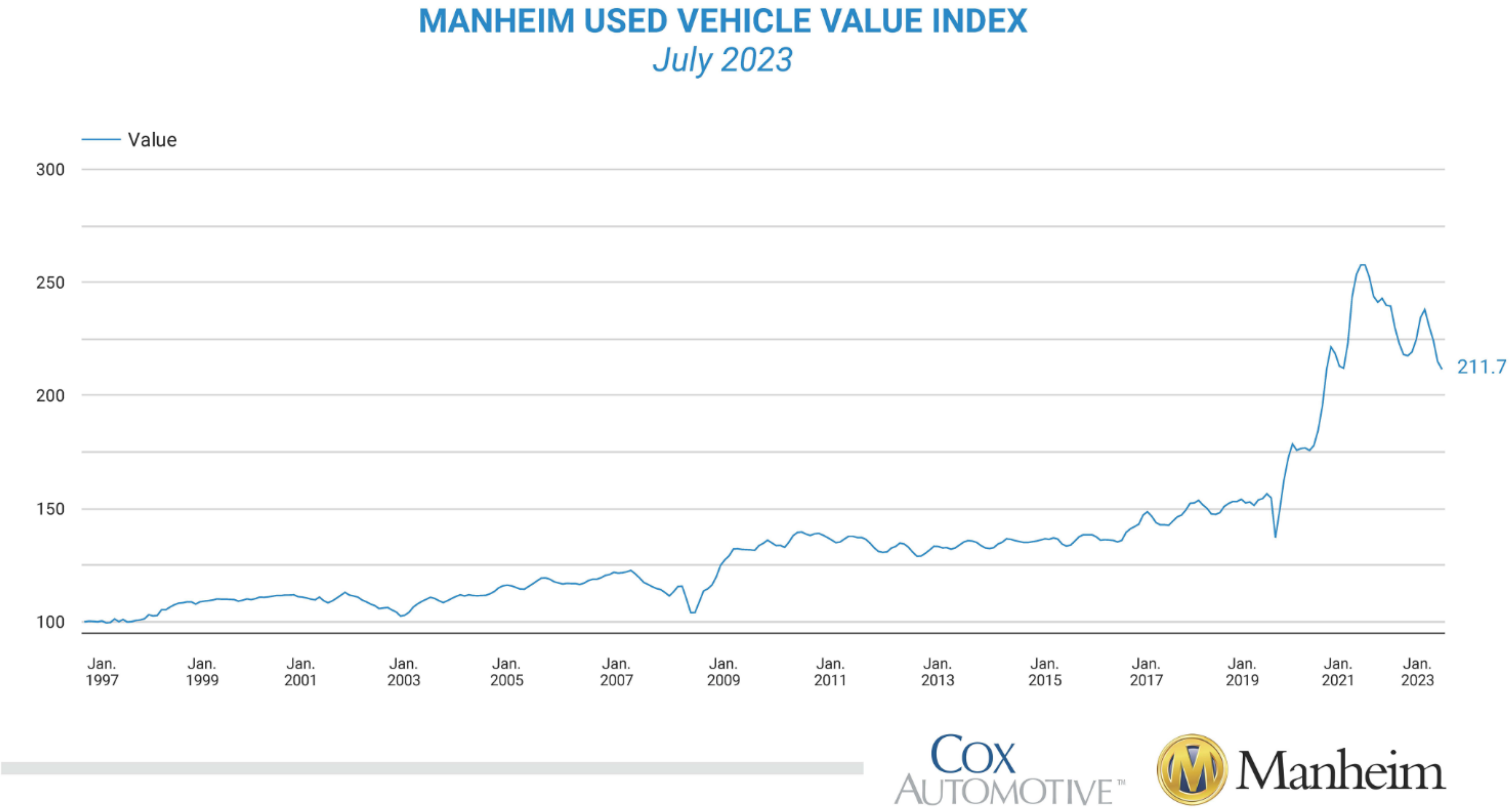
Vintage Delinquency of Used Auto Loans and Leases



Q3 2018 Q3 2021
Q3 2019 Q3 2022
Q3 2020

Source: Transunion

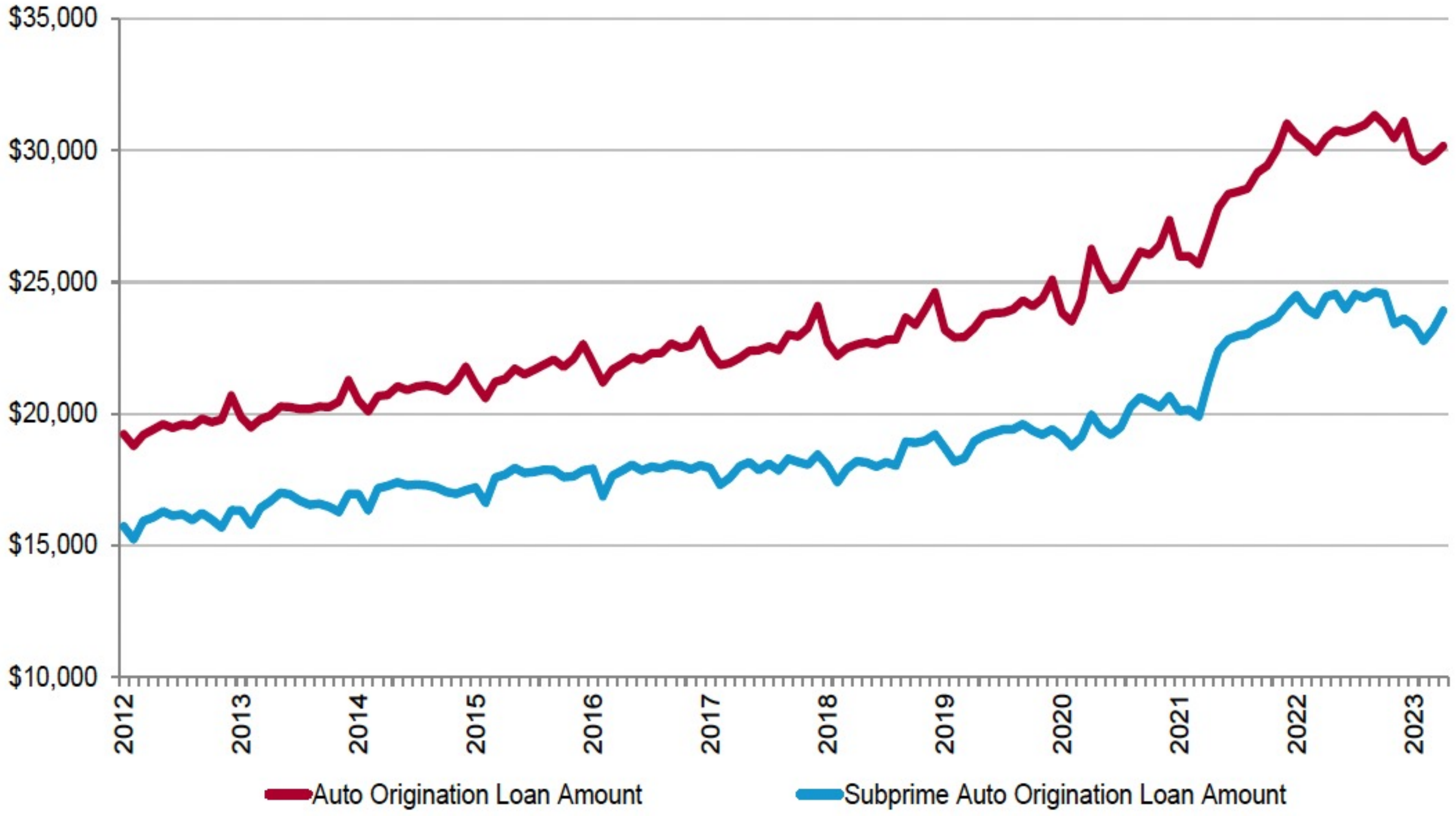
Wholesale used-vehicle prices remain elevated



Auto originations balances remain high as vehicle prices are elevated

Auto Loan Average Origination Balance

Average Origination Balance Over Time; NSA
Subprime accounts defined as those with borrower's origination VantageScore® 3.0 credit score less than 620



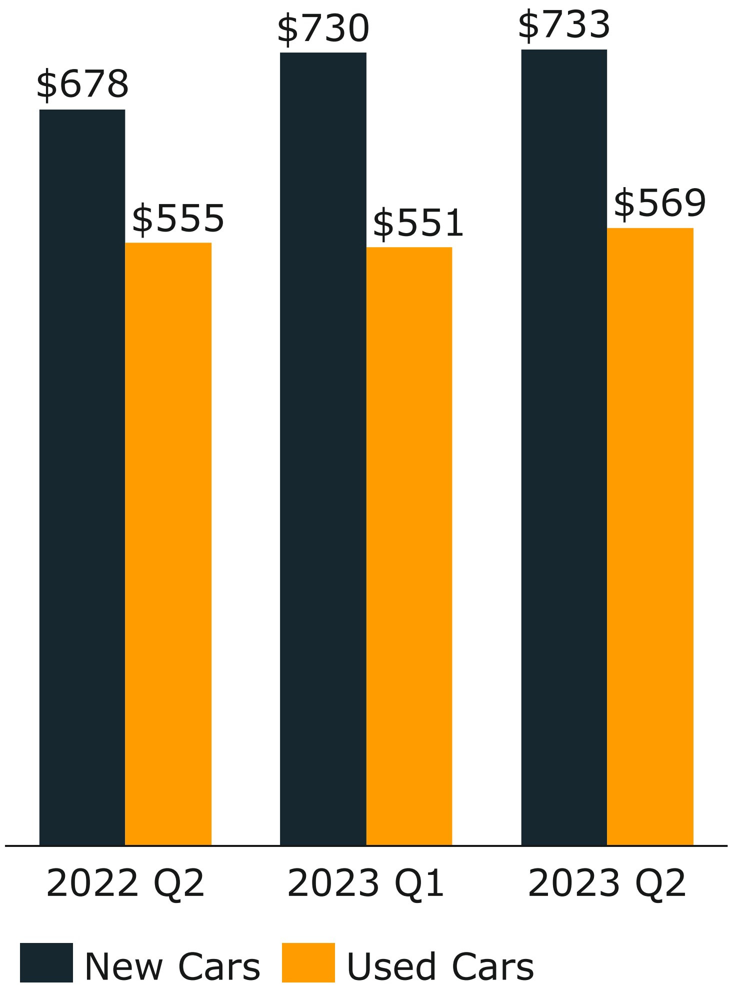
Source: Equifax Inc.

Originations through April 2023 reported as of June 2023

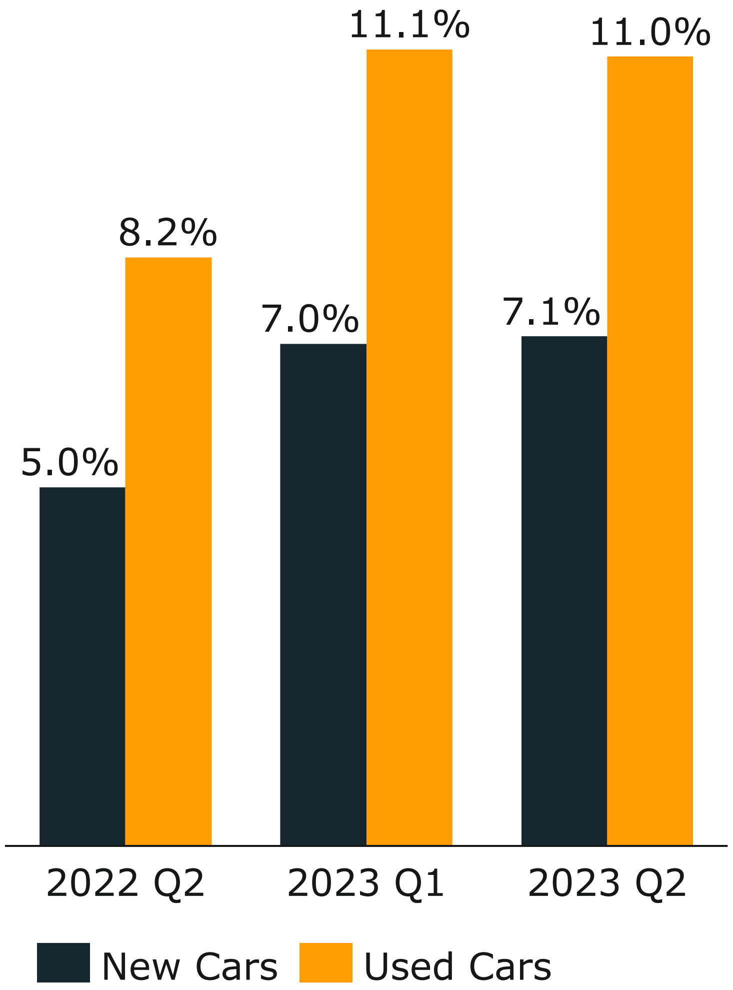
Higher interest rates and vehicle values are driving the high monthly payments

Monthly payment on new cars reached a new record high

Average monthly payment on new and used cars



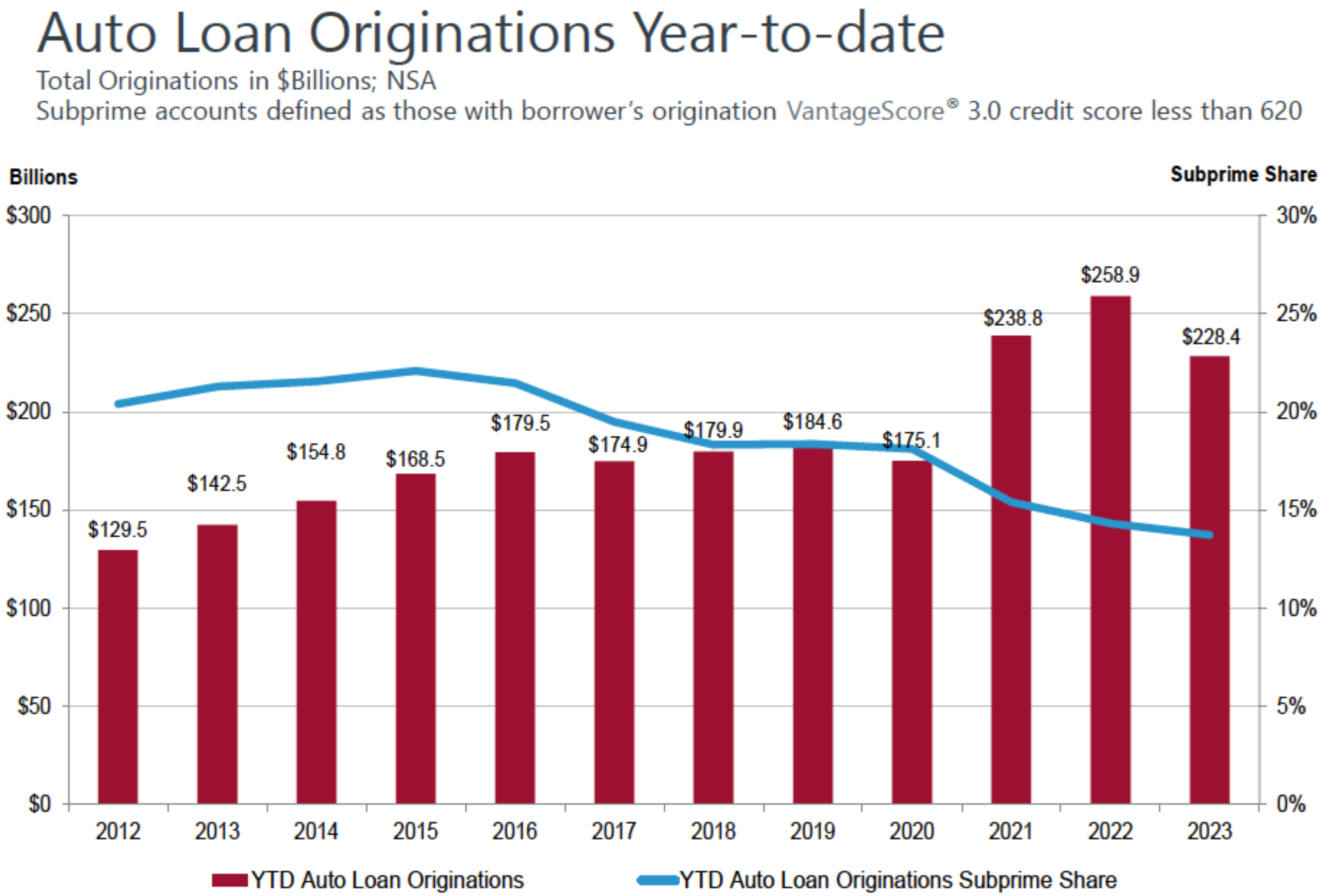
APR on new and used cars



Source: Edmunds, data as of July 3, 2023

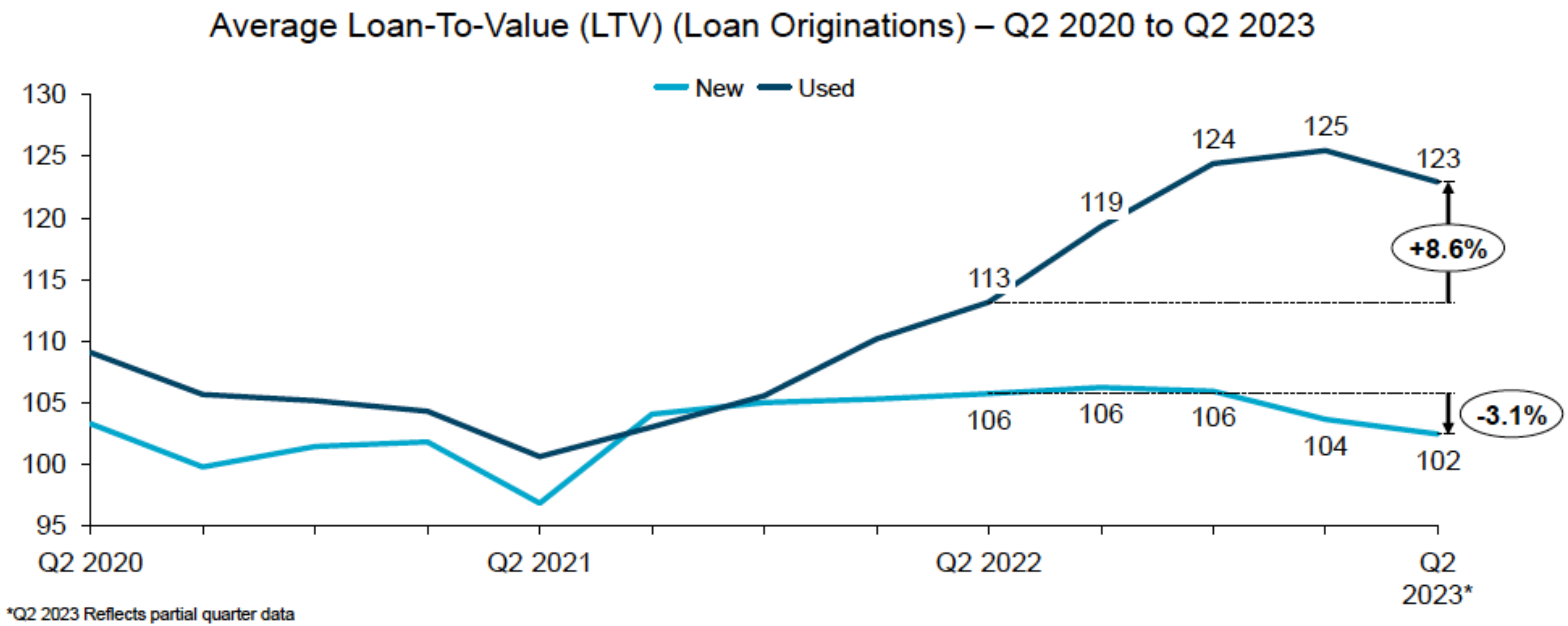
There is overall lower auto loan originations YTD

The subprime share of auto loan origination has reached decade lows



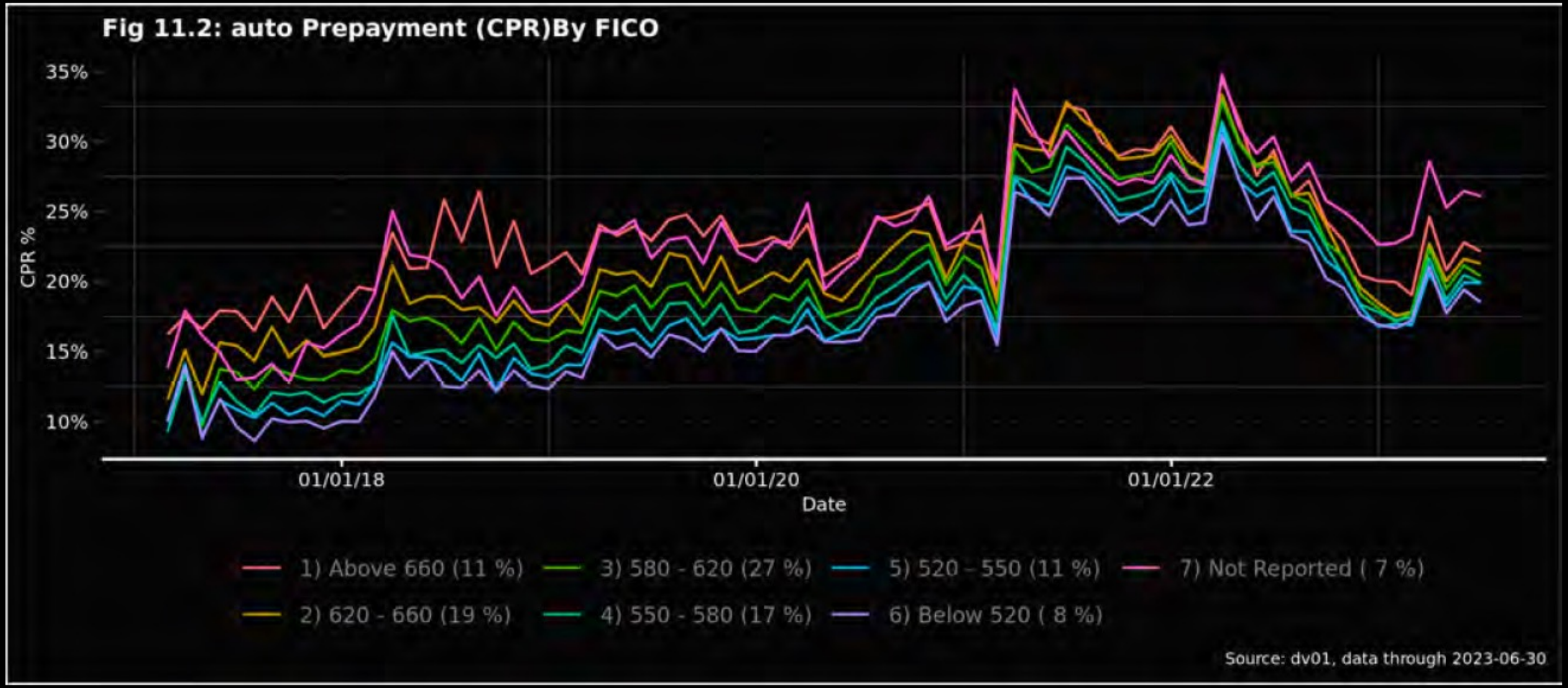
Source: Equifax, originations through April 2023 reported as of June 2023

Average LTV continues remains highly elevated for used auto loans, while new auto LTV is within pre-pandemic levels



Source: Transunion

Prepayment rates have flattened in recent months



Source: dv01, data as of June 30, 2023

- State of the Consumer
- Credit Card
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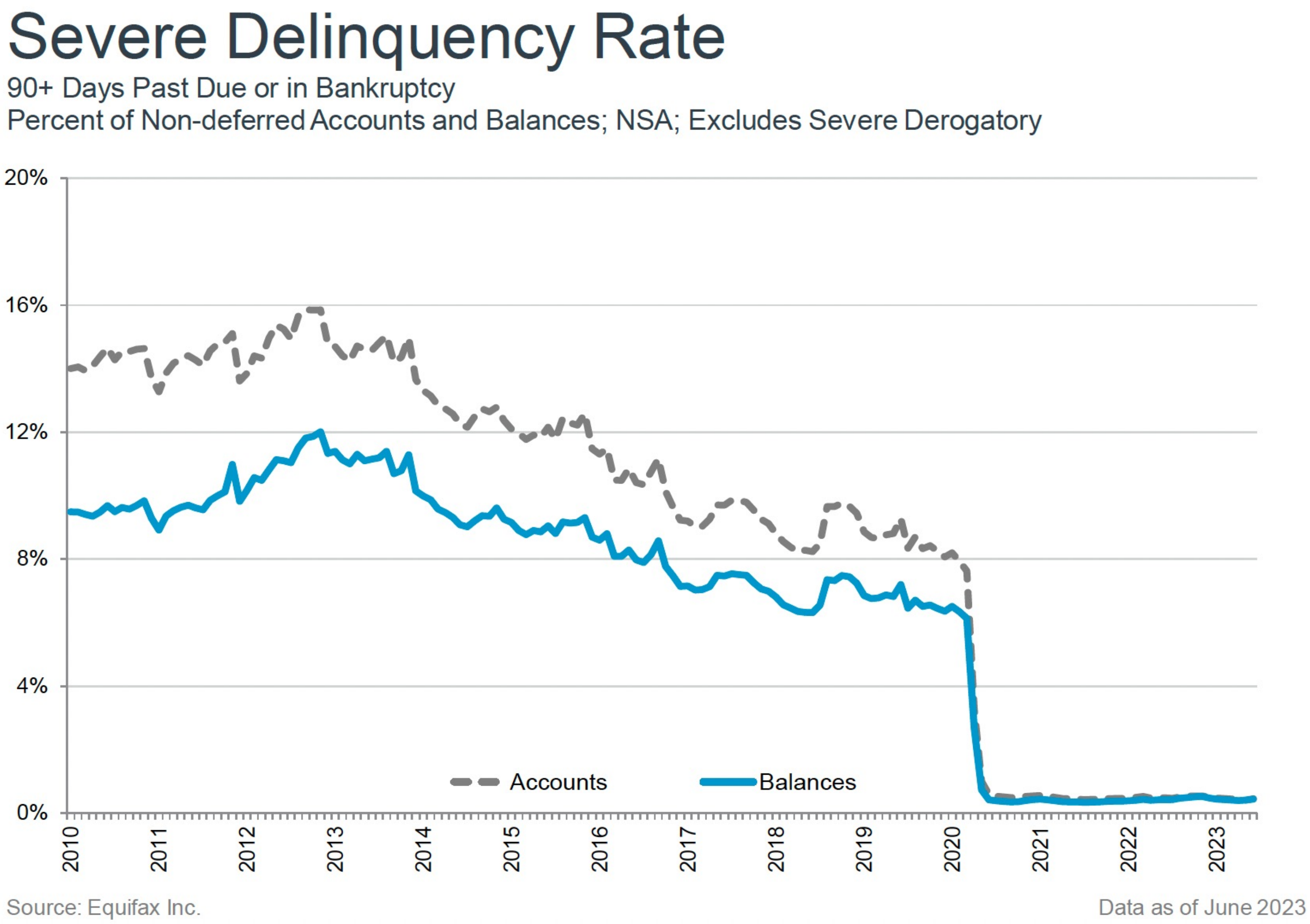
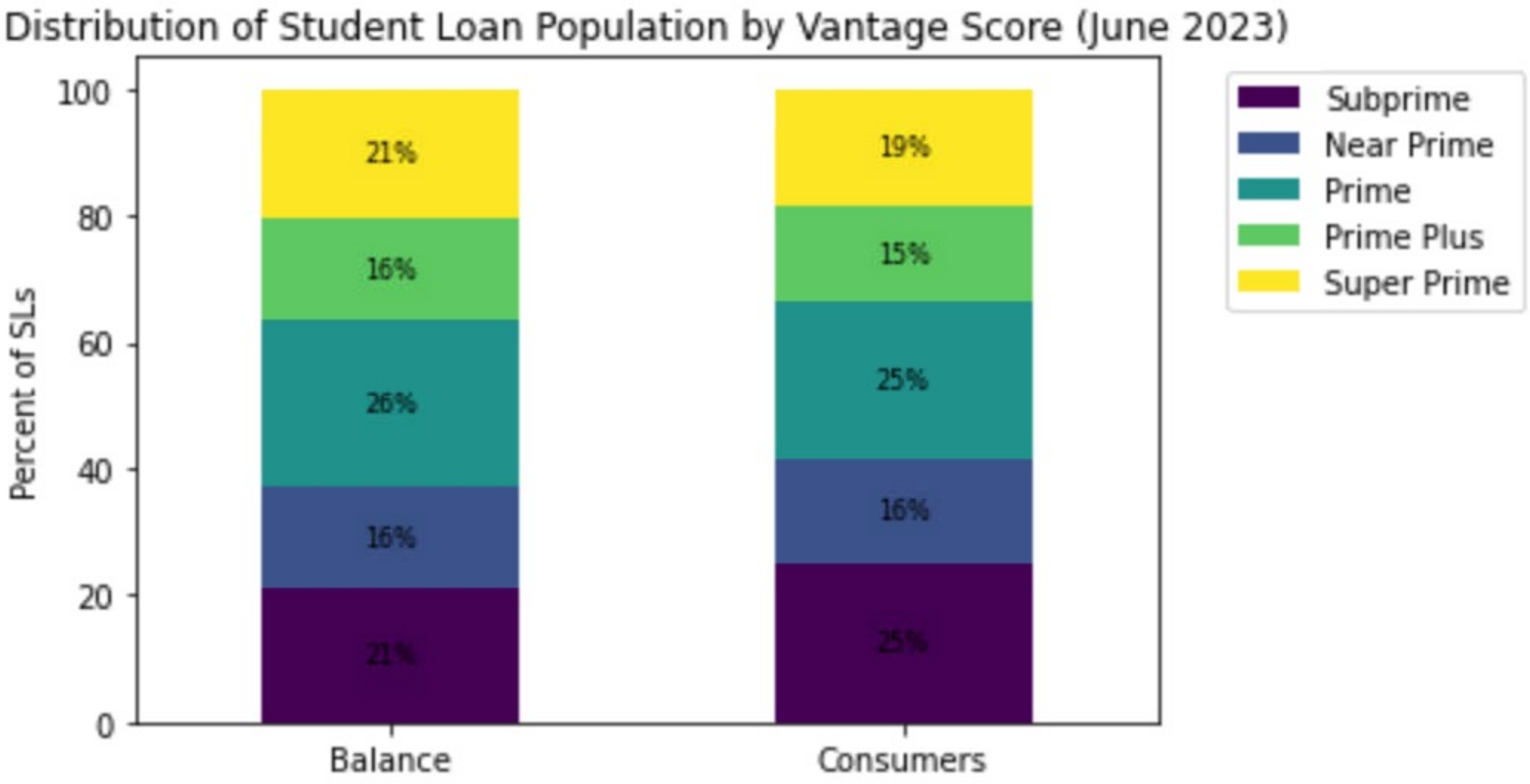
- Auto
- Student Loan
- Mortgage

Federal student loan delinquencies have been non-existent because of deferral programs

As deferrals are set to expire in September 2023, we can expect an increase in risk across other asset classes as payment burdens rise



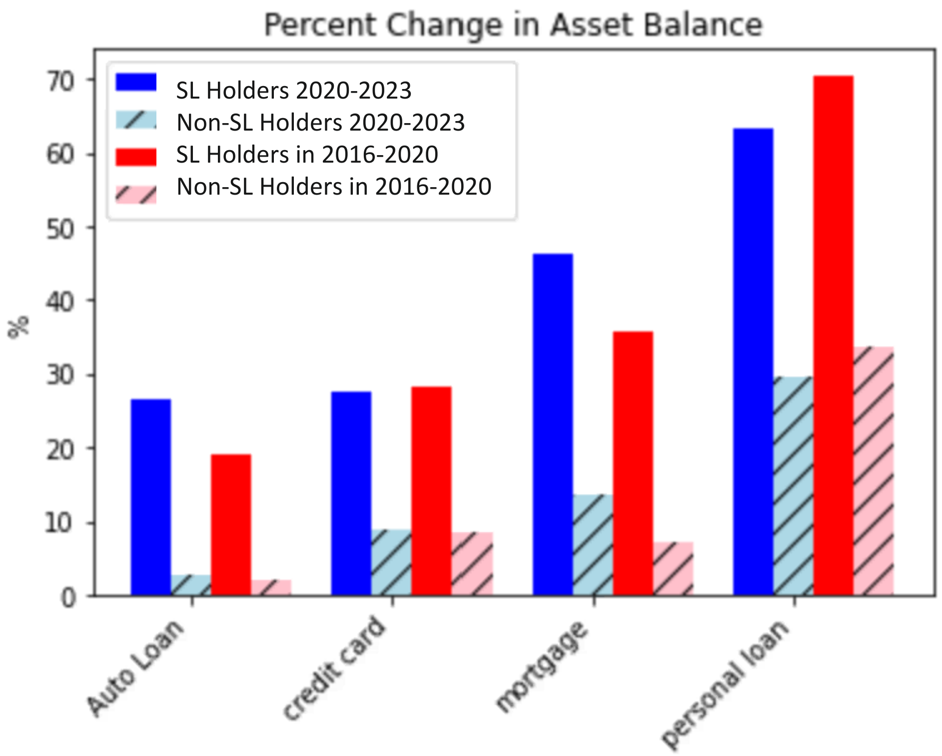
Approximately 43 million consumers have on average $37k in student loans. Borrowers with student loans skew subprime (25%)

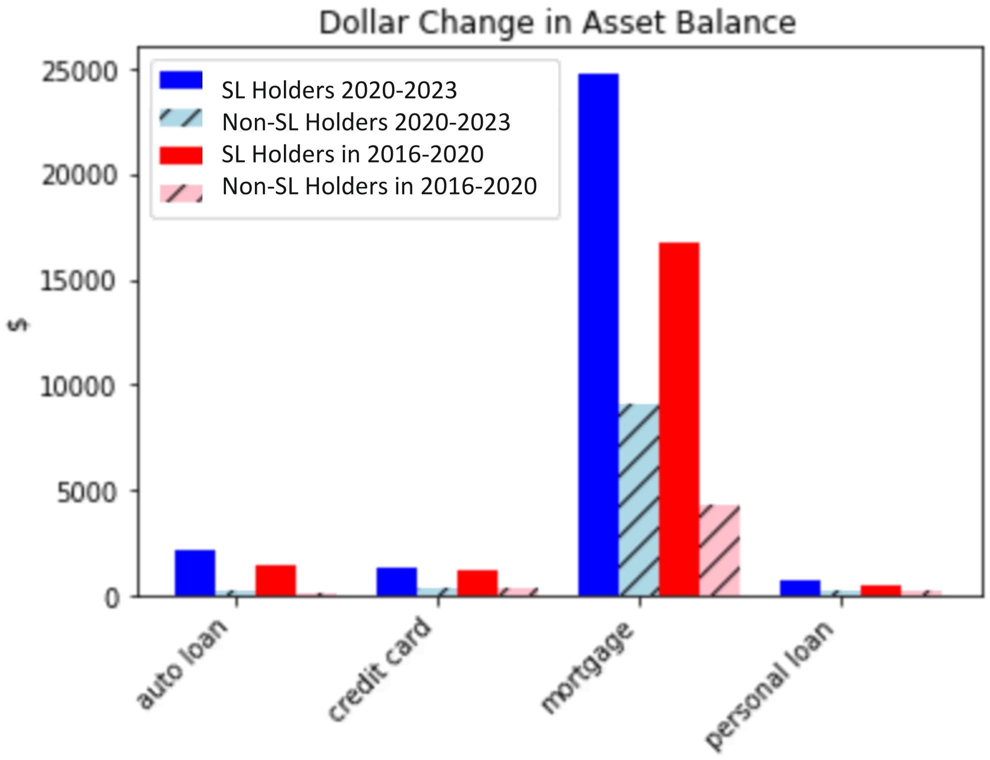


Source: 2OS, Equifax Ignite

SL-borrowers took out more new debt than non-SL borrowers during the last 3 years, but the same is true of SL-cohorts from before the pandemic

Additional Debt Accumulated Over 3 Years: 2016-2020 and 2020-2023



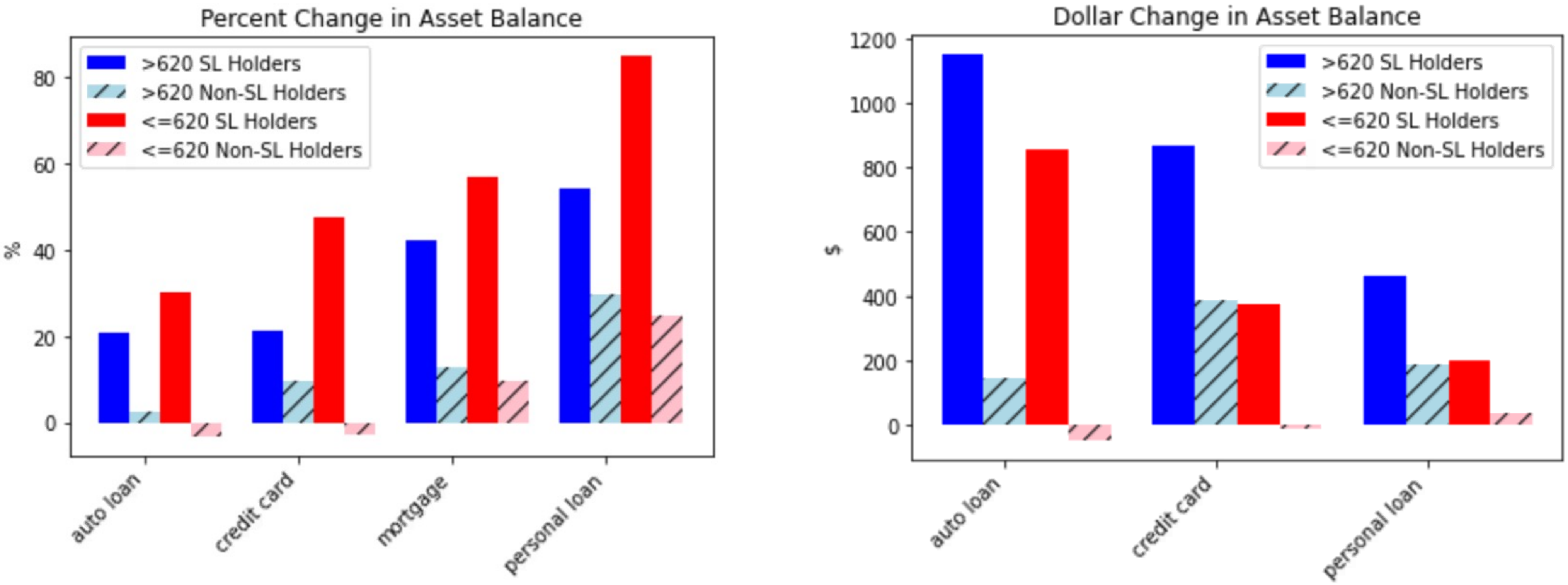


Amongst asset classes, mortgage balances grew the most in both 3-year windows, likely reflecting inflation in the housing market rather than pandemic-particular trends

Source: 2OS, Equifax Ignite
Note: 39-month periods: October 2016-February 2020 and March 2020-June 2023

The riskiest SL-borrowers (Vantage <= 620) accumulated less debt than their higher-credit counterparts during the pandemic, but still more than non-SL holders.

Change in Outstanding Loan Debt for Other Asset Classes by Vantage Score: March 2020-June 2023

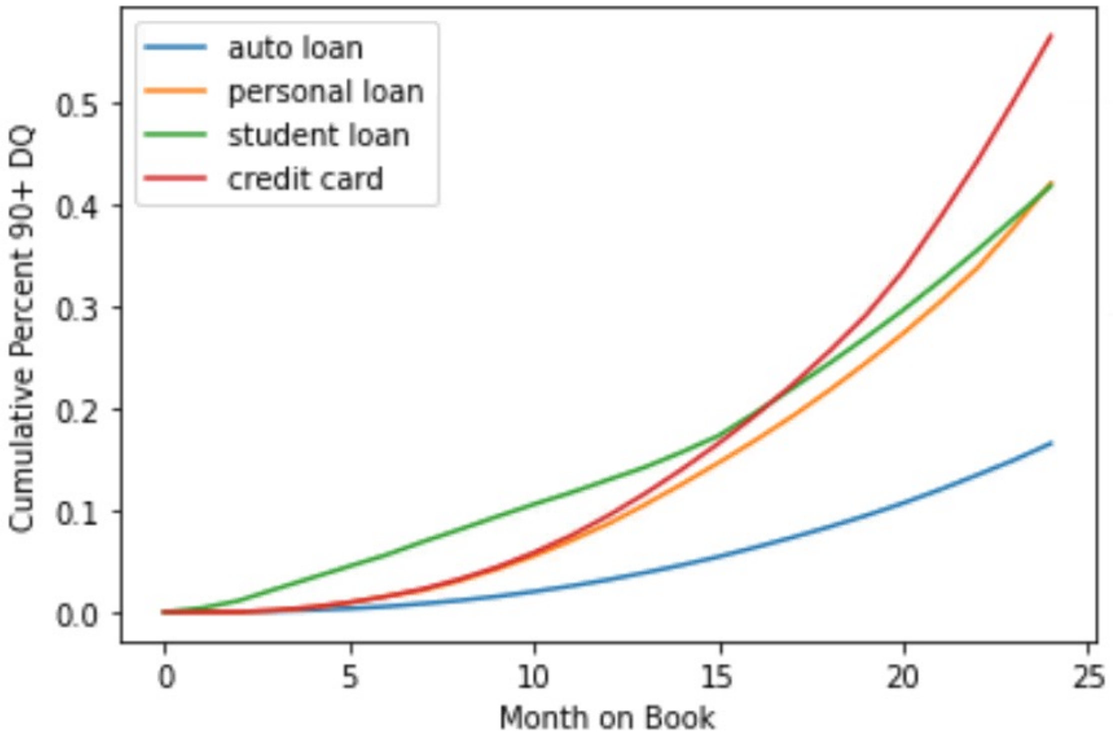


Increased debt of SL borrowers is true across Vantage scores and suggests that the increase in payment burden due to the end of student loan deferrals could have a meaningful impact

Source: 2OS, Equifax Ignite

Student Loans are ahead of credit cards in payment hierarchy, suggesting the end of Student Loan forbearance will most affect credit card repayment

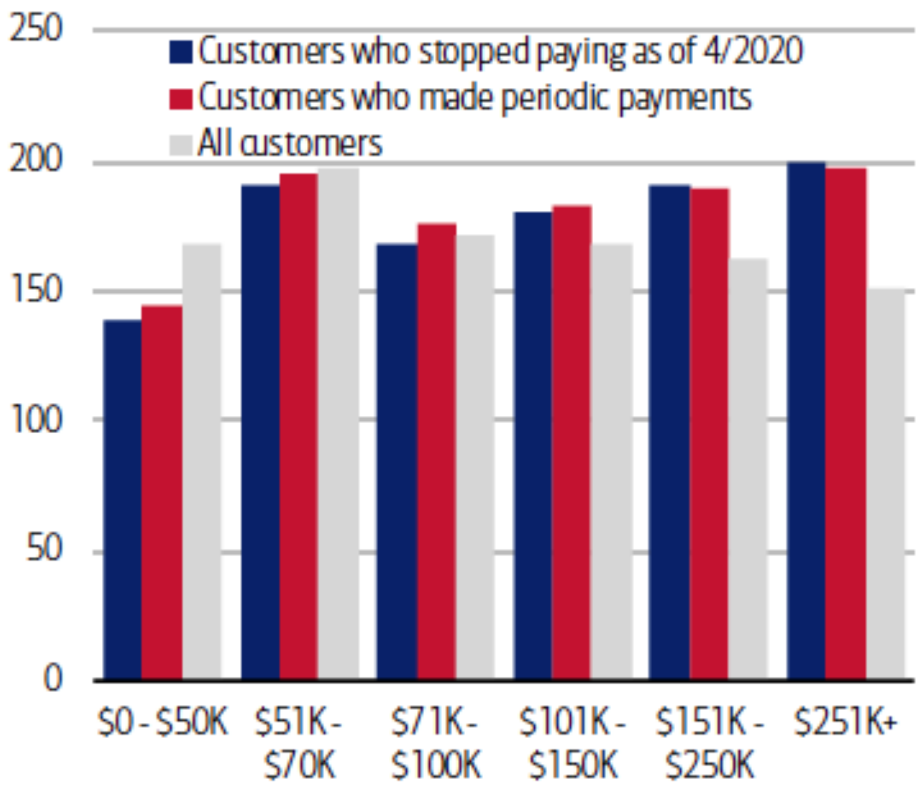
Serious Delinquency for borrowers with many asset types Across Asset Types: February 2018-2020



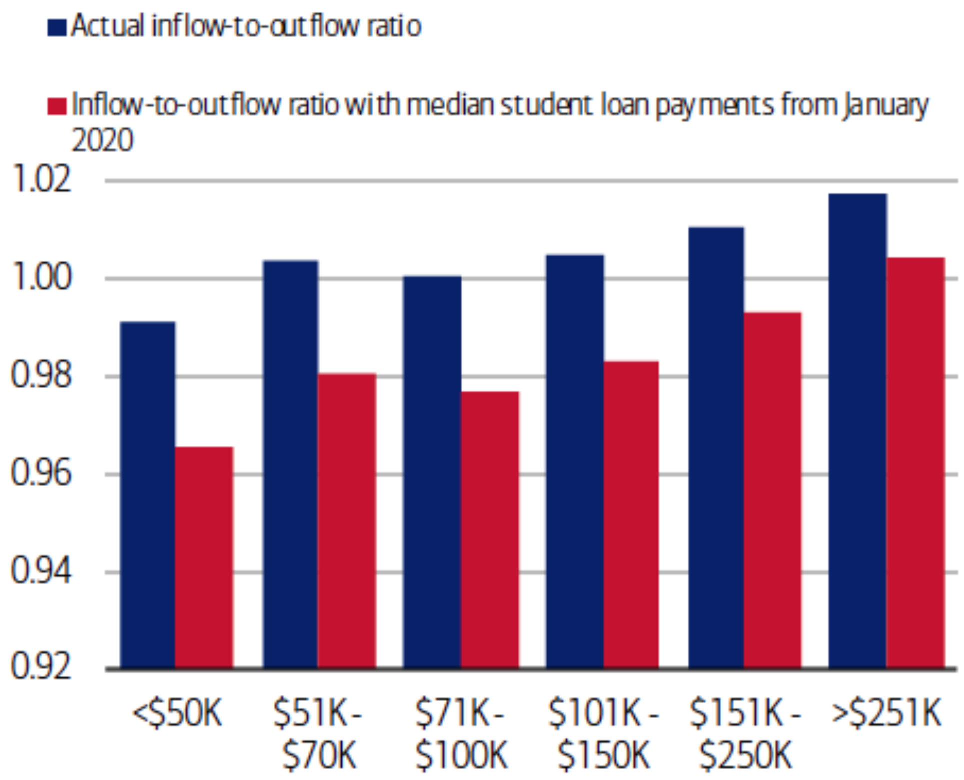
Source: 2OS, Equifax Ignite
Cohort includes a random sample of borrowers who had all 4 displayed loan types open in February 2018 and were current on their payments.

Higher income cohorts with student loans have increased their deposit buffers. Cash outflows for student loan holders might exceed inflows once payments resume

Median deposit balances of customers with student loan payments compared to all customers, by income
Indexed Jan 2020 = 100



Actual Inflow-to-outflow ratios vs. with median student loan payment in January 2020, by income

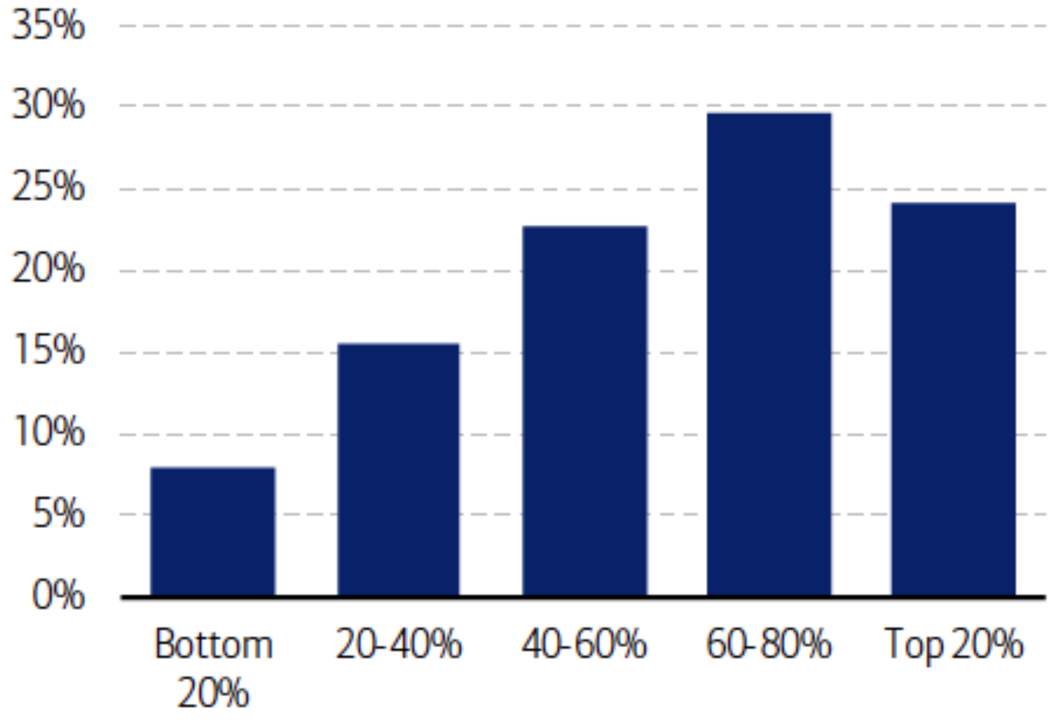


Sources: Bank of America Consumer Checkpoint, data as of July 13, 2023

Most consumers responsible for student loans will have to recalibrate their finances as payments resume

Reduced discretionary spending implications for higher-income households

Distribution of student debt by income quintile (2019, %)



Source: Bank of America Institute estimates based on Federal Reserve Survey of Consumer Finances

The largest proportion of outstanding debt is held by higher income quintiles

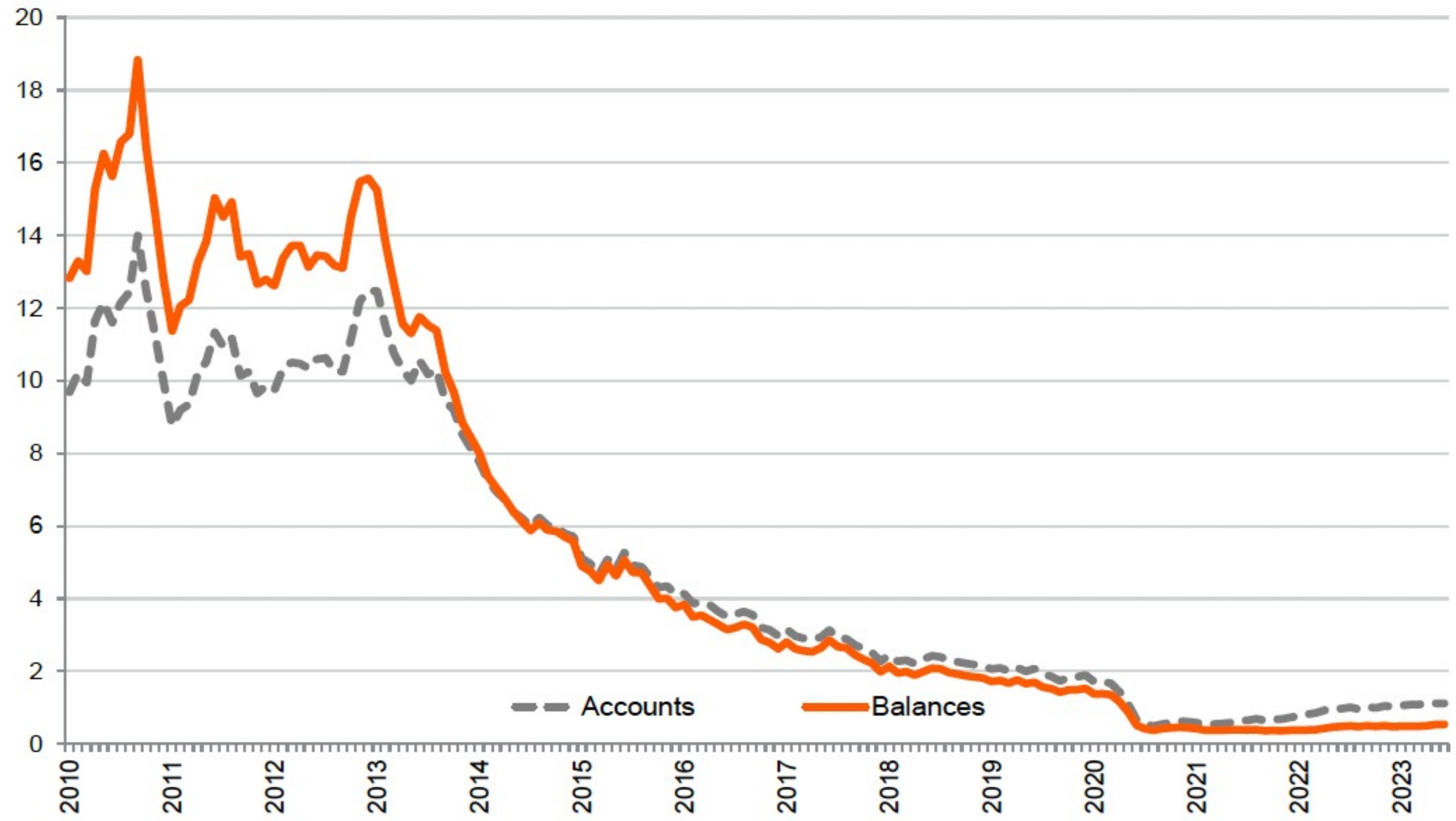
Sources: Bank of America Consumer Checkpoint, data as of July 13, 2023

- State of the Consumer
- Credit Card
- Personal Loan
- Auto
- Student Loan
- Mortgage

Write-off rates are trending slightly upwards but still well below pre-pandemic levels

Write-Off Rates

Accounts terminated in Severe Derogatory status
Share of Accounts and Balances in Basis Points; 3-Month Moving Average, NSA, Not Annualized
Excludes Bankruptcy



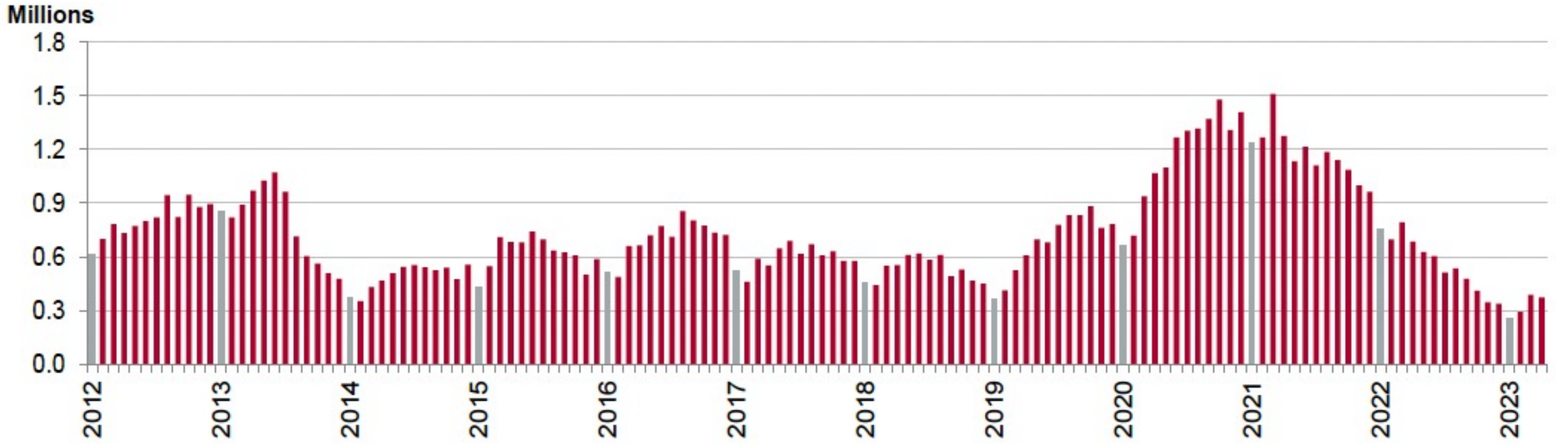
Source: Equifax Inc.

Data as of June 2023

Originations increasing in 2023 but still much lower than. Pandemic levels due to high interest rates and low inventory

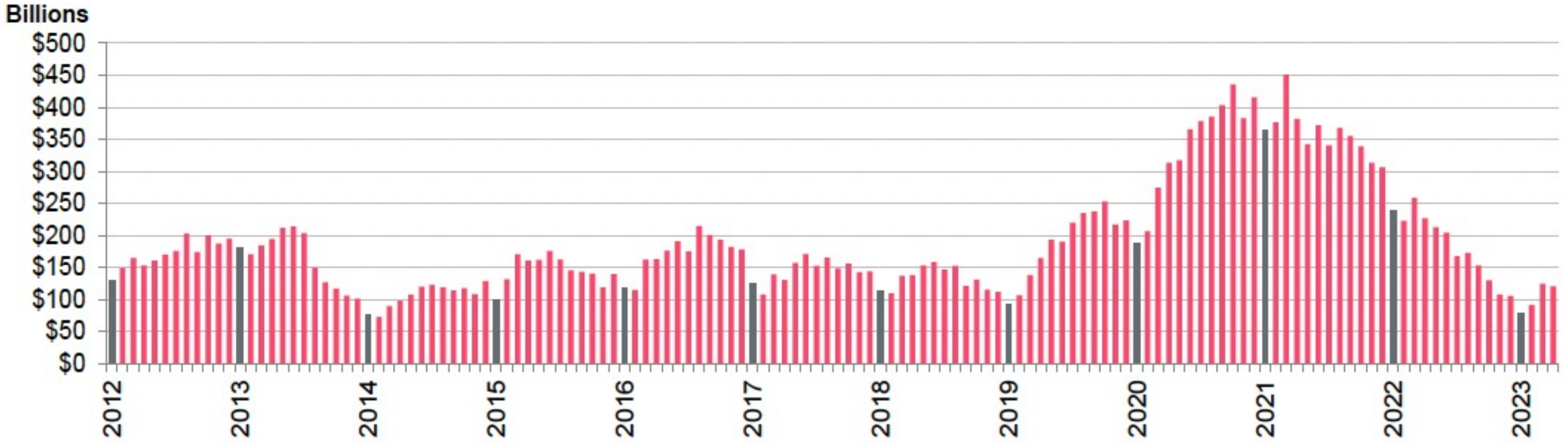
First Mortgage Originations: Accounts

Number of Accounts in Millions; NSA



First Mortgage Originations: Balances

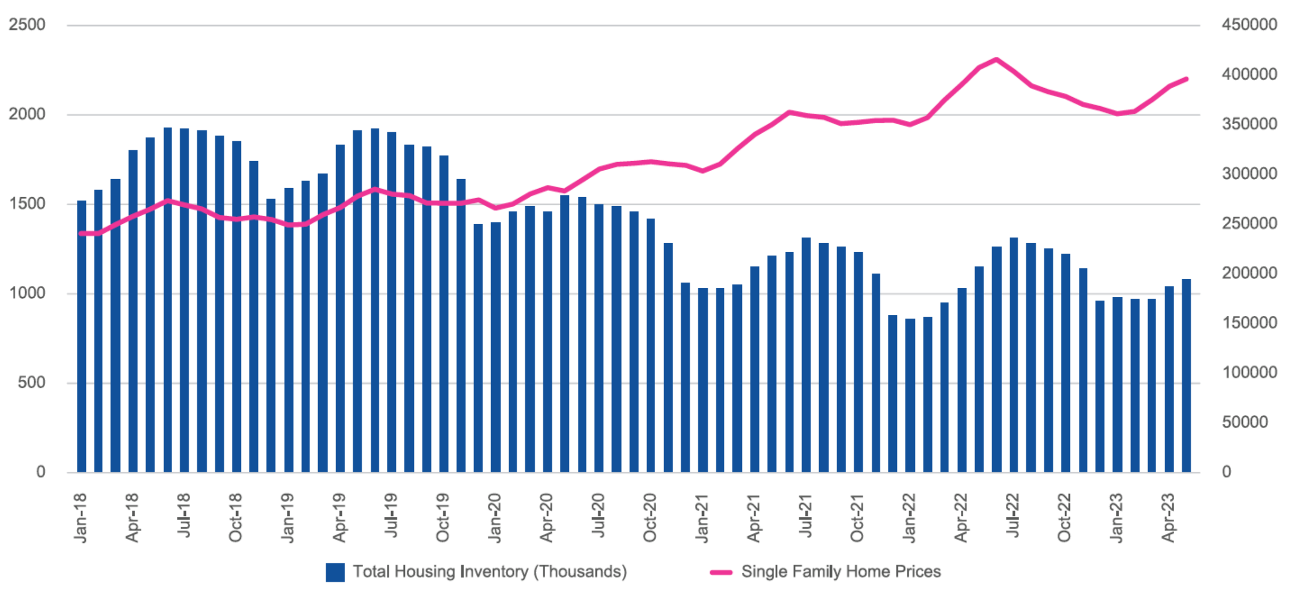
$ Balances in Billions; NSA



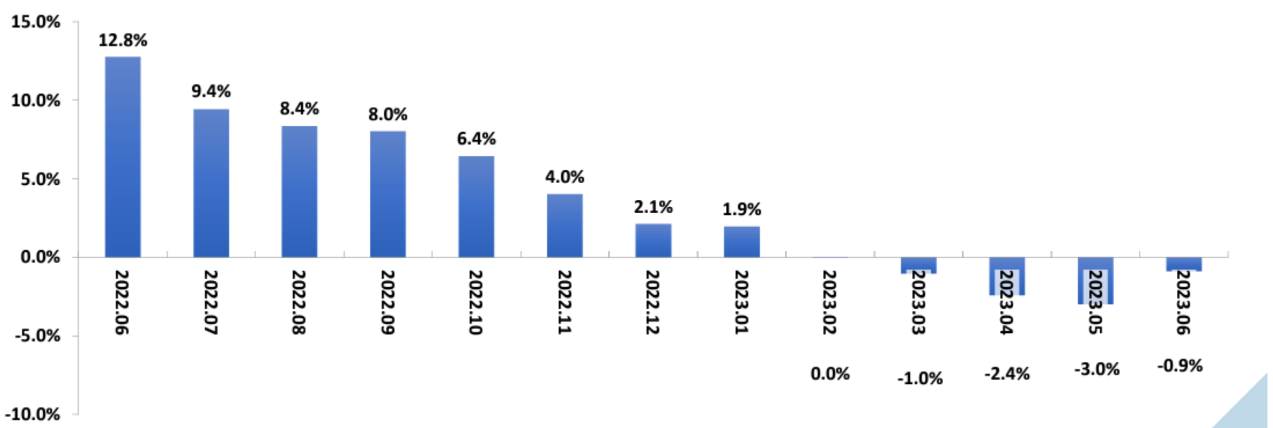
Source: Equifax
Data as of June 2023, originations through April 2023

Reduced housing demand and slightly improving inventories due to new construction are cooling prices

U.S. Housing Inventory and Prices



Existing Home Sales Median Price, Percent Change Year-Over-Year



Source: National Association of Realtors, data as of June 30, 2023

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About 2OS

2nd Order Solutions (2OS) is a boutique credit risk advisory firm that specializes in solving the world's most challenging credit problems. 2OS was founded 12 years ago and consults to a wide range of banks, card issuers, fintechs, and specialty finance companies in the US and abroad.

2OS has deep experience with lending businesses across Card, Auto, Small Business, and Personal Loans, at all points in the credit lifecycle. 2OS partners have vast expertise in all aspects of Collections, both as operating executives and as consultants.

For more insights and commentary on the lending industry, visit us at https://2os.com/insights/

Equifax Ignite Definitions

Definition of bankcard: bankcard include account types labeled as credit card and flexible spending card, filtered for the portfolio type being line of credit and revolving. Only accounts with a valid status in the last archive date, and only including repossessed and charged-off accounts if it was the first occurrence of those events.

Definition of delinquency: Out of the bankcard accounts, 60+ delinquent accounts that were 60-90 DPD, 90-120 DPD, 120+ DPD and charged off accounts.

Vantage bucket timing: To better observe movements within Vantage buckets (and reduce the effect of re-classification of accounts across buckets), lagged the date when the vantage bucket is observed by 3 months from the current archive date when looking at performance charts.

Origination timing: Originations are lagged by 2 months from the current archive date. Hence, the most recent origination datapoint is from April 2023.