

MORTGAGE-BACKED SECURITIES

Mortgage Market Monitor

August 2020 Remittances

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Foreword

The Mortgage Market Monitor draws from a variety of data sources to identify market moving trends in the first lien residential mortgage market. The two main data sources are the First American CoreLogic LoanPerformance securitized loans database and the TCW Loan Level Database. The following definitions will facilitate use of this report:

SECTOR

The sector definition is based upon the following distinctions:

- Prime: FICO > 725 and Loan to Value (LTV) < 75% and No Negative Amortization
- Alt-A: FICO between 675 and 725 or FICO > 725 and LTV >= 75% and No Negative Amortization
- Option Arm: Any loan that allows Negative Amortization
- Subprime: FICO < 675 and No Negative Amortization

SERIOUS DELINQUENCY

We define a serious delinquency as a loan that is: more than 60 days delinquent; in foreclosure; in bankruptcy; or classified as real estate owned (REO). There are two different standards used in the mortgage industry to characterize a loan's delinquency status. The Office of Thrift Supervision (OTS) defines a loan as "past due" when the borrower fails to make a second consecutive scheduled payment. The Mortgage Bankers Association (MBA) defines a loan as "past due" when a scheduled payment is unpaid for 30 days or more. In certain situations (such as the loan due date on the first of the month and the servicer reporting date on the last day of the month) a newly delinquent borrower can be flagged as "under 30" by the OTS methodology and 30-59 days delinquent by the MBA methodology. The MBA methodology is typically used for Prime loans and the OTS methodology is typically used for Subprime loans. In this report we use the MBA methodology for all loans, making apples to apples comparison across sectors possible.

ROLL RATES

Roll rates are displayed as what they imply for Serious Delinquencies, Voluntary Prepayments and Defaults. For example, if the one month roll rate (aka transition rate) for Subprime loans from Current to Current is 92% then we hold that rate static and apply it to the Subprime delinquency pipeline. Likewise, we take the average roll rate from Current to 30 days delinquent, 30 to 30 days delinquent, 30 to Current, and all the remaining roll pairs (63 in all) to project implied Serious Delinquencies, Voluntary Prepayments and Defaults for 12 months into the future. The accuracy of these projections depends upon the assumption that the roll rates stay static over the next 12 months. We know they will not and, consequently, we take the 1 month average roll rate projection and compare it to the 3 month roll rate projection to see which way the most recent roll rates are trending.

CONSUMER CREDIT INFORMATION

Equifax, one of the three consumer credit companies, furnishes TCW with updated consumer credit information on all loans in our database on a monthly basis. This detailed credit information gives us a current view of the borrower's credit profile. The Vantage score is a score that summarizes the consumer's credit behavior, not unlike the FICO score. While FICO score distributions tend to be normal, Vantage score distributions on the same consumers have much fatter tails. In this report we show a weighted average Vantage score by sector, and we also take advantage of the Vantage score's strength in identifying consumer credit distress by looking at the tails.

CPR

Constant Prepayment Rate (CPR) is an annualization of the unscheduled monthly mortality rate of loan balance. To calculate this metric one compares the balance of loans that left the pool of loans through default or voluntary payoff to the outstanding balance of the pool of loans in the previous month. Distinguishing between loans that leave the pool with a loss and loans that leave the pool without a loss yields the Conditional Default Rate (CDR) and the Constant Rate of Reduction (CRR), respectively. These can be viewed as the two components of CPR.

LOSS SEVERITY

If a loan leaves a pool of loans and experiences a loss, then it will have a loss severity. The loss severity is calculated by dividing the total loss amount by the unpaid principal balance of the loan at the time it becomes inactive.

MODIFICATION

A loan whose terms are changed by the servicer becomes a modified loan. Typical modifications include: rate reduction; capitalization of delinquent interest, taxes and insurance; term extension; principal forbearance; and principal forgiveness. We use a proprietary algorithm to determine which loans receive capitalization modifications, principal forgiveness modifications and fixed rate loan interest rate modifications. We look to the Loanperformance modification data for information on adjustable rate mortgage interest rate modifications as well as P&I modifications.

RECIDIVISM

A borrower whose loan was modified and subsequently falls back into delinquency and/or liquidates is a recidivist. To eliminate noise when we track recidivism we let the modification season for six months. Of those seasoned modified loans we determine what percentage is now seriously delinquent.

LIQUIDATION TIMELINE

When a loan becomes delinquent and ultimately liquidates it can progress through three main stages: Pre-foreclosure delinquency; Foreclosure; and REO. Each of these stages lasts a number of months. The length varies substantially by geographic region and servicer. A geographic area with a longer than average timeline might require a more formal court proceeding before title can be transferred to the servicer (Judicial states); it may be an area that is experiencing capacity constraints in recording offices, or attorney networks; there may be an abundant supply of homes on the market making it difficult to sell an REO; or the servicer may be understaffed and unable to attend to the various liquidation requirements of a loan in a timely

manner. This report shows how servicers perform relative to one another in timeline management in California. We focus on one state to eliminate the noise produced by these dynamics across states.

CASH FLOW VELOCITY

This metric is used to track a servicer's ability to get payments from borrowers that are currently delinquent. It is defined as Total Principal and Interest (P&I) paid by delinquent borrowers divided by Total Principal and Interest due from delinquent borrowers. For example, assume there are two borrowers being serviced by a servicer who are 60-89 days delinquent and both borrowers have P&I payments of \$1,500. A servicer with the right calling campaign and incentive structure for its loss mitigators may be able to get one of the two borrowers to pay \$1,500 despite having already missed two payments. This borrower would remain 60-89 days delinquent while the remaining borrower would roll into 90-119 days delinquent. The cash flow velocity for the month in this situation would be $\$1,500 / (\$1,500 + \$1,500) = 50\%$. The higher the cash flow velocity the more adept the servicer is when dealing with delinquent borrowers.

SHORT SALE

In this report we define "Short Sale" as any loan that liquidates with a loss but never reaches the REO status. Short sales typically have lower severities compared to REO sales. Those servicers that successfully implement a short sale focused liquidation strategy relative to other servicers will likely have lower severities.

ADVANCING

When a borrower misses a mortgage payment on a first lien mortgage the servicing contract obligates the servicer to make the interest and principal payment for the borrower. This is called "advancing." The servicer advances the mortgage payment to the certificate holders, expecting to be repaid at some point in the future. The reimbursement requirement is fulfilled through collection of liquidation proceeds, late collections, and/or insurance proceeds from the loan that has been advanced upon. If the servicer believes that the advance is not recoverable, it is freed from the contractual obligation to advance on the loan. Assuming the decision to stop advancing is legitimate; investors can gain insight into a servicer's opinion on future severities of loans on which it has stopped advancing. However, since the determination that advances will not be recoverable is largely subjective, opportunity exists for servicers to save money (funding costs on advances).

SERVICING

The impact of servicing on a bond's IRR is difficult to measure. The two main contributors to this difficulty are: approximately one third of securitized non-agency mortgages are serviced by more than one servicer; and recent industry consolidation in the servicing industry makes it difficult to identify the current servicing platform/management team responsible for a bond. These two difficulties are avoided at TCW by calculating bond level servicing performance. That is, the servicing level metrics displayed in this report are calculated at the bond level for all RMBS securities, thereby removing the uncertainties described above. This bond level analysis is supplemented by a broad, quantitative based opinion formed on servicers in the industry. Factors influencing the rankings from highest weighted to lowest weighted include: Modifications as of 2010, Recidivism, Cash Flow Velocity, Liquidation Timelines, and Modification Timeline, with weights of 40%, 20%, 15%, 15%, and 10%, respectively. While we arrived at these weightings through scenario analysis, they are more last cash flow friendly and front pay unfriendly.

HOME PRICES

Various home price indices have been constructed to gauge the change in home prices over time. In this report we focus on the Case Shiller 10 city aggregate, and the FHFA Purchase only indices. Additionally, we include the Case Shiller futures contracts that trade on the CME to get the market's perspective on where home prices are heading in the next few years. The index values are all normalized to facilitate an apples-to-apples comparison across indices.

DTI

Debt-to-income Ratio. We track the debt-to-income ratio at origination for Freddie Mac loans at the loan level. The debt-to-income ratio "indicates the sum of the borrower's monthly debt payments, including monthly housing expenses, divided by the total monthly income used to qualify the borrower, expressed as a percentage... This disclosure is subject to the widely varying standards originators use to verify borrowers assets and liabilities."

NON-QM LOANS

The Dodd-Frank Act added a provision to the Truth in Lending Act ("TILA") that prohibits lenders from originating residential mortgage loans unless the lender makes a reasonable and good faith determination that the mortgagor has a reasonable ability to repay the loan. Under the Dodd-Frank Act, a lender and its assignees do not have liability under this prohibition with respect to any "qualified mortgage" that has the benefit of a safe harbor from such liability if certain requirements are satisfied, or a rebuttable presumption from such liability if certain requirements are satisfied and the annual percentage rate of the loan exceeds certain thresholds. Mortgage loans originated in violation of the Truth in Lending Act may expose subsequent purchasers of such mortgage loans to liability in respect of such violations.

The CFPB issued a final rule (the "Qualified Mortgage Rule"), effective with respect to mortgage loans for which the origination process commenced on or after January 10, 2014 (the "QM Rule Effective Date"), that specifies the characteristics of a qualified mortgage for this purpose. Interest-only loans, hybrid mortgage loans, negative amortization mortgage loans and balloon loans, as well as loans with a debt-to-income ratio exceeding 43%, in general do not constitute qualified mortgages. In addition, mortgage loans that are eligible for purchase by certain governmental agencies or government-sponsored enterprises, including Fannie Mae and Freddie Mac, constitute qualified mortgages under the Qualified Mortgage Rule, although such mortgage loans are not required to meet certain requirements that are otherwise applicable under the Qualified Mortgage Rule, including that the debt-to-income ratio of the related mortgagors must not exceed 43%. The Qualified Mortgage Rule has resulted and may continue to result in a reduction in the availability of certain types of loans and may adversely affect the ability of mortgagors to refinance Mortgage Loans.

Collateral Performance

The percentage of serious delinquent legacy loans continued to moderate in August. Serious delinquencies fell across all sectors. Prime delinquencies decreased by 76 basis points to 7.84 %; Alt-A delinquencies decreased by 92 basis points to 13.79%; Option Arm delinquencies decreased by 128 basis points to 22.41% and Subprime delinquencies decreased by 103 basis points to 19.94%.

In non-qm mortgages, the percentage of serious delinquencies also declined across all sectors. Prime non-qm delinquencies decreased by 101 basis points to 7.99%; Alt-A non-qm delinquencies declined 193 basis points to 16.95%; and Subprime non-qm delinquencies declined 180 basis points to 22.25%.

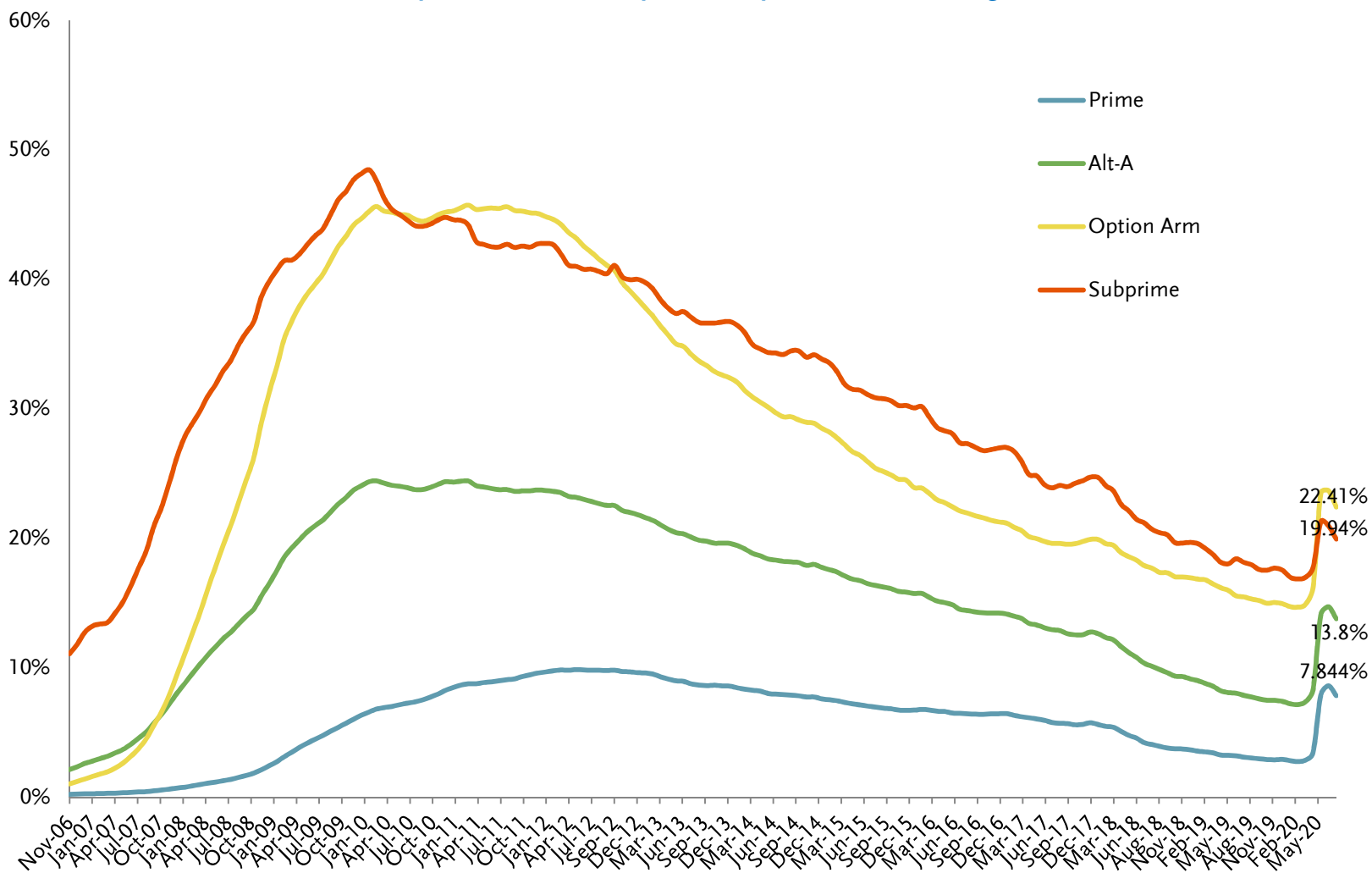
Voluntary prepayment rates increased in the Prime, Option-Arm and Subprime sectors and held steady among Alt-A loans. Prime CRRs came in at 31.2%, up 134 basis points month-over-month; Alt-A CRRs were 22.0%, up 5 basis points month-over-month; Option Arm CRRs were 11.2%, up 75 basis points month-over-month and Subprime CRRs were 8.8%, up 74 basis points month-over-month. CDRs were flat to slightly down this month. Prime CDRs increased by 6 basis points to 0.59%; Alt-A CDRs increased by 4 basis points to 1.73%; Option Arm CDRs decreased by 86 basis points to 3.14%, and Subprime CDRs increased by 3 basis points to 2.61%.

Case-Shiller futures predict home prices will experience a -3.0% YoY decline into 2021 before slowly rebounding in 2022 and fully recovering by 2023 implying an annual increase of 0.5% annually over the next four years. Year-over-year, home prices are up 3.5% across Case-Shiller's 20 major city index. Nationally, changes in severities were mixed across Prime and Alt-A, which hover around mid-50s and Option-Arm and Subprime which hover around 70 percent severity. At the state level, California Subprime severities were up slightly at 47% this month. Florida Subprime severities were lower at 86%. New York Subprime severities decreased to 91%; and Nevada Subprime severities decreased to 68%.

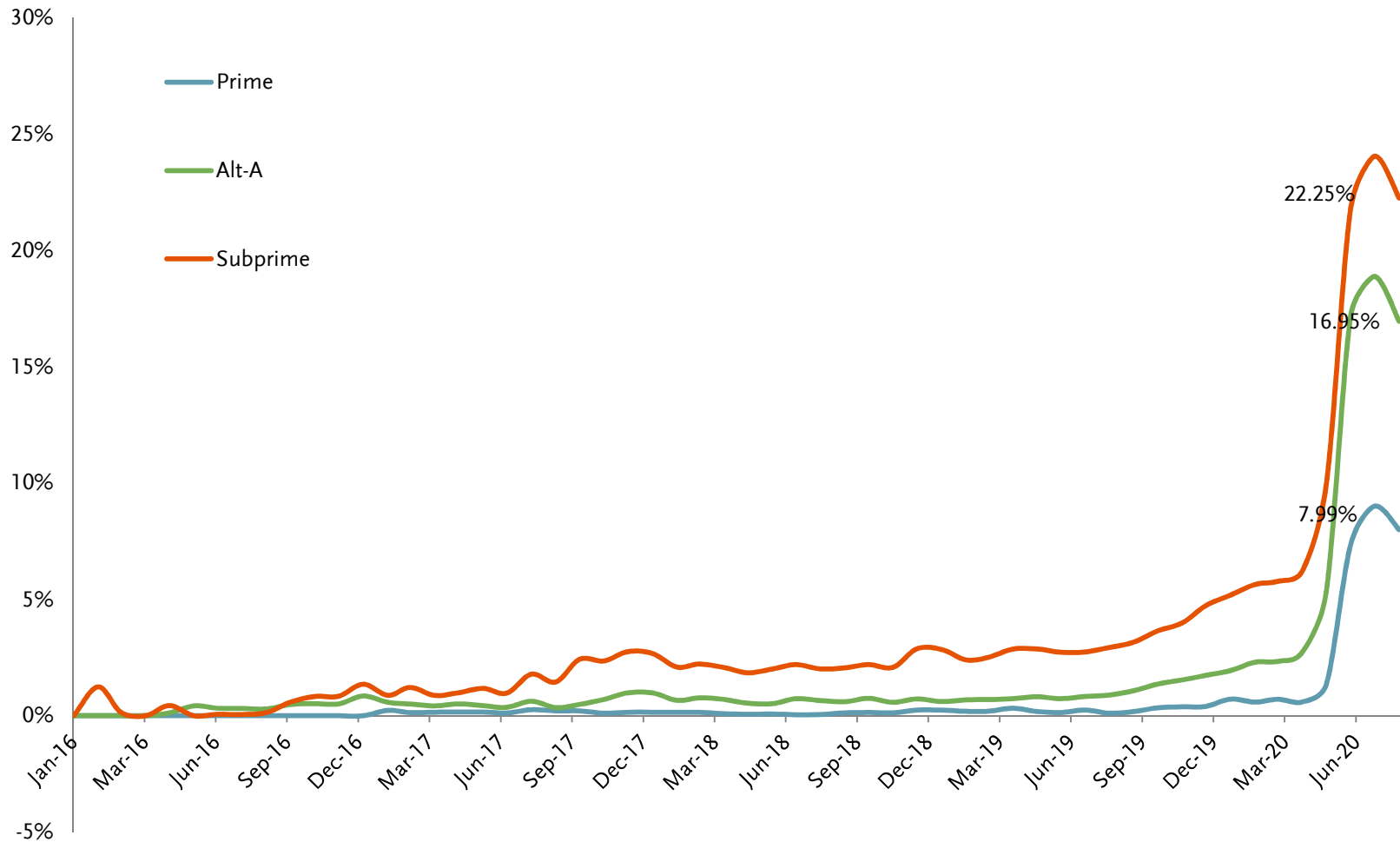
Section A: Serious Delinquencies

I. Serious Delinquencies as % of Unpaid Principal Balance

**Securitized Mortgages:
Serious Delinquencies as % of Unpaid Principal Balance as of August 2020**

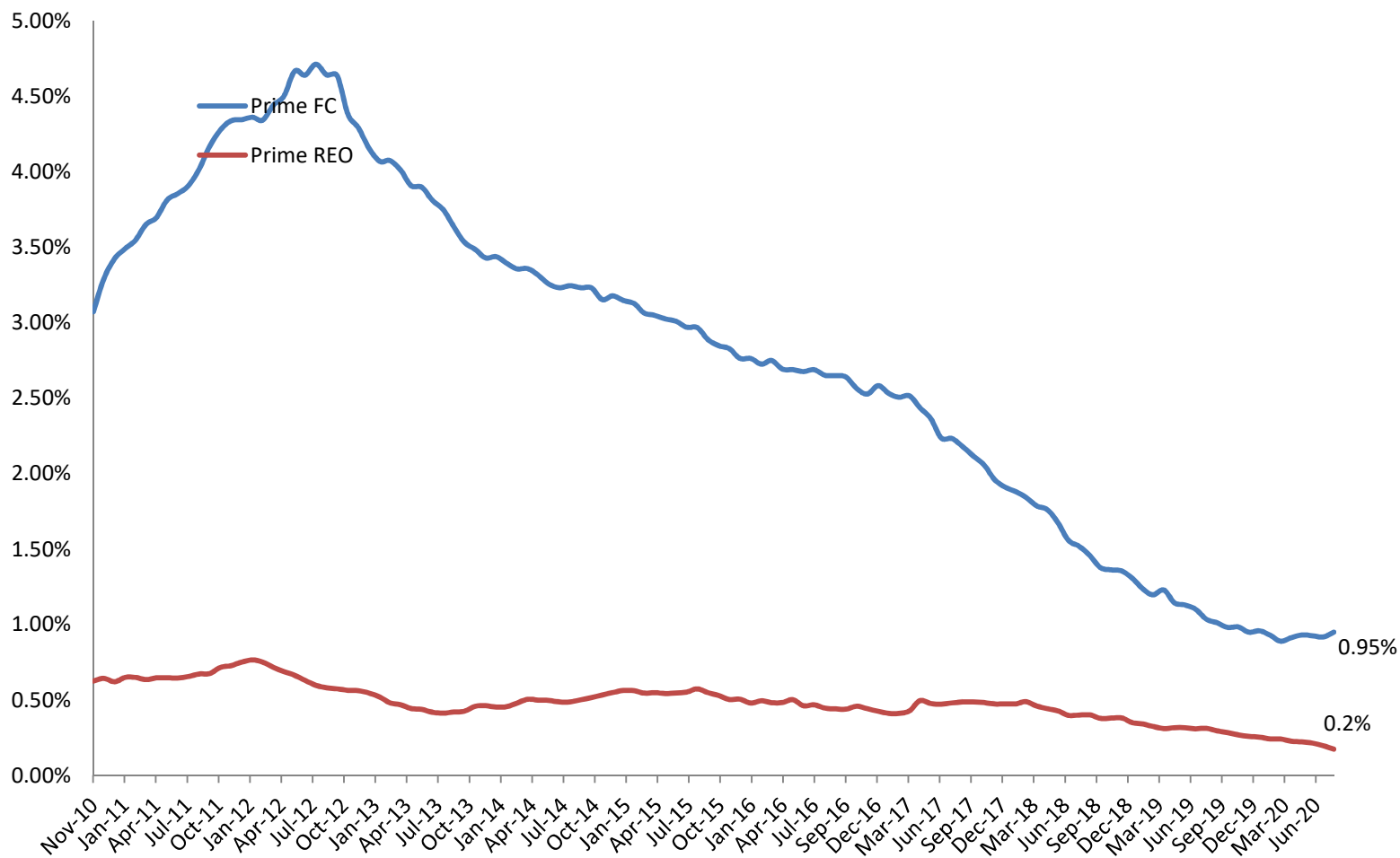


Non-QM Securitized Mortgages:
Serious Delinquencies as % of Unpaid Principal Balance as of August 2020

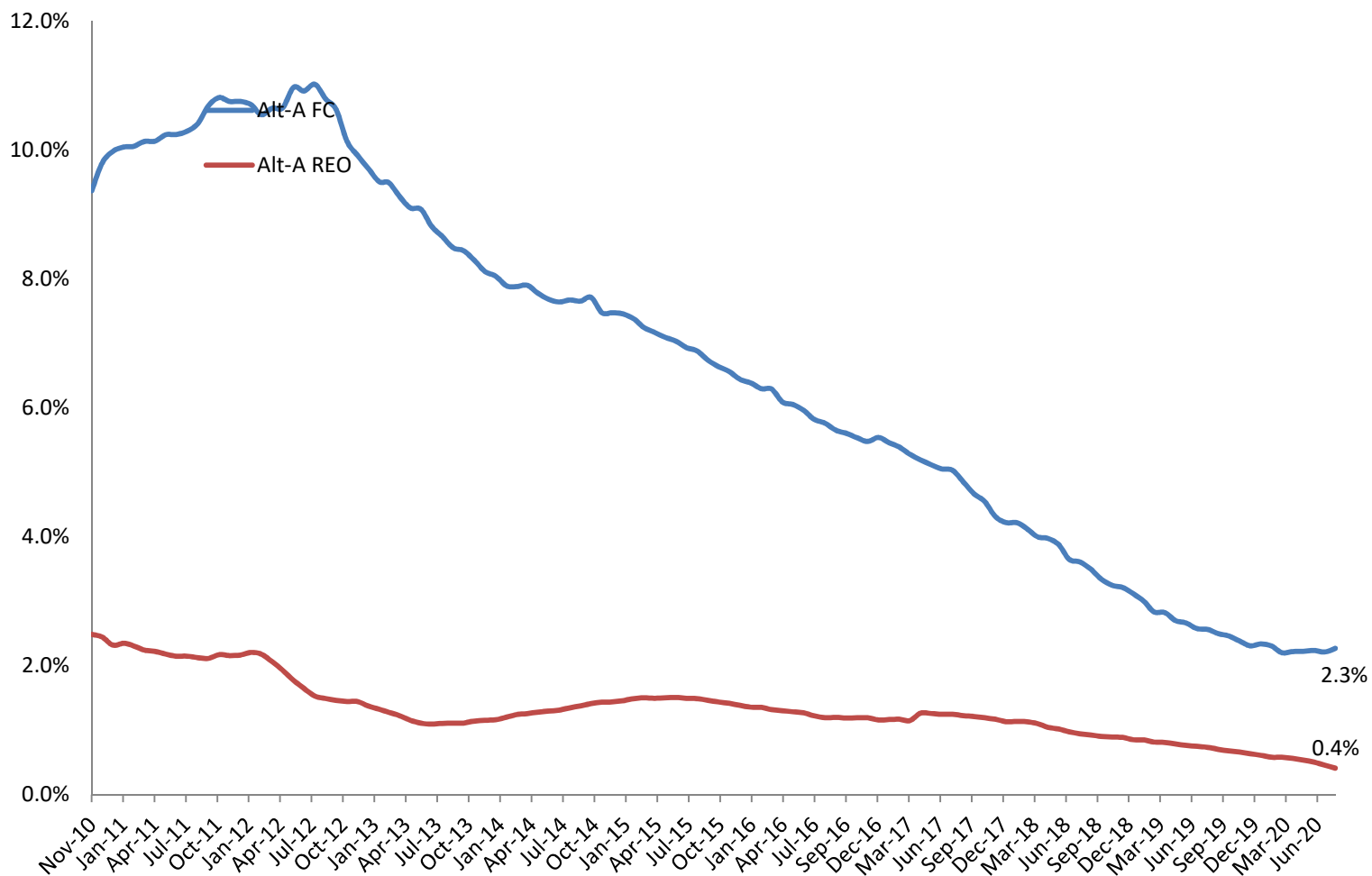


II. Foreclosure and REO as % of Unpaid Principal Balance

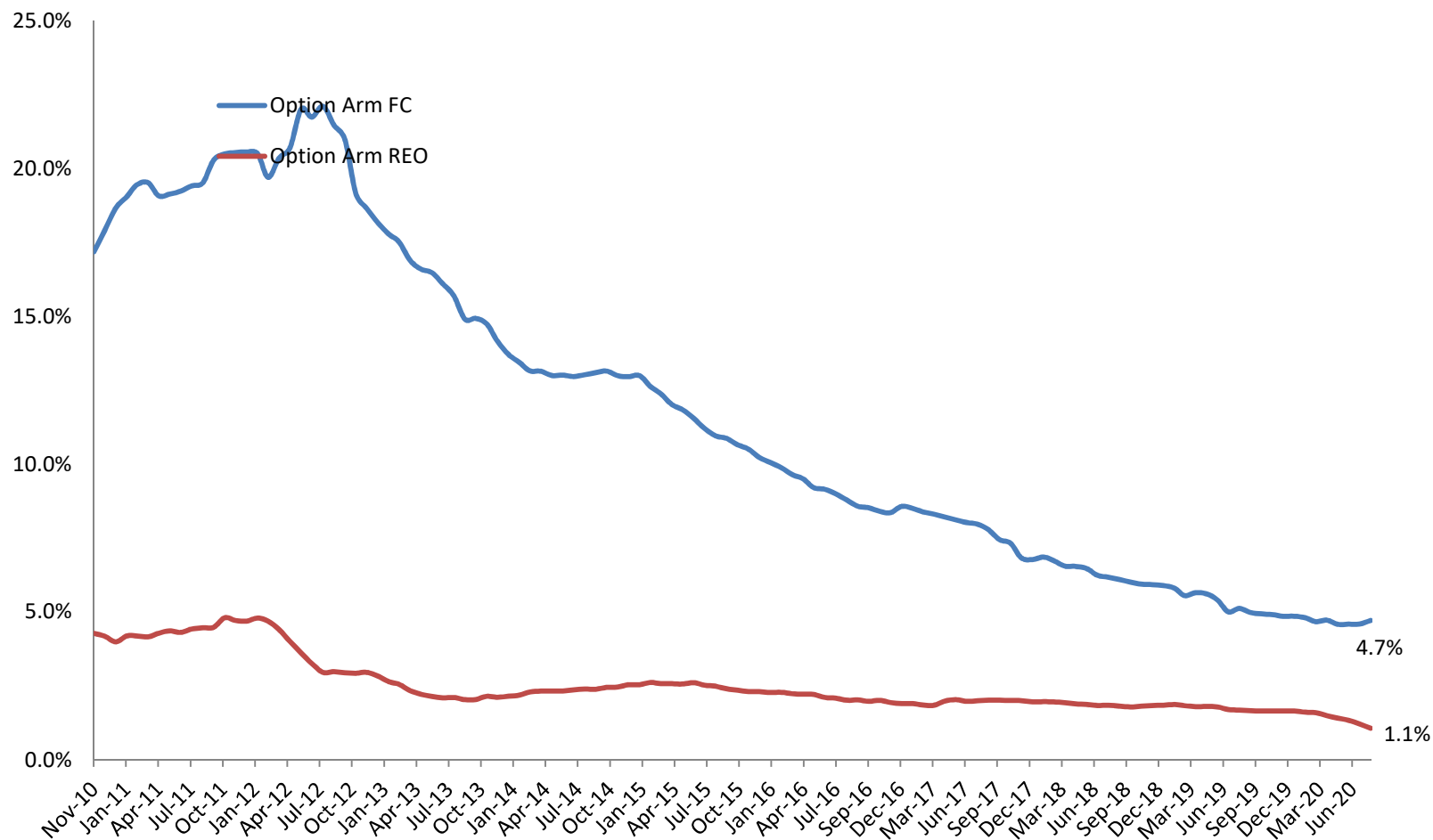
**Prime Securitized Mortgages:
Foreclosure and REO as % of Unpaid Principal Balance as of August 2020**



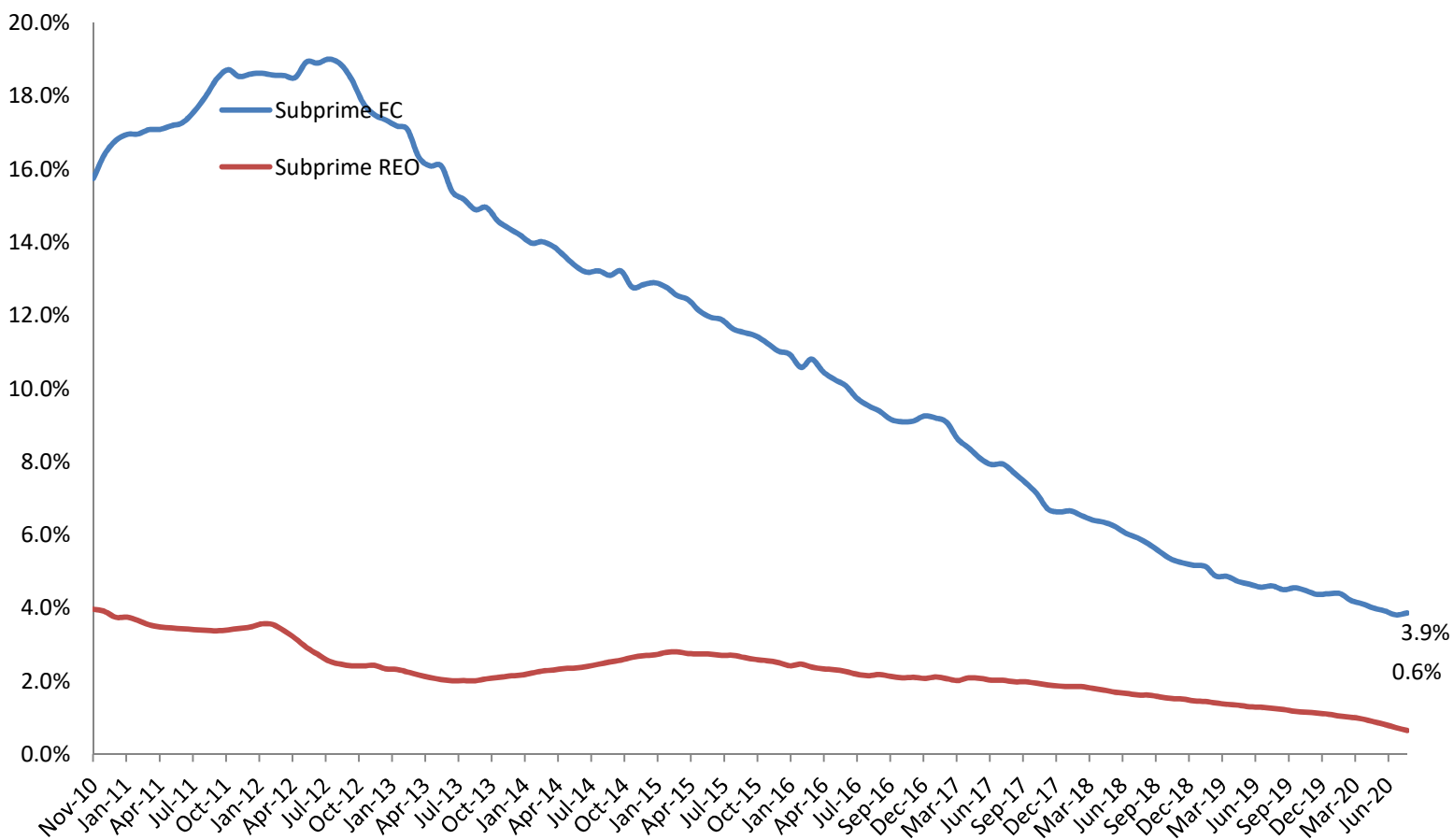
**Alt-A Securitized Mortgages:
Foreclosure and REO as % of Unpaid Principal Balance as of August 2020**



Option Arm Securitized Mortgages: Foreclosure and REO as % of Unpaid Principal Balance as of August 2020



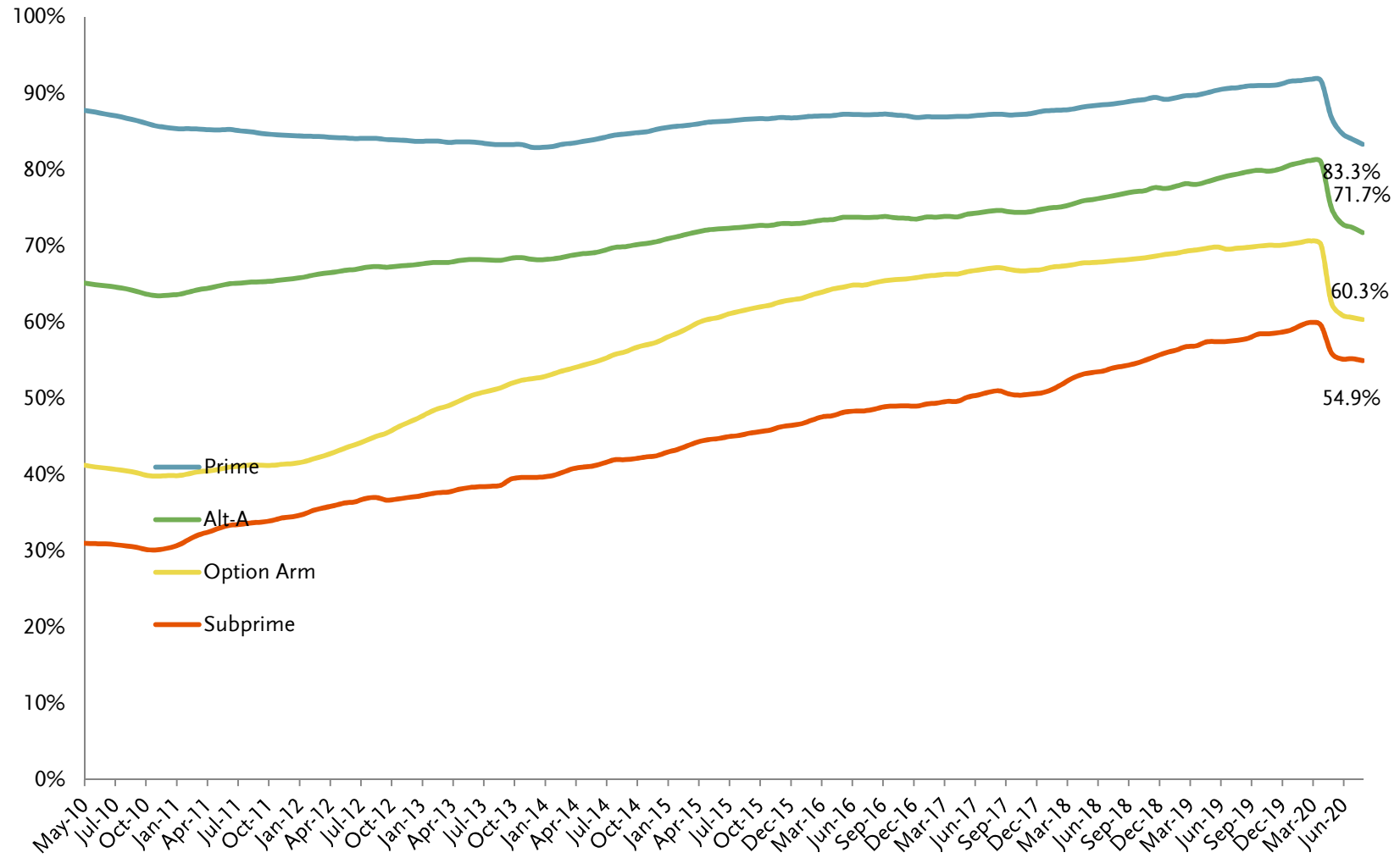
Subprime Securitized Mortgages: Foreclosure and REO as % of Unpaid Principal Balance as of August 2020

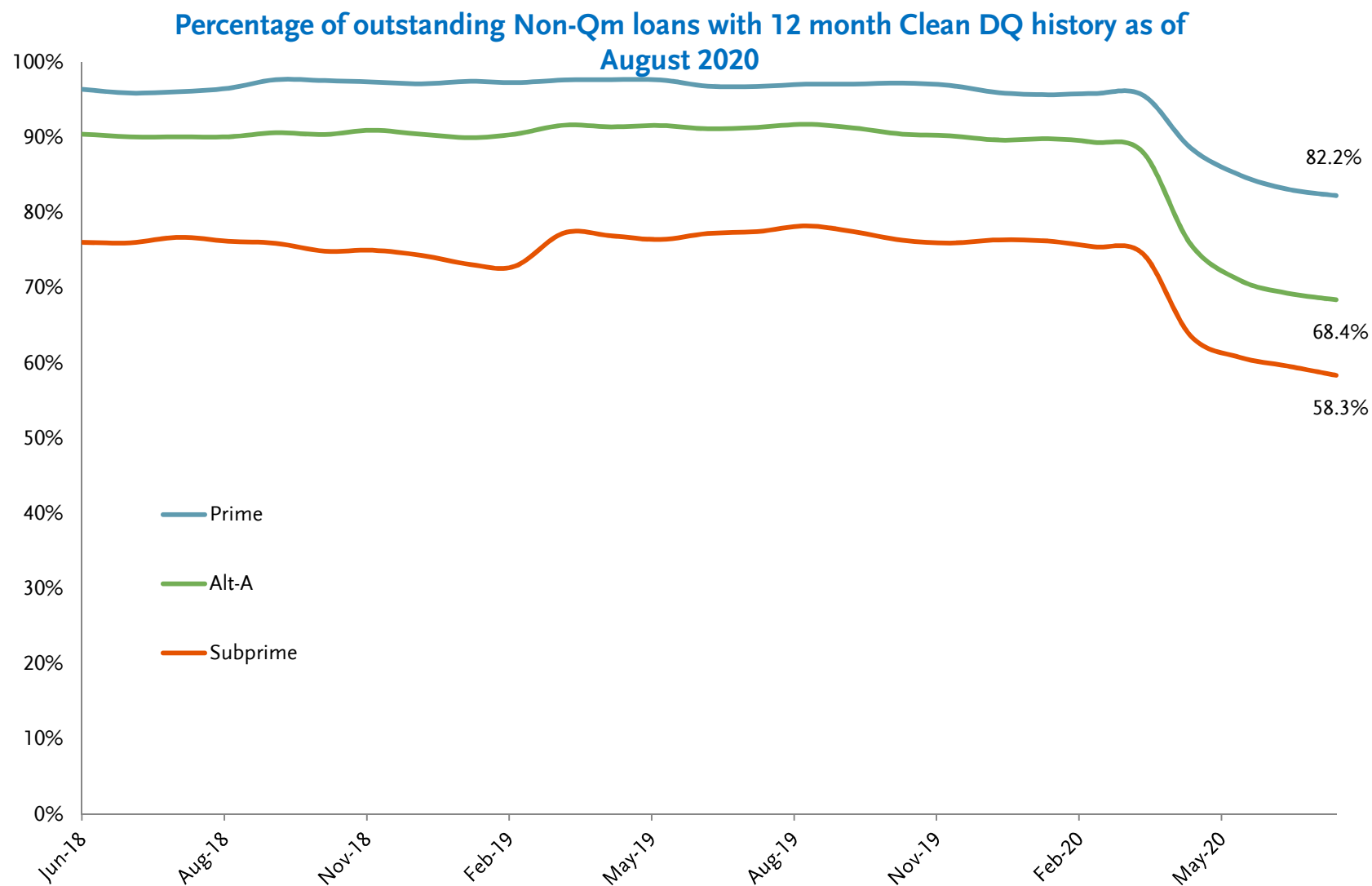


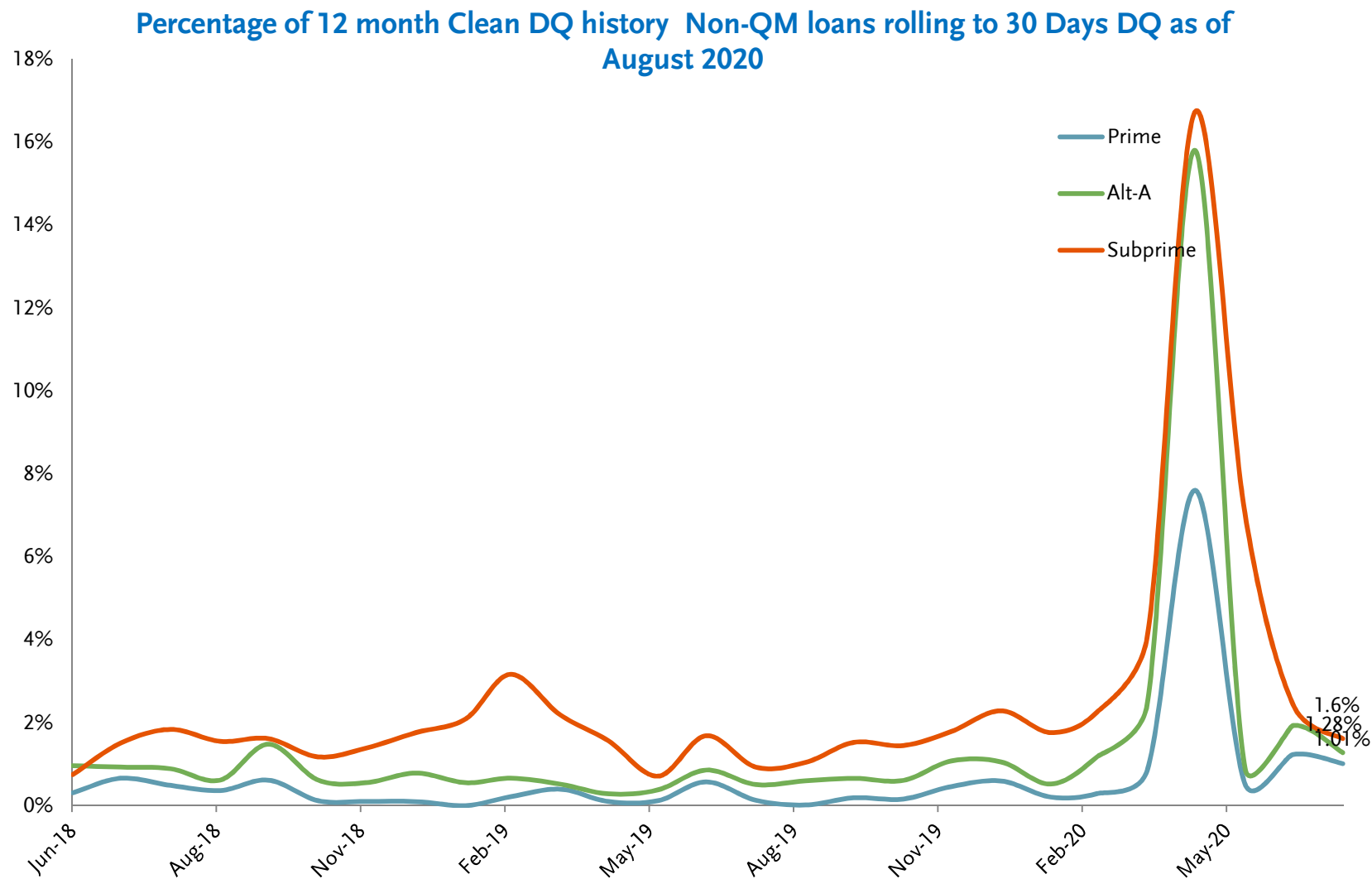
Exhibited by TCW from CoreLogic LoanPerformance Data

III. 12 months of Clean Delinquency History

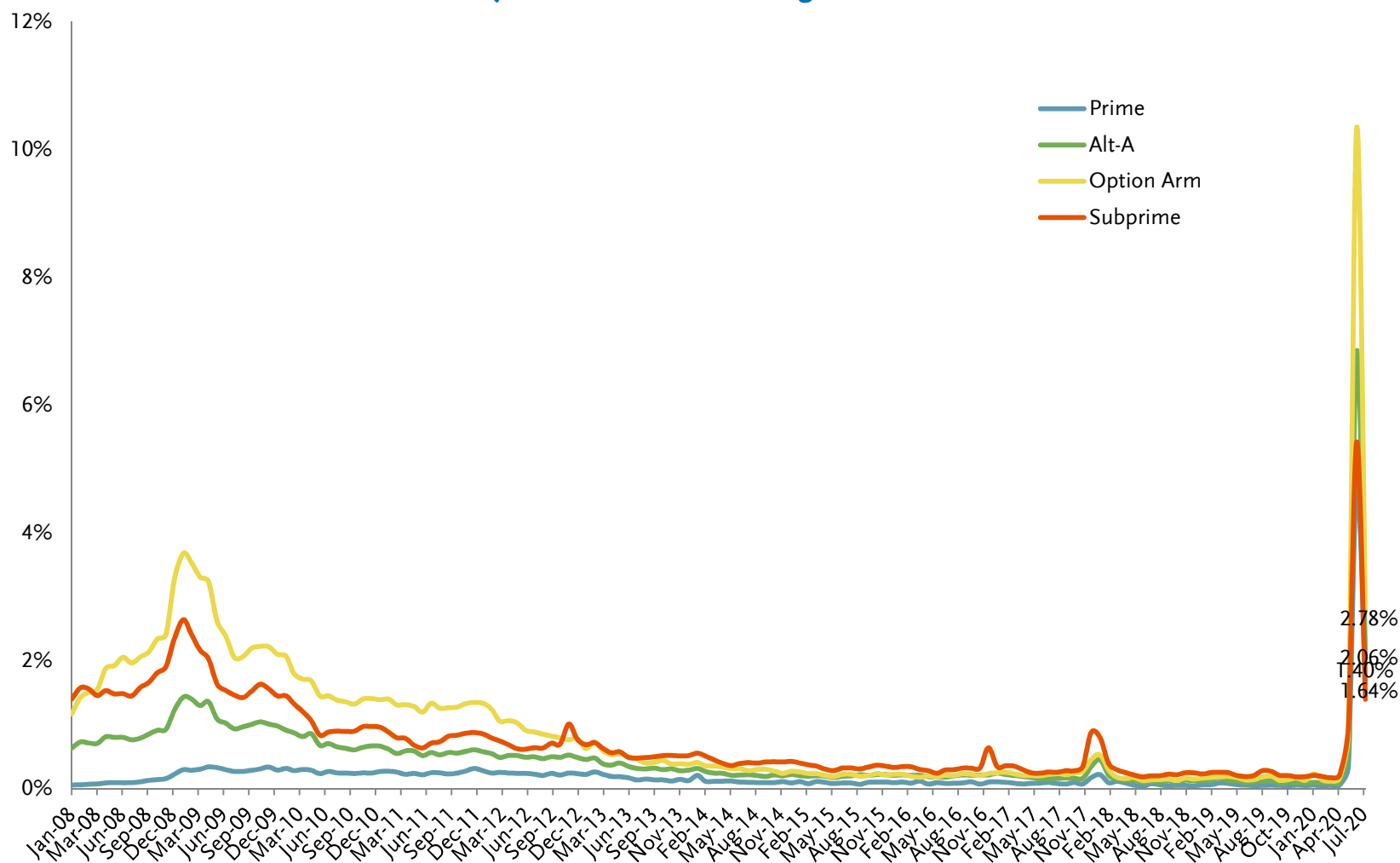
Percentage of outstanding loans with 12 month Clean DQ history as of August 2020

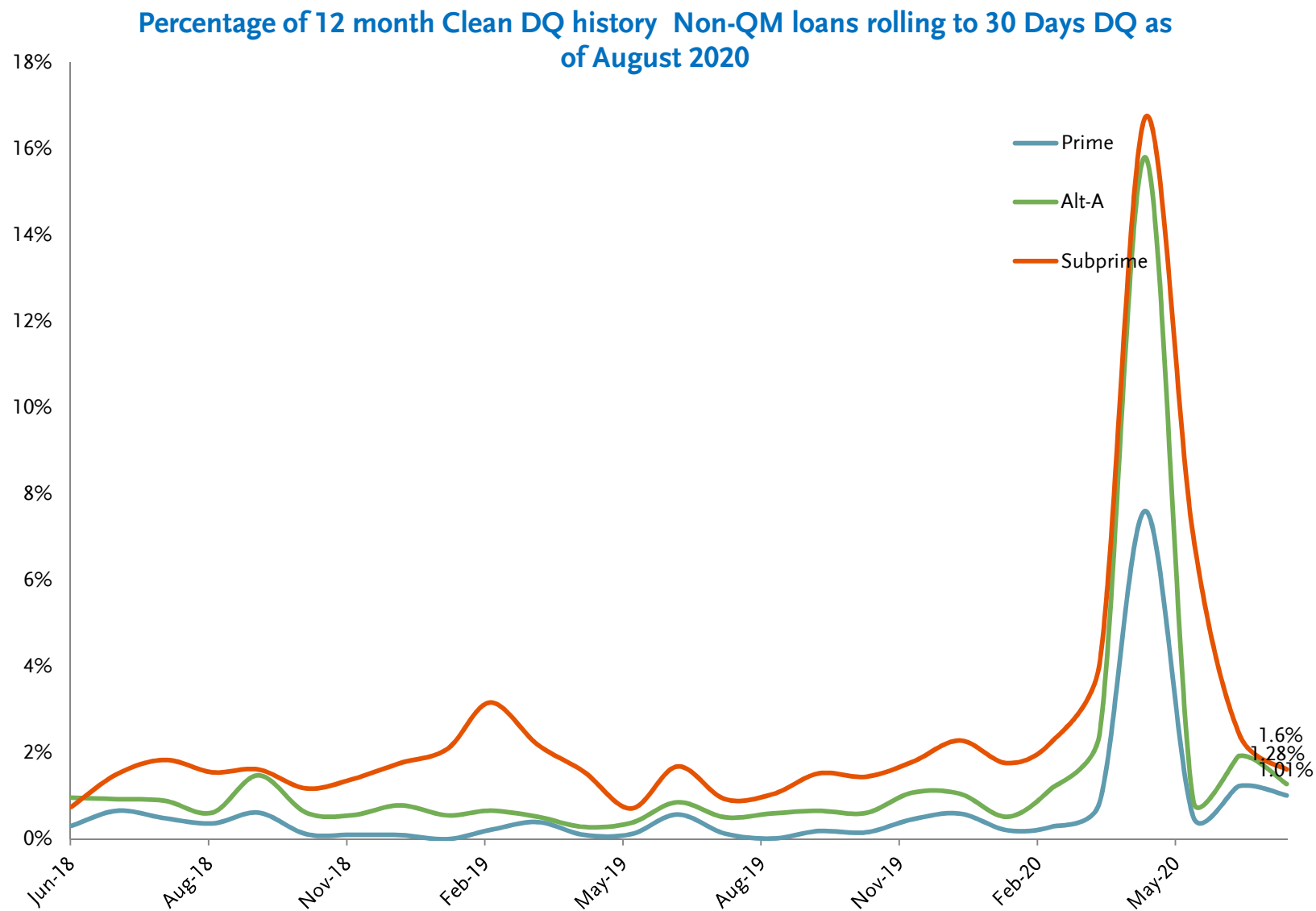




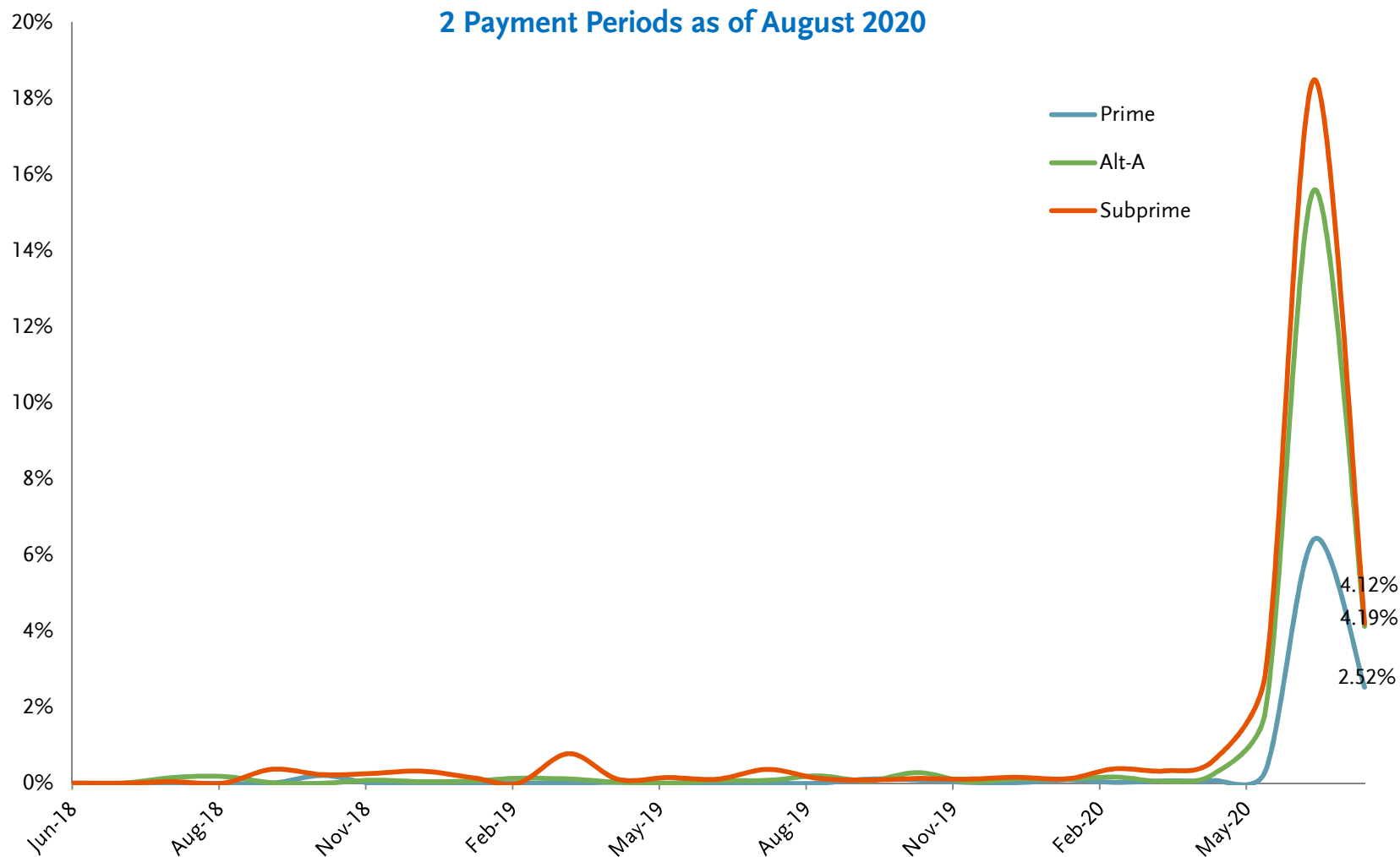


Percentage of 12 month Clean DQ history loans rolling to 60 days Delinquent over
2 Payment Periods as of August 2020



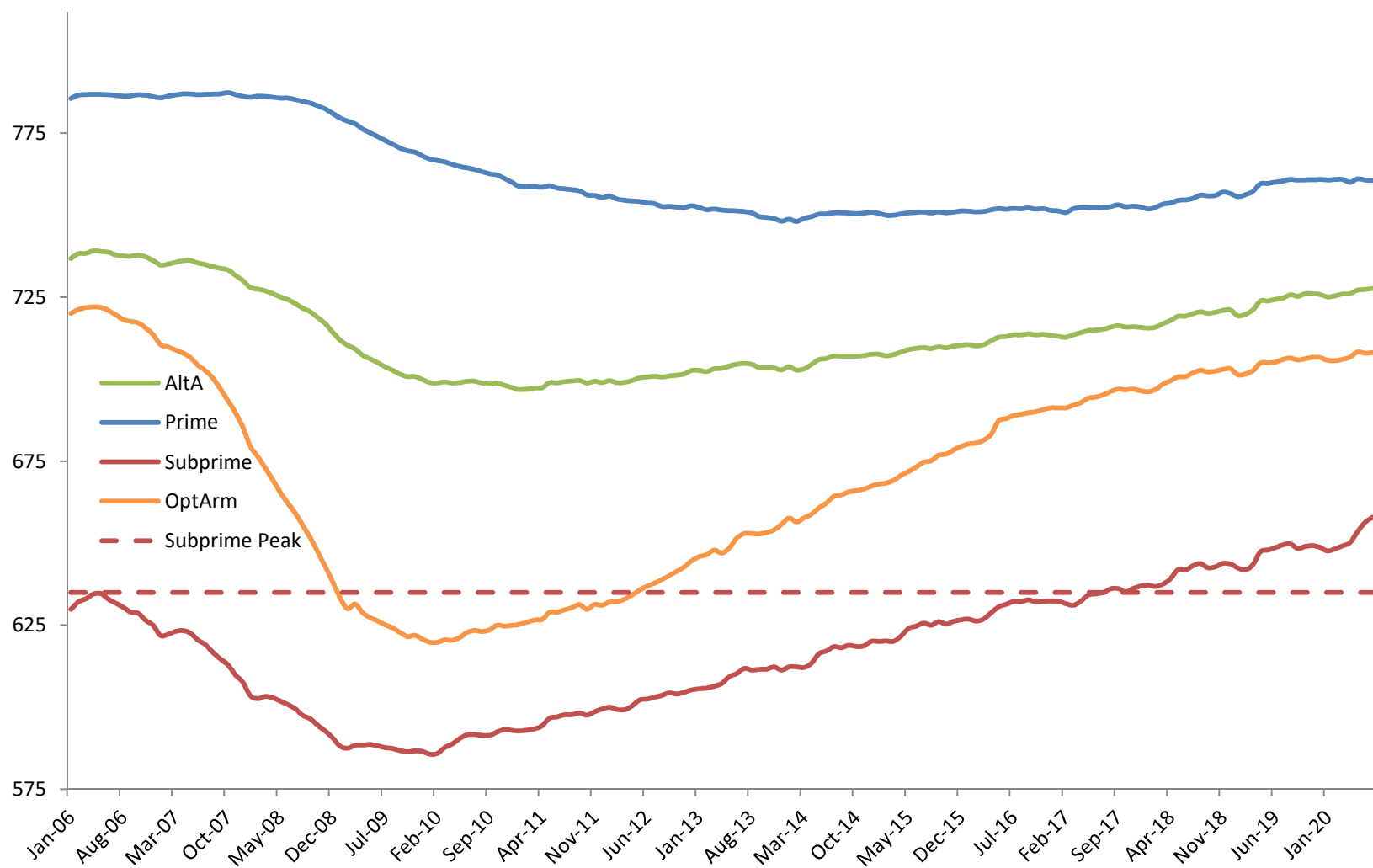


Percentage of 12 month Clean DQ history Non-QM loans rolling to 60 days Delinquent
over
2 Payment Periods as of August 2020

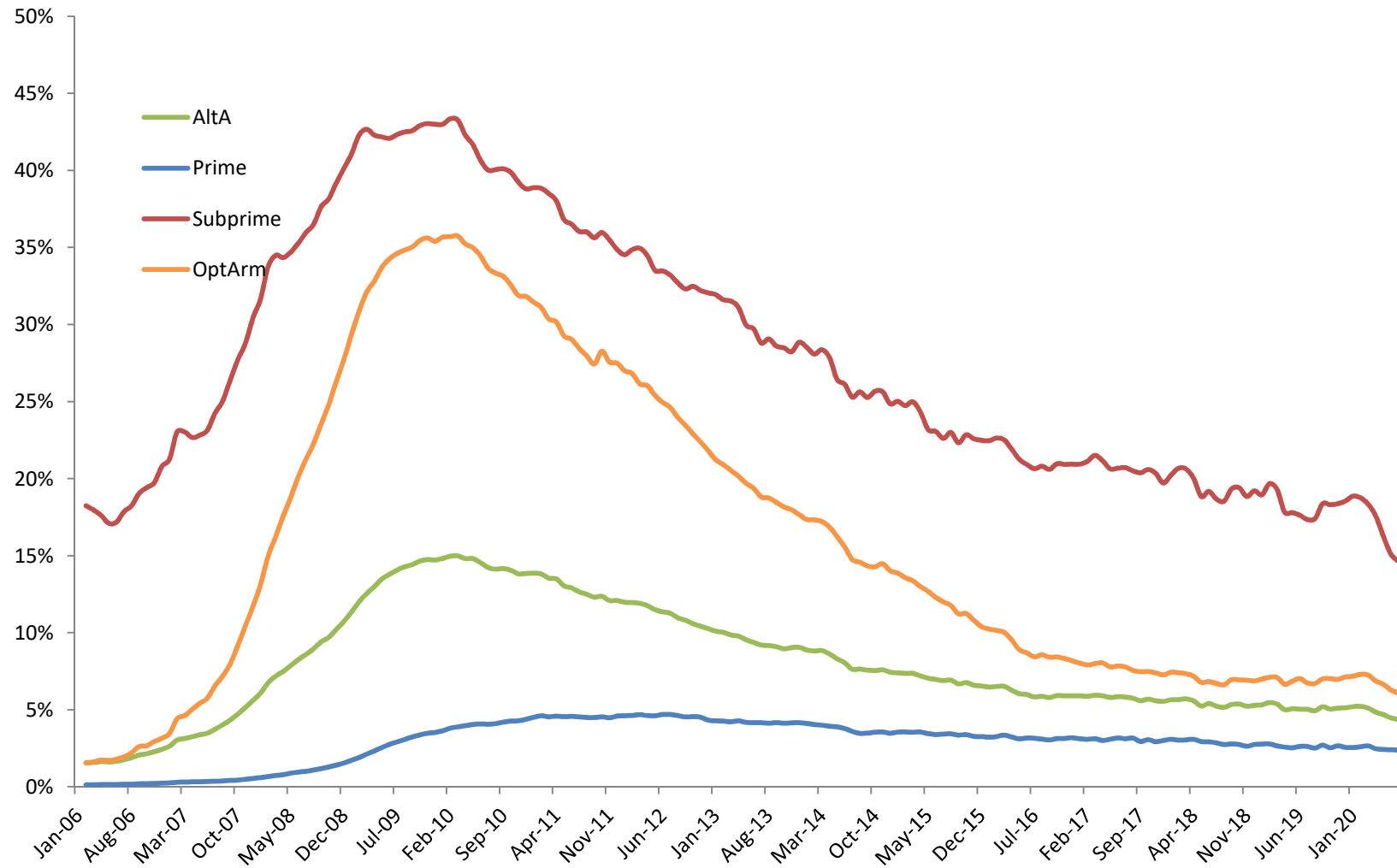


IV. Updated Consumer Credit Data

FICO Score Migration



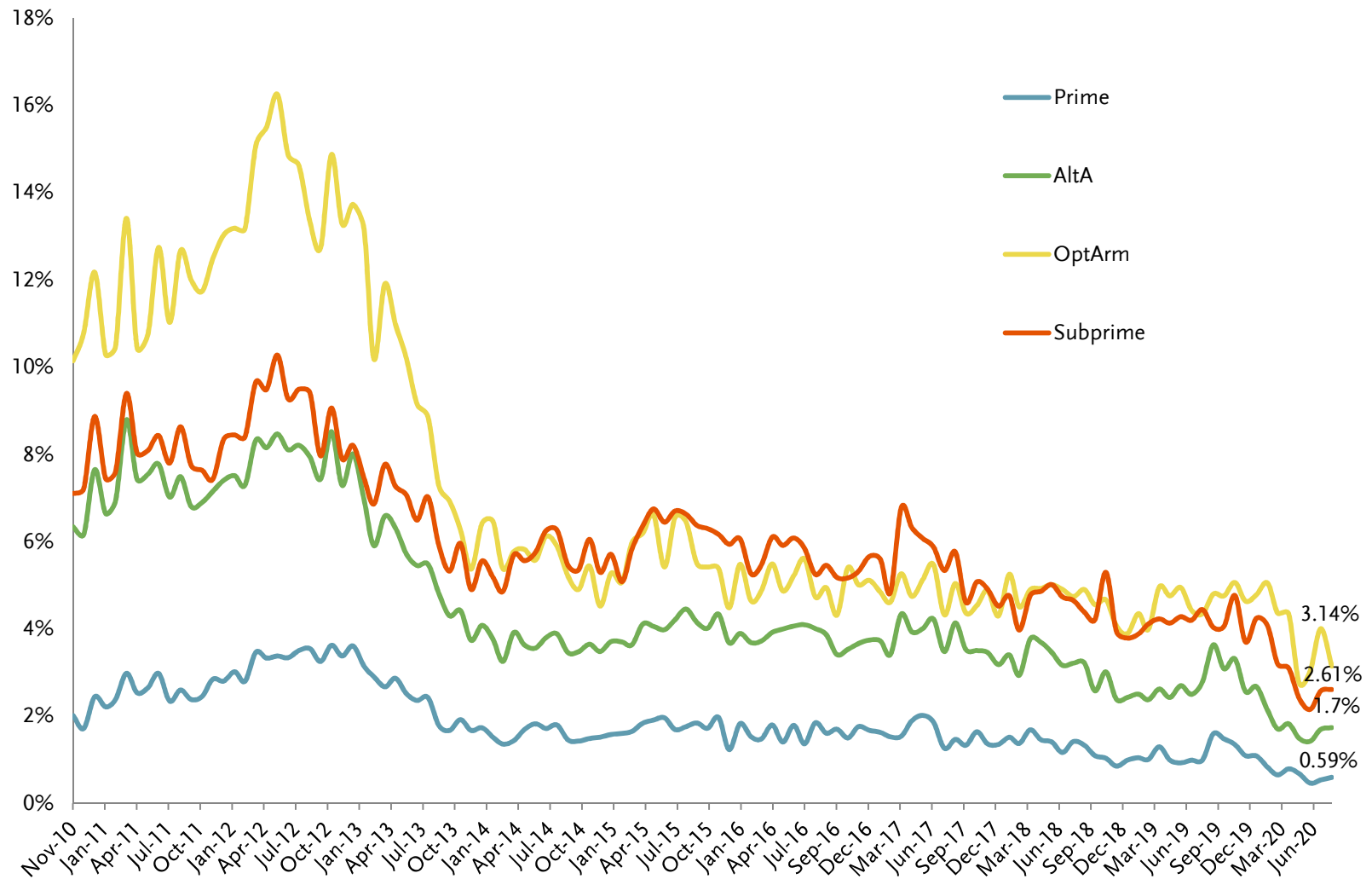
FICO less than 550 as a percentage of Unpaid Balance



Section B: Defaults

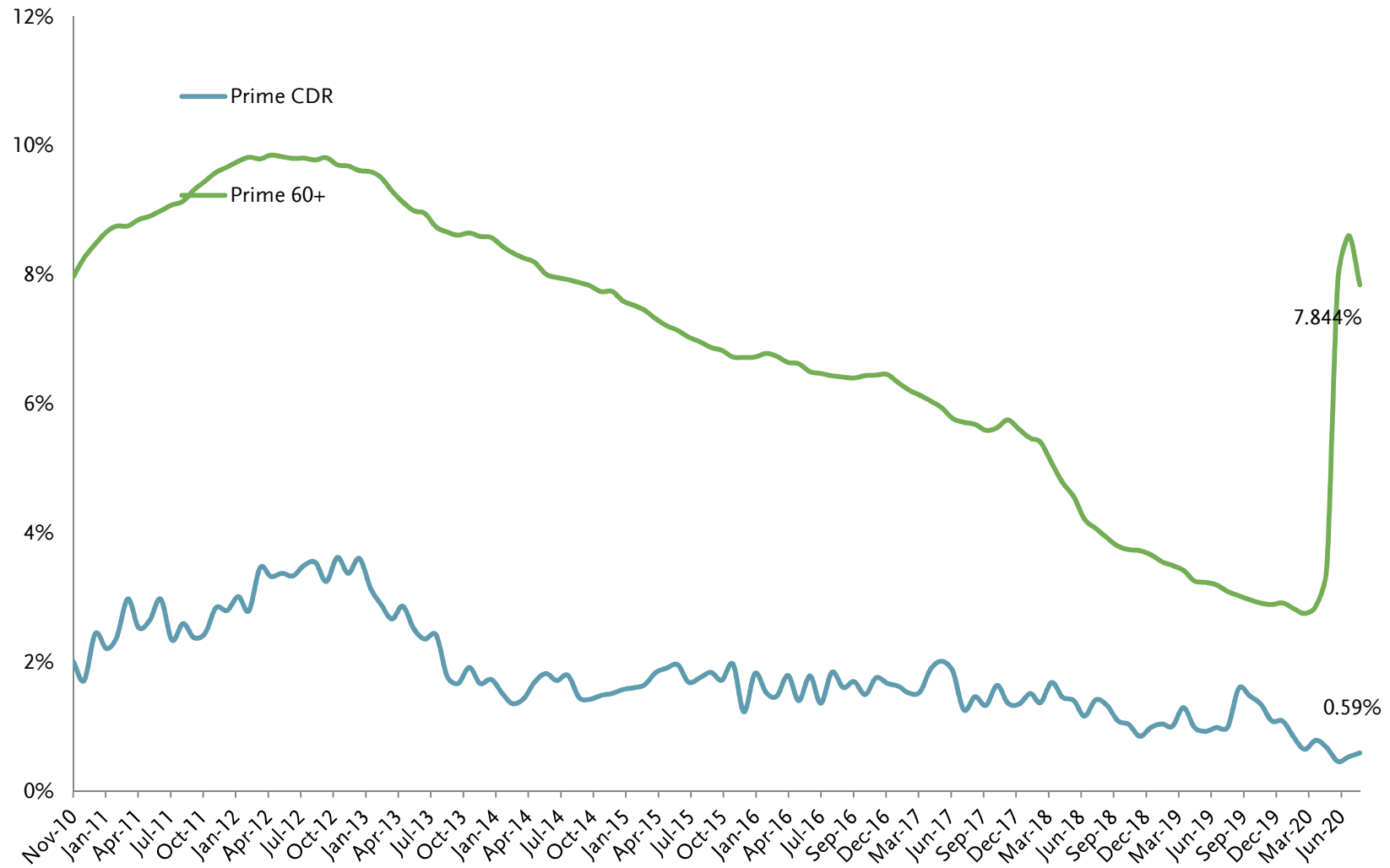
I. CDR by Sector

Securitized Mortgages: Default Rates (CDR) as of August 2020

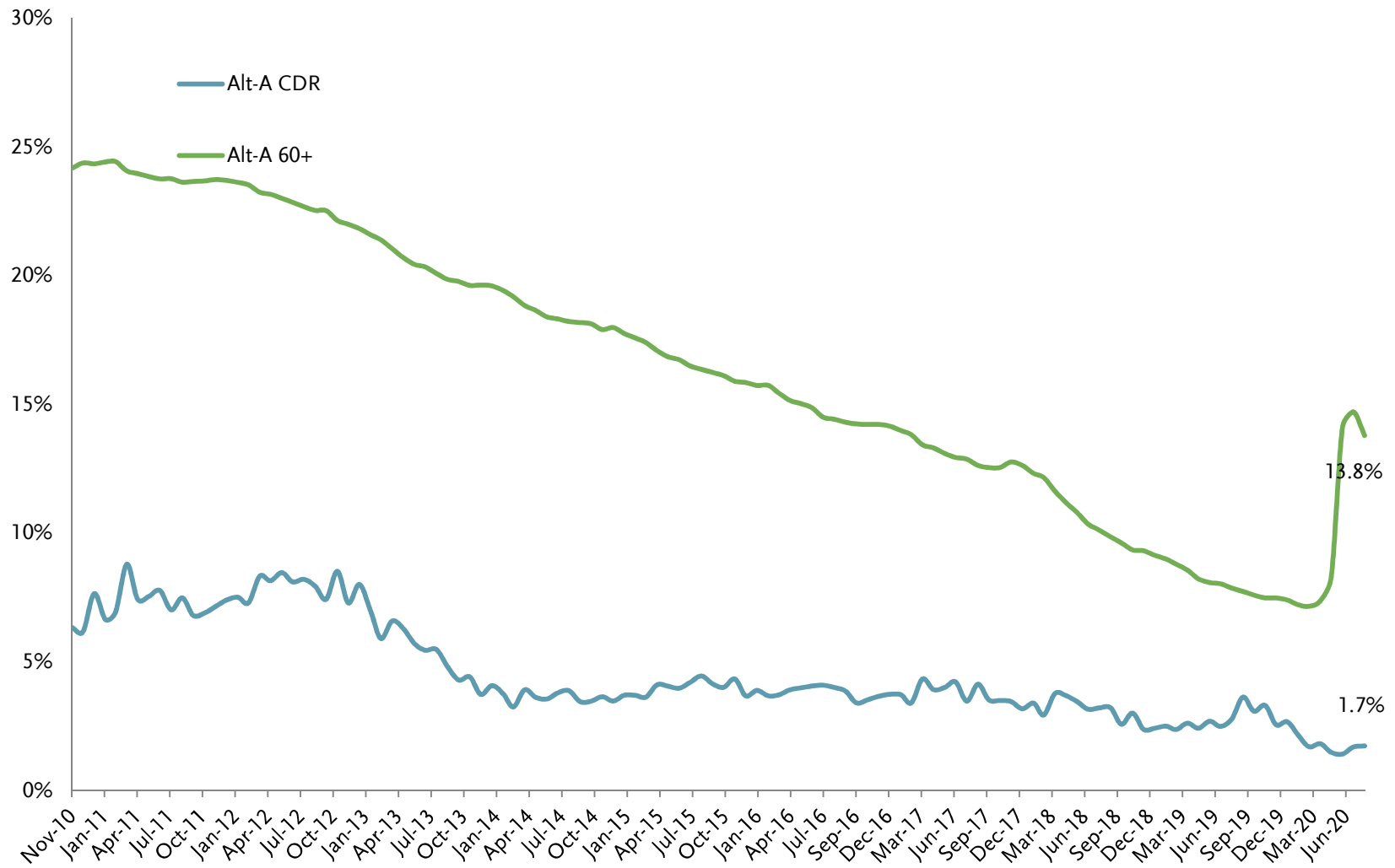


II. CDR and Serious Delinquencies by Sector

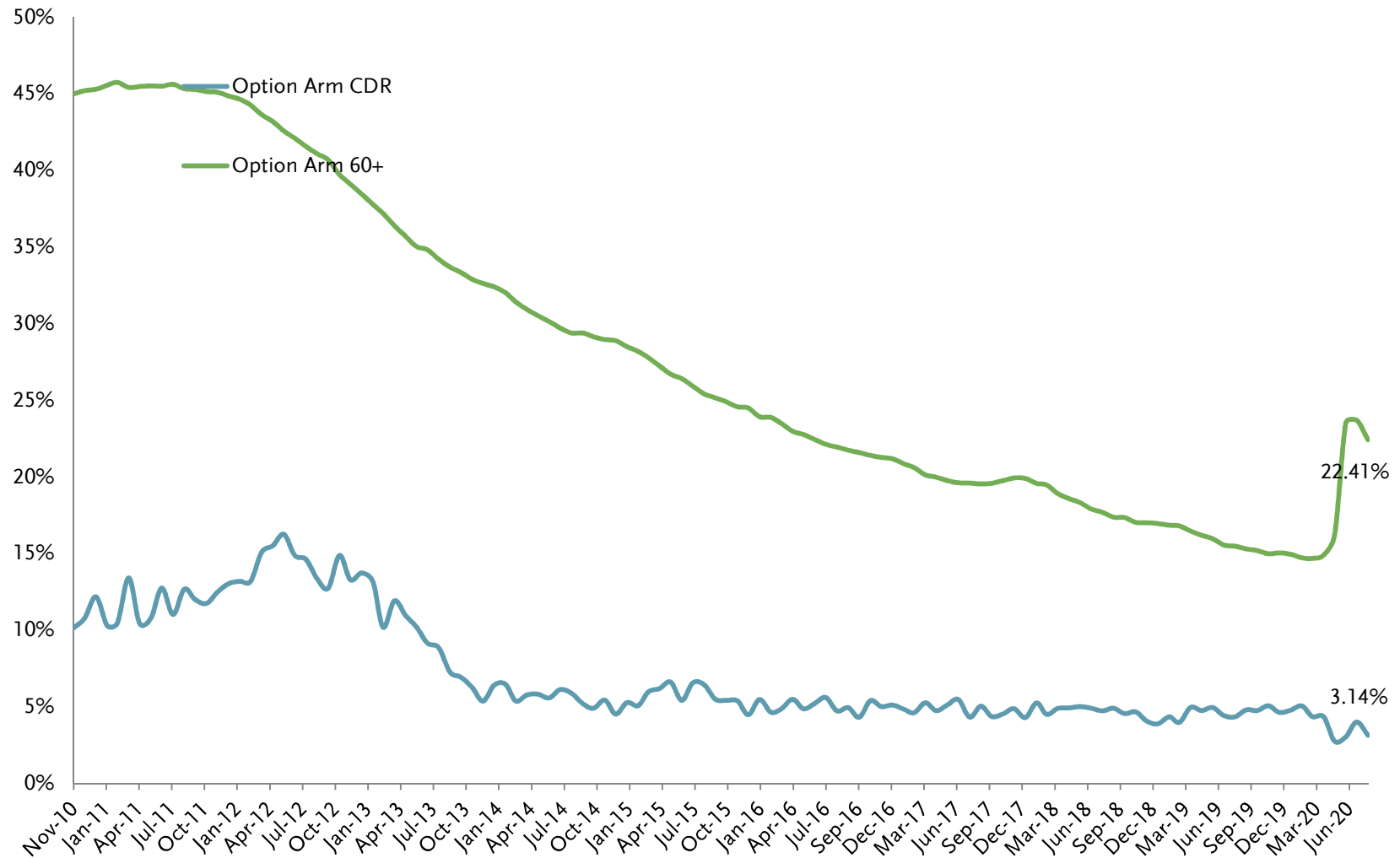
Securitized Mortgages:
Prime 60+ and Prime CDRs as of August 2020



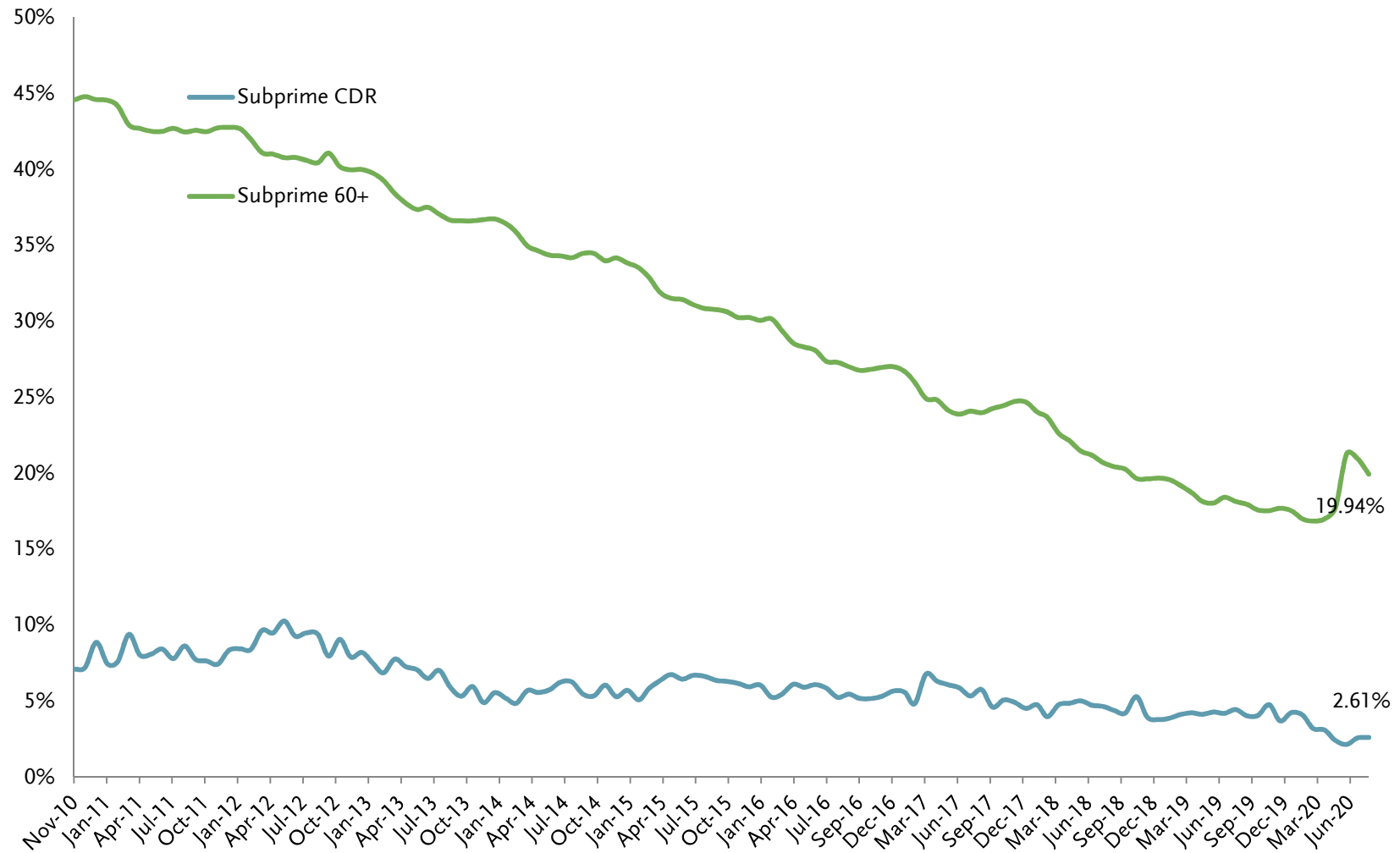
Securitized Mortgages:
Alt-A 60+ and Alt-A CDRs as of August 2020



Securitized Mortgages:
Option Arm 60+ and Option Arm CDRs as of August 2020



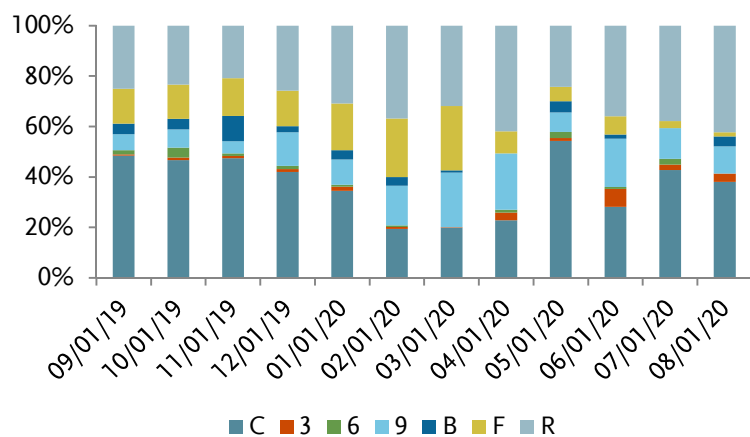
Securitized Mortgages:
Subprime 60+ and Subprime CDRs as of August 2020



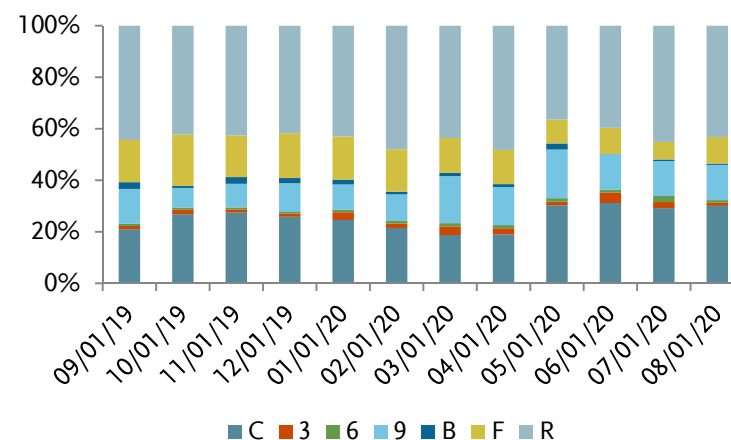
Exhibited by TCW from CoreLogic LoanPerformance Data

III. CDR by Delinquency Status

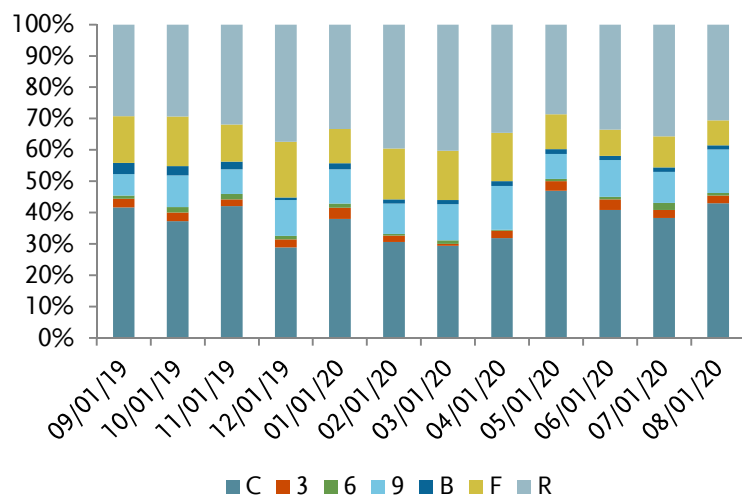
Prime CDR Mix by Delinquency Status



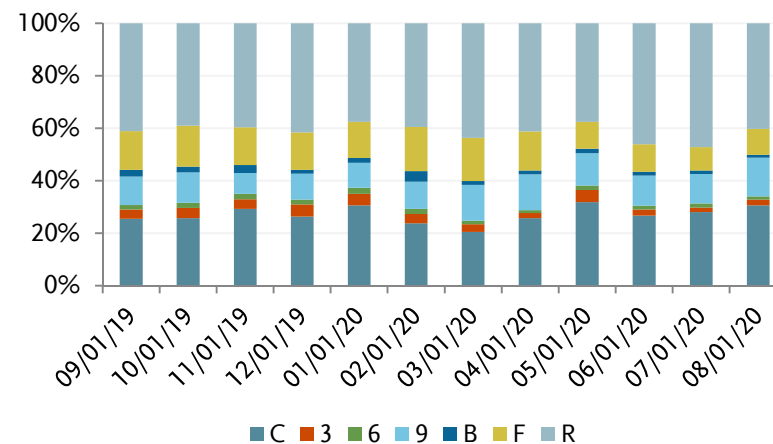
Option Arm CDR Mix by Delinquency Status



Alt-A CDR Mix by Delinquency Status



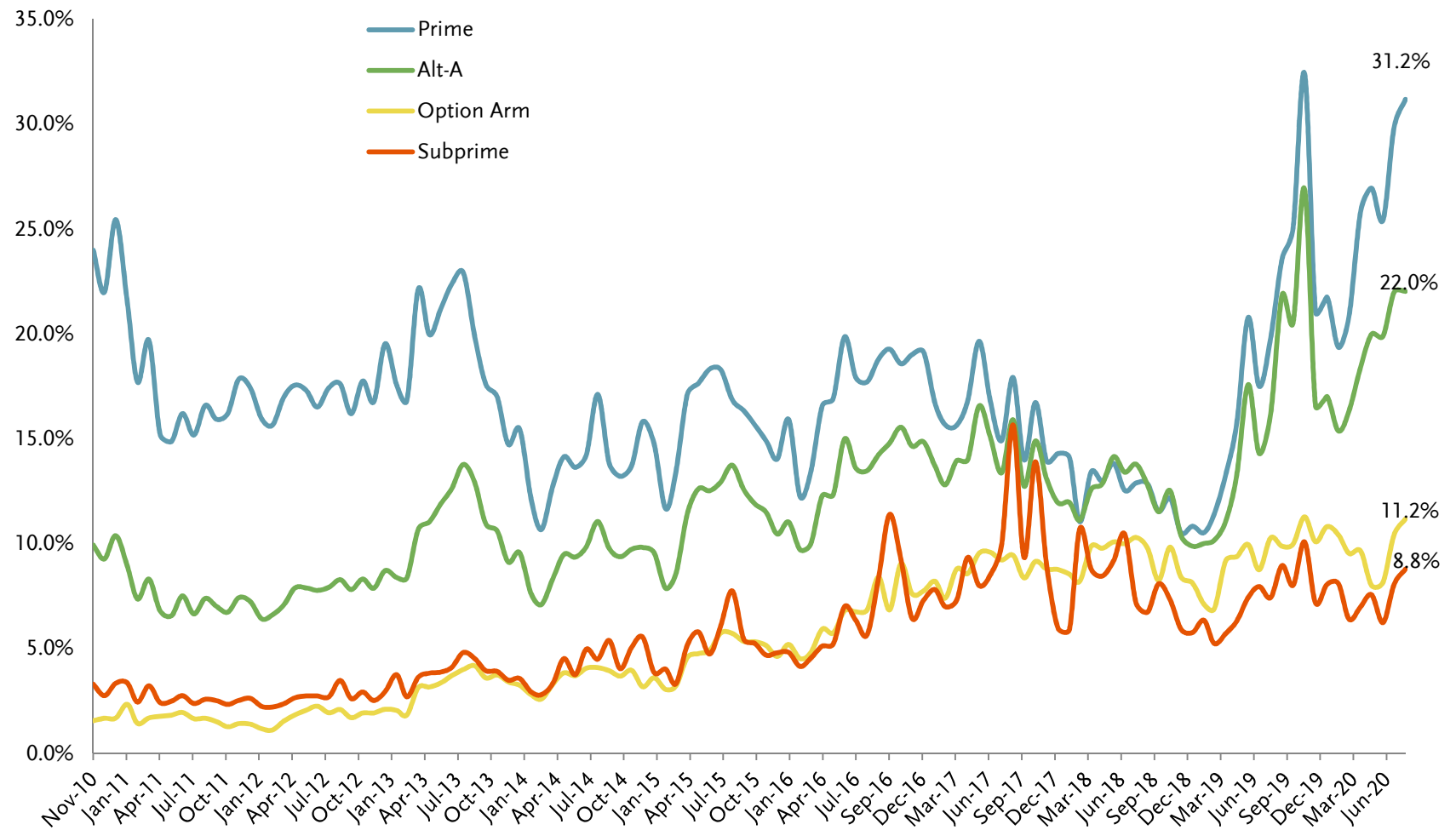
Subprime CDR Mix by Delinquency Status



Section C: Prepayments

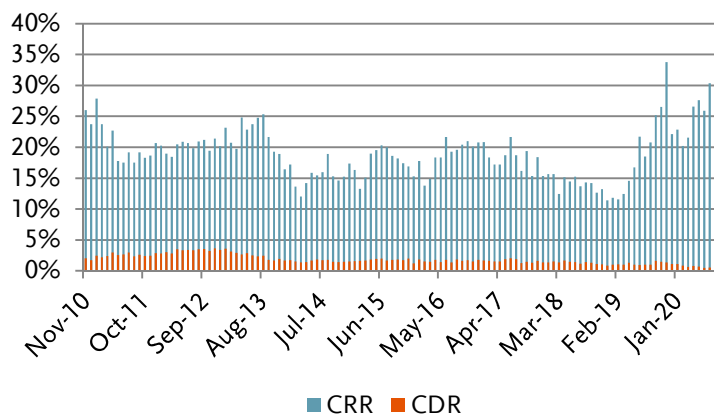
I. Voluntary Prepayments by Sector

Securitized Mortgages:
Voluntary Prepayment Rates (CRR) as of August 2020

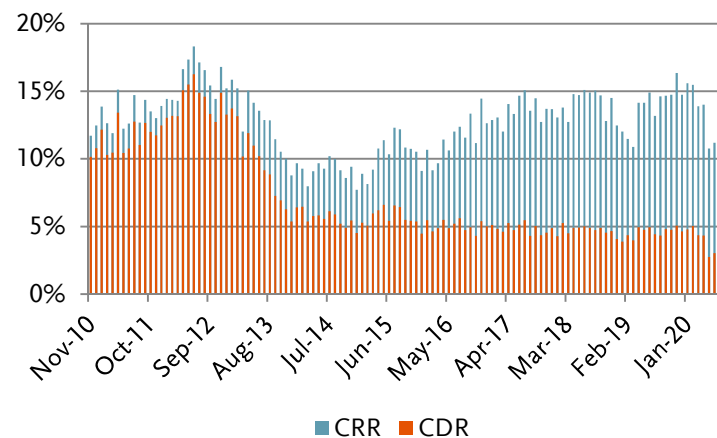


II. CPR Breakout by Sector

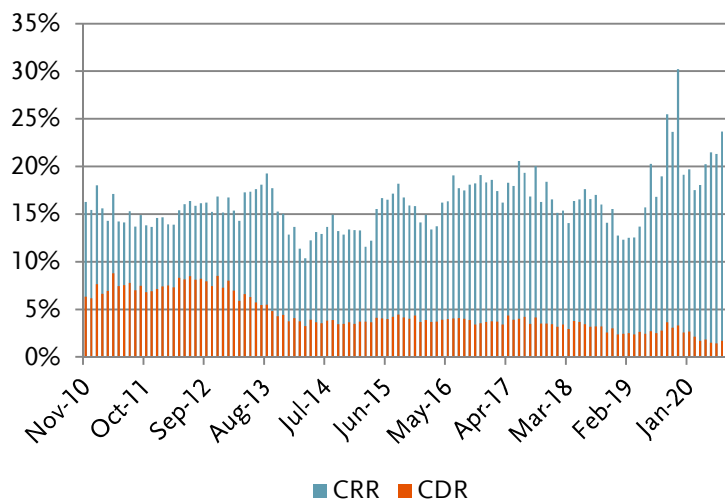
Prime CPR



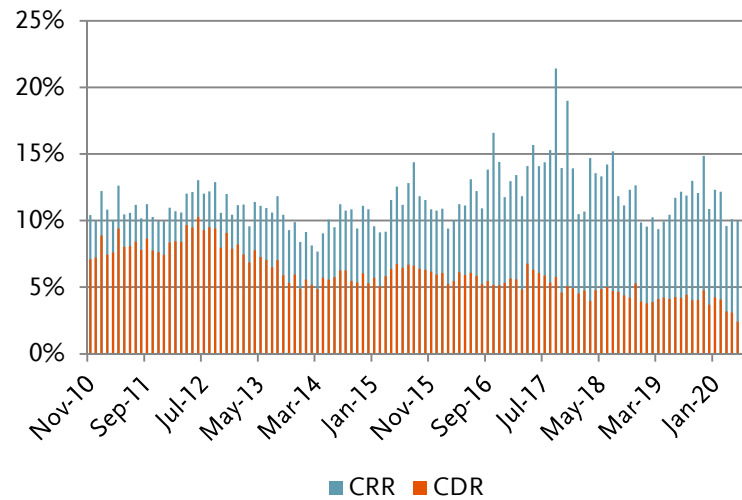
Option Arm CPR



Alt-A CPR

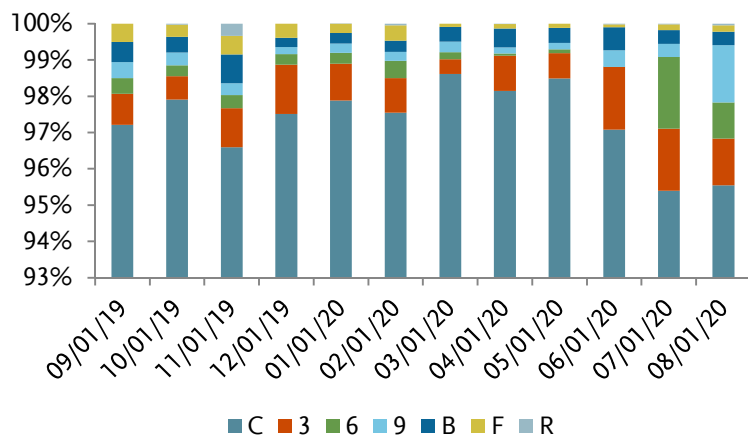


Subprime CPR

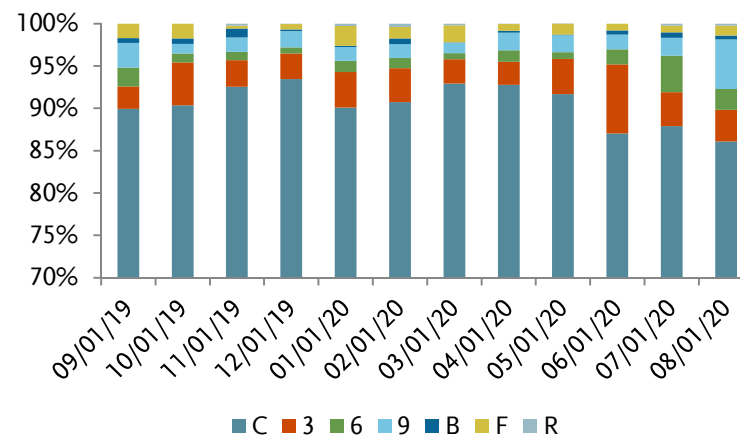


III. Voluntary Prepayments by Delinquency Status

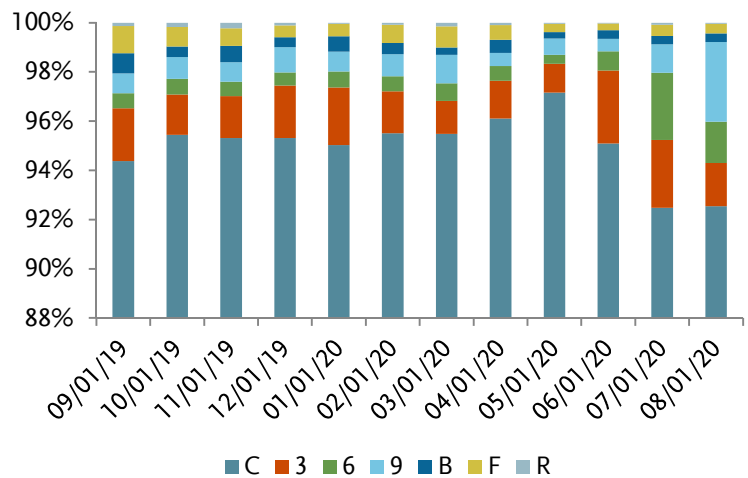
Prime CRR Mix by Delinquency Status



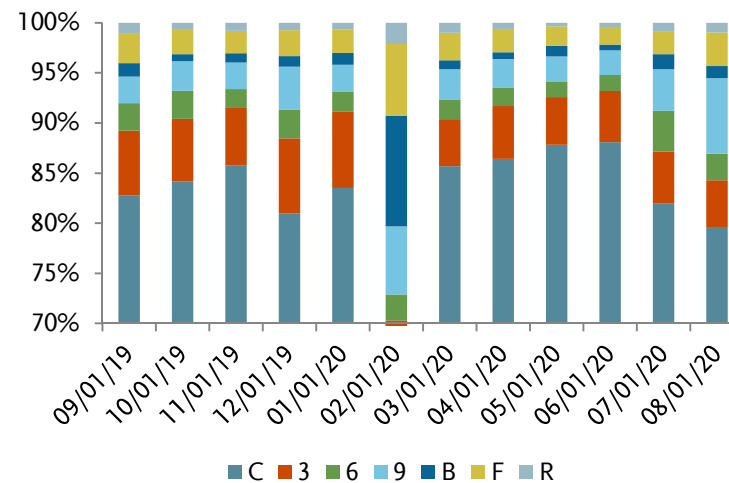
Option Arm CRR Mix by Delinquency Status



Alt-A CRR Mix by Delinquency Status



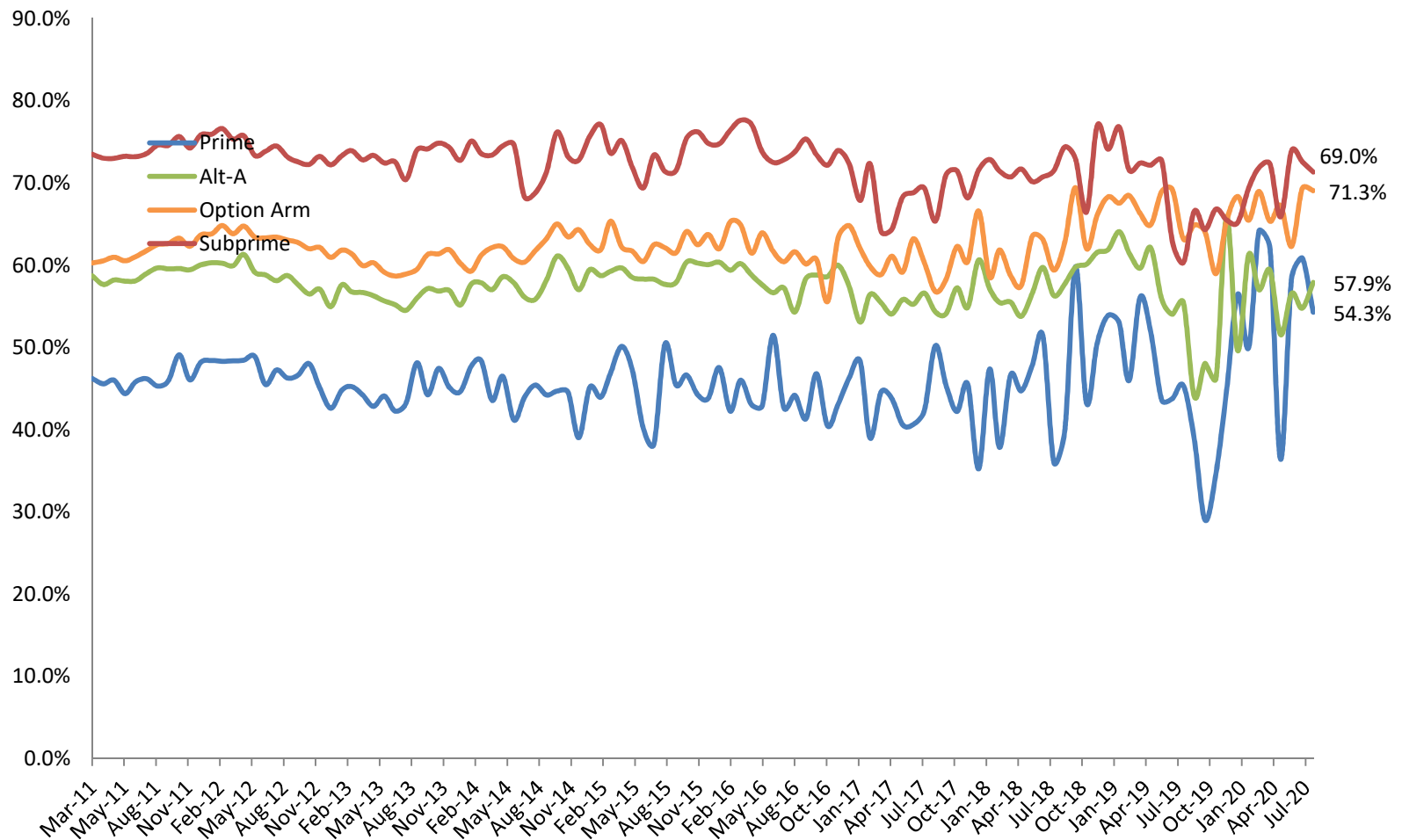
Subprime CRR Mix by Delinquency Status



Section D: Loss Severity

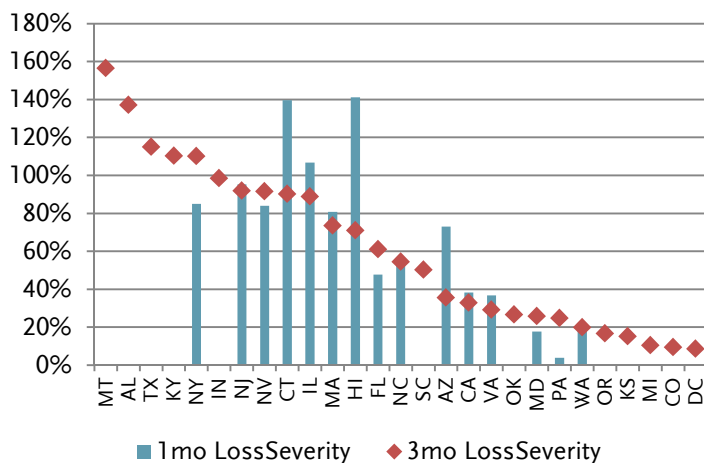
I. Loss Severity by Sector

Historical Loss Severity By Sector

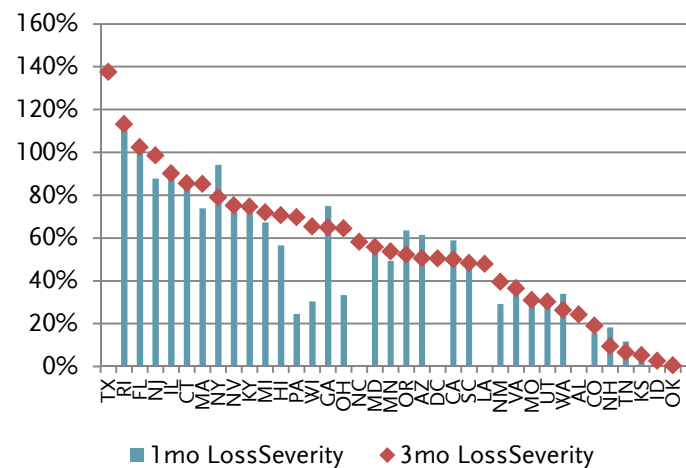


II. Loss Severity by State

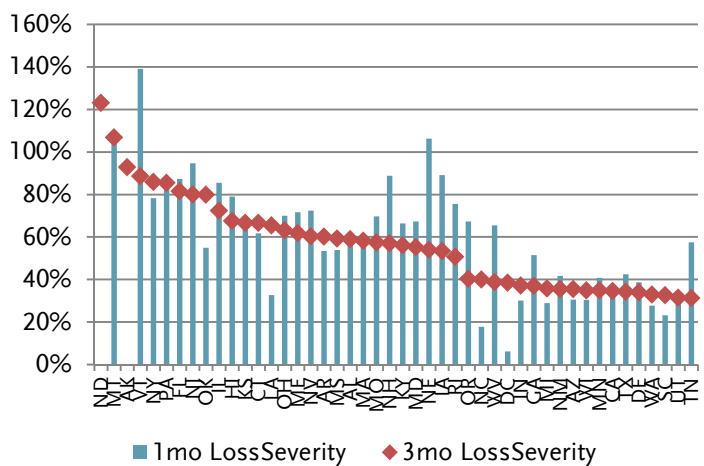
Prime Loss Severity by State



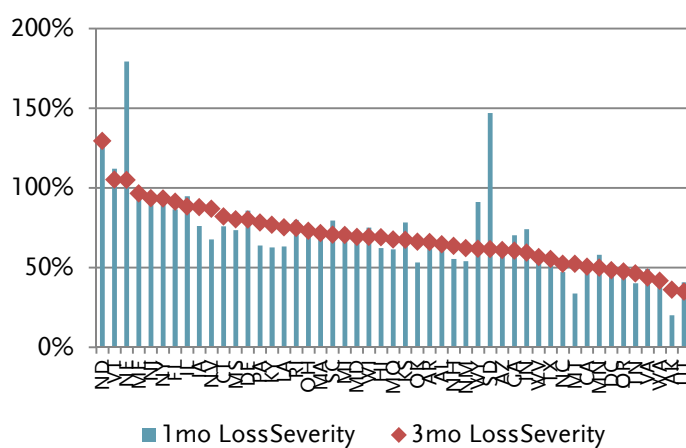
Option Arm Loss Severity by State



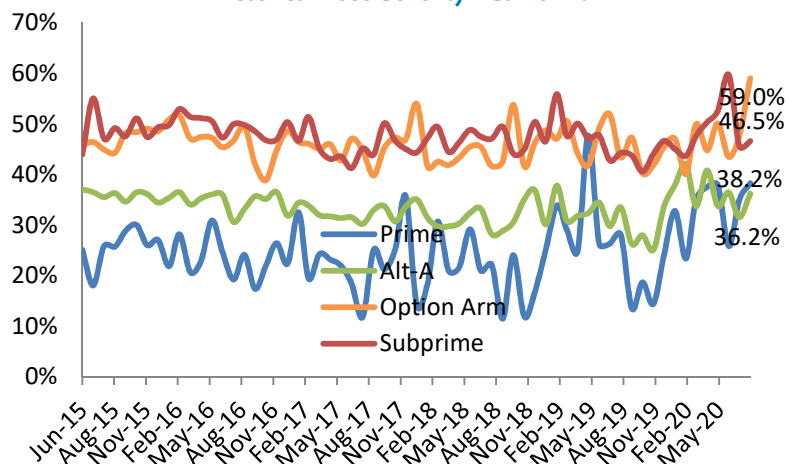
Alt-A Loss Severity by State



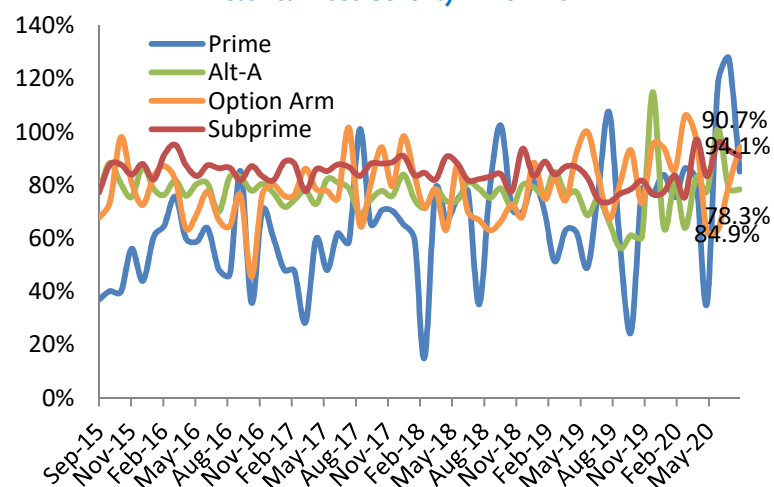
Subprime Loss Severity by State



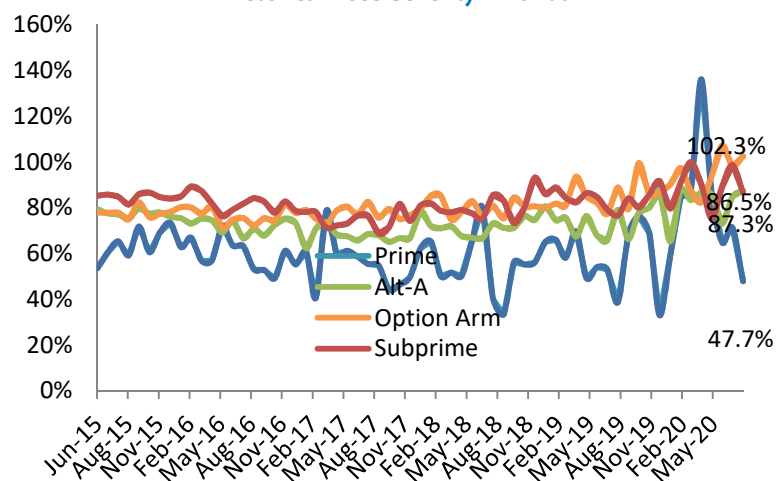
Historical Loss Severity - California



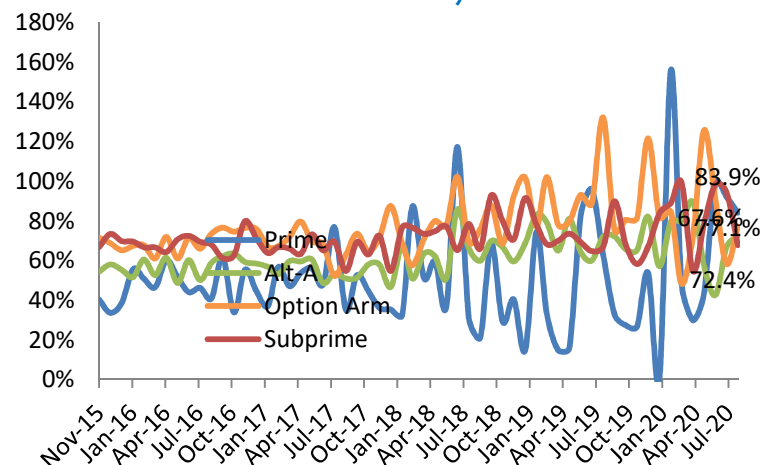
Historical Loss Severity - New York



Historical Loss Severity - Florida

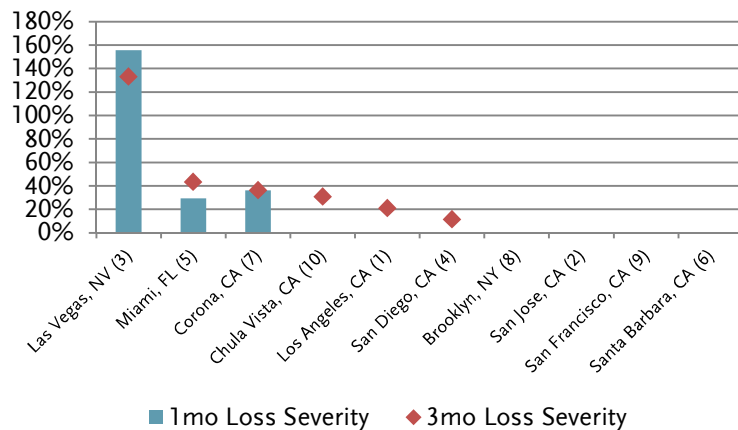


Historical Loss Severity - Nevada

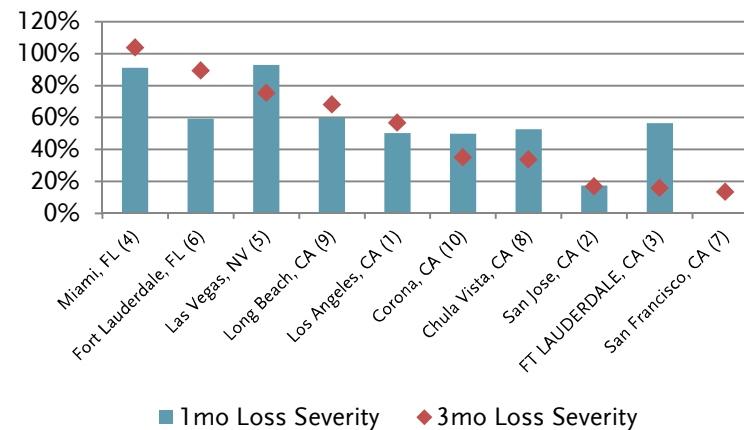


III. Loss Severity by City

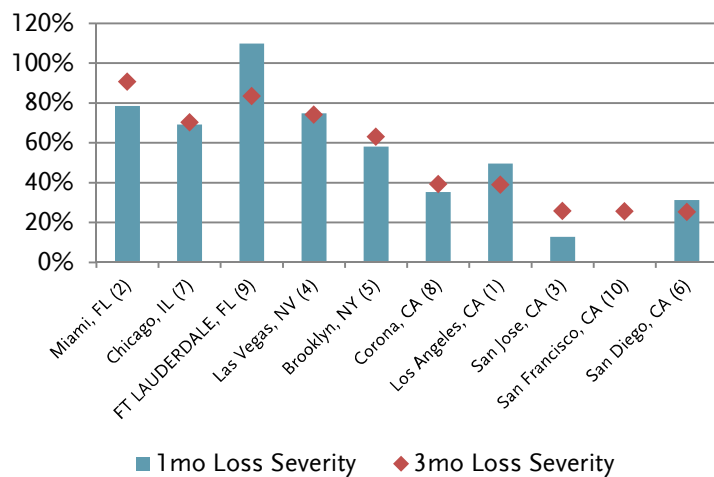
Prime Loss Severity Across Top 10 Cities by UPB



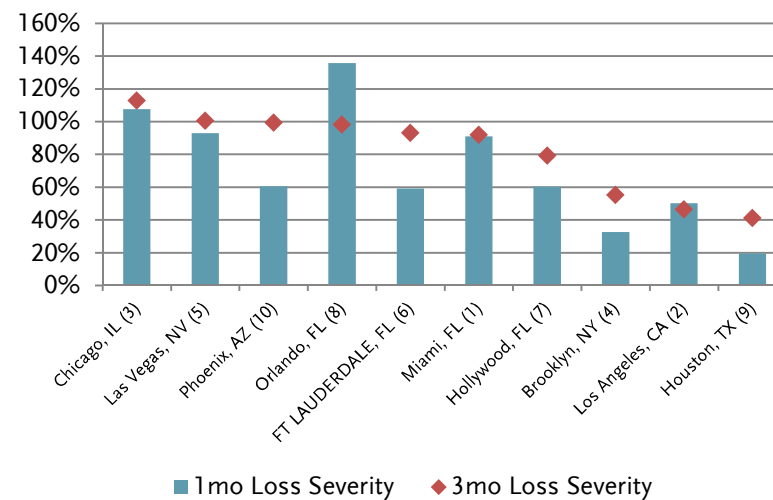
Option Arm Loss Severity Across Top 10 Cities by UPB



Alt-A Loss Severity Across Top 10 Cities by UPB



Subprime Loss Severity Across Top 10 Cities by UPB

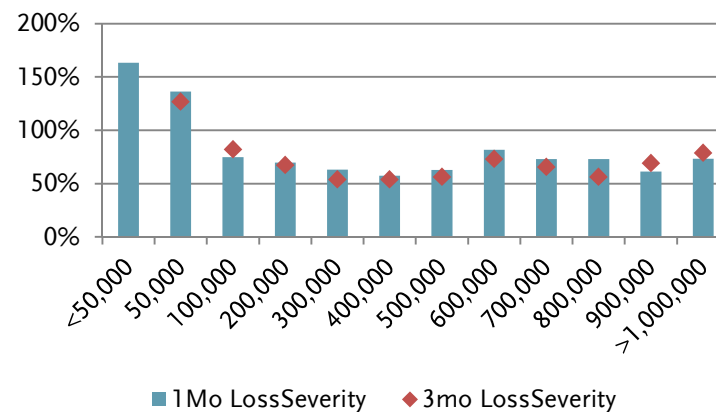


IV. Loss Severity by Unpaid Principal Balance

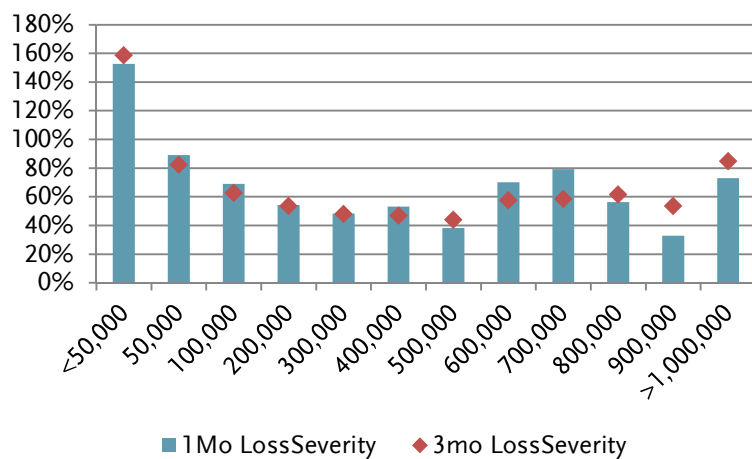
Prime Loss Severity by Current Balance



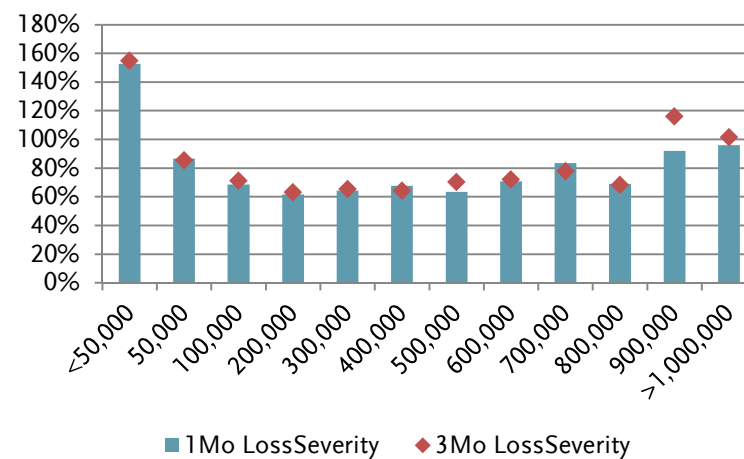
Option Arm Loss Severity by Current Balance



Alt-A Loss Severity by Current Balance



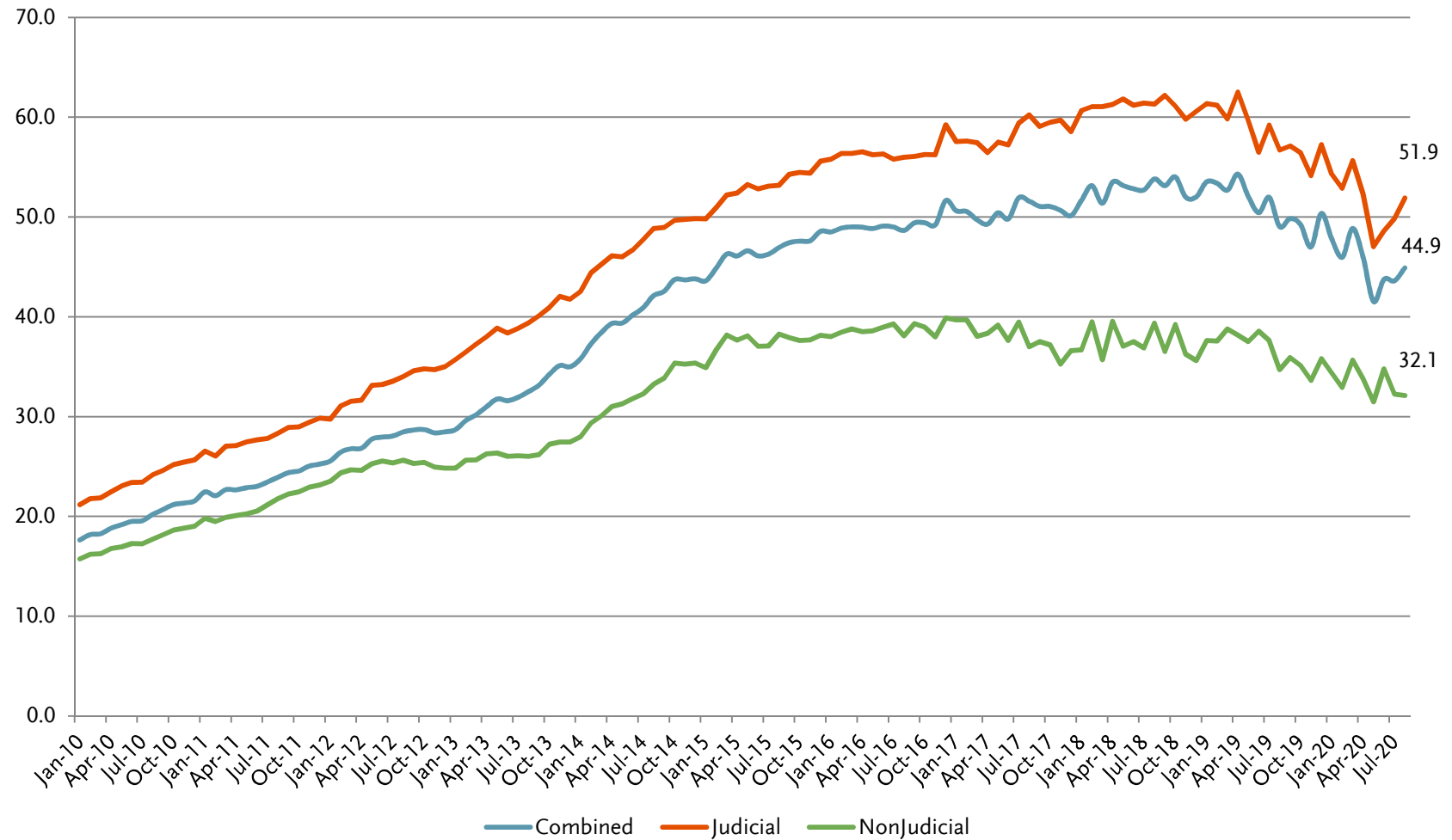
Subprime Loss Severity by Current Balance



Section E: Servicing

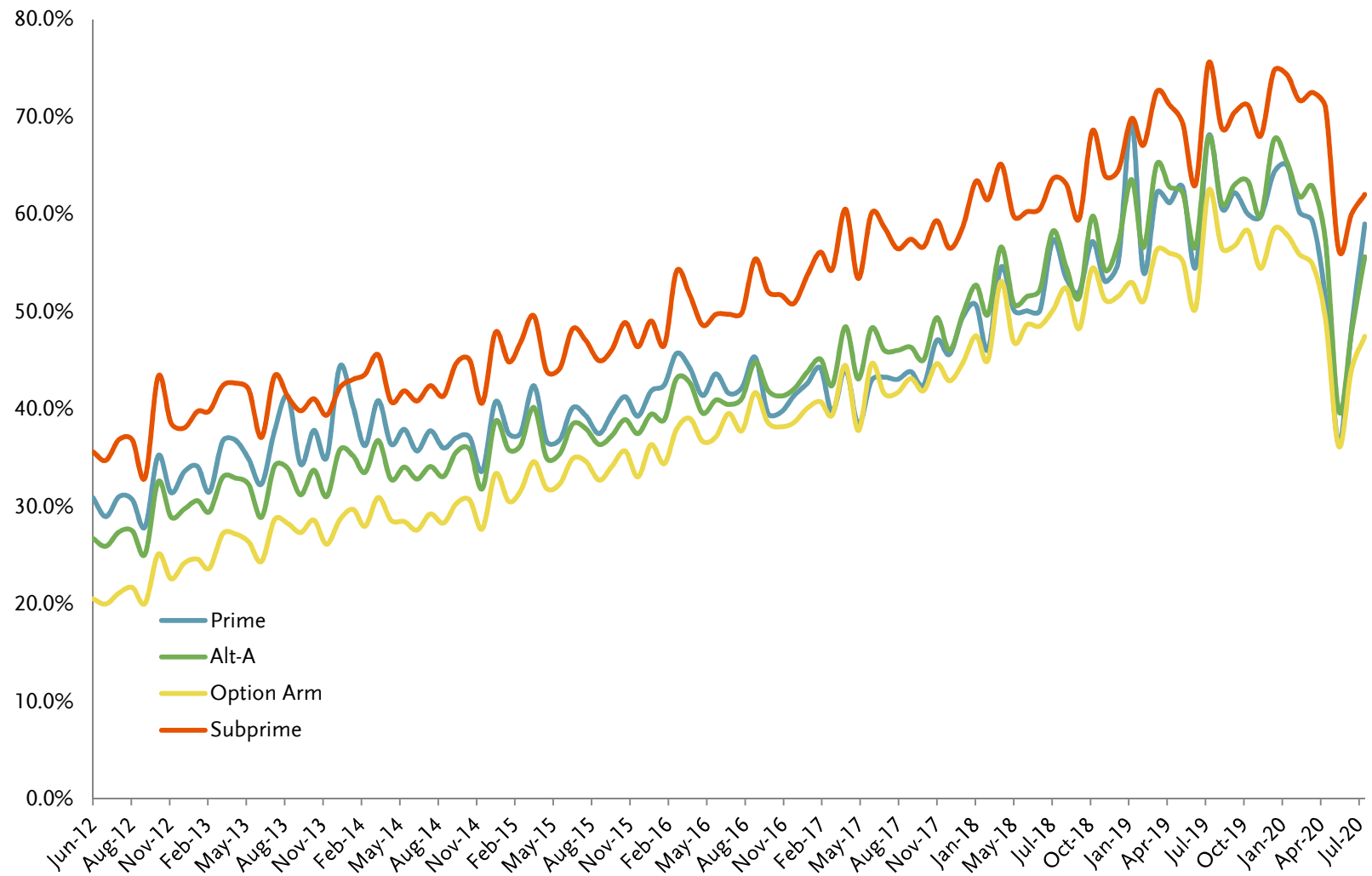
I. Liquidation Timeline

National Average Liquidation Timeline (Months)

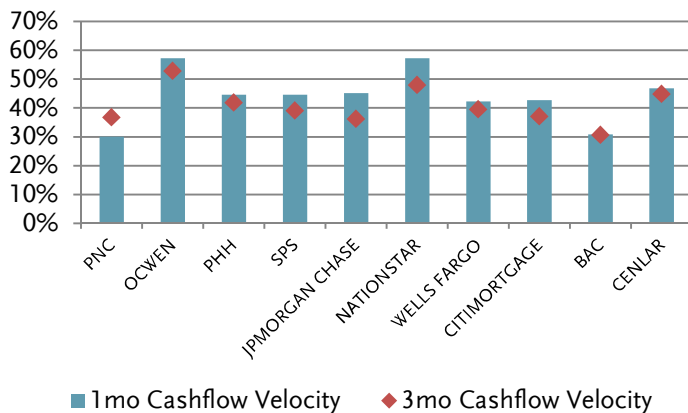


II. Cash Flow Velocity

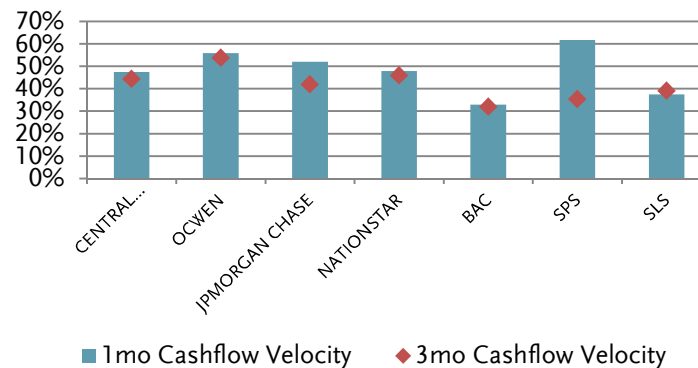
Securitized Mortgages:
Cashflow Velocity (P&I Paid / P&I Due) on Delinquent Loans as of August 2020



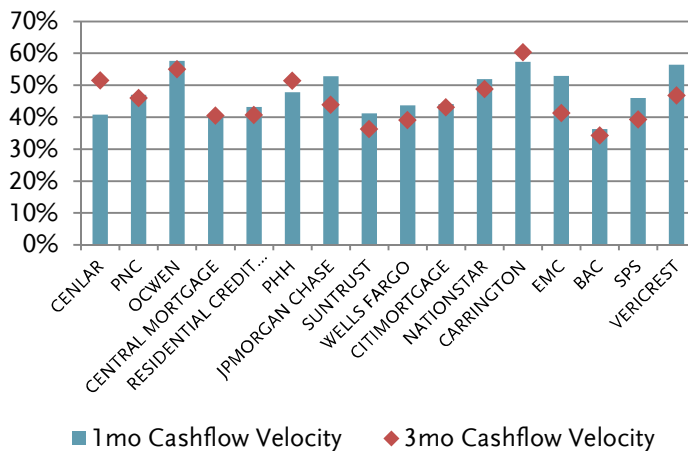
Servicer Level Cashflow Velocity on DQ Prime Loans



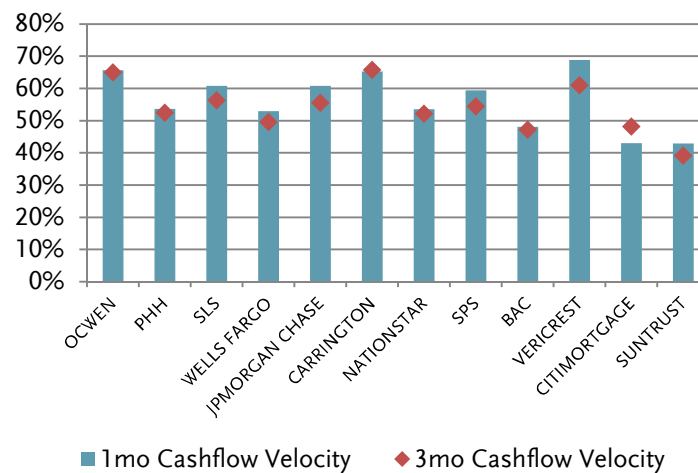
Servicer Level Cashflow Velocity on DQ Option Arm Loans



Servicer Level Cashflow Velocity on DQ Alt-A Loans

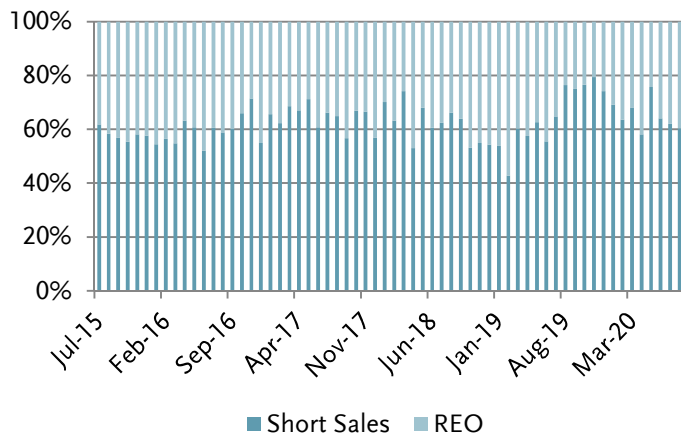


Servicer Level Cashflow Velocity on DQ Subprime Loans

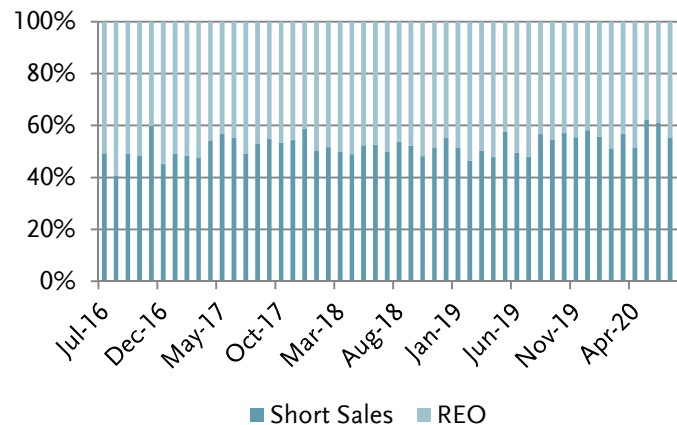


III. Short Sales

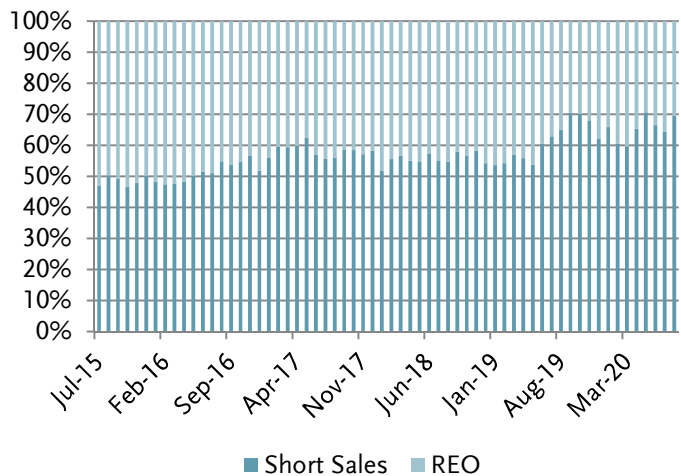
Prime Short Sales as % of Total Defaults



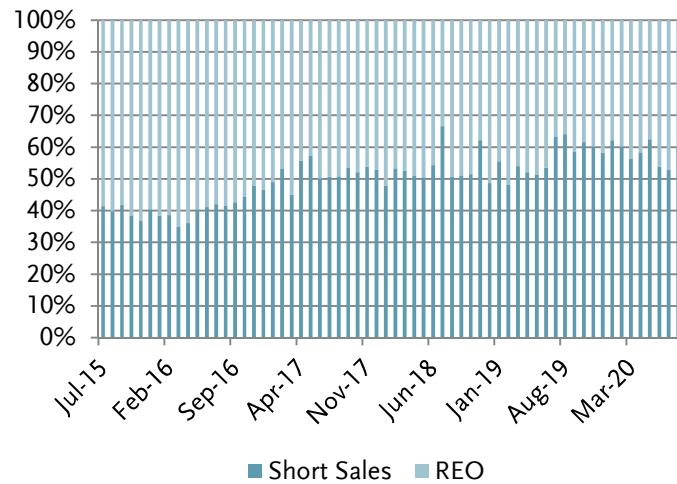
Option Arm Short Sales as % of Total Defaults



Alt-A Short Sales as % of Total Defaults



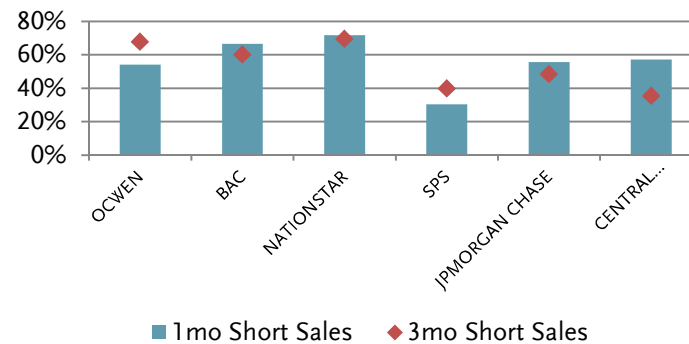
Subprime Short Sales as % of Total Defaults



Percentage Prime Defaults Liquidated via Short Sale by Servicer



Percentage Option Arm Defaults Liquidated via Short Sale by Servicer



Percentage Alt-A Defaults Liquidated via Short Sale by Servicer

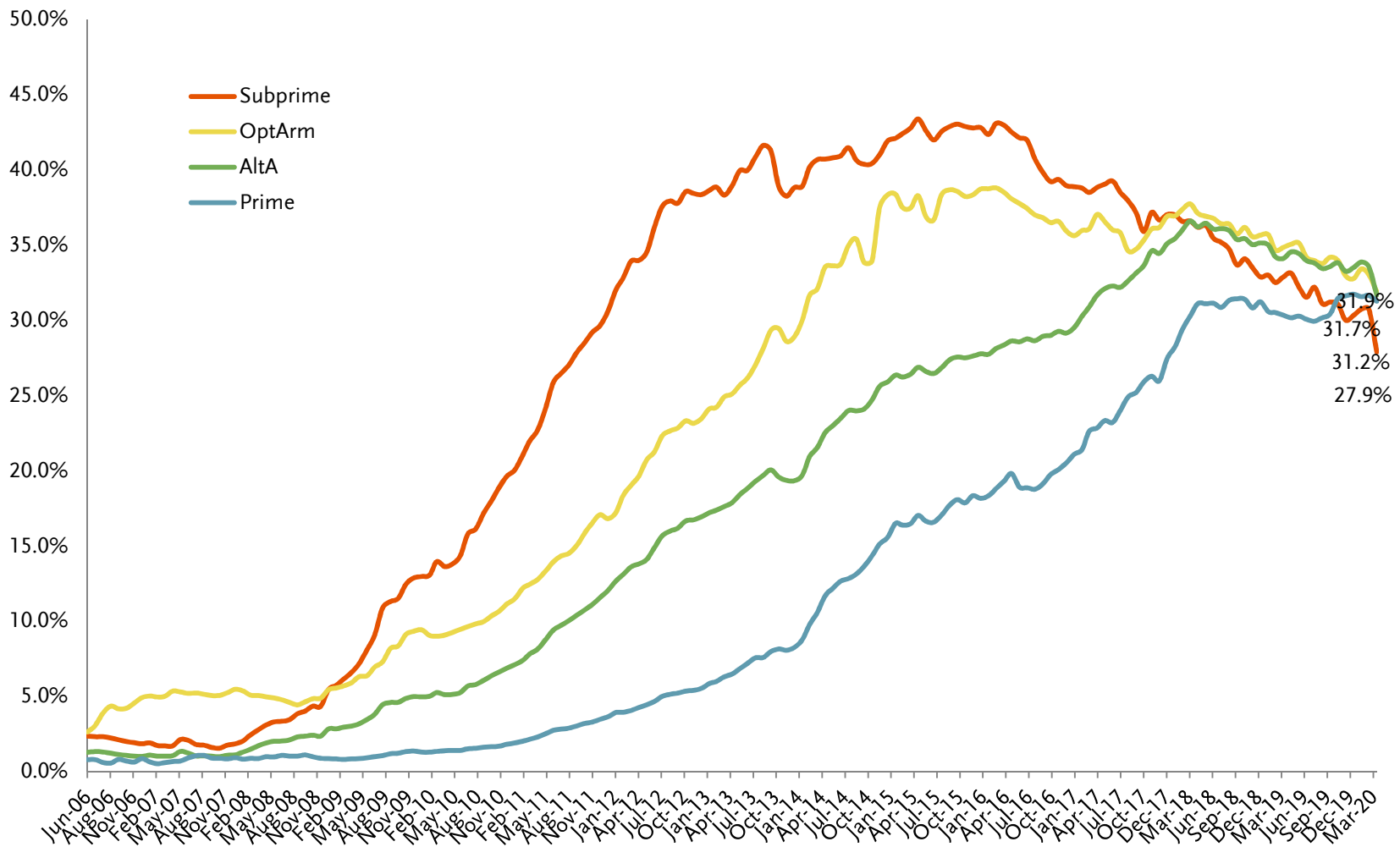


Percentage Subprime Defaults Liquidated via Short Sale by Servicer

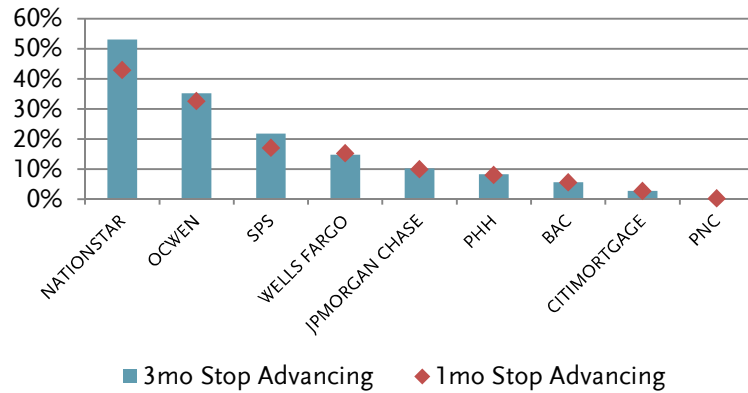


V. Advancing

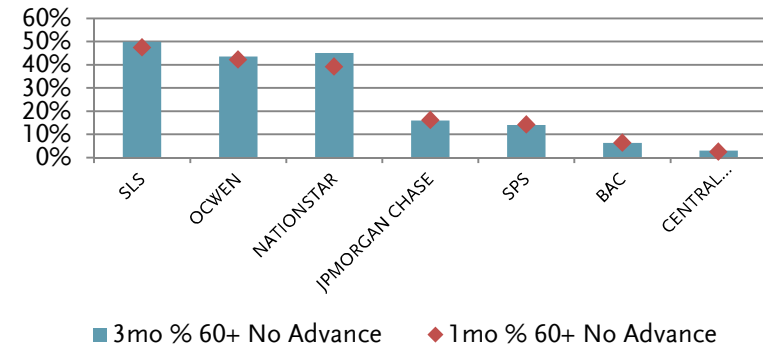
Securitized Mortgages: % 60+ Loans No Longer Advanced Upon as of August 2020



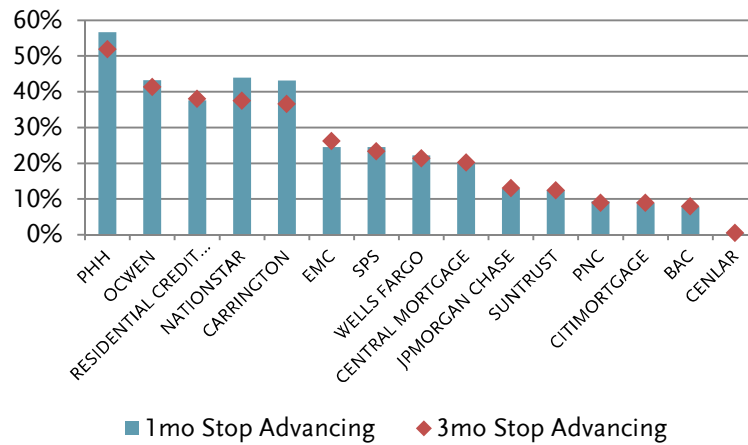
Prime Percentage 60+ Not Advanced Upon by Servicer



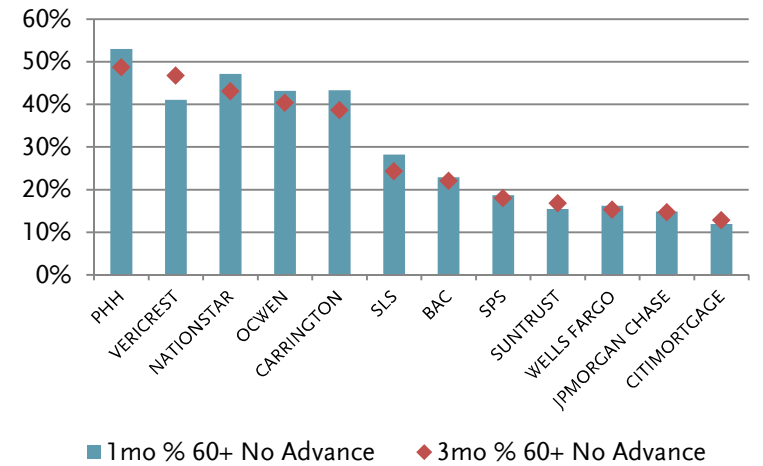
Option Arm Percentage 60+ Not Advanced Upon by Servicer



Alt-A Percentage 60+ Not Advanced Upon by Servicer



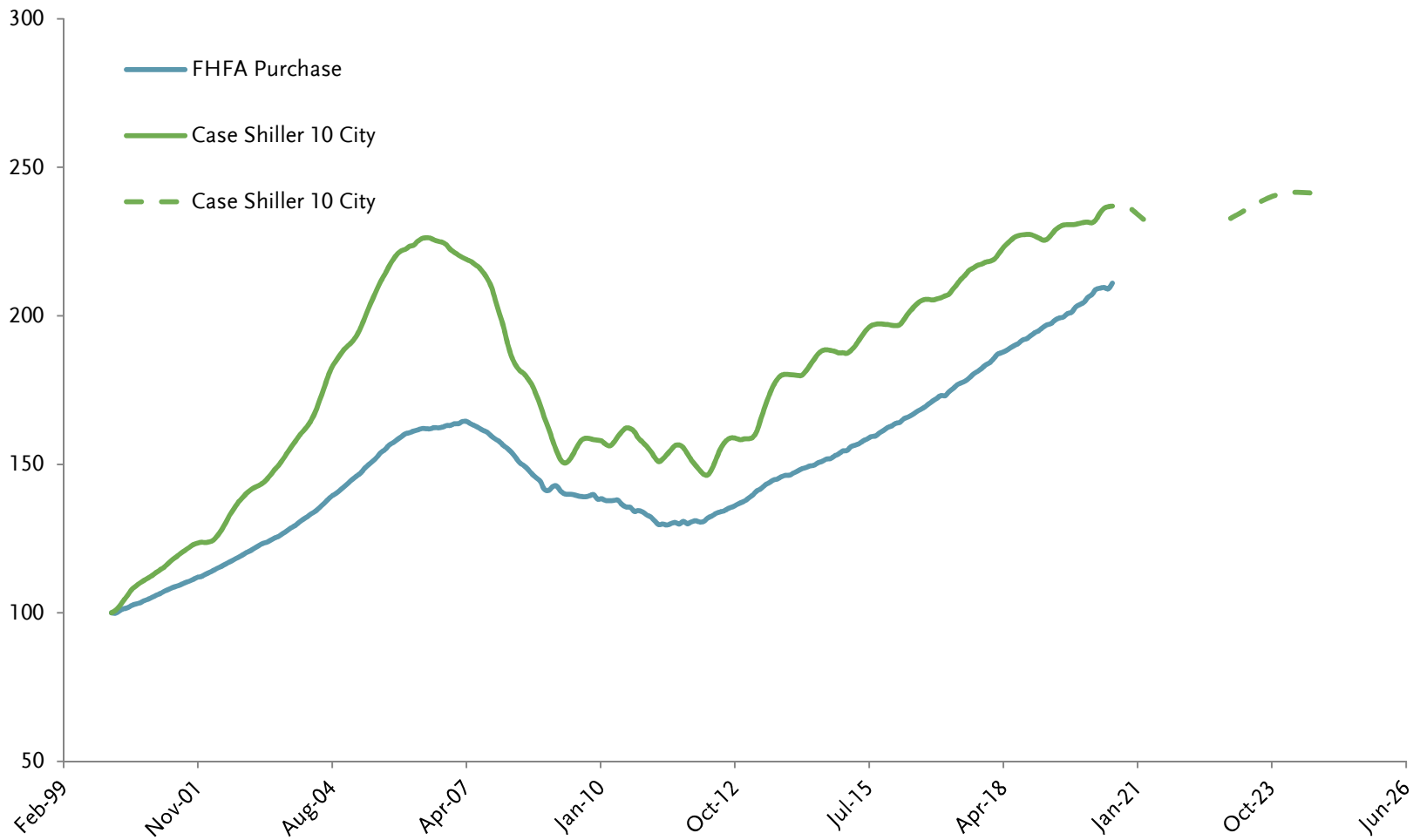
Subprime Percentage 60+ Not Advanced Upon by Servicer



Section F: Home Prices

I. Home Price Indices

National Home Price Indices



II. Case Shiller Summary

Geographic Area	YoY	Peak to Now	Peak to Trough	Trough to Now	Months since peak	Months since trough
Atlanta	4.2%	17%	-36%	83%	157	101
Boston	3.5%	27%	-20%	59%	179	137
Charlotte	5.7%	28%	-20%	61%	156	102
Chicago	0.6%	-13%	-39%	43%	167	101
Cleveland	5.4%	7%	-24%	41%	169	102
Dallas	3.1%	57%	-11%	76%	158	138
Denver	4.0%	66%	-14%	94%	168	138
Detroit	-0.9%	1%	-49%	98%	176	112
Los Angeles	3.9%	9%	-42%	87%	167	135
Las Vegas	3.3%	-15%	-61%	120%	168	101
Miami	4.0%	-10%	-51%	85%	164	112
Minneapolis	5.4%	10%	-38%	78%	167	113
New York	1.6%	-6%	-27%	29%	170	101
Phoenix	9.0%	-8%	-56%	109%	170	107
Portland	4.2%	34%	-31%	94%	157	101
San Diego	5.0%	10%	-42%	90%	177	136
Seattle	6.5%	41%	-32%	108%	157	102
San Francisco	1.4%	25%	-46%	133%	171	137
Tampa	5.9%	-3%	-47%	85%	169	102
Washington DC	3.5%	-3%	-34%	47%	171	137
10 City Aggregate	2.8%	5%	-35%	62%	170	101
20 City Aggregate	3.5%	9%	-34%	65%	169	101