AEI Housing Center

AEI Flash Housing Market Indicators

Week 18 (April 27th – May 1st, 2020)

Key takeaways

- **Cash-out refinance rate lock activity continued to accelerate.**
    - **For the week pf April 27 (week 18), volume was up 54% compared to week 8 of 2020. For week 17, volume had been up 33%.**
    - **On a year-over-year basis, the rate of increase also accelerated, with week 18 posting a 109% increase, compared to 99% for week 17.**
    - **All of the increased activity continues in the conforming loan space.**
- **Purchase loan rate lock activity continued to be well below last year, however has been stable at a decline in the mid-teens for the last 3 weeks.**
    - **For the week of April 27 (week 18), purchase loan rate lock activity was 15% below that for week 18 in 2019.**
    - **However, activity may be down as much as 27% after taking into account that activity in January and February 2020 (weeks 1-8) was running 16% ahead of the same period in 2019.**
    - **There are important differences across metros. Rate locks in some metros are holding up much better than in others.**
    - **Detroit, Pittsburgh, and Philadelphia have seen large declines, while Cleveland, Virginia Beach, and Nashville are weathering the storm rather well.**
- **With the onset of the COVID-19 pandemic, we observe important share shifts in the market.**
    - **FHA, VA, and Rural Housing Service borrowers with FICO score below 640 are increasingly unable to get mortgages as lenders tighten up on lending standards. This is actually not bad news since the most leveraged borrowers tend to purchase late in a housing boom and then default first.**
    - **Since week 16, the share of FHA purchase locks with credit scores below 620 continues to shrink, having declined from 7% to 5%. For the VA, the same share has declined from 4% to 3%.**
- **The rate of home price appreciation (HPA) has decelerated significantly since the onset of the pandemic.**
    - **HPA for the week of April 27, 2020 (week 18) was 4.0%, the same as Week 17 of 2020, but down from 7.2% during week 10.**
    - **The impact of the virus on HPA can be seen clearly across most metros. What stand out are Boston, Columbus, Denver, and Phoenix, which have all exhibited significant decelerations in HPA with the onset of the virus.**
    - **So far however, only 2 among the largest 40 metros are exhibiting consistent year-over-year HPA declines over the last 3 weeks: San Francisco and LA.**

Using newly acquired data from Optimal Blue, a rate lock software provider with roughly a third market coverage, the AEI Housing Center is now able to provide near-real time Flash Housing

Market Indicators (Flash HMI) on purchase loan rate lock volume, home price, credit, and cash-out refinance trends. Released each Monday, the Flash HMIs will provide much-needed and timely insights on the single-family residential housing market convulsing from the effects of the coronavirus pandemic. While Optimal Blue data are used, Edward Pinto and Tobias Peter are solely responsible for the analysis contained herein.

Questions about this report should be directed to Edward Pinto (pintoedward1@gmail.com) or Tobias Peter (tobias.peter@aei.org).

If you are not on our regular distribution list but would like to be added to it, please send your name and email address to Michael.Howard@AEI.org.

Table of Contents

Data

After extensive historical analysis of Optimal Blue data going back 7 years, we have concluded that these rate lock data track closely those reported in our National Mortgage Risk Index (NMRI), which cover 99% of the agency market.[1] As a result, today's Flash HMI will provide an advance look at trends which will not be reported in our NMRI until late-June, a pick-up of 3 months. In terms of home price appreciation trends, the weekly data we are beginning to report on also would not be available until late-June or even late-July and would be reported on a monthly basis.

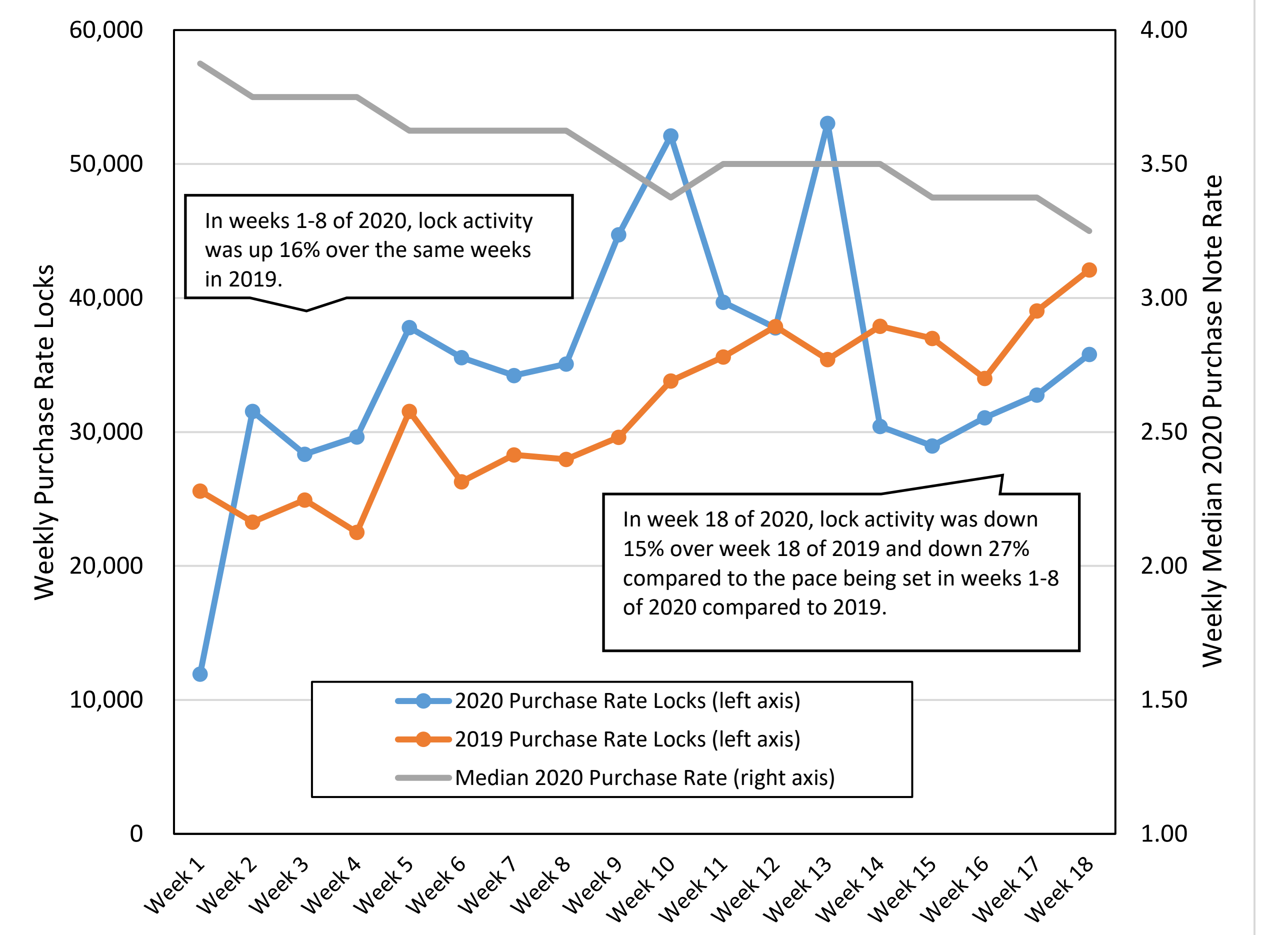
[1] While not all rate locks will be originated or the Optimal Blue data cover the entire market, our analysis of the data has found them to be instructive as the changes over short time periods provide a useful signpost for what's to come.

Purchase Loan Rate Locks

- For the week of April 27 (week 18), purchase loan rate lock activity was 15% below that for week 18 in 2019.
- Purchase loan rate lock activity may be down as much as 27% after taking into account that volume in January and February 2020 (weeks 1-8) was running 16% ahead of the same period in 2019.
- The volatility during weeks 10-13 2020 was due to wildly fluctuating mortgage rates.

We derive trends in application volume from counts of Optimal Blue rate locks. To analyze the impact of the coronavirus pandemic, we overlay 2019 data on top of 2020 data. As has been widely reported, early 2020 has seen larger counts of purchase loan activity in comparison with early 2019, with volatility increasing over the past several weeks.

Chart 1: Daily Purchase Loan Rate Locks and Daily Median Purchase Note Rate

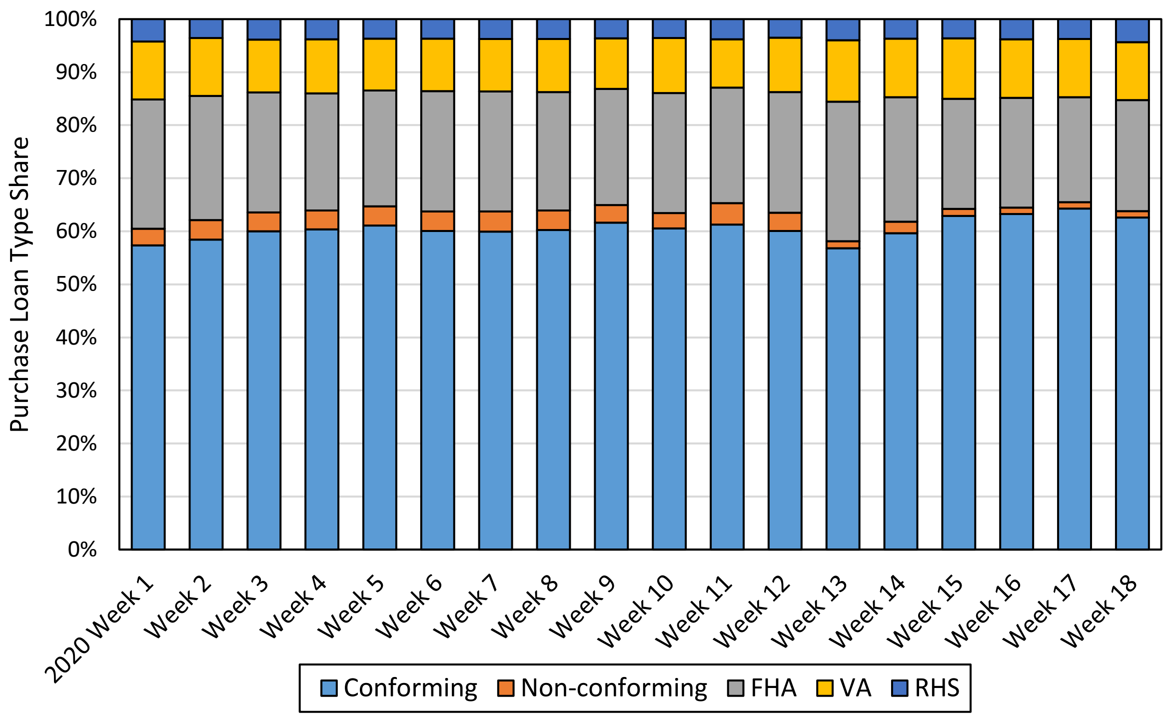


Source: AEI Housing Center, www.aei.org/housing, and Optimal Blue.

Share of Purchase Rate Locks by Loan Type

- For the week of April 27, 2020 (week 18) the conforming share of purchase loan rate locks was 63%, up from an average of 60% during weeks 1-8.
- The non-conforming share of purchase rate locks was 1%, down from an average of 4% from weeks 1-8.
- FHA's share is down modestly. It now stands at 21%, down from an average of 23% during weeks 1-8.

Chart 2: Purchase Loan Rate Locks by Loan Type



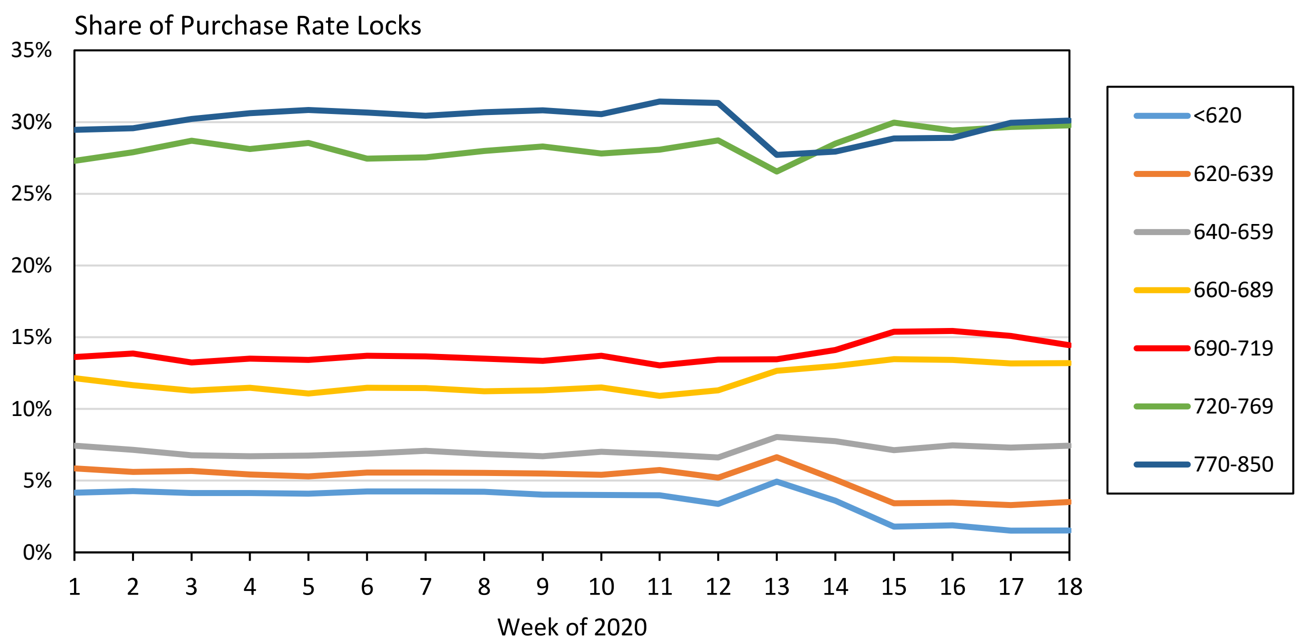
Source: AEI Housing Center, www.aei.org/housing, and Optimal Blue.

Purchase Borrowers by Credit Score Bin and Loan Type

Overall

- With the onset of the COVID-19 pandemic, borrowers with the lowest FICO score are less able to get mortgages as lenders tighten up lending standards. The share of borrowers with a score below 640 has fallen from 10% to 5%. This is actually not bad news since the most leveraged borrowers tend to purchase late in a housing boom and then default first.
- At the same time, highest quality borrowers are either dropping out of the market or are unable to get non-conforming jumbo loans. The share of borrowers with a FICO score of 770+ had initially decreased from 31% to 28%, but this share has recovered to 30% over the past several weeks.
- These same dynamics have played out across various loan types.

Chart 3: FICO Distribution: Overall (weekly, purchase loans)



Source: AEI Housing Center, www.aei.org/housing, and Optimal Blue.

Conforming

Among conforming borrowers, the share of borrowers with a FICO score of 770+ has decreased from 43% to 41% over recent weeks, while the share of borrowers with scores below 720 has held steady at 23%.

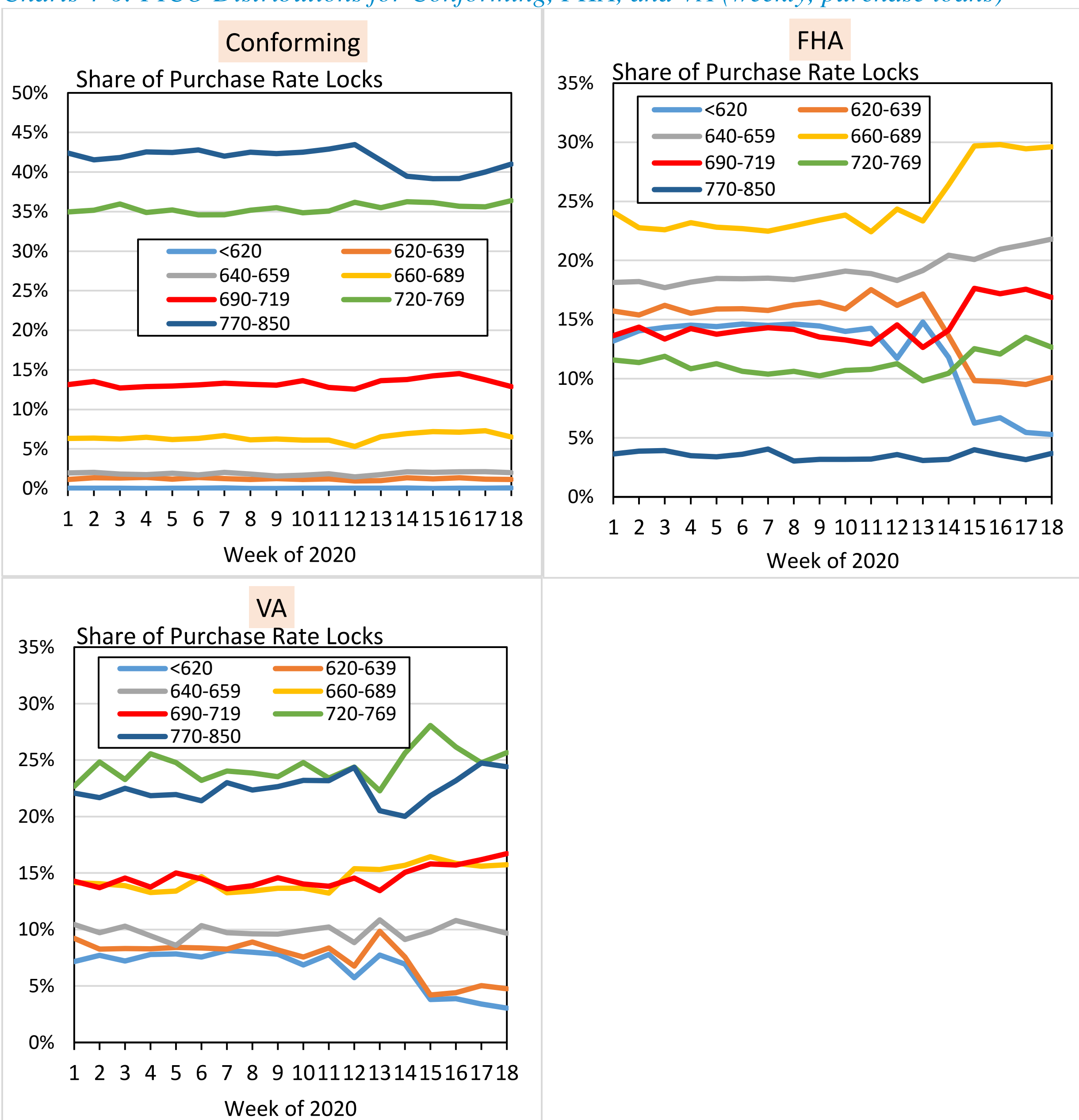
FHA

The share of FHA borrowers with a credit score below 640 has more than halved from 32% to just 15%, with the decline being the even greater for credit scores below 620. On the other hand, the share of borrowers with a FICO of 660-689 has increased from 23% to 30%. Again, this tightening of lending standards is actually not bad news since the most leveraged borrowers tend to purchase late in a housing boom and then default first.

VA

The share of VA borrowers with a credit score below 640 has declined from 16% to just 8%, with the decline being the even greater for credit scores below 620. Again, this tightening is actually not bad news since the most leveraged borrowers tend to purchase late in a housing boom and then default first.

Charts 4-6: FICO Distributions for Conforming, FHA, and VA (weekly, purchase loans)



Source: AEI Housing Center, www.aei.org/housing , and Optimal Blue.

Purchase Loan Credit Indicators by Loan Type

- Indicators for Week 18 of April 2020 show that credit availability has generally tightened compared to Week 8 of 2020 (the last "normal" pre- coronavirus crisis week) and Week 18 of 2019.
- FHA exhibited the largest amount of credit tightening. Compared to Week 8 of 2020, its credit scores rose 11.7 points, its DTIs fell 0.8 ppts, while LTVs remained relatively unchanged. This translated into a 2.7 ppts. decrease in FHA's risk index. The tightening is even larger when compared to the same week in 2019, and is welcome news since the most leveraged borrowers tend to purchase late in a housing boom and then default first, as mentioned above.
- Credit standards also continued to tighten for VA and Rural Housing Services (RHS), while they continued to ease somewhat for conforming and non-conforming loans.

Table 1 reports changes in key credit metrics (credit score, loan-to-value (LTV) ratio, and debt-to-income (DTI) ratios) as well as the Mortgage Risk Index (MRI), which is a summary measure of credit risk.[2]

Table 1: Purchase Loan Changes in Average Credit Score, Loan-to-Value (LTV) Ratio, Debt-to-Income (DTI) Ratios, and Mortgage Risk Index (MRI): by Loan Type (tightening in red)

	Credit Score		**LTV**		**DTI**		**MRI**	
	Change (in points) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to	
	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18
Conforming	-1.2	1.4	1.5	1.5	-0.4	-1.3	0.5	0.0
Non-conforming	5.0	2.7	2.3	2.7	0.6	-0.7	0.5	0.6
FHA	11.7	14.5	0.3	0.3	-0.8	-0.9	-2.7	-3.3
VA	10.3	13.3	0.4	0.6	-1.1	-1.7	-1.4	-1.8
RHS	9.0	10.2	0.0	-0.3	0.7	0.3	-1.7	-2.0

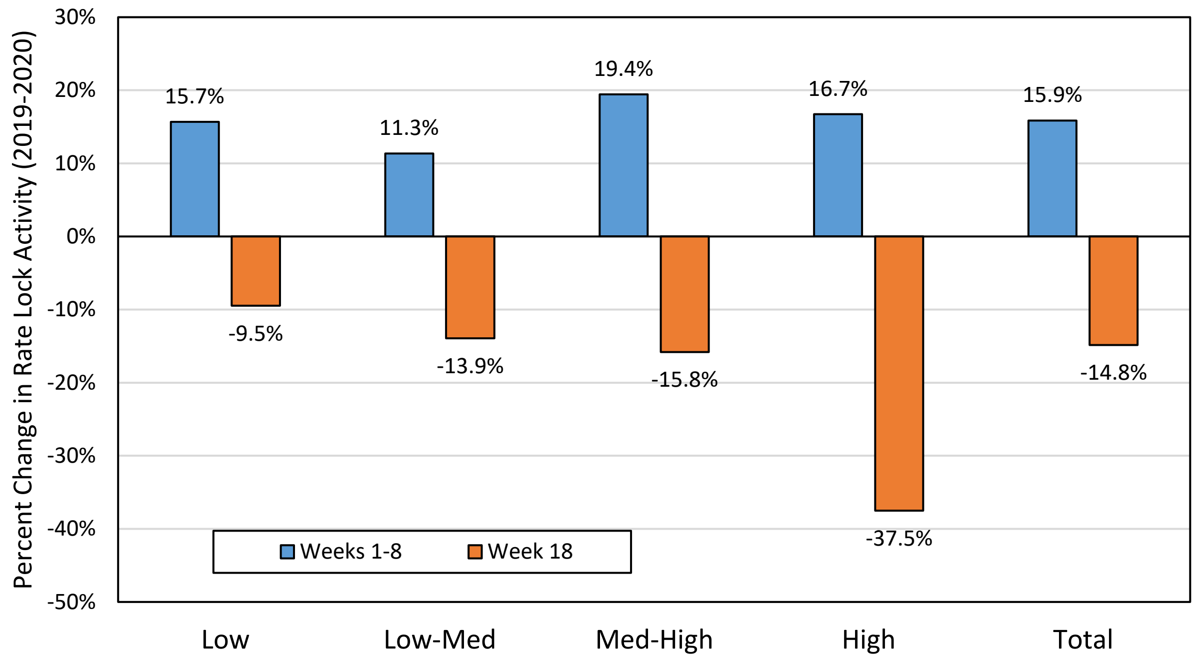
Note: The most recent week is compared to the same week a year ago and to week 8 in 2020 (Feb. 16 – Feb. 22 2020). Week 8 2020 is benchmark for the housing market before the COVID-19 pandemic and is roughly representative of the first 10 weeks in 2020. A positive number implies that scores have increased for the most recent week relative to the prior week/year. Conforming rate locks have a loan amount at or below the applicable GSE loan limit, while non-conforming loans have loan amounts above the applicable GSE loan limit, the national loan limit, or require expanded guidelines. The table reports changes in metrics because of level differences between the Optimal Blue rate lock data and the National Mortgage Risk Index (NMRI) data. Unlike levels, the trends between both datasets line up very closely.
Source: AEI Housing Center, www.aei.org/housing , and Optimal Blue.

[2] A decline in the MRI indicates credit tightening, while an increase indicates credit loosening. For more on the Mortgage Risk Index, see here.

Purchase Rate Locks by Price Tier[3]

- Given the bumper start to the year and subsequent decline, taken together, purchase rate lock volume has collapsed across all price tiers with the largest declines coming in the medium-high and high tiers – the tiers for higher credit quality move-up buyers.
- During the first 8 pre-COVID-19 weeks of 2020, rate lock volume was up robustly across all price tiers compared to 2019. However, volume was up the most for the medium-high (+19%) and high (+17%) price tiers.
- Post COVID-19, rate locks have decreased across all price tiers compared to a year ago. What stands out is the decline of 38% in the high tier.

Chart 7: Year-over-year Change in Purchase Loan Rate Locks by Price Tier



Source: AEI Housing Center, www.aei.org/housing, and Optimal Blue.

---

[3] Price tiers are set at the metro level and are defined as follows:

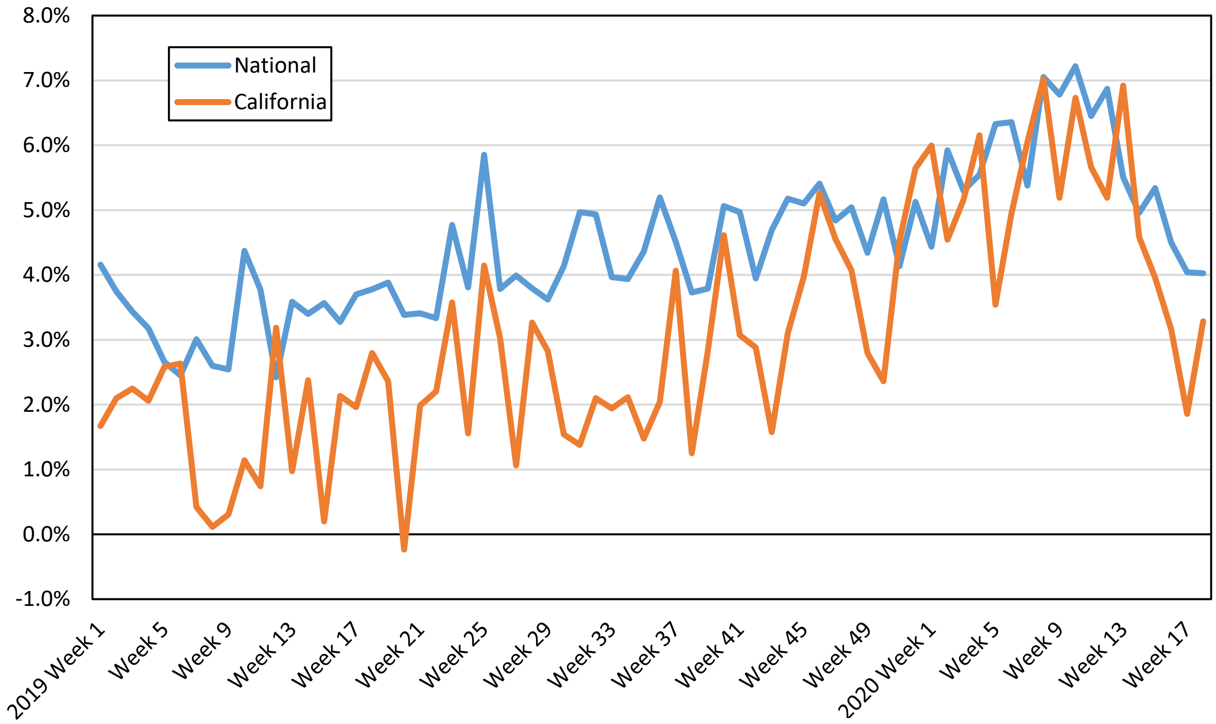
- Low: all sales at or below the 40th percentile of FHA sales prices;
- Low-Medium: all sales at or below the 80th percentile of FHA sales prices;
- Medium-High: all sales at or below the 125% of the GSE loan limit (to account for an 80% down payment);
- High: all other sales.

In the real world in 2019, institutionally financed sales in the low tier account for 27%, in the low-medium for 29%, in the medium-high for 38%, and in the high for 6%.

Home Price Appreciation (HPA) Trends

- Optimal Blue data indicate that the rate of HPA has started to decelerate with the onset of the coronavirus pandemic.[4]
- The index shows HPA accelerating on a year-over-year (yoy) basis starting with the week of January 27, 2019 (week 5), which is consistent with mortgage rates having fallen from their peaks of nearly 5% in late 2018.
- Throughout 2019 and 2020 (until early March), the rate of HPA continued to strengthen and reached a high of 7.2% yoy for the week of March 1, 2020 (week 10).[5]
- Then the index reverses and quickly decelerates and is now at 4.0% yoy for the week of April 27, 2020 (week 18). This decline is found to be statistically significant and therefore represents a real decline rather than normal noise in the series.
- There is even more rapid slowing in California, which was among the first states affected by the virus. This suggests that a further deceleration of HPA is likely.

Chart 8: Weekly Year-over-Year Home Price Appreciation: National and California



Source: AEI Housing Center, www.aei.org/housing, and Optimal Blue.

[4] Please refer to the appendix for a detailed HPA methodology, as well as a comparison to our quasi-repeat sales HPA using Public Records data.
[5] Due to updates in our HPA methodology, we have revised our previous estimates.

Purchase Rate Lock Trends by Metro

- There are important differences across metros. Rate locks in some metros are holding up much better than in others.
- Metros with shutdown orders, an unaffordable housing stock, and a higher proportion of higher or lower credit quality borrowers have been disproportionately been affected by the COVID-19 pandemic.
- Detroit, Pittsburgh, and Philadelphia have seen large declines, while Cleveland, Virginia Beach, Nashville are weathering the storm rather well.
- These trends track well with changes in auto sales from a J.D. Power survey cited by the Wall Street Journal.

The table compares the year-over-year change in week 18 purchase rate locks between 2019 and 2020. The data are for the largest 40 metros.

Table 2: Change in Purchase Loan Rate Lock Activity from 2019-2020, Week 18

Metros with an above average decline	% change in rate locks, week 18: 2019 vs 2020
Pittsburgh, PA	-60%
Detroit, MI	-57%
Philadelphia, PA	-41%
Denver, CO	-40%
Kansas City, MO	-36%
Boston, MA	-35%
Miami, FL	-34%
San Francisco, CA	-33%
Seattle, WA	-32%
Cape Coral, FL	-32%
Las Vegas, NV	-32%
Minneapolis, MN	-30%
Los Angeles, CA	-27%
Cincinnati, OH	-26%
Chicago, IL	-25%
Indianapolis, IN	-24%
Phoenix, AZ	-22%
New York, NY	-20%
Baltimore, MD	-20%
St. Louis, MO	-18%
North Port, FL	-16%
Portland, OR	-16%
Nation	**-15%**

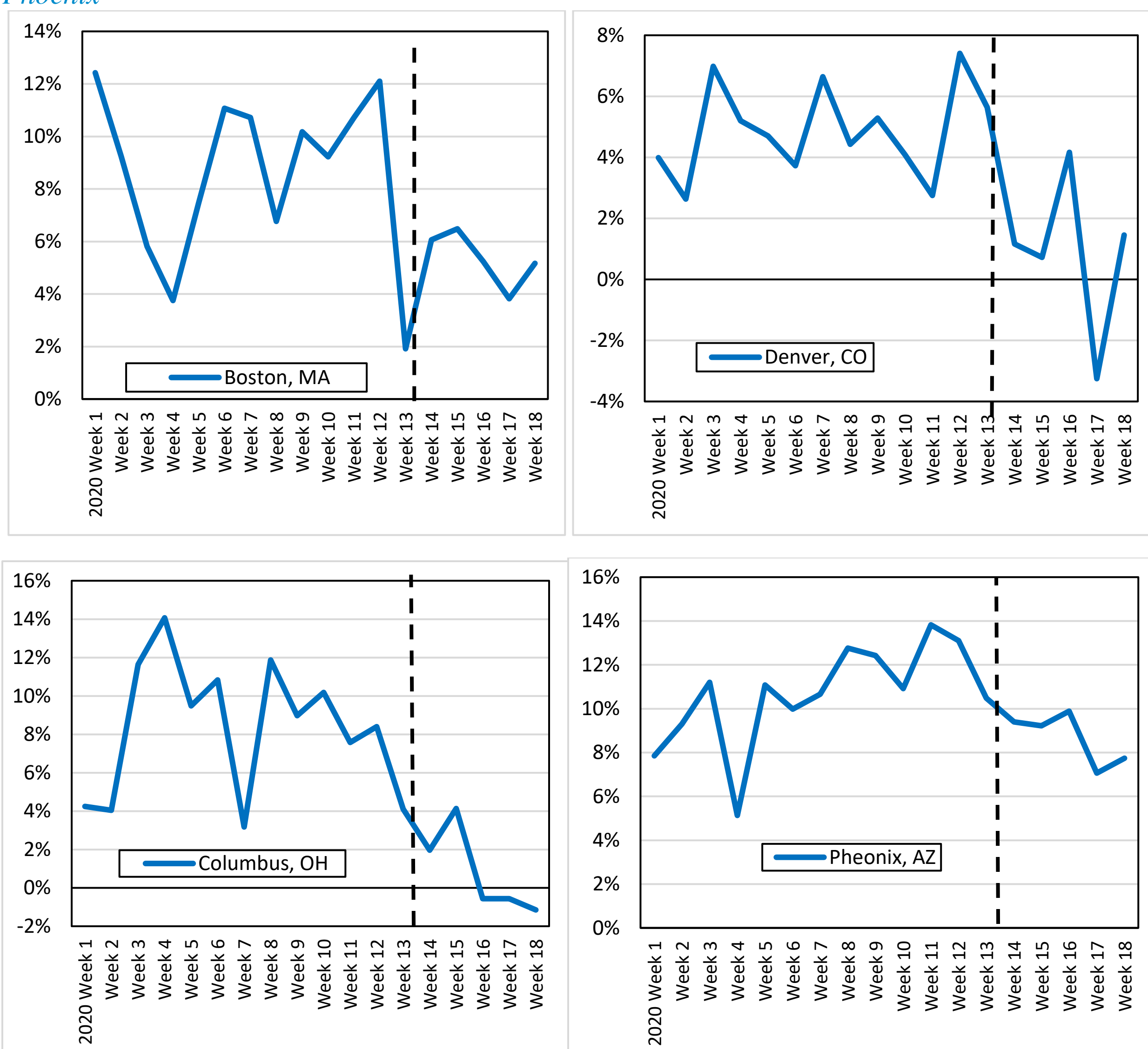
Metros with a below average or no decline	% change in rate locks, week 18: 2019 vs 2020
Nation	**-15%**
Washington, DC	-15%
San Diego, CA	-14%
Orlando, FL	-14%
Sacramento, CA	-11%
San Antonio, TX	-11%
Tampa, FL	-10%
Atlanta, GA	-10%
Raleigh, NC	-9%
Riverside_SB, CA	-8%
Jacksonville, FL	-6%
Dallas, TX	-6%
Austin, TX	-6%
Charlotte, NC	-4%
Houston, TX	-2%
Columbus, OH	5%
Nashville, TN	10%
Virginia Beach, VA	11%
Cleveland, OH	20%

Source: AEI Housing Center, www.aei.org/housing , and Optimal Blue.

Metro Home Price Appreciation (HPA) Trends

- Optimal Blue data indicate that the rate of HPA has started to decelerate across nearly all major metros.
- The impact of the virus on HPA can be seen clearly across most metros, with the majority exhibiting statistically significant decelerations in HPA with the onset of the virus (see table on next page).
- What stand out are Boston, Columbus, Denver, and Phoenix, which have all exhibited significant decelerations in HPA compared to weeks before the onset of the virus.
- So far however, only 2 among the largest 40 metros are exhibiting consistent year-over-year HPA declines over the last 3 weeks: San Francisco and LA (see table on next page).

Chart 9: Weekly Year-over-Year Home Price Appreciation: Boston, Columbus, Denver, and Phoenix



Source: AEI Housing Center, www.aei.org/housing , and Optimal Blue.

Table 3: Comparison of Year-over-Year (YoY) Home Price Appreciation (HPA) Rates Pre- and Post-COVID-19: Largest 40 Metros

Metro	Avg. YoY HPA 2020wk7-12 (pre-COVID-19)	Avg. YoY HPA 2020wk14-18	YoY HPA 2020wk17&18
Atlanta, GA	8.1%	4.6%	4.9%
Austin, TX	7.1%	6.0%	6.7%
Baltimore, MD	7.3%	5.5%	2.2%
Boston, MA	10.0%	5.4%	4.5%
Cape Coral, FL	8.9%	7.6%	13.8%
Charlotte, NC	10.6%	3.6%	3.4%
Chicago, IL	4.3%	3.0%	3.7%
Cincinnati, OH	11.6%	7.0%	3.9%
Cleveland, OH	5.6%	0.1%	-5.5%
Columbus, OH	8.3%	0.8%	-0.9%
Dallas, TX	2.9%	2.1%	0.3%
Denver, CO	5.1%	0.9%	-0.9%
Detroit, MI	6.2%	3.1%	5.5%
Houston, TX	3.7%	3.6%	2.7%
Indianapolis, IN	10.1%	6.8%	6.7%
Jacksonville, FL	7.5%	2.0%	0.3%
Kansas City, MO	9.1%	4.3%	4.1%
Las Vegas, NV	4.9%	5.8%	6.0%
Los Angeles, CA	6.2%	-0.1%	1.5%
Miami, FL	8.0%	7.4%	5.5%
Minneapolis, MN	7.5%	4.8%	5.0%
Nashville, TN	5.9%	3.6%	2.6%
New York, NY	6.0%	2.1%	2.4%
North Port, FL	4.9%	3.3%	0.4%
Orlando, FL	6.8%	4.0%	6.7%
Philadelphia, PA	8.2%	4.1%	4.5%
Phoenix, AZ	12.3%	8.6%	7.4%
Pittsburgh, PA	7.7%	3.7%	4.2%
Portland, OR	7.6%	3.2%	3.3%
Raleigh, NC	10.3%	6.1%	4.7%
Riverside-SB, CA	7.7%	6.4%	4.7%
Sacramento, CA	6.0%	2.3%	1.1%
San Antonio, TX	5.6%	5.4%	3.9%
San Diego, CA	8.1%	3.2%	2.8%
San Francisco, CA	4.1%	-5.2%	-4.3%
Seattle, WA	8.9%	6.1%	6.9%
St. Louis, MO	7.2%	3.3%	1.9%
Tampa, FL	9.4%	8.1%	8.7%
Virginia Beach, VA	7.2%	4.5%	3.9%
Washington, DC	6.1%	4.0%	4.2%

Note: Shading indicates that the change from the pre-COVID-19 period is statistically significant at the 5% level.

Source: AEI Housing Center, www.aei.org/housing , and Optimal Blue.

Cash-out Refinance

Cash-out rate locks and cash-out amounts

- For the week of April 27, 2020 (week 18) cash-out rate lock activity was 54% above that for week 8 in 2020, and 109% above week 18 in 2019. Cash-out refinance rate lock volume is generally more volatile due to changes in mortgage rates.
- The cash-out amount for the week of April 27, 2020 (week 18) averaged $50,100 and ranged from $34,500-$77,200 depending on the loan type.

The Optimal Blue data also allows us to track trends in cash-out rate locks and cash-out amounts. These metrics become increasingly important during times such as today, when home values are undergoing rapid changes and interior inspections are hard to do.[6]

Table 4: Cash-out Refinance Rate Lock Statistics by Loan Type

	% Change in Rate Locks 2020 Week 18		Rate Locks Share by Loan Type			Average Cash-out Amount (rounded to nearest $100)
	2020 Week 8	2019 Week 18	2020 Week 18	2020 Week 8	2019 Week 18	2020 Week 18
Overall	54%	109%				$ 50,100
Conforming	78%	198%	89%	76%	62%	$ 51,400
Non-conforming	-74%	-61%	1%	5%	5%	$ 77,200
FHA	-20%	-51%	5%	9%	19%	$ 34,500
VA	-5%	-9%	6%	10%	14%	$ 38,500

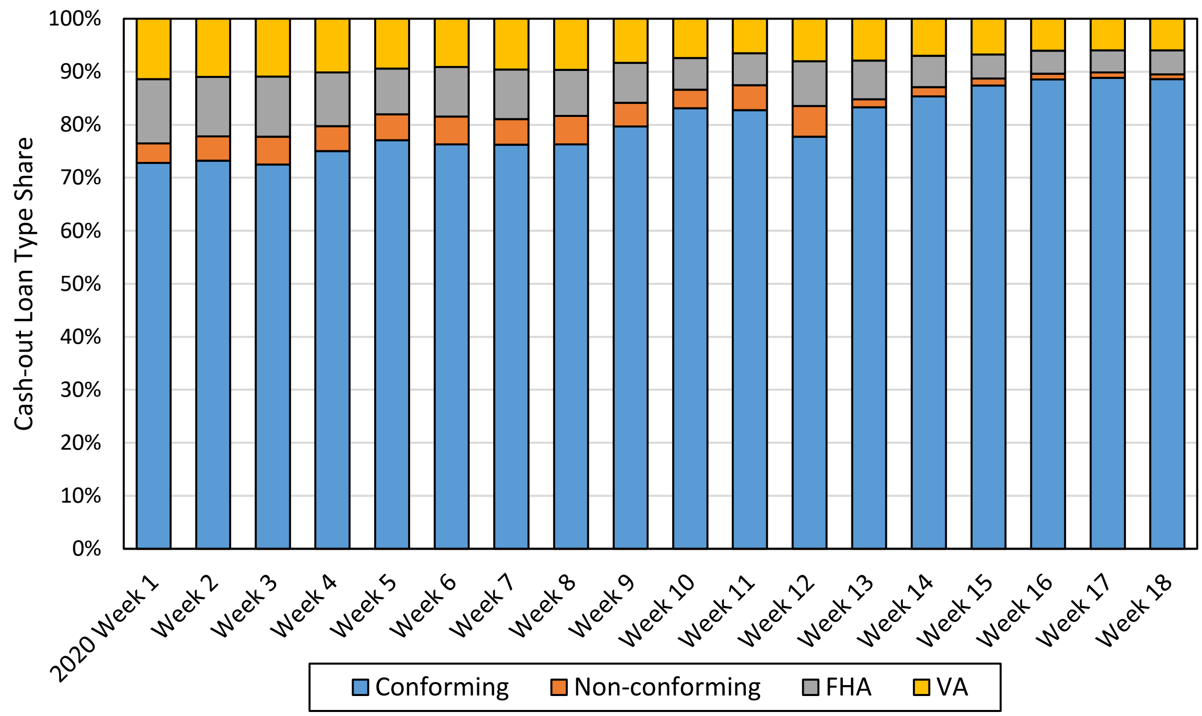
Source: AEI Housing Center, www.aei.org/housing , and Optimal Blue.

[6] These issues further compound the risks of cash-out refinances, which suffer from information asymmetry (the borrower knows more than the lender, who in turn knows more than the guarantor) and a weak appraisal process.

Cash-out rate locks by loan type

- Since the beginning of the year, the conforming share of cash-out refinances has increased from 72% to 89%. At the beginning of 2019, the conforming share was just 61%.
- Over the same period, the share of non-conforming has fallen from 4% to 1%.
- The combined share of FHA and VA has fallen from 23% to just 11%.

Chart 10: Cash-out Refinance Loan Rate Locks by Loan Type



Source: AEI Housing Center, www.aei.org/housing, and Optimal Blue.

Cash-out Refinance Credit Indicators

- Credit standards have recently tightened for cash-out refinances.
- However, some tightening is common when volume increases due to higher quality borrowers entering the market.

Table 5: Cash-out Refinance Loan Changes in Average Credit Score, Loan-to-Value (LTV) Ratio, Debt-to-Income (DTI) Ratios, and Mortgage Risk Index (MRI): by Loan Type (tightening in red)

	Credit Score		**LTV**		**DTI**		**MRI**	
	Change (in points) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to	
	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18
Conforming	9.6	17.7	-1.4	-1.4	-1.2	-2.8	-1.6	-3.0
Non-conforming	22.4	32.1	-0.2	0.3	-0.4	-1.7	-4.1	-6.1
FHA	27.0	16.5	0.3	-5.1	-1.9	-2.2	-3.8	-6.1
VA	19.4	33.5	-2.6	-10.4	-3.1	-5.2	-3.5	-6.8

Note: The most recent week is compared to the same week a year ago and to week 8 in 2020 (Feb. 16 – Feb. 22 2020). Week 8 2020 is benchmark for the housing market before the COVID-19 pandemic and is roughly representative of the first 10 weeks in 2020. A positive number implies that scores have increased for the most recent week relative to the prior week/year. Conforming rate locks have a loan amount at or below the applicable GSE loan limit, while non-conforming loans have loan amounts above the applicable GSE loan limit, the national loan limit, or require expanded guidelines. The table reports changes in metrics because of level differences between the Optimal Blue rate lock data and the National Mortgage Risk Index (NMRI) data. Unlike levels, the trends between both datasets line up very closely.
Source: AEI Housing Center, www.aei.org/housing , and Optimal Blue.

No Cash-out Refinance

No cash-out rate locks

- For the week of April 27, 2020 (week 18) no cash-out rate lock activity was 102% above that for week 8 in 2020, and 538% above week 18 in 2019.
- No cash-out refinance rate lock volume is generally more volatile due to changes in mortgage rates.

Table 6: No Cash-out Refinance Rate Lock Statistics by Loan Type

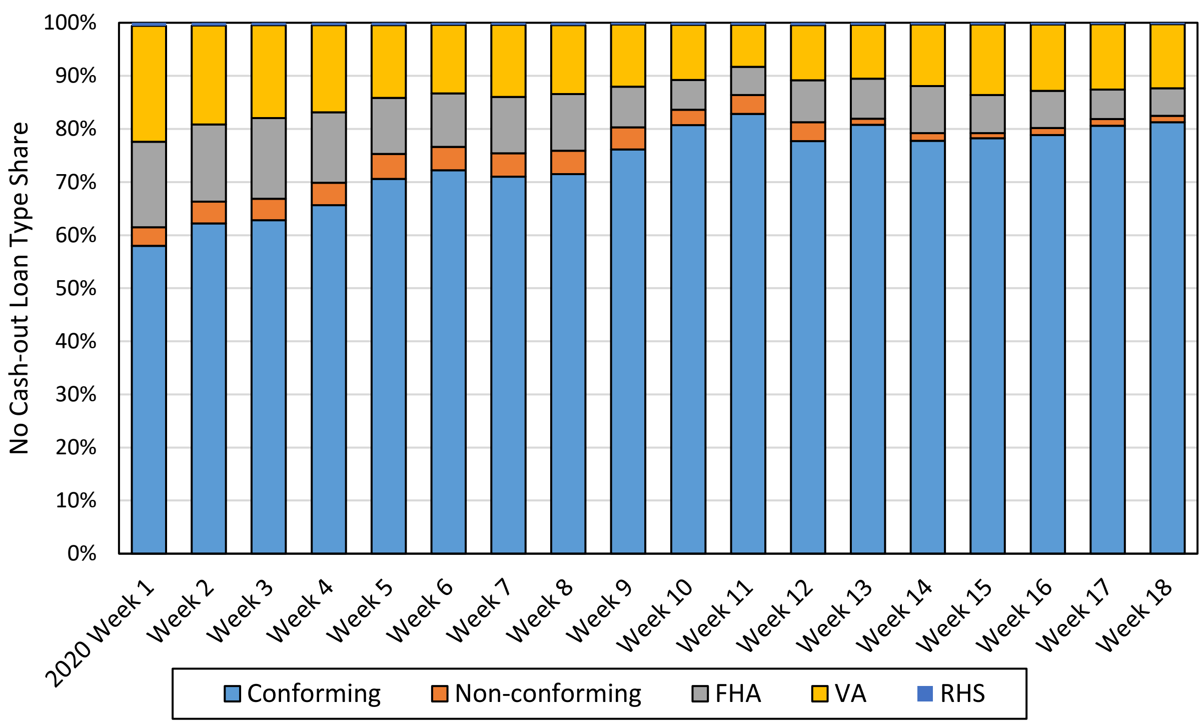
	% Change in Rate Locks 2020 Week 18		Rate Locks Share by Loan Type		
	2020 Week 8	2019 Week 18	2020 Week 18	2020 Week 8	2019 Week 18
Overall	102%	538%			
Conforming	130%	764%	81%	71%	60%
Non-conforming	-47%	16%	1%	4%	6%
FHA	-1%	99%	5%	11%	17%
VA	87%	362%	12%	13%	17%

Source: AEI Housing Center, www.aei.org/housing , and Optimal Blue.

No cash-out rate locks by loan type

- For the week of April 27, 2020 (week 18), the non-conforming share of no cash-out refinances is near 0%, down from an average of 4% for the first 8 weeks of 2020.
- The FHA share has declined from the start of the year and stands now at 5%.
- The VA share has also declined in recent weeks and now stands at 12%.
- The conventional conforming share is now above 81%, well above its share of 60% early in 2020.

Chart 11: No Cash-out Refinance Loan Rate Locks by Loan Type



Source: AEI Housing Center, www.aei.org/housing, and Optimal Blue.

No Cash-out Refinance Rate Lock Credit Indicators

- Indicators for the week of April 27, 2020 show that credit availability generally tightened for conforming conventional, FHA, and VA compared to 2020 Week 8 and 2019 Week 18.

Table 7: No Cash-out Refinance Rate Lock Statistics by Loan Type (tightening in red)

	Credit Score		**LTV**		**DTI**		**MRI**	
	Change (in points) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to		Change (in ppts.) 2020 Week 18 to	
	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18	2020 Week 8	2019 Week 18
Conforming	5.4	19.5	-2.6	-2.8	-1.5	-3.7	-1.3	-3.3
Non-conforming	-1.9	8.8	-1.7	-2.7	-2.1	-4.8	-0.5	-2.3
FHA	-2.3	0.2	-1.5	-0.7	-0.4	-1.8	-1.4	-2.3
VA	14.2	36.3	-0.3	-4.1	-1.5	-2.5	-1.4	-5.3
RHS	22.0	29.7	-1.7	4.2	-3.4	-4.8	-3.2	-5.1

Note: The most recent week is compared to the same week a year ago and to week 8 in 2020 (Feb. 16 – Feb. 22 2020). Week 8 2020 is benchmark for the housing market before the COVID-19 pandemic and is roughly representative of the first 10 weeks in 2020. A positive number implies that scores have increased for the most recent week relative to the prior week/year. Conforming rate locks have a loan amount at or below the applicable GSE loan limit, while non-conforming loans have loan amounts above the applicable GSE loan limit, the national loan limit, or require expanded guidelines. The table reports changes in metrics because of level differences between the Optimal Blue rate lock data and the National Mortgage Risk Index (NMRI) data. Unlike levels, the trends between both datasets line up very closely. Source: AEI Housing Center, www.aei.org/housing.

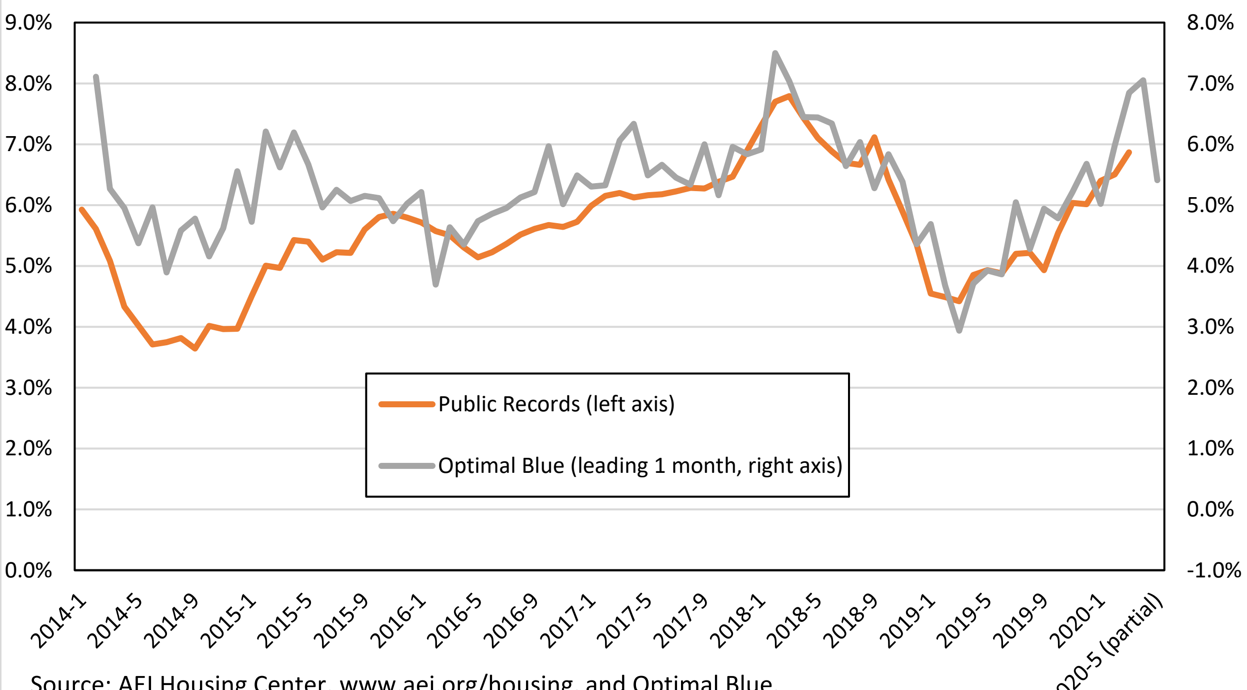
Appendix: Home Price Appreciation (HPA) Methodology

Based on purchase price estimates from rate lock data and their geographic location, we construct a weekly home price appreciation index. The index estimates an average weekly sale price controlling for location at the ZIP code level. The data are weighted by county, loan type, and year using HMDA data to account for differences in coverage of the Optimal Blue data. For the years for which HMDA data are not yet available, we assume the same weight as for 2018.

This simplified HPA regression index using the Optimal Blue data largely replicates the findings of our constant-quality quasi-repeat sales HPA using Public Records data (see chart A1).[7] Especially for more recent years, the year-over-year trends line up neatly, which may reflect increasing coverage for the Optimal Blue data. The results from the simplified regression index are a bit noisier, which may reflect the limited controls in the regression, and also slightly below the regression using more controls.

The Optimal Blue index also provides a window in the future. The data indicate that the rate of HPA observed from the Public Records will continue to climb for another month, before decelerating pretty abruptly with the onset of the coronavirus pandemic

Chart A1: Year-over-Year Home Price Appreciation Comparison between Optimal Blue and Public Records data



Source: AEI Housing Center, www.aei.org/housing, and Optimal Blue.

[7] For more on the quasi-repeat sales methodology, see here.