

The Virginia Tech – U.S. Forest Service

March 2020

Housing Commentary: Section I



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2020

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<http://woodproducts.sbio.vt.edu/housing-report>.

To request the commentary, please email: buehlmann@gmail.com or Delton.R.Alderman@usda.gov

Opening Remarks

In March, an overwhelming majority of month-over-month categories were negative. Total, single-, and multi-family starts all recorded double-digit declines. On a year-over-year basis, fifty percent of the categories indicated improvement. Housing completions was the only subsector reporting declines for all components: total, single- and multi-family. New single-family house and existing sales decreased, month-over-month and year-over-year. Single-family construction expenditures improved year-over-year and decreased month-over-month. The effects of covid19 may not be fully reflected in the March data. The magnitude of the virus might be revealed in the April and May housing construction data.

The May 15th Atlanta Fed GDPNow™ model forecasts an aggregate -101% decrease for residential investment spending. New private permanent site expenditures were projected at a 131.6% decline; the improvement spending forecast was a 12.5% decrease; and the manufactured/mobile housing projection was a 268.5% decline (all: quarterly log change and a seasonally adjusted annual rate).¹

“...A migration from large to small and mid-sized cities was underway prior to the virus, something Joel Kotkin has documented extensively. Will that trend now accelerate? In the pandemic age, it certainly makes sense for individuals to want to move to less densely populated areas. Will companies follow their lead? Will Greenville, SC gain as NYC loses?”² – Marcelo Perez, Alhambra Investment Partners

This month’s commentary contains applicable housing data. Section I contains updated housing forecasts, data, and commentary. Section II includes regional Federal Reserve analysis and private firm indicators.

Sources: ¹ www.frbatlanta.org/cqer/research/gdpnow.aspx; 5/15/20;

² <https://alhambrapartners.com/2020/04/13/the-long-term-implications-of-covid-19/>; 4/13/20

March 2020

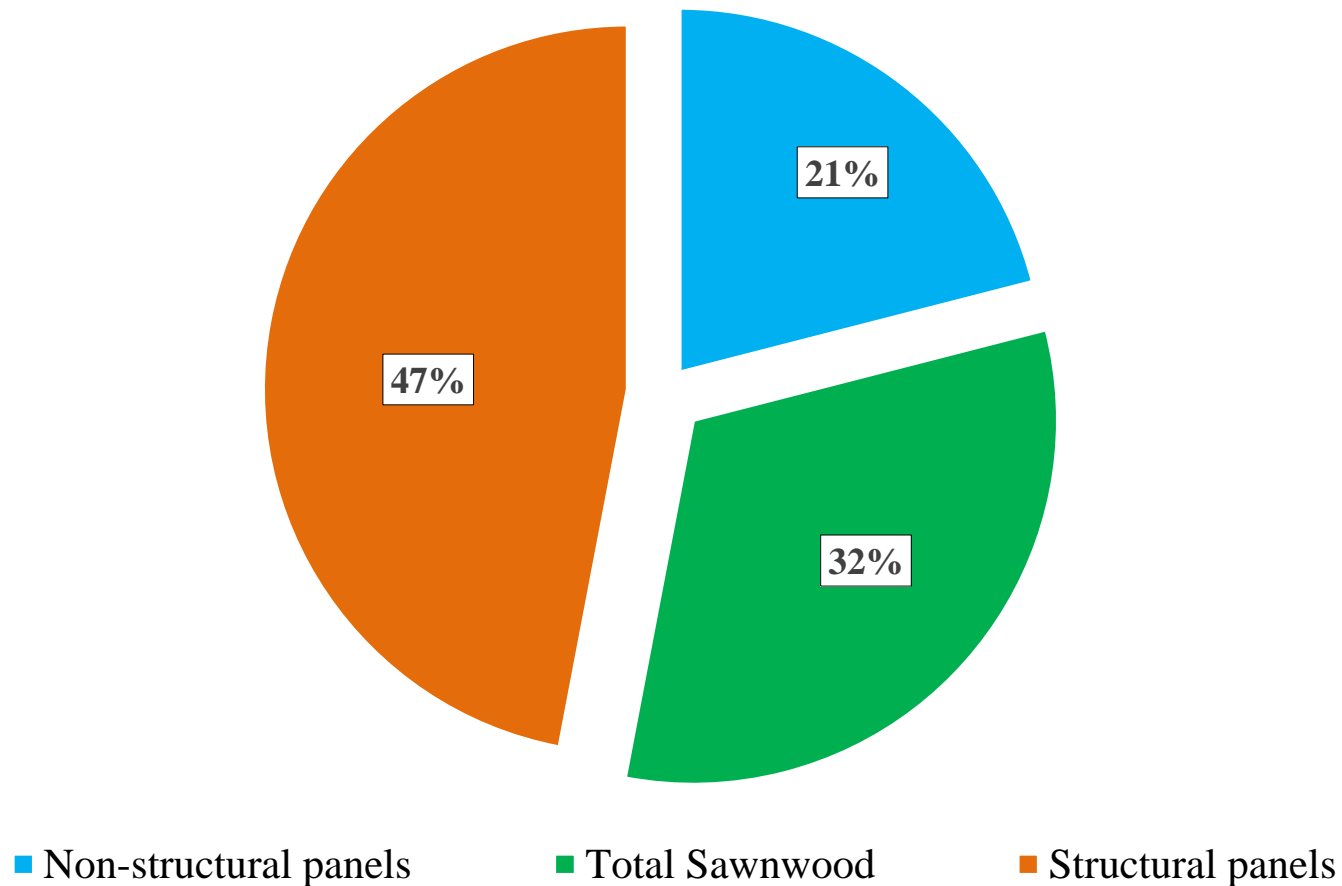
Housing Scorecard

	M/M	Y/Y
Housing Starts	▼ 22.3%	▲ 1.4%
Single-Family (SF) Starts	▼ 17.5%	▲ 2.8%
Multi-Family (MF) Starts*	▼ 31.7%	▼ 1.6%
Housing Permits	▼ 6.8%	▲ 5.0%
SF Permits	▼ 12.0%	▲ 8.7%
MF Permits*	▲ 4.9%	▼ 1.3%
Housing Under Construction	▼ 0.2%	▲ 7.7%
SF Under Construction	▼ 0.4%	NC
Housing Completions	▼ 6.1%	▼ 9.0%
SF Completions	▼ 15.0%	▼ 10.2%
New SF House Sales	▼ 15.4%	▼ 9.5%
Private Residential Construction Spending	▲ 2.3%	▲ 8.8%
SF Construction Spending	▼ 2.0%	▲ 12.1%
Existing House Sales ¹	▼ 8.5%	▼ 0.8%

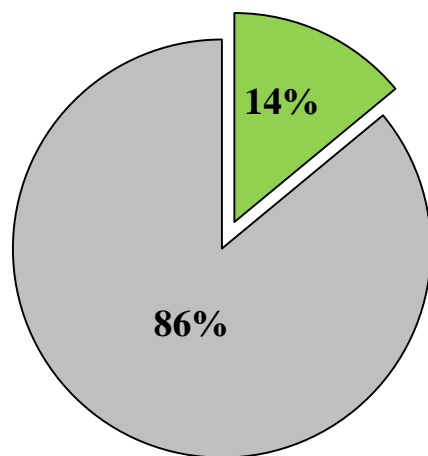
* All multi-family (2 to 4 + ≥ 5-units)

M/M = month-over-month; Y/Y = year-over-year; NC = no change

New Construction's Percentage of Wood Products Consumption

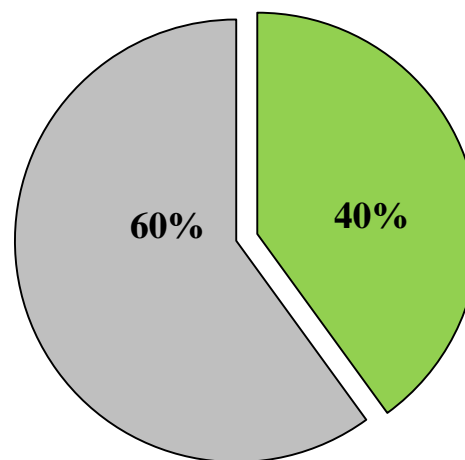


New SF Construction Percentage of Wood Products Consumption



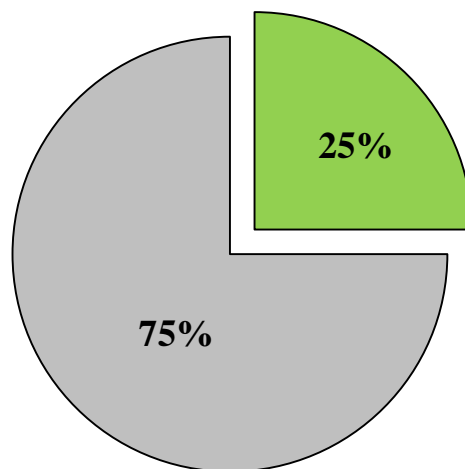
■ Non-structural panels:
New Housing

■ Other markets



■ Structural panels:
New housing

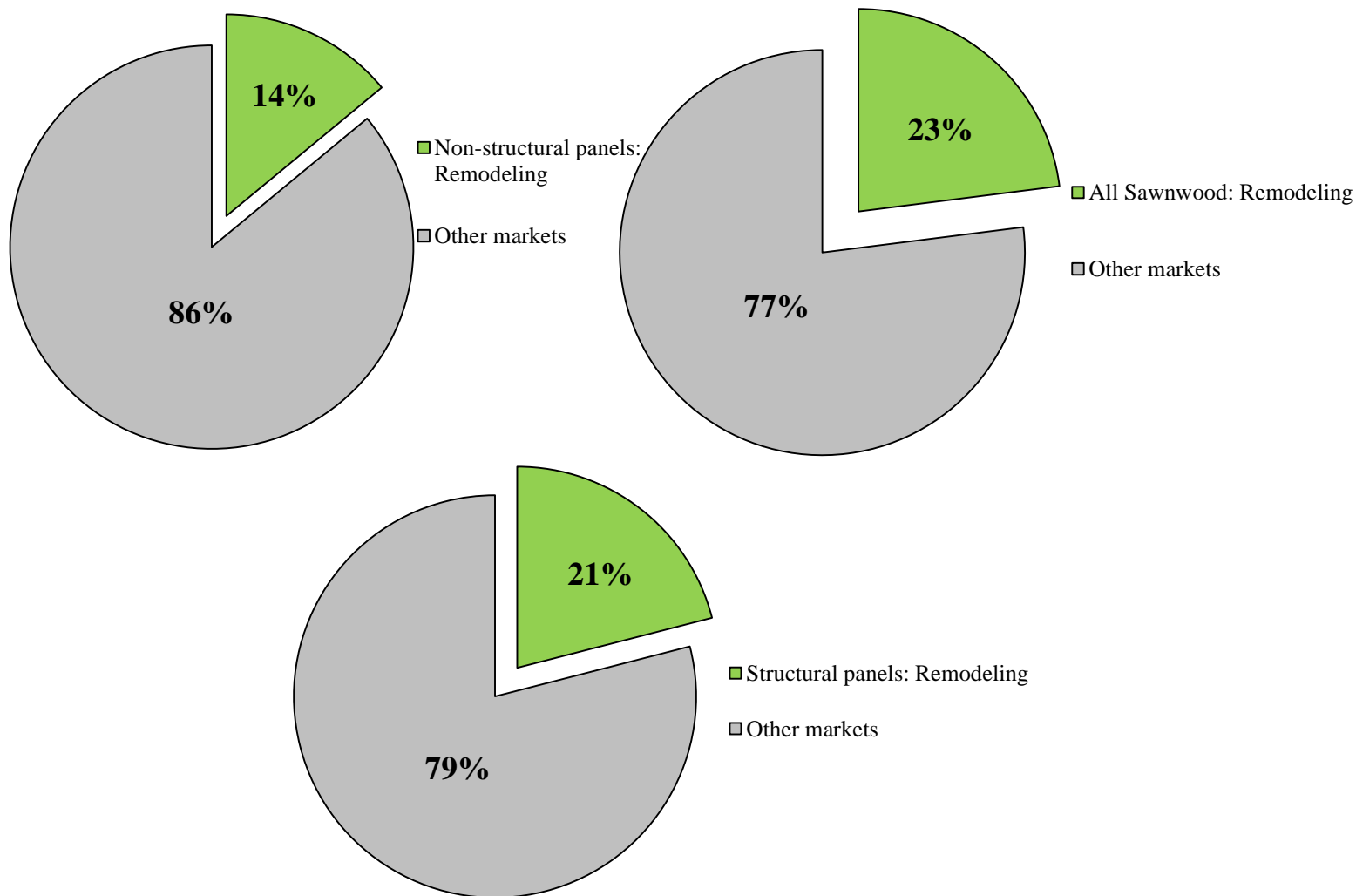
■ Other markets



■ All Sawnwood: New housing

■ Other markets

Repair and Remodeling's Percentage of Wood Products Consumption



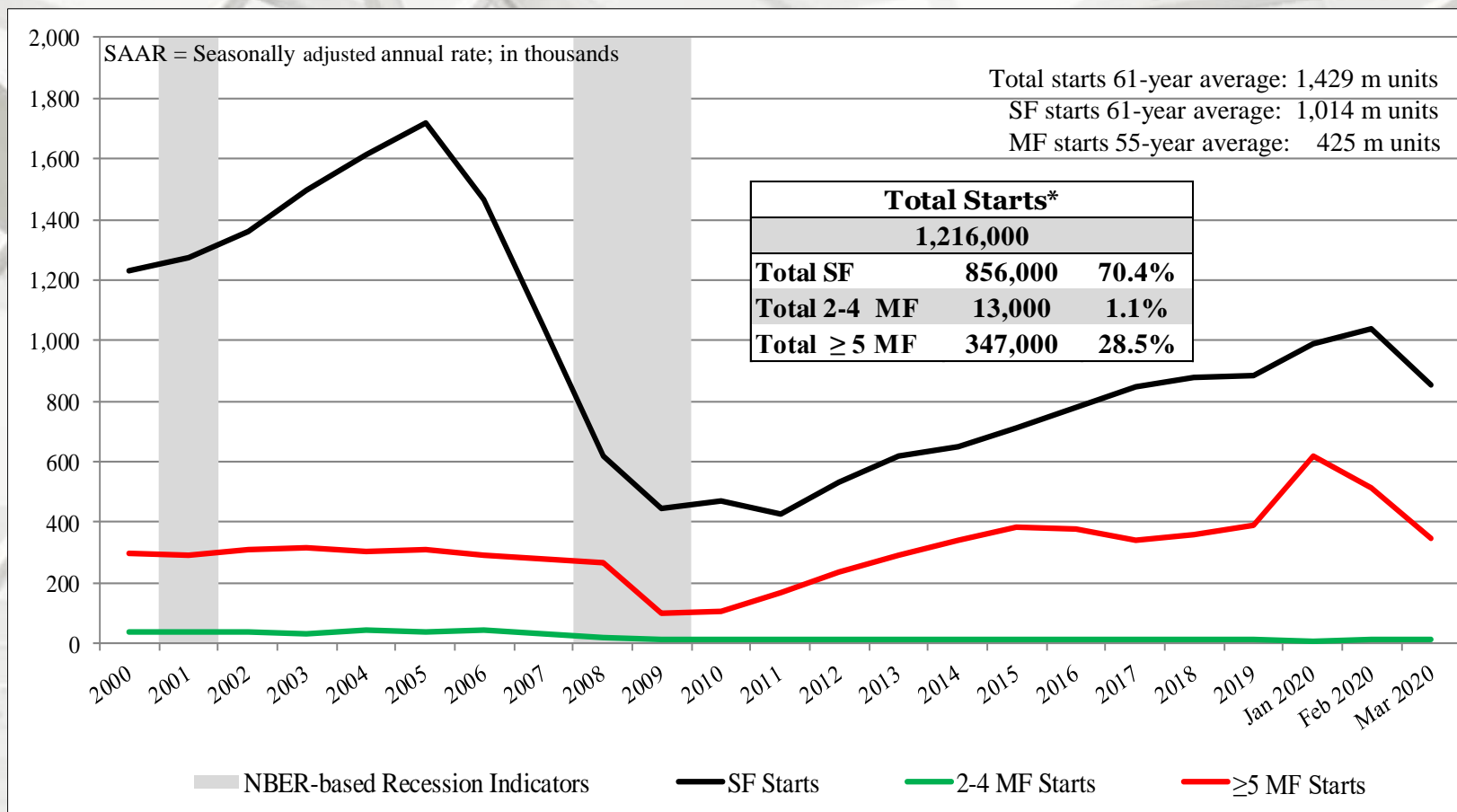
New Housing Starts

	Total Starts*	SF Starts	MF 2-4 Starts**	MF ≥5 Starts
March	1,216,000	856,000	13,000	347,000
February	1,564,000	1,037,000	16,000	511,000
2019	1,199,000	833,000	5,000	361,000
M/M change	-22.3%	-17.5%	-18.8%	-32.1%
Y/Y change	1.4%	2.8%	160.0%	-3.9%

* All start data are presented at a seasonally adjusted annual rate (SAAR).

** US DOC does not report 2 to 4 multifamily starts directly, this is an estimation
((Total starts – (SF + 5 unit MF)).

Total Housing Starts

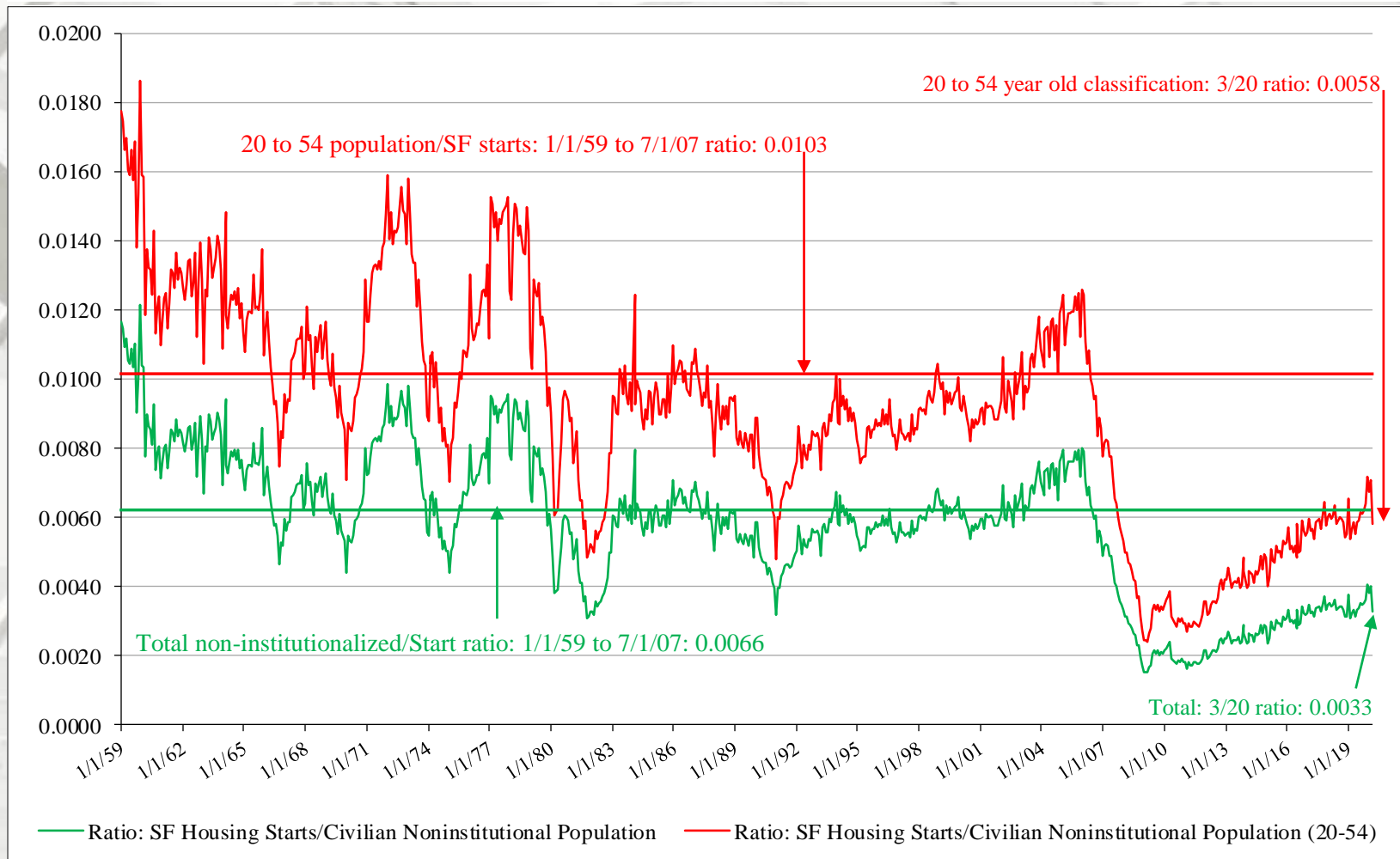


US DOC does not report 2 to 4 multifamily starts directly, this is an estimation: ((Total starts – (SF + ≥ MF)).

* Percentage of total starts.

NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

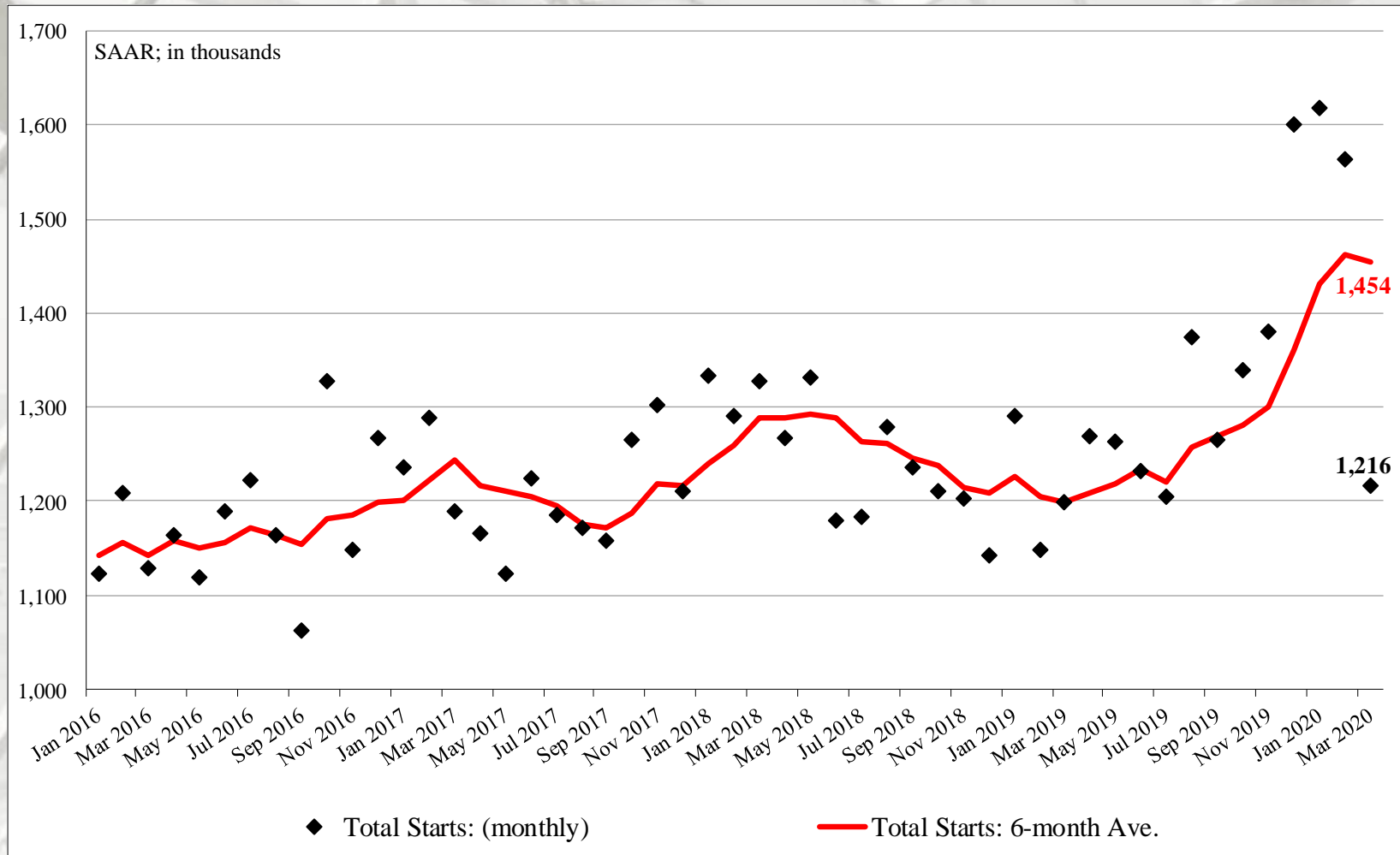
New SF Starts



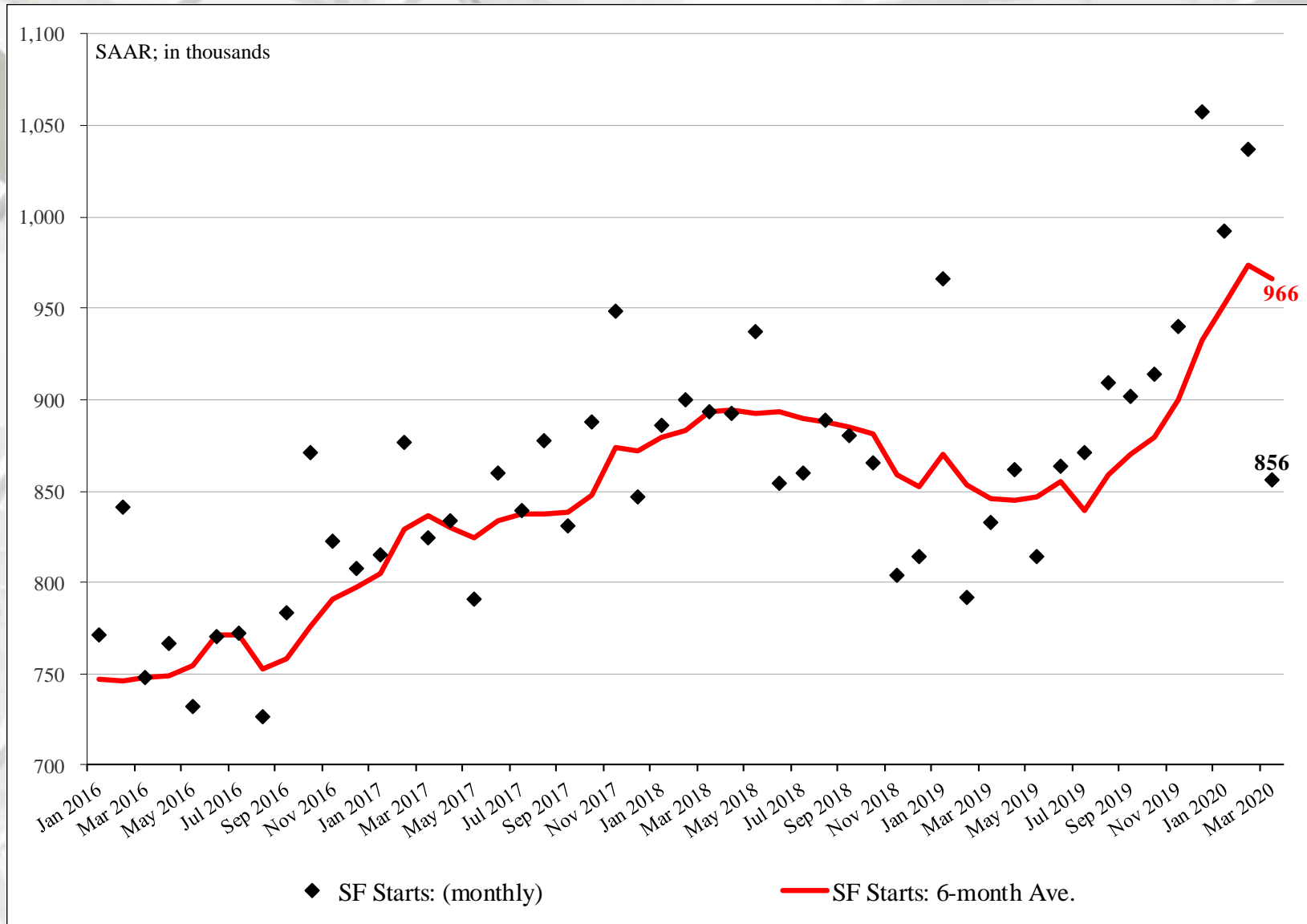
New SF starts adjusted for the US population

From January 1959 to March 2007, the long-term ratio of new SF starts to the total US non-institutionalized population was 0.0066; in March 2020 it was 0.0033 – a decrease from January (0.0040). The long-term ratio of non-institutionalized population, aged 20 to 54 is 0.0103; in March 2020 was 0.0058 – also a decrease from January (0.0071). From a population worldview, new SF construction is less than what is necessary for changes in population (i.e., under-building).

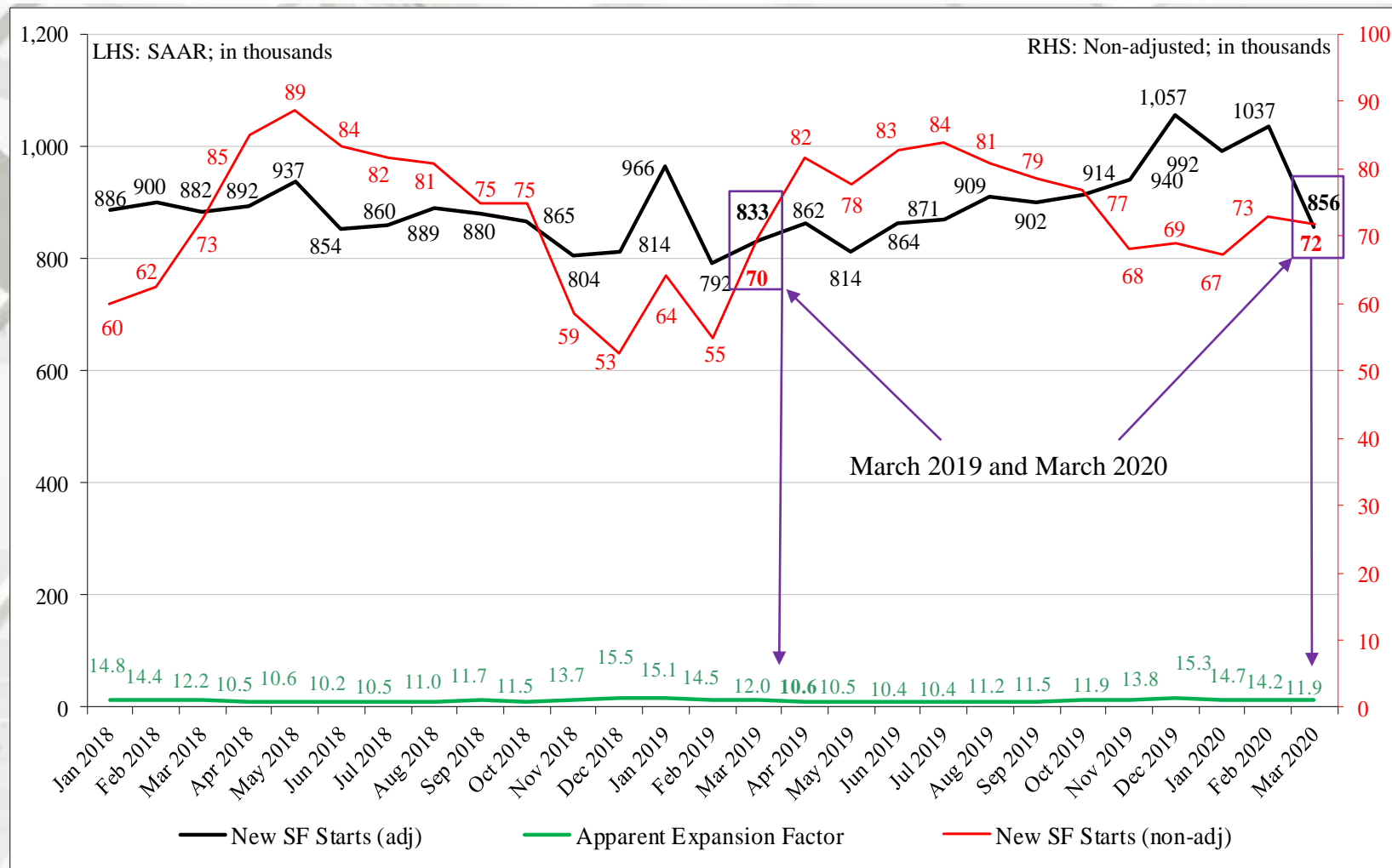
Total Housing Starts: Six-Month Average



SF Housing Starts: Six-Month Average



Nominal & SAAR SF Starts



Nominal and Adjusted New SF Monthly Starts

Presented above is nominal (non-adjusted) new SF start data contrasted against SAAR data.

The apparent expansion factor “... is the ratio of the unadjusted number of houses started in the US to the seasonally adjusted number of houses started in the US (i.e., to the sum of the seasonally adjusted values for the four regions).” – U.S. DOC-Construction

New Housing Starts by Region 1/3

	NE Total	NE SF	NE MF**
March	69,000	52,000	17,000
February	120,000	63,000	57,000
2019	83,000	57,000	26,000
M/M change	-42.5%	-17.5%	-70.2%
Y/Y change	-16.9%	-8.8%	-34.6%
	MW Total	MW SF	MW MF
March	153,000	107,000	46,000
February	195,000	144,000	51,000
2019	132,000	102,000	30,000
M/M change	-21.5%	-25.7%	-9.8%
Y/Y change	15.9%	4.9%	53.3%

All data are SAAR; NE = Northeast and MW = Midwest.

** US DOC does not report multifamily starts directly, this is an estimation (Total starts – SF starts).

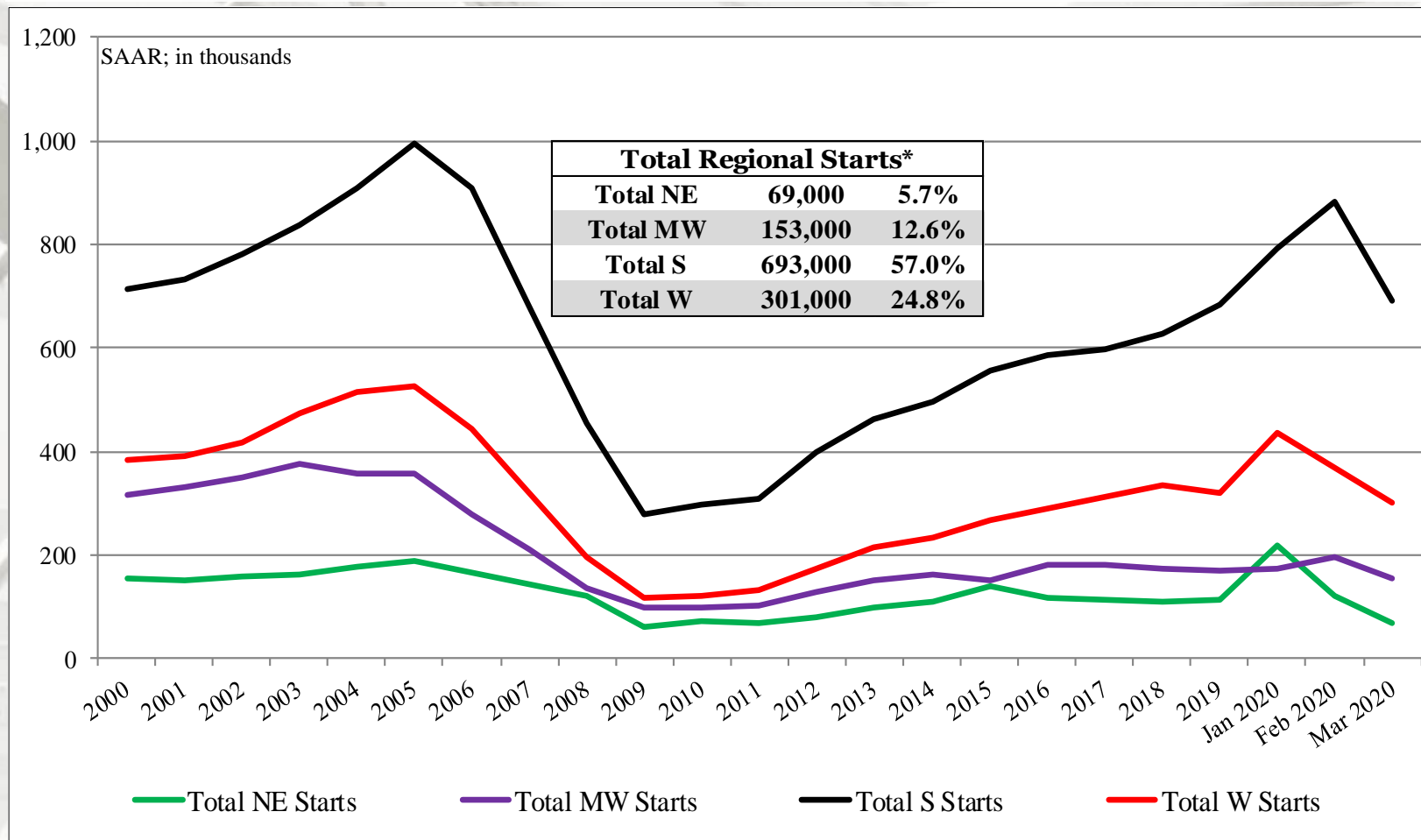
New Housing Starts by Region 2/3

	S Total	S SF	S MF**
March	693,000	454,000	239,000
February	881,000	601,000	280,000
2019	655,000	480,000	175,000
M/M change	-21.3%	-24.5%	-14.6%
Y/Y change	5.8%	-5.4%	36.6%
	W Total	W SF	W MF
March	301,000	243,000	58,000
February	368,000	229,000	139,000
2019	329,000	194,000	135,000
M/M change	-18.2%	6.1%	-58.3%
Y/Y change	-8.5%	25.3%	-57.0%

All data are SAAR; S = South and W = West.

** US DOC does not report multifamily starts directly, this is an estimation (Total starts – SF starts).

New Housing Starts by Region 3/3

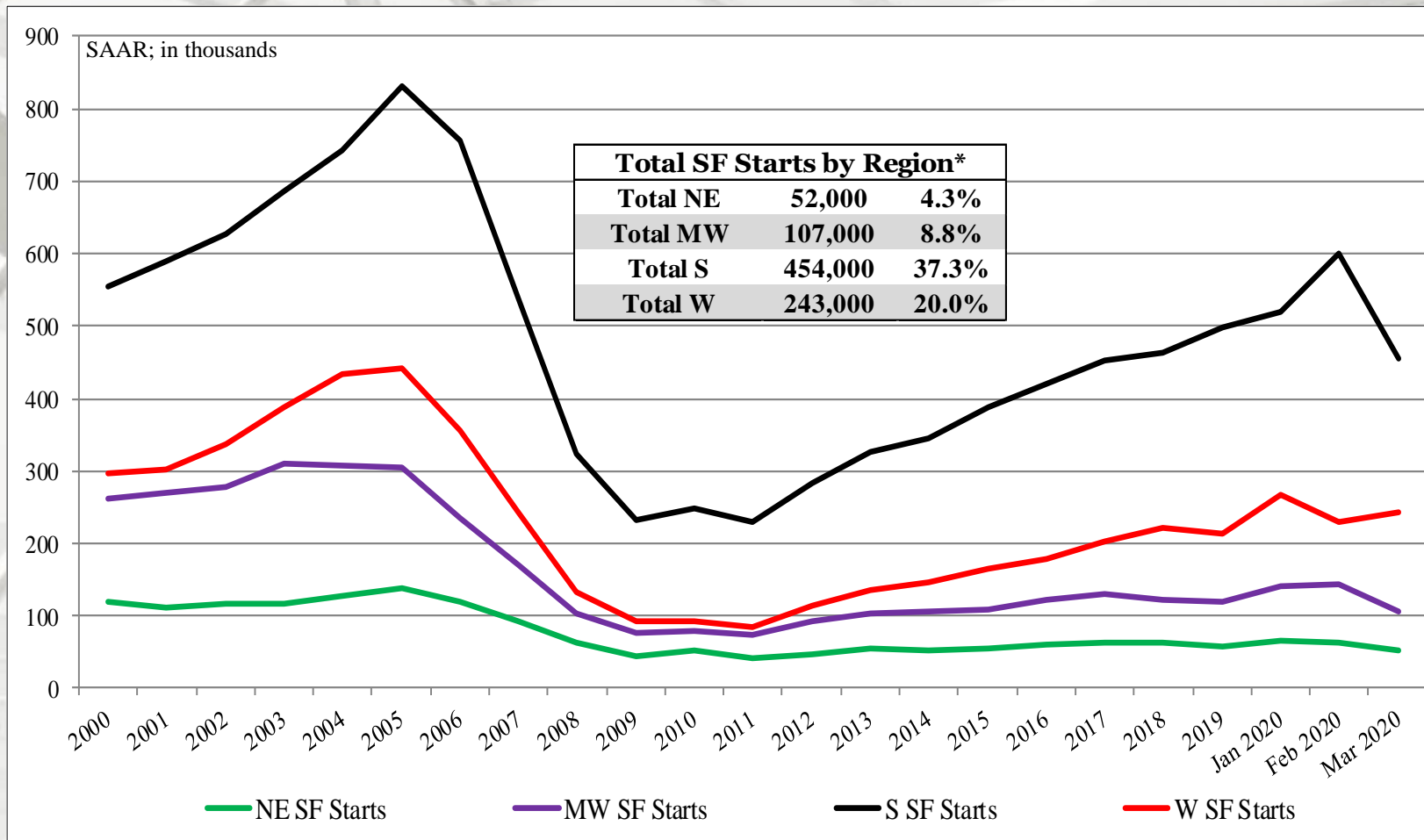


NE = Northeast, MW = Midwest, S = South, W = West

US DOC does not report 2 to 4 multi-family starts directly, this is an estimation (Total starts – (SF + ≥ 5 MF starts)).

* Percentage of total starts.

Total SF Housing Starts by Region

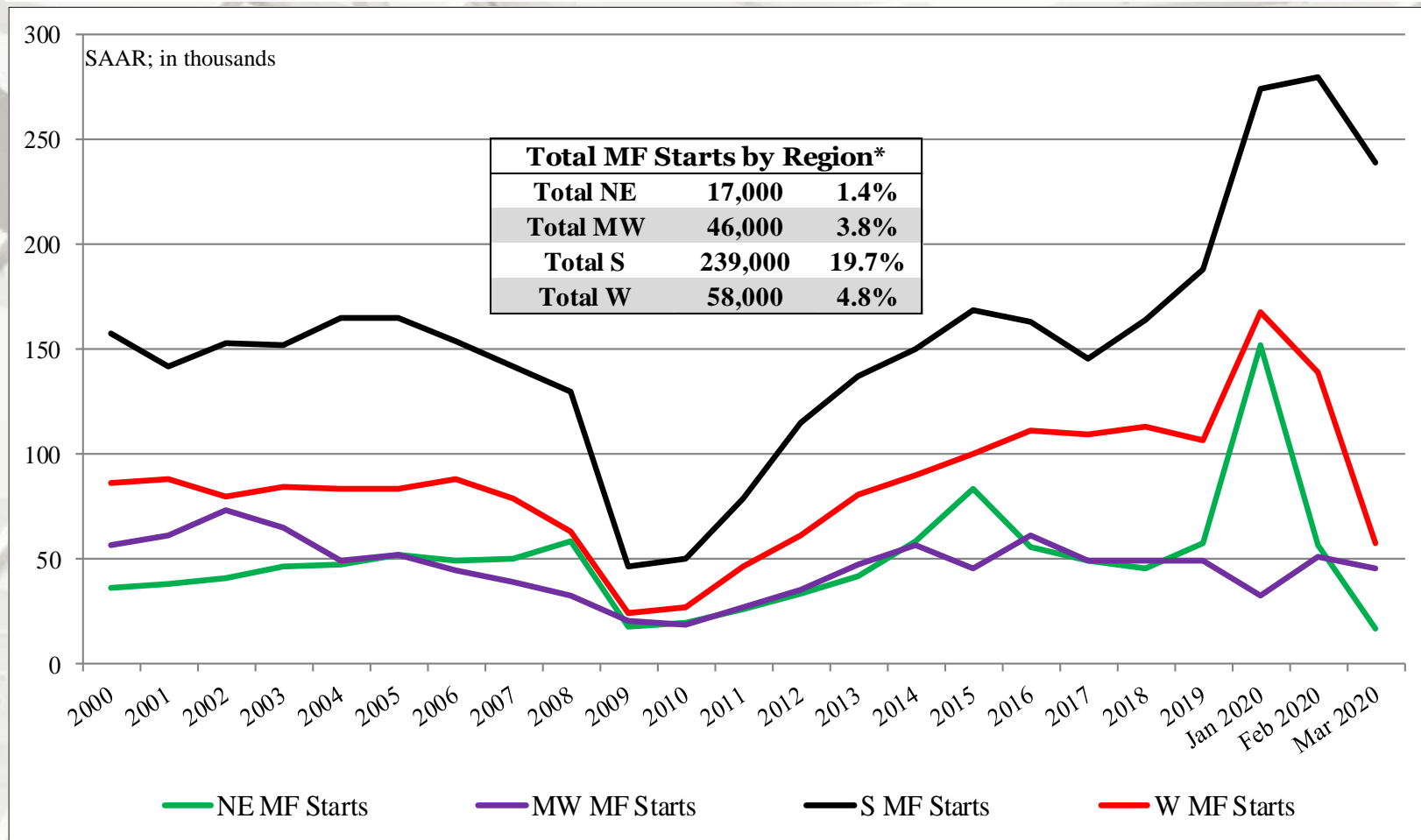


NE = Northeast, MW = Midwest, S = South, W = West

US DOC does not report 2 to 4 multi-family starts directly, this is an estimation (Total starts – (SF + ≥ 5 MF starts)).

* Percentage of total starts.

MF Housing Starts by Region

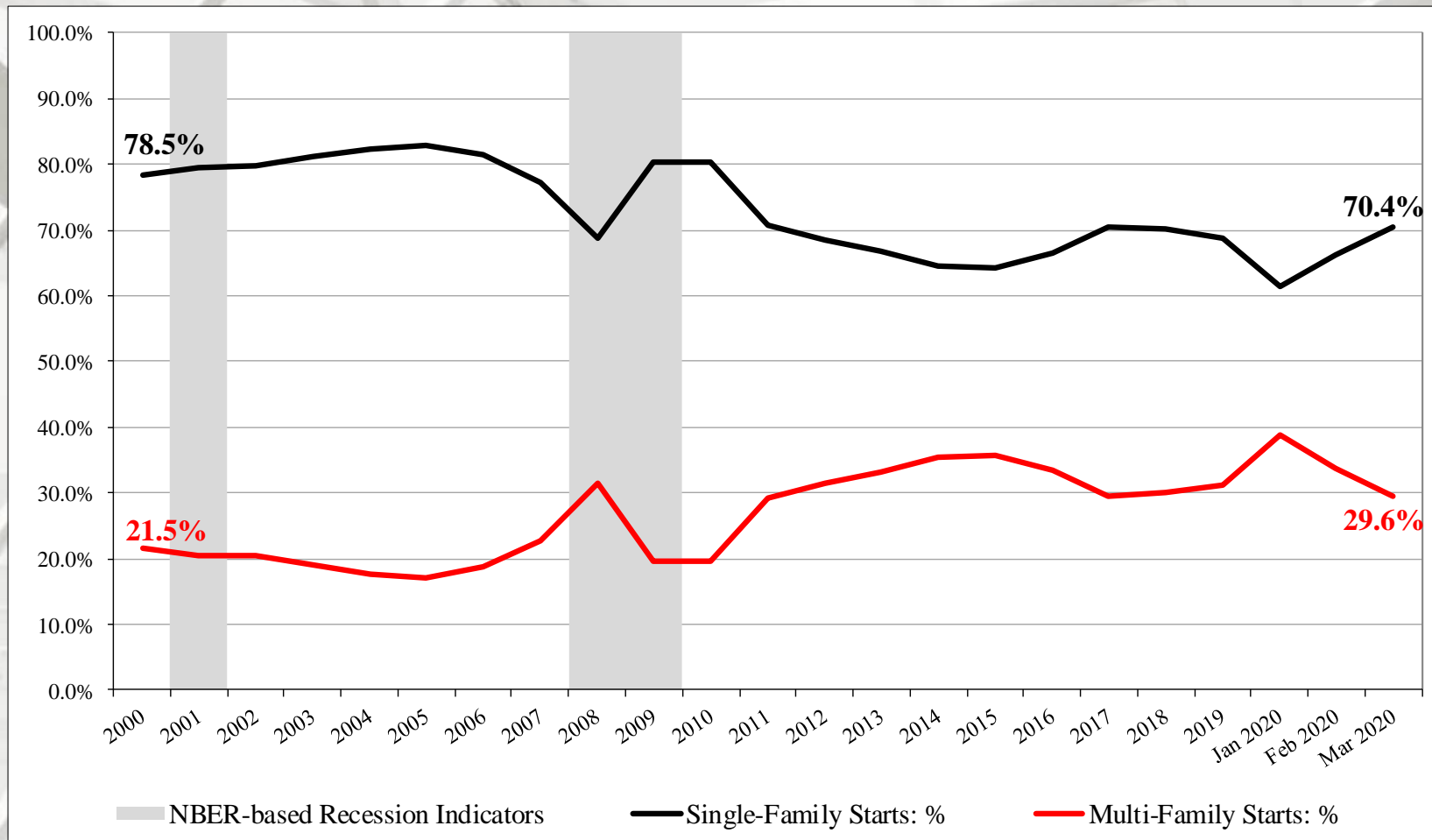


NE = Northeast, MW = Midwest, S = South, W = West

US DOC does not report 2 to 4 multi-family starts directly, this is an estimation (Total starts – (SF + ≥ 5 MF starts)).

* Percentage of total starts.

SF vs. MF Housing Starts (%)



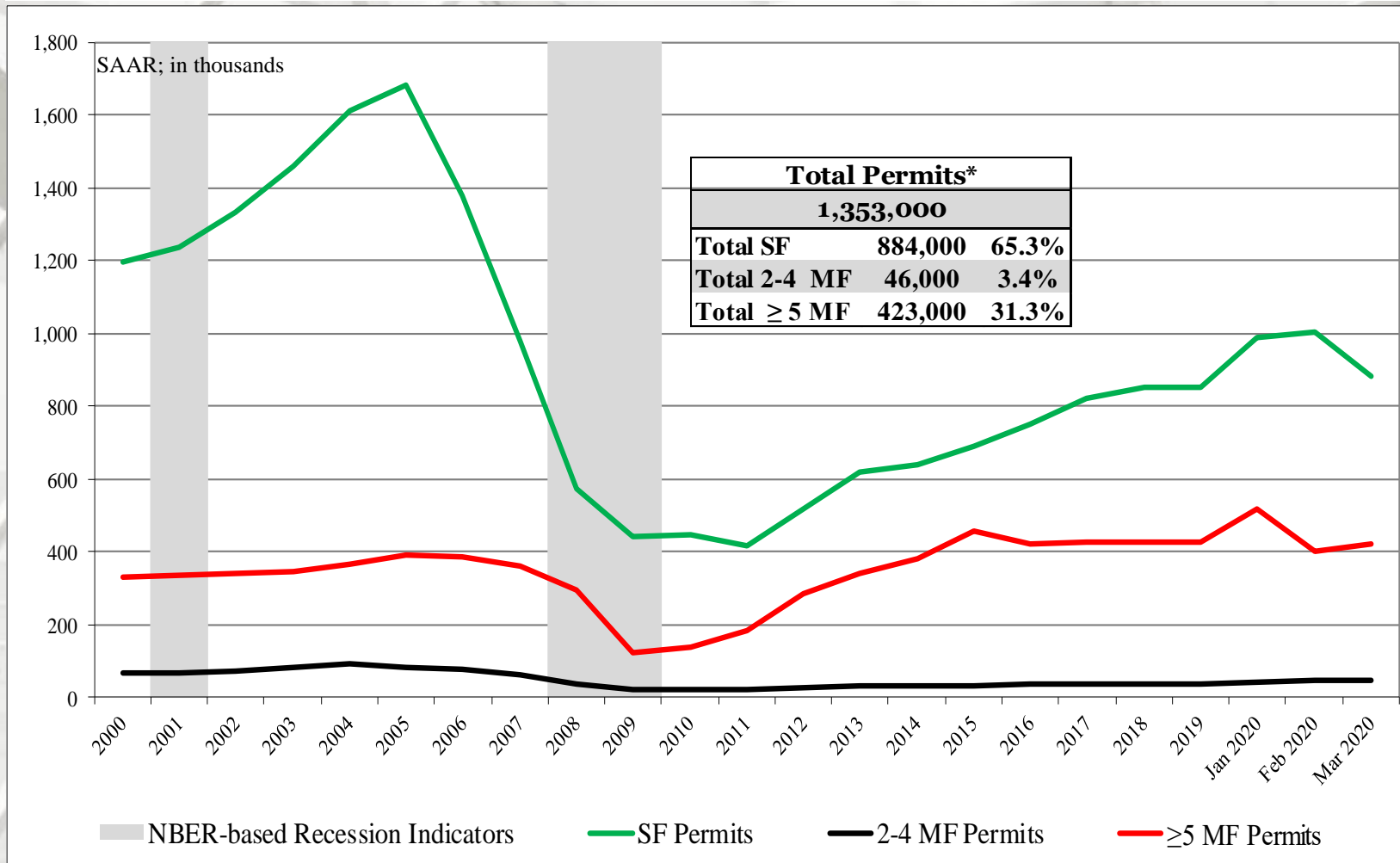
NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New Housing Permits

	Total Permits*	SF Permits	MF 2-4 unit Permits	MF ≥ 5 unit Permits
March	1,353,000	884,000	46,000	423,000
February	1,452,000	1,005,000	45,000	402,000
2019	1,288,000	813,000	36,000	439,000
M/M change	-6.8%	-12.0%	2.2%	5.2%
Y/Y change	5.0%	8.7%	27.8%	-3.6%

* All permit data are presented at a seasonally adjusted annual rate (SAAR).

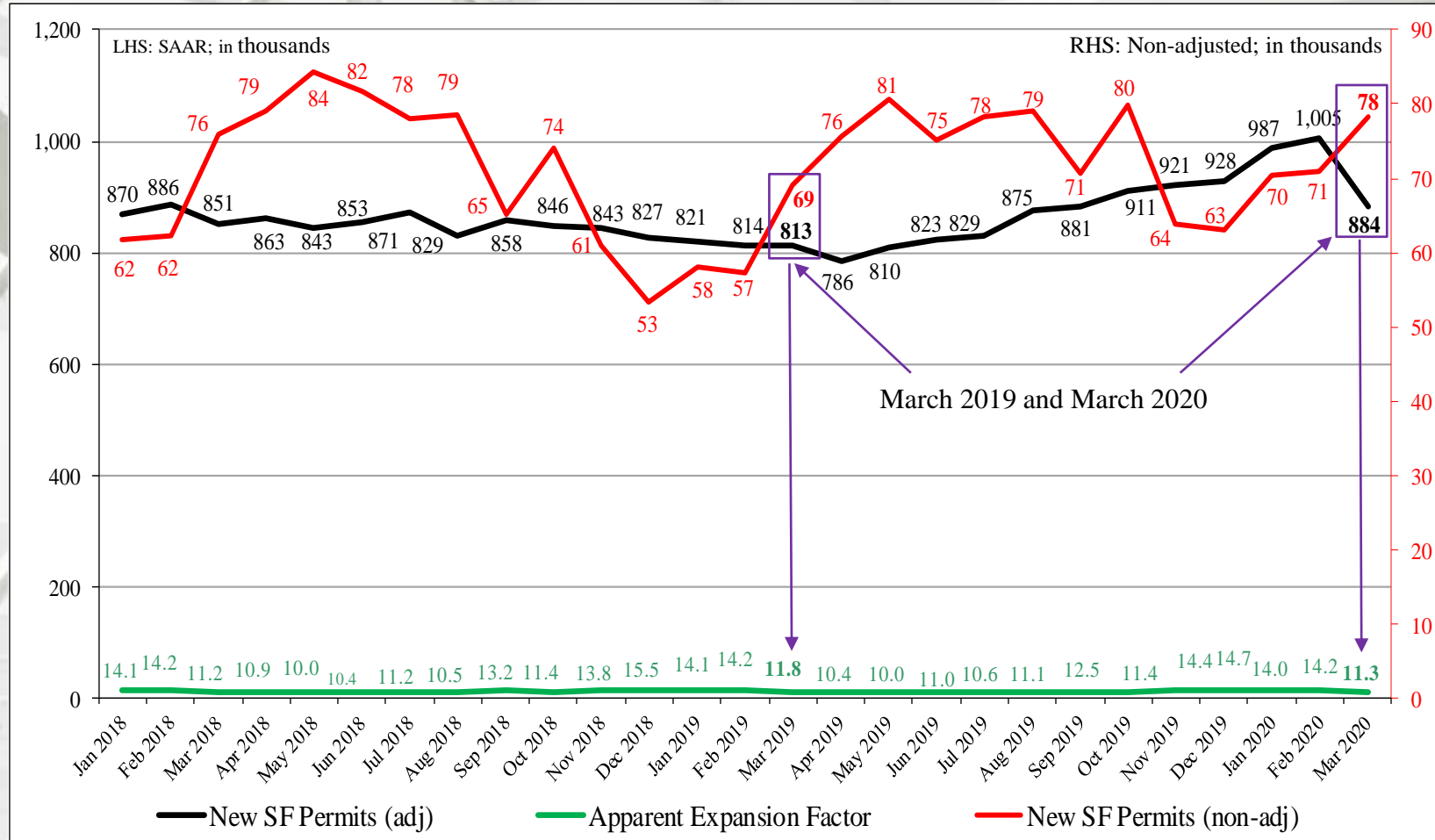
Total New Housing Permits



* Percentage of total permits.

NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

Nominal & SAAR SF Permits



Nominal and Adjusted New SF Monthly Permits

Presented above is nominal (non-adjusted) new SF start data contrasted against SAAR data.

The apparent expansion factor "...is the ratio of the unadjusted number of houses started in the US to the seasonally adjusted number of houses started in the US (i.e., to the sum of the seasonally adjusted values for the four regions)." – U.S. DOC-Construction

New Housing Permits by Region 1/2

	NE Total*	NE SF	NE MF**
March	122,000	59,000	63,000
February	132,000	68,000	64,000
2019	124,000	52,000	72,000
M/M change	-7.6%	-13.2%	-1.6%
Y/Y change	-1.6%	13.5%	-12.5%
	MW Total*	MW SF	MW MF**
March	178,000	111,000	67,000
February	204,000	136,000	68,000
2019	184,000	103,000	81,000
M/M change	-12.7%	-18.4%	-1.5%
Y/Y change	-3.3%	7.8%	-17.3%

NE = Northeast; ME = Midwest

* All data are SAAR

** US DOC does not report multifamily permits directly, this is an estimation (Total permits – SF permits).

New Housing Permits by Region 2/2

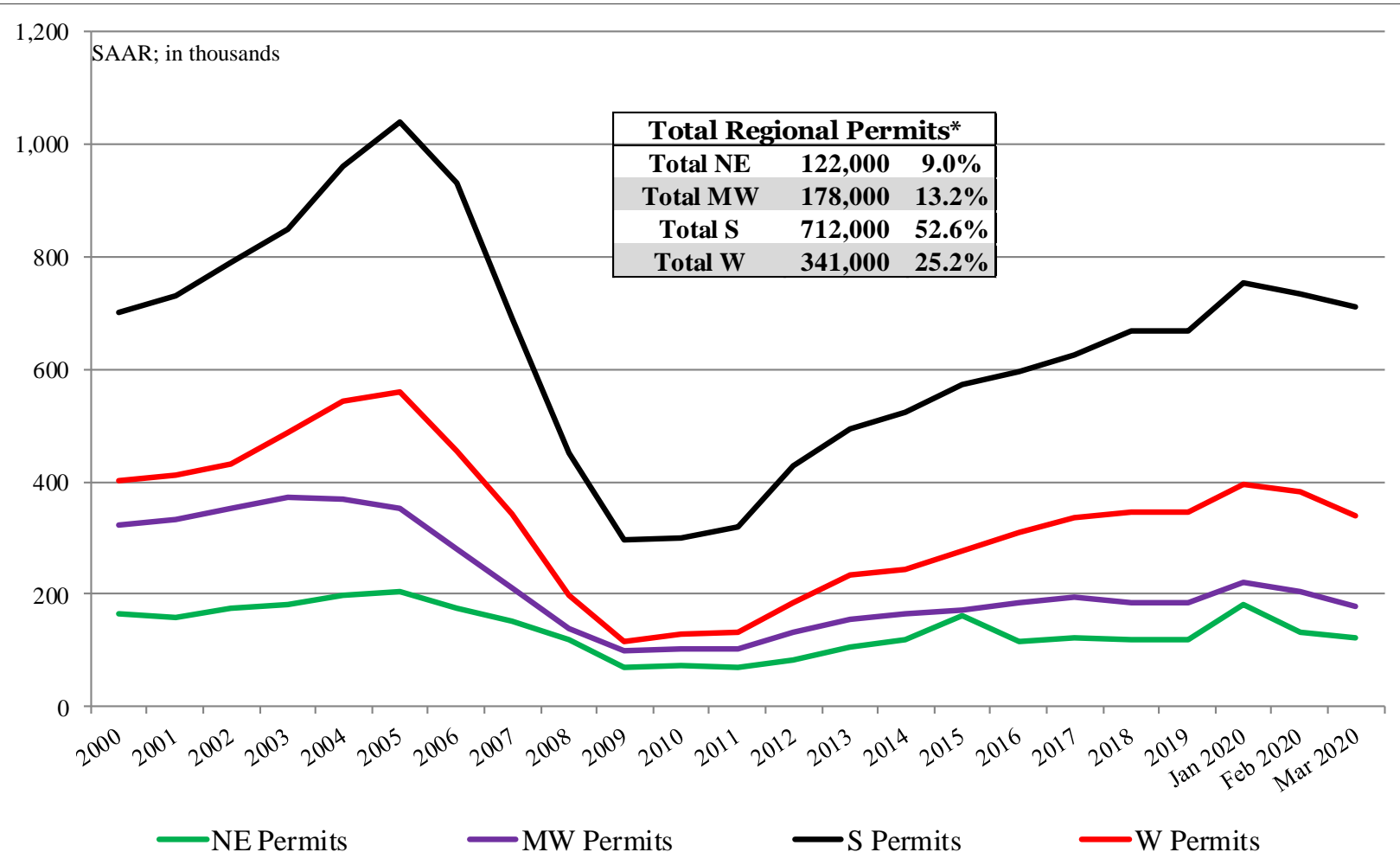
	S Total*	S SF	S MF**
March	712,000	509,000	203,000
February	735,000	544,000	191,000
2019	660,000	464,000	196,000
M/M change	-3.1%	-6.4%	6.3%
Y/Y change	7.9%	9.7%	3.6%
	W Total*	W SF	W MF**
March	341,000	205,000	136,000
February	381,000	257,000	124,000
2019	320,000	194,000	126,000
M/M change	-10.5%	-20.2%	9.7%
Y/Y change	6.6%	5.7%	7.9%

S = South; W = West

* All data are SAAR

** US DOC does not report multifamily permits directly, this is an estimation (Total permits – SF permits).

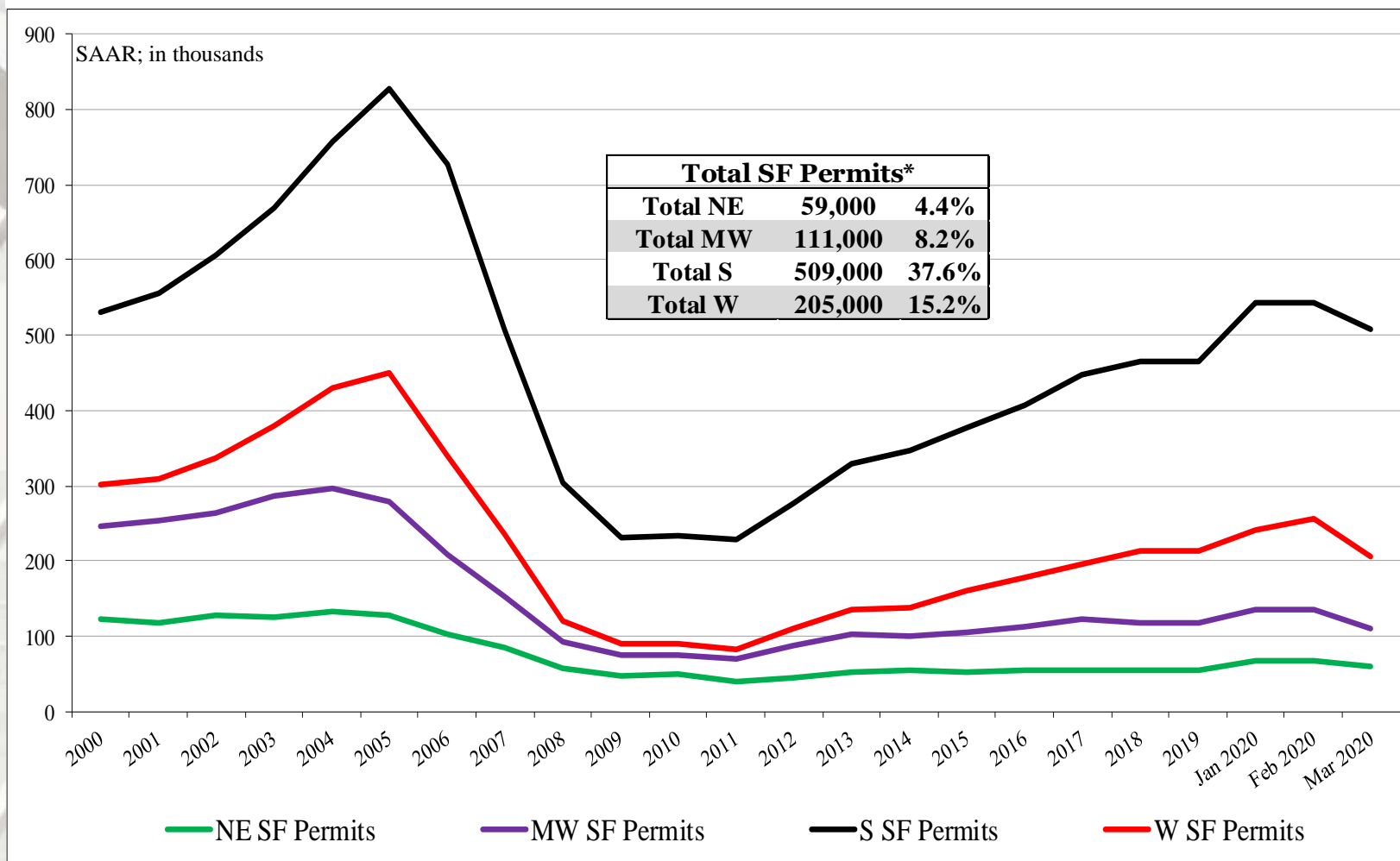
Total Housing Permits by Region



NE = Northeast, MW = Midwest, S = South, W = West

* Percentage of total permits.

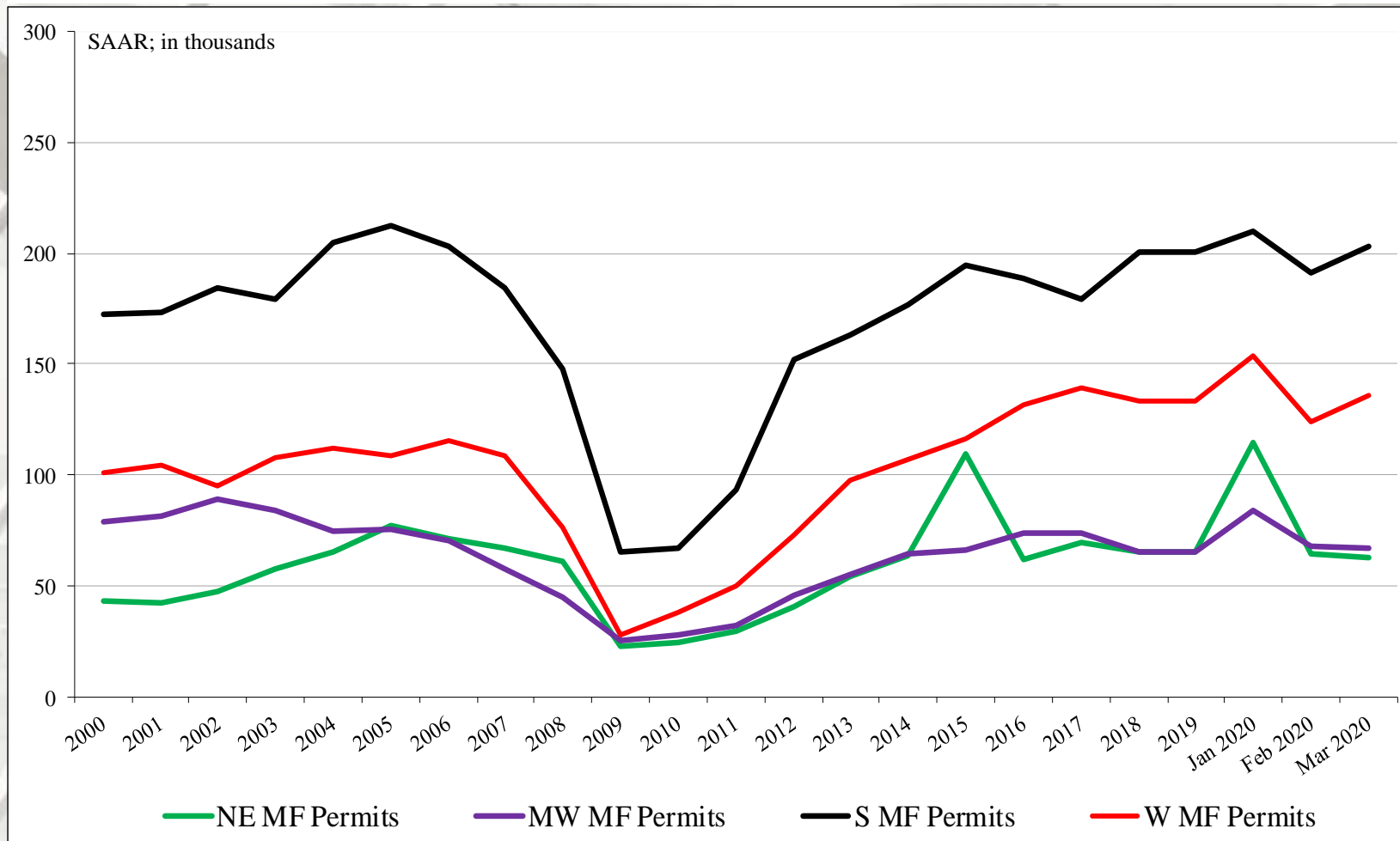
SF Housing Permits by Region



NE = Northeast, MW = Midwest, S = South, W = West

* Percentage of total permits.

MF Housing Permits by Region



NE = Northeast, MW = Midwest, S = South, W = West

* Percentage of total permits.

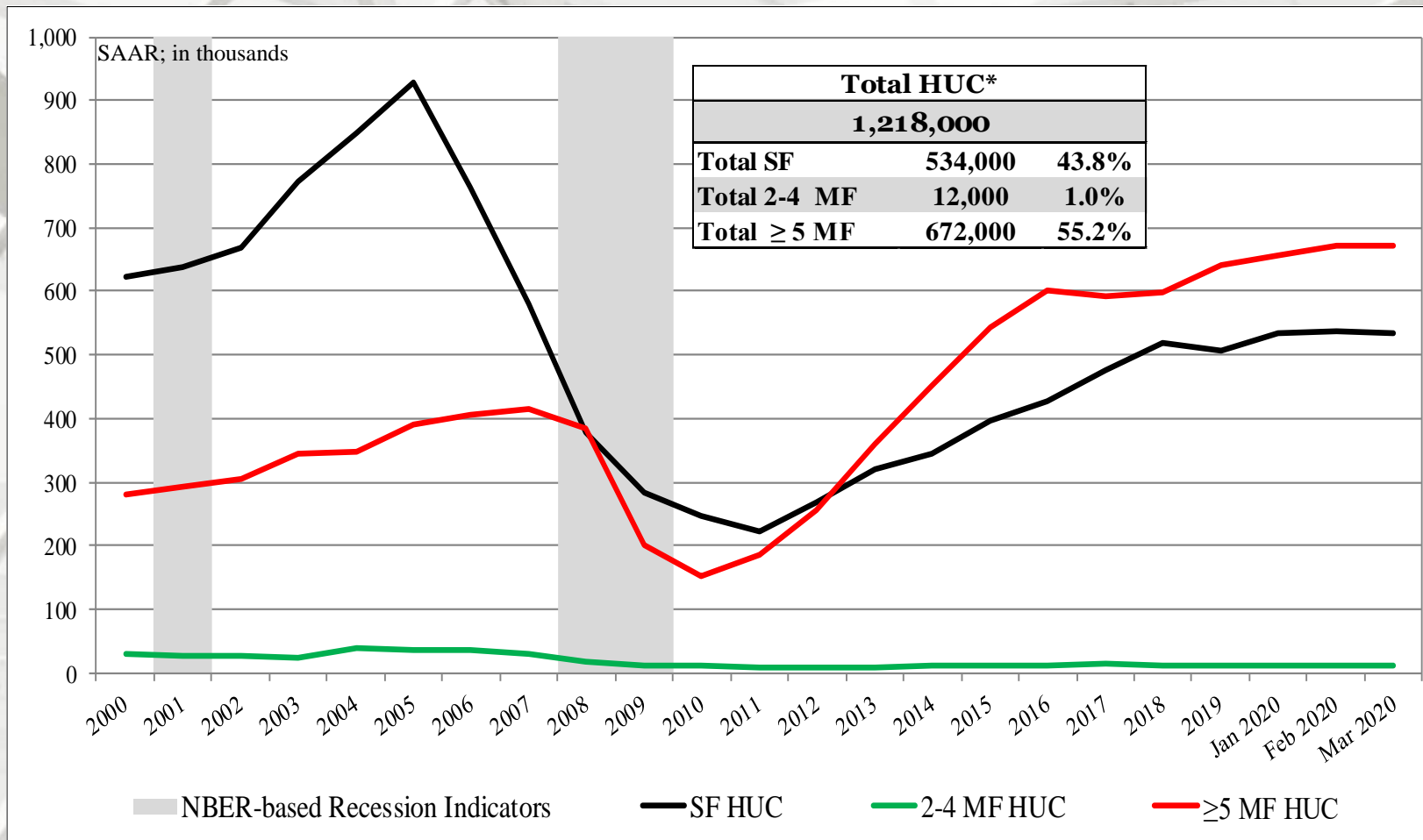
New Housing Under Construction (HUC)

	Total Under Construction*	SF Under Construction	MF 2-4 unit** Under Construction	MF ≥ 5 unit Under Construction
March	1,218,000	534,000	12,000	672,000
February	1,221,000	536,000	12,000	673,000
2019	1,131,000	534,000	10,000	587,000
M/M change	-0.2	-0.4	0.0	-0.1
Y/Y change	7.7	0.0	20.0	14.5

All housing under construction data are presented at a seasonally adjusted annual rate (SAAR).

** US DOC does not report 2-4 multifamily units under construction directly, this is an estimation ((Total under construction – (SF + 5 unit MF)).

Total Housing Under Construction



US DOC does not report 2 to 4 multi-family under construction directly, this is an estimation (Total under constructions – (SF + ≥ 5 MF under construction)).

* Percentage of total housing under construction units.

NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New Housing Under Construction by Region 1/2

	NE Total	NE SF	NE MF**
March	176,000	55,000	121,000
February	179,000	55,000	124,000
2019	181,000	65,000	116,000
M/M change	-1.7	0.0	-2.4
Y/Y change	-2.8	-15.4	4.3
	MW Total	MW SF	MW MF
March	151,000	77,000	74,000
February	155,000	78,000	77,000
2019	146,000	78,000	68,000
M/M change	-2.6	-1.3	-3.9
Y/Y change	3.4	-1.3	8.8

All data are SAAR; NE = Northeast and MW = Midwest.

** US DOC does not report multifamily units under construction directly, this is an estimation
(Total under construction – SF under construction).

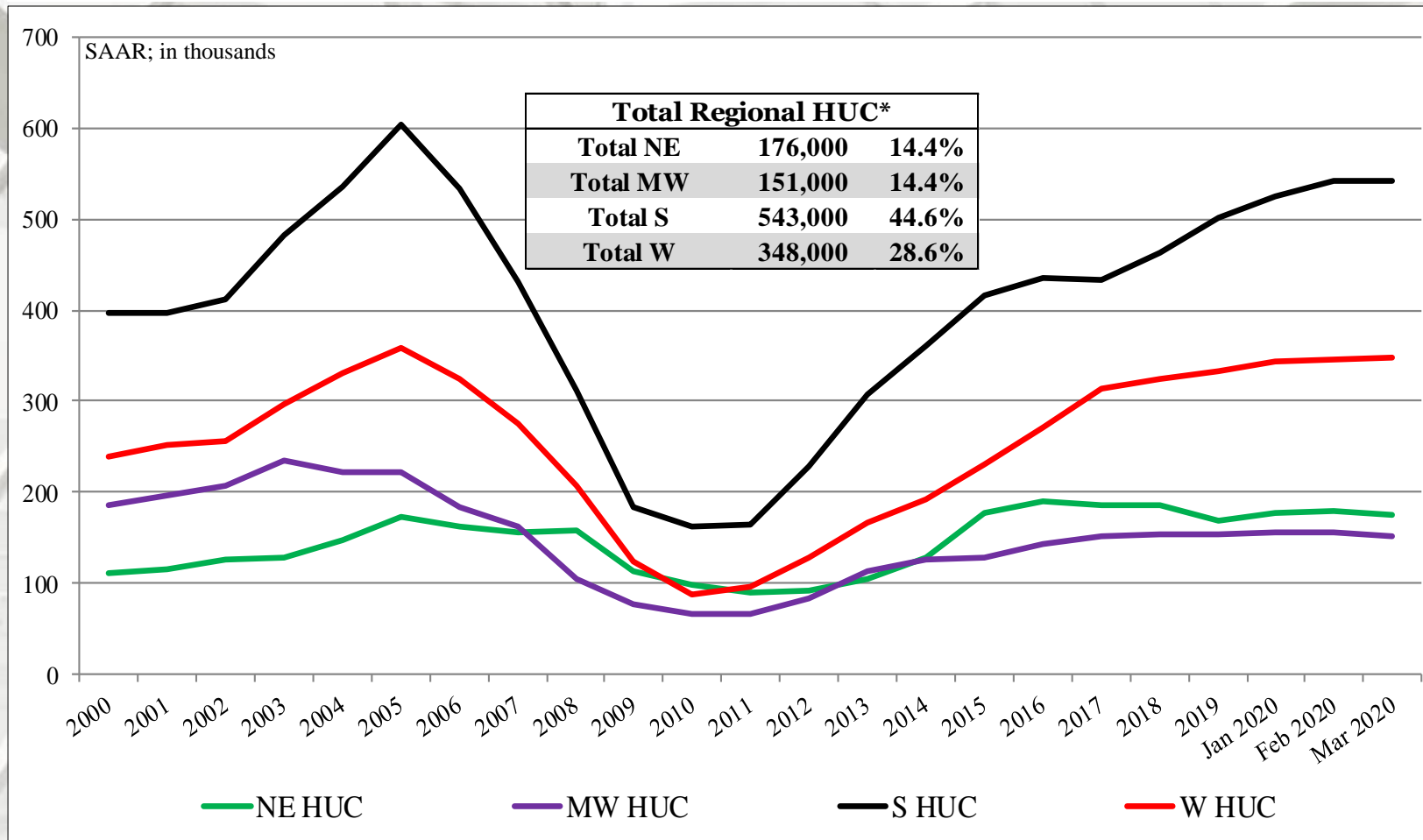
New Housing Under Construction by Region 2/2

	S Total	S SF	S MF**
March	543,000	257,000	286,000
February	542,000	260,000	282,000
2019	481,000	255,000	226,000
M/M change	0.2	-1.2	1.4
Y/Y change	12.9	0.8	26.5
	W Total	W SF	W MF
March	348,000	145,000	203,000
February	345,000	143,000	202,000
2019	323,000	136,000	187,000
M/M change	0.9	1.4	0.5
Y/Y change	7.7	6.6	8.6

All data are SAAR; S = South and W = West.

** US DOC does not report multifamily units under construction directly, this is an estimation
(Total under construction – SF under construction).

Total Housing Under Construction by Region

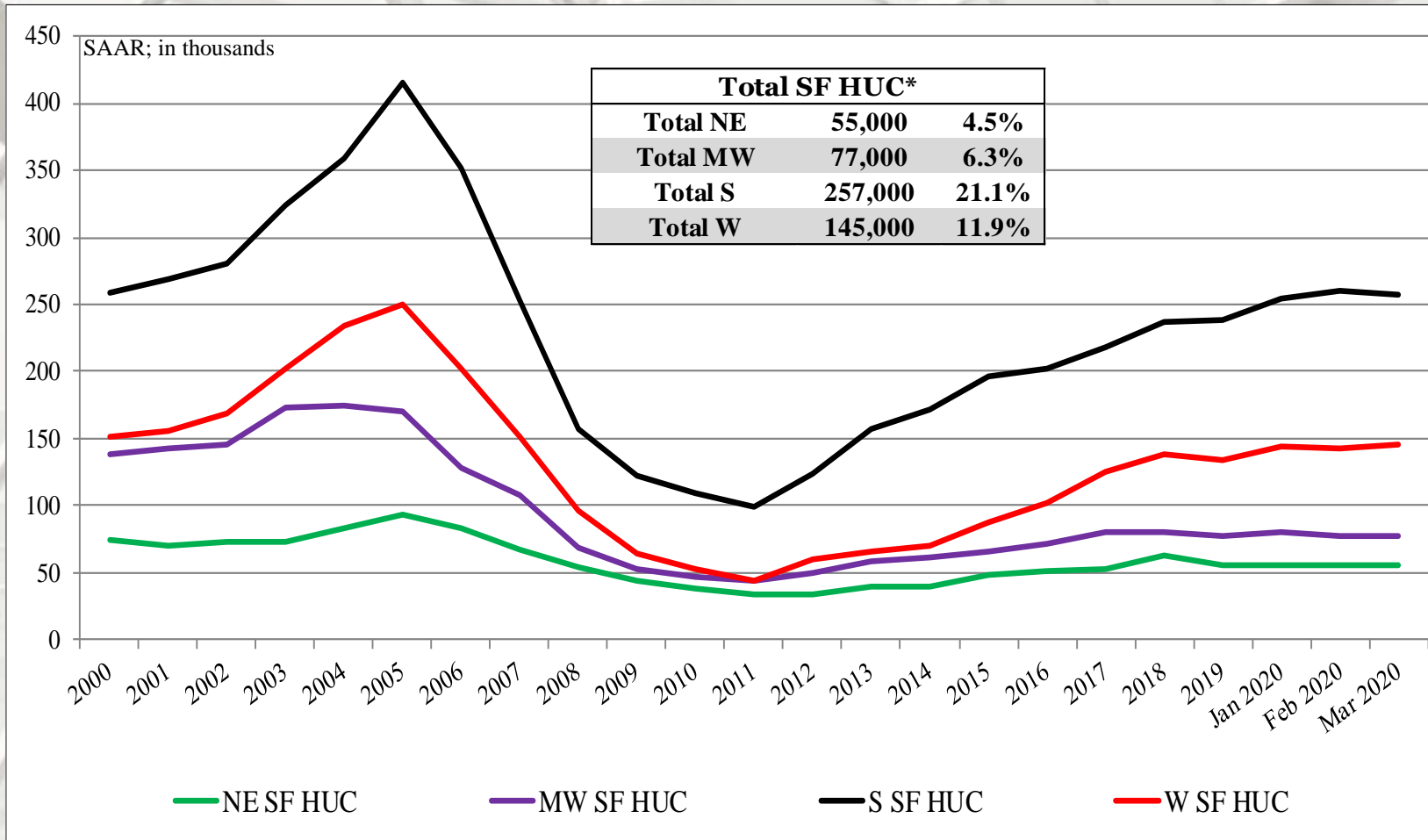


NE = Northeast, MW = Midwest, S = South, W = West

US DOC does not report 2 to 4 multi-family under construction directly, this is an estimation (Total under constructions – (SF + ≥ 5 MF under construction)).

* Percentage of total housing under construction units.

SF Housing Under Construction by Region

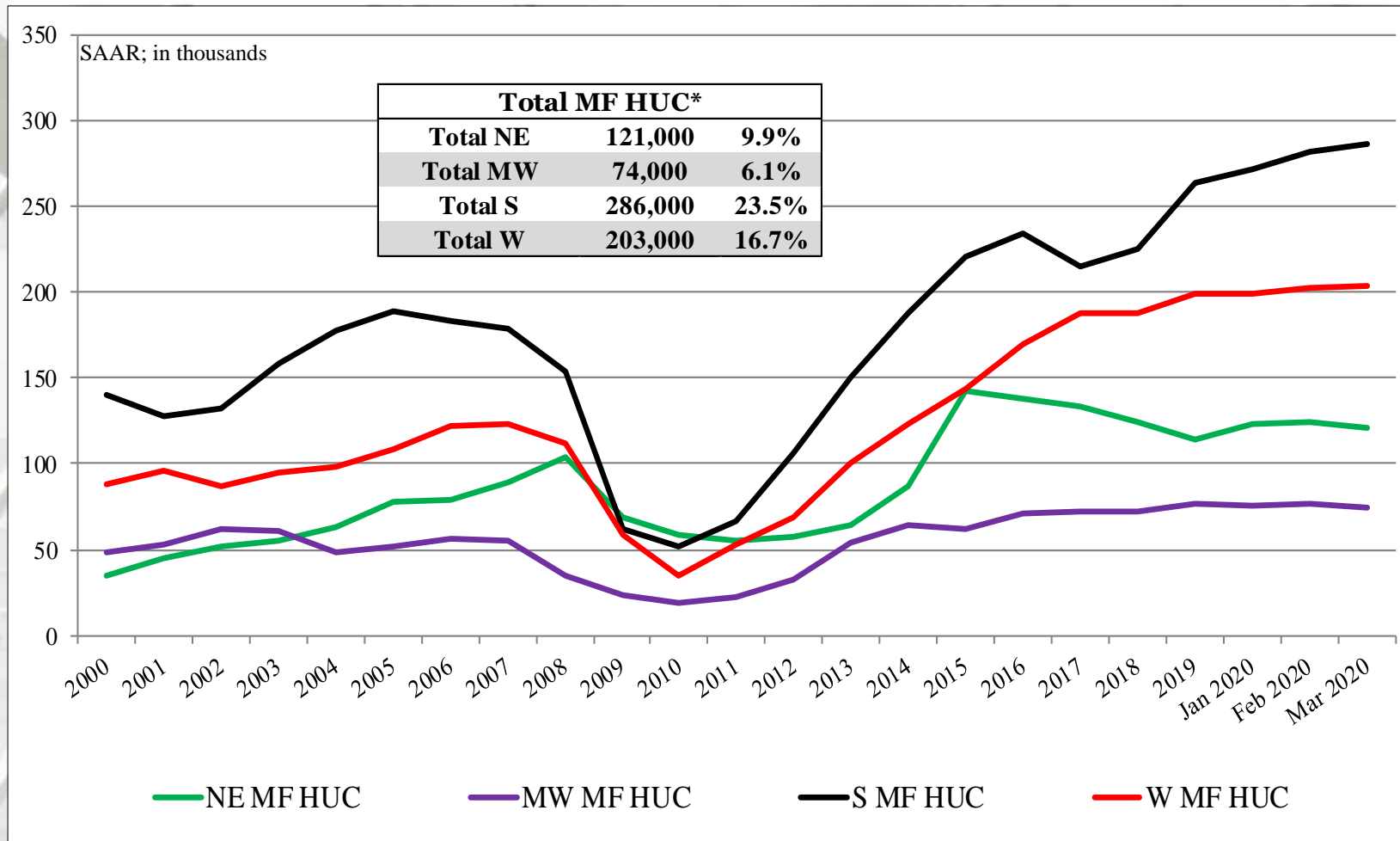


NE = Northeast, MW = Midwest, S = South, W = West.

US DOC does not report 2 to 4 multi-family under construction directly, this is an estimation (Total under constructions – (SF + ≥ 5 MF under construction)).

* Percentage of total housing under construction units.

MF Housing Under Construction by Region



NE = Northeast, MW = Midwest, S = South, W = West

US DOC does not report 2 to 4 multi-family under construction directly, this is an estimation (Total under constructions – (SF + ≥ 5 MF under construction)).

* Percentage of total housing under construction units.

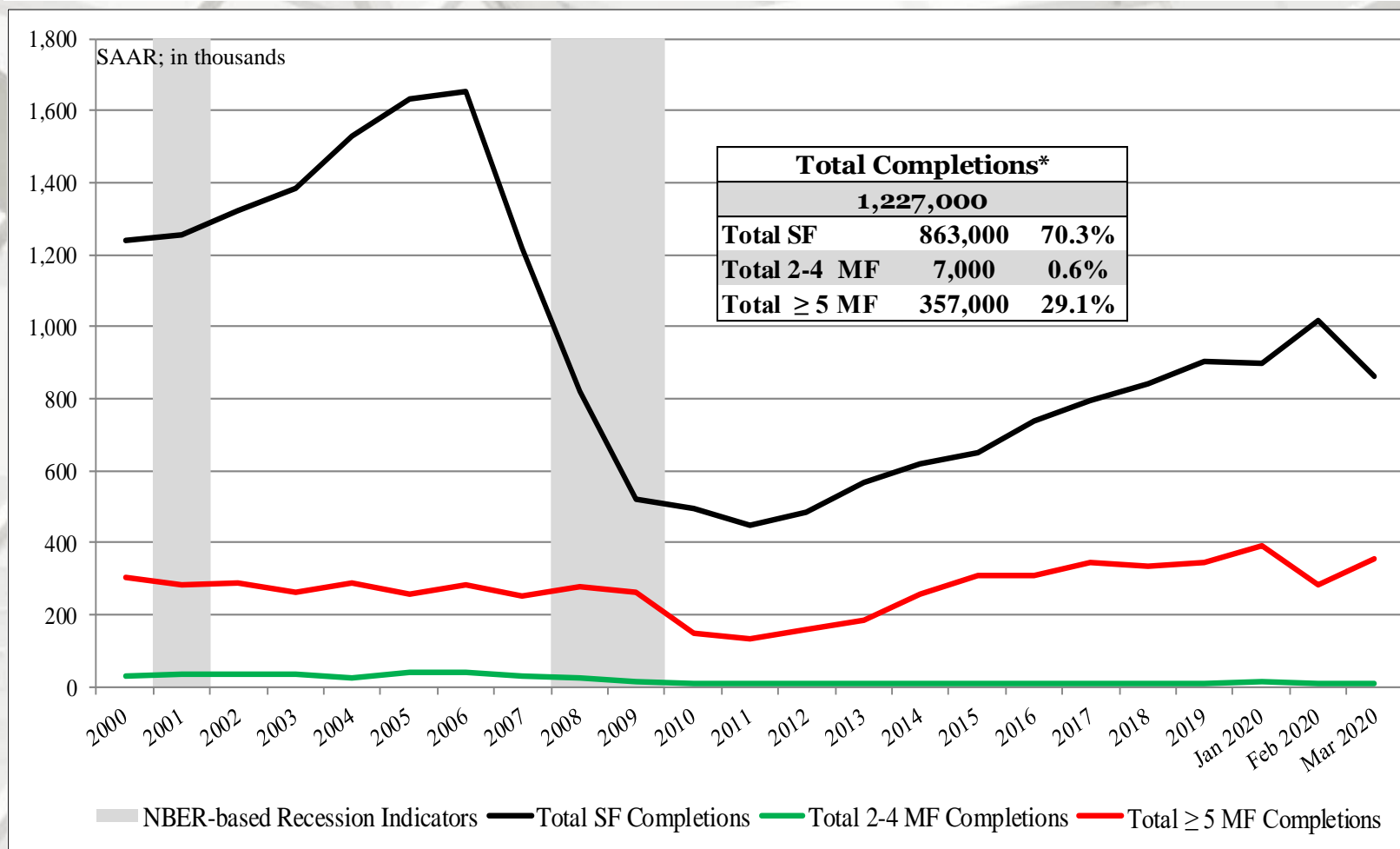
New Housing Completions

	Total Completions*	SF Completions	MF 2-4 unit** Completions	MF ≥ 5 unit Completions
March	1,227,000	863,000	7,000	357,000
February	1,307,000	1,015,000	9,000	283,000
2019	1,348,000	961,000	14,000	373,000
M/M change	-6.1%	-15.0%	-22.2%	26.1%
Y/Y change	-9.0%	-10.2%	-50.0%	-4.3%

* All completion data are presented at a seasonally adjusted annual rate (SAAR).

** US DOC does not report multifamily completions directly, this is an estimation ((Total completions – (SF + ≥ 5 unit MF)).

Total Housing Completions



** US DOC does not report multifamily completions directly, this is an estimation ((Total completions – (SF + ≥ 5 unit MF)).

* Percentage of total housing completions

NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New Housing Completions by Region 1/2

	NE Total	NE SF	NE MF**
March	82,000	46,000	36,000
February	105,000	70,000	35,000
2019	127,000	65,000	62,000
M/M change	-21.9%	-34.3%	2.9%
Y/Y change	-35.4%	-29.2%	-41.9%
	MW Total	MW SF	MW MF
March	205,000	133,000	72,000
February	193,000	153,000	40,000
2019	200,000	149,000	51,000
M/M change	6.2%	-13.1%	80.0%
Y/Y change	2.5%	-10.7%	41.2%

All data are SAAR; S = South and W = West.

** US DOC does not report multifamily units completions directly, this is an estimation
(Total completions – SF completions).

New Housing Completions by Region 2/2

	S Total	S SF	S MF**
March	657,000	486,000	171,000
February	653,000	538,000	115,000
2019	689,000	487,000	202,000
M/M change	0.6%	-9.7%	48.7%
Y/Y change	-4.6%	-0.2%	-15.3%
	W Total	W SF	W MF
March	283,000	198,000	85,000
February	356,000	254,000	102,000
2019	332,000	260,000	72,000
M/M change	-20.5%	-22.0%	-16.7%
Y/Y change	-14.8%	-23.8%	18.1%

NE = Northeast, MW = Midwest, S = South, W = West

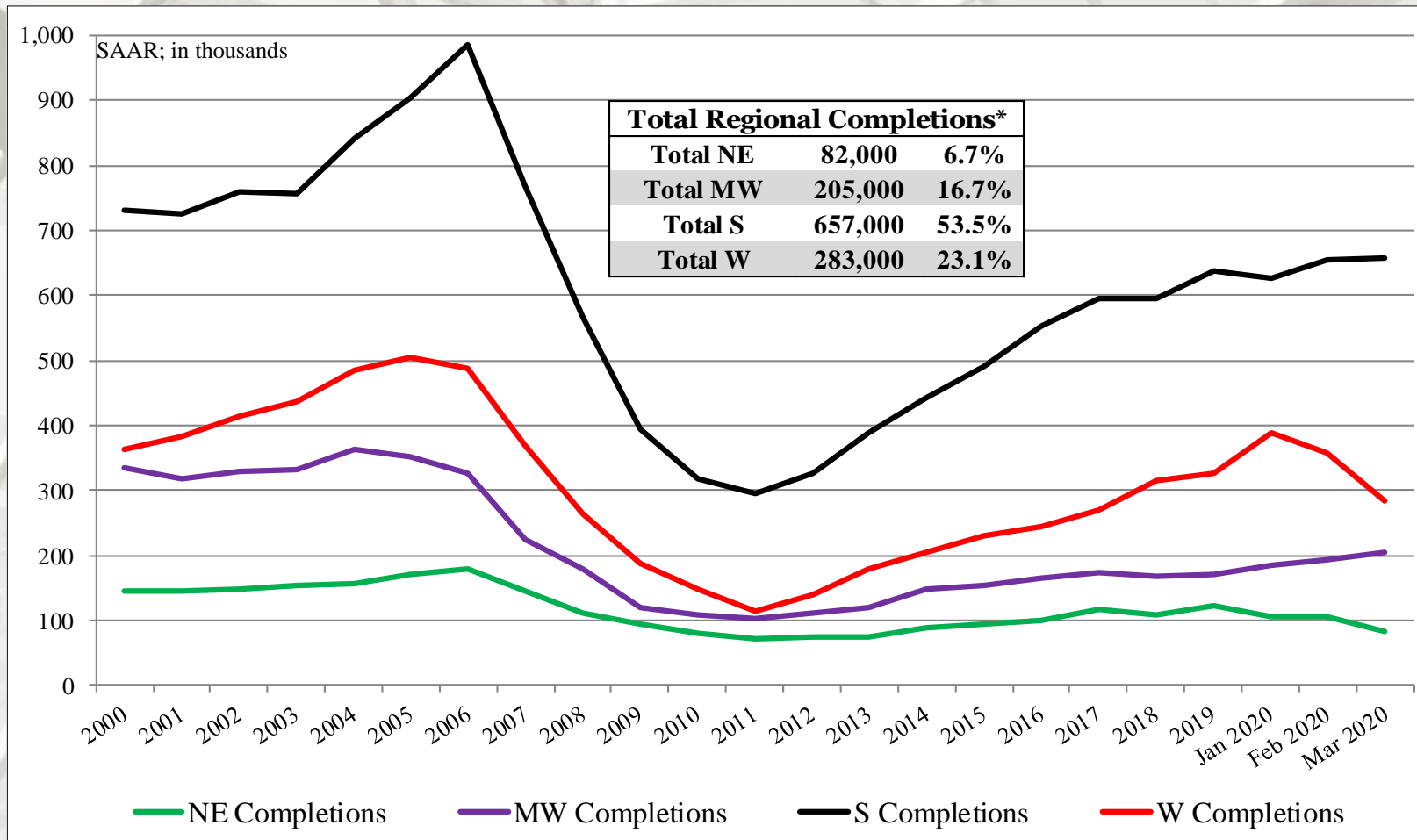
US DOC does not report 2 to 4 multi-family completions directly, this is an estimation (Total completions – SF completions).

* Percentage of total housing completions

Source: <http://www.census.gov/construction/nrc/pdf/newresconst.pdf>; 4/16/20

[Return TOC](#)

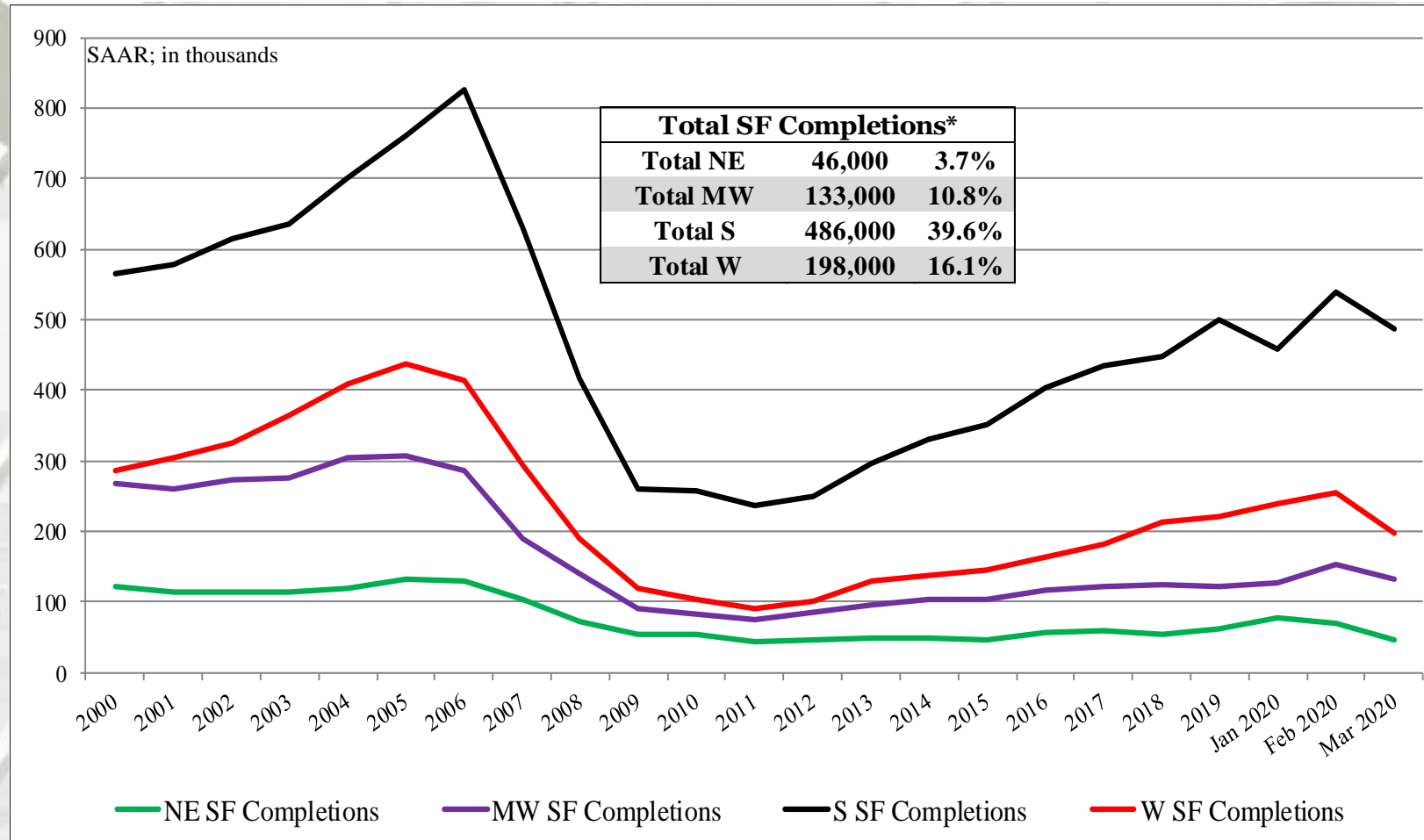
Total Housing Completions by Region



All data are SAAR; NE = Northeast and MW = Midwest.

** US DOC does not report multifamily units completions directly, this is an estimation
(Total completions – SF completions).

SF Housing Completions by Region

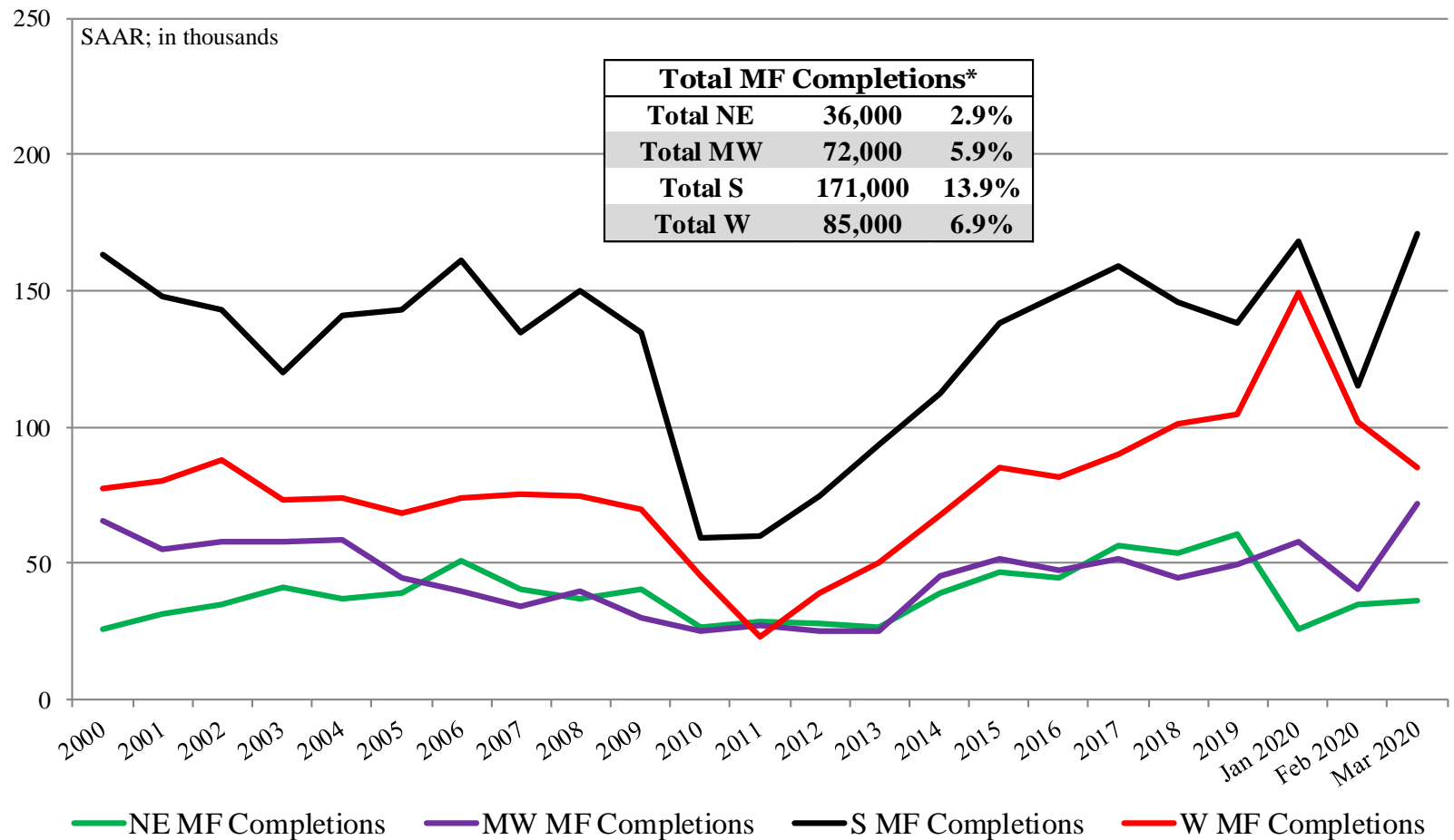


NE = Northeast, MW = Midwest, S = South, W = West

US DOC does not report 2 to 4 multi-family completions directly, this is an estimation (Total completions – SF completions).

* Percentage of total housing completions

MF Housing Completions by Region



NE = Northeast, MW = Midwest, S = South, W = West

US DOC does not report 2 to 4 multi-family completions directly, this is an estimation (Total completions – SF completions).

* Percentage of total housing completions

New Single-Family House Sales

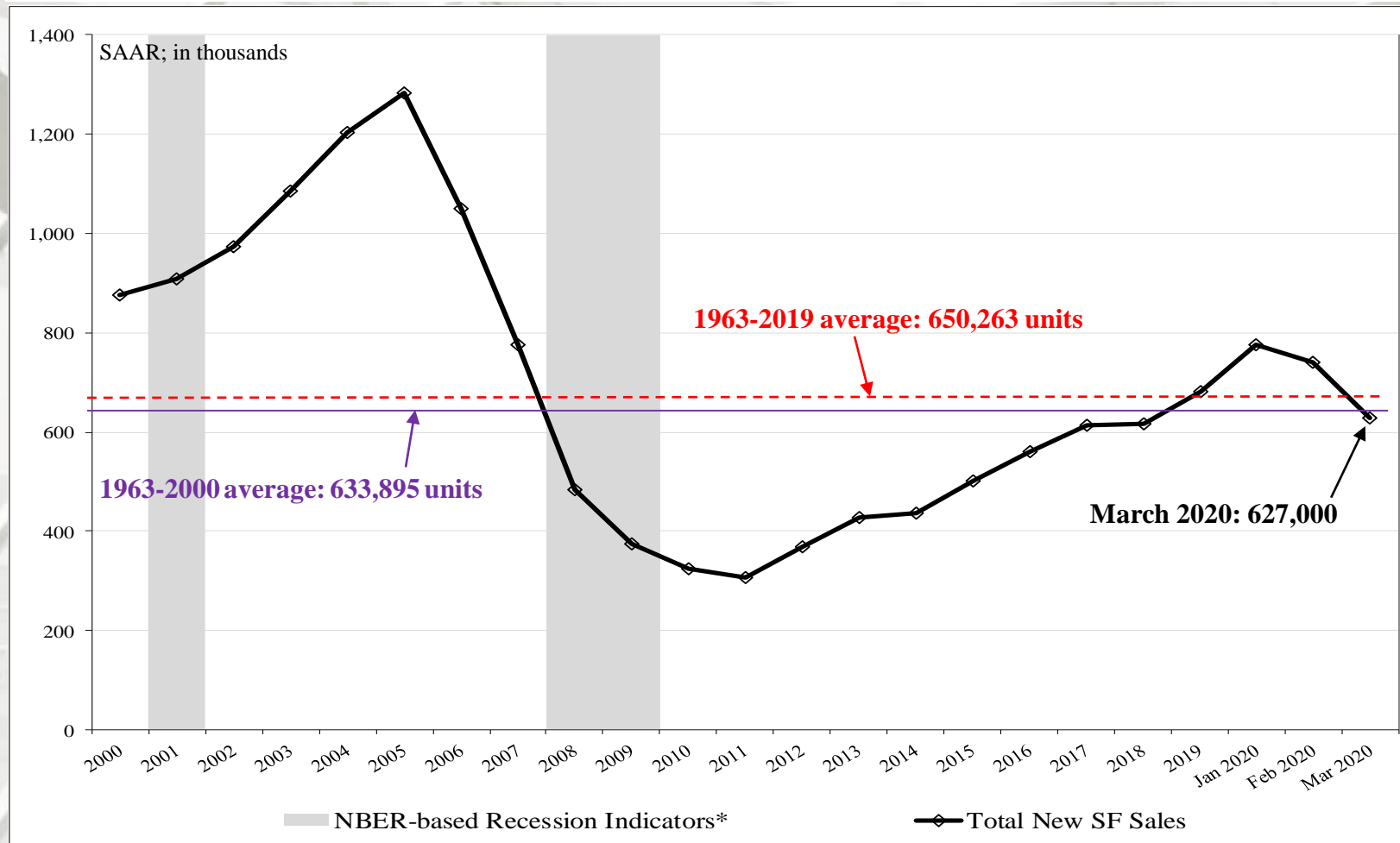
	New SF Sales*	Median Price	Mean Price	Month's Supply
March	627,000	321,400	375,300	6.4
February	741,000	330,100	387,200	5.2
2019	693,000	310,600	372,700	5.8
M/M change	-15.4%	-2.6%	-3.1%	23.1%
Y/Y change	-9.5%	3.5%	0.7%	10.3%

* All new sales data are presented at a seasonally adjusted annual rate (SAAR)¹ and housing prices are adjusted at irregular intervals².

New SF sales were less than the consensus forecast³ of 643 m (range: 570 m to 700 m). The past three month's new SF sales data also were revised:

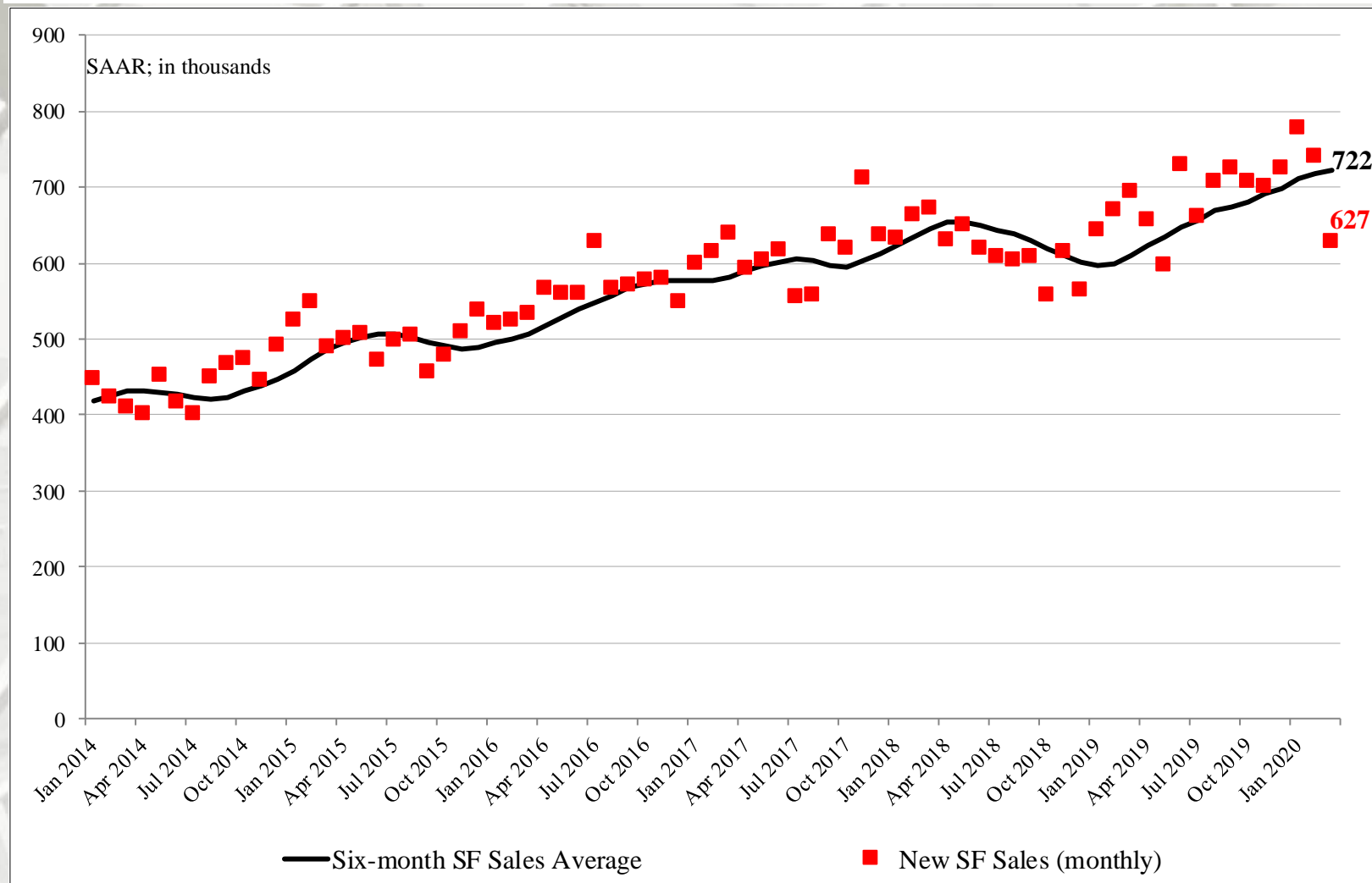
December initial:	694 m revised to 723 m;
January initial:	764 m revised to 777 m;
February initial:	765 m revised to 741 m.

New SF House Sales 1/7



* NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New SF Housing Sales: Six-month average & monthly



New SF House Sales by Region and Price Category

	NE	MW	S	W			
March	24,000	79,000	385,000	139,000			
February	41,000	86,000	388,000	226,000			
2019	25,000	87,000	380,000	201,000			
M/M change	-41.5%	-8.1%	-0.8%	-38.5%			
Y/Y change	-4.0%	-9.2%	1.3%	-30.8%			
	\$150 - ≤ \$150m	\$200 - \$199.9m 299.9m	\$300 - \$399.9m	\$400 - \$499.9m	\$500 - \$749.9m	≥ \$750m	
March ^{1,2,3,4}	1,000	6,000	22,000	15,000	9,000	6,000	3,000
February	1,000	6,000	19,000	18,000	10,000	9,000	3,000
2019	2,000	6,000	23,000	16,000	11,000	8,000	3,000
M/M change	0.0%	0.0%	15.8%	-16.7%	-10.0%	-33.3%	0.0%
Y/Y change	-50.0%	0.0%	-4.3%	-6.3%	-18.2%	-25.0%	0.0%
New SF sales: %	1.6%	9.7%	35.5%	24.2%	14.5%	9.7%	4.8%

NE = Northeast; MW = Midwest; S = South; W = West

¹ All data are SAAR

² Houses for which sales price were not reported have been distributed proportionally to those for which sales price was reported;

³ Detail March not add to total because of rounding.

⁴ Housing prices are adjusted at irregular intervals.

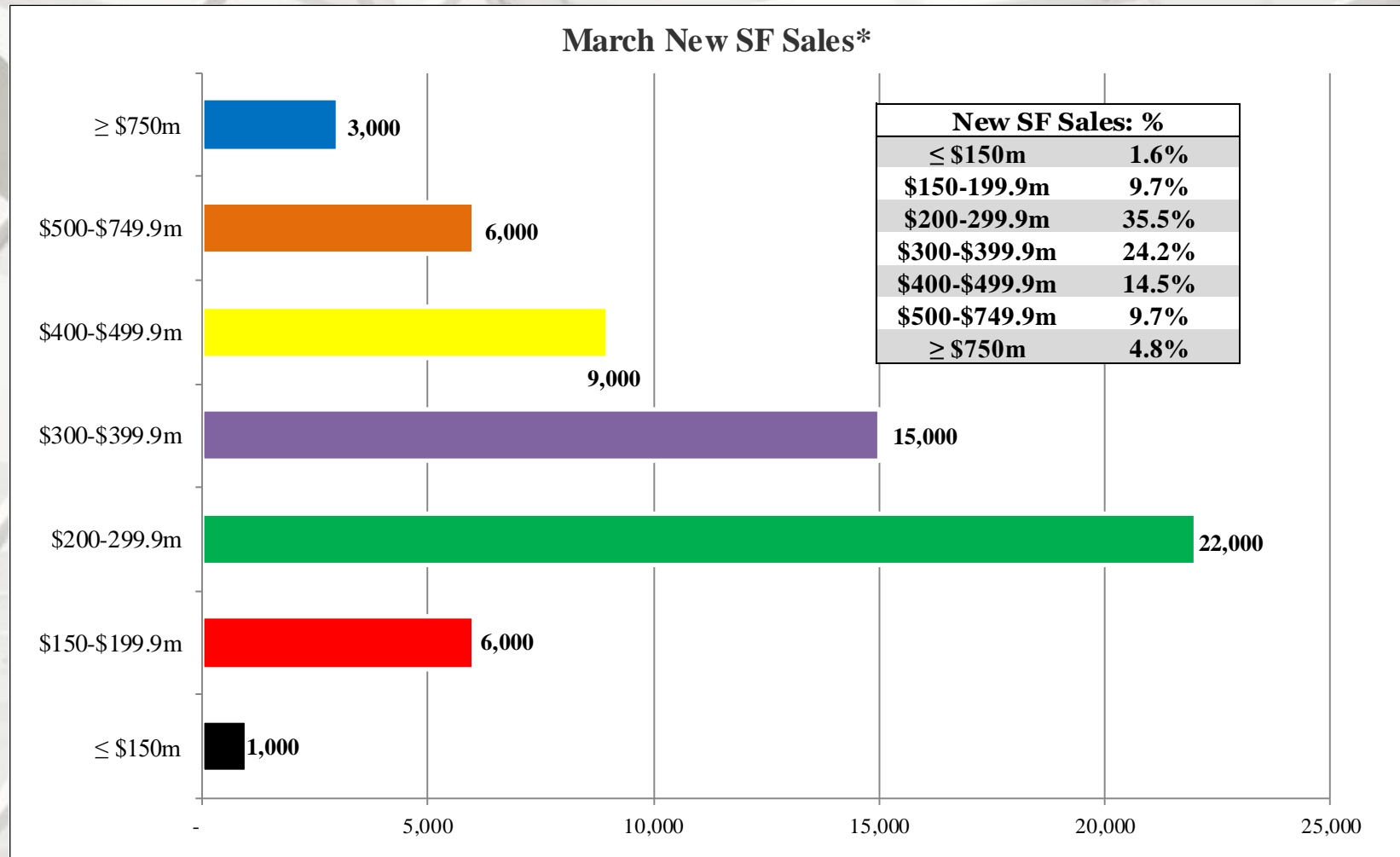
⁵ Z = Less than 500 units or less than 0.5 percent

Sources: ^{1,2,3} <https://www.census.gov/construction/nrs/index.html>; 4/23/20;

⁴ https://www.census.gov/construction/cpi/pdf/descpi_sold.pdf

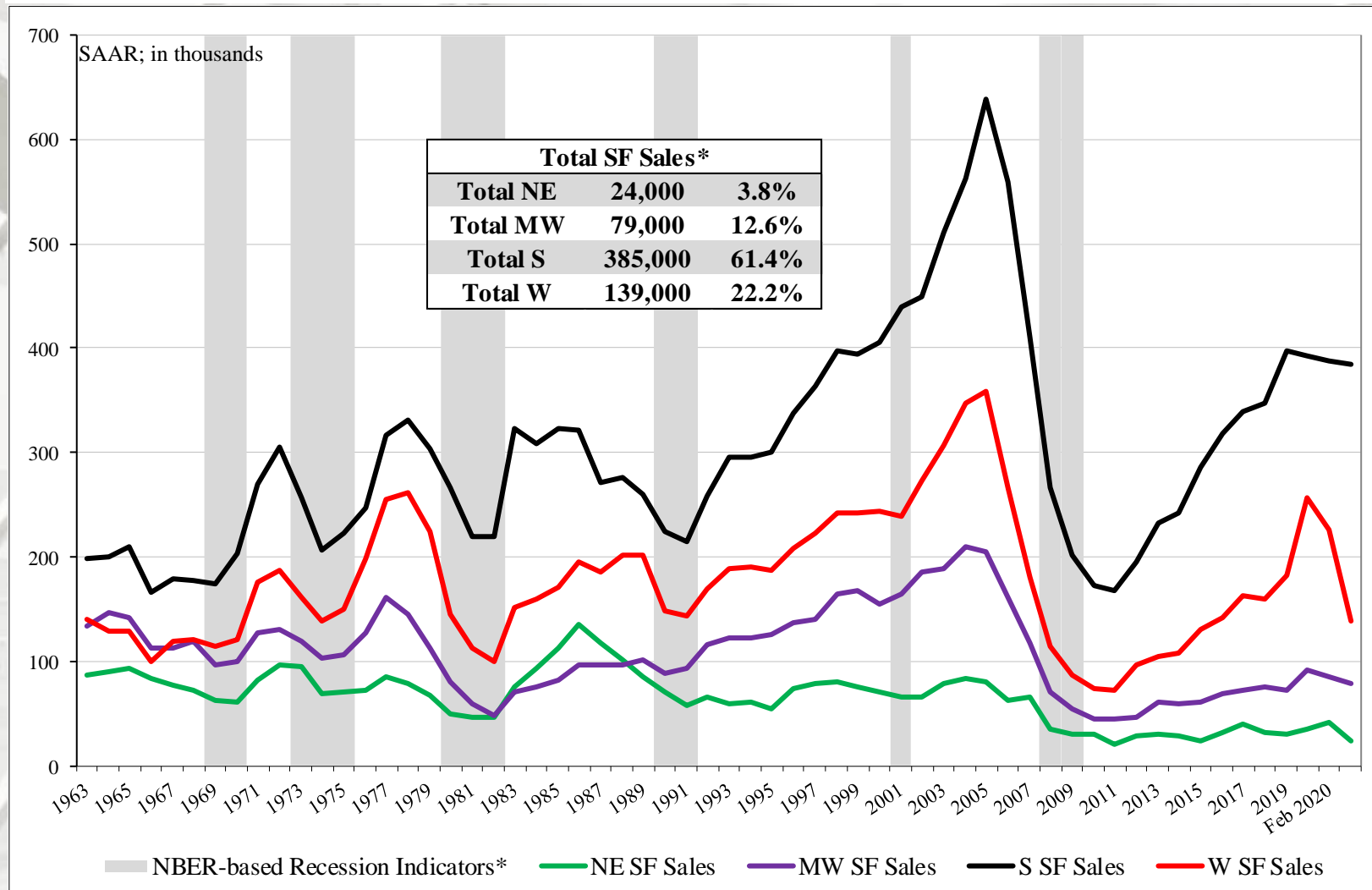
[Return TOC](#)

New SF House Sales 2/7



- Total new sales by price category and percent.

New SF House Sales by Region

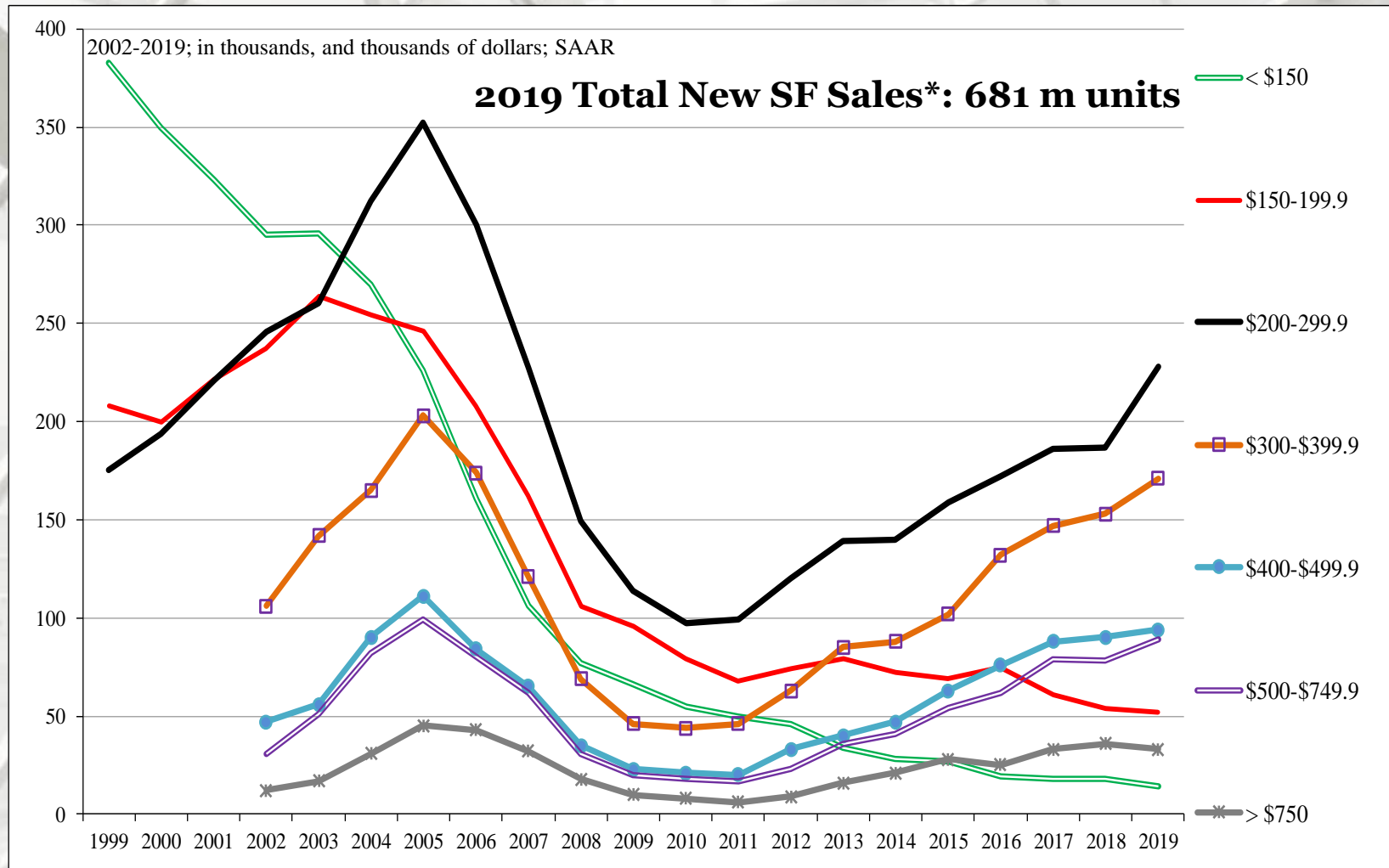


NE = Northeast; MW = Midwest; S = South; W = West

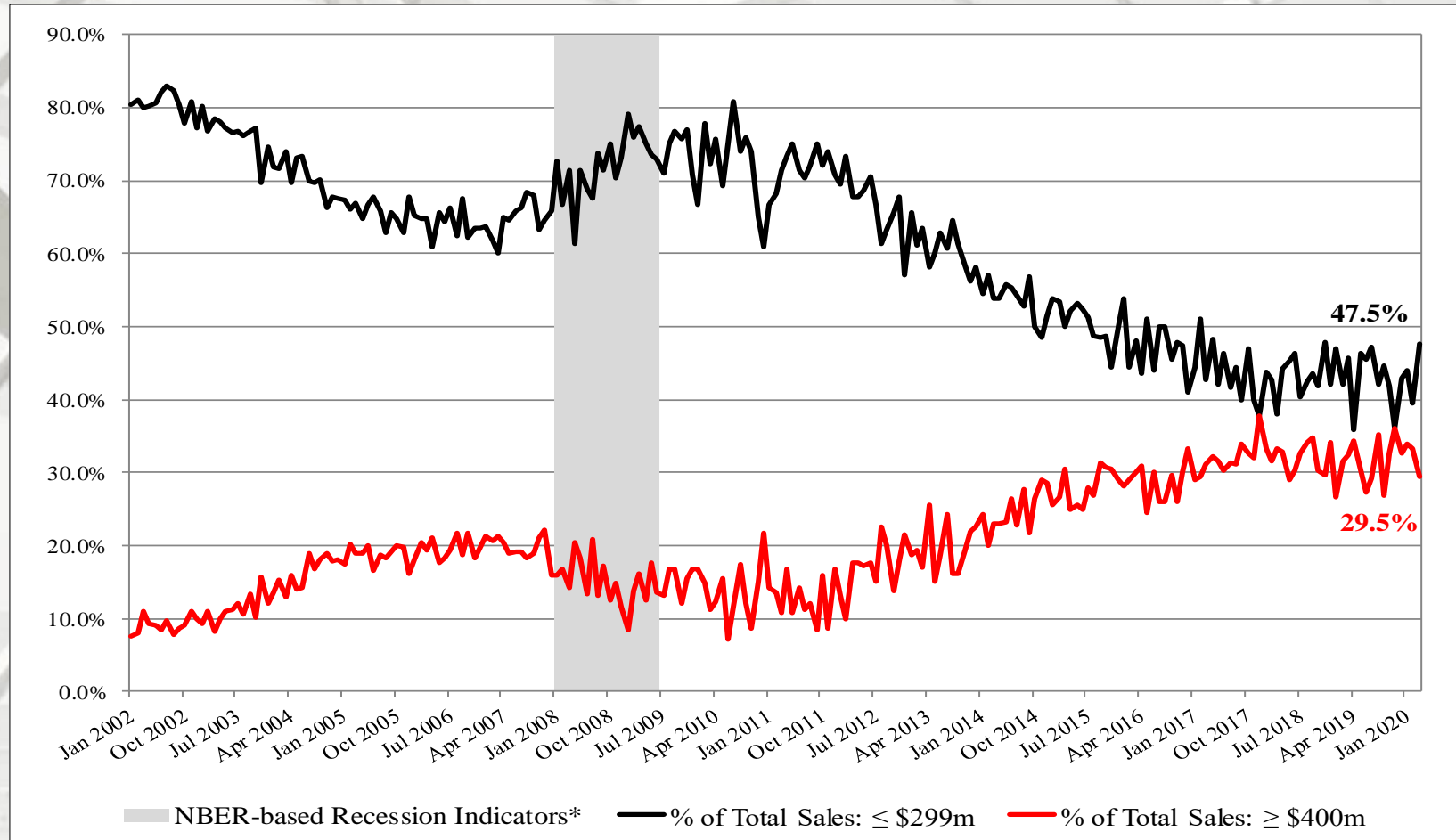
* Percentage of total new sales.

* NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New SF House Sales by Price Category



New SF House Sales 3/7

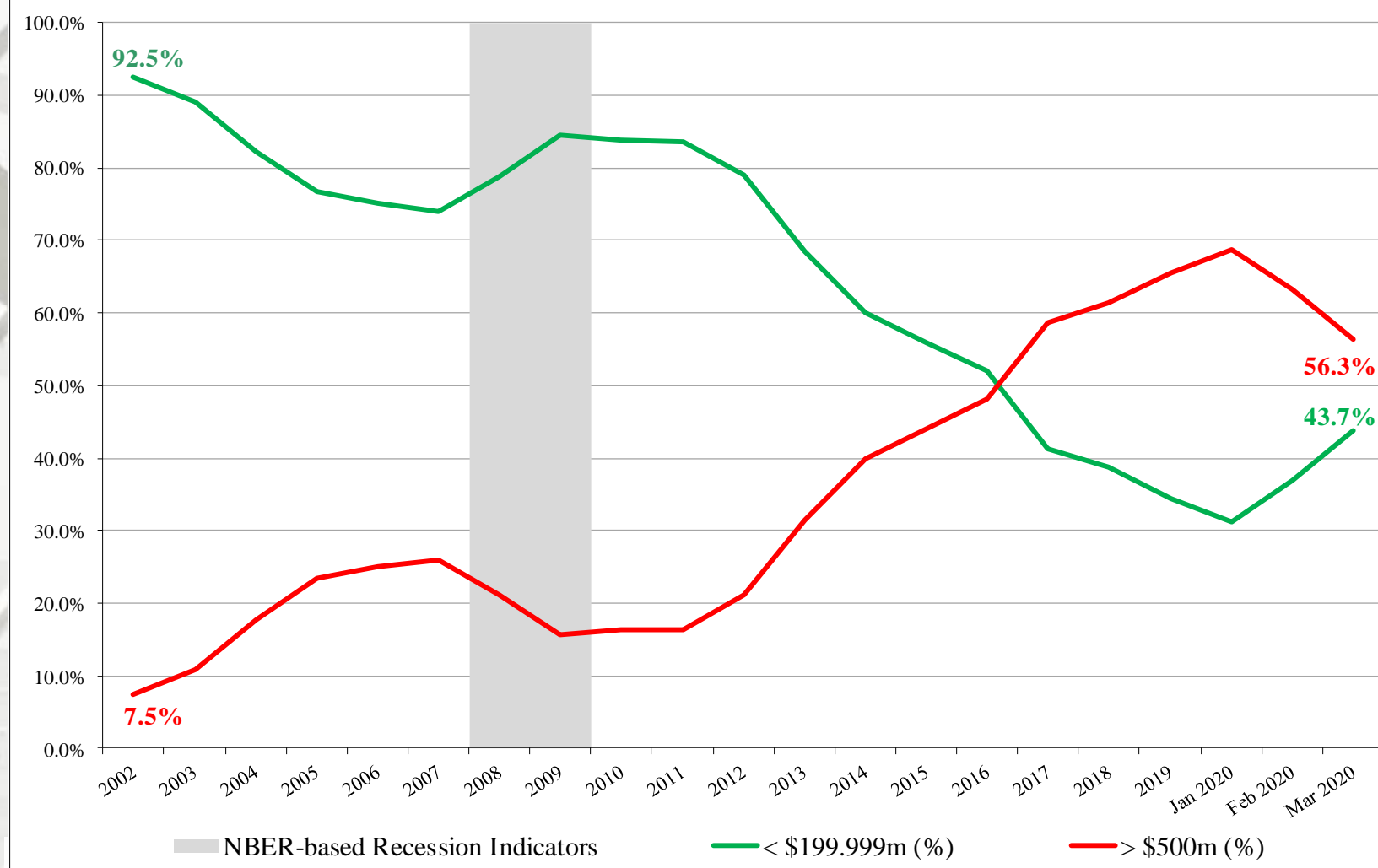


* NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New SF Sales: ≤ \$200m and ≥ \$400m: 2002 – March 2020

The sales share of \$400 thousand plus SF houses is presented above^{1,2}. Since the beginning of 2012, the upper priced houses have and are garnering a greater percentage of sales. A decreasing spread indicates that more high-end luxury homes are being sold. Several reasons are offered by industry analysts; 1) builders can realize a profit on higher priced houses; 2) historically low interest rates have indirectly resulted in increasing house prices; and 3) purchasers of upper end houses fared better financially coming out of the Great Recession.

New SF House Sales 4/7



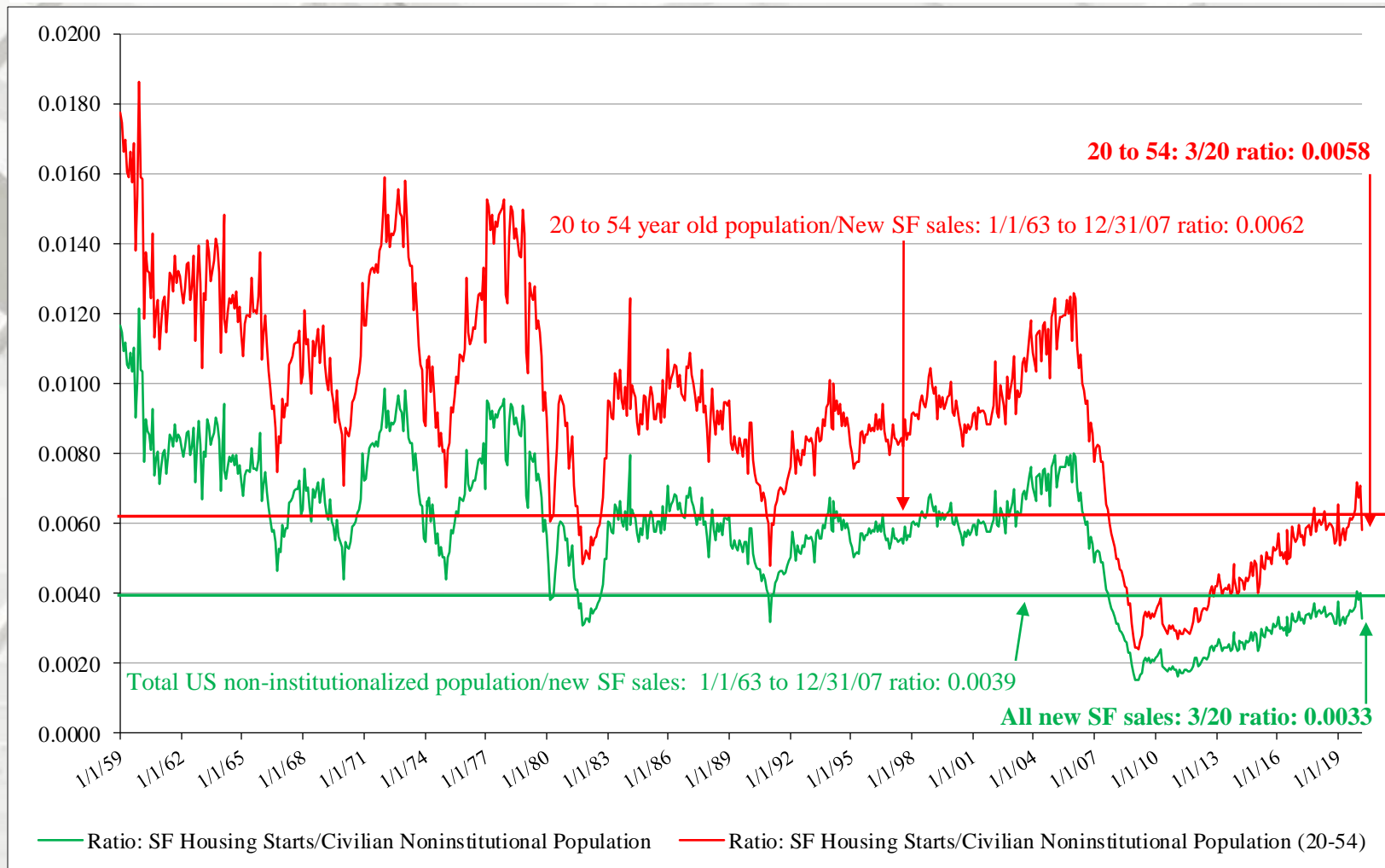
New SF Sales: ≤ \$ 200m and ≥ \$500m: 2002 to March 2020

The number of ≤ \$200 thousand SF houses has declined dramatically since 2002^{1,2}. Subsequently, from 2012 onward, the ≥ \$500 thousand class has soared (on a percentage basis) in contrast to the ≤ \$200m class. One of the most oft mentioned reasons for this occurrence is builder net margins.

Note: Sales values are not adjusted for inflation.

NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

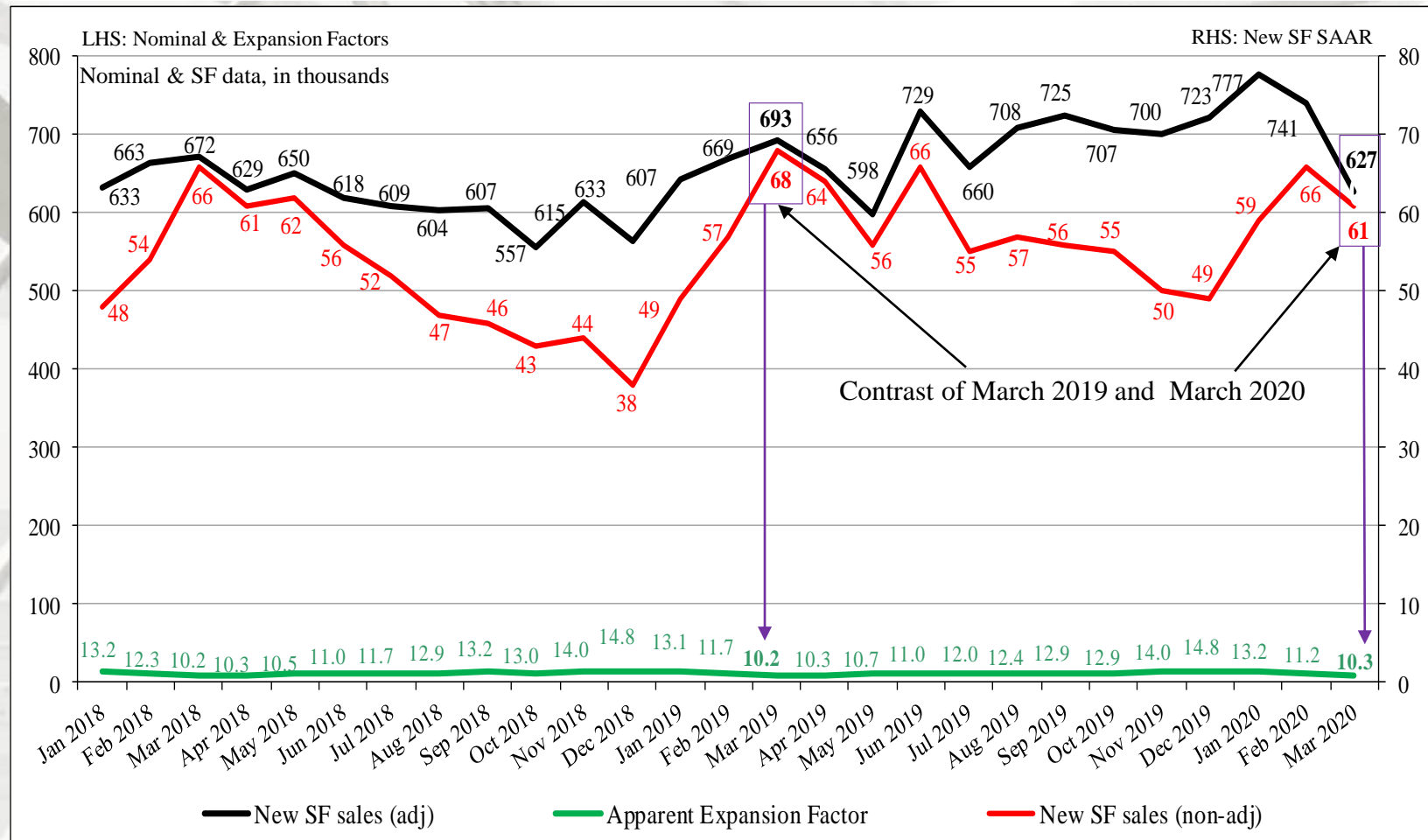
New SF House Sales 5/7



New SF sales adjusted for the US population

From March 1963 to March 2007, the long-term ratio of new house sales to the total US non-institutionalized population was 0.0039; in March 2020 it was 0.0024 – a decrease from February (0.0029). The non-institutionalized population, aged 20 to 54 long-term ratio is 0.0062; in March 2020 it was 0.0043 – also a decrease from February (0.0050). All are non-adjusted data. From a population viewpoint, construction is less than what is necessary for changes in the population (i.e., under-building).

Nominal vs. SAAR New SF House Sales



Nominal and Adjusted New SF Monthly Sales

Presented above is nominal (non-adjusted) new SF sales data contrasted against SAAR data.

The apparent expansion factor "...is the ratio of the unadjusted number of houses sold in the US to the seasonally adjusted number of houses sold in the US (i.e., to the sum of the seasonally adjusted values for the four regions)." – U.S. DOC-Construction

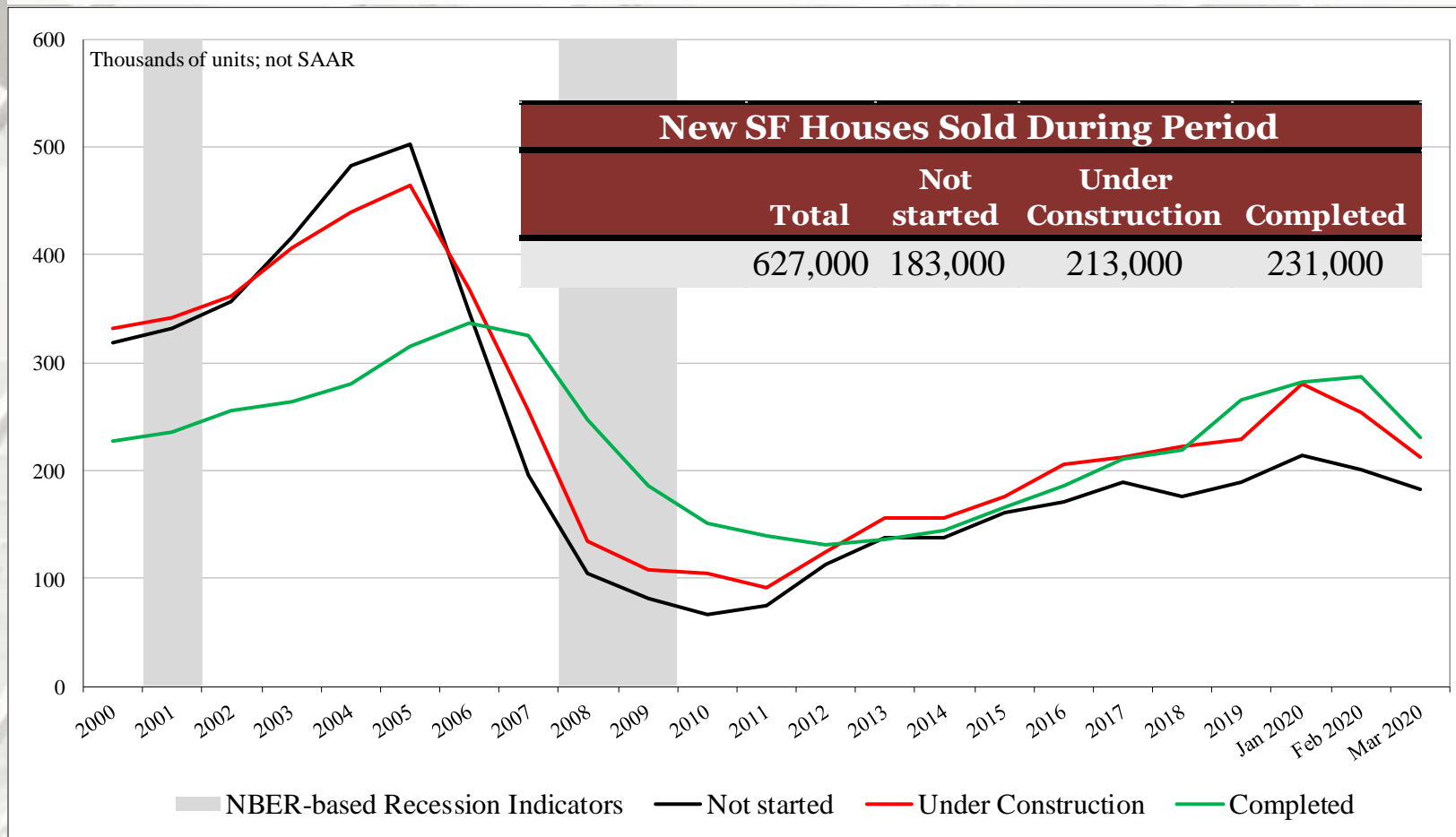
New SF House Sales 6/7

New SF Houses Sold During Period

	Total	Not started	Under Construction	Completed
March	627,000	183,000	213,000	231,000
February	741,000	201,000	253,000	287,000
2019	693,000	169,000	247,000	277,000
M/M change	-15.4%	-9.0%	-15.8%	-19.5%
Y/Y change	-9.5%	8.3%	-13.8%	-16.6%
Total percentage		29.2%	34.0%	36.8%

Not SAAR

New SF House Sales: Sold During Period



Not SAAR

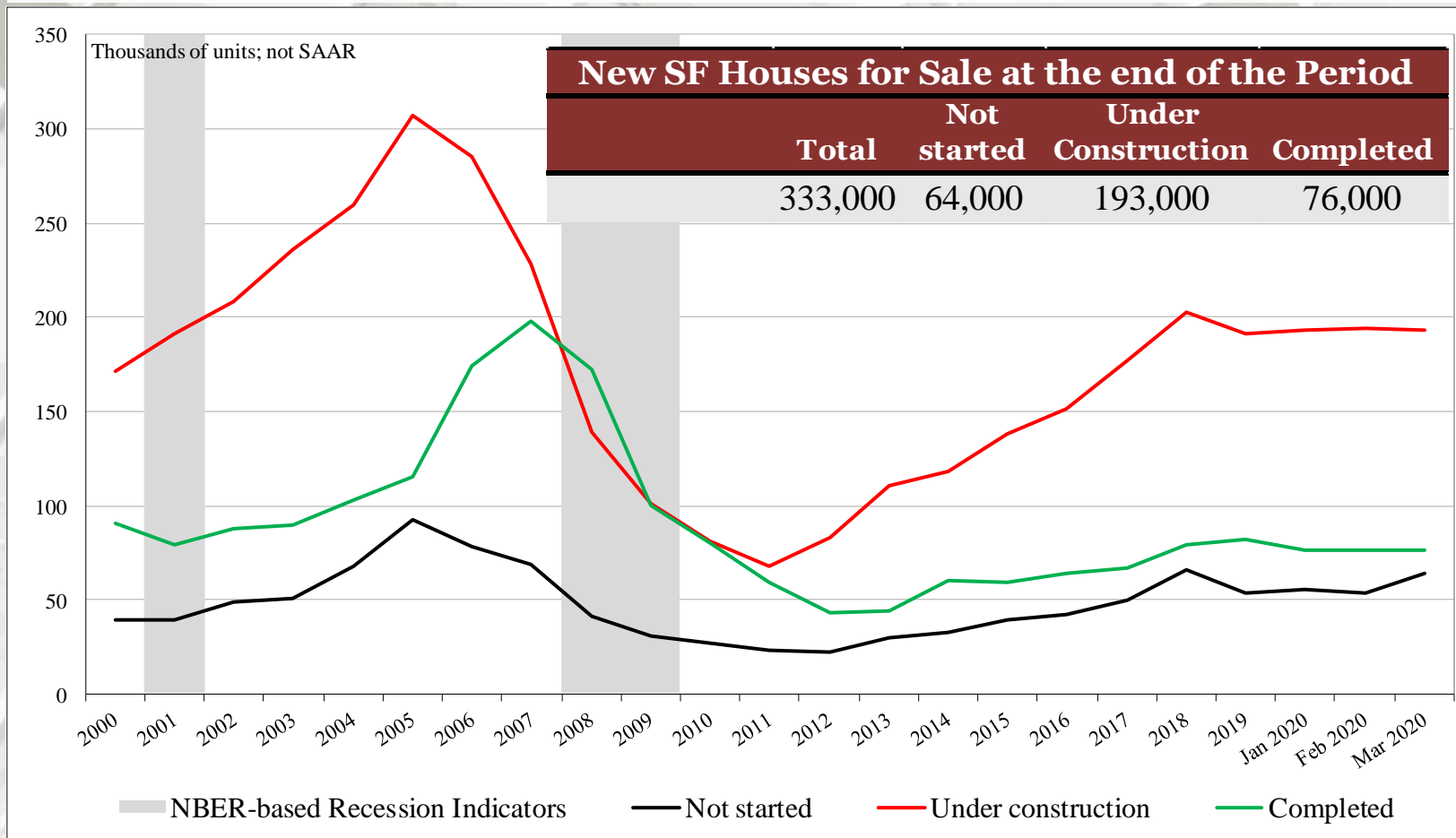
* NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New SF Houses for Sale at End of Period

New SF Houses for Sale at the end of the Period				
	Total	Not started	Under Construction	Completed
March	333,000	64,000	193,000	76,000
February	324,000	54,000	194,000	76,000
2019	337,000	57,000	203,000	77,000
M/M change	2.8%	18.5%	-0.5%	0.0%
Y/Y change	-1.2%	12.3%	-4.9%	-1.3%
Total percentage		19.2%	58.0%	22.8%

Not SAAR

New SF House Sales: For Sale at End of Period



Not SAAR

NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

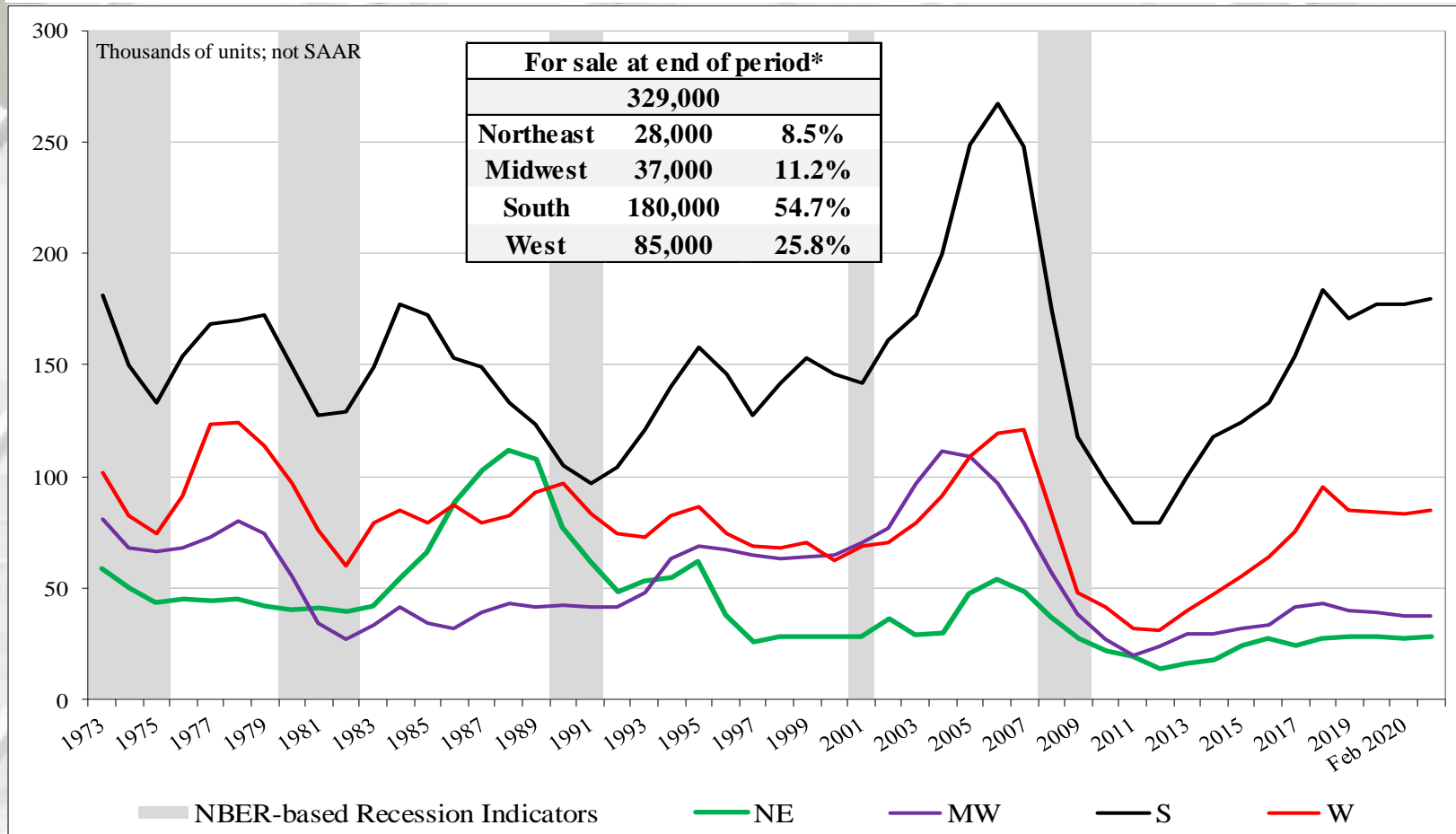
New SF House Sales 7/7

New SF Houses for Sale at the end of the Period by Region*

	Total	NE	MW	S	W
March	329,000	28,000	37,000	180,000	85,000
February	324,000	27,000	37,000	177,000	83,000
2019	331,000	28,000	38,000	181,000	85,000
M/M change	1.5%	3.7%	0.0%	1.7%	2.4%
Y/Y change	-0.6%	0.0%	-2.6%	-0.6%	0.0%

* Not SAAR

New SF Houses for Sale at End of Period by Region



NE = Northeast; MW = Midwest; S = South; W = West

* Percentage of new SF sales.

NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

March 2019 Construction Spending

	Total Private Residential*	SF	MF	Improvement**
March	\$550,266	\$301,073	\$60,204	\$188,989
February	\$537,665	\$307,169	\$59,016	\$171,480
2019	\$505,931	\$268,532	\$62,992	\$174,407
M/M change	2.3%	-2.0%	2.0%	10.2%
Y/Y change	8.8%	12.1%	-4.4%	8.4%

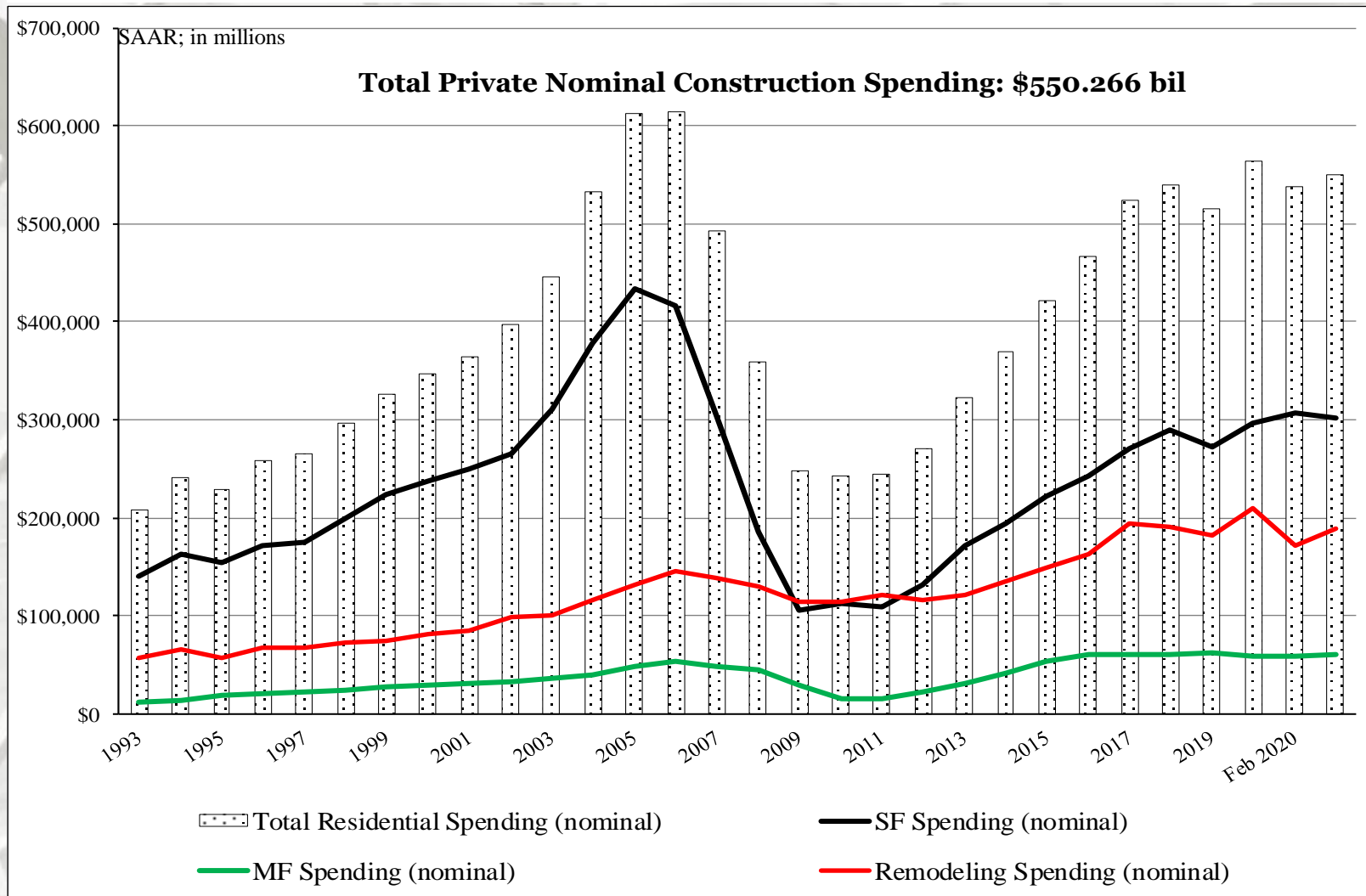
* billion.

** The US DOC does not report improvement spending directly, this is a monthly estimation:

((Total Private Spending – (SF spending + MF spending)).

All data are SAARs and reported in nominal US\$.

Total Construction Spending (nominal): 1993 – March 2020



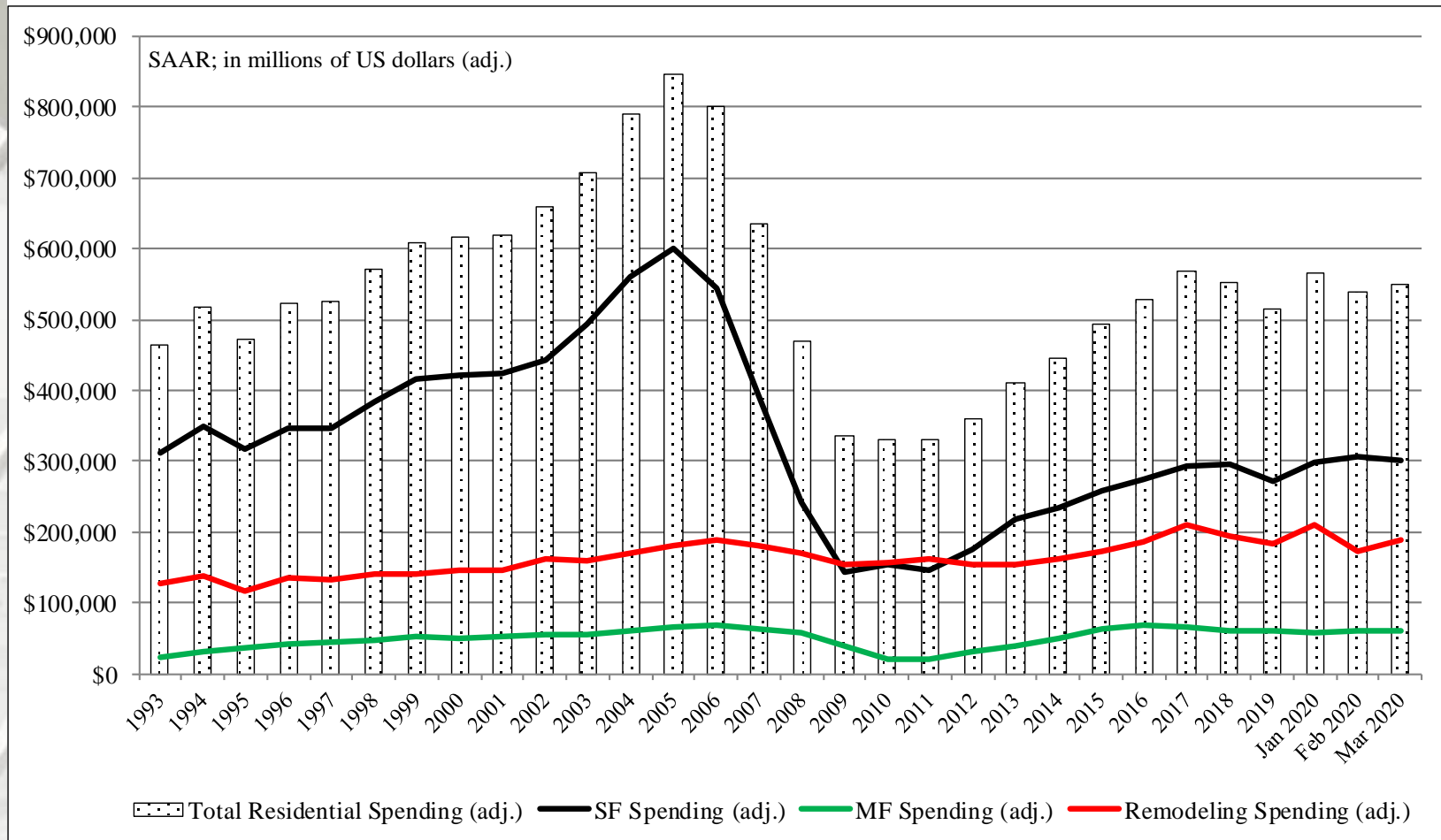
Reported in nominal US\$.

The US DOC does not report improvement spending directly, this is a monthly estimation for 2020.

Source: <http://www.census.gov/construction/c30/pdf/privsa.pdf>; 5/1/20

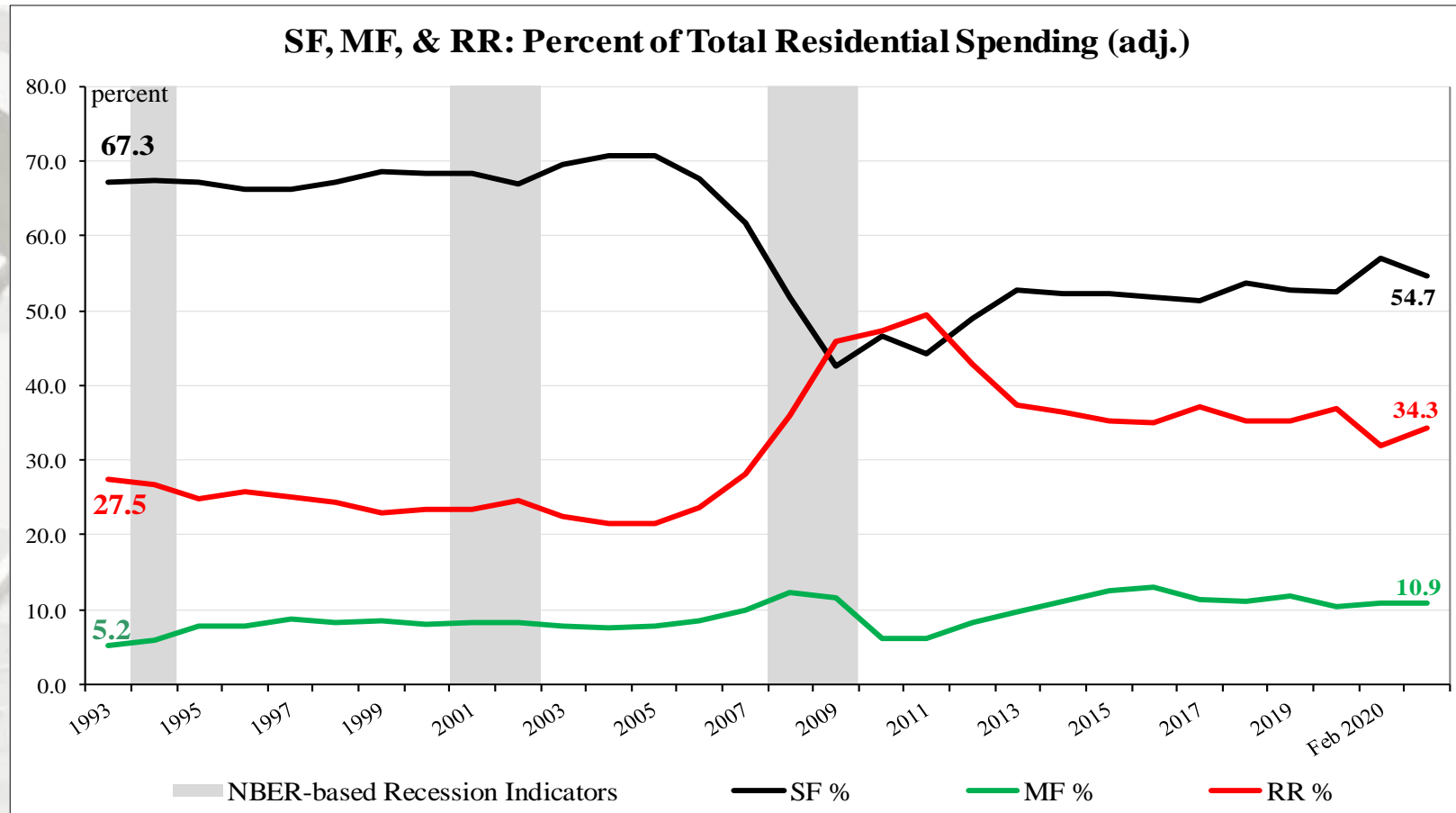
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Total Construction Spending (adjusted): 1993-March 2020



Reported in adjusted US\$: 1993 – 2018 (adjusted for inflation, BEA Table 1.1.9); January to March 2020 reported in nominal US\$.

Construction Spending Shares: 1993 to March 2020



Total Residential Spending: 1993 through 2006

SF spending average: 69.2%

MF spending average: 7.5 %

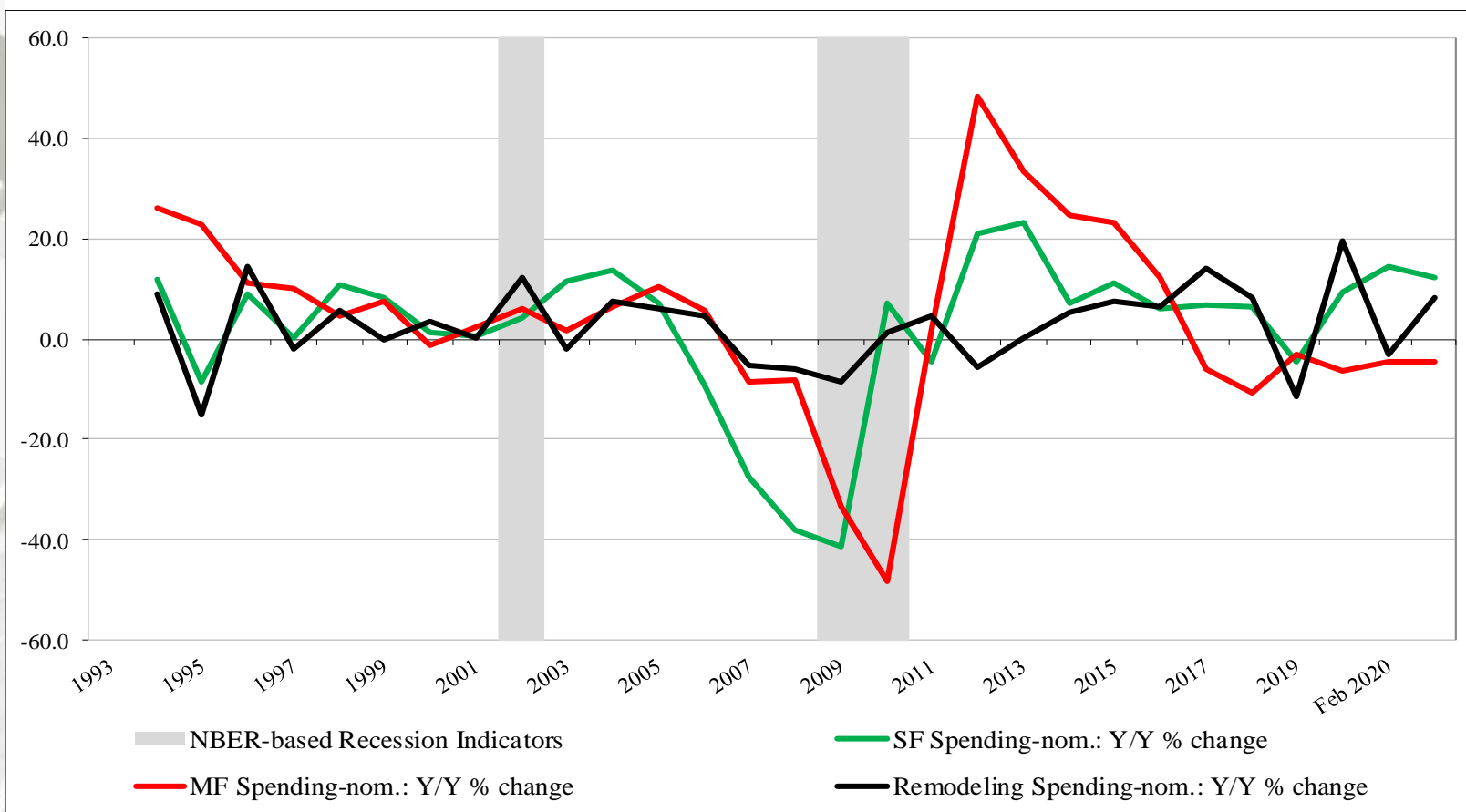
Residential remodeling (RR) spending average: 23.3 % (SAAR).

Note: 1993 to 2019 (adjusted for inflation, BEA Table 1.1.9); January-March 2020 reported in nominal US\$.

* NBER based Recession Indicator Bar s for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

Sources: * <https://fred.stlouisfed.org/series/USREC>, 2/3/20; <http://www.census.gov/construction/c30/pdf/privsa.pdf>; 5/1/20 and <http://www.bea.gov/iTable/iTable.cfm>; 3/2/20

Adjusted Construction Spending: Y/Y Percentage Change, 1993 to March 2020 1/2

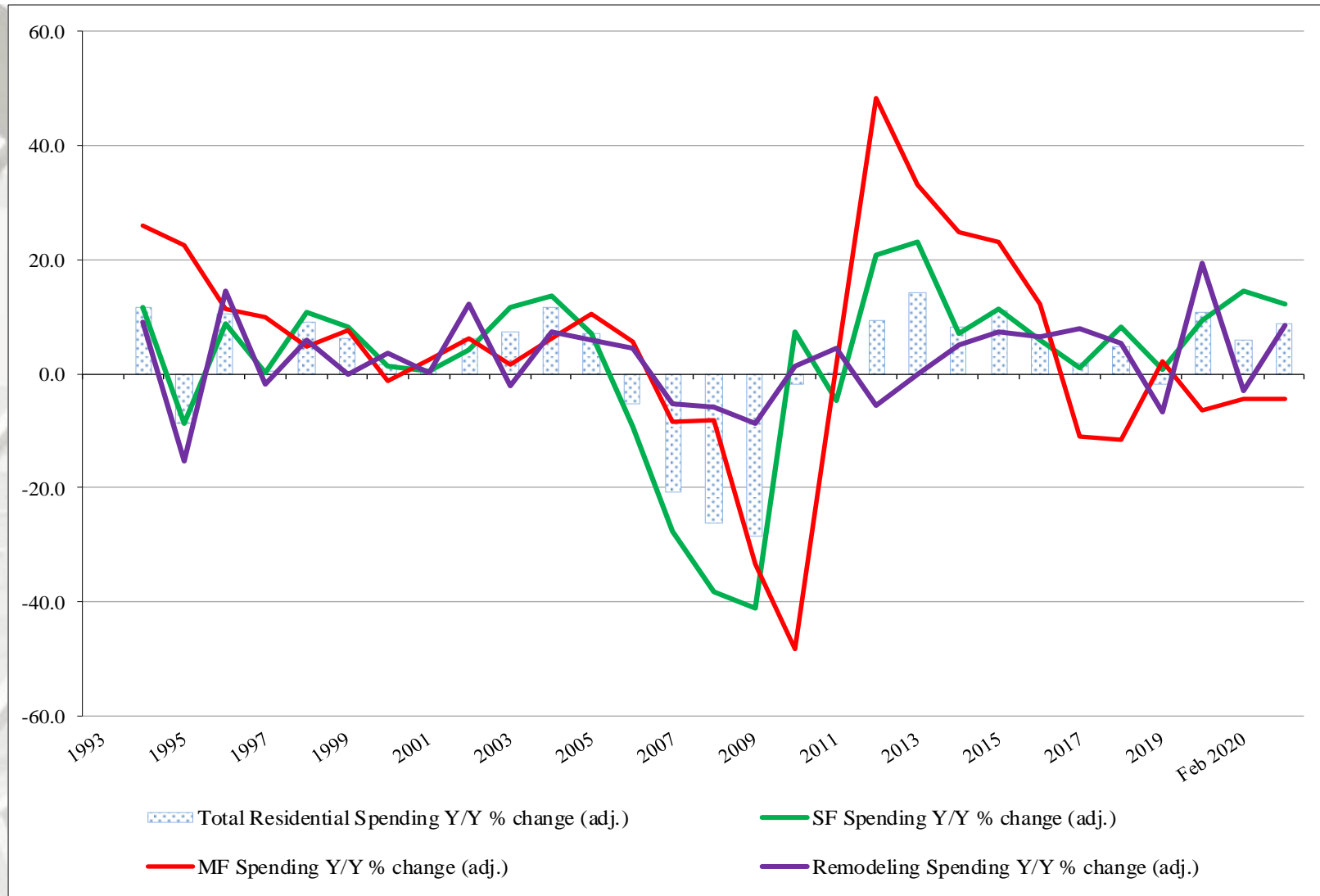


Nominal Residential Construction Spending: Y/Y percentage change, 1993 to March 2019

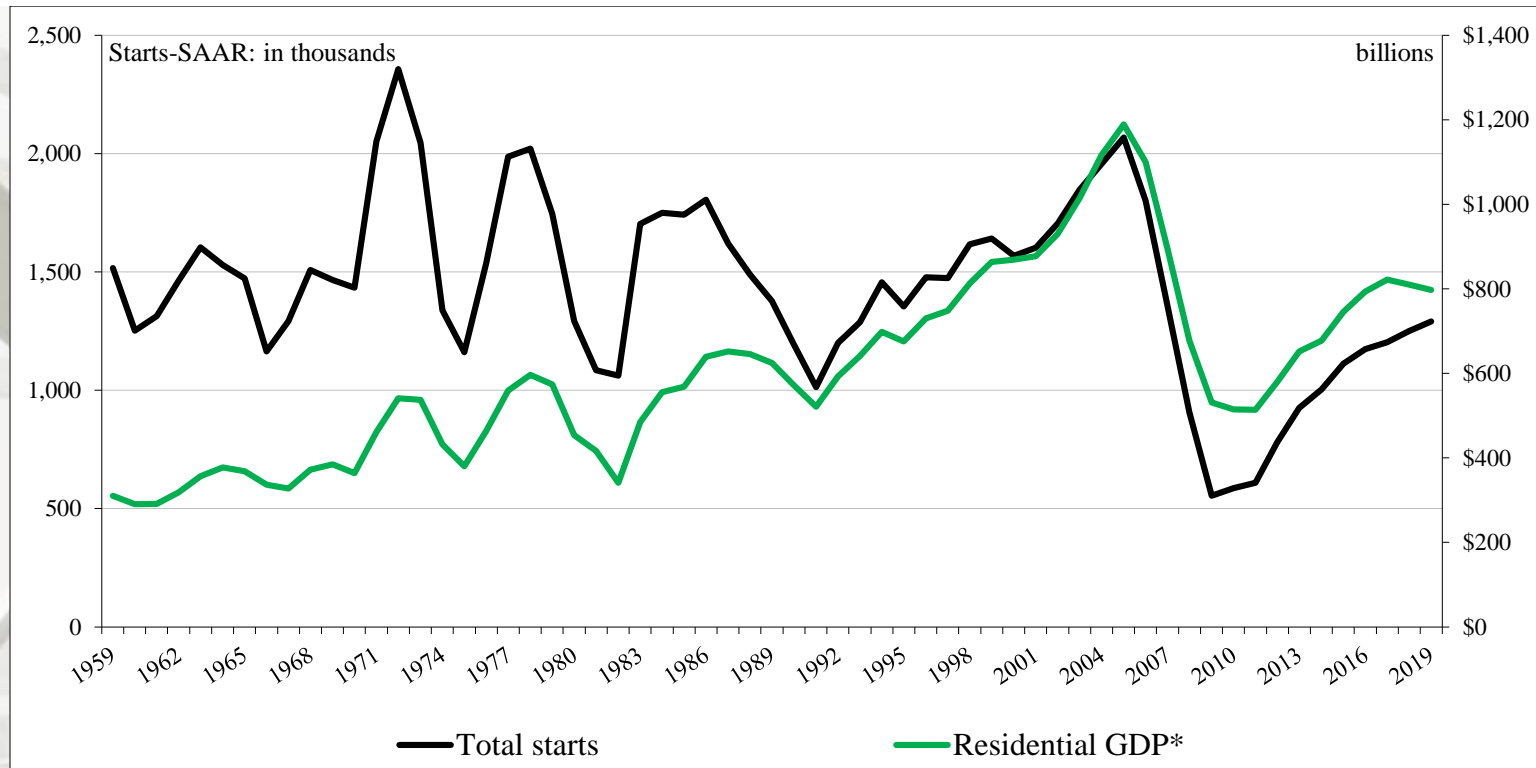
Presented above is the percentage change of inflation adjusted Y/Y construction spending. SF and RR expenditures were positive on a percentage basis, year-over-year (2020 data reported in nominal dollars).

* NBER based Recession Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

Adjusted Construction Spending: Y/Y Percentage Change, 1993 to March 2020 2/2



Total US Housing Starts & Residential Investment



Total US Housing Starts & Construction Spending

Given recent events, a topical question is the relationship between a decline in housing starts and residential construction spending.

Generally, if total starts decline from about 4 to 8%, the following year spending decreases by \$25.9 billion (on average; residential GDP* adjusted for inflation);

a decrease in starts of 13 to 18% yields a \$41.2 billion dollar decline;

a decline in starts of 25 to 26% results in a \$148.5 billion dollar decrease; and

a decrease in starts of 33 to 39% yields a \$163.1 billion dollar decline.

Notes: Table 1.1.5 National Income and Product Accounts, Table 1.1.9. Implicit Price Deflators for Gross Domestic Product, [Index numbers, 2012=100], both tables-Gross private domestic residential investment, and author's calculations.

Remodeling 1/9

Harvard Joint Center for Housing Studies

Early Impacts Of Pandemic Suggest An Abrupt About-face For The Remodeling Market

“Owner expenditures for home renovations and repairs are expected to decline at least through the first quarter of next year due to fallout from the COVID-19 pandemic, according to our latest **Leading Indicator of Remodeling Activity** (LIRA). Pre-pandemic, the LIRA pointed to a healthy rebound in home remodeling spending with annual growth of 3.9 percent by the first quarter of 2021, but the latest data incorporating both actual and forecasted impacts of the economic shutdown point to spending declines this year with further worsening into 2021.

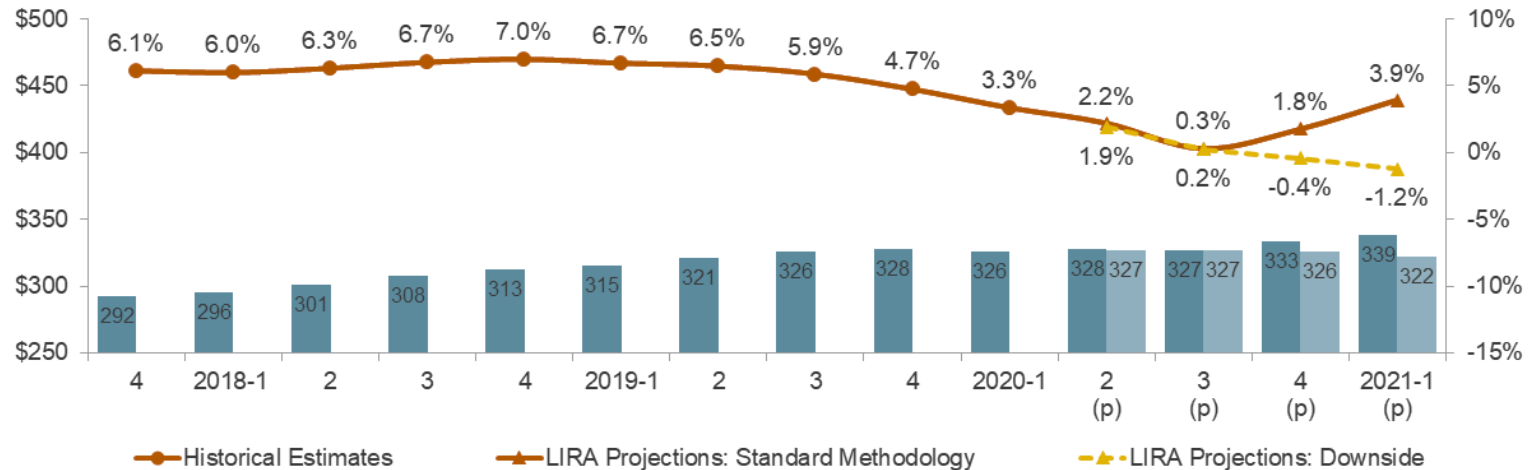
“While there is still considerable uncertainty surrounding the near- and longer-term impacts of the pandemic, the best available evidence suggests substantial downturns in key remodeling indicators of new home construction, home sales, and values of existing homes over the coming quarters. Homeowners who are concerned about losses of income, home equity, and other forms of wealth are anxious about making large investments in improving their homes in this economic environment.” – Chris Herbert, Managing Director of the Joint Center for Housing Studies

With the unprecedented changes to the US economy since mid-March, the Remodeling Futures Program is providing a downside range for the home remodeling outlook, which incorporates forecasts for several core model inputs — retail sales of building materials, home prices, and GDP. Quarterly spending for improvements and repairs to the owner-occupied housing stock is **projected to turn negative by the third quarter**, and annual expenditures are expected to fall to \$322 billion by early next year with potential for even more severe declines to follow. Beyond the start of next year, remodeling activity that would typically result from expanding homebuilding, sales of existing homes, and home prices mean the greatest downturn could come later in 2021 with recovery depending on what occurs in housing markets over the remainder of this year.” – Abbe Will, Research Associate & Associate Project Director, Remodeling Futures, JCHS

Remodeling 2/9

Leading Indicator of Remodeling Activity – First Quarter 2020

Homeowner Improvements & Repairs
Four-Quarter Moving Totals
Billions



Notes: The downside projections incorporate forecasted data for coincident model inputs: retail sales at building materials and supplies dealers, CoreLogic's Home Price Index, and GDP. Forecasted data provided by Moody's Analytics Forecasted, Alternative Scenario 3, April 2020. Historical estimates since 2017 are produced using the LIRA model until American Housing Survey benchmark data become available.

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Joint Center for Housing Studies of Harvard University JCHS

Remodeling 3/9

2020-Q1 LIRA Downside Projections Show Sharp Decline in Quarterly Spending by Early Next Year

Owner Improvements & Repairs	Four-Quarter Moving Total, Billions	Four-Quarter Moving Rate of Change	Quarterly Sum, Billions	Quarter-on-Quarter Rate of Change
2020-2	\$326.9	1.92%	\$92.9	1.17%
2020-3	\$326.6	0.24%	\$96.7	-0.33%
2020-4	\$326.2	-0.40%	\$76.7	-0.44%
2021-1	\$321.9	-1.22%	\$55.6	-7.29%

- The Leading Indicator of Remodeling Activity, by design, smooths cyclical volatility.
- The calculation of a year-over-year rate of change incorporates eight quarters of home improvement and repair spending, and for this reason a sudden change in estimated spending will not be immediately or fully reflected in the annual rate of change projections produced by the LIRA models.
- The quarterly spending estimates derived from the LIRA are not routinely published, but especially in the case of sudden shifts in activity, they may provide more nuanced insight of current market conditions.

Notes: The downside projection incorporates forecasted data for coincident model inputs: retail sales at building materials and supplies dealers, CoreLogic's Home Price Index, and GDP. Forecasted data provided by Moody's Analytics Forecasted, Alternative Scenario 3, April 2020.

Remodeling 4/9

National Association of Home Builders (NAHB)

New Index for Remodeling Activity Debuts in Q1 2020

“The National Association of Home Builders’ (NAHB) redesigned the Remodeling Market Index (RMI) in the first quarter of 2020 in order to ease respondent burden and improve its ability to interpret and track industry trends. The first reading for this new RMI series was 48.

The RMI survey now asks remodelers to rate five components of the remodeling market as “good,” “fair” or “poor.” Each question is measured on a scale from 0 to 100, where an index number above 50 indicates a higher share view conditions as good than poor.

The Current Conditions Index is an average of three components: the current market for large remodeling projects, moderately-sized projects, and small projects. The Future Indicator Index is an average of two components: the current rate at which leads and inquiries are coming in and the current backlog of remodeling projects.

Current Conditions Index stood at 58, with large remodeling projects (\$50,000 or more) yielding a reading of 53, moderately-sized remodeling projects (at least \$20,000 but less than \$50,000) at 59, and small remodeling projects (under \$20,000) with a reading of 62.

Meanwhile, the Future Market Indicators Index stood at 39 in the first quarter of 2020, with the rate at which leads and inquiries coming in at 30 and the backlog of remodeling jobs at 47.

A separate index is created for the final question in the survey: How does the overall market for remodeling in the area where you operate compare to three months ago? This index is also measured on a scale of 0 to 100, where any reading over 50 indicates a higher share of remodelers report conditions as better than worse compared to the previous quarter.

This index stood at 24 in the first quarter of 2020. The low reading is directly related to the impact of the novel coronavirus, COVID-19. The onset of the virus has led to deteriorating economic conditions in the US and in the remodeling industry.” – Carmel Ford, Economist, NAHB

Remodeling 5/9

National Association of Home Builders (NAHB)

Virus Affecting Homeowners' Willingness to Remodel

“A recent NAHB survey shows the negative effect the coronavirus pandemic is having on the decision to remodel. Over 90 percent of remodelers in the survey reported a slowdown in both the **rate at which inquiries are coming in**, and in the **general willingness of homeowners to remodel at this time**.

This information was collected via a question added to the survey for NAHB's first quarter 2020 Remodeling Market Index (RMI). The RMI question listed eight possible impacts of the coronavirus and asked the professional remodelers in the panel if each has so far had a major, minor, or no adverse effect on their businesses. As indicated above, at the top of the list 96 percent of remodelers said the virus was hurting the **rate at which inquiries are coming in** and 93 percent said the virus was hurting the **general willingness of homeowners to remodel at this time**. A full 70 percent characterized the negative impact on inquiries as major rather than minor.

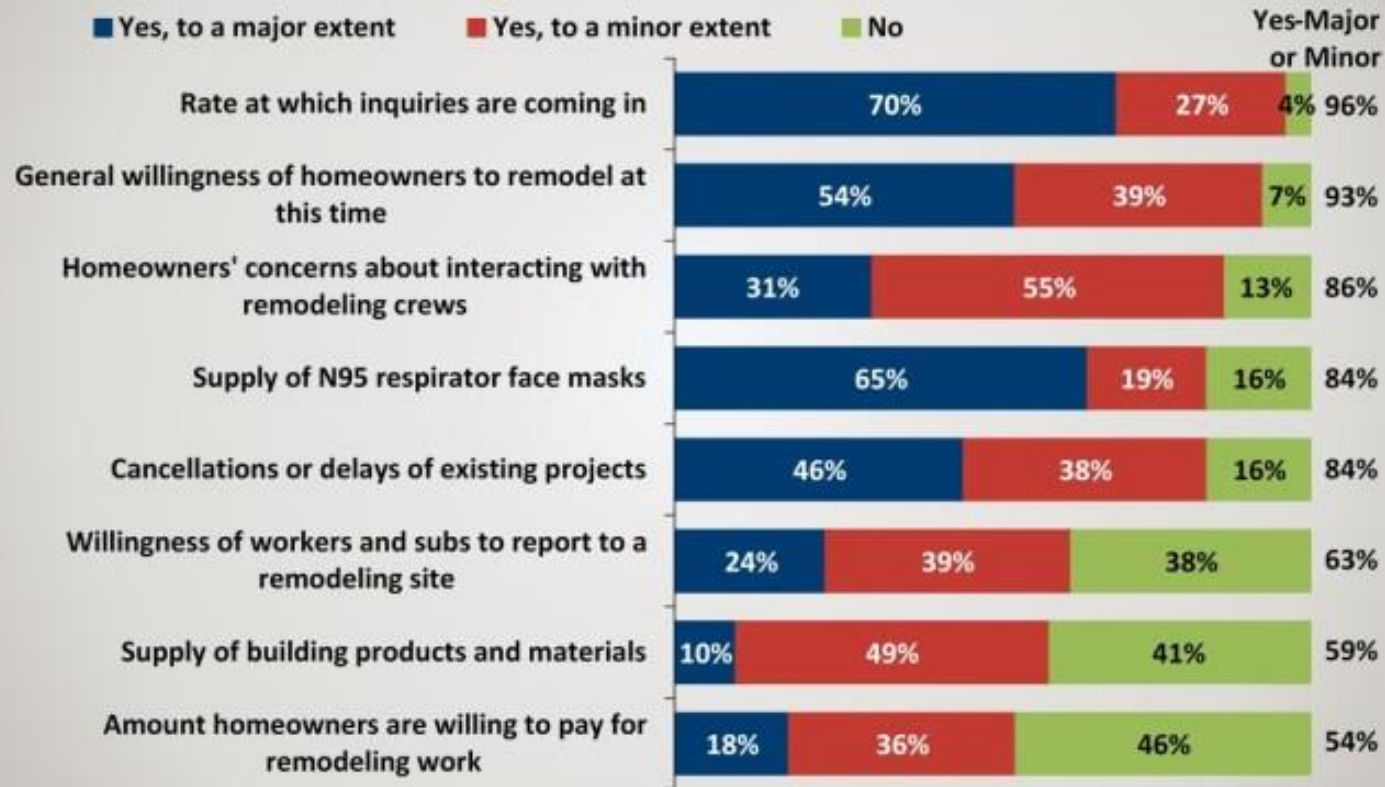
Other adverse impacts on the list have also become widespread. Over 80 percent of remodelers said the virus was having a noticeable, adverse impact on **homeowners' concerns about interacting with remodeling crews** (86 percent), **supply of n95 respirator face masks** (84 percent) and **cancellations or delays of existing projects** (also 84 percent). Although somewhat less widespread, **willingness of workers and subs to report to a remodeling site, supply of building products and materials**, and **amount homeowners are willing to pay for remodeling work** were still cited as significant negative effects of the pandemic by over half of the remodelers.

In some respects, the impact of the coronavirus on the remodeling market mirrors what we're seeing in the market for new homes. In both cases, the pandemic is having a number of significant negative impacts, but the strongest ones are the negative impacts on the behavior of potential customers.” – Paul Emrath, Vice President for Survey and Housing Policy Research, NAHB

Remodeling 6/9

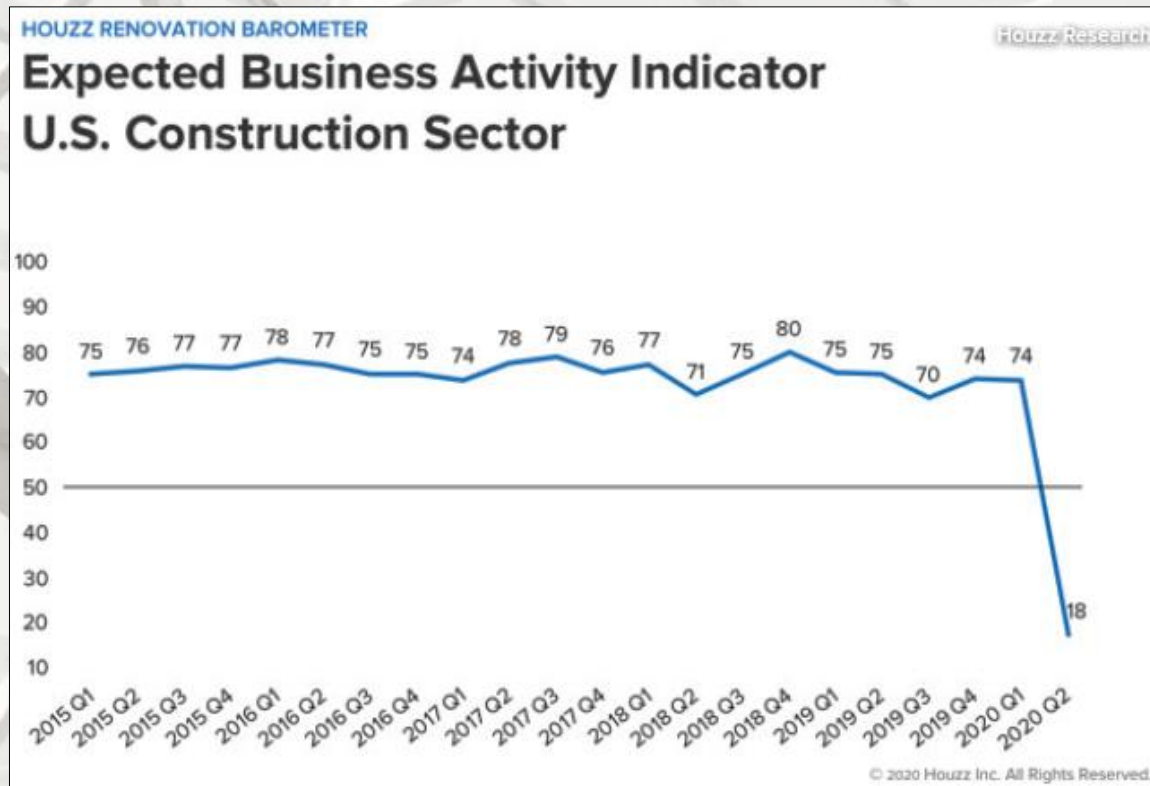
As of this date, has the coronavirus had a noticeable, adverse effect on any of the following aspects of your remodeling business?

(Percent of Respondents)



Source: Remodeling Market Index, First Quarter 2020, NAHB Economics & Housing Policy Group.

Remodeling 7/9



Houzz Research

2020Q2 Houzz Renovation Barometer - Construction Sector

“The Expected Business Activity Indicator related to project inquiries and new committed projects declined to 18 in Q2 (compared to 74 in Q1): This is a result of both expectations for project inquiries and expectations for new committed projects declining to 18 (down 60 points and 52 points relative to Q1, respectively). Among the two reporting business groups, expectations declined significantly for both build-only and design and build remodelers. Expectations of build-only remodelers declined to 14 (down 58 points in Q2 relative to Q1) and to 21 (down 54 points relative to Q1) among design and build remodelers in Q2. [See additional subsector and regional data \(PDF\).](#)” – Erin Carlyle, Houzz Research

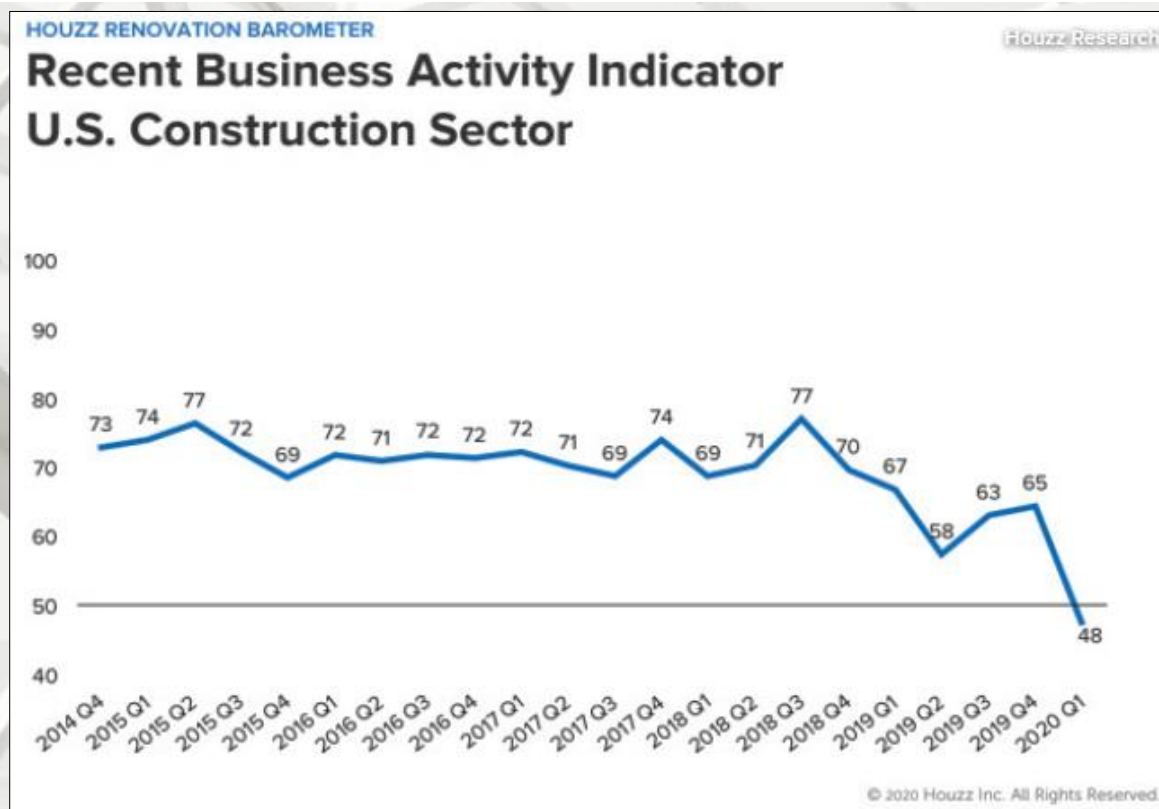
Remodeling 8/9



Houzz Research

“The Project Backlog Indicator remained steady at 5.4 weeks nationally at the start of Q2: The overall backlog for the construction sector is 1.1 weeks below year-over-year levels. Among the two reporting business groups, backlogs remained the same among build-only remodelers at 5.0 weeks and declined slightly among design and build remodelers to 5.8 weeks (down 0.1 weeks relative to Q1). Backlogs vary significantly from 3.5 weeks (West South Central division) to 6.4 weeks (Middle Atlantic division) across the nine Census divisions. [See additional subsector and regional data \(PDF\).](#)” – Erin Carlyle, Houzz Research

Remodeling 9/9



Houzz Research

“The Recent Business Activity Indicator related to project inquiries and new committed projects decreased to 48 in Q1 (compared to 65 in Q4): This follows project inquiry activity, which declined to 46 (down 21 points relative to Q4) in Q1 and a decrease in new committed projects to 50 (down 12 points relative to Q4). The overall recent activity indicator was driven by the two business groups, with build-only and design and build remodelers reporting a decrease in recent activity (down 22 points to 42 and down 11 points to 54 in Q1 relative to Q4, respectively). [See additional subsector and regional data \(PDF\).](#)” – Erin Carlyle, Houzz Research

Existing House Sales 1/3

National Association of Realtors

March 2019 sales: 5.270 thousand

	Existing Sales	Median Price	Mean Price	Month's Supply
March	5,270,000	\$280,600	\$316,000	3.4
February	5,760,000	\$270,400	\$305,800	3.0
2019	5,230,000	\$259,700	\$297,500	3.8
M/M change	-8.5%	3.8%	3.3%	13.3%
Y/Y change	0.8%	8.0%	6.2%	-10.5%

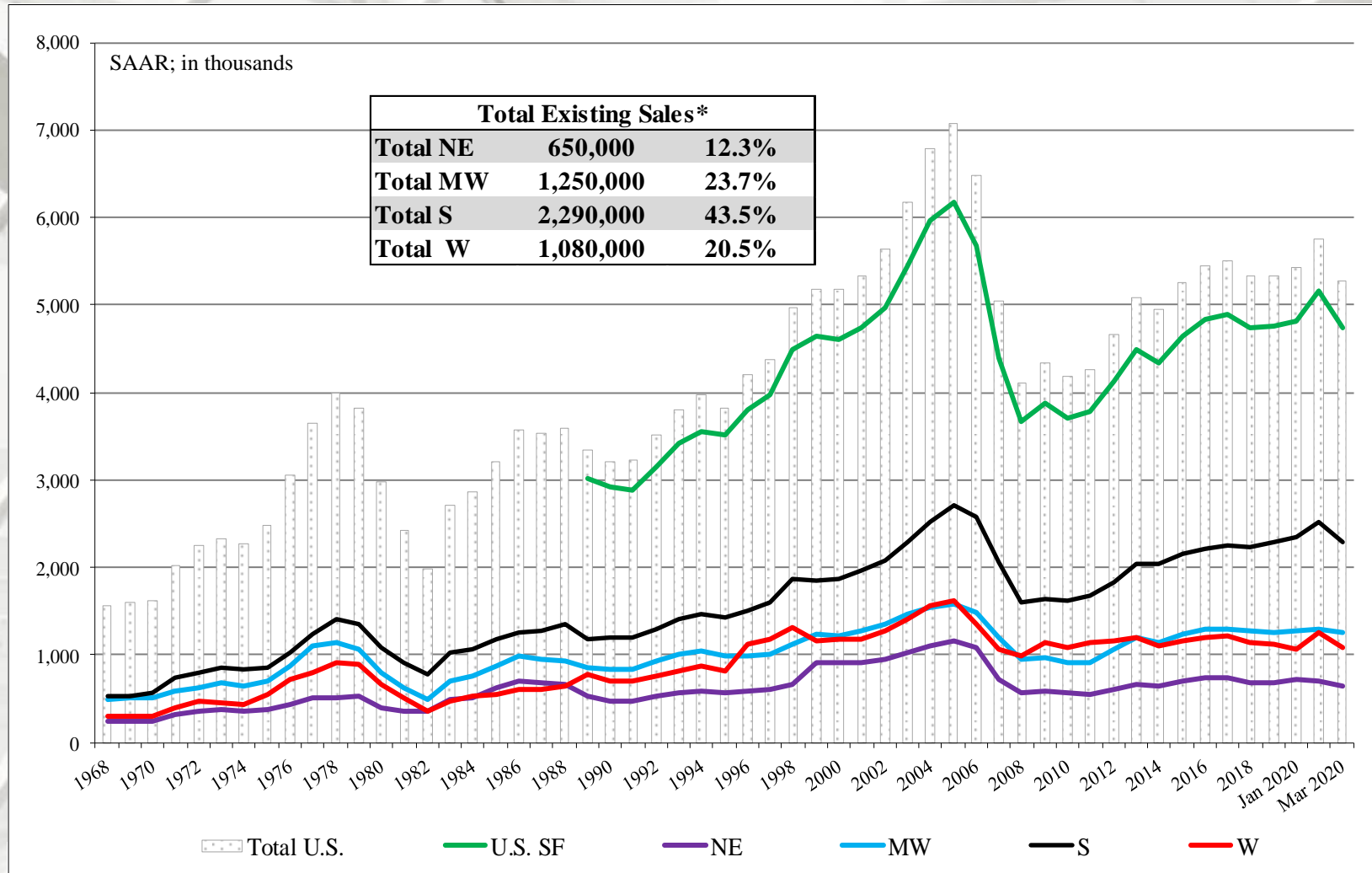
All sales data: SAAR

Existing House Sales 2/3

	Existing SF Sales	SF Median Price	SF Mean Price	
March	4,740,000	282,500	316,900	
February	5,160,000	272,800	307,000	
2019	4,680,000	261,500	298,400	
M/M change	-8.1%	3.8%	3.2%	
Y/Y change	1.3%	8.0%	6.2%	
	NE	MW	S	W
March	650,000	1,250,000	2,290,000	1,080,000
February	700,000	1,290,000	2,520,000	1,250,000
2019	670,000	1,200,000	2,270,000	1,090,000
M/M change	-7.1%	-3.1%	-9.1%	-13.6%
Y/Y change	-3.0%	4.2%	0.9%	-0.9%

All sales data: SAAR.

Existing House Sales 3/3



* Percentage of existing sales.

U.S. Housing Prices 1/4

Federal Housing Finance Agency

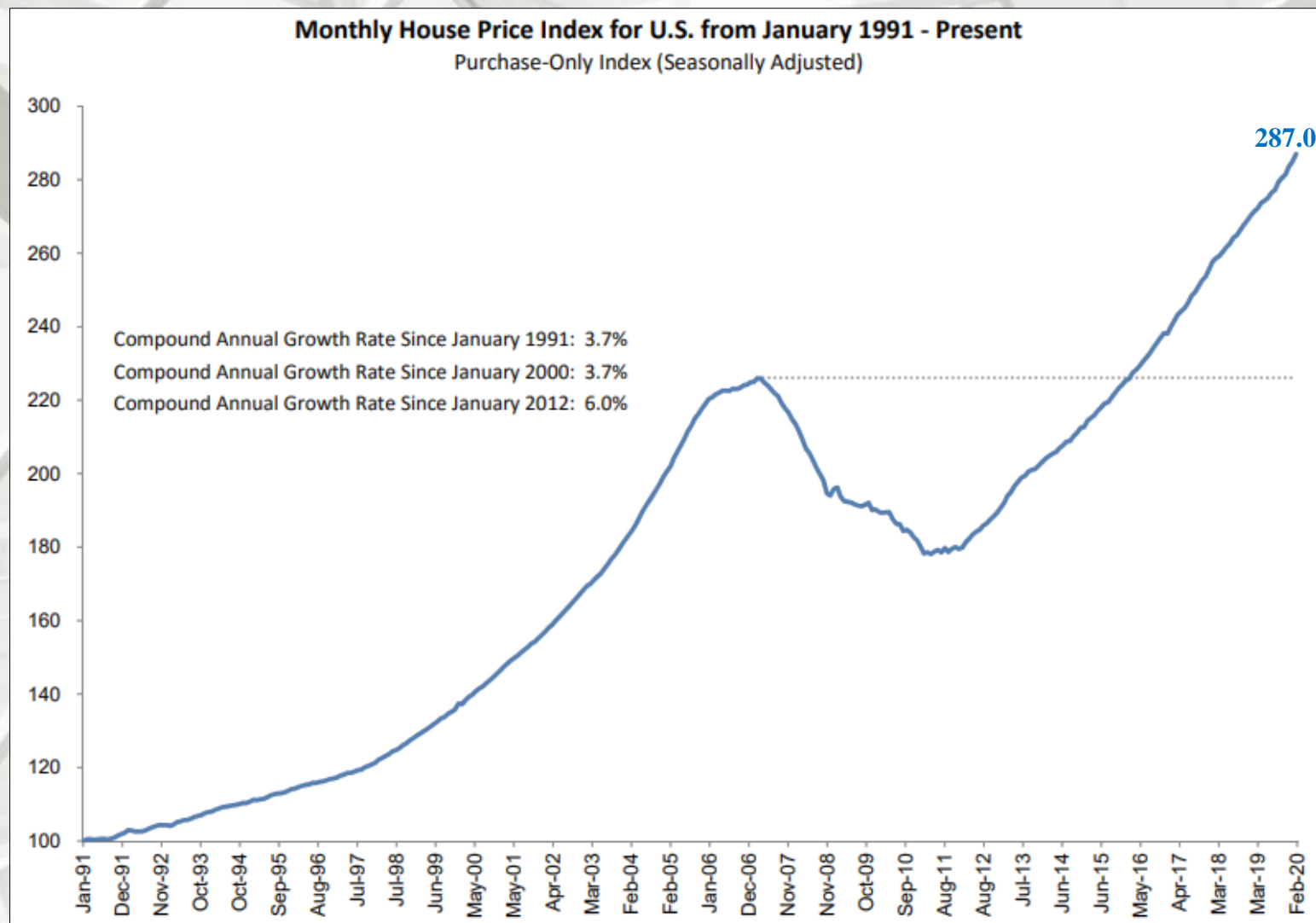
U.S. House Price Index Report – January 2020

“U.S. house prices rose in February, up **0.7 percent** from the previous month, according to the Federal Housing Finance Agency (FHFA) House Price Index (HPI). House prices rose **5.7 percent** from February 2019 to February 2020. The previously reported 0.3 percent increase for January 2020 was revised upward to 0.5 percent.

For the nine census divisions, seasonally adjusted monthly house price changes from January 2020 to February 2020 were all positive, ranging from **0.3 percent** in the West South Central division to **+1.2 percent** in the Middle Atlantic division. The 12-month changes were all positive, ranging from **+4.2 percent** in the West South Central division to **+8.1 percent** in the Mountain division.” – Cynthia Adcock and Raffi Williams, FHFA

“U.S. house prices posted a strong increase in February. The growth in home prices coincides with other data showing robust housing market activity in early 2020 preceding the current crisis. House prices had positive monthly gains in every census division. Transactions still do not reflect much, if any, influence from the COVID-19 outbreak as of February.” – Dr. Lynn Fisher, Deputy Director of the Division of Research and Statistics, FHFA

U.S. Housing Prices 2/4



U.S. Housing Prices 3/4

S&P CoreLogic Case-Shiller Index Continues Shows Annual Home Price Gains Increased To 4.2% In February

“Data for February 2020 show that home prices continue to increase at a modest rate across the U.S. More than 27 years of history are available for these data series, and can be accessed in full by going to www.spdji.com.

Year-Over-Year

The S&P CoreLogic Case-Shiller U.S. National Home Price NSA Index, covering all nine U.S. census divisions, reported a 4.2% annual gain in February, up from 3.9% in the previous month. The 10-City Composite annual increase came in at 2.9%, up from 2.6% in the previous month. The 20-City Composite posted a 3.5% year-over-year gain, up from 3.1% in the previous month.

Phoenix, Seattle, Tampa and Charlotte reported the highest year-over-year gains among the 20 cities. In February, Phoenix led the way with a 7.5% year-over-year price increase, followed by Seattle with a 6.0% increase, and Tampa and Charlotte with 5.2% increases. Seventeen of the 20 cities reported higher price increases in the year ending February 2020 versus the year ending January 2020.” – Craig J. Lazzara, Managing Director and Global Head of Index Investment Strategy, S&P Dow Jones Indices

U.S. Housing Prices 4/4

S&P CoreLogic Case-Shiller Index

Month-Over-Month

“The National Index and the 10-City Composite both posted a 0.4% month-over-month increase, while the 20-City Composite posted a 0.5% increase before seasonal adjustment in February. After seasonal adjustment, the National Index posted a month-over-month increase of 0.5%, while the 10-City and 20-City Composites both posted 0.4% increases. In February, 19 of 20 cities reported increases before seasonal adjustment while all 20 cities reported increases after seasonal adjustment.

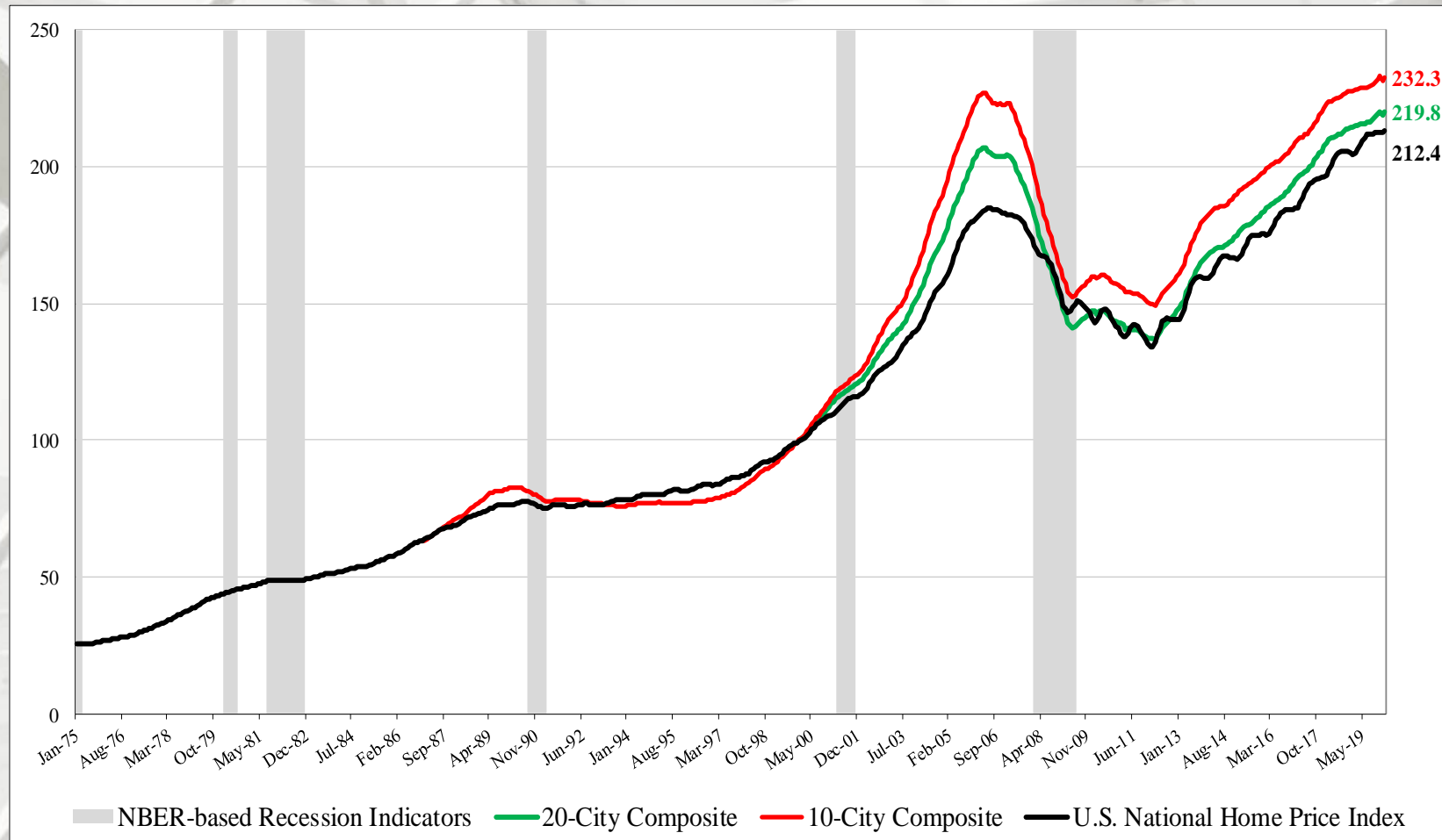
Analysis

The stable growth pattern established in the last half of 2019 continued into February. The National Composite Index rose by 4.2% in February 2020, and the 10- and 20-City Composites also advanced (by 2.9% and 3.5%, respectively). Results for the month were broad-based, with gains in every city in our 20-City Composite; 17 of the 20 cities saw accelerating prices. The National, 10-City, and 20-City Composites all rose at a faster rate in February than they had in January.

At a regional level, Phoenix retains the top spot for the ninth consecutive month, with a gain of 7.5% for February. Home prices in Seattle rose by 6.0%, with Tampa and Charlotte prices both gaining 5.2%. Prices were particularly strong in the West and Southeast, and comparatively weak in the Midwest and Northeast.

Importantly, today’s report covers real estate transactions closed during the month of February, and shows no signs of any adverse effect from the governmental suppression of economic activity in response to the COVID-19 pandemic. As much of the U.S. economy was shuttered in March, next month’s data may begin to reflect the impact of these policies on the housing market.” – Craig J. Lazzara, Managing Director and Global Head of Index Investment Strategy, S&P Dow Jones Indices

S&P/Case-Shiller Home Price Indices



* NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

AEI Housing Center

AEI Flash Housing Market Indicators

Week of May 4th-May 8th, 2020

Home Price Trends:

“The housing market appears to be stabilizing, albeit at a lower level.

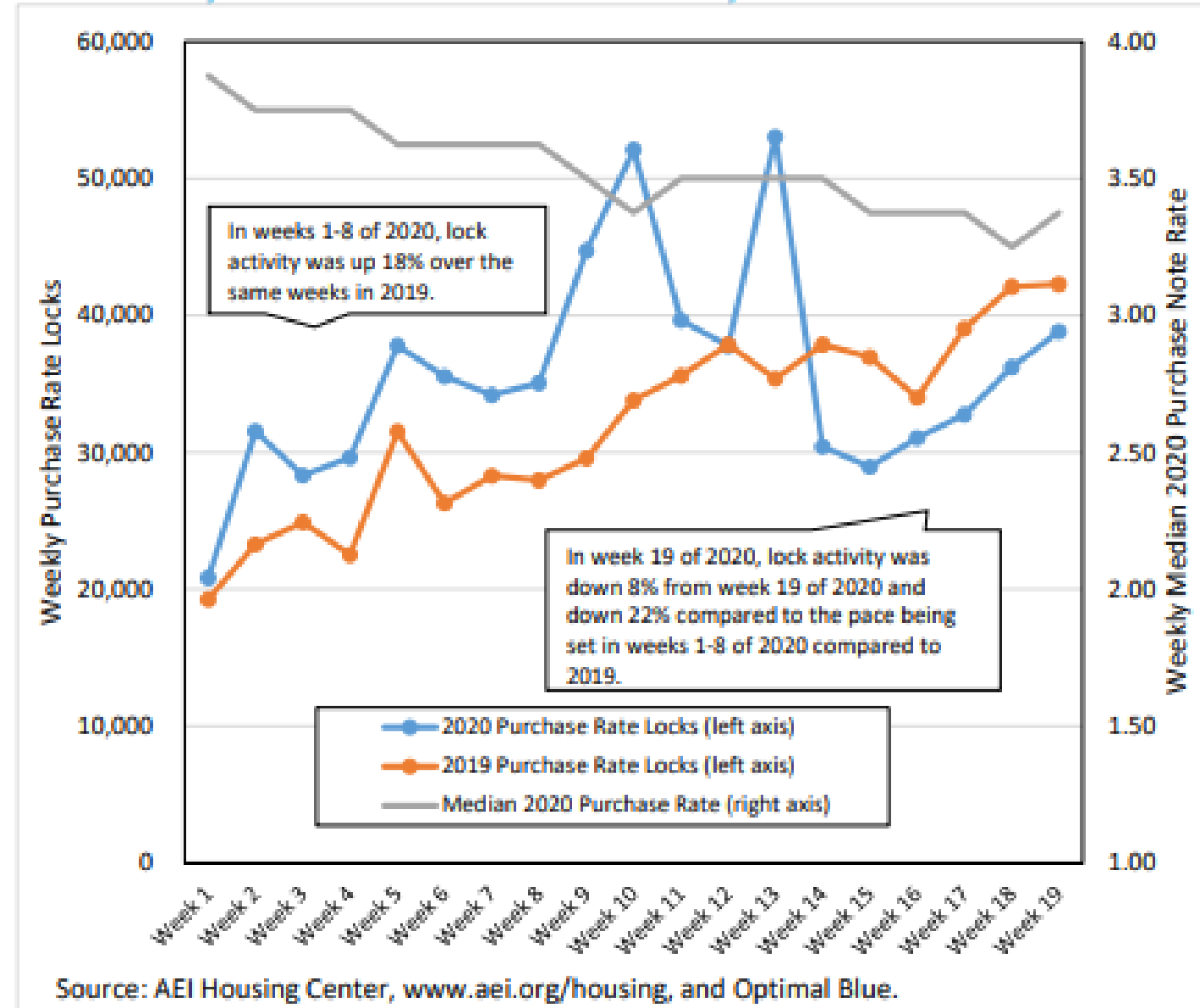
- For the week of May 4 (week 19), purchase loan rate lock activity was 8% below that for week 19 in 2019. This decline is substantially less than the average decline of 15% over the last 4 weeks.
- Some states are doing better than others.
- National home price appreciation (HPA) also appears to be stabilizing at around 4%. However, this is down from 7.2% during week 10.
- With the onset of the COVID-19 pandemic, we observe important share shifts in the market. The parts of the market most negatively affected are:
 - The jumbo market,
 - Potential FHA and VA borrowers with lower credit scores,
 - Potential purchasers of investor homes,
 - The self-employed, and Non-citizens.
- First-time buyers are actually expanding their share of purchase rate locks.
 - Rather than focusing exclusively on credit tightening, the concern should be about FTBs potentially buying late in a real estate cycle when home prices have already reached their respective peaks.” – Edward Pinto and Tobias Peter, AEI Housing Center

AEI Housing Center

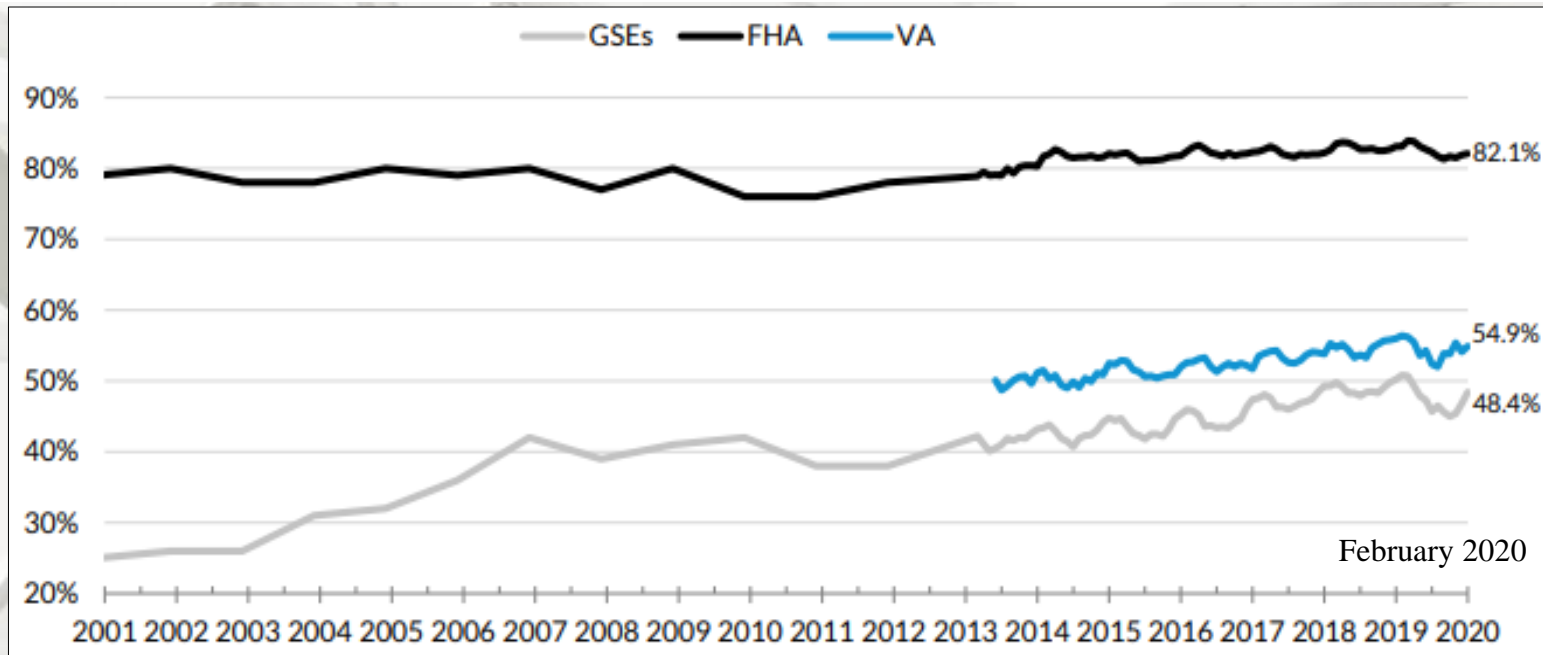
4AEI Flash Housing Market Indicators

May 4th-May 8th, 2020

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



First-Time House Buyers



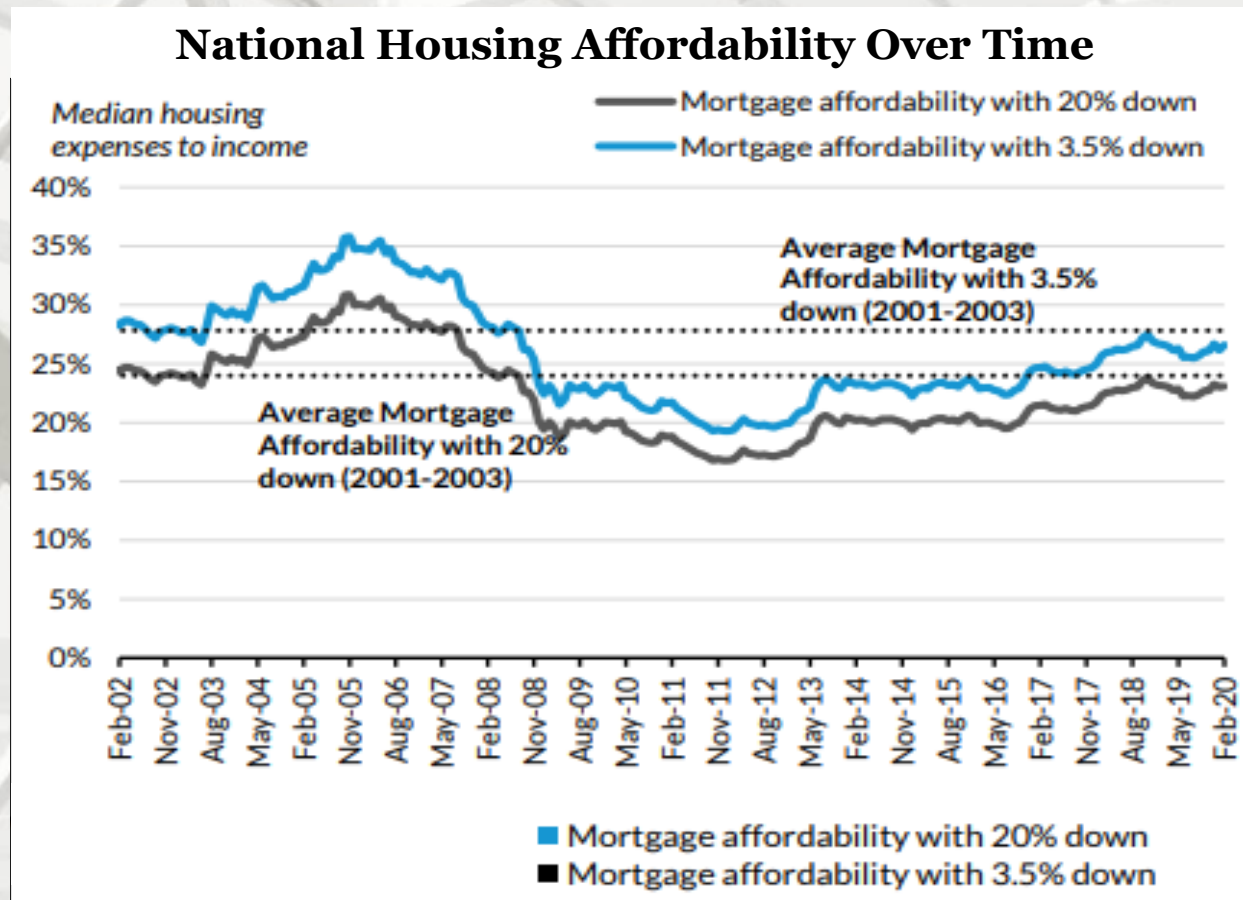
Sources: eMBS, Federal Housing Administration (FHA) and Urban Institute.

Note: All series measure the first-time homebuyer share of purchase loans for principal residences.

Urban Institute

“In February 2020, the FTHB share for FHA, which has always been more focused on first time homebuyers, grew slightly to 82.1 percent. The FTHB share of VA lending increased in February, to 54.9 percent. The GSE FTHB share in February was up from January to 48.4 percent. The bottom table shows that based on mortgages originated in February 2020, the average FTHB was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, and higher LTV.” – Bing Lai, Research Associate, Housing Finance Policy Center

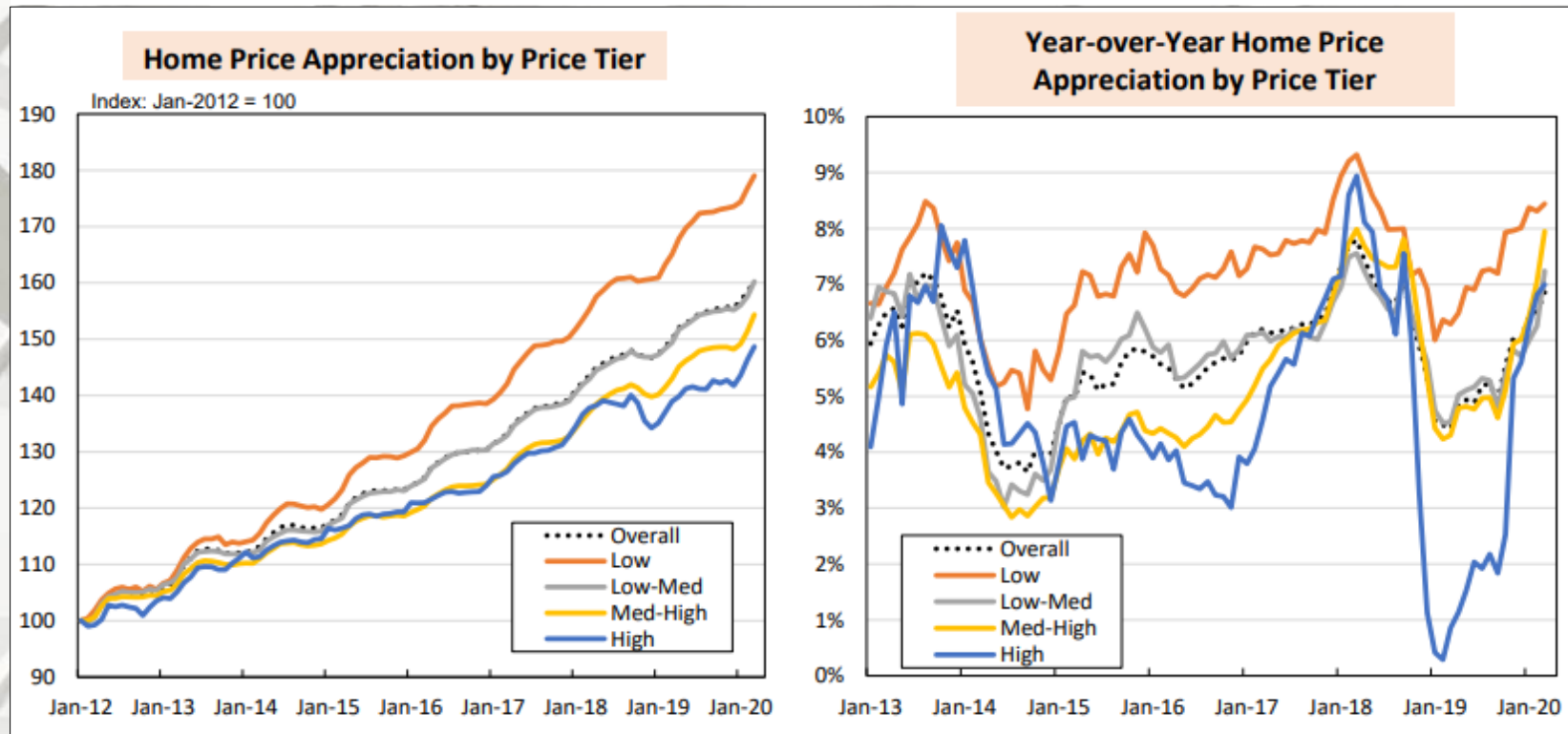
Housing Affordability 1/2



Urban Institute

“Home prices remain affordable by historic standards, despite price increases over the last 7 years, as interest rates remain relatively low in an historic context. As of February 2020, with a 20 percent down payment, the share of median income needed for the monthly mortgage payment stood at 23.1 percent; with 3.5 down, it is 26.6 percent. Since February 2019, the median housing expenses to income ratio has been slightly lower than the 2001-2003 average.” – Laurie Goodman, VP, Housing Finance Policy Center

Housing Affordability 2/2



Note: Data for March 2020 are preliminary. 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; and High: all other sales. HPAs are smoothed around the times of FHFA loan limit changes.

AEI Housing Center National House Price Appreciation (HPA) by Price Tier

“In March 2020, overheating of the low price tier continued (right panel). HPA in the low price tier was 8.4% year-over-year. HPA in the high tier (about 7% share) increased significantly to 7.0% compared to a year ago. This tier was first hit by the Fed’s tightening and is now buoyed by the Fed’s loosening. Looking ahead, the low tier may experience a larger price correction than the low-medium and medium-high tiers due to the virus.” – Edward Pinto and Tobias Peter, AEI Housing Center

Mortgage Credit Availability 1/2

Mortgage Credit Availability Decreased in April

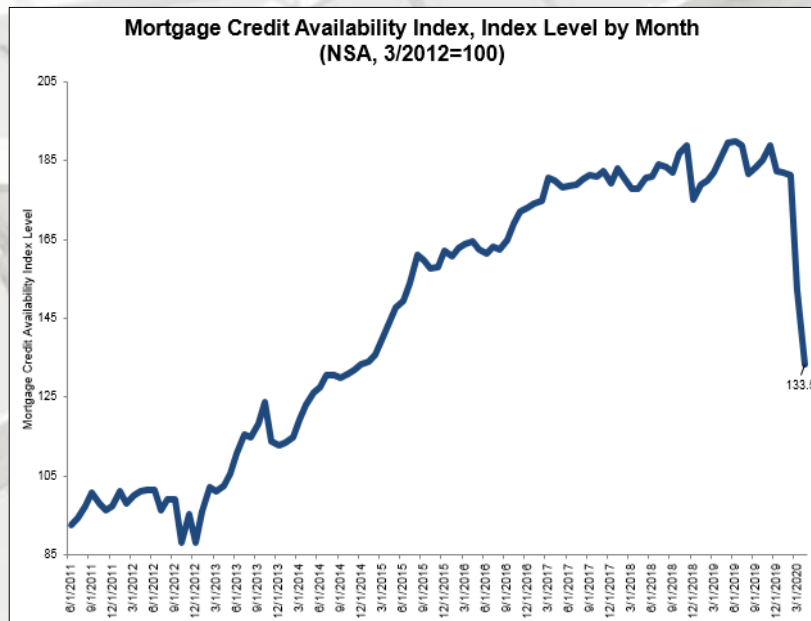
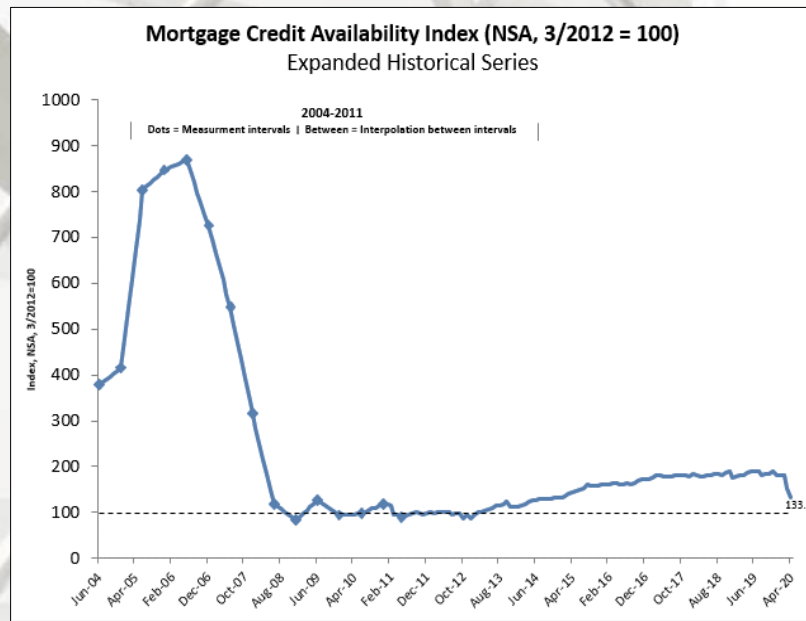
“Mortgage credit availability decreased in March according to the Mortgage Credit Availability Index (MCAI), a report from the Mortgage Bankers Association (MBA) which analyzes data from Ellie Mae's AllRegs® Market Clarity® business information tool.

The MCAI fell by 12.2 percent to 133.5 in April. A decline in the MCAI indicates that lending standards are tightening, while increases in the index are indicative of loosening credit. The index was benchmarked to 100 in March 2012. The Conventional MCAI decreased 15.2 percent, while the Government MCAI decreased by 9.5 percent. Of the component indices of the Conventional MCAI, the Jumbo MCAI decreased by 22.6 percent, and the Conforming MCAI fell by 7.1 percent.

The abrupt weakening of the economy and job market – and the uncertainty in the outlook - drove credit availability down in April for the second consecutive month. The overall index fell to its lowest level since December 2014, and the sub-indexes pointed to tightened credit supply for all loan types. The decline was largely driven by lenders dropping many low credit score and high-LTV programs, as well as further reduction in jumbo and non-QM products.

There was also a large decline in loan offerings pertaining to cash-out refinances, given the GSEs' constraints in purchasing cash-outs that have fallen into forbearance.” – Joel Kan, Associate Vice President of Economic and Industry Forecasting, MBA

Mortgage Credit Availability 2/2



Source: *Mortgage Bankers Association; Powered by Ellie Mae's AllRegs® Market Clarity®*

Summary

In conclusion:

In March, an overwhelming majority of month-over-month categories were negative. Total, single-, and multi-family starts all recorded double-digit declines. On a year-over-year basis, fifty percent of the categories indicated improvement. Housing completions was the only subsector reporting declines for all components: total, single- and multi-family. New single-family house and existing sales decreased, month-over-month and year-over-year. Single-family construction expenditures improved year-over-year and decreased month-over-month. The effects of covid19 may not be fully reflected in the March data. The magnitude of the virus might be revealed in the April and May housing construction data.

Housing, in the majority of categories, remains substantially less than their respective historical averages. The new SF housing construction sector is where the majority of value-added forest products are utilized and this housing sector has ample room for improvement.

Pros:

- 1) Historically low interest rates are still in place;
- 2) Select builders are beginning to focus on entry-level houses;
- 3) Housing affordability indicates improvement;

Cons:

- 1) Coronavirus19 (Covid19);
- 2) Lot availability and building regulations (according to several sources);
- 3) Laborer shortages;
- 4) Household formations still lag historical averages;
- 5) Changing attitudes towards SF ownership;
- 6) Job creation is improving and consistent but some economists question the quantity and types of jobs being created;
- 7) Debt: Corporate, personal, government – United States and globally;
- 8) Other global uncertainties.

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