

The Virginia Tech – U.S. Forest Service

April 2020

Housing Commentary: Section I



Delton Alderman

Forest Products Marketing Unit

Forest Products Laboratory

U.S. Forest Service

Madison, WI

304.431.2734

dalderman@fs.fed.us



Urs Buehlmann

Department of Sustainable Biomaterials

College of Natural Resources & Environment

Virginia Tech

Blacksburg, VA

540.231.9759

buehlmann@gmail.com

2020

Virginia Polytechnic Institute and State University

CNRE-113NP

Virginia Cooperative Extension programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; M. Ray McKinnie, Administrator, 1890 Extension Program, Virginia State University, Petersburg.

Table of Contents

Slide 3: Opening Remarks	Slide 42: New Single-Family House Sales
Slide 4: Housing Scorecard	Slide 45: Region SF House Sales & Price
Slide 5: Wood Use in Construction	Slide 51: New SF Sales-Population Ratio
Slide 8: New Housing Starts	Slide 59: Construction Spending
Slide 14: Regional Housing Starts	Slide 62: Construction Spending Shares
Slide 20: New Housing Permits	Slide 65: Remodeling
Slide 24: Regional New Housing Permits	Slide 70: Existing House Sales
Slide 28: Housing Under Construction	Slide 79: First-Time Purchasers
Slide 30: Regional Under Construction	Slide 81: Affordability
Slide 35: Housing Completions	Slide 88: Summary
Slide 38: Regional Housing Completions	Slide 89: Virginia Tech Disclaimer
	Slide 90: USDA Disclaimer

This report is a free monthly service of Virginia Tech. Past issues are available at:
<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 April, the vast majority of month-over-month and year-over-year categories were negative. On a month-over-month basis, just single-family under construction and new single-family sales were positive. Year-over-year, merely private residential and single-family construction spending indicated improvement. The impact of Covid19 was clearly indicated in this month's data.

The June 9th Atlanta Fed GDPNow™ model for June 2020 forecasts an aggregate 36.1% decrease for residential investment spending. New private permanent site expenditures were projected at a 39.9% decline; the improvement spending forecast was a 24.5% decrease; and the manufactured/mobile housing projection was a 196.7% decline (all: quarterly log change and at a seasonally adjusted annual rate).¹

“Housing-related companies including homebuilders and residential rental operators were slammed at the outset of the pandemic amid fears that a coronavirus-induced recession could inflame a repeat of the Great Financial Crisis in the effects on the critical U.S. housing market. Instead, recent data has indicated that the housing industry has seemingly roared back to life in recent weeks with some forward-looking metrics forming the contours of a “V-Shaped” recovery, suggesting that housing could be a source of early strength to lead the post-pandemic economic rebound.

Consistent with commentary from many housing-related companies during earnings season, brokerage firm Redfin has noted a significant rebound in housing market activity over the last two months. Home buying demand was 21.6% above pre-pandemic levels during the week ending May 31. The Mortgage Bankers Association, meanwhile, reported that mortgage applications for home purchases rose for the 7th consecutive week and are now higher by 18% from the same week last year for the week ending May 29. ...”² – Hoya Capital Real Estate

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; 6/9/20;

² <https://seekingalpha.com/instablog/1723581-hoya-capital-real-estate/5456026-v-shaped-real-estate-recovery-daily-recap>; 6/3/20

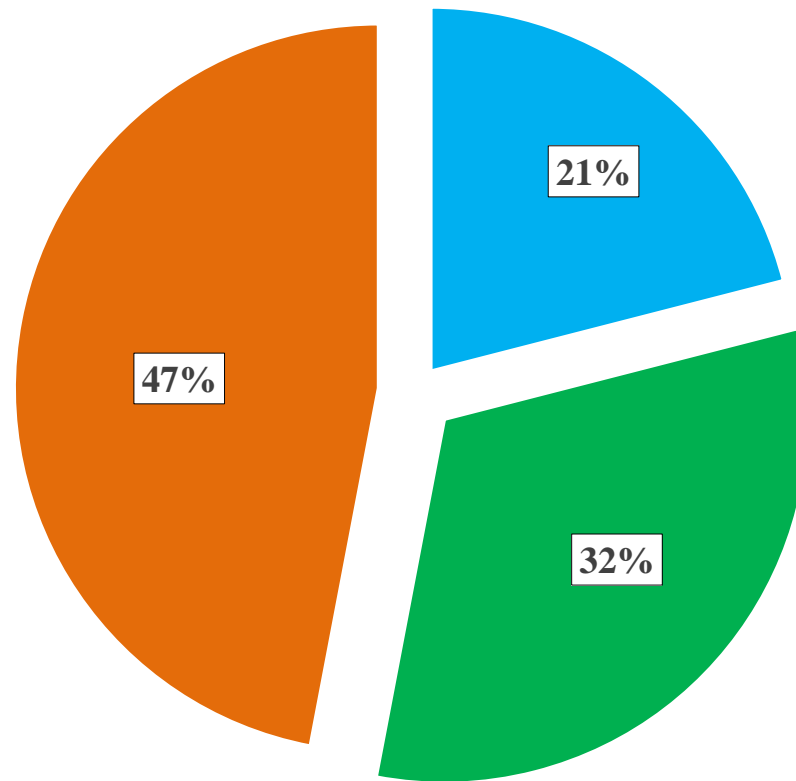
April 2020 Housing Scorecard

	M/M	Y/Y
Housing Starts	▼ 30.2%	▼ 29.7%
Single-Family (SF) Starts	▼ 25.4%	▼ 24.8%
Multi-Family (MF) Starts*	▼ 40.5%	▼ 40.2%
Housing Permits	▼ 20.8%	▼ 19.2%
SF Permits	▼ 24.3%	▼ 16.4%
MF Permits*	▼ 14.2%	▼ 23.6%
Housing Under Construction	▼ 1.7%	▼ 6.5%
SF Under Construction	▲ 3.4%	▼ 2.7%
Housing Completions	▼ 8.1%	▼ 11.8%
SF Completions	▼ 4.9%	▼ 6.4%
New SF House Sales	▲ 0.6%	▼ 6.2%
Private Residential Construction Spending	▼ 4.5%	▲ 6.2%
SF Construction Spending	▼ 6.6%	▲ 4.5%
Existing House Sales ¹	▼ 17.8%	▼ 17.2%

* 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

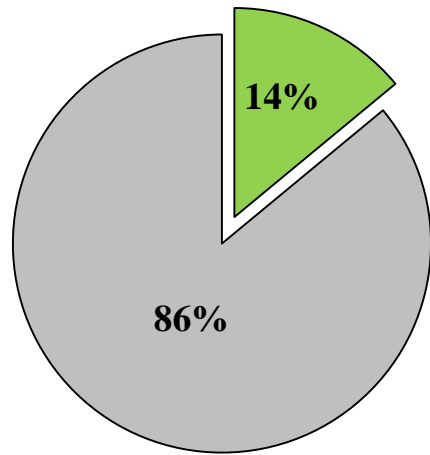


■ Non-structural panels

■ Total Sawnwood

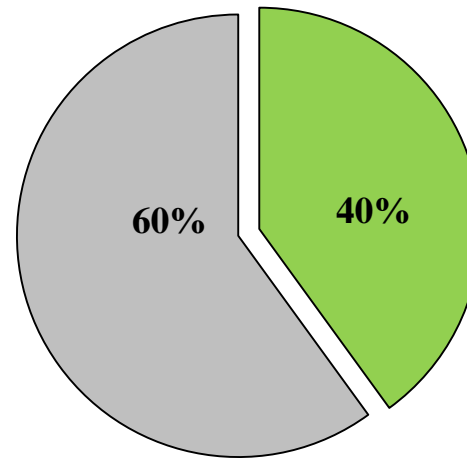
■ Structural panels

New SF Construction Percentage of Wood Products Consumption



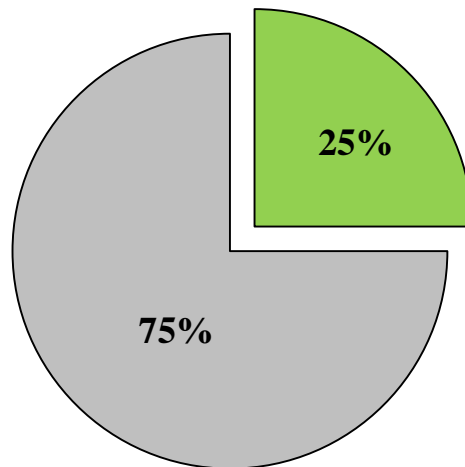
■ Non-structural panels:
New Housing

■ Other markets



■ Structural panels:
New housing

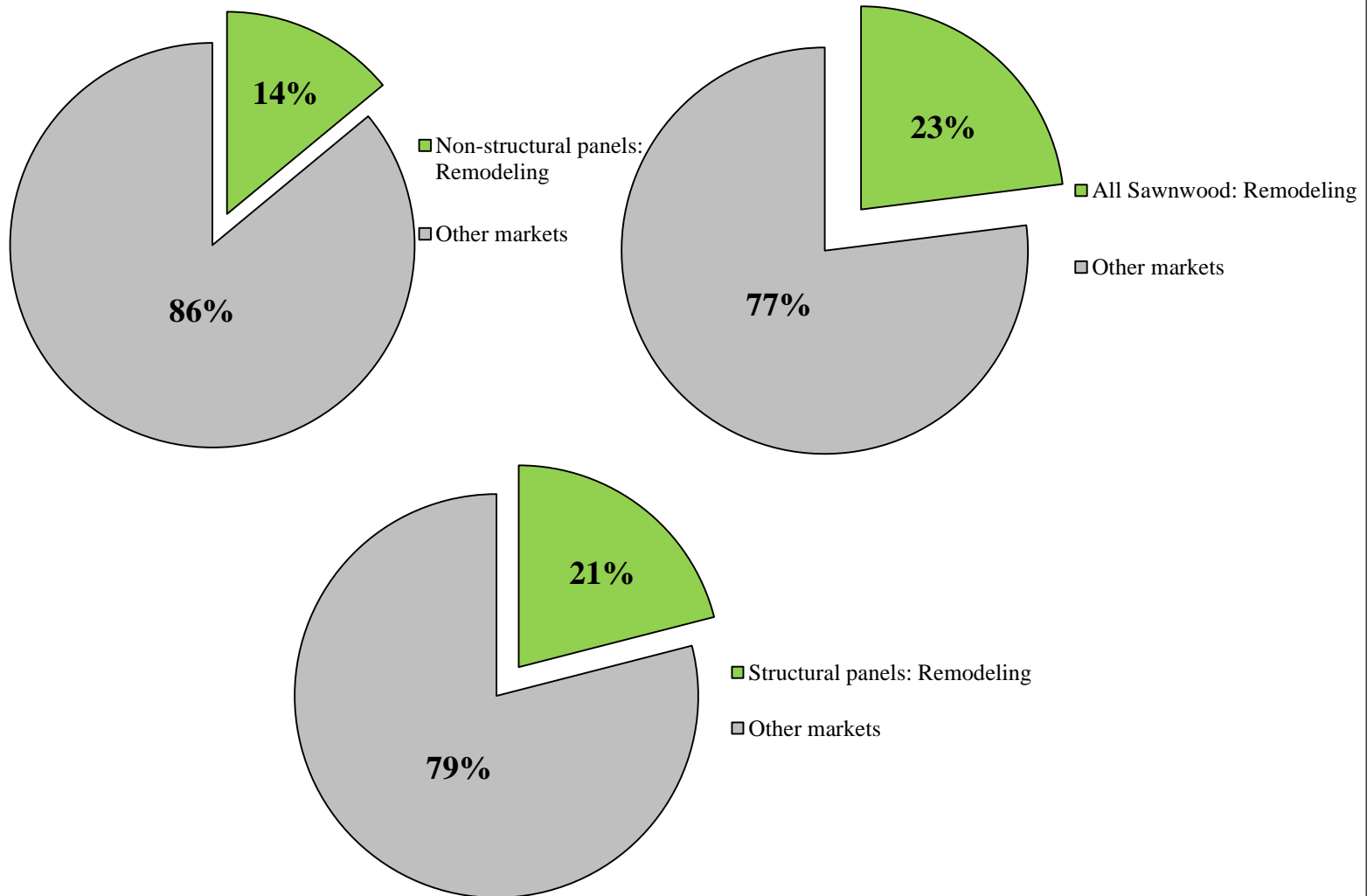
■ Other markets



■ All Sawnwood: New housing

■ Other markets

Repair and Remodeling's Percentage of Wood Products Consumption



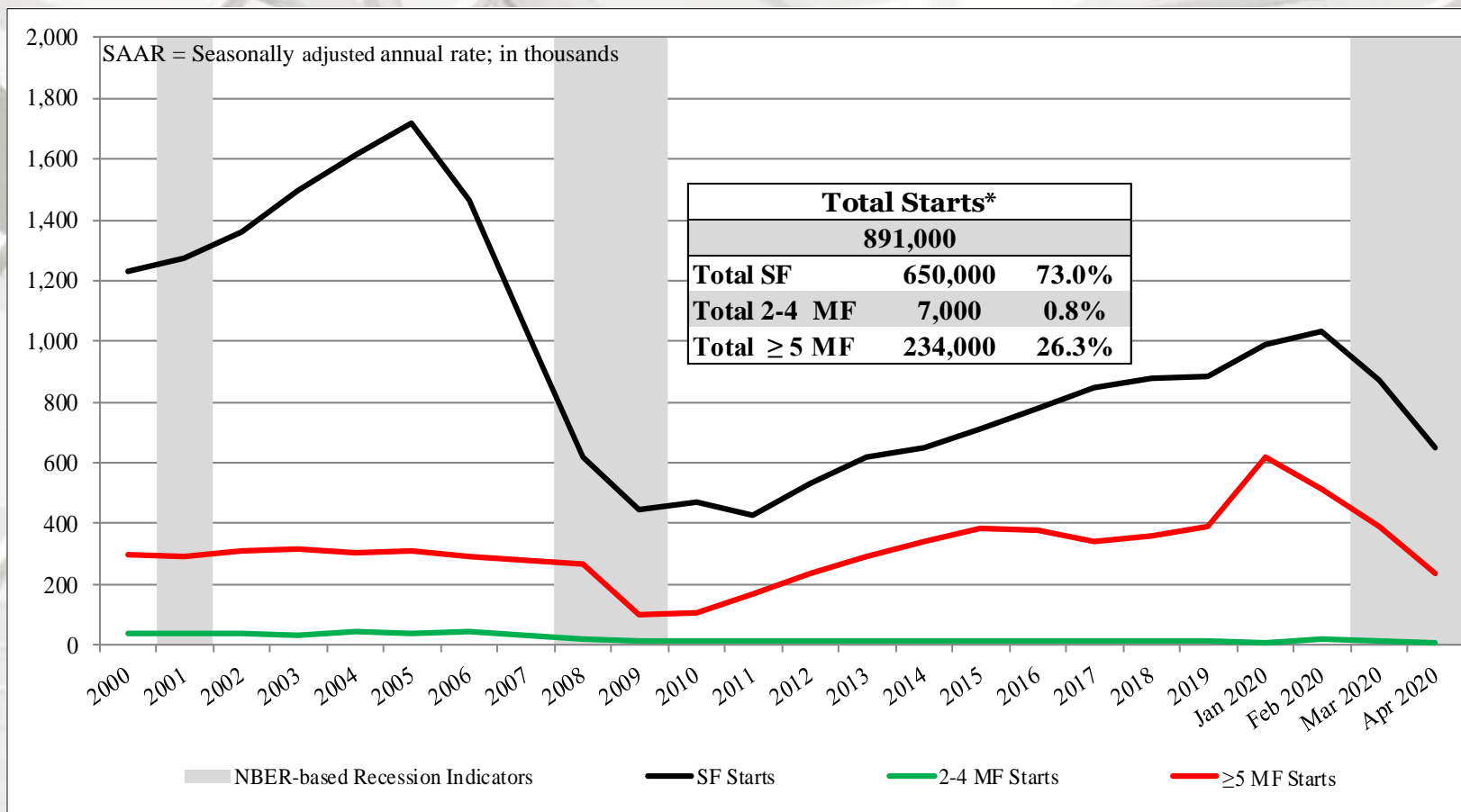
New Housing Starts

	Total Starts*	SF Starts	MF 2-4 Starts**	MF ≥5 Starts
April	891,000	650,000	7,000	234,000
March	1,276,000	871,000	13,000	392,000
2019	1,267,000	864,000	22,000	381,000
M/M change	-30.2%	-25.4%	-46.2%	-40.3%
Y/Y change	-29.7%	-24.8%	-68.2%	-38.6%

* 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

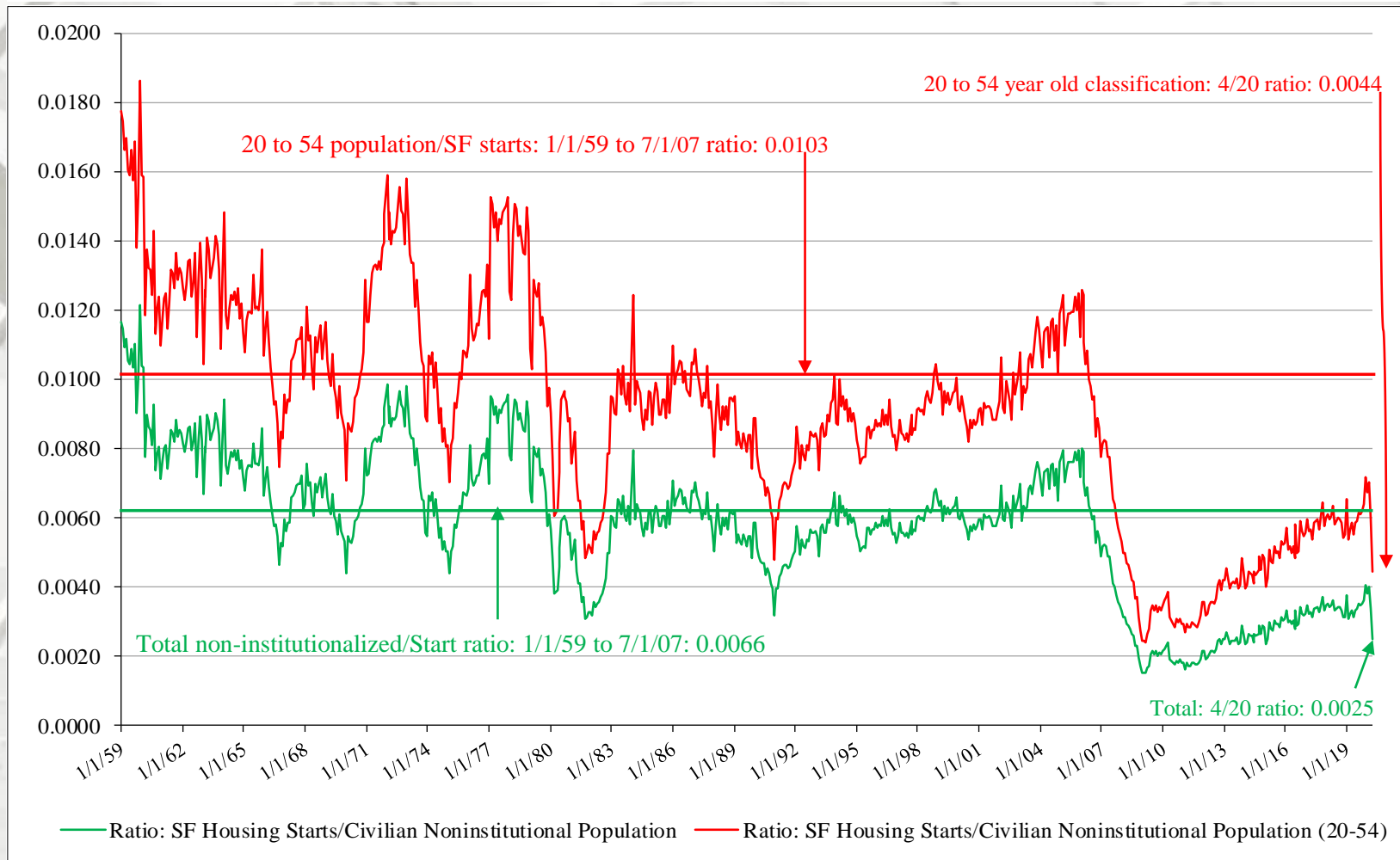


US DOC does not report 2 to 4 multifamily starts directly, this is an estimation: ((Total starts – (SF + ≥ MF)).

* 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).

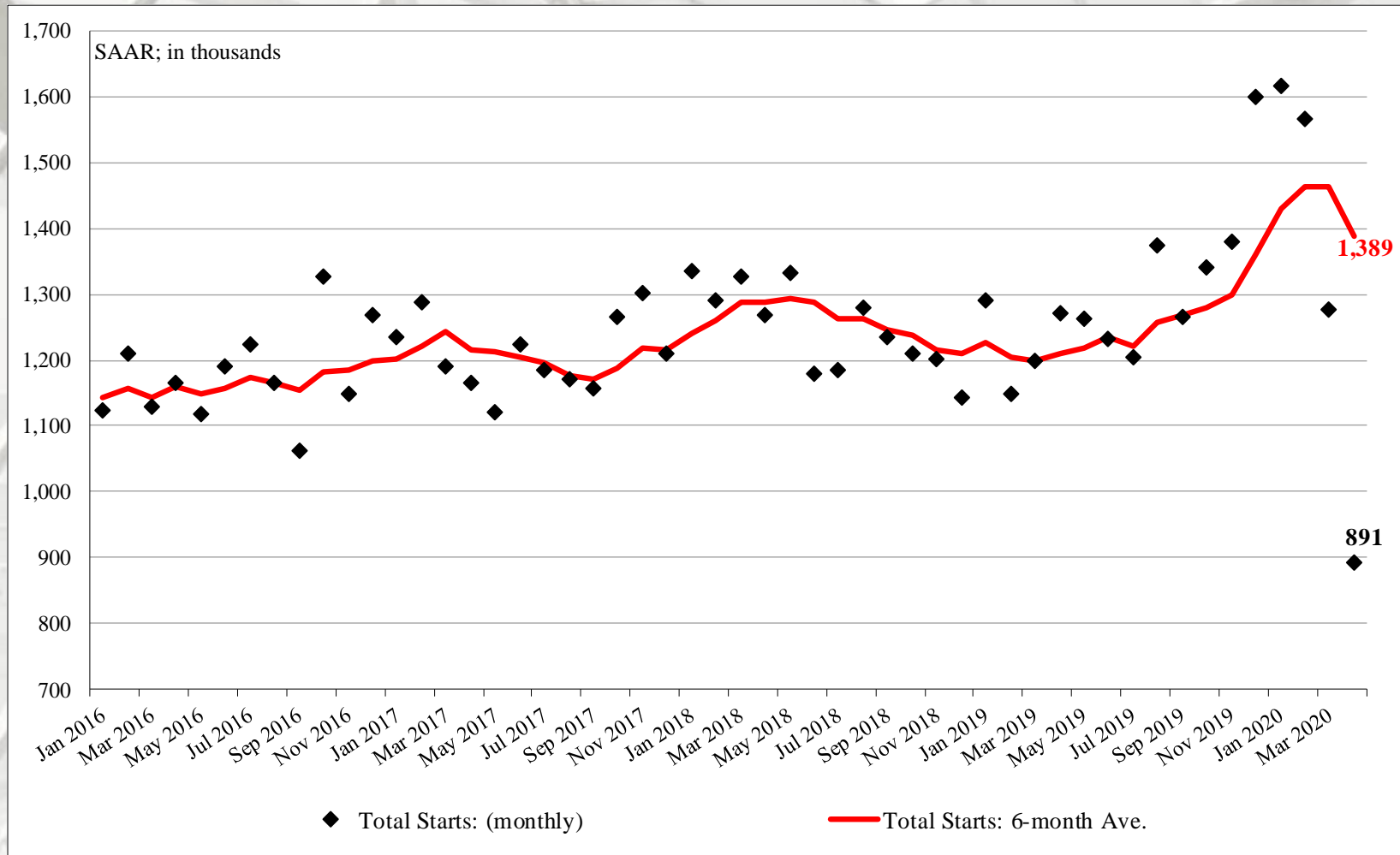
New SF Starts



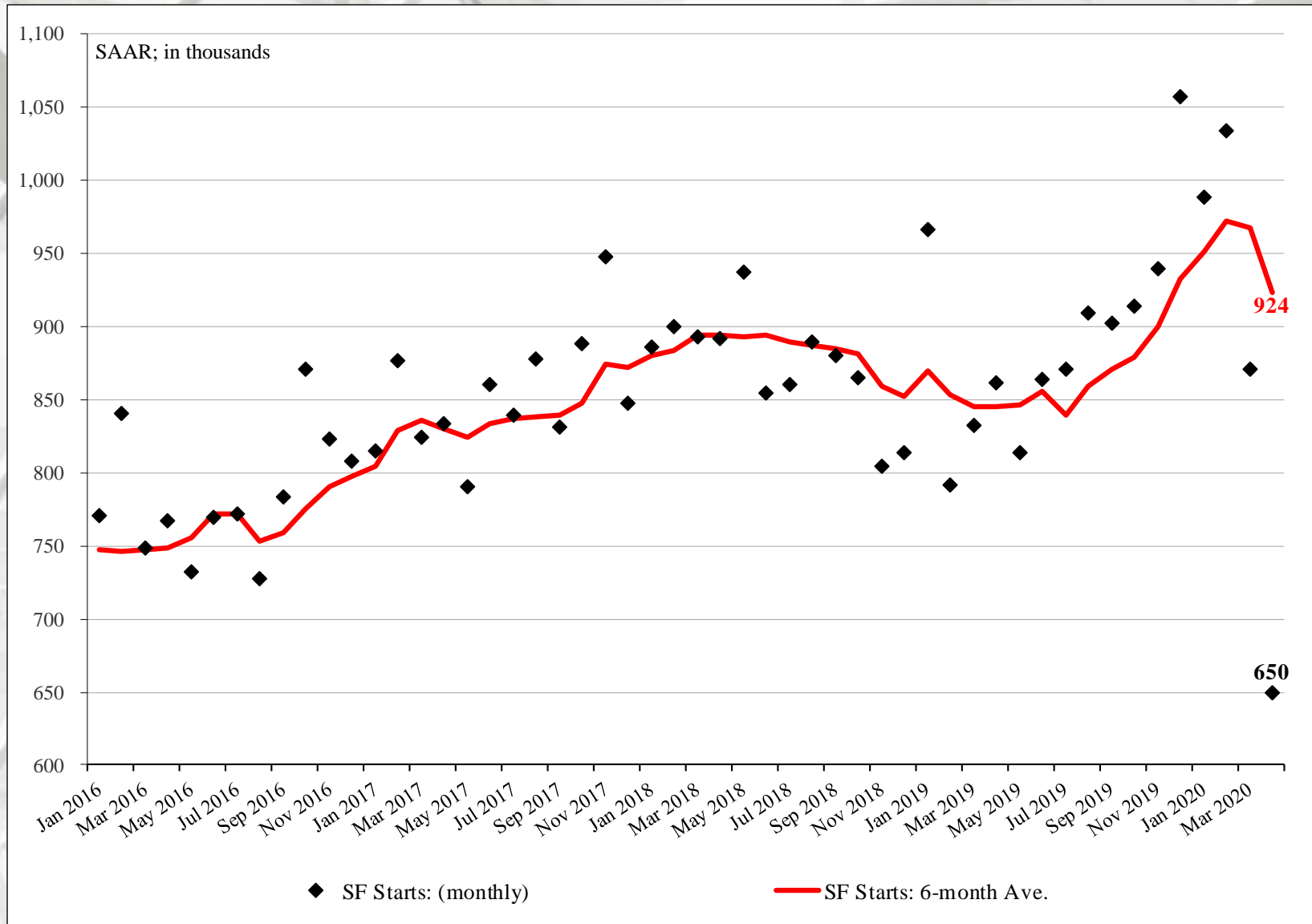
New SF starts adjusted for the US population

From January 1959 to April 2007, the long-term ratio of new SF starts to the total US non-institutionalized population was 0.0066; in April 2020 it was 0.0025 – a decrease from March (0.0034). The long-term ratio of non-institutionalized population, aged 20 to 54 is 0.0103; in April 2020 was 0.0044 – also a decrease from March (0.0059). From a population worldview, new SF construction is less than what is necessary for changes in population (i.e., under-building).

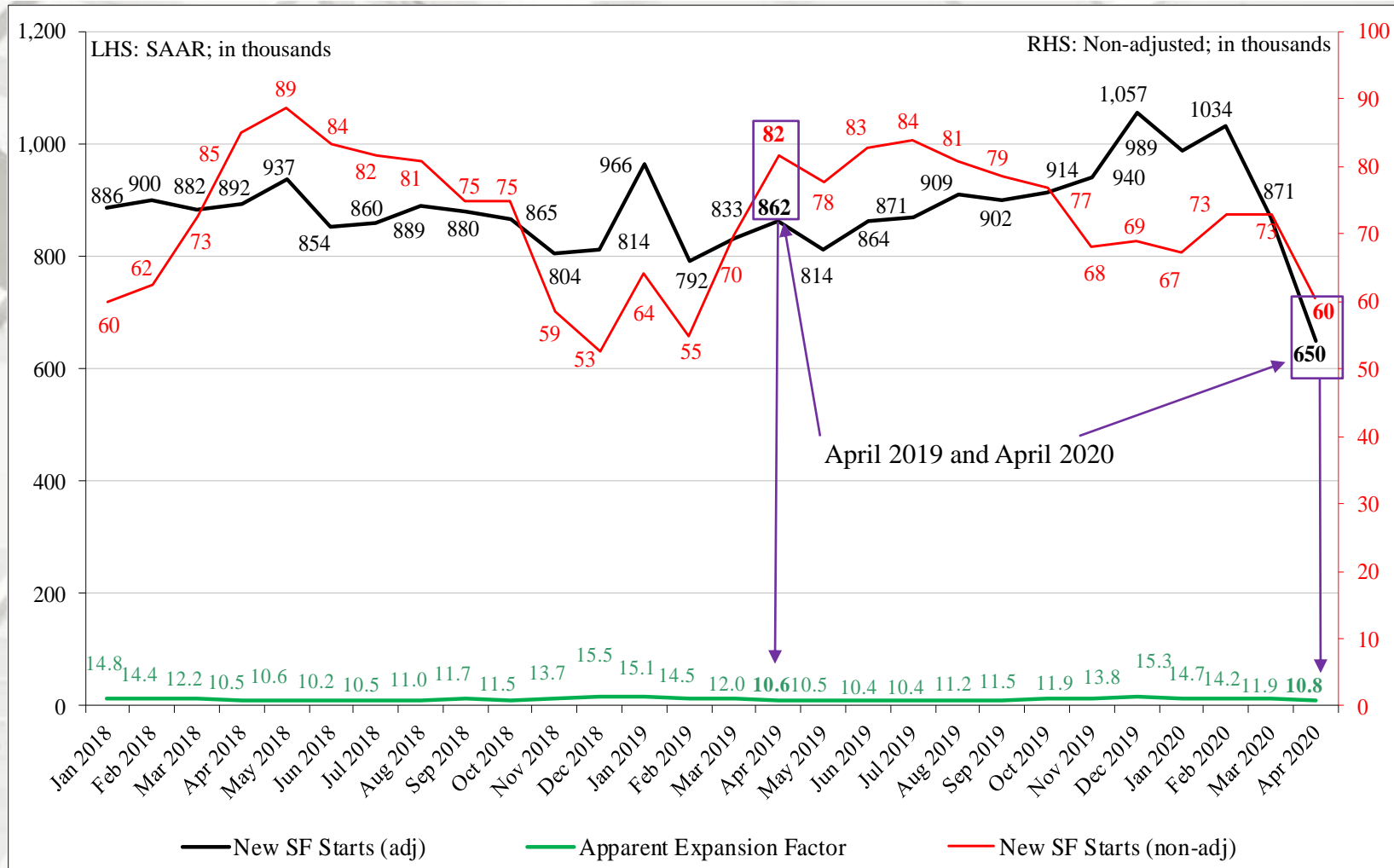
Total Housing Starts: Six-Month Average



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**
April	44,000	18,000	26,000
March	78,000	53,000	25,000
2019	134,000	49,000	85,000
M/M change	-43.6%	-66.0%	4.0%
Y/Y change	-67.2%	-63.3%	-69.4%
	MW Total	MW SF	MW MF
April	131,000	98,000	33,000
March	154,000	113,000	41,000
2019	191,000	115,000	76,000
M/M change	-14.9%	-13.3%	-19.5%
Y/Y change	-31.4%	-14.8%	-56.6%

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).

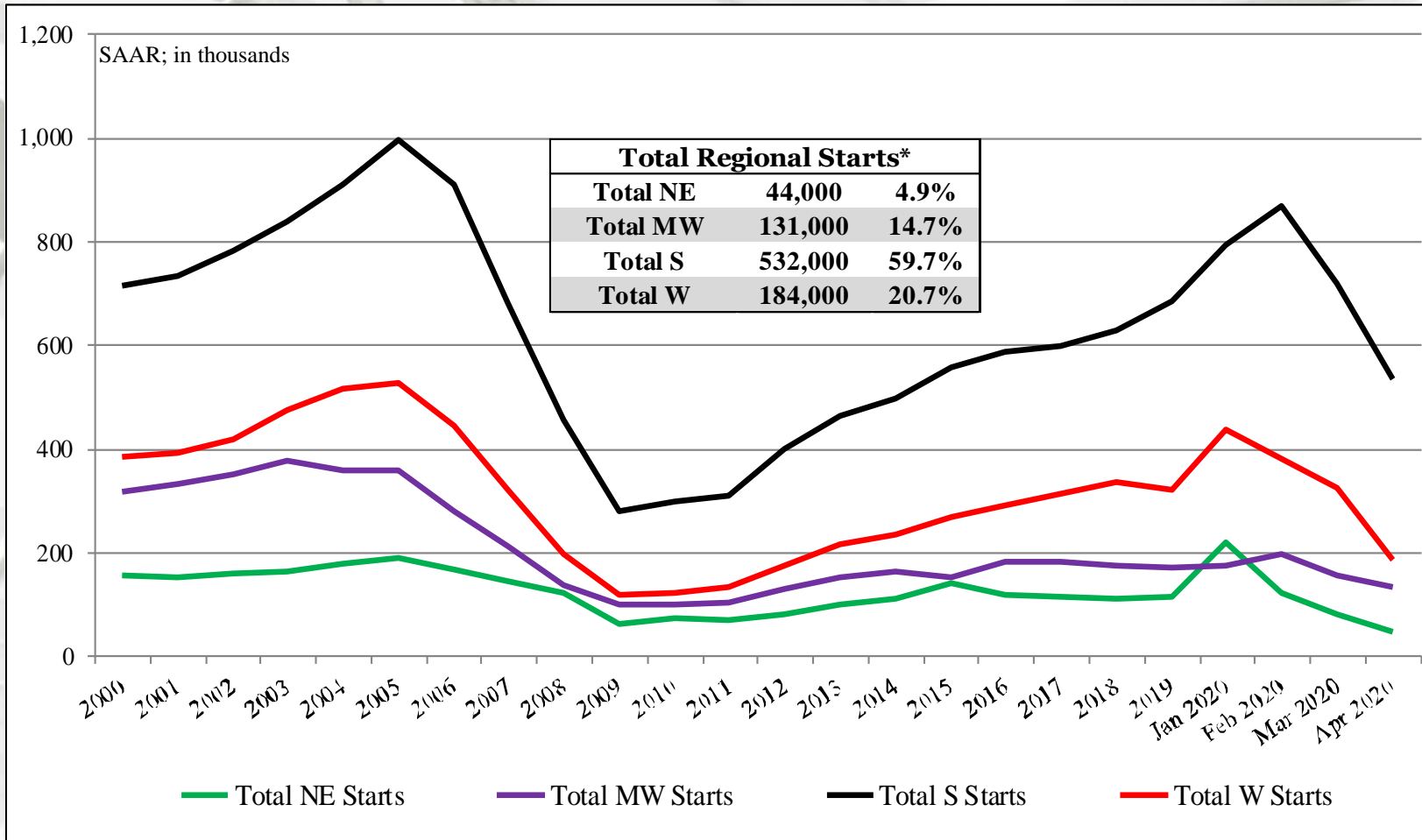
New Housing Starts by Region 2/3

	S Total	S SF	S MF**
April	532,000	391,000	141,000
March	719,000	460,000	259,000
2019	668,000	439,000	229,000
M/M change	-26.0%	-15.0%	-45.6%
Y/Y change	-20.4%	-10.9%	-38.4%
	W Total	W SF	W MF
April	184,000	143,000	41,000
March	325,000	245,000	80,000
2019	337,000	197,000	140,000
M/M change	-43.4%	-41.6%	-48.8%
Y/Y change	-45.4%	-27.4%	-70.7%

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

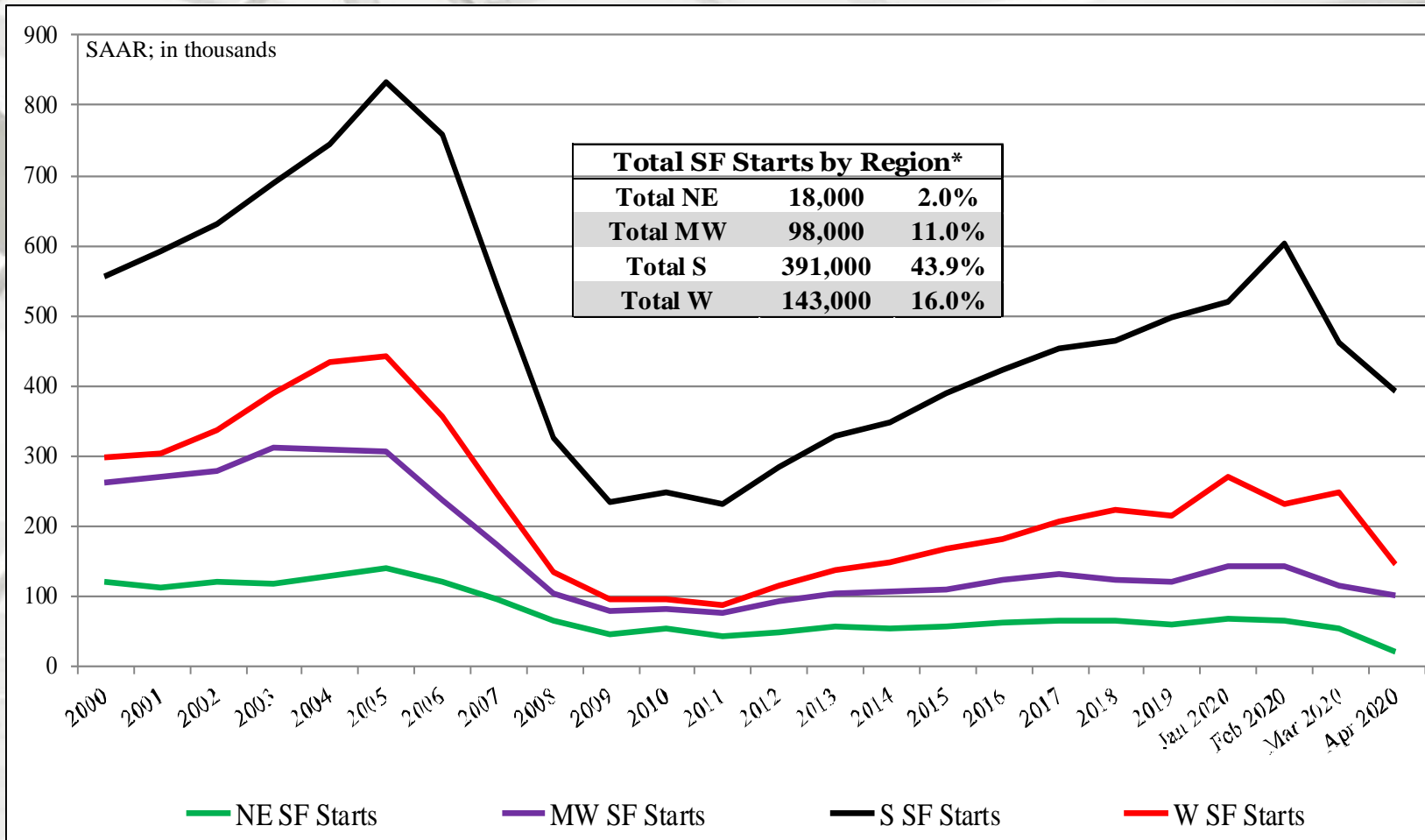


NE = Northeast, MW = Midwest, S = South, W = West

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

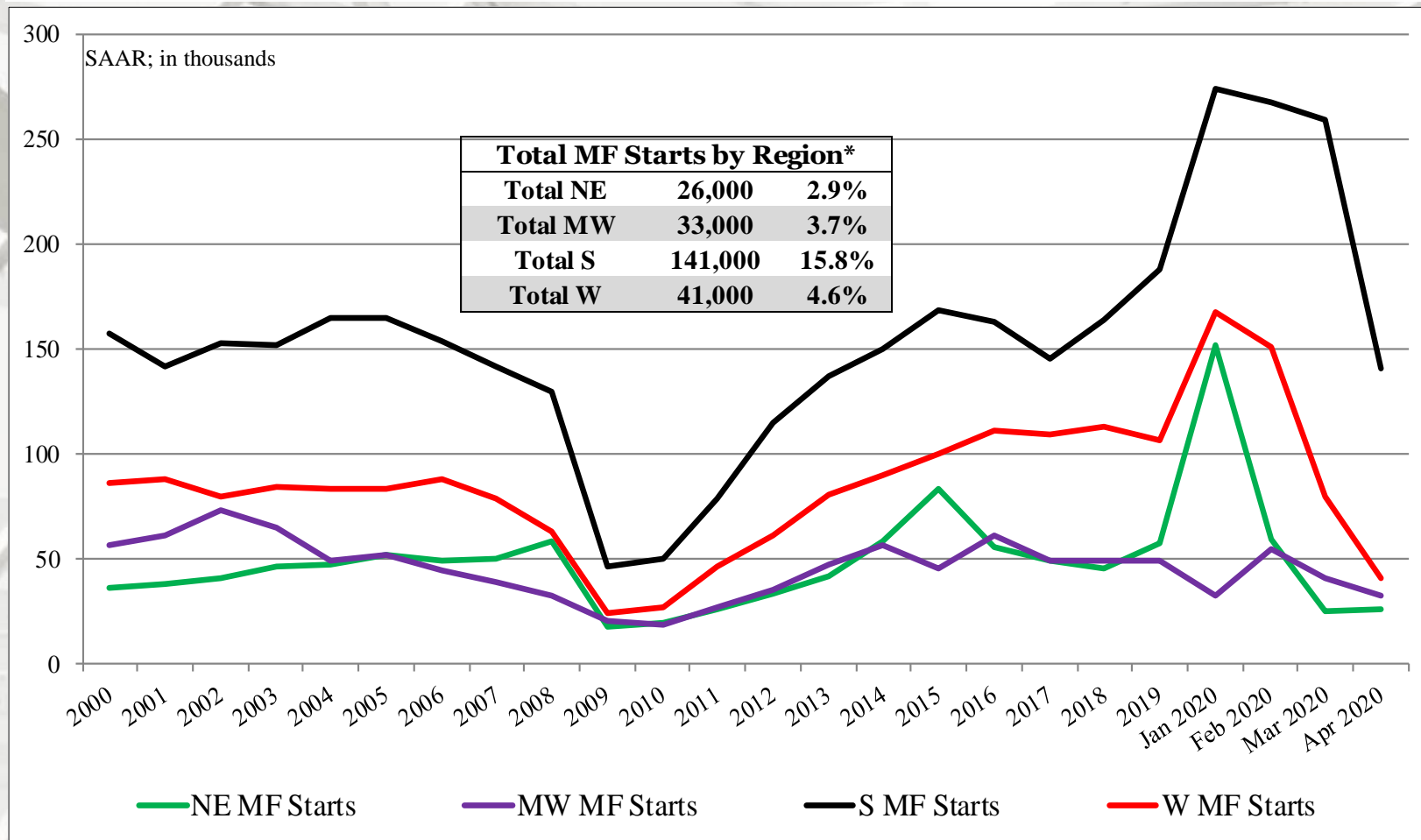


NE = Northeast, MW = Midwest, S = South, W = West

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

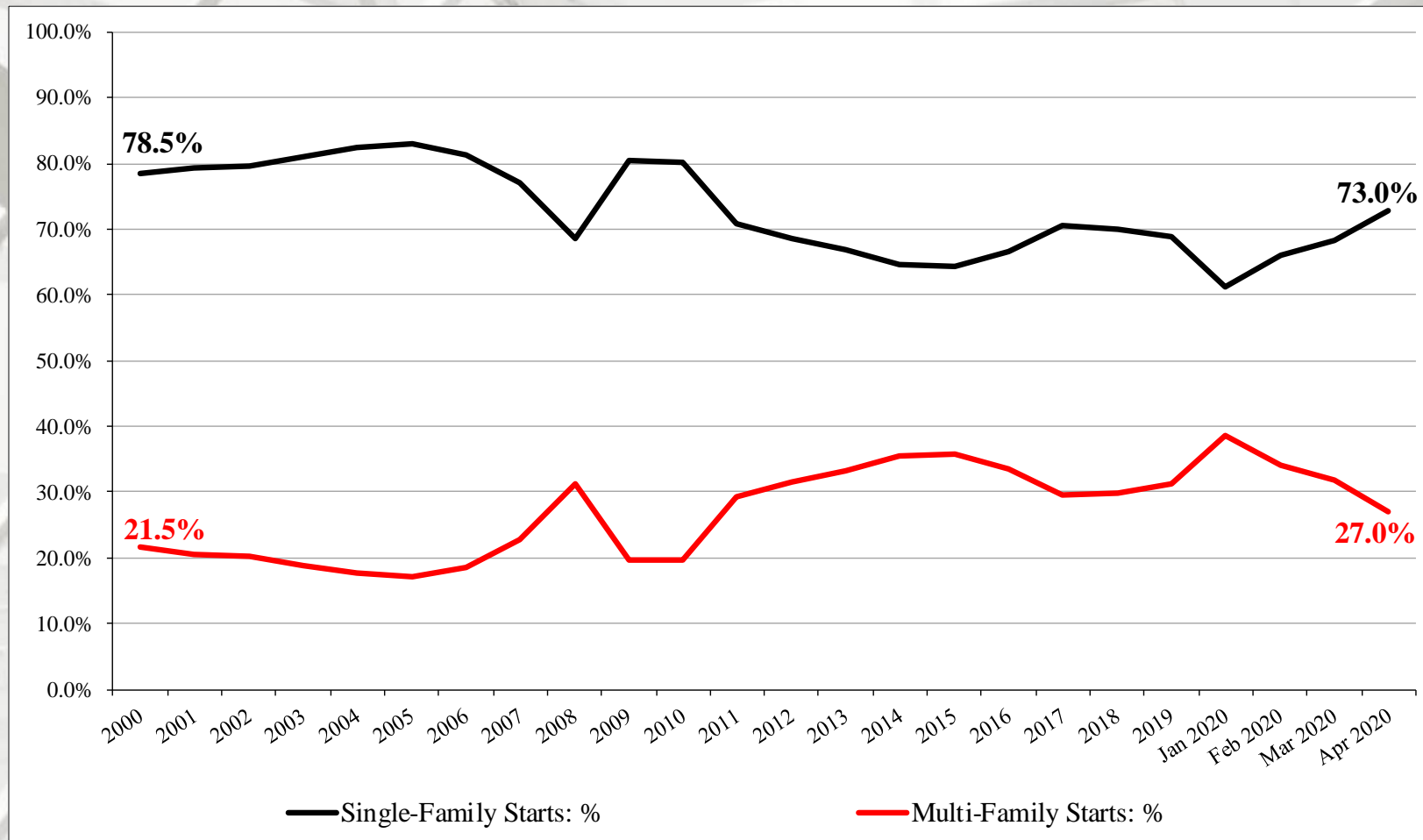


NE = Northeast, MW = Midwest, S = South, W = West

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 (%)



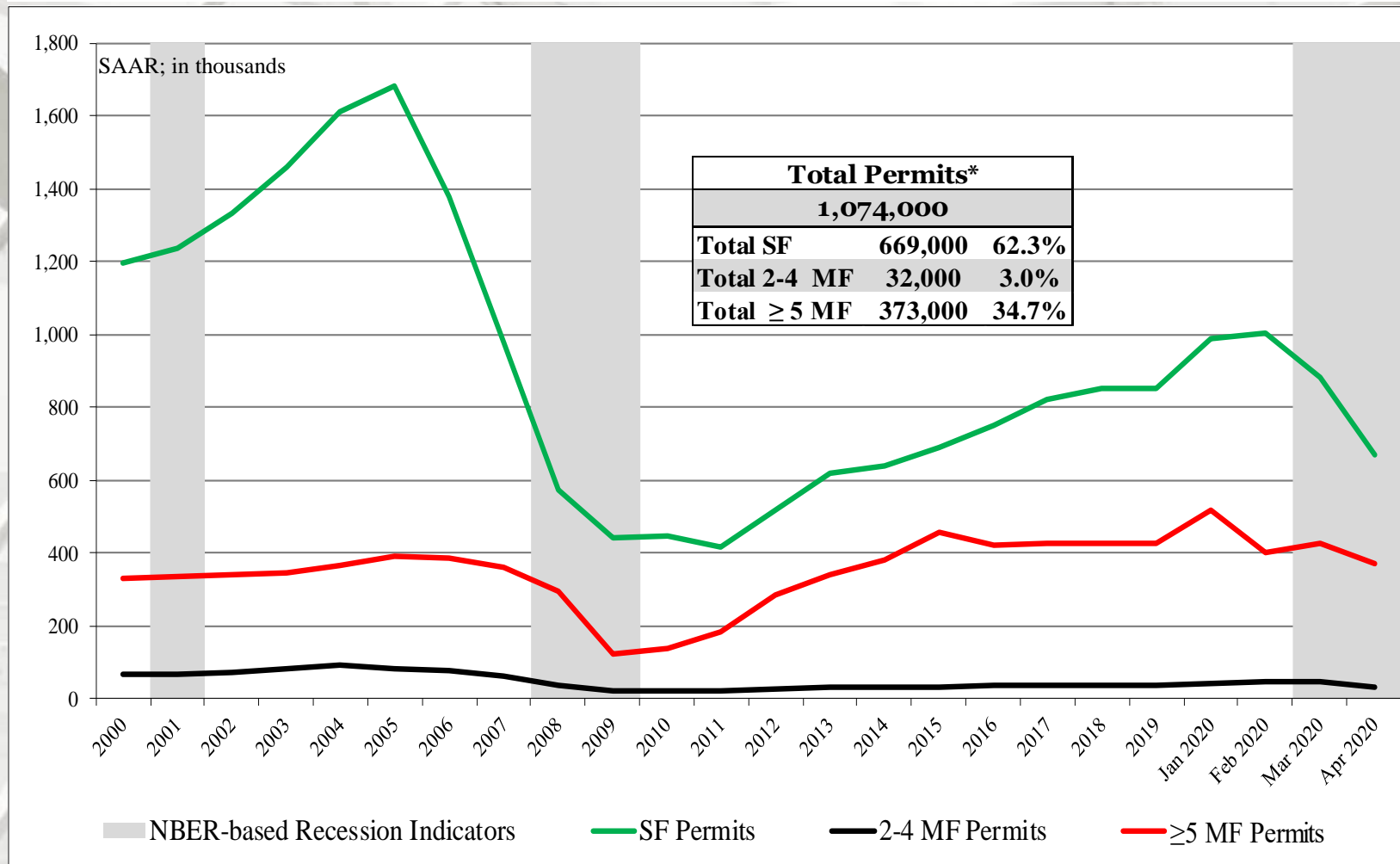
NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New Housing Permits

	Total Permits*	SF Permits	MF 2-4 unit Permits	MF ≥ 5 unit Permits
April	1,074,000	669,000	32,000	373,000
March	1,356,000	884,000	46,000	426,000
2019	1,330,000	800,000	48,000	482,000
M/M change	-20.8%	-24.3%	-30.4%	-12.4%
Y/Y change	-19.2%	-16.4%	-33.3%	-22.6%

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

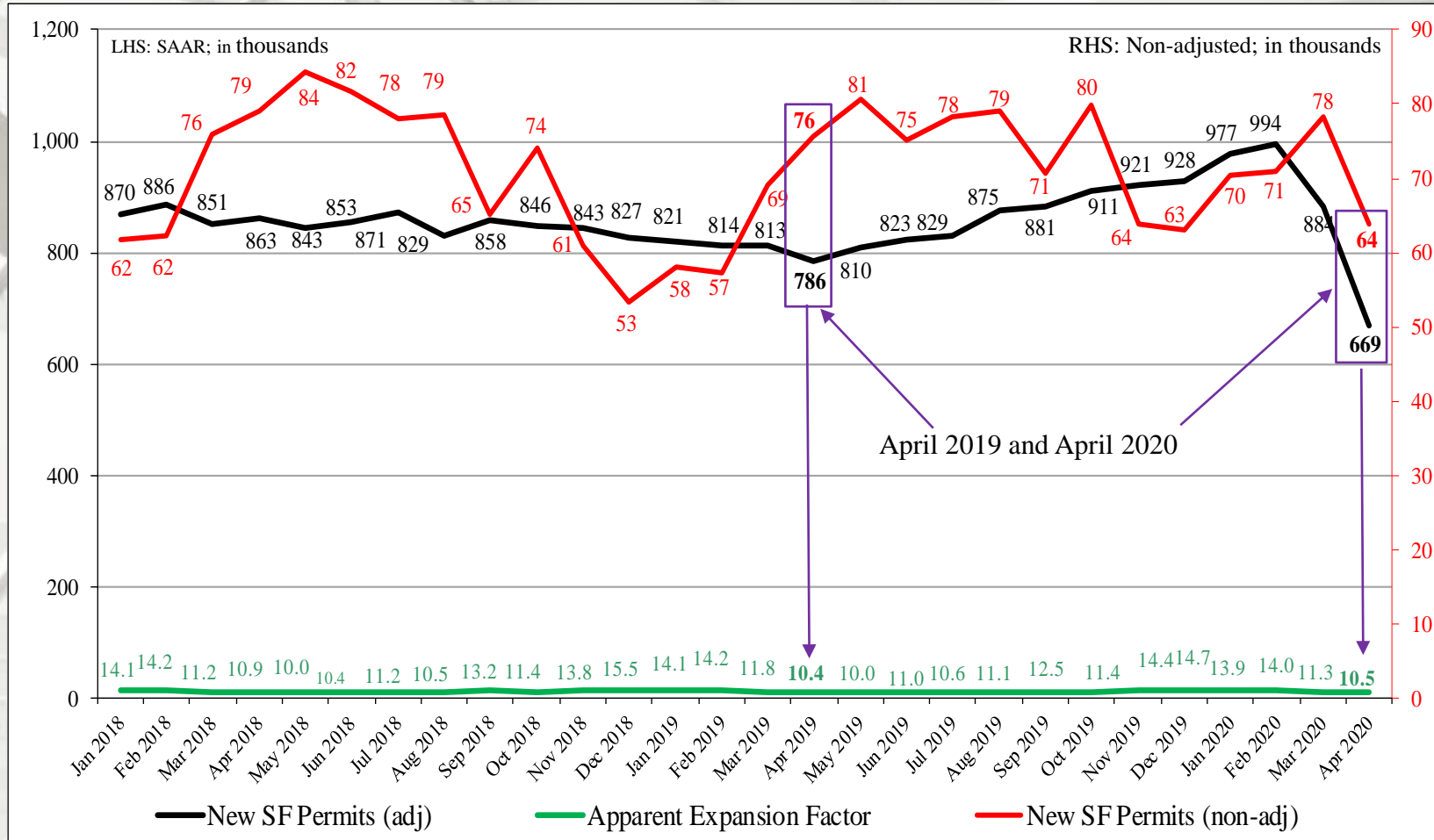
Total New Housing Permits



* 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**
April	61,000	30,000	31,000
March	112,000	55,000	57,000
2019	134,000	49,000	85,000
M/M change	-45.5%	-45.5%	-45.6%
Y/Y change	-54.5%	-38.8%	-63.5%
	MW Total*	MW SF	MW MF**
April	146,000	93,000	53,000
March	174,000	111,000	63,000
2019	191,000	115,000	76,000
M/M change	-16.1%	-16.2%	-15.9%
Y/Y change	-23.6%	-19.1%	-30.3%

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

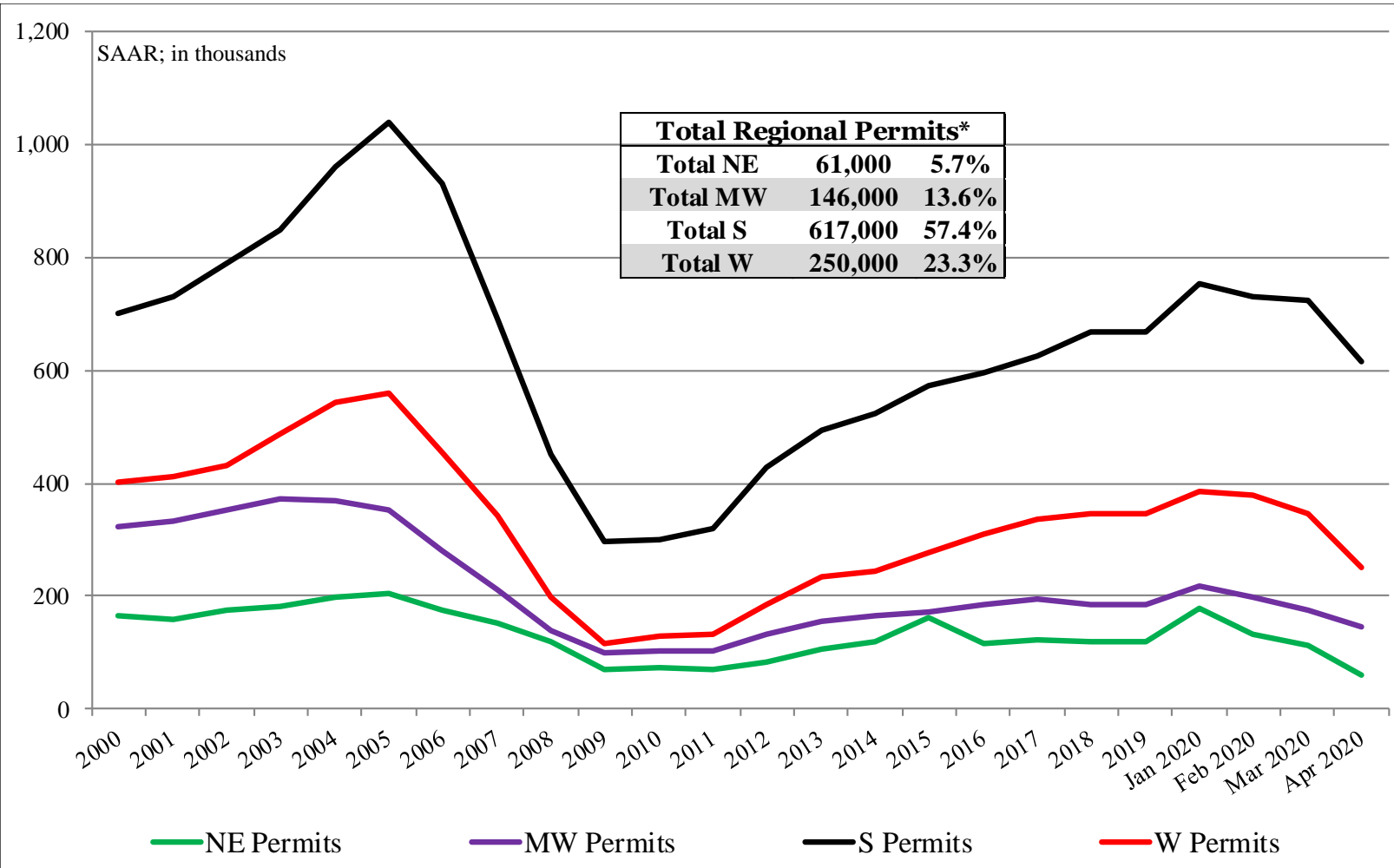
	S Total*	S SF	S MF**
April	617,000	409,000	208,000
March	723,000	513,000	210,000
2019	668,000	439,000	229,000
M/M change	-14.7%	-20.3%	-1.0%
Y/Y change	-7.6%	-6.8%	-9.2%
	W Total*	W SF	W MF**
April	250,000	137,000	113,000
March	347,000	205,000	142,000
2019	337,000	197,000	140,000
M/M change	-28.0%	-33.2%	-20.4%
Y/Y change	-25.8%	-30.5%	-19.3%

S = South; W = West

* All data are SAAR

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

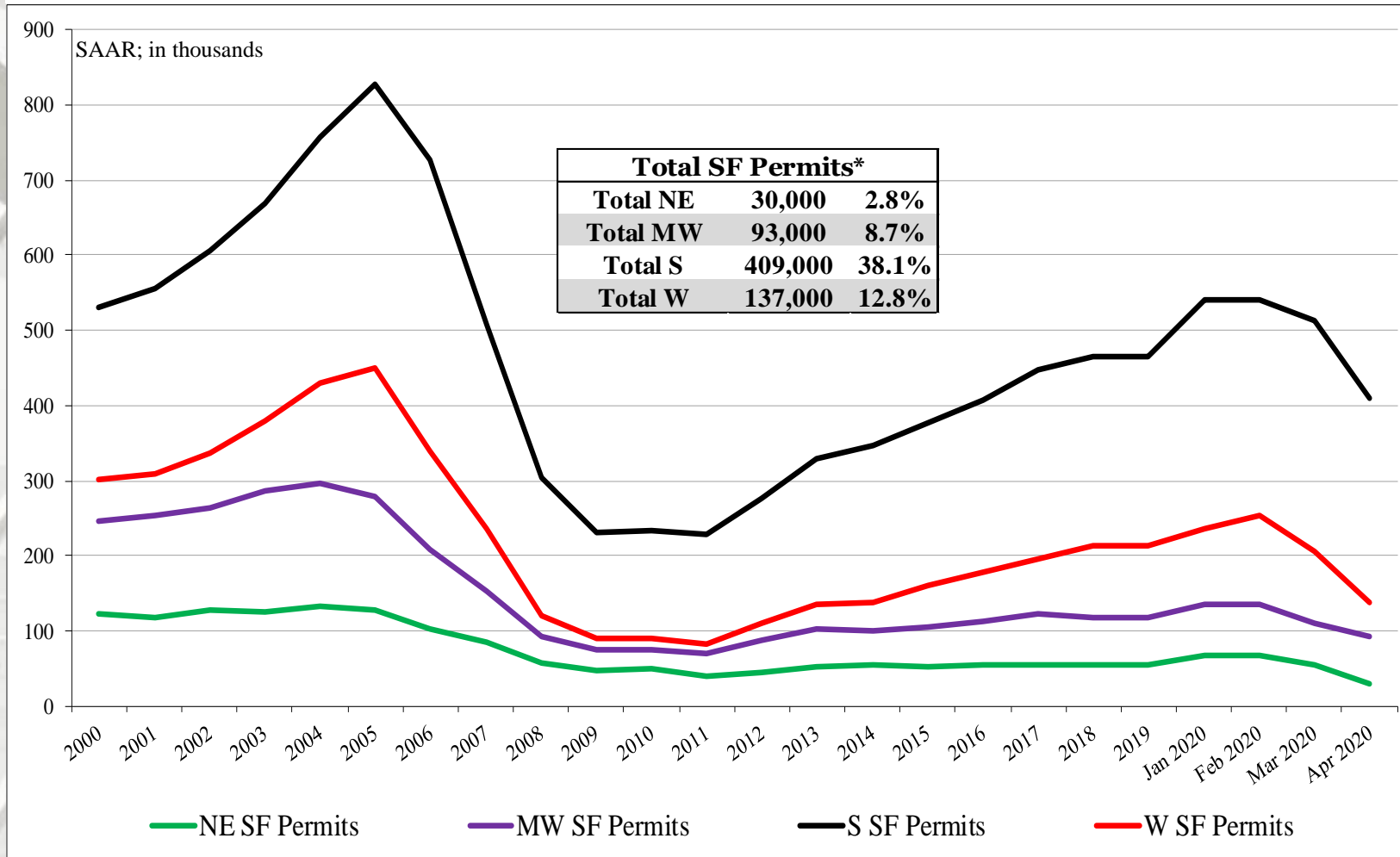
Total Housing Permits by Region



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

* Percentage of total permits.

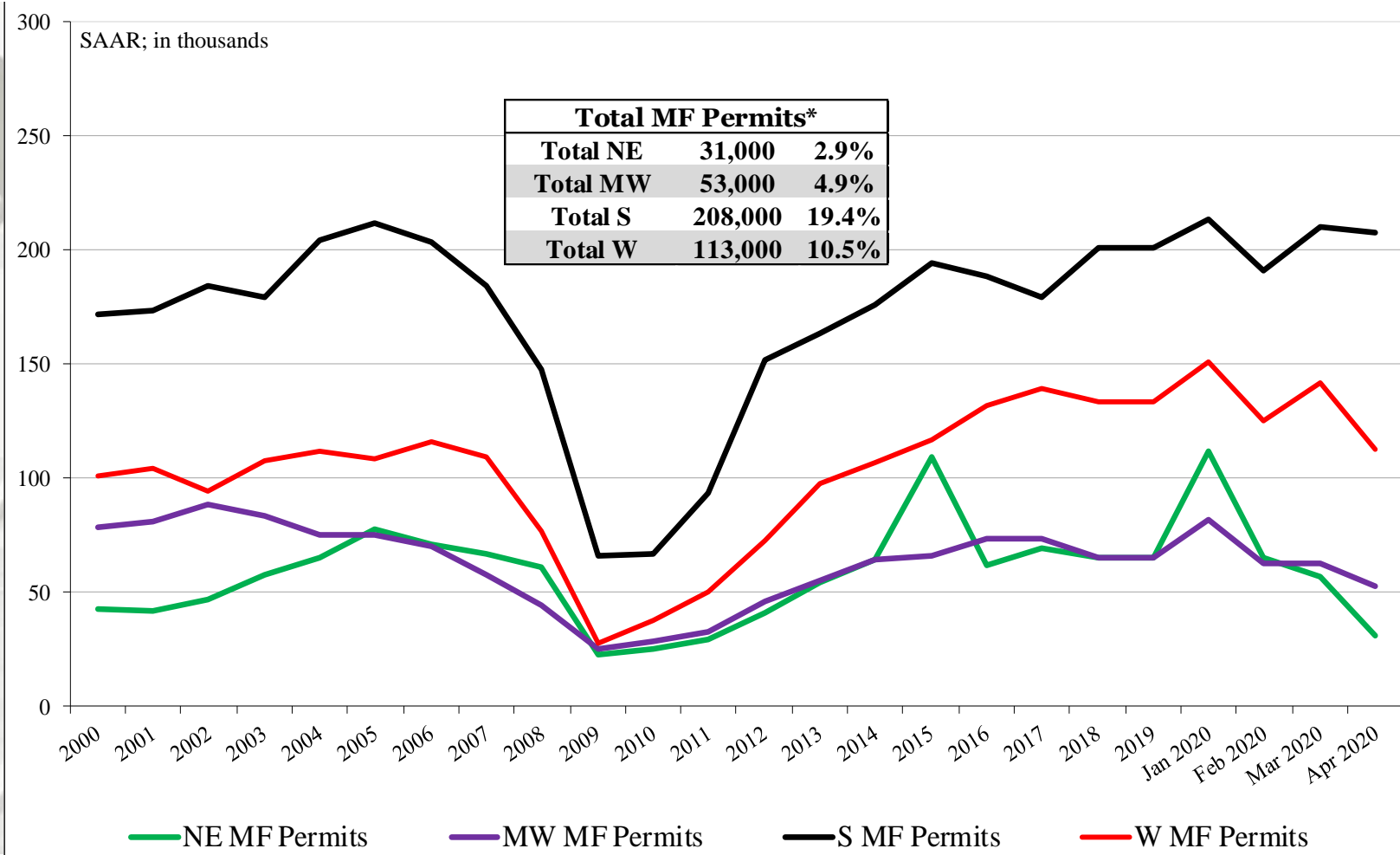
SF Housing Permits by Region



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.

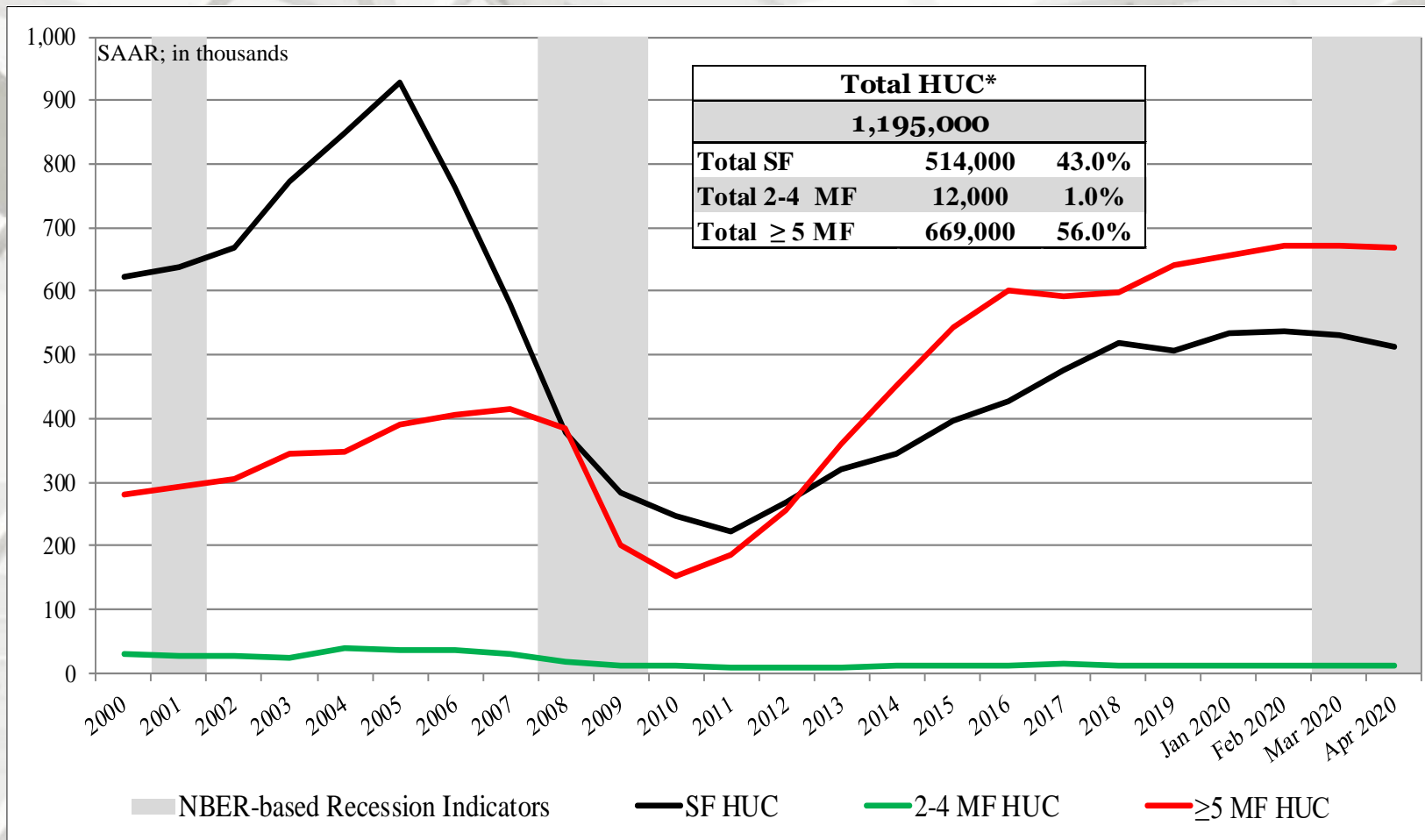
New Housing Under Construction (HUC)

	Total Under Construction*	SF Under Construction	MF 2-4 unit** Under Construction	MF ≥ 5 unit Under Construction
April	1,195,000	514,000	12,000	669,000
March	1,216,000	532,000	12,000	672,000
2019	1,122,000	528,000	11,000	583,000
M/M change	-1.7	-3.4	0.0	-0.4
Y/Y change	6.5	-2.7	9.1	14.8

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**
April	174,000	54,000	120,000
March	175,000	55,000	120,000
2019	182,000	66,000	116,000
M/M change	-0.6	-1.8	0.0
Y/Y change	-4.4	-18.2	3.4
	MW Total	MW SF	MW MF
April	148,000	74,000	74,000
March	152,000	77,000	75,000
2019	140,000	75,000	65,000
M/M change	-2.6	-3.9	-1.3
Y/Y change	5.7	-1.3	13.8

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).

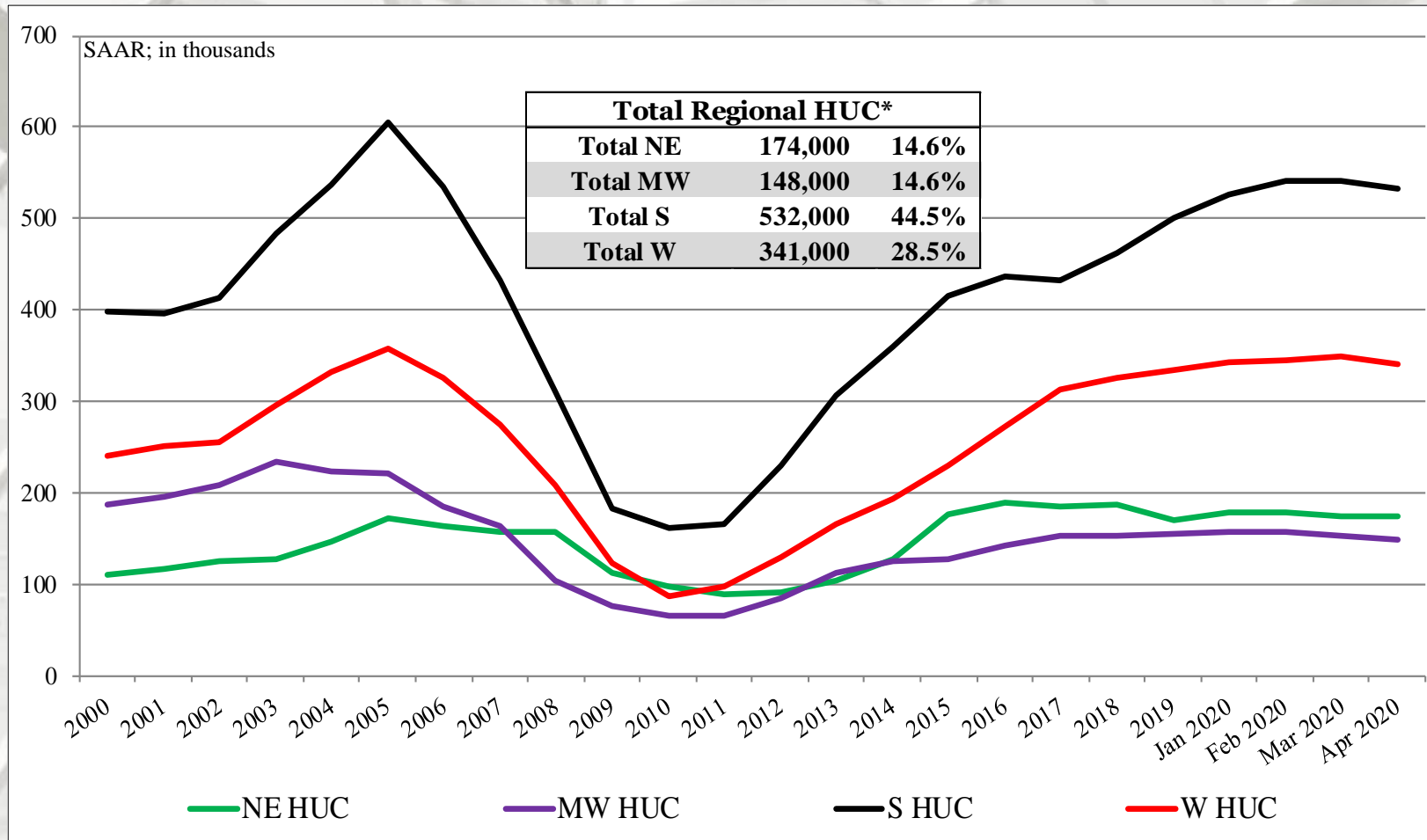
New Housing Under Construction by Region 2/2

	S Total	S SF	S MF**
April	532,000	245,000	287,000
March	541,000	255,000	286,000
2019	478,000	251,000	227,000
M/M change	-1.7	-3.9	0.3
Y/Y change	11.3	-2.4	26.4
	W Total	W SF	W MF
April	341,000	141,000	200,000
March	348,000	145,000	203,000
2019	322,000	136,000	186,000
M/M change	-2.0	-2.8	-1.5
Y/Y change	5.9	3.7	7.5

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



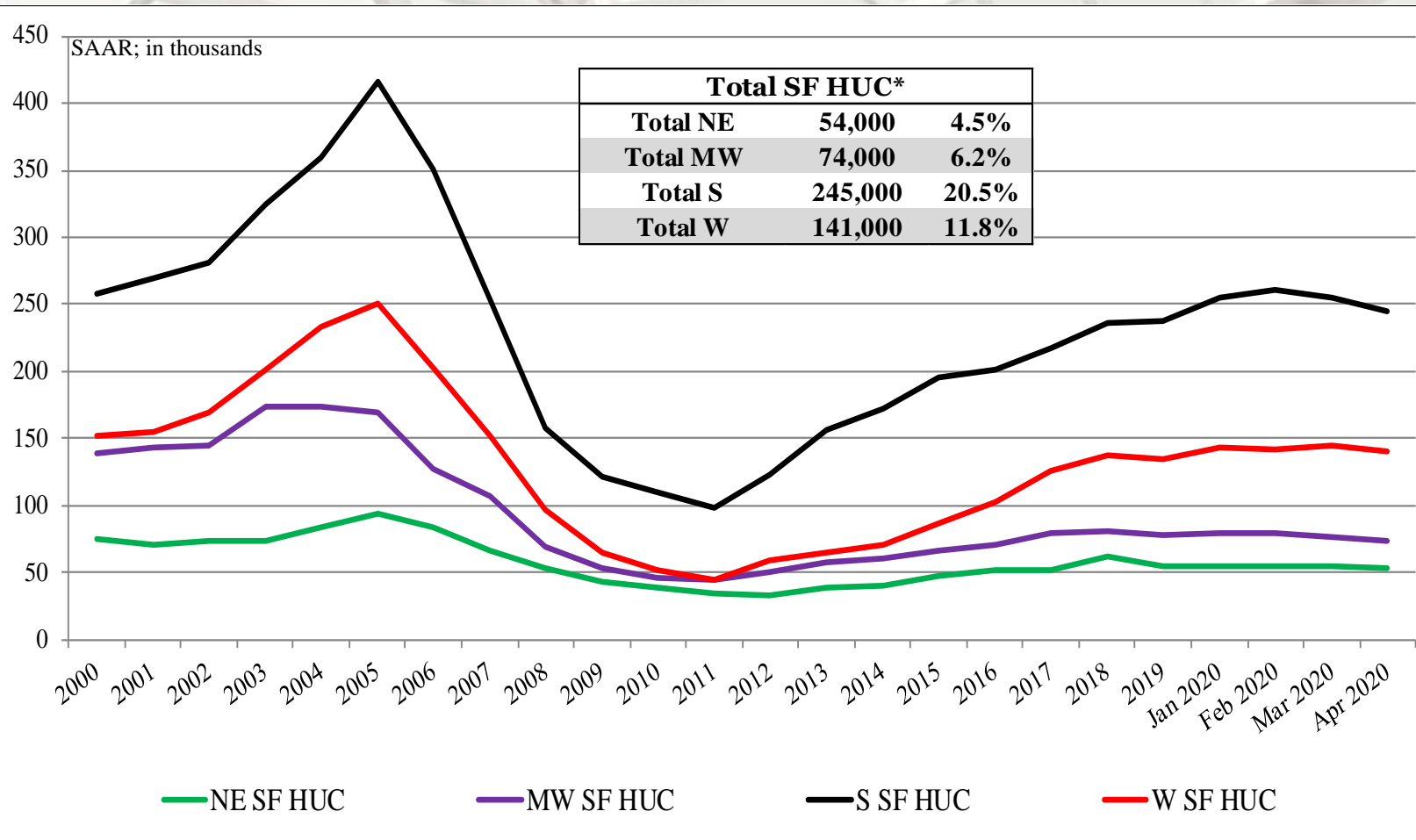
NE = Northeast, MW = Midwest, S = South, W = West

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

* Percentage of total housing under construction units.

Source: <http://www.census.gov/construction/nrc/pdf/newresconst.pdf>; 5/19/20

SF Housing Under Construction by Region

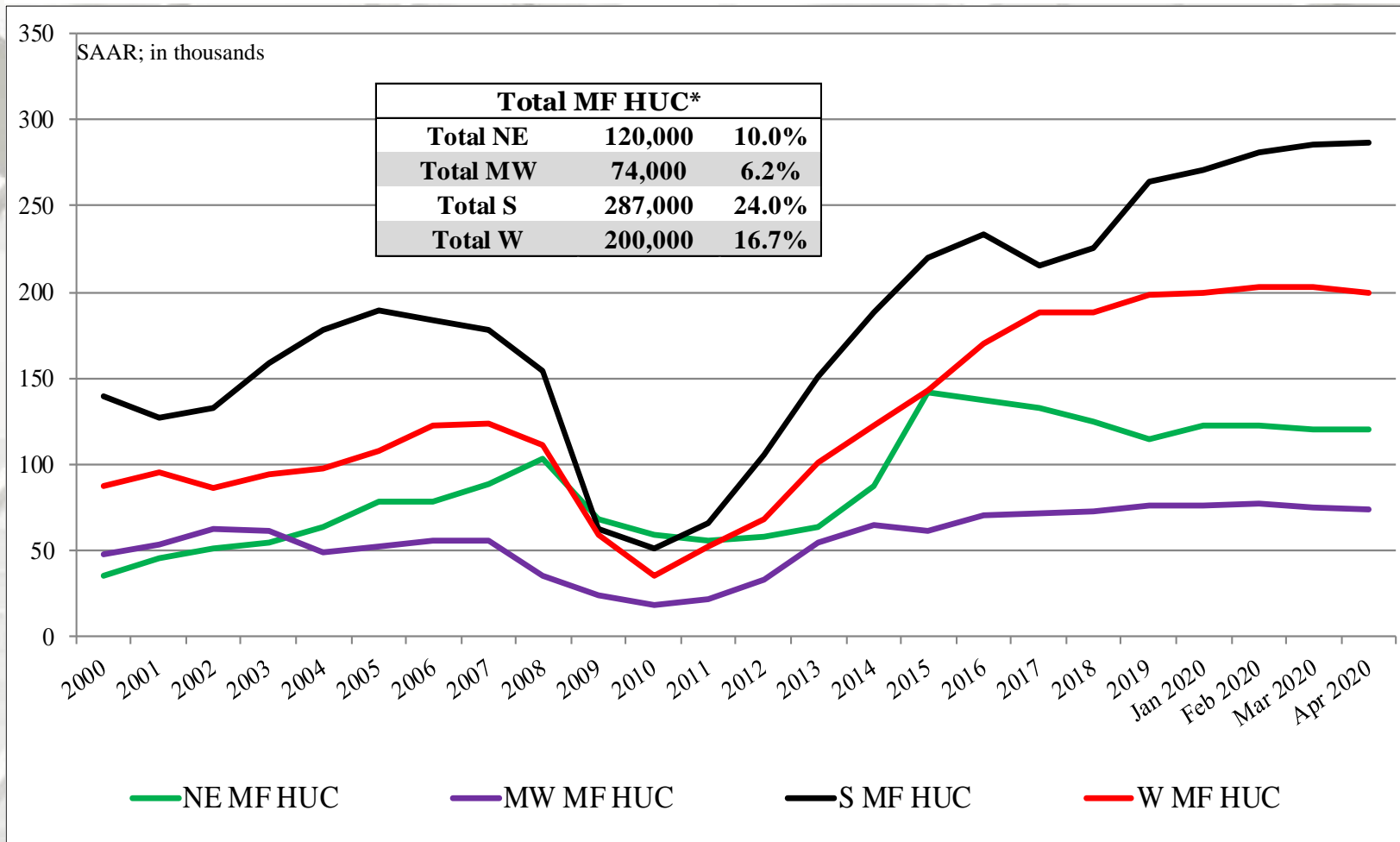


NE = Northeast, MW = Midwest, S = South, W = West.

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.

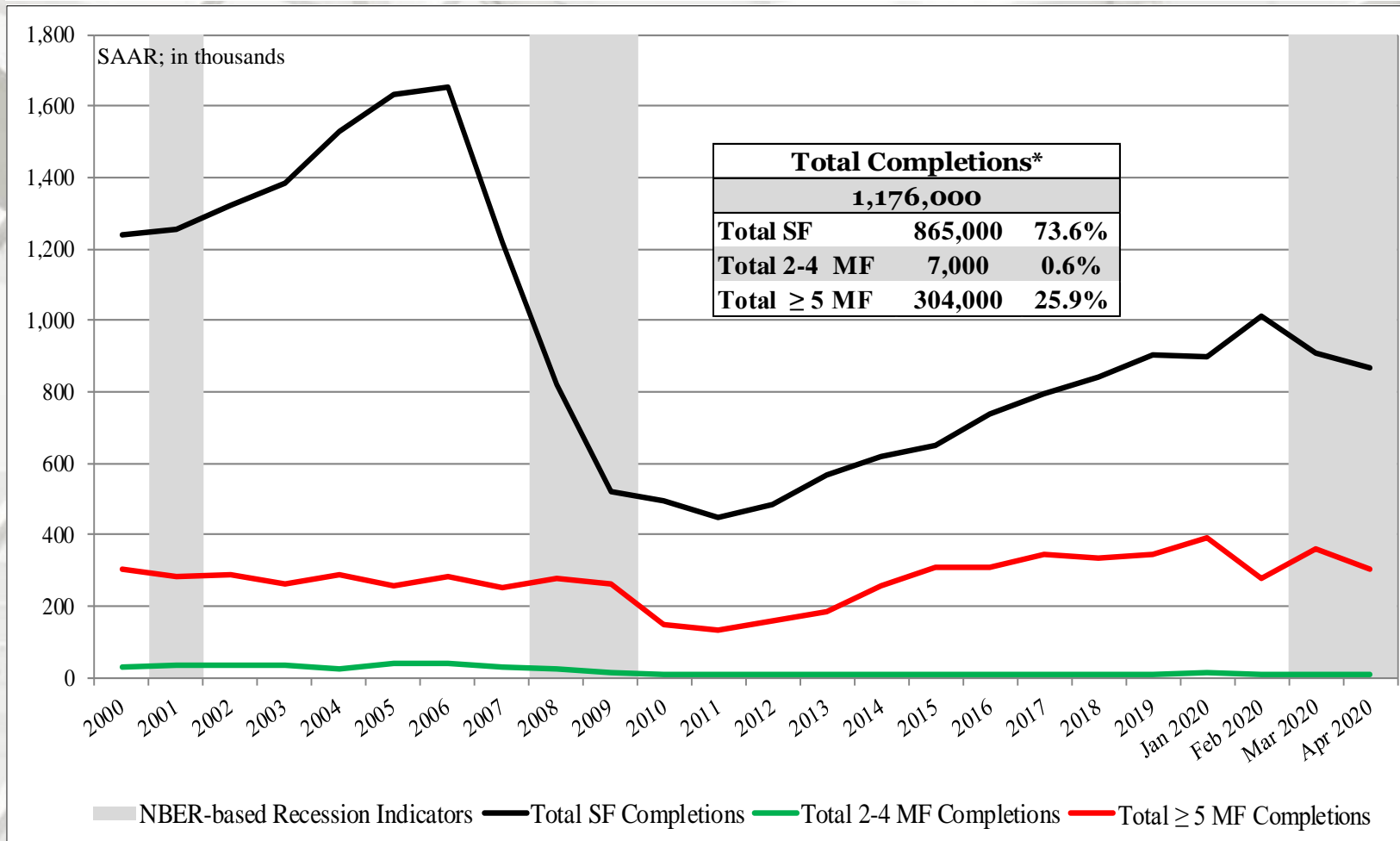
New Housing Completions

	Total Completions*	SF Completions	MF 2-4 unit**	MF ≥ 5 unit Completions
April	1,176,000	865,000	7,000	304,000
March	1,279,000	910,000	7,000	362,000
2019	1,334,000	924,000	12,000	398,000
M/M change	-8.1%	-4.9%	0.0%	-16.0%
Y/Y change	-11.8%	-6.4%	-41.7%	-23.6%

* 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**
April	48,000	29,000	19,000
March	80,000	48,000	32,000
2019	120,000	51,000	69,000
M/M change	-40.0%	-39.6%	-40.6%
Y/Y change	-60.0%	-43.1%	-72.5%
	MW Total	MW SF	MW MF
April	181,000	134,000	47,000
March	203,000	132,000	71,000
2019	190,000	131,000	59,000
M/M change	-10.8%	1.5%	-33.8%
Y/Y change	-4.7%	2.3%	-20.3%

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**
April	676,000	528,000	148,000
March	702,000	525,000	177,000
2019	659,000	513,000	146,000
M/M change	-3.7%	0.6%	-16.4%
Y/Y change	2.6%	2.9%	1.4%
	W Total	W SF	W MF
April	271,000	174,000	97,000
March	294,000	205,000	89,000
2019	365,000	229,000	136,000
M/M change	-7.8%	-15.1%	9.0%
Y/Y change	-25.8%	-24.0%	-28.7%

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

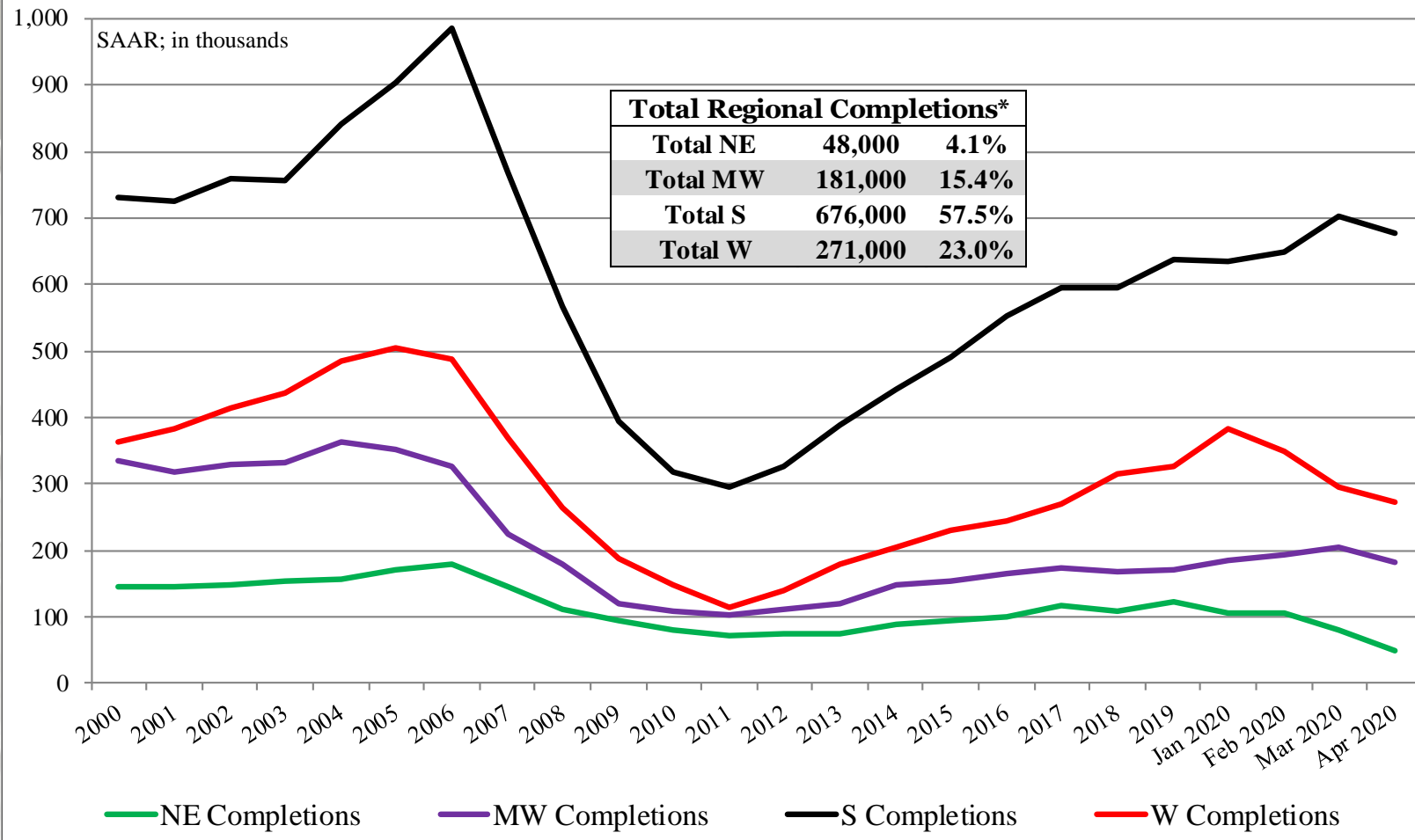
US DOC does not report 2 to 4 multi-family completions directly, this is an estimation (Total completions – SF completions).

* Percentage of total housing completions

Source: <http://www.census.gov/construction/nrc/pdf/newresconst.pdf>; 5/19/20

Return TOC

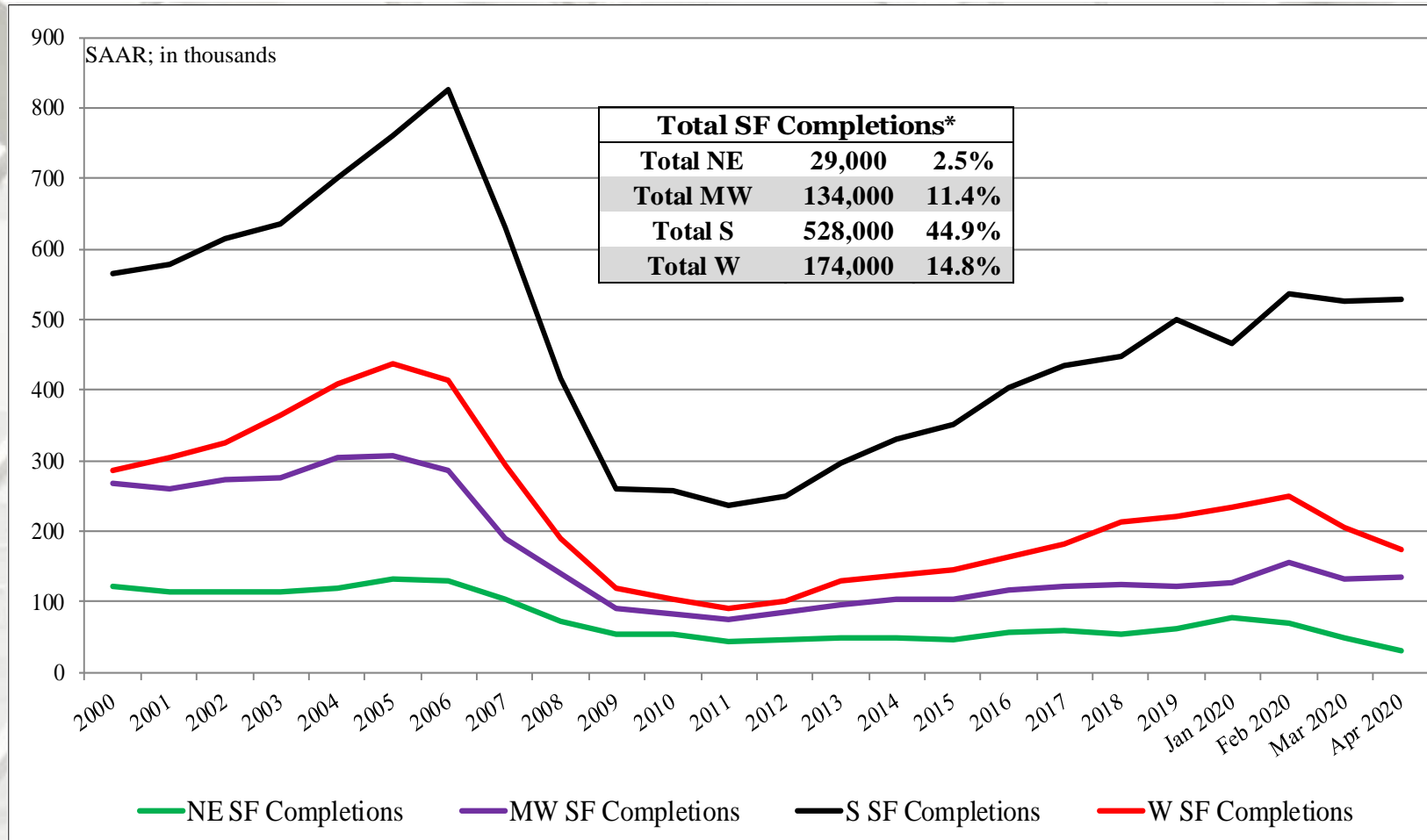
Total Housing Completions by Region



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

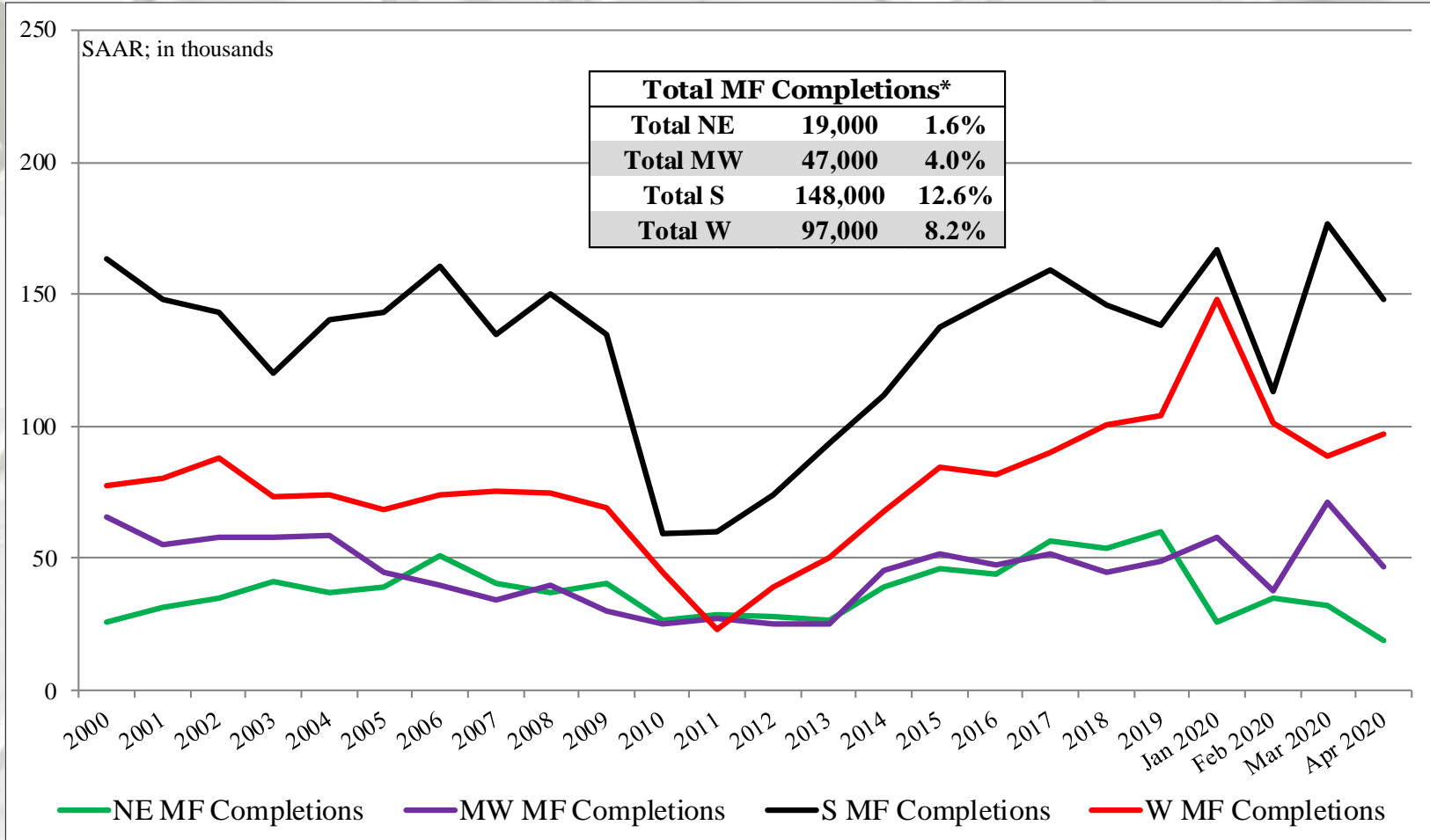


NE = Northeast, MW = Midwest, S = South, W = West

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

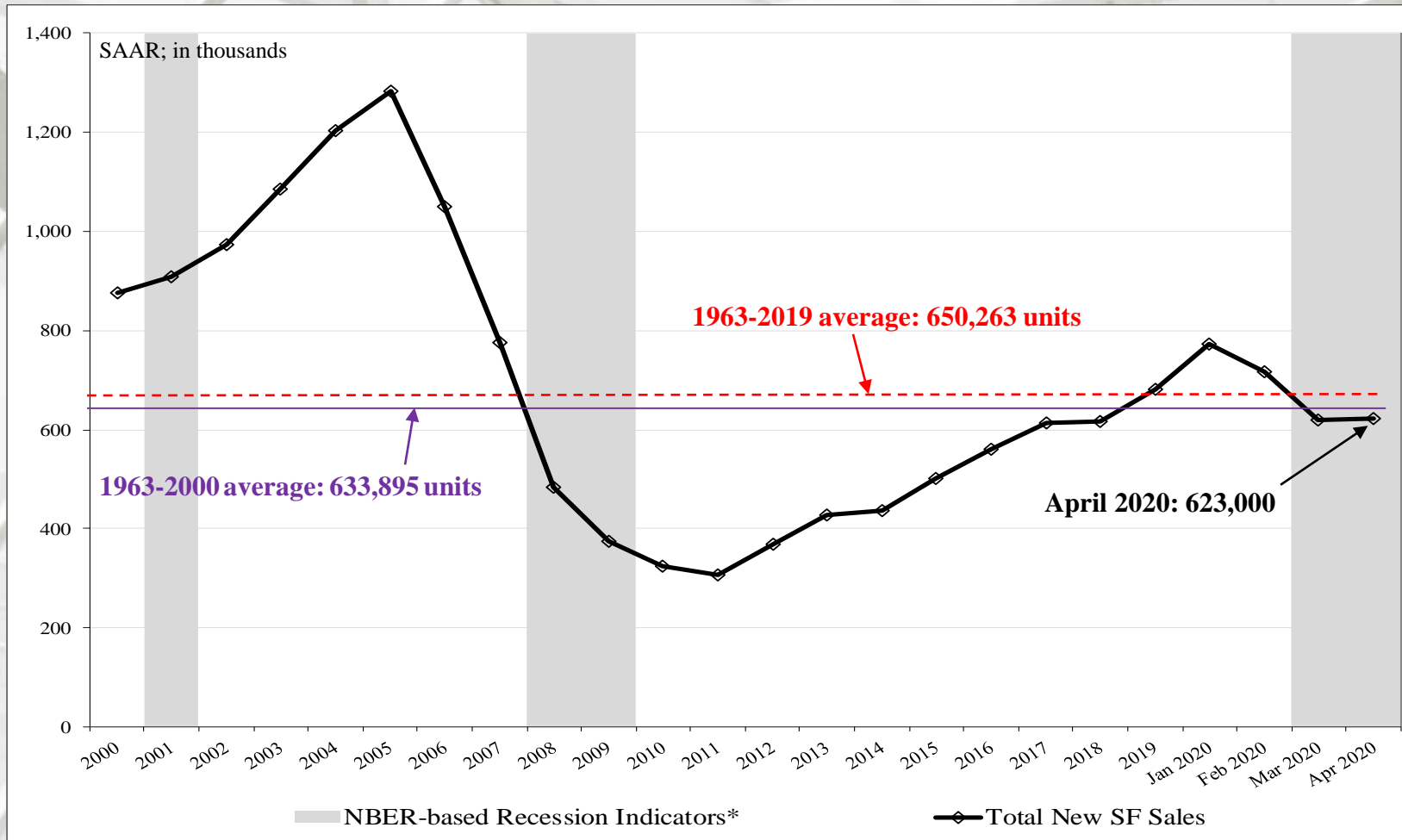
	New SF Sales*	Median Price	Mean Price	Month's Supply
April	623,000	309,900	364,500	6.3
March	619,000	326,900	377,400	6.4
2019	664,000	339,000	385,400	6.1
M/M change	0.6%	-5.2%	-3.4%	-1.6%
Y/Y change	-6.2%	-8.6%	-5.4%	3.3%

* 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 much greater than the consensus forecast³ of 495 m (range: 450 m to 592 m). The past three month's new SF sales data also were revised:

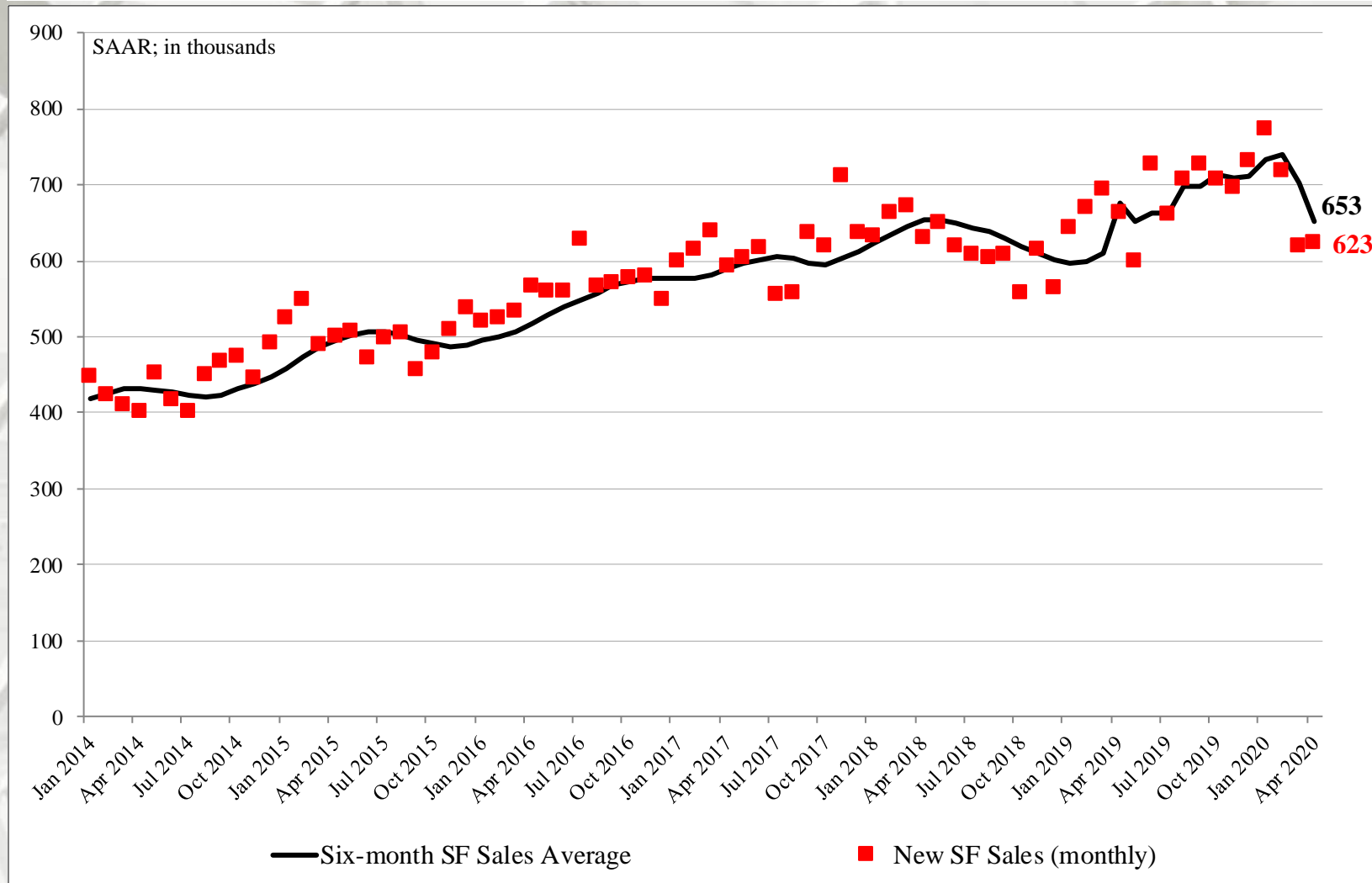
January initial:	764 m revised to 774 m;
February initial:	765 m revised to 717 m;
March initial:	627 m revised to 619 m.

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			
April	25,000	86,000	379,000	133,000			
March	23,000	84,000	370,000	142,000			
2019	34,000	68,000	362,000	200,000			
M/M change	8.7%	2.4%	2.4%	-6.3%			
Y/Y change	-26.5%	26.5%	4.7%	-33.5%			
	≤ \$150m	\$150 - \$199.9m	\$200 - 299.9m	\$300 - \$399.9m	\$400 - \$499.9m	\$500 - \$749.9m	≥ \$750m
April ^{1,2,3,4}	1,000	6,000	20,000	14,000	9,000	6,000	2,000
March	1,000	5,000	20,000	16,000	9,000	6,000	3,000
2019	1,000	4,000	18,000	18,000	10,000	9,000	3,000
M/M change	0.0%	20.0%	0.0%	-12.5%	0.0%	0.0%	-33.3%
Y/Y change	0.0%	50.0%	11.1%	-22.2%	-10.0%	-33.3%	-33.3%
New SF sales: %	1.7%	10.3%	34.5%	24.1%	15.5%	10.3%	3.4%

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 April not add to total because of rounding.

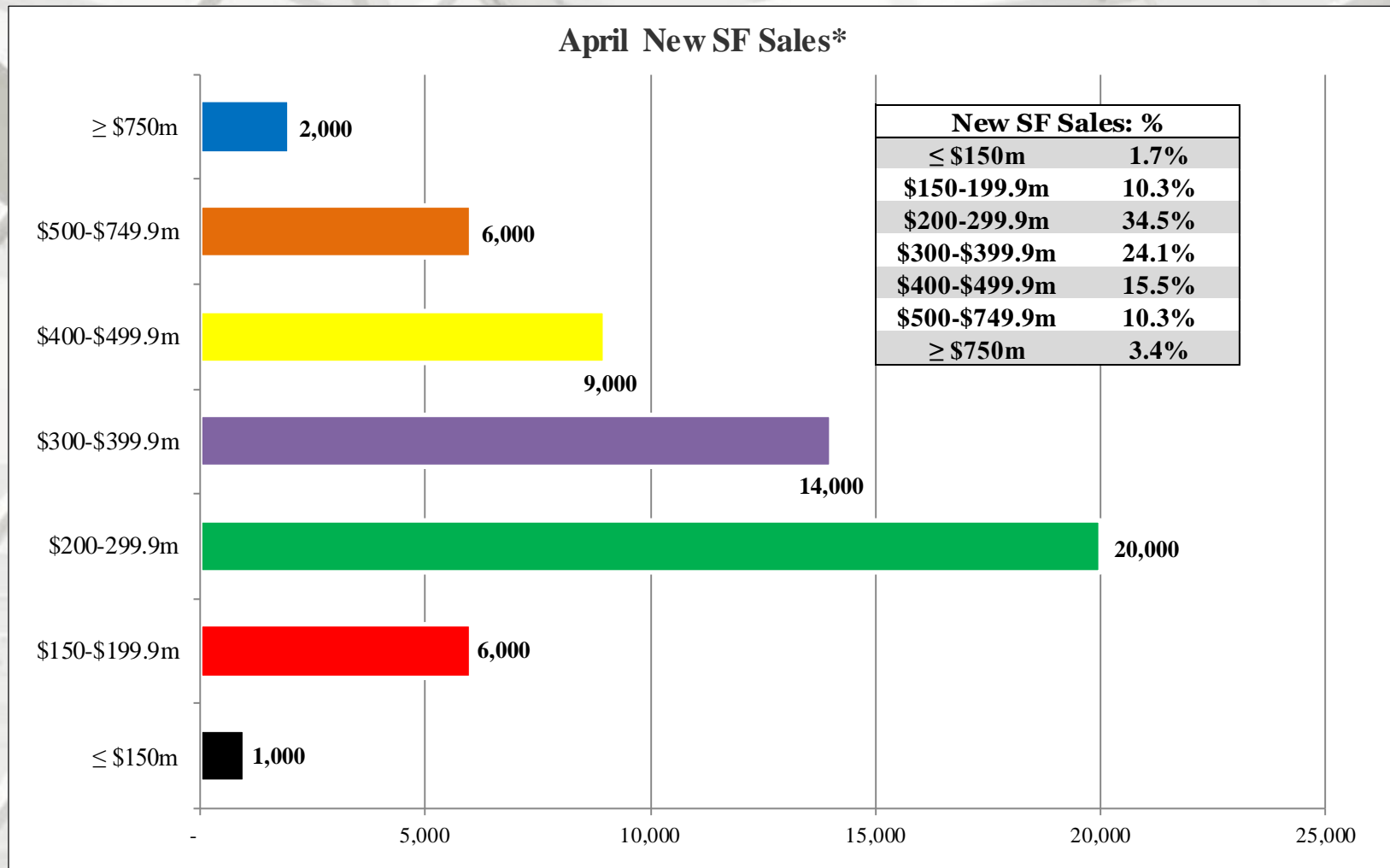
⁴ Housing prices are adjusted at irregular intervals.

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

Sources: ^{1,2,3} <https://www.census.gov/construction/nrs/index.html>; 5/26/20;

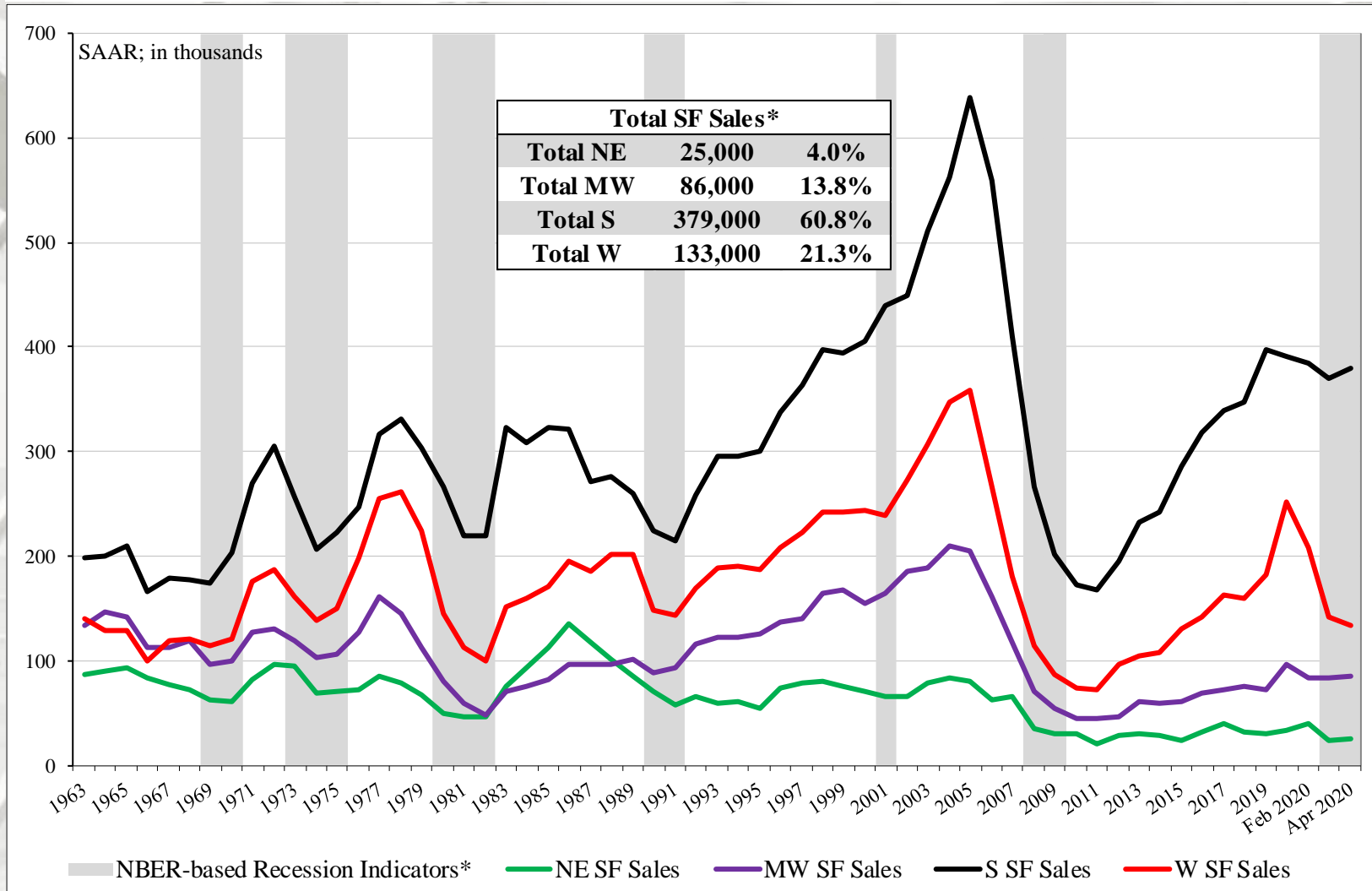
⁴ https://www.census.gov/construction/cpi/pdf/descpi_sold.pdf

New SF House Sales 2/7



- Total new sales by price category and percent.

New SF House Sales by Region

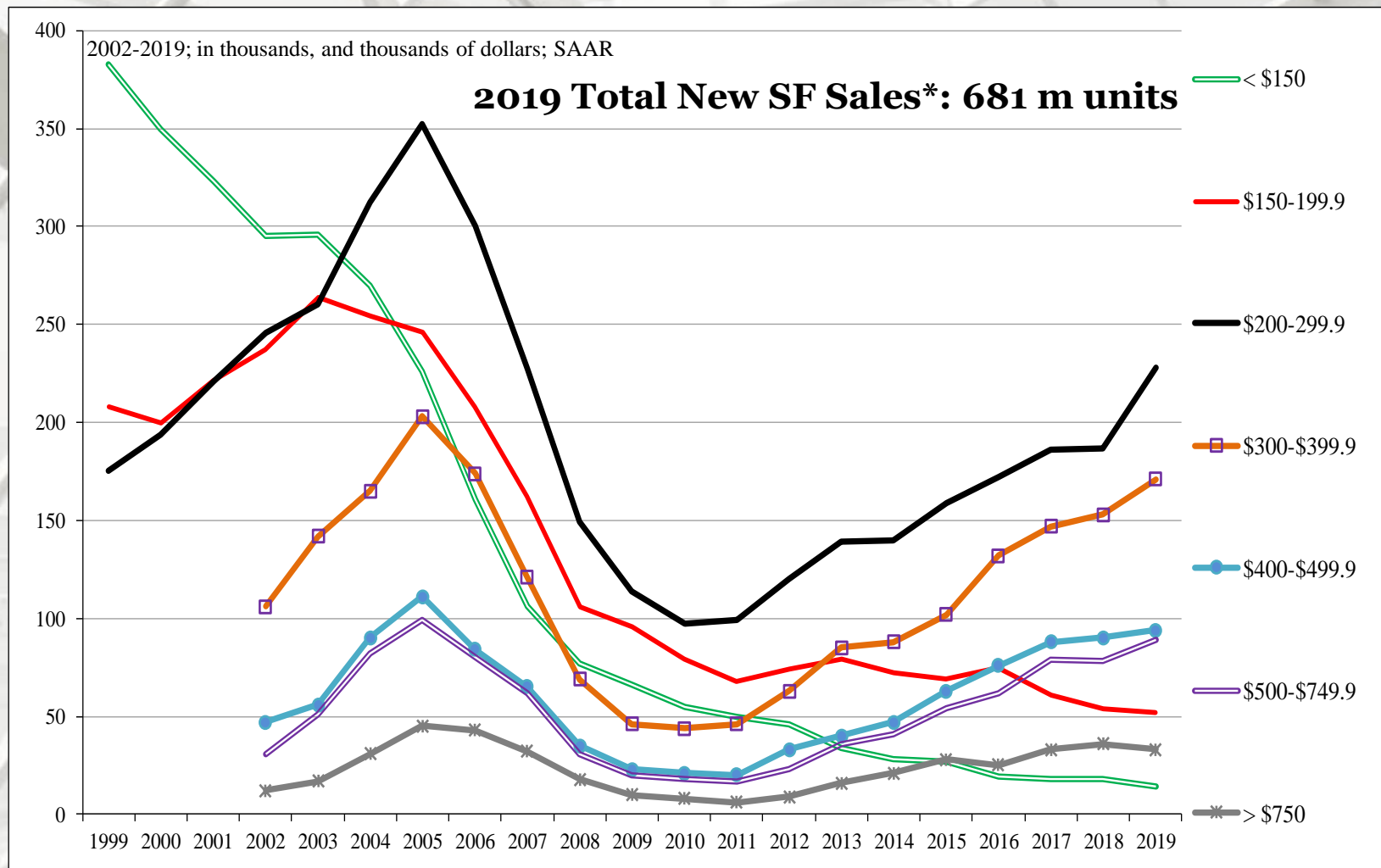


NE = Northeast; MW = Midwest; S = South; W = West

* Percentage of total new sales.

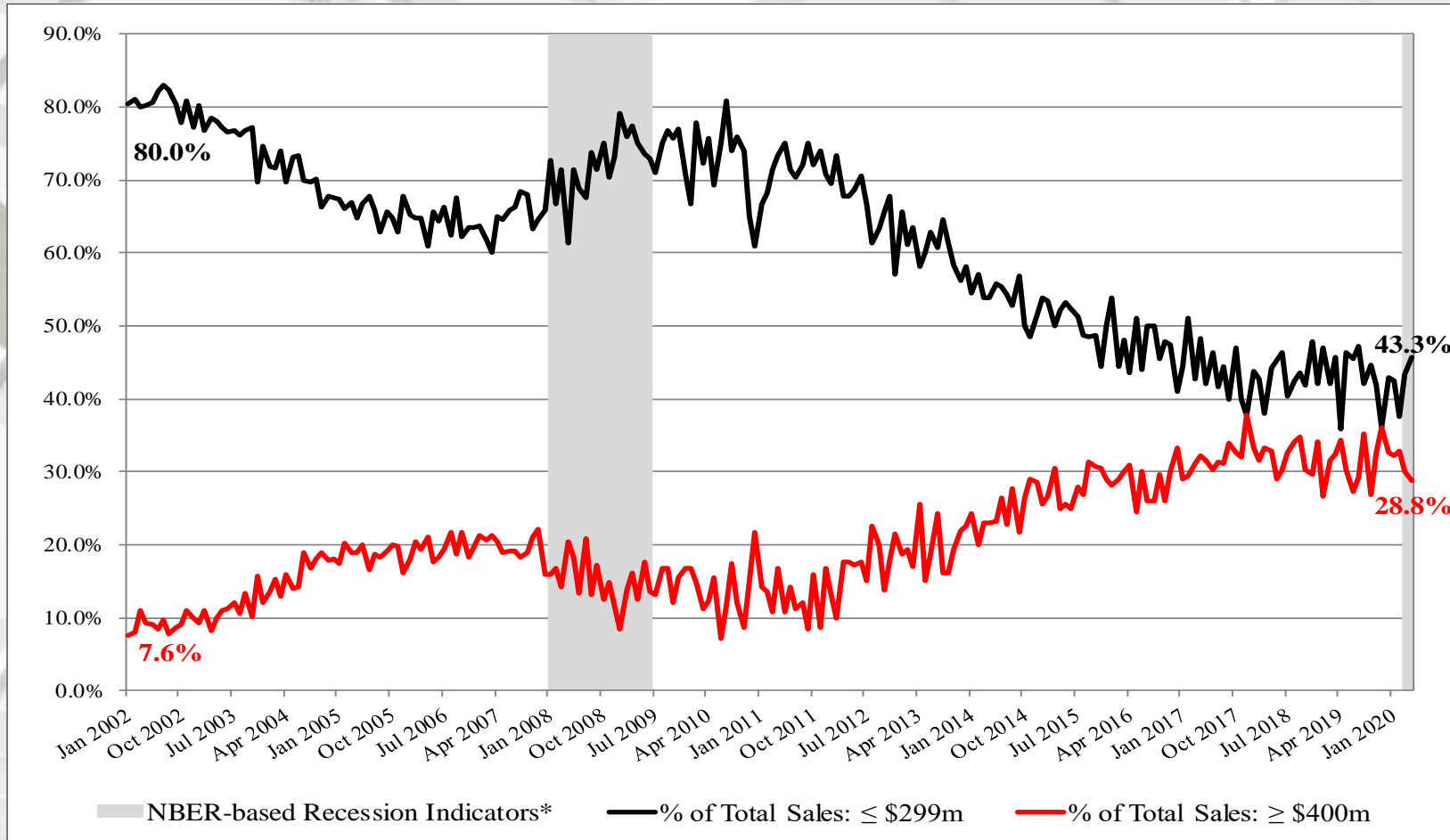
* NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New SF House Sales by Price Category



* Sales tallied 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 – April 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.

Source: ¹ <https://www.census.gov/construction/nrs/index.html>; ² https://www.census.gov/construction/cpi/pdf/descpi_sold.pdf 5/26/20

New SF House Sales 4/7



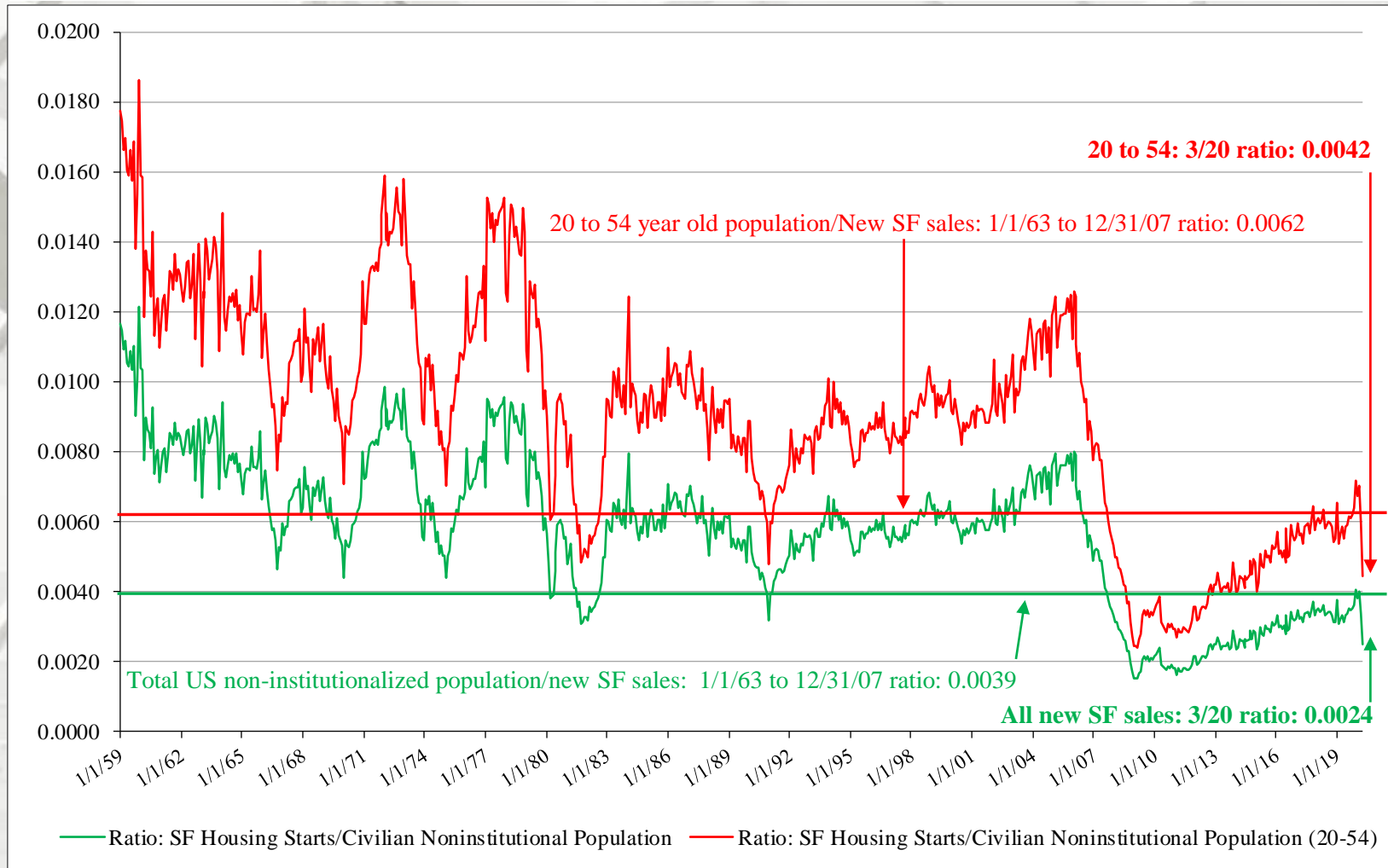
New SF Sales: ≤ \$ 200m and ≥ \$500m: 2002 to April 2020

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).

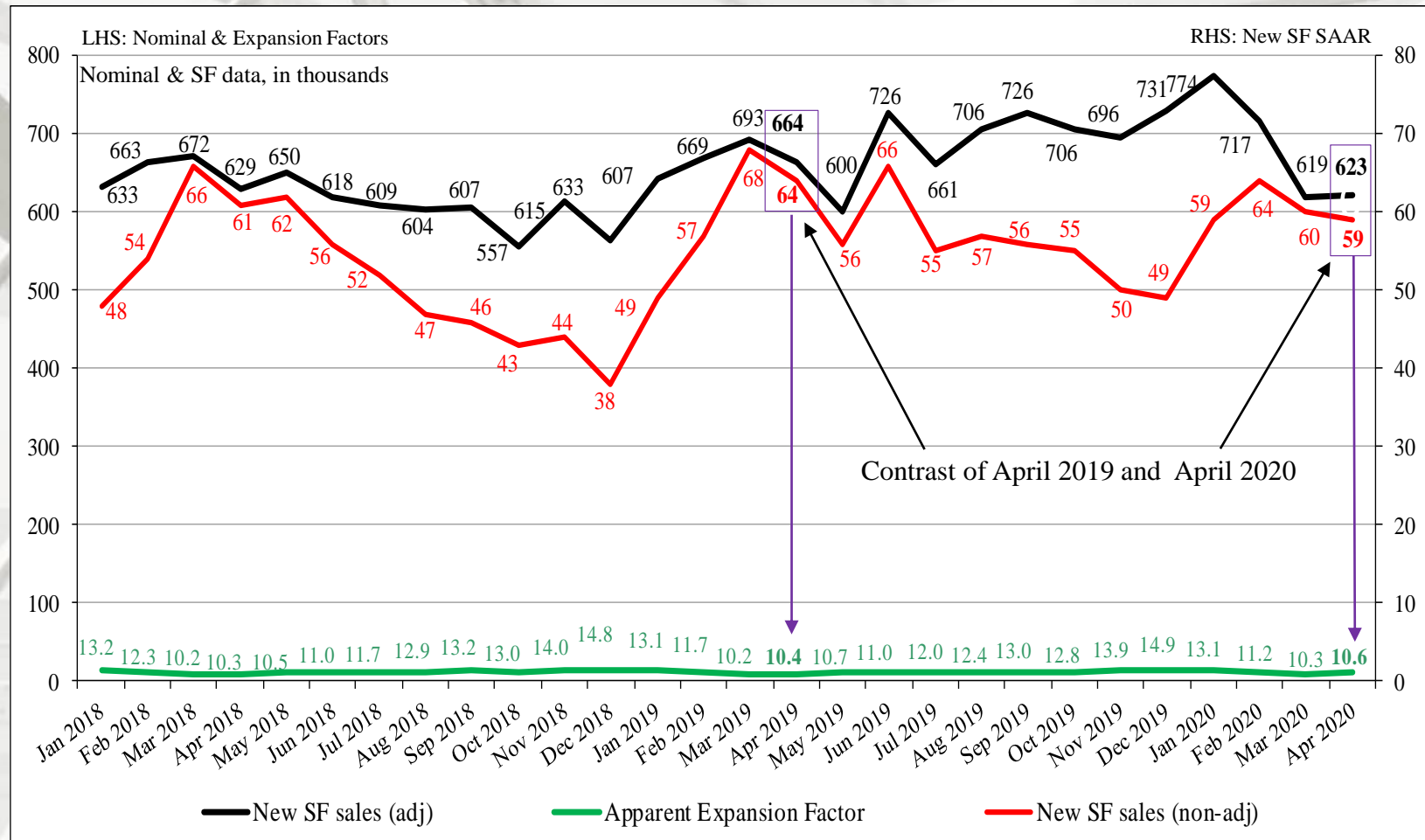
New SF House Sales 5/7



New SF sales adjusted for the US population

From April 1963 to April 2007, the long-term ratio of new house sales to the total US non-institutionalized population was 0.0039; in April 2020 it was 0.0024 – no change from March. The non-institutionalized population, aged 20 to 54 long-term ratio is 0.0062; in April 2020 it was 0.0042 – also no change from March. 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

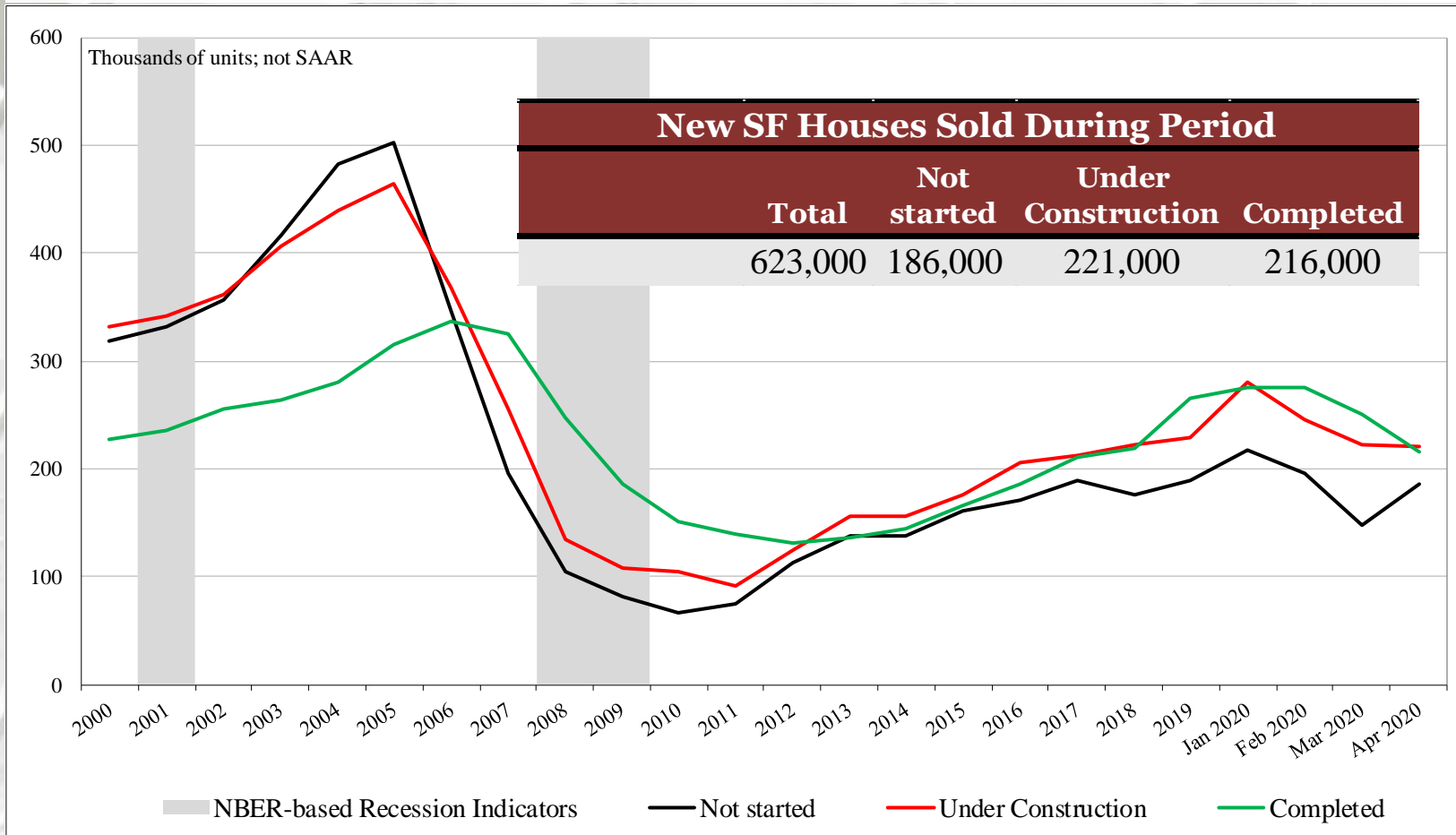
New SF House Sales 6/7

New SF Houses Sold During Period

	Total	Not started	Under Construction	Completed
April	623,000	186,000	221,000	216,000
March	619,000	147,000	222,000	250,000
2019	664,000	184,000	218,000	262,000
M/M change	0.6%	26.5%	-0.5%	-13.6%
Y/Y change	-6.2%	1.1%	1.4%	-17.6%
Total percentage		29.9%	35.5%	34.7%

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).

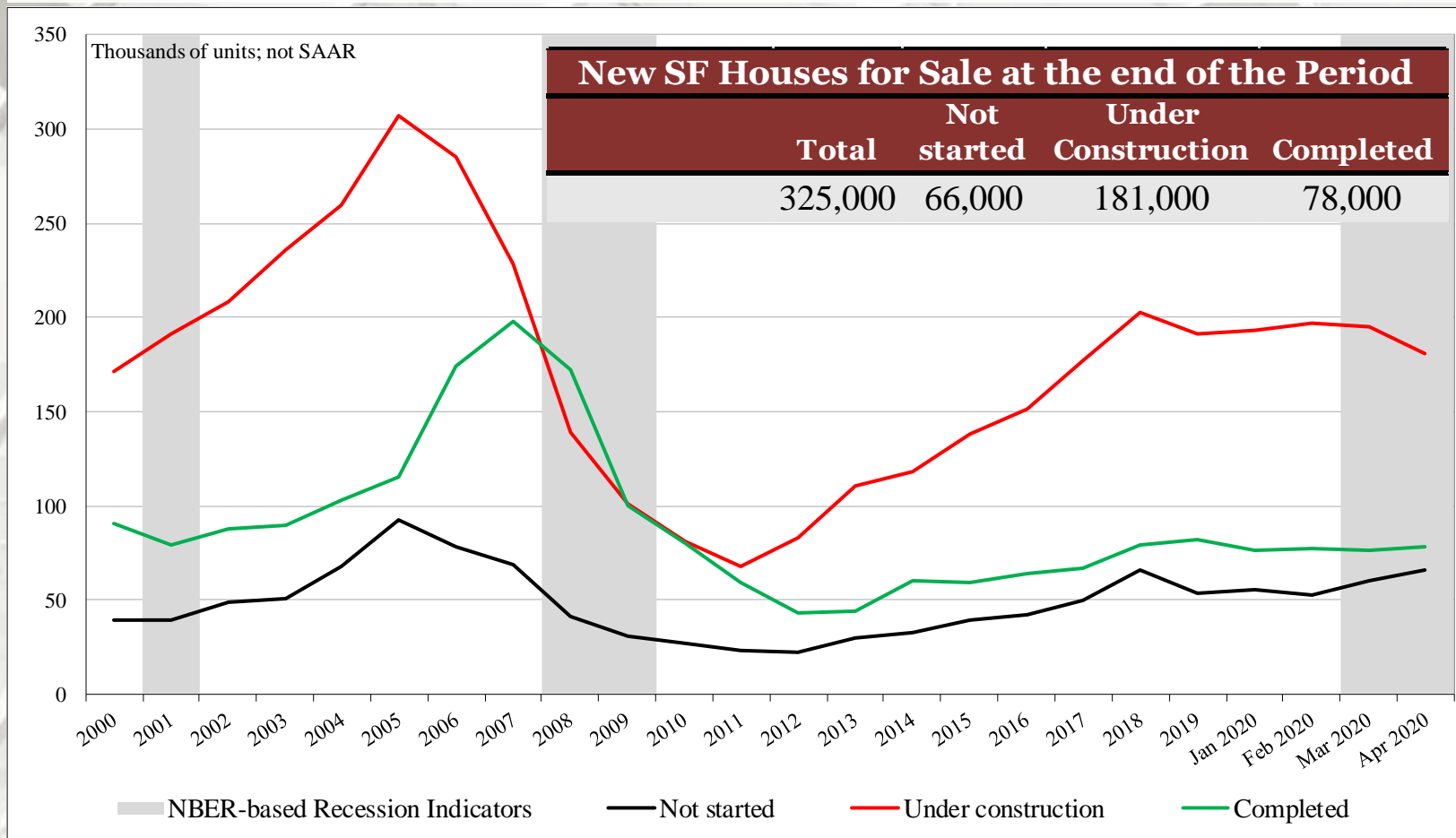
New SF Houses for Sale at End of Period

New SF Houses for Sale at the end of the Period

	Total	Not started	Under Construction	Completed
April	325,000	66,000	181,000	78,000
March	331,000	60,000	195,000	76,000
2019	335,000	54,000	202,000	79,000
M/M change	-1.8%	10.0%	-7.2%	2.6%
Y/Y change	-3.0%	22.2%	-10.4%	-1.3%
Total percentage		20.3%	55.7%	24.0%

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).

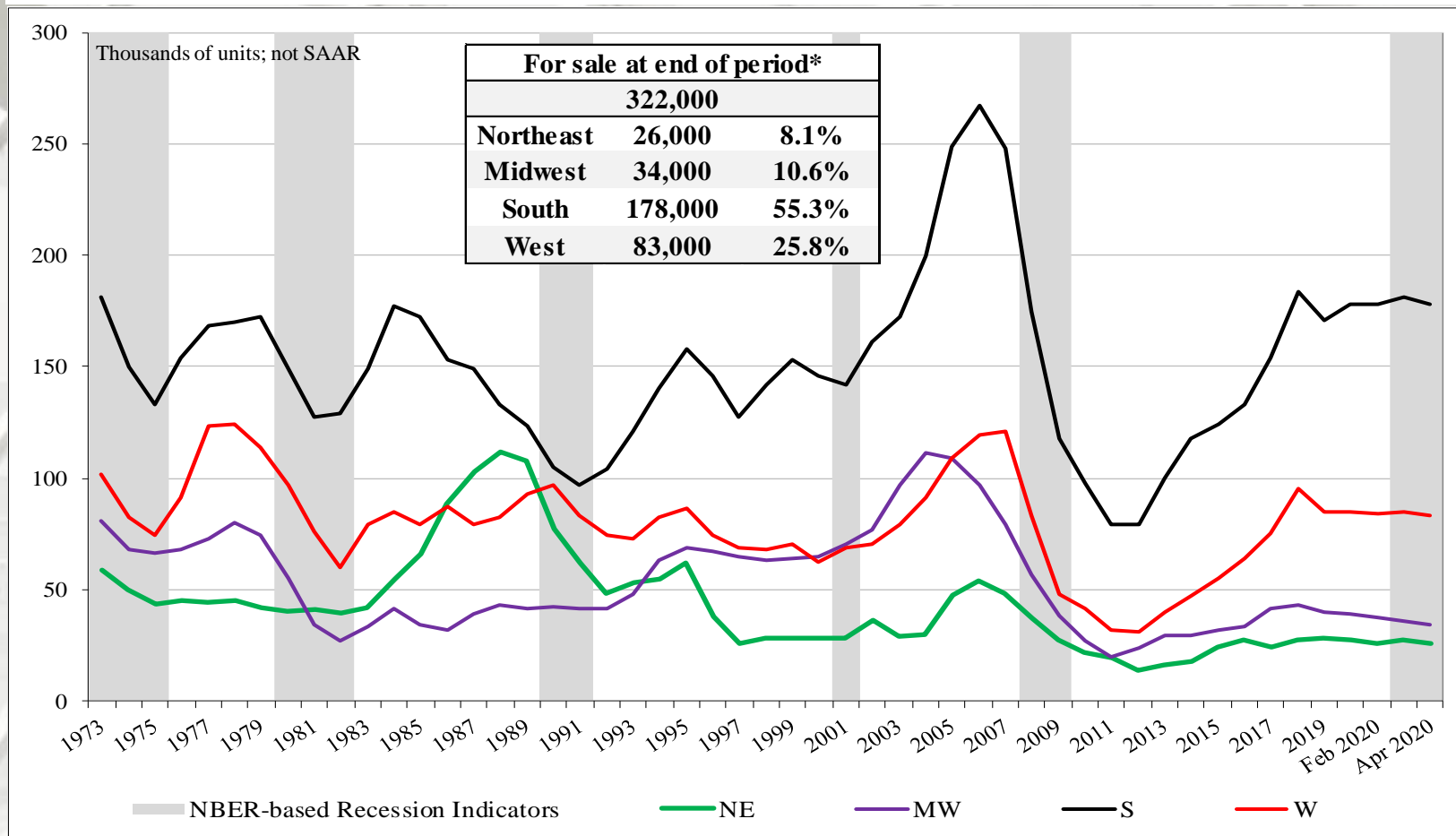
New SF House Sales 7/7

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

	Total	NE	MW	S	W
April	322,000	26,000	34,000	178,000	83,000
March	328,000	27,000	36,000	181,000	85,000
2019	330,000	28,000	39,000	181,000	82,000
M/M change	-1.8%	-3.7%	-5.6%	-1.7%	-2.4%
Y/Y change	-2.4%	-7.1%	-12.8%	-1.7%	1.2%

* 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).

April 2019 Construction Spending

	Total Private Residential*	SF	MF	Improvement**
April	\$536,780	\$280,951	\$53,620	\$202,209
March	\$561,945	\$300,866	\$58,957	\$202,122
2019	\$505,672	\$268,753	\$62,850	\$174,069
M/M change	-4.5%	-6.6%	-9.1%	0.0%
Y/Y change	6.2%	4.5%	-14.7%	16.2%

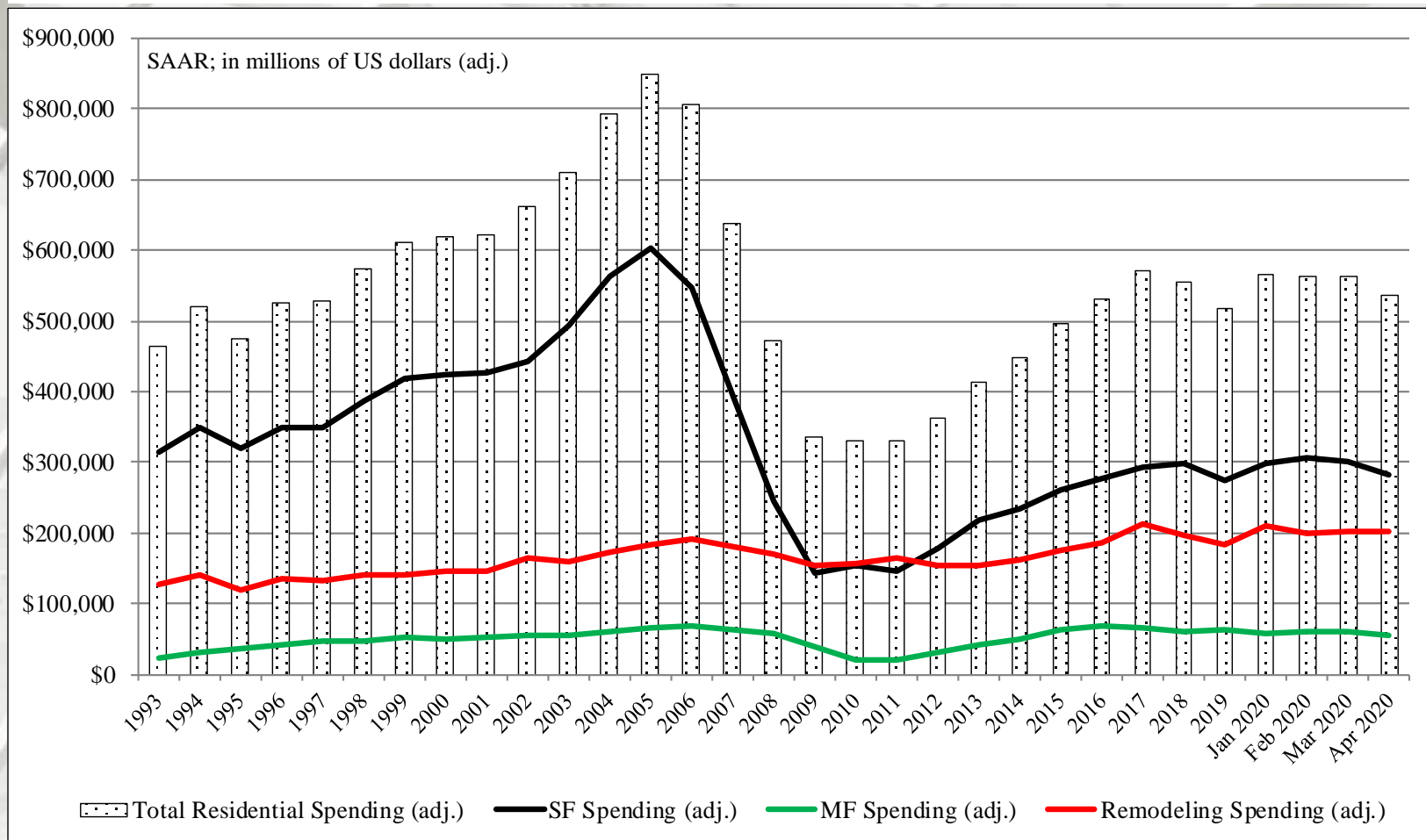
* billion.

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

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

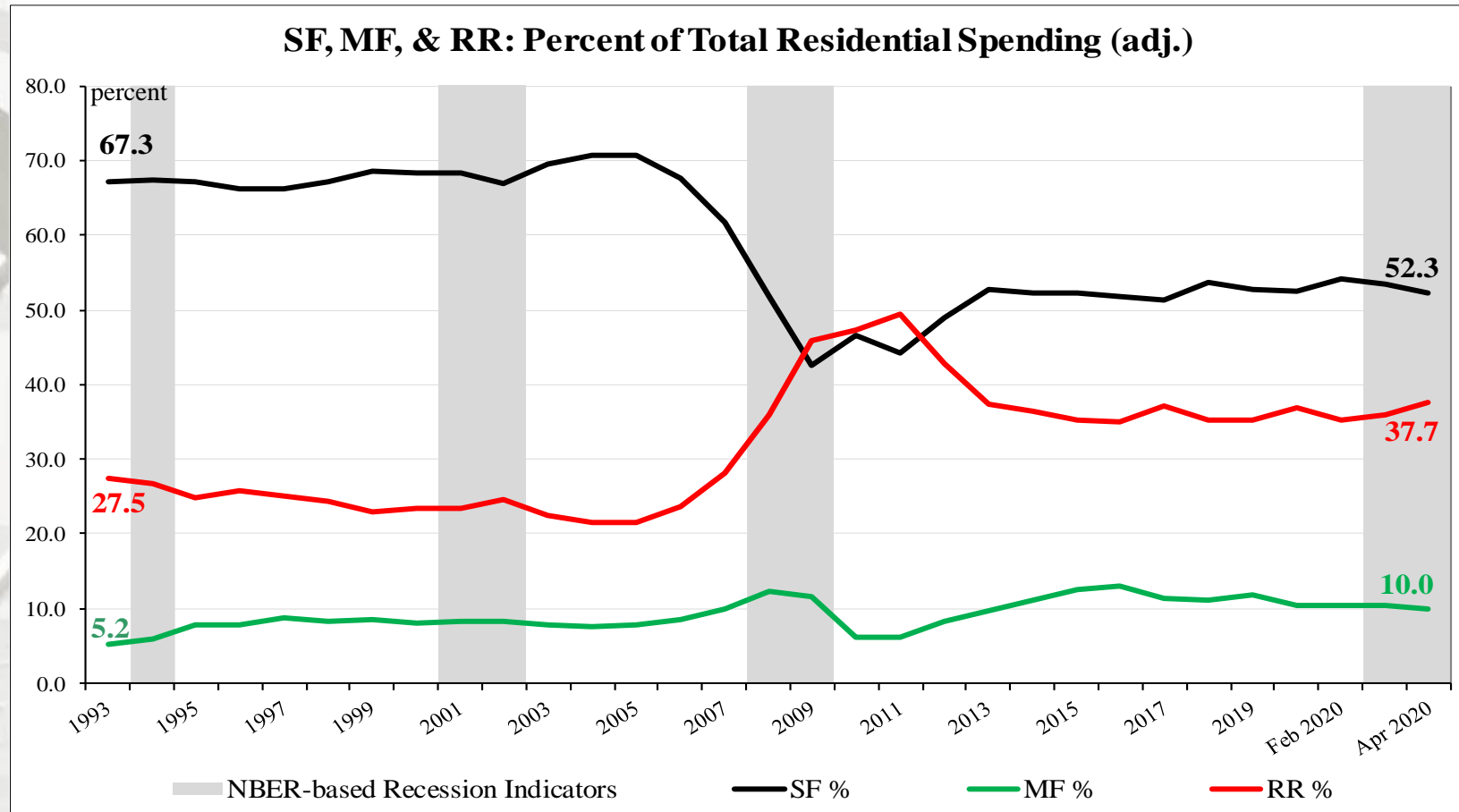
All data are SAARs and reported in nominal US\$.

Total Construction Spending (adjusted): 1993-April 2020



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

Construction Spending Shares: 1993 to April 2020



Total Residential Spending: 1993 through 2006

SF spending average: 69.2%

MF spending average: 7.5%

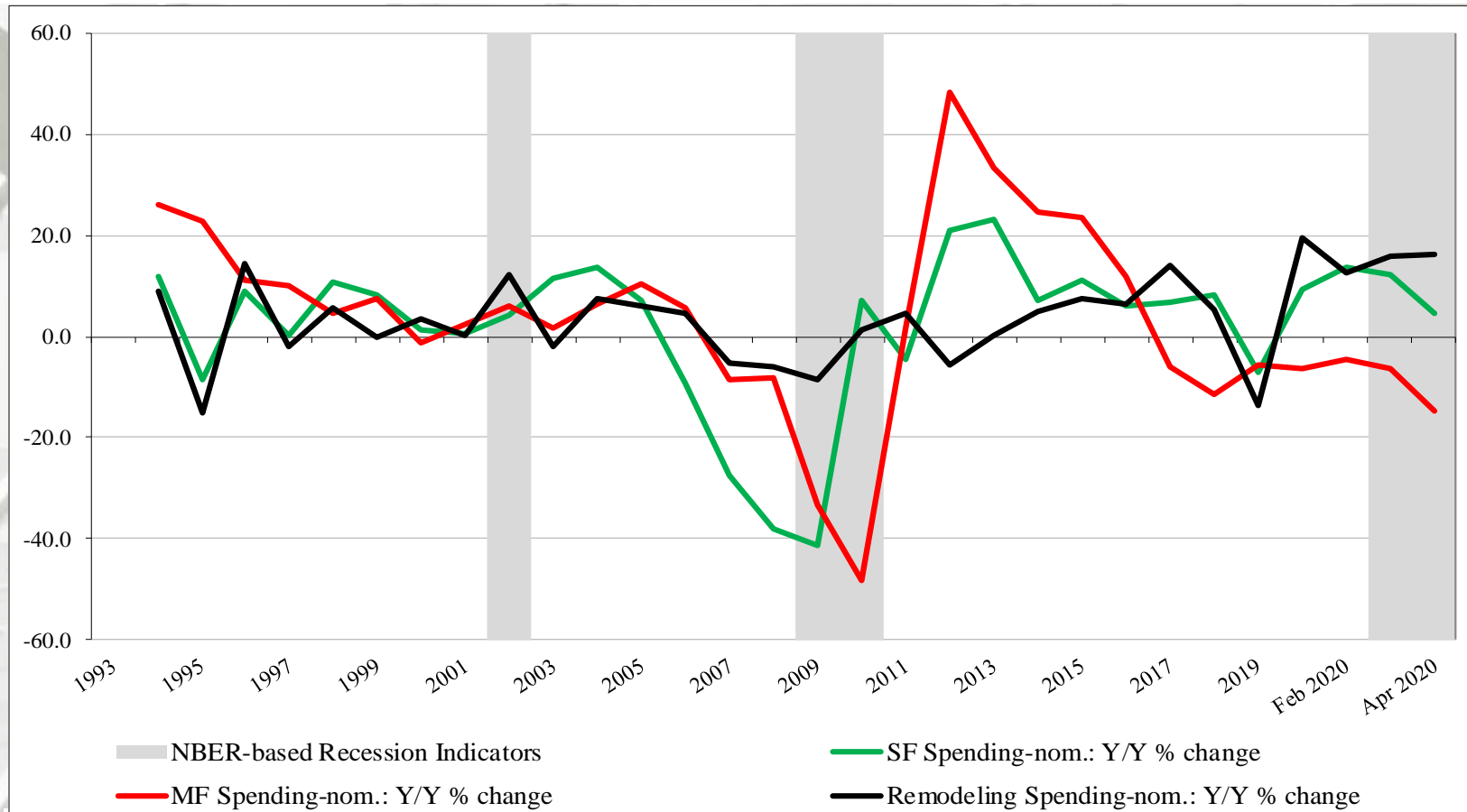
Residential remodeling (RR) spending average: 23.3% (SAAR).

Note: 1993 to 2019 (adjusted for inflation, BEA Table 1.1.9); January-April 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>, 6/8/20; <http://www.census.gov/construction/c30/pdf/privsa.pdf>; 6/1/20 and <http://www.bea.gov/iTable/iTable.cfm>; 3/2/20

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

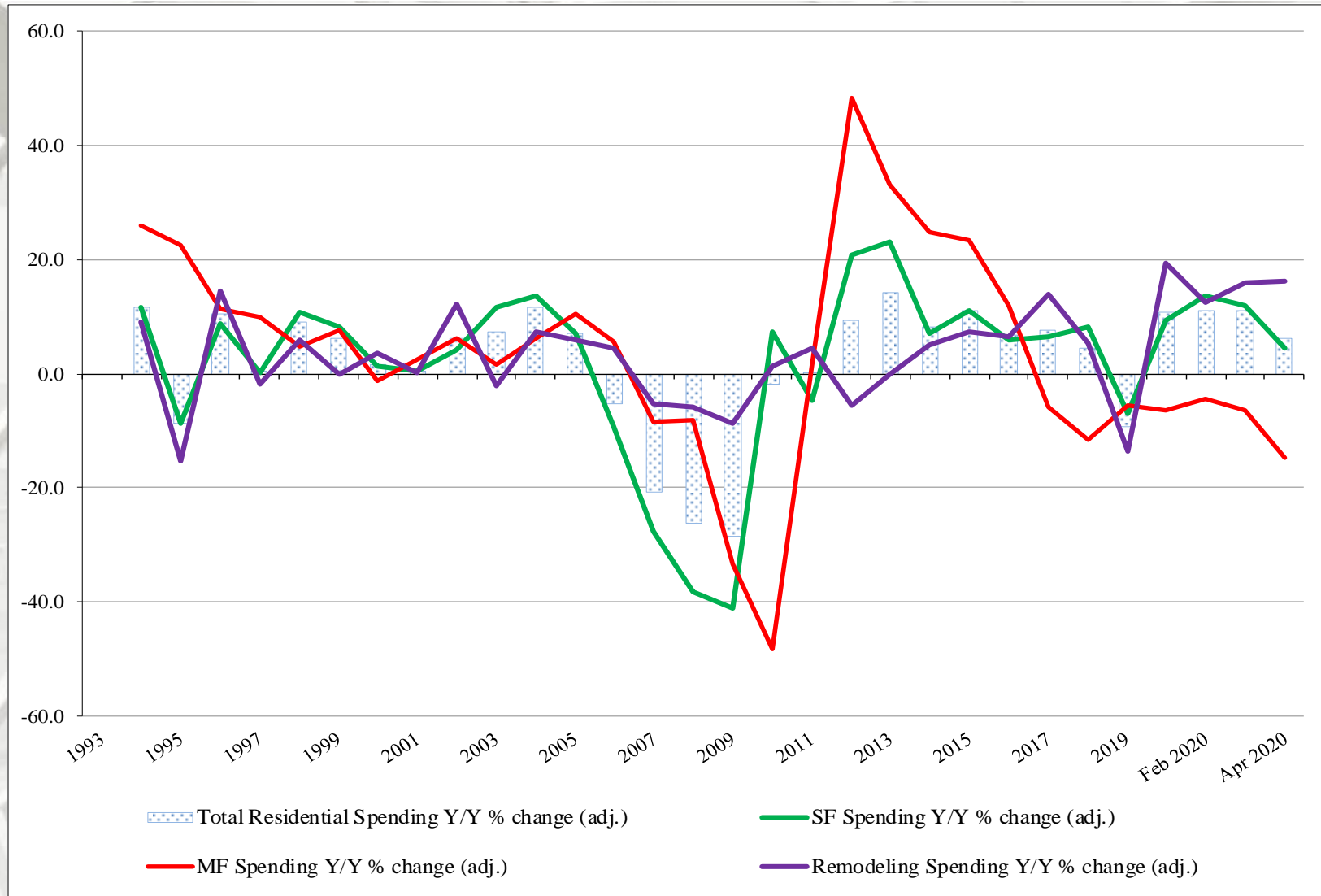


Nominal Residential Construction Spending: Y/Y percentage change, 1993 to April 2019

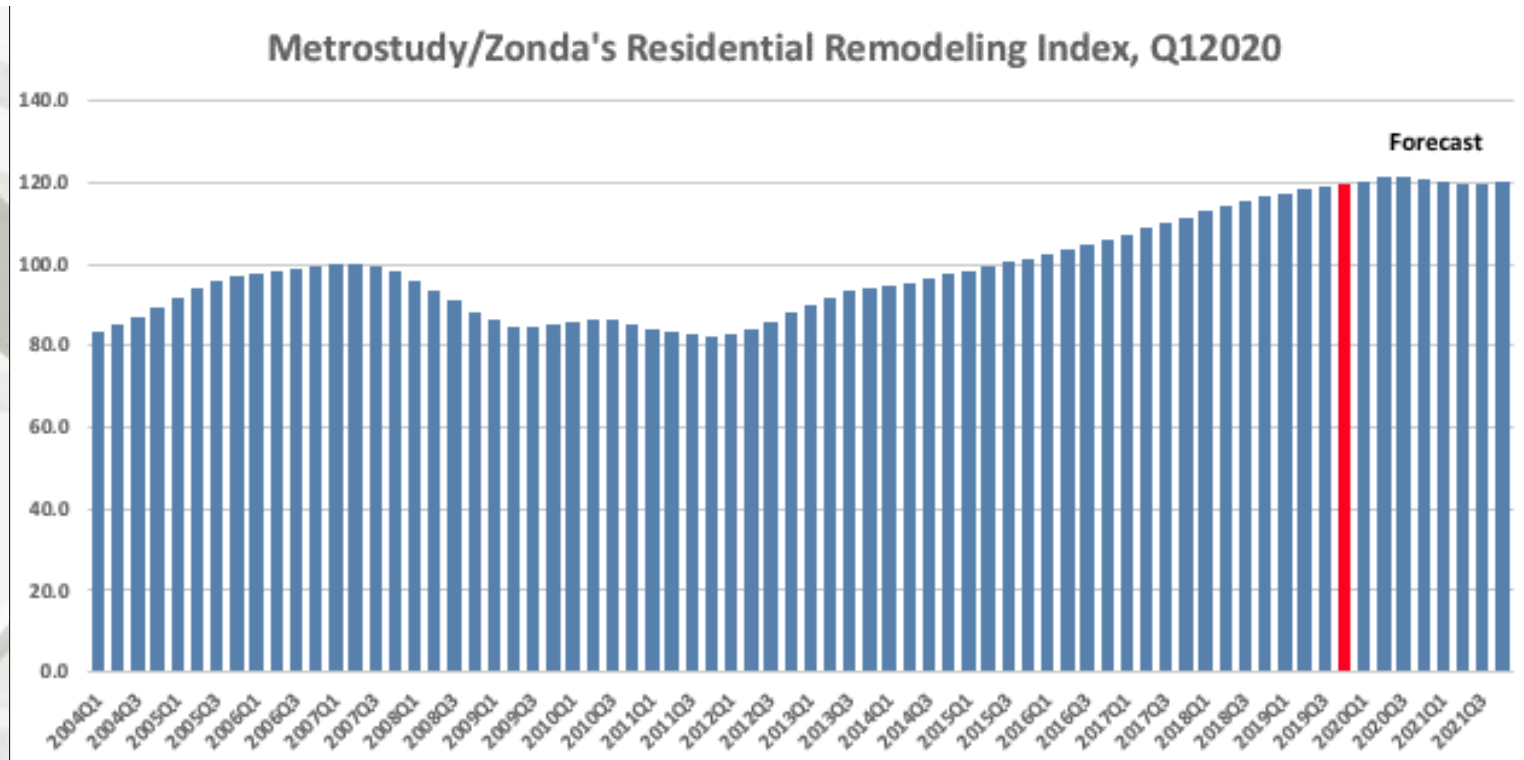
Presented above is the percentage change of inflation adjusted Y/Y construction spending. SF and RR expenditures were positive on a percentage basis, year-over-year (2020 data reported in nominal dollars).

* 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 April 2020 2/2



Remodeling 1/3



Metrostudy/Zonda

Metrostudy/Zonda projects the RRI's streak of consecutive quarters of annual and quarterly growth will come to an end in 2020.

“Big-ticket remodeling spending increased 2.5% year-over-year in the first quarter of 2020 and 0.7% from the fourth quarter, according to the latest Residential Remodeling Index (RRI) released by Metrostudy/Zonda. The index rose to a new high of 120.4, indicating economic conditions known to influence remodeling activity are 20.4% higher than the old peak in 2007.” – Vincent Salandro, Assistant Editor, Remodeling

Remodeling 2/3

Metrostudy/Zonda

“The RRI has posted 32 consecutive quarters of annual and quarterly growth since national remodeling activity bottomed out in 2011. However, Metrostudy/Zonda projects this streak will come to an end in 2020 due to the onset of the coronavirus (COVID-19) pandemic and its effect on the national economy and housing market.

The RRI is projected to see quarterly declines beginning in the fourth quarter of 2020, with annual decreases beginning in the first quarter of 2021. Metrostudy/Zonda projects the RRI will average an annual increase of 2% in 2020 and average an annual decline of 0.7% in 2021.

“The unprecedented shock to the U.S. economy that has occurred since mid-March, when the nation began to lockdown due to concerns over the novel coronavirus, has altered our outlook that had previously called for steady gains in national remodeling activity through 2021,” Tim Sullivan, senior managing principal at Metrostudy/Zonda, said. “Record job loss, in addition to drops in existing home sales and supply, now points to decreases in home renovation activity starting at the end of this year.”” – Vincent Salandro, Assistant Editor, Remodeling

Remodeling 3/3

Metrostudy/Zonda

“Metrostudy/Zonda projects the number of remodeling projects worth \$1,000 or more will total 13.2 million in 2020, an increase of 2.03% compared to 2019. Big-ticket exterior, basement, and kitchen and bath projects are expected to experience the largest increases in 2020 compared to the previous year, while additions, siding, and window projects will have the smallest YOY increases. Big-ticket pool projects are expected to have fewer completed projects in 2020 compared to 2019.

According to Metrostudy/Zonda, 92.7% of the 381 analyzed metropolitan statistical areas are expected to see growth in 2020 project volume, and among these markets, the average growth rate is expected to be 2.7%. Major metros in Florida (including Jacksonville, Miami-Fort Lauderdale-West Palm Beach, Orlando-Kissimmee-Sanford, and Tampa-St. Petersburg-Clearwater), Texas (including Corpus Christi and Houston-The Woodlands-Sugar Land), Colorado (including Denver-Aurora-Lakewood, Boulder, and Grand Junction), and Nevada (Las Vegas-Henderson-Paradise) are among the MSAs not projected to experience growth in project volume in 2020.” – Vincent Salandro, Assistant Editor, Remodeling

Remodeling/Reimaging 1/2

The Conference Board

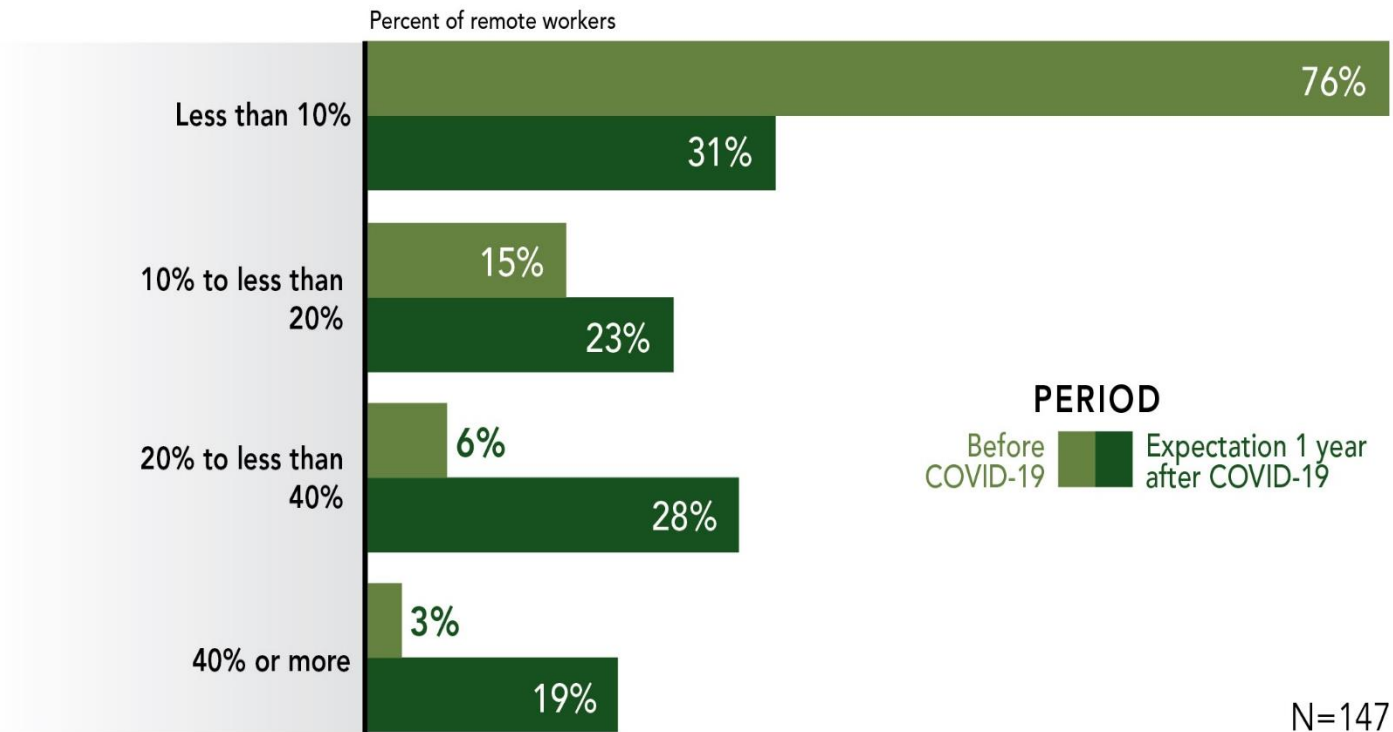
While three-quarters of respondents reported that less than 10 percent of employees worked primarily from home before COVID-19, this trend will likely reverse after COVID-19

“While only a fifth of respondents expect 40 percent or more of their workers to be primarily remote long-term; employers should prepare for more remote working, more of the time. Almost 70 percent of respondents believe at least 1 in 10 of their employees will be working primarily from home 12 months after the pandemic.

An increase in remote work could have large impacts on the rest of the economy, especially for businesses located in city centers. As more employees work from home, they may spend less time in city centers. Consumer spending, especially on food services, may shift from city centers to the places where people live. Demand for housing and office space could also shift away from city centers.” – Rebecca Ray, Ph.D. Executive Vice President, Human Capital, The Conference Board

Remodeling/Reimaging 2/2

Percentage of US full-time employees working primarily from home
(at least 3 days a week) before COVID-19 and expectation 12 months postpandemic



Source: The Conference Board
© 2020 The Conference Board, Inc.



Existing House Sales 1/3

National Association of Realtors

April 2020 sales: 4.430 thousand

	Existing Sales	Median Price	Mean Price	Month's Supply
April	4,330,000	\$286,800	\$321,500	4.1
March	5,270,000	\$280,700	\$316,100	3.4
2019	5,230,000	\$267,000	\$305,000	4.2
M/M change	-17.8%	2.2%	1.7%	20.6%
Y/Y change	-17.2%	7.4%	5.4%	-2.4%

All sales data: SAAR

Existing House Sales 2/3

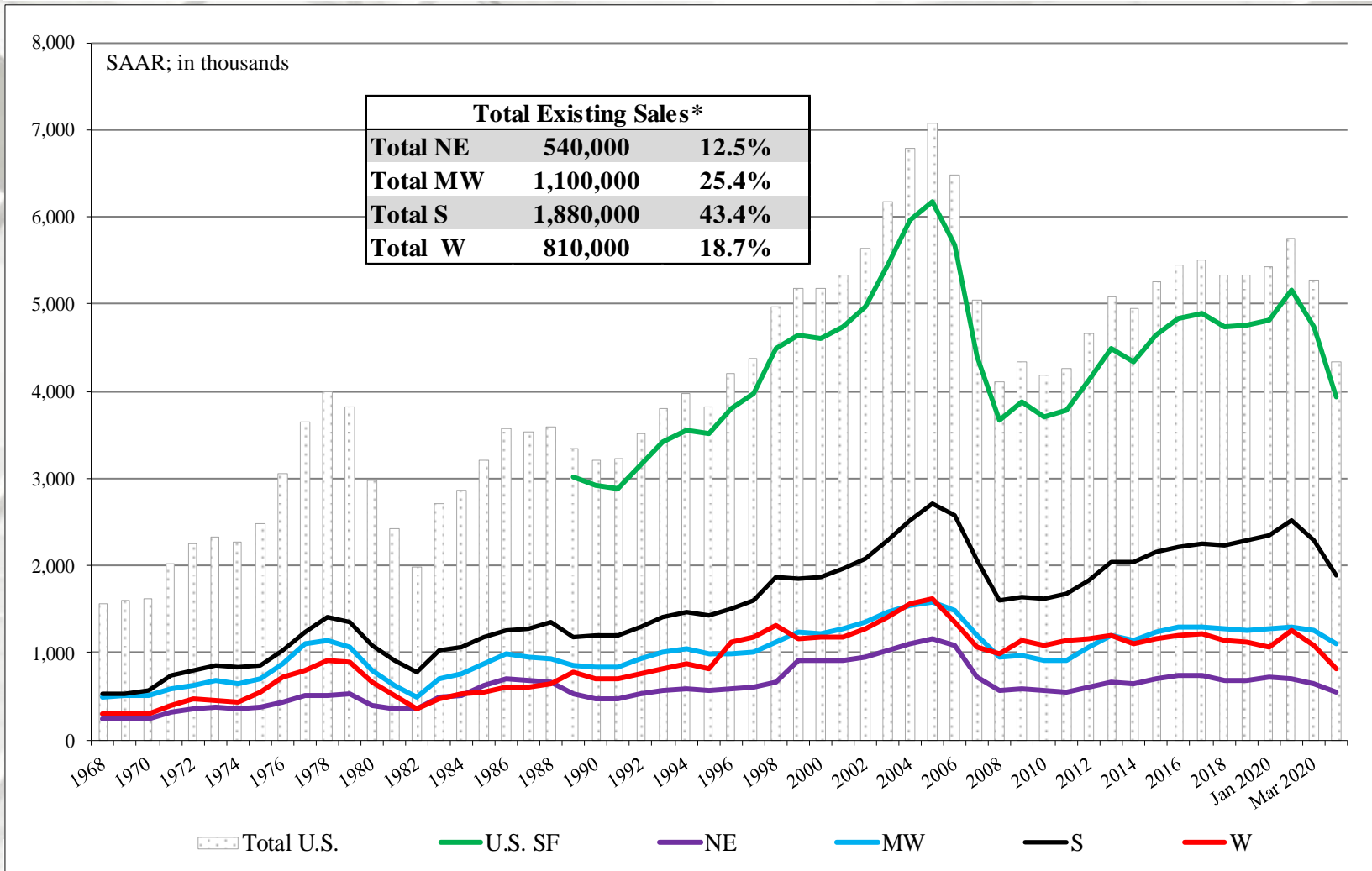
	Existing SF Sales	SF Median Price	SF Mean Price	
April	3,940,000	286,800	322,600	
March	4,740,000	280,700	317,000	
2019	4,660,000	269,100	306,100	
M/M change	-16.9%	2.2%	1.8%	
Y/Y change	-15.5%	6.6%	5.4%	
	NE	MW	S	W
April	540,000	1,100,000	1,880,000	810,000
March	650,000	1,250,000	2,290,000	1,080,000
2019	660,000	1,200,000	2,260,000	1,110,000
M/M change	-16.9%	-12.0%	-17.9%	-25.0%
Y/Y change	-18.2%	-8.3%	-16.8%	-27.0%

All sales data: SAAR.

Source: <https://fred.stlouisfed.org/series/EXHOSLUSM495S>; 5/21/20

Return TOC

Existing House Sales 3/3



* Percentage of existing sales.

U.S. Housing Prices 1/5

Federal Housing Finance Agency

U.S. House Price Index Report

U.S. House Prices Rise 1.7 Percent in First Quarter; Up 5.7 Percent from Last Year

“U.S. house prices rose in the first quarter of 2020, up **1.7 percent** from the previous month, according to the Federal Housing Finance Agency (FHFA) House Price Index (HPI). House prices rose **5.7 percent** from the first quarter of 2019 to the first quarter of 2020. FHFA’s seasonally adjusted monthly index for March was up **0.1 percent** from February.

Significant Findings

- House prices have risen for 35 consecutive quarters, or since September 2011.
- House prices rose in 48 states and the District of Columbia between the first quarters of 2019 and 2020. The top five areas in annual appreciation were: 1) **Idaho** 12.6 percent; 2) **Montana** 10.2 percent; 3) **Wyoming** 9.9 percent; 4) **Utah** 9.0 percent; and 5) **Hawaii** 8.8 percent. The areas showing the lowest annual appreciation were: 1) **West Virginia** -2.1 percent; 2) **Alaska** -0.1 percent; 3) **North Dakota** 0.4 percent; 4) **Illinois** 2.5 percent; and 5) **Connecticut** 3.0 percent.
- House prices rose in all top 100 of the largest metropolitan areas in the U.S. over the last four quarters. Annual price increases were greatest in **Boise City, ID**, where prices increased by 13.1 percent. Prices were weakest in **Lake County-Kenosha County, IL-WI (MSAD)**, where they increased by 0.4 percent.” – Cynthia Adcock and Raffi Williams, FHFA

U.S. Housing Prices 2/5

Federal Housing Finance Agency

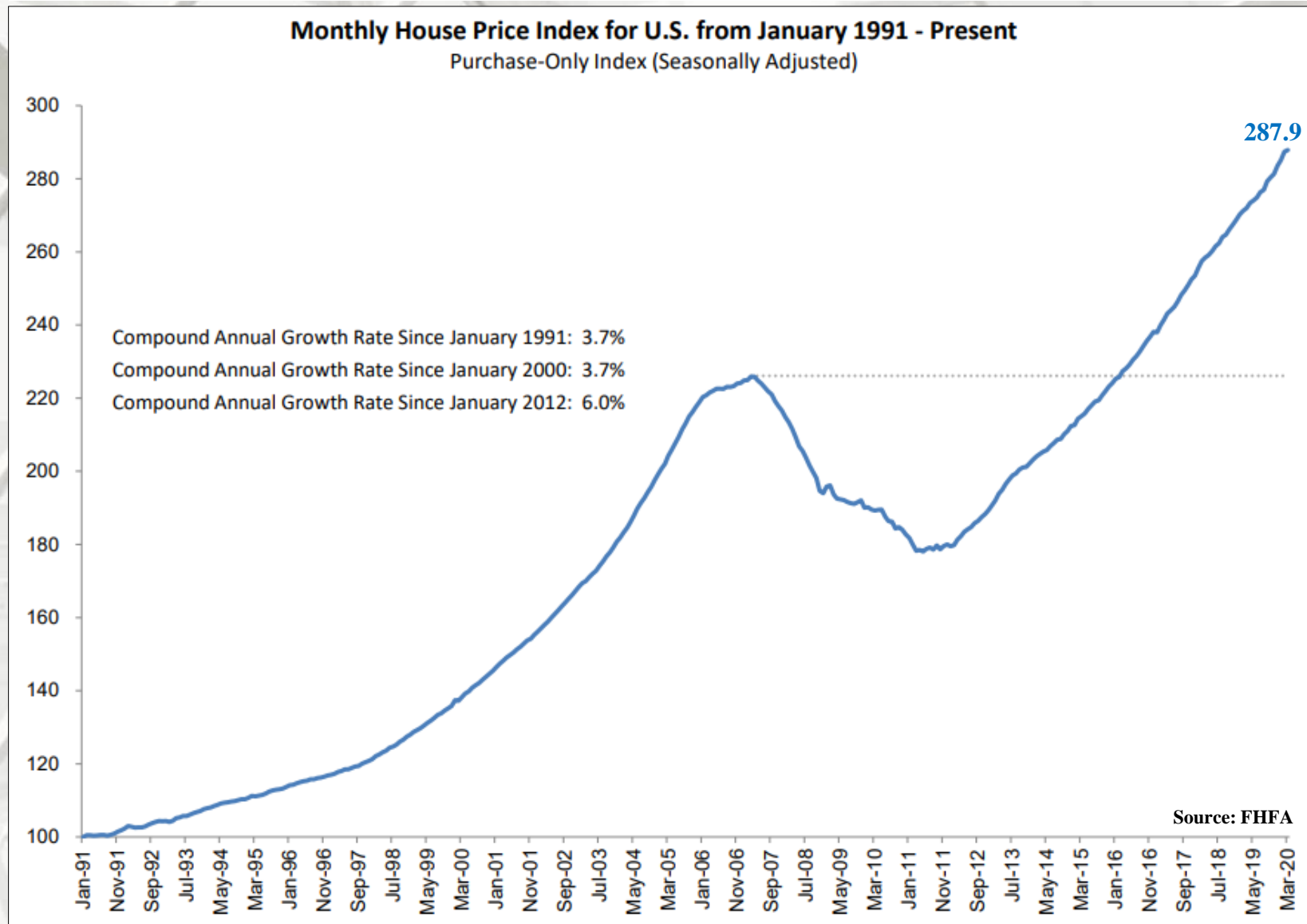
U.S. House Price Index Report

Significant Findings

- “Of the nine census divisions, the **Mountain** division experienced the strongest four quarter appreciation, posting an 8.0 percent gain between the first quarters of 2019 and 2020 and a 2.5 percent increase in the first quarter of 2020. Annual house price appreciation was weakest in the **West South Central** division, where prices rose by 4.3 percent between the first quarters of 2019 and 2020.
- Trends in the Top 100 Metropolitan Statistical Areas are available through our newly published interactive dashboard <https://www.fhfa.gov/DataTools/Tools/Pages/FHFAHPI-Top-100-Metro-Area-Rankings.aspx>. The first tab displays rankings while the second tab offers charts.” – Cynthia Adcock and Raffi Williams, FHFA

“Home price growth in the first quarter outpaced annual growth from the same period a year ago as falling interest rates and shrinking inventories for sale led prices higher just prior to the crisis. Prices in the Mountain Division, encompassing the top four states by growth, grew by 8 percent on a year over year basis. Because of the lag between contract signing and sale closing when our data are recorded, we judge the first quarter’s housing statistics were relatively unaffected by the COVID-19 outbreak. However, we are unable to account for any modifications or cancellations of sales later in March.” – Dr. Lynn Fisher, Deputy Director of the Division of Research and Statistics, FHFA

U.S. Housing Prices 3/5



U.S. Housing Prices 4/5

S&P CoreLogic Case-Shiller Index Continues Shows Annual Home Price Gains Increased To 4.4% In March

“Data for March 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 4.4% annual gain in March, up from 4.2% in the previous month. The 10-City Composite annual increase came in at 3.4%, up from 3.0% in the previous month. The 20-City Composite posted a 3.9% year-over-year gain, up from 3.5% in the previous month.

Phoenix, Seattle and Charlotte reported the highest year-over-year gains among the 19 cities (excluding Detroit for the month). In March, Phoenix led the way with an 8.2% year-over-year price increase, followed by Seattle with a 6.9% increase and Charlotte with a 5.8% increase. Seventeen of the 19 cities reported higher price increases in the year ending March 2020 versus the year ending February 2020. ” – Craig J. Lazzara, Managing Director and Global Head of Index Investment Strategy, S&P Dow Jones Indices

U.S. Housing Prices 5/5

S&P CoreLogic Case-Shiller Index

Month-Over-Month

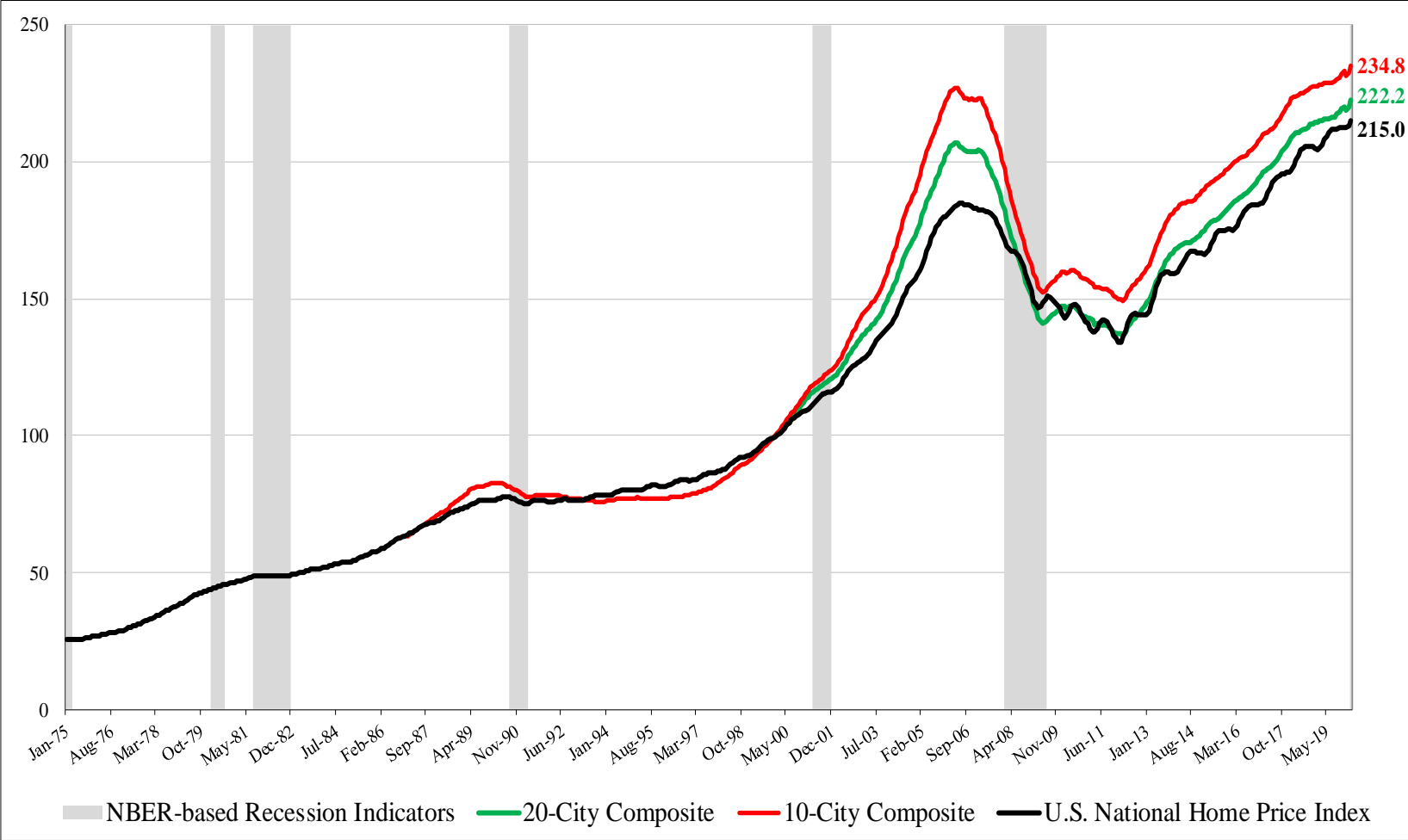
“The National Index posted a 0.8% month-over-month increase, while the 10-City and 20-City Composites posted increases of 1.0% and 1.1% respectively before seasonal adjustment in March. After seasonal adjustment, the National Index and the 20-City Composite posted a month-over-month increase of 0.5%, while the 10-City Composite a posted 0.4% increase. In March, all 19 cities (excluding Detroit) reported increases before seasonal adjustment as well as after seasonal adjustment.

Analysis

"March's data witnessed the first impact of the COVID-19 pandemic on the S&P CoreLogic Case-Shiller Indices. We have data from only 19 cities this month, since transactions records for Wayne County, Michigan (in the Detroit metropolitan area) were unavailable. That said, housing prices continue to be remarkably stable. The National Composite Index rose by 4.4% in March 2020, with comparable growth in the 10- and 20-City Composites (up 3.4% and 3.9%, respectively). In all three cases, March's year-over-year gains were ahead of February's, continuing a trend of gently accelerating home prices that began last autumn. March results were broad-based. Prices rose in each of the 19 cities for which we have reported data, and price increases accelerated in 17 cities. At a regional level, Phoenix retains the top spot for the tenth consecutive month, with a gain of 8.2% for March. Home prices in Seattle rose by 6.9%, followed by increases in Charlotte (5.8%) and Tampa (5.7%). Prices were particularly strong in the West and Southeast, and comparatively weak in the Midwest and Northeast.

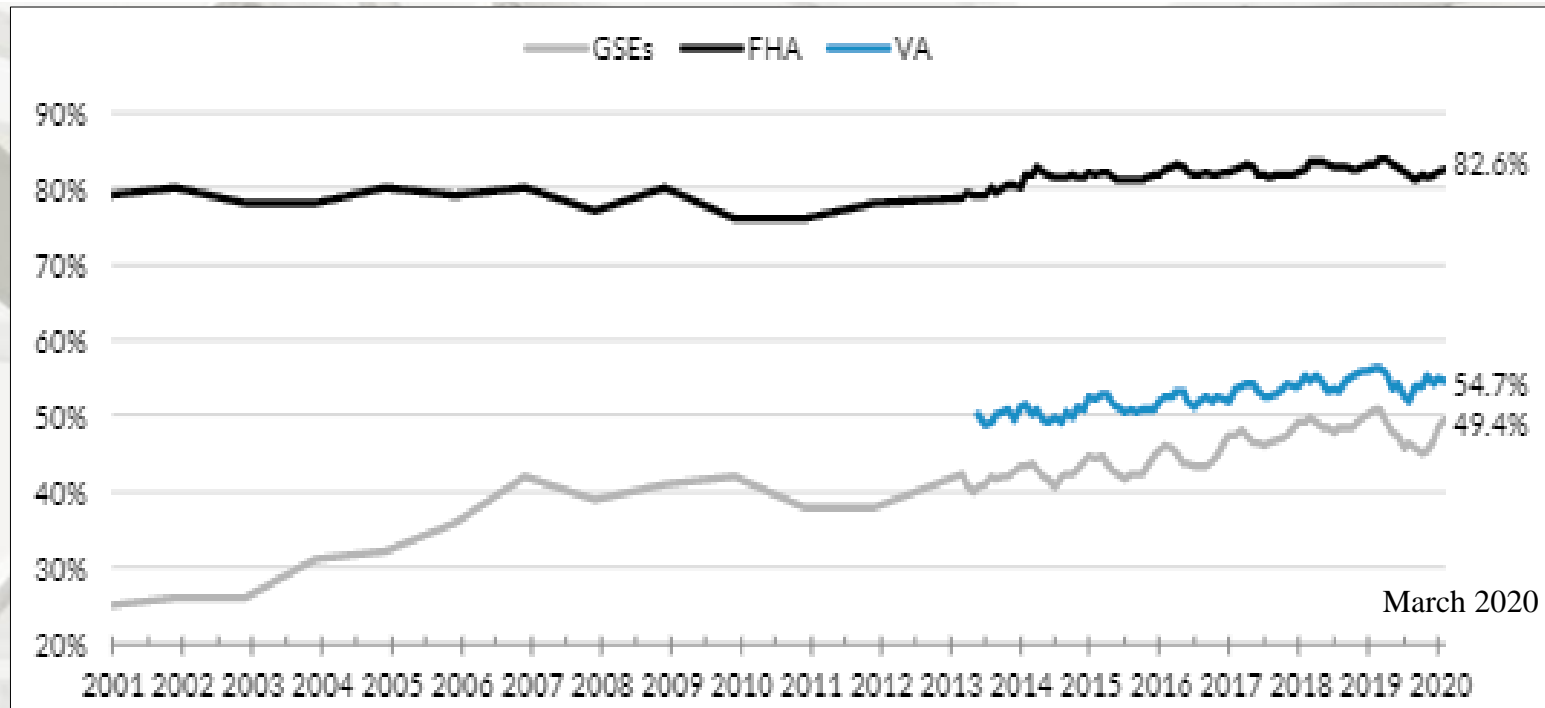
Importantly, today's report covers real estate transactions closed during the month of March. Housing prices have not yet registered any adverse effects from the governmental suppression of economic activity in response to the COVID-19 pandemic. As much of the U.S. economy remained shuttered in April, next month's data may show a more noticeable impact.” – 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).

First-Time House Buyers 1/2



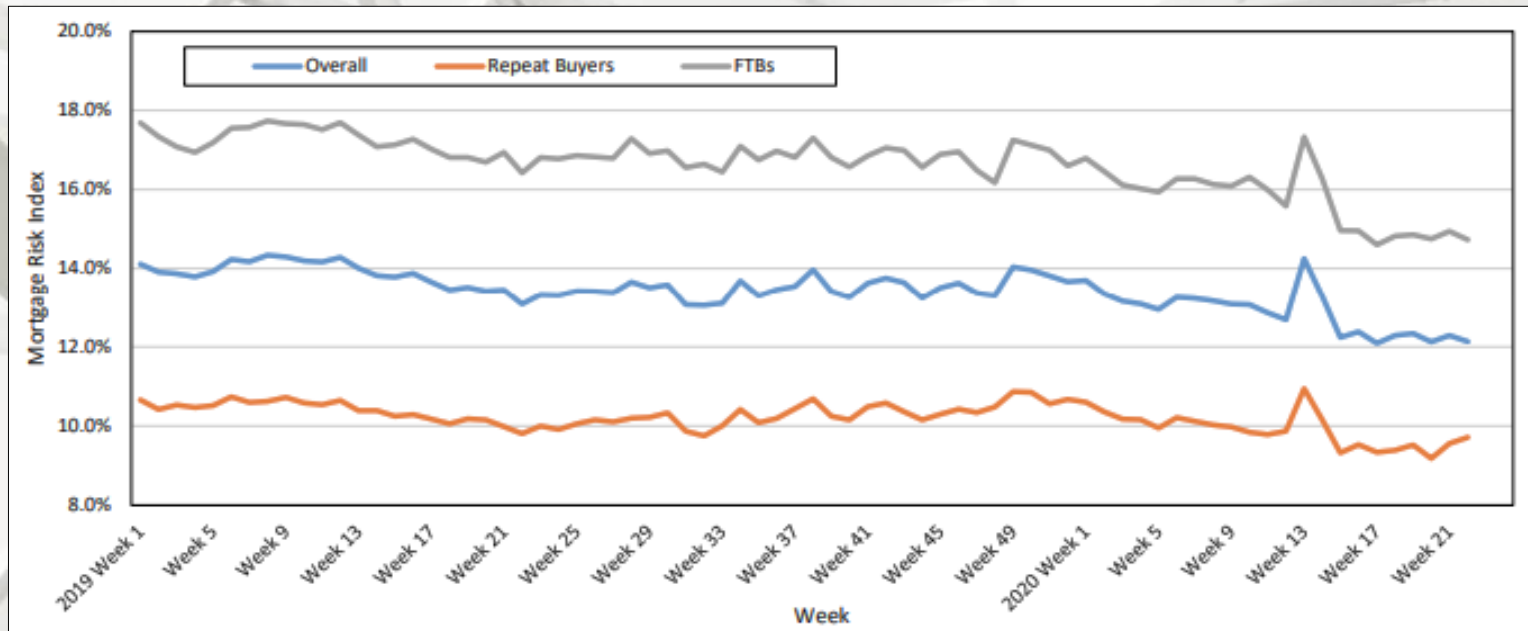
Sources: eMBS, Federal Housing Administration (FHA) and Urban Institute.

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

Urban Institute

“In March 2020, the FTTHB share for FHA, which has always been more focused on first time homebuyers, grew slightly to 82.6 percent. The FTTHB share of VA lending decreased slightly in March, to 54.7 percent. The GSE FTTHB share in March was up from February to 49.4 percent.” – Bing Lai, Research Associate, Housing Finance Policy Center

First-Time House Buyers 2/2



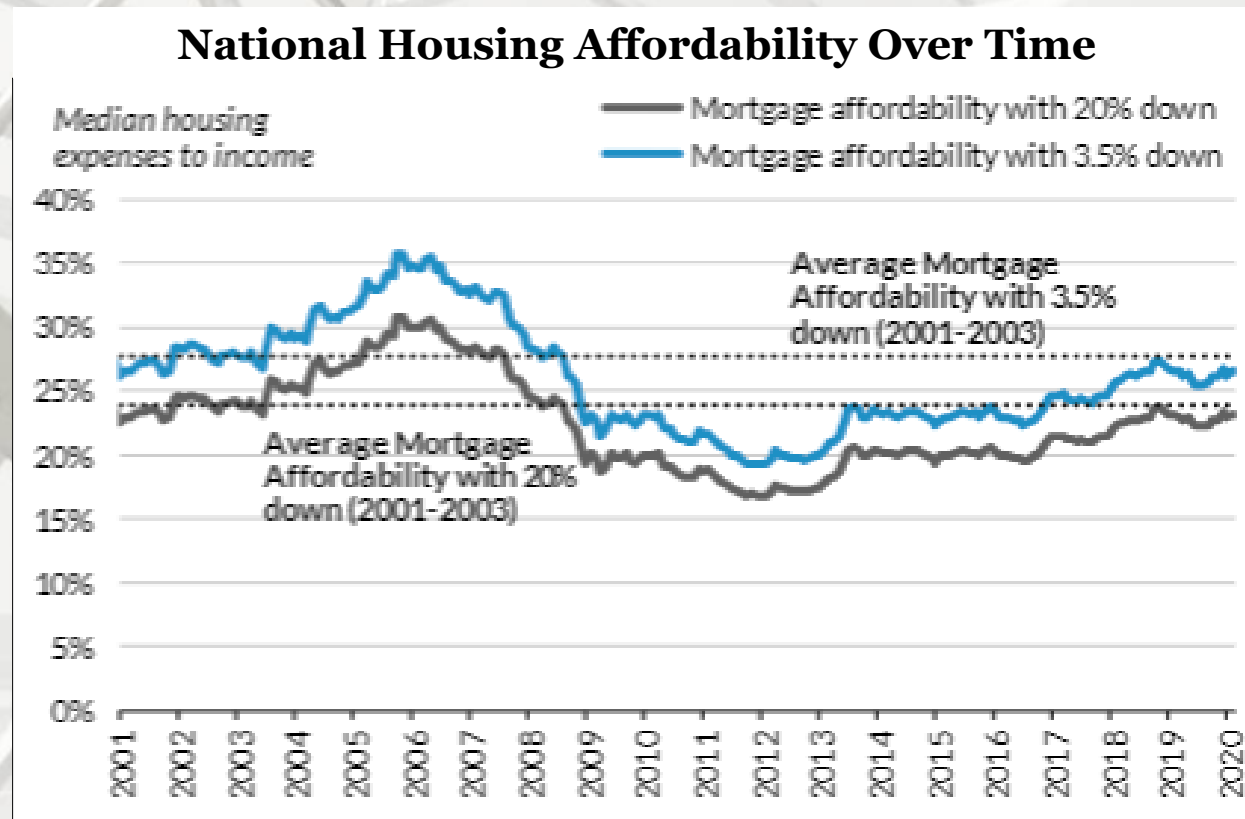
Sources: AEI Housing Center, www.AEI.org/housing and Optimal Blue.

AEI Housing Center

First-Time Homebuyer Mortgage Risk Index

“The return of borrowers to the market over the last 4 weeks does not appear to be driven by looser lending standards. For week 22, the purchase rate lock mortgage risk index stood at 11.6%, which is unchanged since week 15. For week 22, the FTB mortgage risk index stood at 14.7%, which is down from an average of 16.3% pre-virus (weeks 1-8). This tightening of credit standards was both welcome and targeted. For repeat buyers, the index tightened at about a similar rate, although credit has eased slightly in the past week compared to FTBs. Lastly, the spike in week 13 is due to a temporary surge in FHA rate locks, which are on average much riskier than other loan types.” – Edward Pinto and Tobias Peter, AEI Housing Center

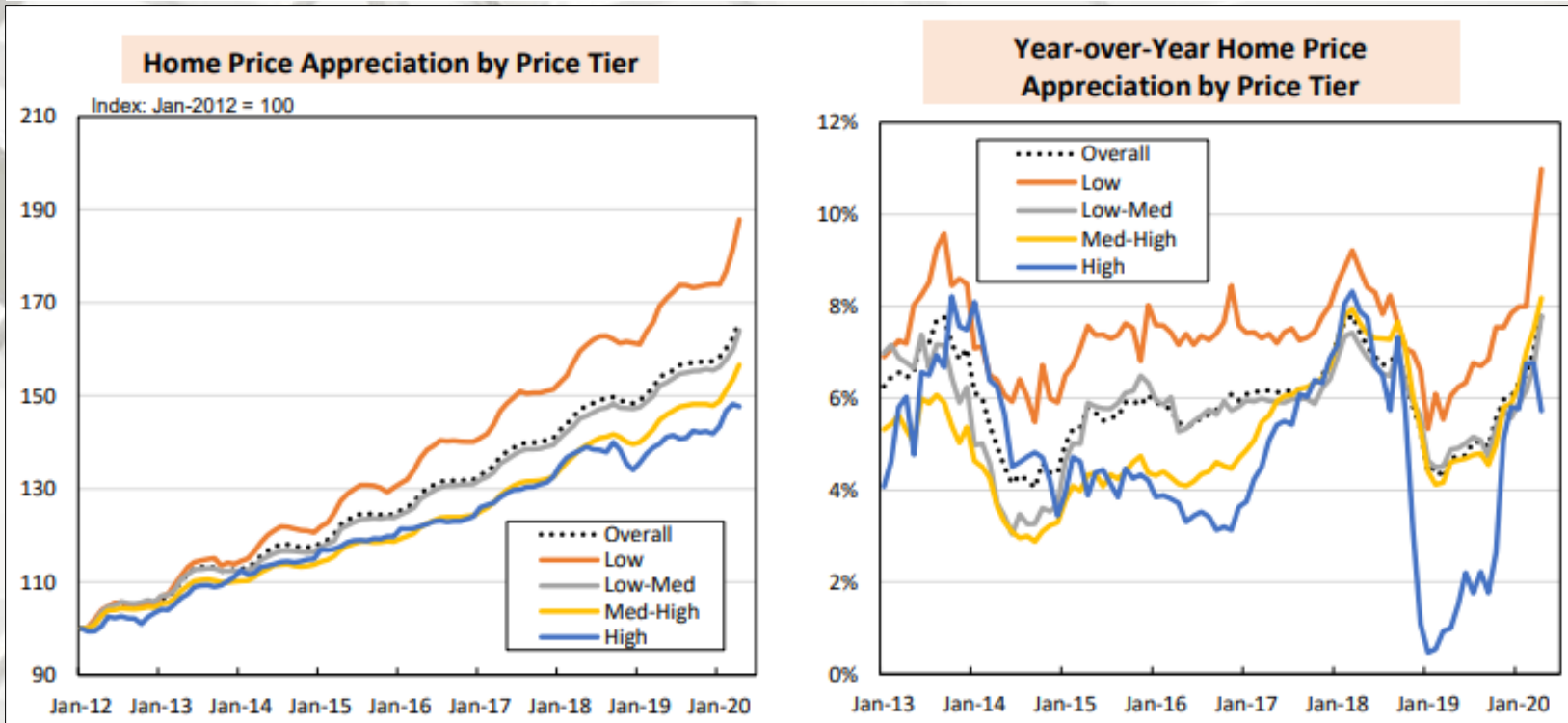
Housing Affordability 1/2



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 March 2020, with a 20 percent down payment, the share of median income needed for the monthly mortgage payment stood at 23.2 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 April 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

“Preliminary numbers for April 2020 indicate that overheating of the low price tier continued (right panel). HPA in the low price tier was 11% year-over-year. HPA in the high tier (about 7% share) increased significantly to 5.7% compared to 1% a year ago. These results are preliminary due to COVID-19 related reporting delays and may be revised when all county records have been updated.” – Edward Pinto and Tobias Peter, AEI Housing Center

AEI Housing Center

AEI Flash Housing Market Indicators

Week of May 30 to June, 2020

Key takeaways:

“In a continuation of the last three weeks’ strong upward trend, purchase rate lock volume for the week of May 30 (week 23) was up 21% from a year ago. This provides further evidence that the worst of the near term effects of the COVID-19 pandemic lockdown may be behind us on a national level. However, much of the Northeast, Midwest, and West are lagging the national trend.

- Purchase rate lock volume is back to its level from before the onset of the pandemic (weeks 1 to 8) when purchase rate lock volume was up 24% on average compared to 2019.
- Over the past 4 weeks, the market has not only returned to normalcy, but is up substantially from weeks 14-18 when the average weekly year-over-year decline was 15%.
- As a result of the last three weeks’ strong purchase lock volume, combined with strong volume in weeks 1-13, year-to-date volume is now running 12% ahead of last year.

There are important changes in the market.

- Credit tightening ended some weeks back, as lending standards remain little changed in recent weeks. This week’s data shows signs of a bit of easing.
- The higher end of the market is coming back driven by a return of repeat buyers.
- The share of second homes set a new series’ high, while the share of investment homes remains low.

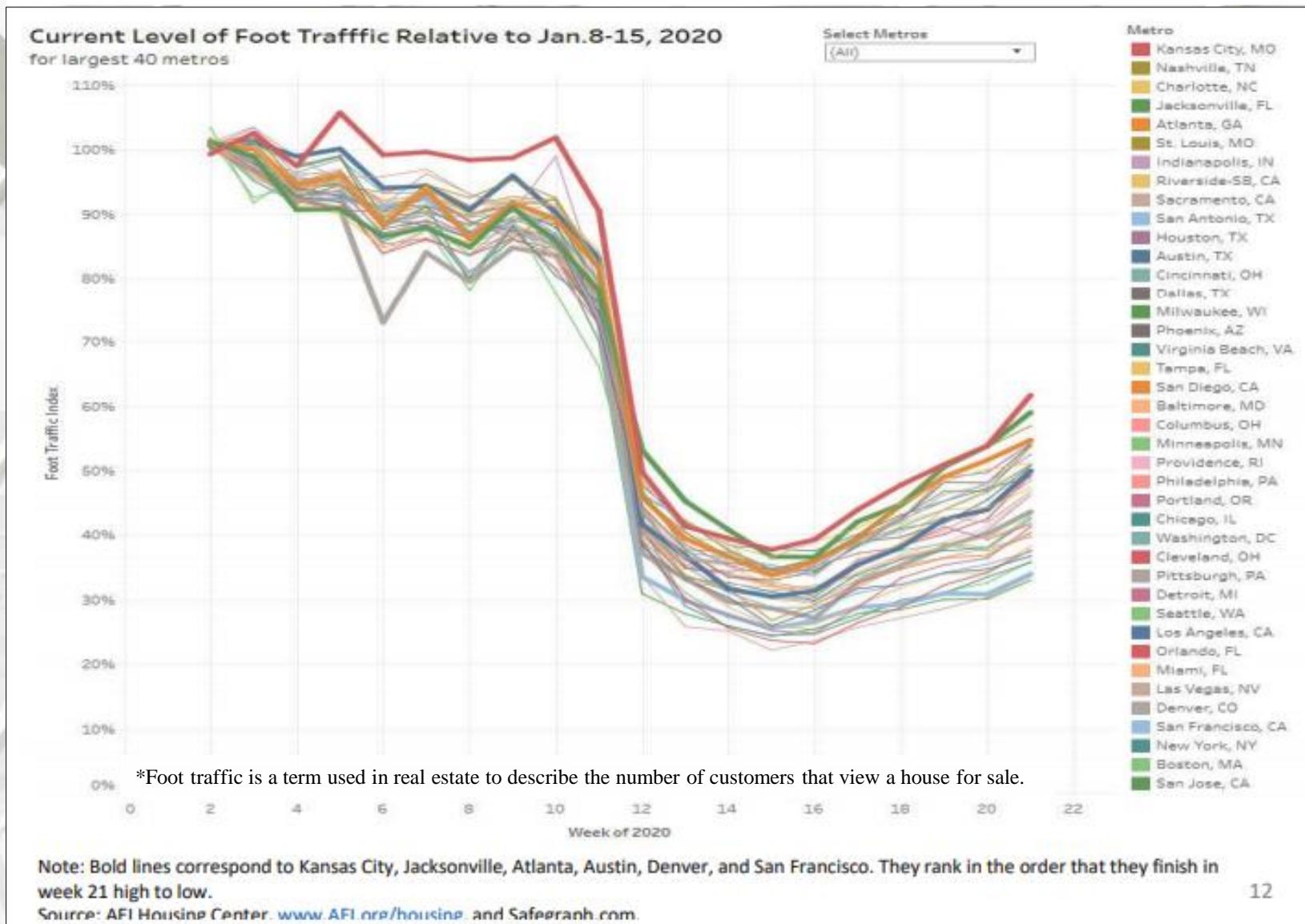
National home price appreciation (HPA) appears to be back in the 5-6% range, similar to before the pandemic.

Cash-out refinance rate lock activity was up 35% from the prior week and continues to run well above the pre-crisis period.” – Edward Pinto and Tobias Peter, AEI Housing Center

U.S. Housing Market

AEI Housing Center

Current Level of Foot Traffic* Relative to January 8-15, 2020



Mortgage Applications

Mortgage Applications Increase in Latest MBA Weekly Survey

“Mortgage applications increased 9.3 percent from one week earlier, according to data from the Mortgage Bankers Association's (MBA) Weekly Mortgage Applications Survey for the week ending June 5, 2020. The previous week's results included an adjustment for the Memorial Day holiday.

The Market Composite Index, a measure of mortgage loan application volume, increased 9.3 percent on a seasonally adjusted basis from one week earlier. On an unadjusted basis, the Index increased 20 percent compared with the previous week. The Refinance Index increased 11 percent from the previous week and was 80 percent higher than the same week one year ago. The seasonally adjusted Purchase Index increased 5 percent from one week earlier. The unadjusted Purchase Index increased 15 percent compared with the previous week and was 13 percent higher than the same week one year ago.

The refinance share of mortgage activity increased to 61.3 percent of total applications from 59.5 percent the previous week. The adjustable-rate mortgage (ARM) share of activity decreased to 3.1 percent of total applications.

Fueled again by low mortgage rates, pent-up demand from earlier this spring, and states reopening across the country, purchase mortgage applications and refinances both increased. The recovery in the purchase market continues to gain steam, with the seasonally adjusted index rising to its highest level since January. Purchase activity increased for the eighth straight week and was a notable 13 percent higher than a year ago. Refinances moved higher for the first time in nearly two months, with both conventional and government applications rising and the overall index coming in 80 percent above year-ago levels.” – Joel Kan, Associate Vice President of Economic and Industry Forecasting, MBA

Mortgage Credit Availability 1/2

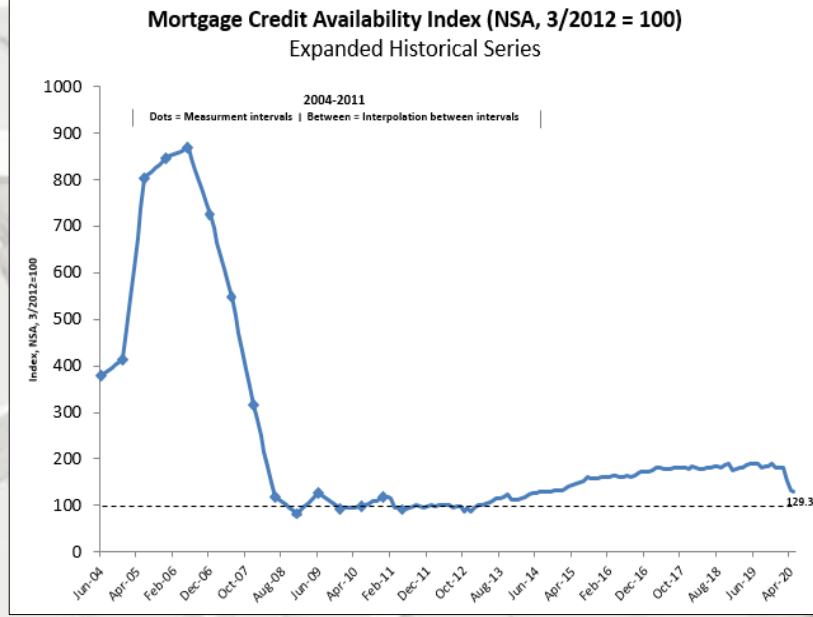
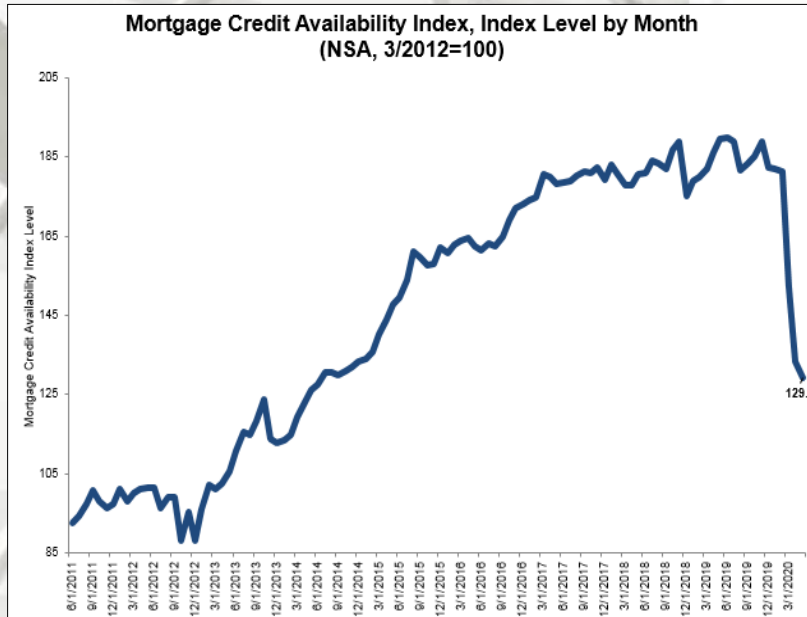
Mortgage Credit Availability Decreased in May

“Mortgage credit availability decreased in May 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 3.1 percent to 129.3 in May. 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 5.7 percent, while the Government MCAI decreased by 0.8 percent. Of the component indices of the Conventional MCAI, the Jumbo MCAI decreased by 4.4 percent, and the Conforming MCAI fell by 6.9 percent.

Mortgage lenders in May responded accordingly to the increased risk and uncertainty in the economy. Credit availability continued to decline, with MBA's overall index now at its lowest level since June 2014. There was a reduction in supply across all loan types, driven by further pullback in investors' appetites for loan programs with low credit scores and high LTVs. Credit tightening was observed at both ends of the market, with less availability of low down payment programs designed for first-time homebuyers, as well as for conforming and non-conforming jumbo loans.” – 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 April, the vast majority of month-over-month and year-over-year categories were negative. On a month-over-month basis, single-family under construction and new single-family sales were positive. Year-over-year, private residential and single-family construction spending indicated improvement. The impact of Covid19 was clearly indicated in this month's 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.

Virginia Tech Disclaimer

Disclaimer of Non-endorsement

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement, recommendation, or favoring by Virginia Tech. The views and opinions of authors expressed herein do not necessarily state or reflect those of Virginia Tech, and shall not be used for advertising or product endorsement purposes.

Disclaimer of Liability

With respect to documents sent out or made available from this server, neither Virginia Tech nor any of its employees, makes any warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

Disclaimer for External Links

The appearance of external hyperlinks does not constitute endorsement by Virginia Tech of the linked web sites, or the information, products or services contained therein. Unless otherwise specified, Virginia Tech does not exercise any editorial control over the information you March find at these locations. All links are provided with the intent of meeting the mission of Virginia Tech's web site. Please let us know about existing external links you believe are inappropriate and about specific additional external links you believe ought to be included.

Nondiscrimination Notice

Virginia Tech prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the author. Virginia Tech is an equal opportunity provider and employer.

U.S. Department of Agriculture Disclaimer

Disclaimer of Non-endorsement

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government, and shall not be used for advertising or product endorsement purposes.

Disclaimer of Liability

With respect to documents available from this server, neither the United States Government nor any of its employees, makes any warranty, express or implied, including the warranties of merchantability and fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

Disclaimer for External Links

The appearance of external hyperlinks does not constitute endorsement by the U.S. Department of Agriculture of the linked web sites, or the information, products or services contained therein. Unless otherwise specified, the Department does not exercise any editorial control over the information you March find at these locations. All links are provided with the intent of meeting the mission of the Department and the Forest Service web site. Please let us know about existing external links you believe are inappropriate and about specific additional external links you believe ought to be included.

Nondiscrimination Notice

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202.720.2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call 800.795.3272 (voice) or 202.720.6382 (TDD). The USDA is an equal opportunity provider and employer.