

The Virginia Tech – U.S. Forest Service

December 2019

Housing Commentary: Section I



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

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Opening Remarks

Total starts were reported at 1,608 million units in December 2019 – this is the greatest number reported since December 2006 (1,649 million units). Further, single-family starts were 1,055 million units, the first-time single-family starts have exceeded one-million units since July 2006 (1,042 million units). Two factors may be behind this upsurge: 1) a mild December and 2) a large increase in the Midwest region's starts. Winter seasonal adjustments for the Midwest typically are greater than the other regions (Slide 18). Total-, single-, and multi-family permits and new single-family sales declined month-over-month. With the exception of single-family under construction, all housing metrics were positive on a year-over-year basis.

The February 7th Atlanta Fed GDPNow™ model forecasts an aggregate 7.2% increase for residential investment spending. New private permanent site expenditures were projected at a 9.0% increase; the improvement spending forecast was a 3.3% increase; and the manufactured/mobile housing projection was a 3.8% increase (all: quarterly log change and seasonally adjusted annual rate).¹

“With momentum expected to build through 2019, we continue to underwrite solid growth in single-family starts in 2020, increasing 8% to 990,000, below our prior growth forecast of 11%. We still expect a demographic tailwind, significant pent-up demand and still-favorable absolute levels of affordability. However, the recent choppiness in demand is likely to stall incremental investment in land development, which could limit future new construction supply on the margin. Importantly, we still expect cyclical upside beyond our explicit forecasts, as our 2020 estimate sits 10-20% below our view of normalized demand.”² – Ivy Zelman, CEO, Zelman & Associates

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

Sources: ¹ www.frbatlanta.org/cqer/research/gdpnow.aspx; 2/10/20;

² https://www.builderonline.com/builder-100/strategy/zelman-on-2019-get-ready-for-flat-to-down_o; 1/4/20

December 2019

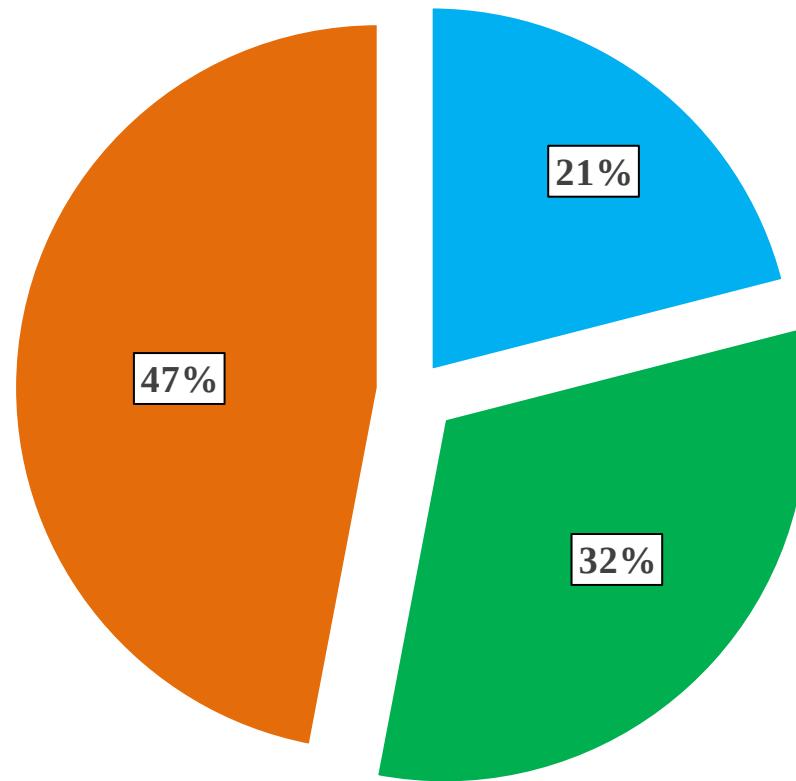
Housing Scorecard

	M/M	Y/Y
Housing Starts	▲ 16.9%	▲ 40.8%
Single-Family (SF) Starts	▲ 11.2%	▲ 29.6%
Multi-Family (MF) Starts*	▲ 29.8%	▲ 68.6%
Housing Permits	▼ 3.9%	▲ 5.8%
SF Permits	▼ 0.5%	▲ 10.8%
MF Permits*	▼ 9.6%	▼ 2.3%
Housing Under Construction	▲ 2.0%	▲ 3.3%
SF Under Construction	▲ 1.9%	▼ 1.1%
Housing Completions	▲ 5.1%	▲ 19.6%
SF Completions	▲ 0.7%	▲ 17.8%
New SF House Sales	▼ 0.4%	▲ 23.0%
Private Residential Construction Spending	▲ 1.4%	▲ 5.5%
SF Construction Spending	▲ 2.7%	▲ 5.2%
Existing House Sales ¹	▲ 3.6%	▲ 10.8%

* 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

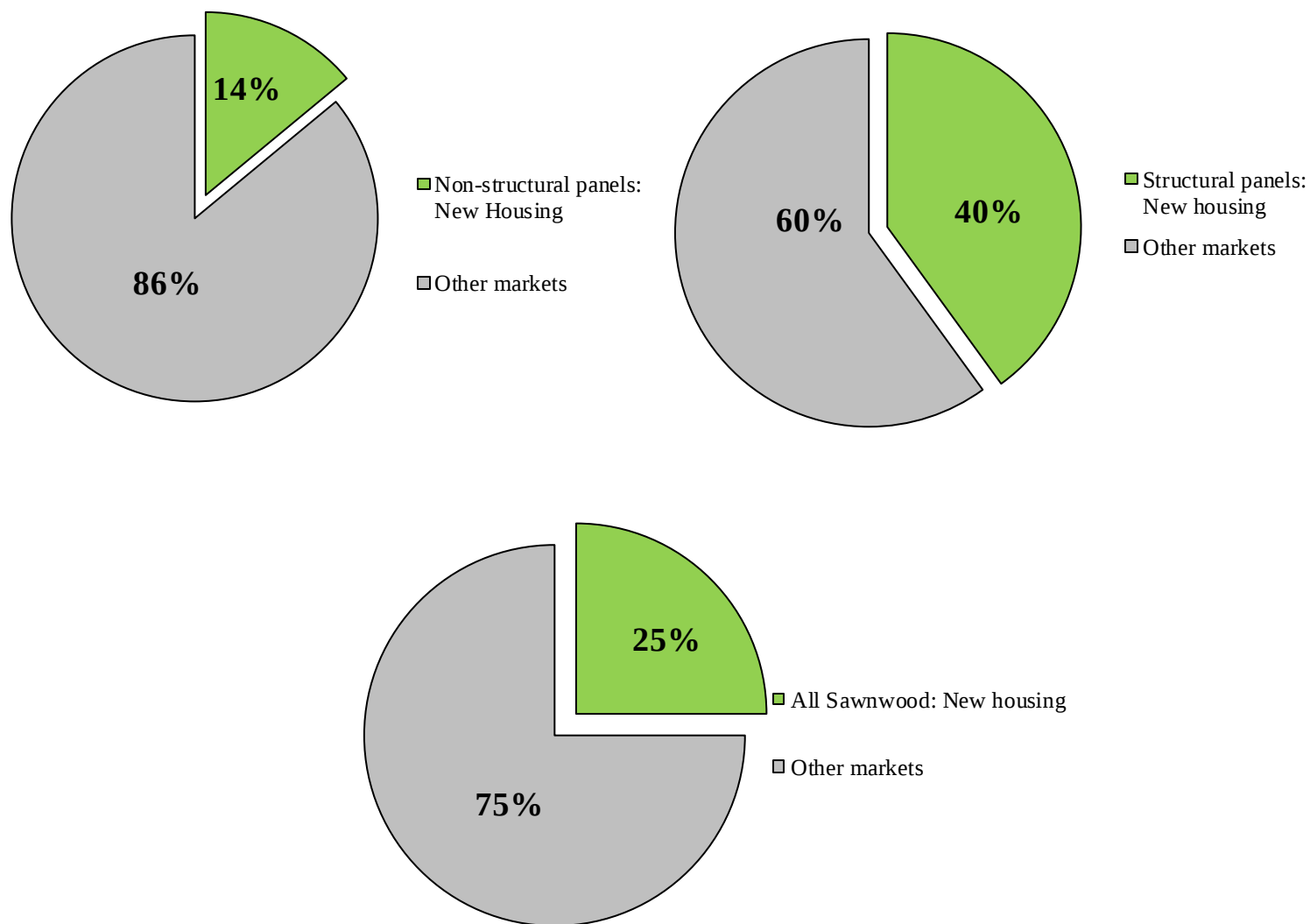


■ Non-structural panels

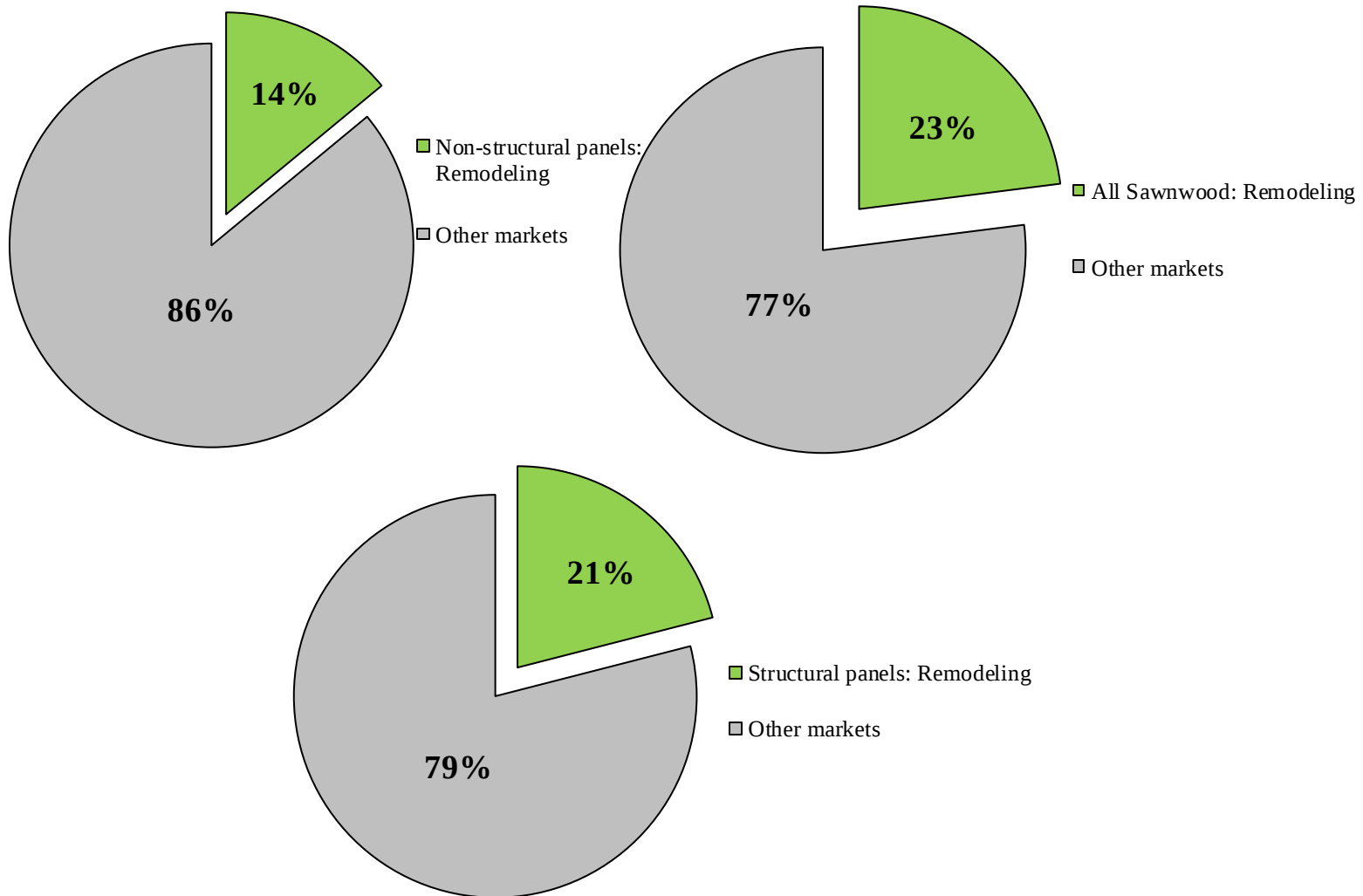
■ Total Sawnwood

■ Structural panels

New SF Construction Percentage of Wood Products Consumption



Repair and Remodeling's Percentage of Wood Products Consumption



2020 Housing Forecasts*

	Range	Median
Total starts:	1,200 to 1,423	1,305
Single-Family (SF) starts:	810 to 990	920
New SF house sales:	695 to 750	726

Organization	Total Starts	SF Starts	New SF House Sales
APA - The Engineered Wood Association ^a	1,335	915	
Bank of Montreal (BMO) ^b	1,350		
Deloitte ^c	1,213		
Fannie Mae ^d	1,360	975	726
Freddie Mac ^e	1,280		
Goldman Sachs ^f	1,381		708
Grant Thornton LLP ^g	1,330		
John Burns Real Estate LLC ^h	1,200		
Mortgage Bankers Association (MBA) ⁱ	1,305	920	726
National Association of Homebuilders ^j	1,303	920	708
National Association of Realtors ^k	1,310		750

* All in thousands of units

2020 Housing Forecasts*

	Range	Median
Total starts:	1,200 to 1,423	1,305
Single-Family (SF) starts:	810 to 990	920
New SF house sales:	695 to 750	726

Organization	Total Starts	SF Starts	New SF House Sales
PNC Financial Services Group ¹	1,423		747
Fastmarkets RISI ^m	1,275	890	
Raymond James ⁿ	1,350	925	695
Royal Bank of Canada (RBC) ^o	1,305		
Scotiabank ^p	1,260		
TD Economics ^q	1,330		
The Federal Reserve Bank of Chicago ^r	1,280		
UCLA Ziman Center for Real Estate ^s	1,250 to 1,300		
Urban Land Institute ^t		810	
U.S. Energy Information Administration ^u	1,290		
Wells Fargo LLC ^v	1,330	935	730
Zelman & Associates ^w		990	

* All in thousands of units

References

- a- APA – *The Engineered Wood Association*. Housing Starts December 2019. 1/17/20. Tacoma, WA. 42 pps.
- b- https://economics.bmo.com/media/filer_public/56/3f/563fbe0f-83d5-4aee-81d7-3464c6bcd947/usmodel.pdf
- c- <https://www2.deloitte.com/us/en/insights/economy/us-economic-forecast/united-states-outlook-analysis.html>
- d- https://www.fanniemae.com/resources/file/research/emma/pdf/Housing_Forecast_121819.pdf
- e- https://www.urban.org/sites/default/files/publication/101476/housing_finance_at_a_glance_a_monthly_chartbook_december_2019.pdf
- f- <https://www.goldmansachs.com/insights/pages/outlook-2020-f/US/report.pdf>
- g- <https://www.grantthornton.com/-/media/content-page-files/economic-analysis/economic-update/economic-update-january-2020/economic-currents-january-2020-v2.ashx>
- h- *SBC Magazine*, Will we see housing's hiccup next year? *SBC Magazine*, Madison, WI. December 2019, p. 17.
- i- <https://www.mba.org/news-research-and-resources/research-and-economics/forecasts-and-commentary/mortgage-finance-forecast-archives>
- j- <http://www.nahbclassic.org/>
- k- <https://www.nar.realtor/sites/default/files/documents/2019-nar-real-estate-forecast-summit-speaker-slides-12-16-2019.pdf>
- l- https://www.pnc.com/content/dam/pnc-com/pdf/aboutpnc/EconomicReports/NEO%20Reports/2019/NEO_Dec2019.pdf
- m- *Random Lengths*, Volume 76, Issue 1 (1/3/20). Random Lengths Publications, Inc. Eugene, OR. 14 pps.
- n- <https://raymondjames.bluematrix.com/sellside/EmailDocViewer>
- o- <https://royal-bank-of-canada-2124.docs.contently.com/v/macroeconomic-outlook-december-2019>
- p- <https://www.scotiabank.com/>
- q- <https://economics.td.com/us-quarterly-economic-forecast>
- r- <https://www.chicagofed.org/publications/chicago-fed-letter/2020/429>
- s- https://www.anderson.ucla.edu/Documents/areas/ctr/ziman/UCLA_Economic_Letter_Shulman_12.06.18.pdf
- t- <https://urbanland.uli.org/capital-markets/uli-forecast-says-longest-u-s-economic-and-real-estate-expansion-to-continue-through-2021/>
- u- <https://www.eia.gov/outlooks/steo/tables/pdf/9atab.pdf>
- v- <https://www08.wellsfargomedia.com/assets/pdf/commercial/insights/economics/real-estate-and-housing/housing-chartbook-20200109.pdf>
- w- https://www.builderonline.com/builder-100/strategy/zelman-on-2019-get-ready-for-flat-to-down_o

2019# Housing Forecasts*

Total starts, range:	1,134 to 1,400	Median: 1,280
Single-family starts, range:	815 to 920	Median: 900
New SF house sales, range:	618 to 688	Median: 638

2018# Housing Forecasts*

Total starts, range:	1,248 to 1,320	Median: 1,280
Single-family starts, range:	850 to 981	Median: 912
New SF house sales, range:	653 to 700	Median: 672

2017# Housing Forecasts*

Total starts, range:	1,170 to 1,500	Median: 1,271
Single-family starts, range:	795 to 893	Median: 856
New SF house sales, range:	610 to 680	Median: 642

The Virginia Tech-USDA Forest Service Housing Commentary, December 2018

* All in thousands of units.

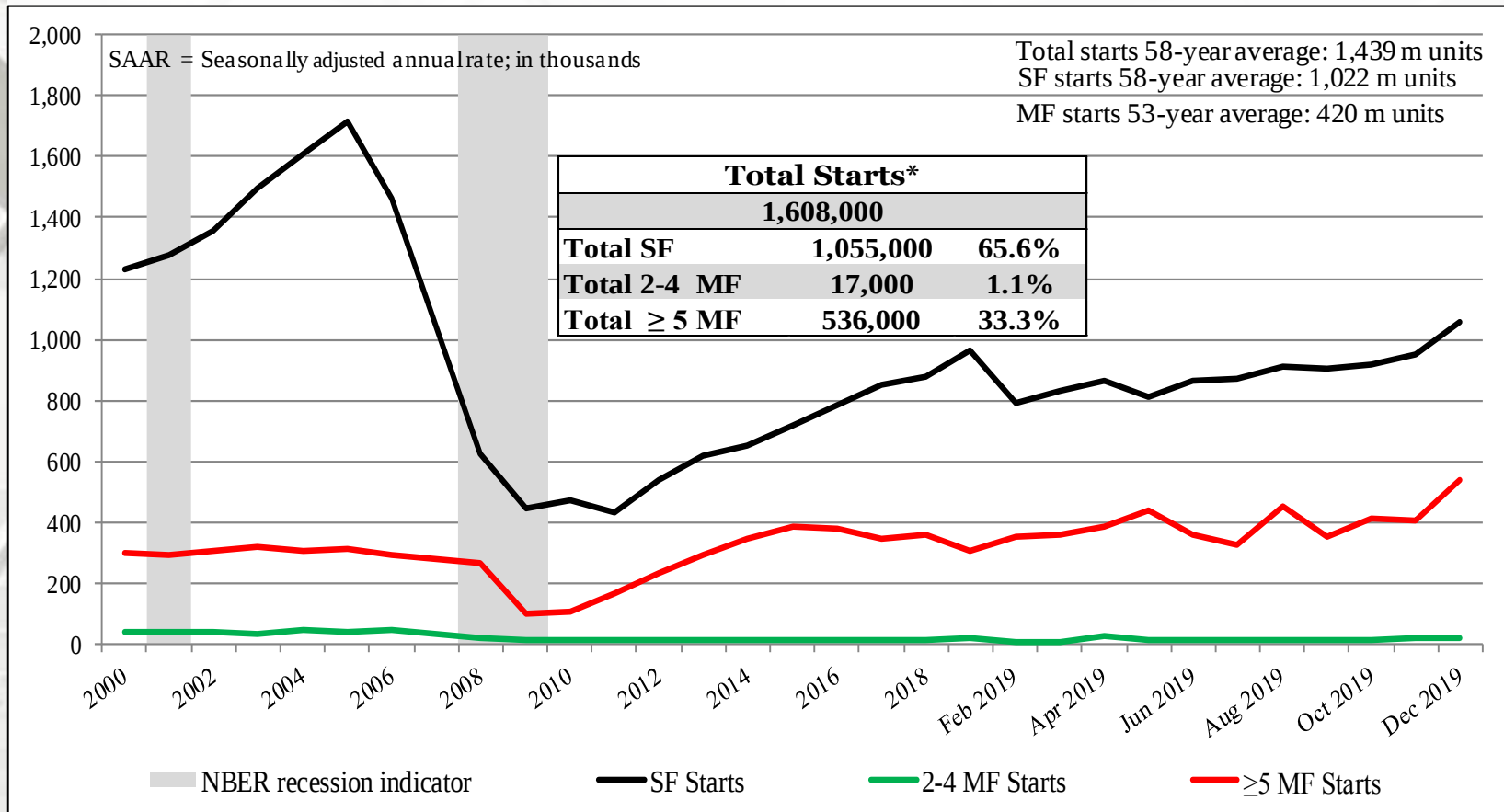
New Housing Starts

	Total Starts*	SF Starts	MF 2-4 Starts**	MF ≥5 Starts
December	1,608,000	1,055,000	17,000	536,000
November	1,375,000	949,000	20,000	406,000
2018	1,142,000	814,000	21,000	307,000
M/M change	16.9%	11.2%	-15.0%	32.0%
Y/Y change	40.8%	29.6%	-19.0%	74.6%

* 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

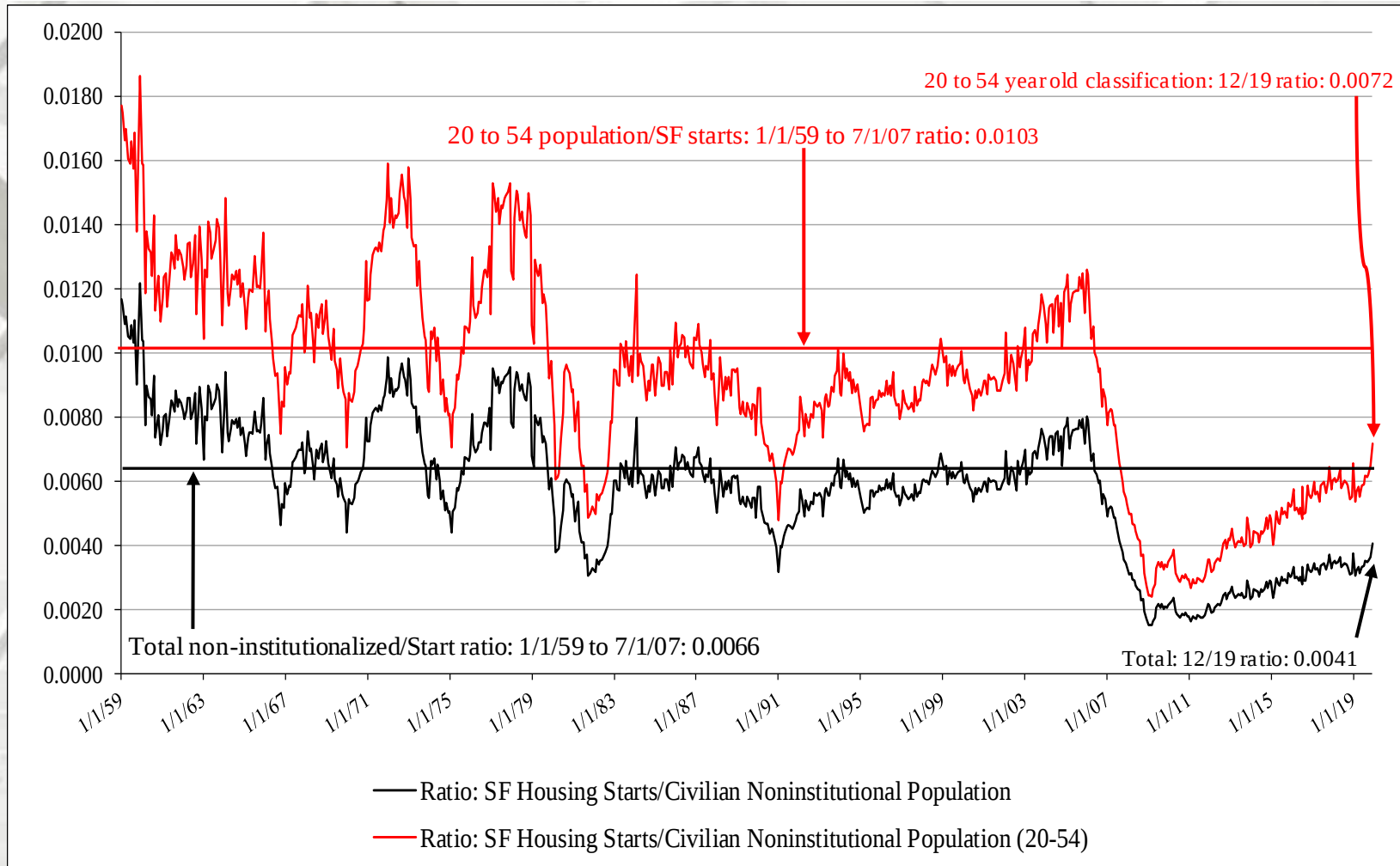


US DOC does not report 2 to 4 multifamily starts directly, this is an estimation: $((\text{Total starts} - (\text{SF} + \geq \text{MF})))$.

* 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).

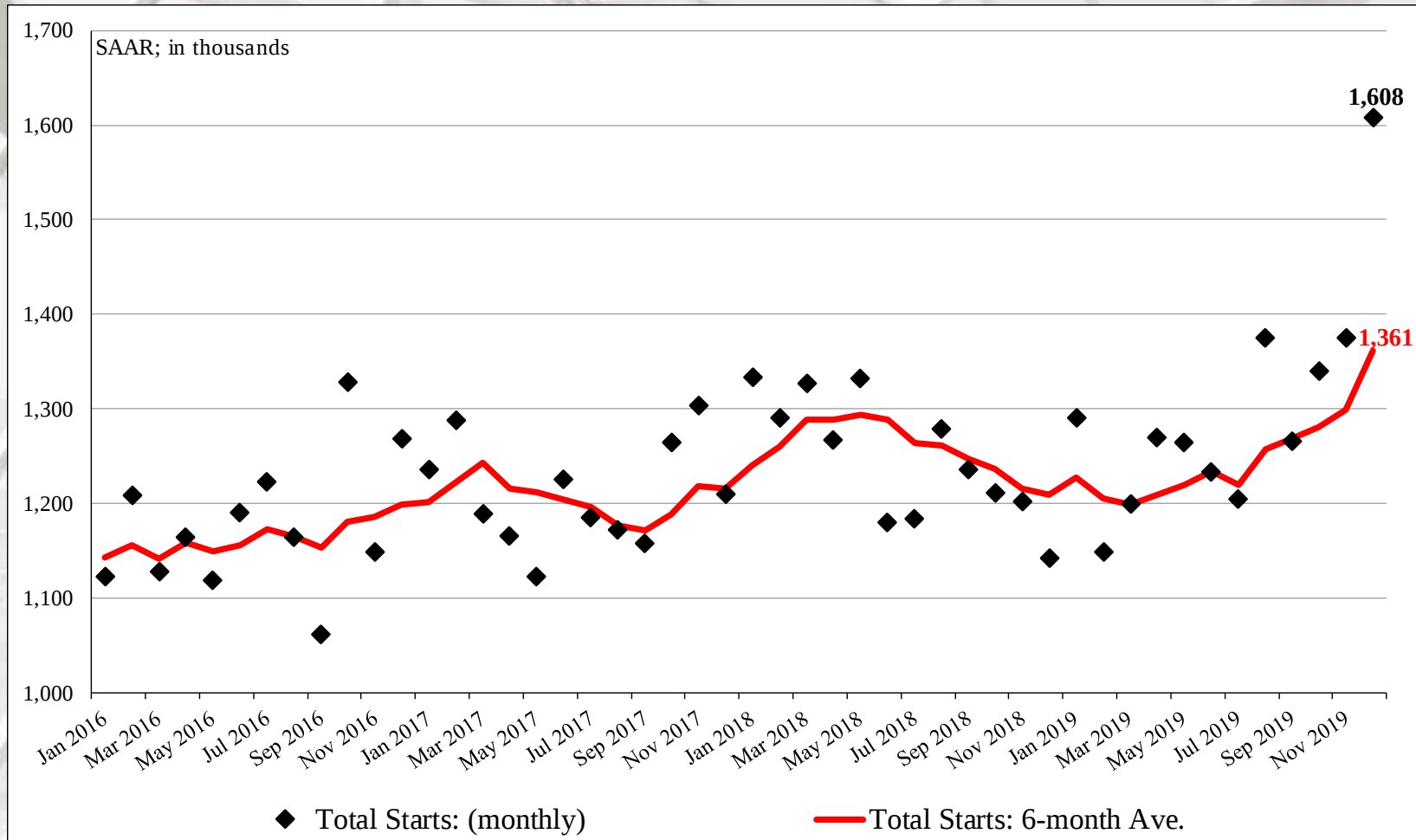
New SF Starts



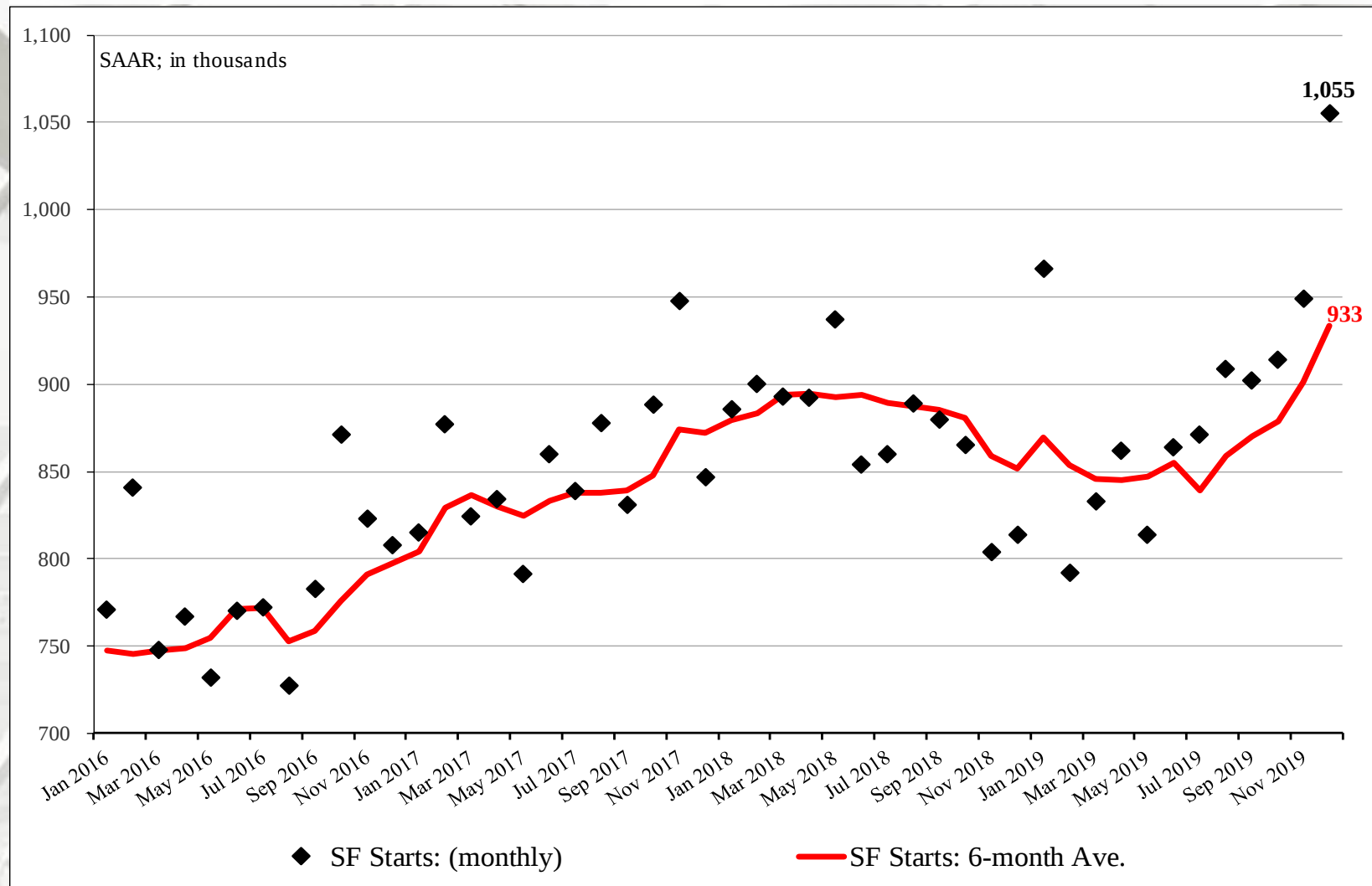
New SF starts adjusted for the US population

From December 1959 to December 2007, the long-term ratio of new SF starts to the total US non-institutionalized population was 0.0066; in December 2019 it was 0.0041 – a large increase from November (0.0036). The long-term ratio of non-institutionalized population, aged 20 to 54 is 0.0103; in December 2019 was 0.0072 – also an increase from November (0.0065). From a population worldview, new SF construction is less than what is necessary for changes in population (i.e., under-building).

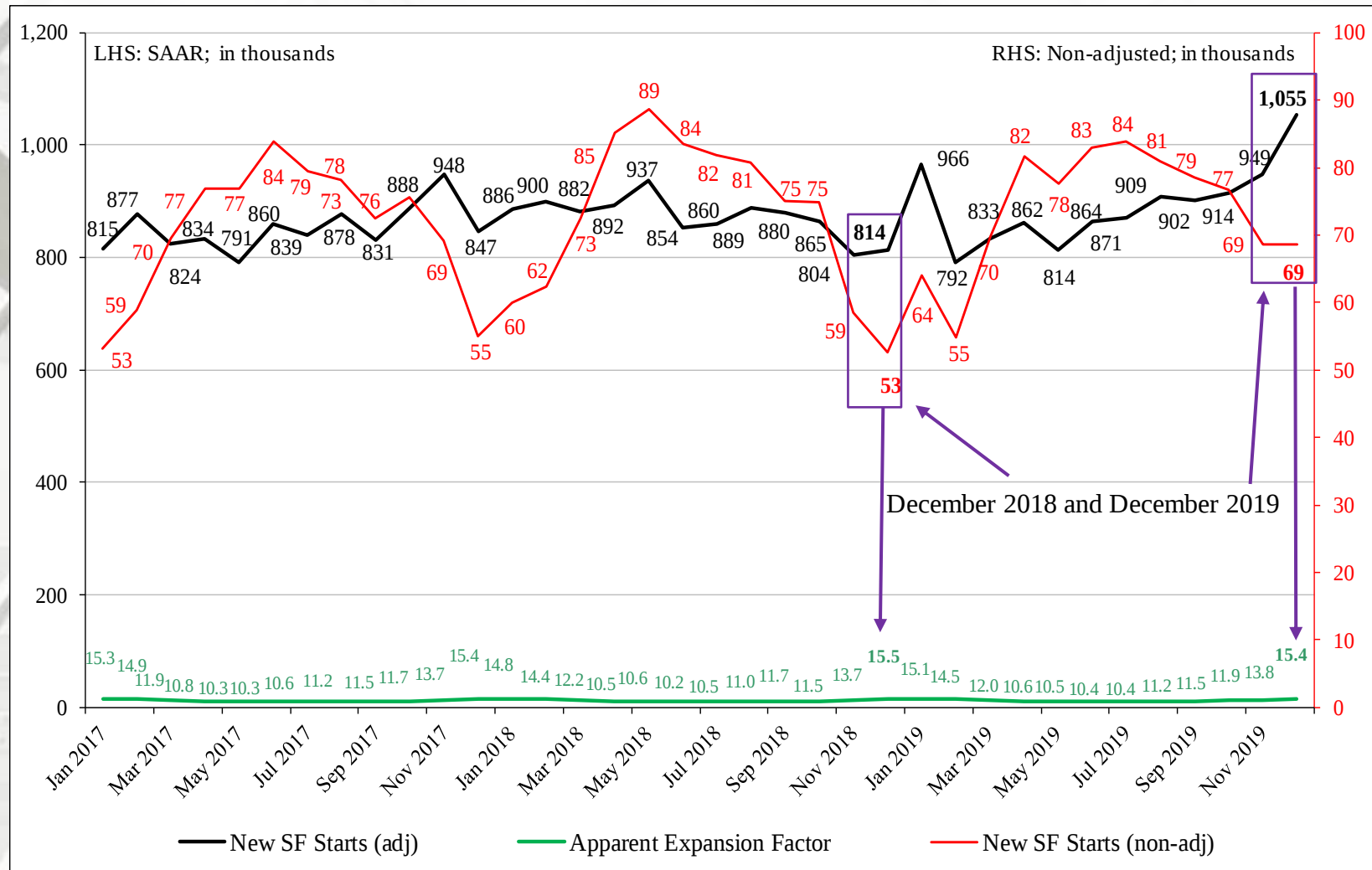
Total Housing Starts: Six-Month Average



SF Housing Starts: Six-Month Average



Nominal & SAAR SF Starts

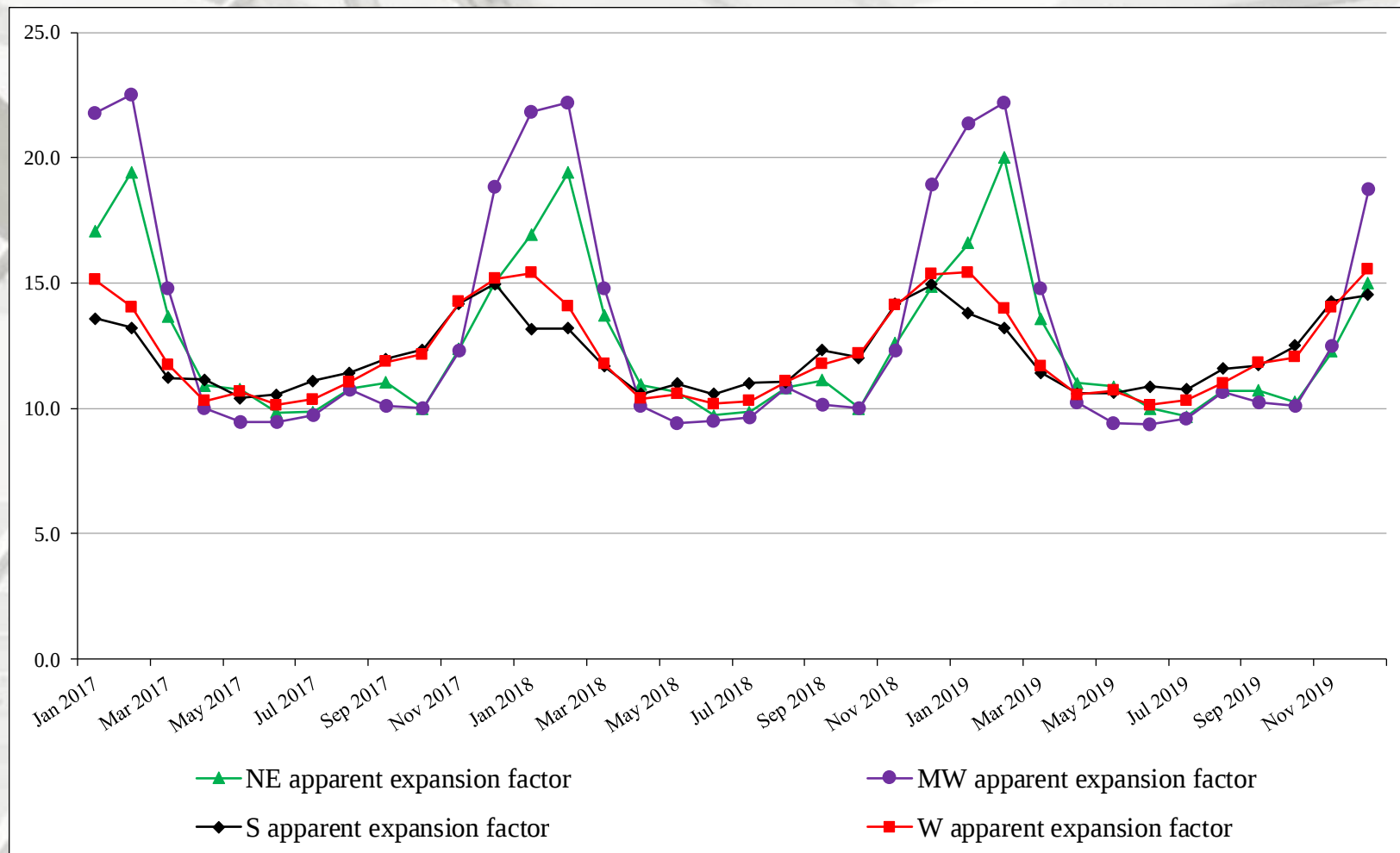


Nominal and Adjusted New SF Monthly Starts

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

Regional Starts: Apparent Expansion Factors



New Housing Starts by Region

	NE Total	NE SF	NE MF**
December	133,000	60,000	73,000
November	106,000	65,000	41,000
2018	112,000	58,000	54,000
M/M change	25.5%	-7.7%	78.0%
Y/Y change	18.8%	3.4%	35.2%
	MW Total	MW SF	MW MF
December	254,000	180,000	74,000
November	185,000	115,000	70,000
2018	137,000	104,000	33,000
M/M change	37.3%	56.5%	5.7%
Y/Y change	85.4%	73.1%	124.2%

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).

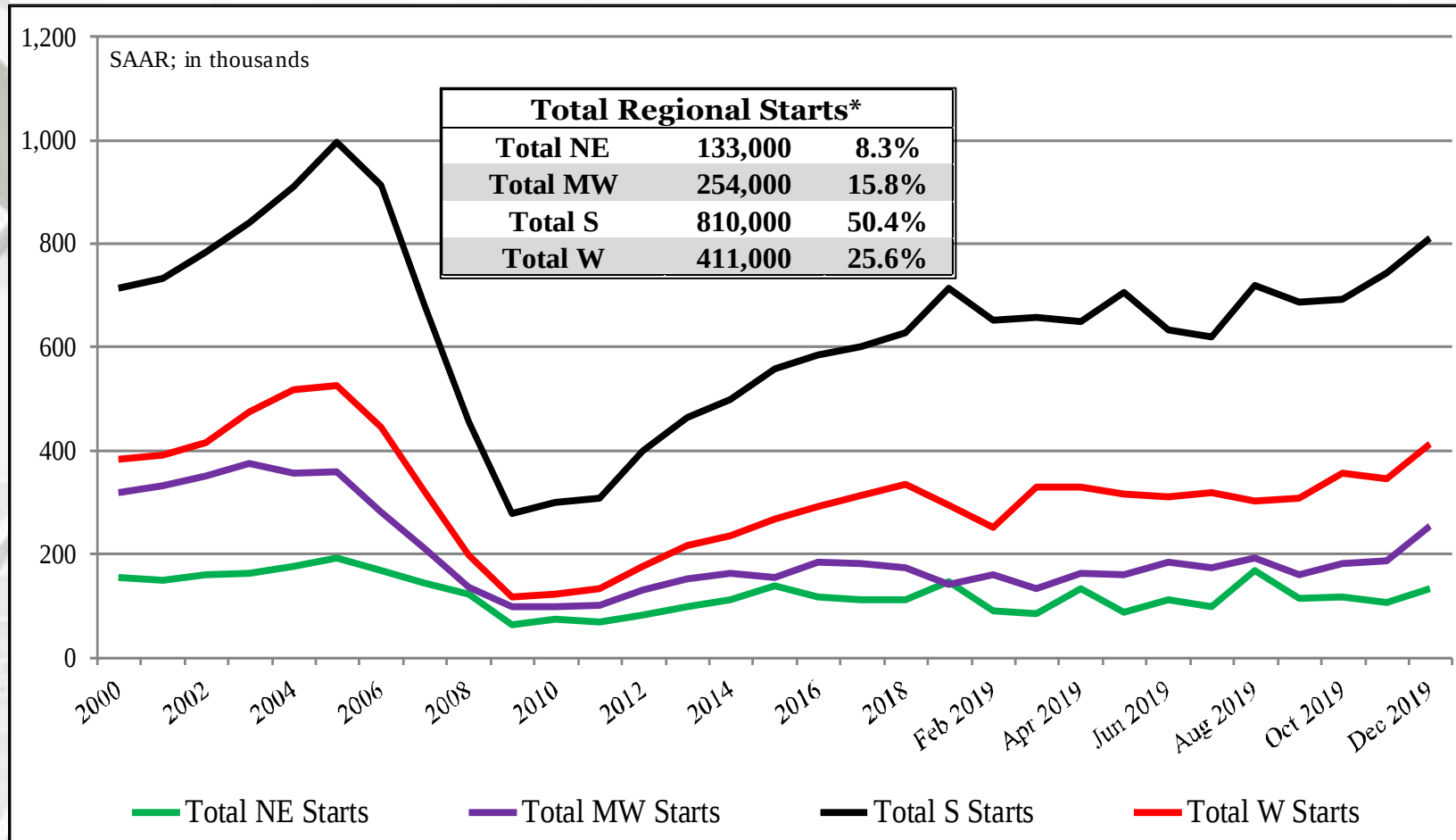
New Housing Starts by Region

	S Total	S SF	S MF**
December	810,000	580,000	230,000
November	741,000	521,000	220,000
2017	655,000	480,000	175,000
M/M change	9.3%	11.3%	4.5%
Y/Y change	23.7%	20.8%	31.4%
	W Total	W SF	W MF
December	411,000	235,000	176,000
November	343,000	248,000	95,000
2018	238,000	172,000	66,000
M/M change	19.8%	-5.2%	85.3%
Y/Y change	72.7%	36.6%	166.7%

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

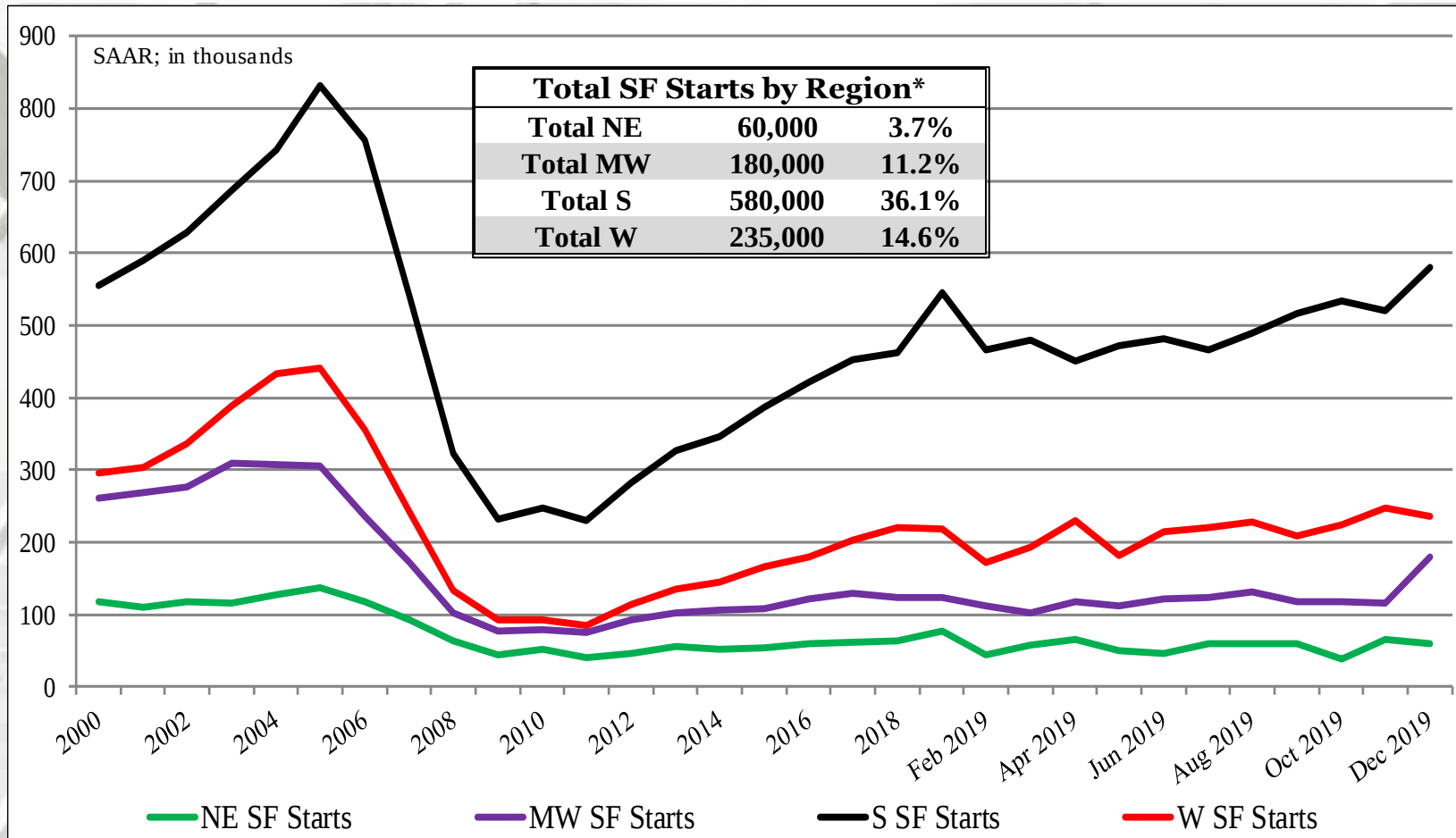


NE = Northeast, MW = Midwest, S = South, W = West

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

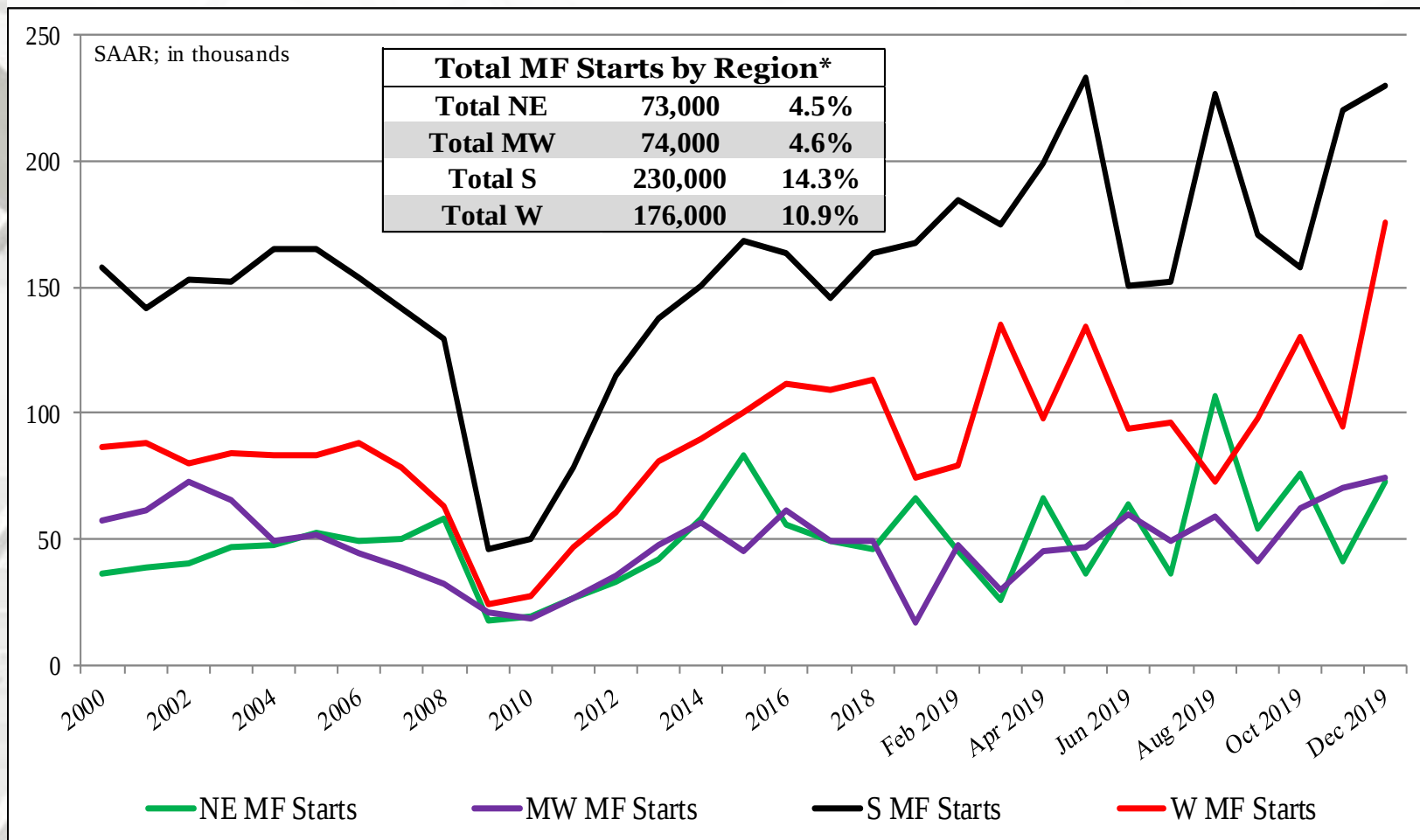


NE = Northeast, MW = Midwest, S = South, W = West

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

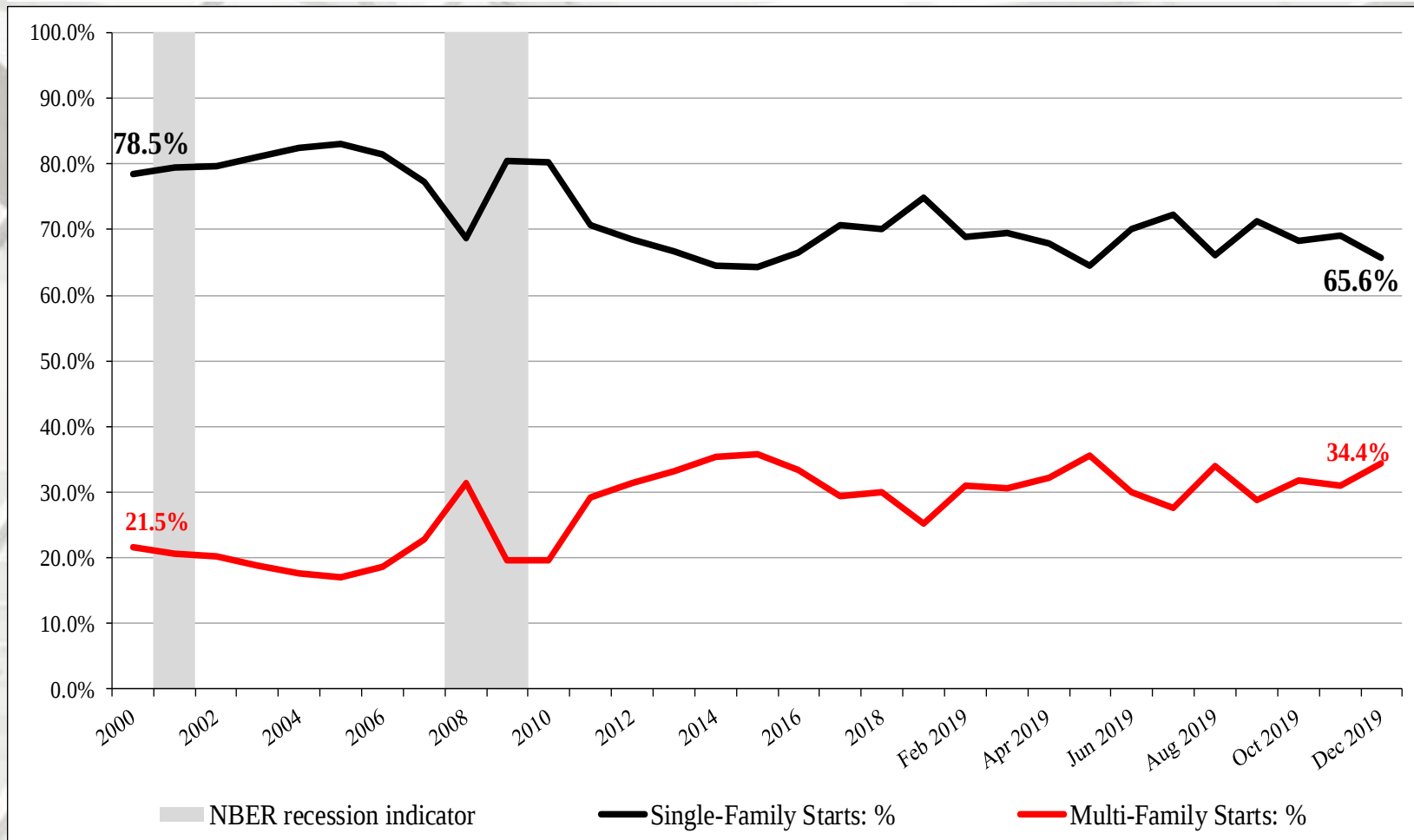


NE = Northeast, MW = Midwest, S = South, W = West

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 (%)



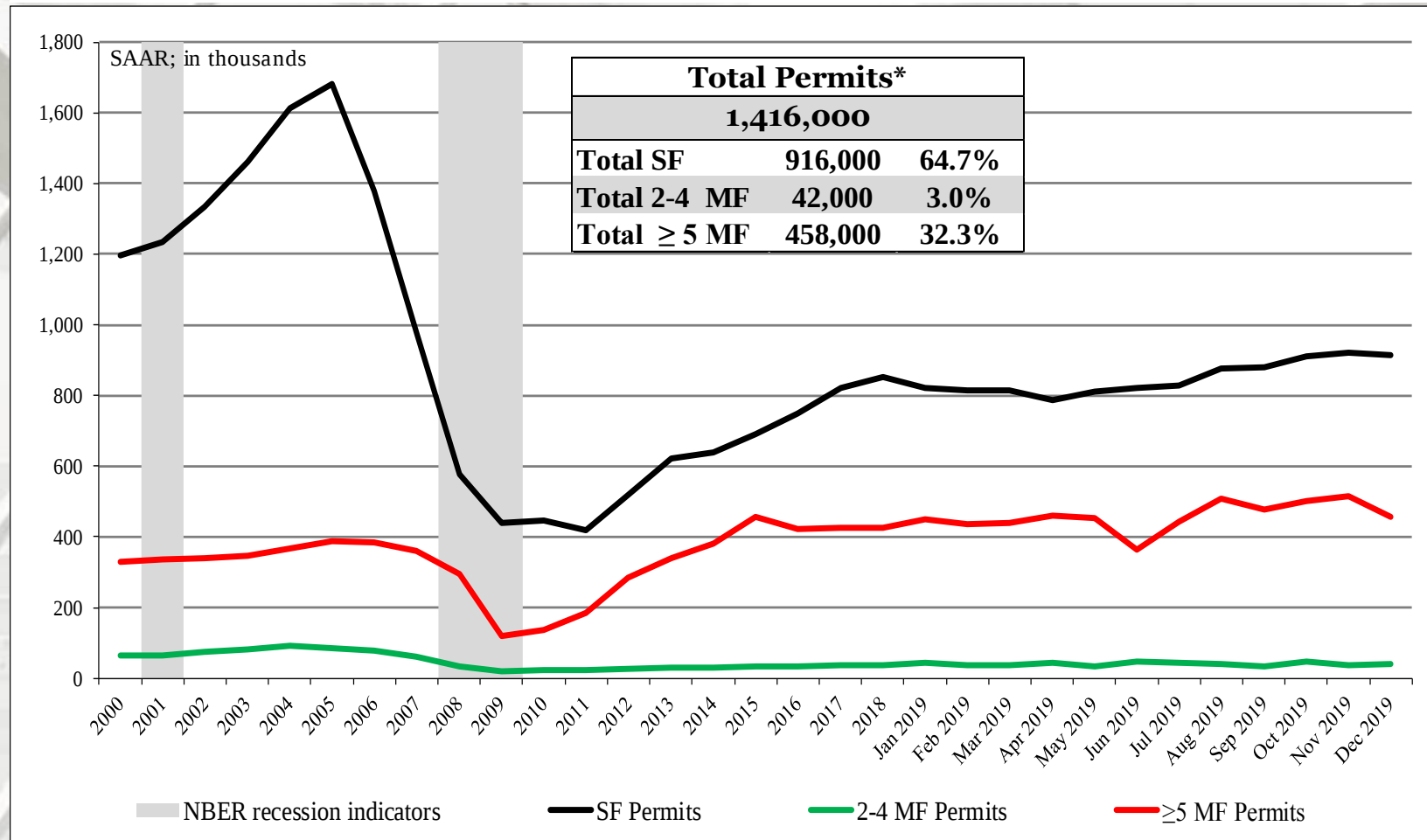
NBER based Recession Indicator Bars for the United States from the Period following the Peak through the Trough (FRED, St. Louis).

New Housing Permits

	Total Permits*	SF Permits	MF 2-4 unit Permits	MF ≥ 5 unit Permits
December	1,416,000	916,000	42,000	458,000
November	1,474,000	921,000	38,000	515,000
2018	1,339,000	827,000	40,000	472,000
M/M change	-3.9%	-0.5%	10.5%	-11.1%
Y/Y change	5.8%	10.8%	5.0%	-3.0%

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

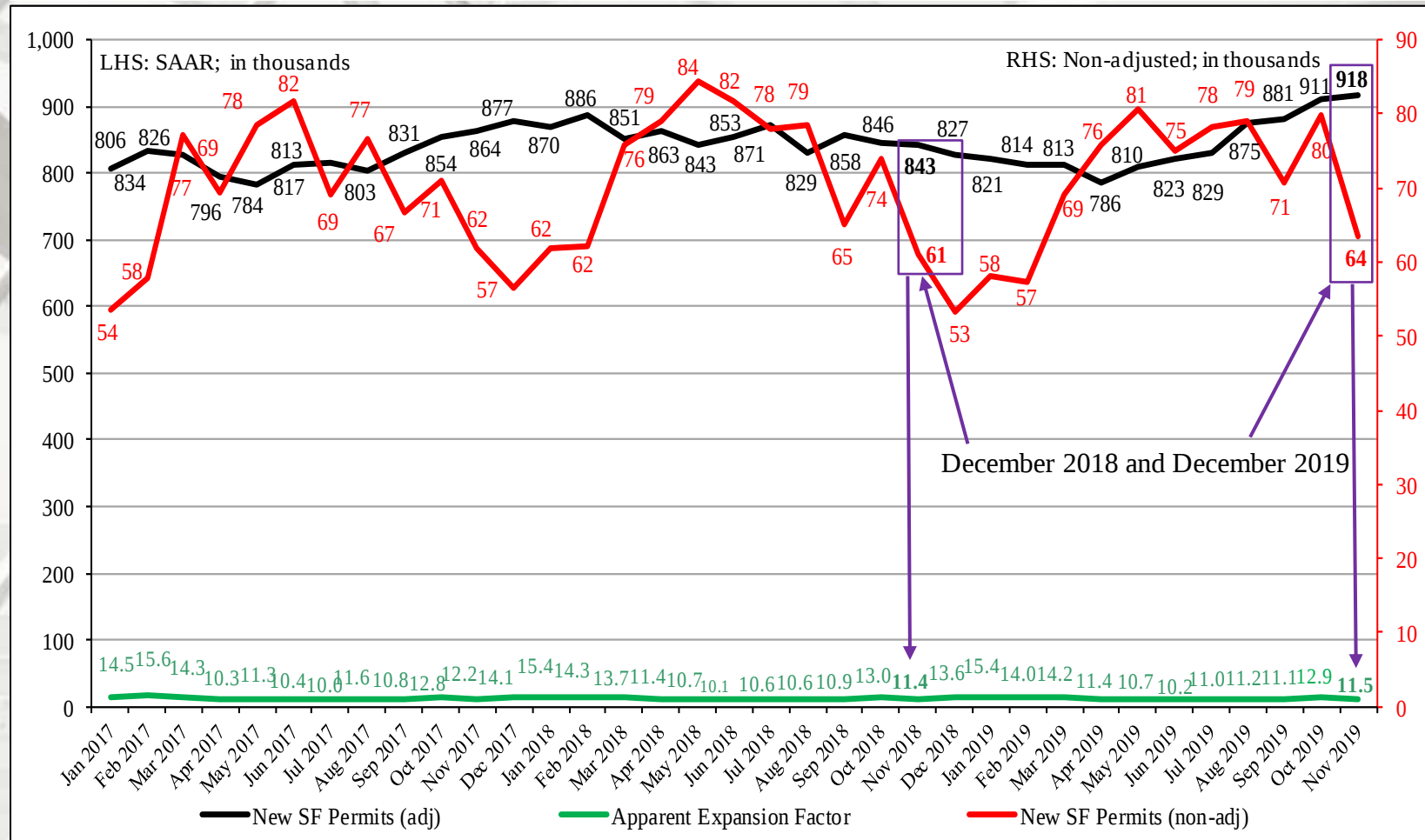
Total New Housing Permits



* 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

	NE Total*	NE SF	NE MF**
December	134,000	47,000	87,000
November	159,000	56,000	103,000
2018	120,000	55,000	65,000
M/M change	-15.7%	-16.1%	-15.5%
Y/Y change	11.7%	-14.5%	33.8%
	MW Total*	MW SF	MW MF**
December	207,000	129,000	78,000
November	206,000	113,000	93,000
2018	145,000	110,000	35,000
M/M change	0.5%	14.2%	-16.1%
Y/Y change	42.8%	17.3%	122.9%

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

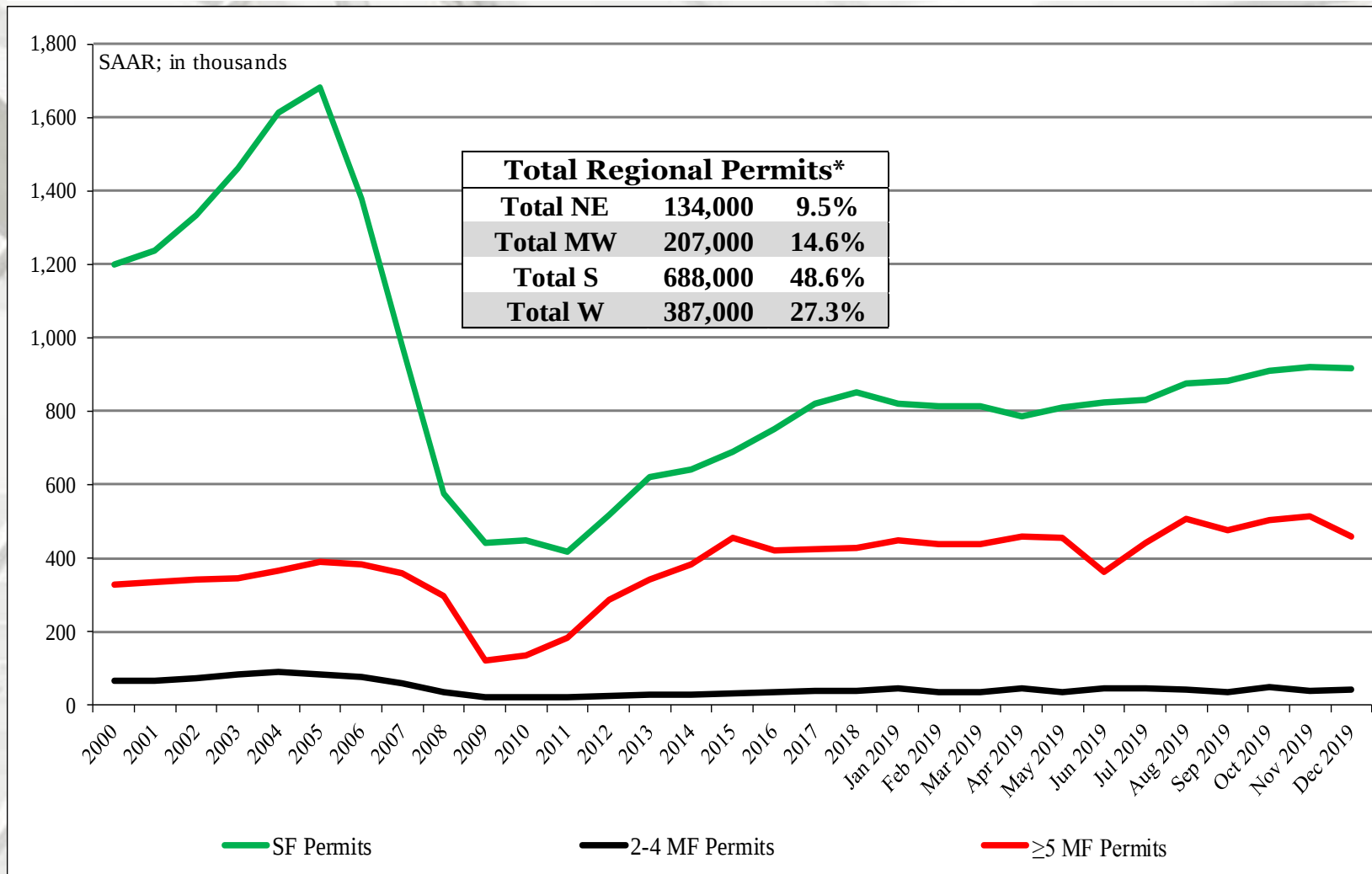
	S Total*	S SF	S MF**
December	688,000	515,000	173,000
November	736,000	517,000	219,000
2018	689,000	460,000	229,000
M/M change	-6.5%	-0.4%	-21.0%
Y/Y change	-0.1%	12.0%	-24.5%
	W Total*	W SF	W MF**
December	387,000	225,000	162,000
November	373,000	235,000	138,000
2018	385,000	202,000	183,000
M/M change	3.8%	-4.3%	17.4%
Y/Y change	0.5%	11.4%	-11.5%

S = South; W = West

* All data are SAAR

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

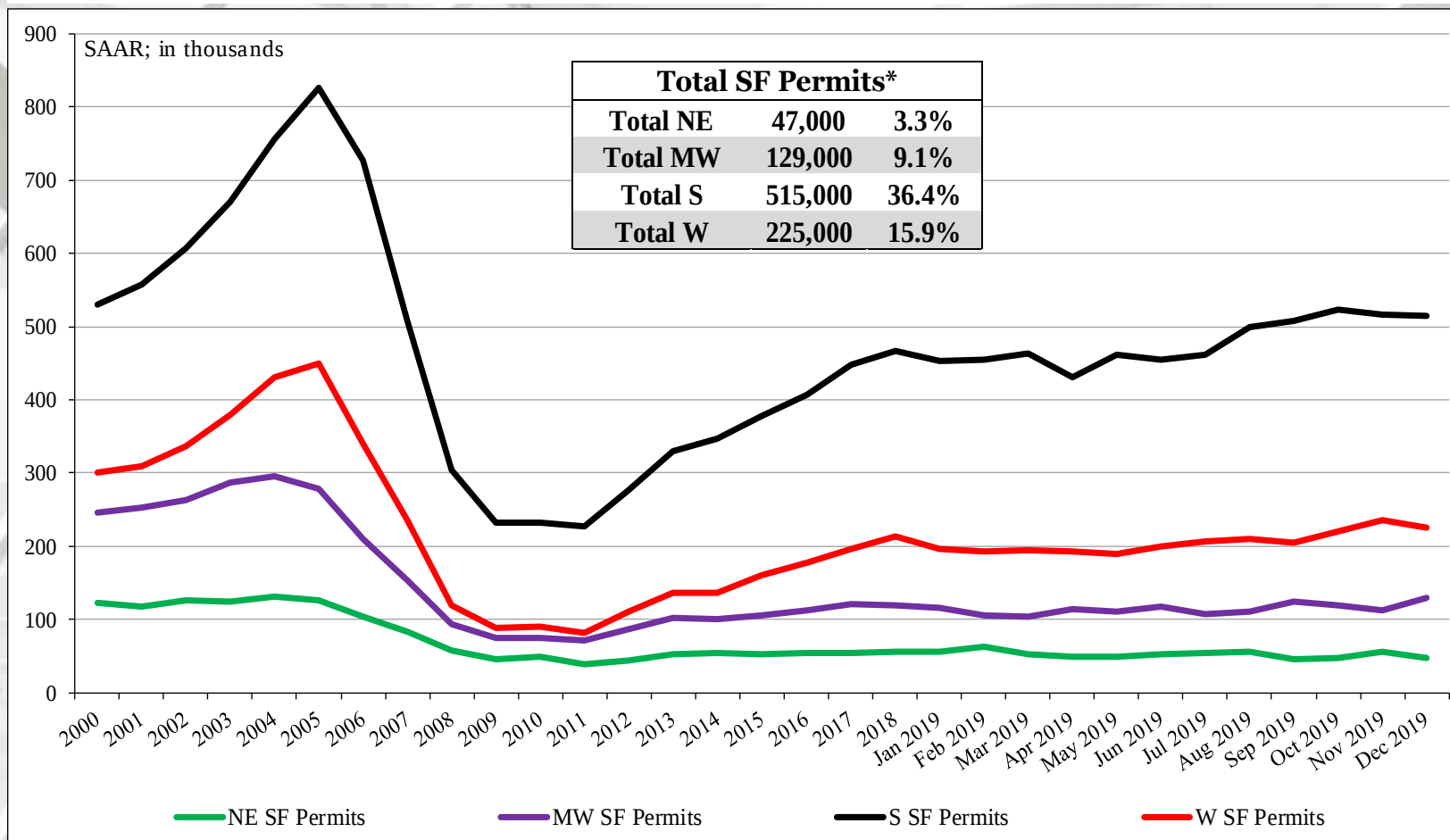
Total Housing Permits by Region



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

* Percentage of total permits.

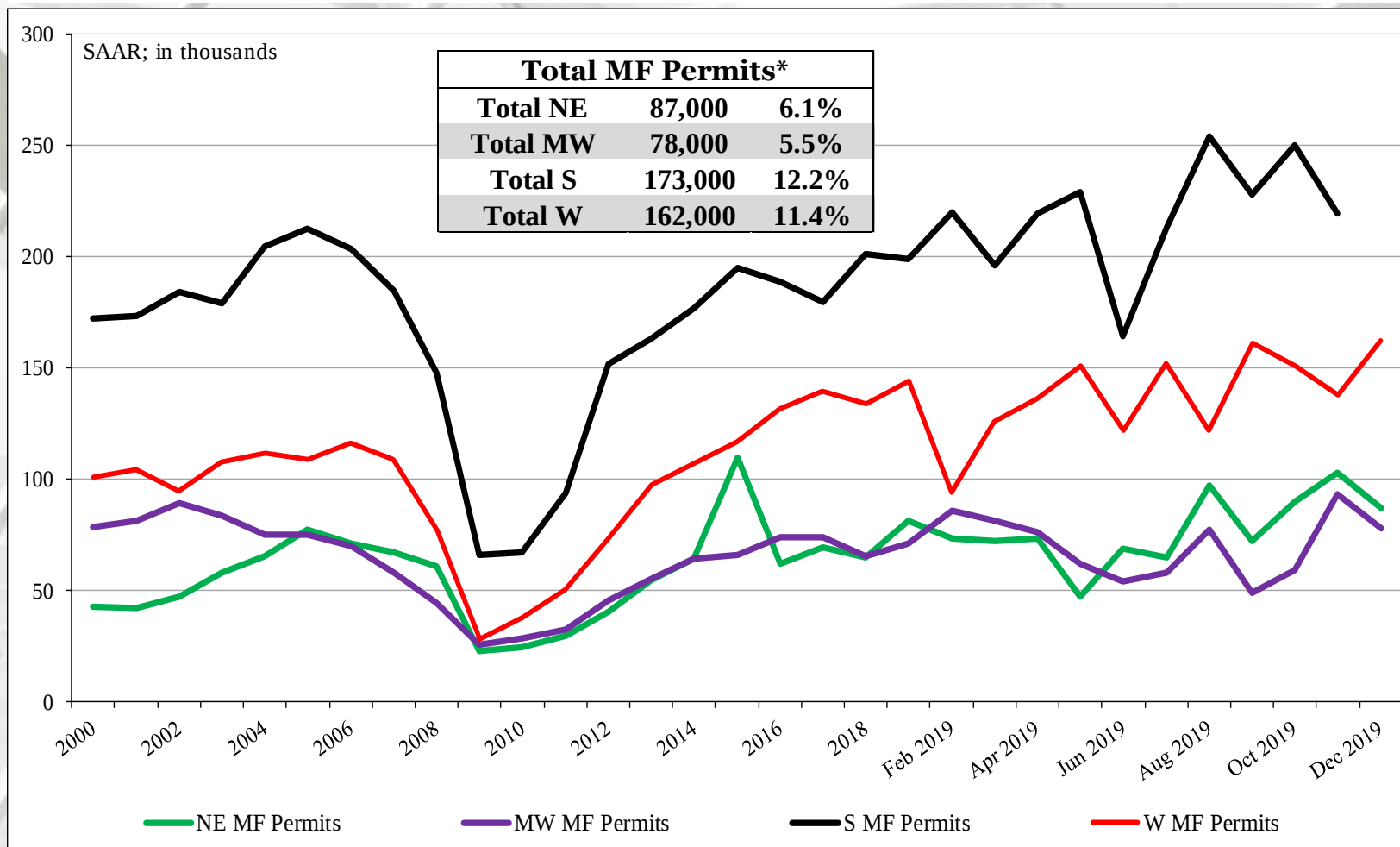
SF Housing Permits by Region



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.

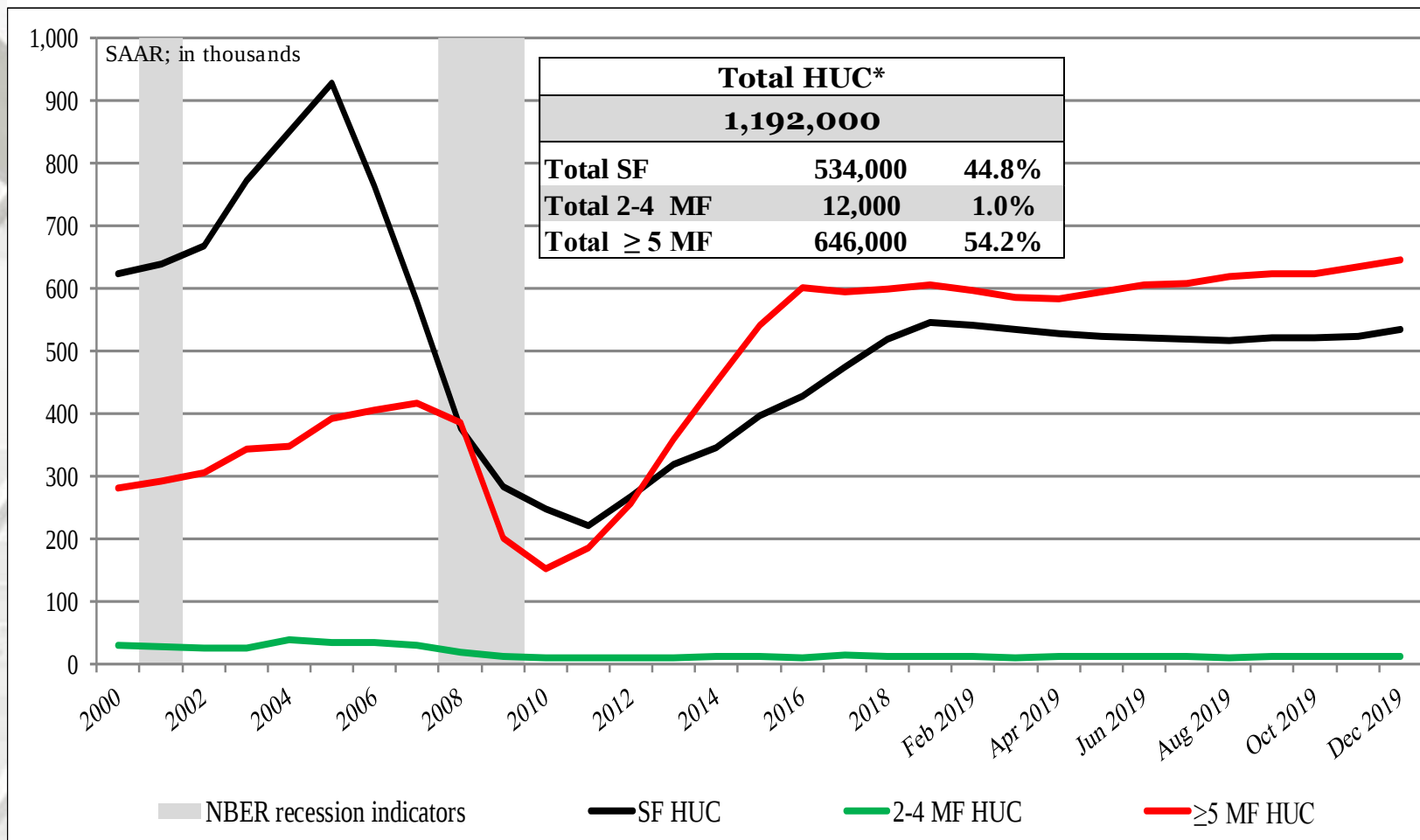
New Housing Under Construction (HUC)

	Total Under Construction*	SF Under Construction	MF 2-4 unit** Under Construction	MF ≥ 5 unit Under Construction
December	1,192,000	534,000	12,000	646,000
November	1,169,000	524,000	11,000	634,000
2018	1,154,000	540,000	12,000	602,000
M/M change	2.0%	1.9%	9.1%	1.9%
Y/Y change	3.3%	-1.1%	0.0%	7.3%

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

	NE Total	NE SF	NE MF**
December	177,000	57,000	120,000
November	179,000	57,000	122,000
2018	188,000	63,000	125,000
M/M change	-1.1%	0.0%	-1.6%
Y/Y change	-5.9%	-9.5%	-4.0%
	MW Total	MW SF	MW MF
December	156,000	80,000	76,000
November	149,000	76,000	73,000
2018	155,000	82,000	73,000
M/M change	4.7%	5.3%	4.1%
Y/Y change	0.6%	-2.4%	4.1%

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).

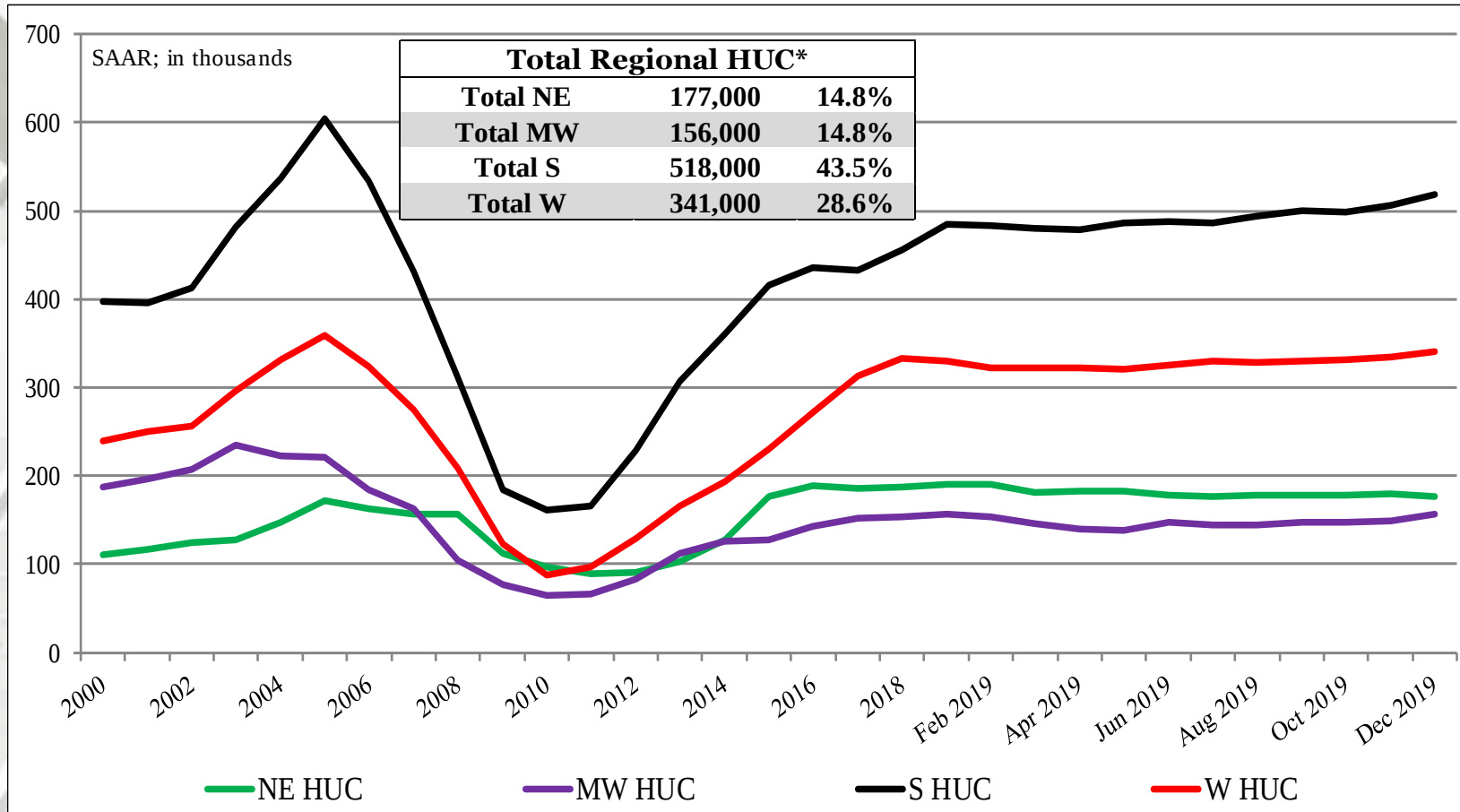
New Housing Under Construction by Region

	S Total	S SF	S MF**
December	518,000	255,000	263,000
November	506,000	250,000	256,000
2018	478,000	251,000	227,000
M/M change	2.4%	2.0%	2.7%
Y/Y change	8.4%	1.6%	15.9%
	W Total	W SF	W MF
December	341,000	142,000	199,000
November	335,000	141,000	194,000
2018	333,000	144,000	189,000
M/M change	1.8%	0.7%	2.6%
Y/Y change	2.4%	-1.4%	5.3%

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

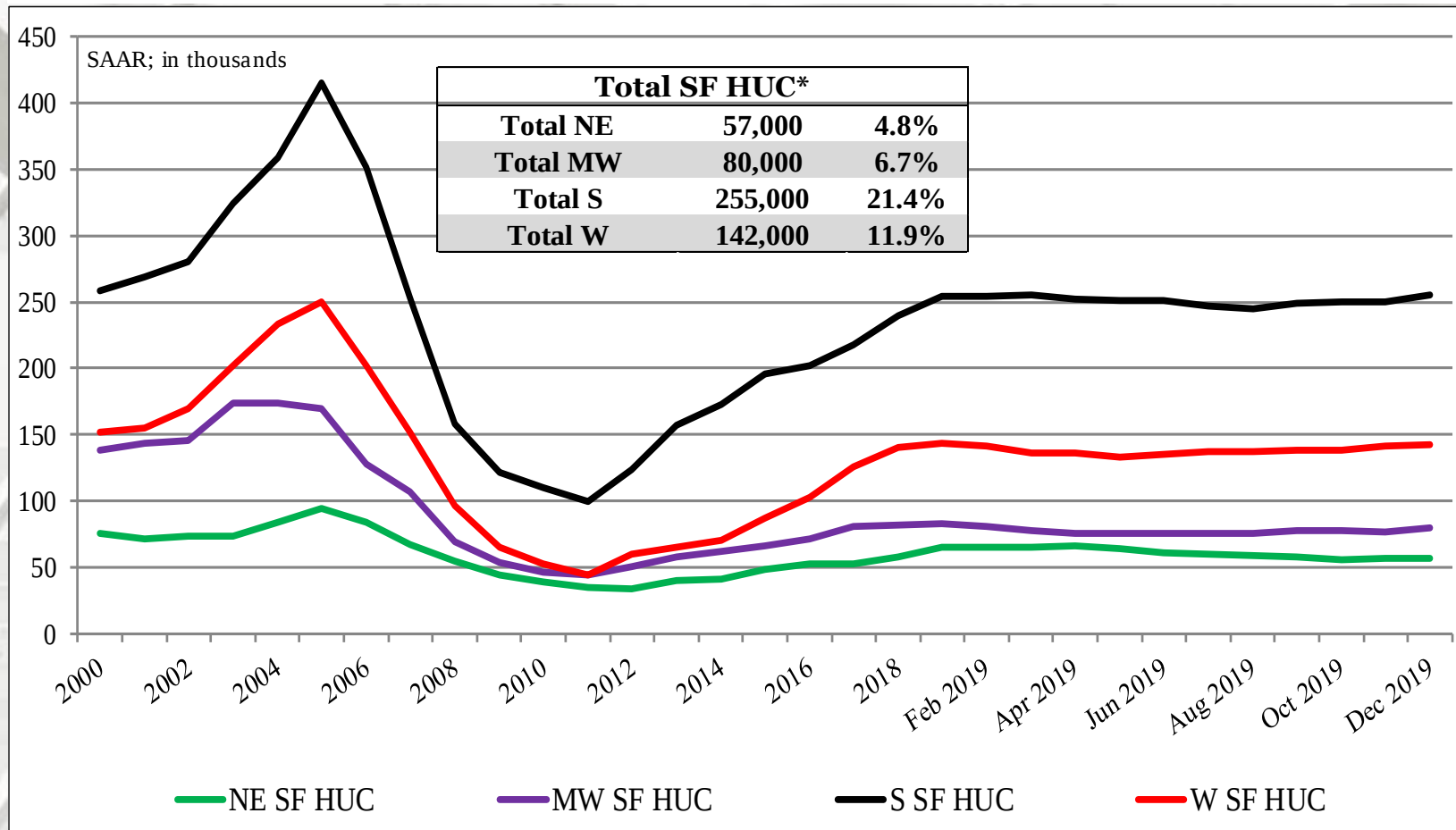


NE = Northeast, MW = Midwest, S = South, W = West

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

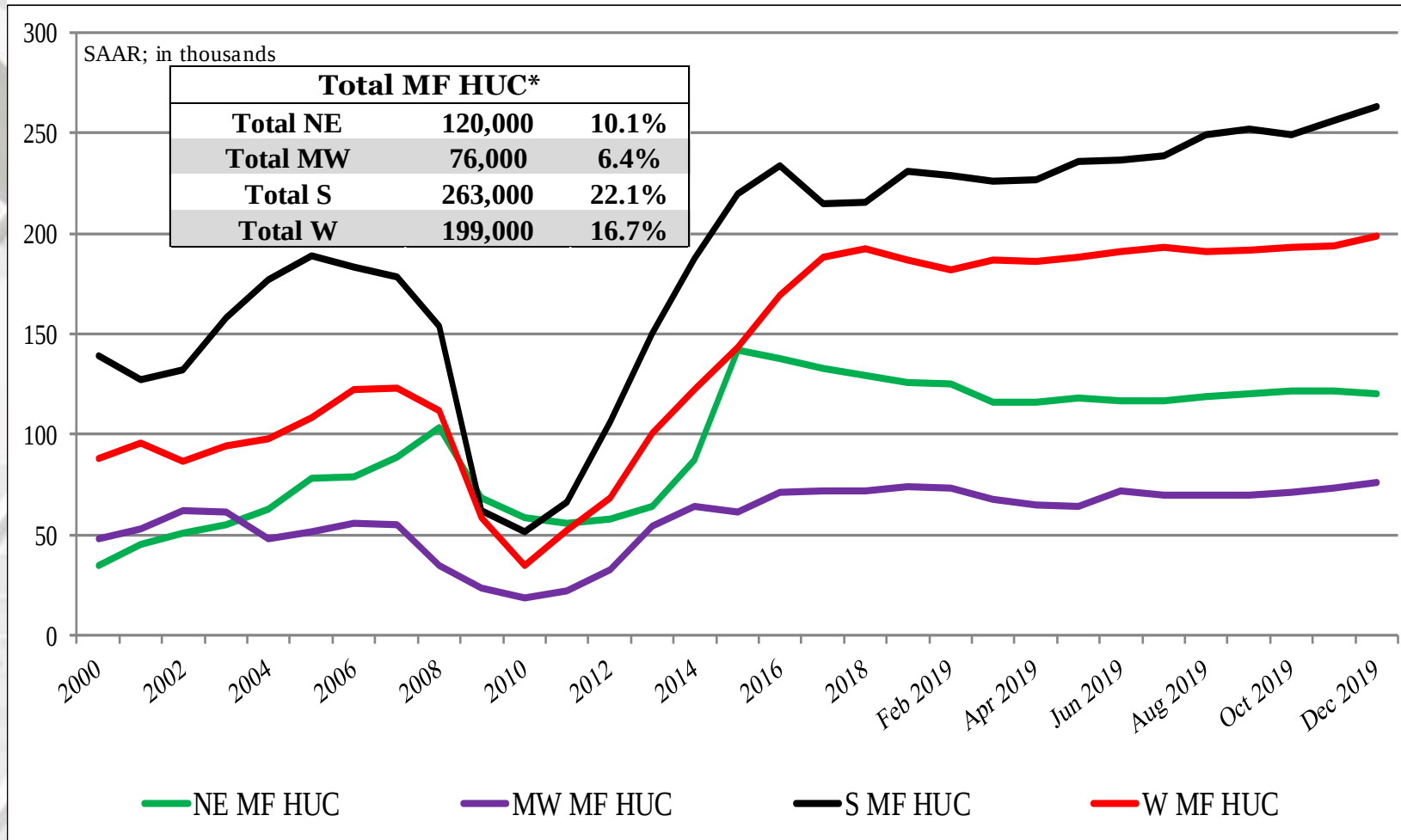


NE = Northeast, MW = Midwest, S = South, W = West.

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.

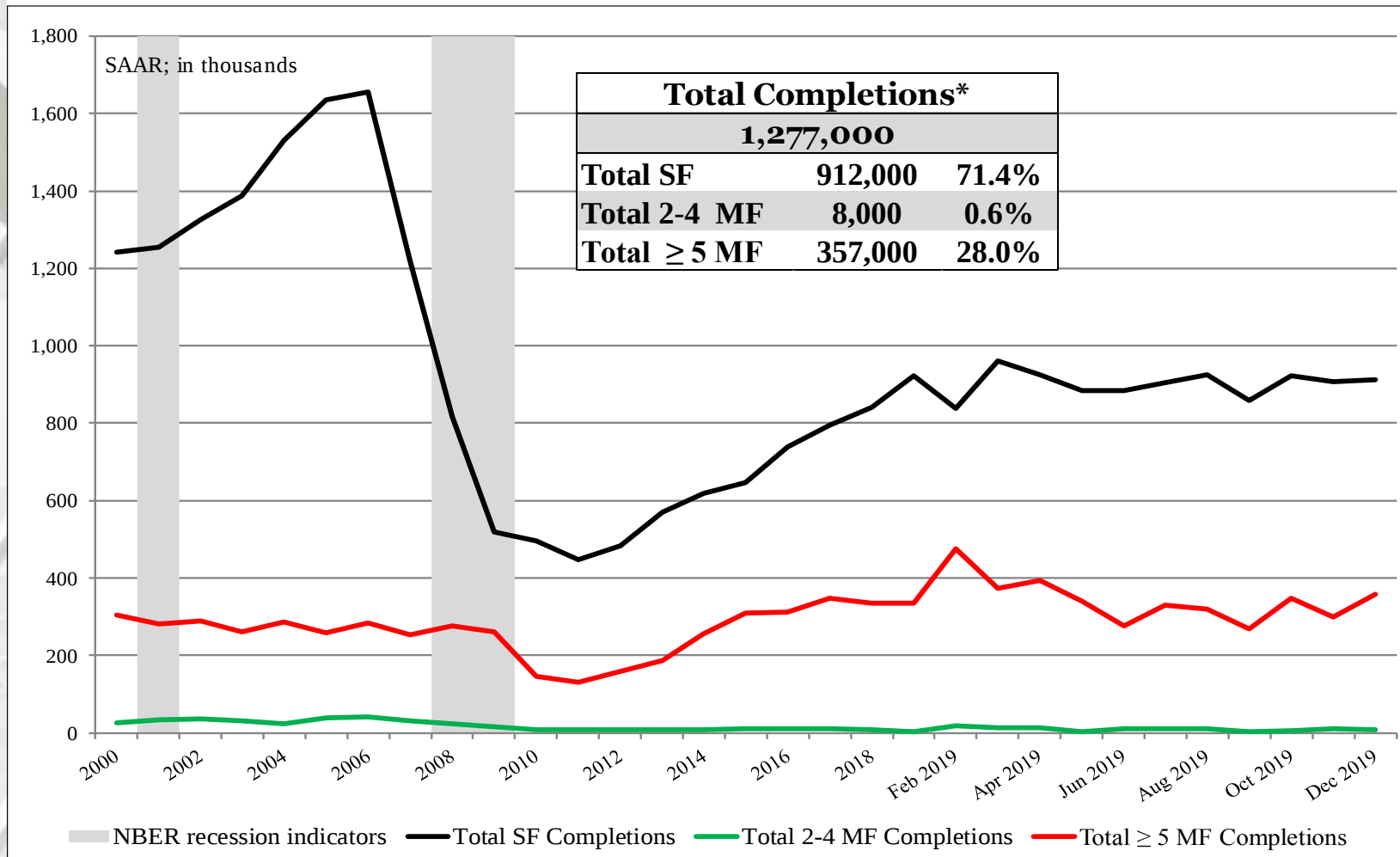
New Housing Completions

	Total Completions*	SF Completions	MF 2-4 unit** Completions	MF ≥ 5 unit Completions
December	1,277,000	912,000	8,000	357,000
November	1,215,000	906,000	10,000	299,000
2018	1,068,000	774,000	11,000	283,000
M/M change	5.1%	0.7%	-20.0%	19.4%
Y/Y change	19.6%	17.8%	-27.3%	26.1%

* 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

	NE Total	NE SF	NE MF**
December	158,000	58,000	100,000
November	107,000	52,000	55,000
2018	78,000	47,000	31,000
M/M change	47.7%	11.5%	81.8%
Y/Y change	102.6%	23.4%	222.6%
	MW Total	MW SF	MW MF
December	144,000	111,000	33,000
November	158,000	113,000	45,000
2018	131,000	106,000	25,000
M/M change	-8.9%	-1.8%	-26.7%
Y/Y change	9.9%	4.7%	32.0%

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).

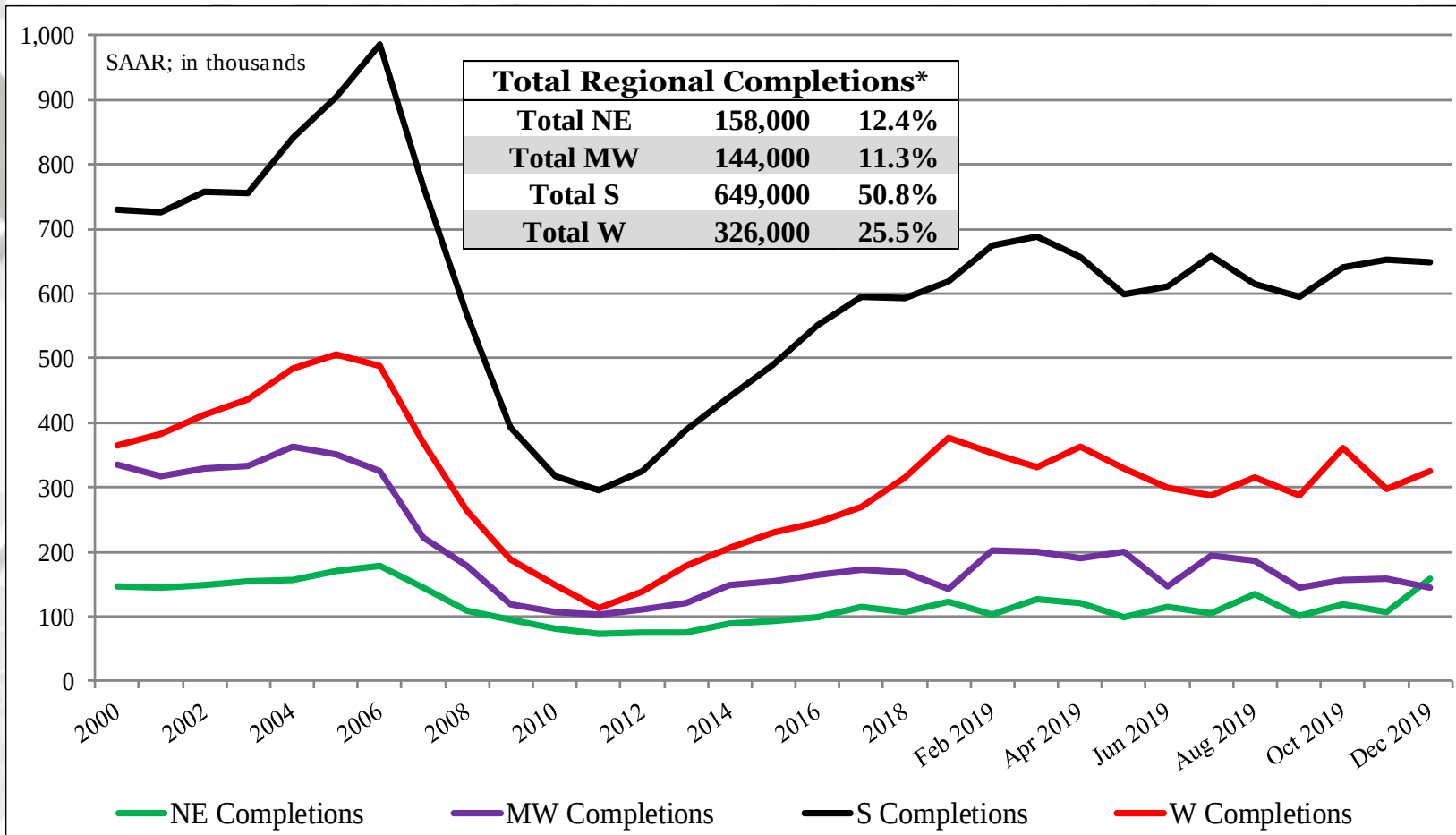
New Housing Completions by Region

	S Total	S SF	S MF**
December	649,000	516,000	133,000
November	652,000	526,000	126,000
2018	546,000	408,000	138,000
M/M change	-0.5%	-1.9%	5.6%
Y/Y change	18.9%	26.5%	-3.6%
	W Total	W SF	W MF
December	326,000	227,000	99,000
November	298,000	215,000	83,000
2018	313,000	213,000	100,000
M/M change	9.4%	5.6%	19.3%
Y/Y change	4.2%	6.6%	-1.0%

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).

Total Housing Completions by Region

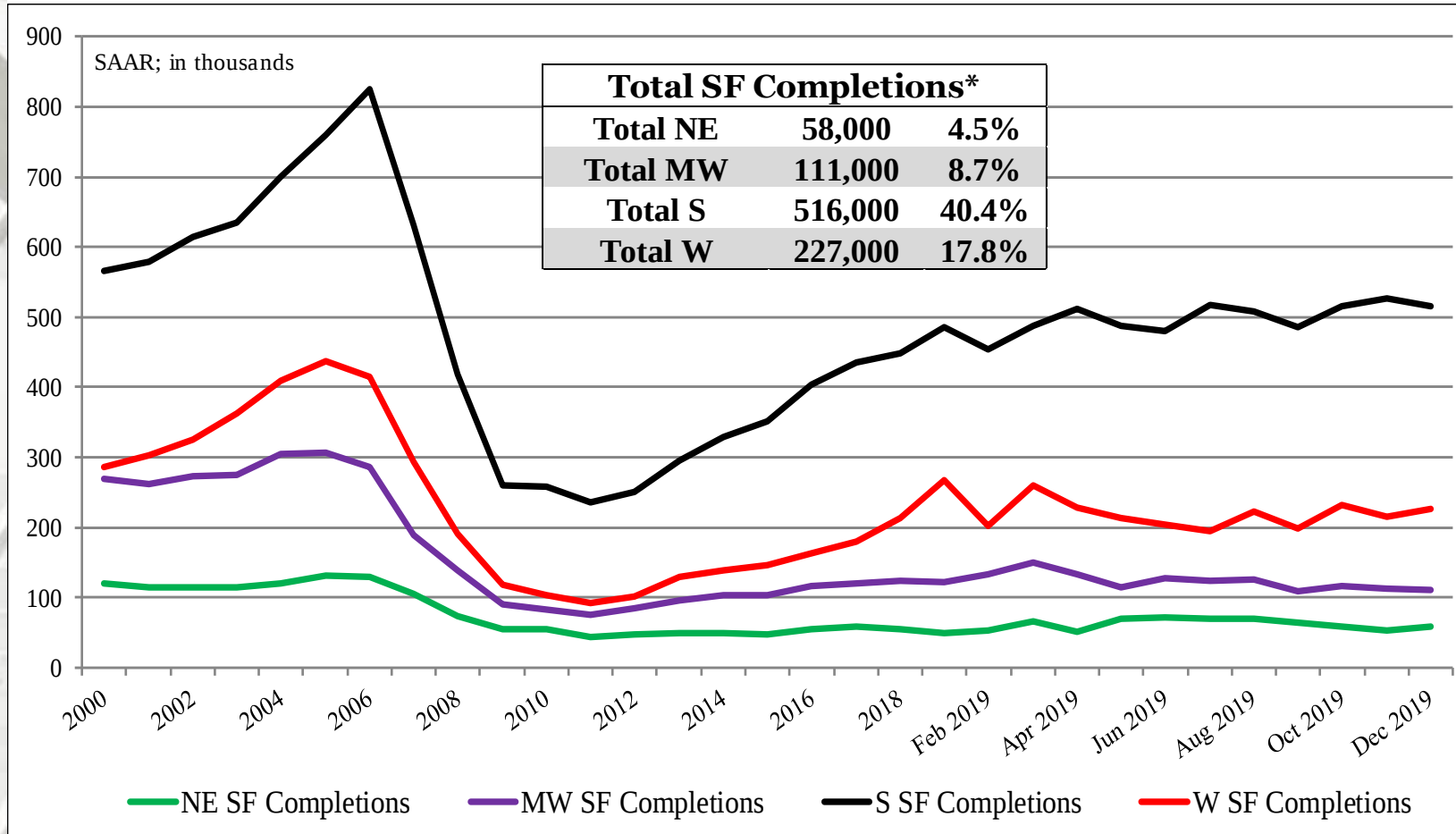


NE = Northeast, MW = Midwest, S = South, W = West

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

SF Housing Completions by Region

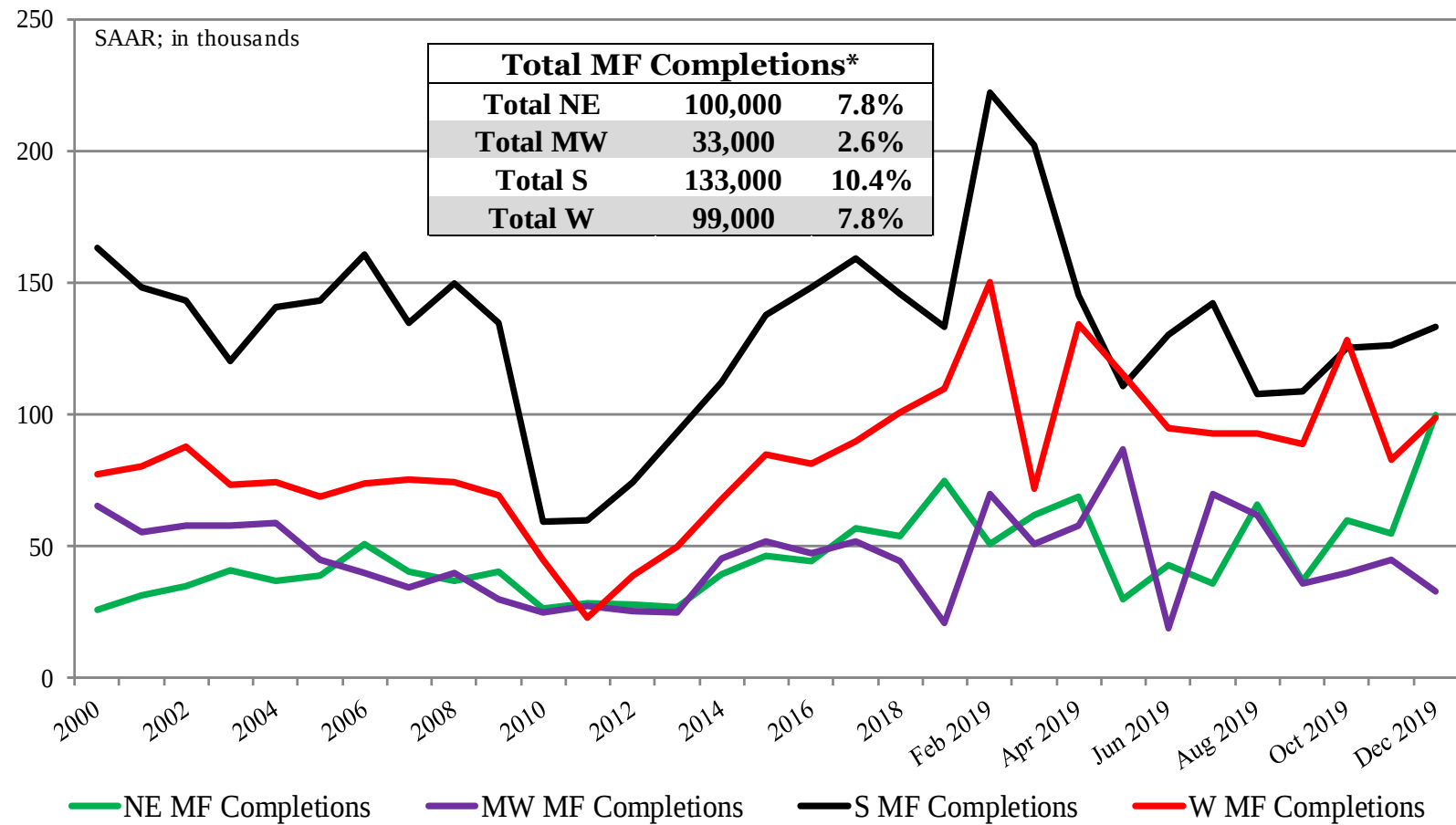


NE = Northeast, MW = Midwest, S = South, W = West

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
December	694,000	\$331,400	\$384,500	5.7
November	697,000	\$320,900	\$377,600	5.5
2018	564,000	\$329,700	\$381,800	7.4
M/M change	-0.4%	3.3%	1.8%	3.6%
Y/Y change	23.0%	0.5%	0.7%	-23.0%

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

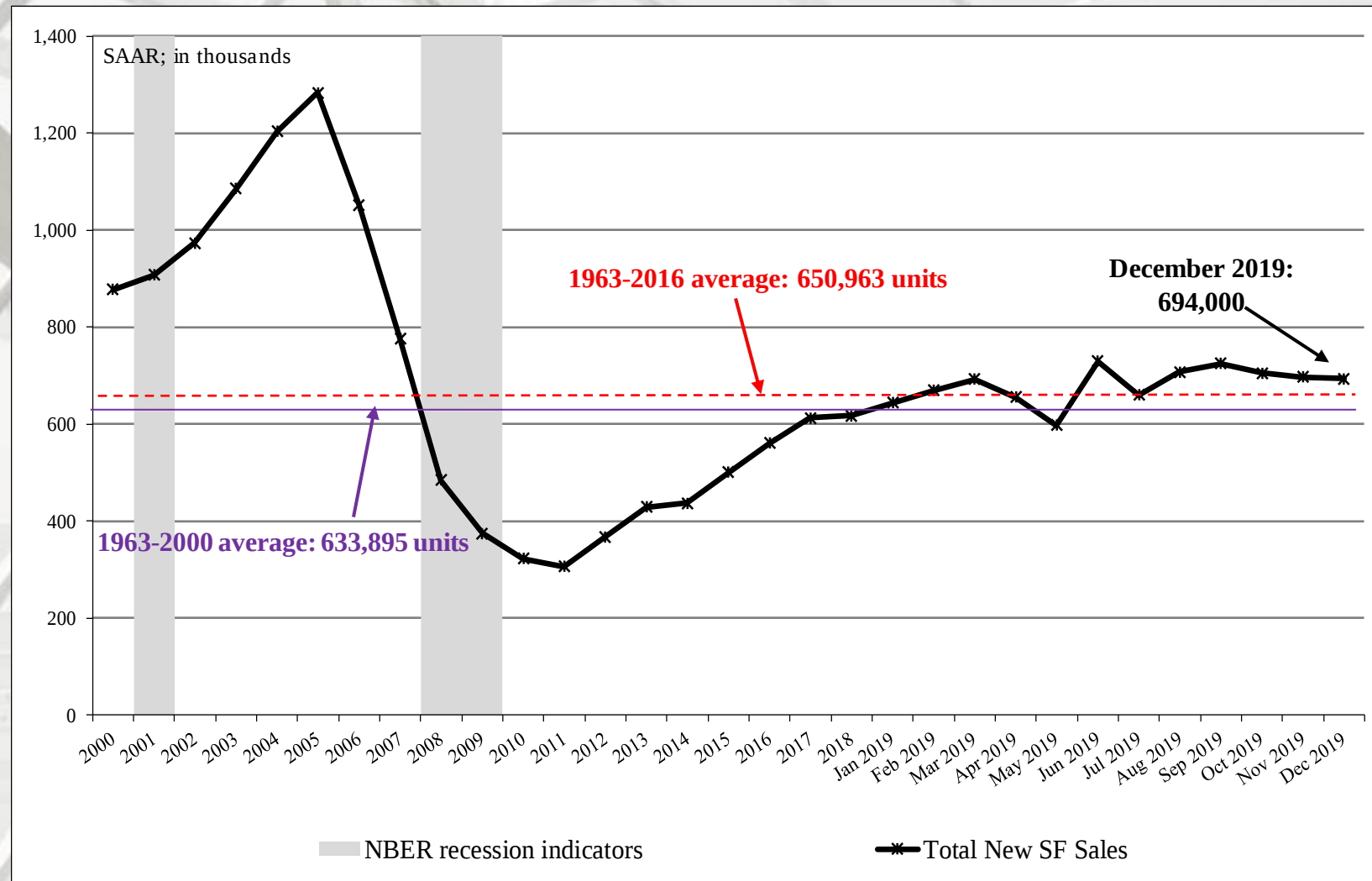
New SF sales were far less than the consensus forecast³ of 728 m (range: 719 m to 745 m). The past three month's new SF sales data also were revised:

September initial:	701 m revised to 725 m;
October initial:	733 m revised to 705 m;
November initial:	719 m revised to 697 m.

Sources: ¹ <https://www.census.gov/construction/nrs/index.html>; 1/27/20; ² <https://www.census.gov/construction/nrs/pdf/newressales.pdf>

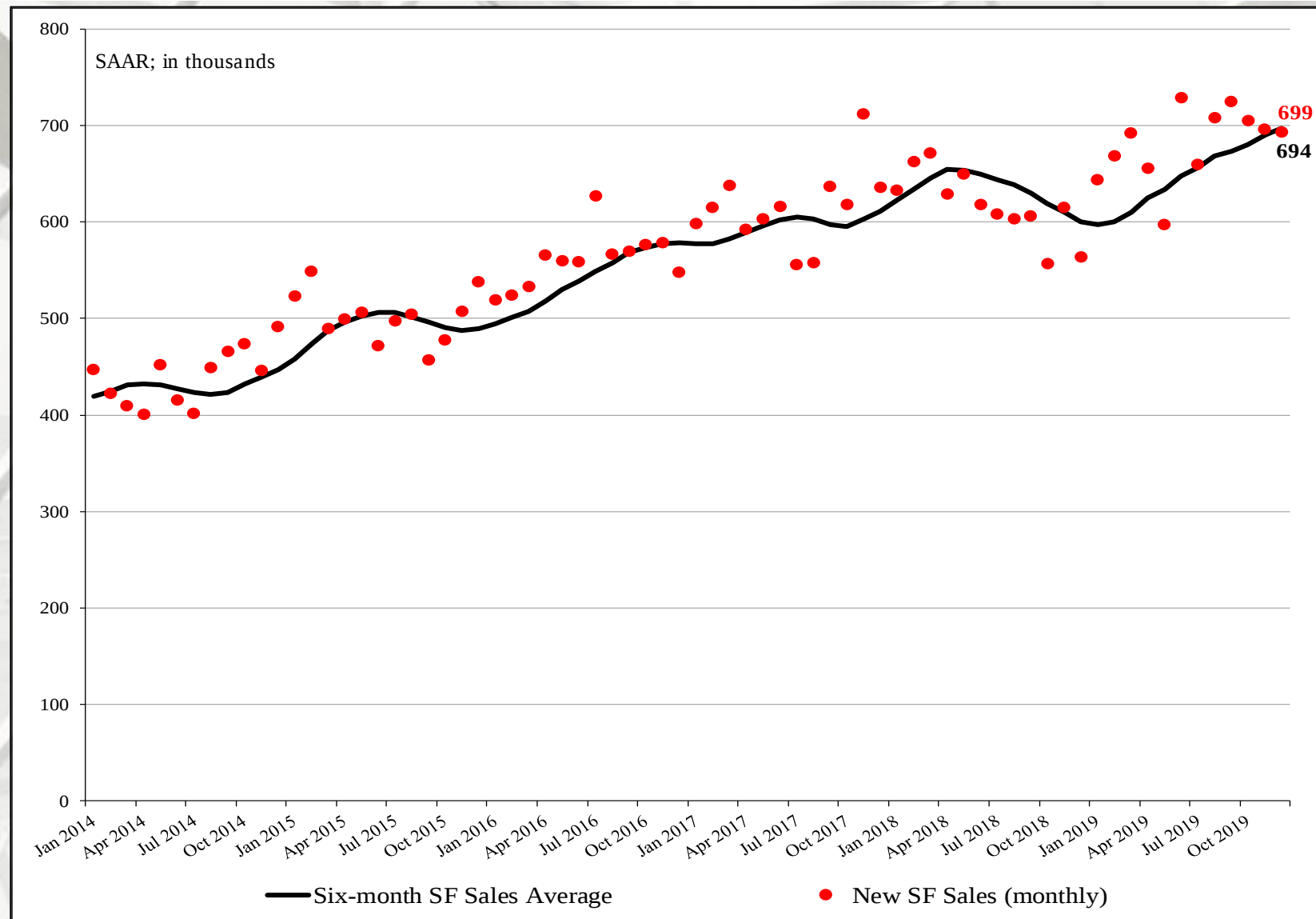
³ <http://us.econoday.com/>; 1/27/20

New SF House Sales



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
December	30,000	76,000	347,000	241,000
November	34,000	69,000	410,000	184,000
2018	27,000	65,000	351,000	121,000
M/M change	-11.8%	10.1%	-15.4%	31.0%
Y/Y change	11.1%	16.9%	-1.1%	99.2%

	≤ \$150m	\$150 - \$199.9m	\$200 - 299.9m	\$300 - \$399.9m	\$400 - \$499.9m	\$500 - \$749.9m	≥ \$750m
December ^{1,2,3,4}	1,000	4,000	14,000	13,000	6,000	7,000	2,000
November	1,000	4,000	17,000	13,000	8,000	6,000	3,000
2018	2,000	3,000	11,000	9,000	6,000	6,000	1,000
M/M change	0.0%	0.0%	-10.5%	0.0%	14.3%	-25.0%	0.0%
Y/Y change	0.0%	0.0%	6.3%	30.0%	33.3%	20.0%	50.0%
New SF sales: %	2.1%	8.5%	29.8%	27.7%	12.8%	14.9%	4.3%

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 December not add to total because of rounding.

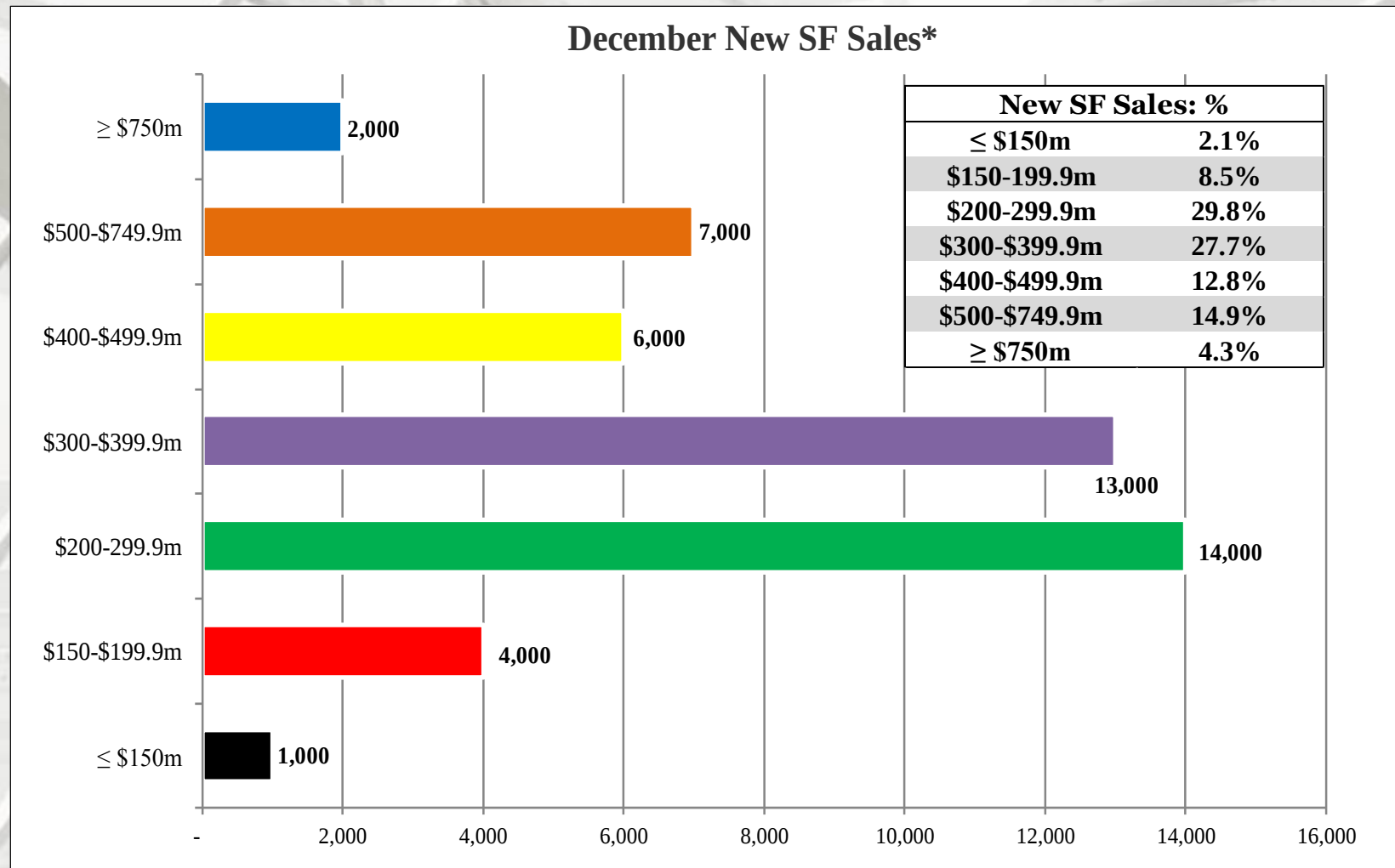
⁴ Housing prices are adjusted at irregular intervals.

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

Sources: ^{1,2,3} <https://www.census.gov/construction/nrs/index.html>; 1/27/20;

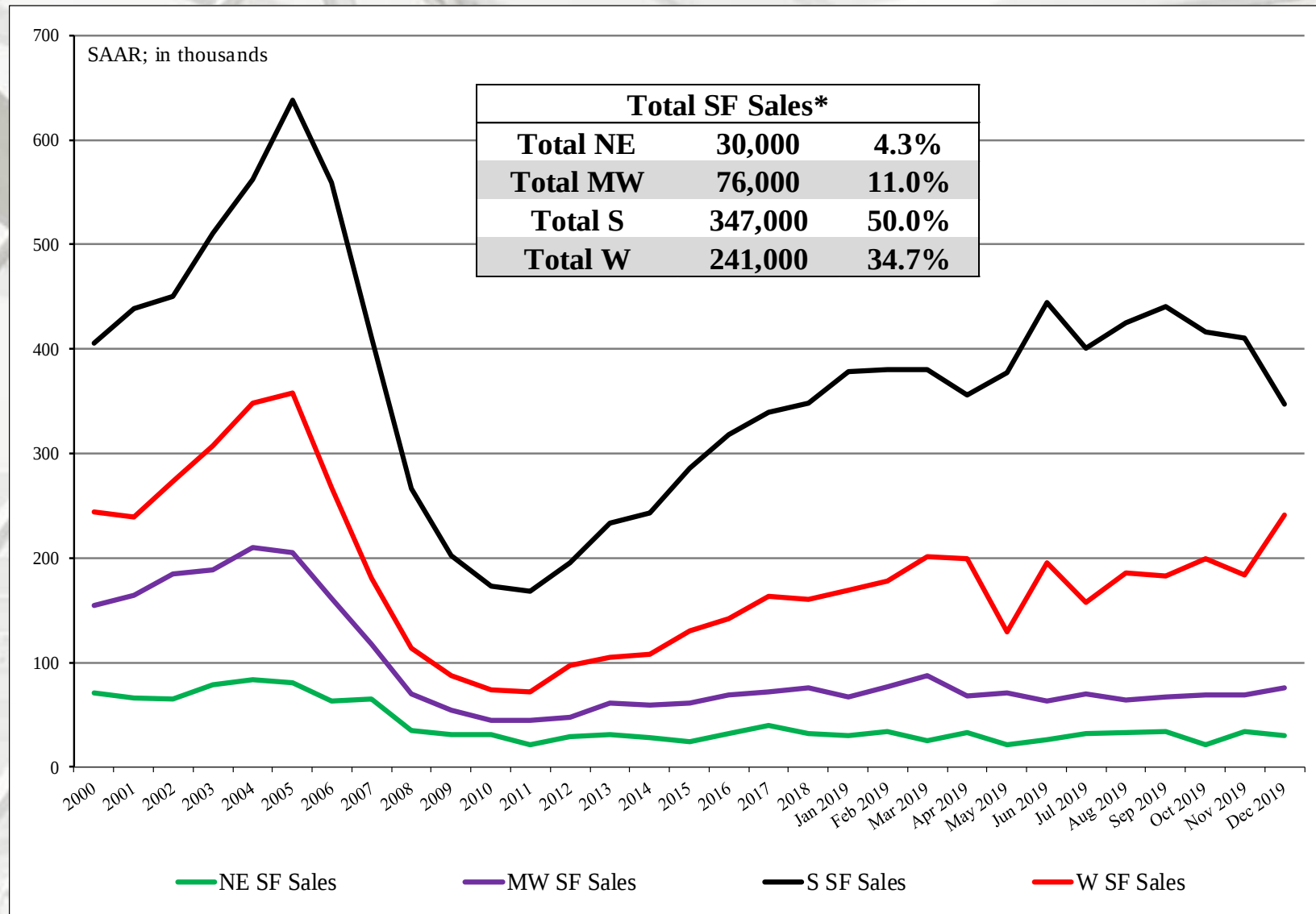
⁴ https://www.census.gov/construction/cpi/pdf/descpi_sold.pdf

New SF House Sales



- Total new sales by price category and percent.

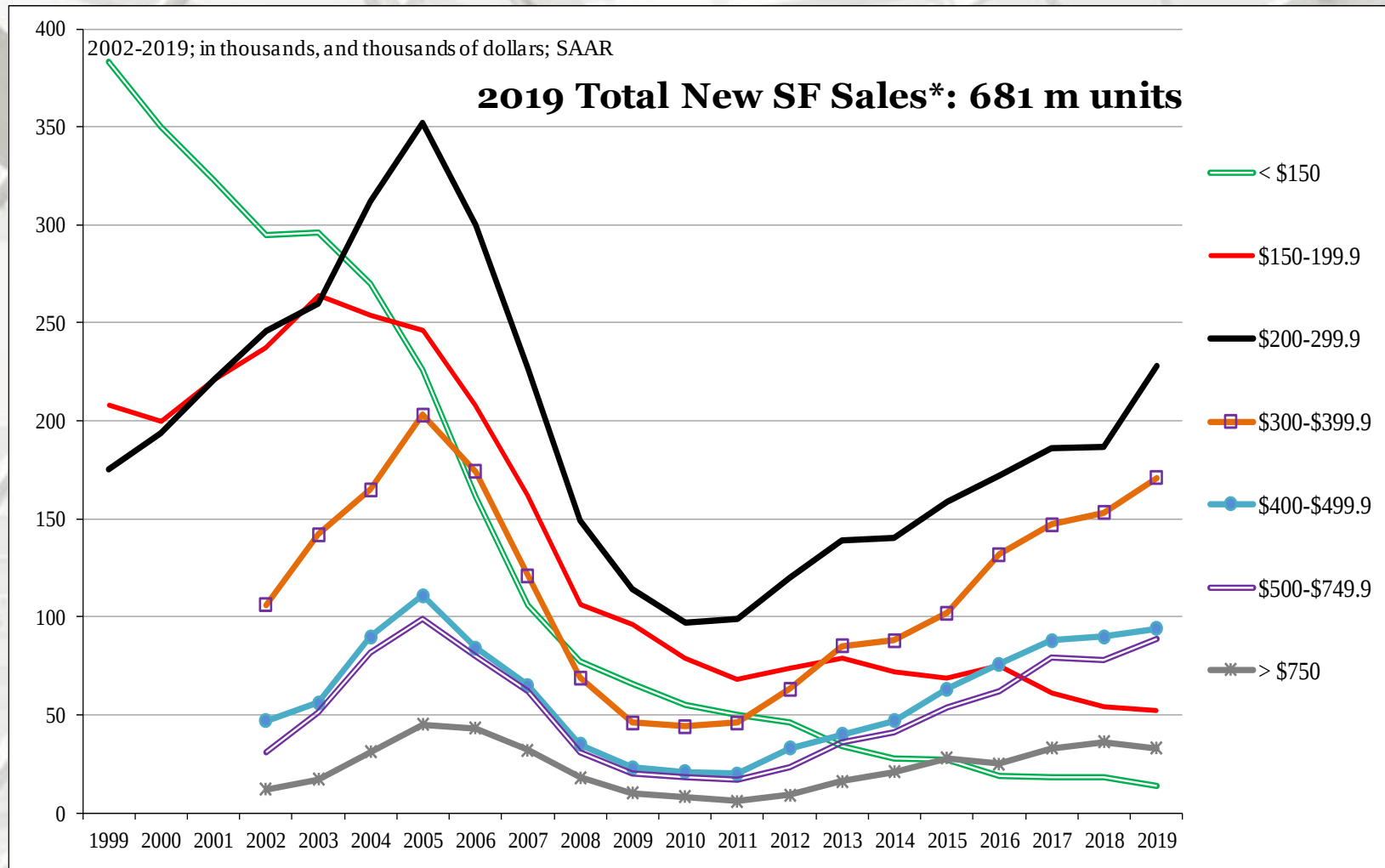
New SF House Sales by Region



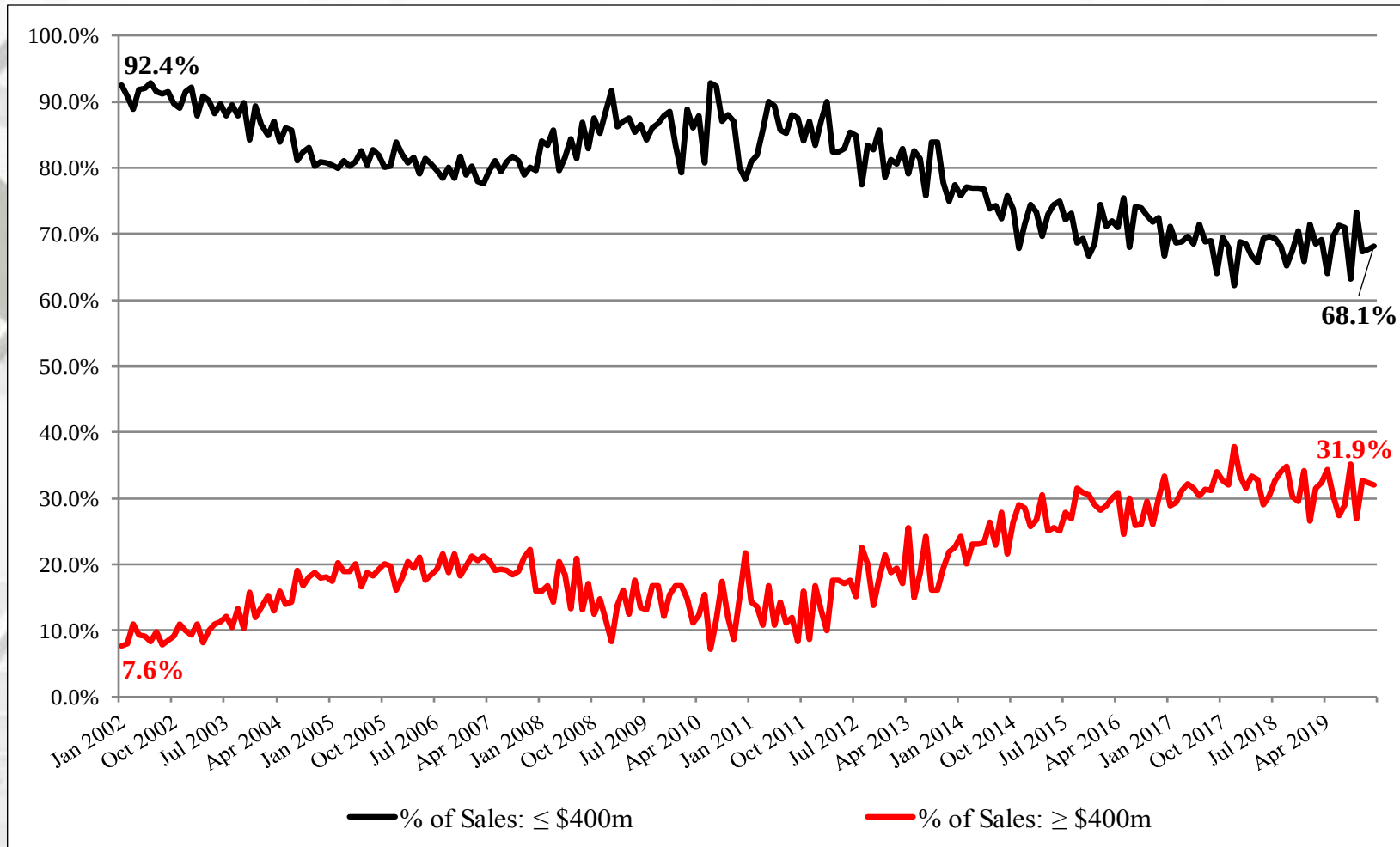
NE = Northeast; MW = Midwest; S = South; W = West

* Percentage of total new sales.

New SF House Sales by Price Category



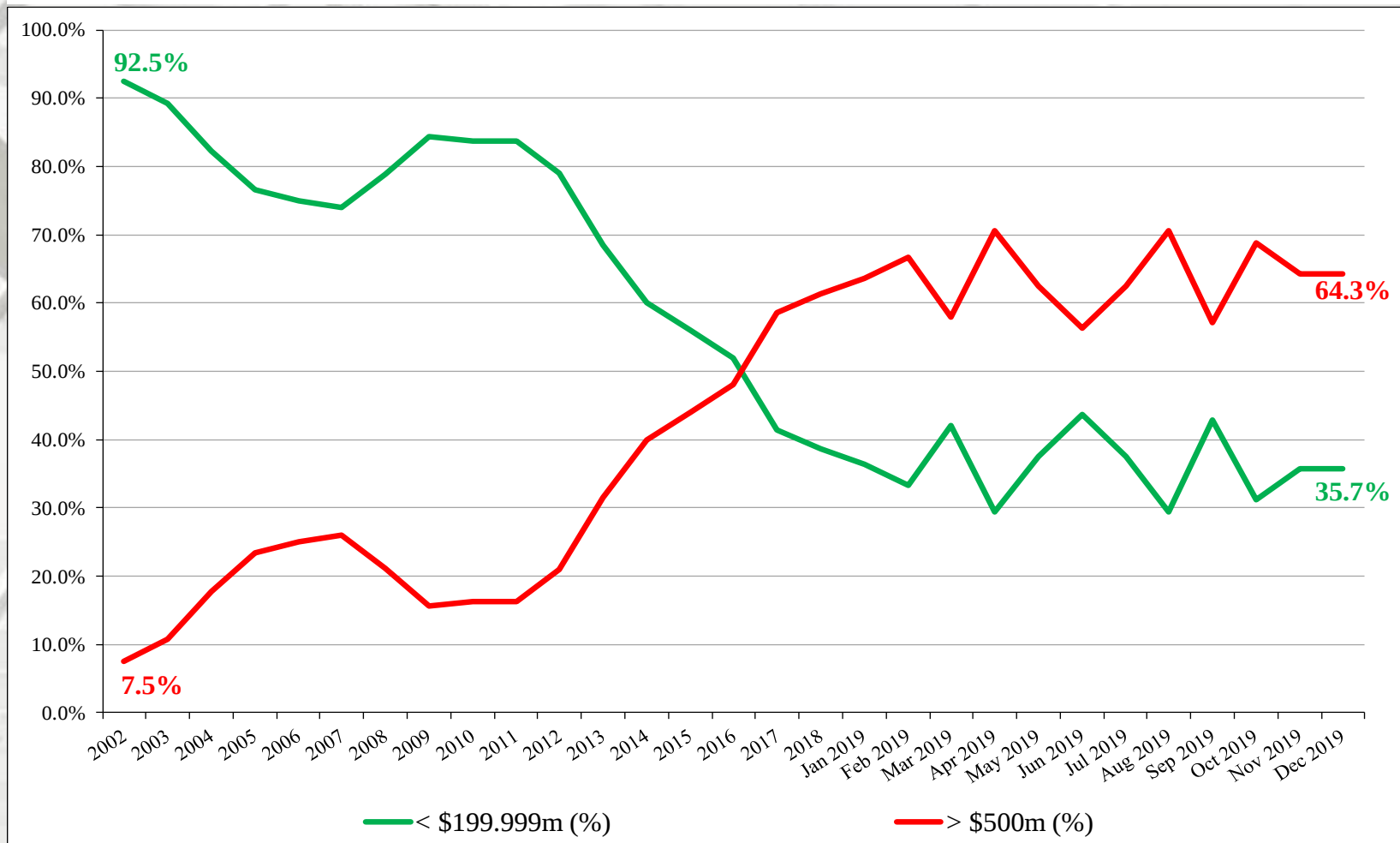
New SF House Sales



New SF Sales \$400m houses: 2002 – December 2019

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

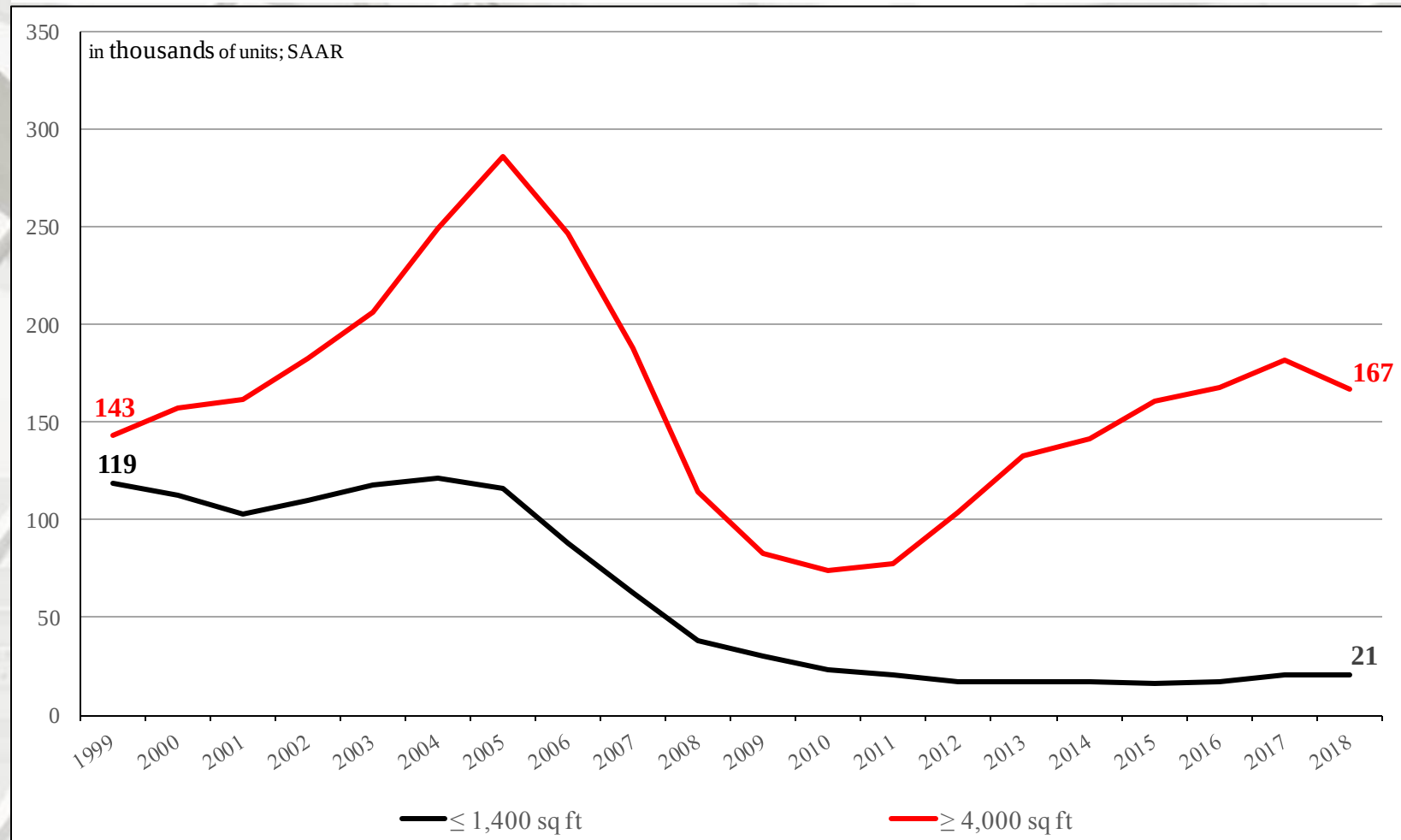


New SF Sales: ≤ \$ 200m and ≥ \$500m: 2002 to December 2019

The number of ≤ \$200 thousand plus 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.

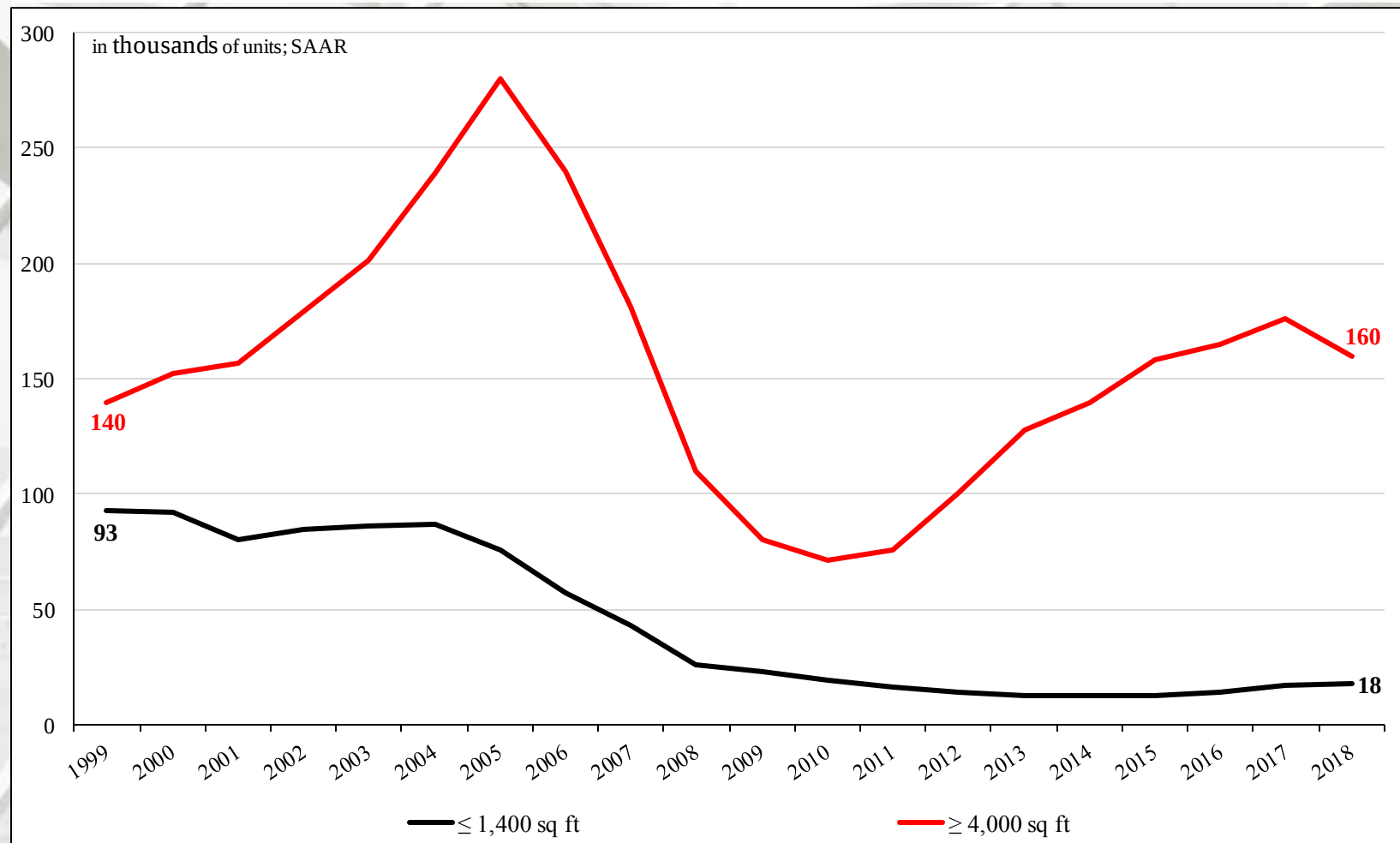
Total New SF House Sales by Square Feet of Floor Area



Total new SF Sales: ≤ 1,400 square feet and ≥ 4,000 square feet: 1999 to 2018

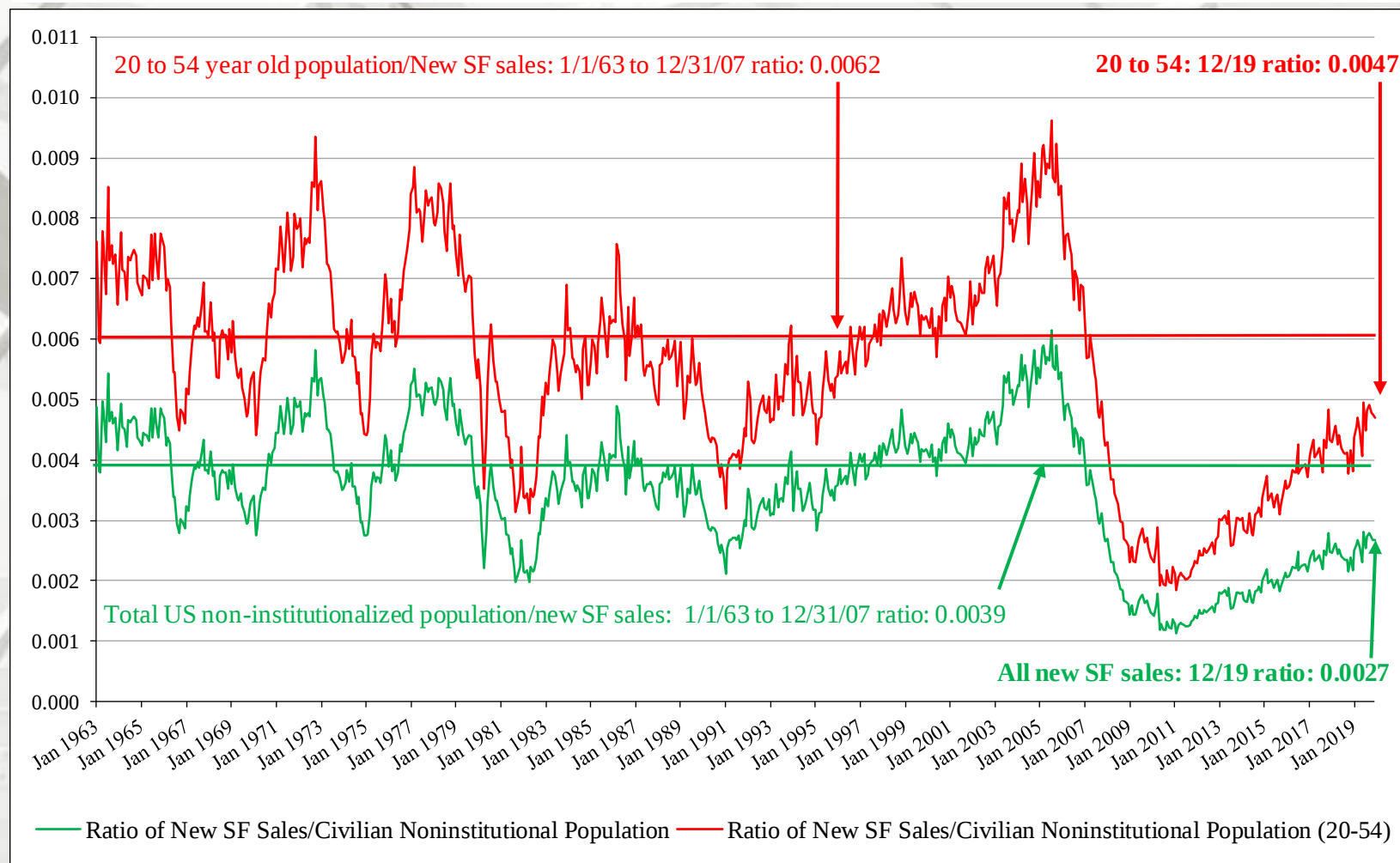
The number of SF houses sold ($\geq 4,000$ sq ft) has risen dramatically since 2010 in comparison to the $\leq 1,400$ sq ft houses. Some of the most oft mentioned reasons for this is builder net margins and regulation.

New Detached SF House Sales by Square Feet of Floor Area



**New Detached SF Sales: ≤ 1,400 square feet and
≥ 4,000 square feet: 1999 to 2018**

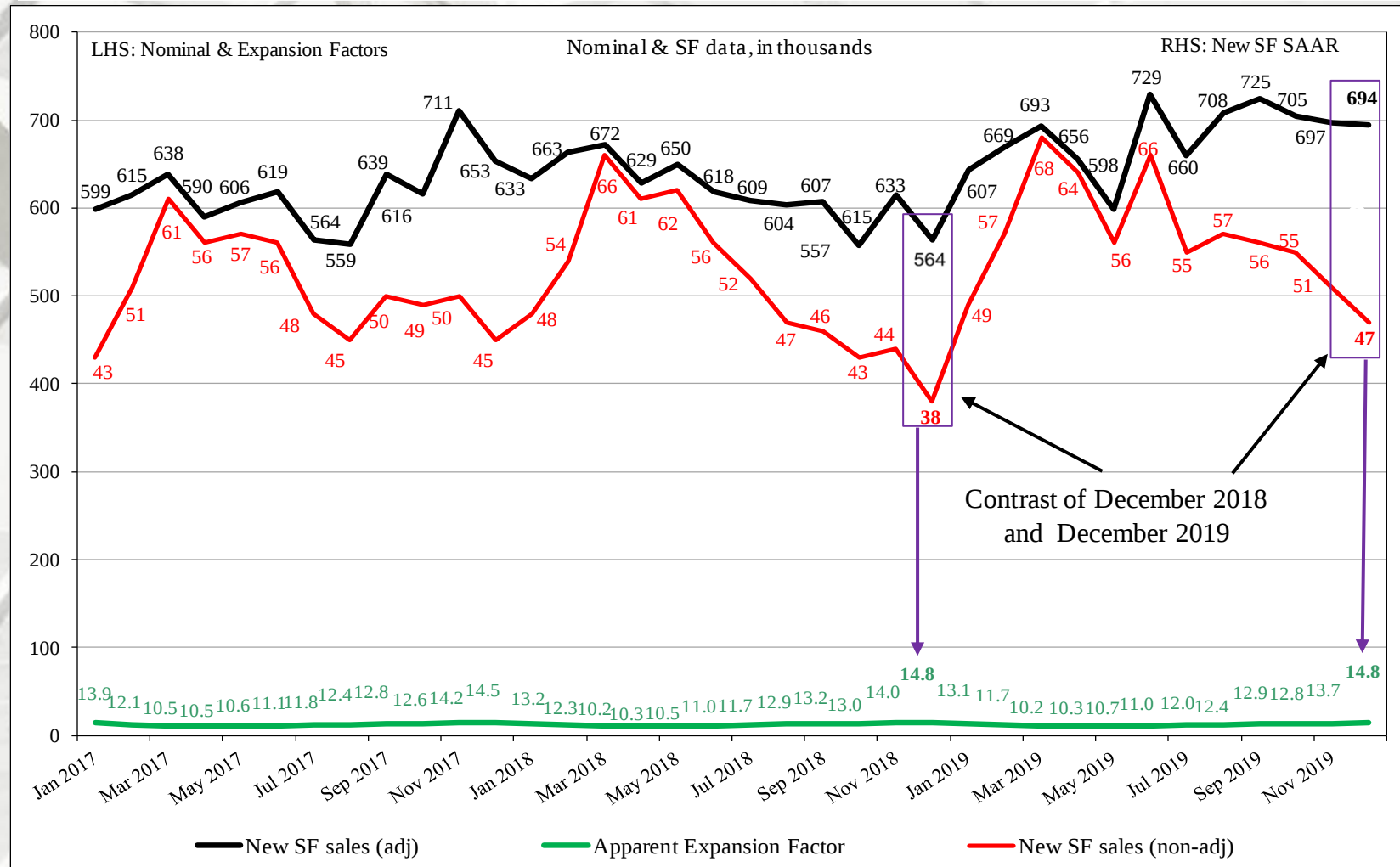
New SF House Sales



New SF sales adjusted for the US population

From December 1963 to December 2007, the long-term ratio of new house sales to the total US non-institutionalized population was 0.0039; in December 2019 it was 0.0027 – no change from November. The non-institutionalized population, aged 20 to 54 long-term ratio is 0.0062; in December 2019 it was 0.0047 – a slight decrease from November. 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

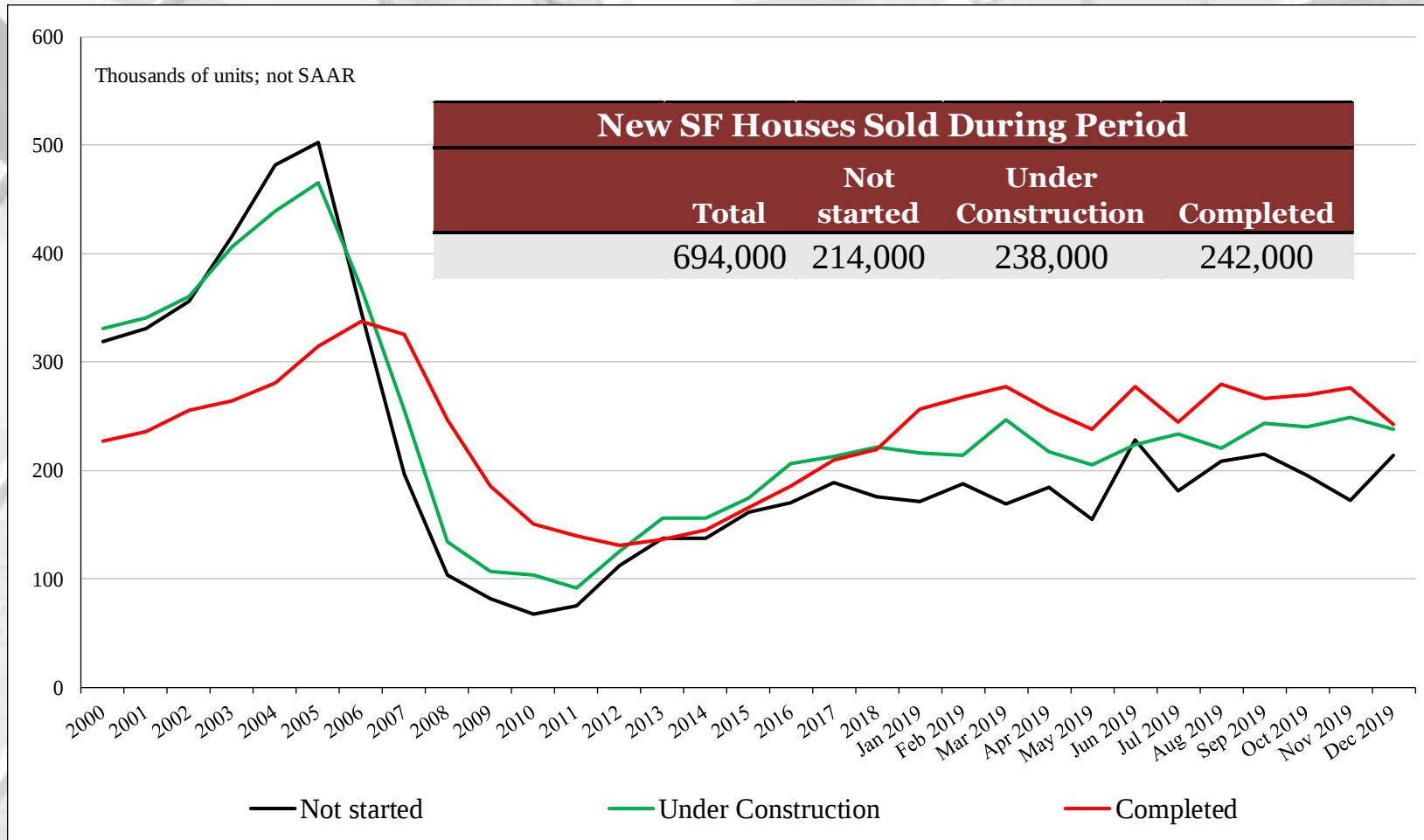
New SF House Sales

New SF Houses Sold During Period

	Total	Not started	Under Construction	Completed
December	694,000	214,000	238,000	242,000
November	697,000	172,000	249,000	276,000
2018	564,000	172,000	170,000	222,000
M/M change	-0.4%	24.4%	-4.4%	-12.3%
Y/Y change	23.0%	24.4%	40.0%	9.0%
Total percentage		30.8%	34.3%	34.9%

Not SAAR

New SF House Sales: Sold During Period



Not SAAR

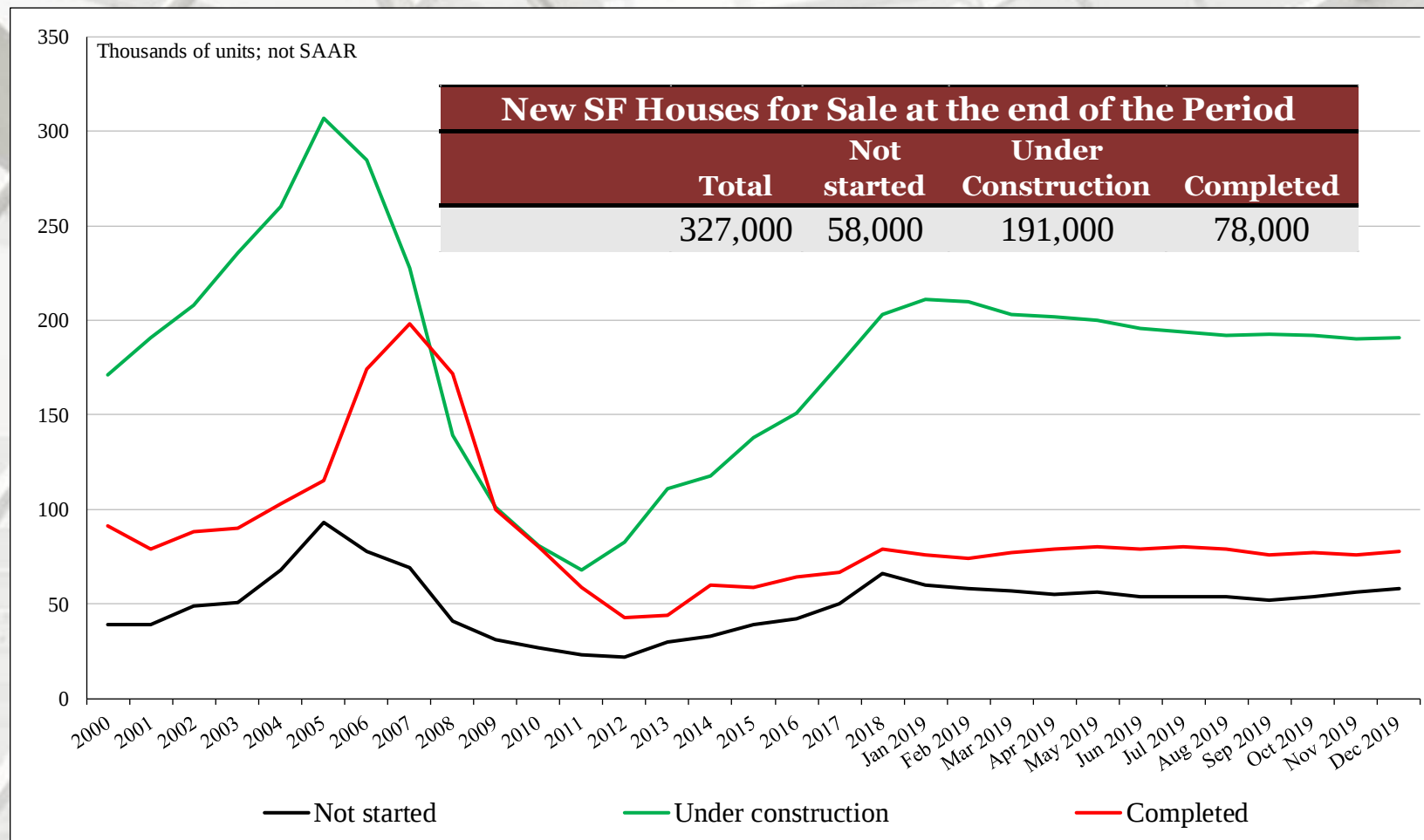
New SF House Sales: For Sale at End of Period

New SF Houses for Sale at the end of the Period

	Total	Not started	Under Construction	Completed
December	327,000	58,000	191,000	78,000
November	322,000	56,000	190,000	76,000
2018	346,000	67,000	205,000	74,000
M/M change	1.6%	3.6%	0.5%	2.6%
Y/Y change	-5.5%	-13.4%	-6.8%	5.4%
Total percentage		17.7%	58.4%	23.9%

Not SAAR

New SF Houses for Sale at End of Period



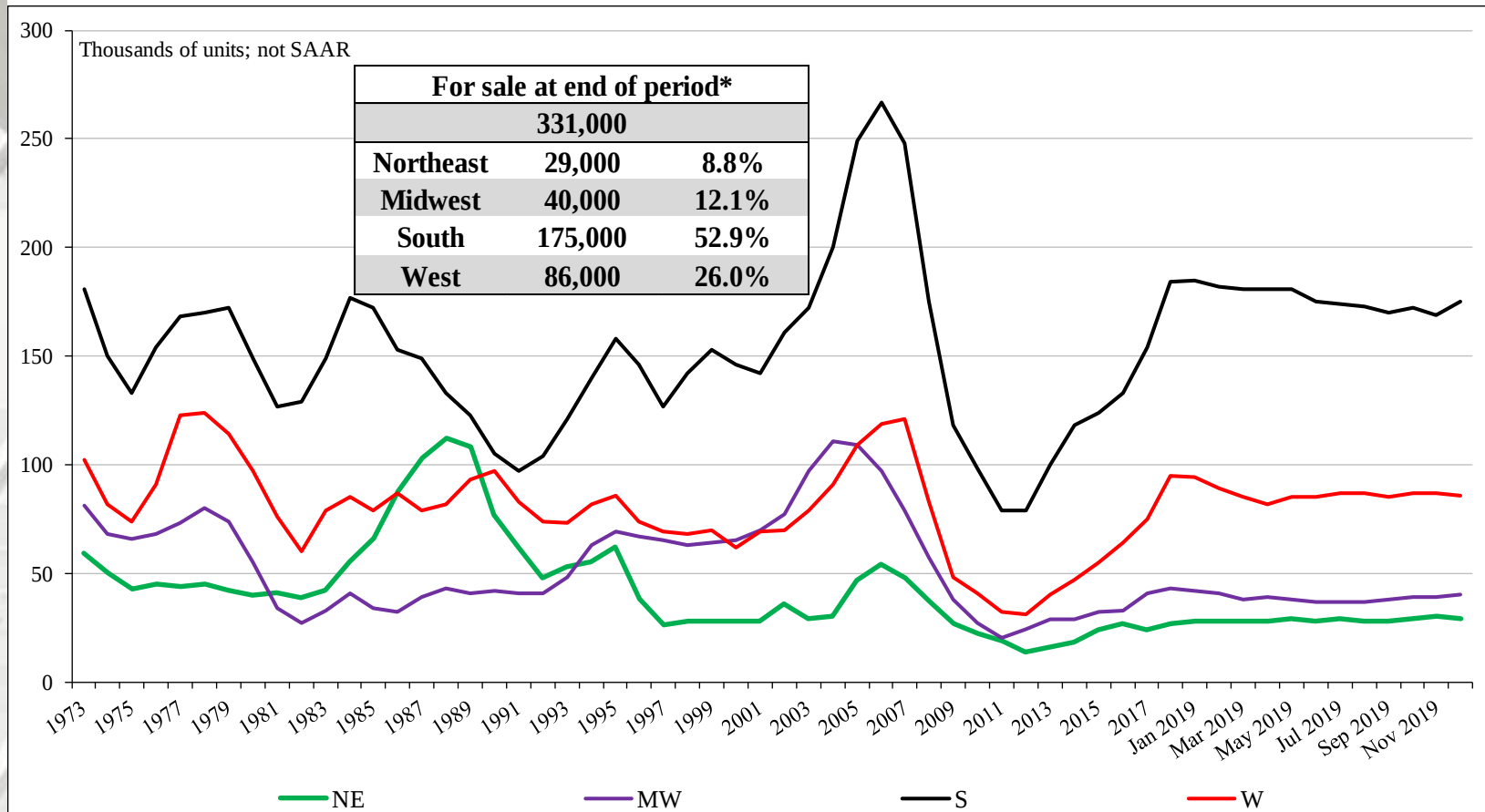
New SF House Sales

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

	Total	NE	MW	S	W
December	331,000	29,000	40,000	175,000	86,000
November	325,000	30,000	39,000	169,000	87,000
2018	348,000	27,000	43,000	184,000	95,000
M/M change	1.8%	-3.3%	2.6%	3.6%	-1.1%
Y/Y change	-4.9%	7.4%	-7.0%	-4.9%	-9.5%

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.

December 2019 Construction Spending

	Total Private Residential*	SF	MF	Improvement**
December	\$540,734	\$289,295	\$57,711	\$193,728
November	\$533,330	\$281,806	\$58,758	\$192,766
2018	\$512,324	\$274,923	\$62,146	\$175,255
M/M change	1.4%	2.7%	-1.8%	0.5%
Y/Y change	5.5%	5.2%	-7.1%	10.5%

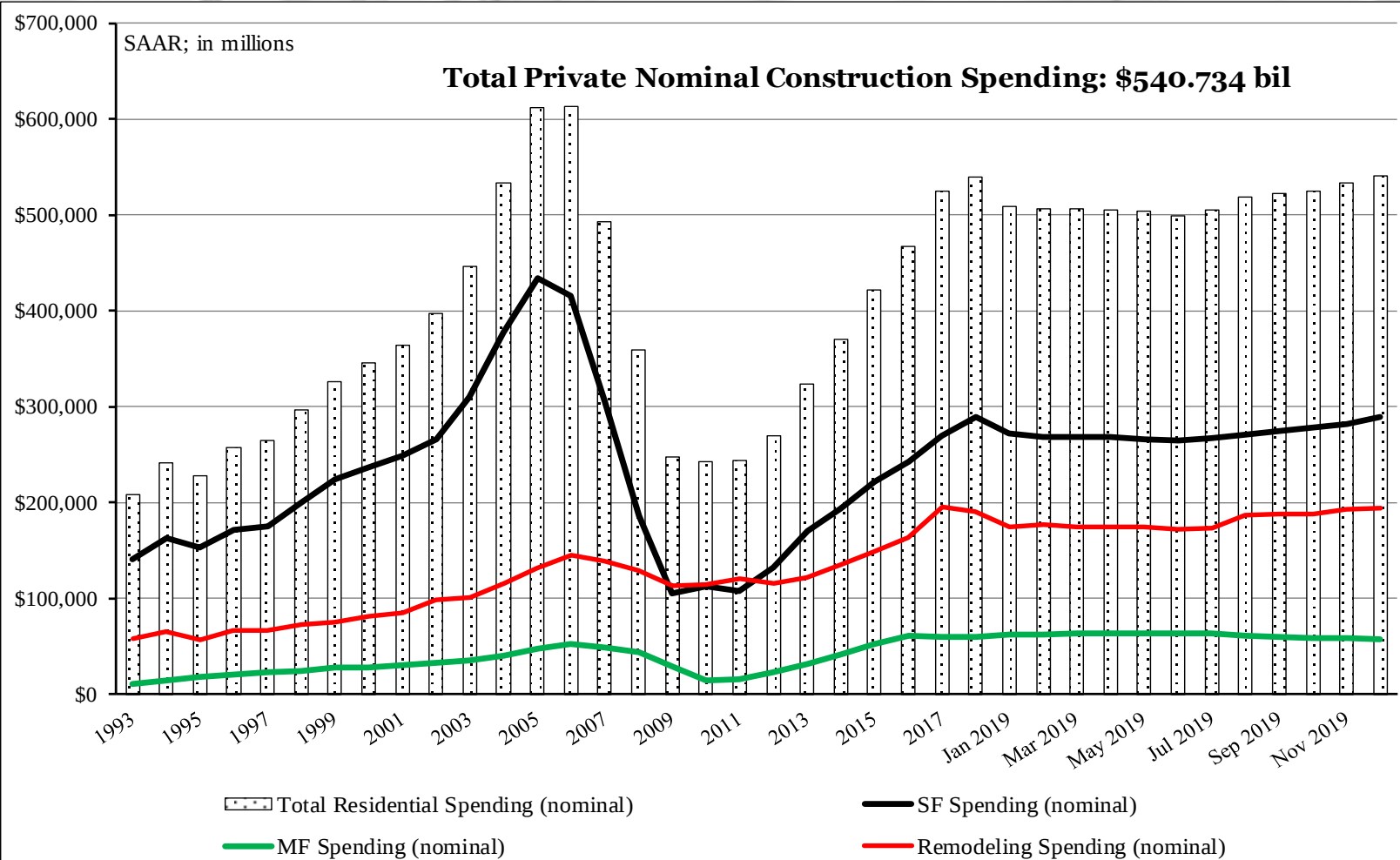
* billion.

** 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\$.

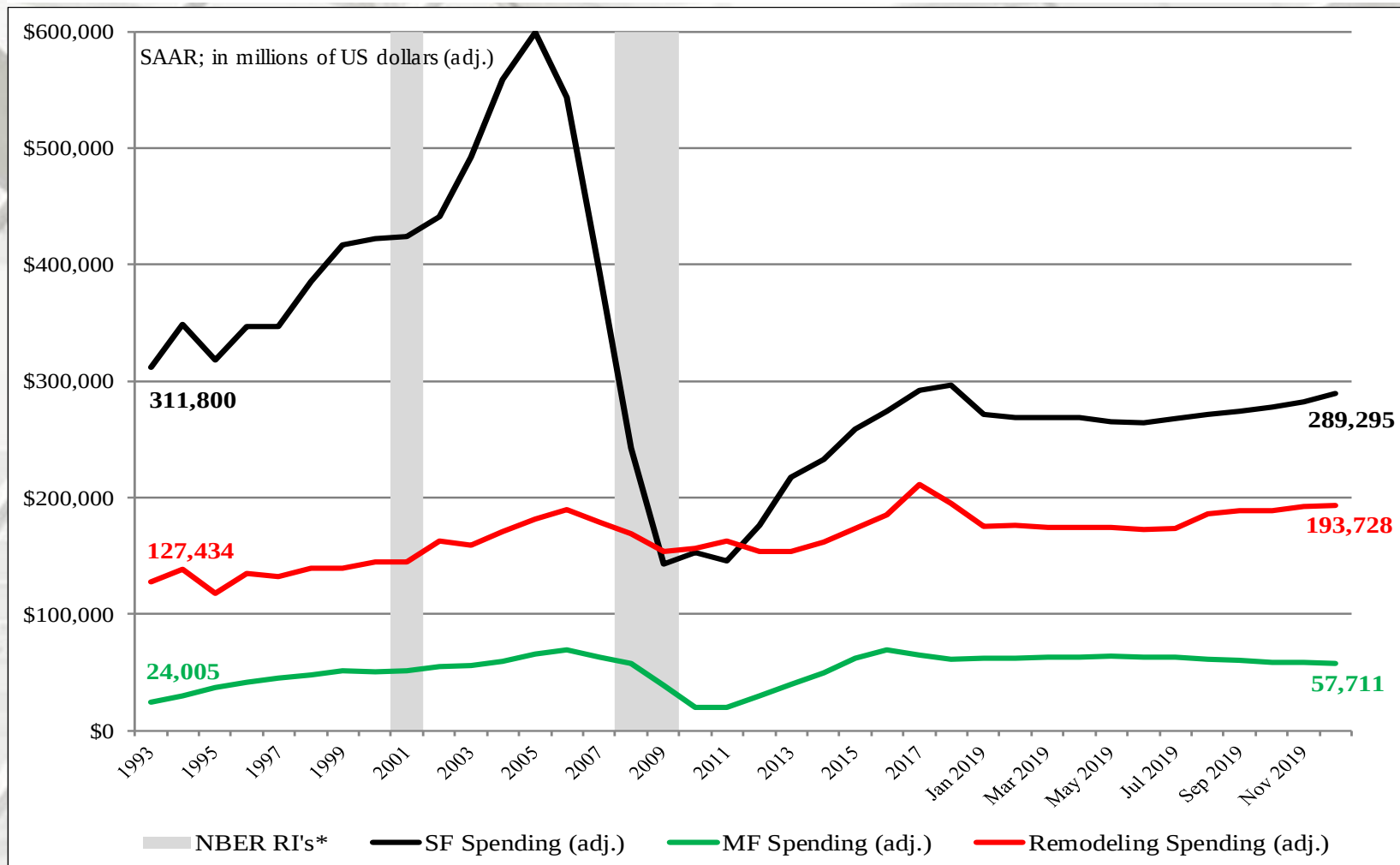
Total Construction Spending (nominal): 1993 – December 2019



Reported in nominal US\$.

The US DOC does not report improvement spending directly, this is a monthly estimation for 2019.

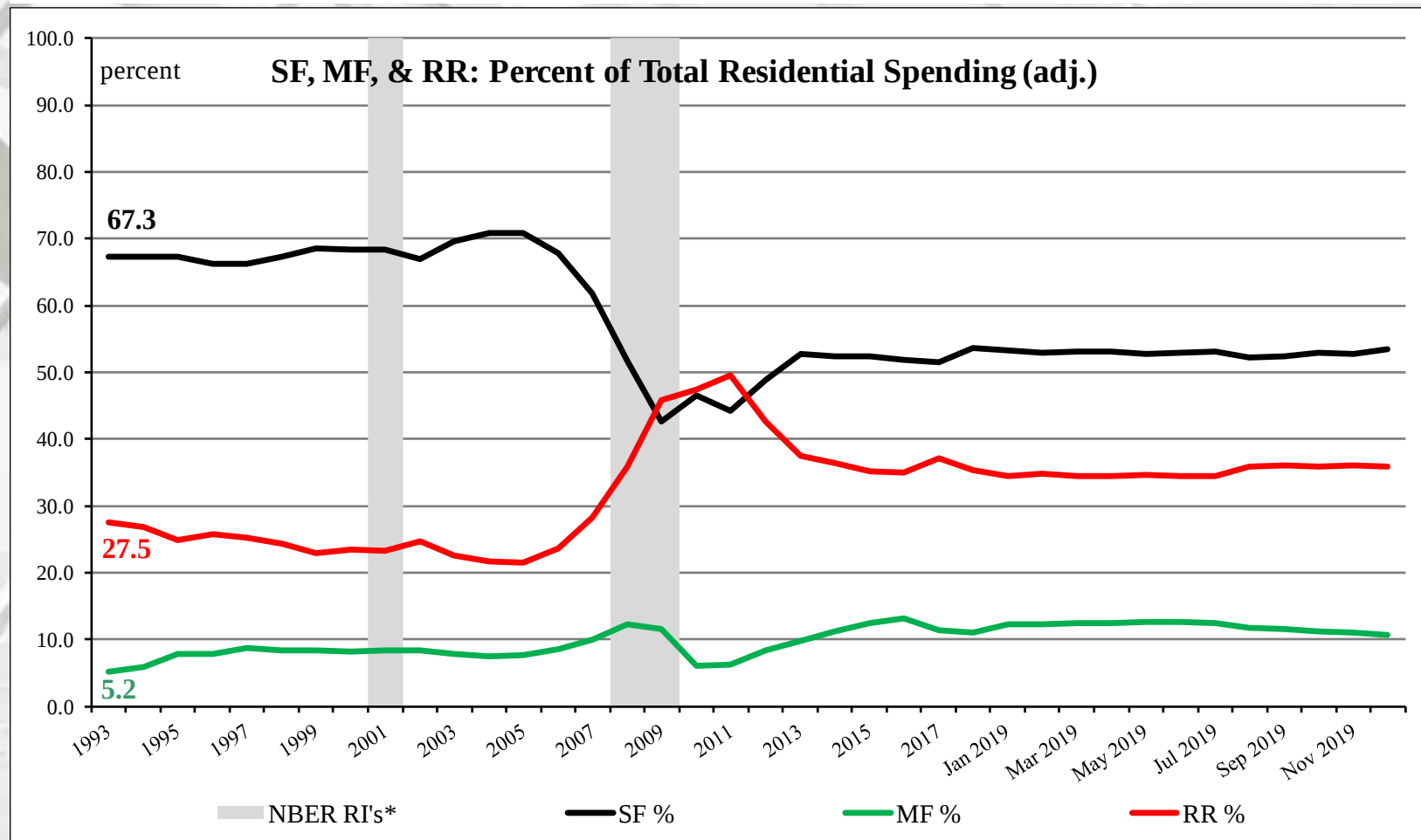
Total Construction Spending (adjusted): 1993-2019[^]



Reported in adjusted US\$: 1993 – 2018 (adjusted for inflation, BEA Table 1.1.9); [^]January to December 2019 reported in nominal US\$.

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

Construction Spending Shares: 1993 to December 2019



Total Residential Spending: 1993 through 2006

SF spending average: 69.2%

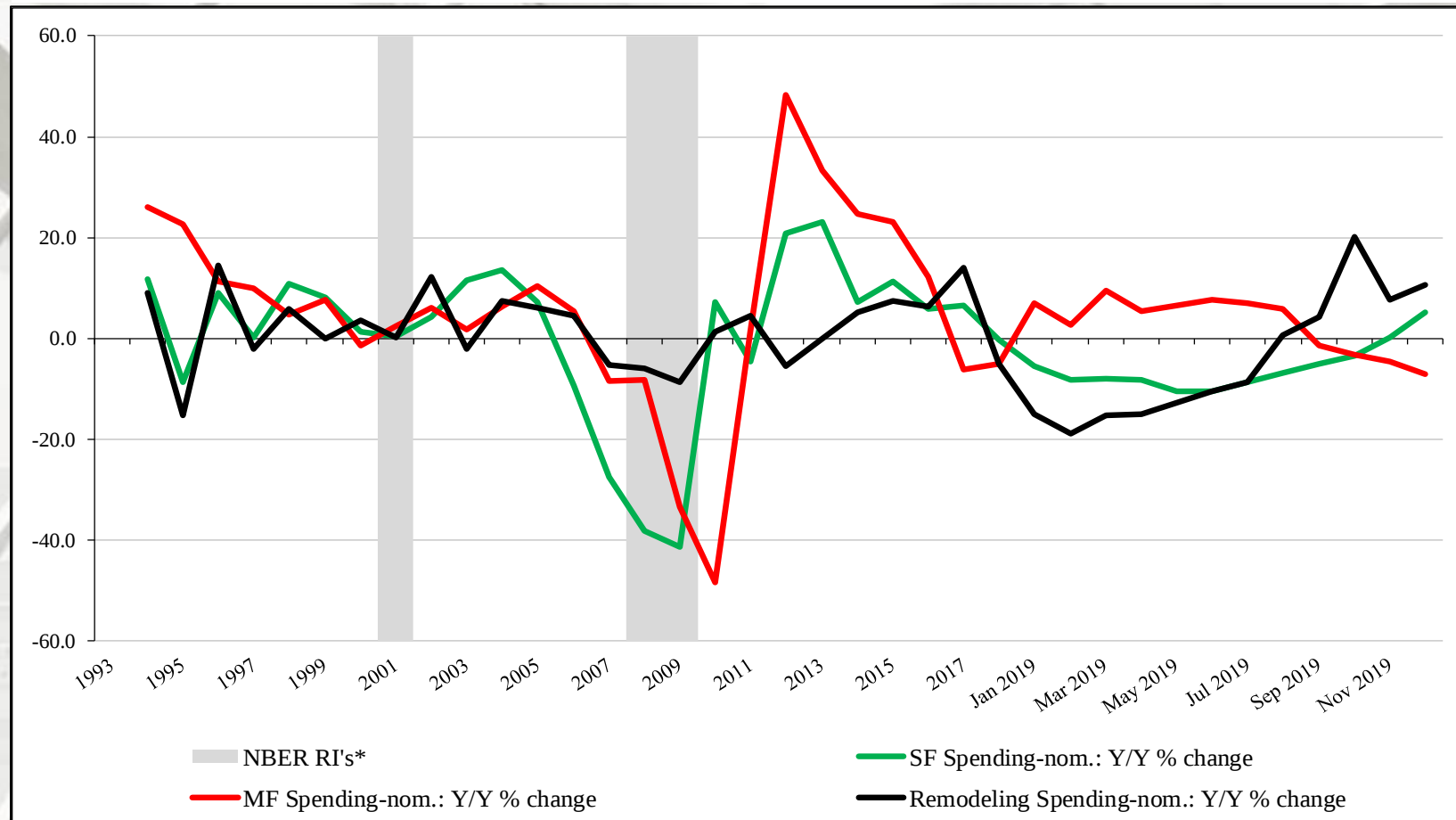
MF spending average: 7.5%

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

Note: 1993 to 2018 (adjusted for inflation, BEA Table 1.1.9); Jan-December 2019 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).

Adjusted Construction Spending: Y/Y Percentage Change, 1993 to December 2019



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

Presented above is the percentage change of inflation adjusted Y/Y construction spending. RR expenditures were positive on a percentage basis, year-over-year (2019 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).

Remodeling

Harvard Joint Center for Housing Studies

Slight Gains In 2020 Outlook For Residential Remodeling

“National spending for improvements and repairs on owner-occupied homes is expected to rise only modestly this year, according to our latest [Leading Indicator of Remodeling Activity \(LIRA\)](#). The LIRA projects that home remodeling expenditures will increase by just 1.5-percent in 2020 compared with annual gains of 5–7-percent in recent years.

While homebuilding and sales activity are now firming, softness from earlier last year will continue to pull on remodeling spending growth in 2020. However, the slowdown should begin to moderate by year-end as today’s healthier housing market indicators will ultimately lead to more home renovation and repair.

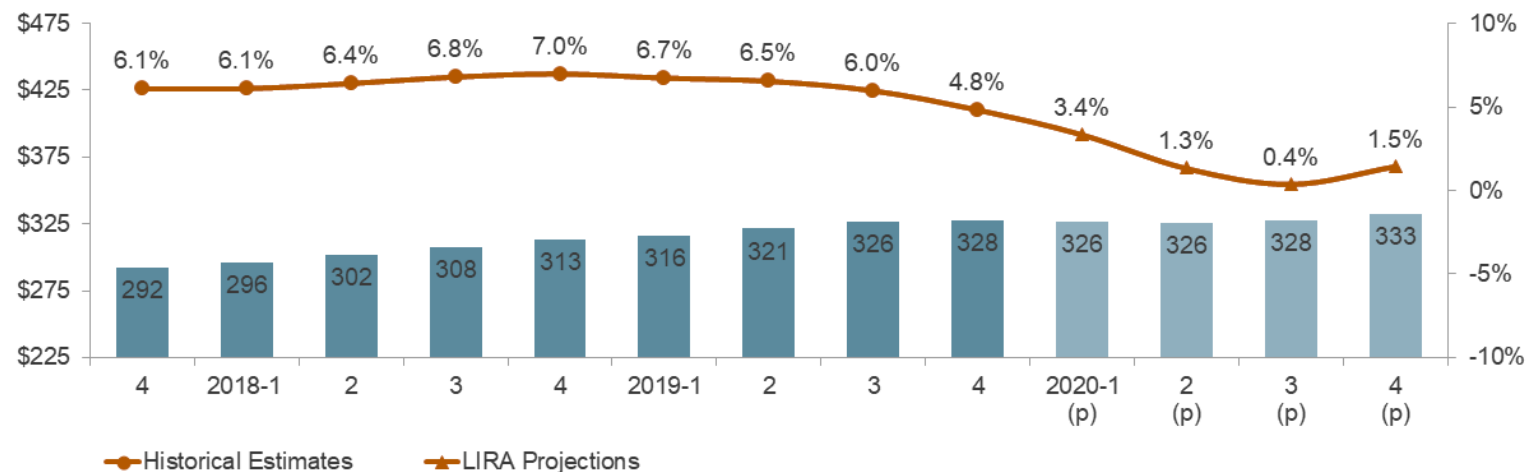
A 2020 growth projection of less than 2-percent is certainly lackluster for the remodeling market, especially given historical average annual growth of about 5-percent. Even so, homeowner improvement and repair expenditures are still set to expand this year to over \$330 billion.” – Abbe Will, Research Associate & Associate Project Director, Remodeling Futures; Harvard Joint Center for Housing Studies

Remodeling

Leading Indicator of Remodeling Activity – Fourth Quarter 2019

Homeowner Improvements & Repairs
Four-Quarter Moving Totals
Billions

Four-Quarter Moving
Rate of Change



Note: 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

Houzz Research

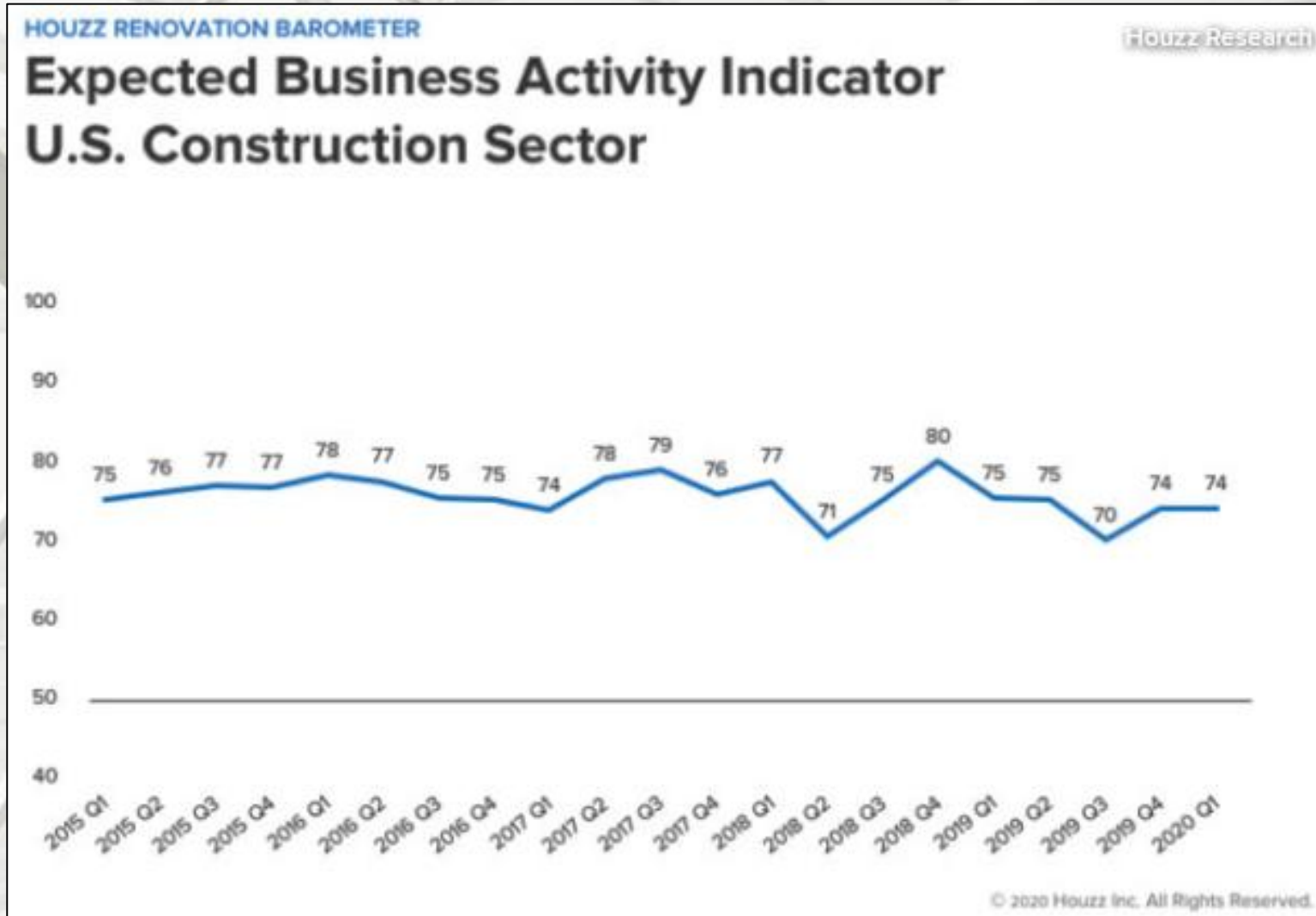
2020Q1 Renovation Barometer – Construction Sector

“Findings from the Q1 2020 Houzz Renovation Barometer, which tracks residential renovation market expectations, project backlogs and recent activity among businesses in the construction sector.

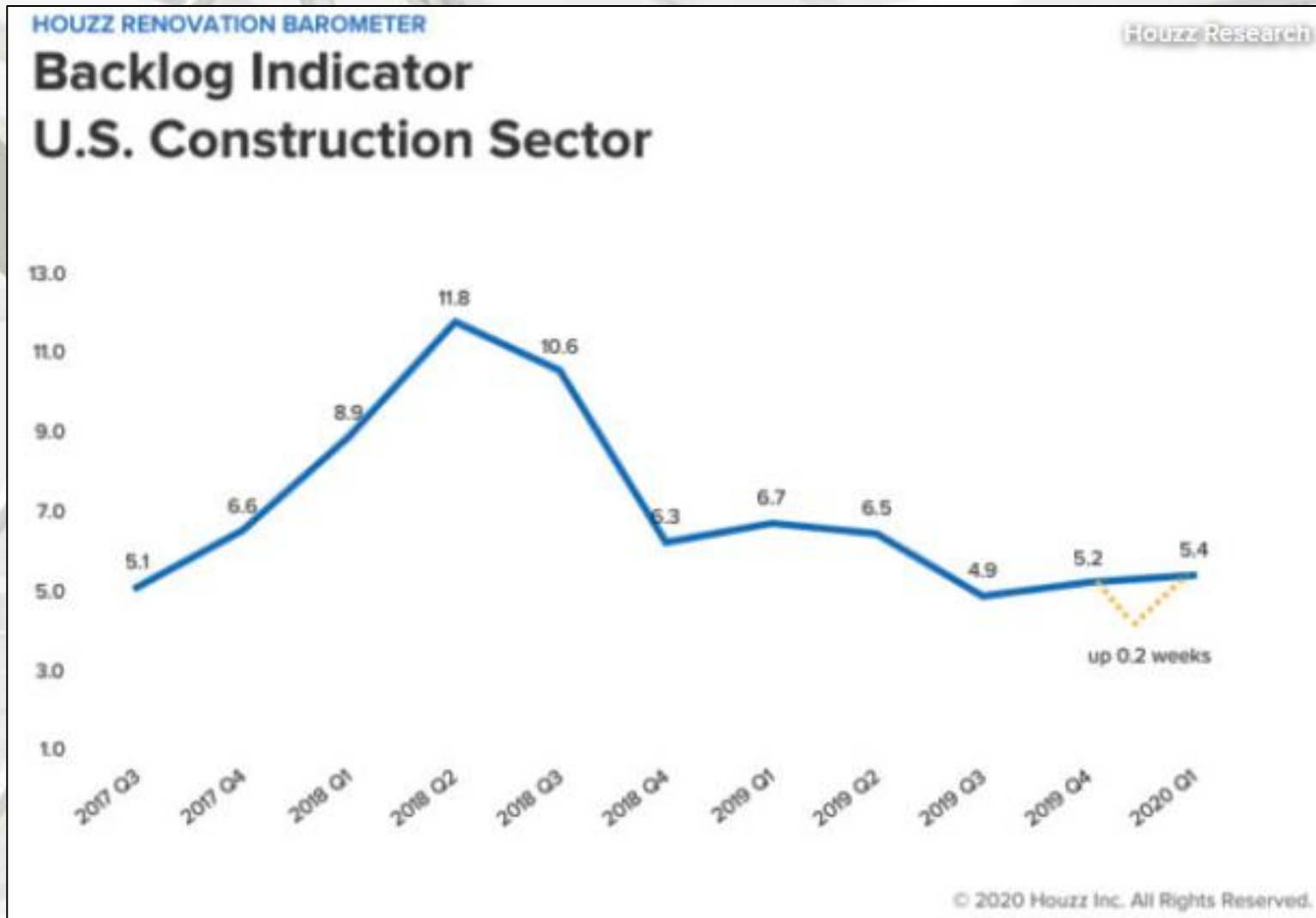
The Expected Business Activity Indicator related to project inquiries and new committed projects remained steady at 74 in Q1: This is a result of both expectations for project inquiries and expectations for new committed projects remaining steady at 78 and 70, respectively. Among the two reporting business groups, expectations declined slightly among build-only remodelers to 72 (down one point in Q1 relative to Q4). Expectations of design and build remodelers remained steady at 75 in Q1 (relative to Q4).

The Project Backlog Indicator increased to 5.4 weeks nationally at the start of Q1 (up 0.2 weeks relative to Q4): The overall backlog for the construction sector is 1.3 weeks below year-over-year levels. Among the two reporting business groups, backlogs increased for build-only remodelers, up to 5.0 weeks (from 4.2 weeks in Q4) and declined among design and build remodelers, down to 5.9 weeks (from 6.3 weeks in Q4). Backlogs vary significantly from 3.4 (East South Central division) weeks to 6.6 (Pacific division) weeks across the nine Census divisions.” – Houzz Research

Remodeling



Remodeling



Remodeling

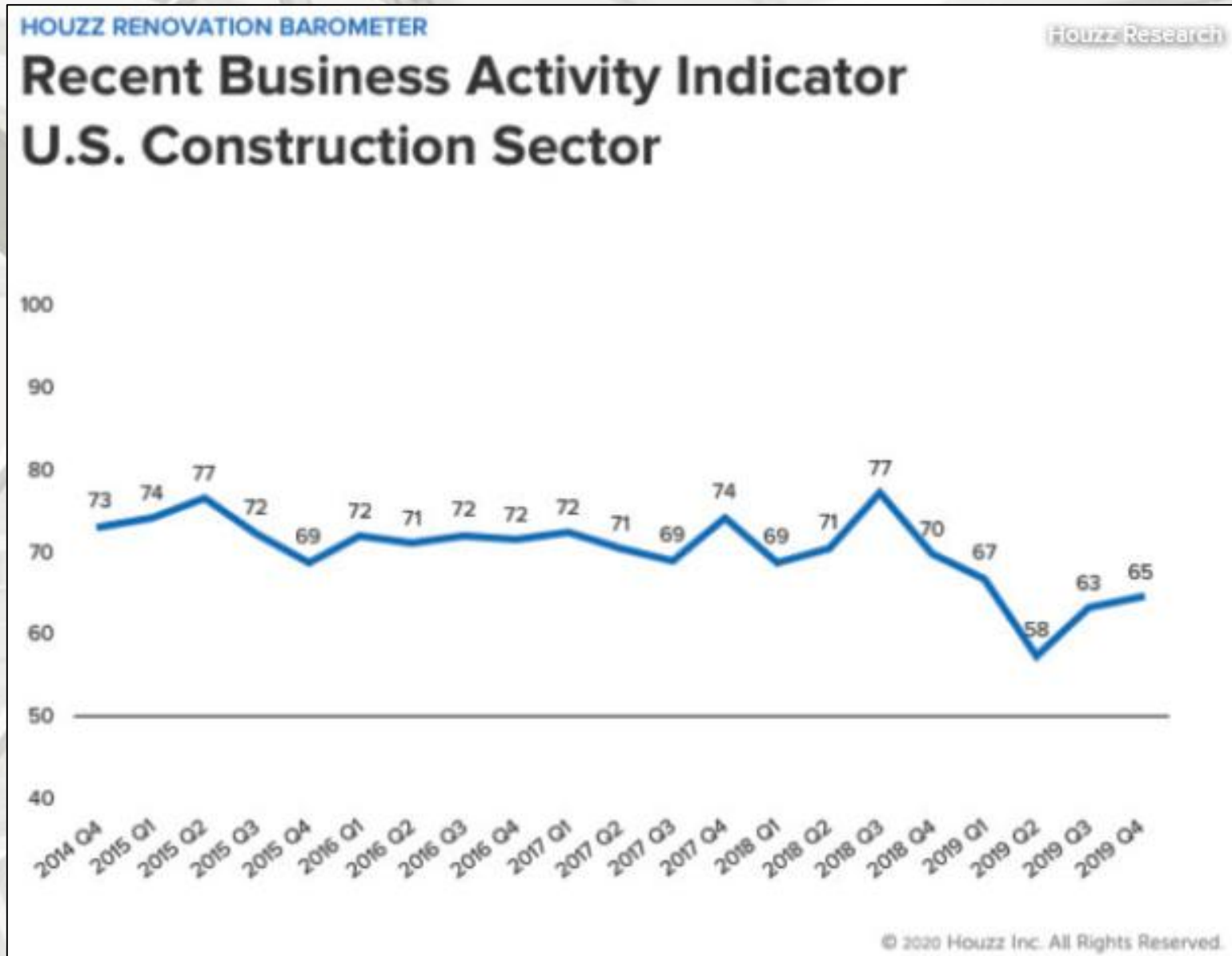
Houzz Research

2020Q1 Renovation Barometer – Construction Sector

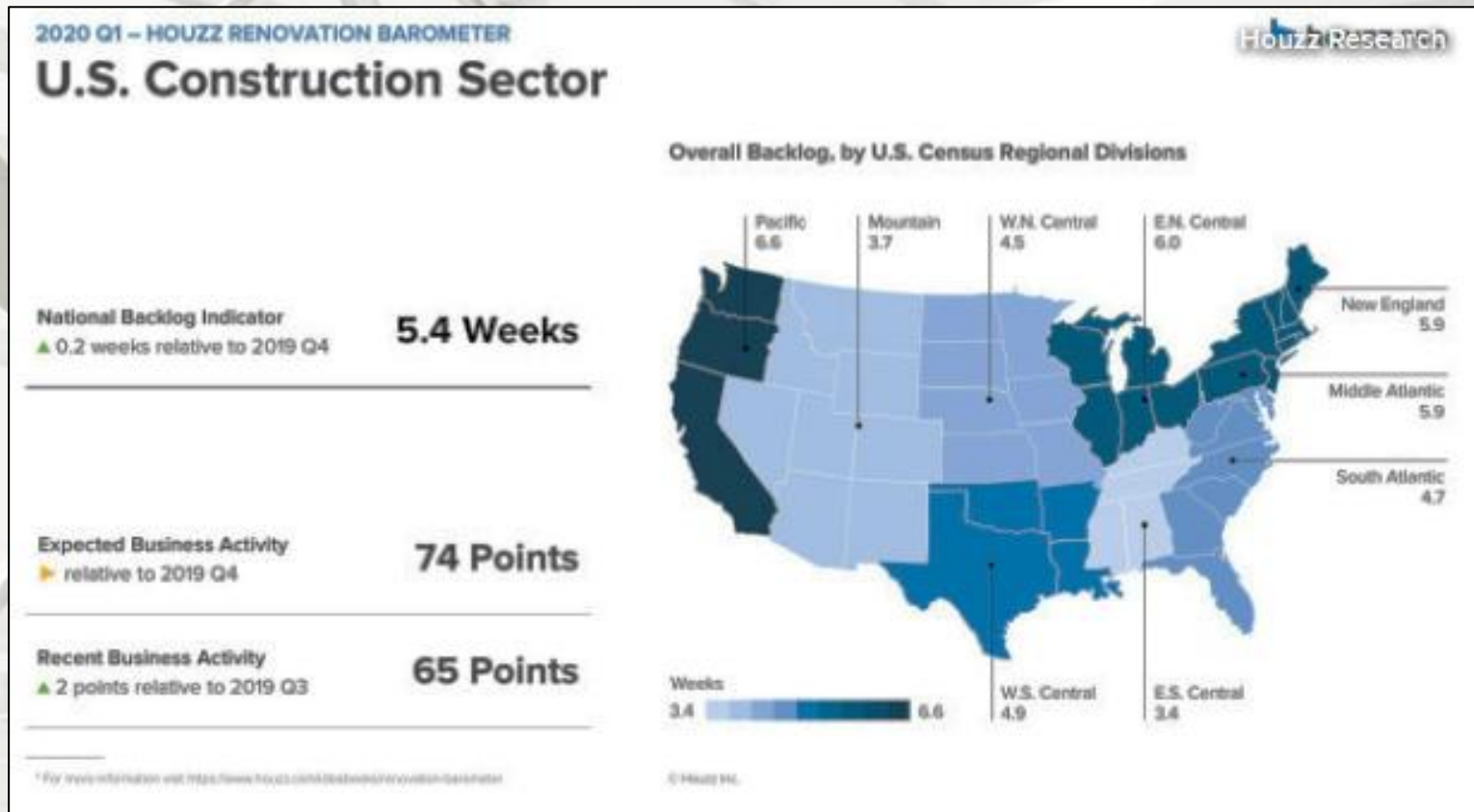
“The Recent Business Activity Indicator related to project inquiries and new committed projects increased to 65 in Q4 (up two points relative to Q3): This follows project inquiry activity, which remained steady at 67 in Q4 and an increase in new committed projects to 62 (up two points). The overall recent activity indicator was mixed among the two business groups, with build-only remodelers reporting a decrease in recent activity (down two points to 64 in Q4 relative to Q3) and an increase reported by design and build remodelers to 65 (up four points relative to Q3).

The Q1 2020 Barometer garnered responses from 218 build-only remodelers and 529 design and build remodelers. n=747 in the construction sector.” – Houzz Research

Remodeling



Remodeling



Existing House Sales

National Association of Realtors

December 2019 sales: 5.350 thousand

	Existing Sales	Median Price	Mean Price	Month's Supply
December	5,540,000	\$274,500	\$311,200	3.0
November	5,350,000	\$271,300	\$308,000	3.7
2018	5,000,000	\$254,700	\$293,800	3.7
M/M change	3.6%	1.2%	1.0%	-18.9%
Y/Y change	10.8%	7.8%	5.9%	-18.9%

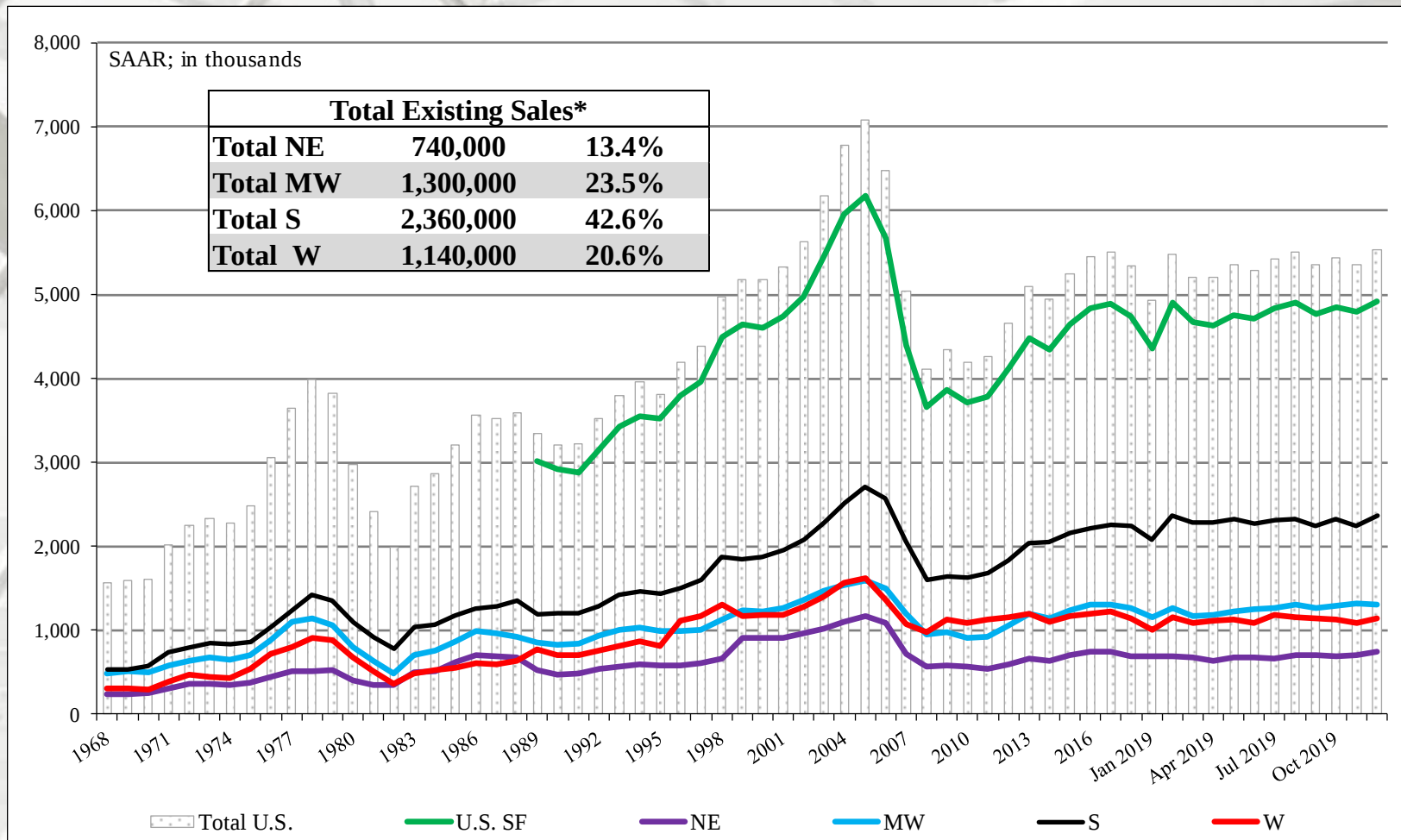
All sales data: SAAR

Existing House Sales

	Existing SF Sales	SF Median Price	SF Mean Price	
December	4,920,000	276,900	312,500	
November	4,790,000	274,100	309,800	
2018	4,450,000	256,400	294,600	
M/M change	2.7%	1.2%	0.9%	
Y/Y change	10.6%	8.0%	6.1%	
	NE	MW	S	W
December	740,000	1,300,000	2,360,000	1,140,000
November	700,000	1,320,000	2,240,000	1,090,000
2018	680,000	1,190,000	2,100,000	1,030,000
M/M change	5.7%	-1.5%	5.4%	4.6%
Y/Y change	8.8%	9.2%	12.4%	10.7%

All sales data: SAAR.

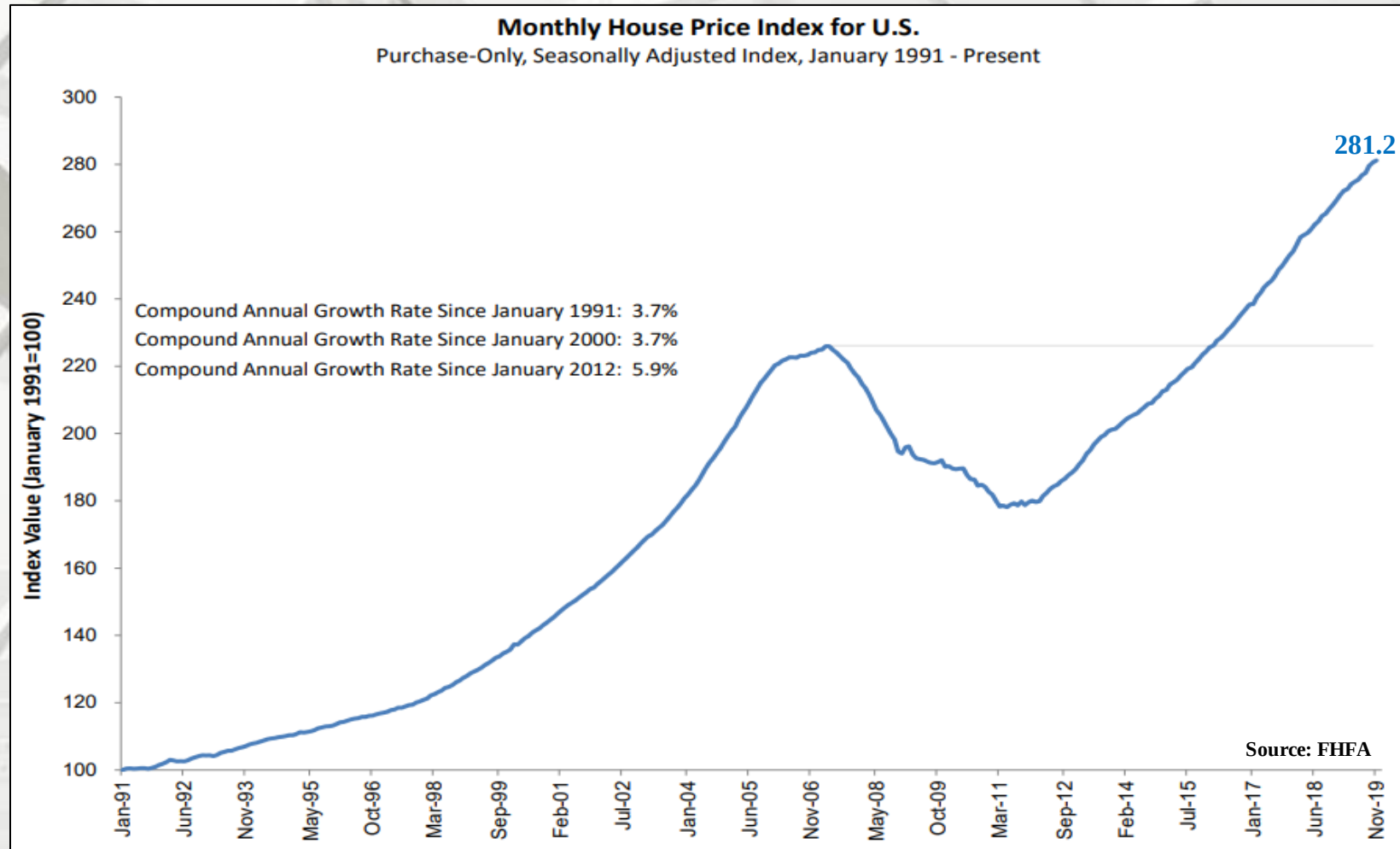
Existing House Sales



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

* Percentage of existing sales.

U.S. Housing Prices



FHFA House Price Index Up 0.2 Percent in November; Up 4.9 Percent from Last Year

“U.S. house prices rose in November, up **0.2 percent** from the previous month, according to the Federal Housing Finance Agency (FHFA) House Price Index (HPI). House prices rose **4.9 percent** from November 2018 to November 2019. The previously reported 0.2 percent increase for October 2019 was revised upward to 0.4 percent.” – Corinne Russell and Raffi Williams, FHFA

U.S. Housing Prices

S&P CoreLogic Case-Shiller Index Continues Upward Trend For Annual Home Price Gains

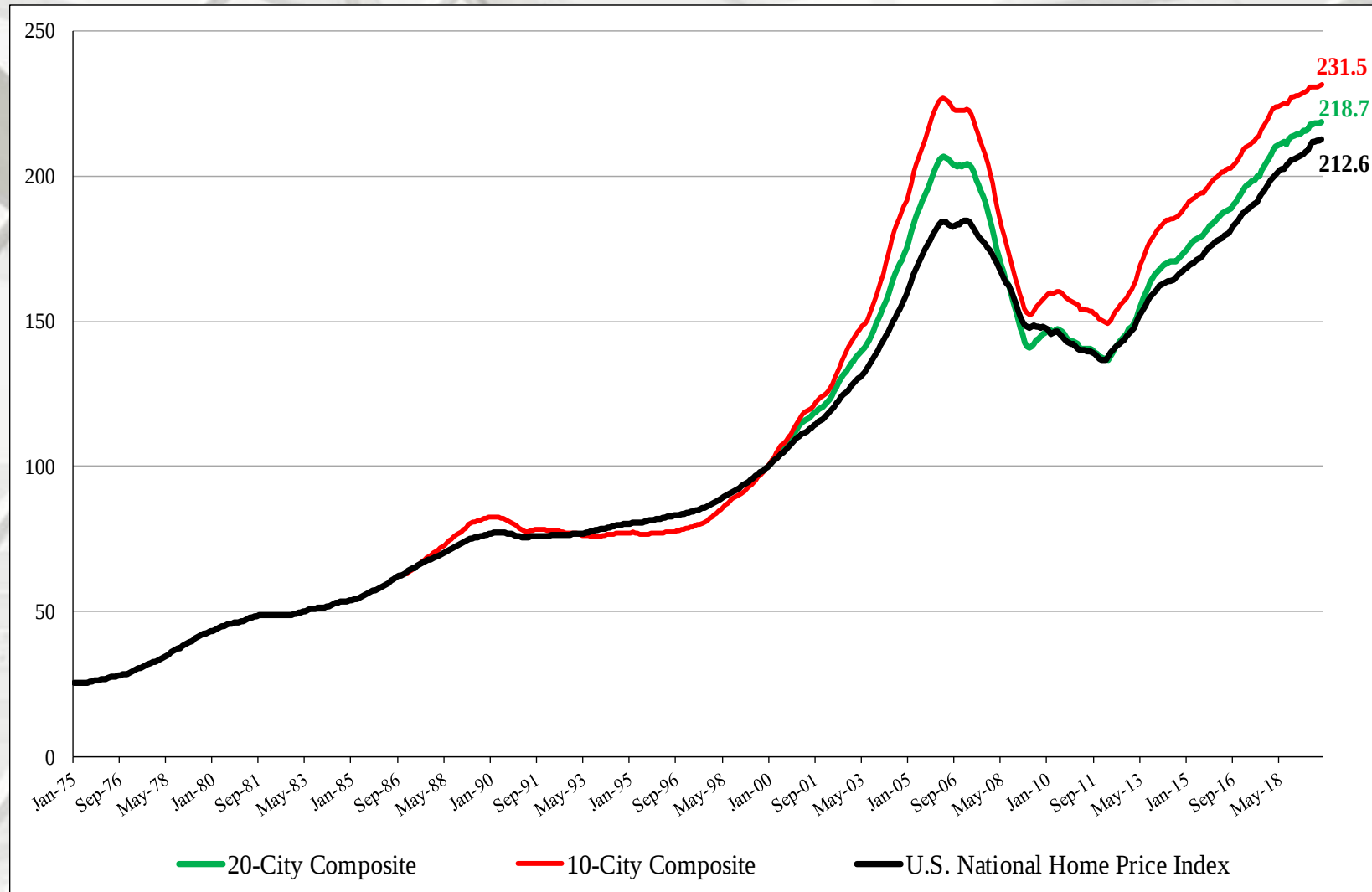
Data released for November 2019 show that home prices continue to increase at a modest rate across the U.S.

“The S&P CoreLogic Case-Shiller U.S. National Home Price NSA Index, covering all nine U.S. census divisions, reported a 3.5% annual gain in November, up from 3.2% in the previous month. The 10-City Composite annual increase came in at 2.0%, up from 1.7% in the previous month. The 20-City Composite posted a 2.6% year-over-year gain, up from 2.2% in the previous month.

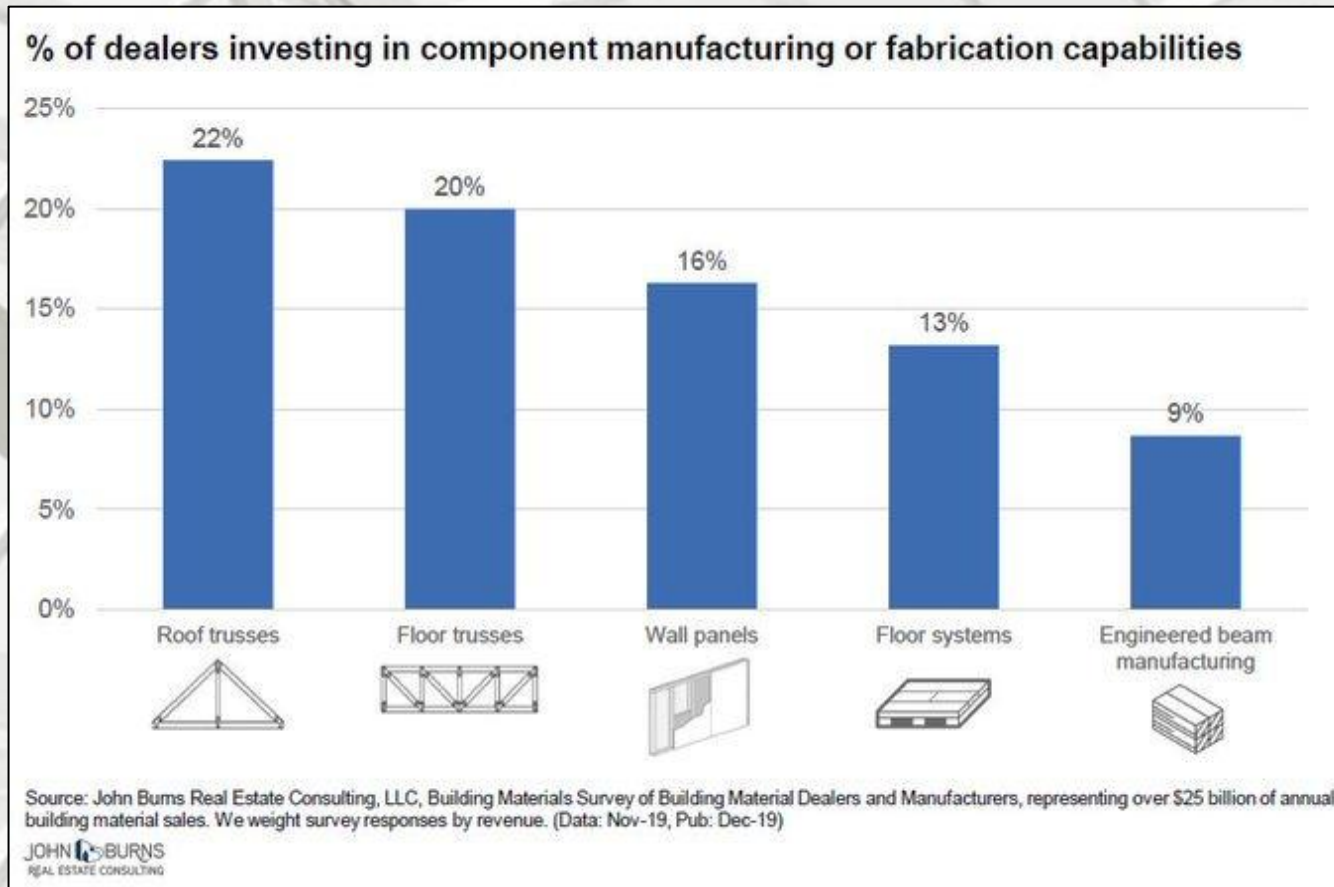
Phoenix, Charlotte and Tampa reported the highest year-over-year gains among the 20 cities. In November, Phoenix led the way with a 5.9% year-over-year price increase, followed by Charlotte with a 5.2% increase and Tampa with a 5.0% increase. Fifteen of the 20 cities reported greater price increases in the year ending November 2019 versus the year ending October 2019.

The U.S. housing market was stable in November. With the month’s 3.5% increase in the national composite index, home prices are currently 59% above the trough reached in February 2012, and 15% above their pre-financial crisis peak. November’s results were broad-based, with gains in every city in our 20-city composite. At a regional level, Phoenix retains the top spot for the sixth consecutive month, with a gain of 5.9% for November. Charlotte and Tampa rose by 5.2% and 5.0% respectively, leading the Southeast region. The Southeast has led all regions since January 2019. As was the case last month, after a long period of decelerating price increases, the National, 10-city, and 20-city Composites all rose at a modestly faster rate in November than they had done in October. This increase was broad-based, reflecting data in 15 of 20 cities. It is, of course, still too soon to say whether this marks an end to the deceleration or is merely a pause in the longer-term trend.” – Craig J. Lazzara, Managing Director and Global Head of Index Investment Strategy, S&P Dow Jones Indices

S&P/Case-Shiller Home Price Indices



U.S. Housing Market

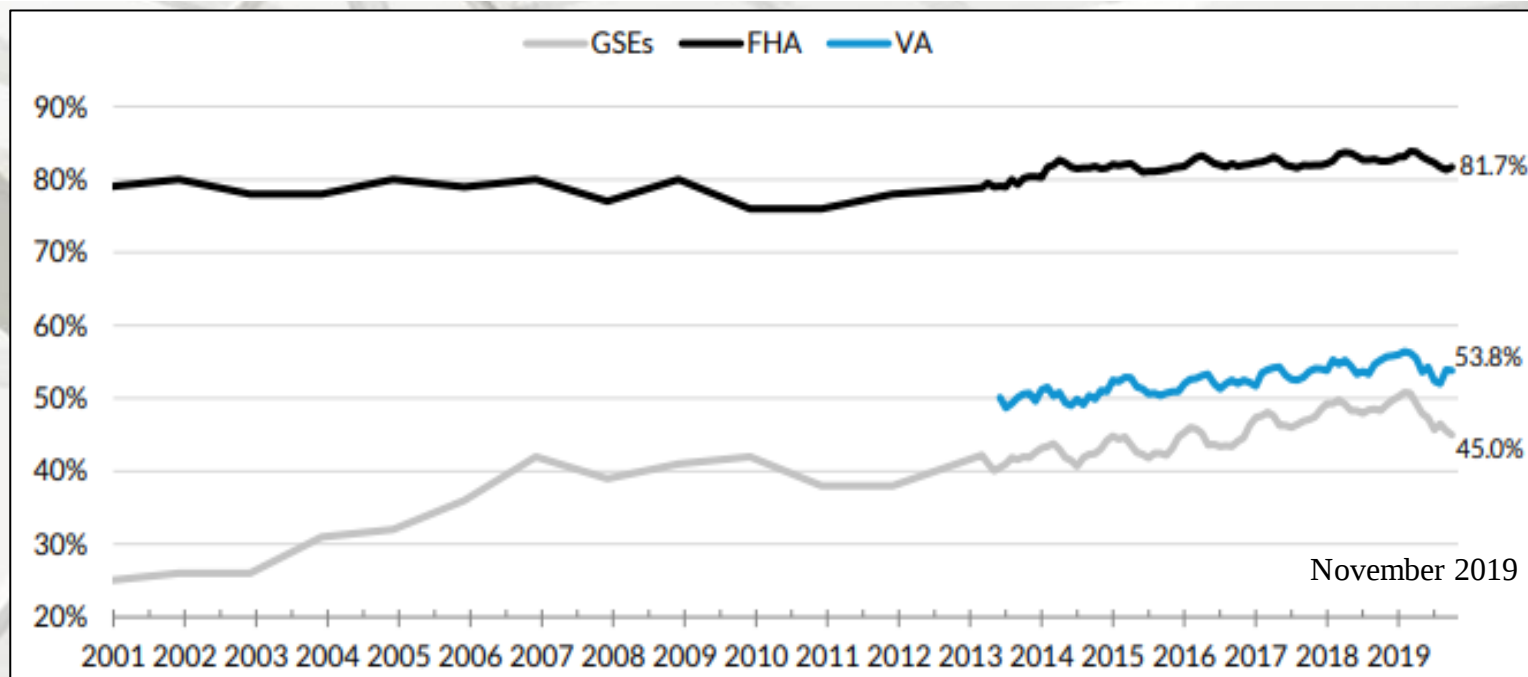


John Burns Real Estate Consulting

Building products business models of yesteryear are changing

“The building products business models of yesteryear are changing. Dealers are investing in component manufacturing and everyone in the space is looking for ways to offer more value through bundling (labor + materials for example). [#JBRECDailyInsight](#) [@JBREC](#)” – Jacob Belk, Manager, Forecasting and Analytics; John Burns Real Estate Consulting LLC

First-Time House Buyers



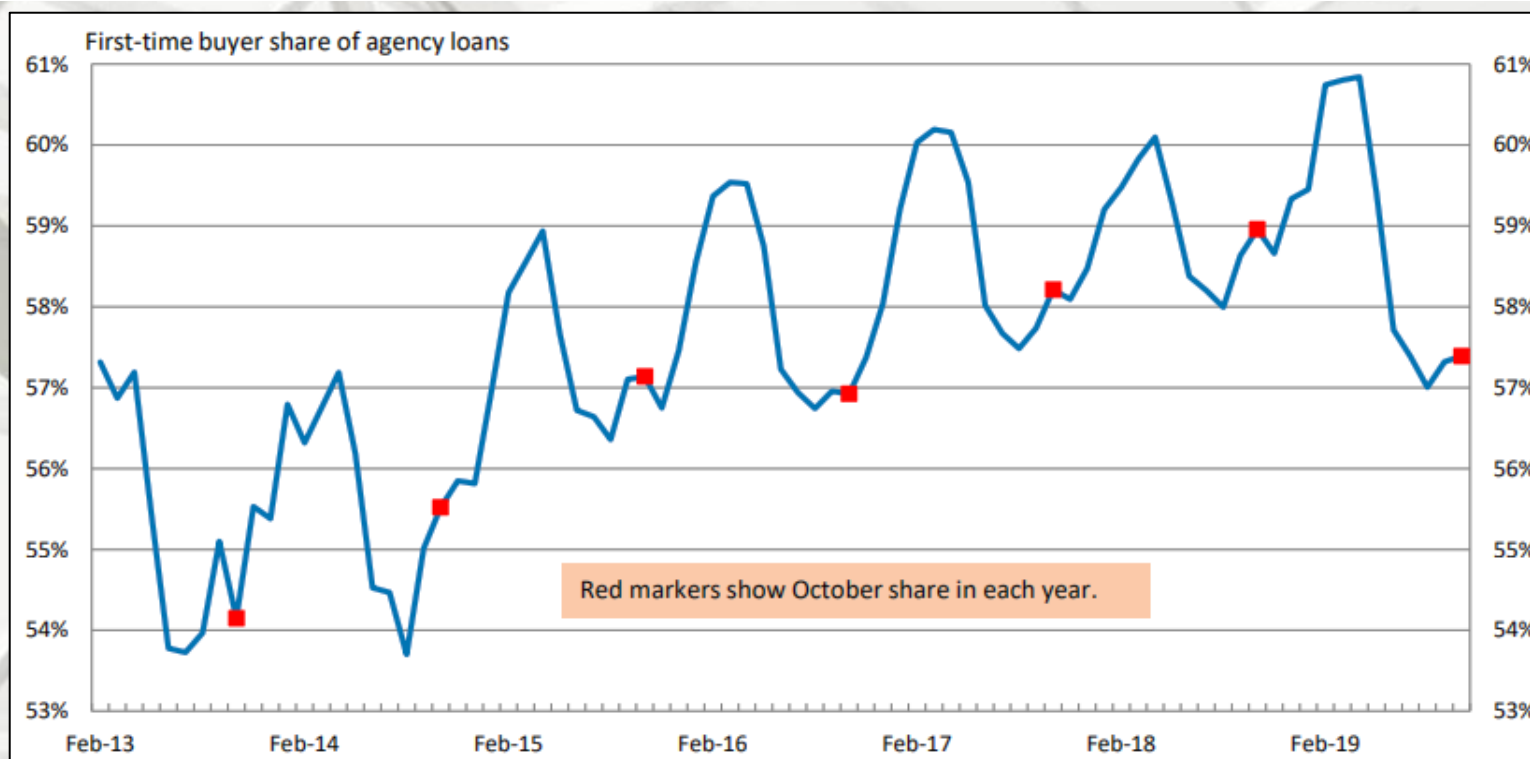
Sources: eMBS, Federal Housing Administration (FHA) and Urban Institute.

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

Urban Institute

“In November 2019, the FTHB share for FHA, which has always been more focused on first time homebuyers, rose very slightly to 81.7 percent. The FTHB share of VA lending decreased slightly in November, to 53.8 percent. The GSE FTHB share in November was 45.0 percent. The bottom table shows that based on mortgages originated in November 2019, 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 and higher DTI, thus paying a higher interest rate.” – Bing Lai, Research Associate, Housing Finance Policy Center

First-Time House Buyers



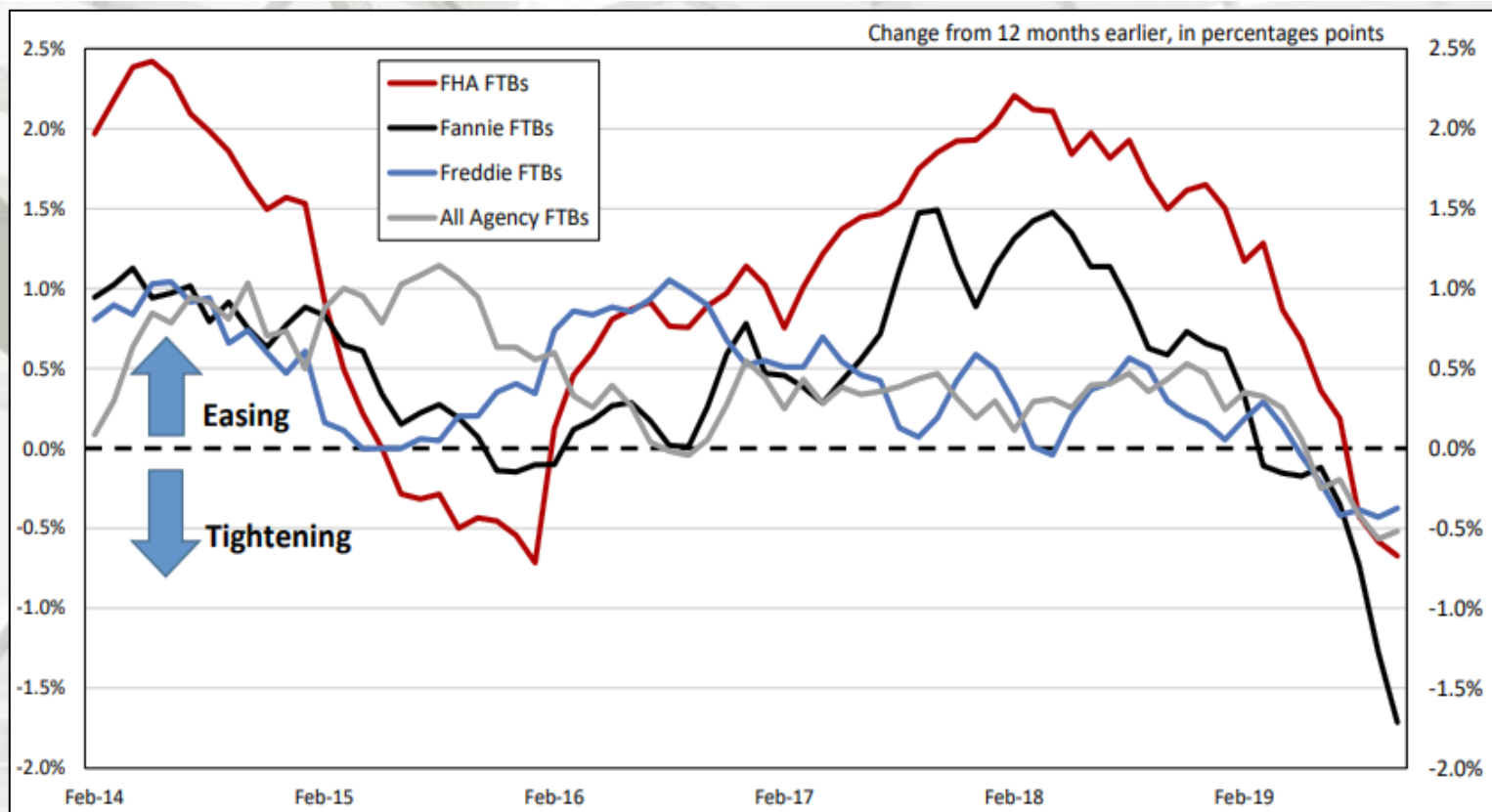
Note: Data are for primary owner-occupied agency purchase loans.

AEI Housing Center

Agency First-time Buyer (FTB) Loan Share

“The Agency FTB loan share was 57.4% in October 2019. This is down from 59.0% in October 2018 and represents a significant trend reversal from the last 5 years, during which the FTB share continuously marched up. The decline in FTB volume has helped reduce the overall level of mortgage risk. This is evidence of counter-cyclical policies, especially appropriate at this point in the 8-year long home price boom.” – Edward Pinto and Tobias Peter, AEI Housing Center

First-Time House Buyers



Note: Includes all types of NMRI purchase loans (primary owner-occupied, second home, and investor loans).

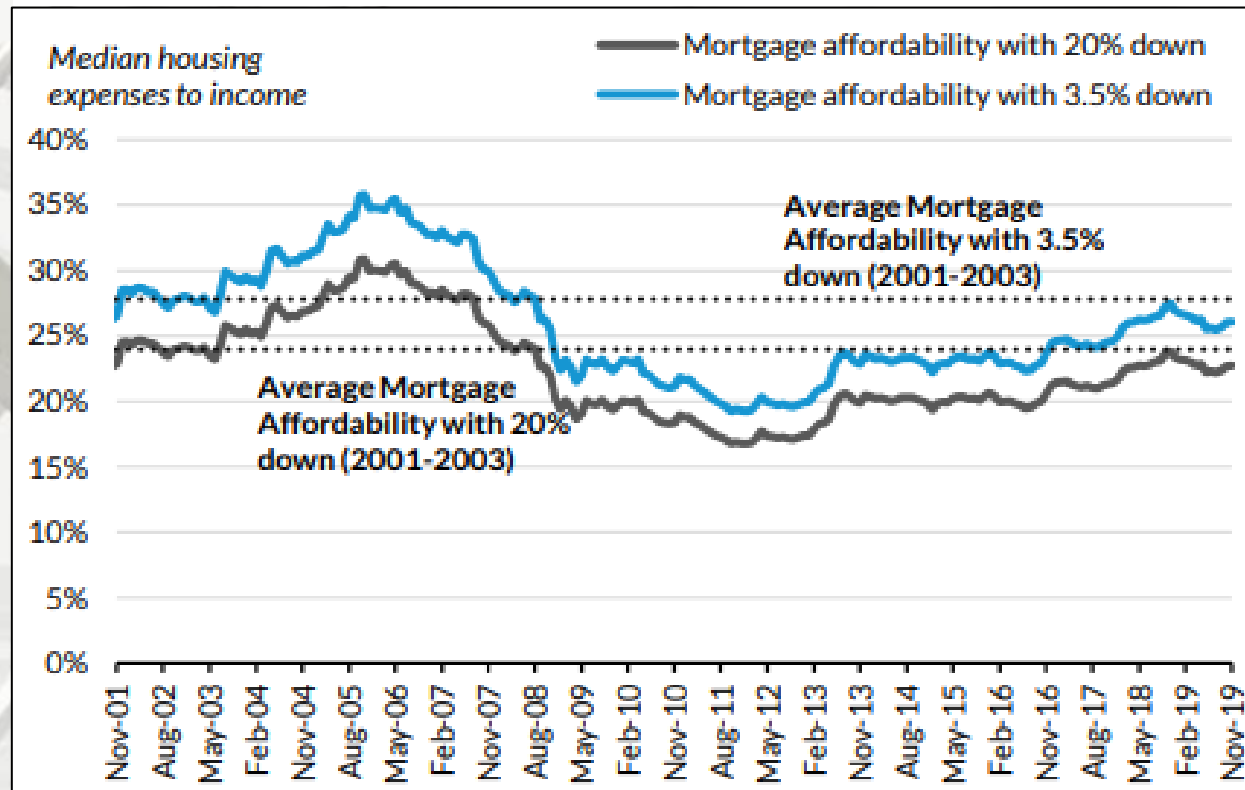
AEI Housing Center

FTB Purchase Loan NMRI: Credit Tightening Continues

“The First-time Buyer (FTB) MRI continued to decrease led by Fannie, which has been tightening since March 2019. FHA’s First-time Buyer MRI stood at 27.8% in October, down 0.7 ppt from a year earlier. While this change is encouraging, the decrease is coming off of very high risk levels and more needs to be done.” – Edward Pinto and Tobias Peter, AEI Housing Center

Housing Affordability

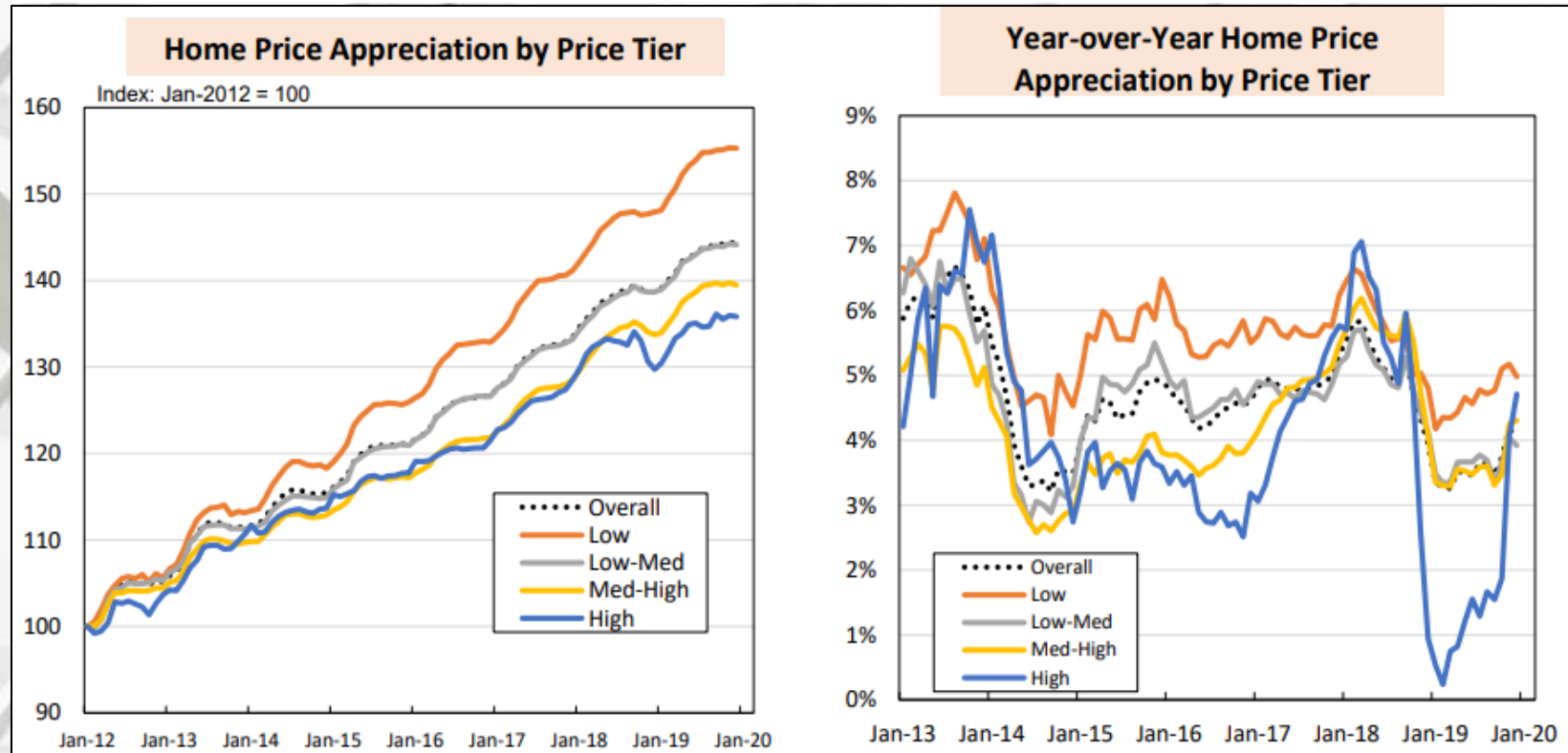
National Housing Affordability Over Time



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 November 2019, with a 20 percent down payment, the share of median income needed for the monthly mortgage payment stood at 23.9 percent; with 3.5 down, it is 27.8 percent. Since February, the median housing expenses to income ratio has been slightly lower than the 2001-2003 average. As shown in the bottom picture, mortgage affordability varies widely by MSA.” – Laurie Goodman, VP, Housing Finance Policy Center

Housing Affordability



Note: Data for December 2019 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 December 2019, overheating of the low price tier continued (right panel). HPA in the low price tier was 5.0% year-over-year. In the low-medium and medium-high tiers, HPA was 3.9% and 4.3%, respectively. HPA in the high tier (about 7% share) increased significantly to 4.7% compared to a year ago. This tier was first hit by the Fed’s tightening and is now buoyed by the Fed’s loosening.” – Edward Pinto and Tobias Peter, AEI Housing Center

Mortgage Credit Availability

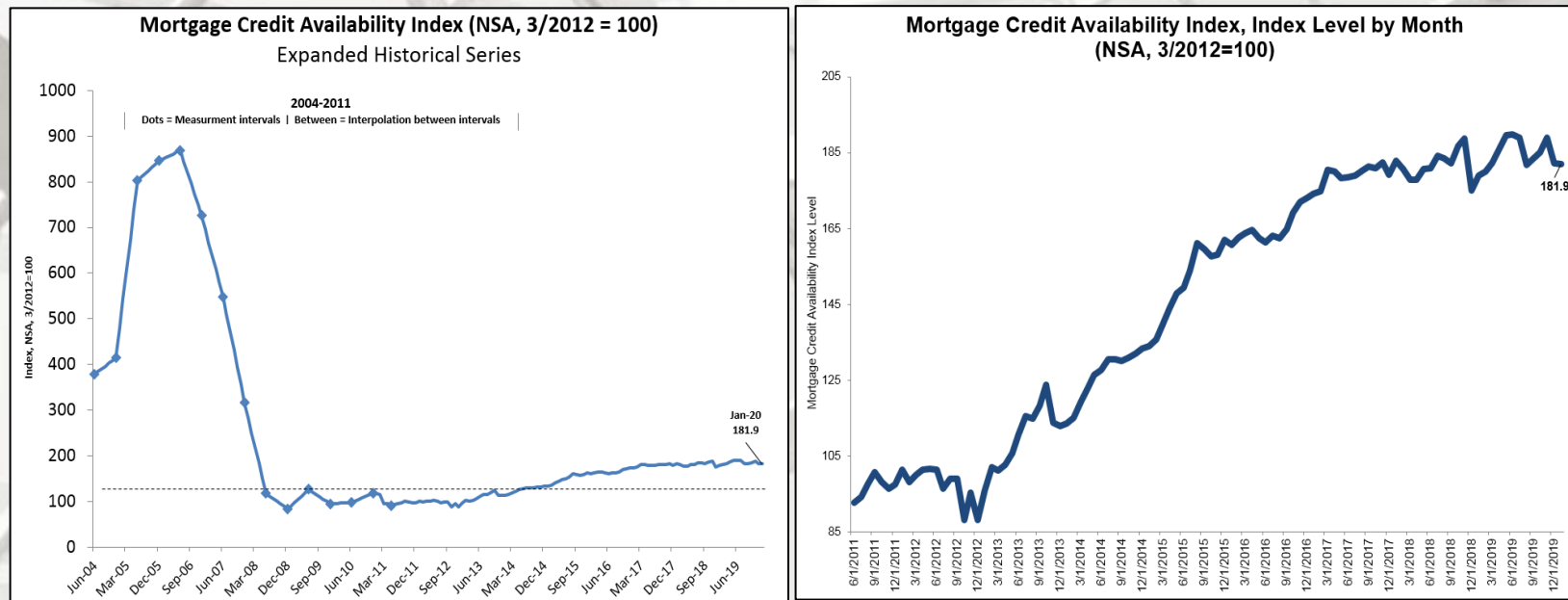
Mortgage Credit Availability Decreased in January

“Mortgage credit availability decreased in January 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 0.2 percent to 181.9 in January. 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 0.5 percent, while the Government MCAI increased by 0.4 percent. Of the component indices of the Conventional MCAI, the Jumbo MCAI decreased by 0.3 percent, and the Conforming MCAI fell by 0.9 percent.

Mortgage credit availability was mostly unchanged to start 2020, decreasing 0.2 percent in January. Similar to December of 2019, the decline came from the reduction of low credit score, high-LTV programs. Furthermore, there continues to be movement with both adds and drops in the government program space, with the net result last month showing small growth in the government index. Although credit supply has flattened these last two years, the meaningful increase seen overall since the Great Recession has been helpful to the growing share of first-time homebuyers, as well as refinance borrowers looking to act on lower mortgage rates. Ongoing housing supply constraints in the lower-price range continues to hold prospective buyers back the most.” – Joel Kan, Associate Vice President of Economic and Industry Forecasting, MBA

Mortgage Credit Availability



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

Summary

In conclusion:

Total starts were reported at 1,608 million units in December 2019 – this is the greatest number reported since December 2006 (1,649 million units). Further, single-family starts were 1,055 million units, the first-time single-family starts have exceeded one-million units since July 2006 (1,042 million units). Two factors may be behind this upsurge: 1) a mild December and 2) a large increase in the Midwest region's starts. Winter seasonal adjustments for the Midwest typically are greater than the other regions (Slide 18). Total-, single-, and multi-family permits and new single-family sales declined month-over-month. With the exception of single-family under construction, all housing metrics were positive on a year-over-year basis.

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.

Cons:

- 1) Housing affordability indicates improvement;
- 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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