

The Virginia Tech – U.S. Forest Service

January 2019

Housing Commentary: Section I



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2018

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Table of Contents

Slide 3: [Opening Remarks](#)
Slide 4: [Housing Scorecard](#)
Slide 5: [Wood Use in Construction](#)
Slide 8: [New Housing Forecasts](#)
Slide 12: [New Housing Starts](#)
Slide 17: [Regional Housing Starts](#)
Slide 26: [New Housing Permits](#)
Slide 29: [Regional New Housing Permits](#)
Slide 36: [Housing Under Construction](#)
Slide 38: [Regional Under Construction](#)
Slide 43: [Housing Completions](#)
Slide 48: [Regional Housing Completions](#)

Slide 50: [New Single-Family House Sales](#)
Slide 53: [Regional SF House Sales & Price](#)
Slide 60: [New SF Sales-Population Ratio](#)
Slide 70: [Construction Spending](#)
Slide 73: [Construction Spending Shares](#)
Slide 84: [Existing House Sales](#)
Slide 89: [Affordability](#)
Slide 92: [First-Time Purchasers](#)
Slide 95: [State of the Housing Market](#)
Slide 96: [Summary](#)
Slide 97: [Virginia Tech Disclaimer](#)
Slide 98: [USDA Disclaimer](#)

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Opening Remarks

January housing data suggests a tepid housing construction and sales markets. January housing data was decidedly mixed, with month-over-month increases and year-over-year declines in total starts and permits. Most problematic was the continued decline in single-family permits, as well as construction spending – total and single-family. Housing under construction and completions data were solid. Existing sales continued their downward trend. The March 13th Atlanta Fed GDPNow™ model for Q1: 2019 projects an aggregate 0.6% increase for residential investment spending. New private permanent site expenditures were projected at a 13.1% decrease; the improvement spending forecast was a 8.5% increase; and the manufactured/mobile housing projection was a 15.5% increase (all: quarterly log change and seasonally adjusted annual rate)¹.

“All things must pass. For five years now, the housing-market story has been a story of strong demand and limited supply. Now, demand has been abated by unrelenting price gains, higher mortgage rates and a widespread sense that homes have become unaffordable, which is keeping some would-be homebuyers on the sidelines. Thankfully, for mortgage originators and the country as a whole, supply remains tight in most areas, so an outright housing bust isn’t expected.

What is the most likely scenario for 2019? ... Sales may decline by 3 to 6 percent, and home-price growth will be slower. National home prices could still grow 2 to 4 percent next year, so long as the U.S. continues to have a constrained housing supply and ample job opportunities. ... Thankfully, a soft landing is a lot more likely than a crash since two engines are still going strong, for the moment at least. Job growth remains robust with total employment at record highs. The housing shortage is not going away anytime soon: New home sales and builders’ incentives to break ground on additional housing have been hampered by higher fixed costs such as local assessment fees, a labor shortage and tariffs. New residential construction is around 1.3 million new units a year, while trend demand is likely somewhere between 1.5 million and 1.7 million new units a year. Another way to see how the country is underbuilt is by looking at today’s residential fixed investment as a percentage of gross domestic product. It’s now 3.9 percent compared to the historical average of 4.6 percent.”² – Ralph DeFranco, Global Chief Economist, Mortgage Group, Arch Capital Services Inc.

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

Sources: ¹ www.frbatlanta.org/cqer/research/gdpnow.aspx; 3/22/19;

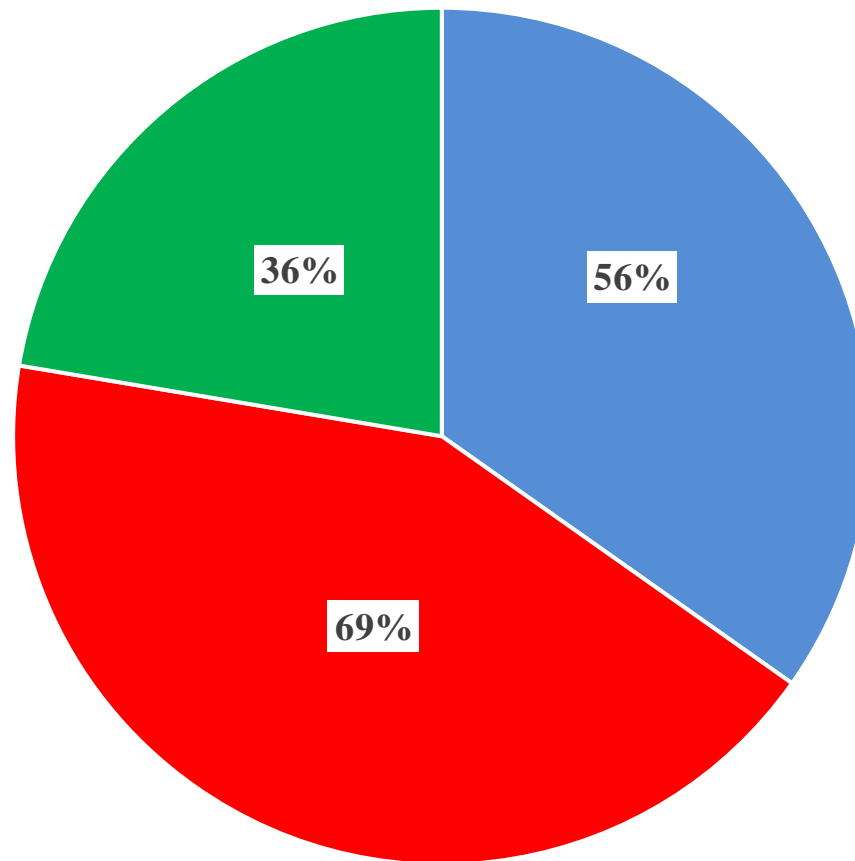
² <https://www.scotsmanguide.com/Residential/Articles/2019/02/It-s-a-Housing-Market-Slowdown--Not-a-Bust/>; 2/5/19

January 2019 Housing Scorecard

	M/M	Y/Y
Housing Starts	△ 18.6%	▽ 7.8%
Single-Family (SF) Starts	△ 25.1%	△ 4.5%
Housing Permits	△ 1.4%	▽ 1.5%
SF Permits	▽ 2.1%	▽ 6.7%
Housing Under Construction	△ 0.4%	△ 3.6%
SF Under Construction	△ 0.6%	△ 8.0%
Housing Completions	△ 27.6%	△ 2.1%
SF Completions	△ 30.2%	△ 6.2%
New SF House Sales	▽ 6.9%	▽ 4.1%
Private Residential Construction Spending	▽ 0.3%	▽ 5.6%
SF Construction Spending	▽ 0.7%	▽ 7.2%
Existing House Sales ¹	▽ 1.2%	▽ 8.5%

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

New Construction's Percentage of Wood Products Consumption

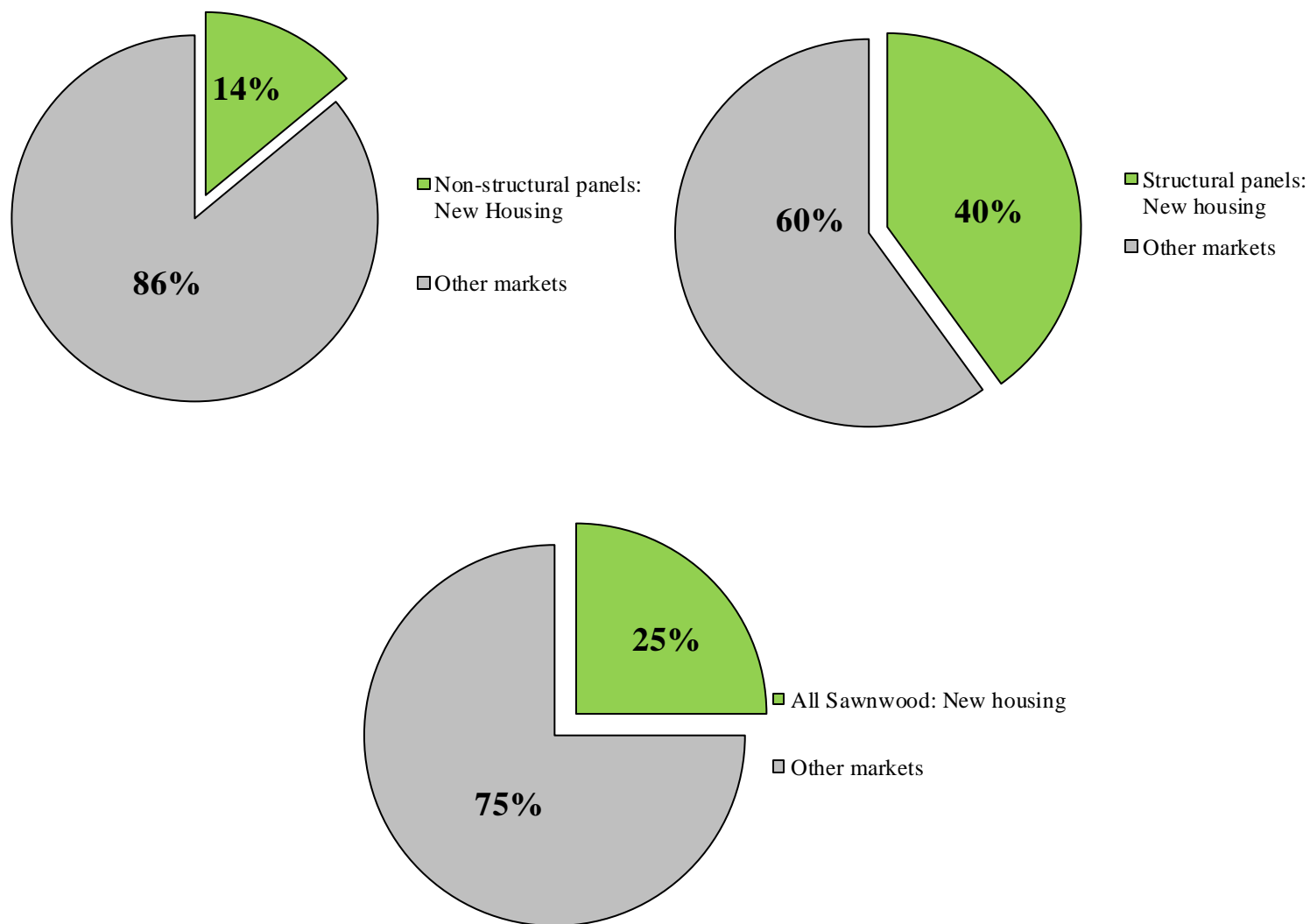


■ All Sawnwood

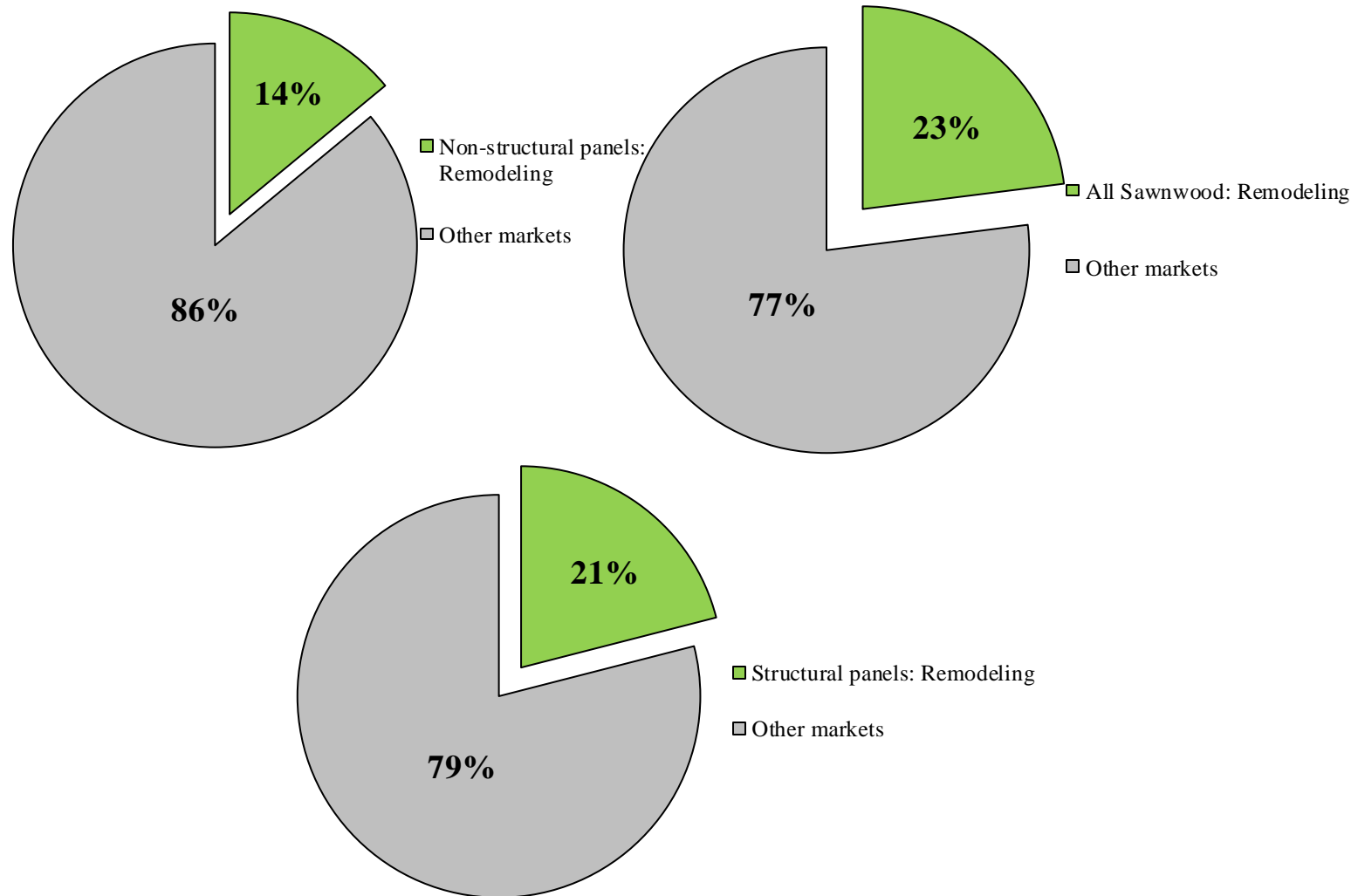
■ Structural panels

■ Non-structural panels

New SF Construction Percentage of Wood Products Consumption



Repair and Remodeling's Percentage of Wood Products Consumption



2019 Housing Forecasts*

Total starts, range:	1,134 to 1,400	Median: 1,283
SF starts, range:	815 to 920	Median: 900
New SF house sales, range:	618 to 688	Median: 637

Organization	Total Starts	SF Starts	New SF House Sales
APA - The Engineered Wood Association ^a	1,230	850	
John Burns Real Estate Consulting LLC ^b	1,290		
Bank of Montreal (BOM) ^c	1,240		
Blue Chip Economic Indicators ^d	1,332		
Deloitte ^e	1,160		
Dodge Data & Analytics ^f	1,280	815	
Forest2Market ^g	1,259		
Fannie Mae ^h	1,265	903	618
Freddie Mac ⁱ	1,290	900	640
Goldman Sachs ^j	1,134		688
Mortgage Bankers Association (MBA) ^k	1,285	900	635

* All in thousands of units

2019 Housing Forecasts*

Organization	Total Starts	Single-Family Starts	New House Sales
National Association of Homebuilders ^l	1,268	897	
National Association of Realtors ^m	1,290	900	640
PNC Financial Services Group ⁿ	1,285		
RISI ^o	1,310	920	
Royal Bank of Canada (RBC) ^p	1,313		
Scotiabank ^q	1,250		
TD Economics ^r	1,240		
The Federal Reserve Bank of Chicago ^s	1,280		
UCLA Ziman Center for Real Estate ^t	1,310		
Urban Institute ^u	1,400		
Wells Fargo LLC ^v	1,300	920	630
Zelmann & Associates ^w		915	

* All in thousands of units

References

- a-*Random Lengths*, Volume 75, Issue 1 (1/4/19). Random Lengths Publications, Inc. Eugene, OR. 12 pps.
- b-<http://cdn.coverstand.com/38983/546862/2f231f90d03fe999b4736979ed36a497edead5f7.3.pdf>; 12/19/18
- c-<https://economics.bmocapitalmarkets.com/economics/forecast/us/usmodel.pdf>
- d-<https://chambermaster.blob.core.windows.net/userfiles/UserFiles/chambers/305/File/2018FederalReservePresentation.pdf>
- e-<https://www2.deloitte.com/insights/us/en/economy/us-economic-forecast/united-states-outlook-analysis.html>
- f-<http://urbanland.uli.org/economy-markets-trends/in-brief-u-s-construction-starts-in-2019-to-hold-steady-with-2018/>
- g-<http://blog.forest2market.com/housing-start-forecast-what-the-next-five-years-really-look-like>
- h-http://www.fanniemae.com/resources/file/research/emma/pdf/Housing_Forecast_012219.pdf
- i-http://www.freddiemac.com/research/forecast/20190129_economic_growth.html
- j-<http://www.goldmansachs.com/insights/pages/outlook-2019/us-outlook/report.pdf>
- k-<http://www.mba.org/Documents/Research/Mortgage%20Finance%20Forecast%20Jan%202019.pdf>. January 2019
- l-*Random Lengths*, Volume 75, Issue 1. Random Lengths Publications, Inc. Eugene, OR. 12 pps.
- m-<http://www.rbc.com/economics/economic-reports/pdf/other-reports/Econoscope.pdf>
- n-https://www.scotiabank.com/content/dam/scotiabank/sub-brands/scotiabank-economics/english/documents/economic-commentary/ec_comm18.pdf
- o-<https://economics.td.com/us-long-term-forecast>
- p-<https://www.chicagofed.org/~media/publications/chicago-fed-letter/2019/cfl410-pdf.pdf>
- q-https://www.anderson.ucla.edu/Documents/areas/ctr/ziman/UCLA_Economic_Letter_Shulman_12.06.18.pdf
- r-https://www.pnc.com/content/dam/pnc-com/pdf/aboutpnc/EconomicReports/NEO%20Reports/NEO_Jan2018.pdf?WT.mc_id=CIB_Email_Ideas
- s-<http://www.urban.org/research/publication/housing-finance-glance-monthly-chartbook-January-2019>
- t-<http://www.gbm.scotiabank.com/scpt/gbm/scotiaeconomics63/forecast.pdf>
- u-<https://economics.td.com/us-long-term-forecast>
- v- <https://www.wellsfargo.com/assets/pdf/commercial/insights/economics/real-estate-and-housing/housing-whats-ahead-20190116.pdf>
- w-www.builderonline.com/money/economics/will-the-housing-market-ever-really-recover_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

* All in thousands of units

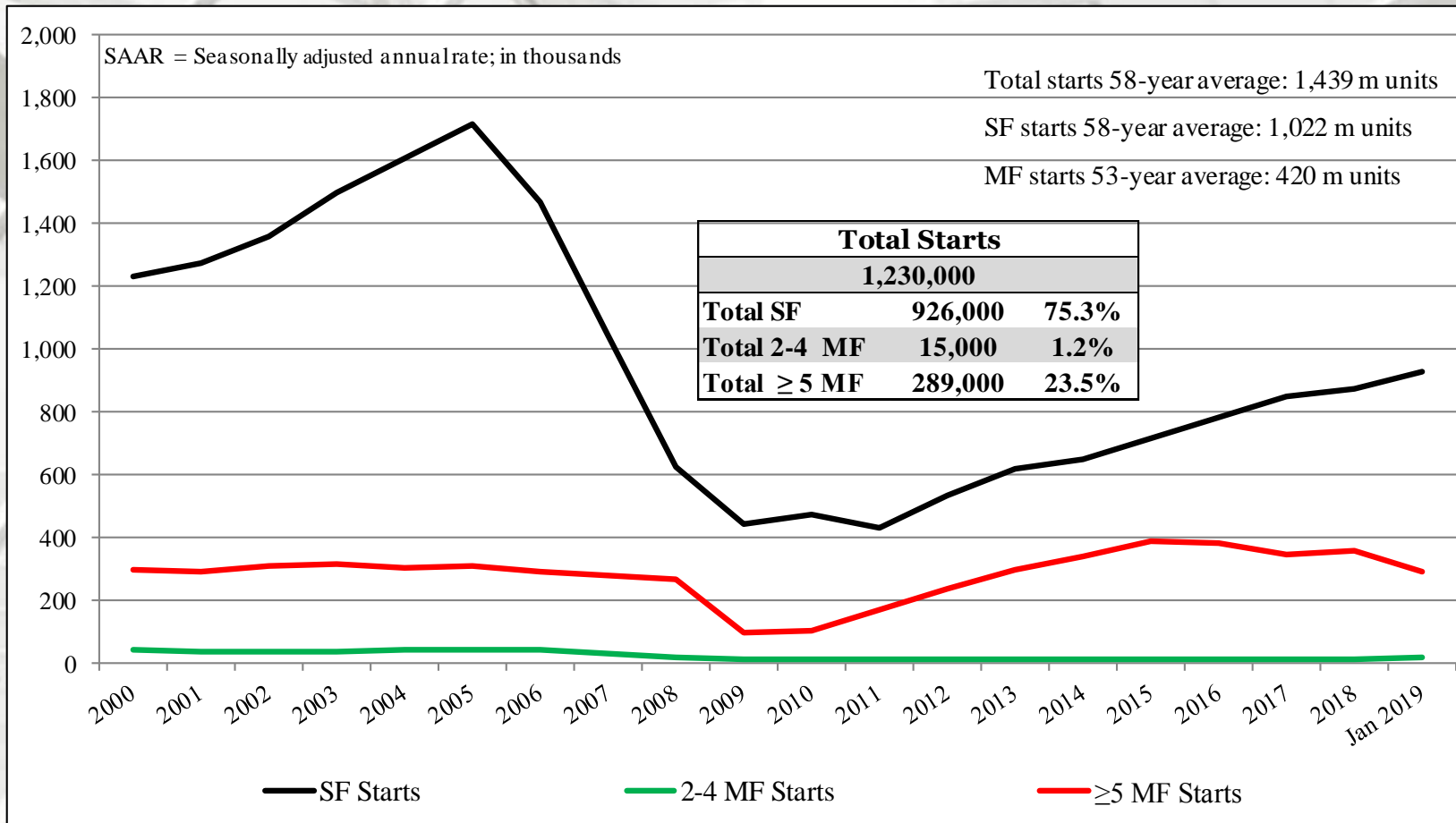
New Housing Starts

	Total Starts*	SF Starts	MF 2-4 Starts**	MF ≥5 Starts
January	1,230,000	926,000	15,000	289,000
December	1,037,000	740,000	19,000	278,000
2018	1,334,000	886,000	13,000	435,000
M/M change	18.6	25.1	-21.1	4.0
Y/Y change	-7.8	4.5	15.4	-33.6

* 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)).

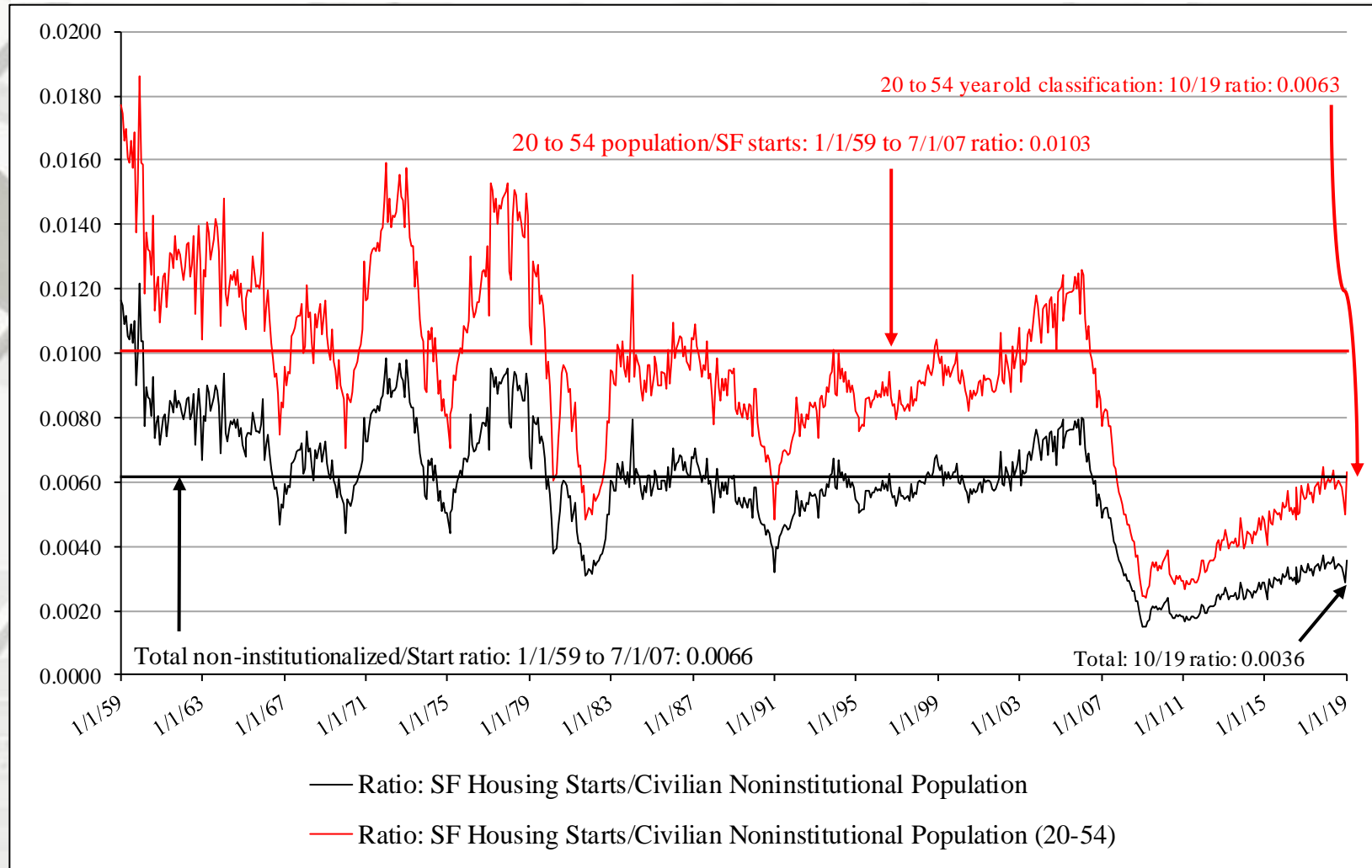
Total Housing Starts



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

* Percentage of total starts.

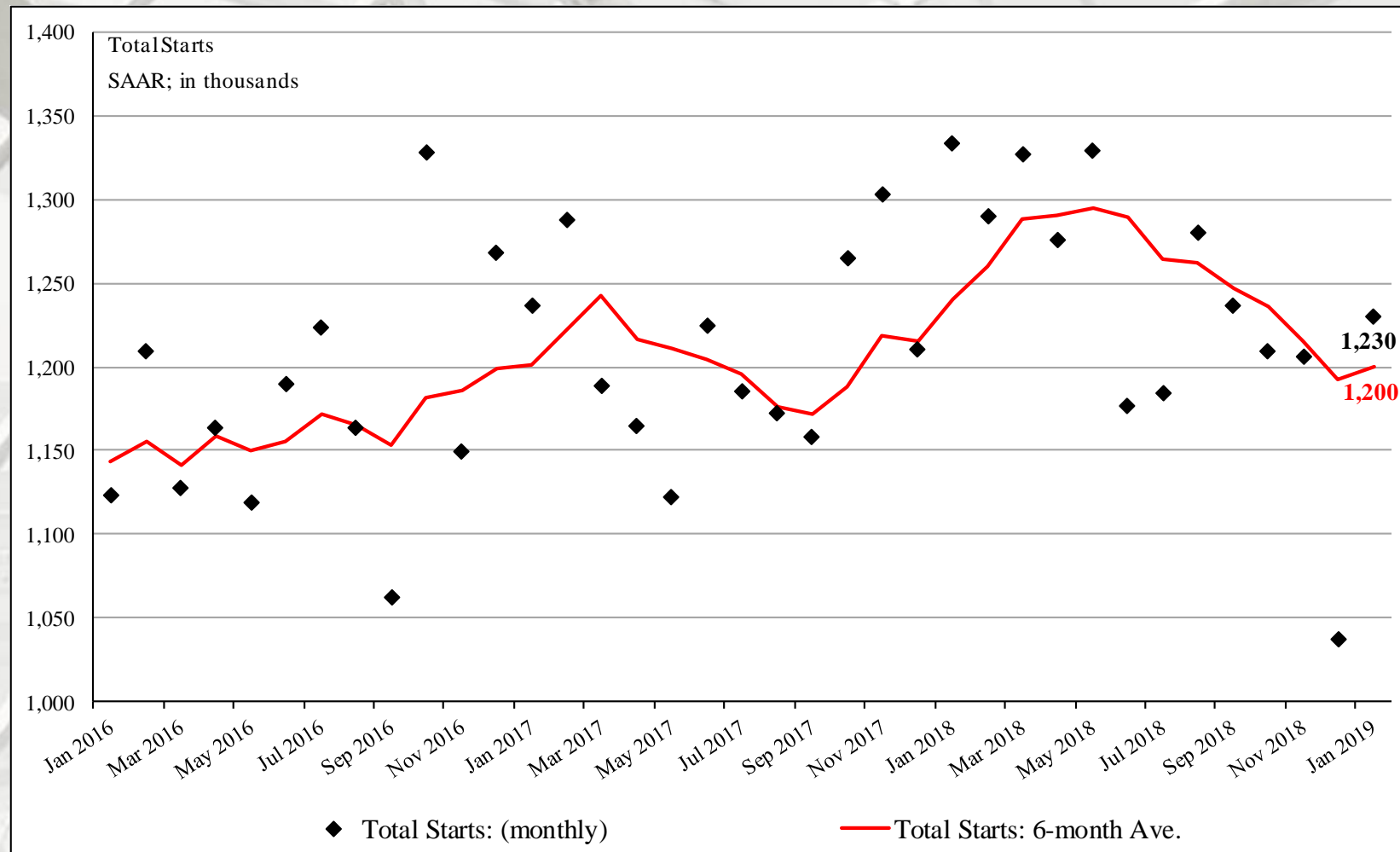
New SF Starts



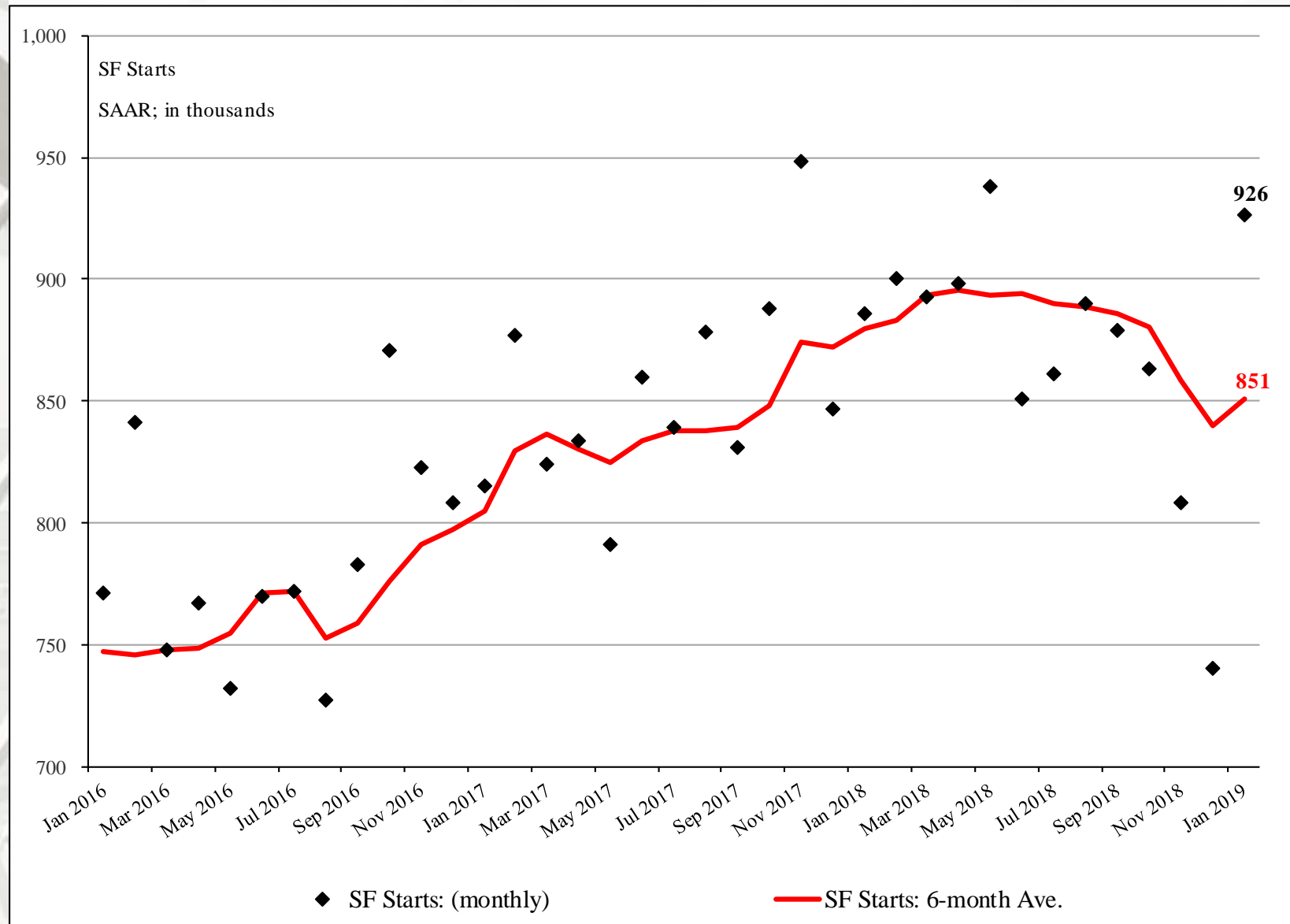
New SF starts adjusted for the US population

From January 1959 to January 2007, the long-term ratio of new SF starts to the total US non-institutionalized population was 0.0066; in January 2018 it was 0.0036 – an increase from December (0.0029). The long-term ratio of non-institutionalized population, aged 20 to 54 is 0.0103; in January 2018 was 0.0063 – also an increase from December (0.0050). From a population worldview, new SF construction is less than what is necessary for changes in population (i.e., under-building).

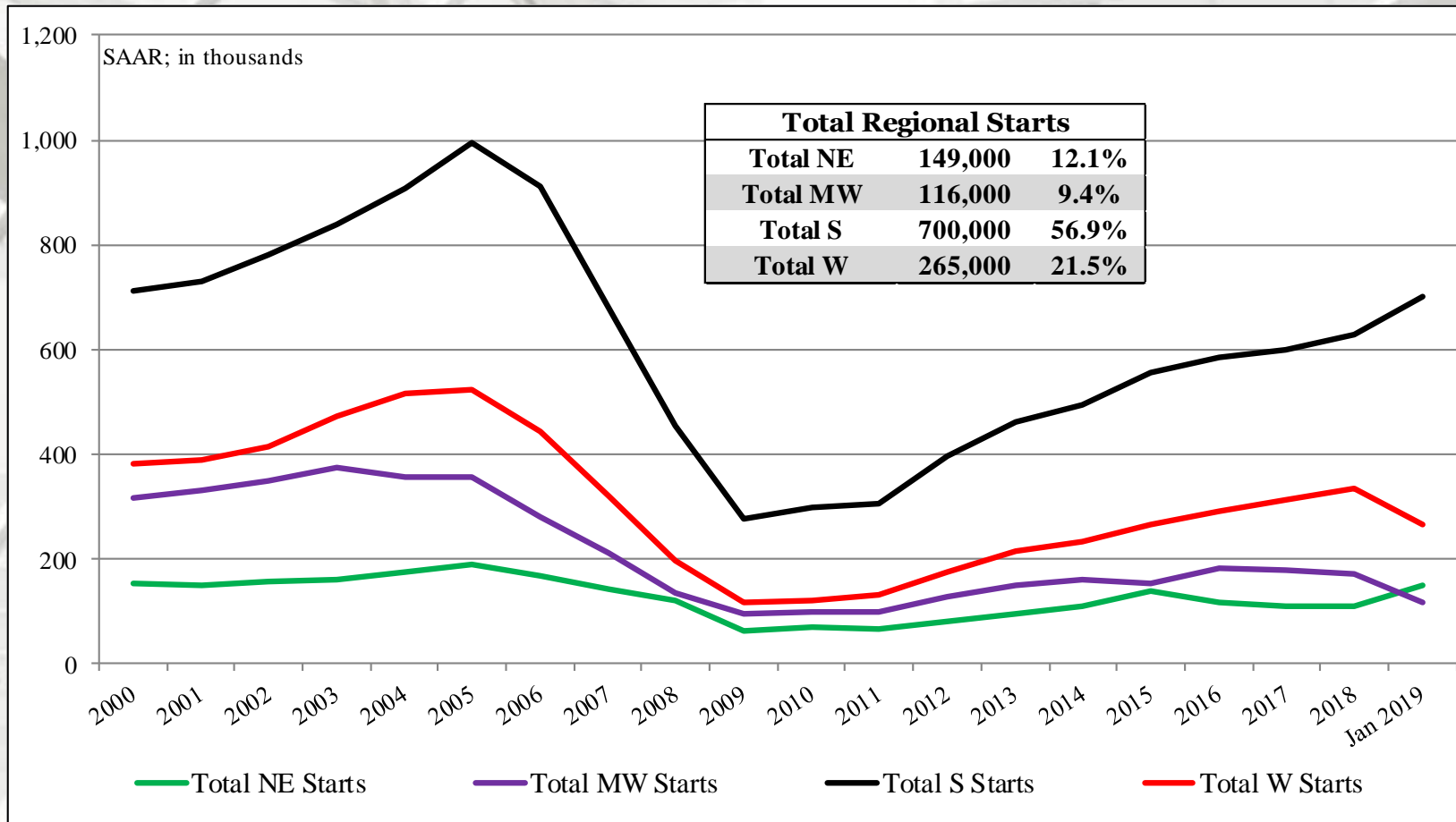
Total Housing Starts: Six-Month Average



SF Housing Starts: Six-Month Average



New Housing Starts 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 starts.

New Housing Starts by Region

	NE Total	NE SF	NE MF**
January	149,000	83,000	66,000
December	94,000	50,000	44,000
2017	116,000	62,000	54,000
M/M change	58.5	66.0	50.0
Y/Y change	28.4	33.9	22.2
	MW Total	MW SF	MW MF
January	116,000	109,000	7,000
December	123,000	92,000	31,000
2017	145,000	122,000	23,000
M/M change	-5.7	18.5	-77.4
Y/Y change	-20.0	-10.7	-69.6

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).

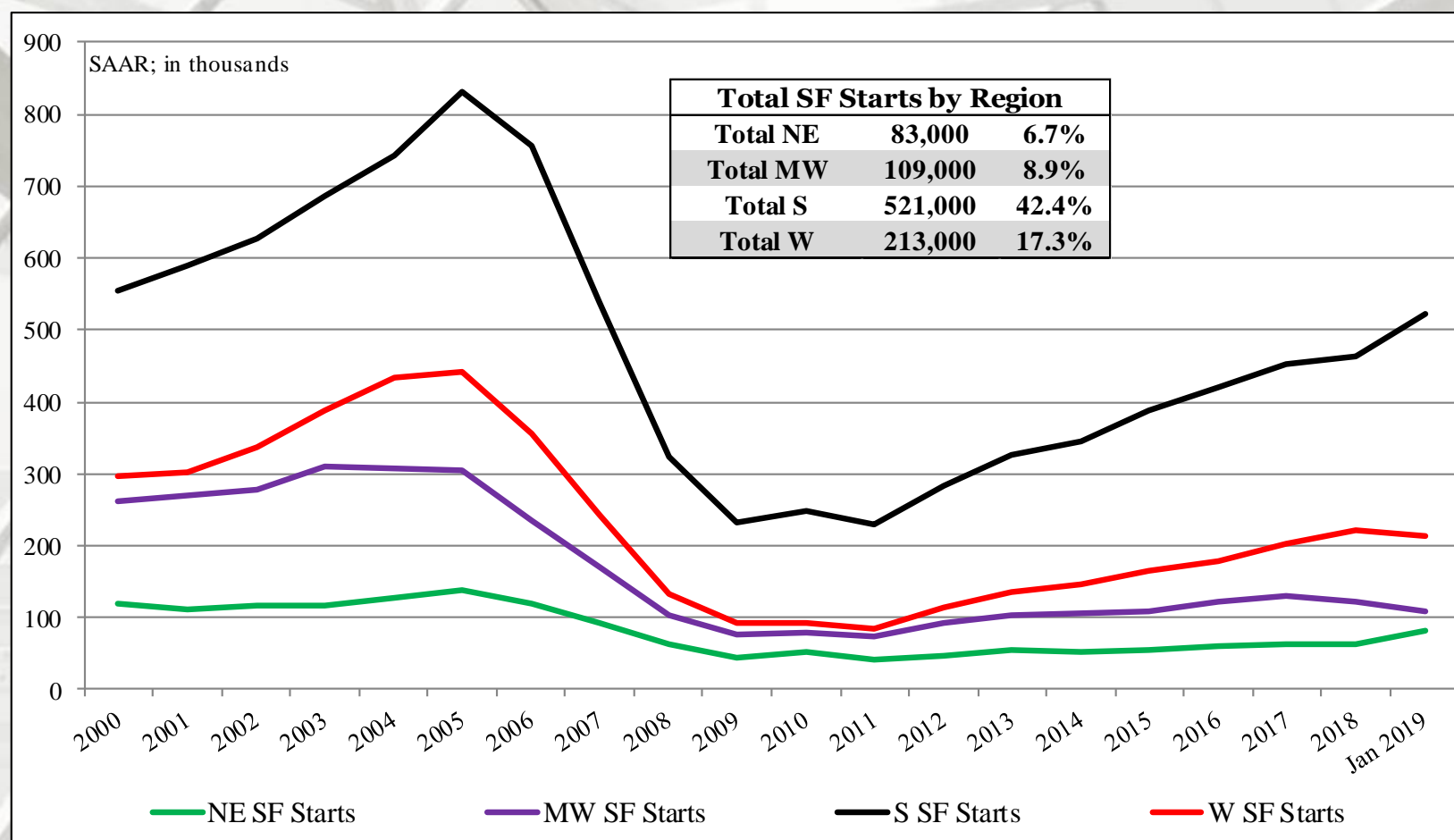
New Housing Starts by Region

	S Total	S SF	S MF**
January	700,000	521,000	179,000
December	615,000	451,000	164,000
2017	684,000	474,000	210,000
M/M change	13.8	15.5	9.1
Y/Y change	2.3	9.9	-14.8
	W Total	W SF	W MF
January	265,000	213,000	52,000
December	205,000	147,000	58,000
2017	389,000	228,000	161,000
M/M change	29.3	44.9	-10.3
Y/Y change	-31.9	-6.6	-67.7

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).

Total SF Housing Starts by Region

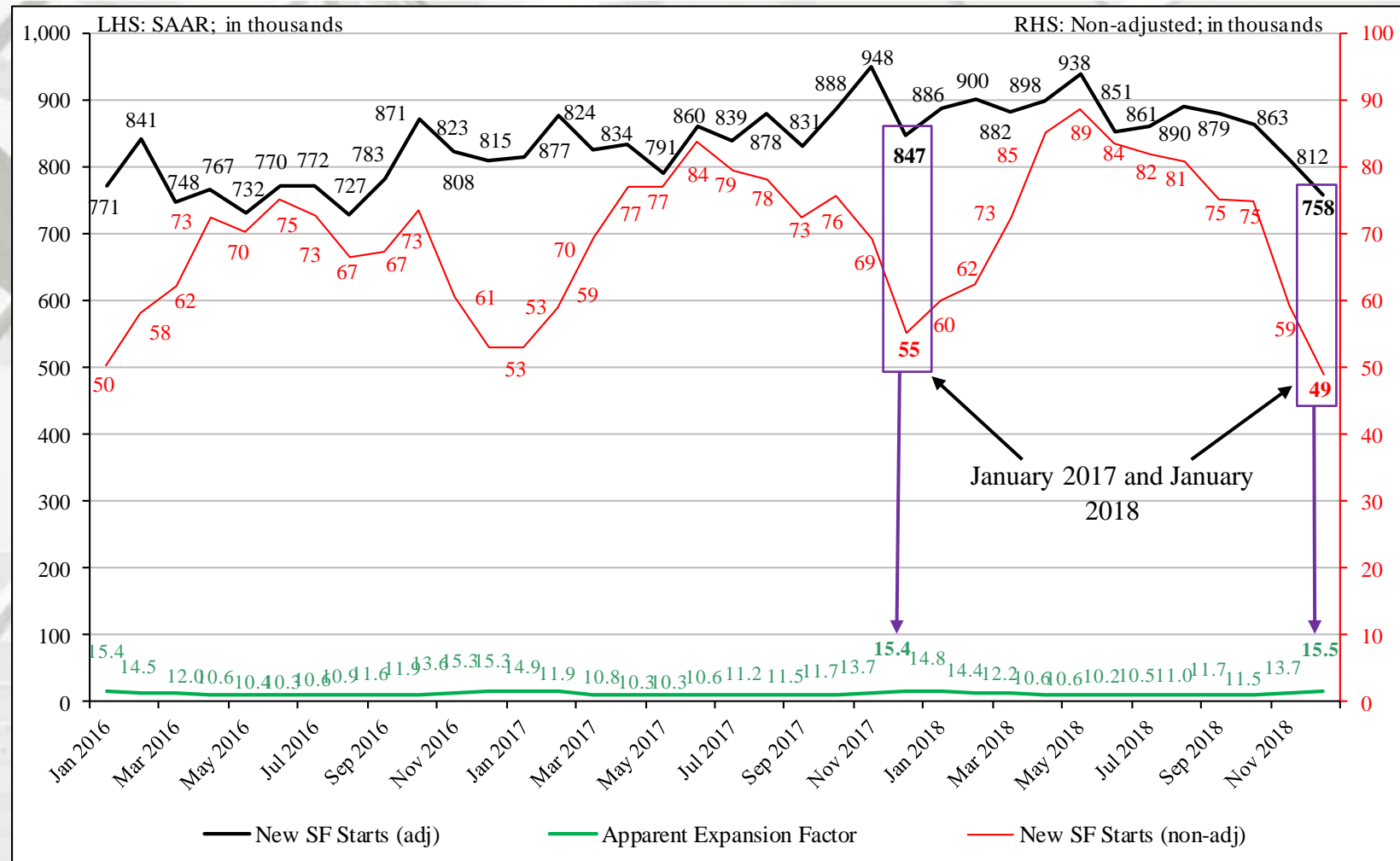


NE = Northeast, MW = Midwest, S = South, W = West

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

* Percentage of total starts.

Nominal & SAAR SF Starts

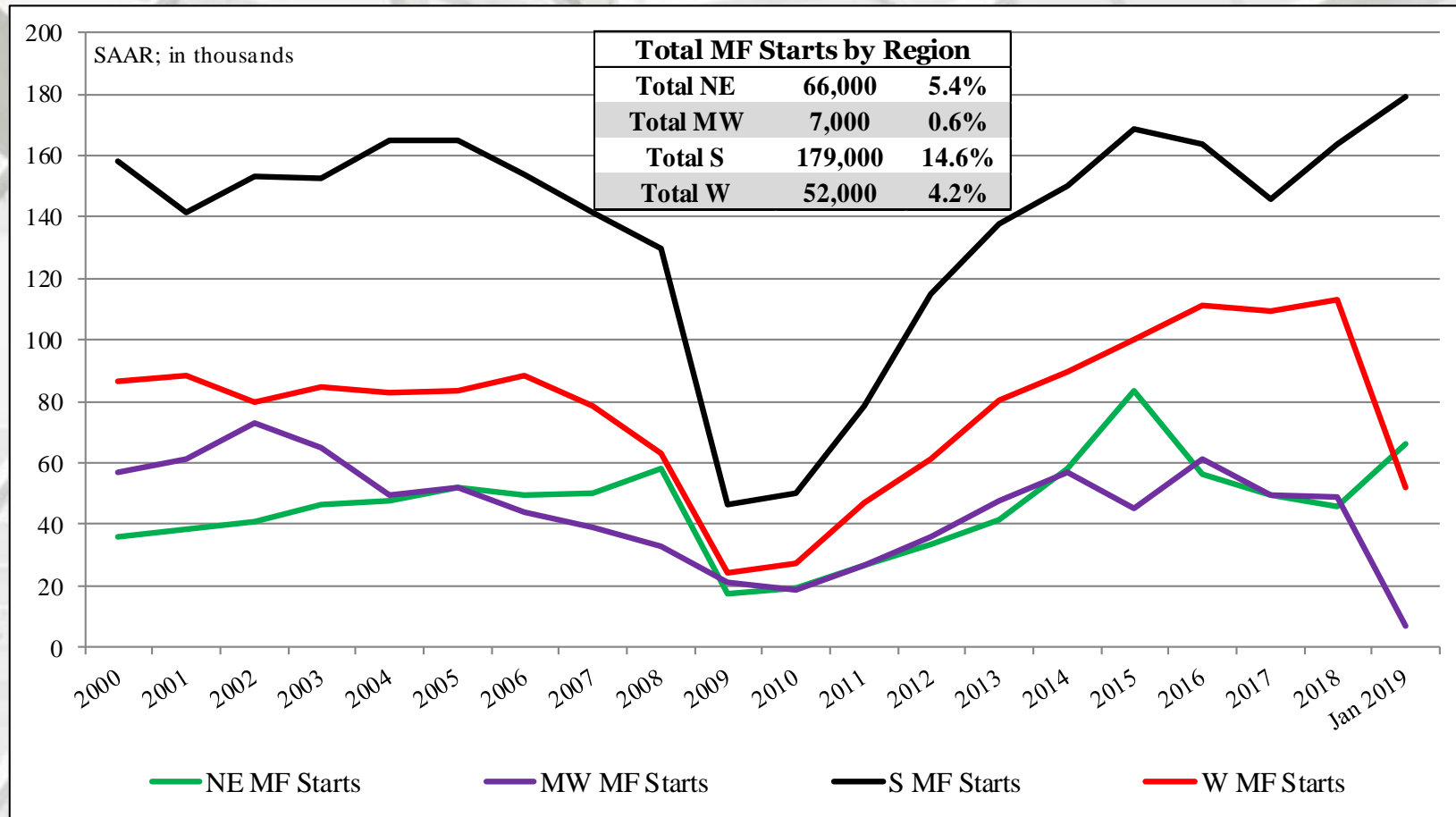


Nominal and Adjusted New SF Monthly Starts

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

MF Housing Starts by Region

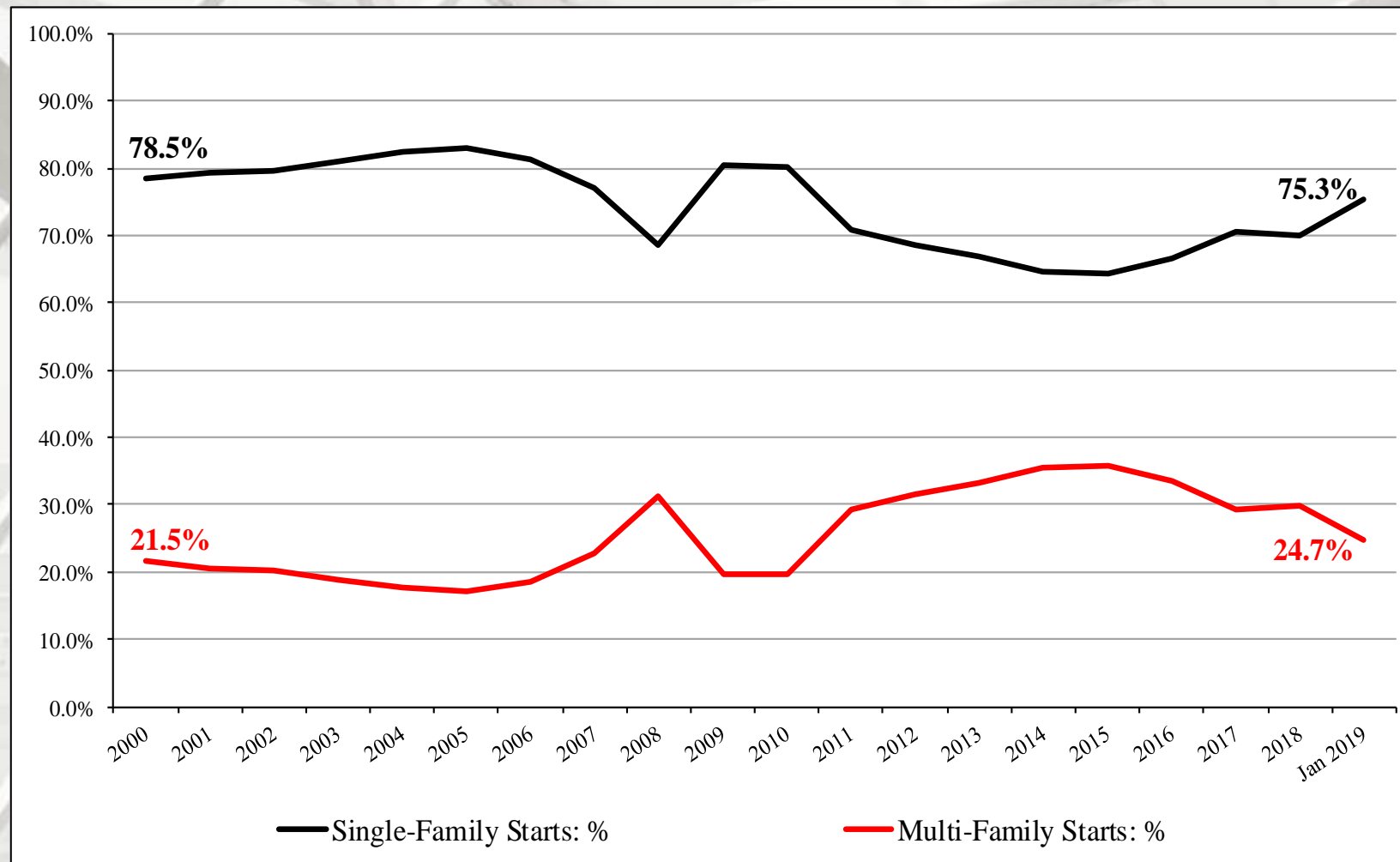


NE = Northeast, MW = Midwest, S = South, W = West

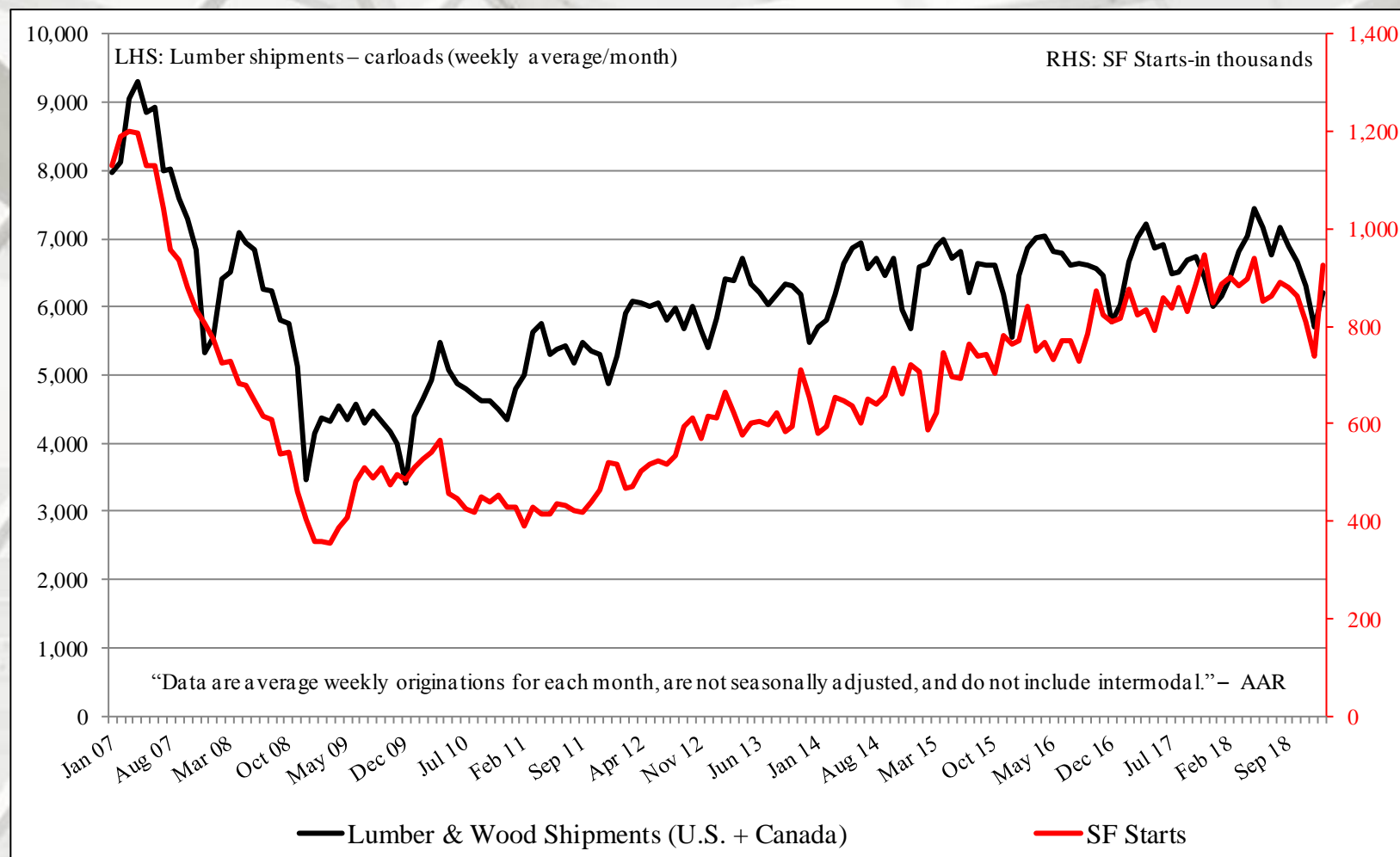
US DOC does not report 2 to 4 multi-family completions directly, this is an estimation (Total completions – SF completions).

* Percentage of total starts.

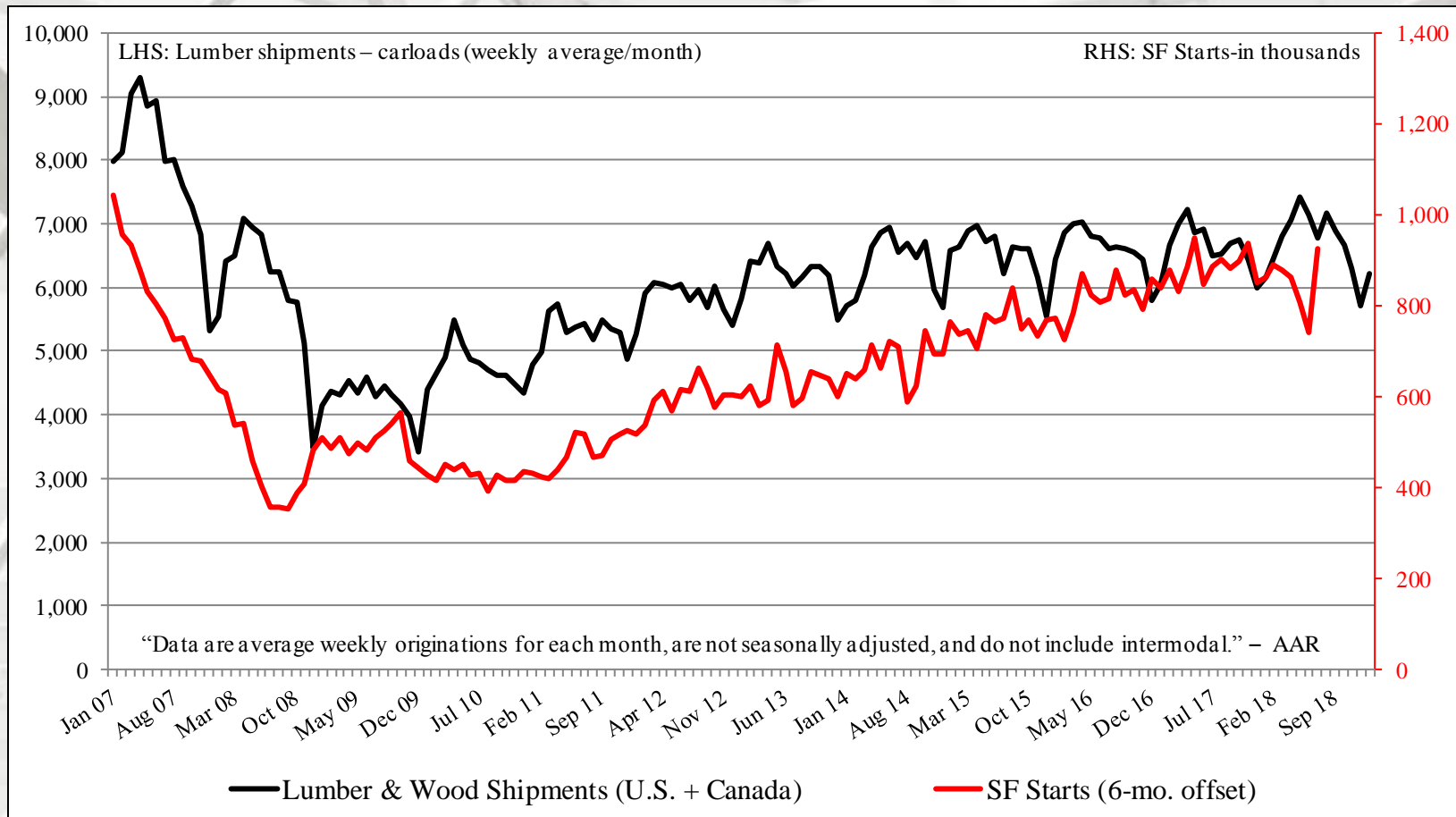
SF vs. MF Housing Starts (%)



Railroad Lumber & Wood Shipments vs. U.S. SF Housing Starts



Railroad Lumber & Wood Shipments vs. U.S. SF Housing Starts: 6-month Offset



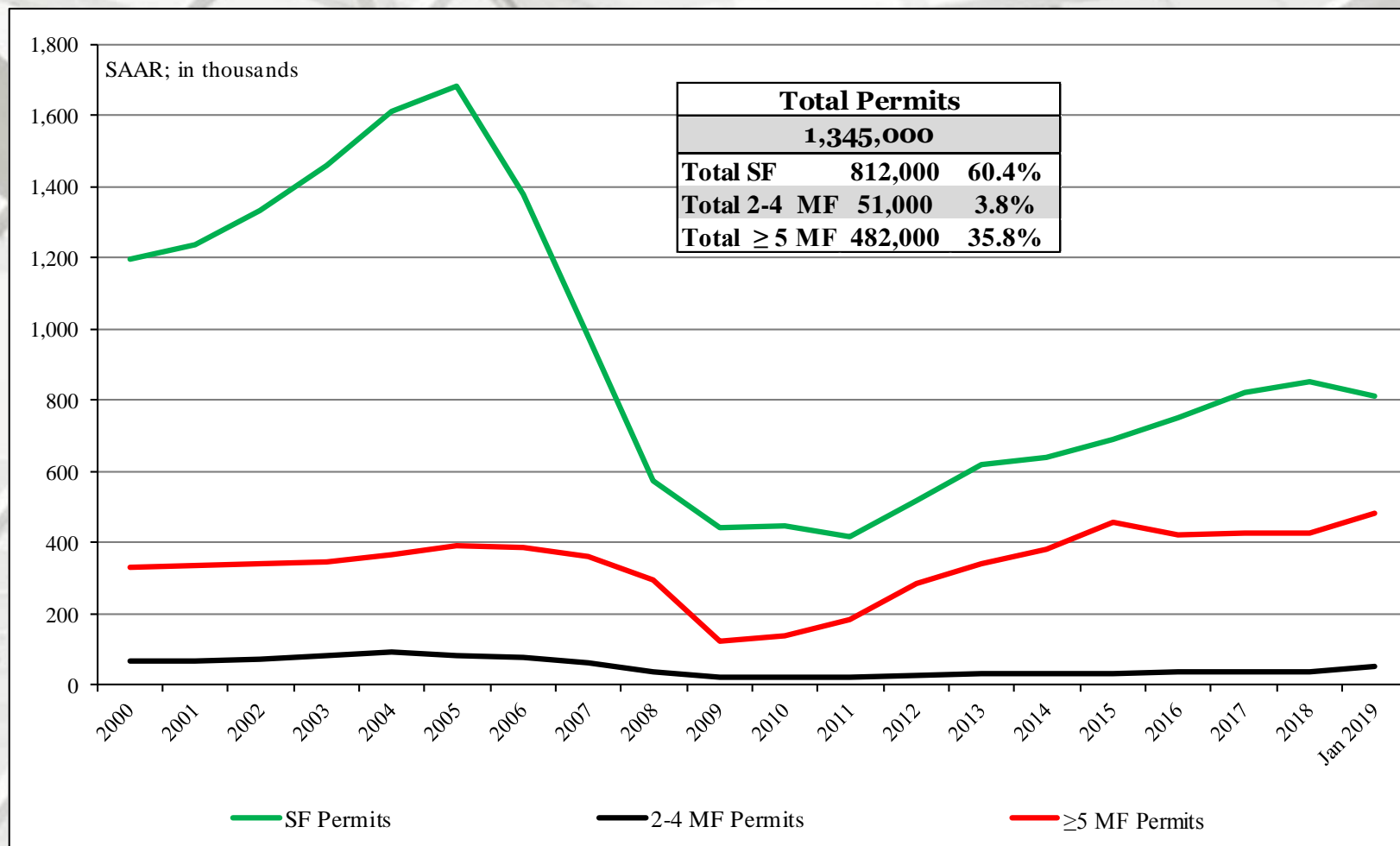
In this graph, January 2007 lumber shipments are contrasted with January 2007 SF starts, and continuing through January 2018 SF starts. The purpose is to discover if lumber shipments relate to future single-family starts. Also, it is realized that lumber and wood products are trucked; however, to our knowledge comprehensive trucking data is not available.

New Housing Permits

	Total Permits*	SF Permits	MF 2-4 unit Permits	MF ≥ 5 unit Permits
January	1,345,000	812,000	51,000	482,000
December	1,326,000	829,000	37,000	460,000
2018	1,366,000	870,000	45,000	451,000
M/M change	1.4	-2.1	37.8	4.8
Y/Y change	-1.5	-6.7	13.3	6.9

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

Total New Housing Permits

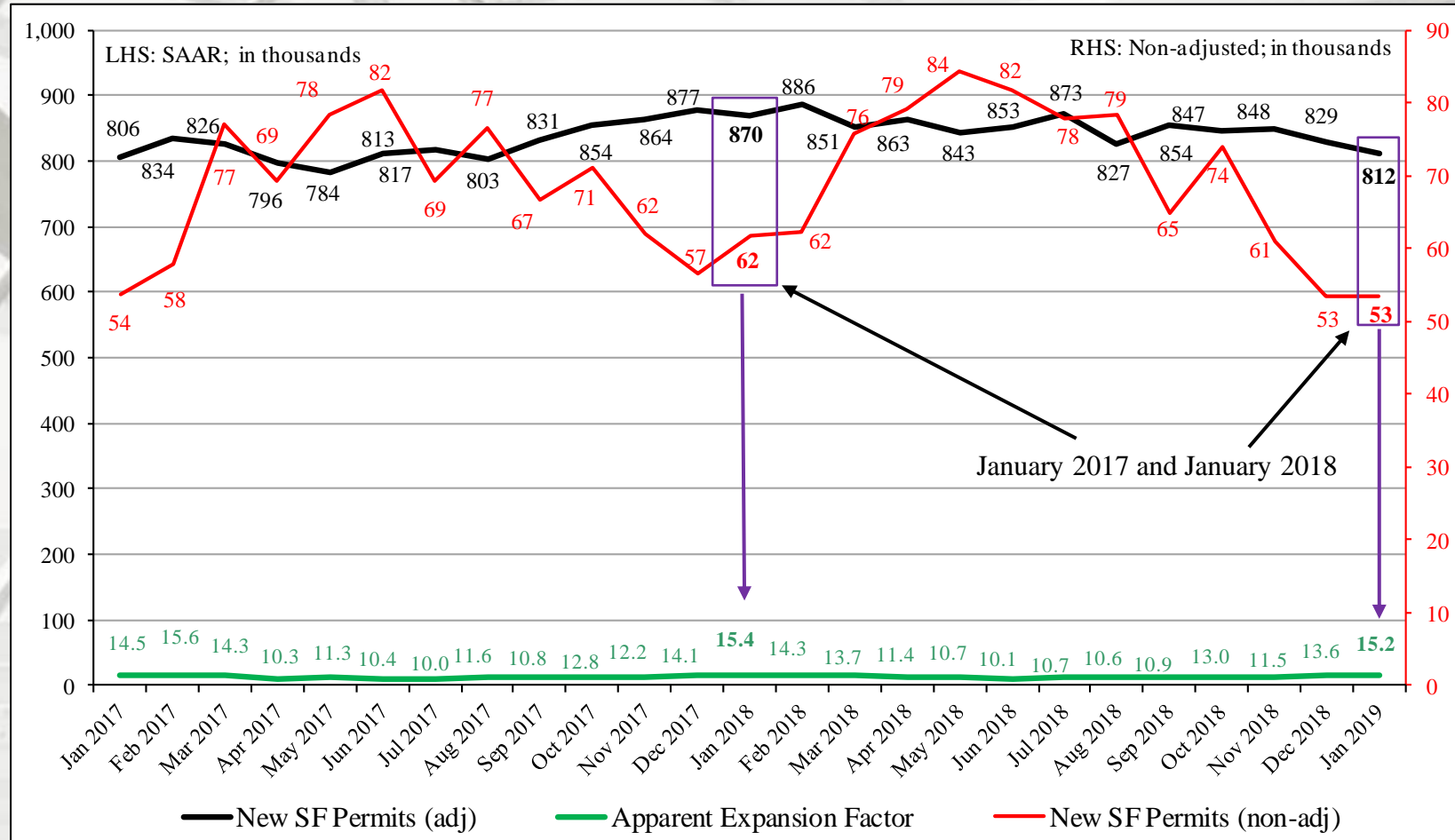


NE = Northeast, MW = Midwest, S = South, W = West

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

* Percentage of total permits.

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**
January	139,000	56,000	83,000
December	110,000	57,000	53,000
2018	115,000	48,000	67,000
M/M change	26.4	-1.8	56.6
Y/Y change	20.9	16.7	23.9
	MW Total*	MW SF	MW MF**
January	193,000	112,000	81,000
December	145,000	110,000	35,000
2018	176,000	124,000	52,000
M/M change	33.1	1.8	131.4
Y/Y change	9.7	-9.7	55.8

All data are SAAR

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

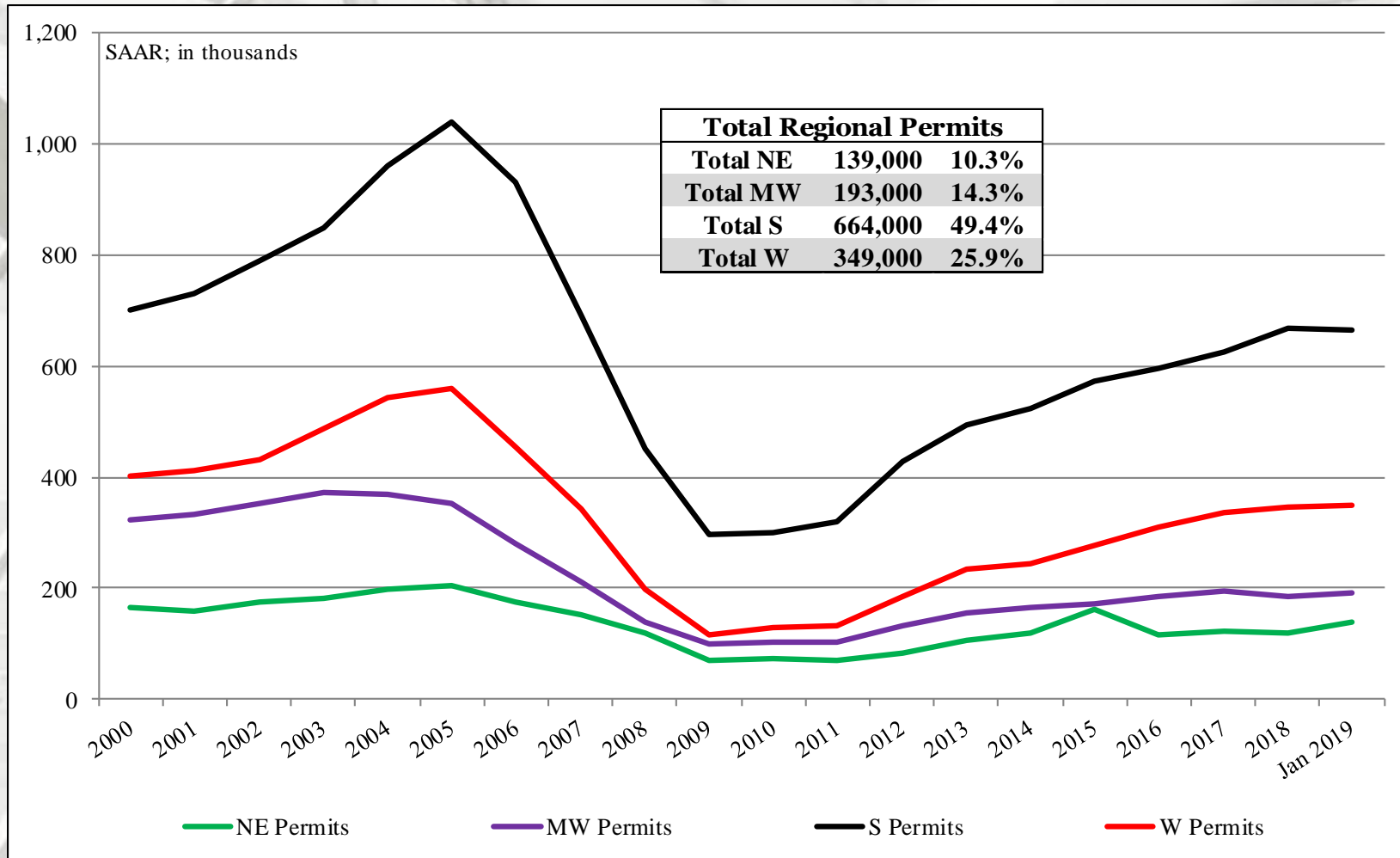
New Housing Permits by Region

	S Total*	S SF	S MF**
January	664,000	449,000	215,000
December	688,000	455,000	233,000
2018	697,000	470,000	227,000
M/M change	-3.5	-1.3	-7.7
Y/Y change	-4.7	-4.5	-5.3
	W Total*	W SF	W MF**
January	349,000	195,000	154,000
December	383,000	207,000	176,000
2018	378,000	228,000	150,000
M/M change	-8.9	-5.8	-12.5
Y/Y change	-7.7	-14.5	2.7

* All data are SAAR

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

Total Housing Permits by Region

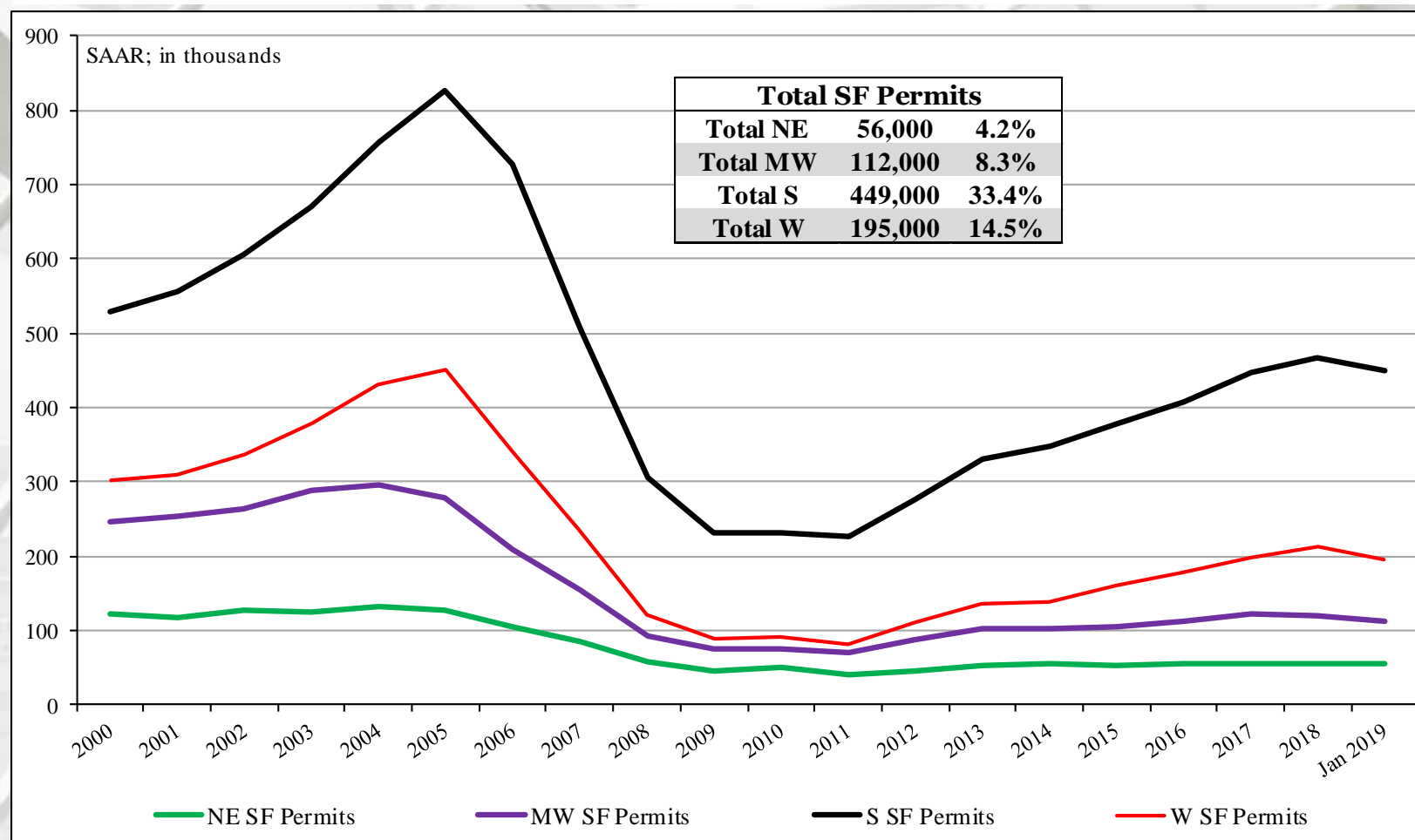


NE = Northeast, MW = Midwest, S = South, W = West

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

* Percentage of total permits.

SF Housing Permits by Region

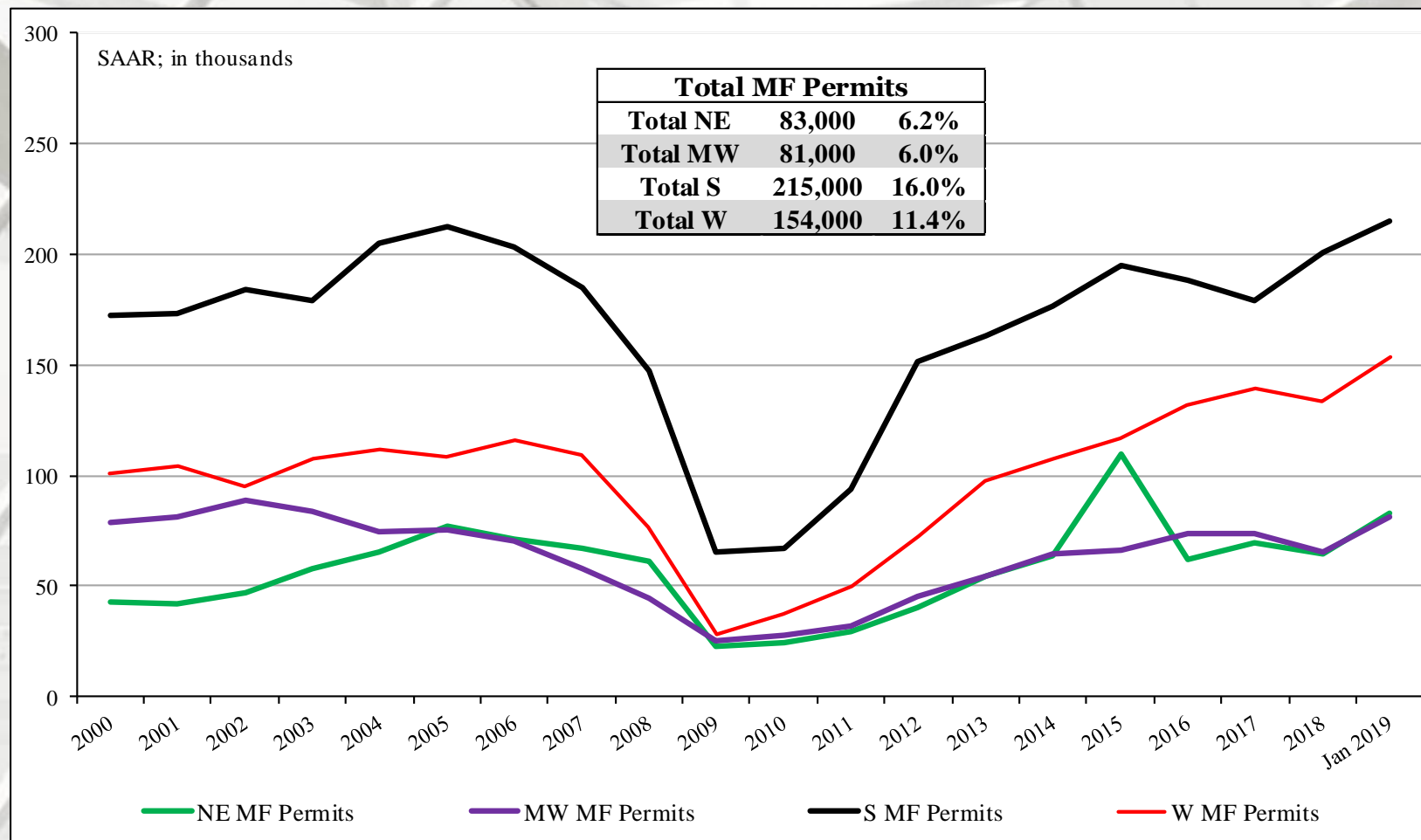


NE = Northeast, MW = Midwest, S = South, W = West

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

* Percentage of total permits.

MF Housing Permits by Region

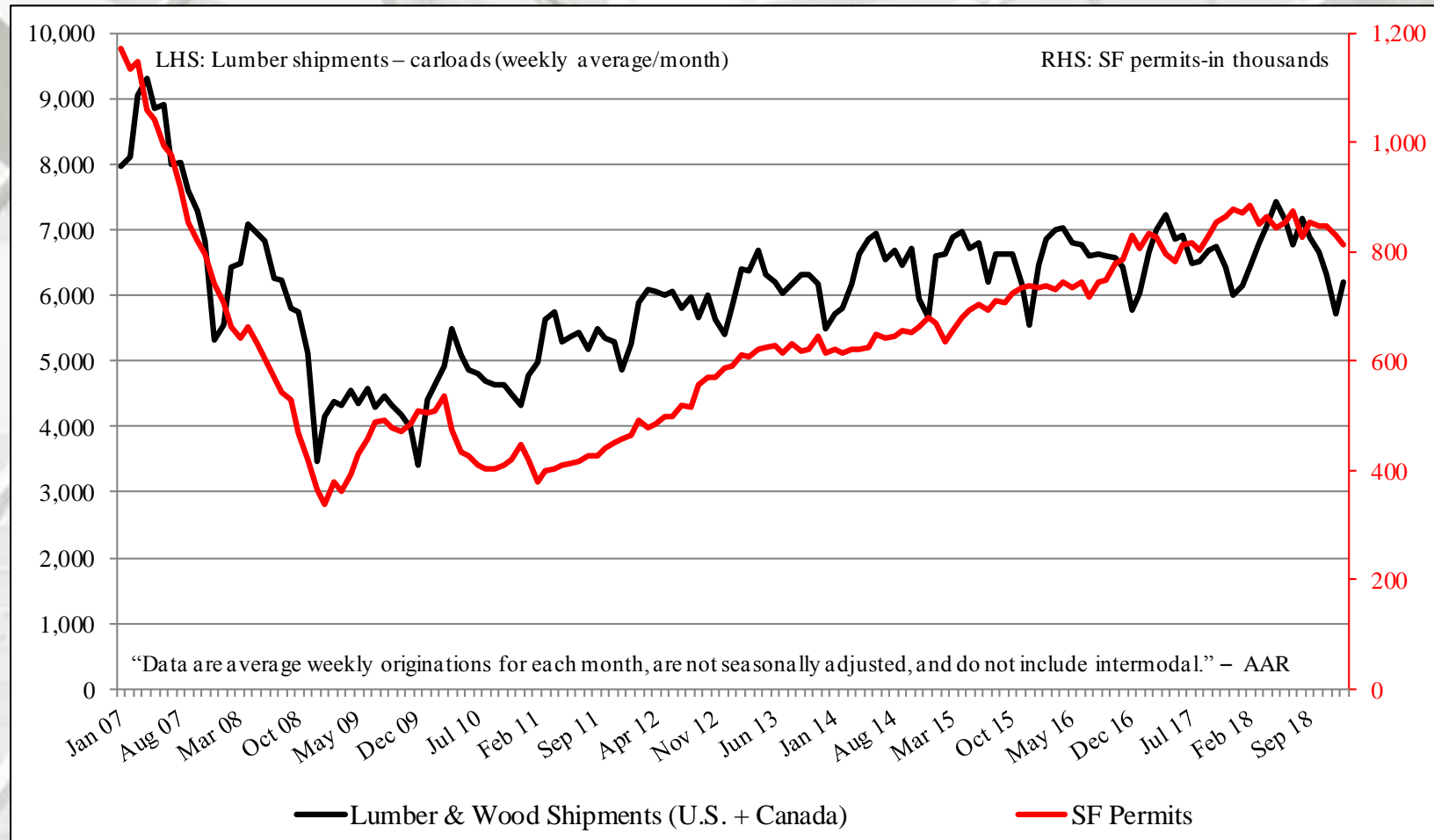


NE = Northeast, MW = Midwest, S = South, W = West

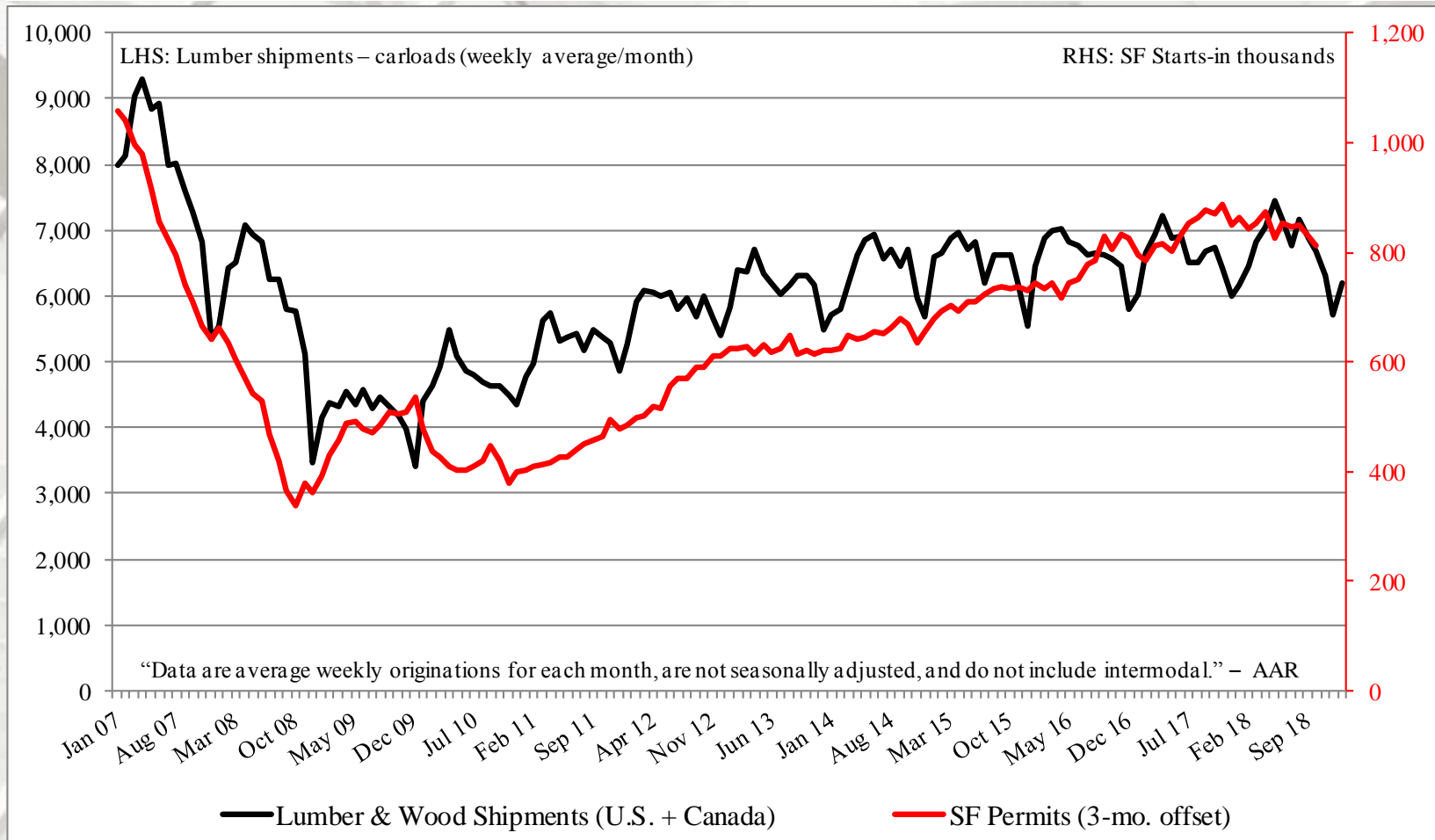
US DOC does not report 2 to 4 multi-family completions directly, this is an estimation (Total completions – SF completions).

* Percentage of total permits.

Railroad Lumber & Wood Shipments vs. U.S. SF Housing Permits



Railroad Lumber & Wood Shipments vs. U.S. SF Housing Permits: 3-month Offset



In this graph, January 2007 lumber shipments are contrasted with January 2007 SF permits, continuing through January 2018. The purpose is to discover if lumber shipments relate to future single-family permits. Also, it is realized that lumber and wood products are trucked; however, to our knowledge comprehensive trucking data is not available.

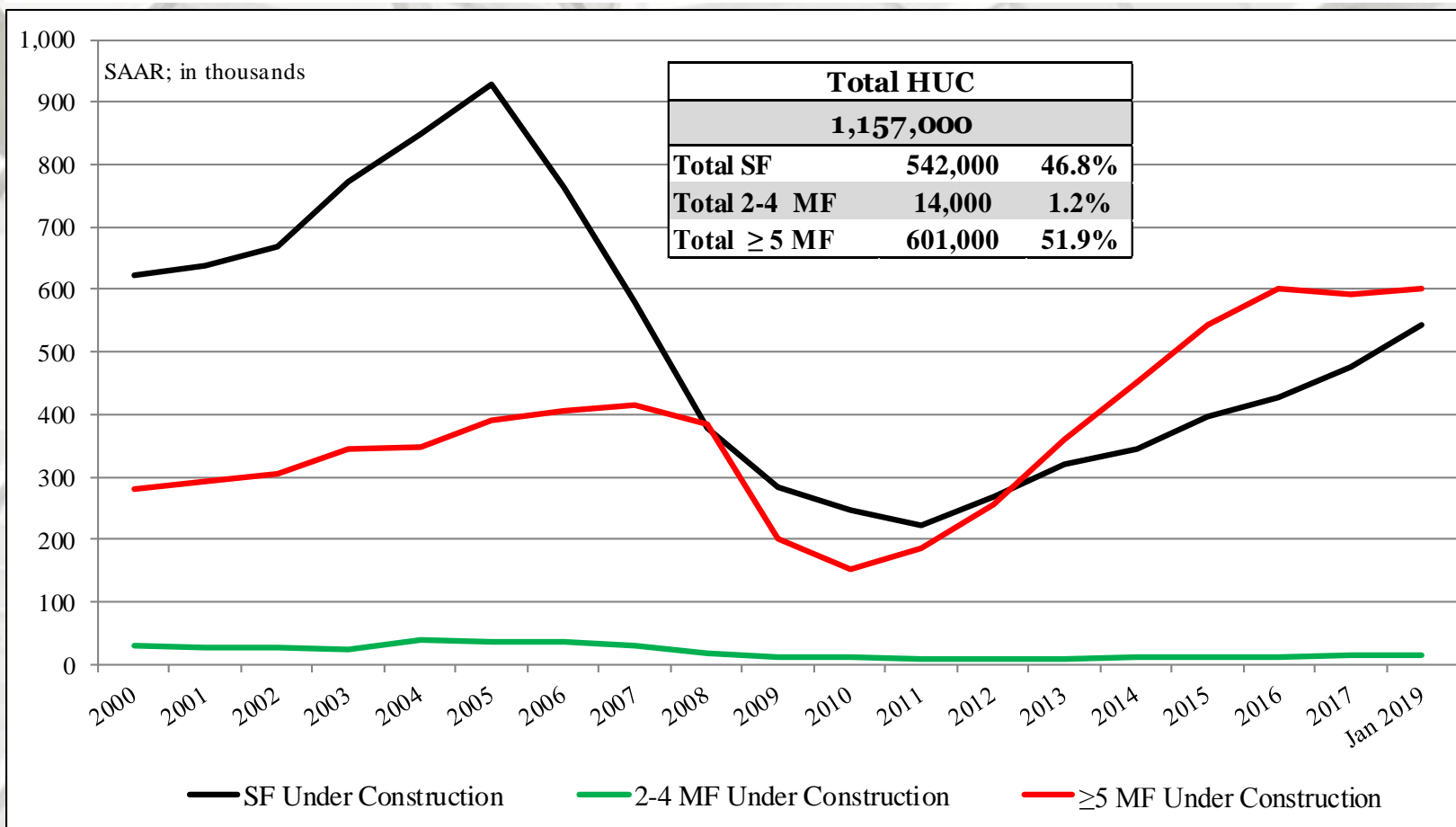
New Housing Under Construction (HUC)

	Total Under Construction*	SF Under Construction	MF 2-4 unit** Under Construction	MF ≥ 5 unit Under Construction
January	1,157,000	542,000	14,000	601,000
December	1,152,000	539,000	13,000	600,000
2018	1,117,000	502,000	11,000	604,000
M/M change	0.4	0.6	7.7	0.2
Y/Y change	3.6	8.0	27.3	-0.5

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

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

Total Housing Under Construction



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 under construction units.

New Housing Under Construction by Region

	NE Total	NE SF	NE MF**
January	191,000	65,000	126,000
December	188,000	63,000	125,000
2018	189,000	53,000	136,000
M/M change	1.6	3.2	0.8
Y/Y change	1.1	22.6	-7.4
	MW Total	MW SF	MW MF
January	156,000	83,000	73,000
December	154,000	81,000	73,000
2018	152,000	82,000	70,000
M/M change	1.3	2.5	0.0
Y/Y change	2.6	1.2	4.3

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).

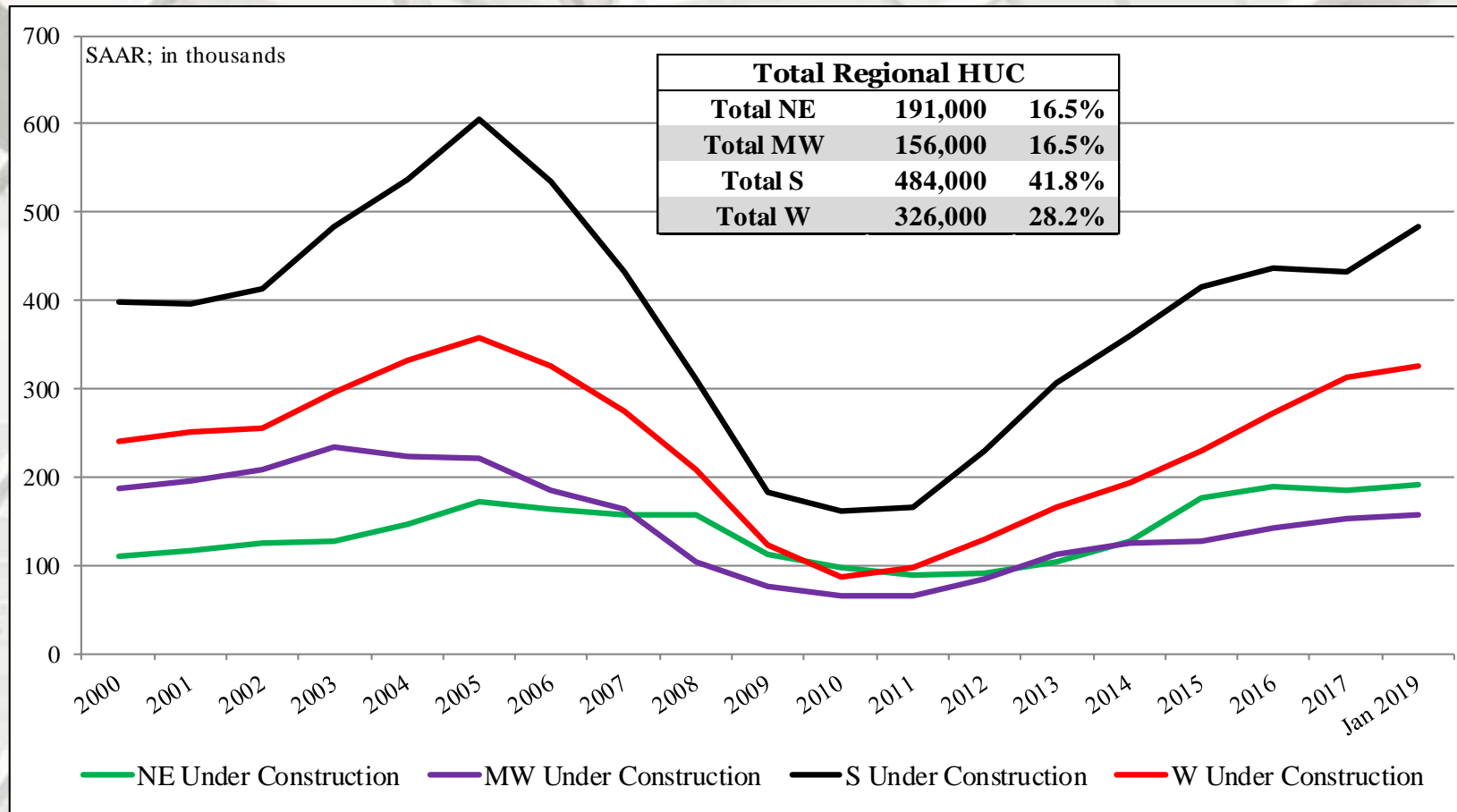
New Housing Under Construction by Region

	S Total	S SF	S MF**
January	484,000	252,000	232,000
December	476,000	250,000	226,000
2018	452,000	233,000	219,000
M/M change	1.7	0.8	2.7
Y/Y change	7.1	8.2	5.9
	W Total	W SF	W MF
January	326,000	142,000	184,000
December	334,000	145,000	189,000
2018	324,000	134,000	190,000
M/M change	-2.4	-2.1	-2.6
Y/Y change	0.6	6.0	-3.2

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

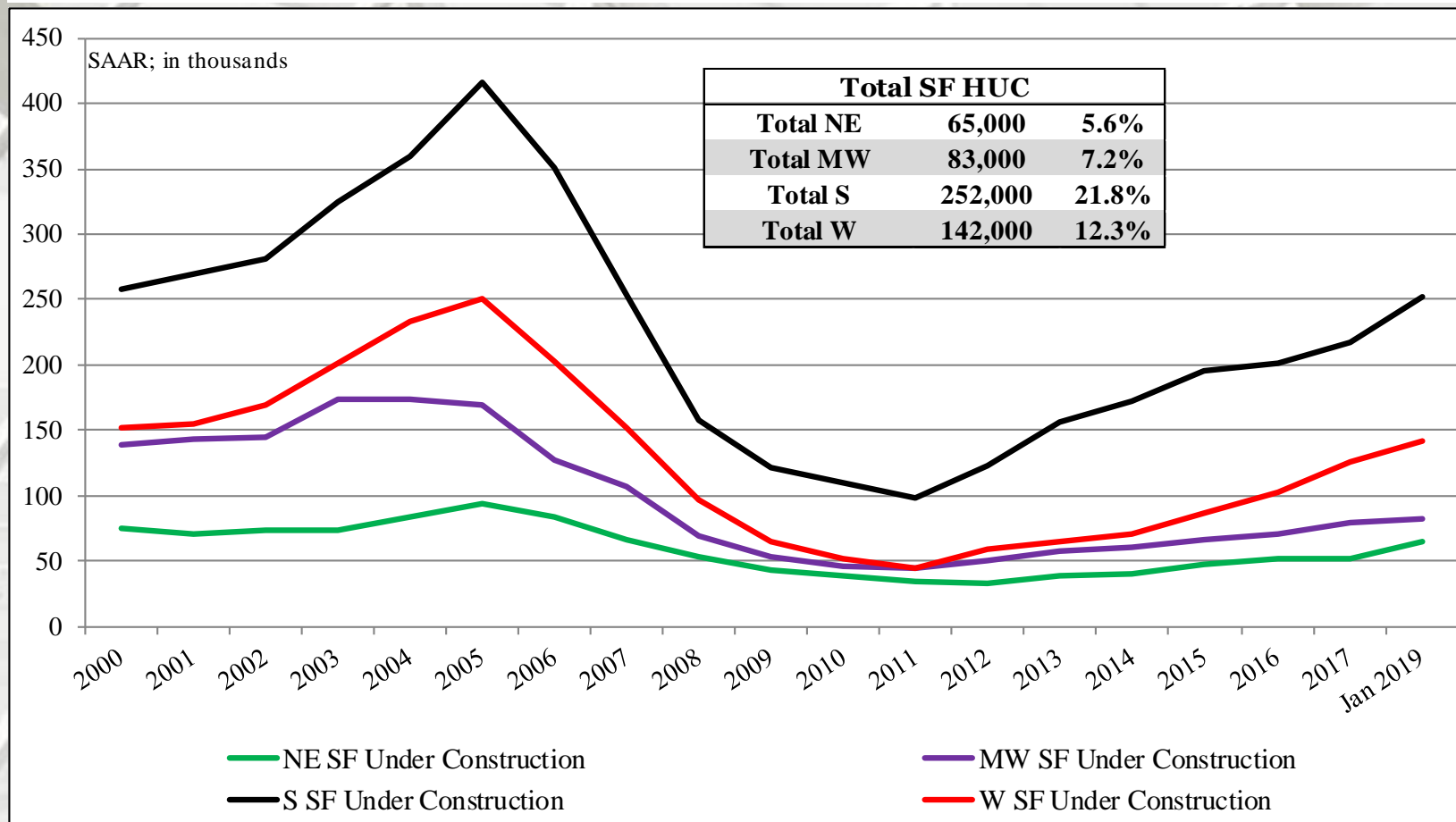


NE = Northeast, MW = Midwest, S = South, W = West

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

* Percentage of total housing under construction units.

SF Housing Under Construction by Region

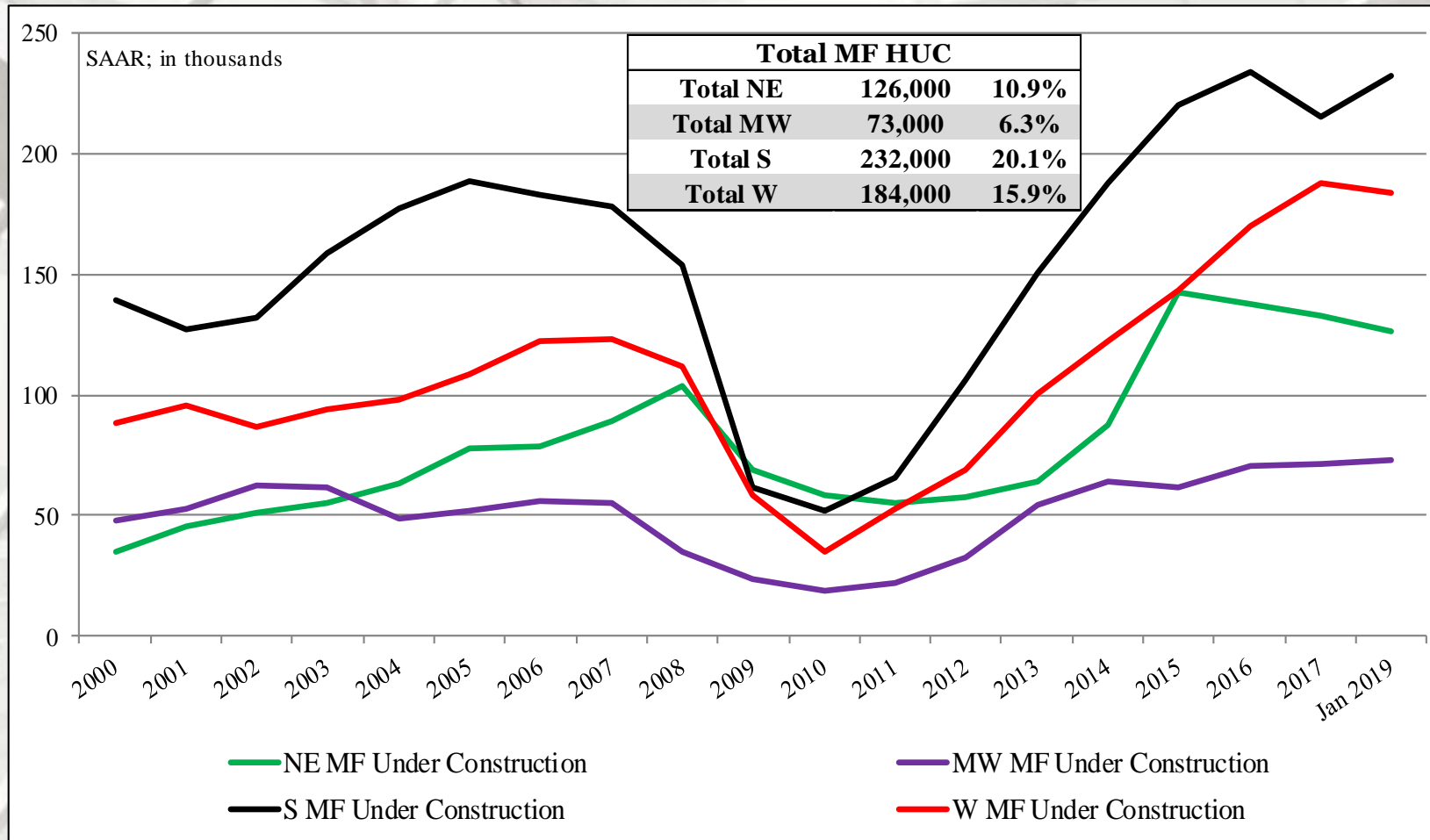


NE = Northeast, MW = Midwest, S = South, W = West

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

* 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 completions directly, this is an estimation (Total completions – SF completions).

* Percentage of total housing under construction units.

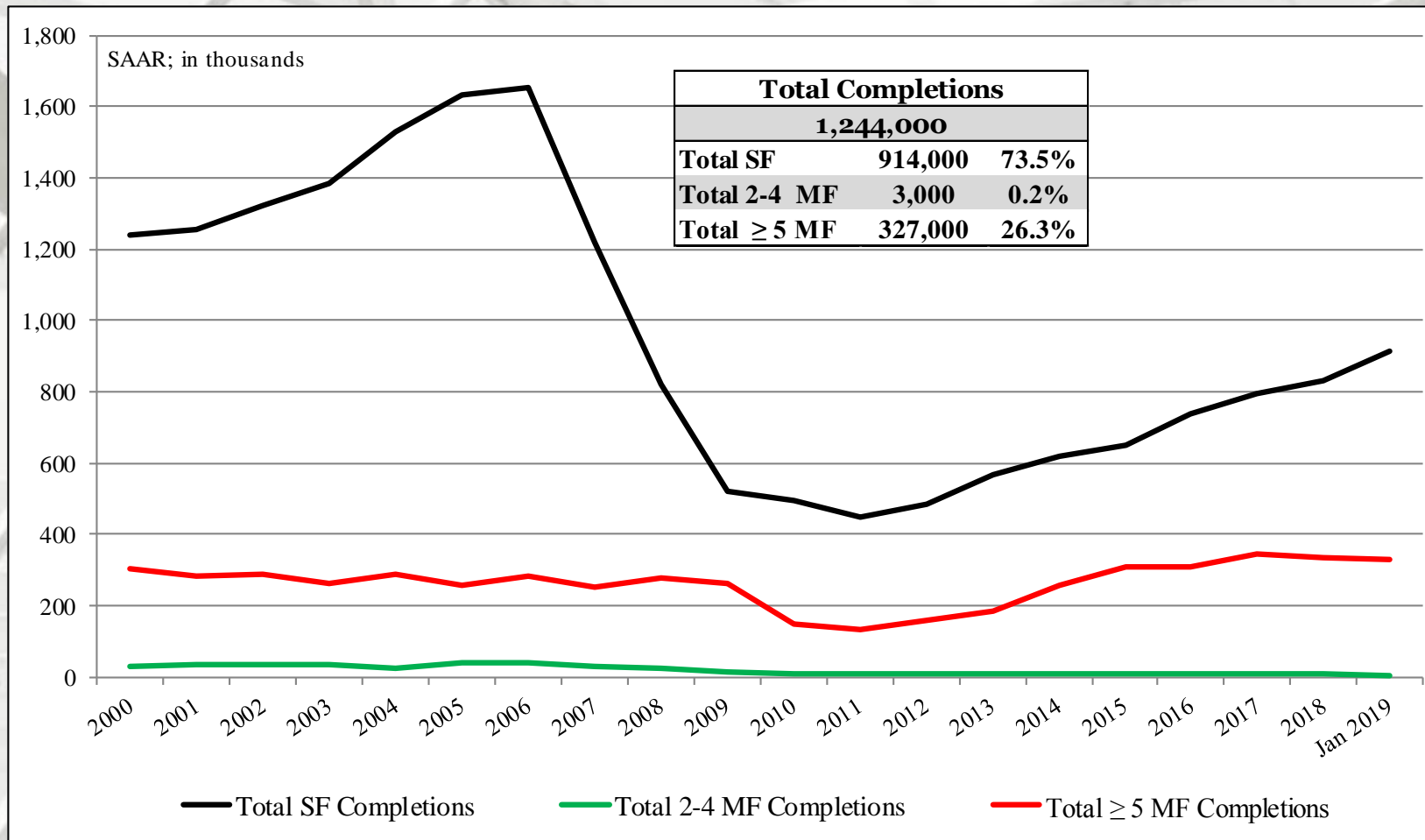
New Housing Completions

	Total Completions*	SF Completions	MF 2-4 unit**	MF ≥ 5 unit Completions
January	1,244,000	914,000	3,000	327,000
December	975,000	702,000	11,000	262,000
2018	1,218,000	859,000	11,000	348,000
M/M change	27.6%	30.2%	-72.7%	24.8%
Y/Y change	2.1%	6.4%	-72.7%	-6.0%

* 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)).

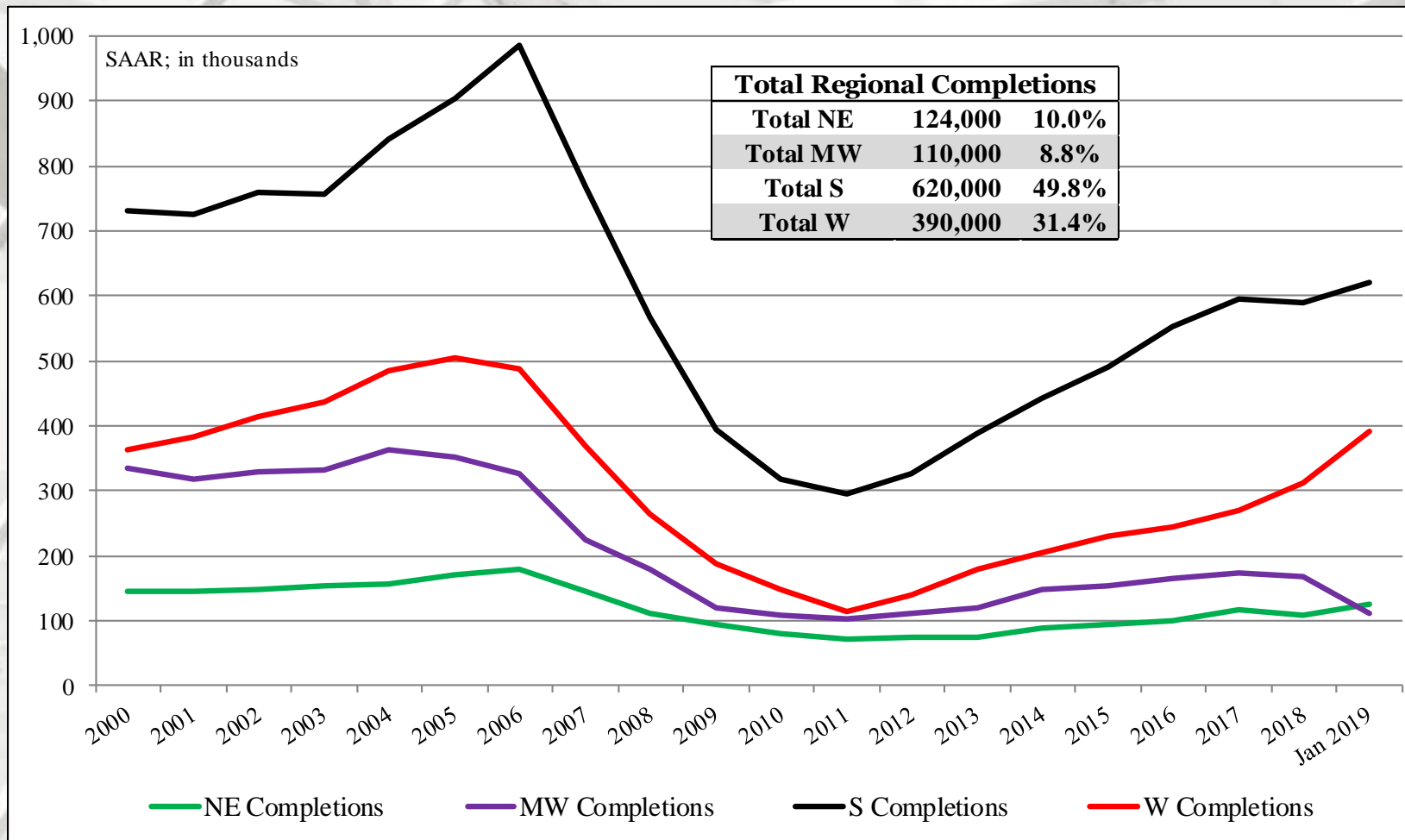
Total Housing Completions



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

* Percentage of total housing completions

Total Housing Completions by Region

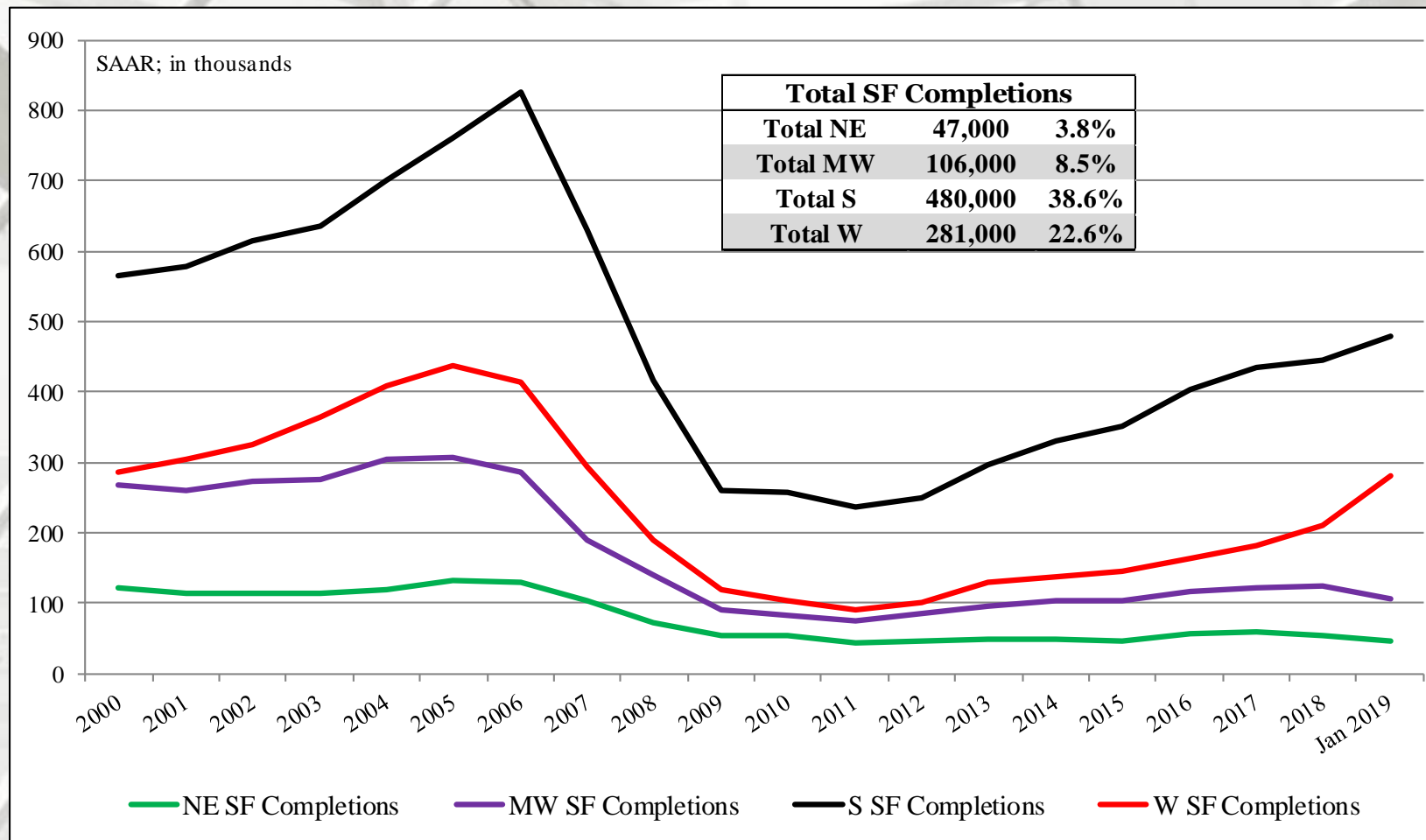


NE = Northeast, MW = Midwest, S = South, W = West

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

Total Housing SF 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 Housing Completions by Region

	NE Total	NE SF	NE MF**
January	124,000	47,000	77,000
December	71,000	44,000	27,000
2018	114,000	60,000	54,000
M/M change	74.6%	6.8%	185.2%
Y/Y change	8.8%	-21.7%	42.6%
	MW Total	MW SF	MW MF
January	110,000	106,000	4,000
December	118,000	96,000	22,000
2018	169,000	132,000	37,000
M/M change	-6.8%	10.4%	-81.8%
Y/Y change	-34.9%	-19.7%	-89.2%

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).

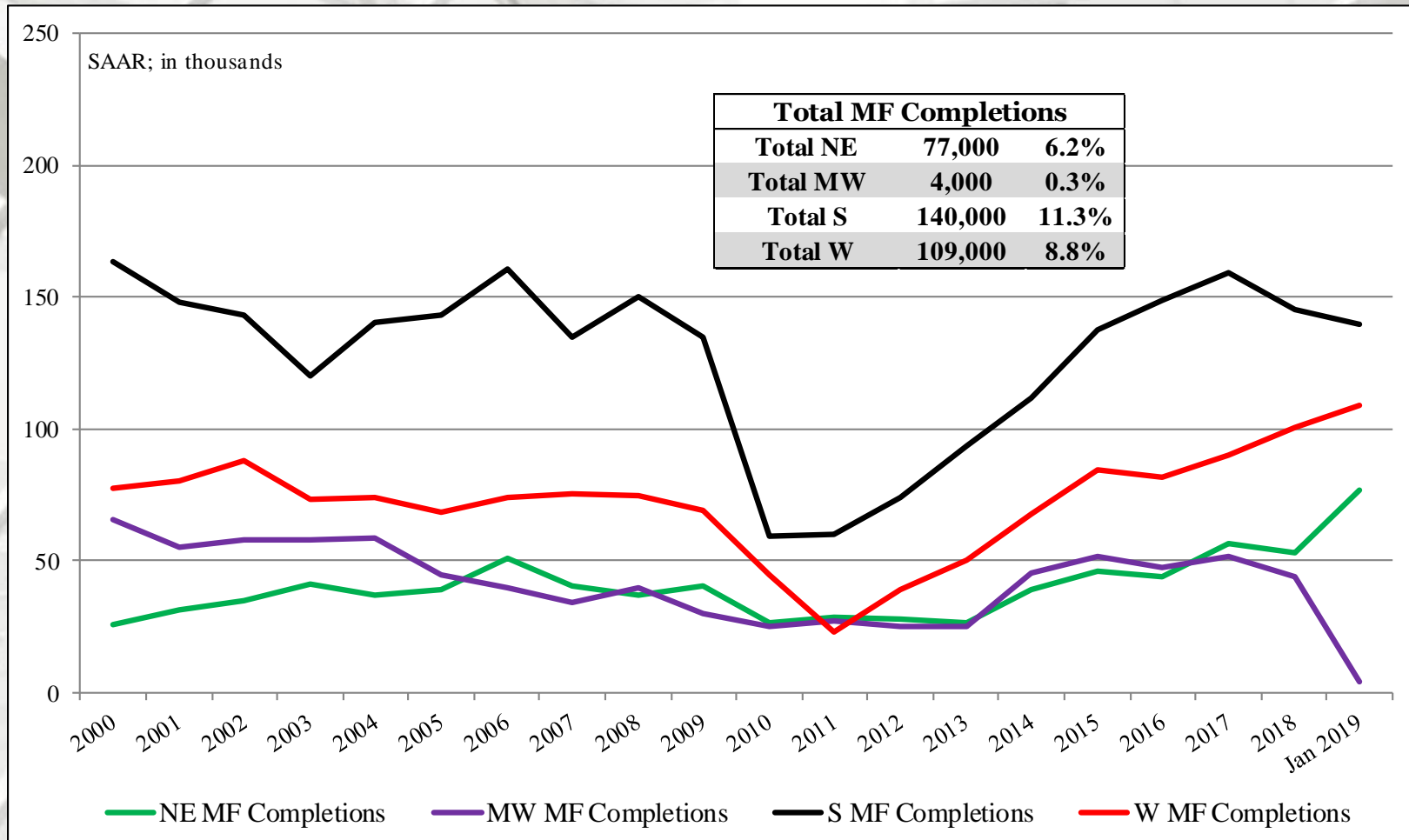
New Housing Completions by Region

	S Total	S SF	S MF**
January	620,000	480,000	140,000
December	502,000	371,000	131,000
2018	596,000	445,000	151,000
M/M change	23.5%	29.4%	6.9%
Y/Y change	4.0%	7.9%	-7.3%
	W Total	W SF	W MF
January	390,000	281,000	109,000
December	284,000	191,000	93,000
2018	339,000	222,000	117,000
M/M change	37.3%	47.1%	17.2%
Y/Y change	15.0%	26.6%	-6.8%

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).

New Housing MF 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

All data are SAAR; NE = Northeast and MW = Midwest; * Percentage of total housing completions.

New Single-Family House Sales

	New SF Sales*	Median Price	Mean Price	Month's Supply
January	607,000	\$317,200	\$373,100	6.6
December	652,000	\$319,100	\$374,000	6.3
2018	633,000	\$329,600	\$377,800	5.6
M/M change	-6.9%	-0.6%	-0.2%	4.8%
Y/Y change	-4.1%	-3.8%	-1.2%	17.9%

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

New SF sales were less than the consensus forecast³ of 612 m. The past three month's new SF sales data also were revised:

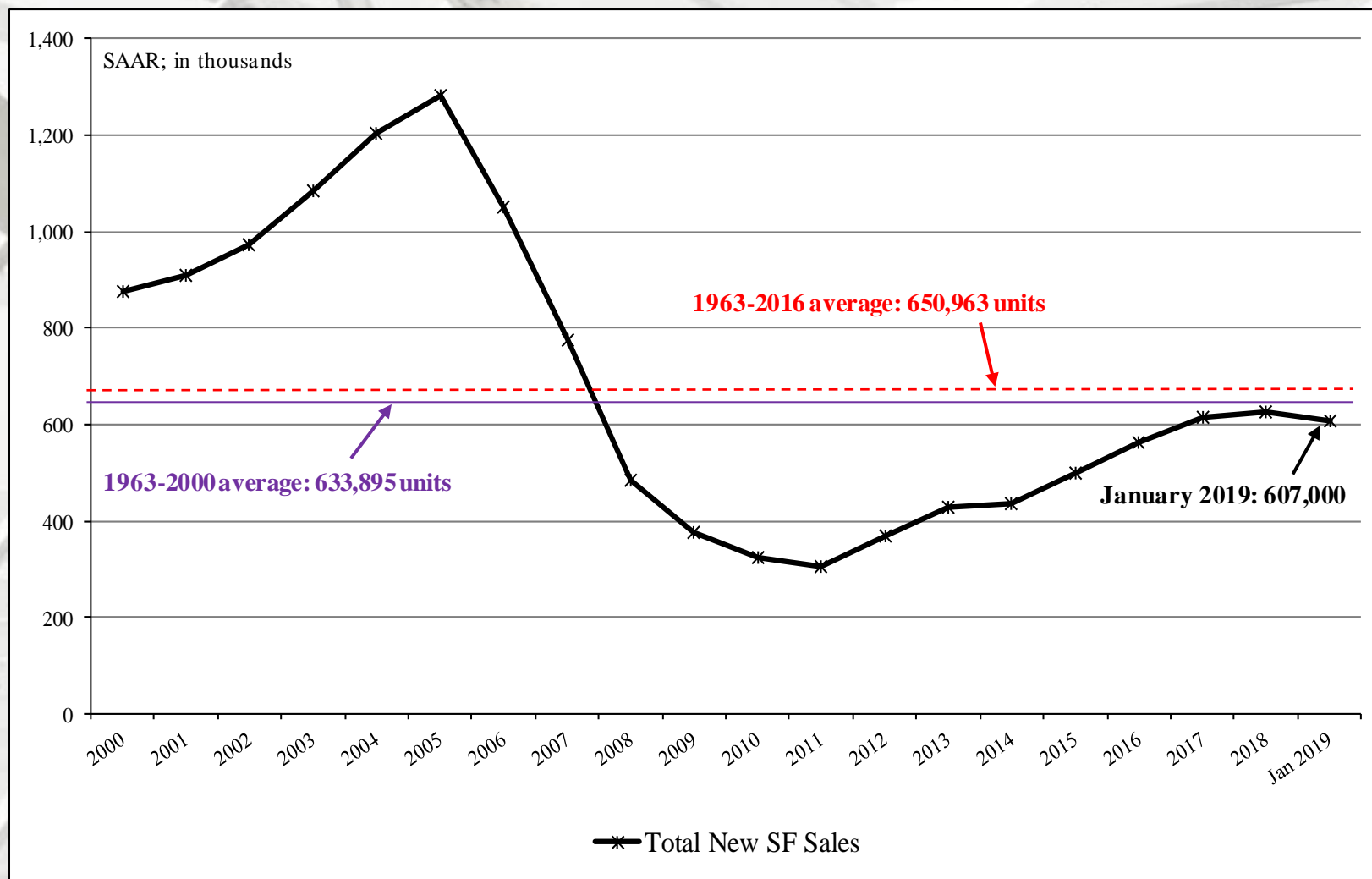
October initial:	544 m revised to 552 m;
November initial:	657 m revised to 628 m;
January initial:	621 m revised to 652 m.

Sources: ¹<http://www.census.gov/construction/nrc/pdf/newresconst.pdf>; 3/14/19; ²https://www.census.gov/construction/cpi/pdf/descpi_sold.pdf

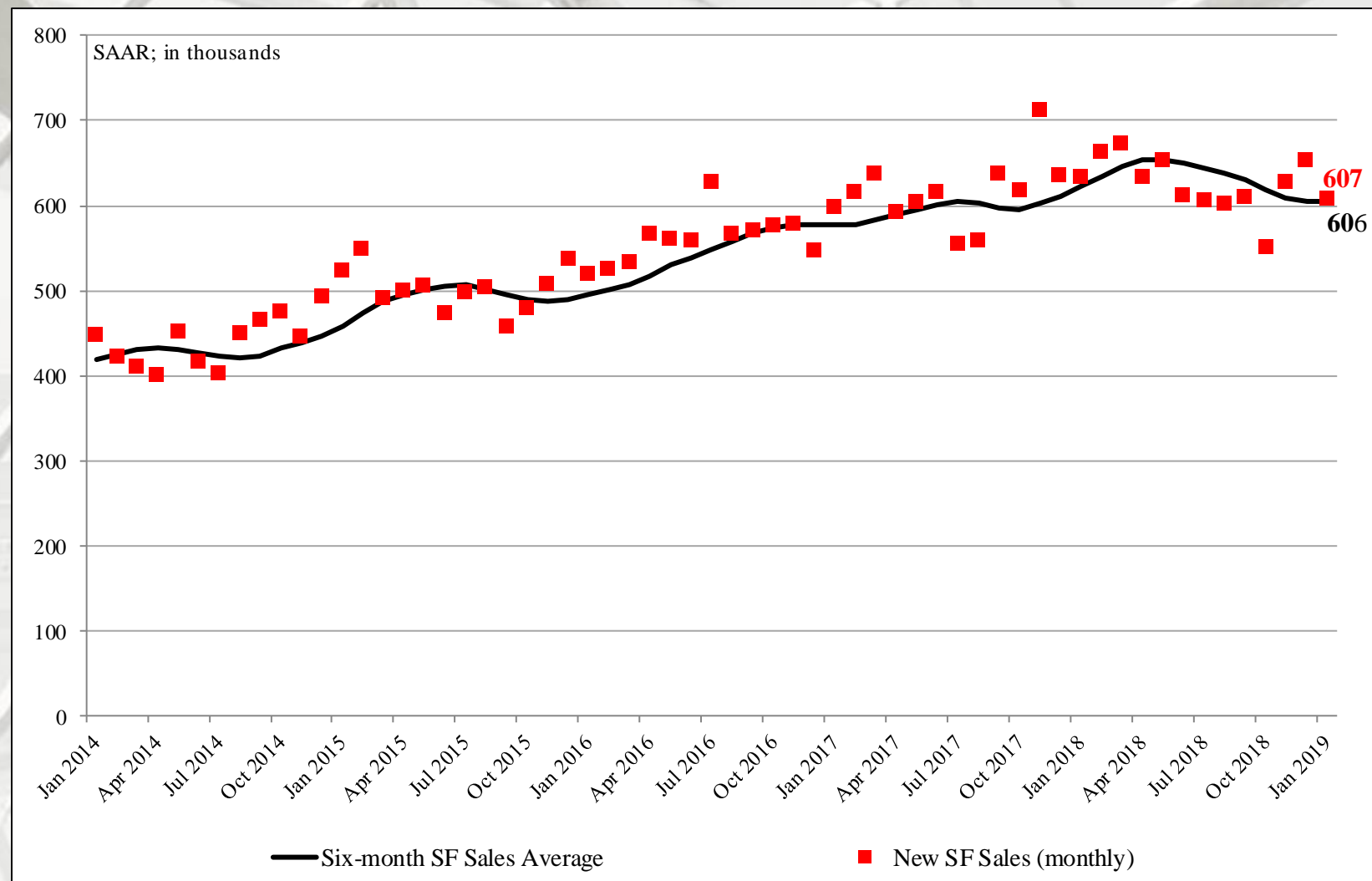
³ <http://us.econoday.com/>; 3/14/19

Return TOC

New SF House Sales



New SF Housing Sales: Six-month average & monthly



New SF House Sales by Region and Price Category

NE SF Sales MW SF Sales S SF Sales W SF Sales							
January	31,000		50,000		342,000		184,000
December	35,000		70,000		403,000		144,000
2018	35,000		86,000		322,000		190,000
M/M change	-11.4%		-28.6%		-15.1%		27.8%
Y/Y change	-11.4%		-41.9%		6.2%		-3.2%
		\$150 - ≤ \$150m	\$200 - \$199.9m 299.9m	\$300 - \$399.9m	\$400 - \$499.9m	\$500 - \$749.9m	≥ \$750m
January ^{1,2,3,4}	1,000	3,000	17,000	13,000	5,000	5,000	2,000
December	3,000	4,000	15,000	11,000	7,000	7,000	2,000
2018	2,000	6,000	13,000	12,000	7,000	7,000	2,000
M/M change	-66.7%	-25.0%	13.3%	18.2%	-28.6%	-28.6%	0.0%
Y/Y change	-50.0%	-50.0%	30.8%	8.3%	-28.6%	-28.6%	0.0%
New SF sales: %	2.2%	6.7%	37.8%	28.9%	11.1%	11.1%	4.4%

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 may not add to total because of rounding.

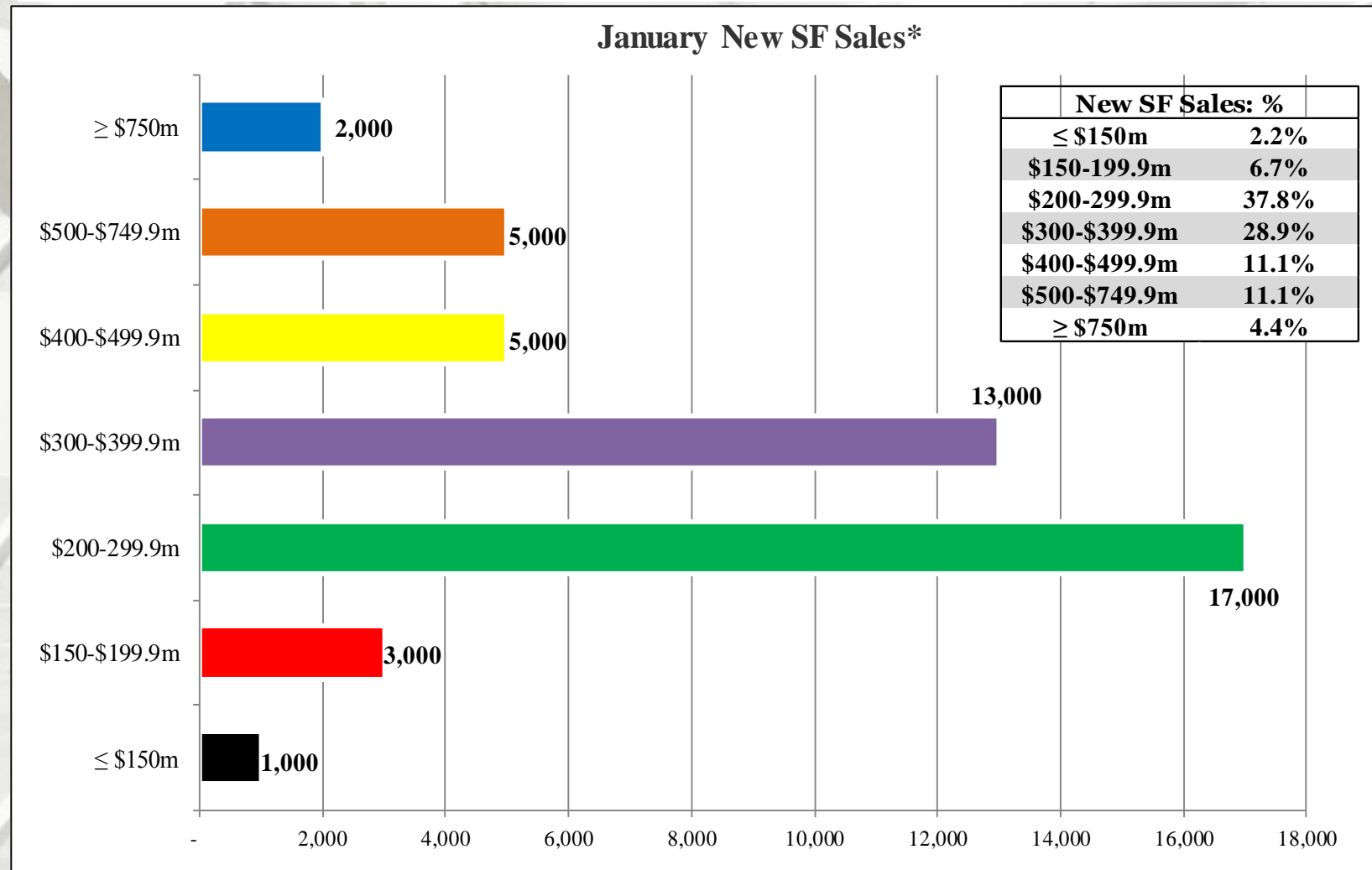
⁴ Housing prices are adjusted at irregular intervals.

Sources: ^{1,2,3} <http://www.census.gov/construction/nrc/pdf/newresconst.pdf>; 3/14/19;

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

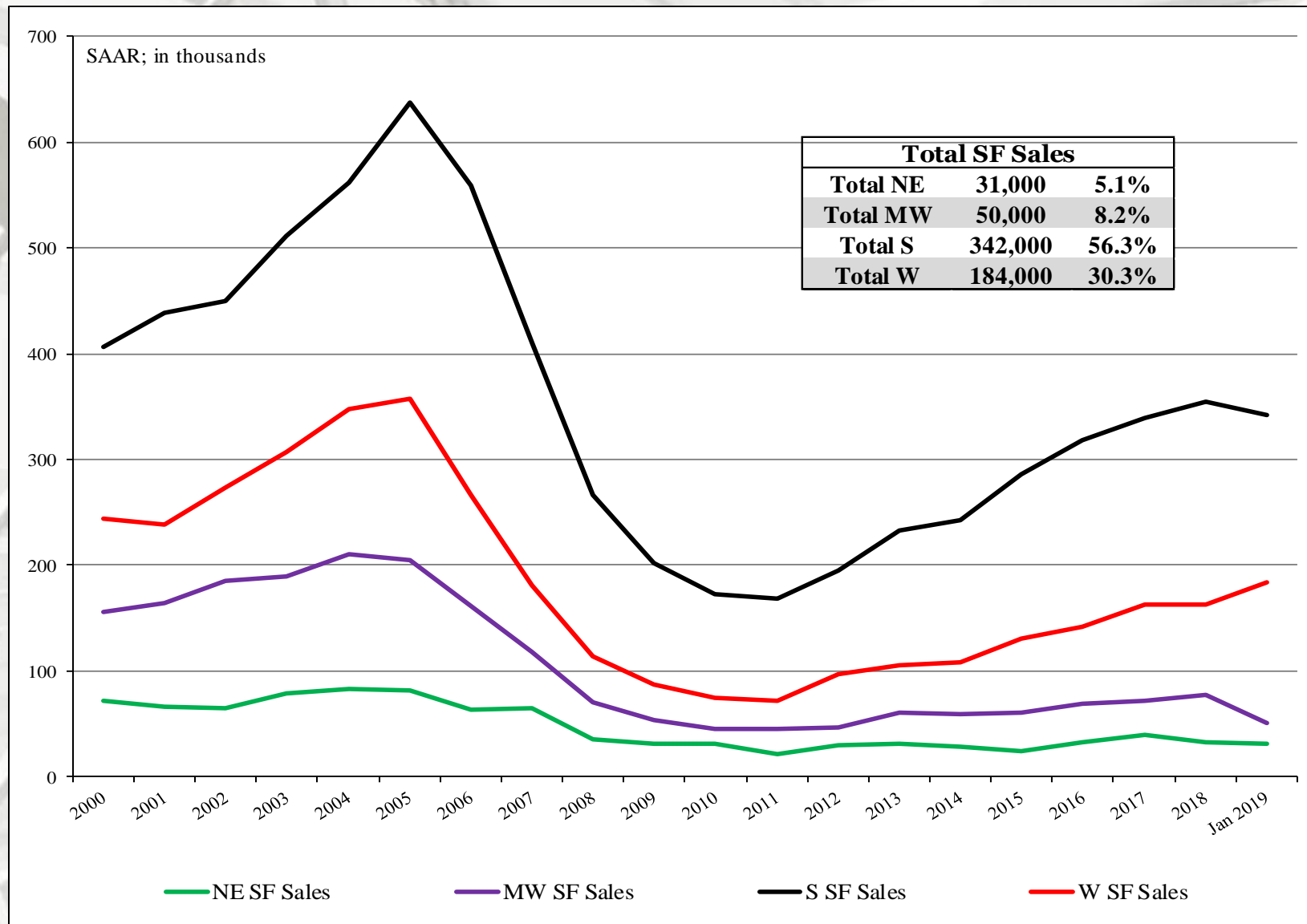
Return TOC

New SF House Sales



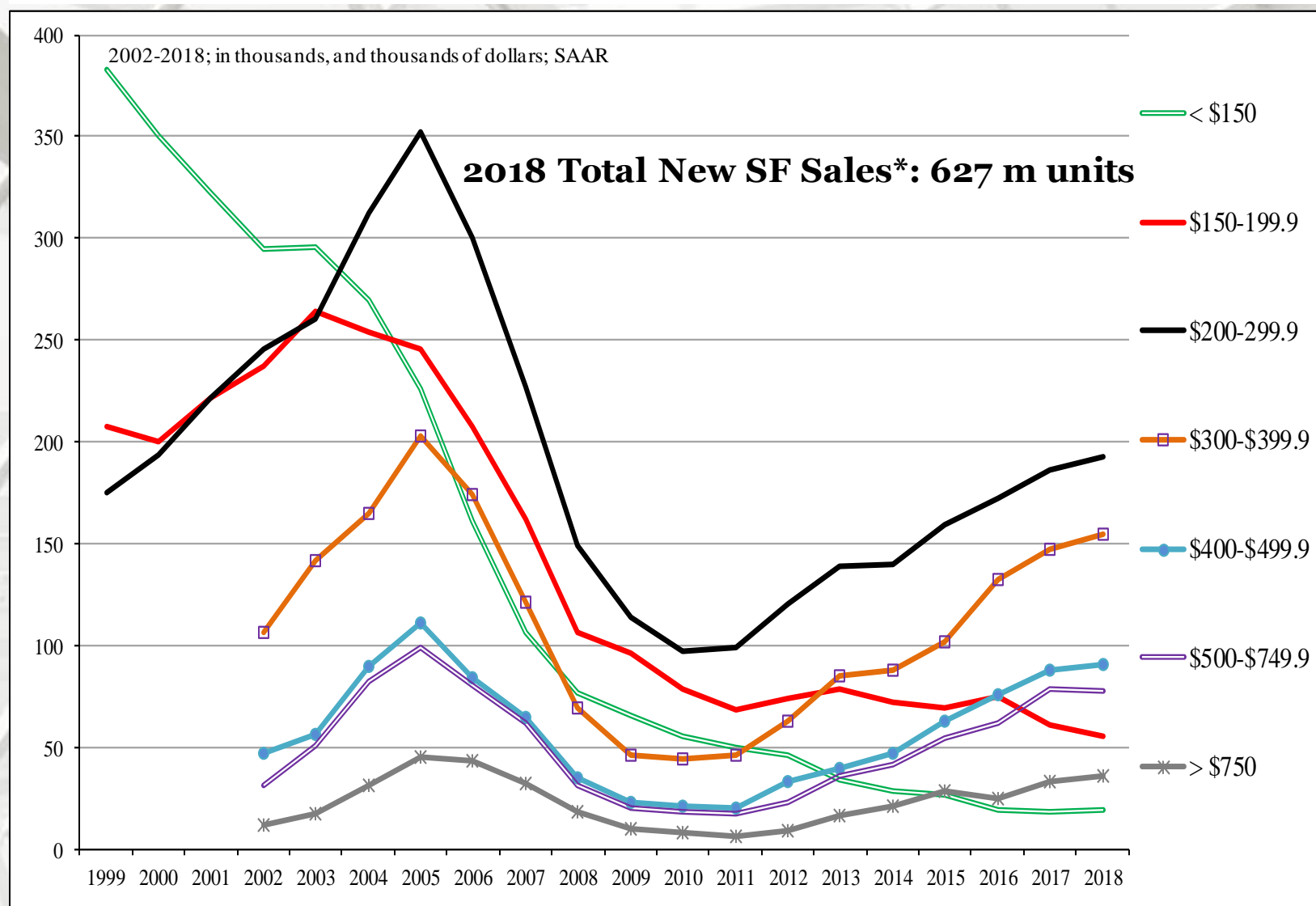
* Total new sales by price category and percent.

New SF House Sales by Region

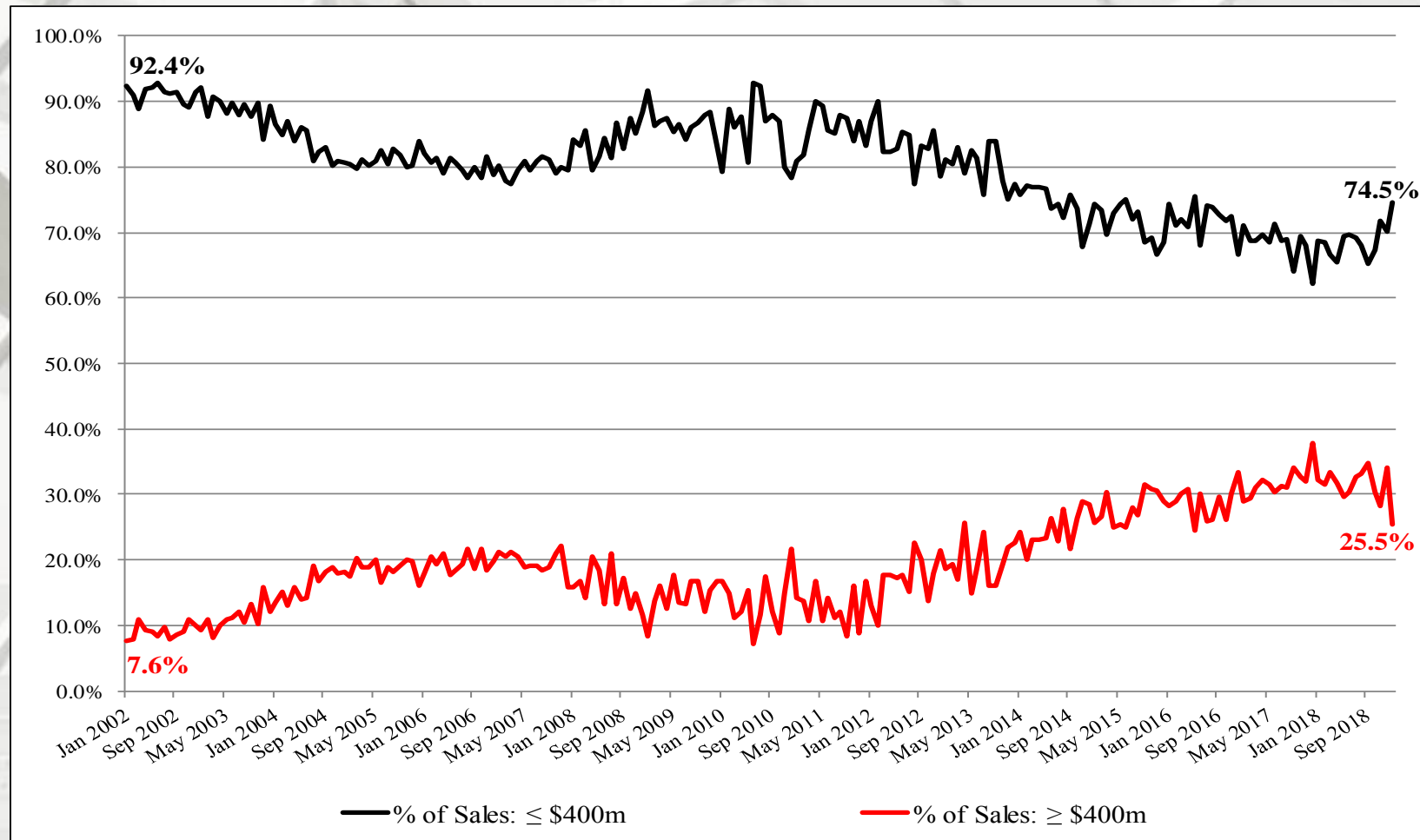


* Percentage of total new sales.

New SF House Sales by Price Category



New SF House Sales



New SF Sales \$400m houses: 2002 – January 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

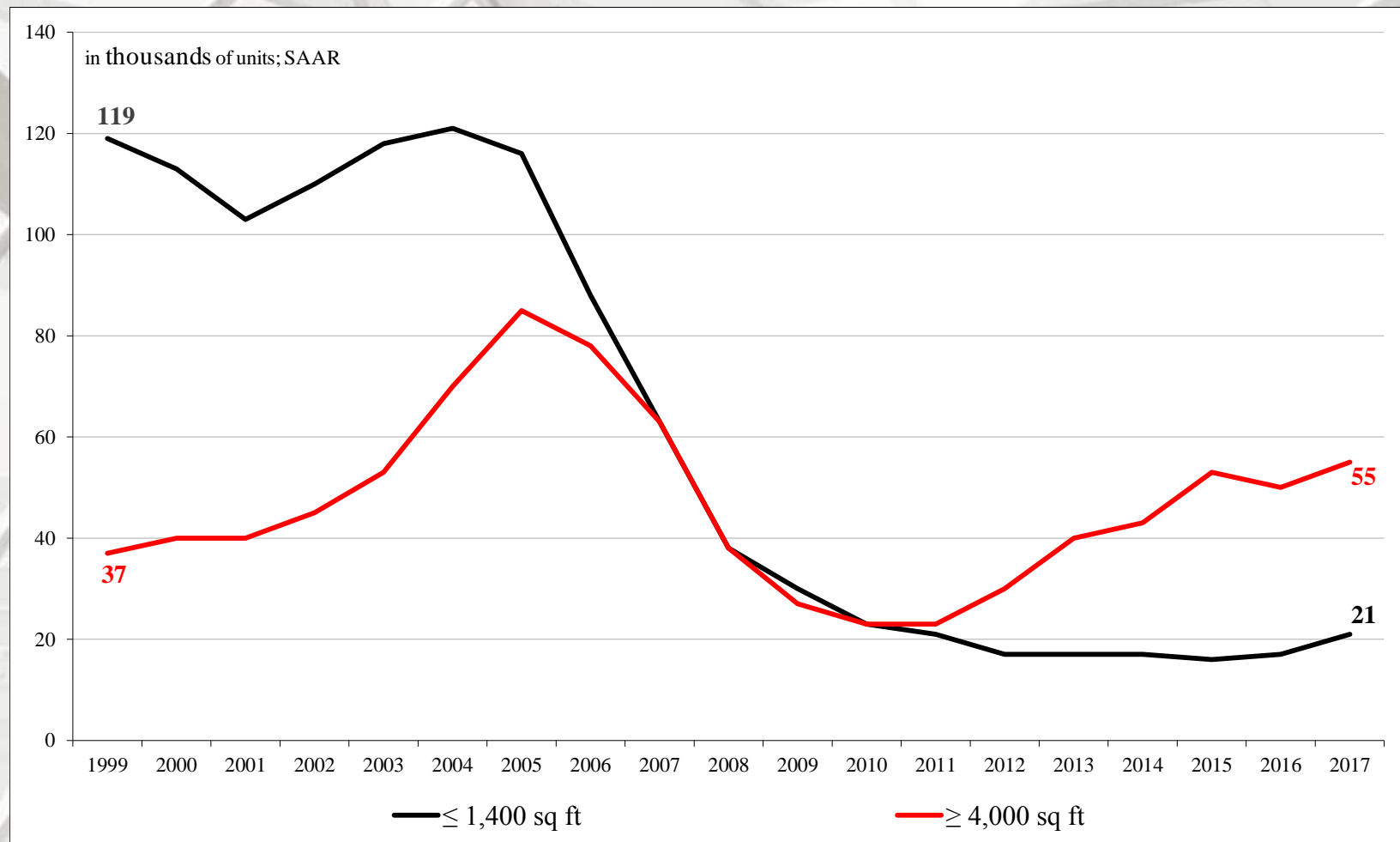


New SF Sales: ≤ \$ 200m and ≥ \$500m: 2002 to January 2019

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.

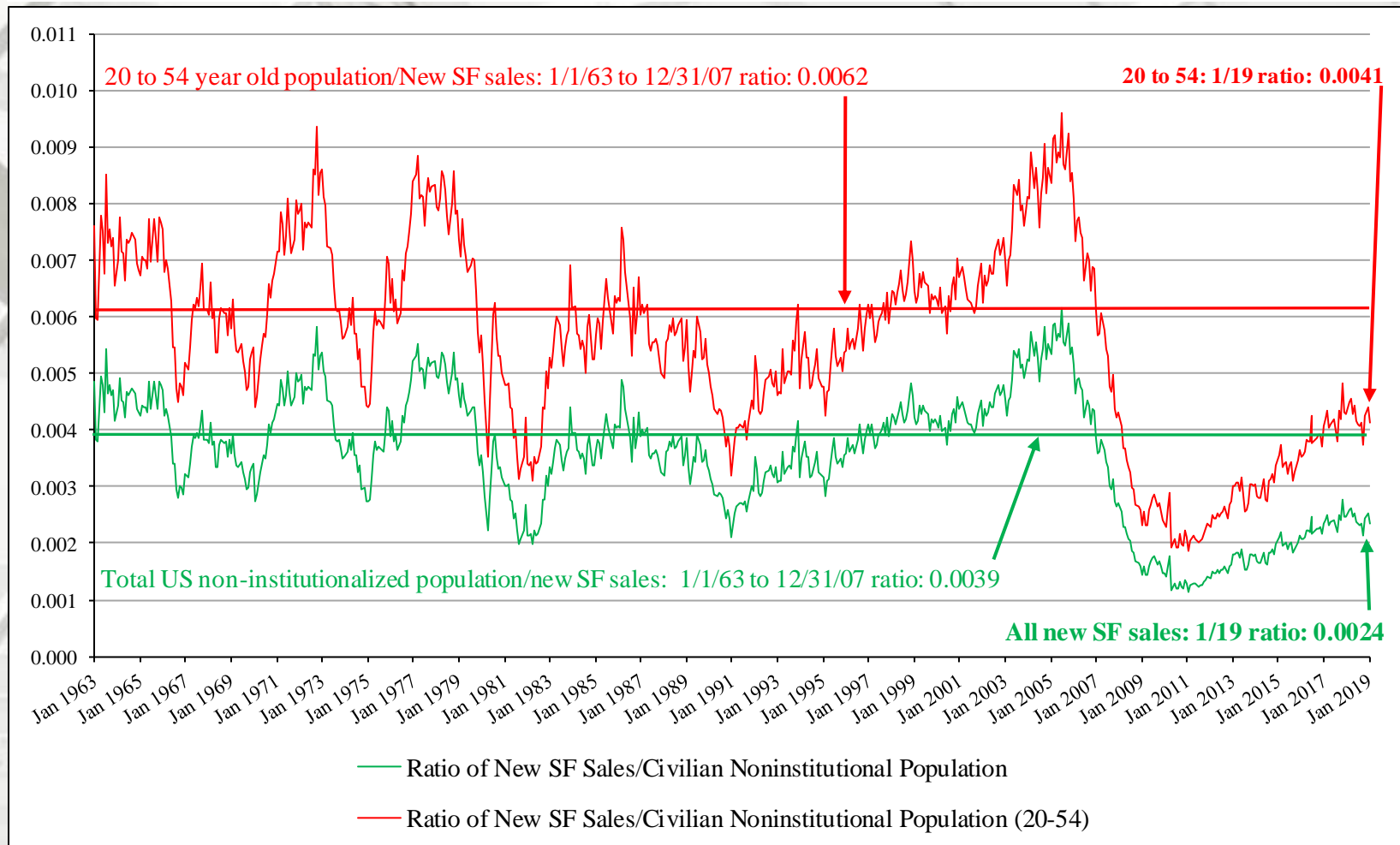
New SF House Sales by Square Feet of Floor Area



New SF Sales: ≤ 1,400 square feet and ≥ 4,000 square feet: 1999 to 2017

The number of SF houses sold ($\geq 4,000$ sq ft) has risen dramatically since 2010. Some of the most oft mentioned reasons for this is builder net margins; regulations, and finance availability.

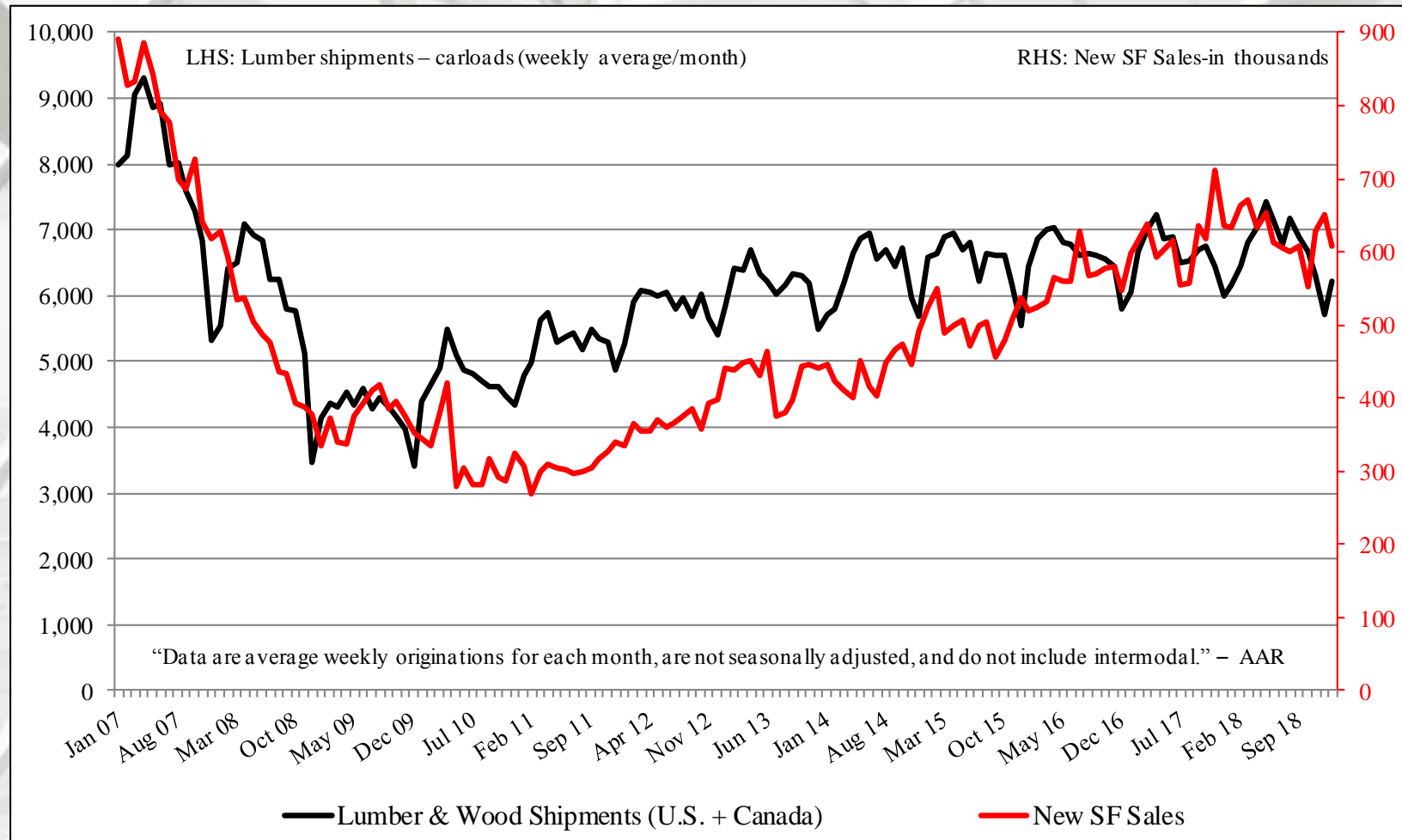
New SF House Sales



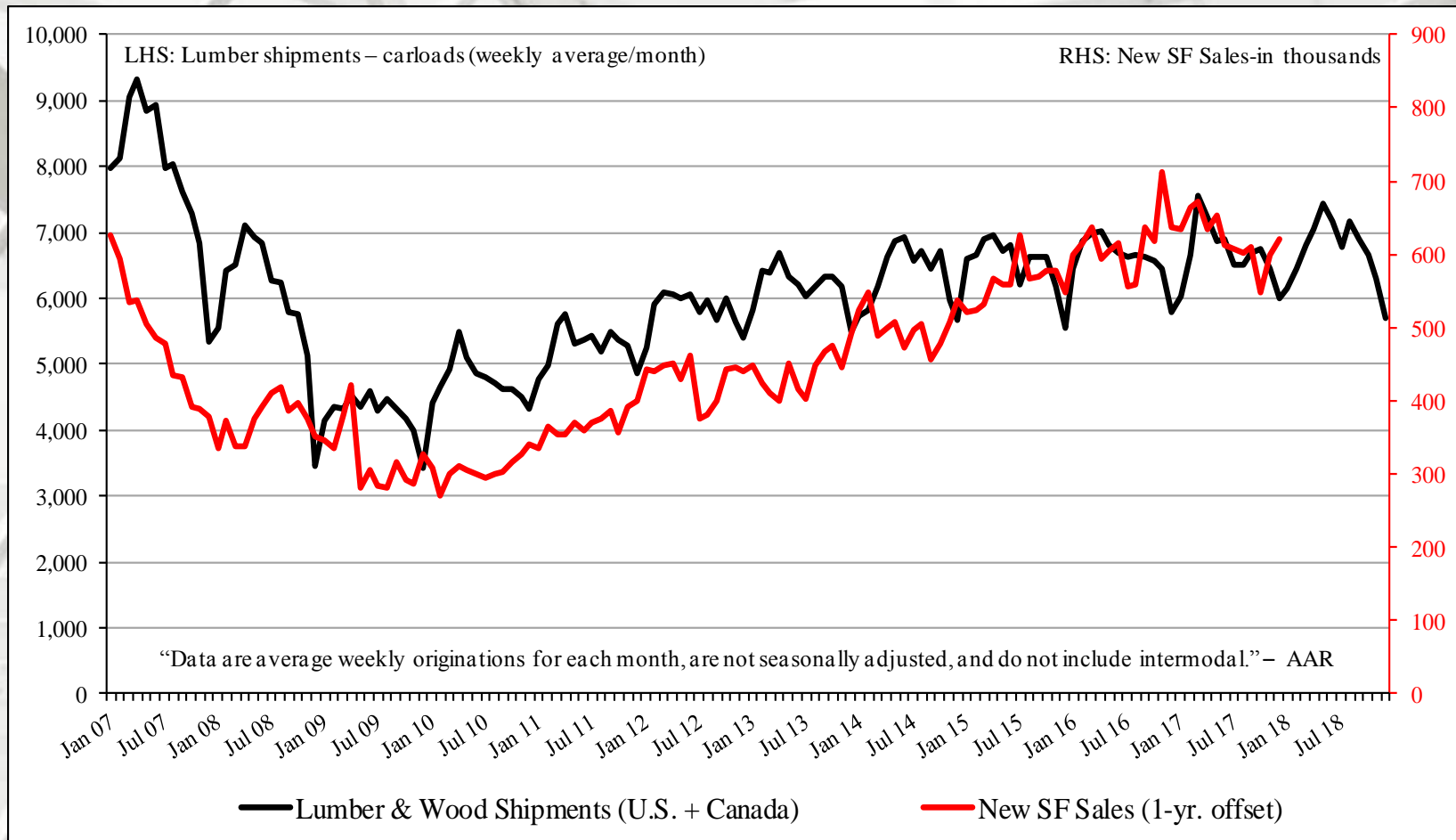
New SF sales adjusted for the US population

From January 1963 to January 2007, the long-term ratio of new house sales to the total US non-institutionalized population was 0.0039; in January 2018 it was 0.0024 – a decrease from December (0.0025). The non-institutionalized population, aged 20 to 54 long-term ratio is 0.0062; in January 2018 it was 0.0041 – also a decline from December (0.0044). 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).

Railroad Lumber & Wood Shipments vs. U.S. SF House Sales

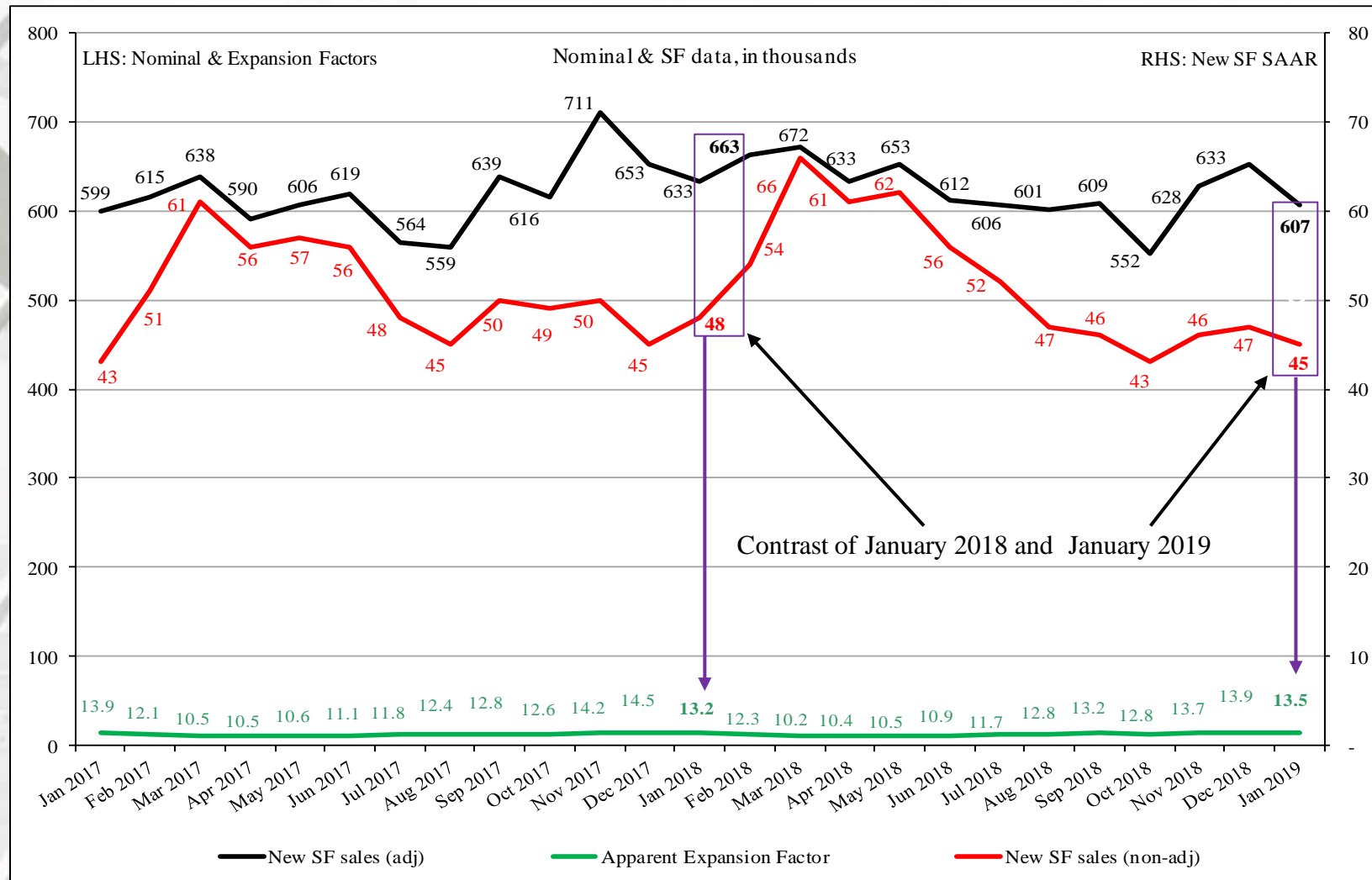


Railroad Lumber & Wood Shipments vs. U.S. SF Housing Sales: 1-year Offset



In this graph, January 2007 lumber shipments are contrasted with January 2008 SF sales, and continuing through January 2019. The purpose is to discover if lumber shipments relate to future single-family sales. Also, it is realized that lumber and wood products are trucked; however, to our knowledge comprehensive trucking data is not available.

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

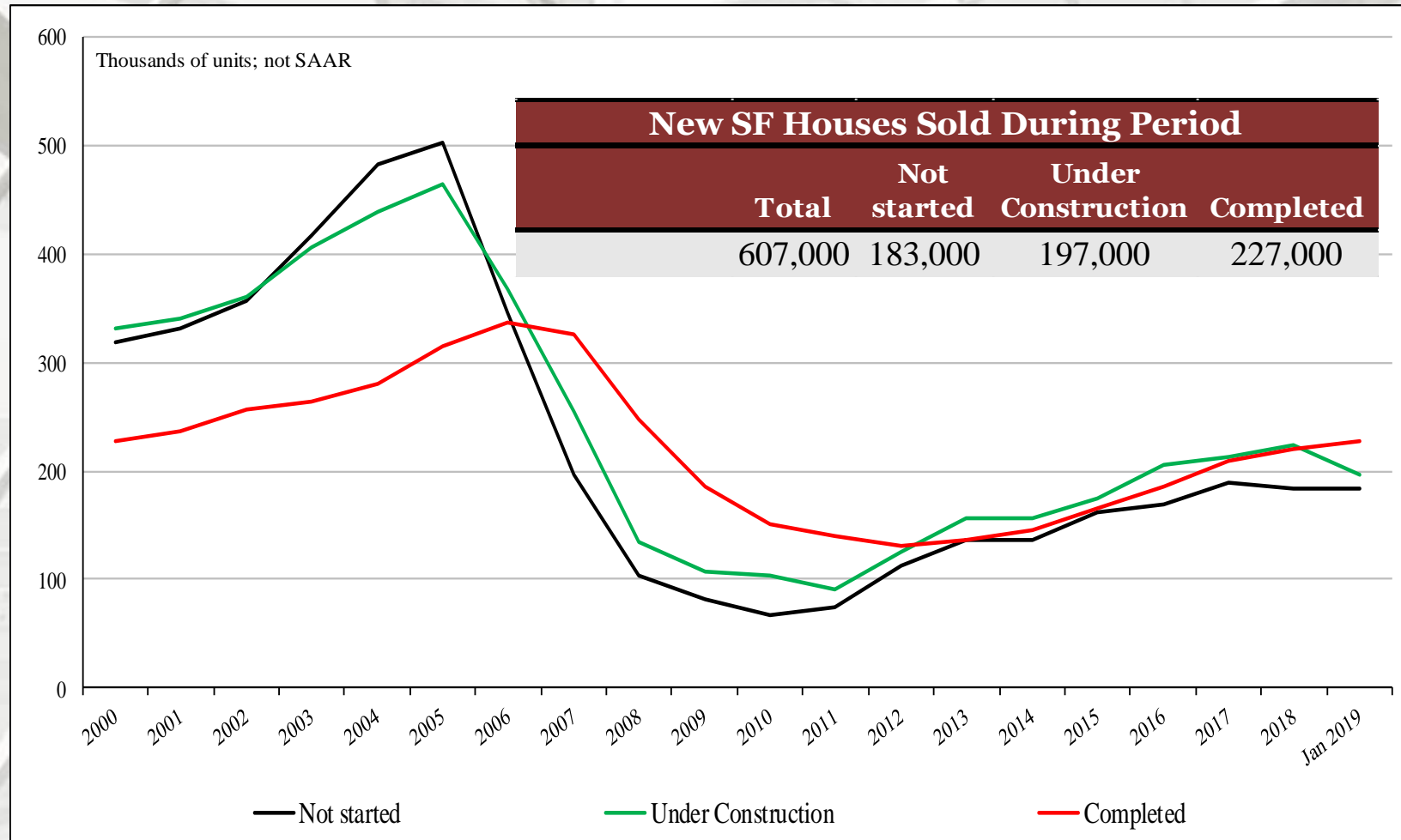
	Total	Not started	Under Construction	Completed
January	607,000	183,000	197,000	227,000
December	652,000	250,000	177,000	225,000
2018	633,000	169,000	235,000	229,000
M/M change	-6.9%	-26.8%	11.3%	0.9%
Y/Y change	-4.1%	8.3%	-16.2%	-0.9%
Total percentage		30.1%	32.5%	37.4%

New SF Houses Sold During Period

In January 2018, a substantial portion of new sales, 30.1% – have not been started; an decrease from December.

* Not SAAR

New SF House Sales



Not SAAR

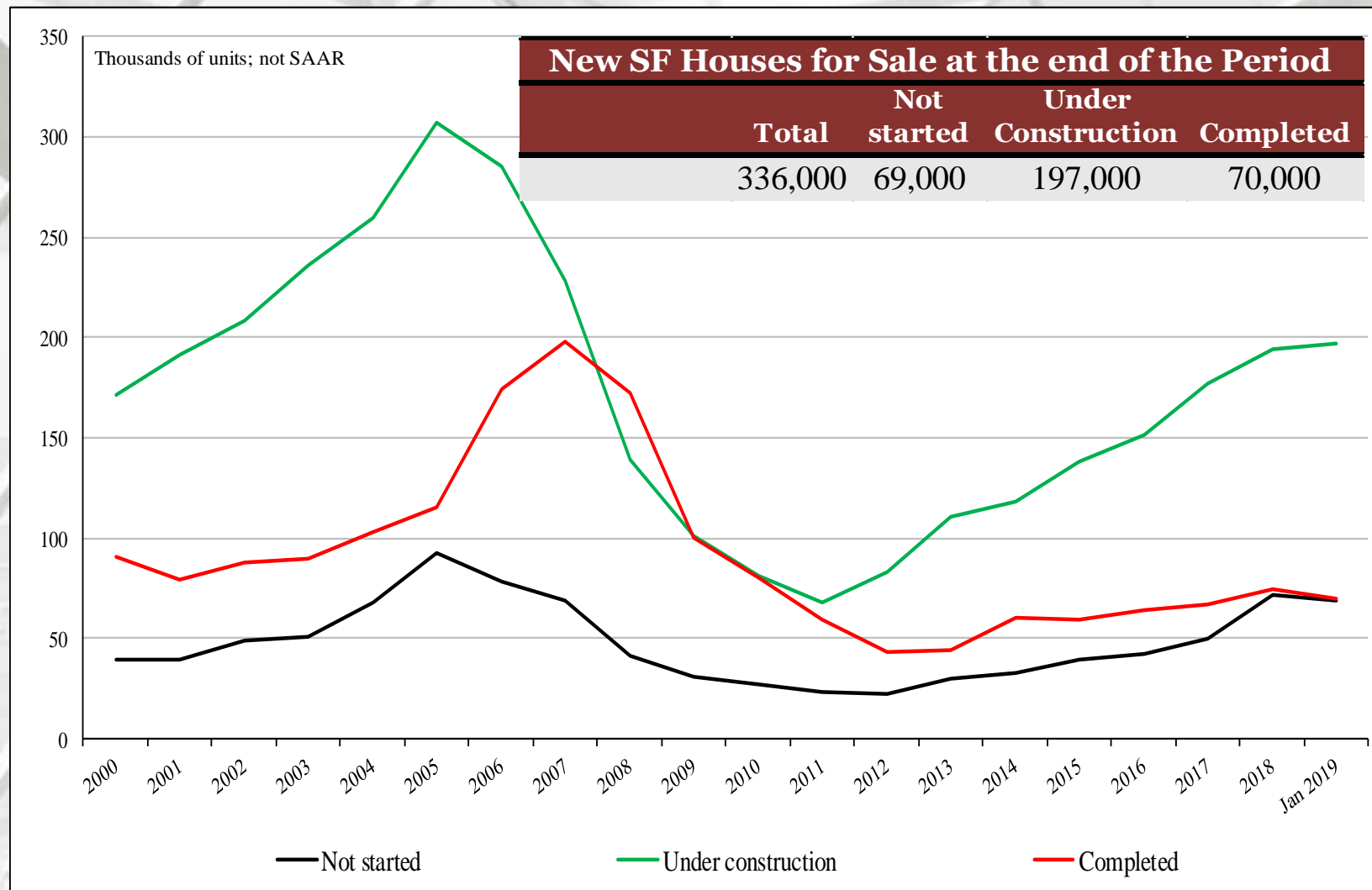
New SF House Sales

New SF Houses for Sale at the end of the Period

	Total	Not started	Under Construction	Completed
January	336,000	69,000	197,000	70,000
December	341,000	74,000	197,000	70,000
2018	295,000	53,000	179,000	63,000
M/M change	-1.5%	-6.8%	0.0%	0.0%
Y/Y change	13.9%	30.2%	10.1%	11.1%
Total percentage		20.5%	58.6%	20.8%

Not SAAR

New SF House Sales



Not SAAR

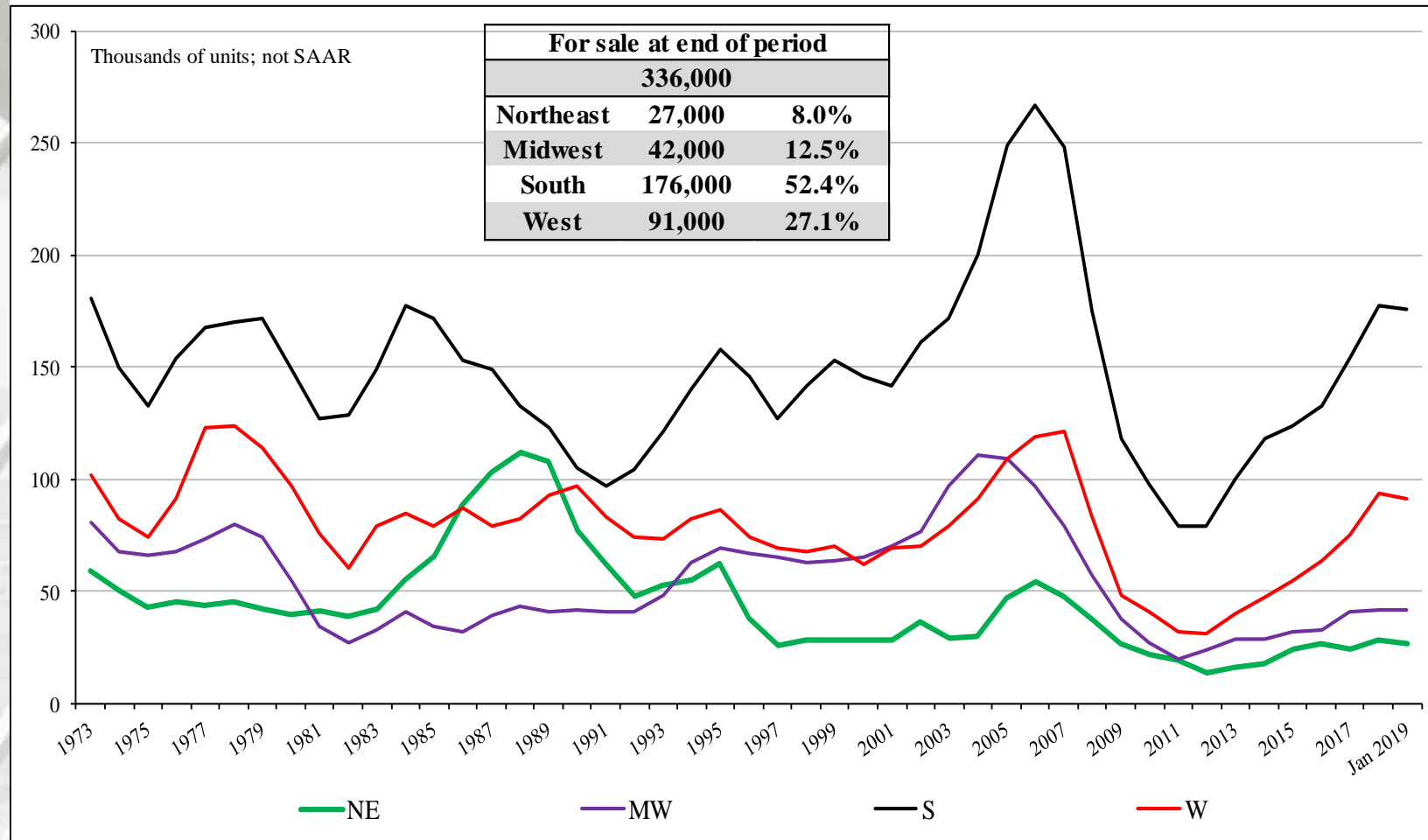
New SF House Sales

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

	Total	NE	MW	S	W
January	336,000	27,000	42,000	176,000	91,000
December	341,000	28,000	42,000	177,000	94,000
2018	294,000	24,000	39,000	156,000	75,000
M/M change	-1.5%	-3.6%	0.0%	-0.6%	-3.2%
Y/Y change	14.3%	12.5%	7.7%	12.8%	21.3%

* Not SAAR

New SF Houses Sale at End of Period by Region



January 2019 Construction Spending

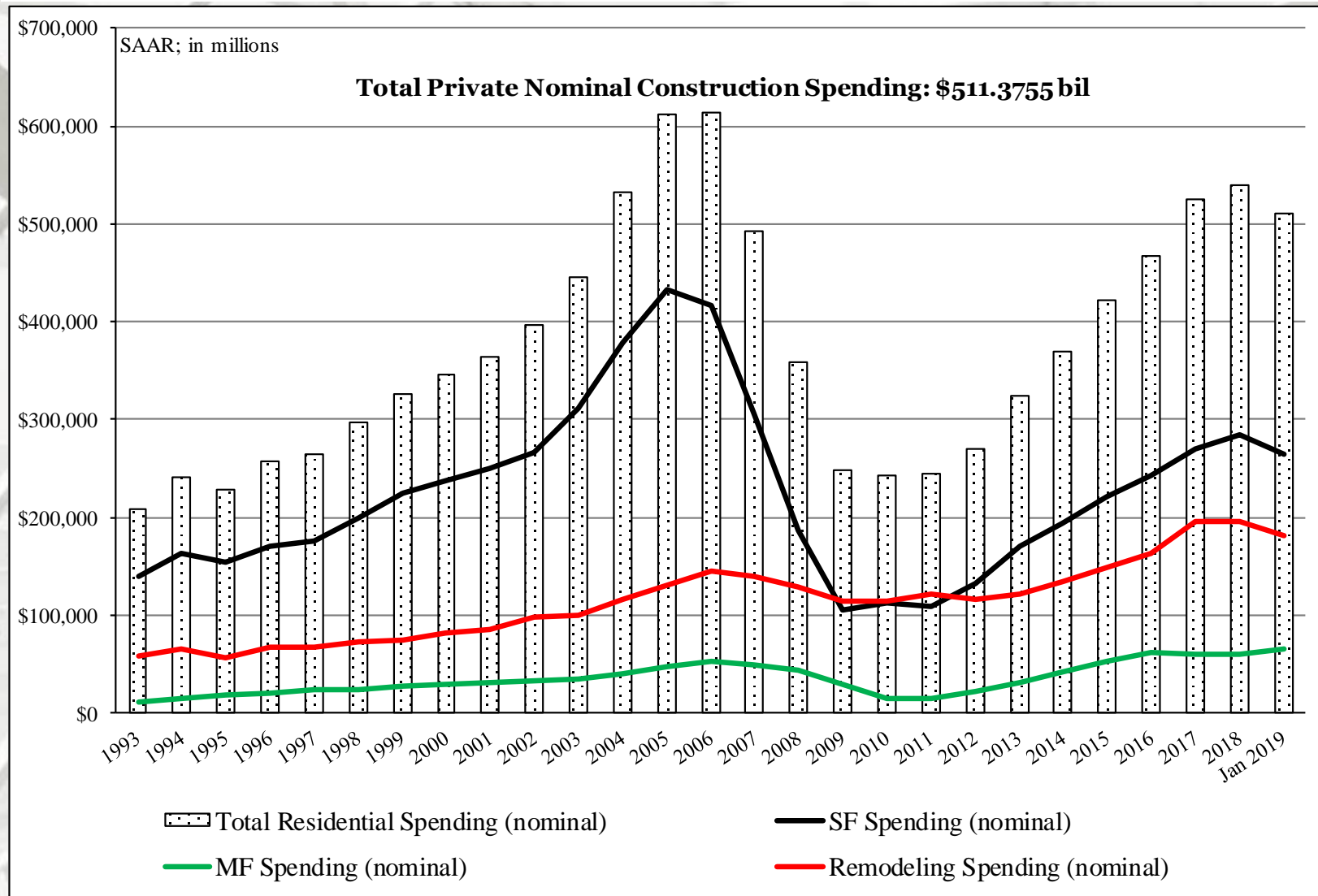
	Total Private Residential*	SF	MF	Improvement**
January	\$511,375	\$264,416	\$65,651	\$181,308
December	\$512,930	\$266,305	\$64,773	\$181,852
2018	\$541,810	\$284,831	\$58,190	\$198,789
M/M change	-0.3%	-0.7%	1.4%	-0.3%
Y/Y change	-5.6%	-7.2%	12.8%	-8.8%

* 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\$.

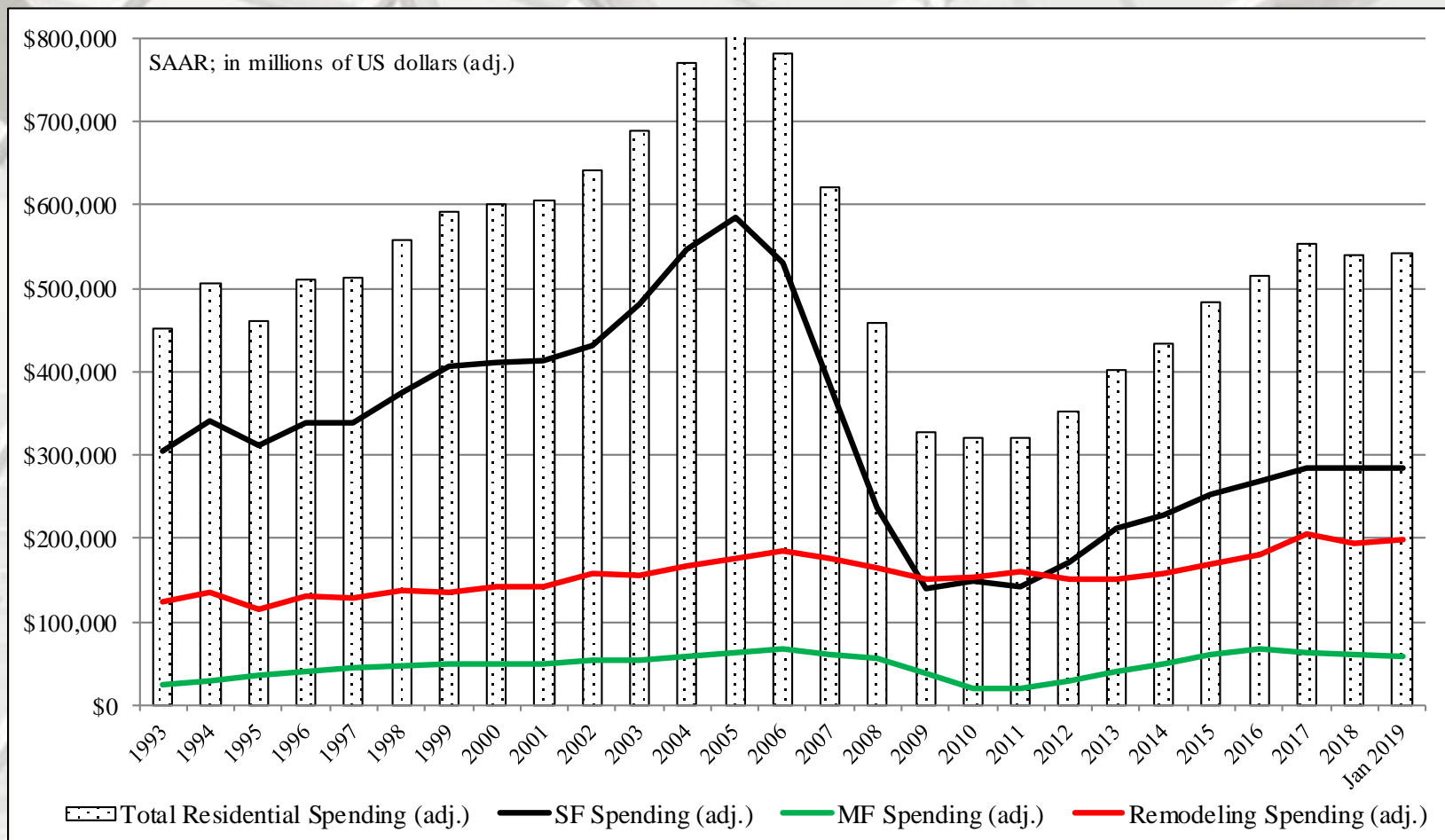
Total Construction Spending (nominal): 1993 – January 2019



Reported in nominal US\$.

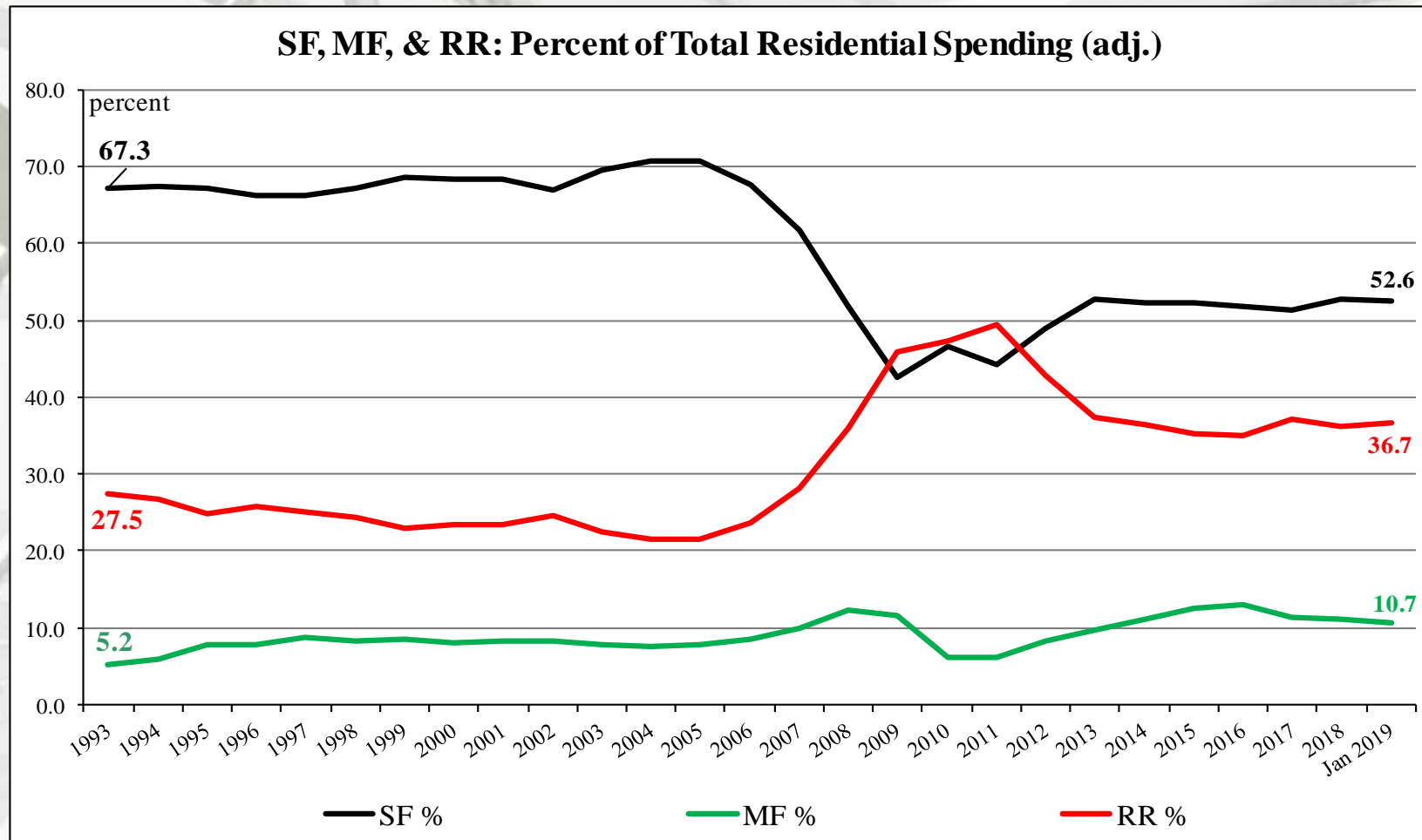
The US DOC does not report improvement spending directly, this is a monthly estimation for 2018.

Total Construction Spending (adjusted): 1993-2019*



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

Construction Spending Shares: 1993 to January 2019



Total Residential Spending: 1993 through 2006

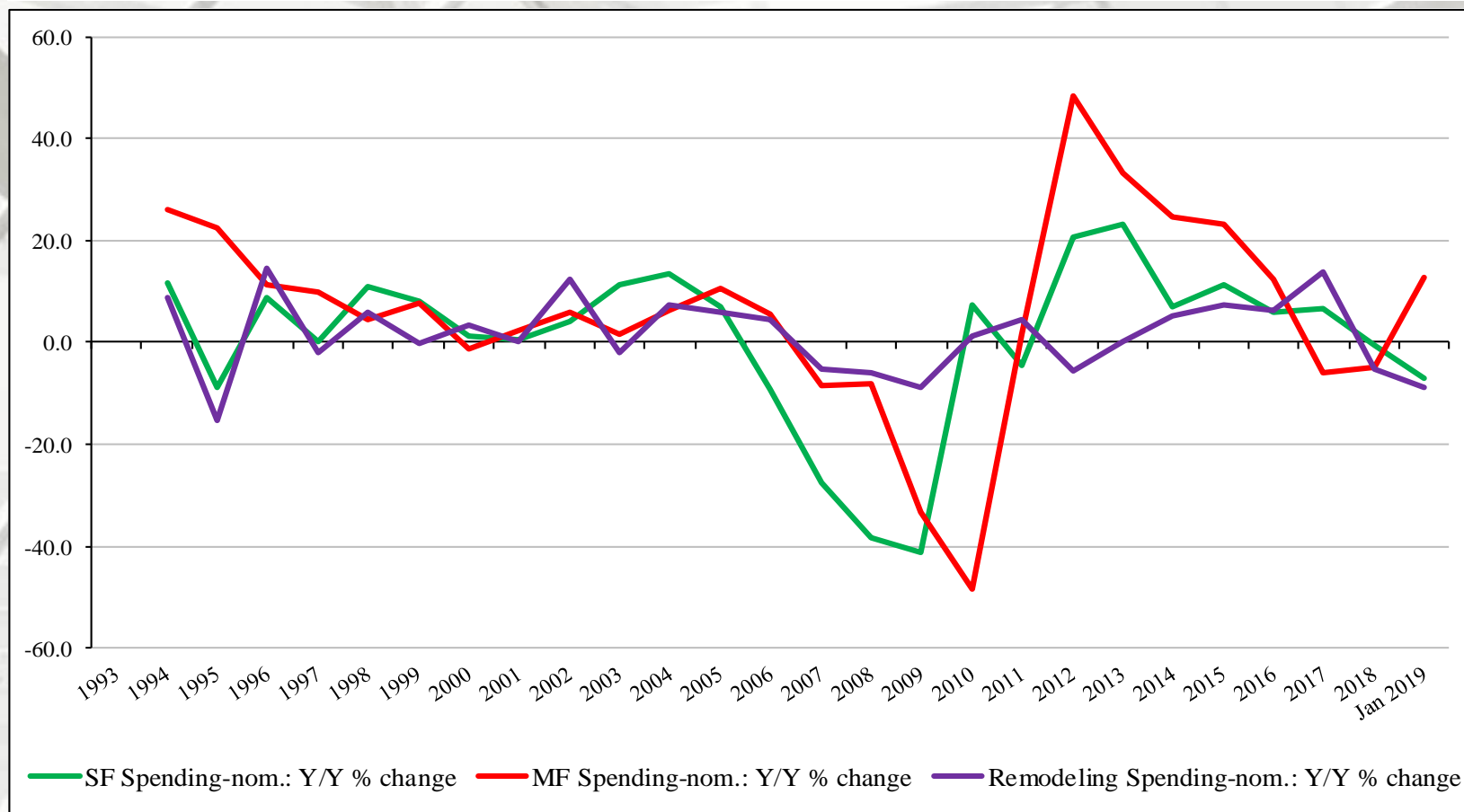
SF spending average: 69.2%

MF spending average: 7.5 %

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

Note: 1993 to 2017 (adjusted for inflation, BEA Table 1.1.9); Jan-January 2018 reported in nominal US\$.

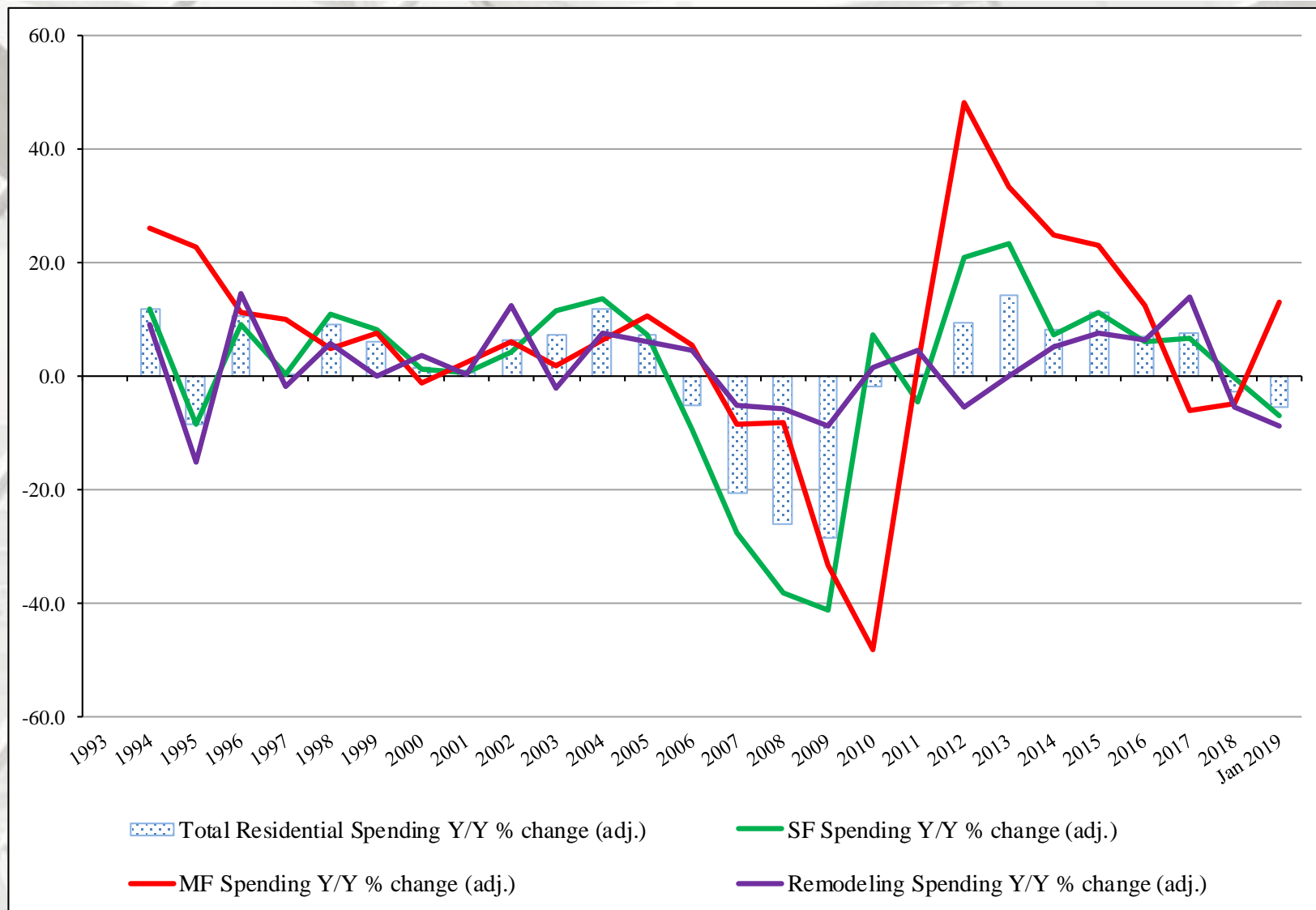
Adjusted Construction Spending: Y/Y Percentage Change, 1993 to January 2019



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

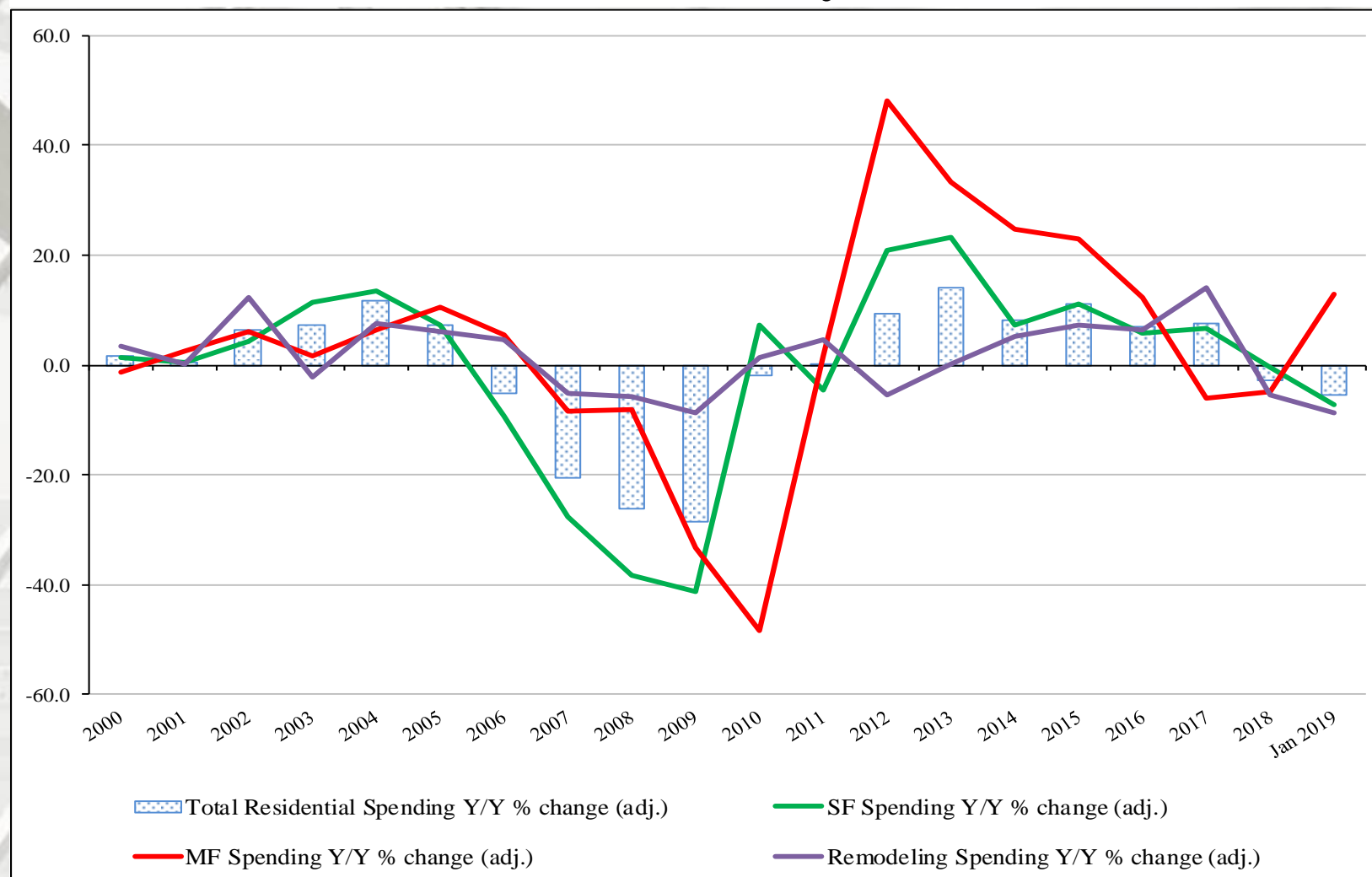
Presented above is the percentage change of inflation adjusted Y/Y construction spending. Only remodeling expenditures were positive on a percentage basis, year-over-year. January 2019 reported in nominal dollars

Adjusted Construction Spending: Y/Y Percentage Change, 2000 to January 2019



Adjusted dollar values; except January 2019 – reported in nominal dollars.

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



Y/Y percentage change, 1993 to January 2019

Remodeling expenditures were positive in January, with Total, SF, and MF all negative. January 2019 reported in nominal dollars.

Remodeling

Remodeling Outlook Remains Positive for 2019, RRI Finds

Index posted strong year-to-year increase, however moderate gains are expected over the next 24 months.

“Big ticket residential remodeling activity nationwide in the fourth quarter of 2018 rose 4.8% from the year-earlier period, Metrostudy announced in their release of the latest Residential Remodeling Index (RRI). The index reached an all-time high of 116.7 in the quarter, a 0.8% increase from the third quarter of 2018.

The RRI value means that the economic conditions known to influence remodeling activity are 16.7% better than the old peak in early 2007, just before the Great Recession. The growth of the RRI from the third quarter marks the 27th consecutive quarter of year-over-year growth for the index.

The forecast projects continued growth in the RRI over the next several years, but growth in 2019 and 2020 is expected to be at slower rates compared to the past several years of the index. The moderate gains projected will be closely tied to the maturation of the housing cycle, according to Metrostudy.” – Vincent Salandro, Assistant Editor, Remodeling

“The remodeling market remains busy as the nation continues to see strong job growth and record levels of home equity, especially in equity rich coastal markets. We expect continued growth for the industry in 2019, with some stabilization, mostly due to the slowing in existing home sales, which will sap some potential.” – Mark Boud, Chief Economist, Metrostudy

Remodeling

Remodeling Outlook Remains Positive for 2019, RRI Finds

Index posted strong year-to-year increase, however moderate gains are expected over the next 24 months.

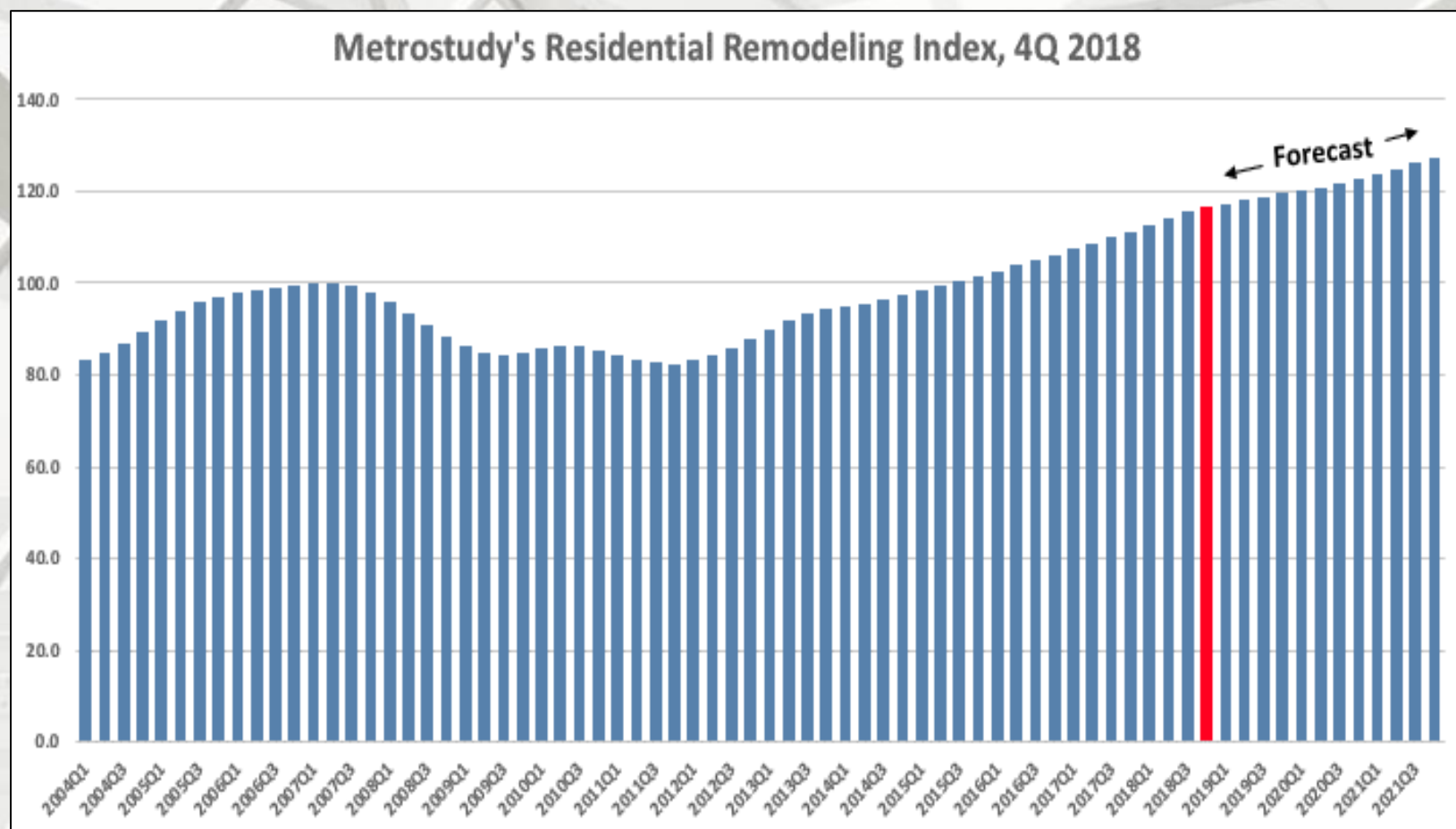
“Boud says the housing cycle is running to “the late innings” as homeowners begin display responsiveness to higher mortgage rates. Continued rising mortgage rates over the next several years are projected to dampen home sales and persuade homeowners to stay put and renovate in their current homes, Boud said.

The RRI is based on a statistical model that takes into account data such as household-level remodeling permits, employment statistics, and a market’s economic health. It uses that model to predict the number and dollar volume of home improvement and replacement projects worth at least \$1,000.

Metrostudy projects the number of remodeling projects worth \$1,000 or more will rise to 12.9 million, a 3.1% increase year-over-year. Big-ticket exterior projects and siding projects are projected to have the biggest increases from 2018. The inflation-adjusted value of big-ticket remodeling projects in 2018 is predicted to increase 4.7% to \$203.5 billion.

According to Metrostudy, 379 of the 381 metro areas surveyed will see growth in project volume for 2019 and these markets will experience an average growth of 3.0%.” – Vincent Salandro, Assistant Editor, Remodeling

Remodeling



Remodeling

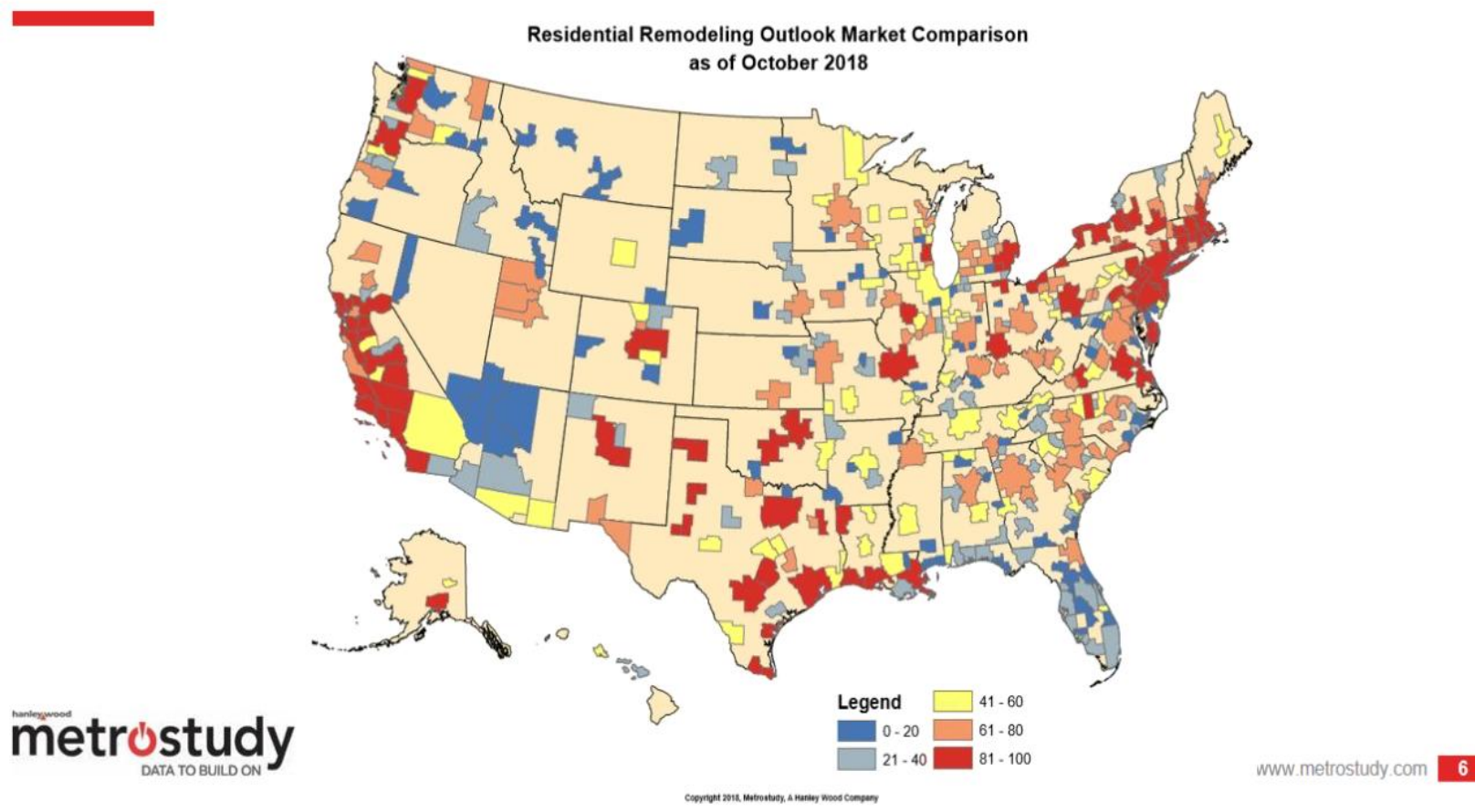
Remodeling Activity Remains High, But Growth Is Expected To Slow

Leading Indicator of Remodeling Activity – Fourth Quarter 2018



Remodeling

\$350bb+ In Remodeling Activity To Be Spent Mainly In 'Expensive' Markets

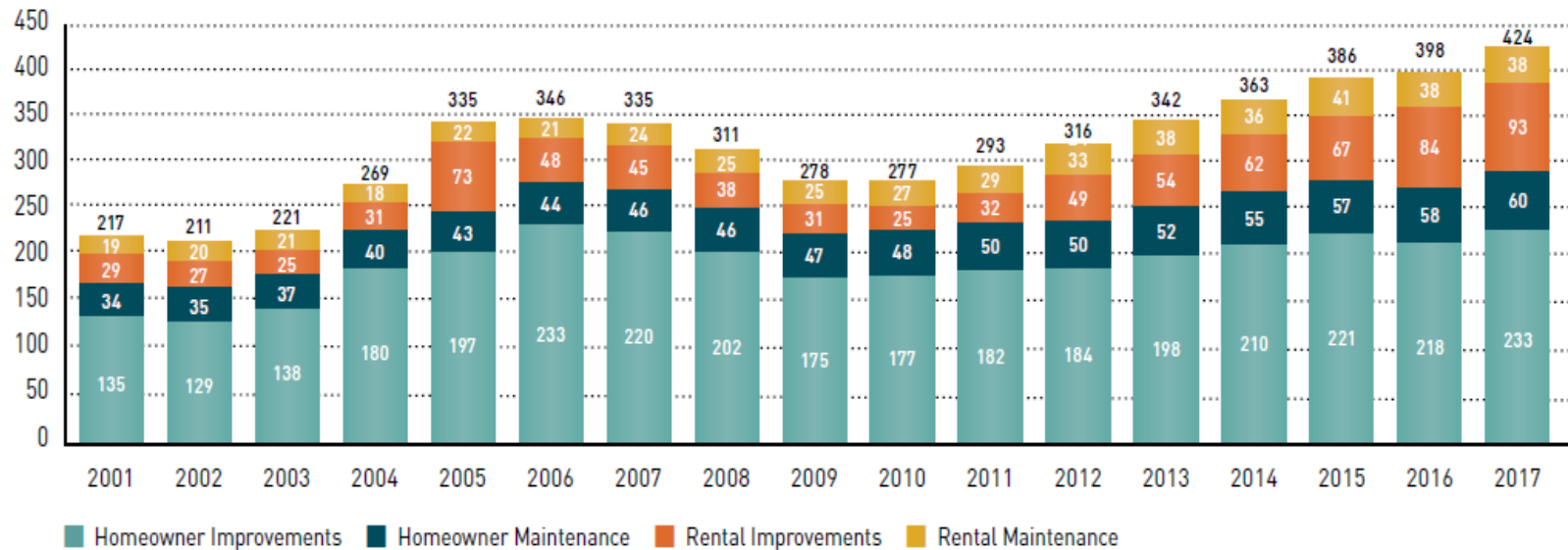


Remodeling

FIGURE 1

The Home Remodeling Market Has Grown More than 50 Percent Since the Recession Ended

Billions of Dollars



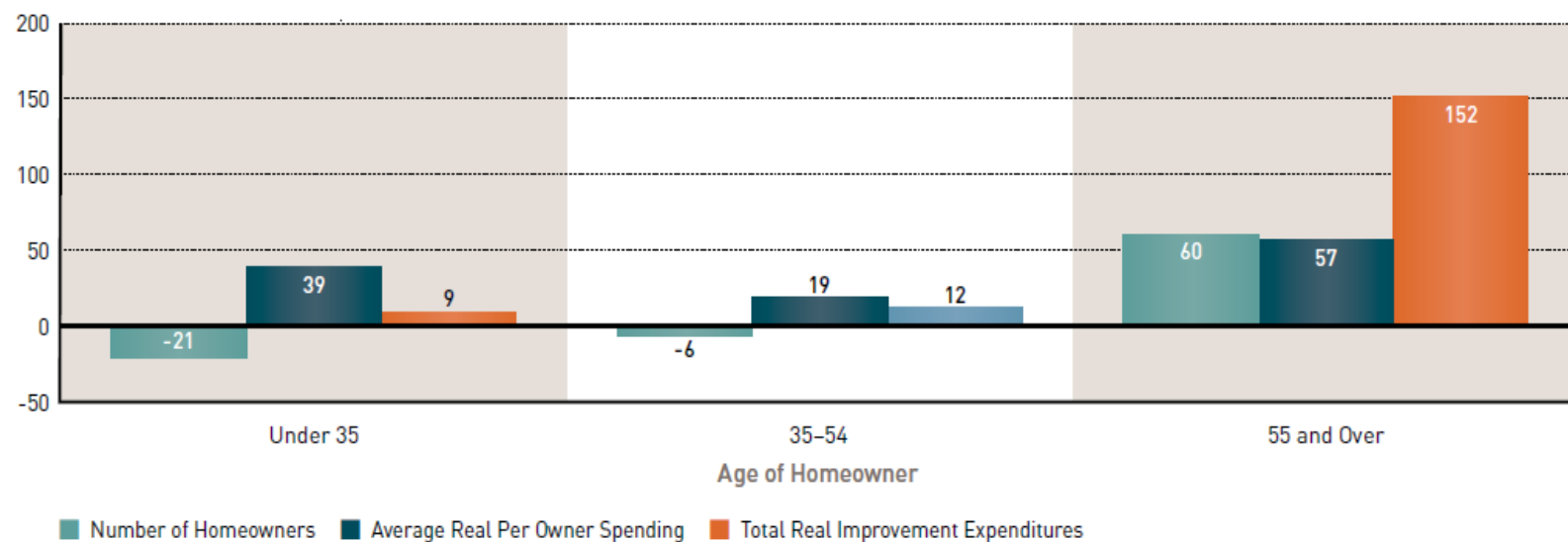
Source: JCHS analysis of US Department of Housing and Urban Development (HUD), American Housing Surveys and Rental Housing Finance Surveys; US Department of Commerce, Retail Sales of Building Materials; US Census Bureau, Surveys of Residential Alterations and Repairs (C-50); and National Apartment Association (NAA), Surveys of Operating Income & Expenses.

Remodeling

FIGURE 6

The Growing Number of Older Owners, Along with Higher Average Spending, Have Lifted Their Improvement Expenditures

Percent Change, 1997–2017



Note: Values are adjusted for inflation using the CPI-U.

Source: JCHS tabulations of HUD, American Housing Surveys.

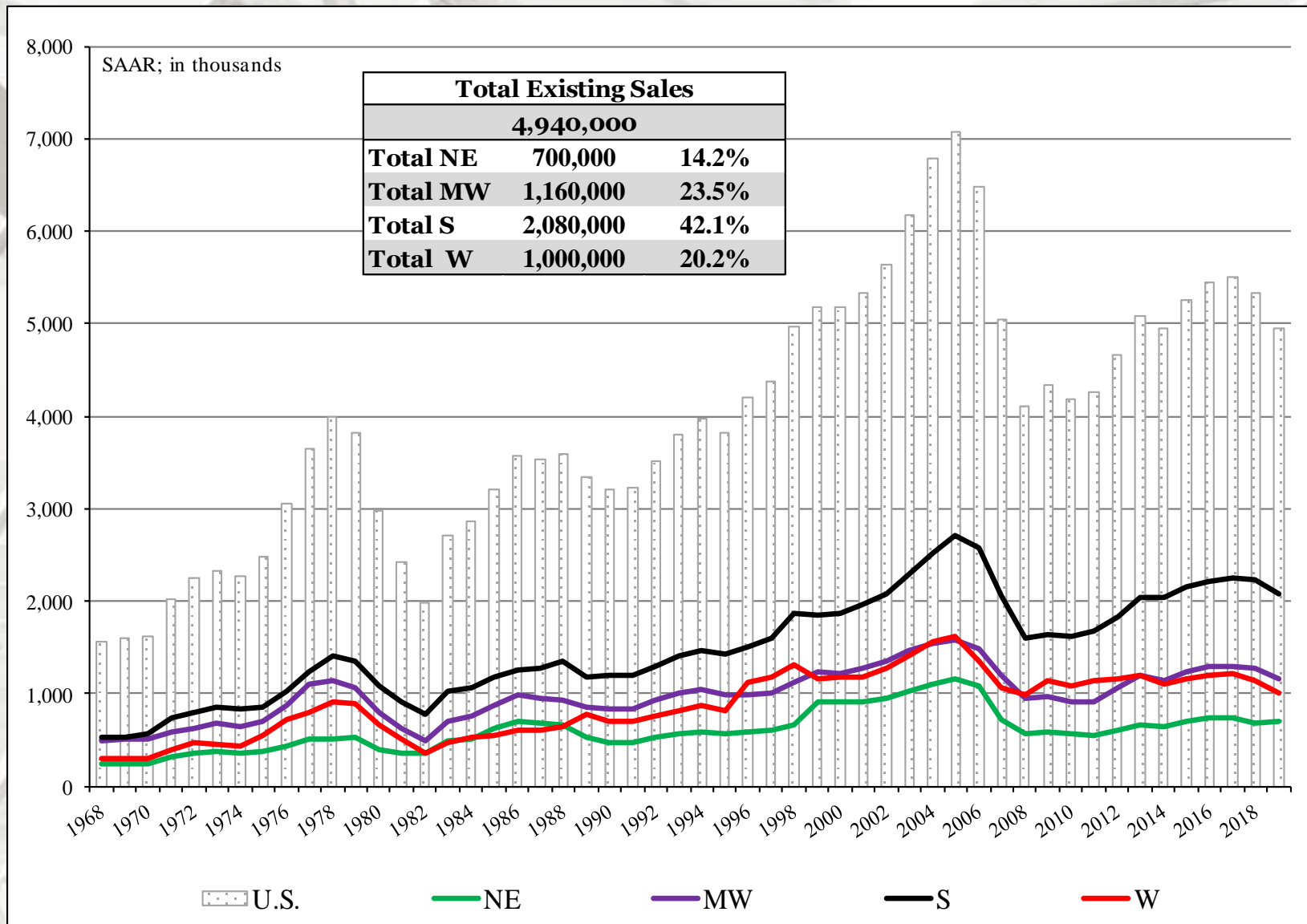
Existing House Sales

National Association of Realtors
January 2019 sales: 4.940 thousand

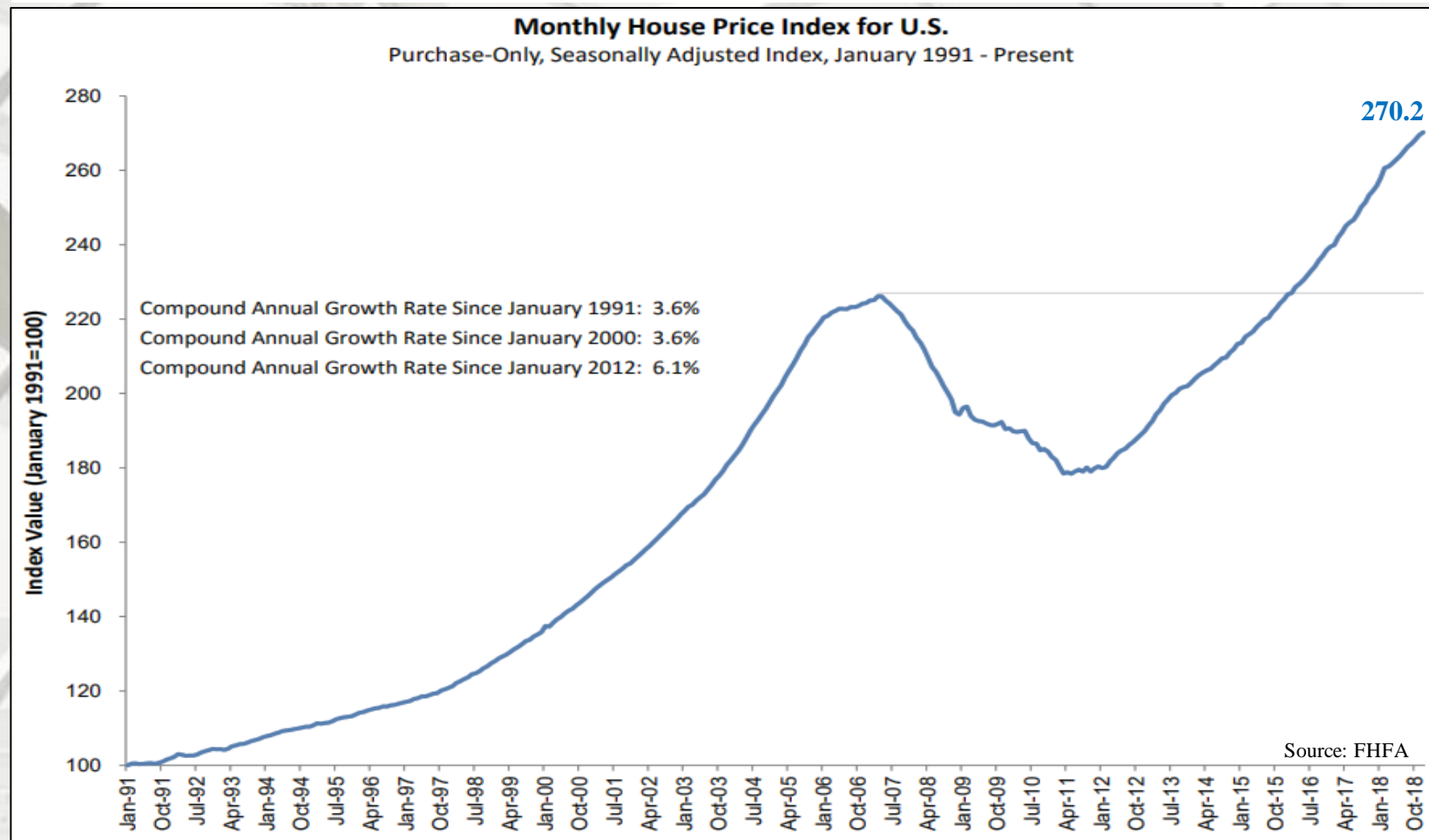
	Existing Sales*	Median Price	Mean Price	Month's Supply
January	4,940,000	\$247,500	\$286,800	3.9
December	5,000,000	\$254,700	\$293,800	3.7
2018	5,400,000	\$240,800	\$282,600	3.4
M/M	-1.2%	-2.8%	-2.4%	5.4%
Y/Y change	-8.5%	2.8%	1.5%	14.7%

* All sales data: SAAR

Existing House Sales



U.S. Housing Prices



U.S. House Prices Rise 1.1 Percent in Fourth Quarter

“U.S. house prices rose **1.1 percent** in the fourth quarter of 2018 according to the Federal Housing Finance Agency (FHFA) House Price Index (HPI). House prices rose **5.7 percent** from the fourth quarter of 2017 to the fourth quarter of 2018. FHFA’s seasonally adjusted monthly index for January was up **0.3 percent** from November.” – Stefanie Johnson and Corinne Russell, FHFA

“House prices rose throughout 2018 but at a slower rate than in recent years. In the fourth quarter, house price appreciation hit one of the lowest levels in the past four years.” – Dr. William Doerner, Supervisory Economist, FHFA

U.S. Housing Prices

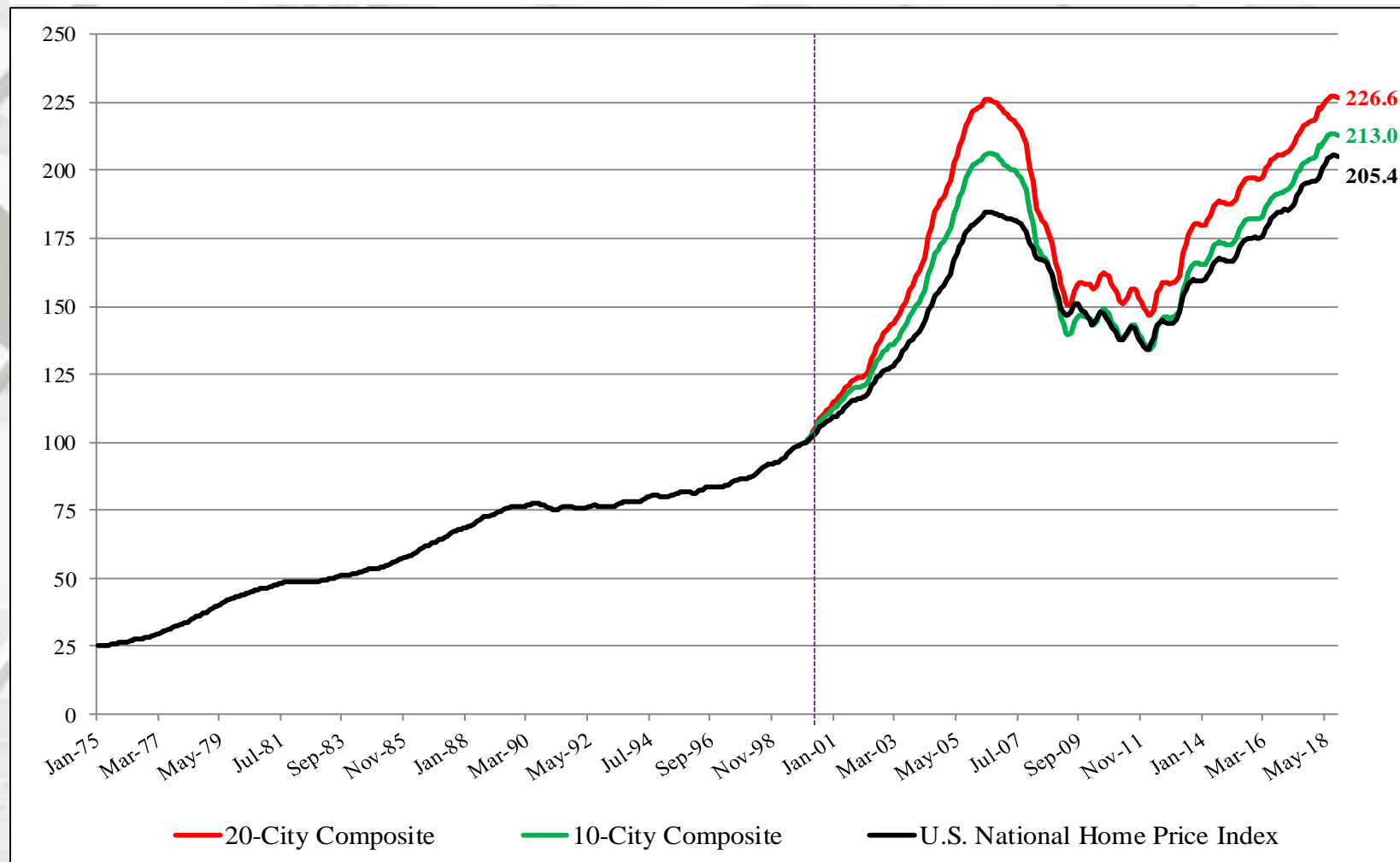
“The S&P CoreLogic Case-Shiller U.S. National Home Price NSA Index, covering all nine U.S. census divisions, reported a 4.7% annual gain in January, down from 5.1% in the previous month. The 10-City Composite annual increase came in at 3.8%, down from 4.2% in the previous month. The 20-City Composite posted a 4.2% year-over-year gain, down from 4.6% in the previous month.

Annual Gains Fall to 4.7% to End 2018 According to S&P CoreLogic Case-Shiller Index

The annual rate of price increases continues to fall. Even at the reduced pace of 4.7% per year, home prices continue to outpace wage gains of 3.5% to 4% and inflation of about 2%. A decline in interest rates in the fourth quarter was not enough to offset the impact of rising prices on home sales. The monthly number of existing single family homes sold dropped throughout 2018, reaching an annual rate of 4.45 million in January. The 2018 full year sales pace was 4.74 million.

Regional patterns continue to shift. Seattle and Portland, OR experienced the fastest price increases of any city from late 2016 to the spring of 2018; in January, they ranked 11th and 16th. Currently, the cities with the fastest price increases are Las Vegas and Phoenix. These are a reminder of how prices rose and collapsed in the financial crisis 12 years ago. Despite their recent gains, Las Vegas and Phoenix are the furthest below their 2006 peaks of any city followed in the S&P CoreLogic Case-Shiller Indices.” – David Blitzer, Managing Director and Chairman of the Index Committee, S&P Dow Jones Indices

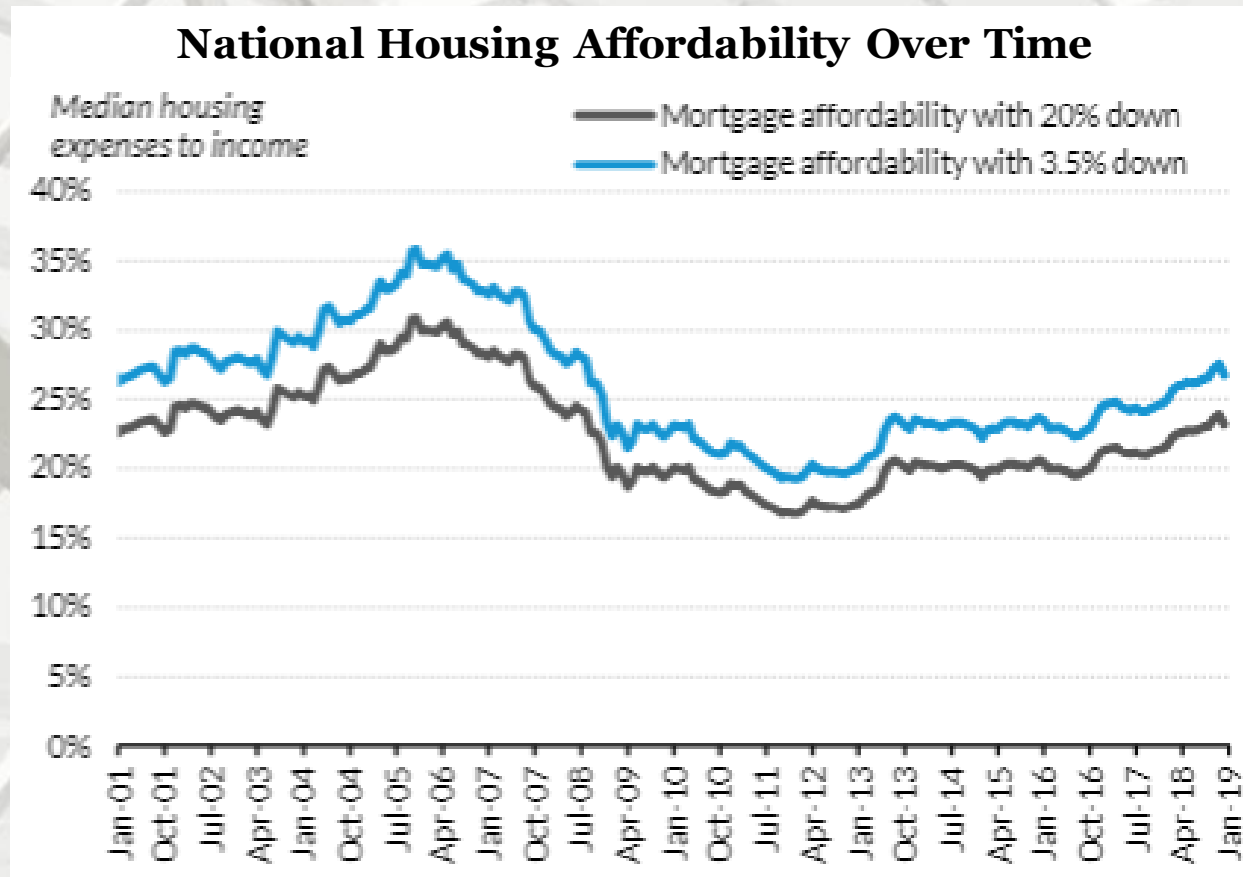
S&P/Case-Shiller Home Price Indices



January 2018 shows that the rate of home price increases across the U.S. has continued to slow

“Las Vegas, Phoenix and Atlanta reported the highest year-over-year gains among the 20 cities. In January, Las Vegas led the way with an 11.4% year-over-year price increase, followed by Phoenix with an 8.0% increase and Atlanta with a 5.9% increase. Three of the 20 cities reported greater price increases in the year ending January 2018 versus the year ending November 2018.” – Soogyung Jordan, Global Head of Communications, S&PCoreLogic

Housing Affordability



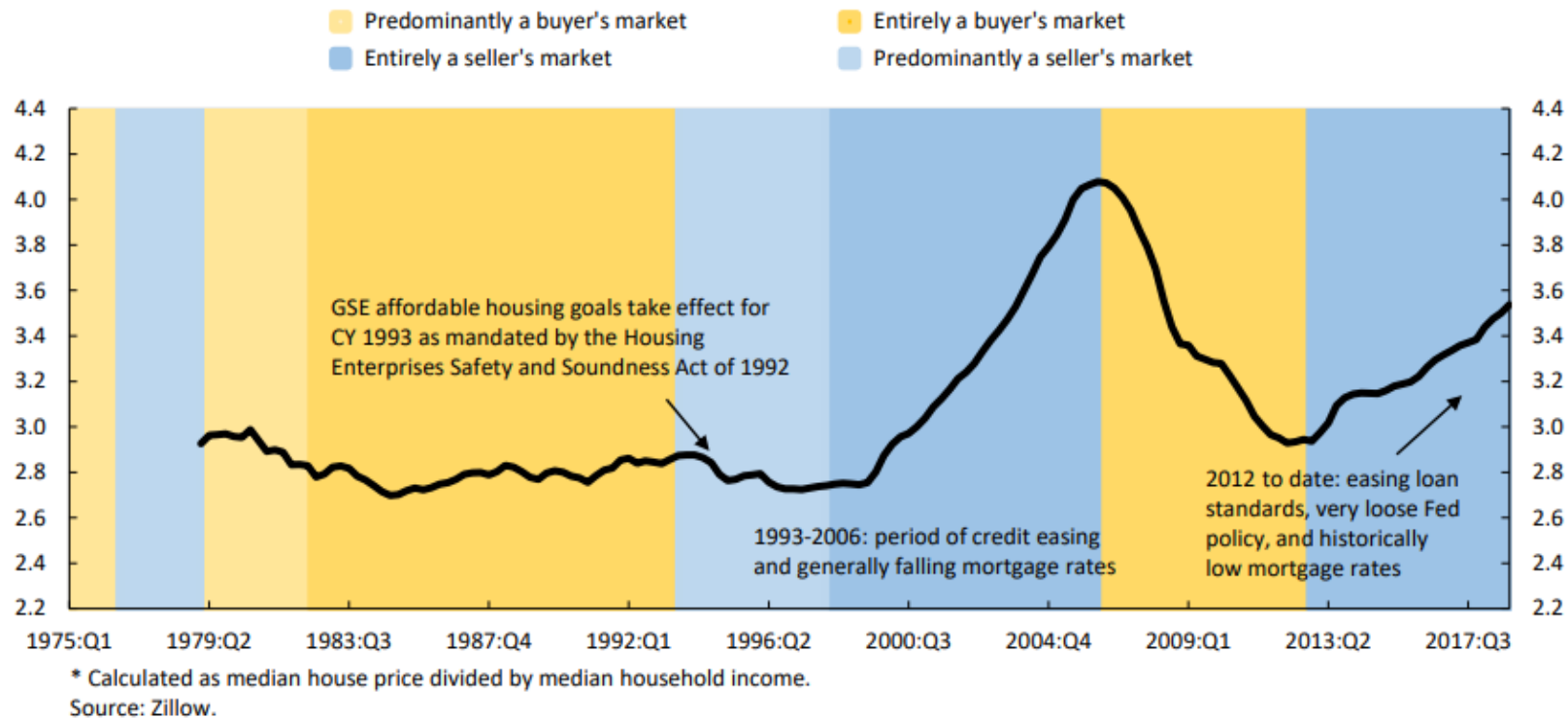
Urban Institute

“Home prices remain affordable by historic standards, despite price increases over the last 6.5 years and interest rate increases. As of January 2019, with a 20 percent down payment, the share of median income needed for the monthly mortgage payment stood at 23.1 percent; with 3.5 down, it is 26.6 percent. As of January, the median housing expenses to income ratio was in line with the 2001-2003 average. As shown in the bottom picture, mortgage affordability varies widely by MSA.” – Bing Lai, Research Associate, Housing Finance Policy Center

Housing Affordability

Affordability Worsens in a Seller's Market

Nominal Price-to-Income Ratio, through 2018:Q4*



AEI Housing Market Indicators

“Nominal Price-to-Income Ratio* has retraced 53% of the drop from the 2006 peak to the 2012 trough. Combination of a continued highly accommodative monetary policy and easier lending promotes further capital flows into real estate, increasing the potential for economic damage as highly leveraged lending fuels a cyclically volatile housing sector.” – Edward Pinto and Tobias Peter, Center on Housing Markets and Finance, AEI

* Calculated as median house price divided by median household income.

Mortgage Credit Availability

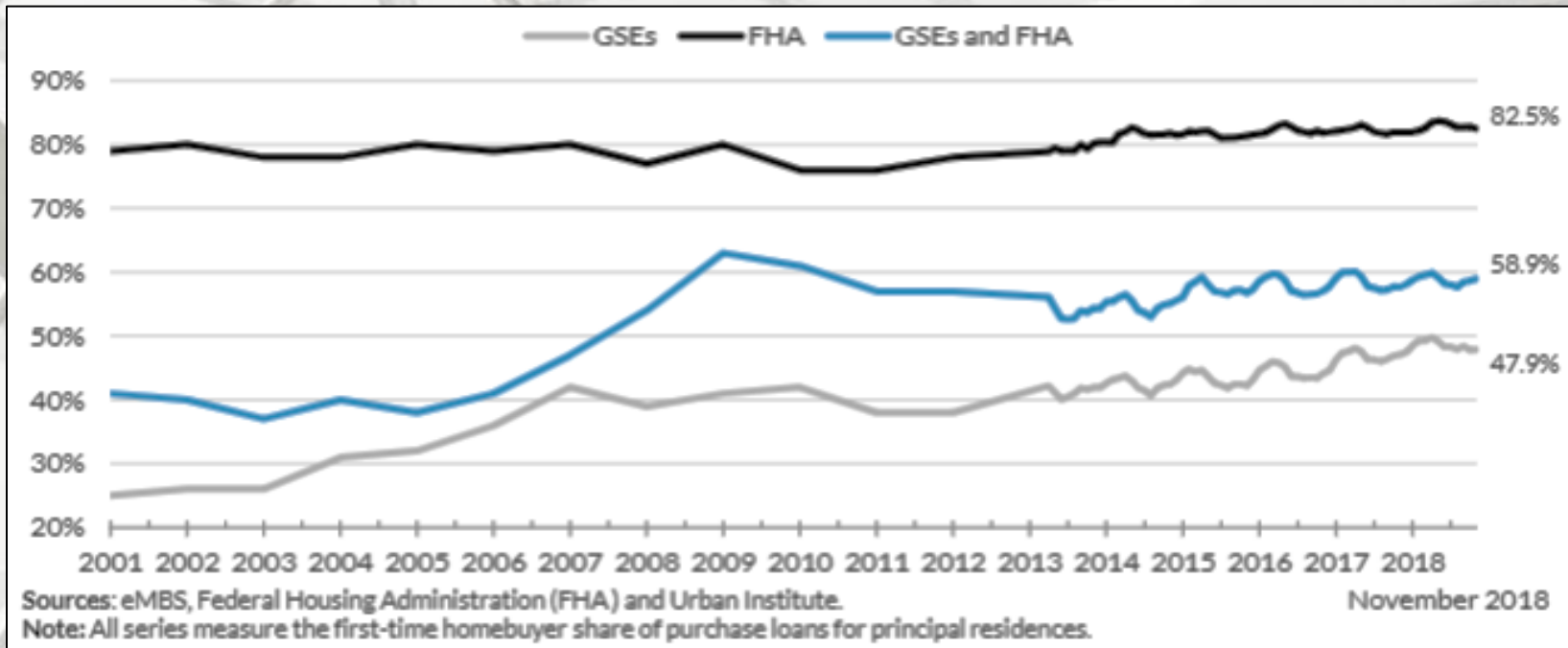
Mortgage Credit Availability Increased in February

“Mortgage credit availability increased 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 rose 0.6 percent to 180.1 in February. 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 increased (1.1 percent), while the Government MCAI increased slightly (0.1 percent). Of the component indices of the Conventional MCAI, the Jumbo MCAI increased by 2.2 percent while the Conforming MCAI decreased by 0.2 percent.

Credit availability increased in February as a result of new jumbo offerings brought to the market, both for agency jumbo and non-agency jumbo programs. We also saw some expansion in credit for borrowers with lower credit scores and higher LTVs, although credit availability for government programs remains tighter following the scaling back of VA refinance programs.” – Mike Fratantoni, Senior and Chief Economist, MBA

First-Time Purchasers



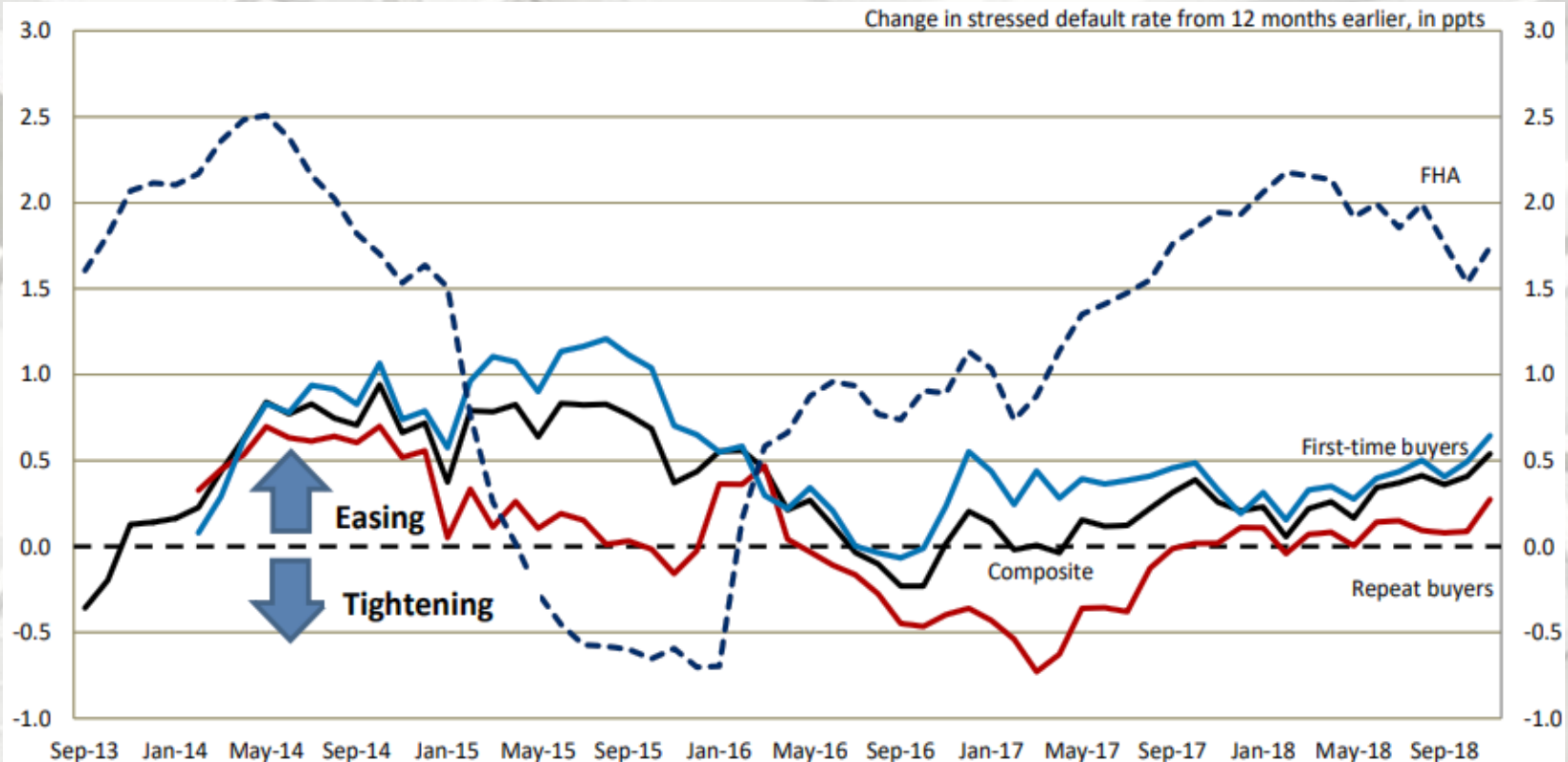
Urban Institute

First-Time Homebuyer Share

“In November 2018, the first time homebuyer (FTHB) share of purchase loans increased very slightly for FHA and conventional mortgages. The FTHB share for FHA, which has always been more focused on first time homebuyers, stood at 82.5 percent in November 2018. The GSE FTHB share in November 2018 was 47.9 percent. The bottom table shows that based on mortgages originated in November 2018, 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.” – Laurie Goodman, *et al.*, Co-director, Housing Finance Policy Center

First-Time Purchasers

Purchase Loan NMRI: Credit Easing Continues

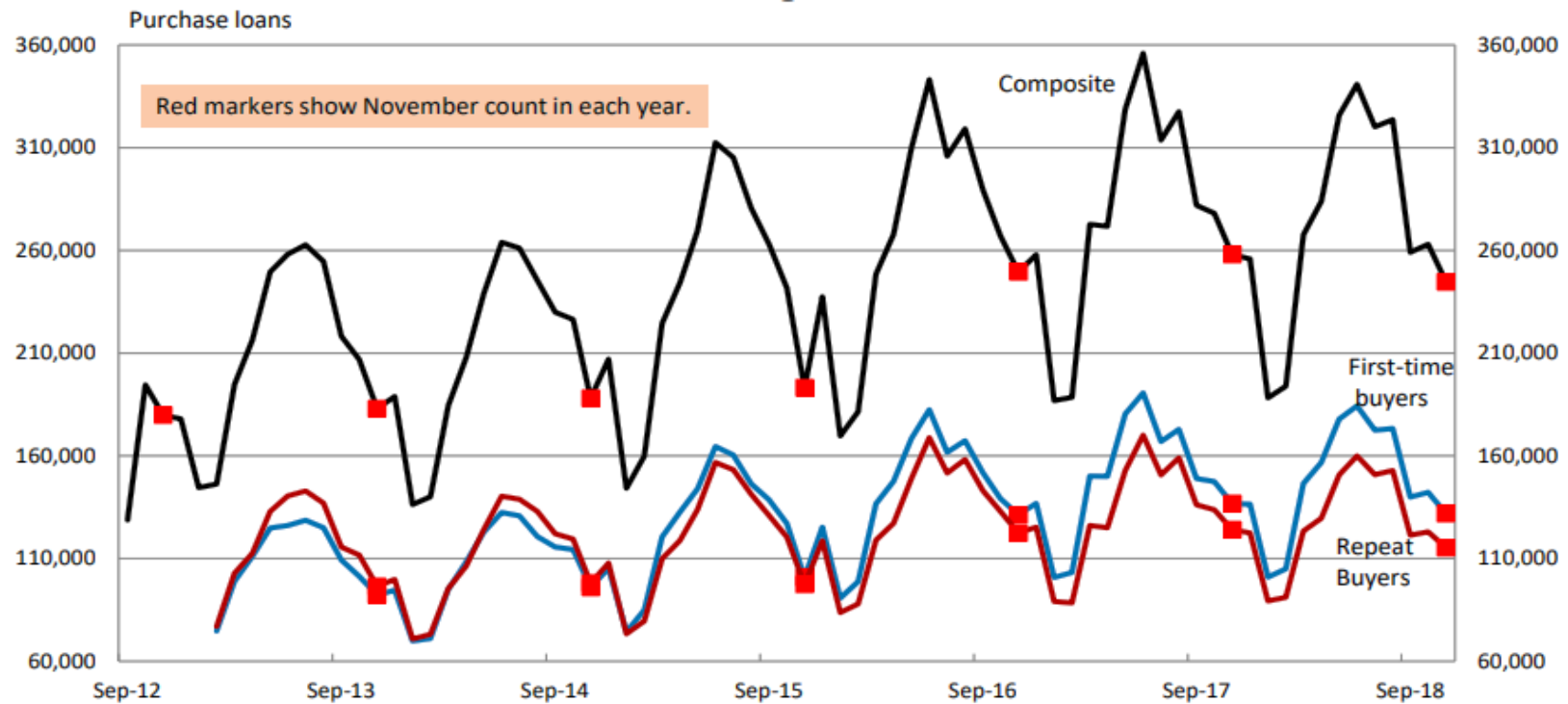


AEI Housing Market Indicators

“The composite NMRI for purchase loans jumped 0.5 ppt from elevated levels a year ago. The first-time buyer index jumped 0.6 ppt, primarily due to FHA being up 1.7 ppts. The repeat buyer index was up 0.3 ppt. Rising prices are having a disparate impact on buyers, benefiting repeat buyers through as set appreciation, and hurting FTBs who have to take on more leverage.” – Edward Pinto and Tobias Peter, Center on Housing Markets and Finance, AEI

First-Time Purchasers

Leverage Fueled Housing Demand Pauses Due to Higher Rates

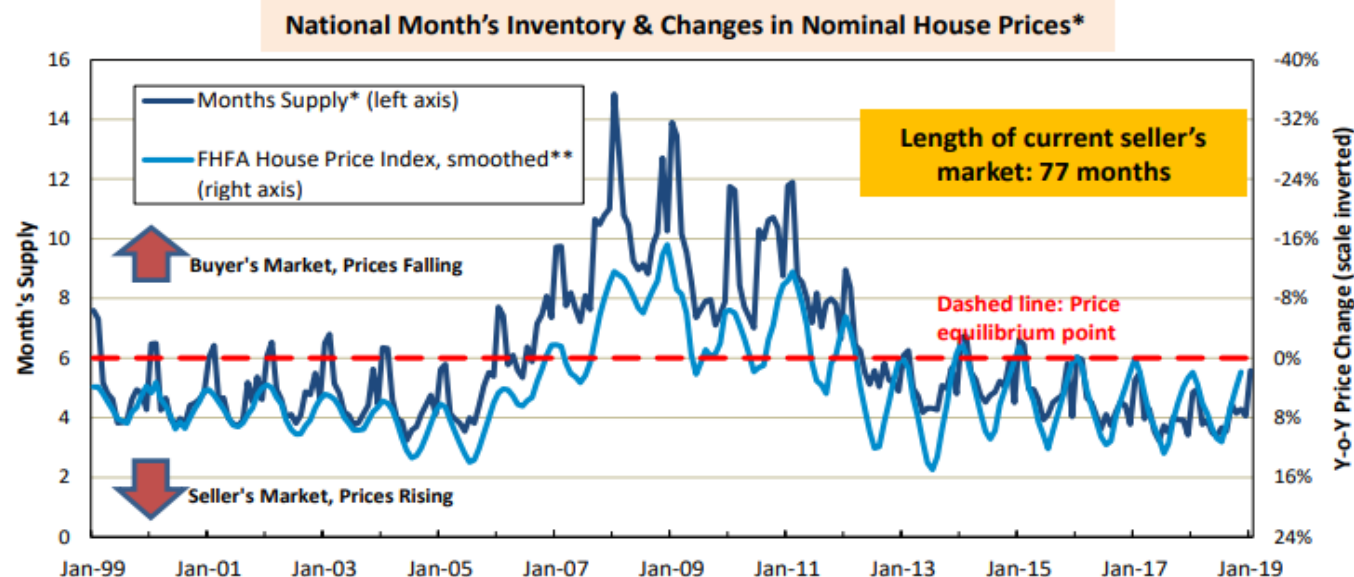


AEI Housing Market Indicators

“While still being up 25 percent from 5 years ago, purchase volume in November 2018 declined 5.1 percent from a year earlier. First-time buyer volume was down 3.6 percent, while repeat buyer volume was down 7.0%. Greater access to credit is allowing first-time buyers to offset higher mortgage rates and higher house prices, while repeat buyers, with less access to credit, are electing to drop out of the market in larger numbers.” – Edward Pinto and Tobias Peter, Center on Housing Markets and Finance, AEI

Housing Market

Supply-Demand Imbalance in the Market Is Driving Prices Up



* National Association of Realtors (NAR) "Number of homes available for sale (NSA) divided by NAR's "Existing Homes Sales (NSA)". The NAR defines a seller's market to exist when the inventory of existing homes for sale would be exhausted in six months or less at the current sales pace. Conversely, a buyer's market exists when the inventory of existing homes for sale exceeds six months at the current sales pace. (<http://www.realtor.org/news-releases/2013/04/march-existing-home-sales-slip-due-to-limited-inventory-prices-maintain-uptrend>).

** FHFA Monthly Purchase-Only Not Seasonally Adjusted house price index. The series is a 6 month trailing average.

Source: National Association of Realtors, FHFA, and AEI, Center on Housing Markets and Finance, www.AEI.org/housing.

20

AEI Housing Market Indicators

"The supply-demand imbalance persists. The NAR's not-seasonally adjusted months (mo.) inventory in January, which is traditionally the month with the greatest inventory and lowest sales, stood at 5.6 mo., up 0.7 mo. from a year ago. While this metric has started to increase over the past 5 mo., it is still averaging below 6 mo., the demarcation between a buyer's and seller's market, and it will fall back with the beginning of the spring buying season. Thus, it is too soon to project a return of a buyer's market. Instead, we expect the seller's market to modestly strengthen. This means further credit easing will continue to be capitalized into higher home prices. According to the FHFA, not-seasonally adjusted home prices rose 5.8% in November year-over-year, down from 6.8% a year ago. The chart above shows the strong inverse relationship between supply and prices." – Edward Pinto and Tobias Peter, Center on Housing Markets and Finance, AEI

Summary

In summary:

January housing data suggests a tepid housing construction and sales markets. January housing data was decidedly mixed, with month-over-month increases and year-over-year declines in total starts and permits. Most problematic was the continued decline in single-family permits, as well as construction spending – total and single-family. Housing under construction and completions data were solid. The new SF construction market needs consistent improvement in to influence the housing construction market upward. Existing sales continued their stagnating trend based on yearly analysis.

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

Pros:

- 1) Historically low interest rates are still in effect, though in aggregate rates are incrementally rising;
- 2) Housing affordability is suffering – and deteriorating in discrete U.S. metros;
- 3) Select builders are beginning to focus on entry-level houses.

Cons:

- 1) Lot availability and building regulations (according to several sources);
- 2) Increasing interest rates;
- 3) Laborer shortage;
- 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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