

The Virginia Tech – U.S. Forest Service

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Housing Commentary: Section I



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To request the commentary, please email: buehlmann@gmail.com or dalderman@fs.fed.us

Opening Remarks

October housing data suggests a slowdown, or a normalization of housing construction at a decreased level. The questions are: Is this permanent, or due to seasonal slowing? October housing data was mostly negative, with several monthly declines in single-family starts, permits, and completions, and new single-family sales. Several housing data reports were negative on year-over-year basis. Total and single-family housing under construction remained positive, except for multi-family data. Total housing completions declined on a month-over-month and yearly basis. New and existing sales continued their stagnant trend, monthly and yearly. Total private and single-family construction spending also were minimally negative on a monthly basis. The December 9th Atlanta Fed GDPNow™ model projects an aggregate -2.3% decline for residential investment spending. New private permanent site expenditures were projected for a 4.5% decrease; the improvement spending forecast was a 4.0% increase; and the manufactured/mobile housing projection was a 8.6% improvement (all: quarterly log change and seasonally adjusted annual rate)¹.

“...More than a decade after the start of the recession, housing starts sit at about 1.2 million units, which, while up substantially from a low of 500,000 or so in 2011, remain not within earshot of their cyclical high of 2 million units in 2005. (In 2008, starts sat at 900,000 units.) Yes, it’s true that the median sales price of new single-family houses (in 2017 dollars), which tumbled 16% from 2005 to 2011, has since recovered and hit an all-time high of about \$320,000. And, yes, the foreclosure rate is back to normal, and, yes, the national average credit score sits at a record high of 704. And, yes, household formation rates have improved, which should drive demand for new houses.

But, no, the housing industry has not emerged from the recession in the best of shape. Housing starts, the industry’s key indicator, remain close to the typical recession level, and at \$270 billion in 2017, the value of new single-family houses added to the housing stock is close to 50% off from the 2005 peak. Another reason the industry doesn’t have much to celebrate? With slumping housing starts and with a veritable handful of big builders controlling more of the country’s housing activity, the number of active building firms in the U.S. has declined from 75,000 in 2008 to 30,000 this year. That’s a 60% decline and the clearest sign yet of a housing industry in something closer to retreat than recovery.”² – Frank Anton, Vice Chairman Emeritus, Hanley Wood

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.

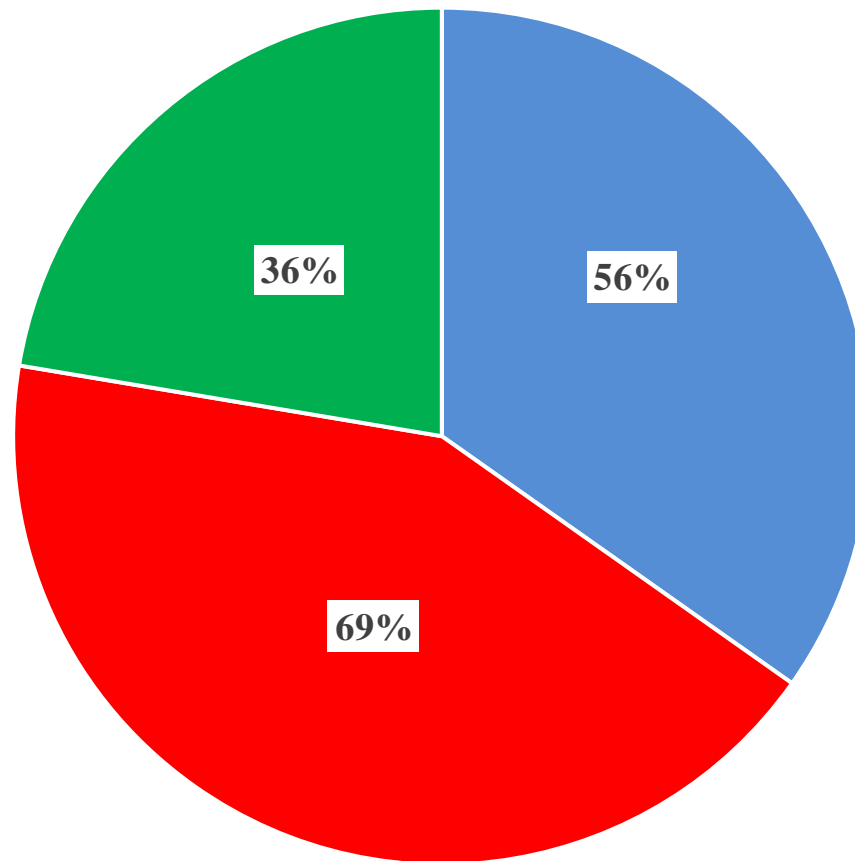
October 2018

Housing Scorecard

	M/M		Y/Y	
Housing Starts	△	1.5%	▽	2.9%
Single-family Starts	▽	1.8%	▽	2.6%
Housing Permits	▽	0.6%	▽	6.0%
Single-family Permits	▽	0.6%	▽	0.6%
Housing Under Construction	△	0.5%	△	3.6%
Single-family Under Construction	△	1.0%	△	8.4%
Housing Completions	▽	3.3%	▽	6.5%
Single-family Completions	▽	1.2%	△	4.3%
New Single-family House Sales	▽	8.9%	▽	12.0%
Private Residential				
Construction Spending	▽	0.5%	△	1.8%
Single-family Construction Spending	▽	0.5%	△	2.4%
Existing House Sales ¹	△	1.4%	▽	5.1%

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

New Construction's Percentage of Wood Products Consumption

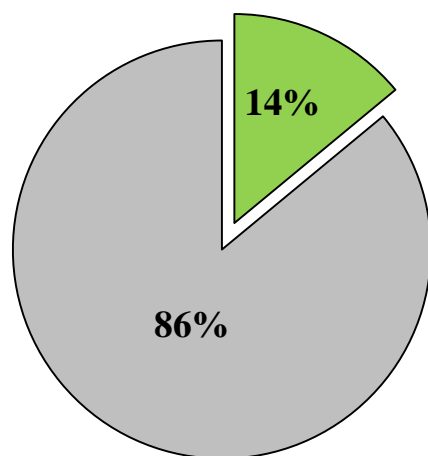


■ All Sawnwood

■ Structural panels

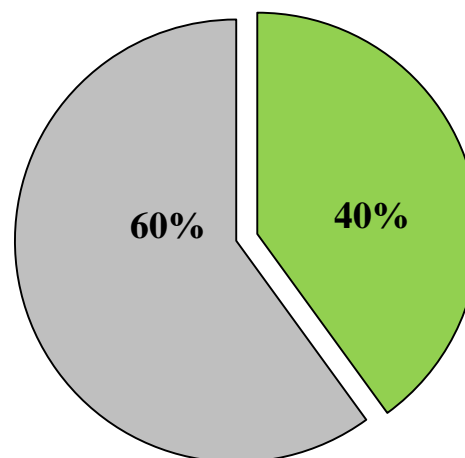
■ Non-structural panels

New SF Construction Percentage of Wood Products Consumption



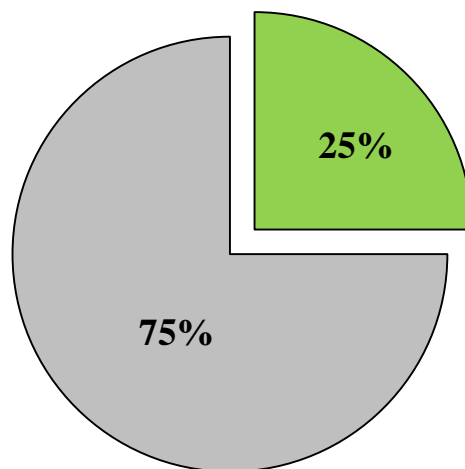
■ Non-structural panels:
New Housing

■ Other markets



■ Structural panels:
New housing

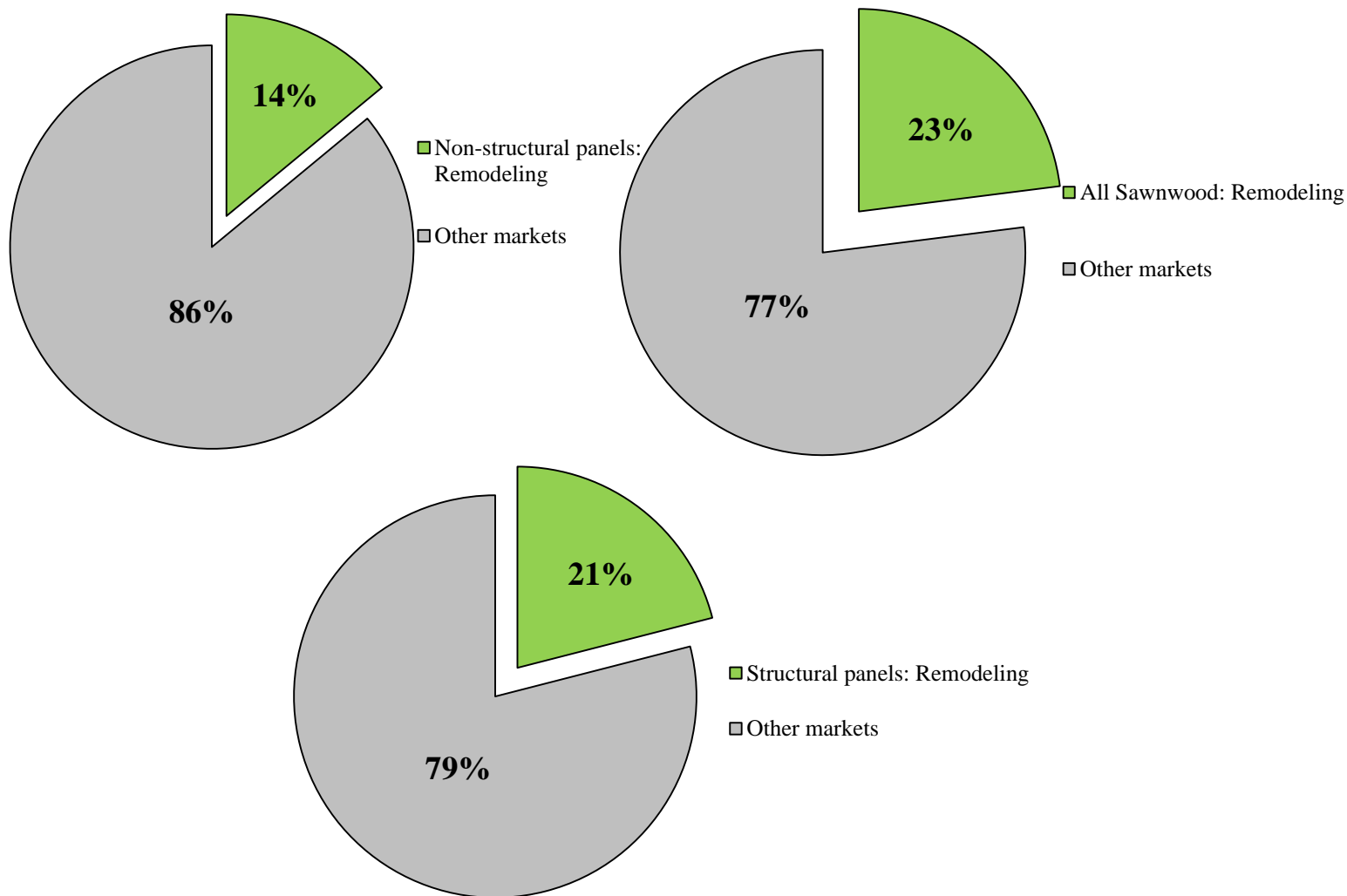
■ Other markets



■ All Sawnwood: New housing

■ Other markets

Repair and Remodeling's Percentage of Wood Products Consumption



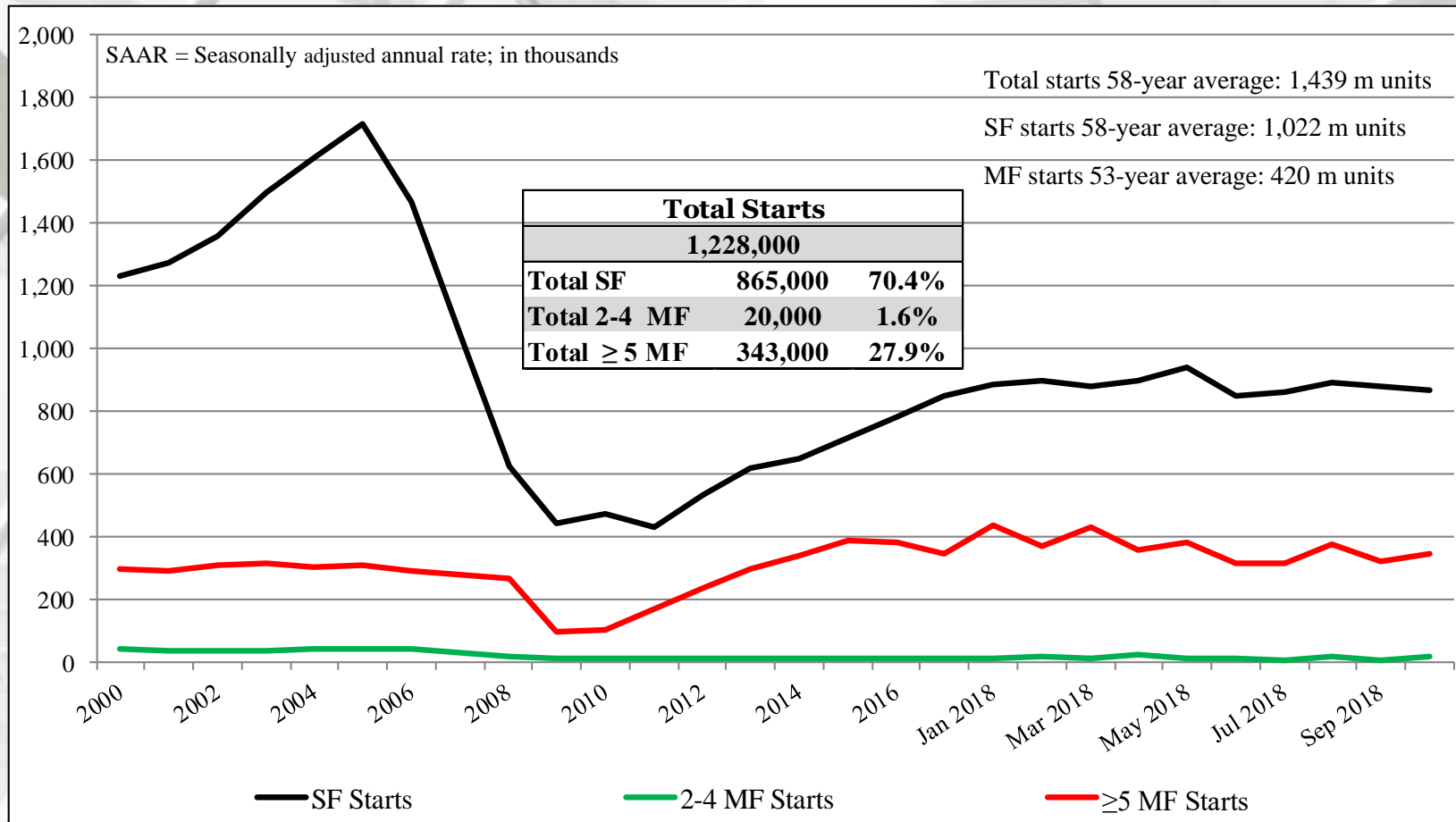
New Housing Starts

	Total Starts*	SF Starts	MF 2-4 Starts**	MF ≥5 Starts
October	1,228,000	865,000	20,000	343,000
September	1,210,000	881,000	6,000	323,000
2017	1,265,000	888,000	18,000	359,000
M/M change	1.5	-1.8	233.3	6.2
Y/Y change	-2.9	-2.6	11.1	-4.5

* 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)).

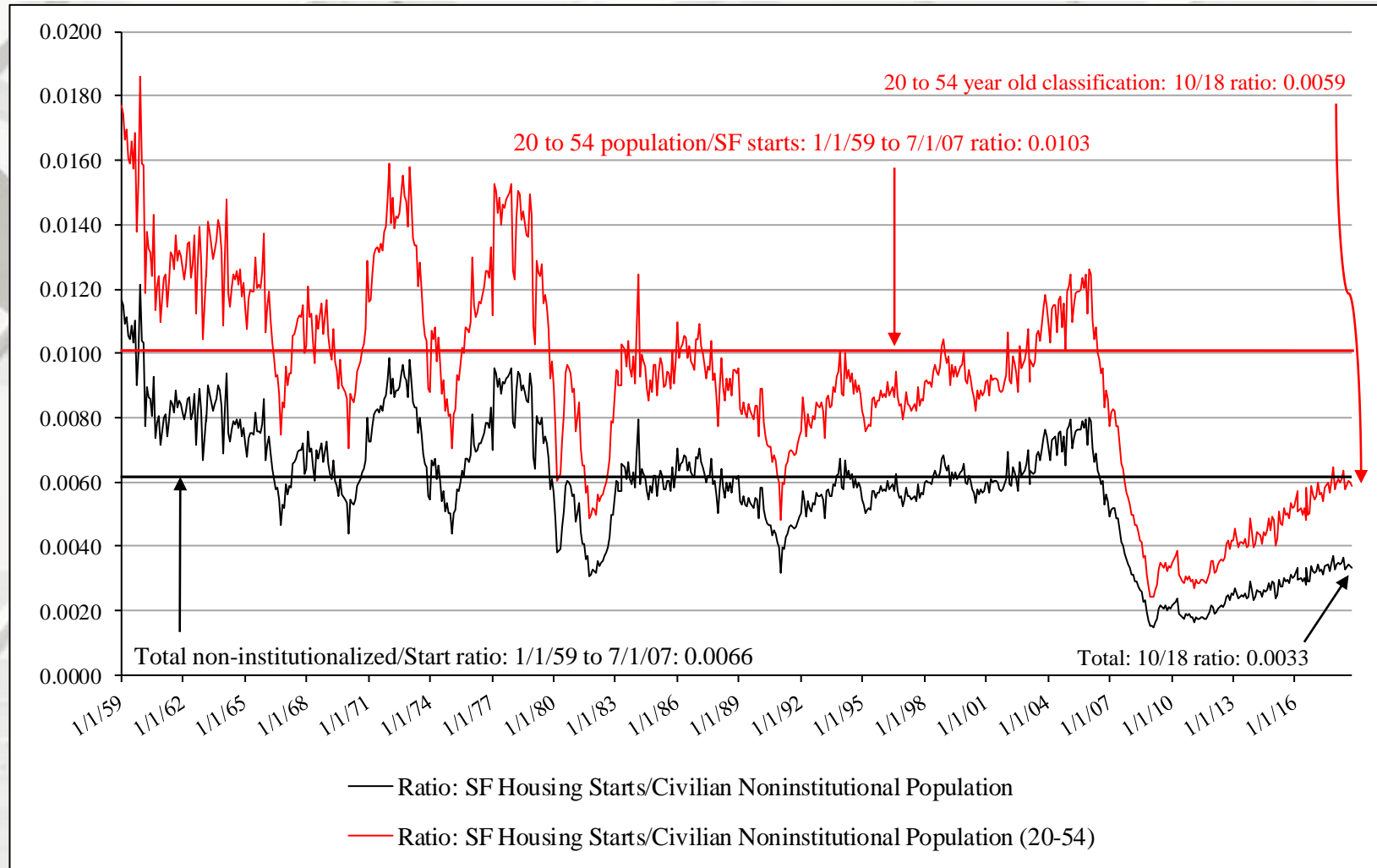
Total Housing Starts



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

* Percentage of total starts.

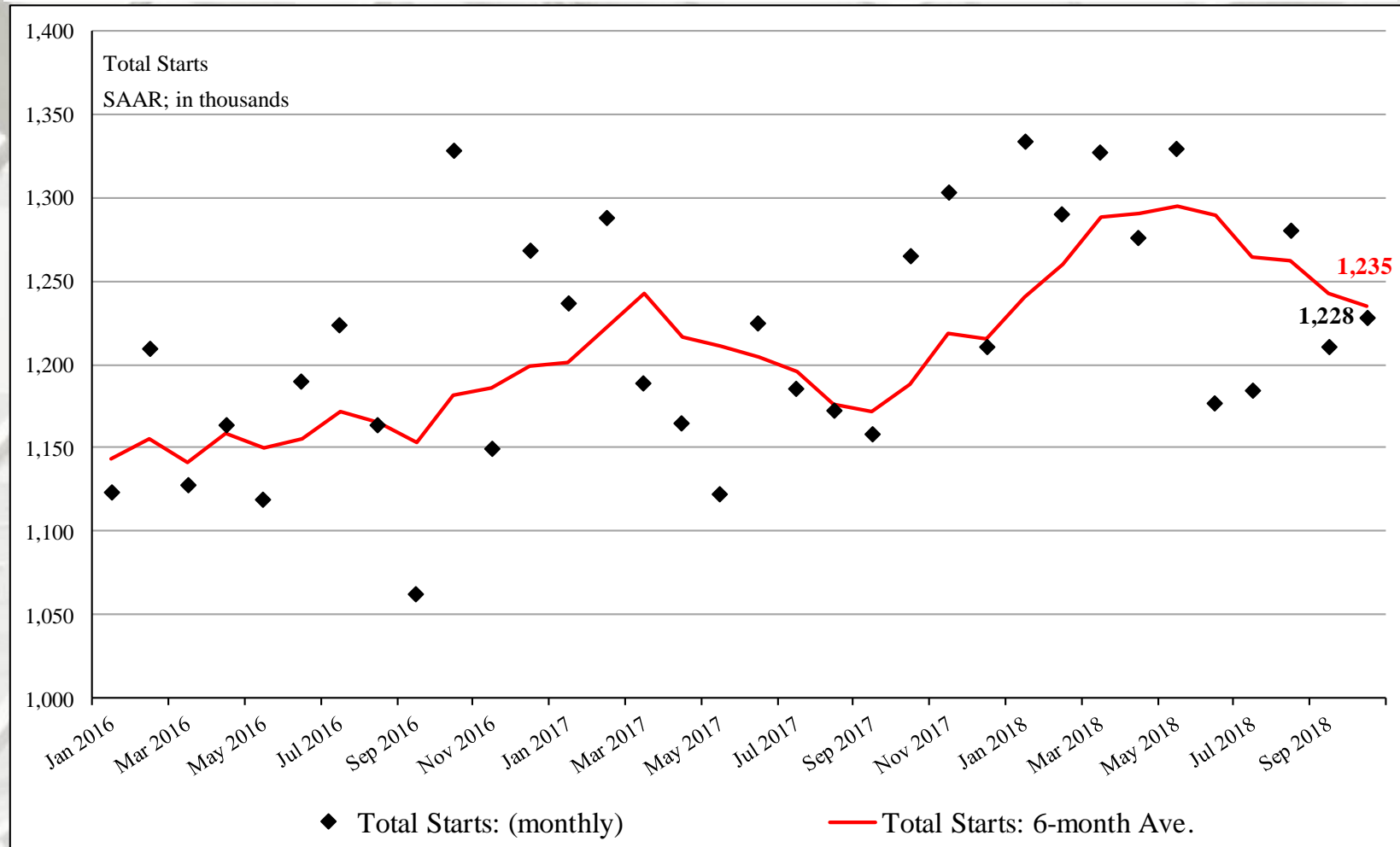
New SF Starts



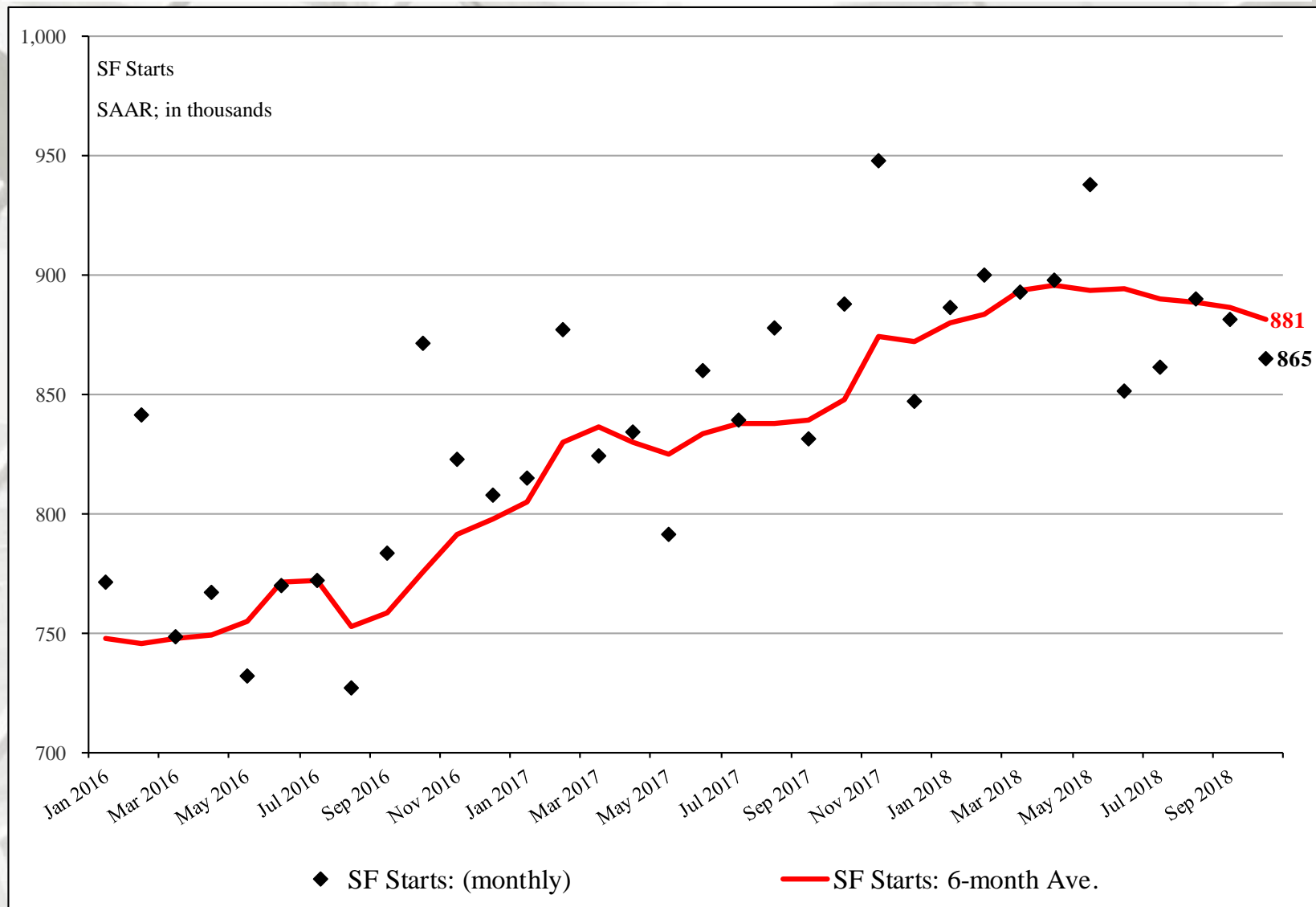
New SF starts adjusted for the US population

From October 1959 to October 2007, the long-term ratio of new SF starts to the total US non-institutionalized population was 0.0066; in October 2018 it was 0.0033 – a slight decrease from September. The long-term ratio of non-institutionalized population, aged 20 to 54 is 0.0103; in October 2018 was 0.0059 – no change from September. From a population worldview, new SF construction is less than what is necessary for changes in population (i.e., under-building).

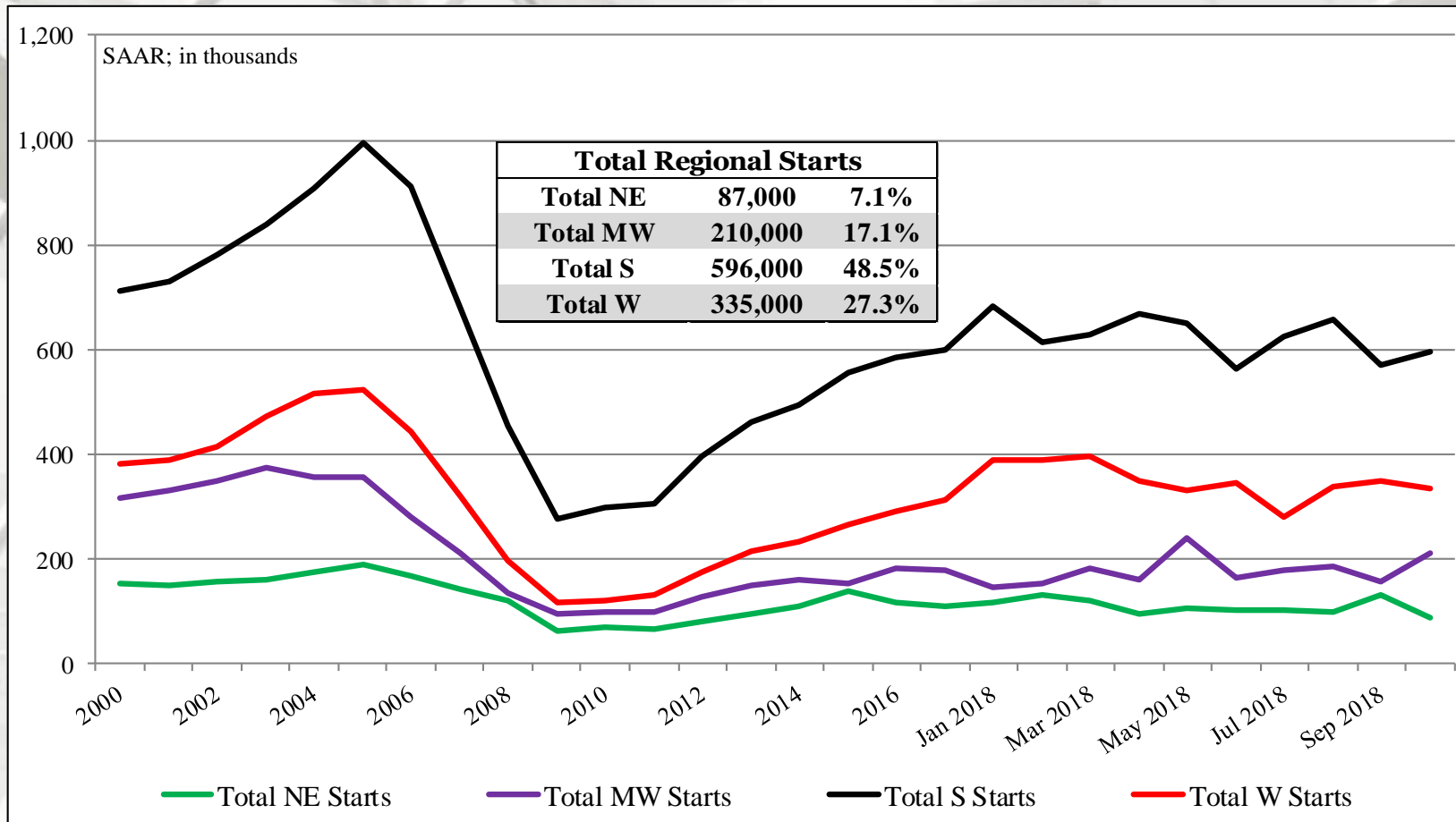
Total Housing Starts: Six-Month Average



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**
October	87,000	70,000	17,000
September	132,000	61,000	71,000
2017	145,000	64,000	81,000
M/M change	-34.1	14.8	-76.1
Y/Y change	-40.0	9.4	-79.0
	MW Total	MW SF	MW MF
October	210,000	127,000	83,000
September	158,000	129,000	29,000
2017	200,000	144,000	56,000
M/M change	32.9	-1.6	186.2
Y/Y change	5.0	-11.8	48.2

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).

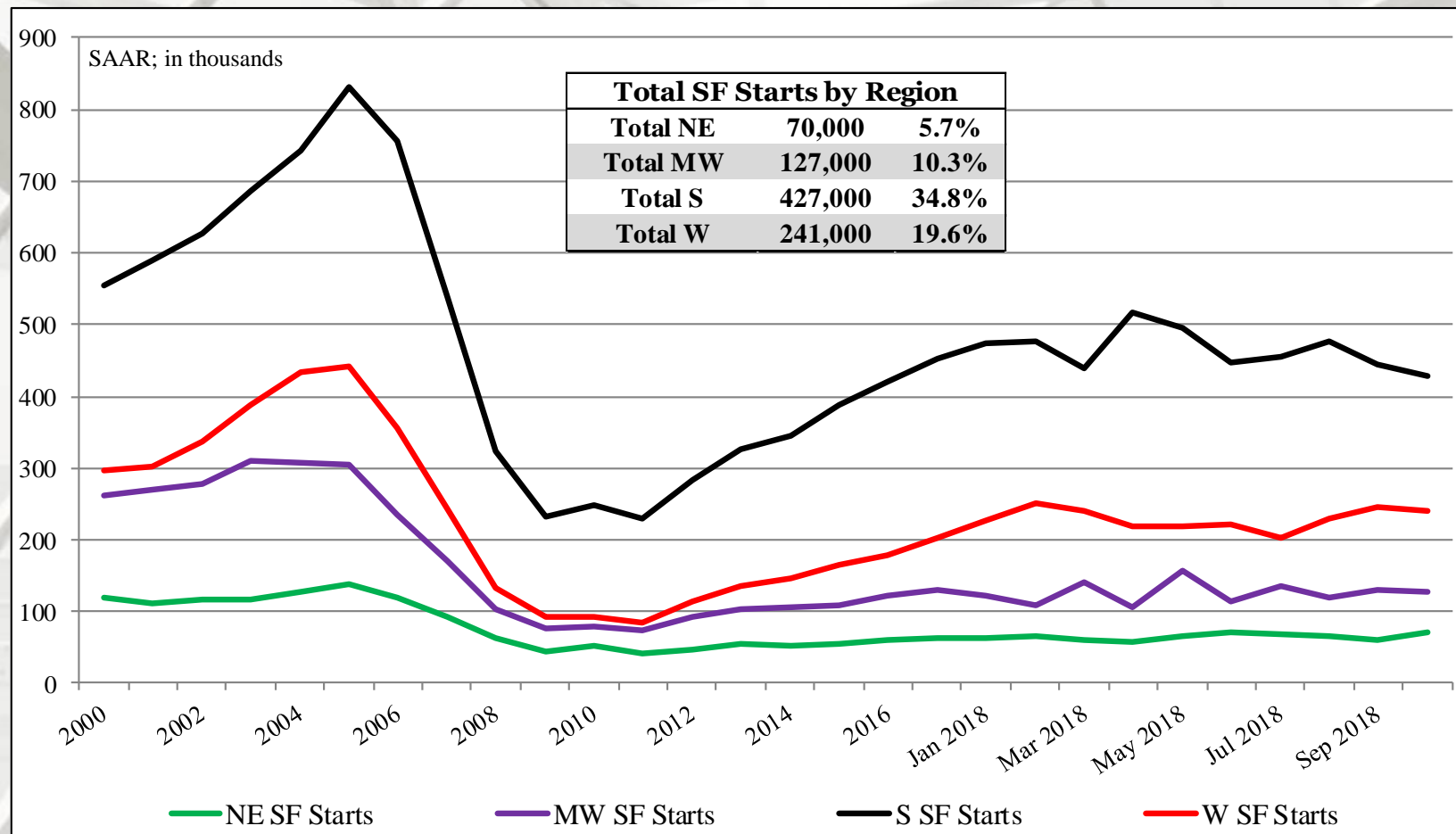
New Housing Starts by Region

	S Total	S SF	S MF**
October	596,000	427,000	169,000
September	569,000	445,000	124,000
2017	617,000	475,000	142,000
M/M change	4.7	-4.0	36.3
Y/Y change	-3.4	-10.1	19.0
	W Total	W SF	W MF
October	335,000	241,000	94,000
September	351,000	246,000	105,000
2017	303,000	205,000	98,000
M/M change	-4.6	-2.0	-10.5
Y/Y change	10.6	17.6	-4.1

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

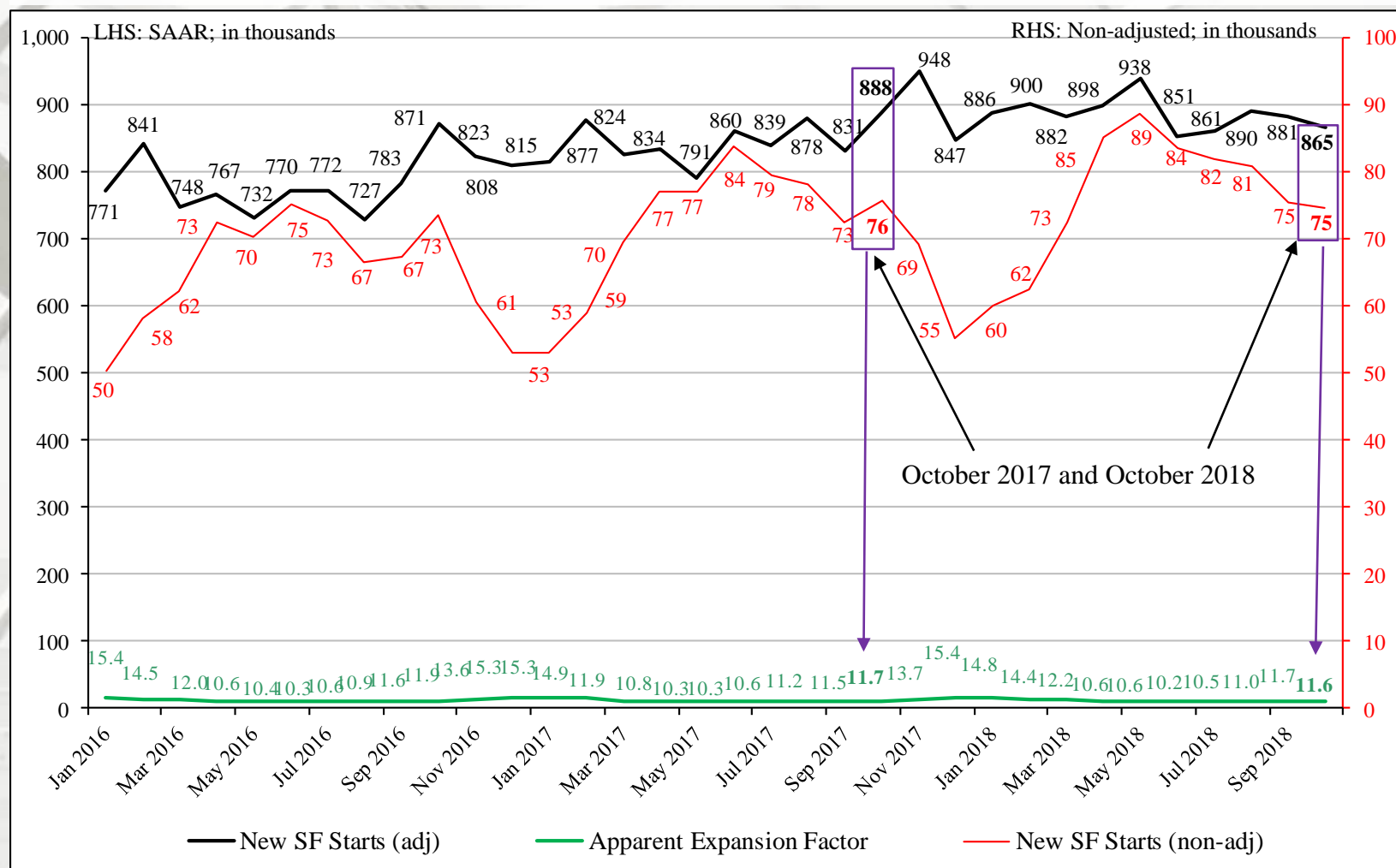


NE = Northeast, MW = Midwest, S = South, W = West

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

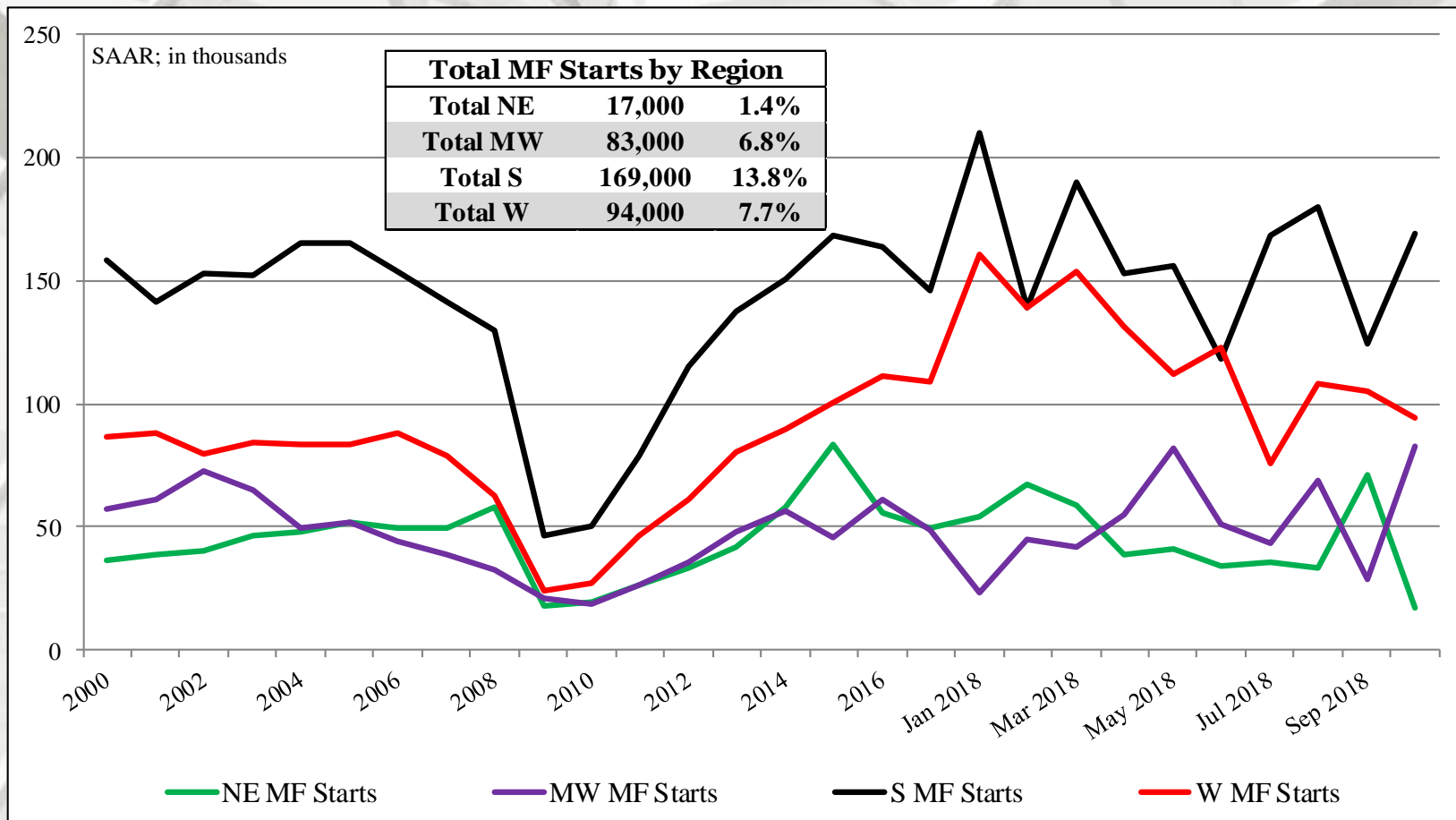


Nominal and Adjusted New SF Monthly Starts

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

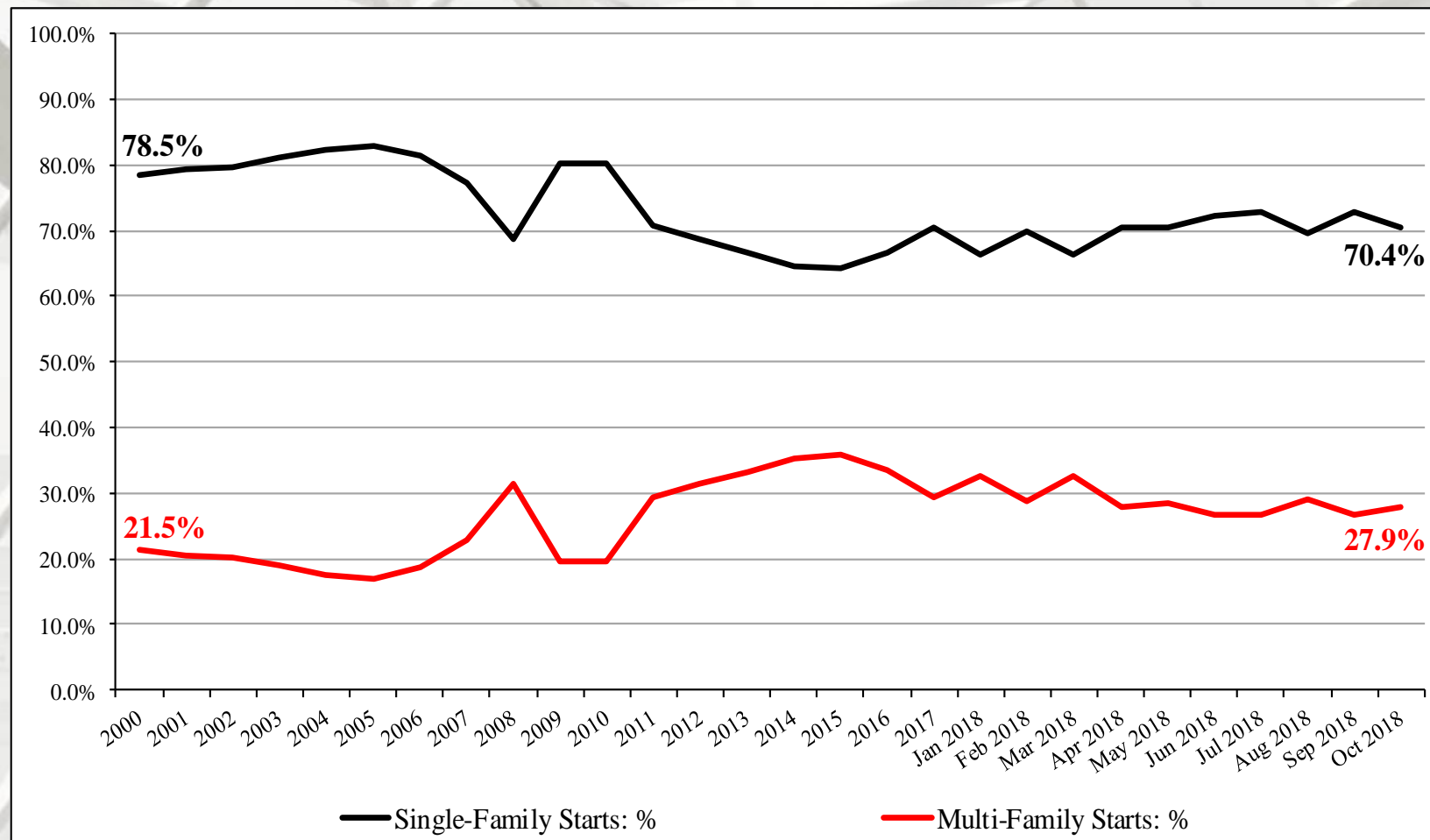


NE = Northeast, MW = Midwest, S = South, W = West

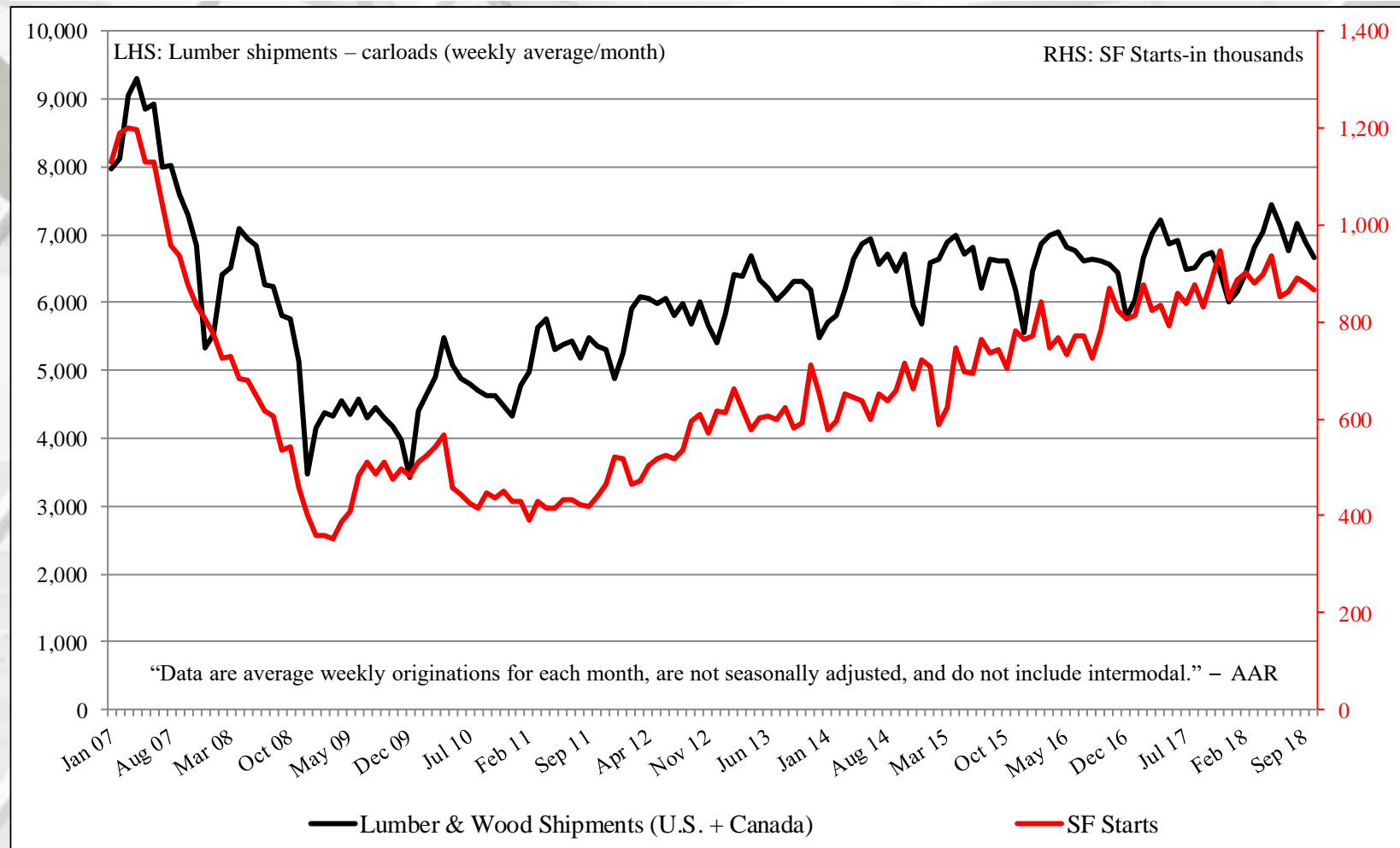
US DOC does not report 2 to 4 multi-family completions directly, this is an estimation (Total completions – SF completions).

* Percentage of total starts.

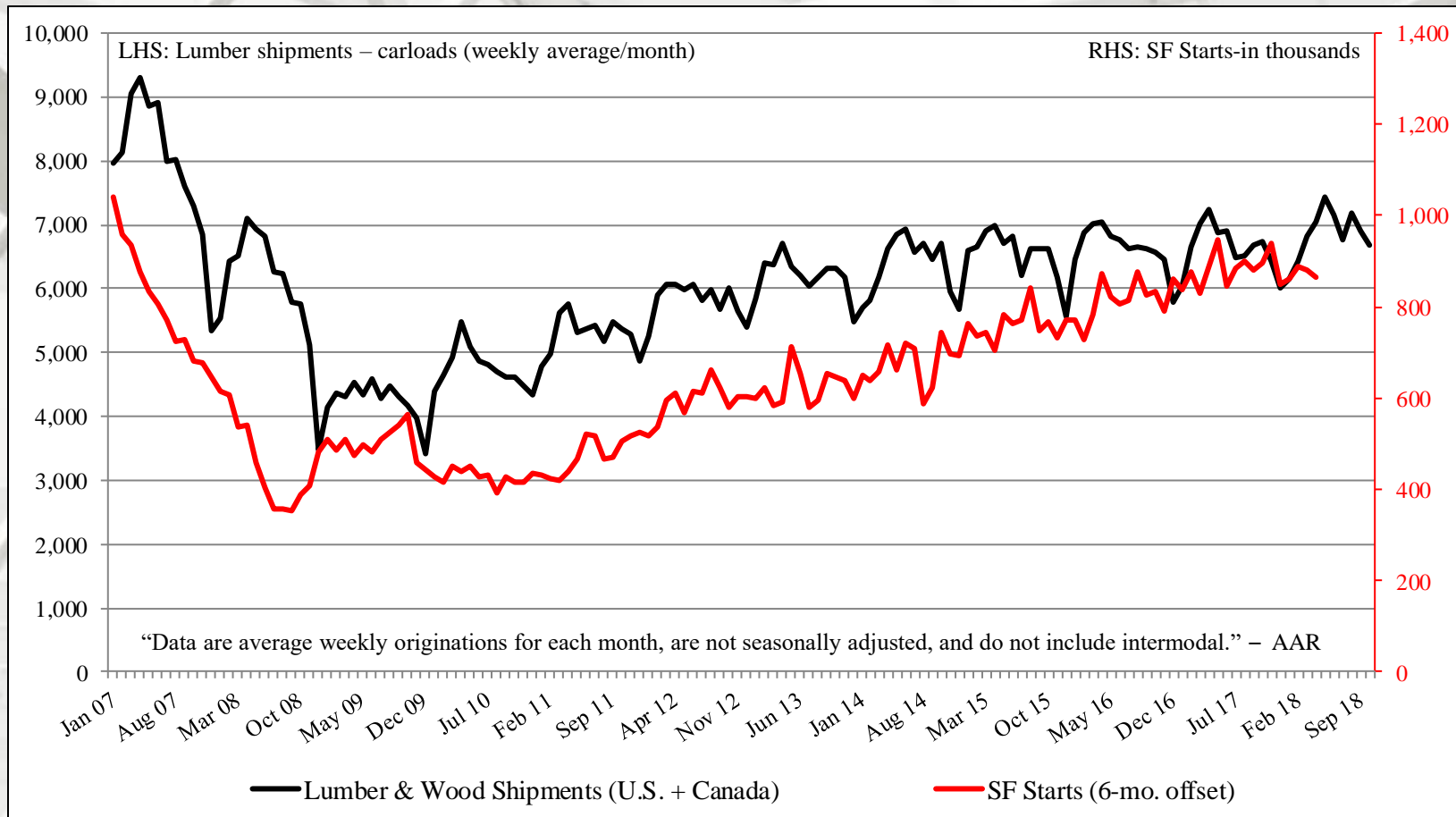
SF & MF Housing Starts (%)



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



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



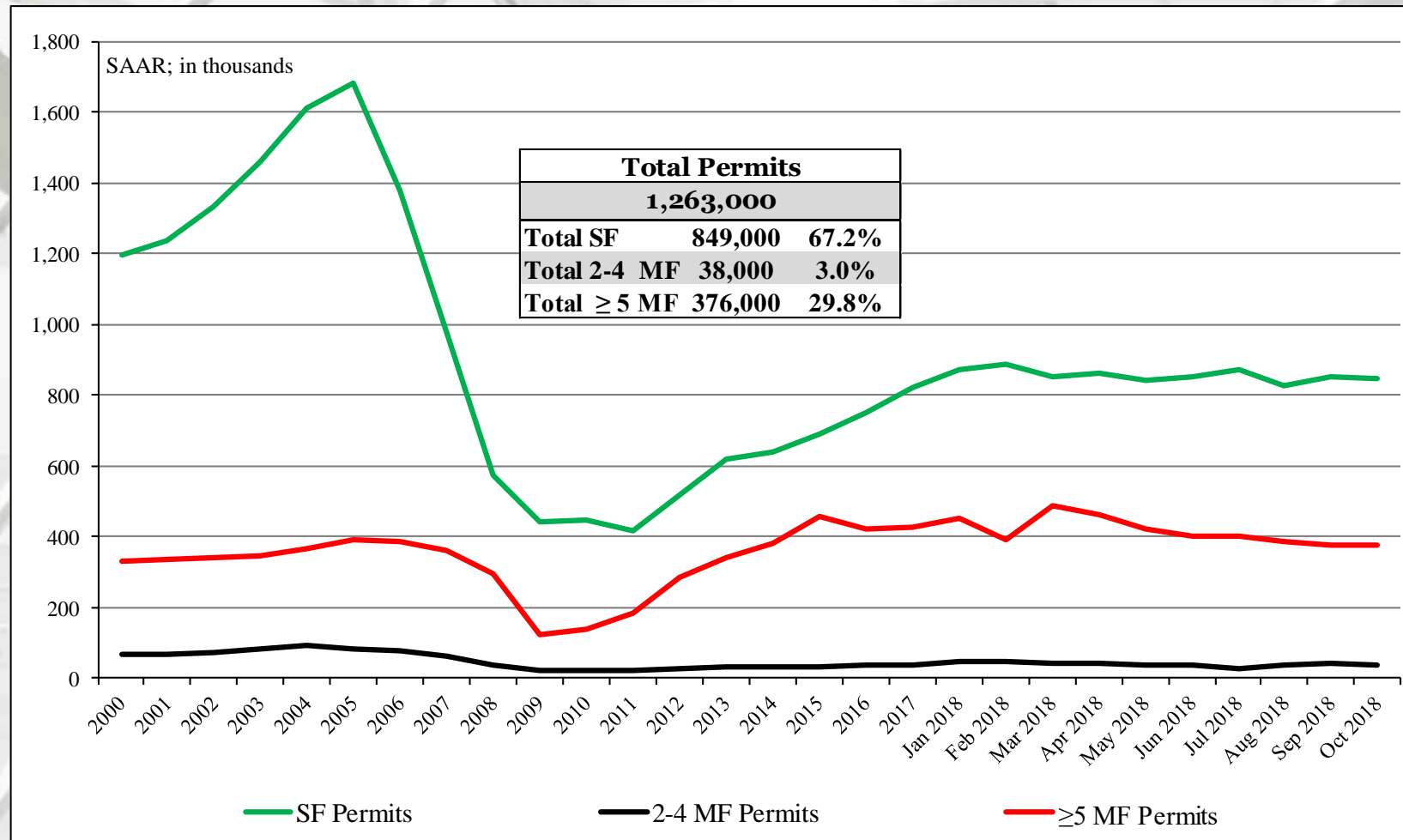
In this graph, January 2007 lumber shipments are contrasted with October 2007 SF starts, and continuing through October 2018 SF starts. The purpose is to discover if lumber shipments relate to future single-family starts. Also, it is realized that lumber and wood products are trucked; however, to our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

New Housing Permits

	Total Permits*	SF Permits	MF 2-4 unit Permits	MF ≥ 5 unit Permits
October	1,263,000	849,000	38,000	376,000
September	1,270,000	854,000	40,000	376,000
2017	1,343,000	854,000	35,000	454,000
M/M change	-0.6	-0.6	-5.0	0.0
Y/Y change	-6.0	-0.6	8.6	-17.2

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

Total New Housing Permits

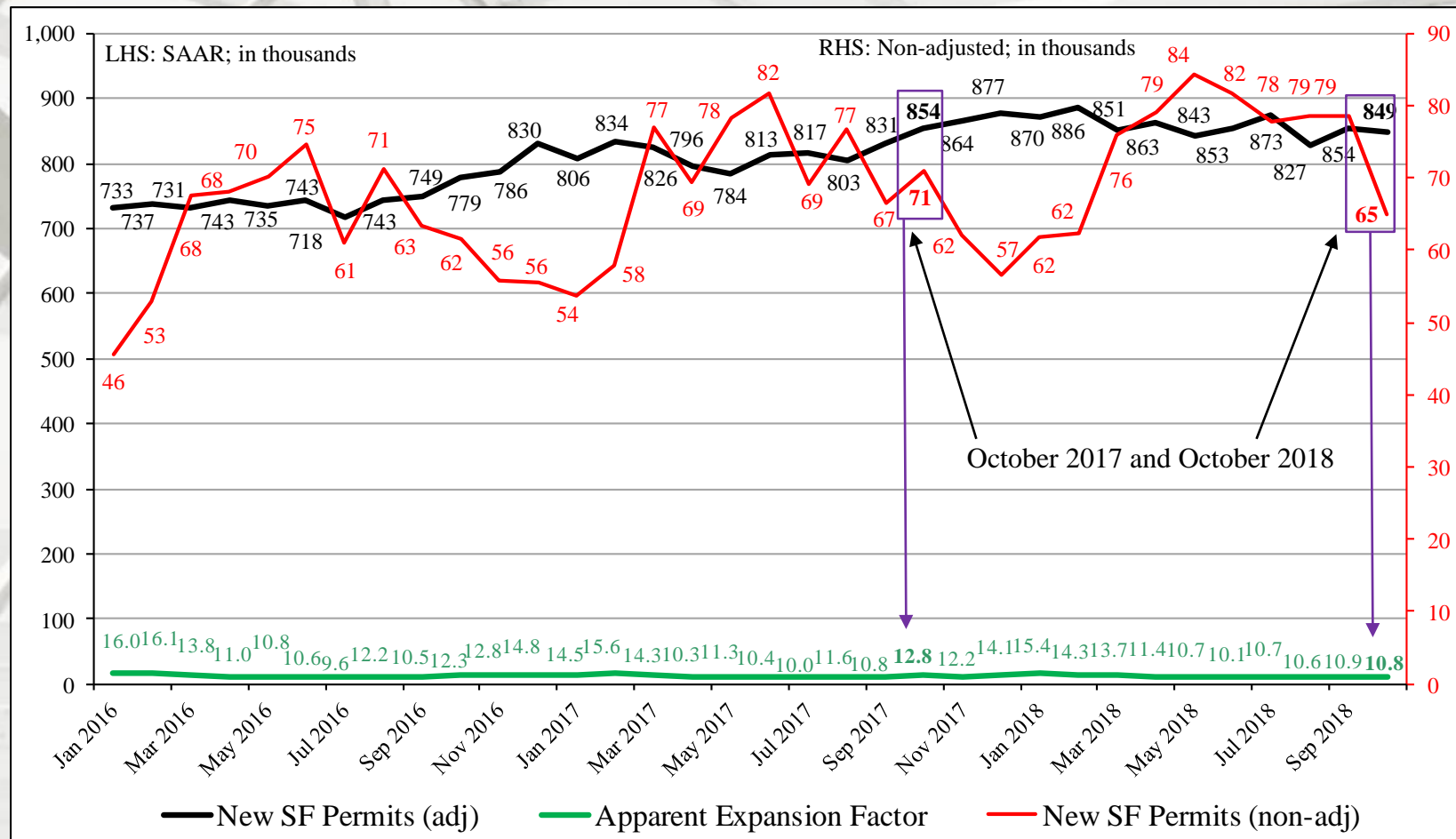


NE = Northeast, MW = Midwest, S = South, W = West

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**
October	115,000	63,000	52,000
September	95,000	57,000	38,000
2017	121,000	51,000	70,000
M/M change	21.1	10.5	36.8
Y/Y change	-5.0	23.5	-25.7
	MW Total*	MW SF	MW MF**
October	187,000	116,000	71,000
September	171,000	119,000	52,000
2017	197,000	127,000	70,000
M/M change	9.4	-2.5	36.5
Y/Y change	-5.1	-8.7	1.4

* All data are SAAR

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

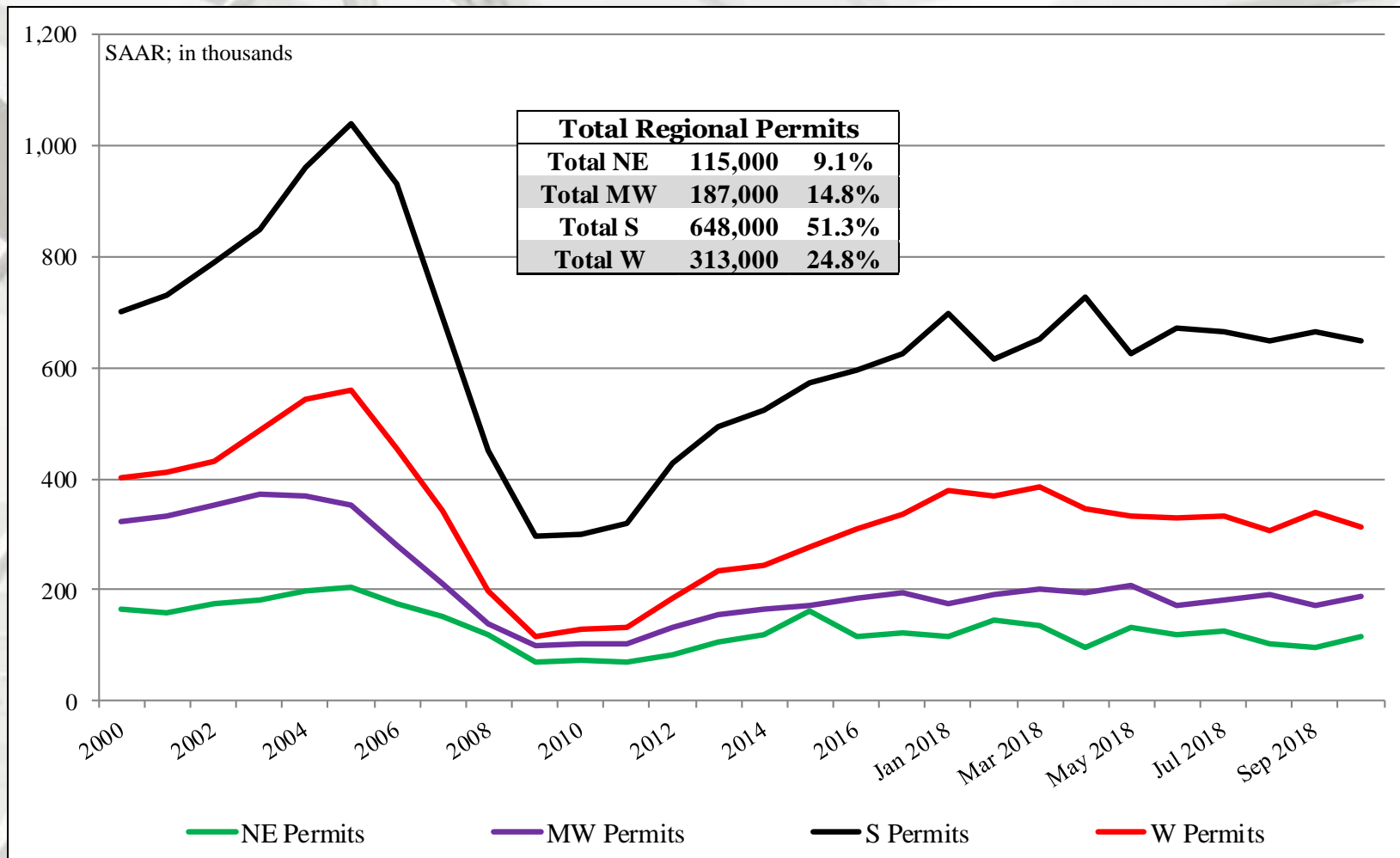
New Housing Permits by Region

	S Total*	S SF	S MF**
October	648,000	463,000	185,000
September	664,000	459,000	205,000
2017	647,000	461,000	186,000
M/M change	-2.4	0.9	-9.8
Y/Y change	0.2	0.4	-0.5
	W Total*	W SF	W MF**
October	313,000	207,000	106,000
September	340,000	219,000	121,000
2017	378,000	215,000	163,000
M/M change	-7.9	-5.5	-12.4
Y/Y change	-17.2	-3.7	-35.0

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

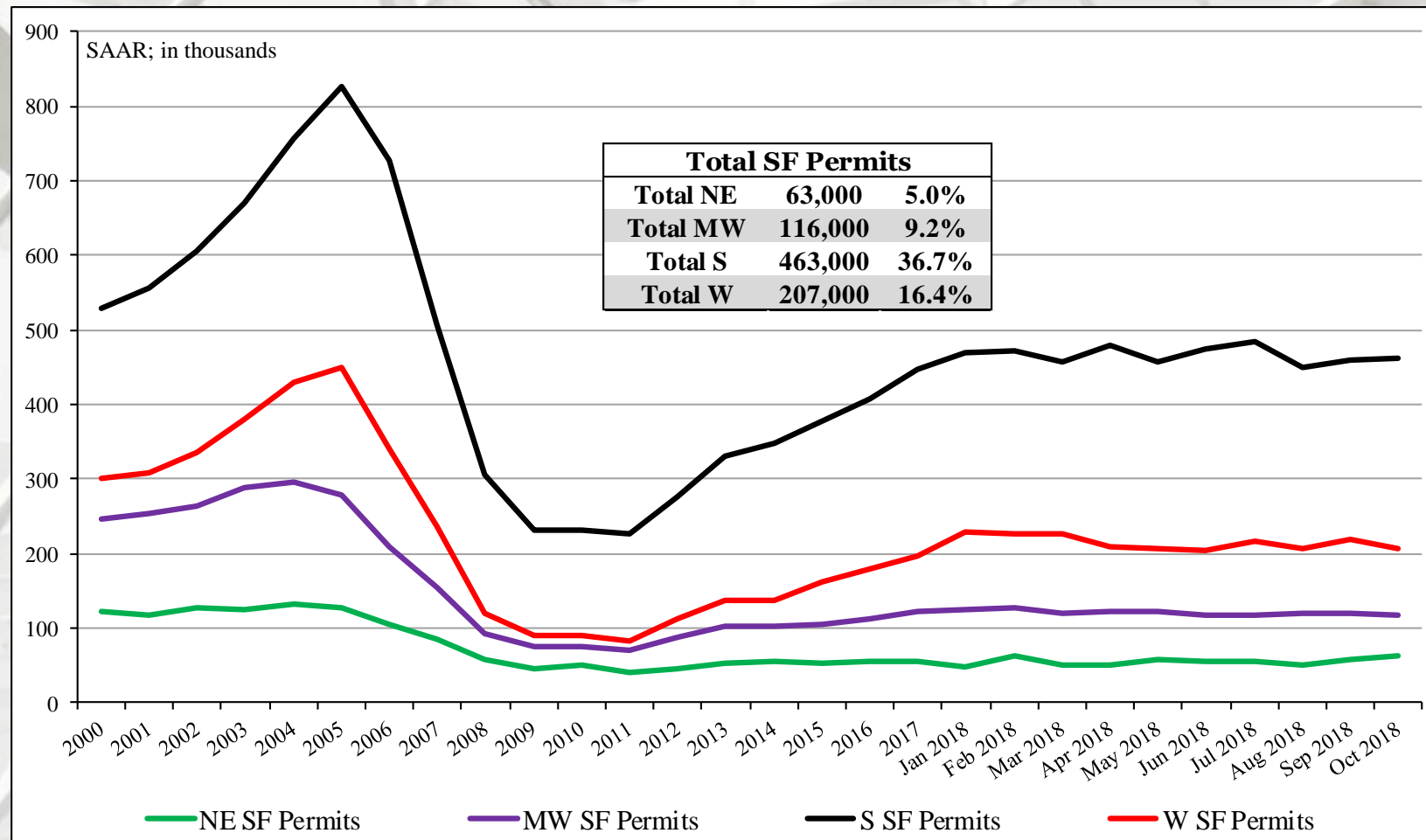


NE = Northeast, MW = Midwest, S = South, W = West

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

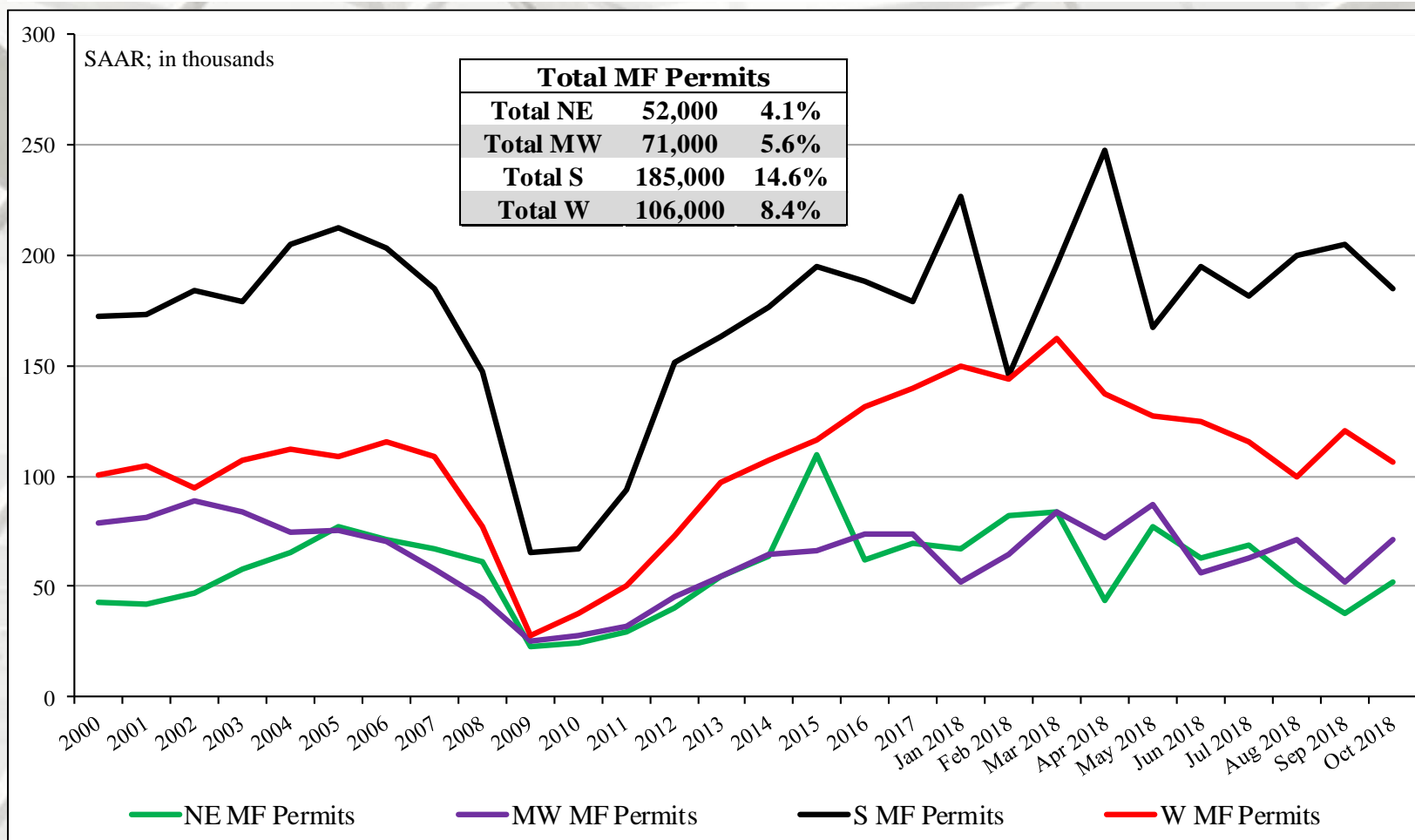


NE = Northeast, MW = Midwest, S = South, W = West

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

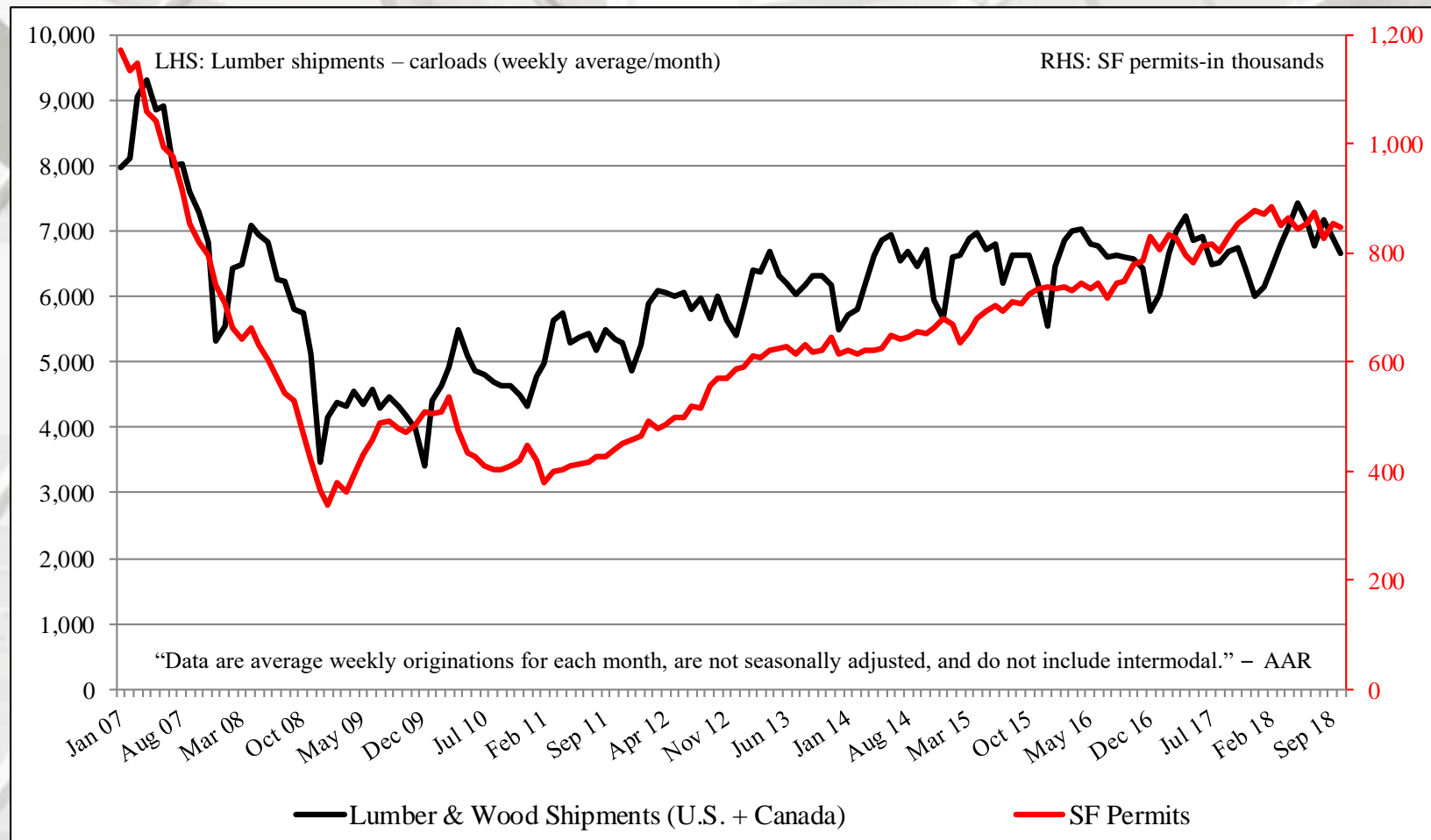


NE = Northeast, MW = Midwest, S = South, W = West

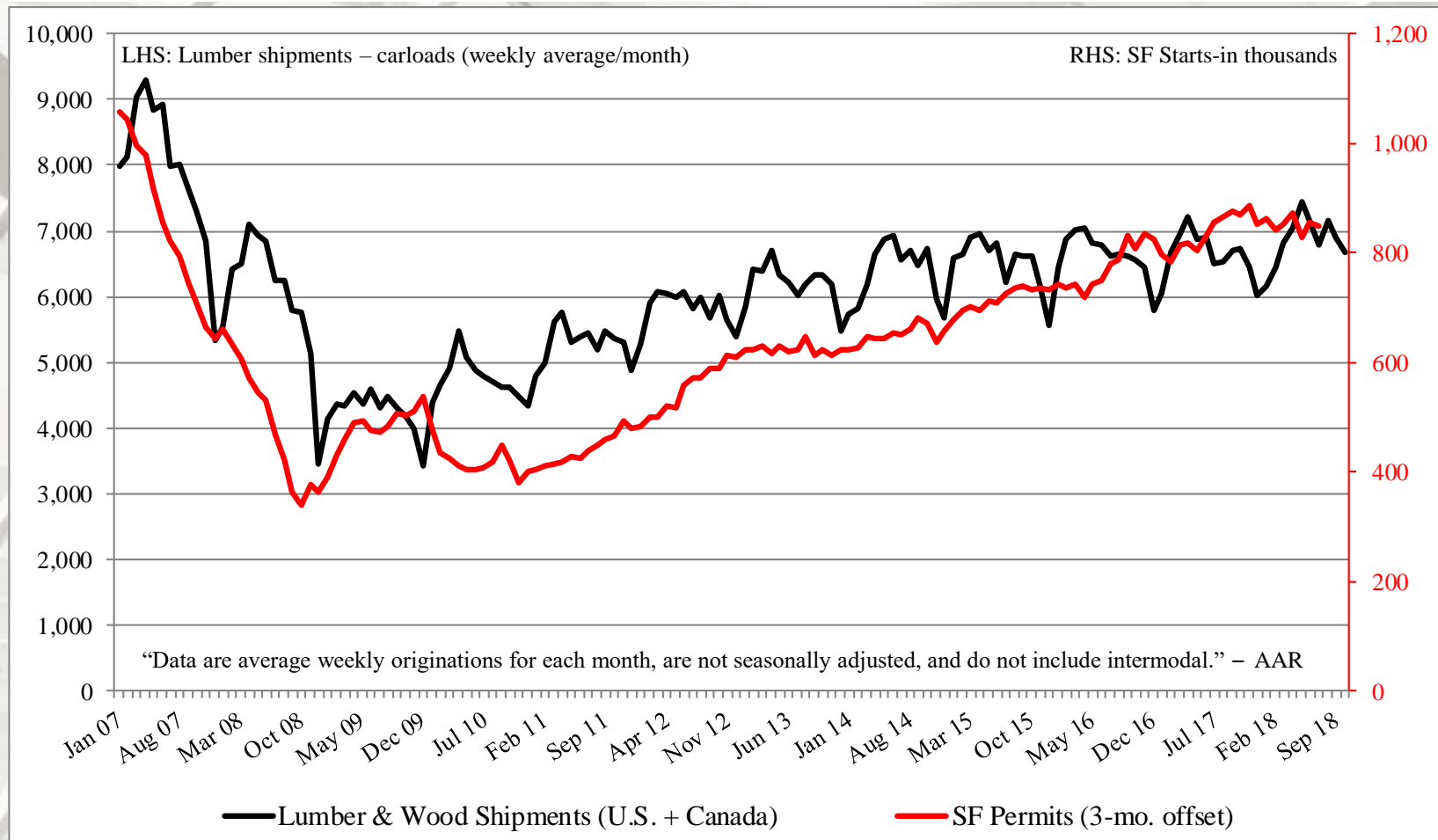
US DOC does not report 2 to 4 multi-family completions directly, this is an estimation (Total completions – SF completions).

* 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 October 2007 SF permits, continuing through October 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.

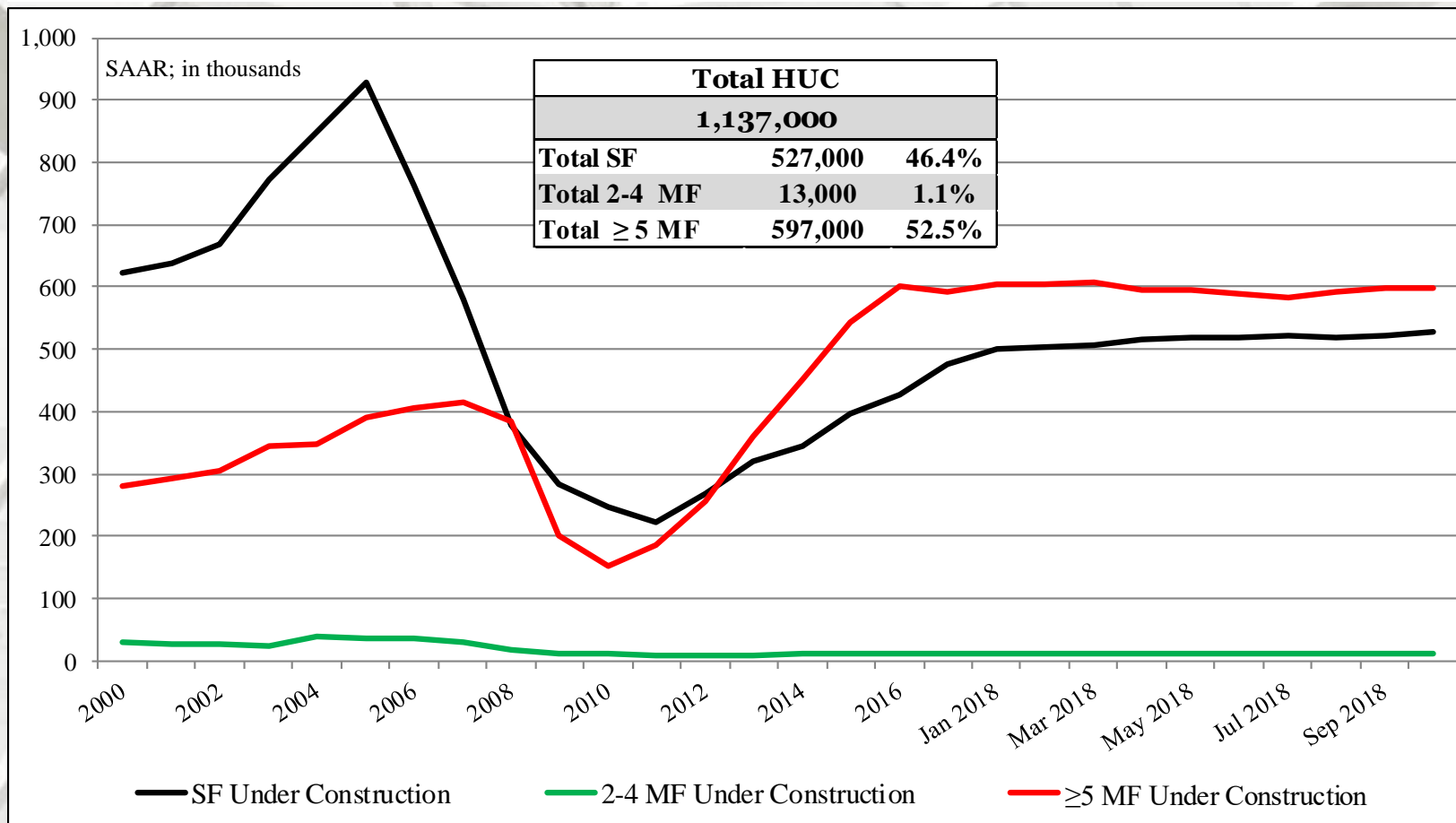
New Housing Under Construction (HUC)

	Total Under Construction*	SF Under Construction	MF 2-4 unit** Under Construction	MF ≥ 5 unit Under Construction
October	1,137,000	527,000	13,000	597,000
September	1,131,000	522,000	12,000	597,000
2017	1,097,000	486,000	12,000	599,000
M/M change	0.5	1.0	8.3	0.0
Y/Y change	3.6	8.4	8.3	-0.3

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



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**
October	190,000	61,000	129,000
September	191,000	60,000	131,000
2017	192,000	53,000	139,000
M/M change	-0.5	1.7	-1.5
Y/Y change	-1.0	15.1	-7.2
	MW Total	MW SF	MW MF
October	152,000	82,000	70,000
September	152,000	82,000	70,000
2017	154,000	80,000	74,000
M/M change	0.0	0.0	0.0
Y/Y change	-1.3	2.5	-5.4

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).

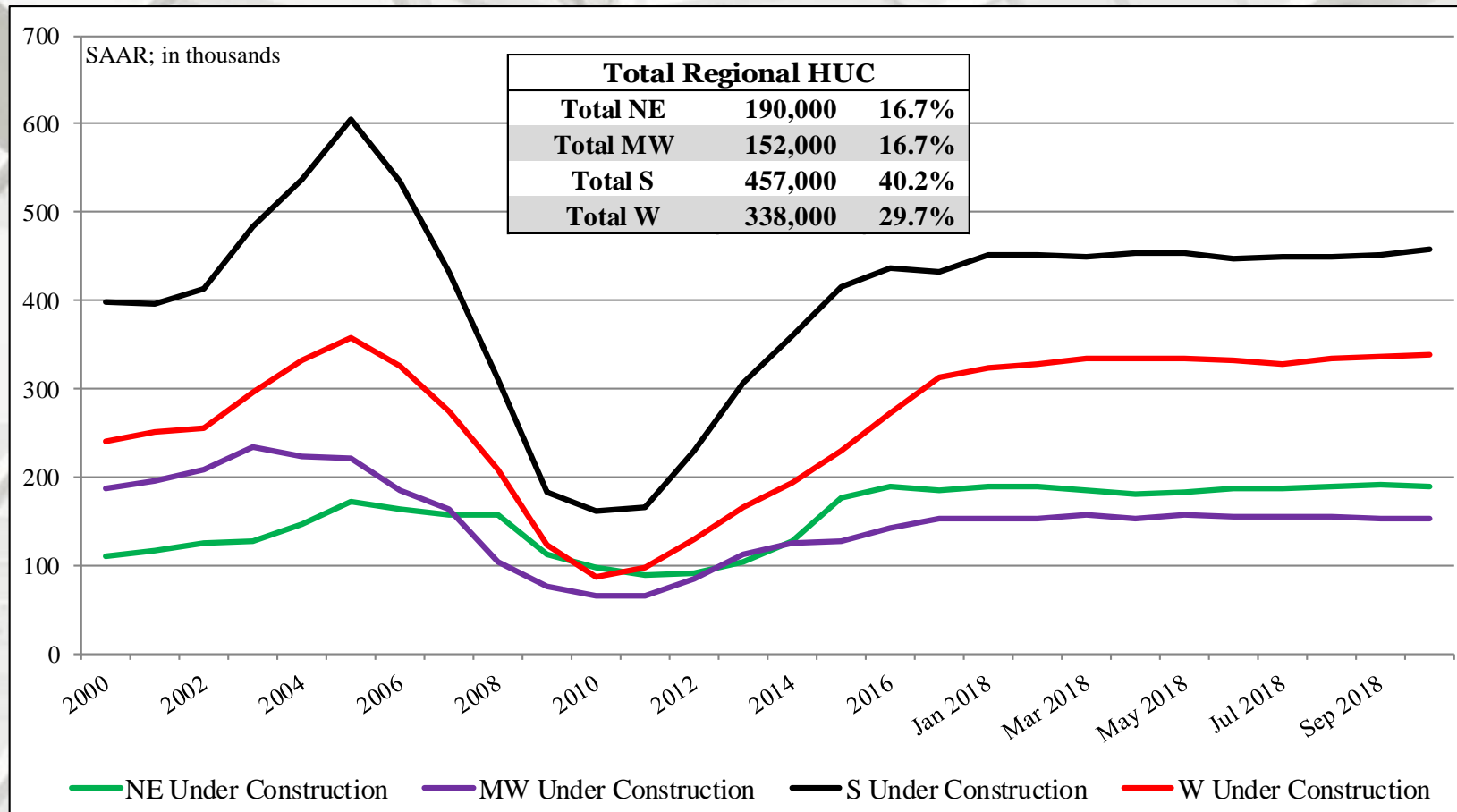
New Housing Under Construction by Region

	S Total	S SF	S MF**
October	457,000	241,000	216,000
September	452,000	238,000	214,000
2017	444,000	230,000	214,000
M/M change	1.1	1.3	0.9
Y/Y change	2.9	4.8	0.9
	W Total	W SF	W MF
October	338,000	143,000	195,000
September	336,000	142,000	194,000
2017	307,000	123,000	184,000
M/M change	0.6	0.7	0.5
Y/Y change	10.1	16.3	6.0

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

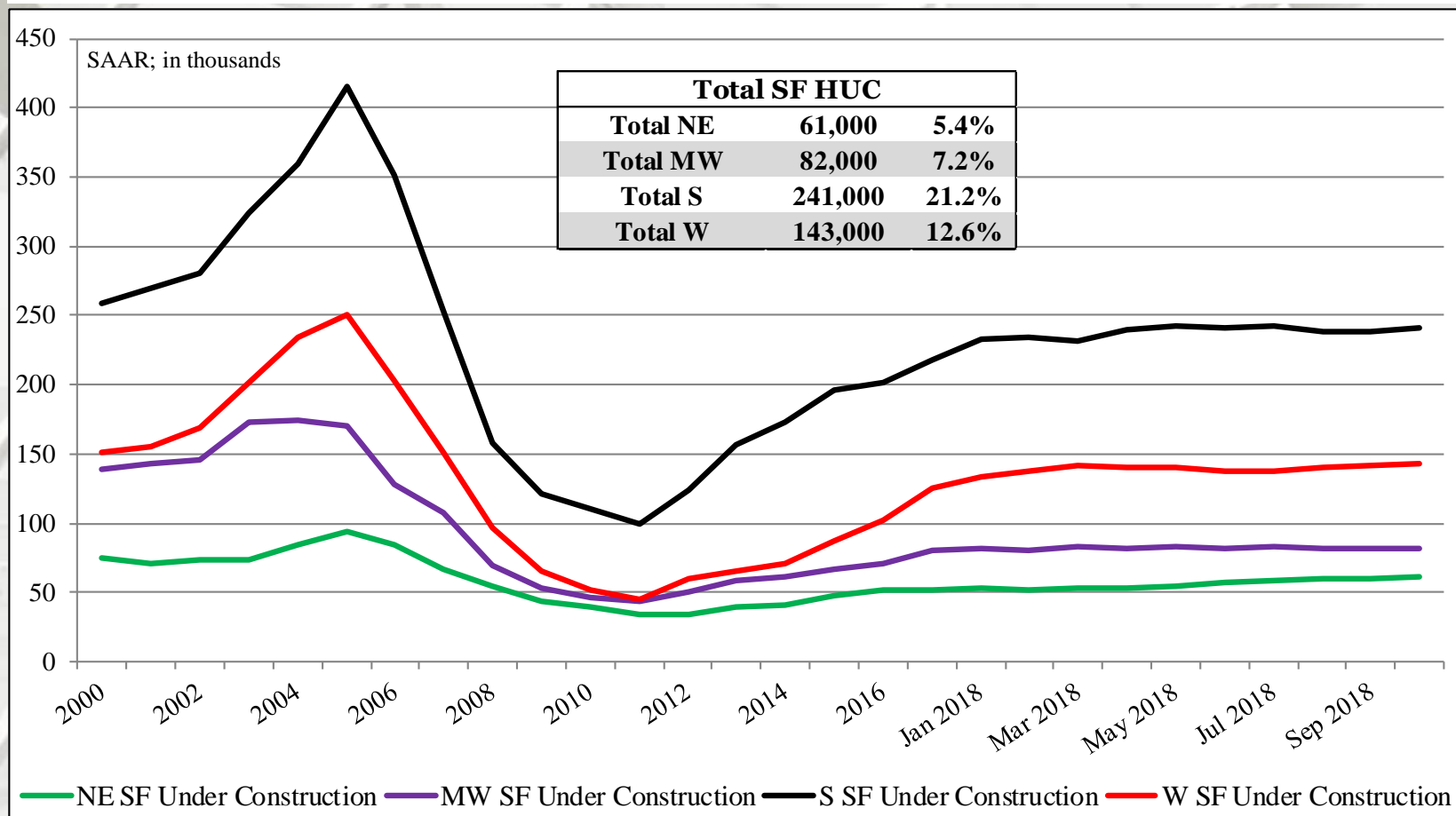


NE = Northeast, MW = Midwest, S = South, W = West

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

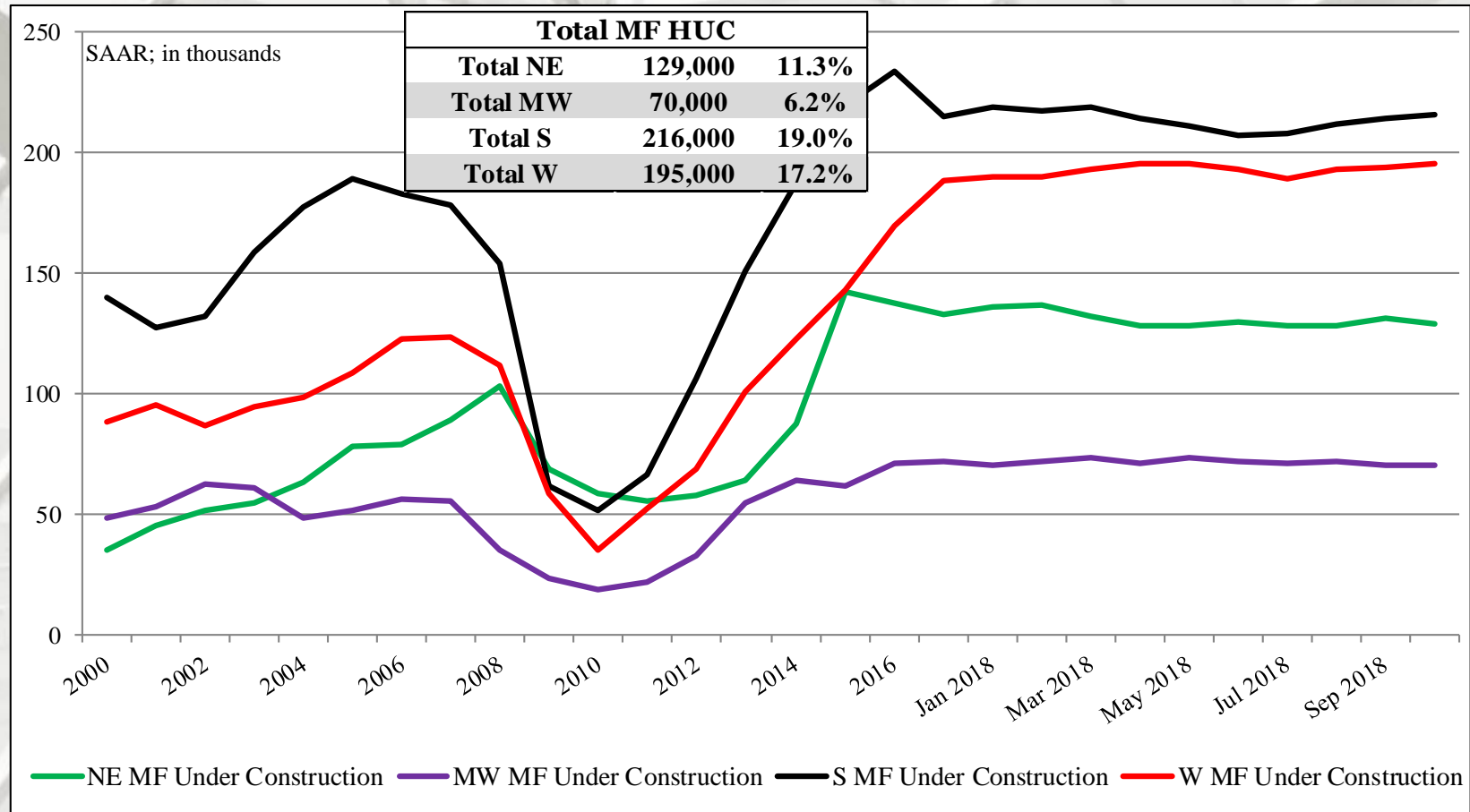


NE = Northeast, MW = Midwest, S = South, W = West

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.

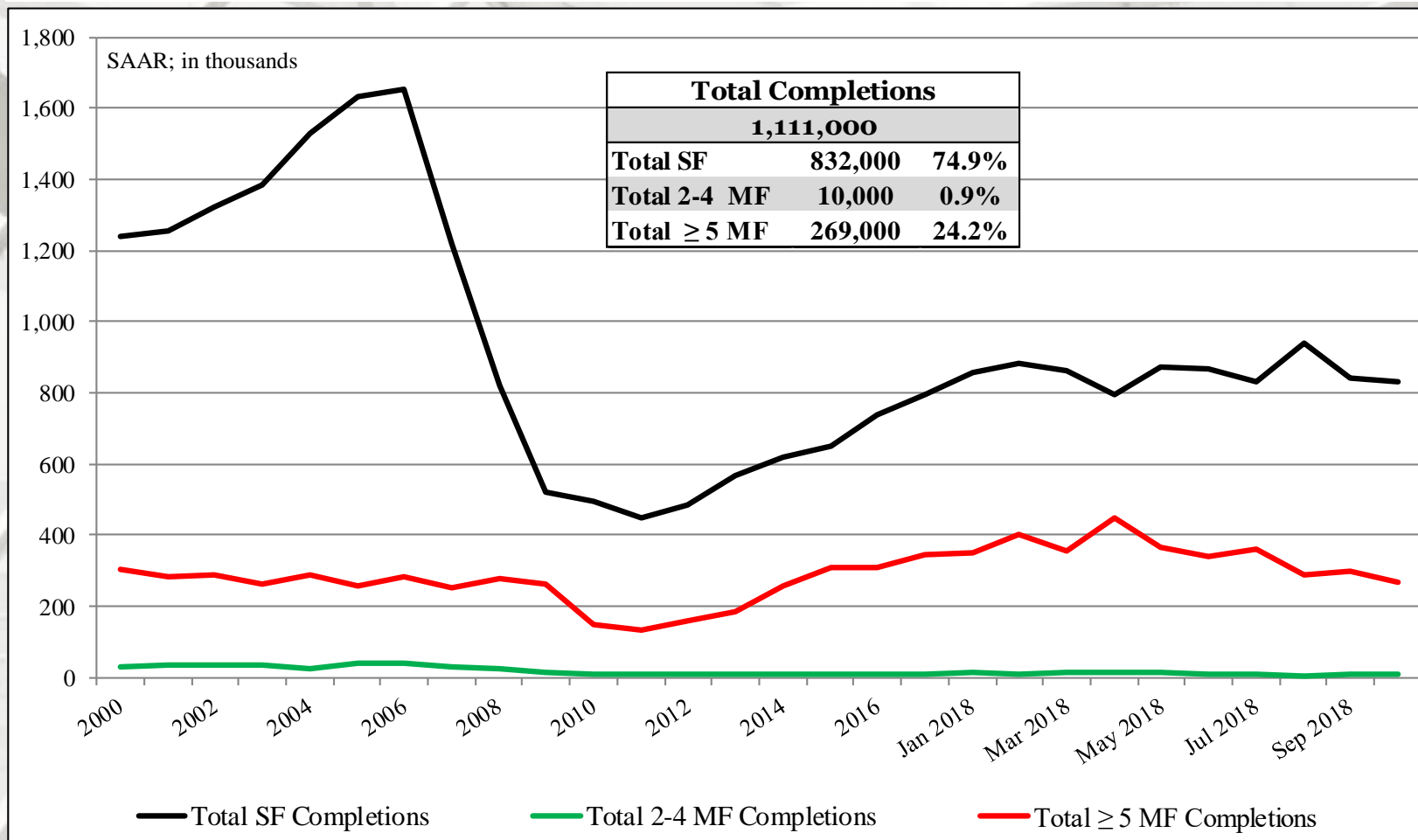
New Housing Completions

	Total Completions*	SF Completions	MF 2-4 unit**	MF ≥ 5 unit Completions
October	1,111,000	832,000	10,000	269,000
September	1,149,000	842,000	8,000	299,000
2017	1,188,000	798,000	7,000	383,000
M/M change	-3.3%	-1.2%	25.0%	-10.0%
Y/Y change	-6.5%	4.3%	42.9%	-29.8%

* 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)).

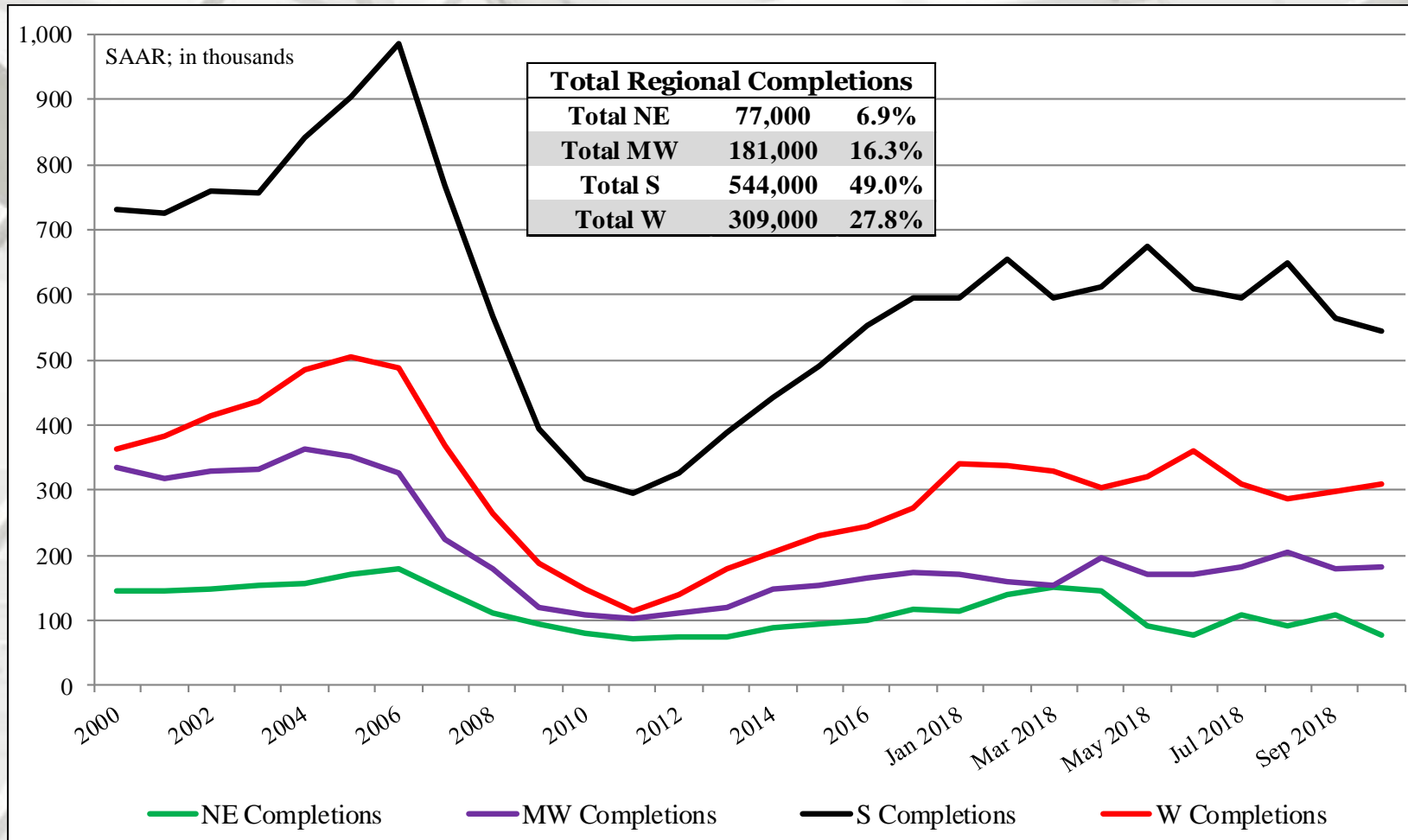
Total Housing Completions



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

New Housing Completions by Region

	NE Total	NE SF	NE MF**
October	77,000	49,000	28,000
September	107,000	60,000	47,000
2017	139,000	61,000	78,000
M/M change	-28.0%	-18.3%	-40.4%
Y/Y change	-44.6%	-19.7%	-64.1%
	MW Total	MW SF	MW MF
October	181,000	124,000	57,000
September	178,000	129,000	49,000
2017	148,000	129,000	19,000
M/M change	1.7%	-3.9%	16.3%
Y/Y change	22.3%	-3.9%	200.0%

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).

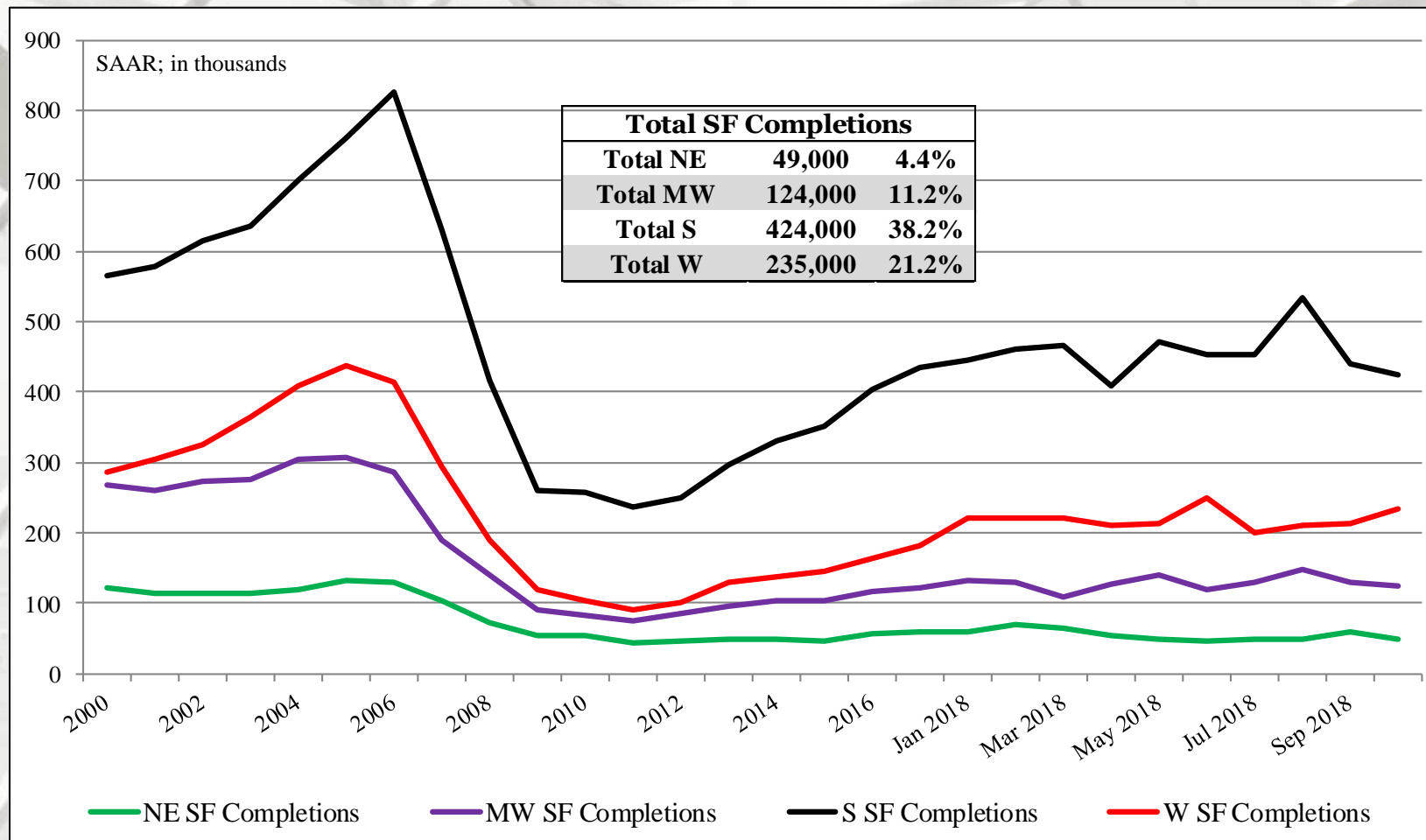
New Housing Completions by Region

	S Total	S SF	S MF**
October	544,000	424,000	120,000
September	565,000	439,000	126,000
2017	628,000	427,000	201,000
M/M change	-3.7%	-3.4%	-4.8%
Y/Y change	-13.4%	-0.7%	-40.3%
	W Total	W SF	W MF
October	309,000	235,000	74,000
September	299,000	214,000	85,000
2017	273,000	181,000	92,000
M/M change	3.3%	9.8%	-12.9%
Y/Y change	13.2%	29.8%	-19.6%

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

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

Total Housing SF Completions by Region

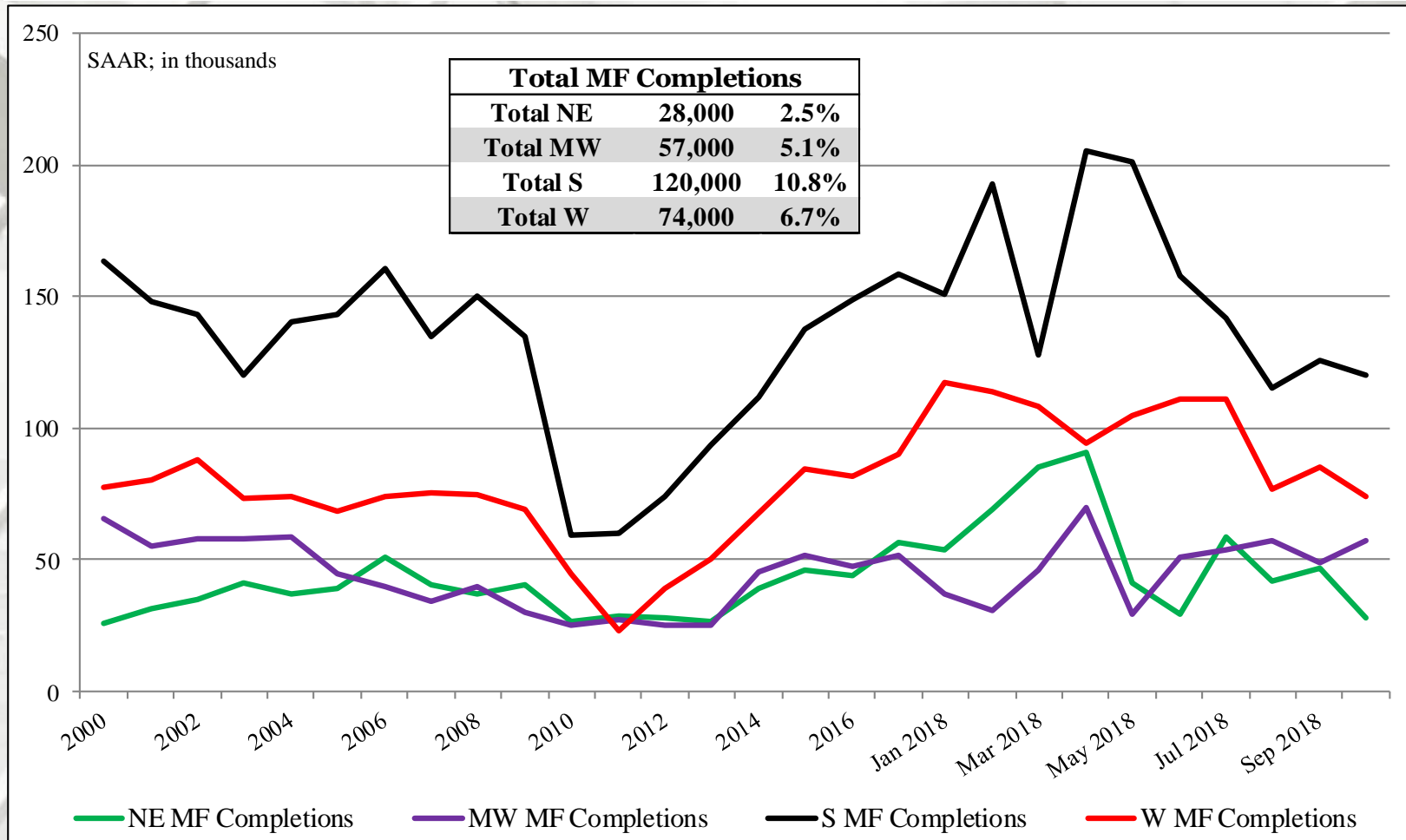


NE = Northeast, MW = Midwest, S = South, W = West

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 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

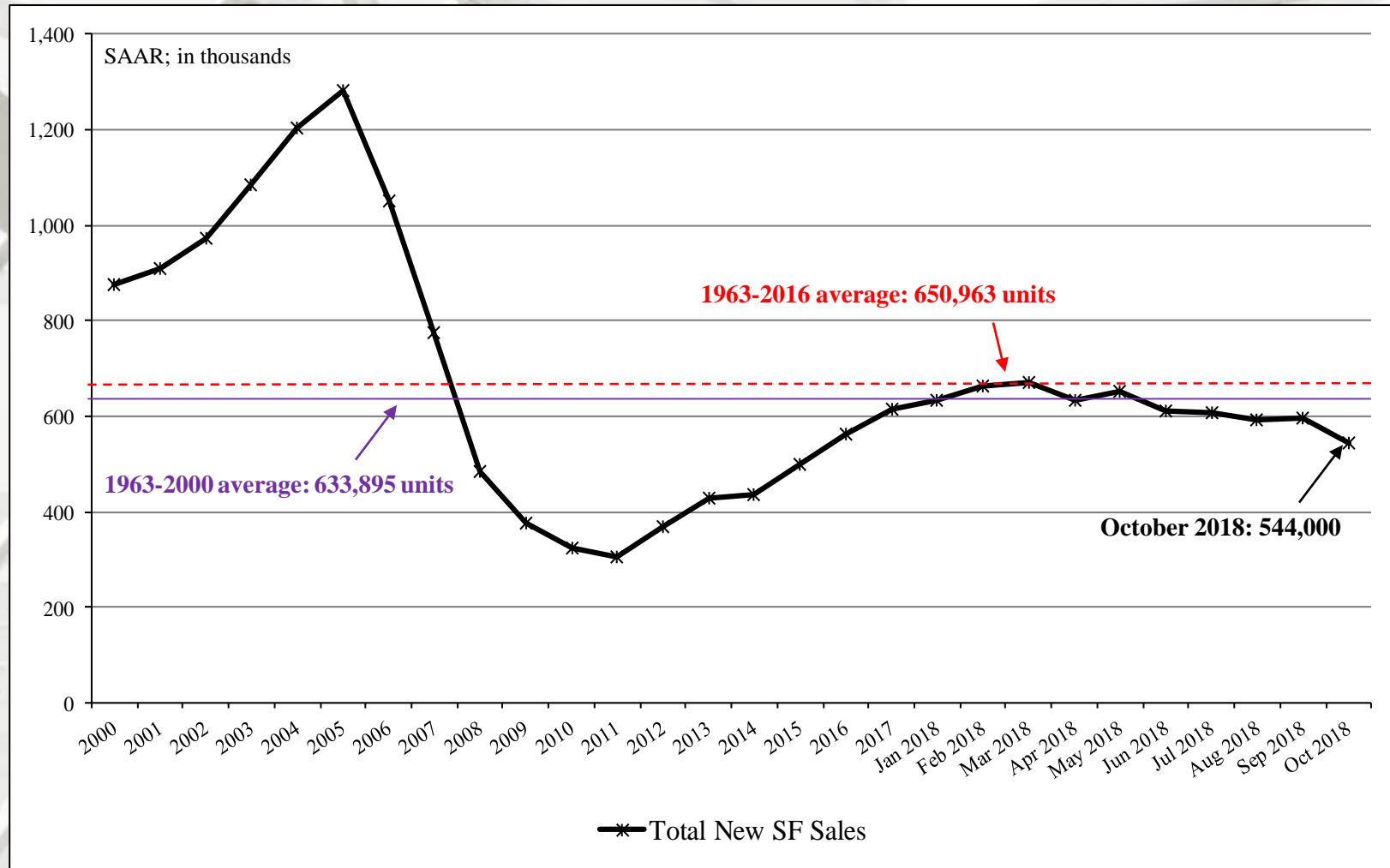
	New SF Sales*	Median Price	Mean Price	Month's Supply
October	544,000	\$309,700	\$395,000	7.4
September	597,000	\$321,300	\$379,000	6.5
2017	618,000	\$319,500	\$394,000	5.6
M/M change	-8.9%	-3.6%	4.2%	13.8%
Y/Y change	-12.0%	-3.1%	0.3%	32.1%

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

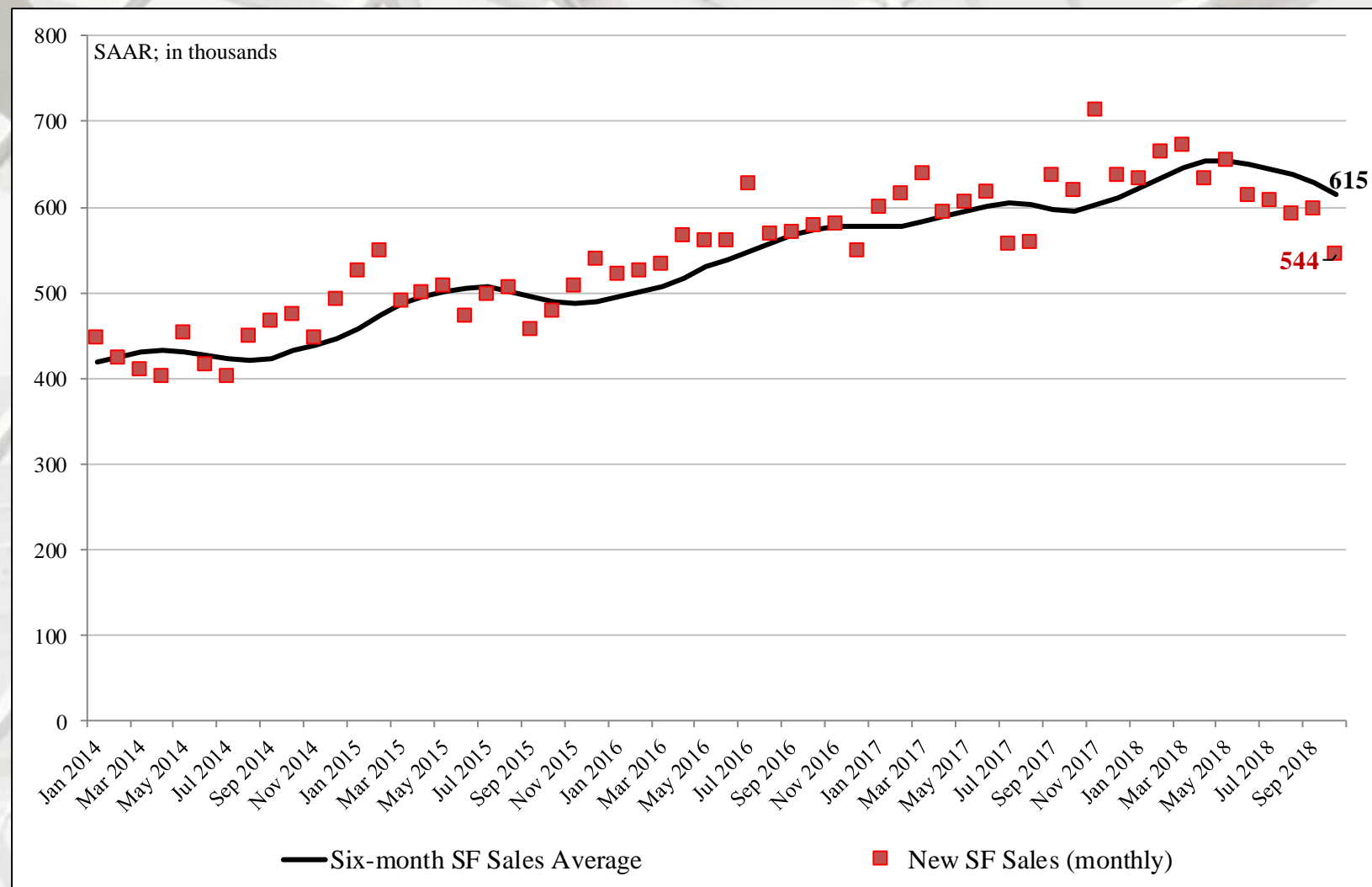
New SF sales were markedly less than the consensus forecast³ of 575 m. The past three month's new SF sales data also were revised downward:

July initial: 654 m revised to 606 m;
 August initial: 609 m revised to 591 m;
 September initial: 693 m revised to 597 m.

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							
October	22,000		60,000		313,000		149,000
September	27,000		77,000		339,000		154,000
2017	41,000		72,000		354,000		151,000
M/M change	-18.5%		-22.1%		-7.7%		-3.2%
Y/Y change	-46.3%		-16.7%		-11.6%		-1.3%
		\$150 - ≤ \$150m	\$200 - \$199.9m 299.9m	\$300 - \$399.9m	\$400 - \$499.9m	\$500 - \$749.9m	≥ \$750m
October ^{1,2,3,4}	2,000	3,000	15,000	10,000	5,000	4,000	3,000
September	1,000	3,000	16,000	11,000	8,000	5,000	2,000
2017	2,000	4,000	17,000	11,000	8,000	5,000	3,000
M/M change	100.0%	0.0%	-6.3%	-9.1%	-37.5%	-20.0%	50.0%
Y/Y change	0.0%	-25.0%	-11.8%	-9.1%	-37.5%	-20.0%	0.0%
New SF sales: %	4.8%	7.1%	35.7%	23.8%	11.9%	9.5%	7.1%

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.

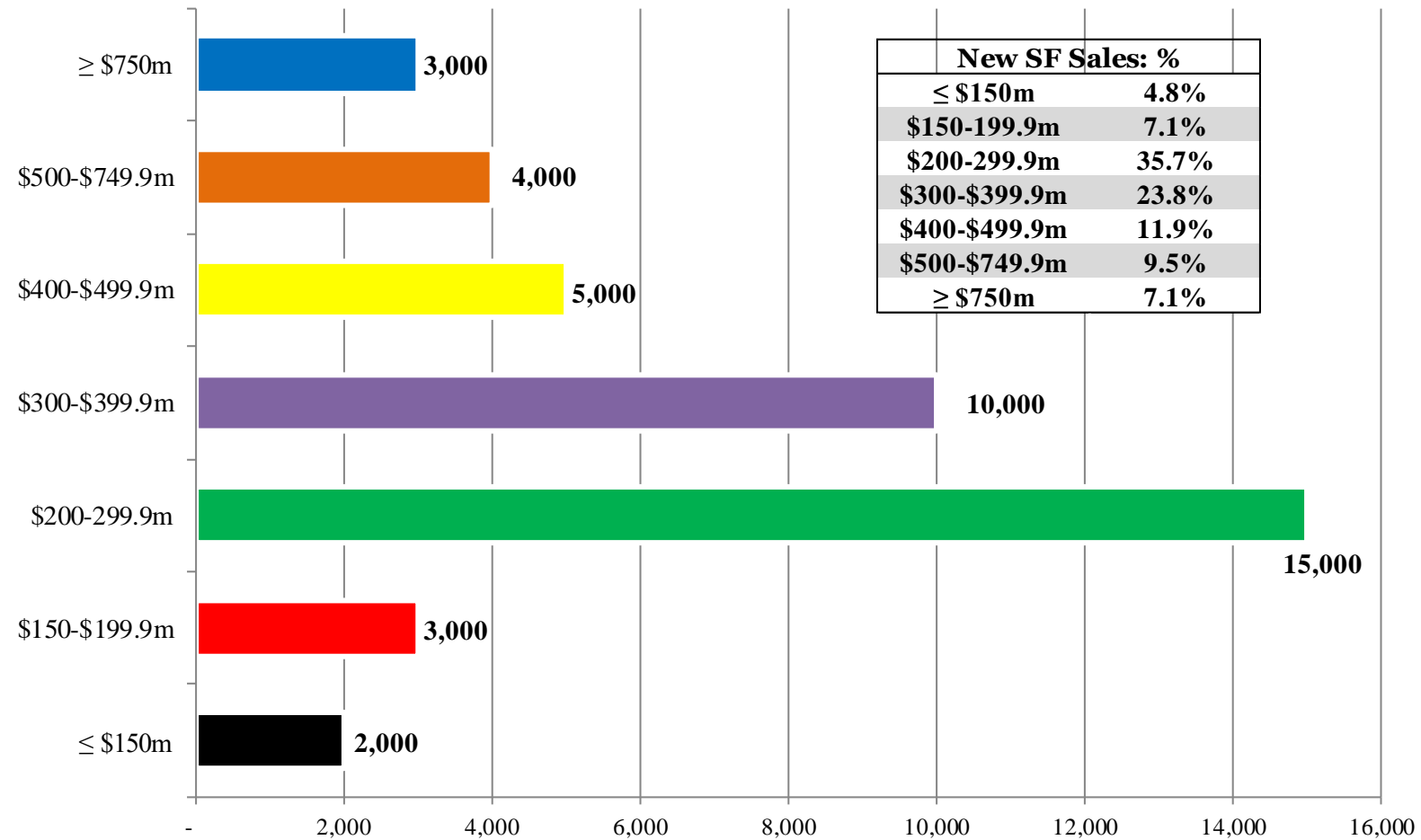
Sources: ^{1,2,3} <http://www.census.gov/construction/nrc/pdf/newresconst.pdf>; 11/28/18;

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

[Return TOC](#)

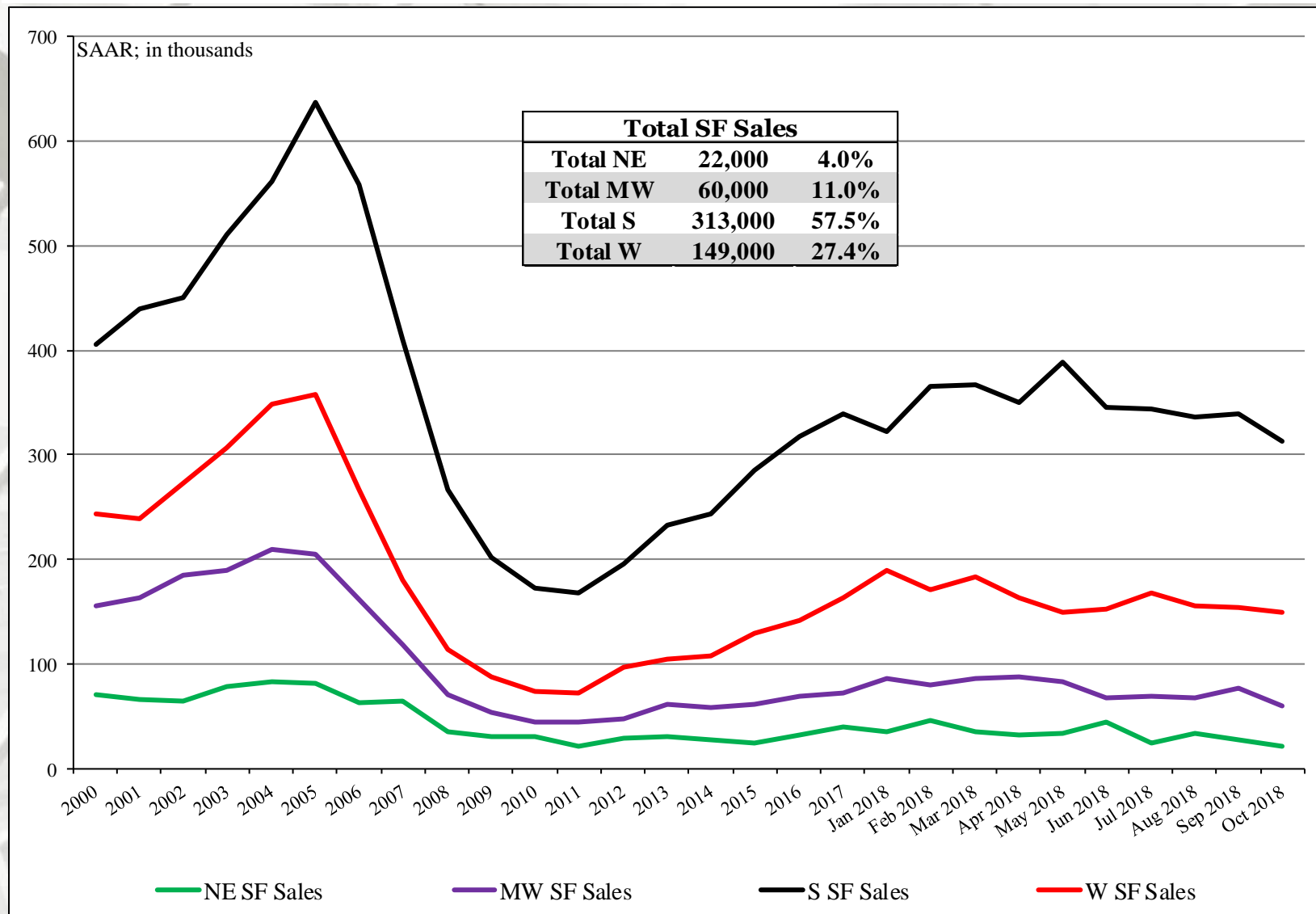
New SF House Sales

October New SF Sales*



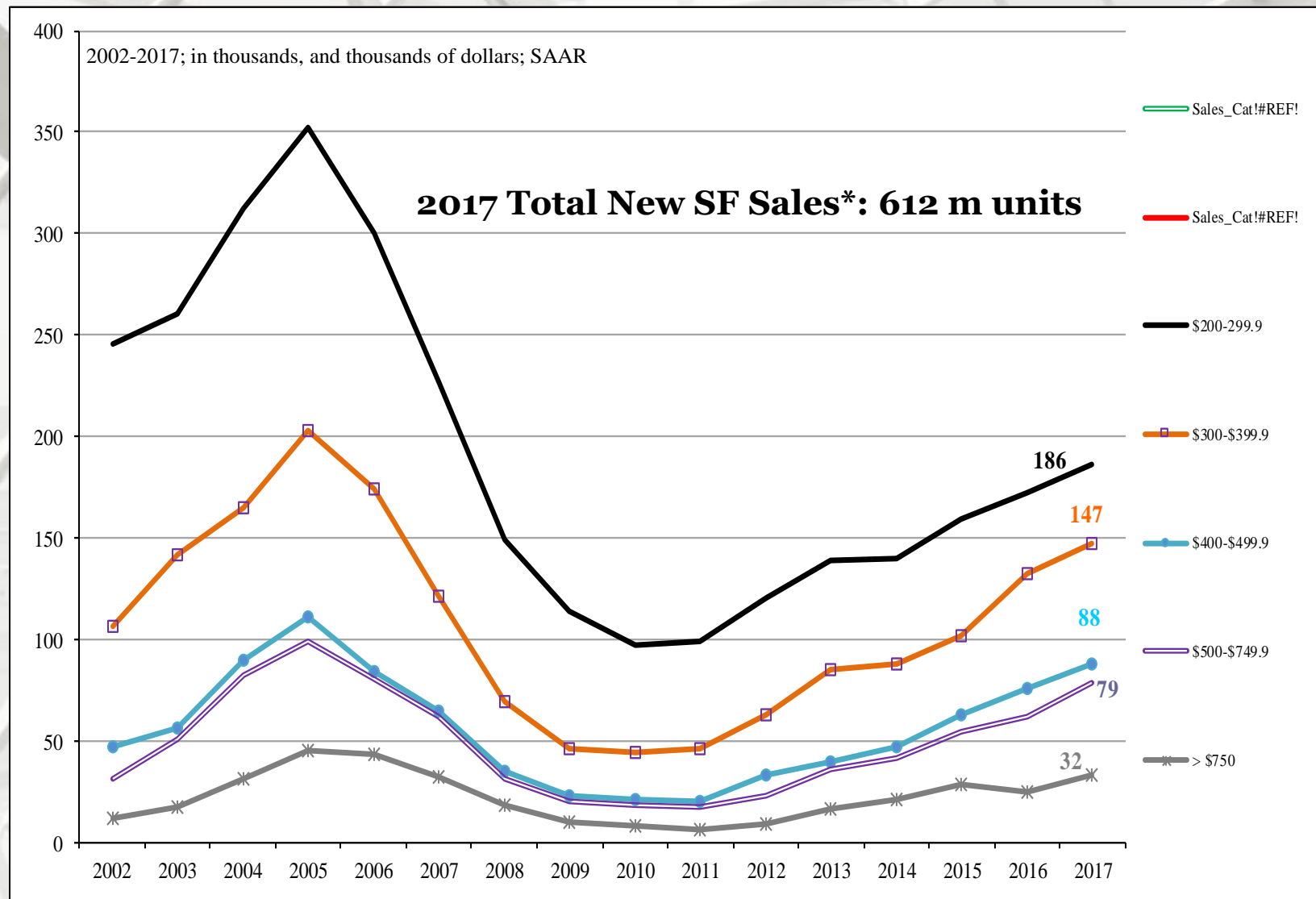
* Total new sales by price category and percent.

New SF House Sales by Region

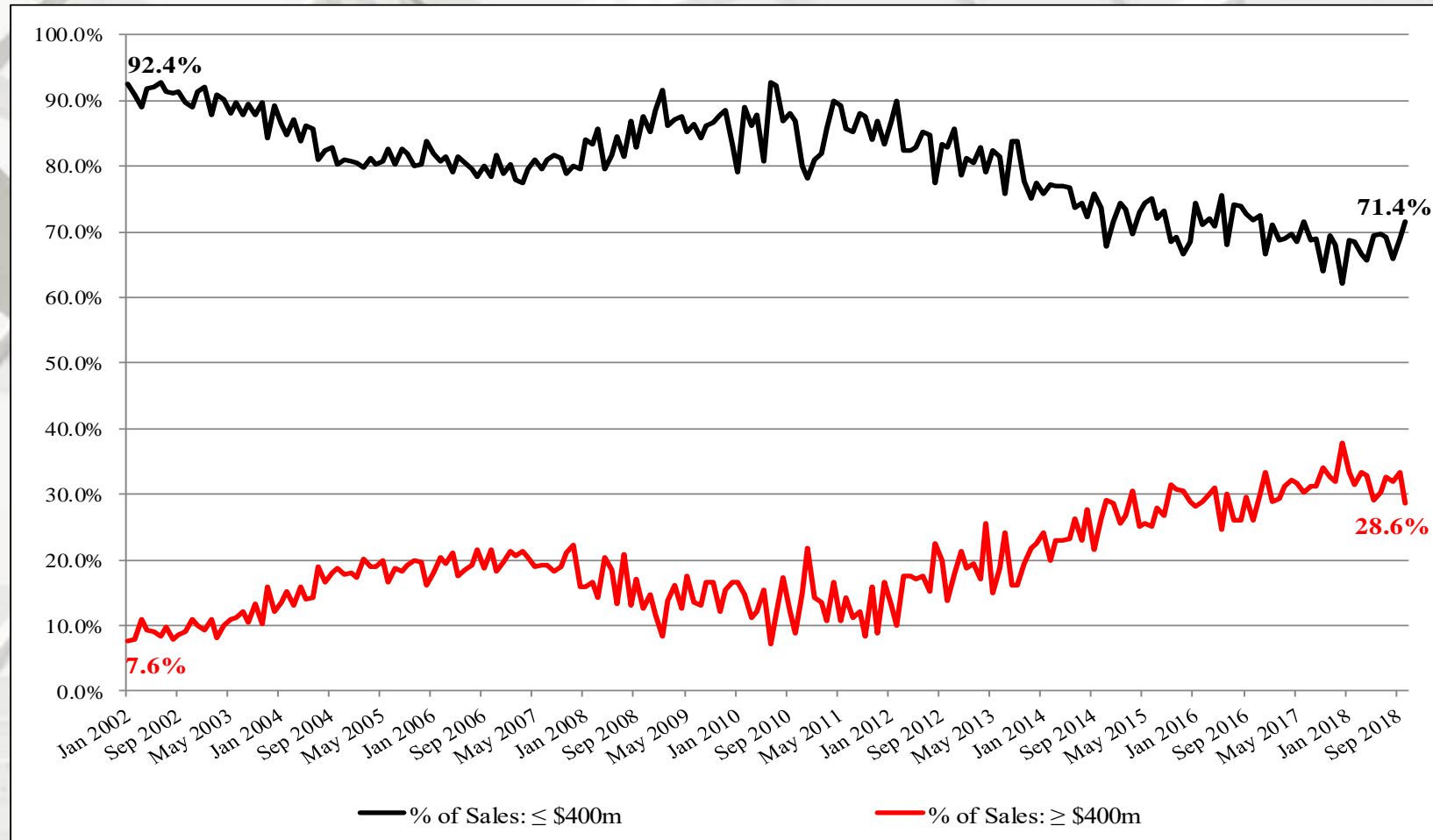


* Percentage of total new sales.

New SF House Sales by Price Category



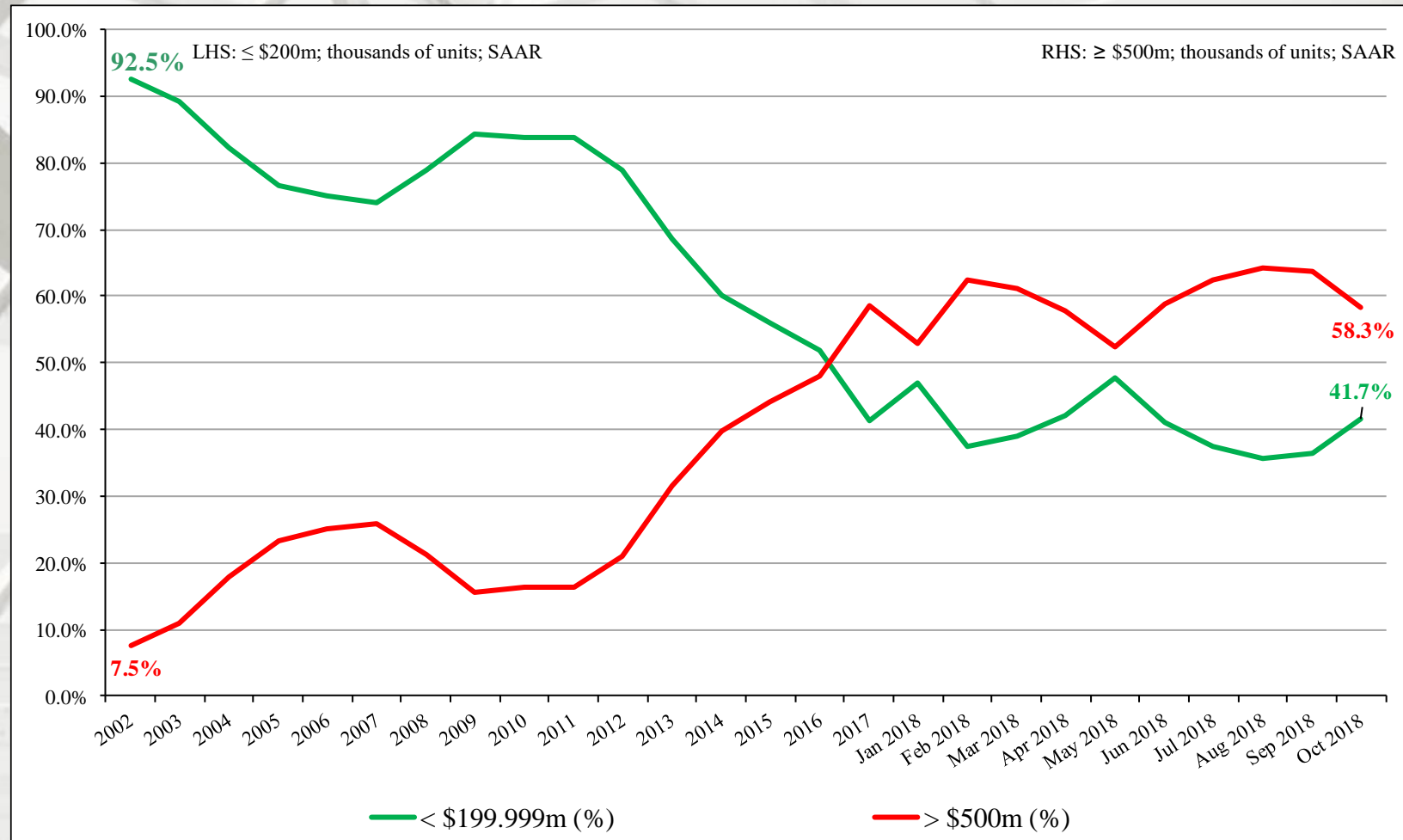
New SF House Sales



New SF Sales \$400m houses: 2002 – October 2018

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

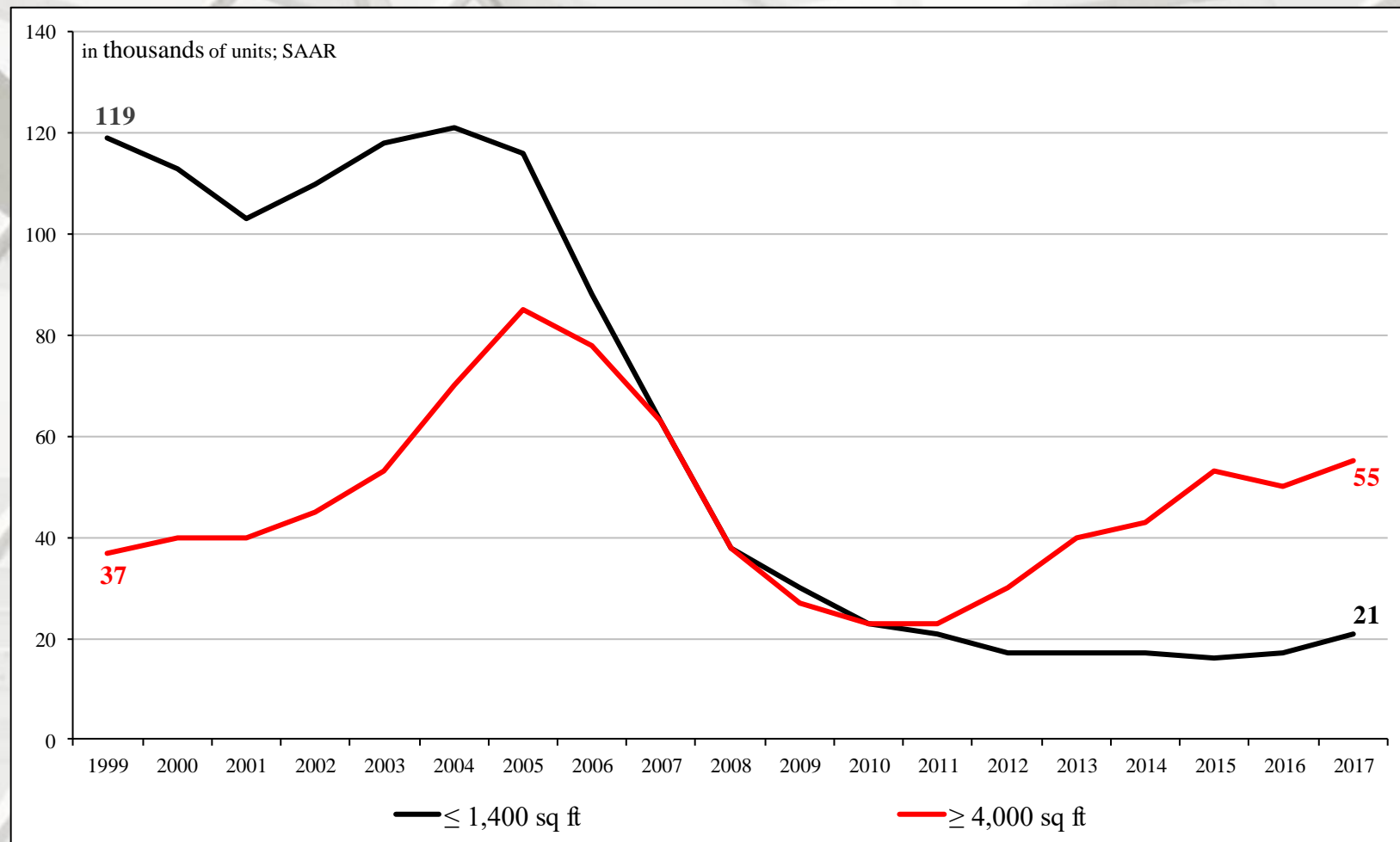


New SF Sales: $\leq \$200m$ and $\geq \$500m$: 2002 to October 2018

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

Note: Sales values are not adjusted for inflation.

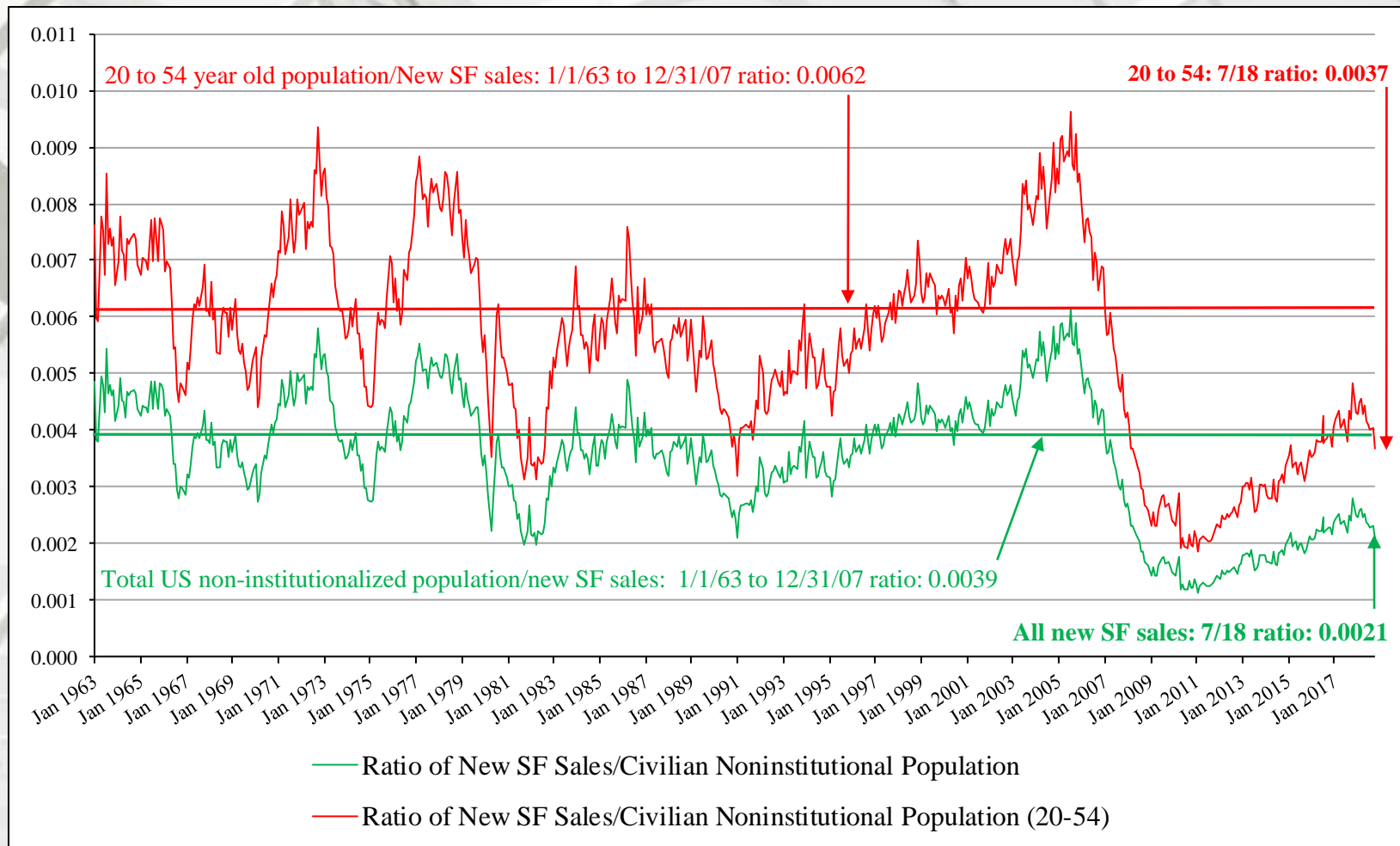
New SF House Sales by Square Feet of Floor Area



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.

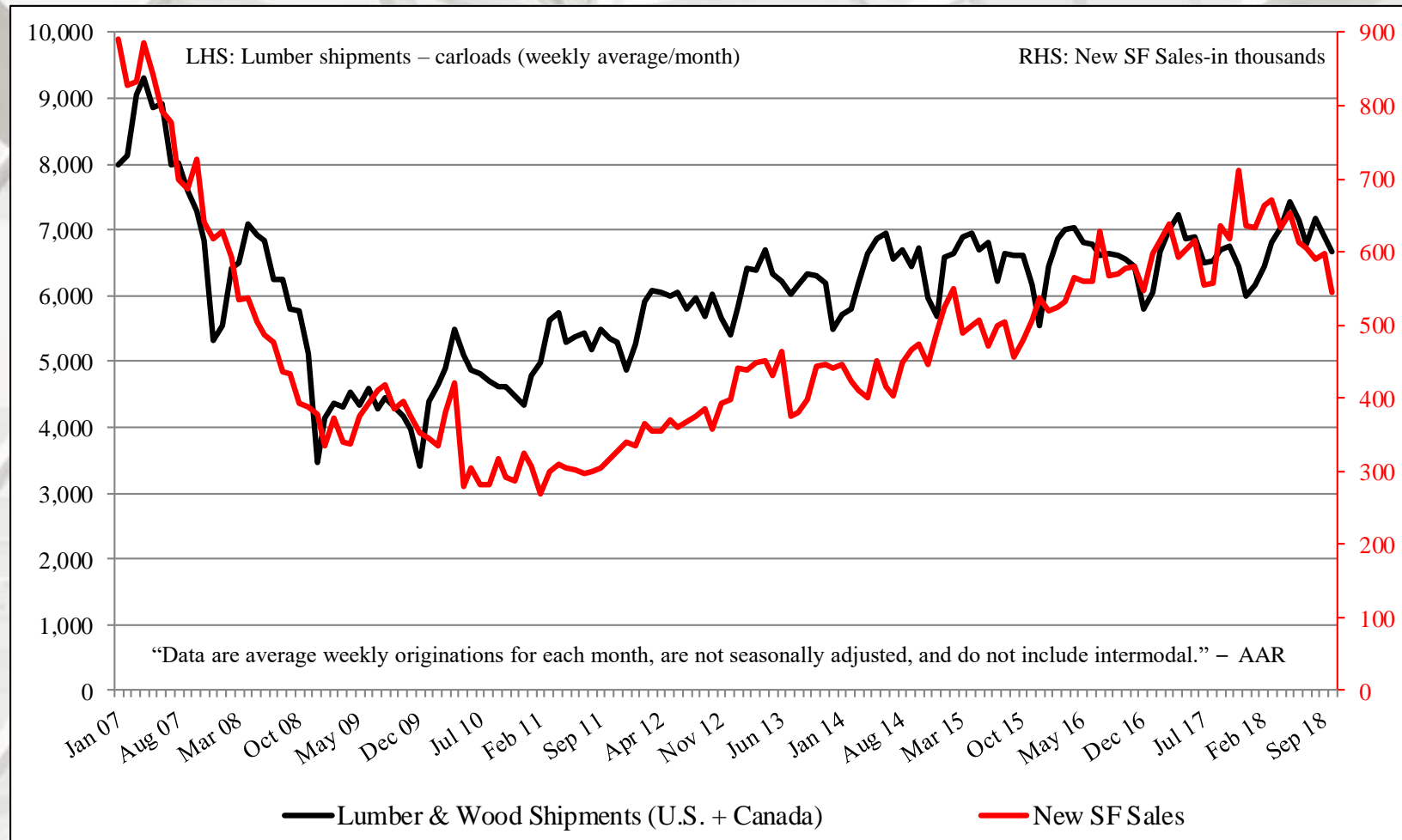
New SF House Sales



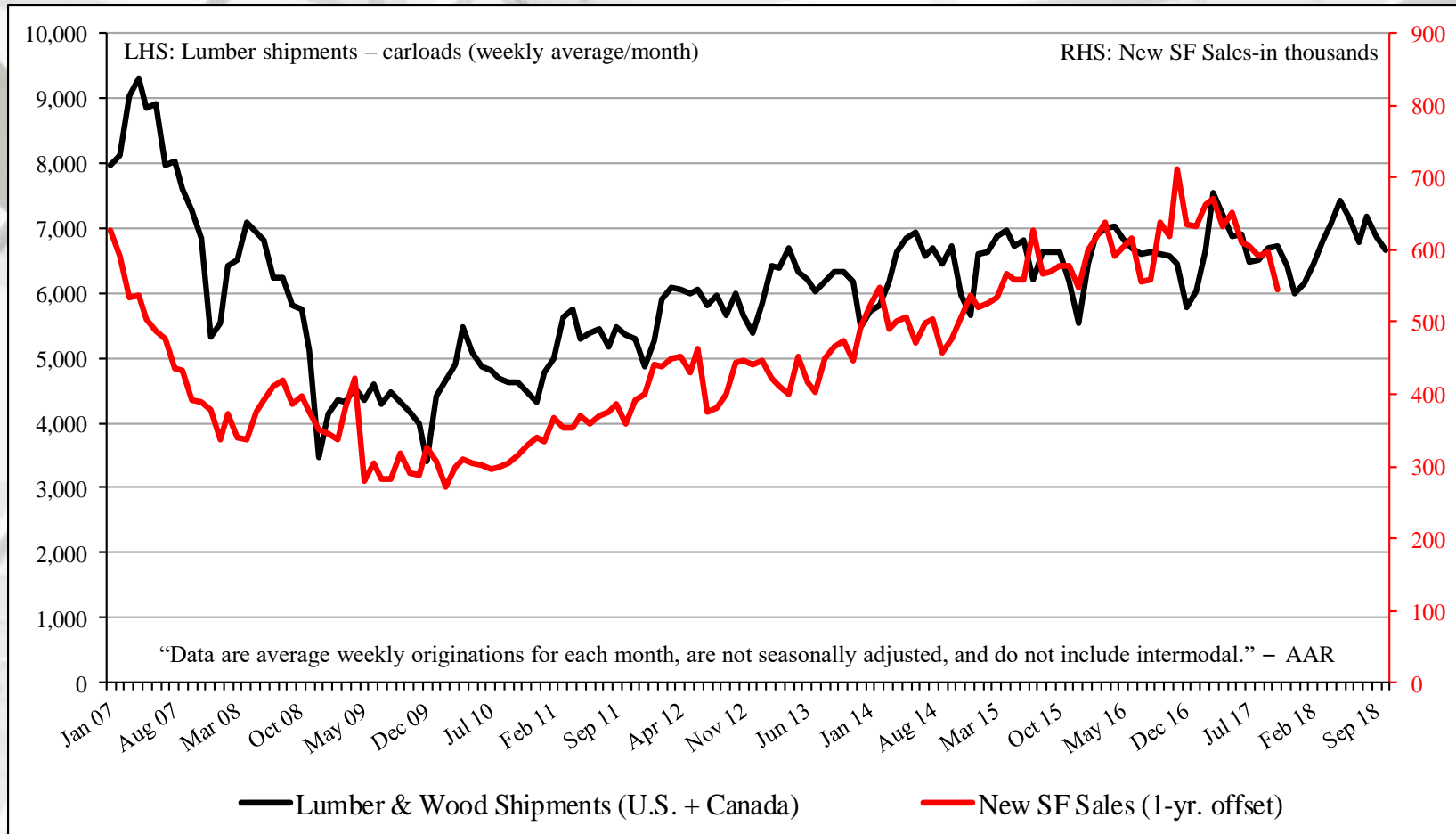
New SF sales adjusted for the US population

From October 1963 to November 2007, the long-term ratio of new house sales to the total US non-institutionalized population was 0.0039; in October 2018 it was 0.0021 – a decrease from September (0.0023). The non-institutionalized population, aged 20 to 54 long-term ratio is 0.0062; in October 2018 it was 0.0037 – also decrease from September (0.0040). 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

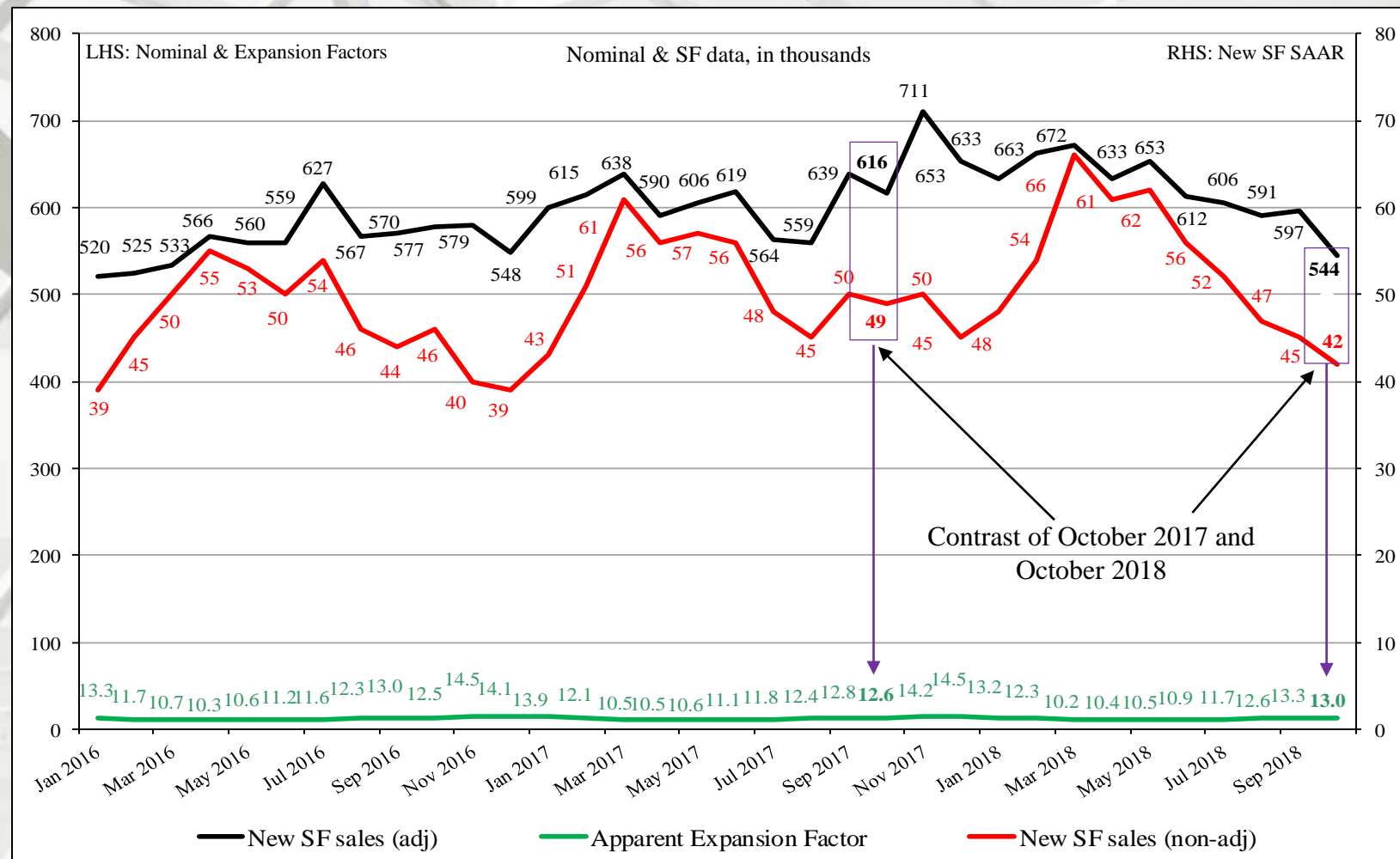


Railroad Lumber & Wood Shipments vs. U.S. SF Housing Sales: 1-year Offset



In this graph, January 2007 lumber shipments are contrasted with January 2008 SF sales, and continuing through October 2018. 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

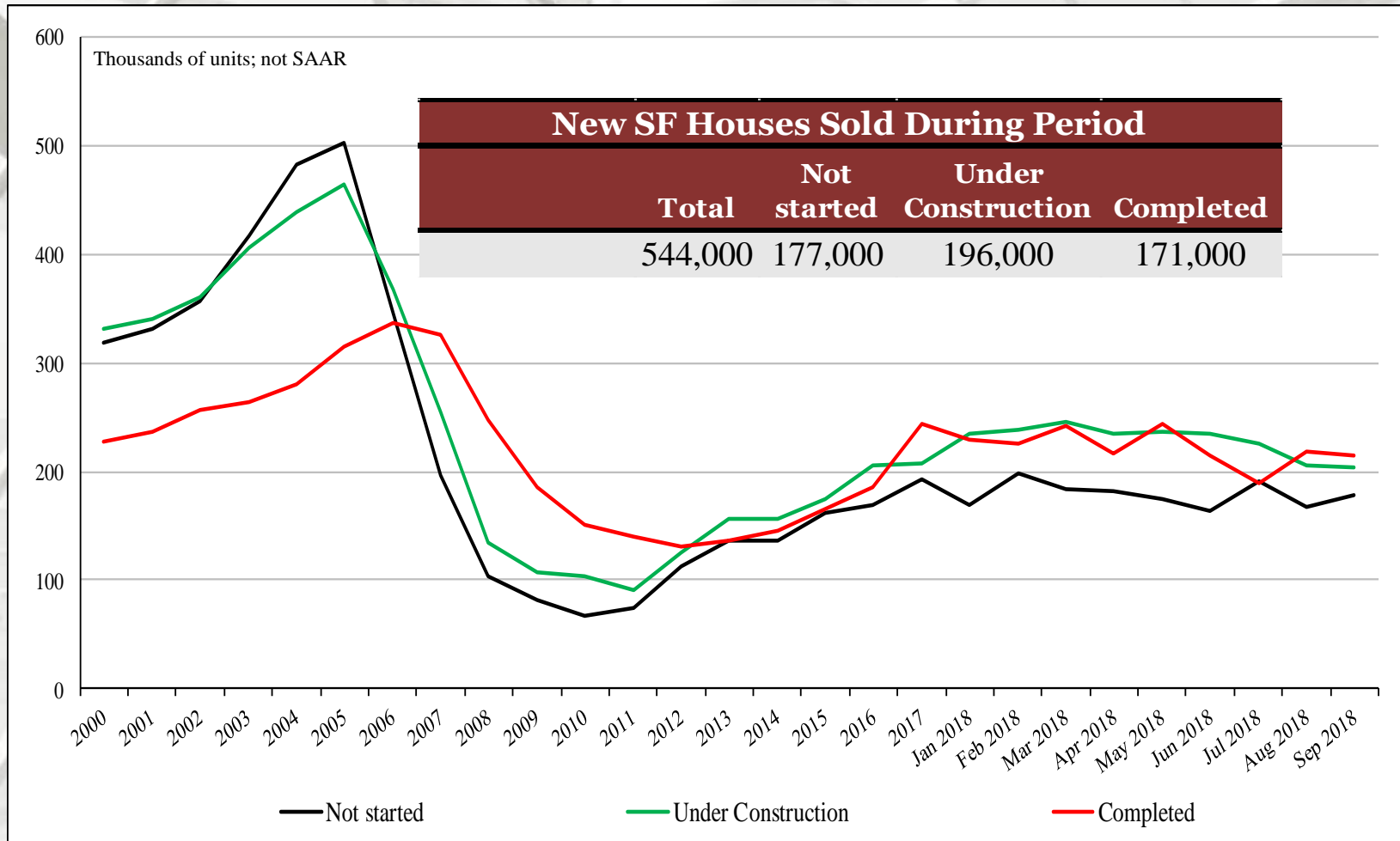
	Total	Not started	Under Construction	Completed
October	544,000	177,000	196,000	171,000
September	597,000	178,000	204,000	215,000
2017	618,000	182,000	218,000	218,000
M/M change	-8.9%	-0.6%	-3.9%	-20.5%
Y/Y change	-12.0%	-2.7%	-10.1%	-21.6%
Total percentage		32.5%	36.0%	31.4%

New SF Houses Sold During Period

In October 2018, a substantial portion of new sales – 32.5% – have not been started; an increase of 2.5% from September.

* Not SAAR

New SF House Sales



Not SAAR

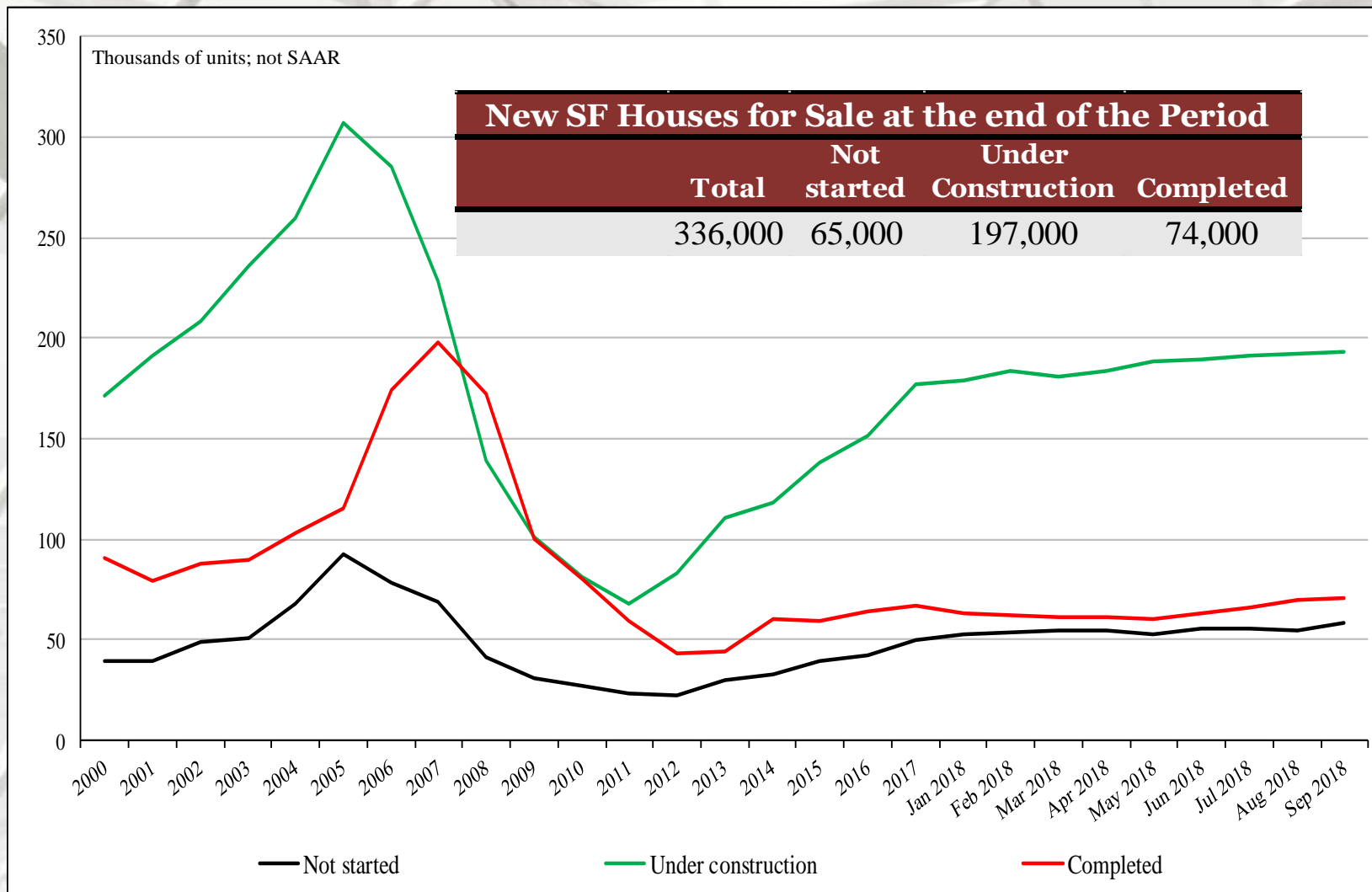
New SF House Sales

New SF Houses for Sale at the end of the Period

	Total	Not started	Under Construction	Completed
October	336,000	65,000	197,000	74,000
September	322,000	58,000	193,000	71,000
2017	289,000	48,000	176,000	65,000
M/M change	4.3%	12.1%	2.1%	4.2%
Y/Y change	16.3%	35.4%	11.9%	13.8%
Total percentage		19.3%	58.6%	22.0%

Not SAAR

New SF House Sales



Not SAAR

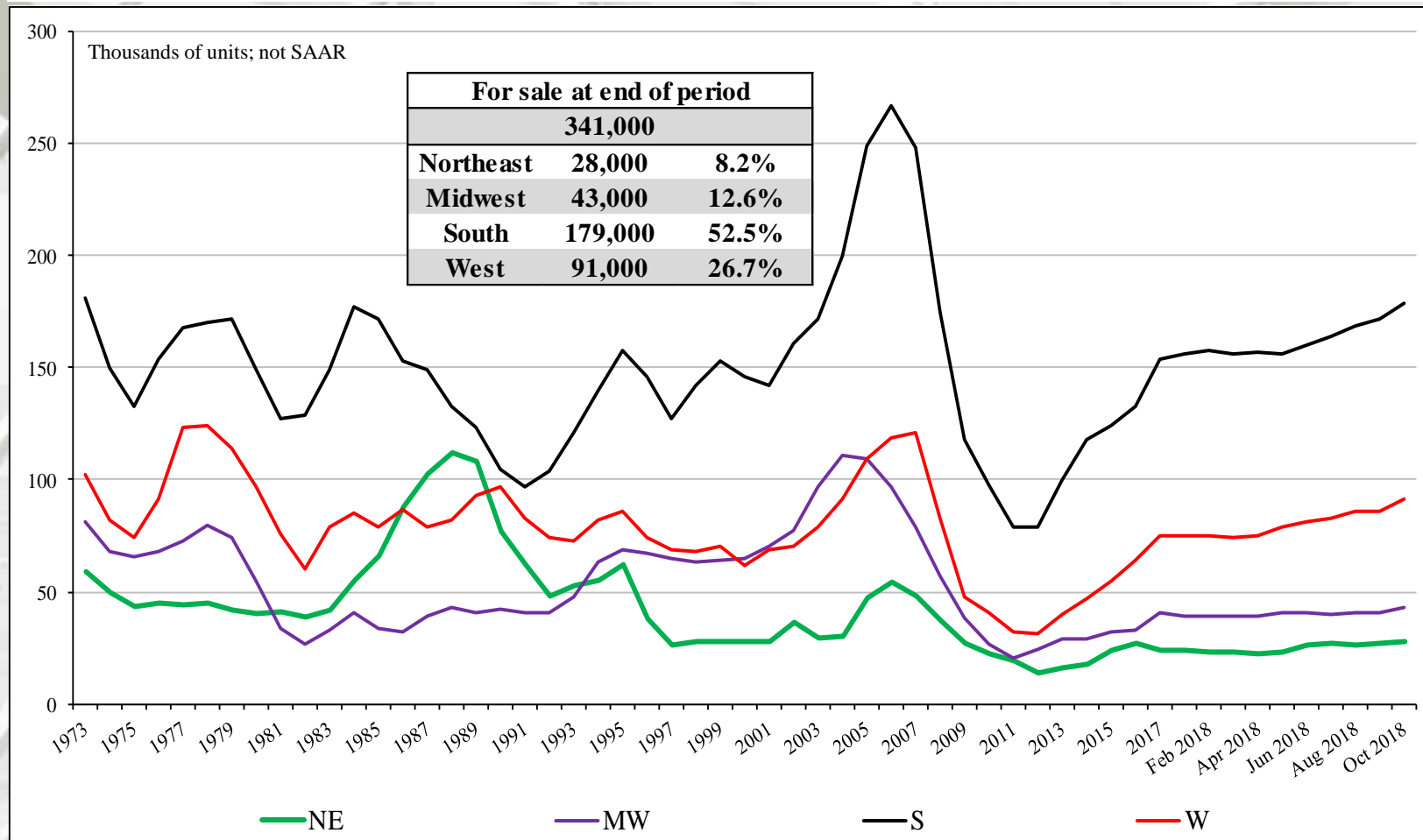
New SF House Sales

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

	Total	NE	MW	S	W
October	341,000	28,000	43,000	179,000	91,000
September	326,000	27,000	41,000	172,000	86,000
2017	289,000	25,000	39,000	152,000	73,000
M/M change	4.6%	3.7%	4.9%	4.1%	5.8%
Y/Y change	18.0%	12.0%	10.3%	17.8%	24.7%

* Not SAAR

New SF Houses Sale at End of Period by Region



October 2018 Construction Spending

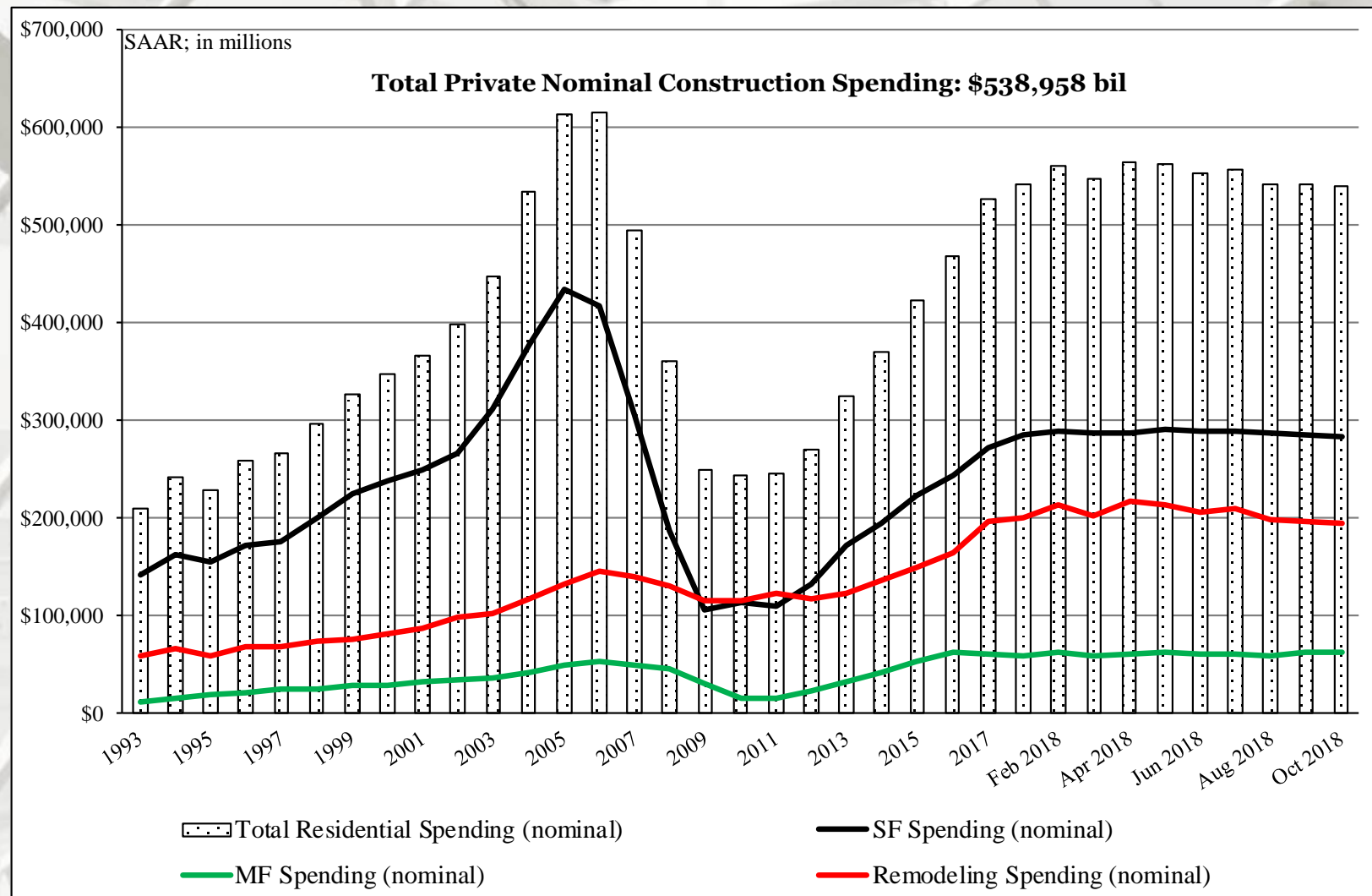
	Total Private Residential*	SF	MF	Improvement**
October	\$538,958	\$282,611	\$62,035	\$194,312
September	\$541,650	\$284,172	\$61,439	\$196,039
2017	\$529,523	\$275,868	\$60,119	\$193,536
M/M change	-0.5%	-0.5%	1.0%	-0.9%
Y/Y change	1.8%	2.4%	3.2%	0.4%

* billion.

** The US DOC does not report improvement spending directly, this is a monthly estimation:
((Total Private Spending – (SF spending + MF spending)).

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

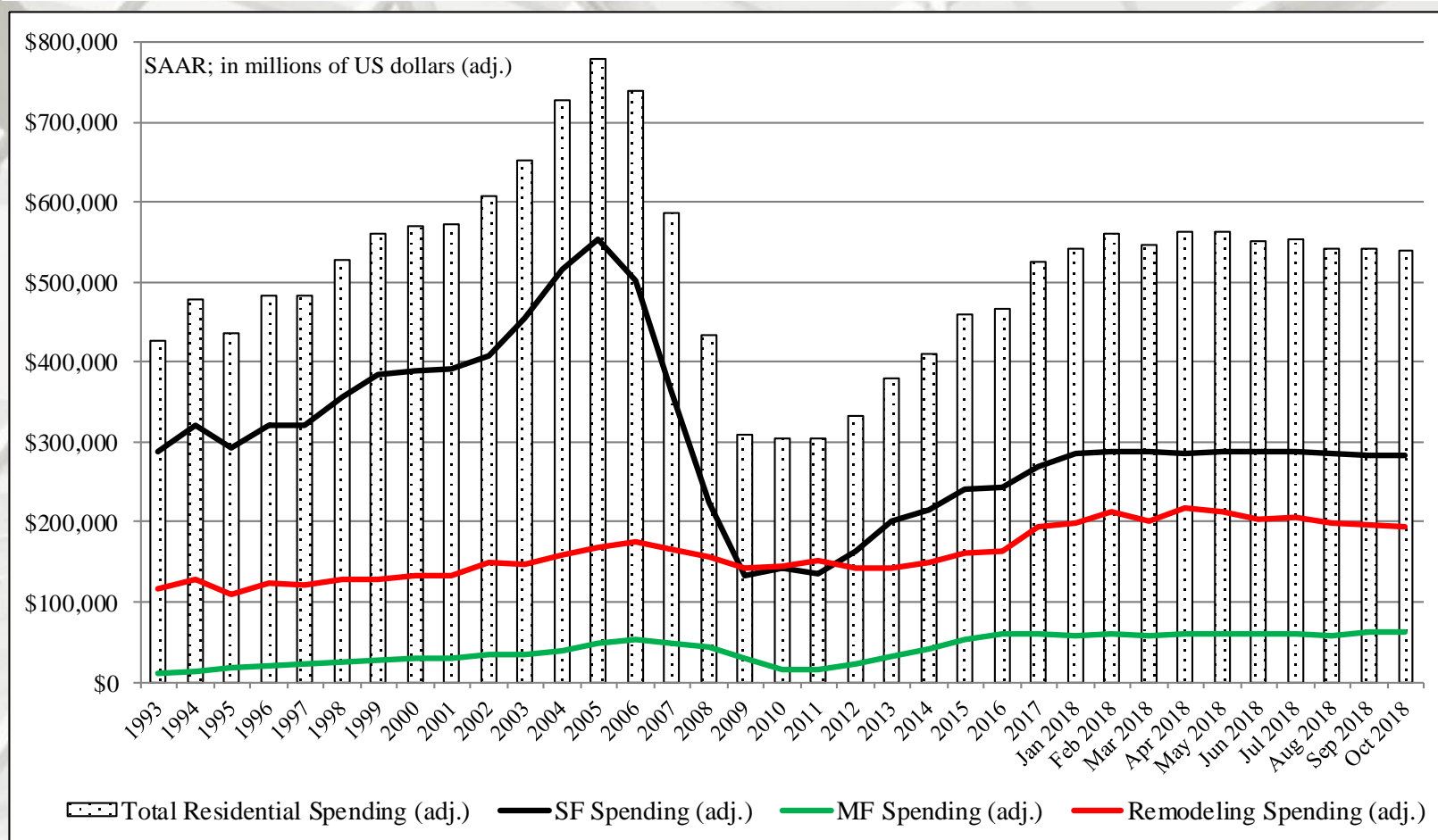
Total Construction Spending (nominal): 1993 – October 2018



Reported in nominal US\$.

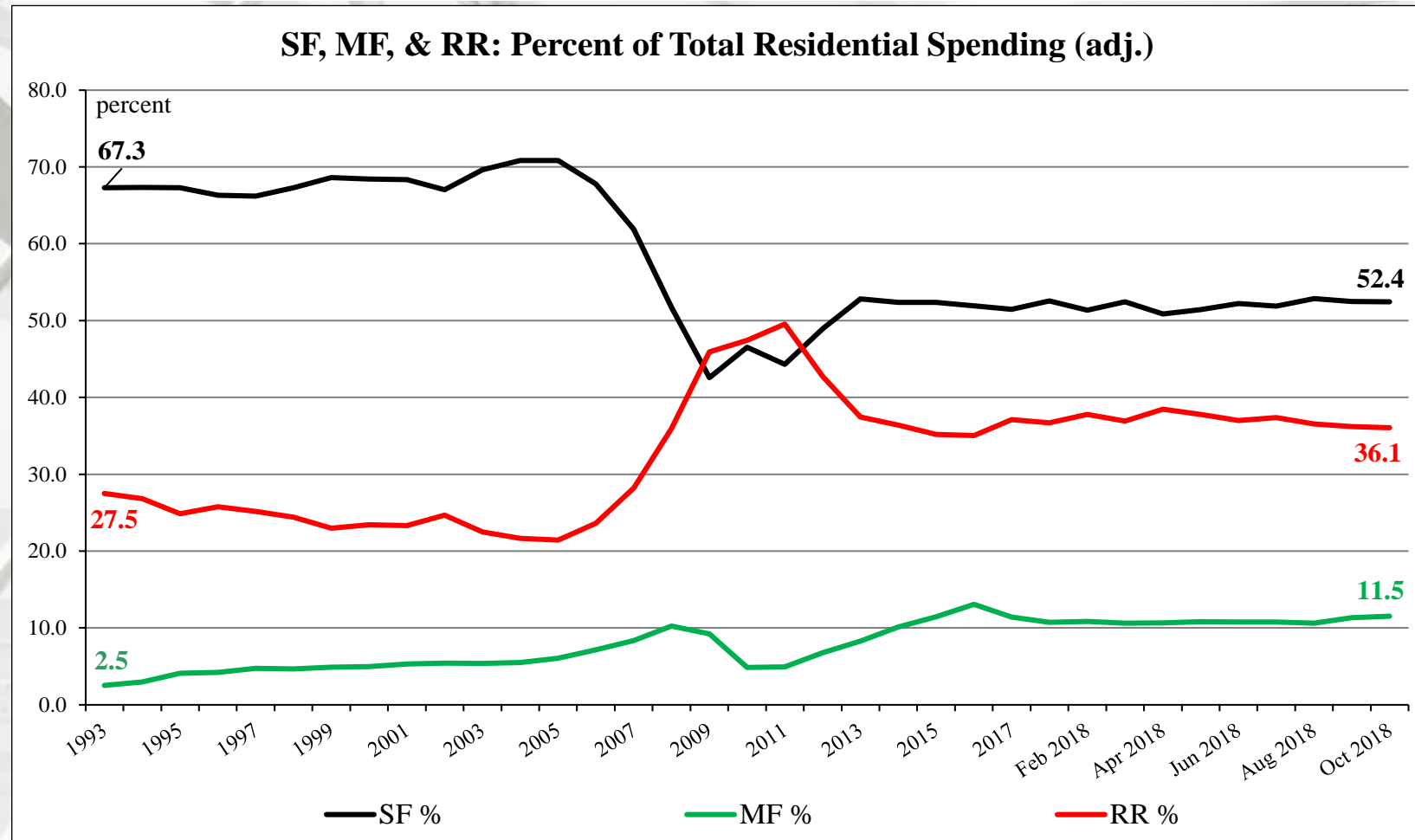
The US DOC does not report improvement spending directly, this is a monthly estimation for 2018.

Total Construction Spending (adjusted): 1993-2018*



Reported in adjusted US\$: 1993 – 2017 (adjusted for inflation, BEA Table 1.1.9); *January 2018 to October 2018 reported in nominal US\$.

Construction Spending Shares: 1993 to October 2018



Total Residential Spending: 1993 through 2006

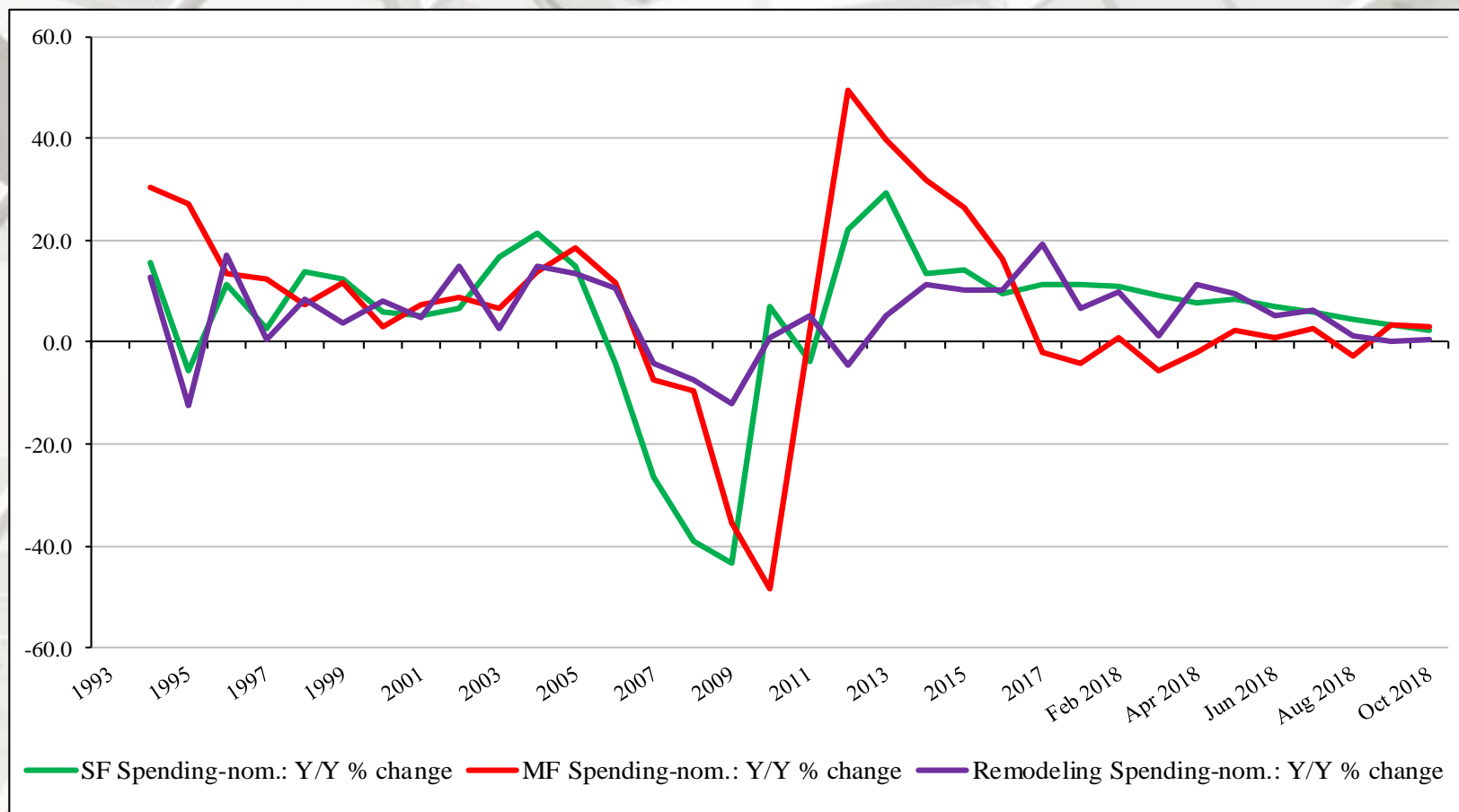
SF spending average: 69.2%

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-October 2018 reported in nominal US\$.

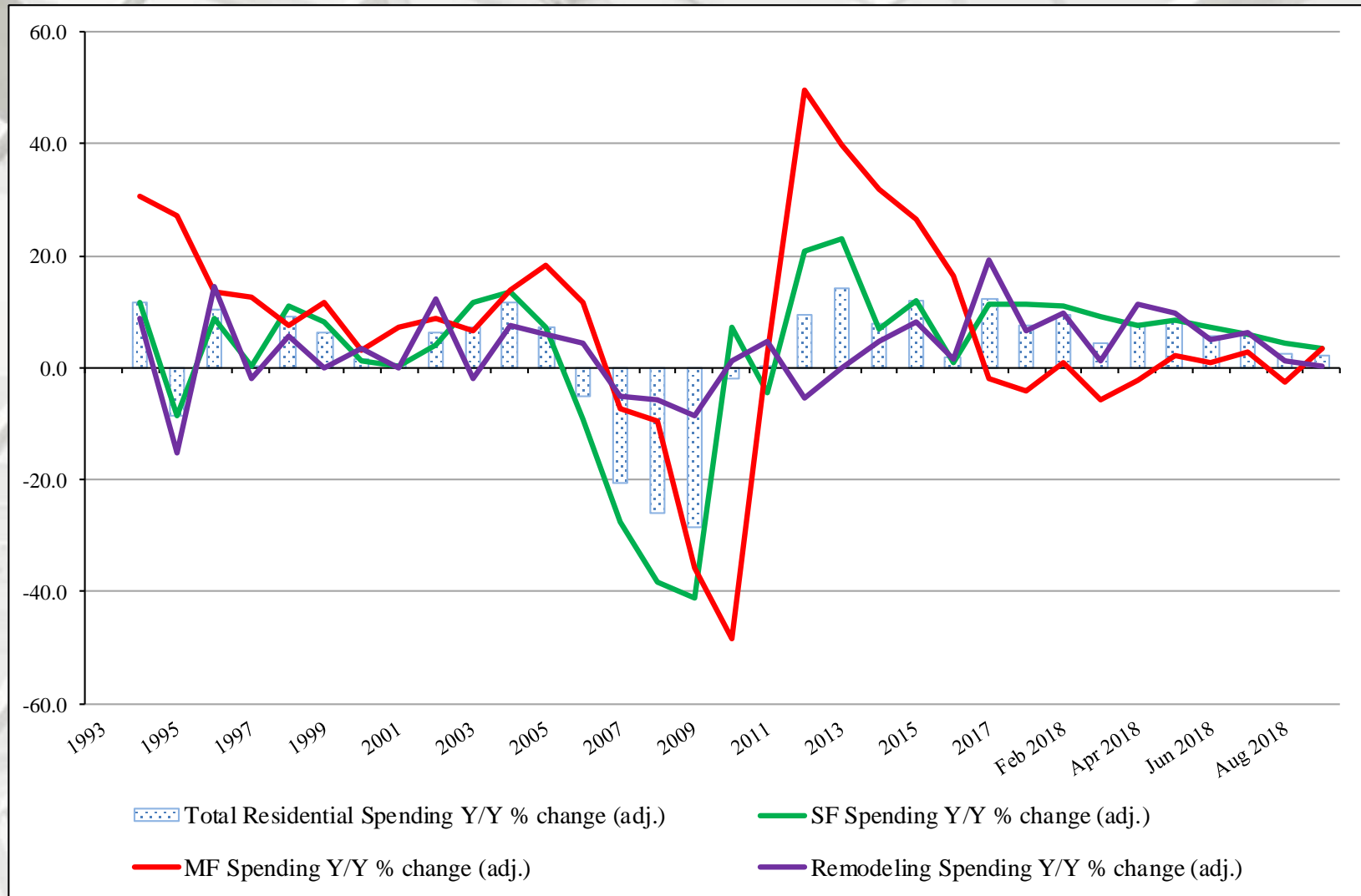
Adjusted Construction Spending: Y/Y Percentage Change, 1993 to October 2018



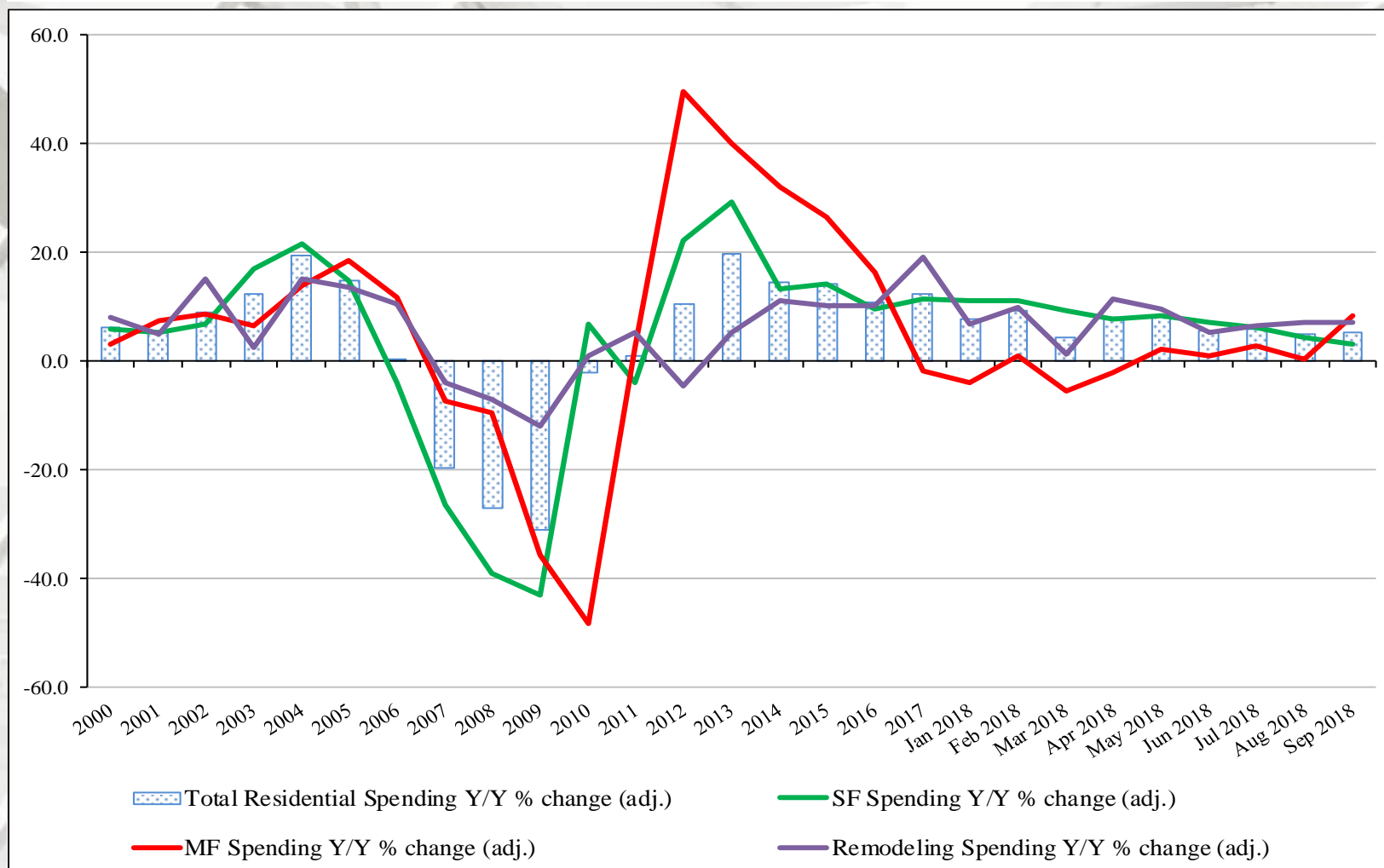
Nominal Residential Construction Spending: Y/Y percentage change, 1993 to October 2018

Presented above is the percentage change of inflation adjusted Y/Y construction spending. Total, SF, MF, and Remodeling expenditures were lightly positive, on a percentage basis, year-over-year.

Adjusted Construction Spending: Y/Y Percentage Change, 2000 to October 2018



Total Adjusted Construction Spending: Y/Y Percentage Change, 1993 to October 2018



Y/Y percentage change, 1993 to October 2018

Total, SF< MF, and Remodeling were minimally to slightly positive. January to October 2018 reported in nominal percent.

Remodeling

BuildFax Housing Health Report

A sharp spike in maintenance activity sees direct impact from 2017 hurricane season

“BuildFax research revealed the annual rate of single-family housing authorizations picks up pace, while the annual rate of single-family housing starts begins to slow in October.

Existing U.S. housing maintenance project volume and spend are still showing annual rate increases at progressively larger margins. However, the pace of remodeling – a subset of maintenance that includes renovations, alterations, and additions to a structure – has shown for a third month in a row that it is leveling out after a few years of steep increases. Gains in remodel and maintenance spend demonstrate continued improvements to the health of the existing housing supply as homeowners look to maintain their properties instead of investing in new homes.

Typically, we see dips in maintenance and remodeling activity immediately following a natural disaster, as we saw in Florida following Hurricane Irma, which caused \$10 billion in insured losses. Irma’s impact on Florida in October 2017 directly contributed to last month’s 5.06 percent increase in maintenance activity,. Hurricane Harvey is a different story. Harris County's non-traditional permitting strategies spiked maintenance activity shortly after landfall. This will likely impact remodeling and maintenance activity well into 2019 and we'll be tracking these trends in depth over time.” – Jonathan Kanarek, COO, BuildFax

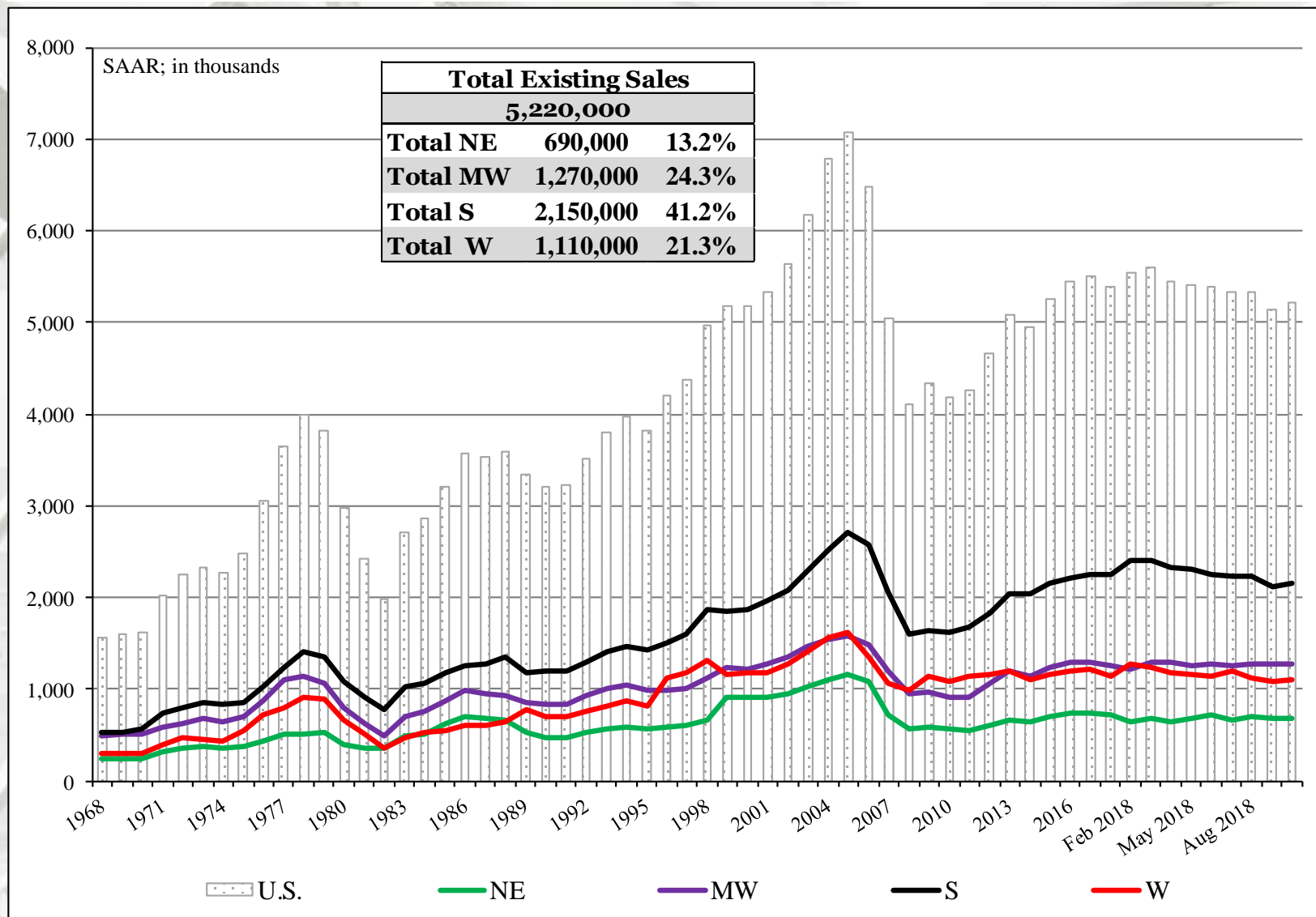
Existing House Sales

National Association of Realtors
October 2018 sales: 5.220 thousand

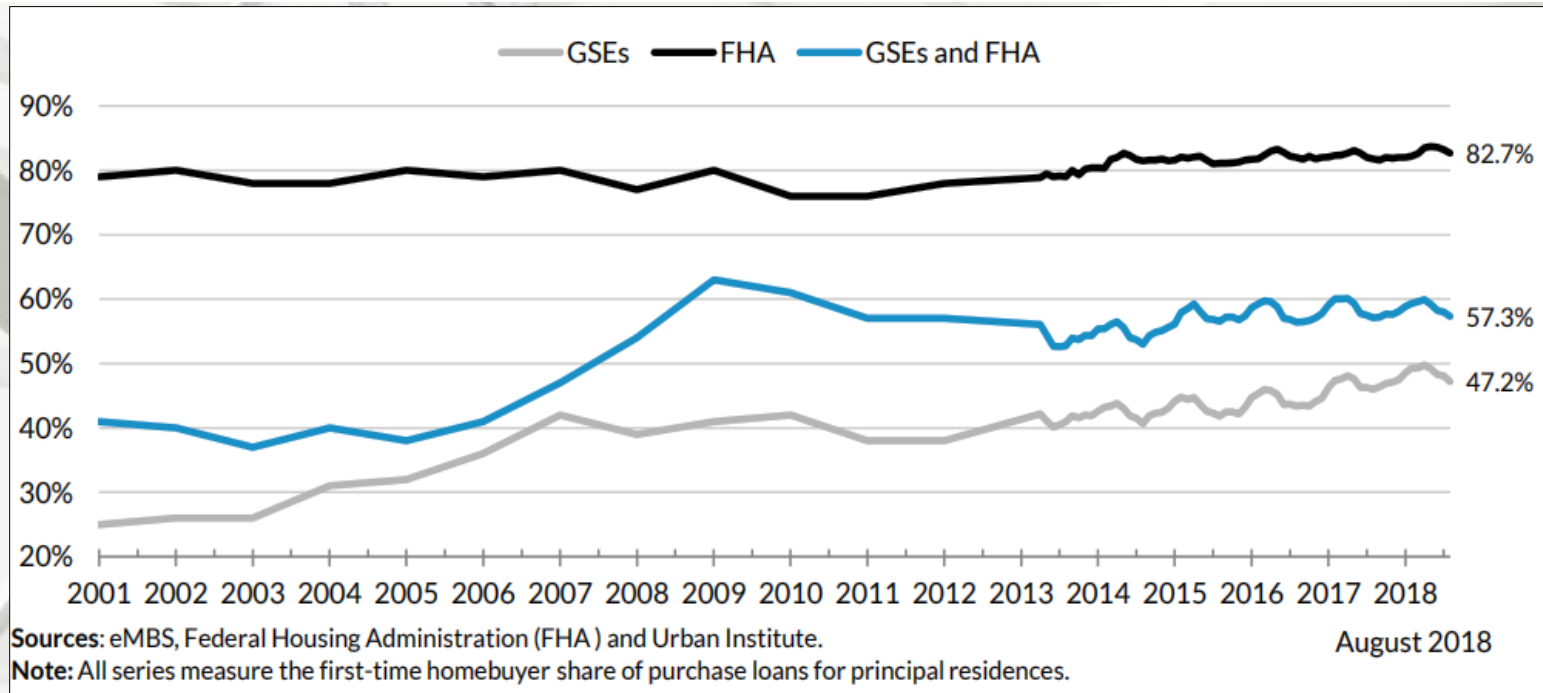
	Existing Sales*	Median Price	Mean Price	Month's Supply
October	5,220,000	\$255,400	\$294,200	4.3
September	5,150,000	\$256,900	\$296,000	4.4
2017	5,500,000	\$246,000	\$287,600	3.9
M/M	1.4%	-0.6%	-0.6%	-2.3%
Y/Y change	-5.1%	3.8%	2.3%	10.3%

* All sales data: SAAR

Existing House Sales



First-Time Purchasers



Urban Institute

“In August 2018, the first time homebuyer share of purchase loans fell for both FHA and conventional mortgages, reflecting seasonal factors. FHA, which has always been more focused on first time homebuyers, remains near their record-high first time homebuyer share with 82.7 percent in August 2018; the FHA share has traditionally hovered around 80 percent. The GSE share in August 2018 was 47.2 percent. The next table shows that based on mortgages originated in August 2018, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan and have a lower credit score and higher LTV and DTI, thus requiring a higher interest rate.” – Laurie Goodman, *et al.*, Co-director, Housing Finance Policy Center

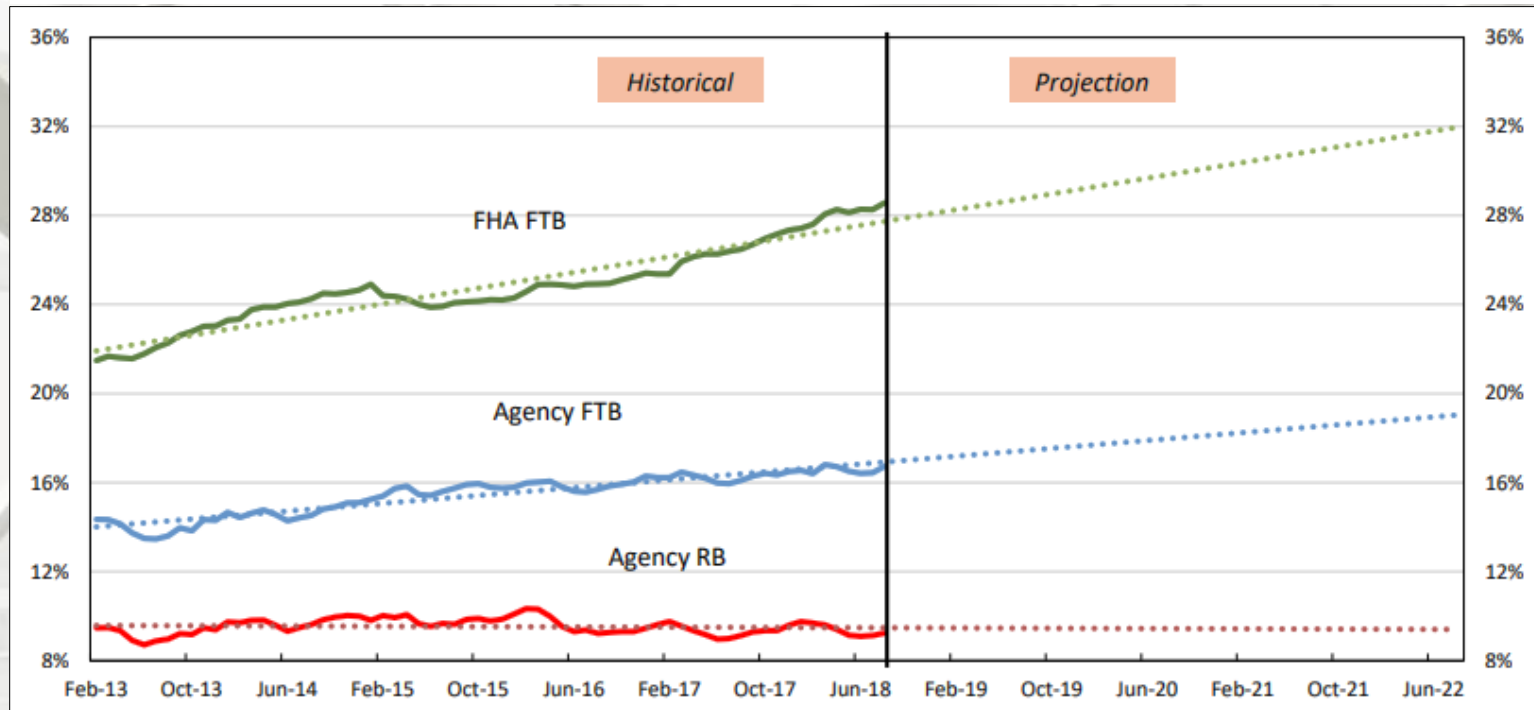
First-Time Purchasers

Comparison of First-Time and Repeat Homebuyers, GSE and FHA Originations

Characteristics	GSEs		FHA		GSEs and FHA	
	First-time	Repeat	First-time	Repeat	First-time	Repeat
Loan Amount (\$)	234,798	258,431	205,314	227,834	223,005	254,183
Credit Score	738.3	754.2	669.6	675.9	710.9	743.4
LTV (%)	87.4	78.8	95.5	93.9	90.7	80.9
DTI (%)	36.4	36.8	43.4	44.4	39.2	37.8
Loan Rate (%)	4.84	4.73	4.92	4.84	4.87	4.75
Sources: eMBS and Urban Institute. Note: Based on owner-occupied purchase mortgages originated in August 2018.						

First-Time Purchasers

Punchbowl 2: Eased Underwriting Standards Only Available to Agency First-time Buyers



Note: Calculated for primary owner-occupied home purchase mortgages..

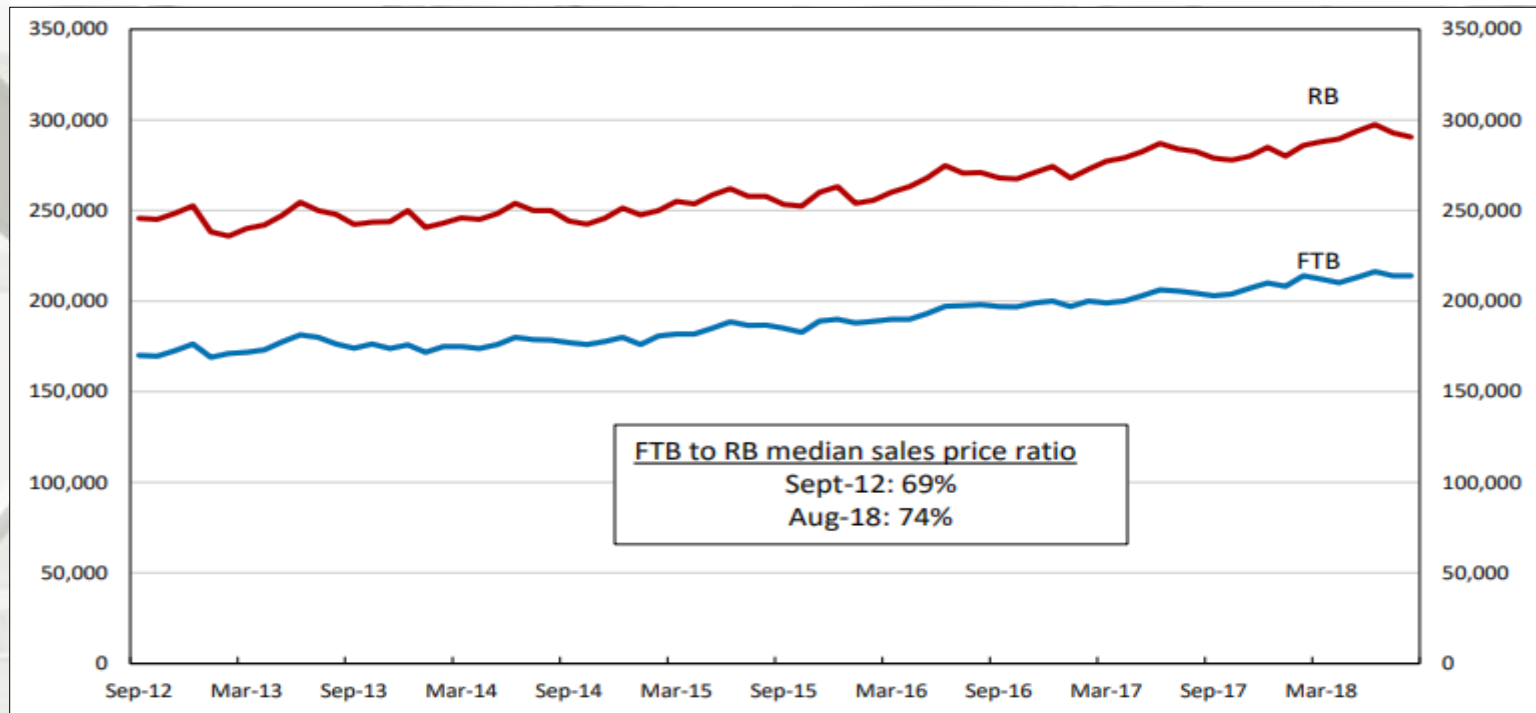
Source: AEI, Center on Housing Markets and Finance

AEI, Center on Housing Markets and Finance

“The Agency First-time Buyer MRI (FBMRI) stood at 16.7% in August, up 0.1 ppt from a year earlier and up 2.6 ppts. from 5 years ago. The Agency RBMRI is virtually unchanged since August 2013 (down 0.1 ppts.). The Agency FBMRI is 7.5 ppts higher than the Agency RBMRI, 0.5 ppt. wider than the gap a year earlier. If the FBMRI trend continues, it will reach almost 20% by August 2022.” – Edward Pinto and Tobias Peter; AEI, Center on Housing Markets and Finance

First-Time Purchasers

Market Segmentation: Median Sales Price for First-time and Repeat Buyers



Note: Data are for primary owner occupied properties only.

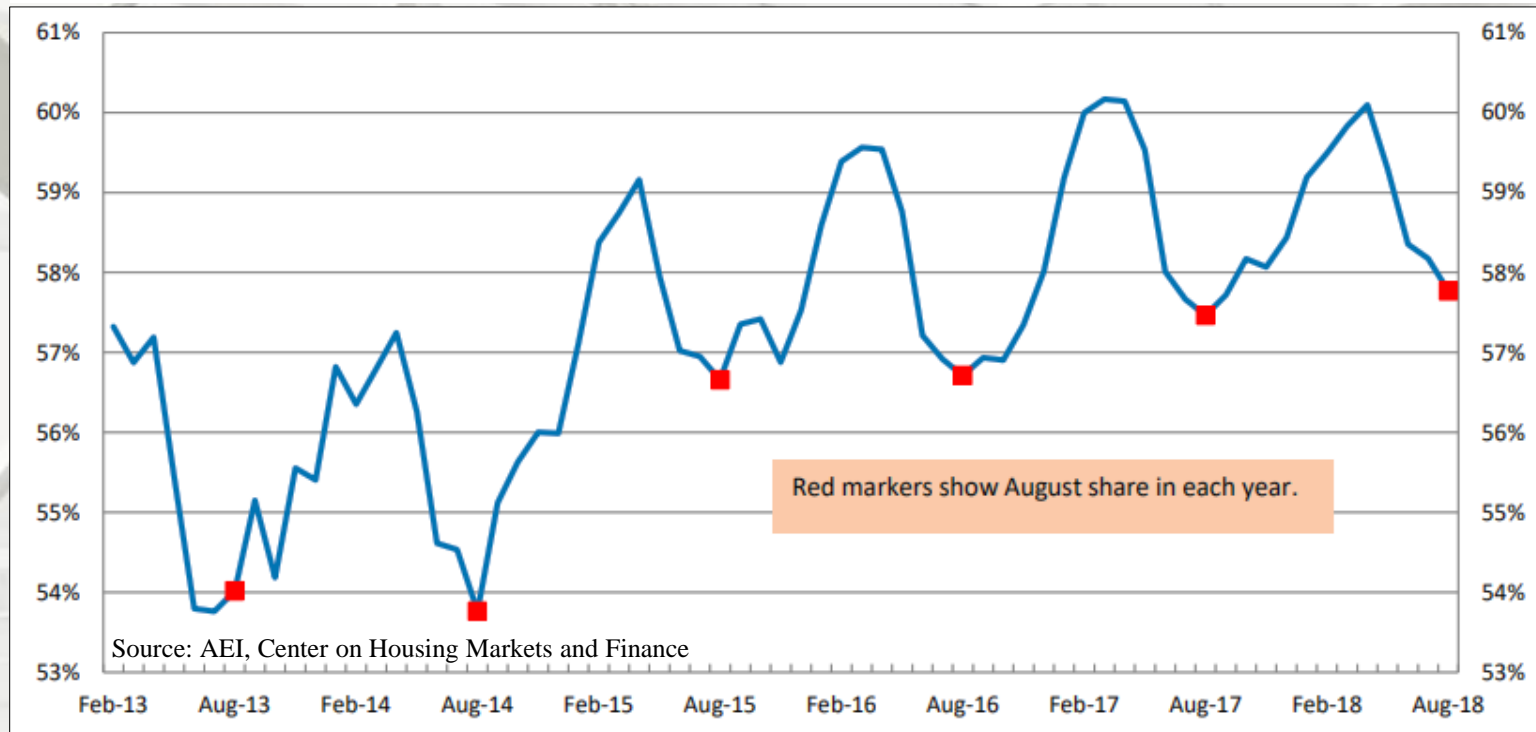
Source: AEI, Center on Housing Markets and Finance

AEI, Center on Housing Markets and Finance

“The housing market is largely segmented by price. FTBs, or entry level buyers, traditionally buy at lower price points than RBs, or move-up buyers. Lately, FTBs have reduced the gap to RBs, an indication that recipients used added buying power from looser lending to bid up FTB homes, ironically made more expensive by FTB leverage, as RBs have had to make downward quality adjustments.” – Edward Pinto and Tobias Peter; AEI, Center on Housing Markets and Finance

First-Time Purchasers

Agency First-Time Buyer Purchase Loan Share



Note: First-time buyer volume not available before February 2013.

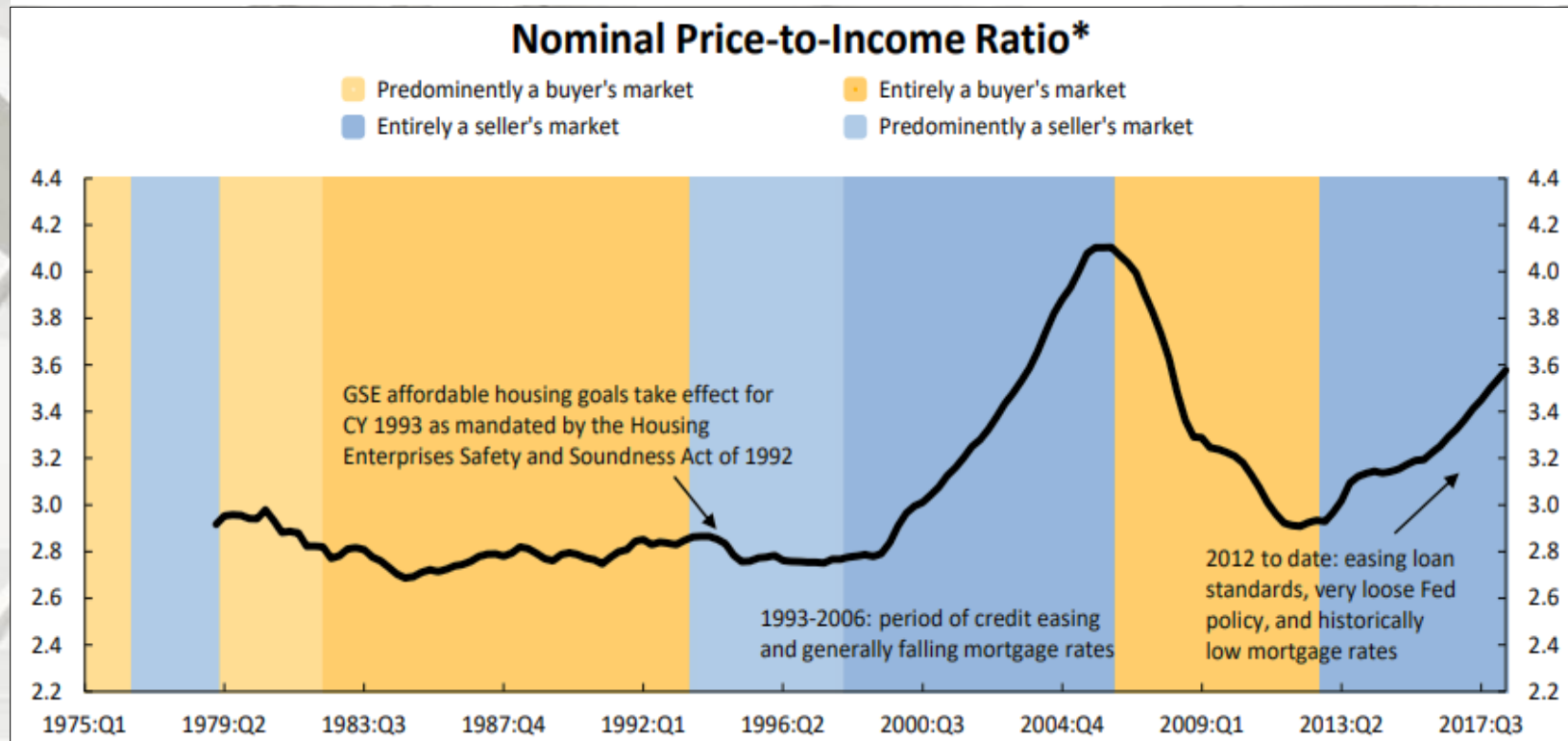
Source: AEI, Center on Housing Markets and Finance

AEI, Center on Housing Markets and Finance

“Agency FTB share for August stood at 57.8%, up 0.3 ppt from a year ago. FTB share has likely reached saturation with tight inventory holding back buyers. An expanding economy and further credit easing will help maintain current levels as they offset higher prices and higher mortgage rates.” – Edward Pinto and Tobias Peter; AEI, Center on Housing Markets and Finance

Housing Affordability

Affordability Worsens in a Seller's Market



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

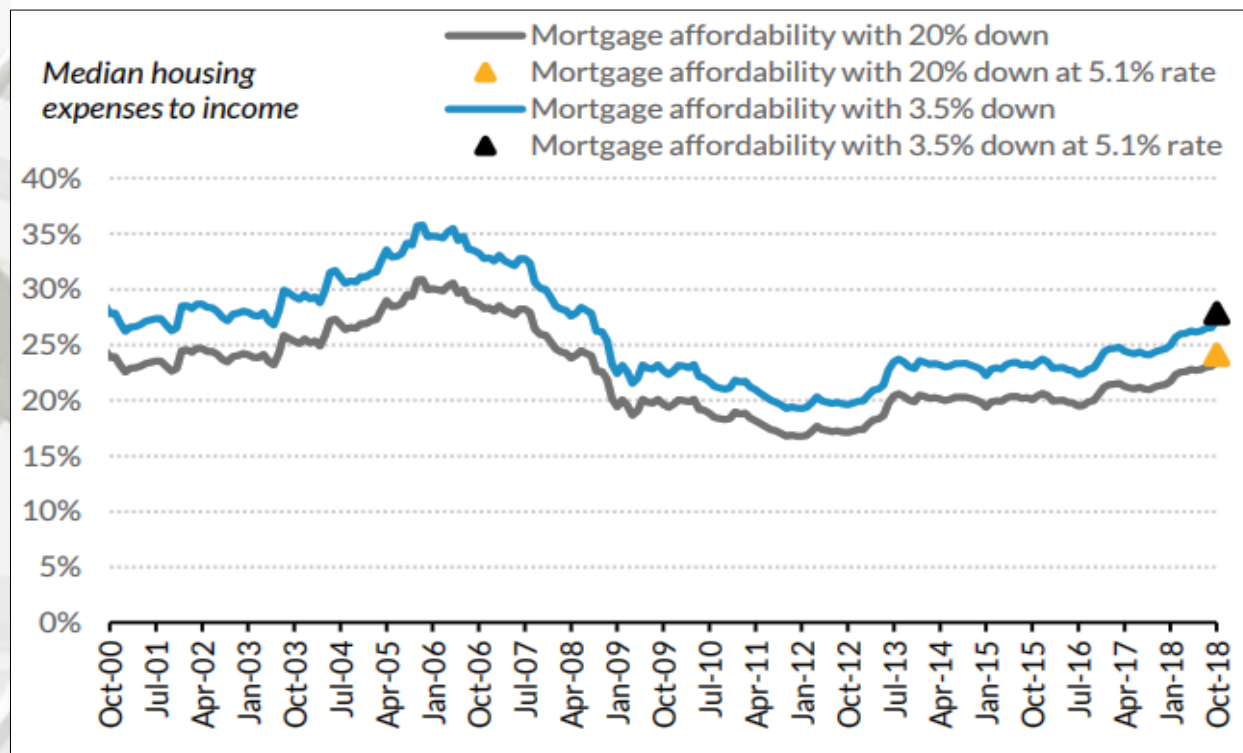
Note: The National Association of Realtors (NAR) defines a seller's market as inventory that is less than or equal to 6 months of sales. NAR data pertain to existing homes; not available before June 1982. Data from the Census Bureau for new home inventories used before June 1982. Source: Zillow, Census Bureau, and the NAR..

AEI, Center on Housing Markets and Finance

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

Housing Affordability

National Housing Affordability Over Time



Urban Institute

“Home prices remain affordable by historic standards, despite price increases over the last 6.5 years and the recent interest rate hikes. As of October 2018, with 20% down payment, the share of median income needed for the monthly mortgage payment stood at 23.6%; with 3.5% down, it is 27.2%. If interest rates rise from 4.83% to 5.1%, the housing expenses to income share with both a 20 percent and a 3.5 percent down payment would be the same as the 2001-03 averages (24 and 28 percent, respectively).” – Bing Lai, Research Associate, Housing Finance Policy Center

Mortgage Credit Availability

Mortgage Credit Availability Increased in November

“Mortgage credit availability increased in November 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 increased 1.1 percent to 188.8 in November. 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 (2.4 percent) and the Government MCAI decreased (0.1 percent). Of the component indices of the Conventional MCAI, the Jumbo MCAI increased by 1.1 percent, while the Conforming MCAI increased by 4.0 percent.

The supply of credit continues to drift higher, driven once again by growth in the conventional credit space, while credit supply in government loans was essentially unchanged from the previous month. There were more mortgage programs offered with high LTV and low credit score characteristics – likely attributable to rising demand from first-time buyers. As seen in our weekly mortgage applications survey, average purchase loan amounts have moved lower in the second half of the year, which also supports first-timers' increased presence in the market.” – Joel Kan, Vice President of Economic and Industry Forecasting, MBA

Summary

In summary:

October housing data was mostly negative, with several monthly declines in single-family starts, permits, and completions, and new single-family sales. Total private and single-family construction spending also were minimally negative (monthly basis). Several housing data reports were negative on year-over-year basis. Total and single-family housing under construction remained positive, except for multi-family data. Total and single-family housing completions declined on a month-over-month basis. New single-family sales continued their sluggish trend, monthly and yearly. The new SF construction market needs consistent improvement in to influence the housing construction market upward. Existing sales continued their stagnating trend, monthly and yearly.

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) Laborers;
- 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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