

The Virginia Tech – U.S. Forest Service

March 2017

Housing Commentary: Section I



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<http://woodproducts.sbio.vt.edu/housing-report>. To request the report, please email: buehlmann@gmail.com

Opening Remarks

In March 2017, in aggregate, monthly housing data were largely positive. Total and single-family (SF) starts, and SF permits declined. Total permits and completions month-over-month and year-over-year improved. New SF and existing sales also improved. Regionally, data were mixed across all sectors. New SF house construction spending also increased minimally month-over-month. SF construction spending improved minimally month-over-month. The May 12th Atlanta Fed GDPNow™ model projects aggregate residential investment spending to increase at a 5.8 percent seasonally adjusted annual rate for Quarter 2; both new residential investment and improvements spending were projected to increase (7.6 and 3.0 percent, respectively) (all declined from Q1's estimate).¹

“We believe that it is fair to conclude that national new home order activity has maintained a low double-digit growth pace in the early part of 2017, comparing favorably to an already-strong fourth quarter trend. This is in spite of higher mortgage rates that typically undermine short-term momentum, speaking to the empowering effect of stronger consumer confidence that is combining with favorable household formation and limited vacant inventory across the new construction and existing home markets. The reason we're calling attention to these different readings in the data is that if the market is running hotter than the government prints say it is, it could have at least two strongly negative impacts that could stop momentum in its tracks. One is that construction activity and orders will start again stressing labor capacity constraints, extending start-to-completion cycles, degrading customers' buying experience, and, possibly leading to quality issues. Two is that builders will burn through their lot supplies at a faster than usual pace, forcing them back out into a land buying market where prices are high and the ability to pencil profitable deals – without writing in escalators on home appreciation – becomes more and more difficult. The issue is, there's risk in managing to a false read on the market, whether it's underestimating its strength or not copping to actual signs of weakness. The good news is, there are remedies.”² – Ivy Zelman, Zelman & Associates

This month's commentary also contains applicable housing data; data exploration of home ownership and quarterly new SF sales; new SF- and multifamily and existing housing data; economic information; and demographics. Section I contains data and commentary and Section II includes Federal Reserve analysis; private indicators; and demographic commentary. We hope you find this commentary beneficial.

Sources: ¹ <https://www.frbatlanta.org/-/media/Documents/cqer/researchcq/gdpnow/GDPTrackingModelDataAndForecasts.xlsx>; 5/12/17;

² <http://www.metrostudy.com/zelman-2017-markets-hotter-looks/>; 4/27/17

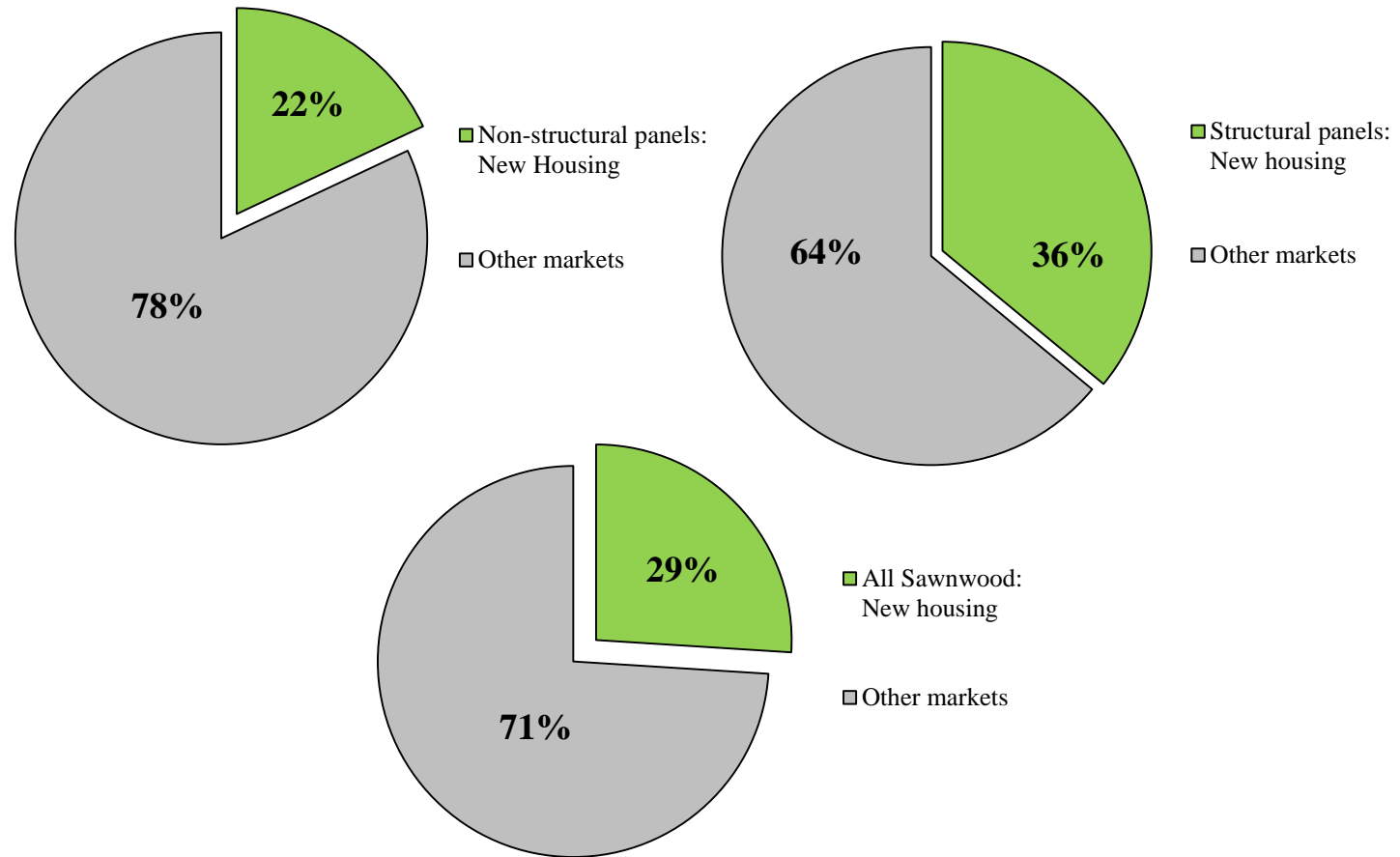
March 2017

Housing Scorecard

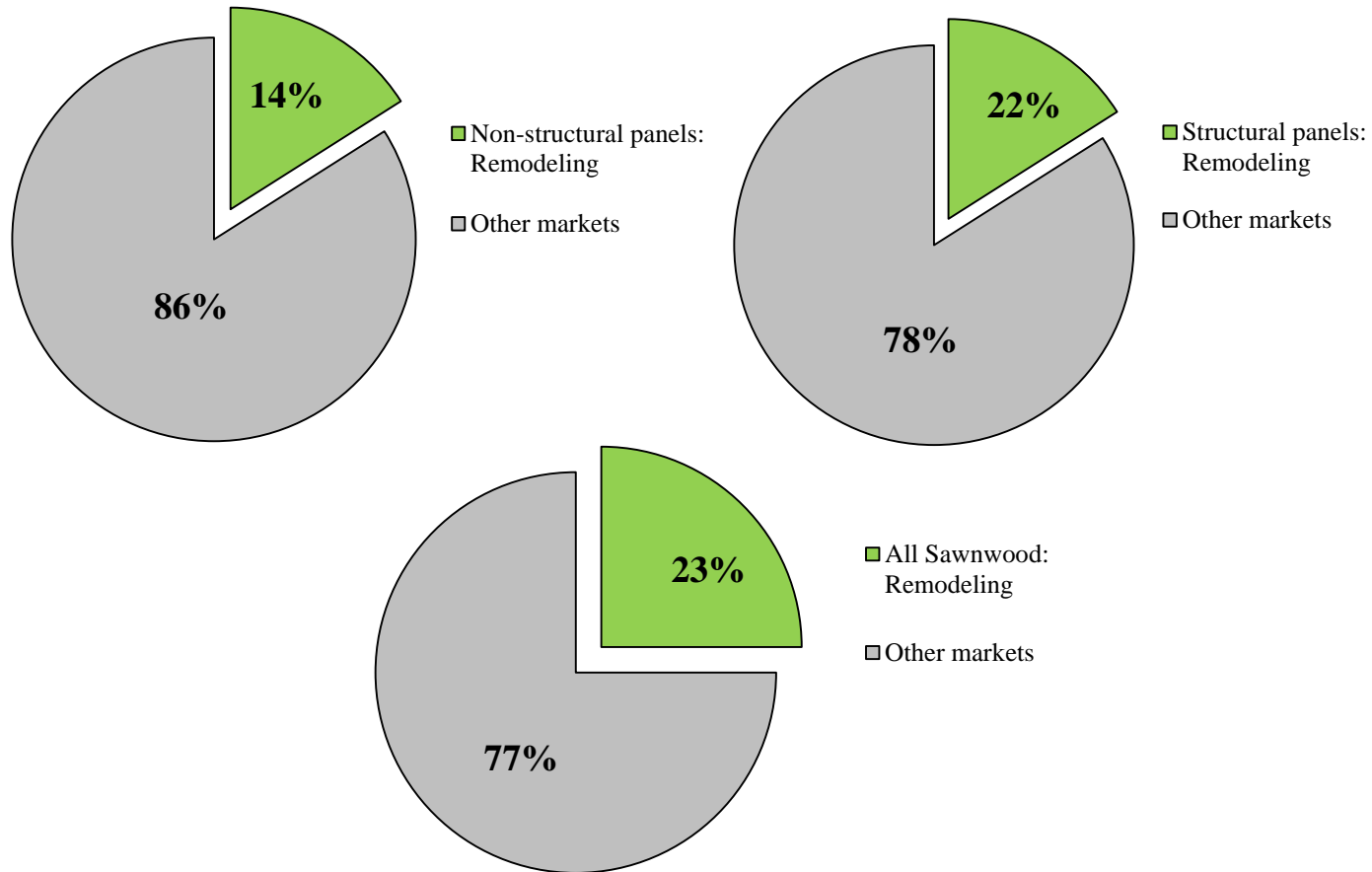
	M/M	Y/Y
Housing Starts	▽ 6.8%	△ 9.2%
Single-Family Starts	▽ 6.2%	△ 9.3%
Housing Permits	△ 3.6%	△ 17.0%
Single-Family Permits	▽ 1.1%	△ 13.5%
Housing Completions	△ 3.2%	△ 13.4%
New Single-Family House Sales	△ 5.8%	△ 15.6%
Private Residential Construction Spending	△ 1.2%	△ 7.5%
Single-Family Construction Spending	△ 0.3%	△ 4.7%
Existing House Sales ¹	△ 4.4%	△ 5.9%

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

New Construction's Percentage of Wood Products Consumption



Repair and Remodeling's Percentage of Wood Products Consumption



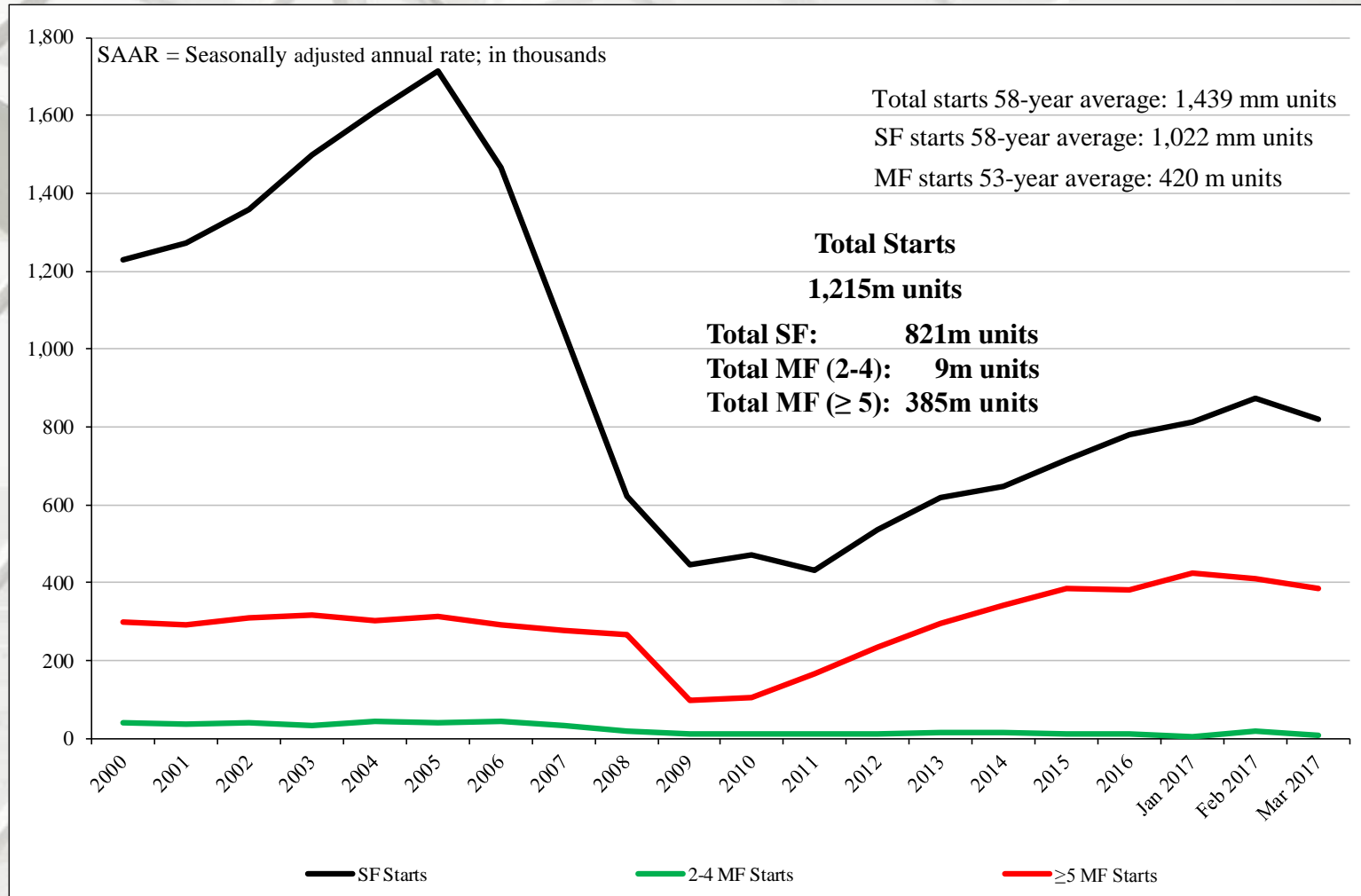
New Housing Starts

	Total Starts	SF Starts	MF 2-4 Starts	MF ≥5 Starts
March	1,215,000	821,000	9,000	385,000
February	1,303,000	875,000	18,000	410,000
2016	1,113,000	751,000	9,000	353,000
M/M change	-6.8%	-6.2%	-50.0%	-6.1%
Y/Y change	9.2%	9.3%	0.0%	9.1%

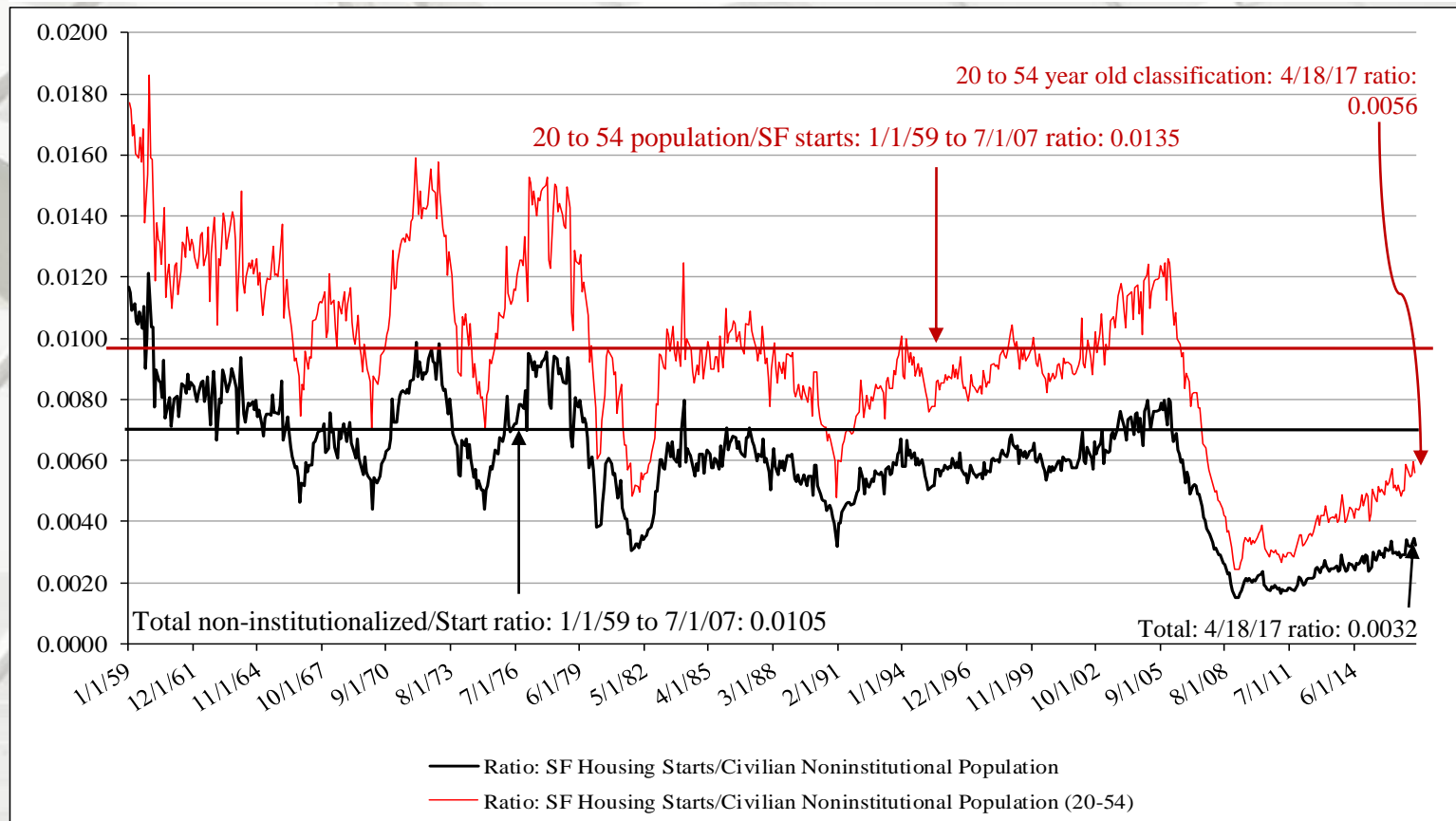
* All start data are presented at a seasonally adjusted annual rate (SAAR).

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

Total Housing Starts



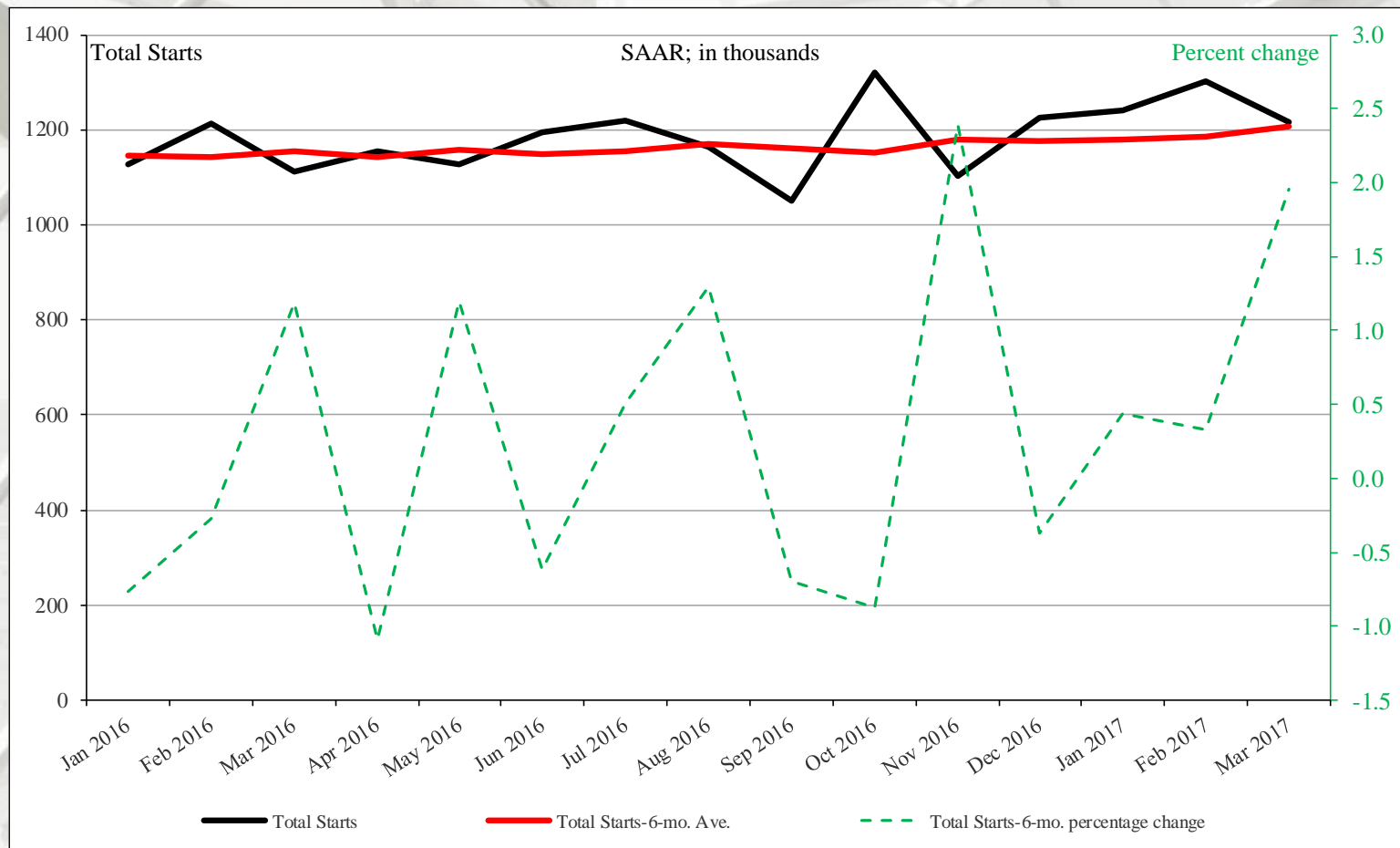
New SF Starts



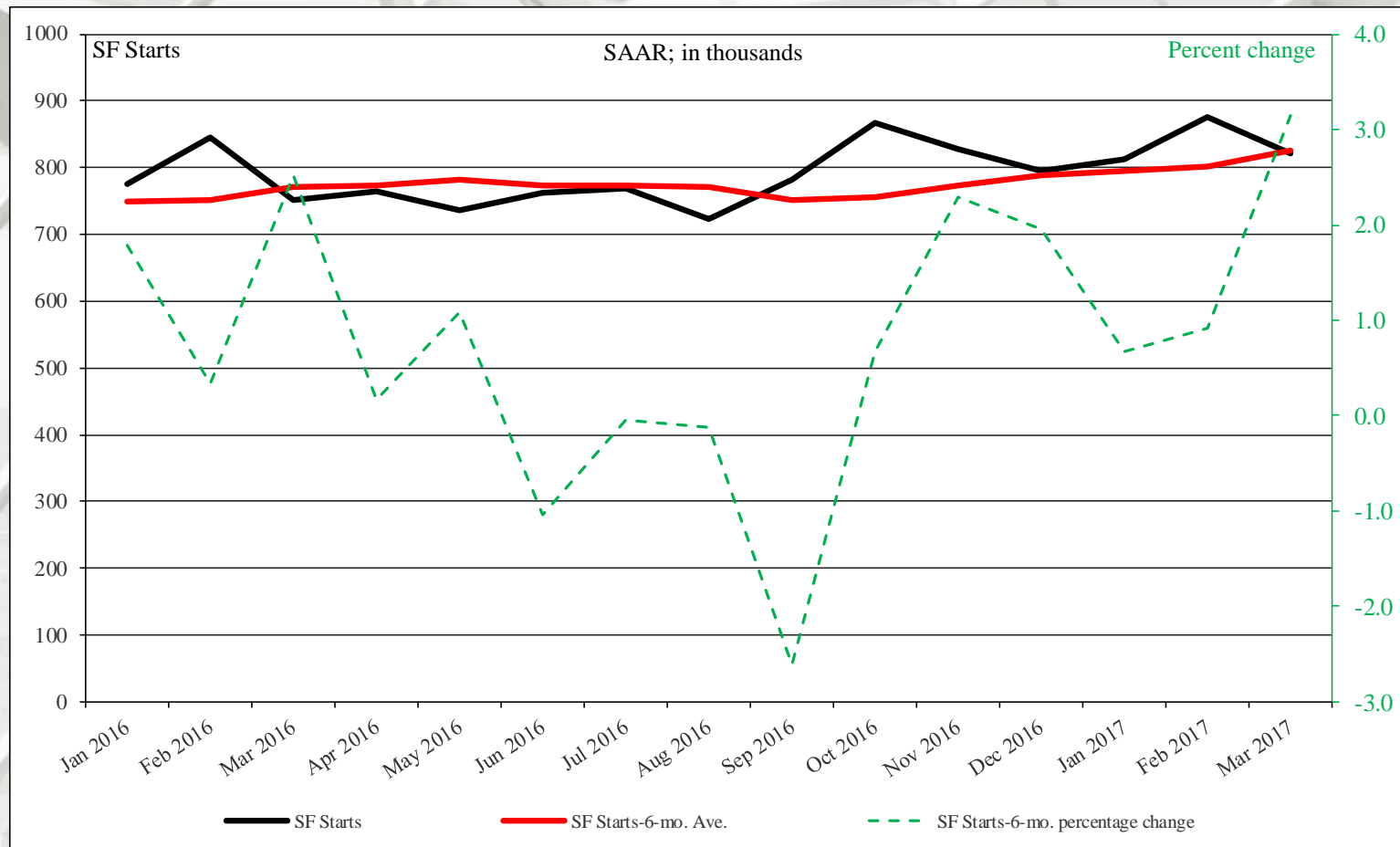
New SF starts adjusted for the US population

From January 1959 to July 2007, the long-term ratio of new SF starts to the total US non-institutionalized population was 0.0105; in March 2017 it was 0.0056 – a decrease from February (0.0060). The long-term ratio of non-institutionalized population, aged 20 to 54 is 0.0135; in March 2017 it was 0.0032 – a decrease from January (0.0034). From a population viewpoint, 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 Total	NE SF	NE MF**
March	131,000	69,000	62,000
February	116,000	69,000	47,000
2016	154,000	58,000	96,000
M/M change	12.9%	0.0%	31.9%
Y/Y change	-14.9%	19.0%	-35.4%

	MW Total	MW SF	MW MF
March	155,000	106,000	49,000
February	185,000	163,000	22,000
2016	159,000	116,000	43,000
M/M change	-16.2%	-35.0%	122.7%
Y/Y change	-2.5%	-8.6%	14.0%

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

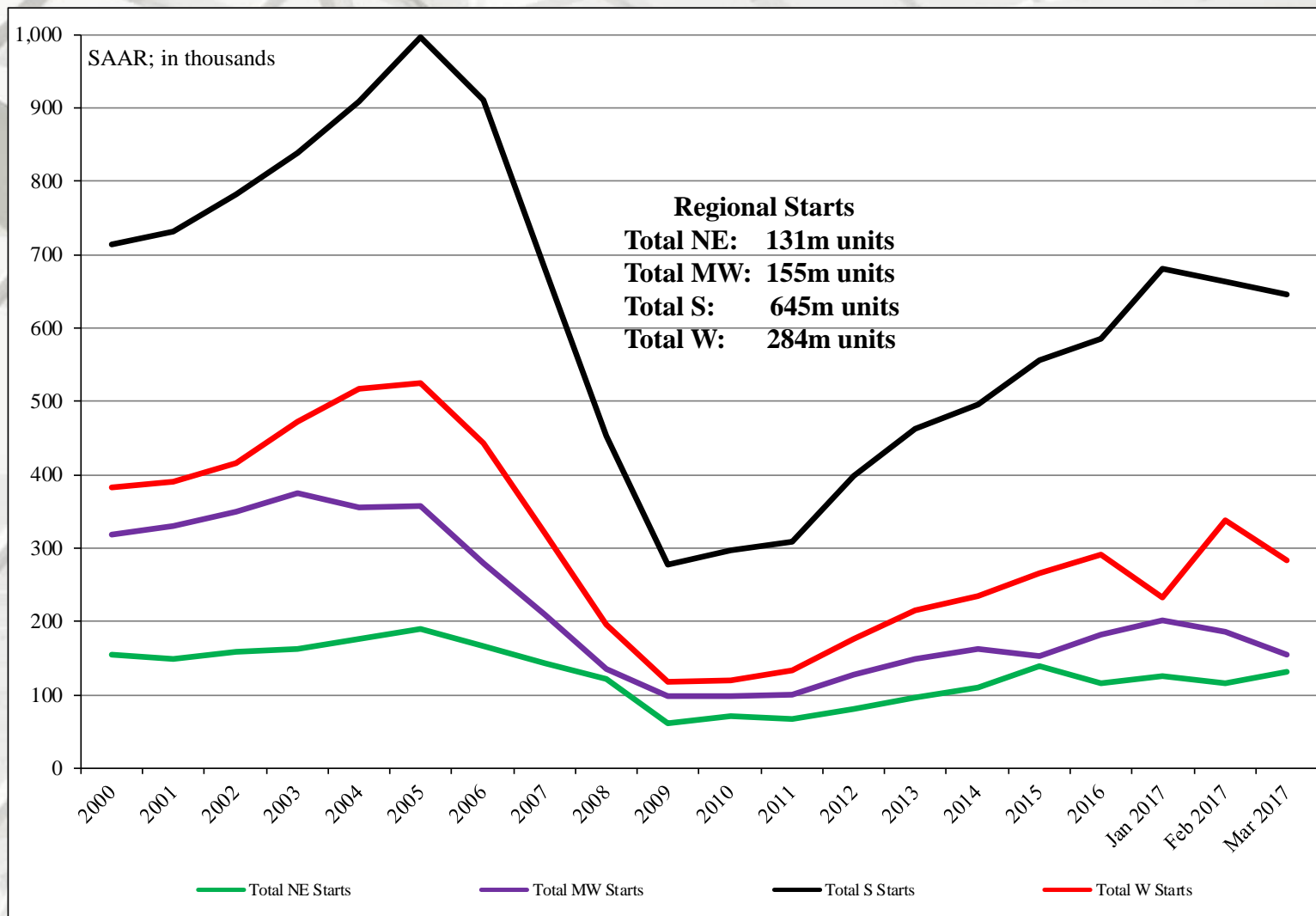
	S Total	S SF	S MF**
March	645,000	458,000	187,000
February	664,000	444,000	220,000
2016	540,000	400,000	140,000
M/M change	-2.9%	3.2%	-15.0%
Y/Y change	19.4%	14.5%	33.6%

	W Total	W SF	W MF
March	284,000	188,000	96,000
February	338,000	199,000	139,000
2016	260,000	177,000	83,000
M/M change	-16.0%	-5.5%	-30.9%
Y/Y change	9.2%	6.2%	15.7%

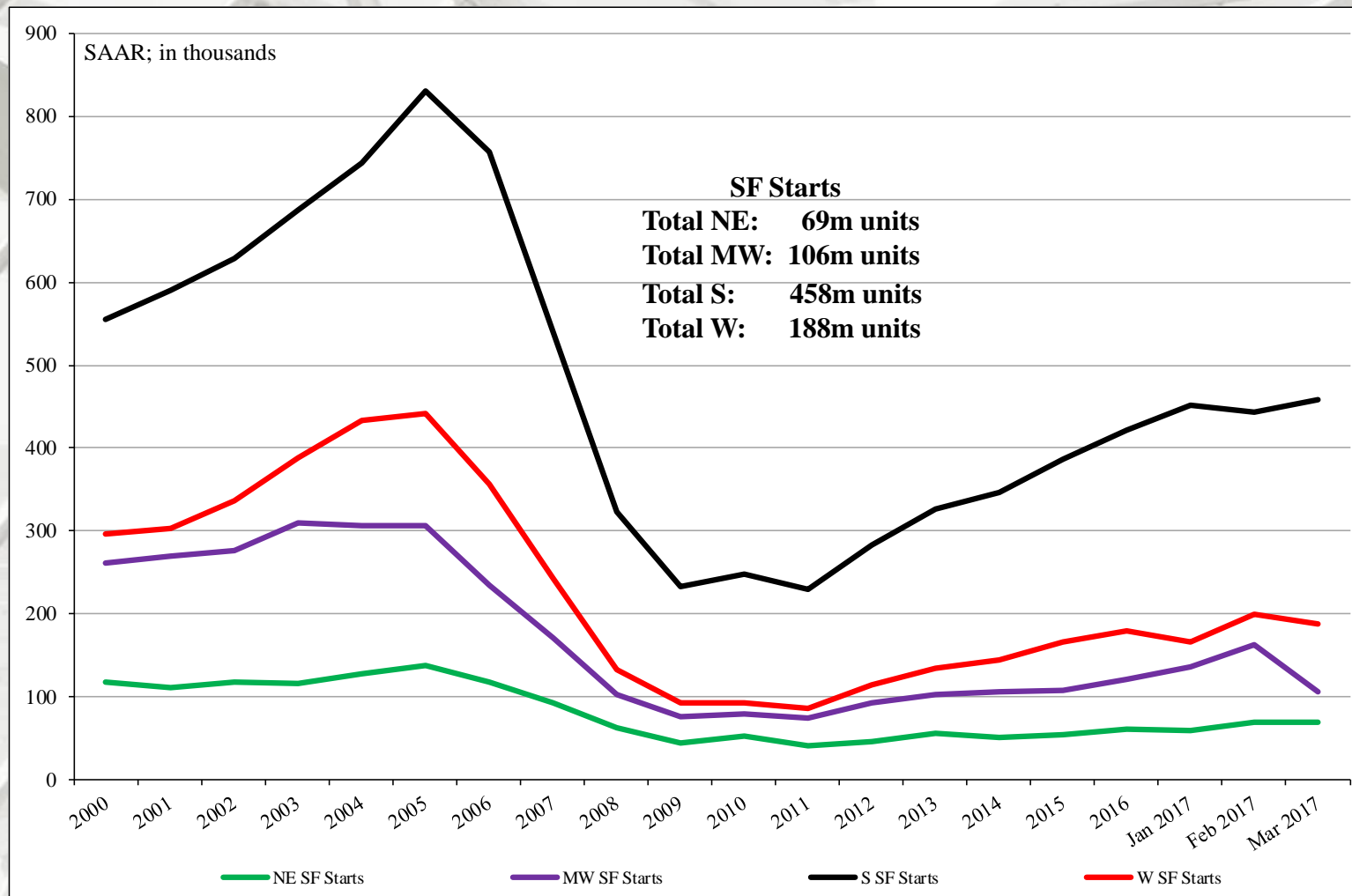
All data are SAAR; S = South and W = West.

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

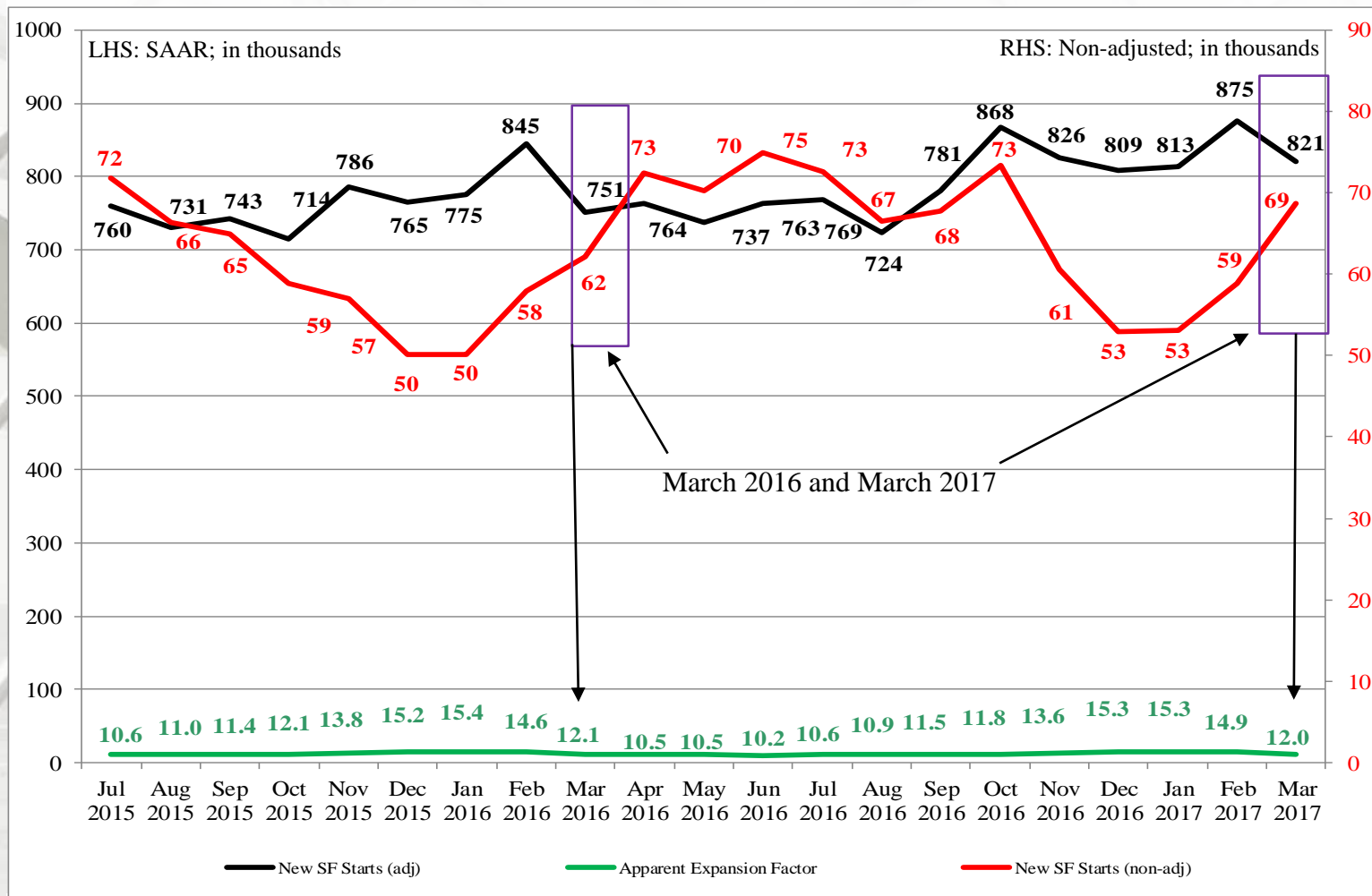
Total Housing Starts by Region



SF Housing Starts by Region



Nominal & SAAR SF Starts

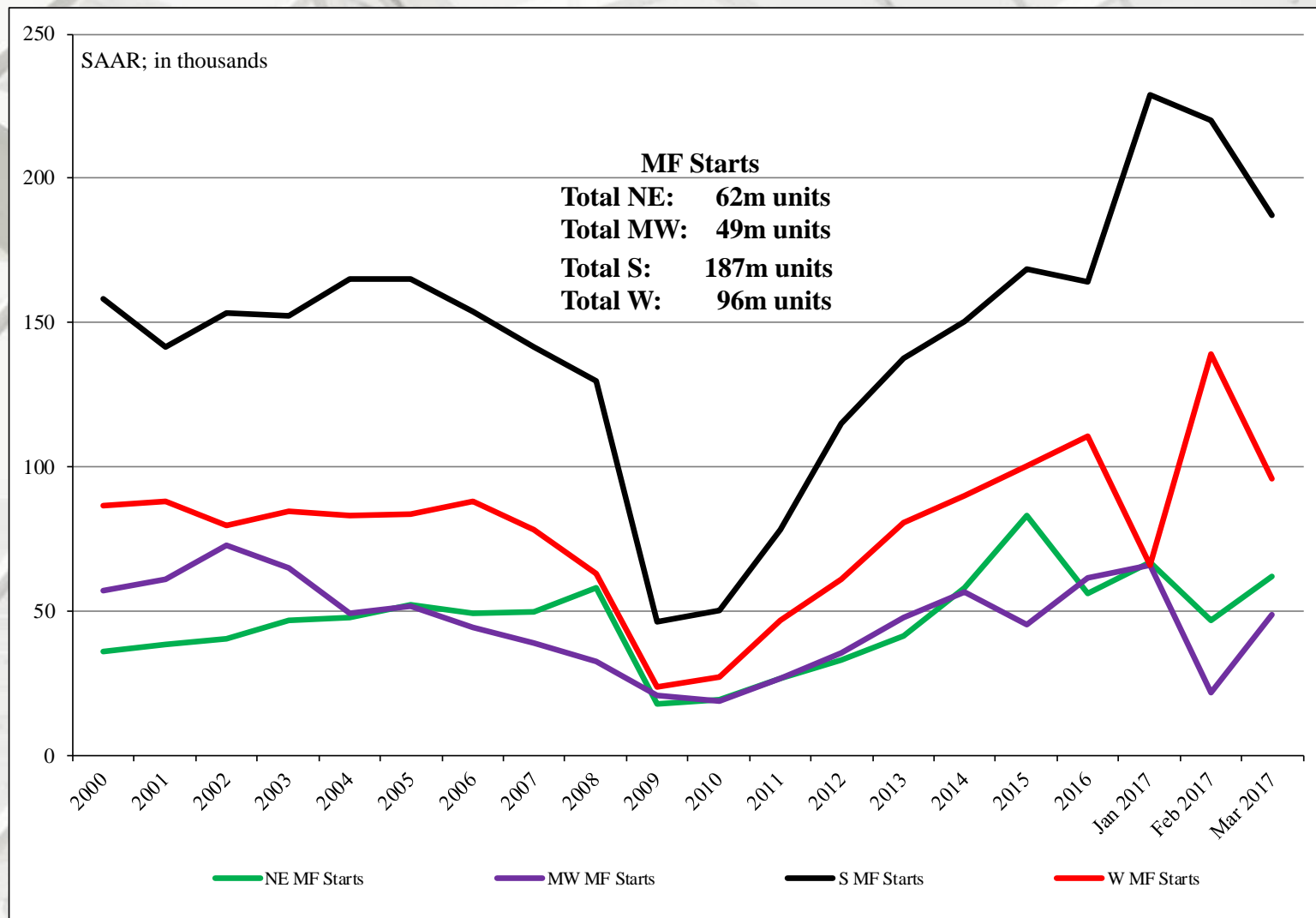


Nominal and Adjusted New SF Monthly Starts

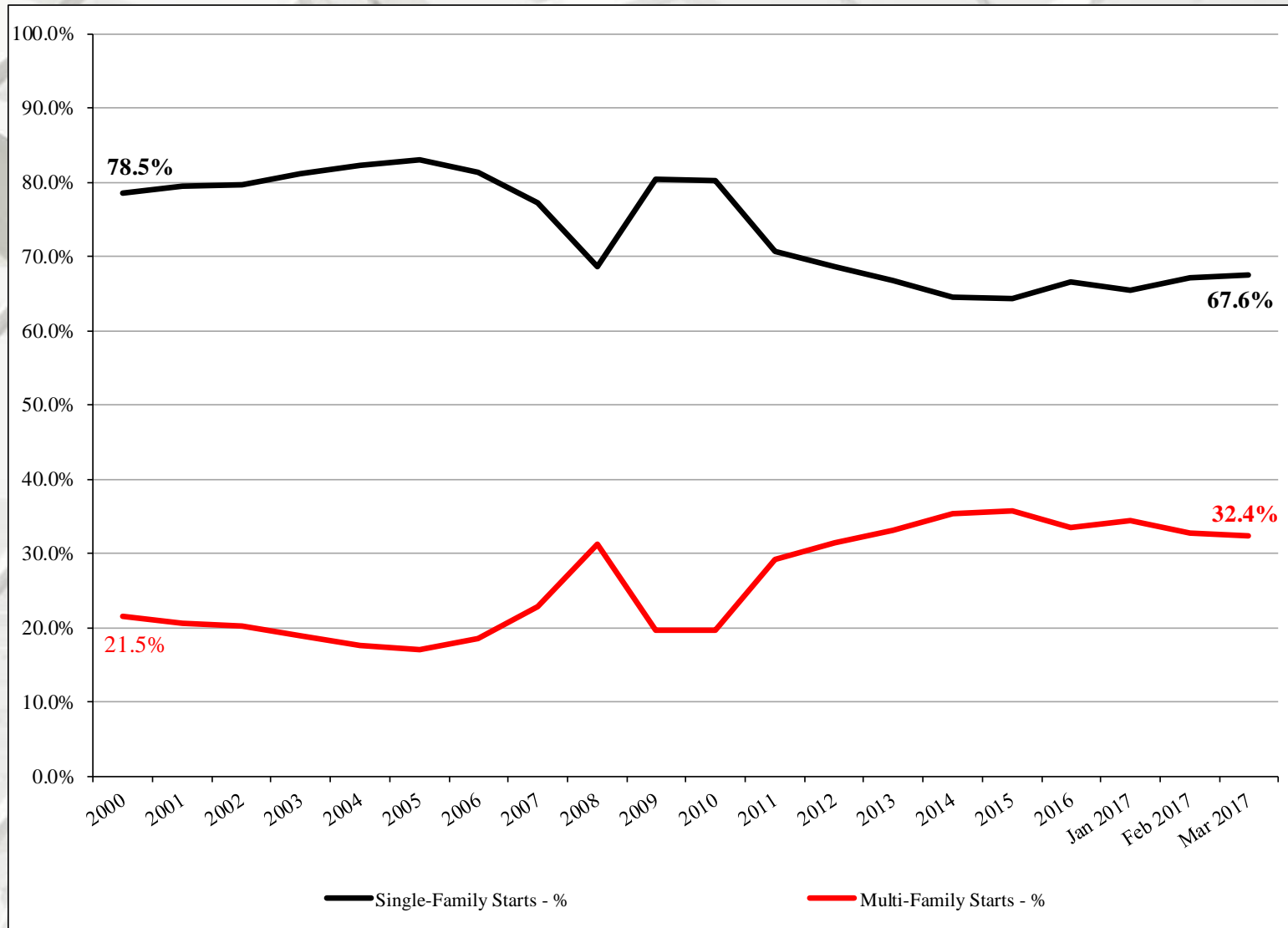
Presented above is nominal (non-adjusted) new SF start data contrasted against SAAR data.

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

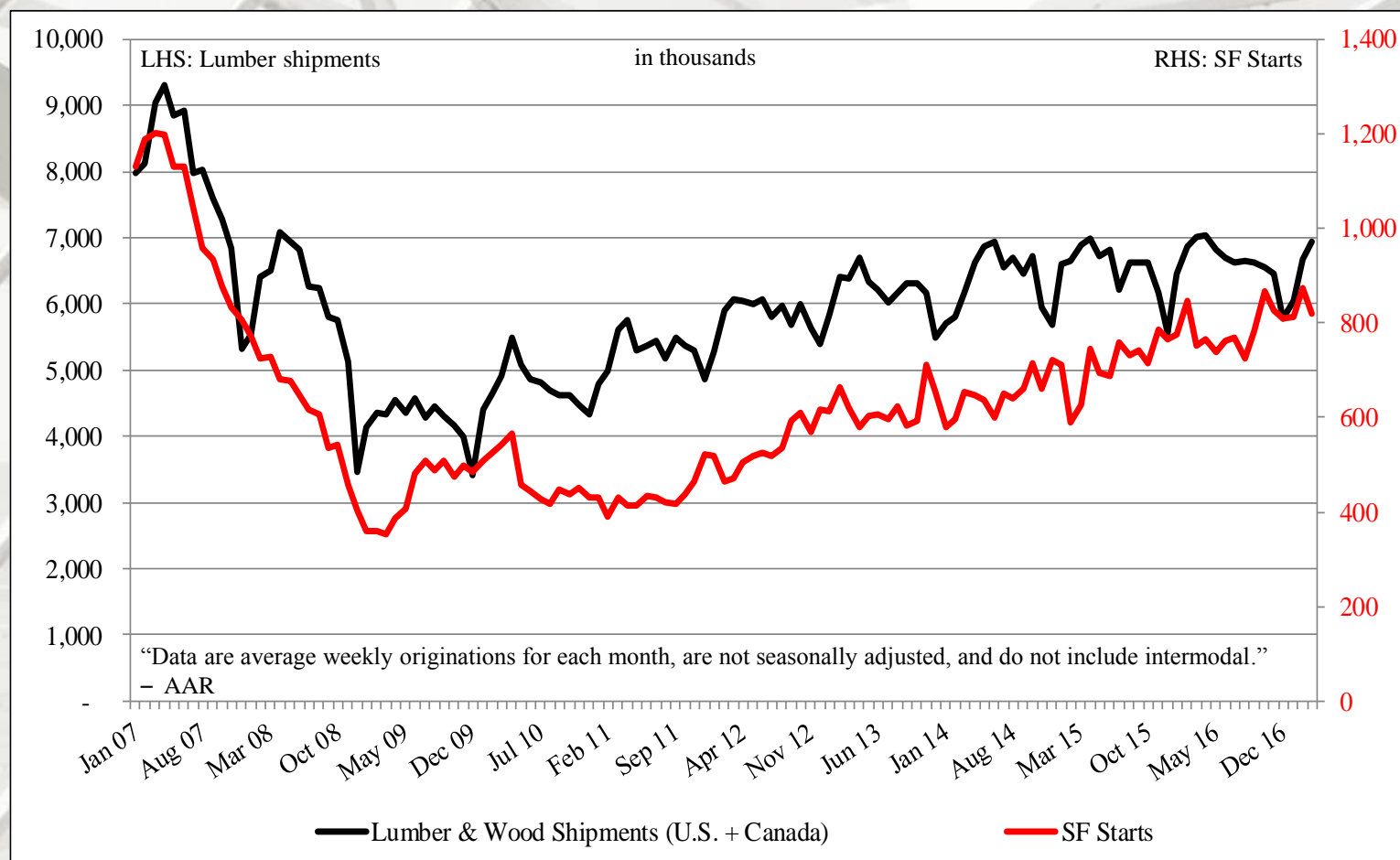
MF Housing Starts by Region



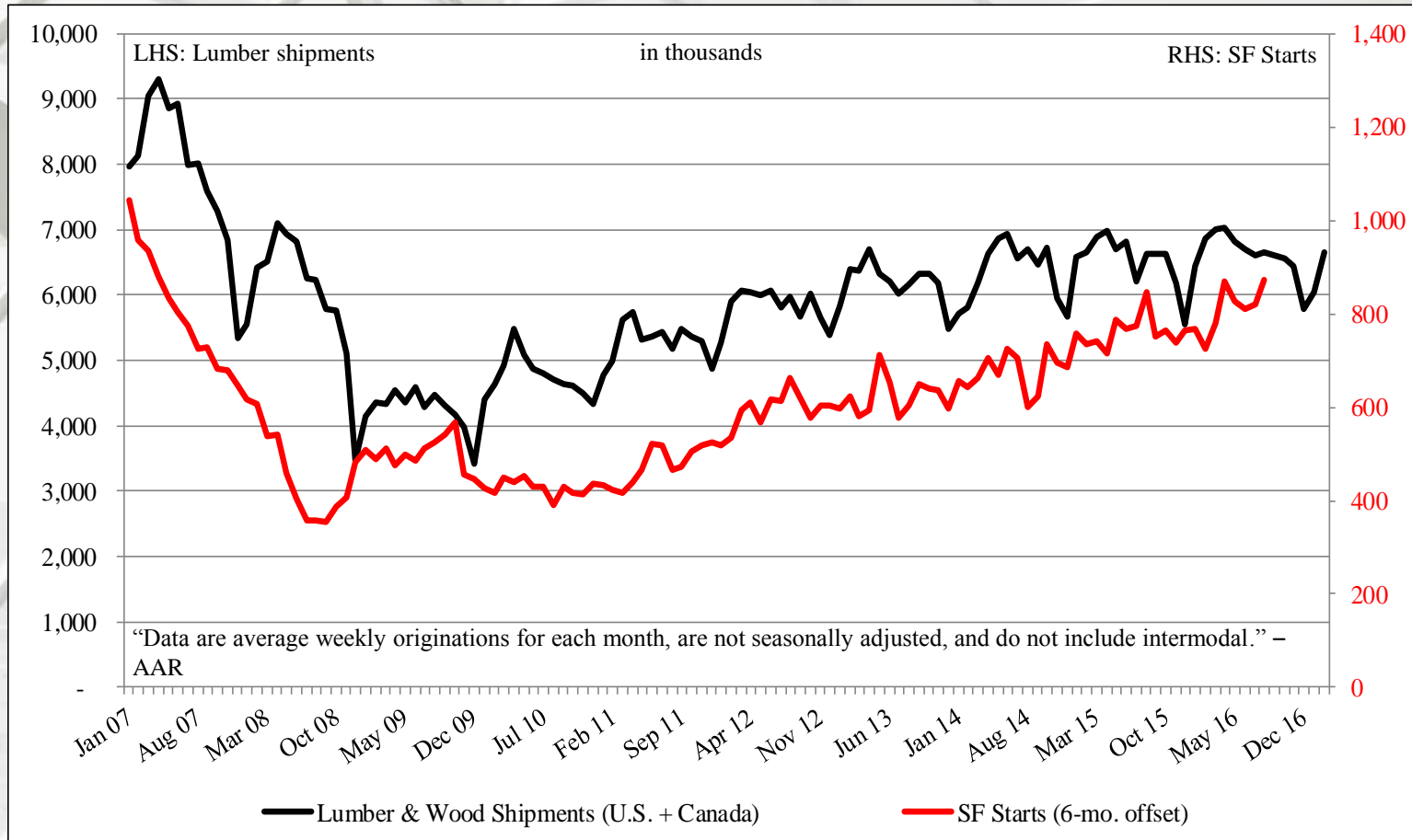
Housing Starts by Percent



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



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



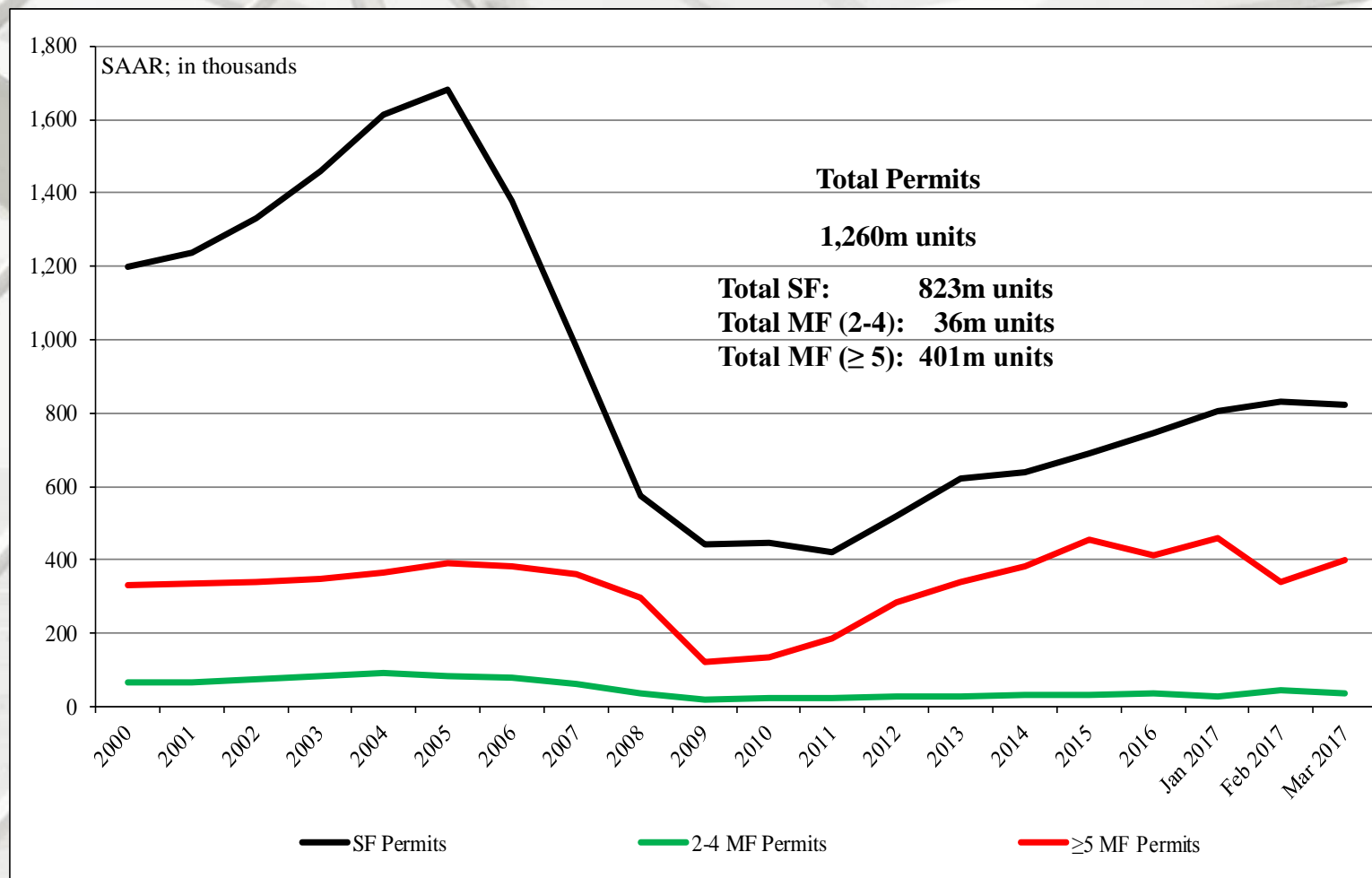
In this graph, January 2007 lumber shipments are contrasted with July 2007 SF starts, and continuing through March 2017 SF starts. The purpose is to discover if lumber shipments relate to future single-family starts. Also, it is realized that lumber and wood products are trucked; however, to our knowledge comprehensive trucking data is not available.

New Housing Permits

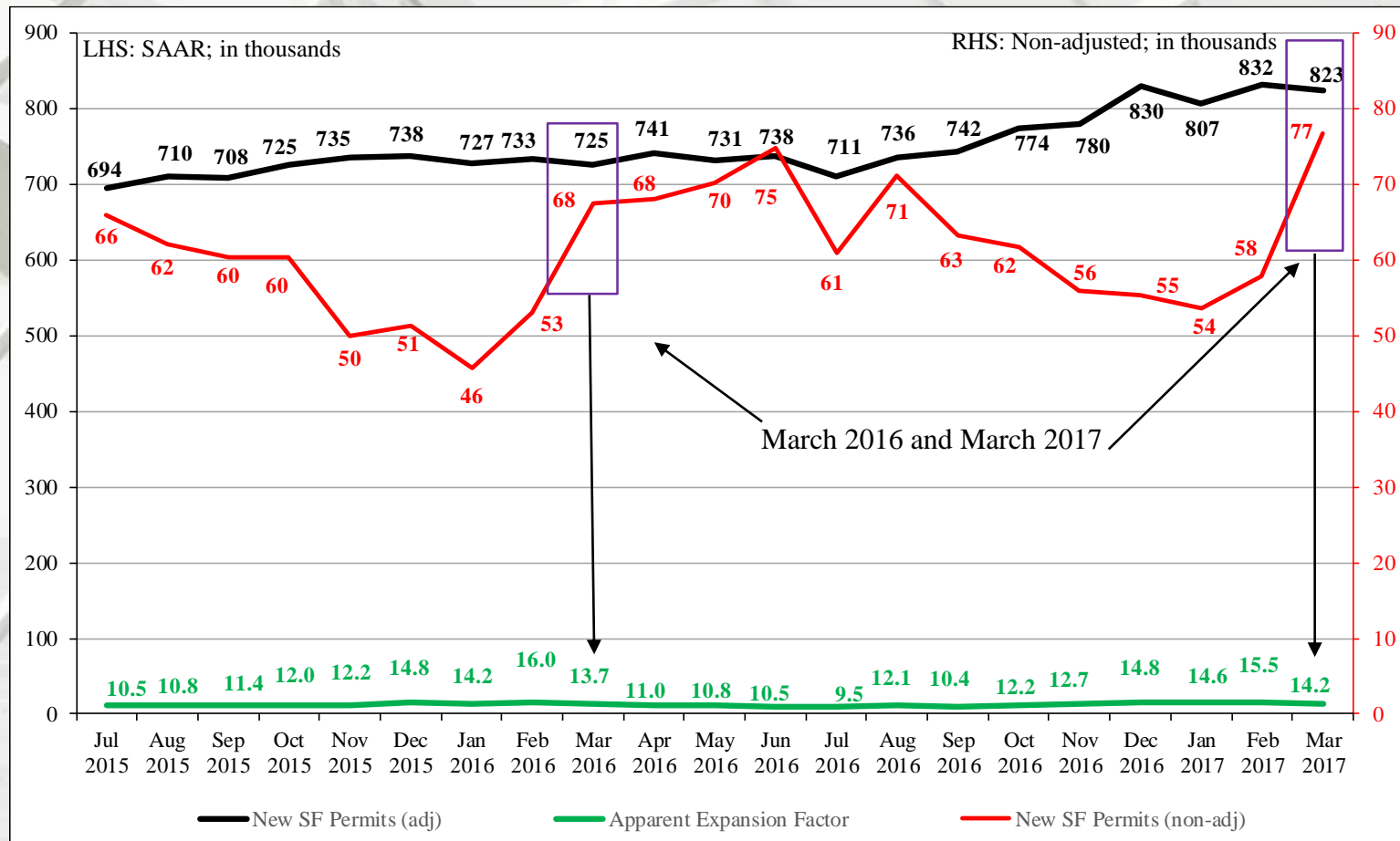
	Total Permits*	SF Permits	MF 2-4 unit Permits	MF ≥ 5 unit Permits
March	1,260,000	823,000	36,000	401,000
February	1,216,000	832,000	45,000	339,000
2016	1,077,000	725,000	34,000	318,000
M/M change	3.6	-1.1	-20.0	18.3
Y/Y change	17.0	13.5	5.9	26.1

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

Total New Housing 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
March	134,000	54,000	80,000
February	116,000	54,000	62,000
2016	101,000	52,000	49,000
M/M change	15.5	0.0	29.0
Y/Y change	32.7	3.8	63.3
	MW Total	MW SF	MW MF
March	192,000	127,000	65,000
February	246,000	135,000	111,000
2016	183,000	120,000	63,000
M/M change	-22.0	-5.9	-41.4
Y/Y change	4.9	5.8	3.2

* All data are SAAR.

New Housing Permits by Region

	S Total	S SF	S MF
March	619,000	454,000	165,000
February	584,000	448,000	136,000
2016	540,000	387,000	153,000
M/M change	6.0	1.3	21.3
Y/Y change	14.6	17.3	7.8
	W Total	W SF	W MF
March	315,000	188,000	127,000
February	270,000	195,000	75,000
2016	253,000	166,000	87,000
M/M change	16.7	-3.6	69.3
Y/Y change	24.5	13.3	46.0

* All data are SAAR.

Total Building Permits -- Top 25	
Dallas-Fort Worth-Arlington, TX	16,910
New York-Newark-Jersey City, NY-NJ	11,976
Houston-The Woodlands-Sugarland, TX	11,262
Atlanta-Sandy Springs-Roswell, GA	9,110
Los Angeles-Long Beach-Anaheim, CA	6,790
Phoenix-Mesa-Scottsdale, AZ	6,641
Austin-Round Rock, TX	6,631
Washington-Arlington-Alexandria, DC-VA-MD	5,772
Seattle-Tacoma-Bellevue, WA	5,729
Denver-Aurora-Lakewood, CO	5,709
Charlotte-Concord-Gastonia, NC	4,976
Nashville-Davidson-Murfreesboro-Franklin, TN	4,806
Tampa-St. Petersburg-Clearwater, FL	4,804
Miami-Fort Lauderdale-West Palm Beach, FL	4,705
Orlando-Kissimmee-Sanford, FL	4,330
Raleigh, NC	3,817
Portland-Vancouver-Hillsboro, OR	3,655
Chicago-Naperville-Elgin, IL	3,507
Minneapolis-St. Paul-Bloomington, MN	3,449
Boston-Cambridge-Newton, MA	3,257
Riverside-San Bernardino-Ontario, CA	2,982
Jacksonville, FL	2,941
San Francisco-Oakland-Hayward, FL	2,922
Philadelphia-Camden-Wilmington ,PA-NJ-DE	2,808
Las Vegas-Henderson-Paradise, NV	2,797

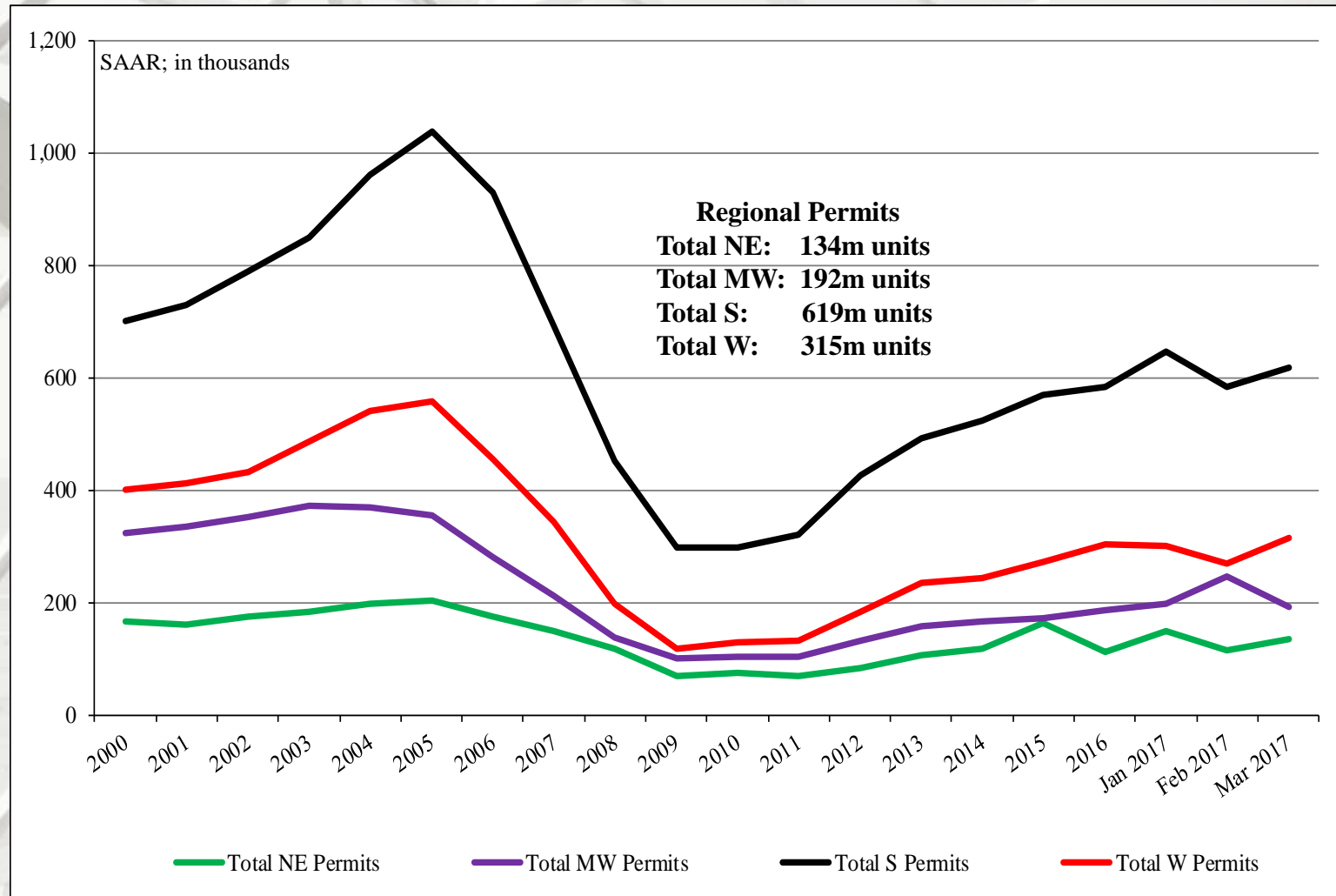
Total Building Permits by Metro Jan – Mar 2017

SF Building Permits -- Top 25

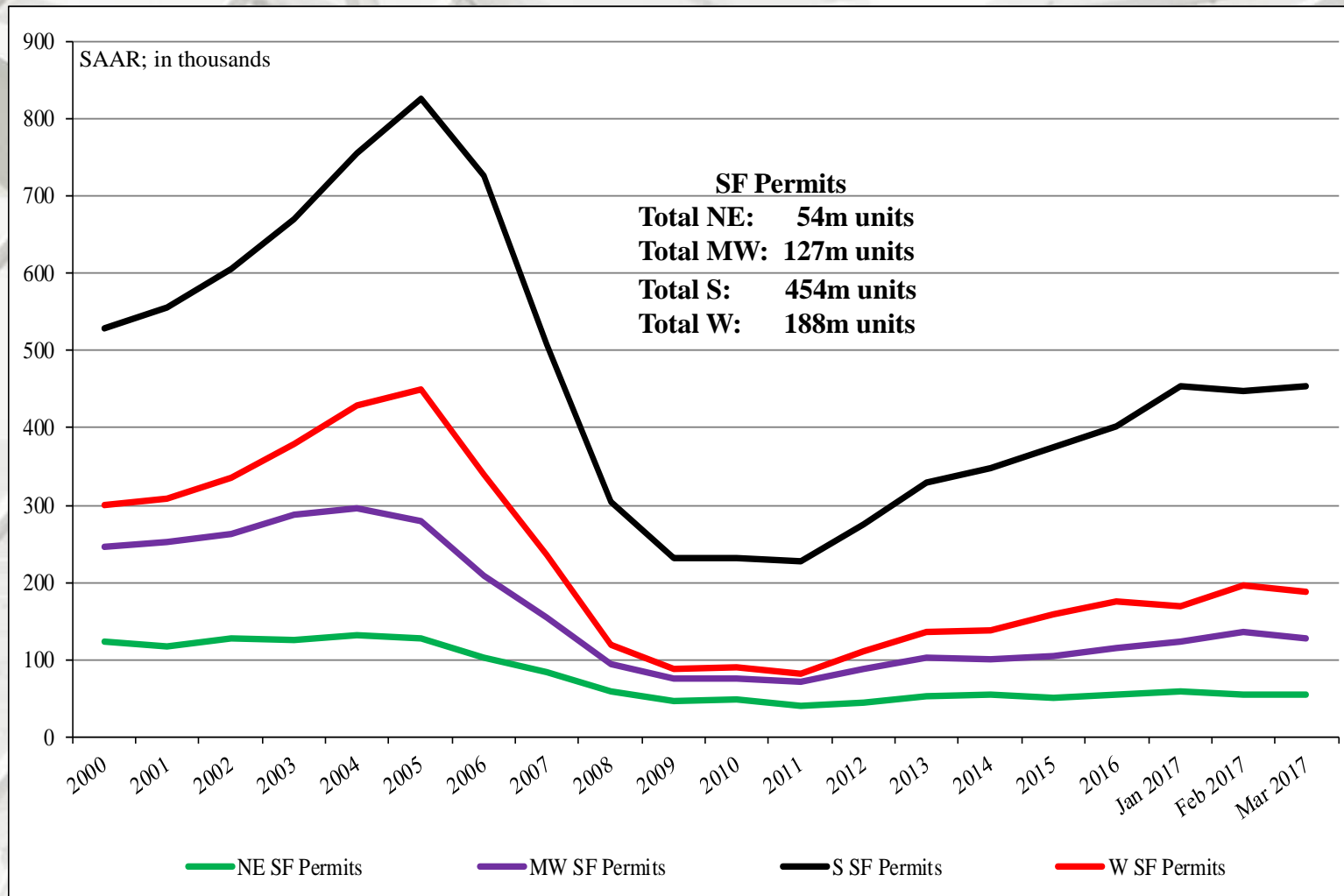
Houston-The Woodlands-Sugarland, TX	9,890
Dallas-Fort Worth-Arlington, TX	8,782
Atlanta-Sandy Springs-Roswell, GA	6,030
Phoenix-Mesa-Scottsdale, AZ	4,817
Austin-Round Rock, TX	4,255
Orlando-Kissimmee-Sanford, FL	3,799
Charlotte-Concord-Gastonia, NC	3,593
Washington-Arlington-Alexandria, DC-VA-MD	3,490
Nashville-Davidson-Murfreesboro-Franklin, TN	3,318
Tampa-St. Petersburg-Clearwater, FL	3,096
Raleigh, NC	2,589
Denver-Aurora-Lakewood, CO	2,466
Los Angeles-Long Beach-Anaheim, CA	2,449
New York-Newark-Jersey City, NY-NJ	2,370
Las Vegas-Henderson-Paradise, NV	2,330
Jacksonville, FL	2,317
Seattle-Tacoma-Bellevue, WA	2,209
Riverside-San Bernardino-Ontario, CA	2,014
San Antonio-New Braunfels, TX	1,979
Portland-Vancouver-Hillsboro, OR	1,678
Minneapolis-St. Paul-Bloomington, MN	1,659
Miami-Fort Lauderdale-West Palm Beach, FL	1,651
Sacramento-Roseville-Arden, CA	1,593
Philadelphia-Camden-Wilmington, PA-NJ-DE	1,587
Myrtle Beach-Conway-North Myrtle Beach, SC	1,574

SF Housing Permits by Metro Jan – Mar 2017

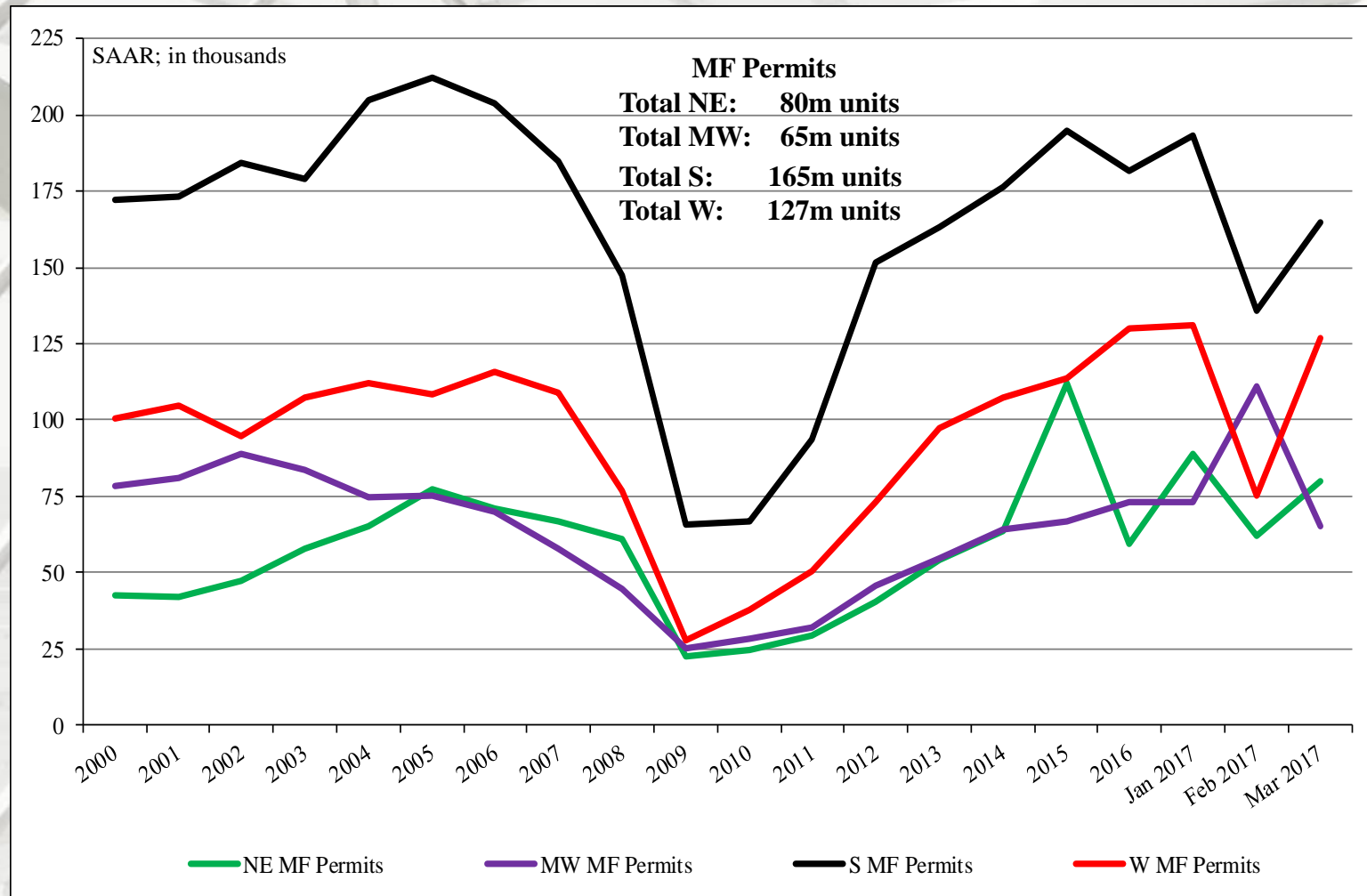
Total Housing Permits by Region



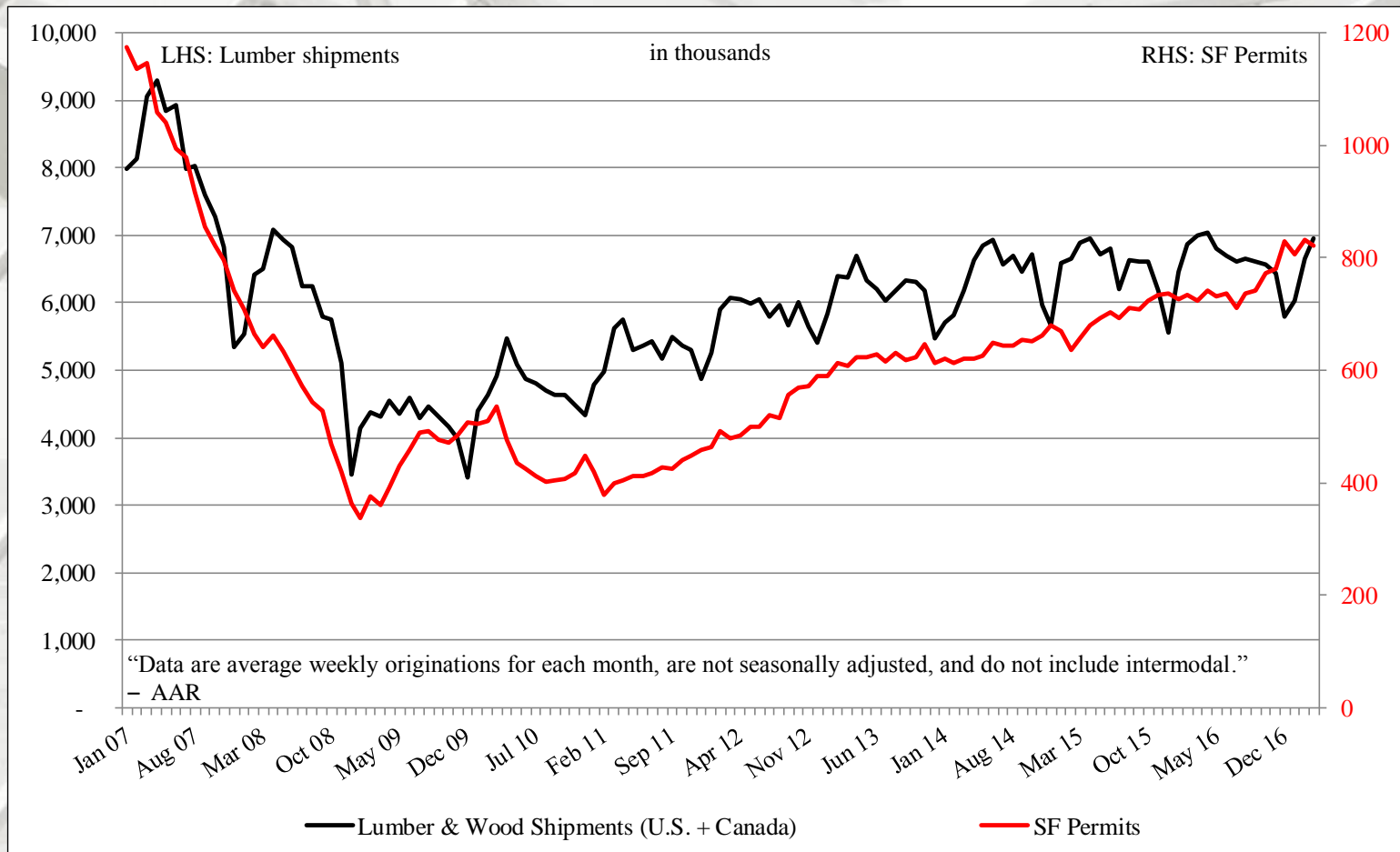
SF Housing Permits by Region



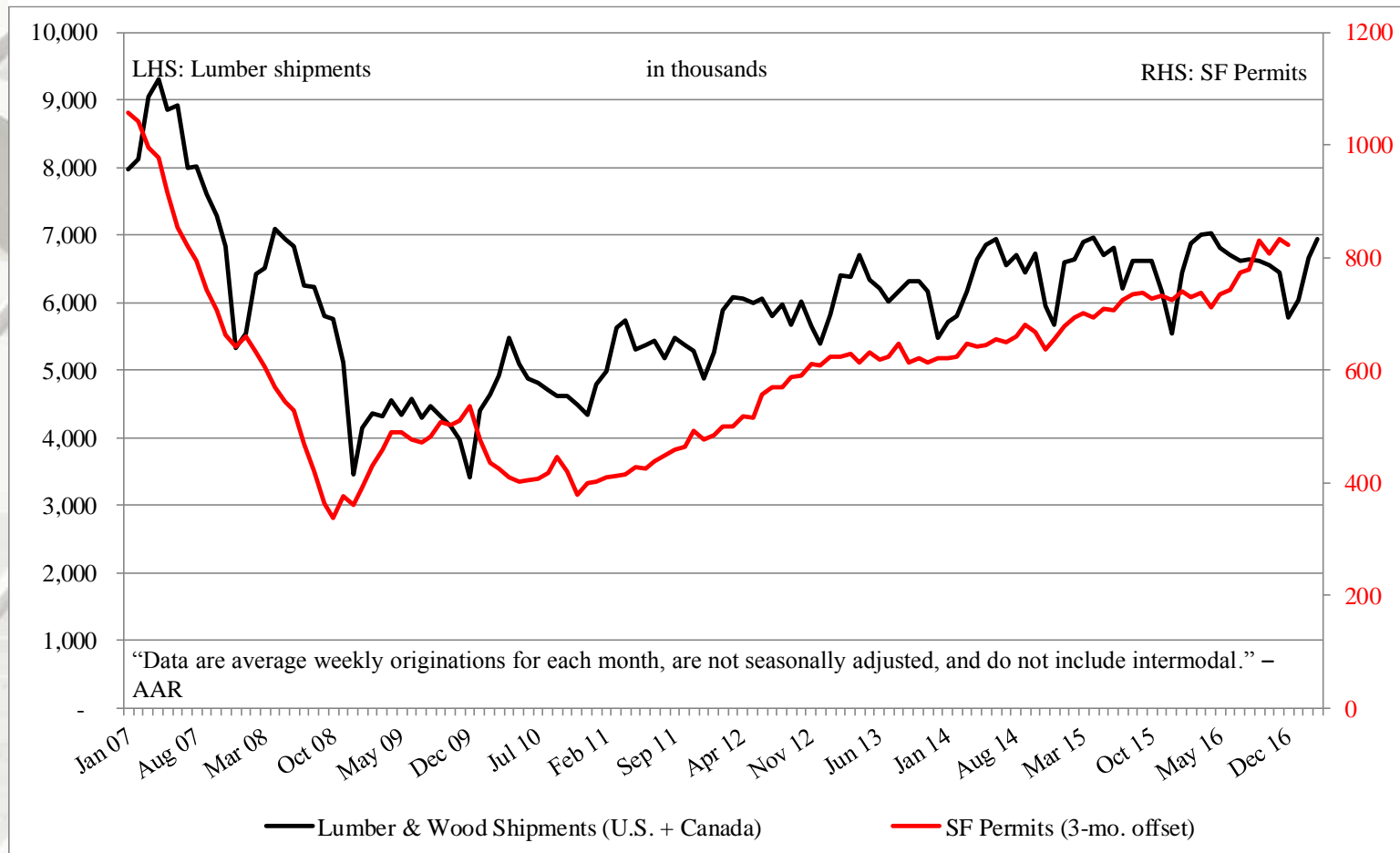
MF Housing Permits by Region



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 April 2007 SF permits, continuing through March 2017 SF permits. 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.

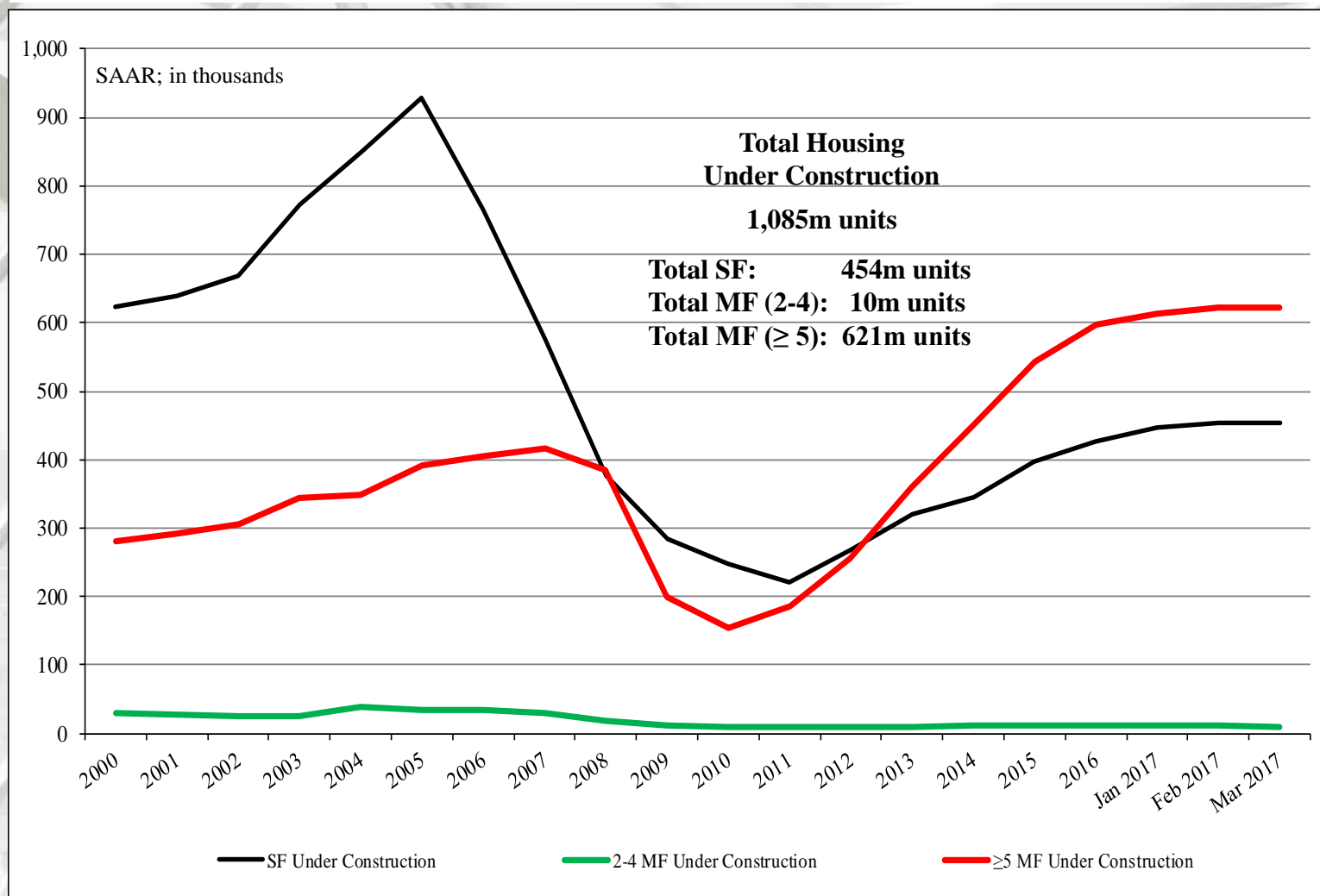
New Housing Under Construction

	Total Under Construction*	SF Under Construction	MF 2-4 unit** Under Construction	Under Construction
March	1,085,000	454,000	10,000	621,000
February	1,087,000	453,000	11,000	623,000
2016	991,000	427,000	10,000	554,000
M/M change	-0.2%	0.2%	-9.1%	-0.3%
Y/Y change	9.5%	6.3%	0.0%	12.1%

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



New Housing Under Construction by Region

	NE Total	NE SF	NE MF**
March	195,000	54,000	141,000
February	196,000	54,000	142,000
2016	187,000	49,000	138,000
M/M change	-0.5%	0.0%	-0.7%
Y/Y change	4.3%	10.2%	2.2%
	MW Total	MW SF	MW MF
March	149,000	73,000	76,000
February	151,000	75,000	76,000
2016	131,000	73,000	58,000
M/M change	-1.3%	-2.7%	0.0%
Y/Y change	13.7%	0.0%	31.0%

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).

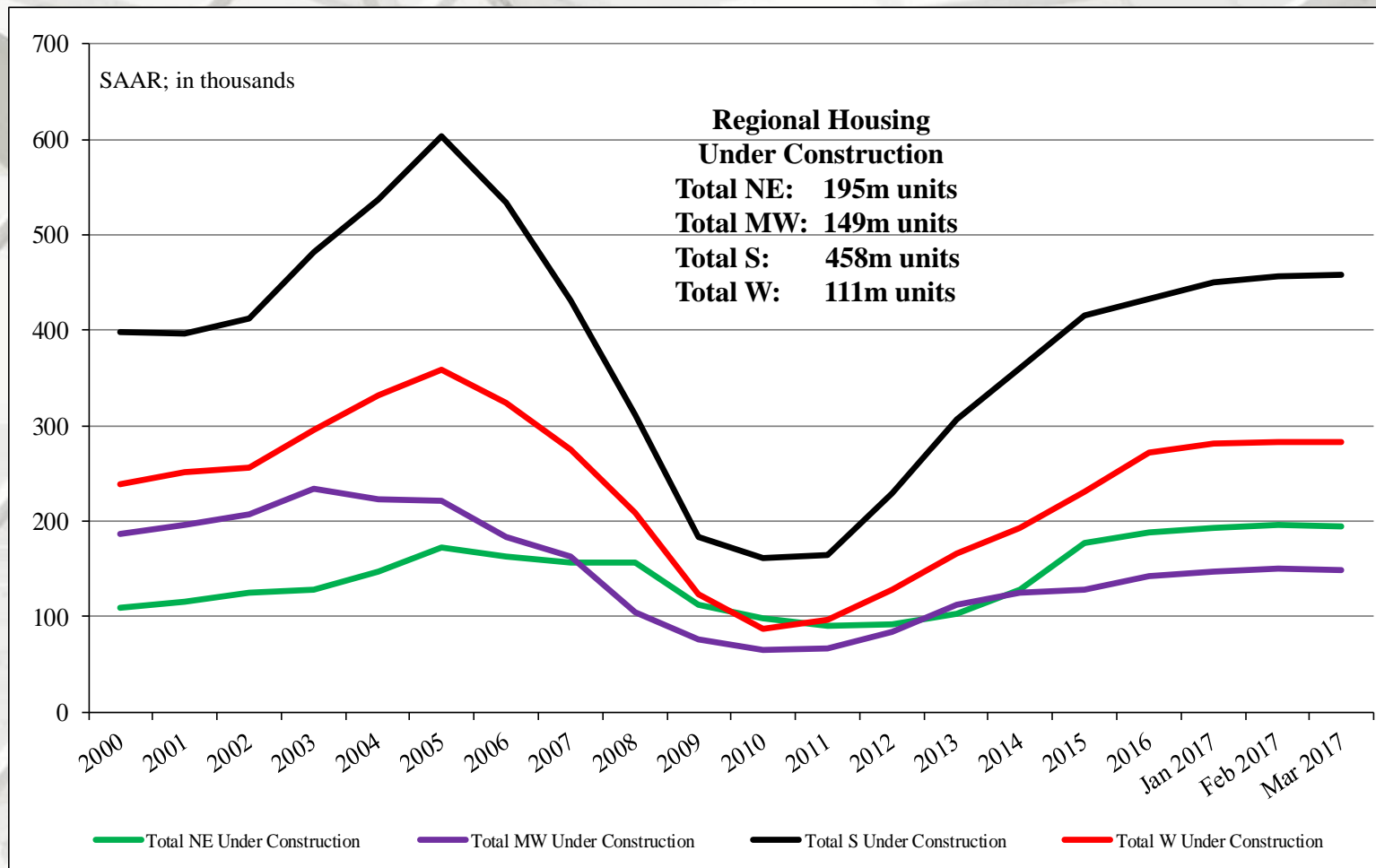
New Housing Under Construction by Region

	S Total	S SF	S MF**
March	458,000	216,000	242,000
February	457,000	214,000	243,000
2016	430,000	209,000	221,000
M/M change	0.2%	0.9%	-0.4%
Y/Y change	6.5%	3.3%	9.5%
	W Total	W SF	W MF
March	283,000	111,000	172,000
February	283,000	110,000	173,000
2016	243,000	96,000	147,000
M/M change	0.0%	0.9%	-0.6%
Y/Y change	16.5%	15.6%	17.0%

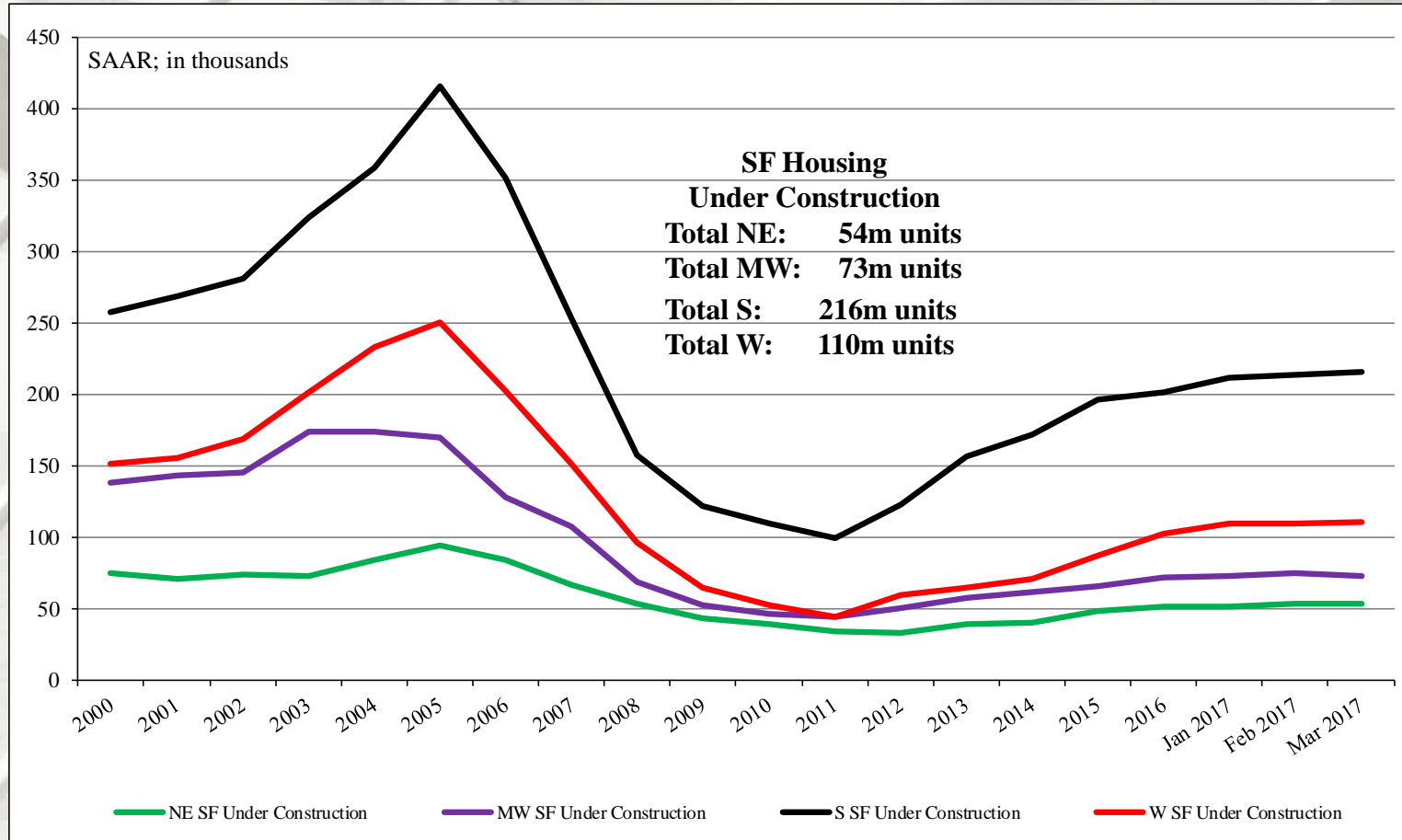
All data are SAAR; S = South and W = West.

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

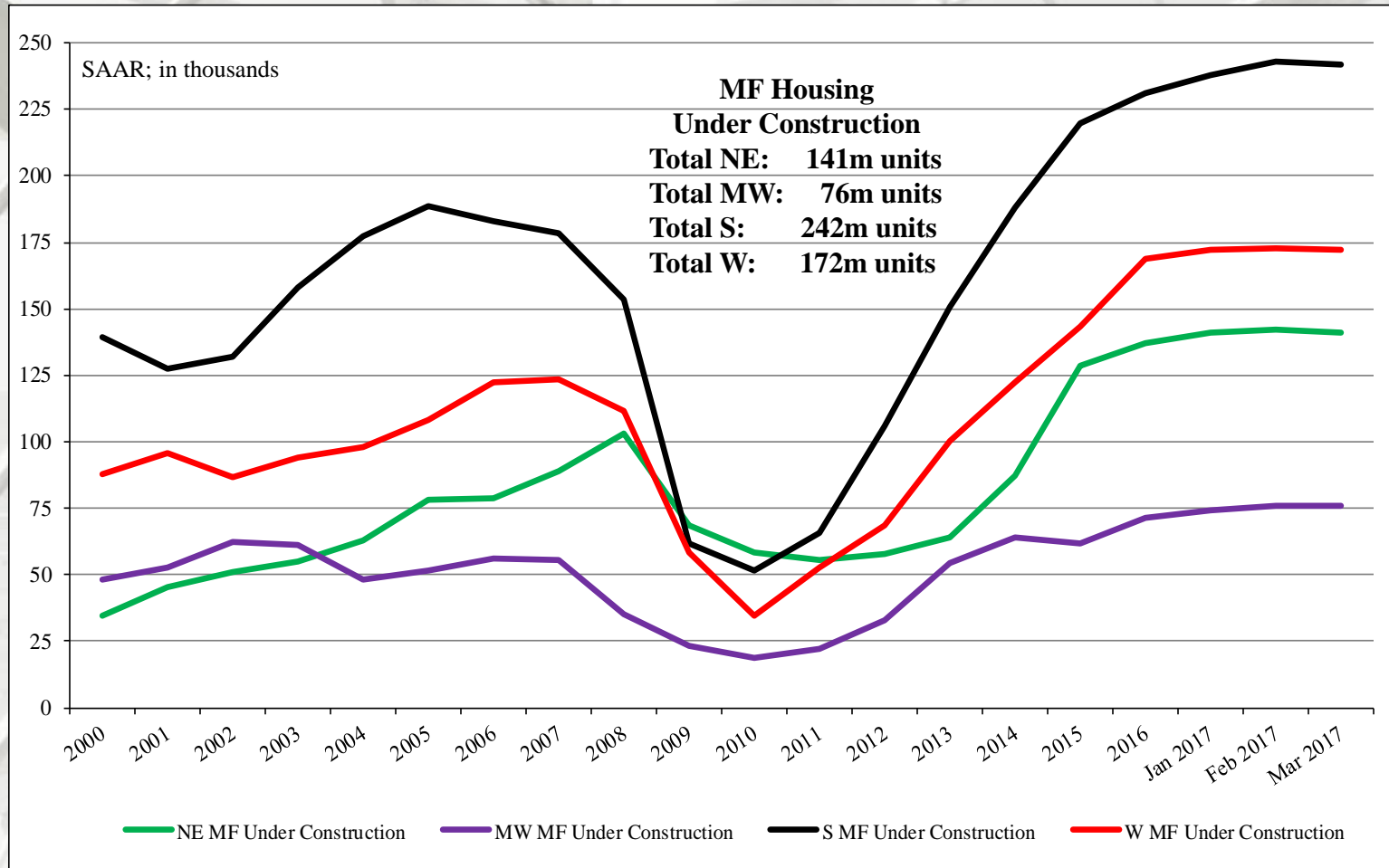
Total Housing Under Construction by Region



SF Housing Under Construction by Region



MF Housing Under Construction by Region



New Housing Completions

	Total Completions*	SF Completions	MF 2-4 unit** Completions	MF ≥ 5 unit Completions
March	1,205,000	819,000	12,000	374,000
February	1,168,000	759,000	17,000	392,000
2016	1,063,000	730,000	9,000	324,000
M/M change	3.2%	7.9%	-29.4%	-4.6%
Y/Y change	13.4%	12.2%	33.3%	15.4%

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 by Region

	NE Total	NE SF	NE MF**
March	113,000	59,000	44,300
February	117,000	42,000	44,300
2016	110,000	65,000	45,000
M/M change	-3.4%	40.5%	0.0%
Y/Y change	2.7%	-9.2%	-1.6%
	MW Total	MW SF	MW MF
March	191,000	135,000	56,000
February	125,000	110,000	15,000
2016	170,000	118,000	52,000
M/M change	52.8%	22.7%	273.3%
Y/Y change	12.4%	14.4%	7.7%

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

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

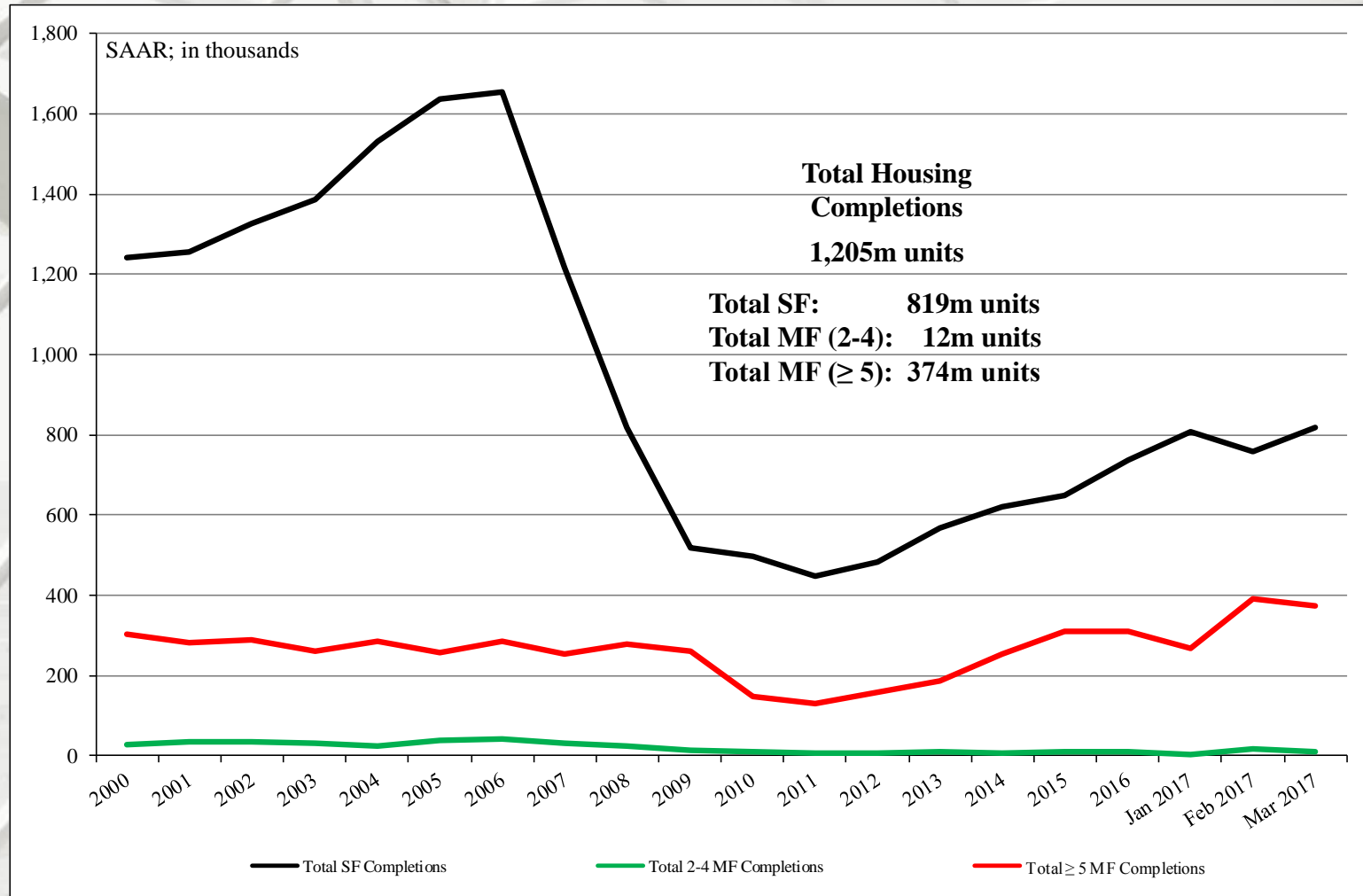
Total Housing Completions by Region

	S Total	S SF	S MF**
March	611,000	450,000	161,000
February	573,000	395,000	178,000
2016	553,000	403,000	150,000
M/M change	6.6%	13.9%	-9.6%
Y/Y change	10.5%	11.7%	7.3%
	W Total	W SF	W MF
March	290,000	175,000	115,000
February	353,000	212,000	141,000
2016	230,000	144,000	86,000
M/M change	-17.8%	-17.5%	-18.4%
Y/Y change	26.1%	21.5%	33.7%

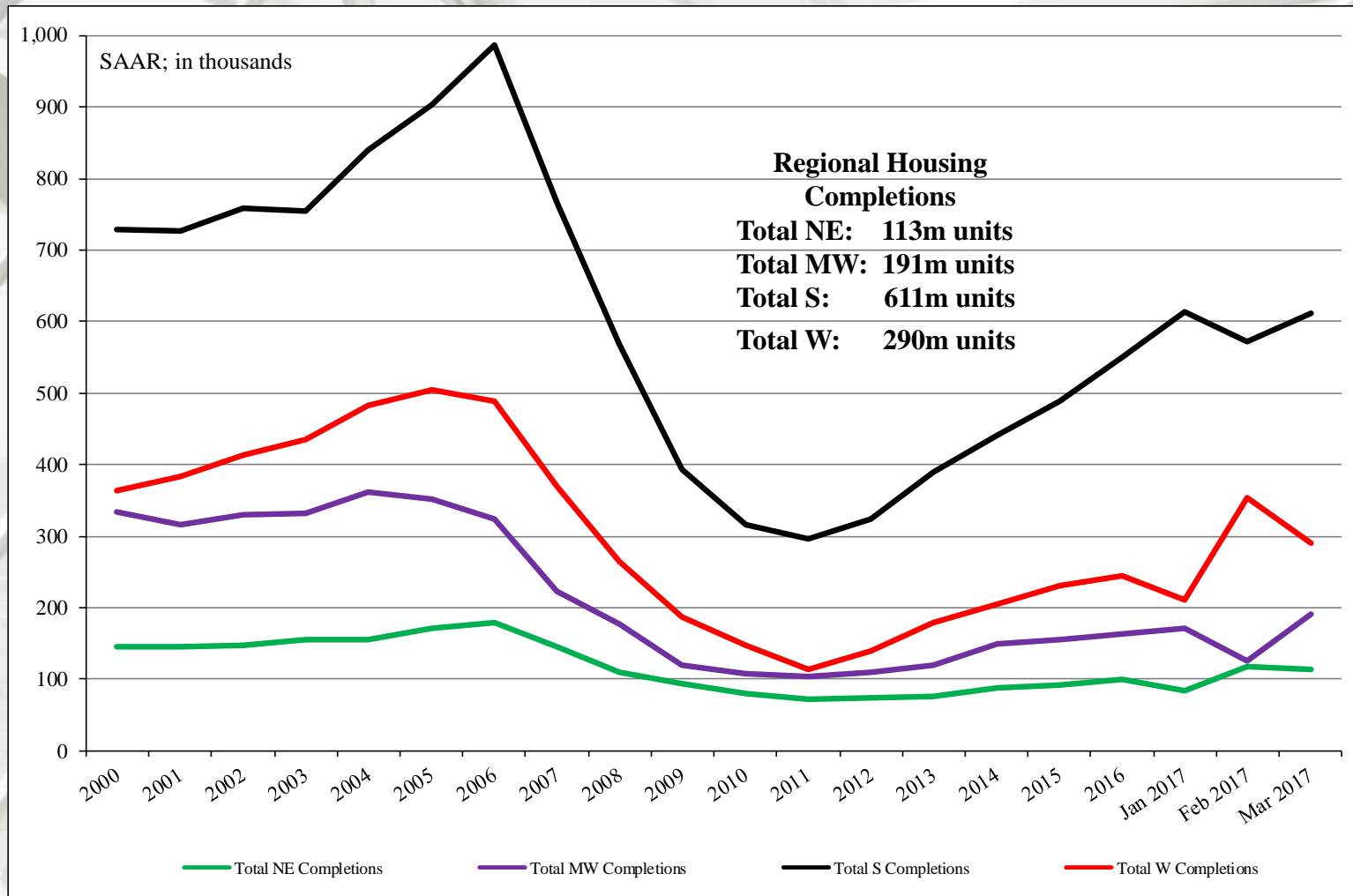
All data are SAAR; S = South and W = West.

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Total Housing Completions



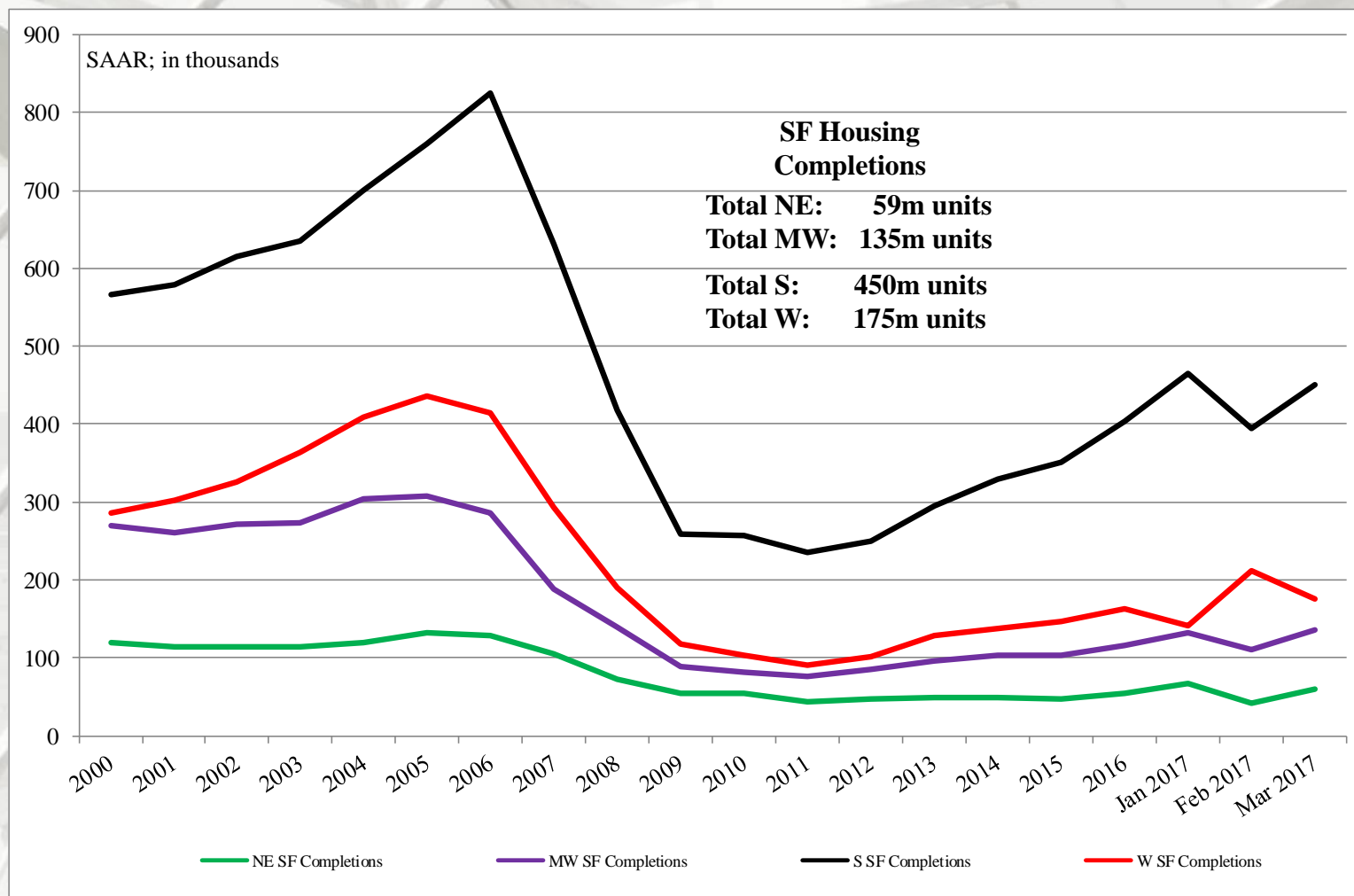
New Housing Completions by Region



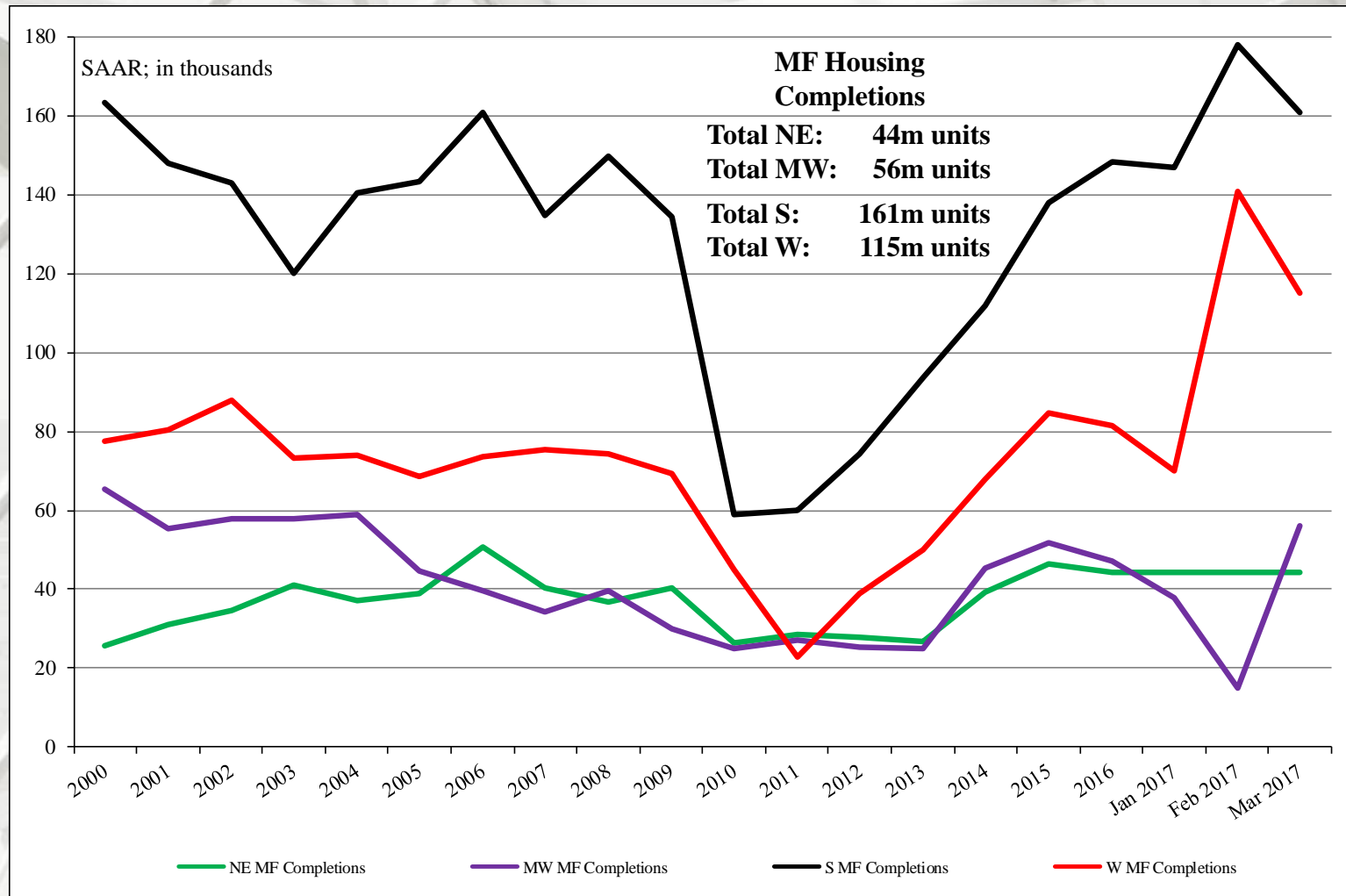
All data are SAAR; NE = Northeast and MW = Midwest.

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

SF Housing Completions by Region



MF Housing Completions by Region



New Single-Family House Sales

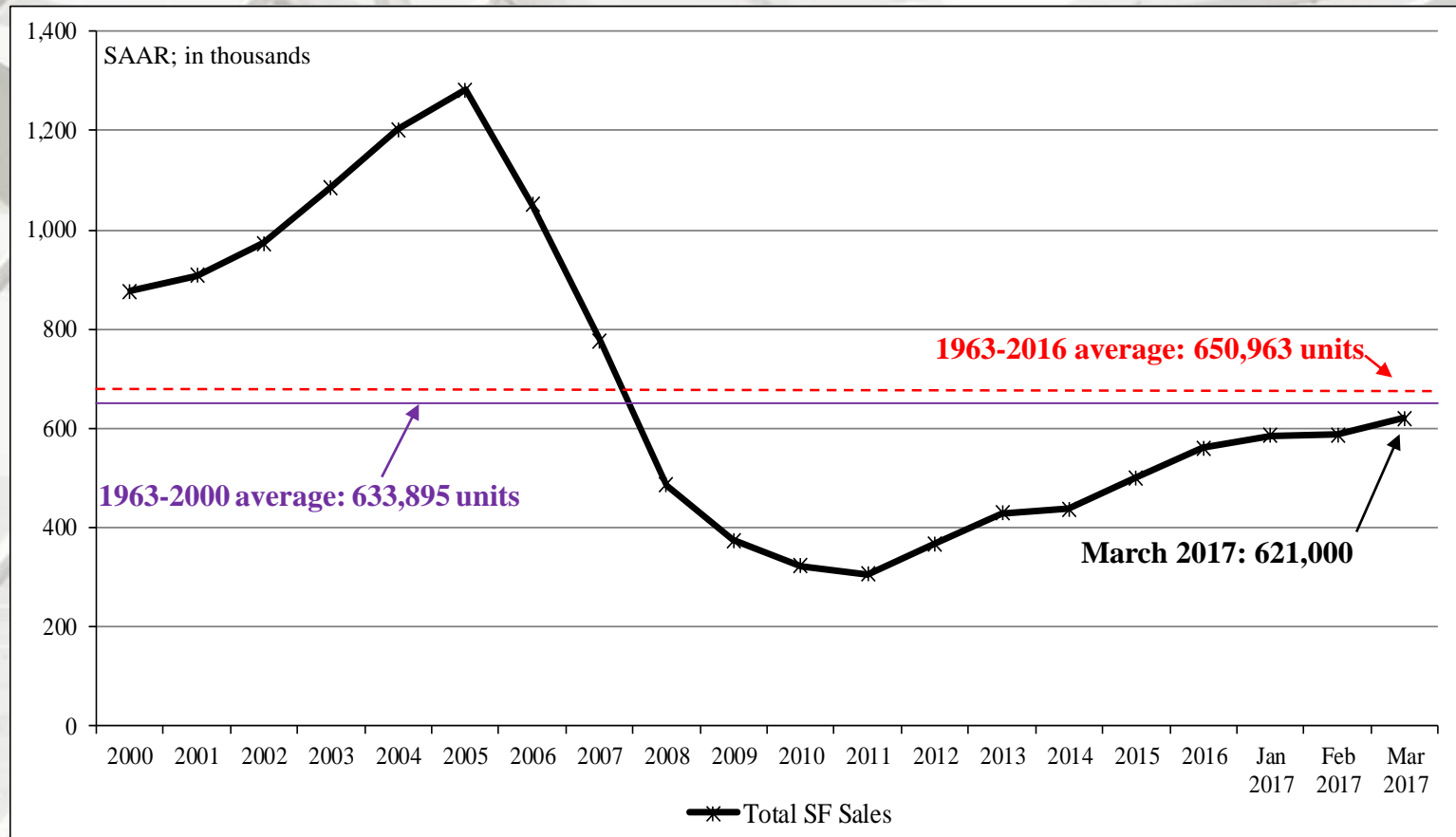
	New SF Sales*	Median Price	Mean Price	Month's Supply
March	621,000	\$315,100	\$388,200	5.2
February	587,000	\$293,100	\$373,600	5.4
2016	537,000	\$311,400	\$367,700	5.5
M/M change	5.8%	7.5%	3.9%	-3.7%
Y/Y change	15.6%	1.2%	5.6%	-5.5%

* All sales data are presented at a seasonally adjusted annual rate (SAAR) ¹.

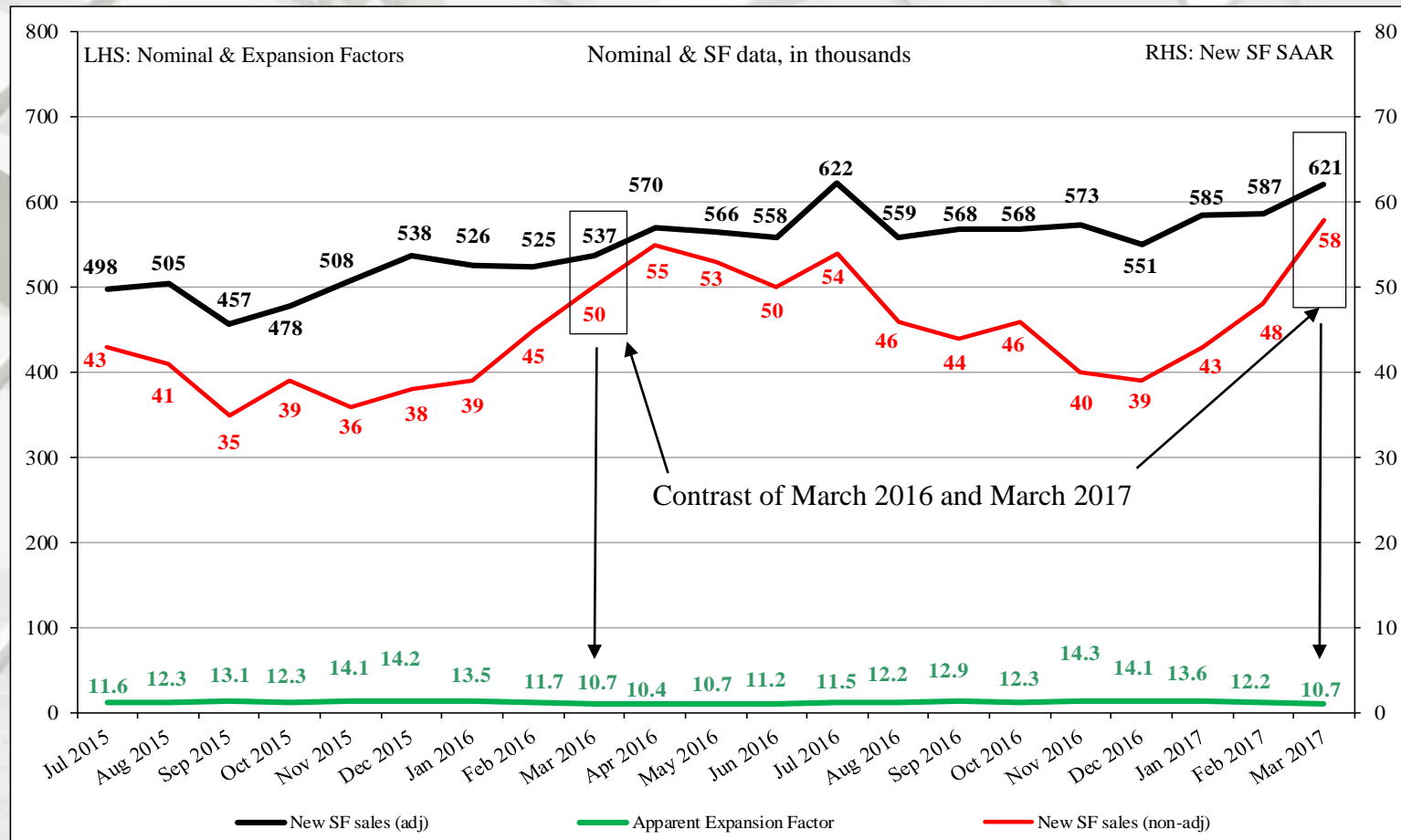
New SF sales were substantially more than the consensus forecast (580m)². Two of past three month's new SF sales data were revised upward:

December initial: 536 m revised to 551 m;
 January initial: 555 m revised to 585 m.
 February initial: 592 m revised to 587 m.

New SF House Sales



Nominal vs. SAAR New SF House Sales

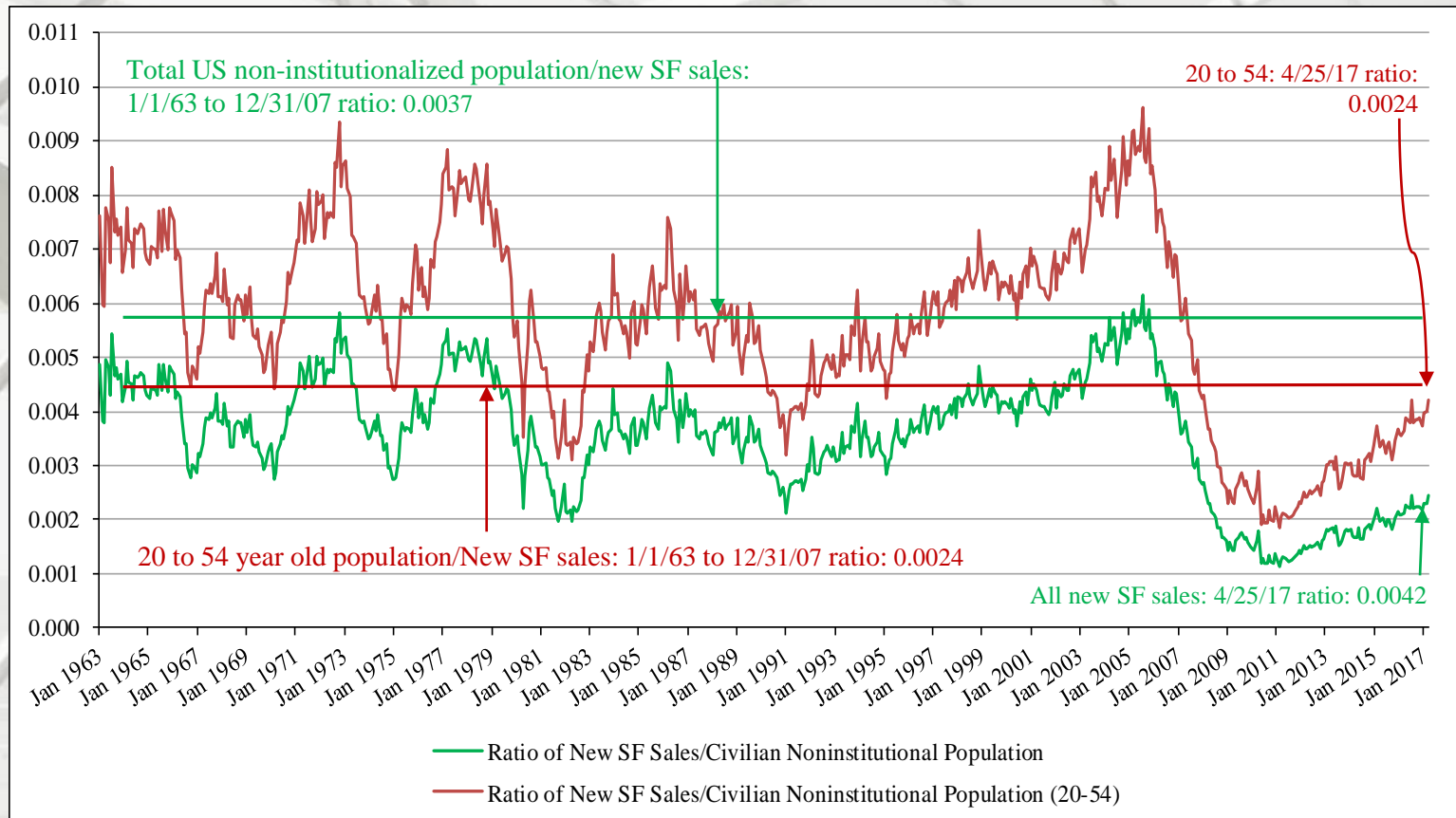


Nominal and Adjusted New SF Monthly Sales

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 sales adjusted for the US population

From January 1963 to March 2007, the long-term ratio of new house sales to the total US non-institutionalized population was 0.0037; in March 2017 it was 0.0024 – a minimal increase from February (0.0023). The non-institutionalized population, aged 20 to 54 long-term ratio is 0.0062; in March 2017 it was 0.00427 – an increase from February (0.0040). All are non-adjusted data. From a population viewpoint, construction is less than what is necessary for changes in population (i.e., under-building).

New SF House Sales by Region and Price Category

	NE SF Sales	MW SF Sales	S SF Sales	W SF Sales
March	39,000	84,000	323,000	175,000
February	31,000	88,000	318,000	150,000
2016	32,000	68,000	305,000	132,000
M/M change	25.8%	-4.5%	1.6%	16.7%
Y/Y change	21.9%	23.5%	5.9%	32.6%

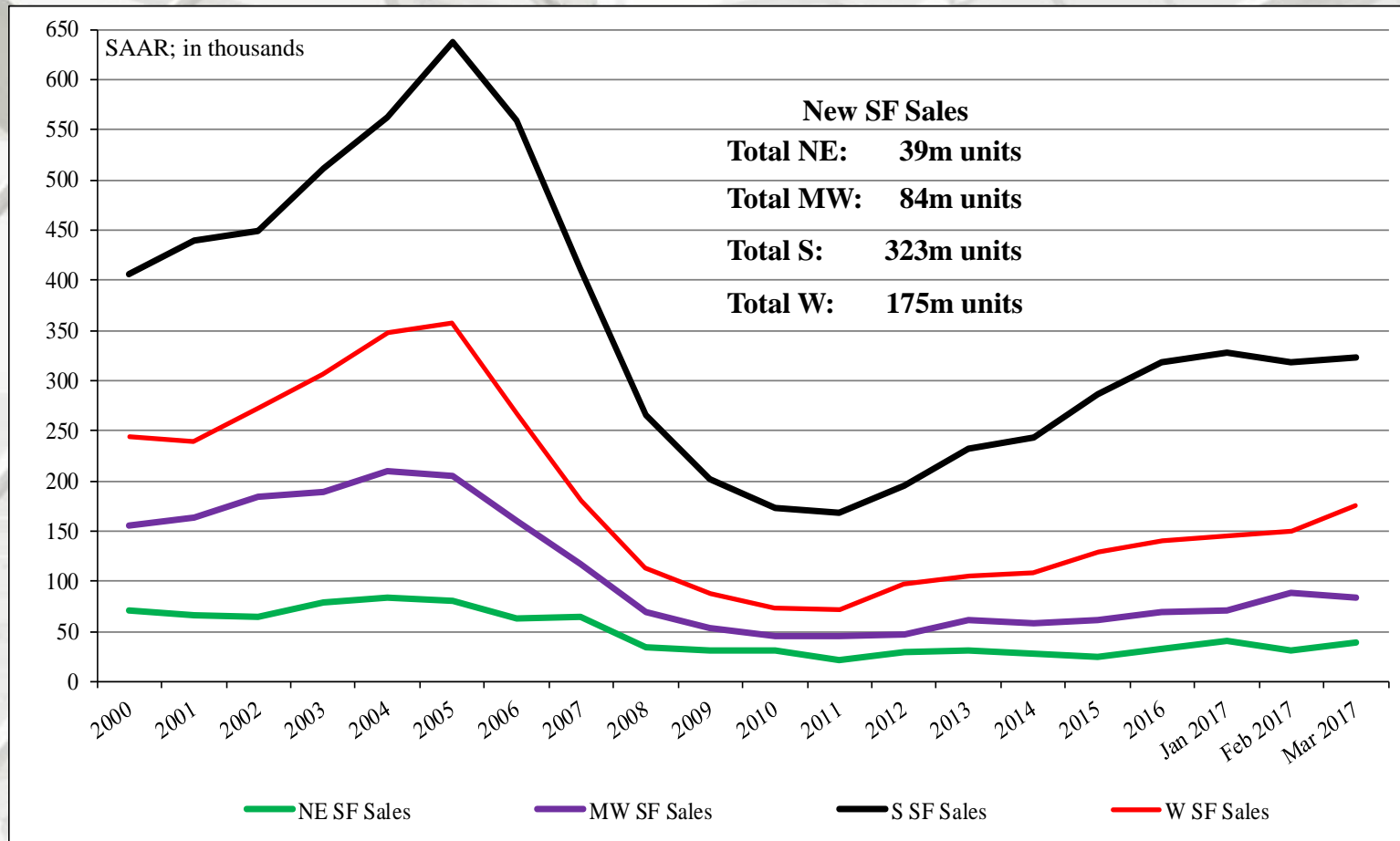
	≤ \$150m	\$150 - \$199.9m	\$200 - 299.9m	\$300 - \$399.9m	\$400 - \$499.9m	\$500 - \$749.9m	≥ \$750m
March ^{1,2}	4,000	6,000	16,000	14,000	7,000	8,000	3,000
February	2,000	6,000	17,000	8,000	8,000	5,000	2,000
2016	2,000	5,000	17,000	12,000	7,000	6,000	2,000
M/M change	100.0%	0.0%	-5.9%	75.0%	-12.5%	60.0%	50.0%
Y/Y change	100.0%	20.0%	-5.9%	16.7%	0.0%	33.3%	50.0%

All data are SAAR.

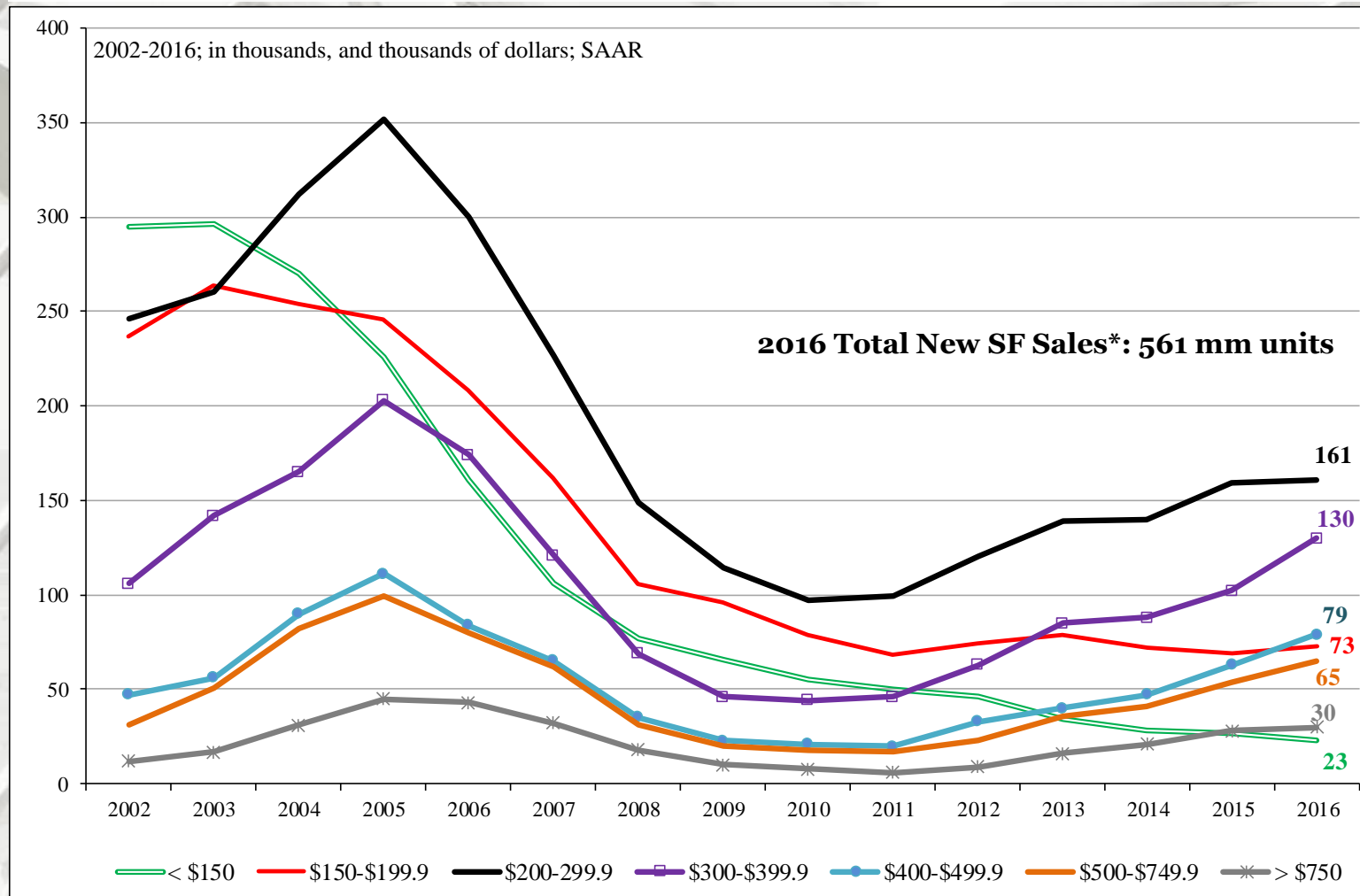
¹ Houses for which sales price were not reported have been distributed proportionally to those for which sales price was reported;

² Detail June not add to total because of rounding.

New SF House Sales by Region

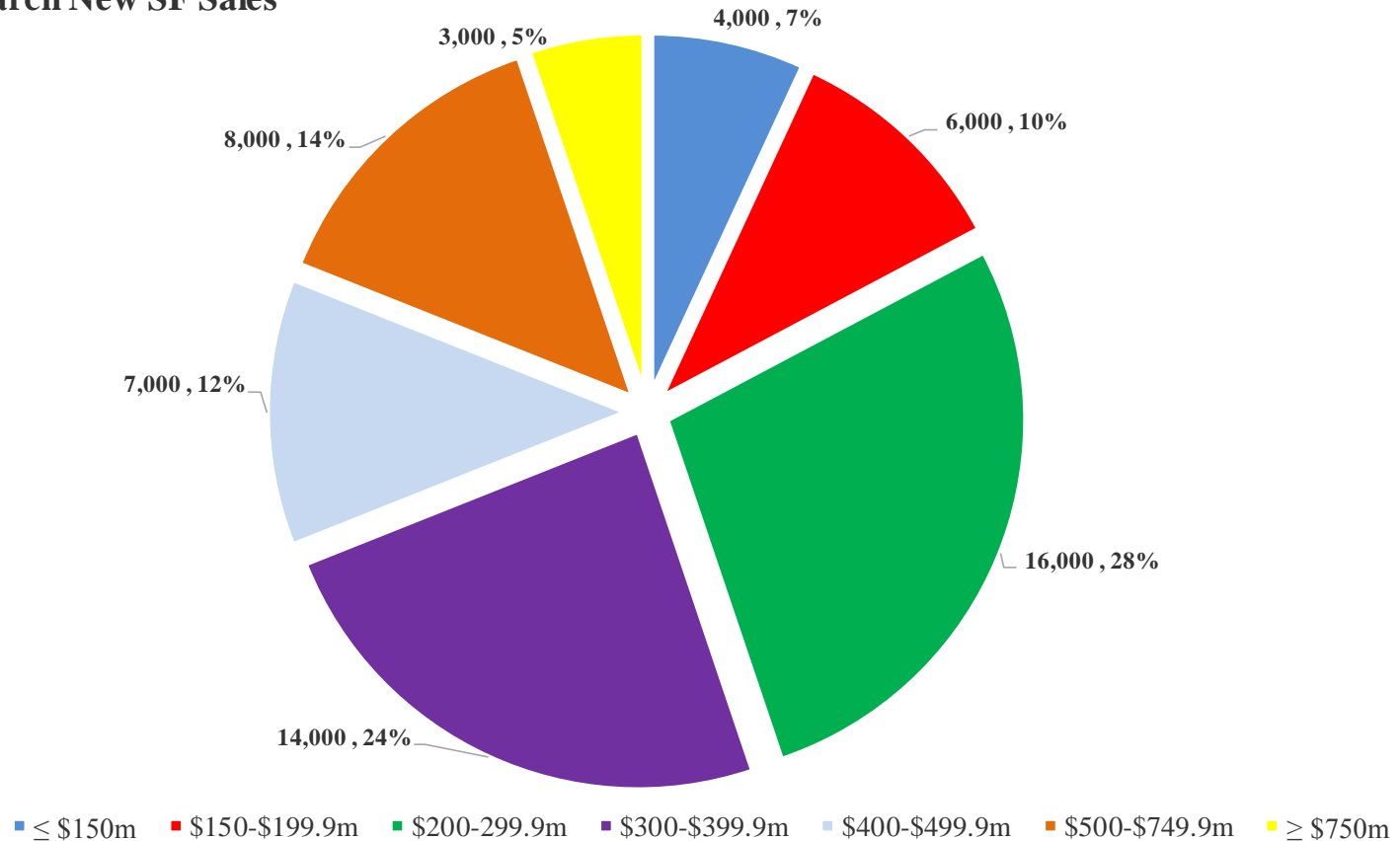


New SF House Sales by Price Category

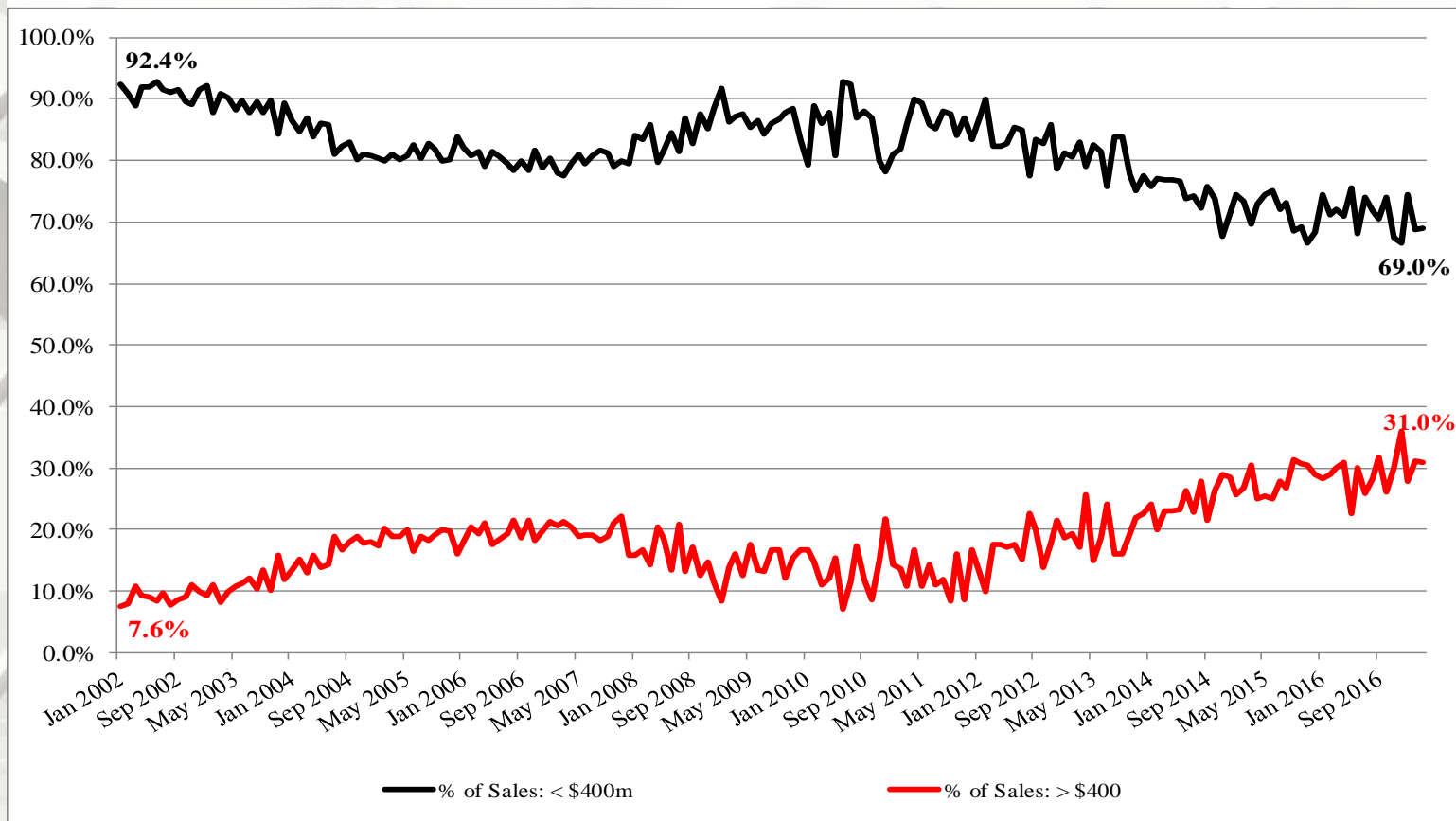


New SF House Sales

March New SF Sales



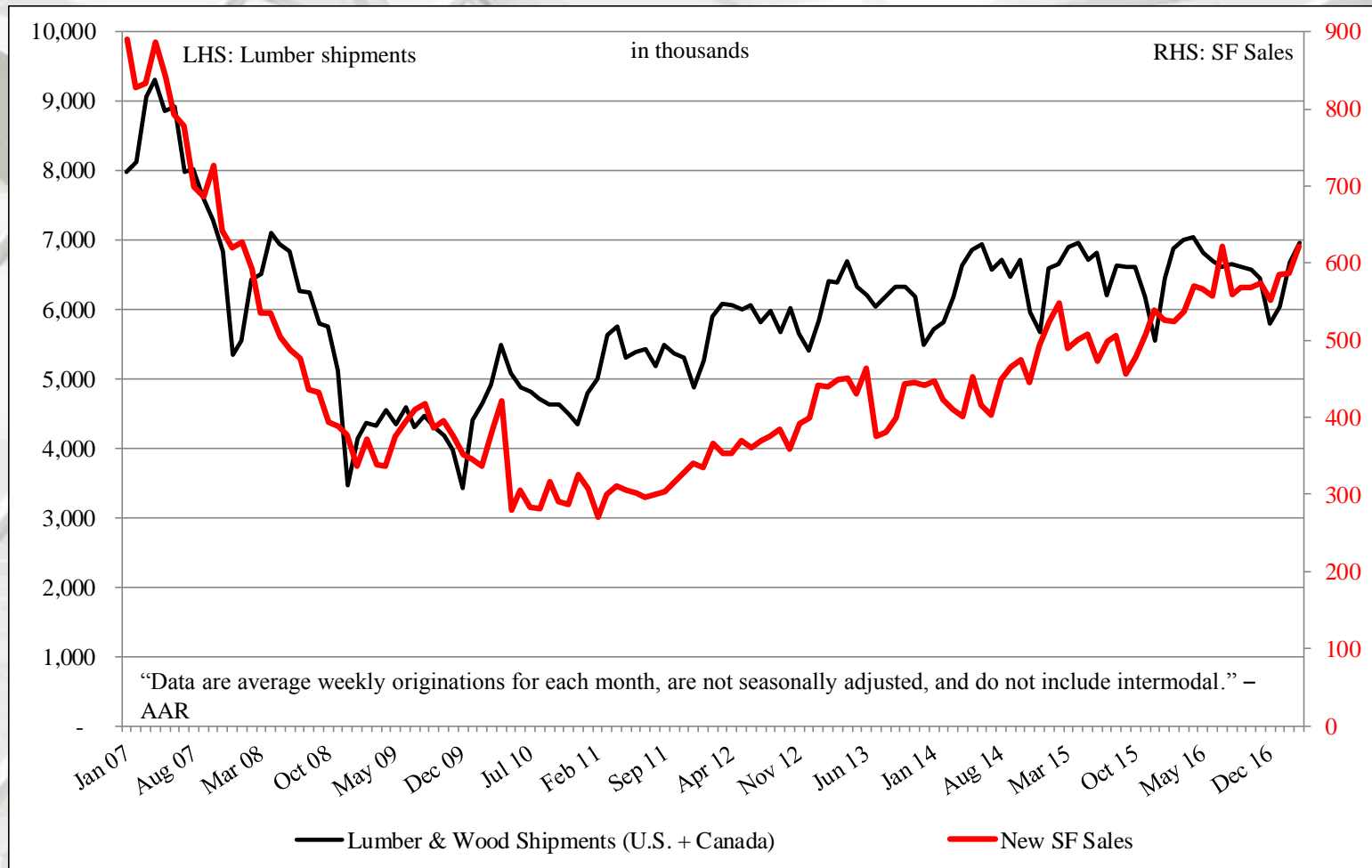
New SF House Sales



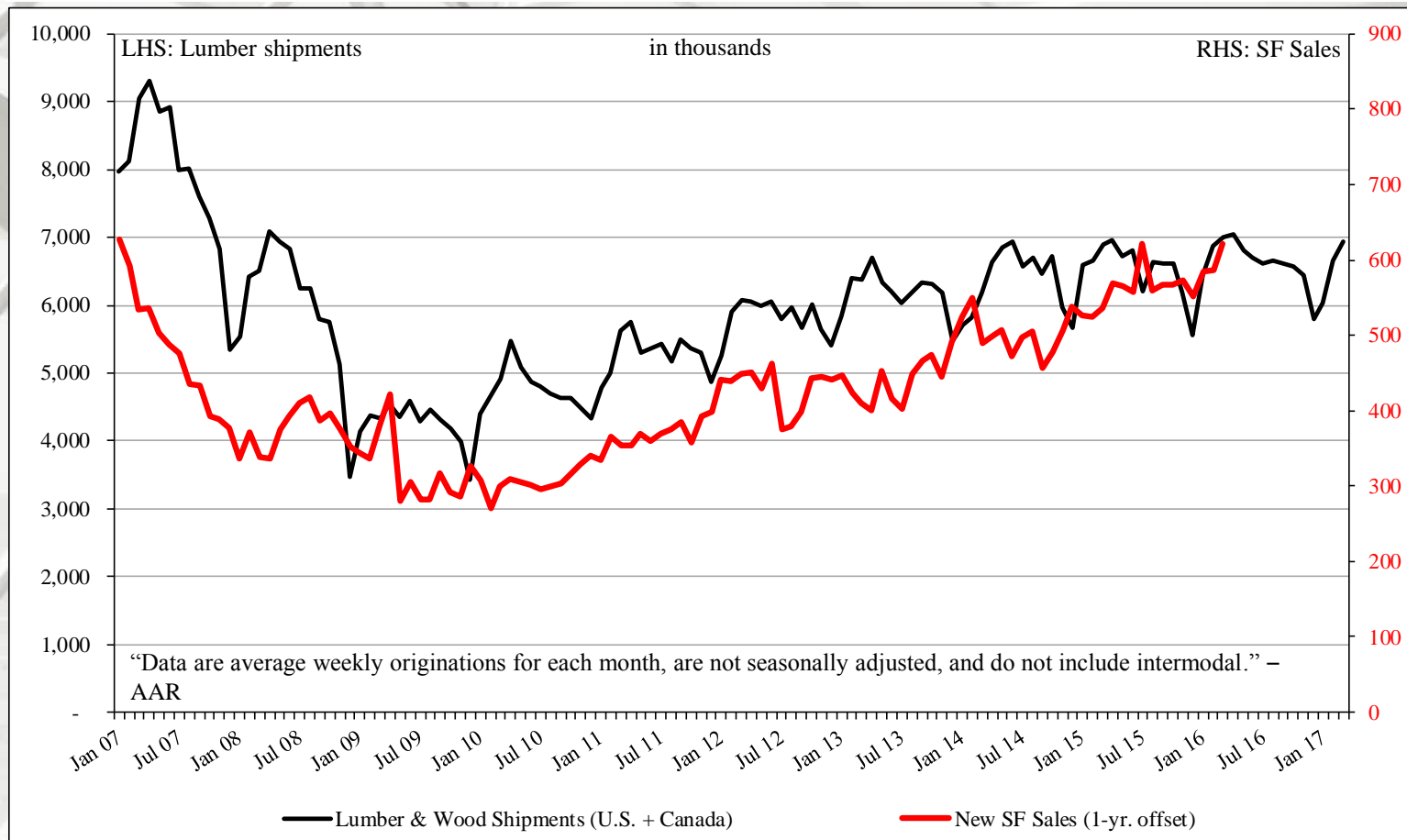
New SF Sales: 2002 – March 2017

The sales share of \$400 thousand plus SF houses is presented above. Since the beginning of 2012, the upper priced houses have and are garnering a greater percentage of sales. The wider the spread, the more high-end luxury homes were 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.

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



Railroad Lumber & Wood Shipments vs. U.S. New SF House Sales: 1-year offset



In this graph, initially January 2007 lumber shipments are contrasted with January 2008 new SF sales through March 2017 new SF sales. The purpose is to discover if lumber shipments relate to future new SF house sales. Also, it is realized that lumber and wood products are trucked; however, to our knowledge comprehensive trucking data is not available.

New SF House Sales: Quarterly

	≤ \$125 m	\$125- \$149.9 m	\$150- \$199.9 m	\$200- \$249.9 m	\$250- \$299.9 m	\$300- \$399.9 m	\$400- \$499.9 m	\$500- \$749.9 m	≥ \$750 m
Q1 2017	1,000	3,000	14,000	20,000	18,000	31,000	19,000	15,000	6,000
Q4 2016	1,000	5,000	17,000	24,000	24,000	33,000	19,000	19,000	7,000
Q1 2016	2,000	4,000	16,000	18,000	22,000	32,000	19,000	15,000	6,000
Q/Q % change	0.0	66.7	21.4	20.0	33.3	6.5	0.0	26.7	16.7
Y/Y % change	-50.0	25.0	6.3	33.3	9.1	3.1	0.0	26.7	16.7

All data are SAAR.
In thousands of units.

New SF House Sales: Quarterly

Northeast		\$200 -	\$300 -	\$500 -		Total
	≤ \$200 m	\$299.9 m	\$499.9 m	\$749.9 m	≥ \$750 m	
Q1 2017	0	1,000	2,000	3,000	2,000	9,000
Q4 2016	0	1,000	4,000	1,000	1,000	7,000
Q1 2016	0	1,000	3,000	2,000	1,000	7,000
Q/Q % change	0.0	0.0	-50.0	200.0	100.0	28.6
Y/Y % change	0.0	0.0	-33.3	50.0	100.0	28.6

Midwest		\$200 -	\$300 -	\$500 -		Total
	≤ \$200 m	\$299.9 m	\$499.9 m	\$749.9 m	≥ \$750 m	
Q1 2017	1,000	3,000	8,000	6,000	1,000	18,000
Q4 2016	0	2,000	5,000	5,000	2,000	15,000
Q1 2016	1,000	2,000	5,000	5,000	1,000	14,000
Q/Q % change	0.0	50.0	60.0	20.0	-50.0	20.0
Y/Y % change	0.0	50.0	60.0	20.0	0.0	28.6

All data are SAAR.

In thousands of units.

Note: "0" represents "less than 500 units or less than 0.5 percent" sold and are not included in Census data.

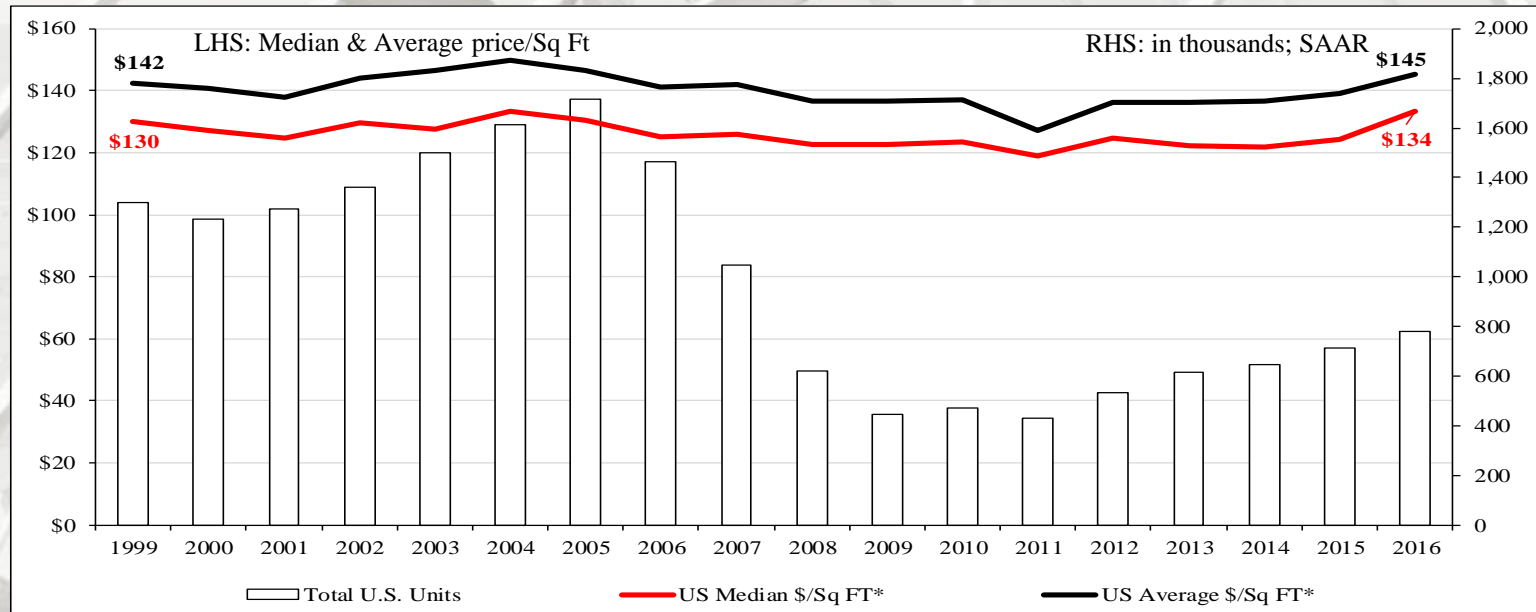
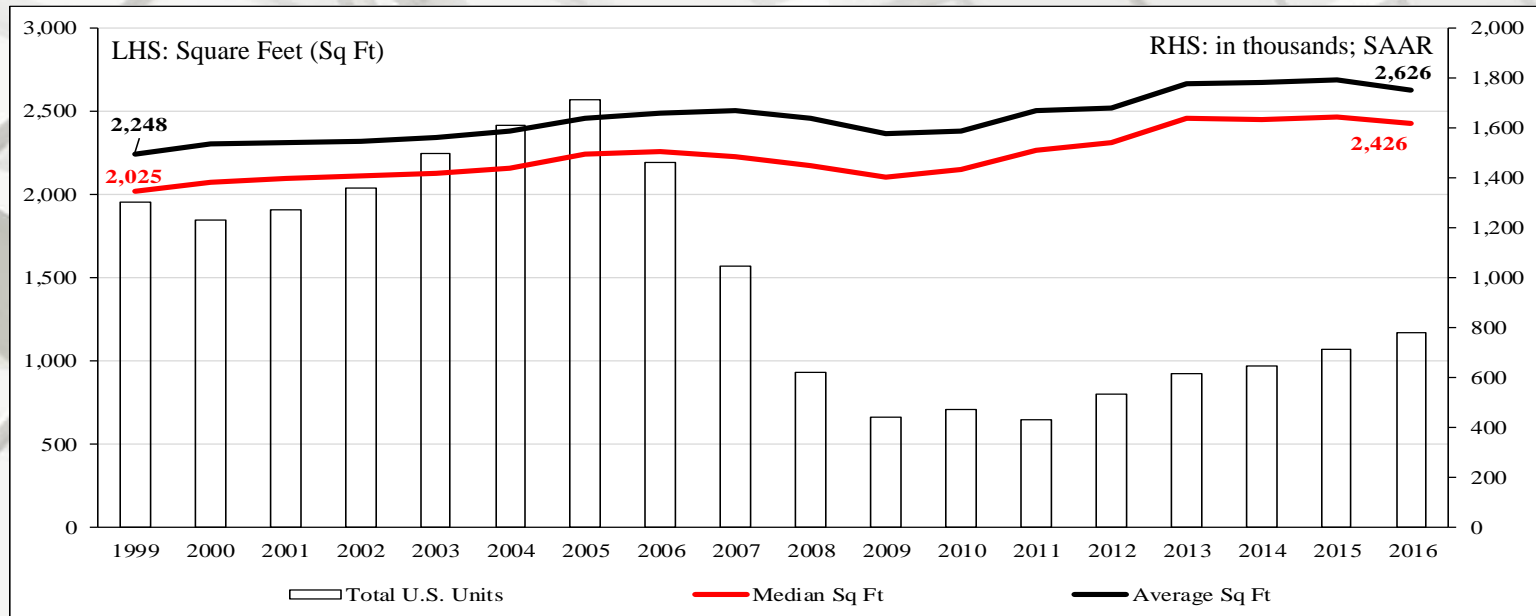
New SF House Sales: Quarterly

South	≤ \$200 m	\$200 - \$299.9 m	\$300 - \$499.9 m	\$500 - \$749.9 m	≥ \$750 m	Total
Q1 2017	6,000	13,000	28,000	26,000	9,000	82,000
Q4 2016	3,000	11,000	23,000	25,000	8,000	70,000
Q1 2016	5,000	12,000	25,000	26,000	9,000	77,000
Q/Q % change	100.0	18.2	21.7	4.0	12.5	17.1
YY % change	20.0	8.3	12.0	0.0	0.0	6.5

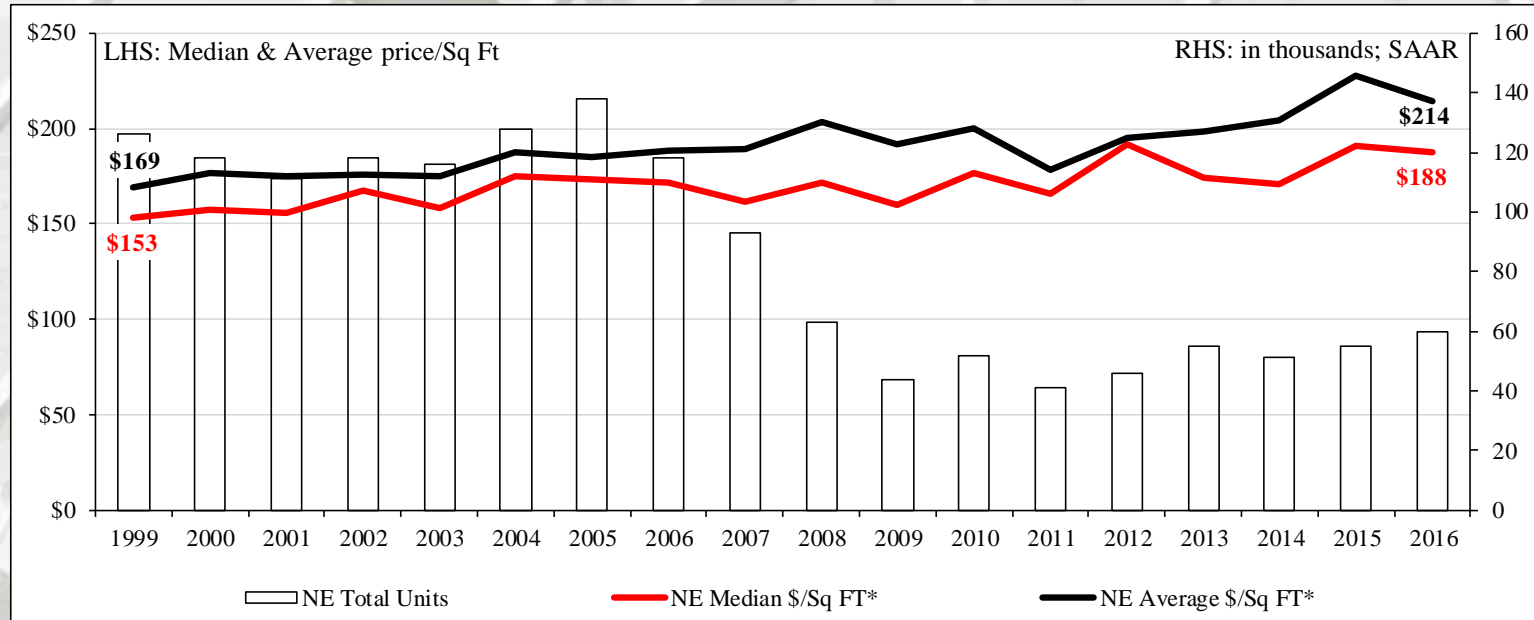
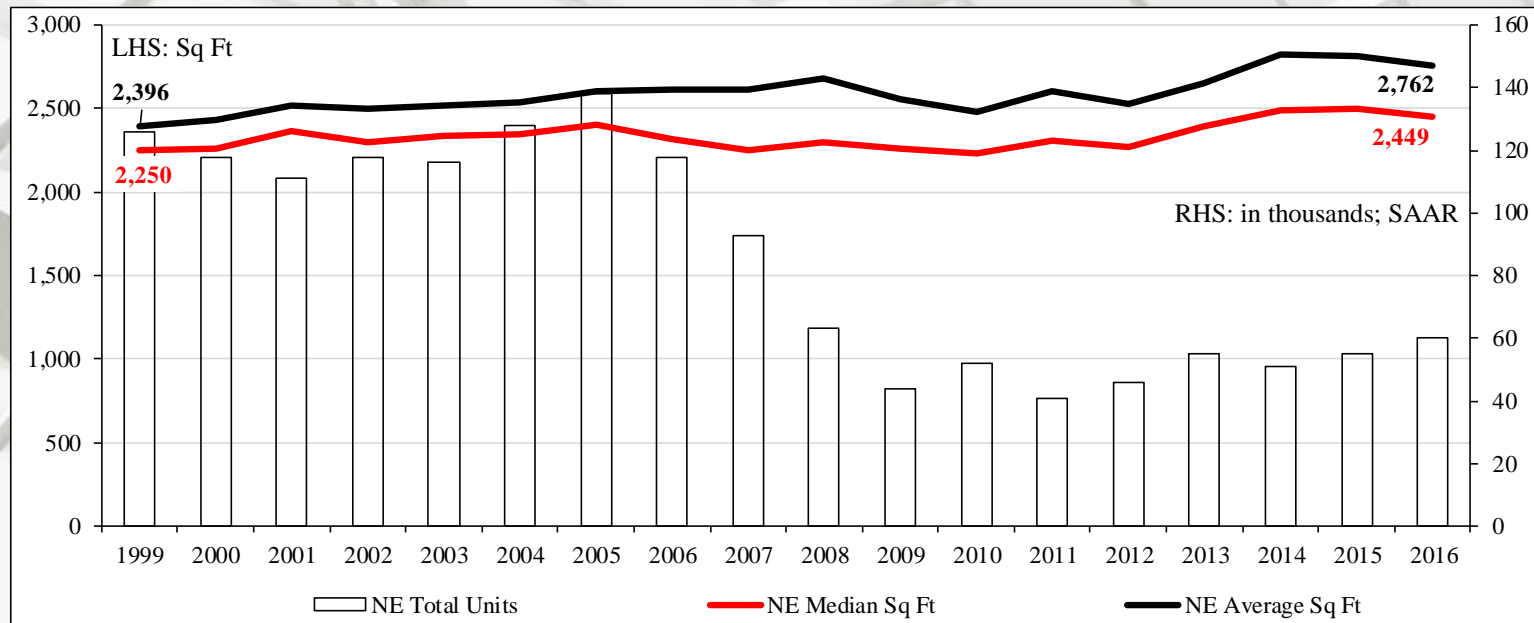
West	≤ \$200 m	\$200 - \$299.9 m	\$300 - \$499.9 m	\$500 - \$749.9 m	≥ \$750 m	Total
Q1 2017	1,000	11,000	19,000	7,000	3,000	40,000
Q4 2016	1,000	7,000	16,000	5,000	3,000	32,000
Q1 2016	1,000	9,000	16,000	6,000	2,000	35,000
Q/Q % change	0.0	57.1	18.8	40.0	0.0	25.0
Y/Y % change	0.0	22.2	18.8	16.7	50.0	14.3

All data are SAAR.
In thousands of units.

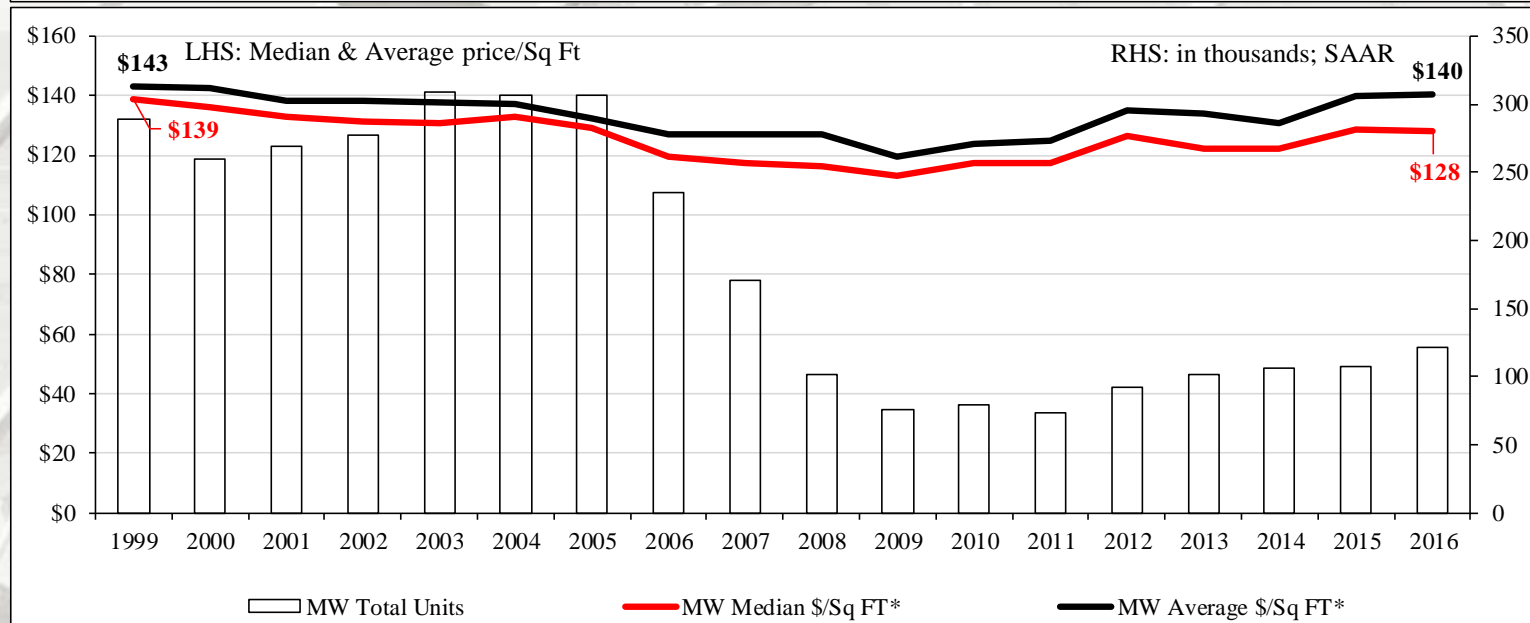
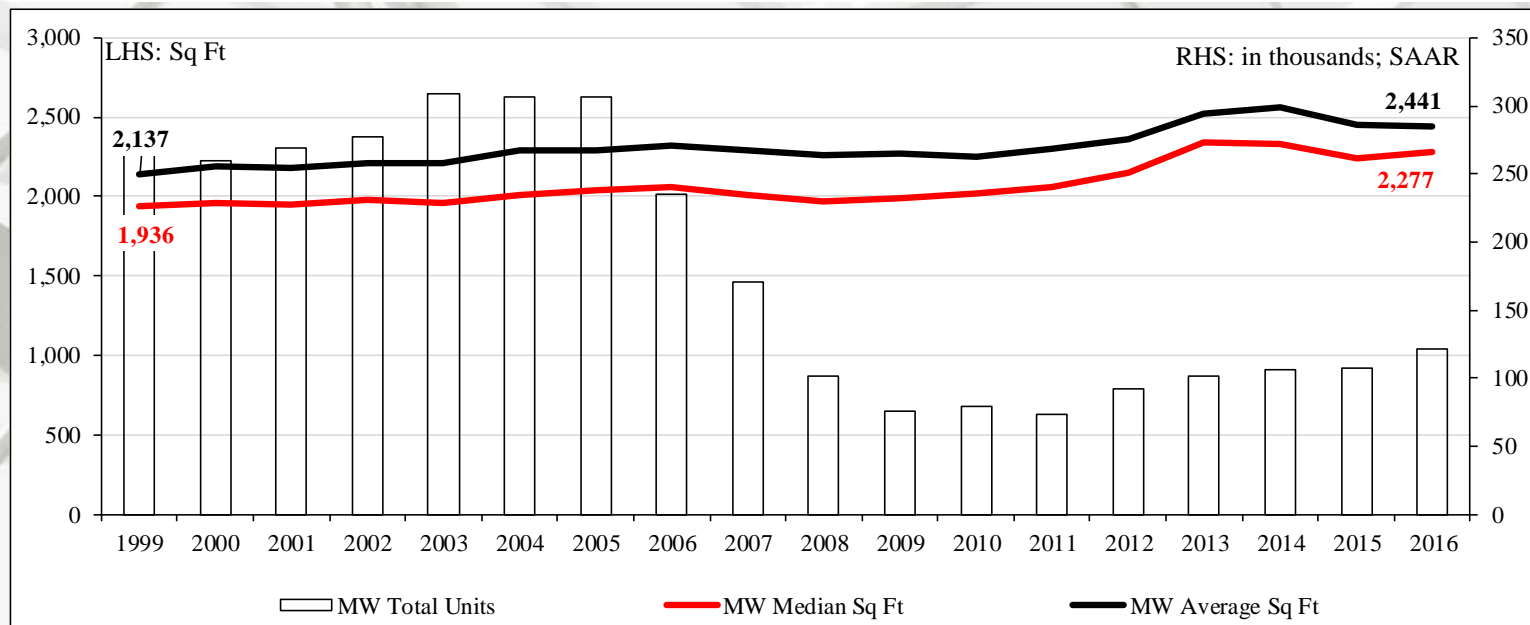
Total New SF House Square Foot Price – Inflation Adjusted*



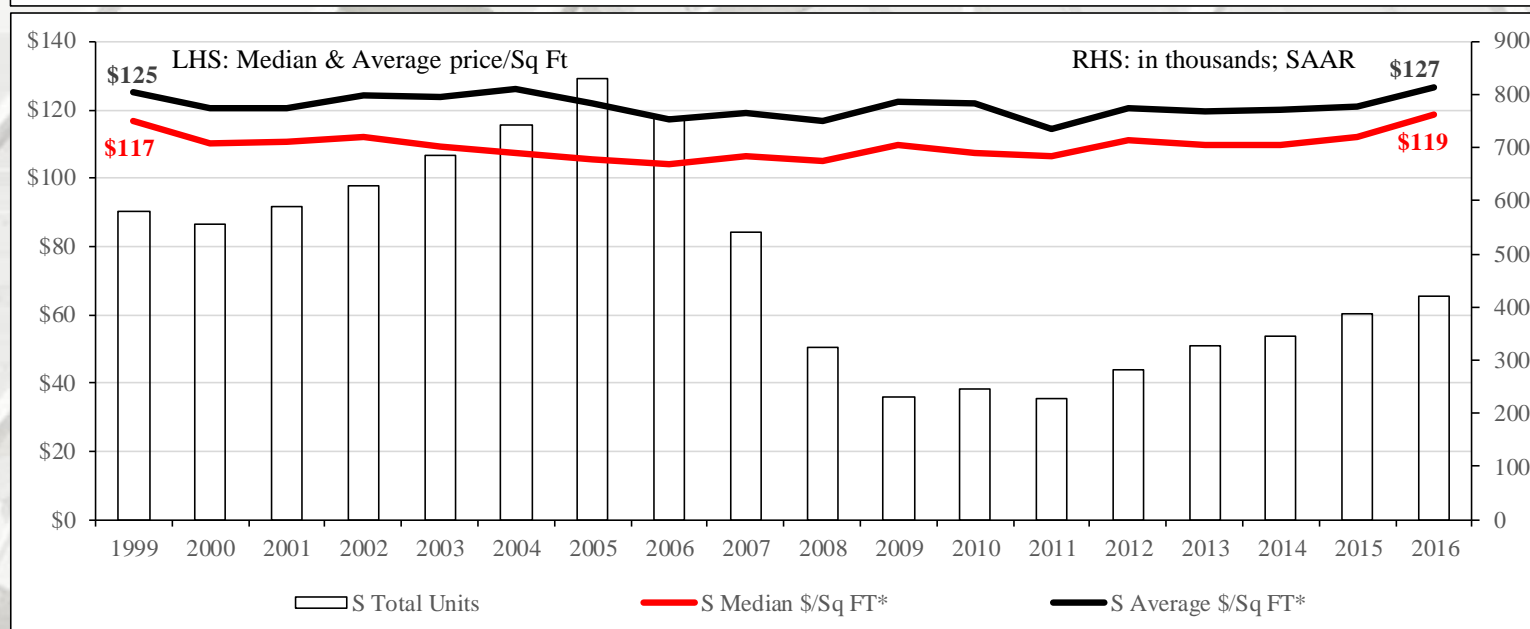
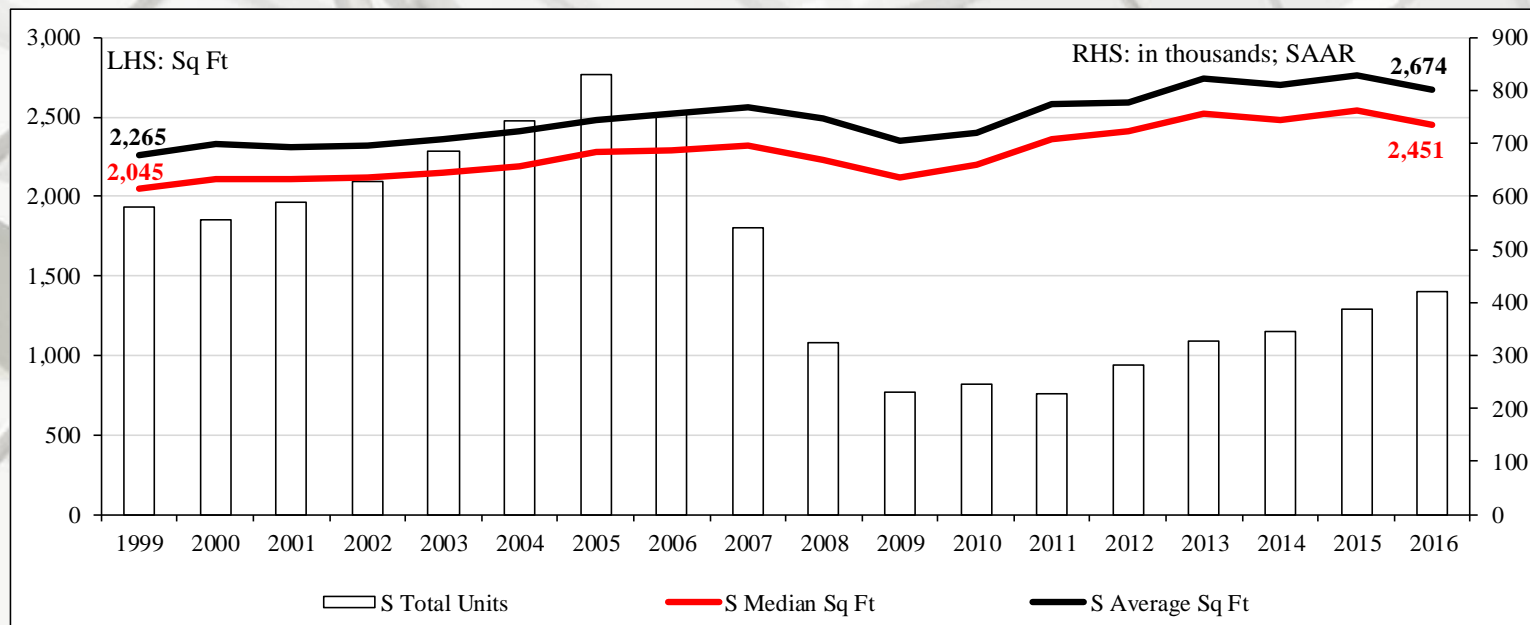
NE New SF House Square Foot Price – Inflation Adjusted*



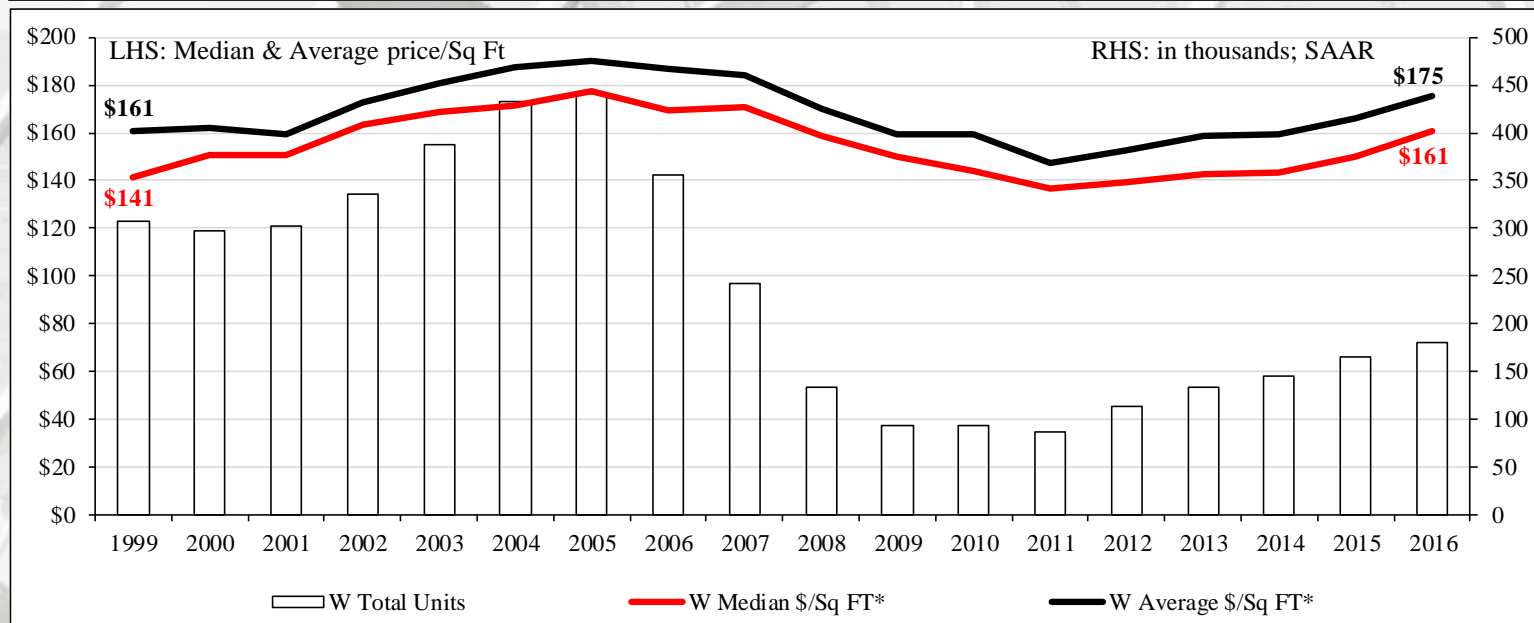
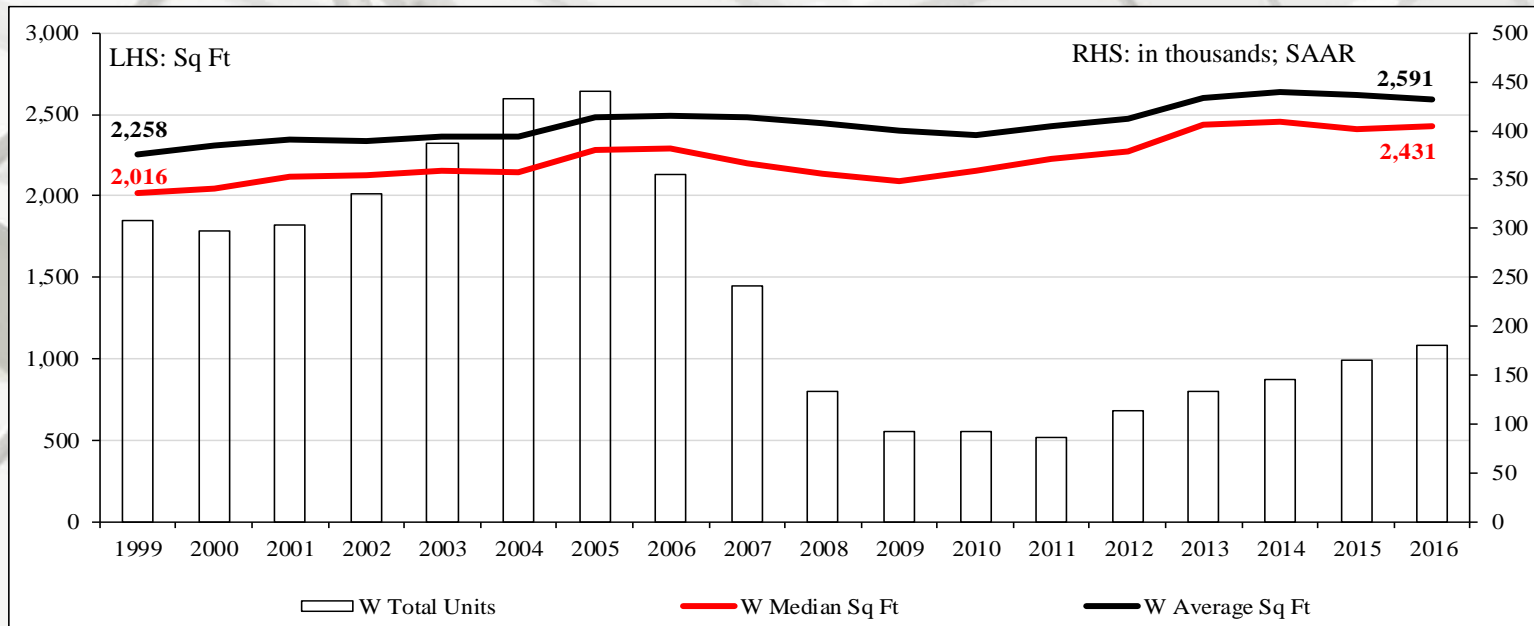
MW New SF House Square Foot Price – Inflation Adjusted*



S New SF House Square Foot Price – Inflation Adjusted*



W New SF House Square Foot Price – Inflation Adjusted*



March 2017

Construction Spending

	Total Private Residential*	SF	MF	Improvement**
March	\$503,425	\$258,479	\$66,080	\$178,866
February	\$497,437	\$257,612	\$64,767	\$175,058
2016	\$468,362	\$246,787	\$61,543	\$160,032
M/M change	1.2%	0.3%	2.0%	2.2%
Y/Y change	7.5%	4.7%	7.4%	11.8%

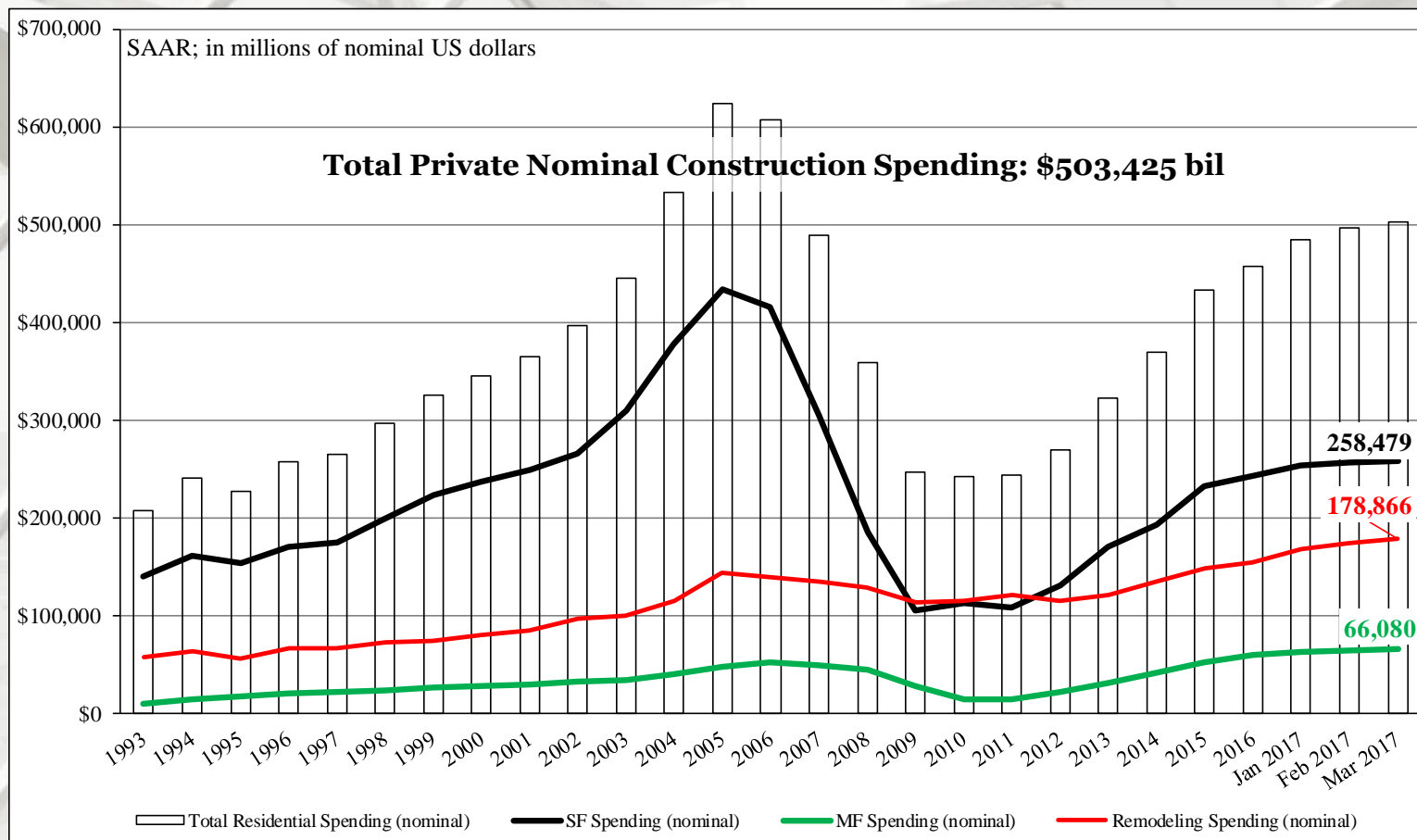
* Millions

** The US DOC does not report improvement spending directly, this is a monthly estimation for 2017:

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

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

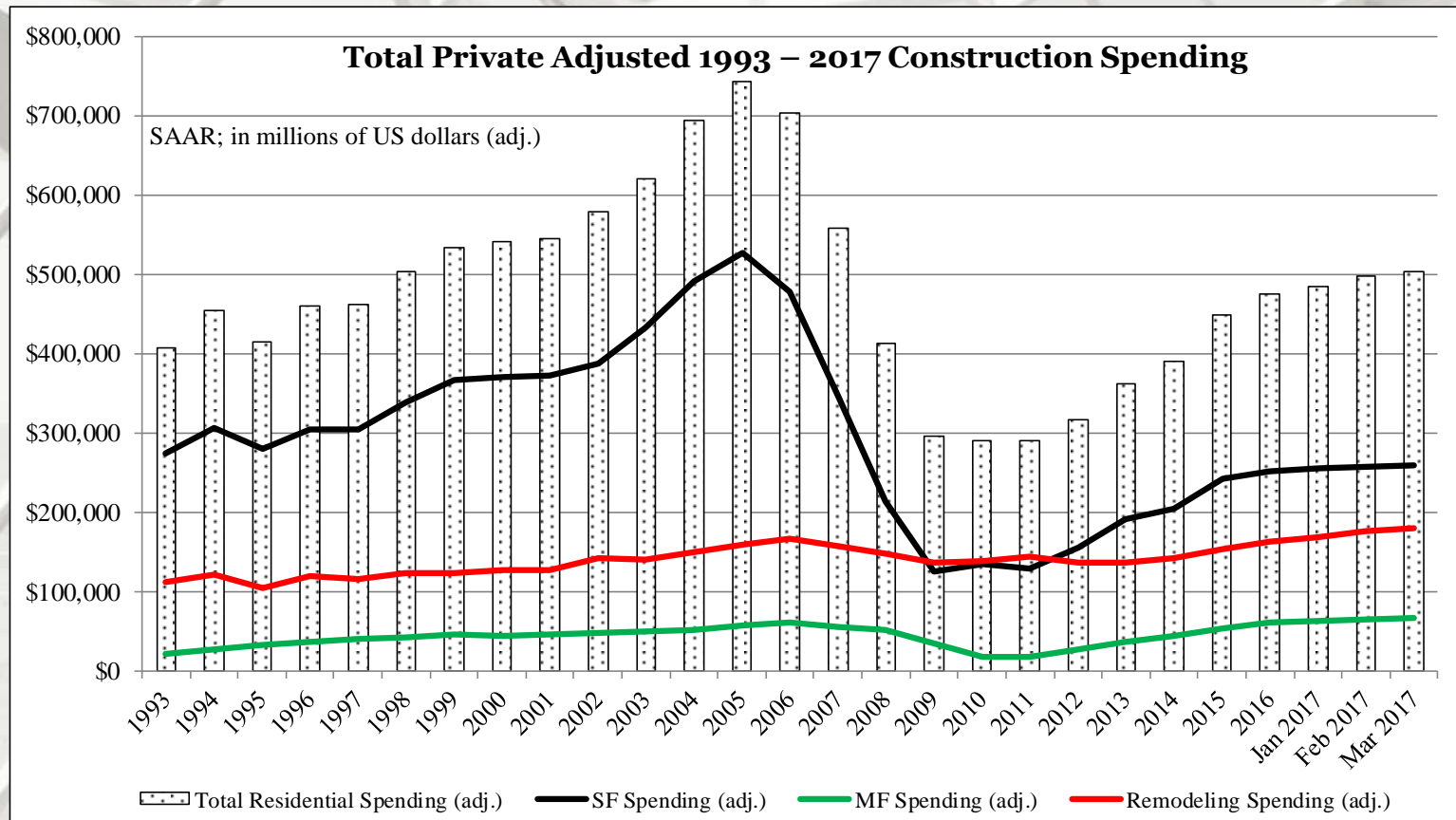
Total Construction Spending (nominal): 1993 – March 2017



Reported in nominal US\$.

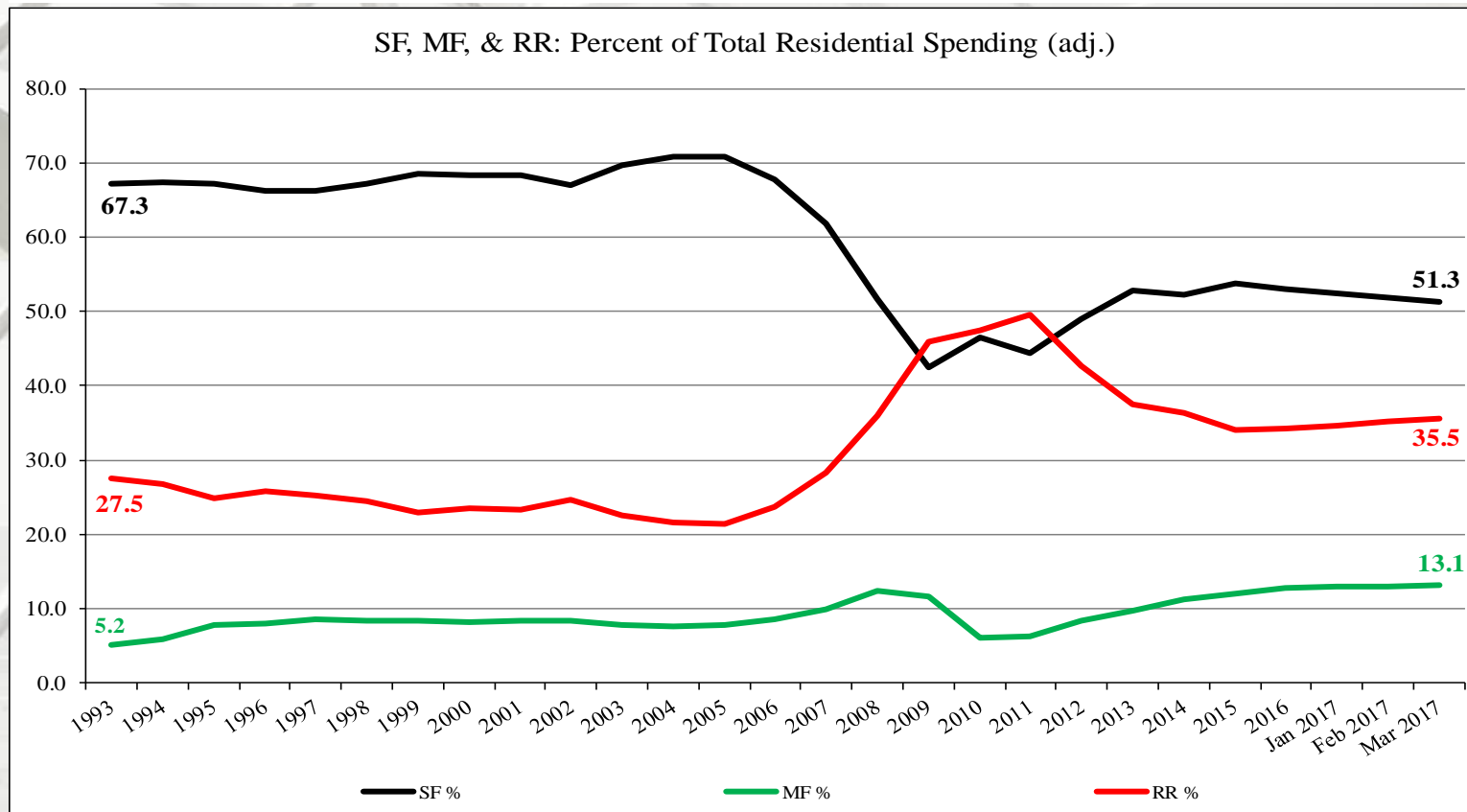
The US DOC does not report improvement spending directly, this is a monthly estimation for 2017.

Total Construction Spending (adjusted): 1993-2017*



Reported in adjusted US\$: 1993 – 2016 (adjusted for inflation, BEA Table 1.1.9); *January-March 2017 reported in nominal US\$.

Construction Spending Shares: 1993 to March 2017



Total Residential Spending: 1993 through 2006

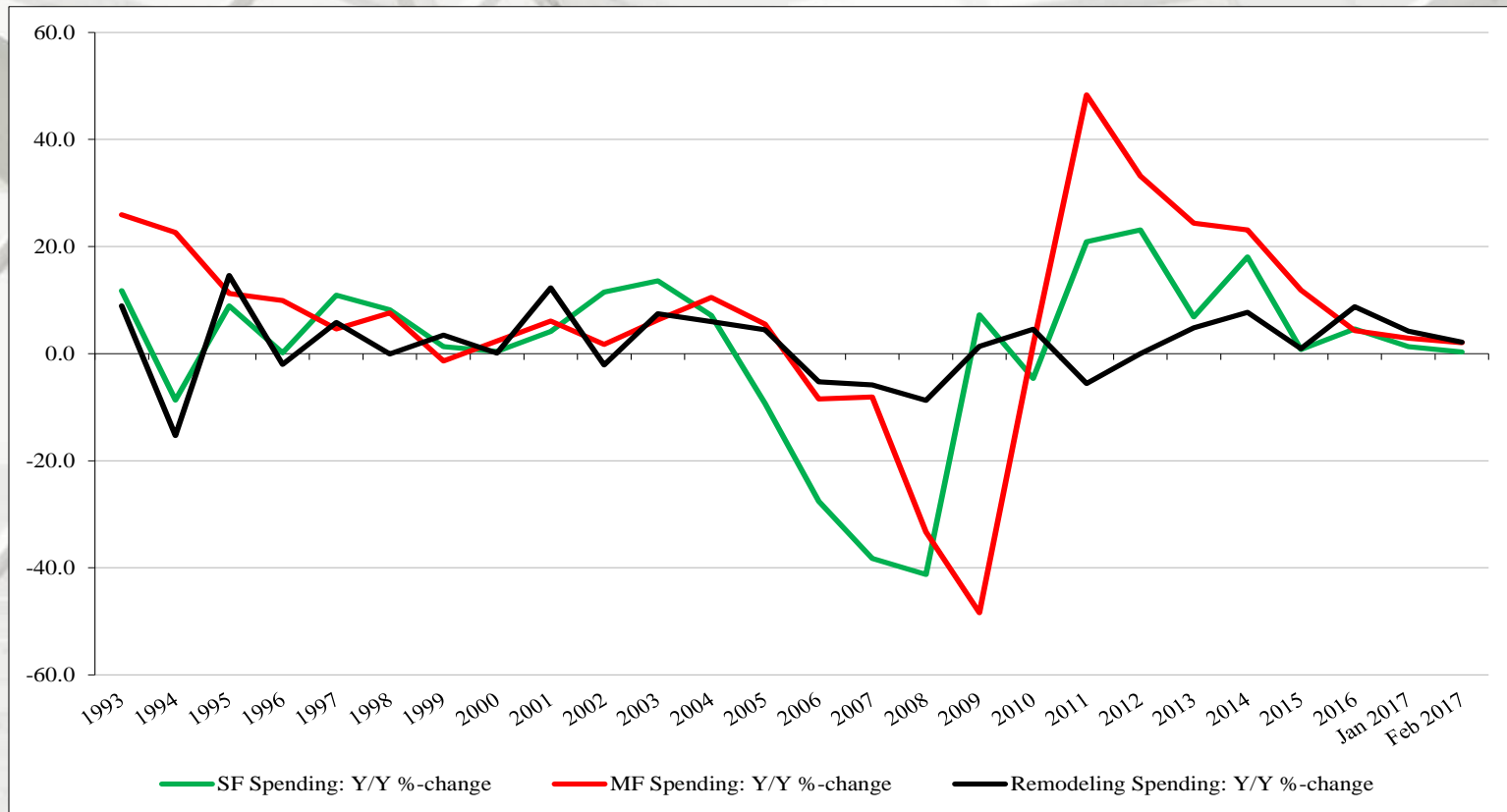
SF spending average: 69.2 %

MF spending average: 7.5 %;

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

Note: 1993 to 2016 (adjusted for inflation, BEA Table 1.1.9); January-March 2017 reported in nominal US\$.

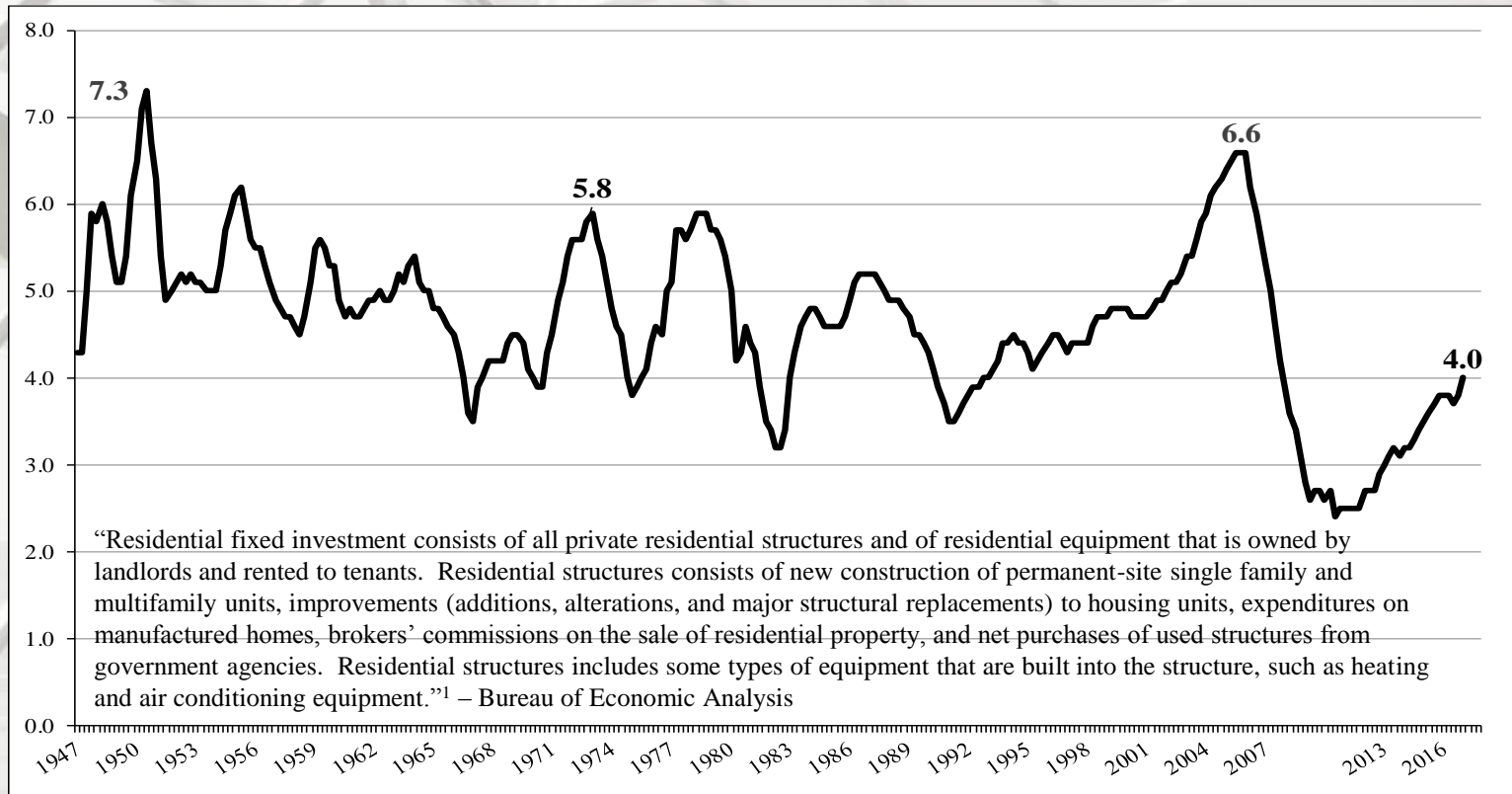
Construction Spending: Percentage Change, 1993 to March 2017



Residential Construction Spending: Percentage Change, 1993 to March 2017

Presented above is the percentage change of inflation adjusted Y/Y construction spending (1993-2016). Since mid-2015 – SF, MF, and RR spending are in an apparent decreasing trend. The questions are: Is construction spending normalizing or is it turning over?

Residential Spending's Contribution to Gross Domestic Product (1947 – Q1 2017)



In Q1 2017 residential investment (RI) increased to 13.7% of real gross domestic product from Q4 2016 (SAAR); RI contributed 0.50% change in real gross domestic product; and RI added 4.0% to the U.S. gross domestic product².

“NOTE. Quarterly estimates are expressed at seasonally adjusted annual rates, unless otherwise specified. Quarter-to-quarter dollar changes are differences between these published estimates. Percent changes are calculated from unrounded data and are annualized. “Real” estimates are in chained (2009) dollars. Price indexes are chain-type measures.”² – Bureau of Economic Analysis

Construction Employment

Construction Jobs Growing Faster Than Volume

“Jobs growth slowed in the last two months adding only 6,000 construction jobs since February. However, a longer term look at jobs x hours worked vs. volume growth gives better information.

In the following plot **Jobs** (red line) = # of jobs x hours worked and Construction **Volume** (blue line) = construction spending in constant \$ (adjusted for inflation). Unless we make these two adjustments we cannot compare jobs to construction spending and get any meaningful analysis from the data.” – Ed Zarenski, Construction Economics Analyst



Construction Employment



Construction Jobs Growing Faster Than Volume

“You can see in the plot above from Jan 2011 to Mar 2013 both jobs growth and volume growth balanced. Then again by August 2014 jobs growth caught up to volume growth. It was the period from Aug 014 to Jul 2015 when volume took off and climbed much faster than jobs growth. But then, since July 2015, jobs have been increasing faster than construction volume growth.

In a plot of this information back to 2005, it would show that by the end of 2010 there were excess jobs. That is discussed in the attached articles. During the recession, firms held onto far more staff than was required to perform the available declining work volumes.

Long term, having stated 2011 with not enough volume to support the remaining staff, we see since then two periods of growth in which jobs and volume were balanced, only one period where volume exceeded jobs growth and this latest period for the last 21 months in which jobs are growing faster than volume.

There are many reports of job shortages and they appear to be genuinely honest assessments. However, long term jobs vs. volume data shows there is far more in play than not enough workers to hire. In fact for the last 21 months hiring has exceeded workload and that simply does not indicate a worker shortage.” – Ed Zarenski, Construction Economics Analyst

Remodeling

Renovation Spending Continues to Grow, But More Slowly

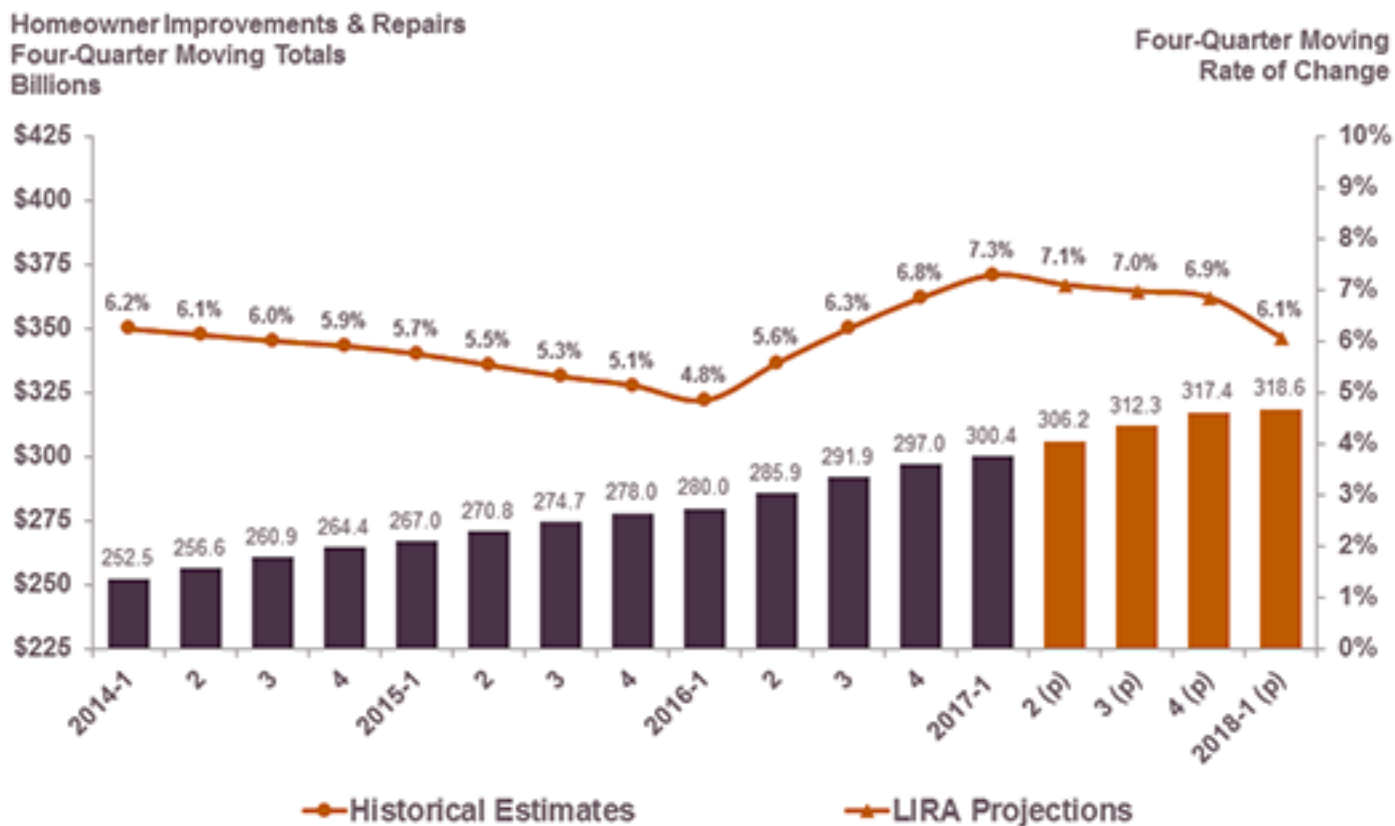
“Strong gains in home remodeling and repair activity are expected to ease moving into next year, according to our latest [Leading Indicator of Remodeling Activity](#) (LIRA) released today. The LIRA projects that annual growth in home improvement and repair expenditure this year will remain above its long-term trend of 5 percent, but will decline steadily from 7.3 percent in the first quarter to 6.1 percent by the first quarter of 2018.

Homeowners are continuing to spend more on improvements as house prices strengthen in most parts of the country. Yet, recent slowdowns in home sales activity and remodeling permitting suggests improvement spending gains will lose some steam over the course of the year.

The remodeling market is approaching a cyclical slowdown after several years of steady recovery. While the rate of growth is starting to trend down, national remodeling expenditures by homeowners are projected to reach almost \$320 billion by early next year.” – Abbe Will, Research Analyst, Harvard Joint Center for Housing Studies

Remodeling

Leading Indicator of Remodeling Activity – First Quarter 2017

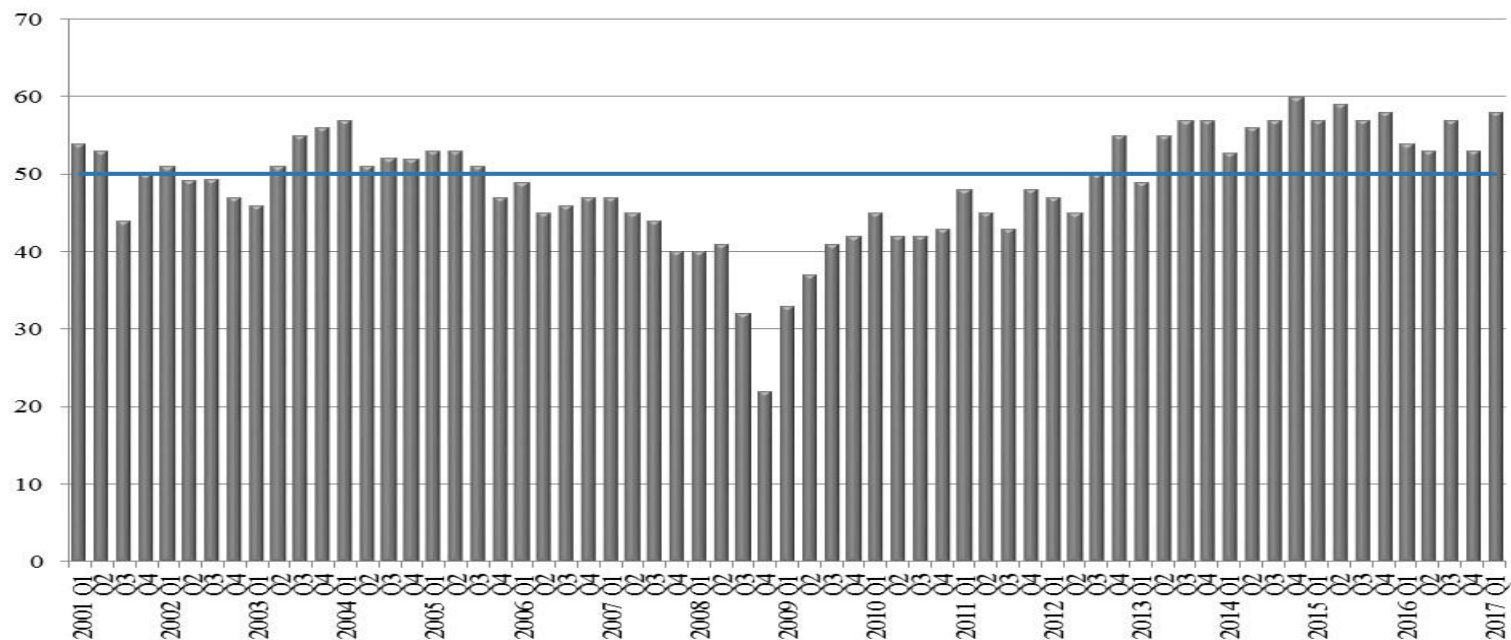


Notes: The former LIRA modeled homeowner improvement activity only, while the re-benchmarked LIRA models home improvement and repair activity. Historical estimates are produced using the LIRA model until American Housing Survey data become available.
Source: Joint Center for Housing Studies.

Remodeling



**Figure 1: Remodeling Market Index (RMI)
Overall RMI**



Increase in Remodeling Market Index Reflects Broad-Based Confidence

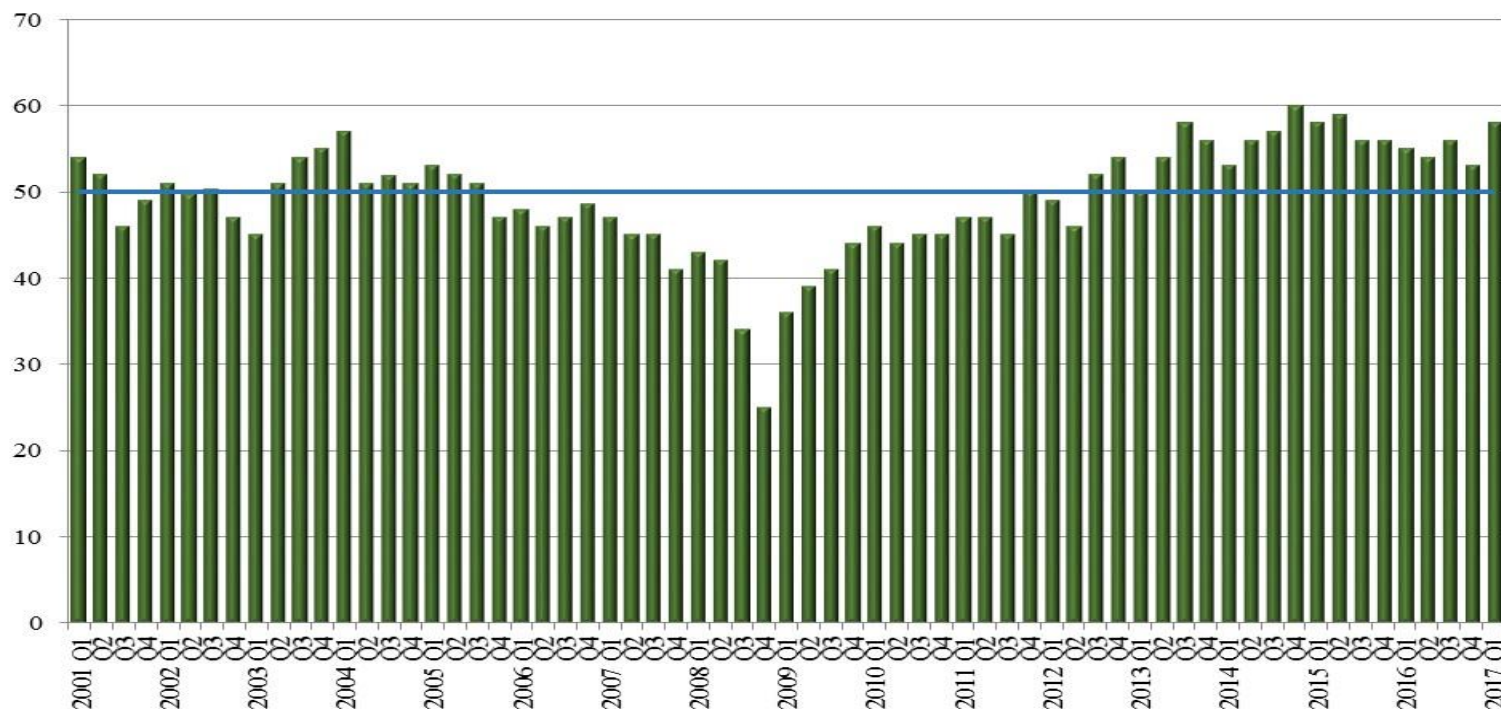
“The National Association of Home Builders’ (NAHB) Remodeling Market Index (RMI) posted a reading of 58 in the first quarter of 2017, up five points from the previous quarter. This reading is the highest since the fourth quarter of 2015 (Figure 1).

A RMI above 50 indicates that more remodelers report market activity is higher (compared to the prior quarter) than report it is lower. The overall RMI is an average of two sub-indices: one that measures current market activity and another measuring future remodeling activity.” – Carmel Ford, Research Associate, National Association of Homebuilders

Remodeling



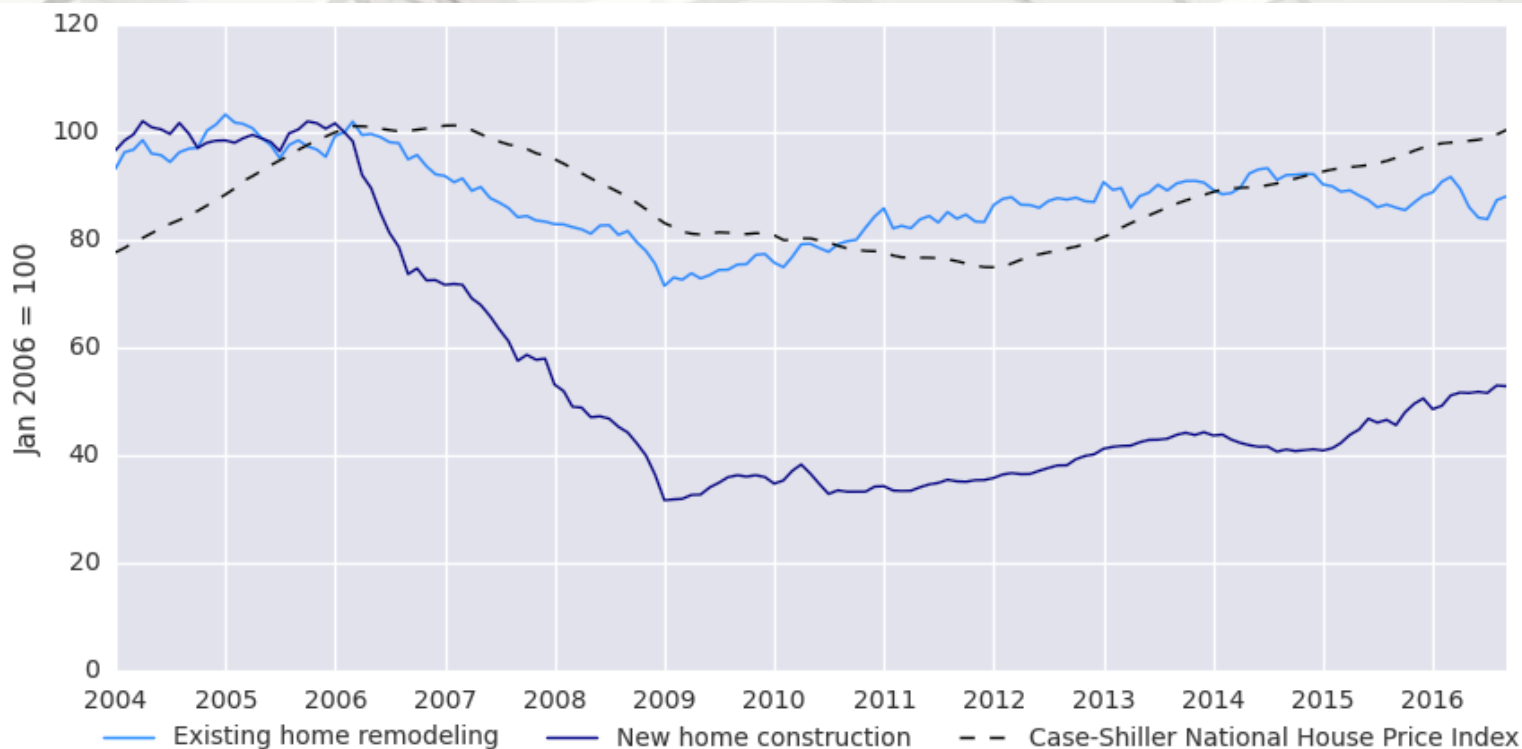
**Figure 2: Remodeling Market Index (RMI)
Current Market Conditions**



Increase in Remodeling Market Index Reflects Broad-Based Confidence

“In the first quarter of 2017, the current market sub-index increased to 58 (Figure 2). Among its components, major additions and alterations rose 4 points to 57, minor additions and alterations climbed 7 points to 59, and maintenance and repair increased six points to 60.”– Carmel Ford, Research Associate, National Association of Homebuilders

Remodeling



The BuildZoom and Urban Economics Lab Index: Third Quarter 2016

- “Residential remodeling is arguably a better indicator of consumer sentiment than new construction, and is of similar importance as an indicator of national economic health.
- Remodeling of existing homes is 17.5% above its 2009 housing bust level, but remains 10.8% below its 2005 housing boom level, and that new home construction is 48.9% above its 2009 level, but remains 48.6% below its 2005 level.
- Year-over-year, residential new construction increased by 14.0% and residential remodeling increased by 1.9%.”— Jack Cookson, BuildZoom

Existing House Sales

National Association of Realtors (NAR®)

March 2017 sales: 5.710 million (SAAR)

	Existing Sales*	Median Price	Mean Price	Month's Supply
March	5,710,000	\$236,400	\$278,500	3.8
February	5,470,000	\$228,200	\$269,600	3.8
2016	5,390,000	\$221,400	\$264,400	4.4
M/M change	4.4%	3.6%	3.3%	0.0%
Y/Y change	5.9%	6.8%	5.3%	-13.6%

* All sales data: SAAR

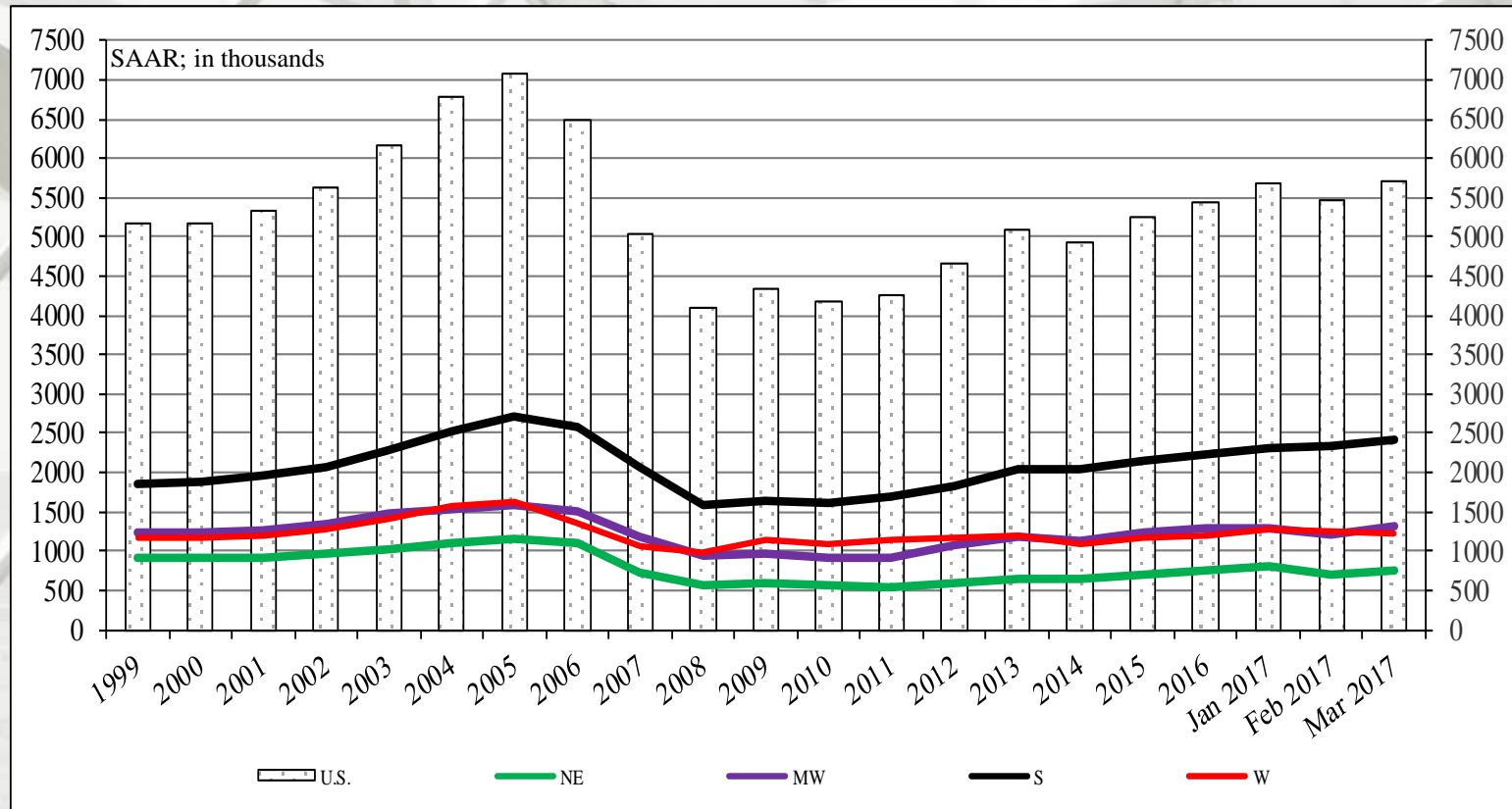
Existing House Sales

	Distressed House Sales	Foreclosures	Short-Sales	All-Cash Sales	Individual Investor Purchases*
March	6%	5%	1%	23%	15%
February	7%	6%	1%	27%	17%
2016	8%	7%	1%	25%	14%

* 63% of investors paid cash in March

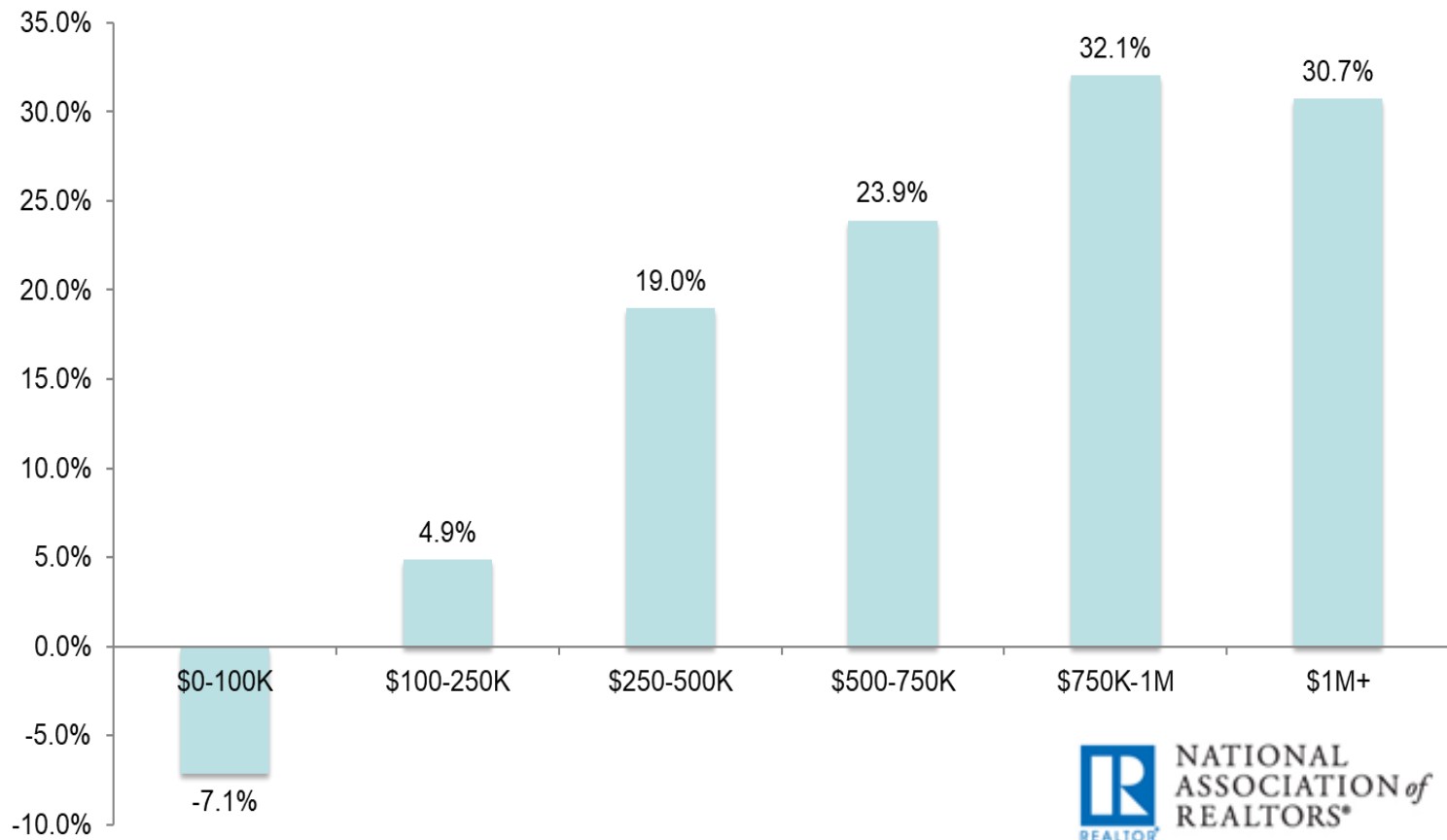
	NE Sales	MW Sales	S Sales	W Sales
March	760,000	1,310,000	2,420,000	1,220,000
February	690,000	1,200,000	2,340,000	1,240,000
2016	730,000	1,270,000	2,230,000	1,160,000
M/M change	10.1%	9.2%	3.4%	-1.6%
Y/Y change	4.1%	3.1%	8.5%	5.2%

Total Existing House Sales

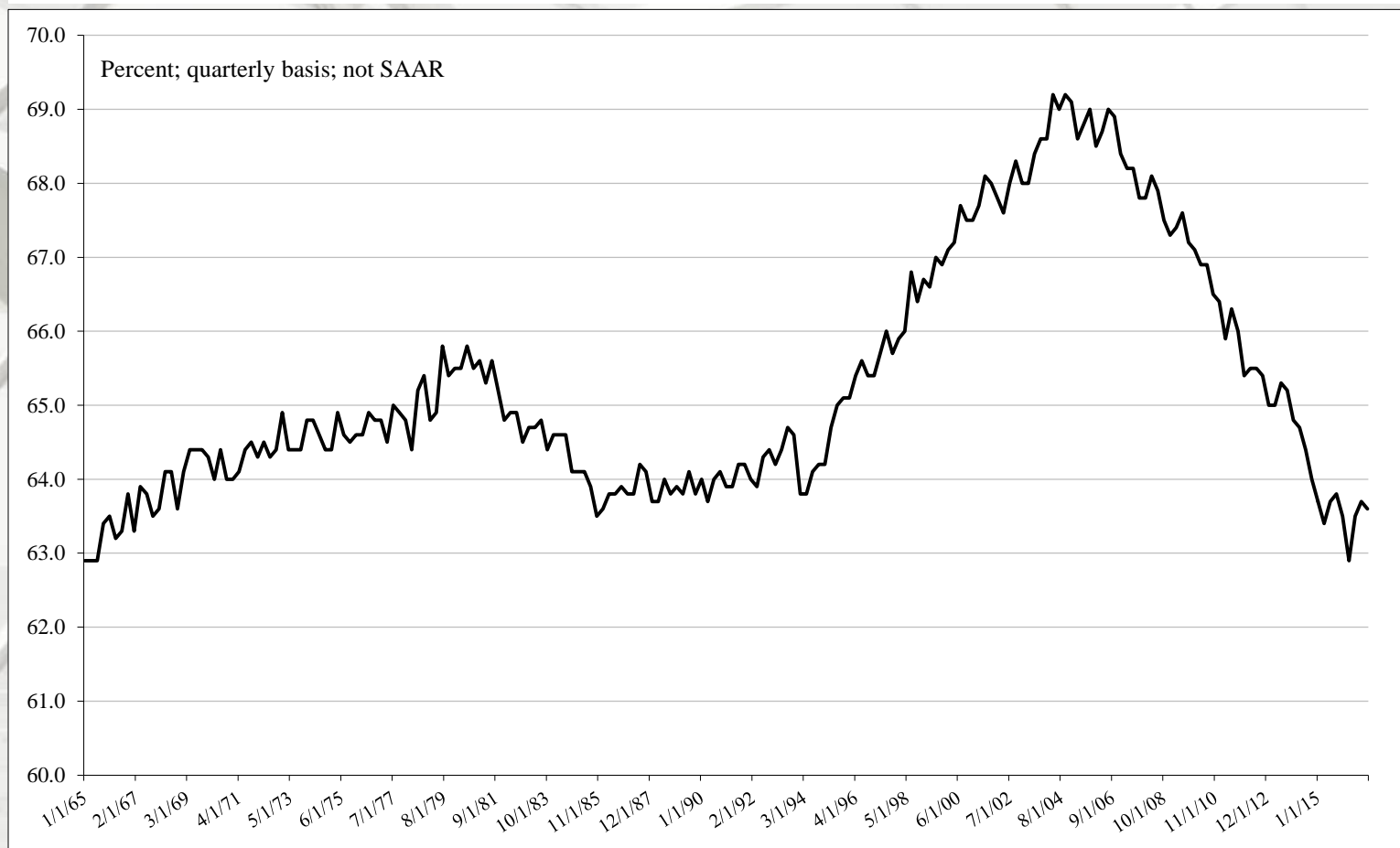


Changes in Existing House Sales

Percent Change in Sales From a Year Ago by Price Range



Home Ownership

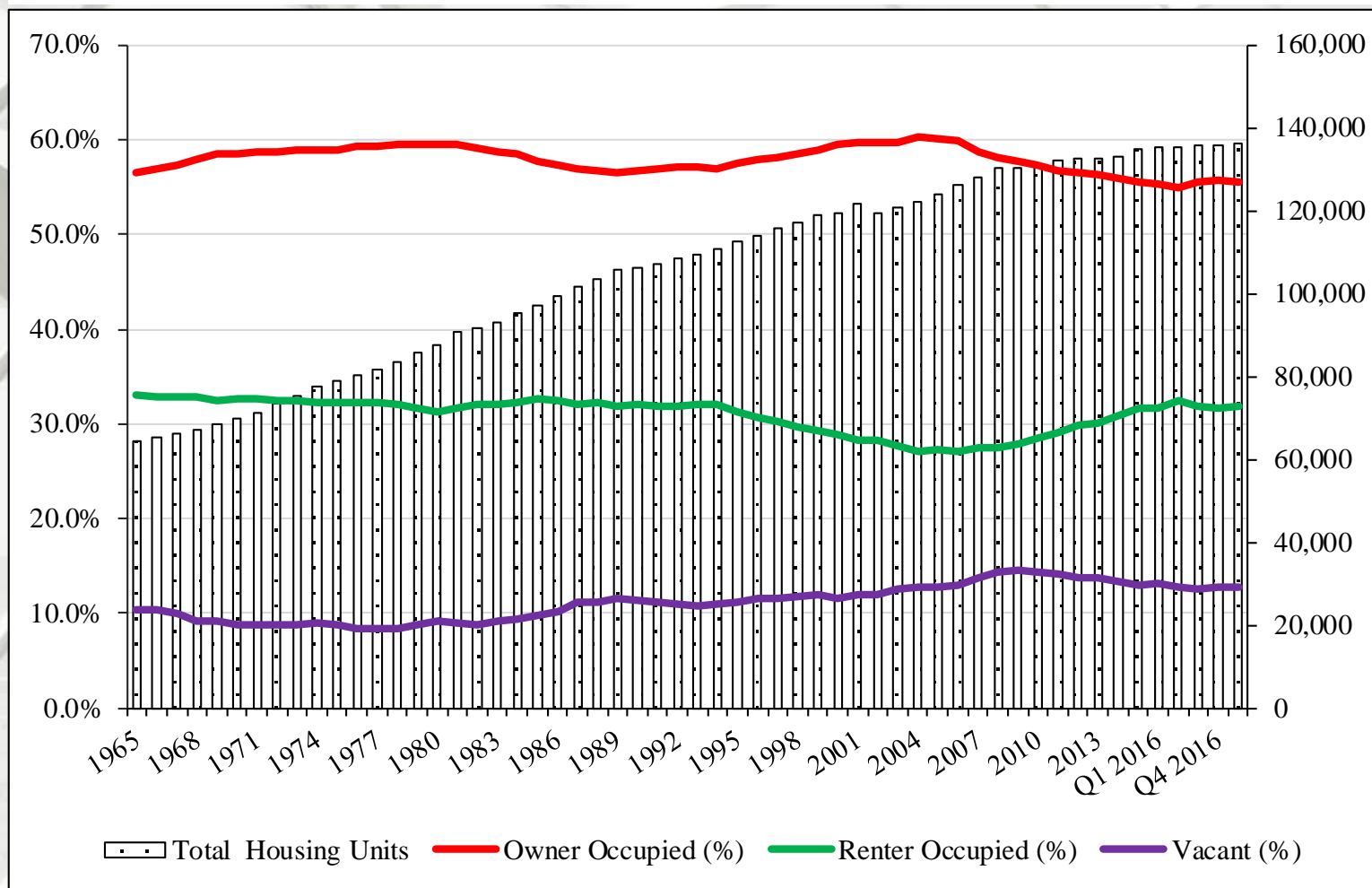


Home Ownership Rate for the United States

Q1 1965: 62.9 percent; U.S. civilian noninstitutional population – 125,814,000

Q1 2017: 63.6 percent; U.S. civilian noninstitutional population – 252,247,333

Home Ownership

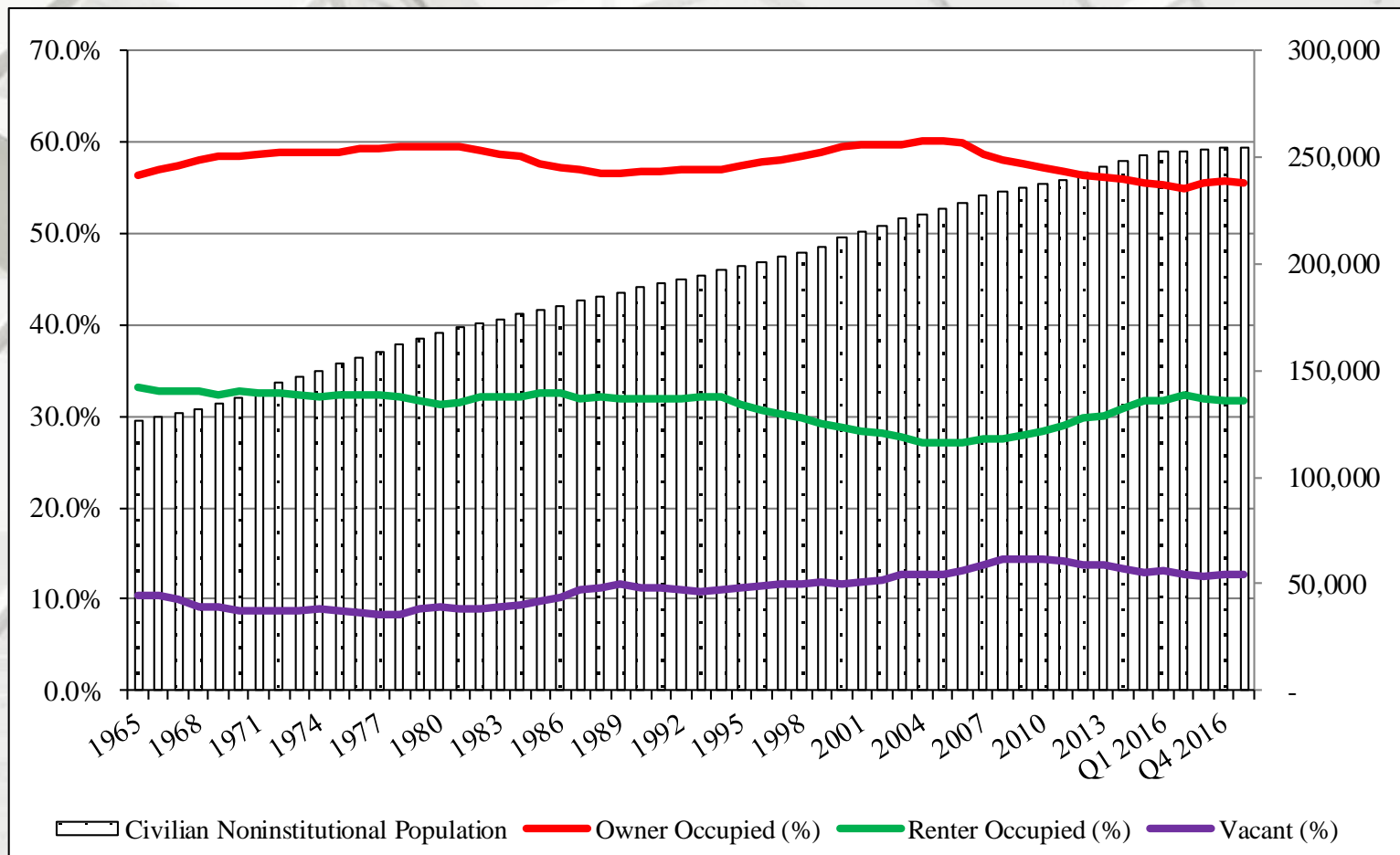


Quarter (Q) 1 home ownership rate was 63.6%, minimally more than Q4 2016 (63.5%), and less than Q1 2016 (63.7%).

Owner occupancy rate: Q1 2017 (55.7%); Q4 2016 (55.6%); and Q1 2016 (55.2%).

Renter occupancy rate: Q1 2017 (31.8%); Q4 2016 (31.7%); and Q1 2016 31.7%).

Home Ownership

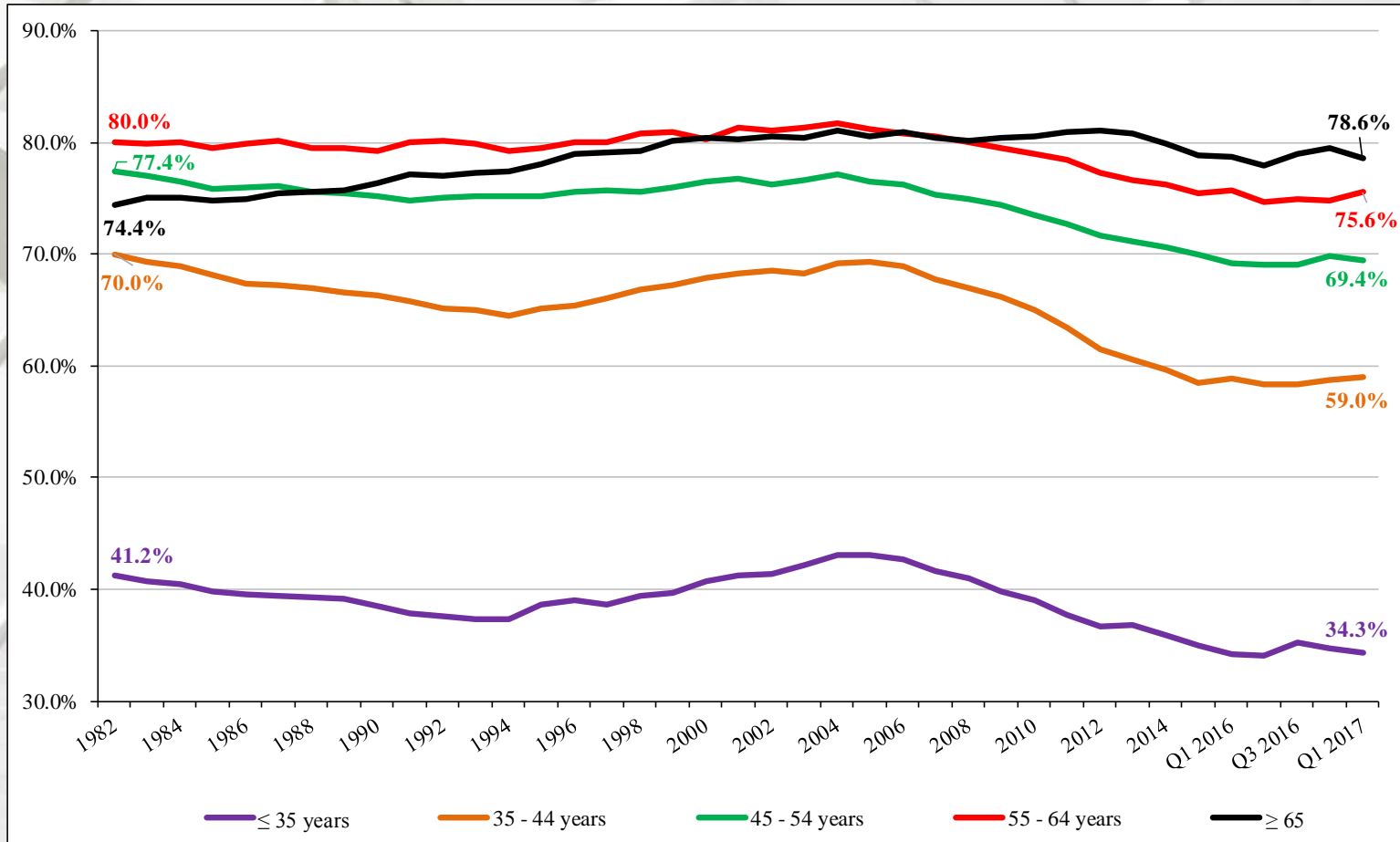


Q1 civilian noninstitutional population = 254,247 million (mm), Q4 2016 (254,534 mm), and Q1 2016 (252,581 mm).

Owner occupancy rate: Q1 2017 (55.7%); Q4 2016 (55.6%); and Q1 2016 (55.2%).

Renter occupancy rate: Q1 2017 (31.8%); Q4 2016 (31.7%); and Q1 2016 31.7%).

Home Ownership

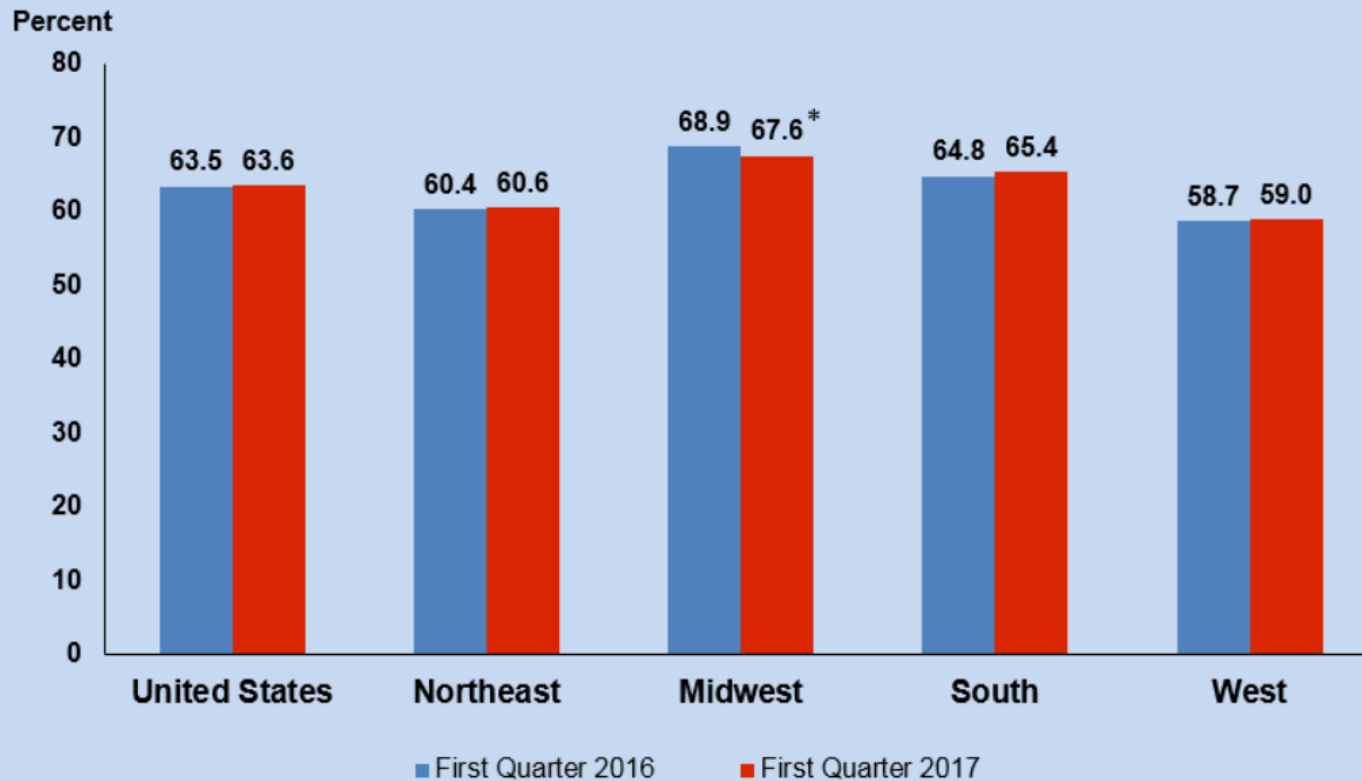


As presented above, four of five age groups home ownership rates have declined since 1982. The exception to the home ownership decline is the 65 and older class.

For many years the first house purchase was in the 30 to 34 age range – broaching 50% by 2007. Since then home ownership has declined for this group as well as for the 35 to 44 year old class. At present, the first-time purchase has increased to the 35 to 39 year old age bracket.

Home Ownership

Homeownership Rates by Region



* Denotes a statistically significant change from the rate last year

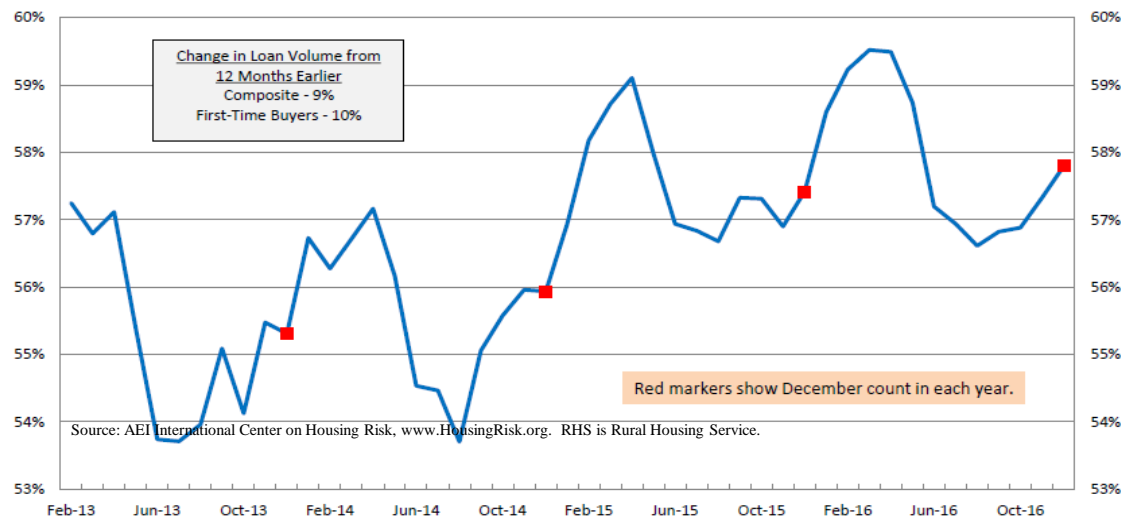
Source: Current Population Survey/Housing Vacancy Survey, Series H-111, U.S. Census Bureau, Washington, DC 20233

First-Time Purchasers

National Association of Realtors (NAR®)

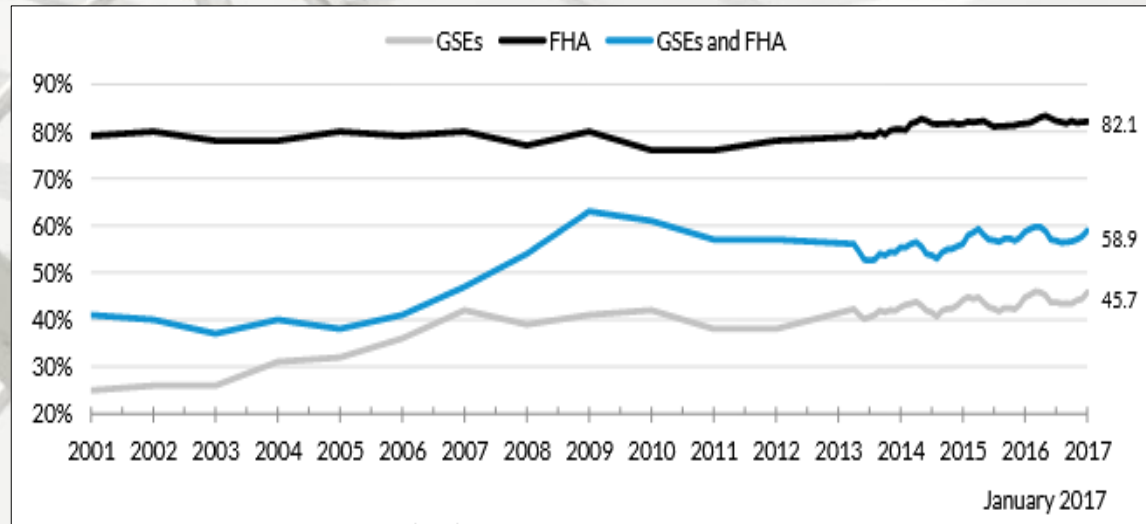
32% of sales in March 2017 – 32% in February 2016 and 30% in March 2016

American Enterprise Institute International Center on Housing Risk



“Credit remains readily available for first-time buyers, as risk levels set new series’ highs in January. The first-time buyer NMRI stood at 16.2% in January, up 0.5 percentage point from a year earlier, and well above the Repeat Primary Homebuyer NMRI of 8.8%.” – Tobias Peter, Senior Research Analyst, AEI’s International Center on Housing Risk

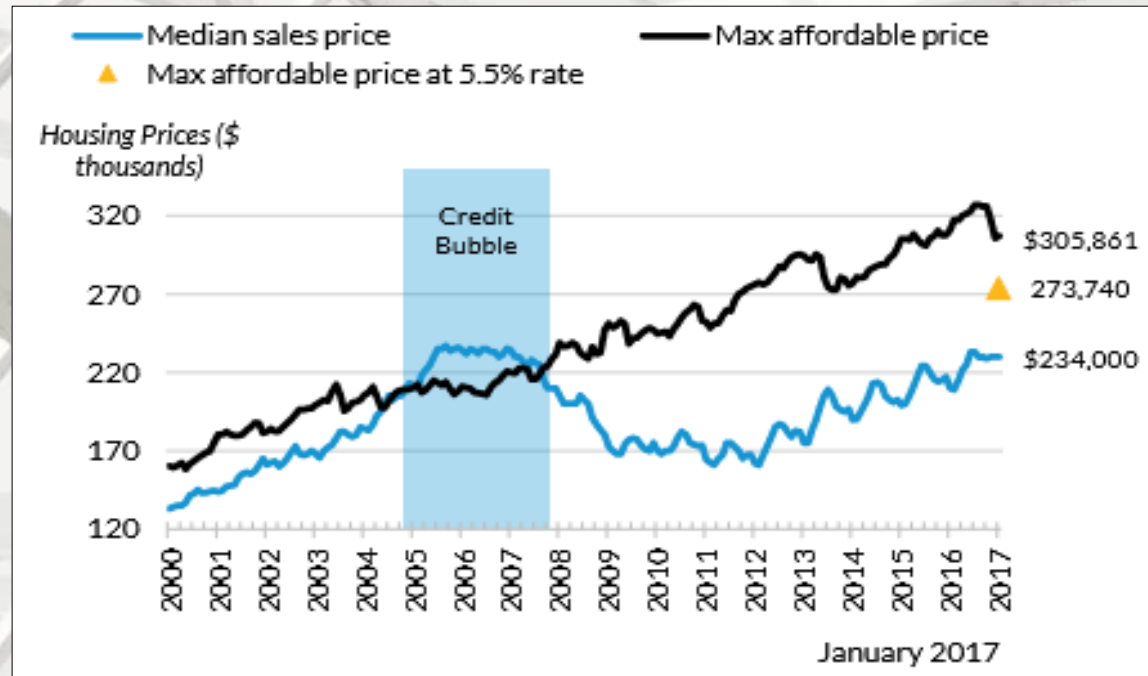
First-Time Purchasers



Urban Institute

“In January 2017, the first-time homebuyer share of GSE purchase loans rose slightly to 45.7 percent. The FHA, always, more focused on first-time homebuyers, stood at 82.1 percent in January 2017, down from the peak of 83.3 percent in May 2016. The bottom table shows that based on mortgages originated in January 2017, 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

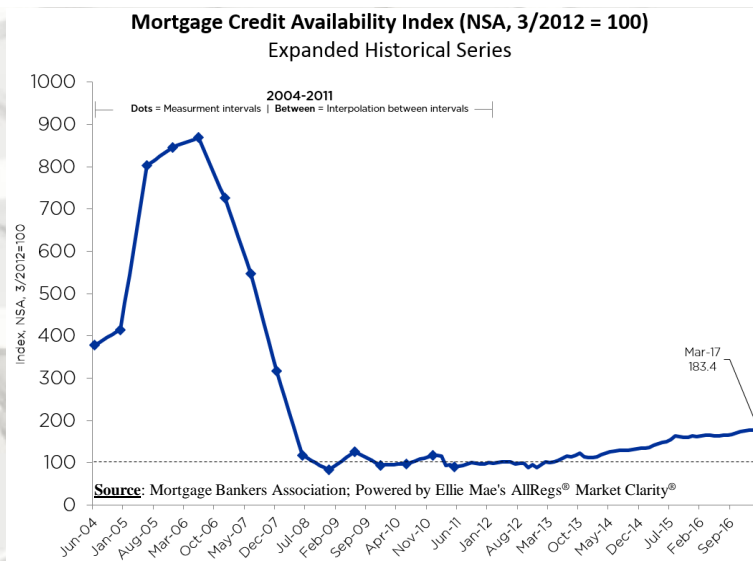
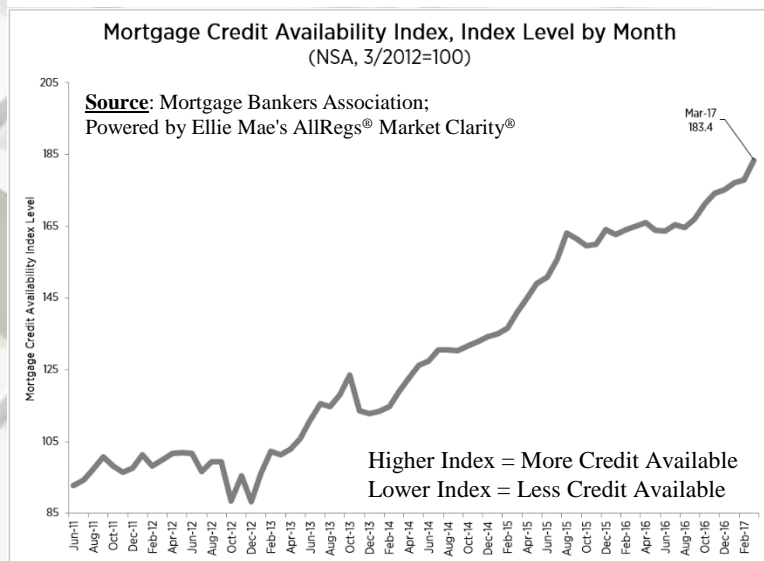
Housing Affordability



Urban Institute

“Home prices are still very affordable by historic standards, despite increases over the last four years and the recent interest rate hike. Even if interest rates rise to 5.5 percent, affordability would still be at the long term historical average” – Bing Lai, Research Associate, Housing Finance Policy Center

Mortgage Credit Availability



Mortgage Credit Availability Decreases Slightly in April

"Mortgage credit availability decreased in April according to the Mortgage Credit Availability Index (MCAI), a report from the Mortgage Bankers Association (MBA) ... The MCAI decreased 0.2 percent to 183.0 in April. A decline in the MCAI indicates that lending standards are tightening, while increases in the index are indicative of loosening credit. The index was benchmarked to 100 in March 2012. Of the four component indices, the Conforming MCAI saw the greatest decrease in availability over the month (down 0.9 percent), followed by the Conventional MCAI (down 0.6 percent), and the Jumbo MCAI (down 0.4 percent). The Government MCAI was unchanged from last month.

After some program changes early in the year and some merger activity among investors, credit availability held fairly steady in April with little discernable change in the composition of the supply of credit for government and jumbo programs. Conforming credit availability has slipped a bit since the beginning of the year, with fewer program offerings along a range of credit characteristics and no particular culprit." – Lynn Fisher, Vice President of Research and Economics, Mortgage Bankers Association

Summary

In summary:

March's housing data were mixed but mostly positive. All data sectors were positive on a Y/Y basis. SF starts and permits declined nominally – as did total starts on a month-over-month basis. All other categories were positive. Once again, new SF lower-priced tier house sales struggled. It bears repeating, the market needs consistent improvement in this category to influence the housing construction market upward.

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 forest products are used and this housing sector has room for improvement.

Pros:

- 1) Historically low interest rates are still in effect, though incrementally rising;
- 2) As a result, housing affordability is good for many in most of – but not all of the U.S.;
- 3) Select builders are beginning to focus on entry-level houses.

Cons:

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

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