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MORTGAGE INSURANCE

# DATA

AT A

# GLANCE



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# The Role of Mortgage Insurance in the Mortgage Market

During the past 62 years, the private mortgage insurance (PMI) industry has enabled homeownership for borrowers who lack sufficient funds for a 20 percent down payment on a conventional mortgage. This data publication quantifies the role of PMI in the agency mortgage market. It describes the borrowers served by PMI and how they compare with borrowers without PMI (e.g., Federal Housing Administration, or FHA, and US Department of Veterans Affairs, or VA, borrowers) along key dimensions, such as loan-to-value (LTV) ratios, credit scores, and first-time homebuyer status. In addition to loan origination characteristics, this publication quantifies the performance of PMI-insured agency loans as measured by historical delinquency rates and loss severities, as well as the role of PMI in reducing loss to the government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac.

This data publication is being released as an update to the inaugural 2017 data publication to provide an up to date snapshot of the present mortgage insurance market. For an in-depth explanation of the past and present role of private mortgage insurance, please also see the 2017 comprehensive report *Sixty Years of Private Mortgage Insurance*, available at [urban.org](http://urban.org).

This publication relies on two main sources:

## ***Data on the Agency Mortgage Market:***

This section compares loan origination characteristics for GSE PMI mortgages with GSE non-PMI, FHA, and VA mortgages using loan-level agency security data (eMBS) for Ginnie Mae, Fannie Mae, and Freddie Mac, available from 2013 onward. These data contain all agency origination data, but they do not contain credit performance data.

## ***Government-Sponsored Enterprise Loan-Level Credit Data:***

These data, covering loans from 1999 on, are provided by the GSEs in support of Fannie Mae's Connecticut Avenue Securities and Freddie Mac's Structured Agency Credit Risk deals and cover loans similar to those included in the deals: 30-year fixed-rate, full-documentation, fully amortizing loans not purchased under special programs.

## A FEW HIGHLIGHTS OF THE REPORT

***Private mortgage insurance borrowers*** tend to have higher credit scores and lower LTV and debt-to-income (DTI) ratios than FHA borrowers.

***Private mortgage insurance borrowers*** tend to have lower credit scores and higher LTV and DTI ratios and are more likely to be first-time homebuyers than conventional borrowers without PMI.

***Government-sponsored enterprise loans*** with PMI have lower loss severities than non-PMI GSE loans despite their higher LTV ratios because of PMI recovery proceeds.



# Overview





# Mortgage Insurance Market

The PMI share has varied widely since 1972. Historically, the PMI share has expanded during strong economic environments, with the FHA and VA share ramping up during downturns. After contracting during the last housing crisis, the PMI share has rebounded in recent years.

## Mortgage Insurance Market Share based on Loan Count, 1972–1H 2019

**Sources:** Prior to 2016, data are from US Department of Housing and Urban Development (US Housing Market Conditions archives), Mortgage Insurance Companies of America, and USMI; after that, data are from eMBS and Urban Institute.

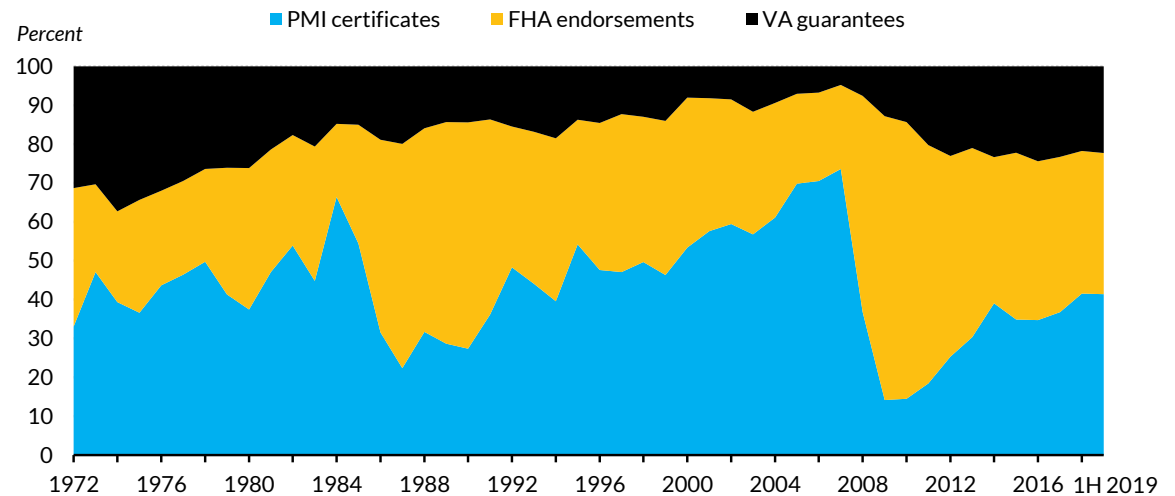
**Notes:** FHA = Federal Housing Administration; PMI = private mortgage insurance; VA = US Department of Veteran Affairs. 1H 2019 covers January to June 2019.

## Annual Mortgage Insurance Volume: PMI versus FHA/VA

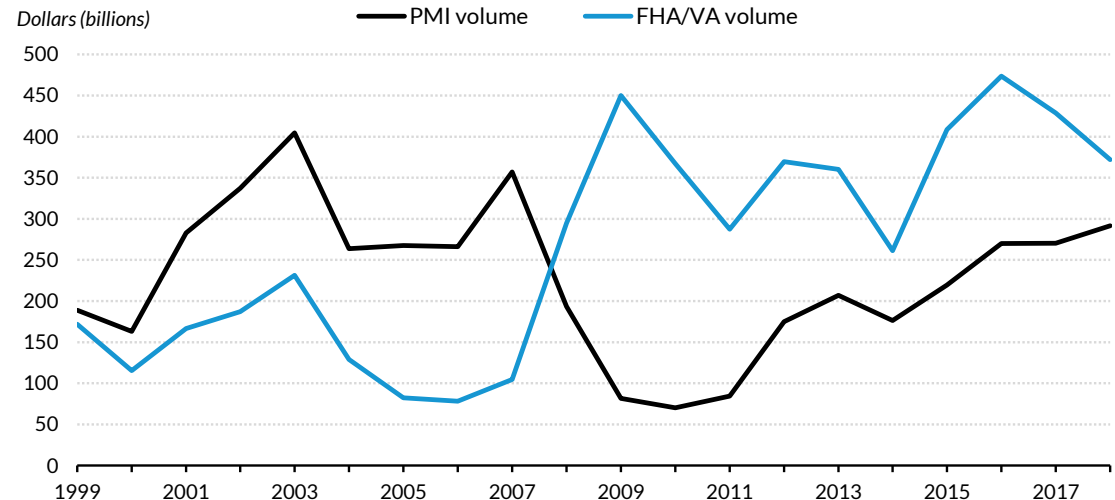
**Sources:** Inside Mortgage Finance and Urban Institute.

**Notes:** FHA = Federal Housing Administration; PMI = private mortgage insurance; VA = US Department of Veteran Affairs.

## Mortgage Insurance Market Share Based on Loan Count, 1972–1H 2019



## Annual Mortgage Insurance Volume: PMI versus FHA/VA





# Agency Mortgage Market





# GSE Mortgages: PMI versus Non-PMI

Private mortgage insurance borrowers tend to have lower credit scores and higher LTV and DTI ratios than non-PMI GSE borrowers. For 1H 2019 originations, 36.3 percent of GSE loans had PMI. The share was higher for purchase loans (51.9 percent) than for refinance (refi) loans (9.8 percent). The average balance of a GSE PMI loan is about 8 percent larger than that of a non-PMI GSE loan. But the average value of a home where the borrower has PMI is \$280,260, compared with \$357,650 for borrowers without PMI. GSE borrowers with PMI (PMI borrowers) take out larger loans relative to the property's value than non-PMI GSE borrowers. GSE PMI borrowers averaged 92.8 percent LTV versus 67.5 percent LTV for GSE borrowers without PMI, in the first half of 2019.

## All

**Sources:** eMBS and the Urban Institute.

**Notes:** DTI = debt-to-income ratio; FRM 30 = 30-year fixed-rate mortgage; LTV = loan-to-value ratio; PMI = private mortgage insurance. Home Affordable Refinance Program loans are included and counted as refinances.

## Average LTVs: FHA, PMI, VA

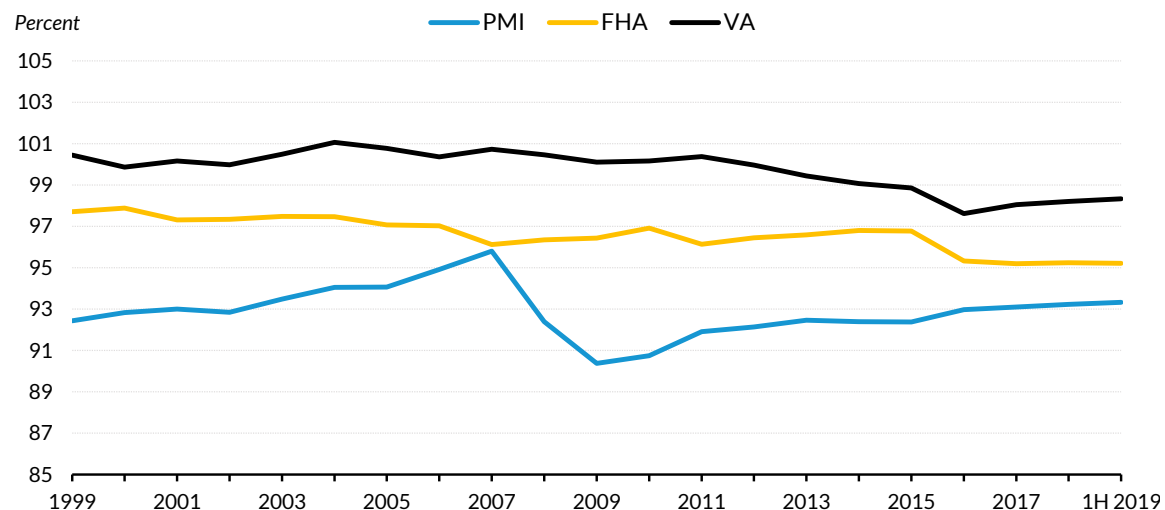
**Sources:** Prior to 2016, data are from the 2017 Mortgage Insurance Data at a Glance, after that date, they are from eMBS and Urban Institute.

**Notes:** LTV = loan-to-value ratio; FHA = Federal Housing Administration; PMI = private mortgage insurance; VA = US Department of Veteran Affairs.

## All GSE Loans

	% of Loans		Loan size (\$ thousands, avg.)		Note Rate (%)		Purchase (%)		FRM 30 (%)		LTV (%)		FICO		DTI (%)	
	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI
2013	30.2	69.8	199.1	204.7	4.1	3.7	35.0	26.2	79.9	58.8	100.6	64.3	736	755	34.5	31.8
2014	30.5	69.5	208.9	208.8	4.5	4.2	66.7	42.4	84.9	64.6	94.0	67.3	736	747	34.9	33.5
2015	26.9	73.0	223.2	221.8	4.1	3.9	71.3	35.1	87.7	66.5	92.7	66.8	741	750	34.6	33.2
2016	26.3	73.6	233.9	233.0	3.9	3.7	75.5	32.5	89.6	67.0	92.3	66.1	742	751	34.8	33.1
2017	30.0	70.0	236.0	225.6	4.3	4.1	86.5	43.5	91.8	70.3	92.7	67.2	740	745	36.0	34.6
2018	34.4	65.6	243.6	227.9	4.8	4.7	93.1	51.1	95.3	77.8	92.9	67.4	740	744	37.6	35.9
1H 2019	36.3	63.7	260.1	241.4	4.6	4.5	89.9	47.4	95.9	78.5	92.8	67.5	743	747	37.1	35.3

## Average LTVs: FHA, PMI, VA



# PMI versus FHA and VA

For 1H 2019 originations, 58.0 percent of agency mortgages had mortgage insurance (PMI, FHA, or VA). Of these insured mortgages, 41.2 percent had PMI coverage, 36.2 percent were FHA insured, and 22.6 percent were VA insured. The PMI share of the insured market has gradually increased since 2016 while FHA and VA shares have declined. The average loan amount for mortgages with PMI, at \$260,081, was larger than for FHA mortgages (\$218,831) and smaller than for VA mortgages (\$280,831). In the purchase market, 69.3 percent of agency loans had mortgage insurance, with PMI composing 47.8 percent of the insured market. Purchase loans with PMI had an average LTV ratio of 93.3 percent, lower than the FHA's 95.2 percent or the VA's 98.3 percent. Private mortgage insurance borrowers also had higher FICO scores and lower DTI ratios than their FHA and VA counterparts in 1H 2019 for both purchase and refinance loans.

**Sources:** eMBS and the Urban Institute.

**Notes:** DTI = debt-to-income ratio; FHA = Federal Housing Administration; LTV = loan-to-value ratio; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Home Affordable Refinance Program loans are included and counted as refinances. Percentages of all loans may not sum to 100 because of rounding.

## All

	% of loans with mortgage insurance	% of All Insured Loans				Loan Size (\$ thousands, avg.)			Note Rate (%)		
		PMI	FHA	VA	All	PMI	FHA	VA	PMI	FHA	VA
2013	47.1	48.6	34.6	16.8	100	199.1	175.4	221.1	4.1	3.8	3.6
2014	51.0	42.0	35.5	22.4	100	208.9	173.1	231.2	4.5	4.2	4.0
2015	51.6	34.6	43.8	21.7	100	223.2	195.1	244.0	4.1	4.0	3.7
2016	50.8	34.7	40.3	25.0	100	233.9	198.2	255.2	3.9	3.8	3.5
2017	53.3	37.5	39.6	22.8	100	236.0	202.0	255.2	4.3	4.2	3.9
2018	55.5	42.2	36.5	21.3	100	243.6	207.4	264.4	4.8	4.8	4.5
1H 2019	58.0	41.2	36.2	22.6	100	260.1	218.8	280.1	4.6	4.6	4.3

## Purchase

	% of loans with mortgage insurance	% of All Insured Loans				Loan Size (\$ thousands, avg.)		
		PMI	FHA	VA	All	PMI	FHA	VA
2013	60.4	37.8	45.2	17.0	100	220.3	179.1	234.0
2014	62.6	41.2	39.9	18.9	100	218.2	177.7	236.4
2015	66.3	38.0	44.5	17.4	100	226.7	190.6	245.2
2016	67.2	40.5	42.2	17.3	100	234.0	197.7	254.2
2017	66.2	43.4	39.0	17.6	100	237.2	204.6	262.6
2018	66.7	47.7	34.7	17.6	100	244.1	209.0	269.5
1H 2019	69.3	47.8	34.4	17.8	100	256.1	216.5	277.5

## Refinance

	% of loans with mortgage insurance	% of All Insured Loans				Loan Size (\$ thousands, avg.)		
		PMI	FHA	VA	All	PMI	FHA	VA
2013	39.9	57.4	26.0	16.6	100	187.6	170.1	210.3
2014	36.6	43.9	26.1	30.1	100	190.3	158.0	224.2
2015	36.6	28.3	42.3	29.4	100	214.5	203.7	242.7
2016	35.1	24.0	36.9	39.1	100	233.6	199.3	256.0
2017	33.7	20.1	41.6	38.3	100	227.9	194.8	245.1
2018	31.1	16.5	44.7	38.8	100	236.8	201.7	253.6
1H 2019	37.2	18.4	42.3	39.3	100	295.8	225.3	284.3



Purchase (%)			LTV (%)			FICO			DTI (%)		
PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA
35.0	58.7	45.5	100.6	92.0	95.1	736	697	717	34.5	38.3	35.9
66.7	76.6	57.3	94.0	92.6	95.2	736	680	707	34.9	40.2	38.2
71.3	66.0	52.2	92.7	92.6	94.9	741	683	708	34.6	40.1	38.2
75.5	67.7	44.7	92.3	92.3	94.5	742	681	710	34.8	40.7	38.4
86.5	73.6	57.6	92.7	91.8	94.3	740	676	709	36.0	42.1	39.9
93.1	78.3	67.8	92.9	92.0	95.3	740	670	707	37.6	43.3	41.4
89.9	73.6	60.9	92.8	91.8	95.7	743	667	705	37.1	43.5	41.2

Note Rate (%)			LTV (%)			FICO			DTI (%)		
PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA
4.2	3.9	3.8	93.1	95.3	98.0	749	692	715	34.0	40.4	38.3
4.4	4.2	4.0	92.9	95.2	97.6	743	681	711	34.6	40.7	38.8
4.1	4.0	3.8	92.9	95.3	97.7	744	684	711	34.6	40.5	39.1
3.9	3.8	3.6	93.0	95.3	97.6	743	682	711	34.9	41.0	39.4
4.3	4.2	4.0	93.1	95.2	98.1	741	678	712	36.0	42.4	40.4
4.8	4.9	4.6	93.2	95.2	98.2	741	672	712	37.6	43.5	41.6
4.6	4.7	4.4	93.3	95.2	98.3	743	669	711	37.1	43.7	41.6

Note Rate (%)			LTV (%)			FICO			DTI (%)		
PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA
4.0	3.8	3.5	104.6	87.3	85.8	729	705	720	34.7	33.2	32.0
4.5	4.3	3.9	96.2	83.9	87.5	722	675	702	35.7	37.5	36.7
4.1	3.9	3.6	92.4	86.9	87.3	735	683	706	34.4	38.4	36.4
3.8	3.7	3.4	90.1	85.1	86.9	739	679	709	34.3	39.4	36.5
4.2	4.0	3.7	89.8	81.6	88.6	733	671	703	35.8	41.0	39.0
4.6	4.6	4.4	88.8	79.8	89.1	735	663	696	36.8	42.4	40.9
4.5	4.5	4.2	88.4	81.9	91.4	744	663	695	36.6	42.9	40.1

# State-Level Analysis: All Loans

For agency mortgages originated in 1H 2019, 58.0 percent had either FHA, VA, or private mortgage insurance. Of these, 41.2 percent had PMI, and the remaining 58.8 percent were insured by the FHA or VA. The five states with the highest PMI share were the District of Columbia, Iowa, Minnesota, North Dakota, and Wisconsin; the District of Columbia had the highest share at 78.9 percent. The five states with the lowest PMI share were Alabama, Alaska, Hawaii, Mississippi, and West Virginia; Mississippi had the lowest share at 28.9 percent.

**Sources:** eMBS and the Urban Institute.

**Notes:** Data based on agency issuance in 1H 2019. National numbers also include Guam, Puerto Rico, and the Virgin Islands. The District of Columbia is considered a state for this analysis.

## All Loans 1H 2019

State	% of Loans with Insurance			Number of Loans			% of All Agency Loans with Insurance	
	PMI	FHA	VA	PMI	FHA	VA	All	
National	41.2	36.2	22.6	518,248	455,258	285,030	1,258,536	58.0
Alabama	34.6	37.4	28.0	7,144	7,722	5,773	20,639	66.5
Alaska	31.9	20.4	47.8	874	559	1,310	2,743	64.8
Arizona	41.8	32.8	25.4	20,171	15,828	12,248	48,247	57.4
Arkansas	37.7	38.7	23.6	3,962	4,061	2,479	10,502	60.2
California	36.8	39.0	24.2	39,759	42,186	26,113	108,058	45.1
Colorado	38.7	31.8	29.5	14,875	12,246	11,341	38,462	53.2
Connecticut	46.6	41.9	11.5	5,022	4,521	1,245	10,788	60.0
Delaware	38.3	40.2	21.5	1,771	1,862	997	4,630	57.6
District of Columbia	71.9	14.8	13.3	1,230	253	228	1,711	50.5
Florida	35.2	40.4	24.4	38,197	43,882	26,447	108,526	60.7
Georgia	35.3	38.8	25.8	19,139	21,031	13,976	54,146	63.9
Hawaii	32.2	12.8	55.0	1,185	471	2,026	3,682	50.4
Idaho	40.4	31.3	28.3	4,155	3,216	2,912	10,283	53.7
Illinois	52.5	35.6	11.8	22,688	15,401	5,120	43,209	56.7
Indiana	43.2	41.1	15.8	13,056	12,425	4,774	30,255	62.2
Iowa	56.3	26.8	16.9	5,633	2,679	1,685	9,997	56.2
Kansas	45.6	32.8	21.6	4,753	3,424	2,247	10,424	63.8
Kentucky	39.0	40.3	20.7	6,273	6,470	3,326	16,069	60.4
Louisiana	35.6	43.4	21.0	5,489	6,693	3,244	15,426	61.6
Maine	40.6	34.9	24.5	1,593	1,367	959	3,919	55.4
Maryland	39.2	38.4	22.4	11,659	11,442	6,675	29,776	66.8
Massachusetts	49.8	36.9	13.3	8,712	6,449	2,319	17,480	47.9
Michigan	51.9	34.0	14.1	18,820	12,306	5,121	36,247	53.0
Minnesota	58.1	27.7	14.2	13,481	6,417	3,305	23,203	55.0
Mississippi	28.9	44.5	26.6	2,411	3,719	2,226	8,356	64.9



State	% of Loans with Insurance			Number of Loans			% of All Agency	
	PMI	FHA	VA	PMI	FHA	VA	All Loans with Insurance	
Montana	45.0	25.2	29.9	1,773	992	1,178	3,943	50.3
Nebraska	48.0	29.3	22.7	3,495	2,136	1,649	7,280	60.1
Nevada	35.8	33.0	31.2	7,391	6,822	6,437	20,650	57.2
New Hampshire	45.8	33.6	20.7	2,496	1,829	1,126	5,451	56.3
New Jersey	43.6	46.5	9.9	11,587	12,358	2,644	26,589	53.4
New Mexico	35.6	36.7	27.6	3,116	3,214	2,419	8,749	65.8
New York	45.1	43.5	11.3	12,034	11,613	3,027	26,674	48.6
North Carolina	41.2	27.6	31.2	19,178	12,829	14,540	46,547	60.4
North Dakota	53.7	22.1	24.2	1,022	420	461	1,903	55.5
Ohio	45.3	38.4	16.3	20,207	17,143	7,280	44,630	62.7
Oklahoma	35.7	38.3	26.0	5,283	5,664	3,842	14,789	65.0
Oregon	42.1	29.9	27.9	7,493	5,322	4,967	17,782	48.6
Pennsylvania	45.0	40.7	14.3	17,038	15,419	5,424	37,881	60.0
Rhode Island	37.7	48.7	13.6	1,538	1,988	554	4,080	58.7
South Carolina	38.0	32.8	29.2	9,987	8,620	7,670	26,277	61.9
South Dakota	43.6	30.4	26.0	1,288	898	770	2,956	56.7
Tennessee	35.9	37.3	26.8	10,825	11,235	8,073	30,133	59.7
Texas	40.0	38.9	21.1	42,762	41,603	22,494	106,859	59.2
Utah	50.6	33.1	16.3	10,517	6,875	3,389	20,781	52.8
Vermont	51.4	29.4	19.2	703	403	263	1,369	48.0
Virginia	35.0	27.1	37.9	14,811	11,503	16,056	42,370	65.3
Washington	40.7	27.6	31.8	15,145	10,262	11,821	37,228	54.0
West Virginia	33.8	40.4	25.8	1,454	1,741	1,111	4,306	61.8
Wisconsin	60.6	23.7	15.7	12,215	4,766	3,171	20,152	54.7
Wyoming	38.7	30.7	30.7	1,014	805	804	2,623	58.0

# State-Level Analysis: Purchase

For 1H 2019 agency purchase originations, 69.3 percent had either FHA, VA, or private mortgage insurance. Of these, 47.8 percent had PMI, and 52.2 percent were insured by the FHA or VA. The five states with the highest PMI share of purchase originations were the District of Columbia, Iowa, Michigan, Minnesota, and Wisconsin. The five states with the lowest PMI share of purchase originations were Alaska, Louisiana, Mississippi, Oklahoma, and West Virginia.

**Sources:** eMBS and the Urban Institute.

**Notes:** Data based on agency issuance in 1H 2019. National numbers also include Guam, Puerto Rico, and the Virgin Islands. The District of Columbia is considered a state for this analysis.

## Purchase Loans 1H 2019

State	% of Loans with Insurance			Number of Loans			% of All Agency Loans with Insurance	
	PMI	FHA	VA	PMI	FHA	VA	All	
National	47.8	34.4	17.8	465,974	334,931	173,489	974,394	69.3
Alabama	39.2	37.1	23.7	6,405	6,057	3,866	16,328	72.5
Alaska	37.6	20.1	42.3	818	437	920	2,175	75.1
Arizona	50.5	30.3	19.2	17,682	10,620	6,714	35,016	66.3
Arkansas	42.0	38.4	19.6	3,554	3,255	1,658	8,467	65.9
California	46.2	37.4	16.4	31,734	25,687	11,303	68,724	62.4
Colorado	49.8	27.8	22.4	12,796	7,133	5,750	25,679	64.3
Connecticut	50.6	40.3	9.0	4,575	3,647	818	9,040	69.0
Delaware	44.5	40.0	15.5	1,587	1,428	555	3,570	63.1
District of Columbia	81.9	7.9	10.2	1,159	112	144	1,415	65.1
Florida	40.8	39.6	19.6	36,077	35,005	17,329	88,411	66.8
Georgia	42.3	36.8	20.9	17,569	15,298	8,662	41,529	71.8
Hawaii	43.3	11.8	44.9	1,090	297	1,131	2,518	58.3
Idaho	50.3	29.0	20.6	3,874	2,237	1,590	7,701	62.7
Illinois	57.5	33.4	9.1	20,086	11,670	3,184	34,940	68.1
Indiana	50.6	38.0	11.4	12,012	9,026	2,700	23,738	70.0
Iowa	62.6	23.8	13.6	5,071	1,931	1,099	8,101	65.5
Kansas	51.9	30.2	17.9	4,398	2,563	1,519	8,480	72.1
Kentucky	44.7	39.3	16.0	5,731	5,034	2,046	12,811	68.8
Louisiana	39.0	43.3	17.6	4,809	5,341	2,175	12,325	69.7
Maine	49.2	33.4	17.5	1,459	990	518	2,967	64.5
Maryland	46.1	36.3	17.6	10,170	7,999	3,882	22,051	75.9
Massachusetts	57.5	34.1	8.5	7,579	4,494	1,119	13,192	63.3
Michigan	61.1	28.9	10.0	16,499	7,816	2,699	27,014	65.8
Minnesota	66.1	24.1	9.9	12,216	4,453	1,824	18,493	66.1
Mississippi	30.6	45.4	24.0	1,986	2,950	1,555	6,491	72.2



	% of Loans with Insurance			Number of Loans			% of All Agency Loans with Insurance	
State	PMI	FHA	VA	PMI	FHA	VA	All	
Missouri	48.9	34.5	16.6	10,064	7,104	3,419	20,587	67.6
Montana	53.7	23.0	23.3	1,633	701	708	3,042	60.1
Nebraska	54.9	26.4	18.7	3,232	1,555	1,099	5,886	69.1
Nevada	46.2	30.5	23.2	6,640	4,387	3,340	14,367	67.9
New Hampshire	54.2	30.7	15.1	2,237	1,268	623	4,128	67.1
New Jersey	49.8	42.9	7.3	10,268	8,855	1,515	20,638	63.6
New Mexico	41.0	37.1	21.9	2,827	2,556	1,511	6,894	73.0
New York	51.5	39.5	8.9	11,342	8,705	1,969	22,016	60.4
North Carolina	48.7	24.4	26.9	17,819	8,948	9,859	36,626	66.6
North Dakota	59.3	21.0	19.7	905	321	301	1,527	65.2
Ohio	51.9	35.6	12.5	18,881	12,937	4,558	36,376	71.3
Oklahoma	38.7	38.8	22.5	4,793	4,815	2,787	12,395	70.8
Oregon	54.7	26.6	18.7	6,836	3,322	2,337	12,495	58.7
Pennsylvania	50.6	38.8	10.6	15,714	12,062	3,294	31,070	68.4
Rhode Island	43.2	47.0	9.8	1,362	1,481	309	3,152	70.4
South Carolina	44.4	31.3	24.3	9,352	6,589	5,113	21,054	67.1
South Dakota	48.1	29.4	22.5	1,126	690	527	2,343	65.9
Tennessee	43.9	34.1	21.9	10,050	7,808	5,015	22,873	66.2
Texas	41.5	39.3	19.2	40,214	38,057	18,604	96,875	70.7
Utah	58.5	30.0	11.5	8,792	4,501	1,730	15,023	66.3
Vermont	58.3	26.1	15.6	642	288	172	1,102	57.1
Virginia	41.0	26.0	33.0	13,197	8,392	10,628	32,217	73.2
Washington	52.0	25.6	22.4	13,551	6,672	5,848	26,071	66.5
West Virginia	38.2	39.4	22.4	1,284	1,327	754	3,365	68.7
Wisconsin	68.8	20.0	11.3	10,945	3,175	1,793	15,913	67.1
Wyoming	45.4	29.6	25.0	912	594	501	2,007	65.8

# State-Level Analysis: Refinance

For 2016 agency refinance originations, 37.2 percent had either FHA, VA or private mortgage insurance. Of these, 18.4 percent had PMI, and 81.6 percent were either FHA or VA insured. The five states with the largest PMI share of refinance originations were Illinois, Iowa, North Dakota, Utah and Wisconsin. The five states with the lowest PMI share of refinance originations were Alaska, Florida, Hawaii, Idaho and Tennessee.

**Sources:** eMBS and the Urban Institute.

**Notes:** Data based on agency issuance in 1H 2019. National numbers also include Guam, Puerto Rico, and the Virgin Islands. The District of Columbia is considered a state for this analysis.

## Refinances 1H 2019

State	% of Loans with Insurance			Number of Loans			% of All Agency Loans with Insurance	
	PMI	FHA	VA	PMI	FHA	VA	All	
National	18.4	42.3	39.3	52,274	120,327	111,541	284,142	37.2
Alabama	17.1	38.6	44.2	739	1,665	1,907	4,311	50.5
Alaska	9.9	21.5	68.7	56	122	390	568	42.4
Arizona	18.8	39.4	41.8	2,489	5,208	5,534	13,231	42.4
Arkansas	20.0	39.6	40.3	408	806	821	2,035	44.1
California	20.4	41.9	37.7	8,025	16,499	14,810	39,334	30.4
Colorado	16.3	40.0	43.7	2,079	5,113	5,591	12,783	39.5
Connecticut	25.6	50.0	24.4	447	874	427	1,748	35.9
Delaware	17.4	40.9	41.7	184	434	442	1,060	44.5
District of Columbia	24.0	47.6	28.4	71	141	84	296	24.3
Florida	10.5	44.1	45.3	2,120	8,877	9,118	20,115	43.3
Georgia	12.4	45.4	42.1	1,570	5,733	5,314	12,617	46.9
Hawaii	8.2	14.9	76.9	95	174	895	1,164	39.0
Idaho	10.9	37.9	51.2	281	979	1,322	2,582	37.5
Illinois	31.5	45.1	23.4	2,602	3,731	1,936	8,269	33.2
Indiana	16.0	52.2	31.8	1,044	3,399	2,074	6,517	44.3
Iowa	29.6	39.5	30.9	562	748	586	1,896	35.1
Kansas	18.3	44.3	37.4	355	861	728	1,944	42.6
Kentucky	16.6	44.1	39.3	542	1,436	1,280	3,258	40.9
Louisiana	21.9	43.6	34.5	680	1,352	1,069	3,101	42.1
Maine	14.1	39.6	46.3	134	377	441	952	38.5
Maryland	19.3	44.6	36.2	1,489	3,443	2,793	7,725	49.9
Massachusetts	26.4	45.6	28.0	1,133	1,955	1,200	4,288	27.4
Michigan	25.1	48.6	26.2	2,321	4,490	2,422	9,233	33.8
Minnesota	26.9	41.7	31.4	1,265	1,964	1,481	4,710	33.1
Mississippi	22.8	41.2	36.0	425	769	671	1,865	48.0

MORE >

State	% of Loans with Insurance			Number of Loans			All	% All Agency Loans with Insurance
	PMI	FHA	VA	PMI	FHA	VA		
Missouri	23.0	43.7	33.2	1,308	2,482	1,886	5,676	39.3
Montana	15.5	32.3	52.2	140	291	470	901	32.4
Nebraska	18.9	41.7	39.5	263	581	550	1,394	38.7
Nevada	12.0	38.8	49.3	751	2,435	3,097	6,283	42.0
New Hampshire	19.6	42.4	38.0	259	561	503	1,323	37.5
New Jersey	22.2	58.9	19.0	1,319	3,503	1,129	5,951	34.4
New Mexico	15.6	35.5	48.9	289	658	908	1,855	48.2
New York	14.9	62.4	22.7	692	2,908	1,058	4,658	25.3
North Carolina	13.7	39.1	47.2	1,359	3,881	4,681	9,921	44.8
North Dakota	31.1	26.3	42.6	117	99	160	376	34.6
Ohio	16.1	51.0	33.0	1,326	4,206	2,722	8,254	40.9
Oklahoma	20.5	35.5	44.1	490	849	1,055	2,394	45.6
Oregon	12.4	37.8	49.7	657	2,000	2,630	5,287	34.6
Pennsylvania	19.4	49.3	31.3	1,324	3,357	2,130	6,811	38.4
Rhode Island	19.0	54.6	26.4	176	507	245	928	37.5
South Carolina	12.2	38.9	49.0	635	2,031	2,557	5,223	47.1
South Dakota	26.4	33.9	39.6	162	208	243	613	37.0
Tennessee	10.7	47.2	42.1	775	3,427	3,058	7,260	45.5
Texas	25.5	35.5	39.0	2,548	3,546	3,890	9,984	22.9
Utah	30.0	41.2	28.8	1,725	2,374	1,659	5,758	34.5
Vermont	22.8	43.1	34.1	61	115	91	267	28.9
Virginia	15.9	30.6	53.5	1,614	3,111	5,428	10,153	48.8
Washington	14.3	32.2	53.5	1,594	3,590	5,973	11,157	37.6
West Virginia	18.1	44.0	37.9	170	414	357	941	45.4
Wisconsin	30.0	37.5	32.5	1,270	1,591	1,378	4,239	32.4
Wyoming	16.6	34.3	49.2	102	211	303	616	41.8



# Credit Box

## Distribution: FICO

In 1H, 2019, GSE borrowers with PMI (PMI borrowers) had higher median FICO scores than FHA and VA borrowers but lower FICO scores than GSE borrowers without PMI. The median FICO score for purchase originations was 732 for PMI borrowers, 666 for FHA, and 712 for VA borrowers. Over half (54.1 percent) of PMI purchase borrowers had FICO scores at or above 740, compared with 9.7 percent of FHA borrowers and 37.1 percent of VA borrowers. A majority (61.6 percent) of FHA purchase borrowers had FICO scores below 680, compared to 33.5 percent of VA borrowers and 9.0 percent of PMI borrowers. Median PMI FICO scores were higher than median FHA or VA FICOs in the refinance space.

**Sources:** eMBS and the Urban Institute.

**Notes:** FHA = Federal Housing Administration; GSE = government-sponsored enterprise; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. "Other" refers to loans insured by the US Department of Housing and Urban Development's Office of Public and Indian Housing and the US Department of Agriculture's Rural Development. Data based on agency issuance in 1H 2019.

### All Loans 1H 2019

	Loan count	≤ 619	620–679	680–739	≥ 740	Median	Mean
All	4,726,923	3.0	21.4	31.1	44.4	728	724
PMI	1,085,933	0.1	9.1	36.8	54.0	744	740
FHA	928,973	11.8	50.6	28.4	9.2	665	670
VA	538,539	5.5	29.7	31.3	33.6	705	707
GSE non-PMI	2,093,571	0.2	12.3	29.0	58.5	753	744
Other	104,848	2.3	36.4	39.4	21.9	695	699

### Purchase Loans 1H 2019

	Loan count	≤ 619	620–679	680–739	≥ 740	Median	Mean
All	3,277,151	2.9	21.2	29.8	46.1	732	726
PMI	3,277,151	0.0	9.0	36.8	54.1	732	726
FHA	734,815	10.4	51.2	28.7	9.7	666	672
VA	371,754	4.7	28.9	29.3	37.1	712	712
GSE non-PMI	1,074,567	0.0	7.9	23.6	68.5	767	756
Other	103,532	2.2	36.4	39.4	21.9	695	699

### Refinance Loans 1H 2019

	Loan count	≤ 619	620–679	680–739	≥ 740	Median	Mean
All	1,449,772	3.3	22.1	34.0	40.5	721	719
PMI	75,267	0.8	10.5	36.6	52.2	741	735
FHA	194,158	17.5	48.2	27.1	7.2	660	663
VA	166,785	7.4	31.8	36.0	24.7	694	696
GSE non-PMI	1,019,004	0.4	17.0	34.8	47.8	736	732
Other	1,316	9.2	30.7	33.7	26.4	697	695

# Credit Box

## Distribution: LTV

In 1H 2019, GSE borrowers with PMI (PMI borrowers) had lower median LTV ratios than FHA and VA borrowers but higher LTV ratios than GSE borrowers without PMI. The median LTV was 95 percent for PMI purchase borrowers, 98.2 percent for FHA borrowers, and 100 percent for VA borrowers. Most FHA and VA purchase borrowers, 81.9 and 85.6 percent, respectively, had LTV ratios over 95 percent, compared with 23.4% for PMI borrowers. VA dominated the high-LTV refinance space; 45.7 percent of VA refinances had LTVs 95.0 percent or above, compared to 3.5 percent for FHA and 3.9 percent for PMI.

**Sources:** eMBS and the Urban Institute.

**Notes:** FHA = Federal Housing Administration; GSE = government-sponsored enterprise; LTV = loan-to-value ratio; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. "Other" refers to loans insured by the US Department of Housing and Urban Development's Office of Public and Indian Housing and the US Department of Agriculture's Rural Development. Data based on agency issuance in 1H 2019.

### All Loans 1H 2019

	Loan count	≤ 80%	80.01–90%	90.01–95%	≥ 95.01%	Median	Mean
All	4,740,542	46.7	12.2	12.7	28.3	85.0	82.0
PMI	1,086,361	0.0	34.6	43.3	22.1	95.0	92.9
FHA	932,317	8.6	15.5	9.2	66.6	96.5	92.0
VA	547,127	9.1	9.9	6.9	74.2	100.0	95.3
GSE non-PMI	2,093,976	98.9	0.3	0.2	0.6	74.0	67.4
Other	105,723	1.4	3.2	5.5	89.9	101.0	99.0

### Purchase Loans 1H 2019

	Loan count	≤ 80%	80.01–90%	90.01–95%	≥ 95.01%	Median	Mean
All	3,280,075	33.3	11.7	16.9	38.1	95.0	87.4
PMI	1,011,082	0.0	31.9	44.7	23.4	95.0	93.2
FHA	735,947	2.3	5.1	10.7	81.9	96.5	95.2
VA	372,349	4.2	5.1	5.1	85.6	100.0	98.2
GSE non-PMI	1,074,889	98.3	0.3	0.3	1.1	80.0	71.5
Other	104,010	1.3	3.0	5.4	90.4	101.0	99.2

### Refinance Loans 1H 2019

	Loan count	≤ 80%	80.01–90%	90.01–95%	≥ 95.01%	Median	Mean
All	1,460,467	78.2	13.5	2.8	5.5	74.0	69.9
PMI	75,279	0.0	72.1	23.9	3.9	88.0	88.8
FHA	196,370	34.8	58.6	3.1	3.5	84.7	79.8
VA	174,778	21.1	21.9	11.3	45.7	93.6	89.1
GSE non-PMI	1,019,087	99.5	0.3	0.1	0.1	68.0	63.2
Other	1,713	19.5	27.0	16.6	36.9	91.4	89.4

# Credit Box

## Distribution: DTI

In 1H 2019, GSE borrowers with PMI had lower median DTI ratios than FHA and VA borrowers but slightly higher DTI ratios than GSE borrowers without PMI. The median purchase DTI was 39.0 percent for PMI borrowers, 44.6 percent for FHA borrowers, and 42.2 percent for VA borrowers. A significant share of PMI purchase borrowers, 40.4 percent, had DTI ratios lower than 36 percent, and the corresponding shares for FHA and VA purchase borrowers were 20.3 percent and 28.4 percent, respectively. In addition, 56.9 percent and 46.9 percent of FHA and VA borrowers, respectively, had DTI ratios over 43 percent in 1H 2019, compared with 28.9 percent of PMI borrowers. Median PMI DTI was lower than the median FHA or VA DTI in the refinance space.

**Sources:** eMBS and the Urban Institute.

**Notes:** DTI = debt-to-income ratio; FHA = Federal Housing Administration; GSE = government-sponsored enterprise; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. "Other" refers to loans insured by the US Department of Housing and Urban Development's Office of Public and Indian Housing and the US Department of Agriculture's Rural Development. Data based on agency issuance in 1H 2019.

### All Loans 1H 2019

	Loan count	≤ 36%	36.01–43%	43.01–48%	≥ 48.01%	Median	Mean
All	4,681,890	38.6	25.9	19.9	15.5	39.9	38.3
PMI	1,084,296	40.7	30.5	21.2	7.5	39.0	37.6
FHA	914,048	21.2	22.5	21.1	35.2	44.5	43.3
VA	518,041	29.0	24.4	18.7	27.9	42.1	41.4
GSE non-PMI	2,083,860	47.1	24.7	19.5	8.7	37.0	36.0
Other	105,056	48.2	41.9	9.7	0.2	36.3	35.2

### Purchase Loans 1H 2019

	Loan count	≤ 36%	36.01–43%	43.01–48%	≥ 48.01%	Median	Mean
All	3,277,760	37.8	26.4	19.8	16.1	40.0	38.6
PMI	1,011,068	40.4	30.7	21.4	7.5	39.0	37.6
FHA	735,895	20.3	22.7	21.2	35.7	44.6	43.5
VA	369,379	28.4	24.7	18.7	28.3	42.2	41.6
GSE non-PMI	1,075,741	49.4	24.0	18.6	8.0	37.0	35.4
Other	103,876	48.1	42.0	9.8	0.1	36.3	35.3

### Refi Loans 1H 2019

	Loan Count	≤36%	36.01–43%	43.01–48%	≥48.01%	Median	Mean
All	1,404,130	40.7	24.9	20.2	14.2	39.0	37.8
PMI	73,228	45.4	28.3	18.4	8.0	38.0	36.8
FHA	178,153	24.8	21.6	20.4	33.2	44.0	42.4
VA	148,662	30.6	23.7	18.7	27.0	41.8	40.9
GSE non-PMI	1,008,119	44.7	25.4	20.5	9.4	38.0	36.6
Other	1,180	61.1	28.4	5.1	5.4	32.0	31.4



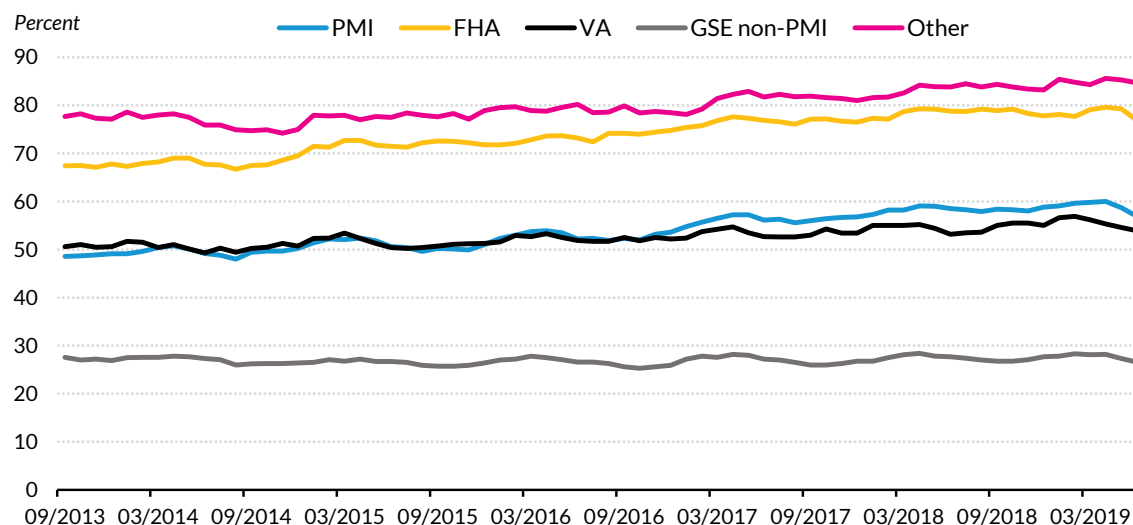
# Credit Box: First-Time Homebuyer

Within the July 2019 agency purchase market, 56.9 percent of GSE borrowers with PMI, 76.9 percent of FHA borrowers, 53.9 percent of VA borrowers, and 26.6 percent of non-PMI GSE borrowers were first-time homebuyers. For 1H 2019 originations, 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, higher LTV ratio, slightly lower DTI ratio, and a higher interest rate.

**Sources:** eMBS, FHA, and the Urban Institute.

**Notes:** FHA = Federal Housing Administration; GSE = government-sponsored enterprise; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. "Other" refers to loans insured by the US Department of Housing and Urban Development's Office of Public and Indian Housing and the US Department of Agriculture's Rural Development. Data based on agency originations in 1H 2019.

## First-Time Homebuyer Share



	PMI		FHA		VA		GSE non-PMI		Other	
	First-time	Repeat	First-time	Repeat	First-time	Repeat	First-time	Repeat	First-time	Repeat
Loan amount (\$ thousands)	229.2	270.2	204.6	225.5	246.0	297.6	241.7	256.1	142.9	163.0
FICO score	733.3	745.0	670.6	676.8	699.2	728.0	743.0	759.3	696.5	709.7
LTV (%)	94.3	92.5	95.6	94.0	99.8	96.3	73.9	69.5	99.2	99.1
DTI (%)	37.7	38.9	43.3	44.3	41.0	42.3	35.0	35.9	35.2	35.9
Note rate (%)	4.9	4.8	4.9	4.8	4.7	4.5	4.7	4.6	4.7	4.7

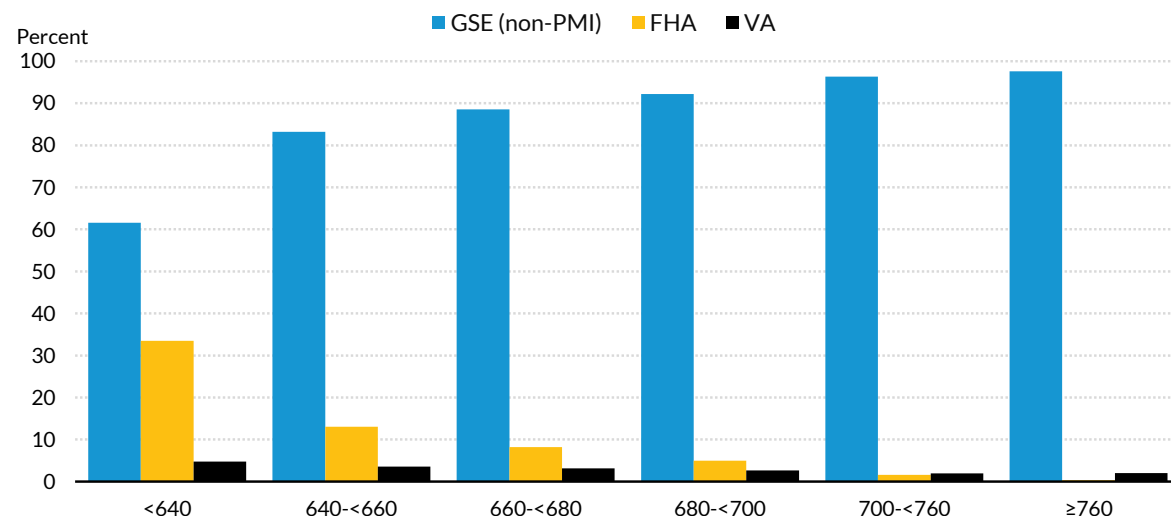
# Channel by FICO/ LTV: All Loans

For all 1H 2019 originations, borrowers with LTV ratios at or below 80 percent were highly likely to choose non-PMI GSE mortgages over any other channel regardless of FICO score. Borrowers with LTVs from 80.01 to 95 percent and FICO scores above 680 were more likely to choose GSE loans with PMI over FHA or VA loans. Borrowers with FICO scores below 660 were more likely to choose FHA loans over PMI or VA loans, except for when having an LTV greater than 97, where borrowers are more likely to choose VA loans. FHA loans dominated the 95.01-to-97 LTV and under 700 FICO market; borrowers in this LTV/FICO band were much more likely to choose FHA over PMI or VA. In the above-97 LTV market, VA loans dominated all FICO buckets.

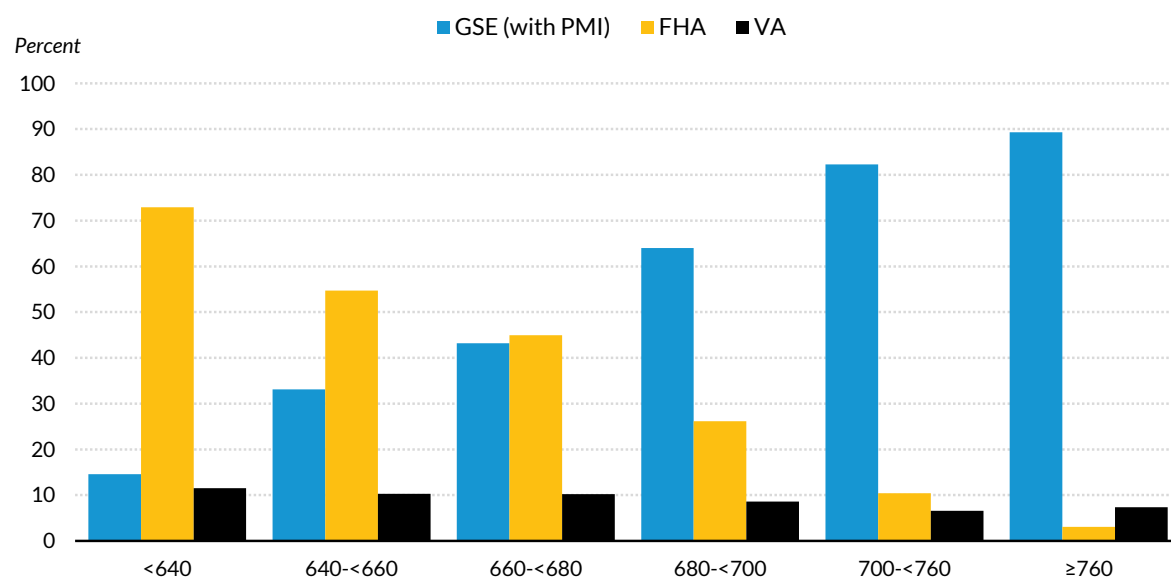
Sources: eMBS and the Urban Institute.

Notes: FHA = Federal Housing Administration; GSE = government-sponsored enterprise; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data based on agency originations in 1H 2019.

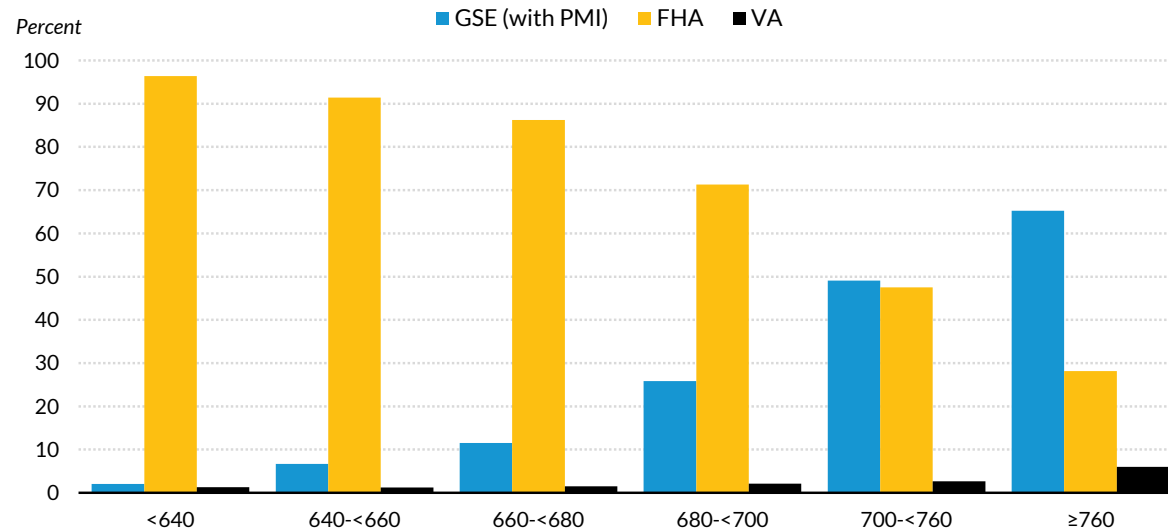
FICO Distribution by Channel for LTV ≤ 80



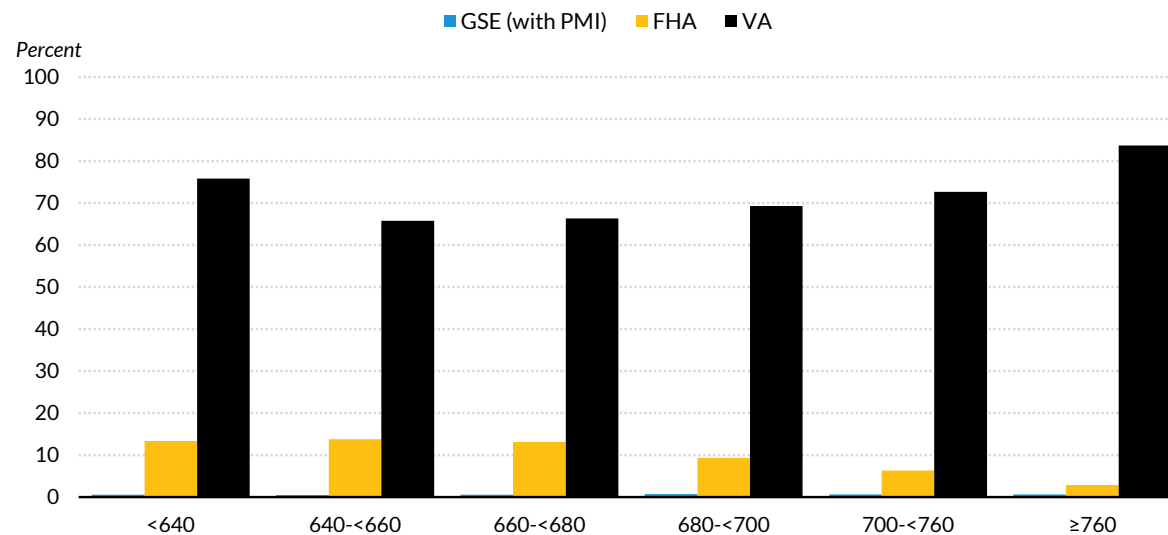
FICO Distribution by Channel for LTV 80.01–95



### FICO Distribution by Channel for LTV 95.01-97



### FICO Distribution by Channel for LTV >97



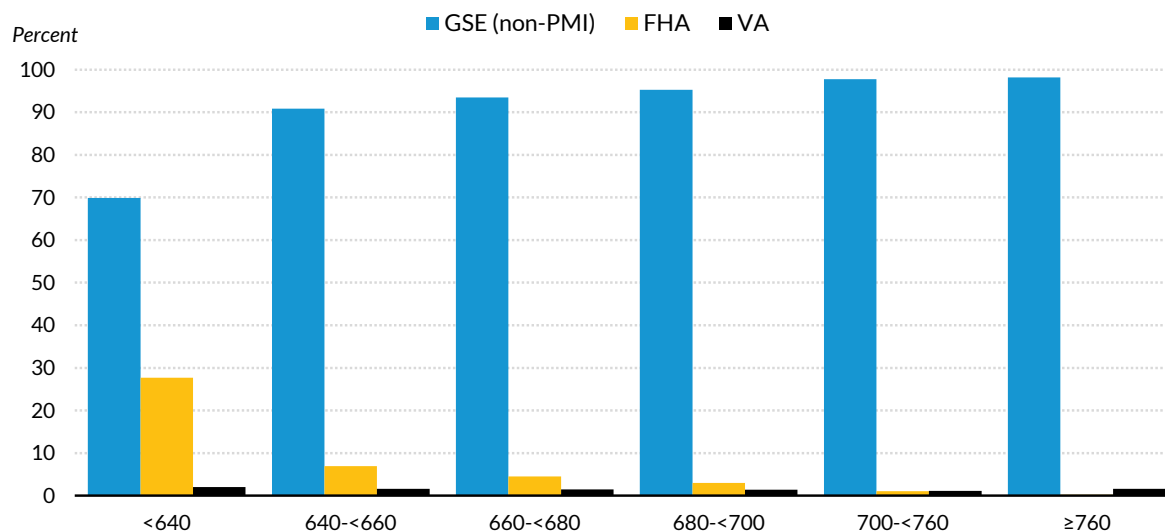
# Channel by FICO/ LTV: Purchase

For 1H 2019 purchase originations, borrowers with LTV ratios at or below 80 percent were highly likely to choose non-PMI GSE mortgages over any other channel regardless of FICO score. Borrowers with LTVs from 80.01 to 95 percent and FICO scores above 660 were more likely to choose GSE loans with PMI over FHA or VA loans, while FHA dominated the under 640 FICO bucket. FHA also dominated the 95.01-97 LTV/under 700 FICO market; borrowers in this segment were much more likely to choose FHA over PMI or VA. Across the FICO spectrum, VA dominated the above 97 LTV lending segment.

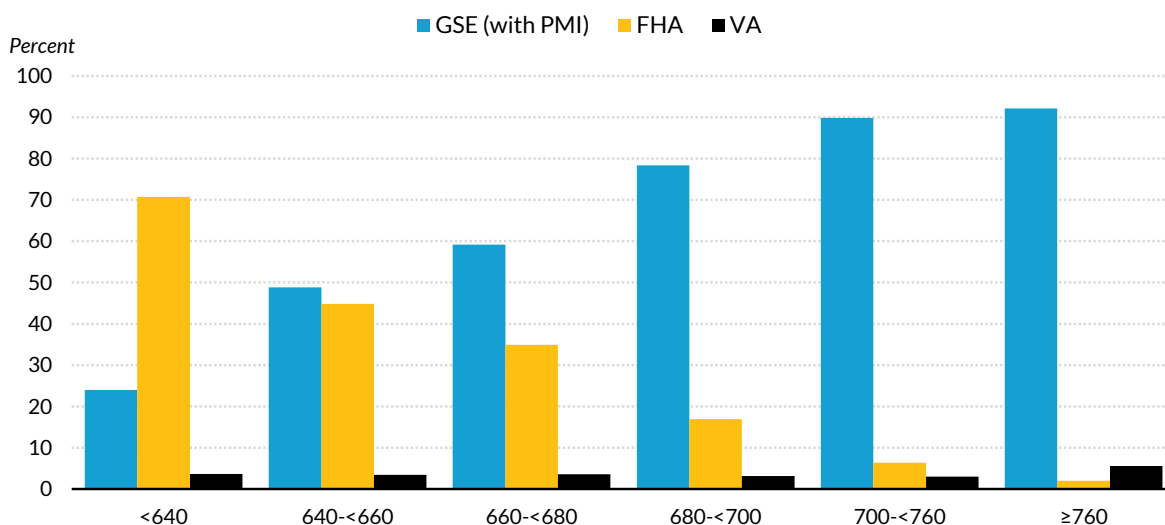
**Sources:** eMBS and the Urban Institute.

**Notes:** FHA = Federal Housing Administration; GSE = government-sponsored enterprise; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data based on agency originations in 1H 2019.

FICO Distribution by Channel for LTV ≤ 80

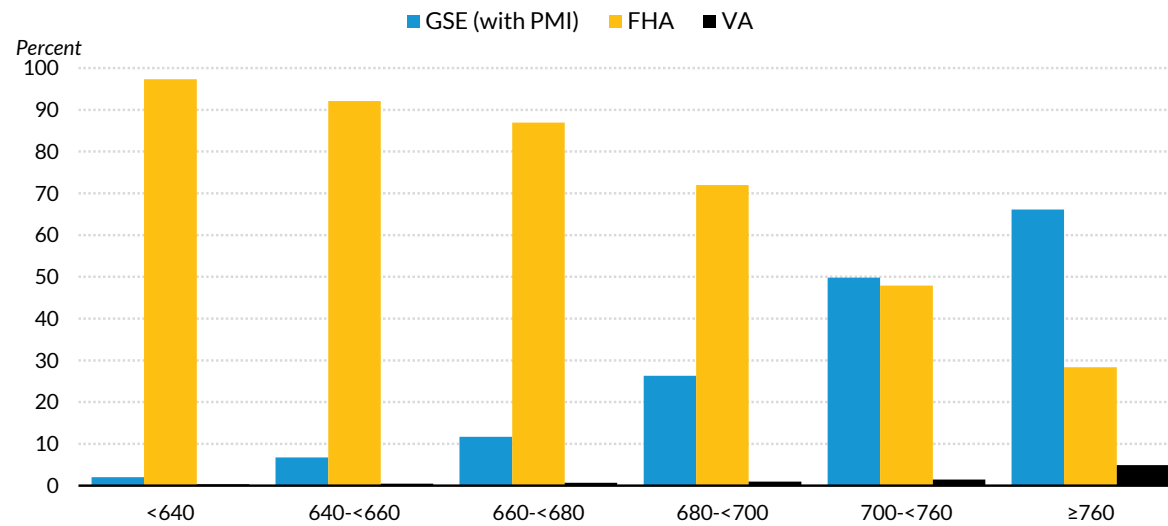


FICO Distribution by Channel for LTV 80.01–95

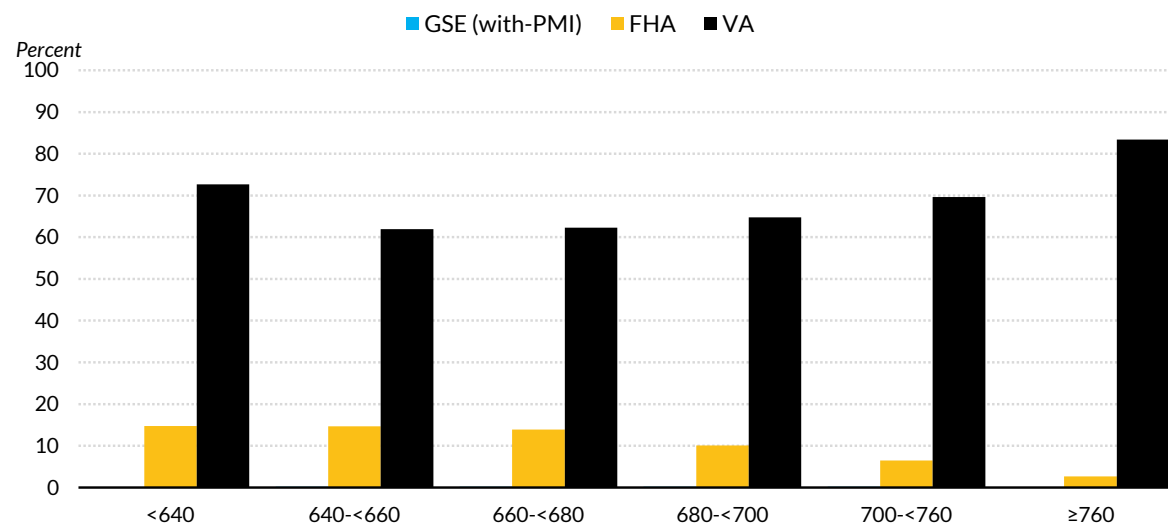




FICO Distribution by Channel for LTV 95.01–97



FICO Distribution by Channel for LTV >97



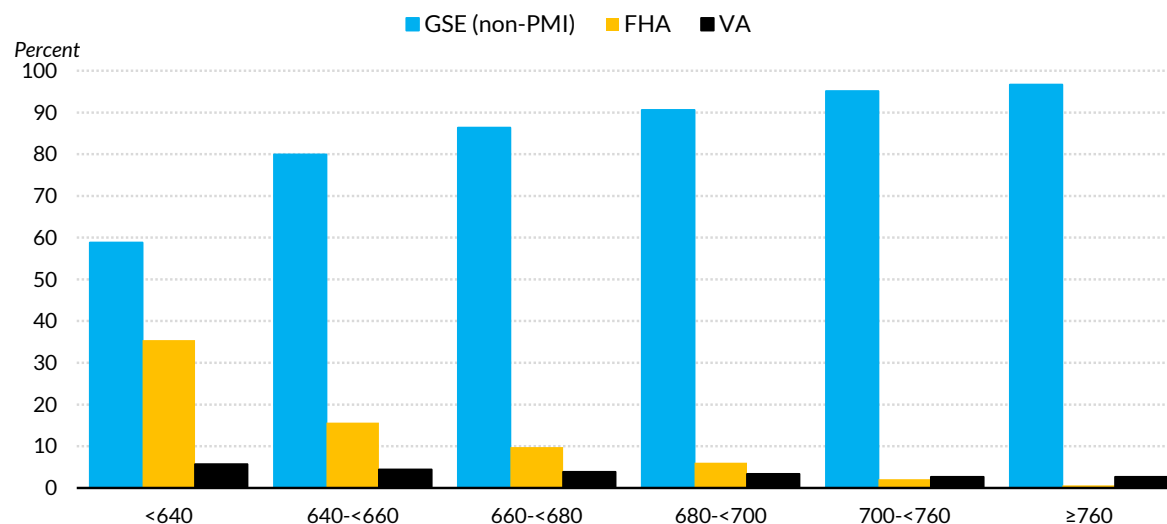
# Channel by FICO/ LTV: Refinance

For 1H 2019 refinance originations, borrowers with LTV ratios at or below 80 percent were highly likely to choose non-PMI GSE mortgages over any other channel regardless of FICO score. Borrowers with LTVs from 80.01 to 95 percent and FICO scores above 700 were more likely to choose GSE loans with PMI over FHA or VA loans. In the 95-97 LTV bucket, VA is very popular for refi borrowers; it was the most common choice for borrowers with FICOs above 680 and a close second behind FHA for lower FICO borrowers. In the over 97 LTV market, VA loans dominated.

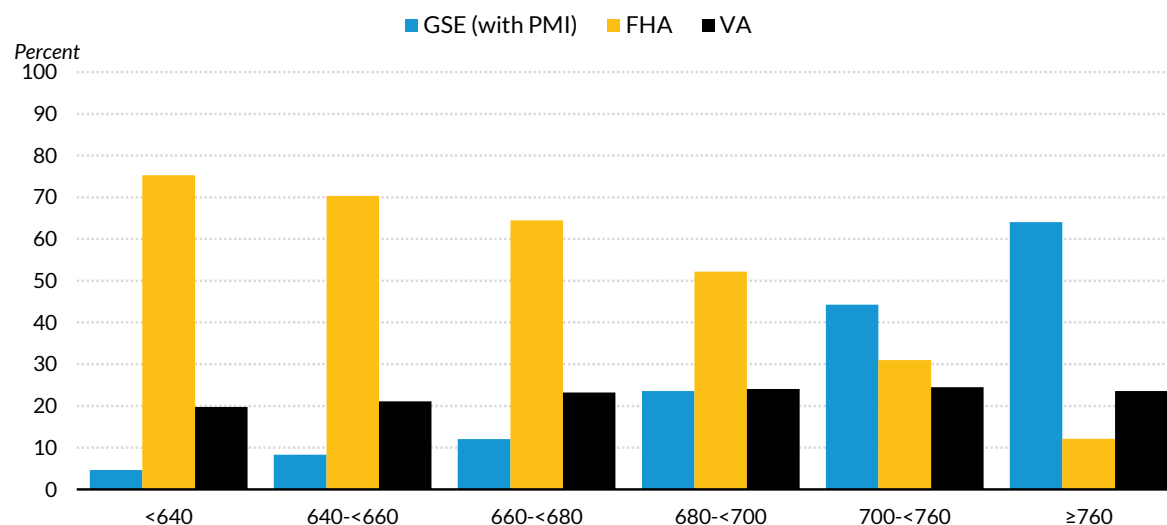
**Sources:** eMBS and the Urban Institute.

**Notes:** FHA = Federal Housing Administration; GSE = government-sponsored enterprise; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data based on agency originations in 1H 2019.

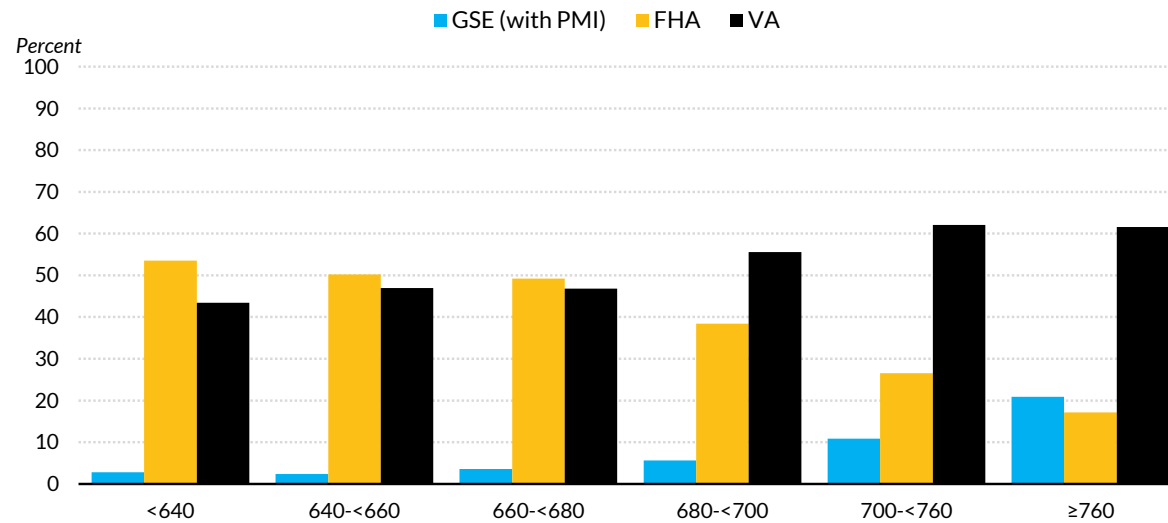
FICO Distribution by Channel for LTV ≤ 80



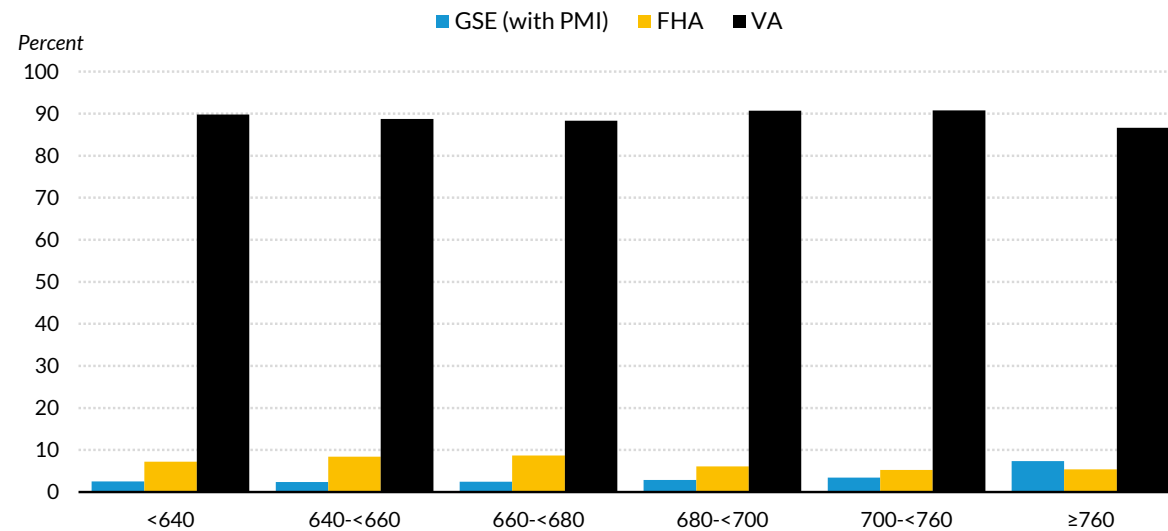
FICO Distribution by Channel for LTV 80.01–95



### FICO Distribution by Channel for LTV 95.01–97



### FICO Distribution by Channel for LTV >97





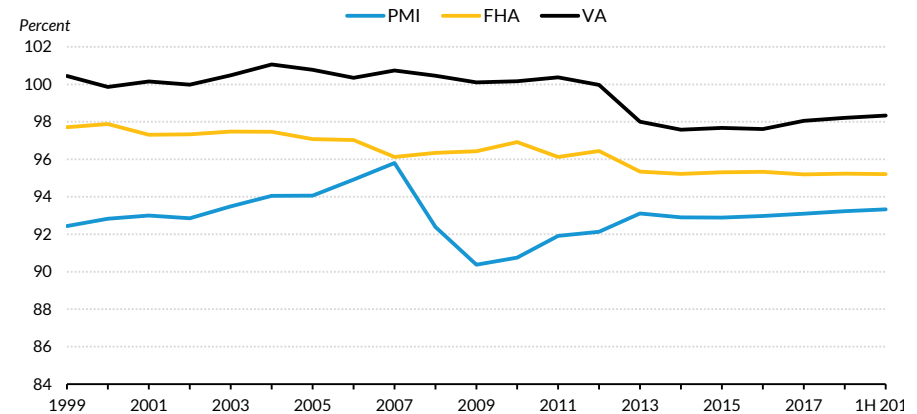
# Average LTV, DTI, FICO Trends

Conventional loans with PMI have higher FICO scores and lower LTV ratios than FHA or VA loans. Postcrisis, conventional loans with PMI have exhibited lower DTI ratios than FHA- and VA-insured loans. DTIs have increased for all three channels because house price appreciation has exceeded wage growth over the last several years, forcing homebuyers to borrow more in relation to their incomes.

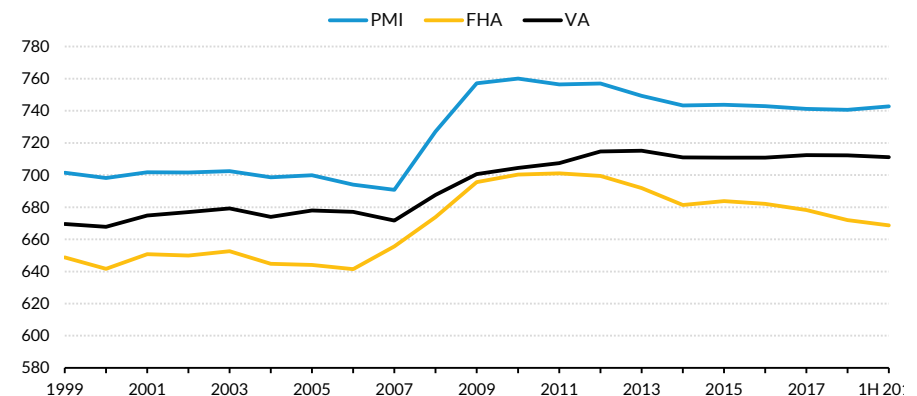
**Sources:** Prior to 2016, data are from the 2017 Mortgage Insurance at a Glance; after that date, they are from eMBS and Urban Institute.

**Notes:** DTI = debt-to-income ratio; FHA = Federal Housing Administration; LTV = loan-to-value ratio; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Private-label securities are excluded. "Conventional with PMI" includes government-sponsored enterprise and portfolio loans with and without PMI. Based on purchase loans only.

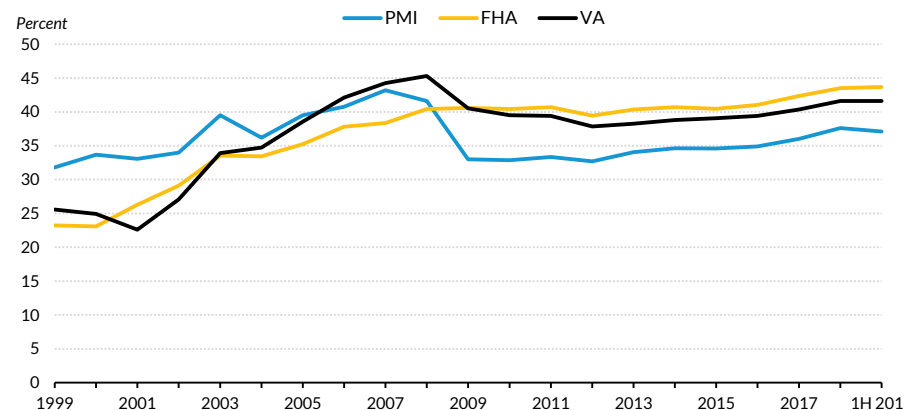
Average LTVs: FHA, PMI, VA



Average FICO Score: FHA, PMI, VA



Average DTI Ratios: FHA, PMI, VA





# Agency and Non-Agency Mortgage Market

Black Knight data (which include agency issuance plus bank portfolio loans and some private-label securities) show that from 1999 to 1H 2019, 63.2 percent of loans originated were conventional loans without PMI, 15.0 percent were conventional loans with PMI, 13.1 percent were FHA loans, and 4.3 percent were VA loans. Conventional loans without mortgage insurance have larger balances than loans with mortgage insurance (jumbo loans are less likely to have mortgage insurance). In recent years, conventional loans with PMI had lower FICO scores, similar DTI ratios, and higher LTV ratios than conventional loans without mortgage insurance.

**Sources:** Black Knight and the Urban Institute.

**Notes:** DTI = debt-to-income ratio; FHA = Federal Housing Administration; LTV = loan-to-value ratio; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. "Conventional PMI" include government-sponsored enterprise and portfolio loans with PMI. "Other" refers to loans insured by the US Department of Housing and Urban Development's Office of Public and Indian Health and the US Department of Agriculture's Rural Development.

		% of all loans	Loan size (\$ thousands, average)	Note rate (%)	LTV	FICO	DTI
1999-2004	Conventional PMI	16.0	128.3	6.4	89.6	707	34
	FHA	10.3	107.1	6.8	97.5	643	37
	VA	3.0	119.8	6.3	100.0	676	39
	Conventional non-PMI	67.3	137.0	5.9	70.5	734	33
	Other	3.5	106.4	7.3	80.0	627	38
	All	100.0	128.6	6.1	77.3	719	33
2005	Conventional PMI	12.4	151.5	6.0	88.6	703	37
	FHA	3.8	117.5	6.0	97.3	634	39
	VA	1.3	149.7	5.8	100.1	671	39
	Conventional non-PMI	71.9	172.0	6.0	74.2	716	37
	Other	10.7	115.0	7.5	76.9	625	39
	All	100.0	158.4	6.0	77.1	703	37
2006	Conventional PMI	12.9	152.0	6.6	88.4	702	38
	FHA	3.4	126.3	6.5	96.6	633	37
	VA	1.1	166.7	6.4	100.7	673	39
	Conventional non-PMI	72.0	168.4	6.8	73.4	710	37
	Other	10.6	138.6	7.9	79.4	620	40
	All	100.0	160.0	6.8	76.9	697	38
2007	Conventional PMI	21.2	171.0	6.5	90.0	701	38
	FHA	5.8	138.7	6.5	96.4	623	37
	VA	1.4	175.7	6.4	100.0	668	37
	Conventional non-PMI	66.9	175.0	6.5	71.5	722	37
	Other	4.7	160.2	7.3	80.0	626	39
	All	100.0	169.8	6.5	78.1	708	37
2008	Conventional PMI	19.0	191.2	6.0	85.0	741	38
	FHA	25.2	157.5	6.0	96.4	656	39
	VA	3.4	185.9	6.0	100.0	682	40
	Conventional non-PMI	50.3	192.0	5.9	70.0	754	34
	Other	2.1	98.0	5.8	78.2	689	33
	All	100.0	177.8	6.0	80.0	727	36

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		Loan size (\$ thousands, average)					
		% of all loans	Note rate (%)	LTV	FICO	DTI	
2009-10	Conventional PMI	7.2	203.0	4.9	88.7	761	33
	FHA	27.2	158.5	5.0	96.7	691	40
	VA	5.0	185.1	4.9	100.0	703	41
	Conventional non-PMI	59.2	195.0	4.8	68.9	773	32
	Other	1.4	131.9	4.9	88.5	726	31
	All	100.0	180.8	4.9	79.4	753	34
2011-16	Conventional PMI	15.4	198.0	4.1	92.8	752	34
	FHA	17.0	158.3	3.9	96.1	687	39
	VA	7.7	203.0	3.8	98.9	712	37
	Conventional non-PMI	56.9	196.4	3.9	70.0	771	31
	Other	3.0	144.3	4.0	98.9	702	34
	All	100.0	186.1	3.9	80.0	751	34
2017-19	Conventional PMI	18.7	236.1	4.5	92.7	748	38
	FHA	19.0	193.7	4.5	96.7	671	43
	VA	10.8	240.0	4.3	99.6	710	40
	Conventional non-PMI	49.2	234.0	4.4	72.4	762	35
	Other	2.3	145.6	4.5	99.8	697	35
	All	100.0	222.4	4.4	80.0	738	37
All	Conventional PMI	15.0	161.1	5.8	90.0	727	36
	FHA	13.1	140.2	5.0	96.7	673	39
	VA	4.3	176.1	4.5	100.0	701	39
	Conventional non-PMI	63.2	166.6	5.5	70.9	745	34
	Other	4.3	128.0	6.8	80.0	647	37
	All	100.0	160.0	5.5	78.7	727	35



# GSE Loan-Level Credit Data





# Composition

From 1999 to 2018, 22.1 percent of 30-year fixed-rate, full-documentation, fully amortizing GSE loans had private mortgage insurance. This share was as low as 9.0 percent for 2009–10 originations and was 27.2 percent for 2011–18 originations. From 1999 to 2018, the average PMI coverage was 25.0 percent. Compared with GSE loans without PMI, GSE loans with PMI are slightly smaller, are more heavily purchase, have higher LTV ratios, lower FICO scores, and have higher DTI ratios. These data do not include streamlined refinance programs such as the Home Affordable Refinance Program. Thus, this dataset contains a smaller share of refinance loans than do the data used for pages 7 to 9.

**Sources:** Fannie Mae, Freddie Mac, and the Urban Institute.

**Notes:** DTI = debt-to-income ratio; GSE = government-sponsored enterprise; LTV = loan-to-value ratio; PMI = private mortgage insurance. GSE credit data include 30-year fixed-rate, full-documentation, fully amortizing mortgage loans only. Fannie Mae data include loans originated from Q1 1999 through Q2 2018; performance data for these loans is available through Q2, 2019. Freddie Mac data includes loans originated from Q1 1999 to Q4 2017; performance data for these loans is available through Q2 2018.

## Loan Count and Share for GSE Loans, by PMI Category

Origination year	Loan count		Share		Average MI Coverage
	PMI	Non-PMI	PMI	Non-PMI	
1999-2004	4,313,324	14,147,080	23.4	76.6	24.5%
2005	361,765	2,090,253	14.8	85.2	24.7%
2006	286,196	1,674,012	14.6	85.4	24.6%
2007	424,469	1,673,726	20.2	79.8	24.7%
2008	448,829	1,700,966	20.9	79.1	23.8%
2009-10	481,633	4,843,210	9.0	91.0	23.0%
2011-18	4,440,577	11,866,280	27.2	72.8	26.0%
All	10,756,793	37,995,527	22.1	77.9	25.0%

## Origination Loan Characteristics, by PMI Category

Origination year	Loan size (\$ thousands, avg.)		Note rate (%)		Purchase (%)		LTV (%)		FICO		DTI (%)	
	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI
1999-2004	139.0	158.1	6.9	6.5	65.7	32.7	91.1	68.5	703.8	724.2	35.8	33.0
2005	157.2	186.6	6.0	5.9	65.2	39.8	91.2	68.1	707.4	726.0	38.6	36.5
2006	166.9	193.2	6.6	6.4	65.9	44.9	91.2	68.5	706.2	725.1	39.9	37.4
2007	183.1	199.9	6.6	6.4	61.9	39.3	91.4	68.5	707.9	725.8	40.1	37.4
2008	206.0	220.7	6.2	6.1	70.0	36.6	91.0	67.7	733.1	742.3	39.7	37.0
2009-10	217.4	235.9	4.9	4.9	63.3	28.0	90.2	66.2	758.9	763.5	32.7	32.9
2011-18	234.8	241.3	4.2	4.1	82.8	43.7	92.1	69.0	750.6	757.5	34.5	33.5
All	187.9	201.8	5.6	5.5	72.7	36.9	91.5	68.3	727.1	740.6	35.6	33.9

# Defaults: 180+ Days Delinquent

GSE loans with PMI tend to go 180 or more days delinquent more frequently than GSE loans without PMI. From 1999 to 2018, 3.1 percent of GSE loans without PMI went 180 or more days delinquent, versus 4.9 percent of loans with PMI. For the highest delinquency issue year, 2007, the 180 or more days delinquency rates (+D180) were 12.0 percent and 21.3 percent, respectively. For 2011–18 vintages, the +D180 rate is 0.3 percent for GSE loans without PMI and 0.5 percent for those with PMI. GSE loans with PMI have higher LTV ratios and weaker credit than non-PMI GSE loans, hence the higher default rates.

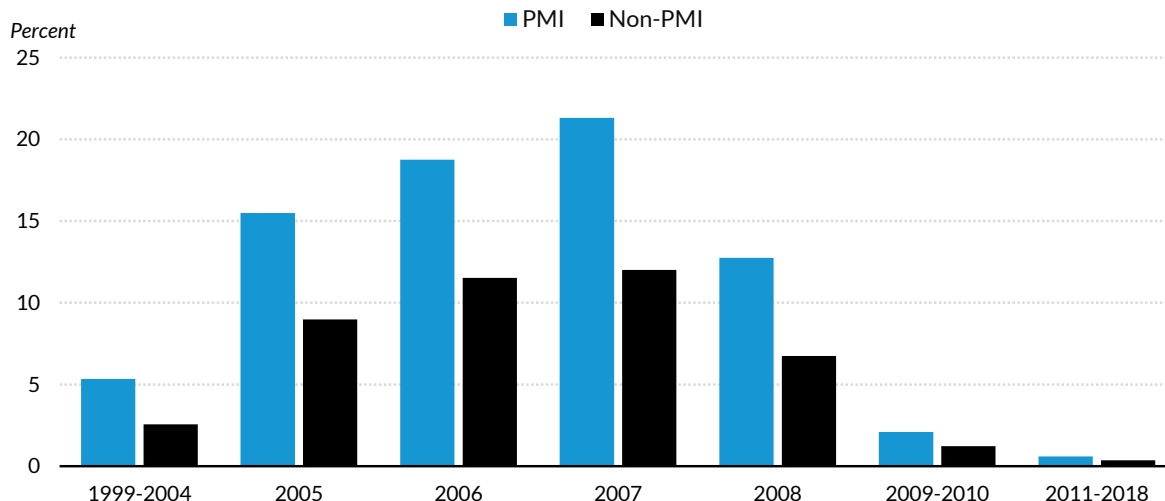
**Sources:** Fannie Mae, Freddie Mac, and the Urban Institute.

**Notes:** +D180 = loans that have been delinquent for 180 or more days; PMI = private mortgage insurance; UPB = unpaid principal balance. GSE credit data include 30-year fixed-rate, full-documentation, fully amortizing mortgage loans only. Fannie Mae data include loans originated from Q1, 1999 through Q2, 2018; performance data for these loans are available through Q2, 2019. Freddie Mac data include loans originated from Q1, 1999 to Q4, 2017; performance data for these loans is available through Q2, 2018. Default is defined as six months delinquent or disposed of via short sales, third-party sales, deeds in lieu of foreclosure, or real estate-owned acquisitions.

## Loans Ever 180 or More Days Delinquent

Origination year	D180+ Rates (by loan count)		D180+ Rates (by UPB)	
	PMI	Non-PMI	PMI	Non-PMI
1999-2004	5.3%	2.6%	4.4%	2.0%
2005	15.5%	9.0%	15.3%	8.6%
2006	18.8%	11.5%	19.2%	11.4%
2007	21.3%	12.0%	22.2%	11.7%
2008	12.7%	6.7%	12.9%	6.0%
2009-10	2.1%	1.2%	1.8%	1.0%
2011-18	0.6%	0.4%	0.5%	0.3%
All	4.9%	3.1%	4.0%	2.6%

## Historical Default Rates (D180+) for GSE Loans, by Origination Year (by loan count)





# Defaulted Loans and Loss Severity

Once more than 180 days delinquent, GSE loans with PMI are less likely to become current or prepaid and are more likely to liquidate. From 1999 to 2018, 68.1 percent of GSE loans with PMI were liquidated, versus 59.4 percent of loans without PMI. However, once the loan is liquidated (REO or foreclosure alternative), the actual severity experienced by the GSEs is lower for loans with PMI than those without, because mortgage insurance recoveries help reduce losses.

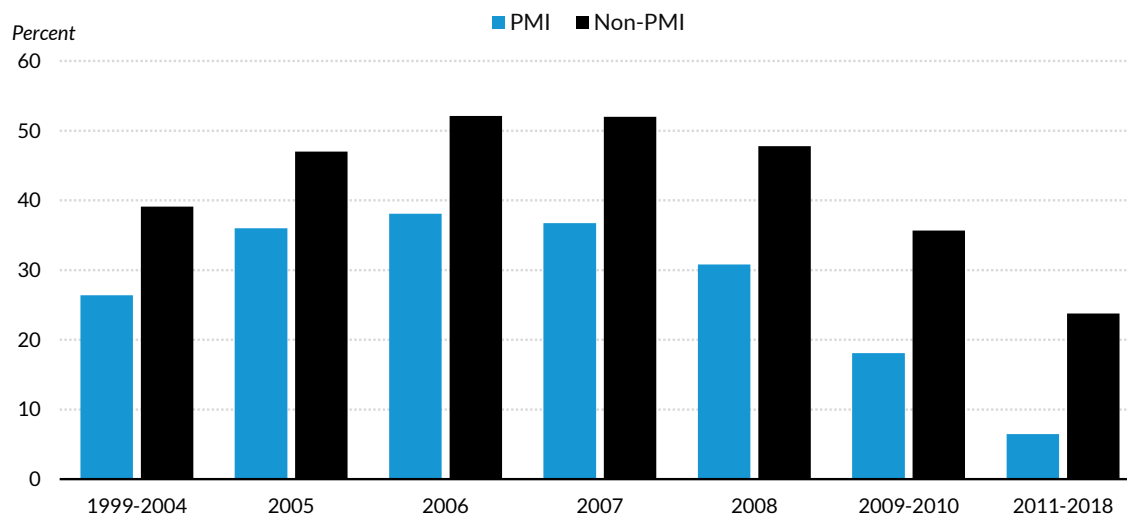
**Sources:** Fannie Mae, Freddie Mac, and the Urban Institute.

**Notes:** PMI = private mortgage insurance; REO = real estate owned. GSE credit data includes 30-year fixed-rate, full-documentation, fully amortizing mortgage loans only. Fannie Mae data include loans originated from Q1 1999 through Q2 2018; performance data for these loans are available through Q2 2019. Freddie Mac data include loans originated from Q1 1999 to Q4 2017; performance data for these loans are available through Q2 2018.

## What Happens to Defaulted Loans? (share by loan count)

Origination year	Current		Prepay		REO or foreclosure alternatives		Persistently delinquent	
	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI	PMI	Non-PMI
1999-2004	9.2%	12.3%	16.4%	24.2%	68.0%	55.7%	5.8%	7.2%
2005	10.4%	13.0%	7.8%	13.1%	74.2%	65.6%	6.3%	6.8%
2006	9.9%	12.6%	7.0%	10.9%	75.2%	68.2%	6.1%	6.3%
2007	10.8%	13.8%	7.6%	12.0%	72.8%	64.6%	6.5%	7.1%
2008	12.2%	15.4%	10.1%	15.5%	68.4%	58.6%	6.5%	8.5%
2009-10	12.2%	16.4%	10.5%	20.7%	66.4%	47.6%	10.2%	14.7%
2011-18	21.3%	22.5%	10.8%	18.7%	25.2%	19.4%	42.5%	39.2%
All	10.7%	13.6%	12.0%	16.9%	68.1%	59.4%	8.0%	8.7%

## Loss Severity for GSE Loans with and without PMI



# Loss Severity

For the 1999–2018 origination period, the loss severity of GSE loans without PMI was 47.9 percent, higher than the 30.6 percent severity for loans with PMI. For loans with PMI, mortgage insurance recovery was 22.7 percent. In the absence of PMI recovery, loss severity for GSE loans with PMI would be 53.2 percent (=22.7% plus 30.6%). The pattern of higher severity for PMI loans than for non-PMI loans before the mortgage insurance recovery and the reduced loss severity for the GSEs holds across all origination years.

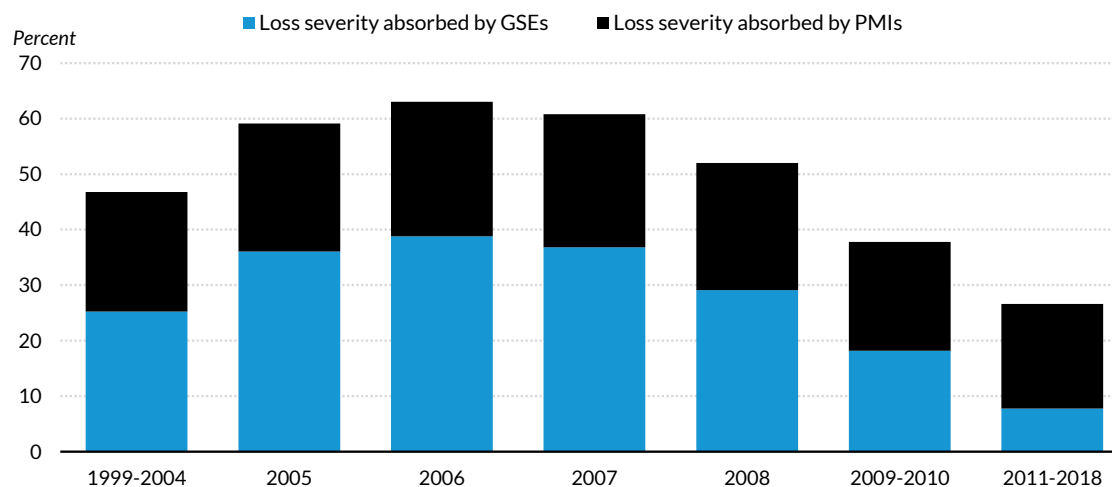
**Sources:** Fannie Mae, Freddie Mac, and the Urban Institute.

**Notes:** GSE = government-sponsored enterprise; PMI = private mortgage insurance; REO = real estate owned. Foreclosure Alternatives include Short sales, Third-party sales, Note-sales, and reperforming sales. GSE credit data includes 30-year fixed-rate, full documentation, fully amortizing mortgage loans. Fannie Mae data include loans originated from Q1 1999 through Q2 2018; performance data for these loans is available through Q2 2019. Freddie Mac data includes loans originated from Q1 1999 to Q4 2017; performance data for these loans is available through Q2 2018.

## Total

Origination year	Total severity for PMI loans	MI recovery	Severity without MI recovery	Loss severity for loans without PMI
1999-2004	25.3%	21.5%	46.8%	40.2%
2005	36.1%	23.0%	59.1%	48.1%
2006	38.8%	24.2%	63.0%	54.1%
2007	36.8%	24.0%	60.8%	53.7%
2008	29.1%	22.9%	52.0%	49.0%
2009-2010	18.2%	19.6%	37.8%	35.8%
2011-2018	7.8%	18.9%	26.6%	27.5%
All	30.6%	22.6%	53.2%	48.0%

## Reduction in GSE Loss Severity because of PMI



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## Foreclosure Alternatives

Origination year	Total severity for PMI loans	MI recovery	Severity without MI recovery	Loss severity for loans without PMI
1999-2004	17.5%	11.7%	29.2%	24.0%
2005	28.8%	20.1%	48.9%	40.3%
2006	30.3%	21.7%	52.0%	45.9%
2007	28.3%	21.7%	50.0%	45.4%
2008	21.8%	20.5%	42.3%	40.3%
2009-2010	12.6%	17.2%	29.8%	27.8%
2011-2018	6.5%	13.8%	20.3%	18.4%
All	23.3%	18.5%	41.7%	38.4%

## REO

Origination year	Total severity for PMI loans	MI recovery	Severity without MI recovery	Loss severity for loans without PMI
1999-2004	27.3%	24.1%	51.5%	48.7%
2005	39.2%	24.3%	63.4%	53.4%
2006	42.8%	25.3%	68.1%	59.6%
2007	41.1%	25.1%	66.2%	59.5%
2008	33.5%	24.3%	57.8%	54.8%
2009-2010	22.1%	21.3%	43.4%	41.5%
2011-2018	8.7%	22.9%	31.6%	35.8%
All	33.7%	24.4%	58.1%	54.2%

# Loss Rate for GSE Loans

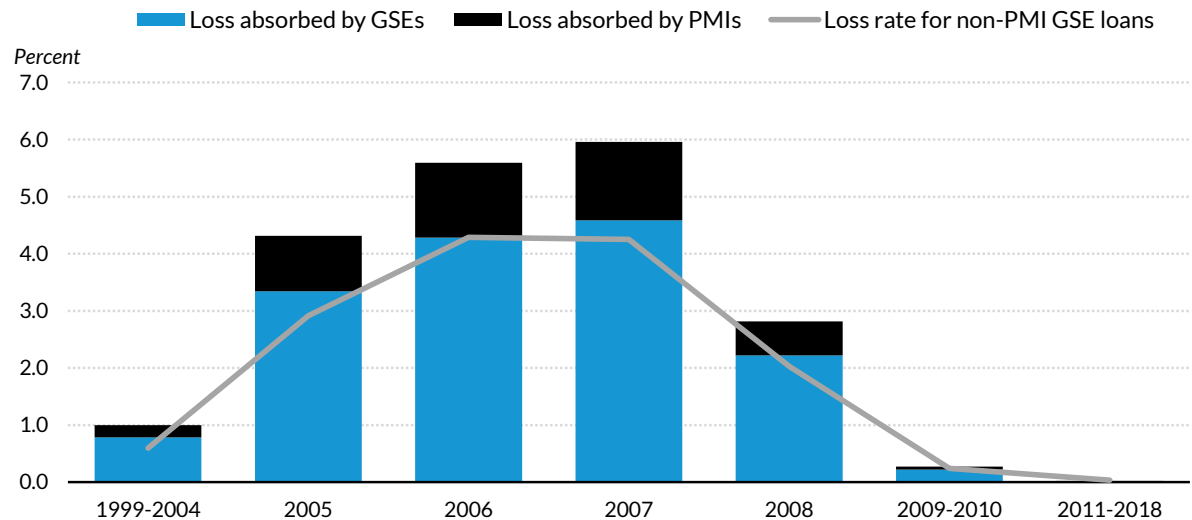
Loss rate is the ratio of total dollar losses to the dollar volume of GSE mortgages. It combines the probability of default (as measured by loans going 180 or more days delinquent) and the loss severity rate upon liquidation. This chart shows loss rates separately for GSE loans with and without PMI. The loss rate for GSE loans without PMI (grey line) is very consistent with the portion of loss rate GSEs absorb for loans with PMI (blue bars.) The black bars show the portion of loss rate absorbed by PMIs.

The presence of PMI reduces the losses GSE experience on over 80 percent LTV loans to same levels as the losses they experience on loans with LTVs under 80 percent. This shows that PMI is highly effective in reducing losses to the GSEs.

**Sources:** Fannie Mae, Freddie Mac, and the Urban Institute.

**Notes:** GSE = government-sponsored enterprise; PMI = private mortgage insurance; REO = real estate owned. Foreclosure alternatives include short sales, third-party sales, note-sales, and reperforming sales. GSE credit data includes 30-year fixed-rate, full-documentation, fully amortizing mortgage loans only. Fannie Mae data include loans originated from Q1 1999 through Q2 2018; performance data for these loans is available through Q2 2019. Freddie Mac data include loans originated from Q1 1999 to Q4 2017; performance data for these loans is available through Q2 2018.

Loss Rate for GSE Loans









# FHA versus PMI: Borrowing Cost



# Initial Monthly Payment Comparison

This page and the next compare initial borrower monthly payments for FHA and GSE mortgages with PMI at different FICO scores and LTV ratios. This analysis accounts for the FHA's up-front and annual mortgage insurance premiums, GSE loan-level payment adjustments, and up-to-date PMI pricing. For borrowers with a 96.5 percent LTV ratio (3.5 percent down), PMI is more economical than FHA for borrowers with a FICO score of 740 or above. For borrowers with a 95 percent LTV ratio (5 percent down), PMI is more economical for FICO scores of 700 and above. However, note that PMI cancels at 78 percent LTV, whereas FHA annual premium stays for the life of the loan.

**Sources:** PMI premiums taken from Genworth rate card effective June 2018; Ginnie Mae, and the Urban Institute.

**Notes:** FHA = Federal Housing Administration; GSE = government-sponsored enterprise; LLPA = loan-level price adjustment; LTV = loan-to-value ratio; MIP = mortgage insurance premium; PMI = private mortgage insurance; UFMIP = up-front mortgage insurance premium. Mortgage insurance premiums are listed in percentage points. The PMI monthly payment calculation excludes special programs, such as Fannie Mae's HomeReady and Freddie Mac's Home Possible, which offer more favorable rates for low- and moderate-income borrowers. Calculation excludes property taxes and insurance.

## FHA versus PMI: 96.5 LTV

FICO	620-639	640-659	660-679	680-699	700-719	720-739	740-759	760+
<b>FHA MI premiums</b>								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
<b>PMI</b>								
GSE LLPA	3.50	2.75	2.25	1.50	1.50	1.00	0.75	0.75
PMI annual MIP	1.86	1.65	1.54	1.21	0.99	0.87	0.70	0.58
<b>Monthly payment</b>								
FHA	\$1,320	\$1,320	\$1,320	\$1,320	\$1,320	\$1,320	\$1,320	\$1,320
PMI	\$1,592	\$1,528	\$1,492	\$1,405	\$1,361	\$1,323	\$1,281	\$1,257
PMI advantage	(\$272)	(\$208)	(\$172)	(\$85)	(\$40)	(\$2)	\$39	\$63

### Assumptions

Property value \$250,000 Loan amount \$241,250 LTV 96.5% Base rate-conforming 3.77% Base rate-FHA 3.84%

## FHA versus PMI: 95 LTV

FICO	620-639	640-659	660-679	680-699	700-719	720-739	740-759	760+
<b>FHA MI premiums</b>								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
<b>PMI</b>								
GSE LLPA	3.25	2.75	2.25	1.25	1.00	0.50	0.25	0.25
PMI annual MIP	1.42	1.33	1.28	0.96	0.78	0.66	0.53	0.38
<b>Monthly payment</b>								
FHA	\$1,300	\$1,300	\$1,300	\$1,300	\$1,300	\$1,300	\$1,300	\$1,300
PMI	\$1,473	\$1,441	\$1,418	\$1,327	\$1,284	\$1,247	\$1,214	\$1,185
PMI advantage	(\$173)	(\$142)	(\$118)	(\$27)	\$16	\$53	\$86	\$115

### Assumptions

Property value \$250,000 Loan amount \$237,500 LTV 95% Base rate-conforming 3.77% Base rate-FHA 3.84%

# Initial Monthly Payment Comparison

For borrowers with a 90 percent LTV ratio (10 percent down), PMI is more economical than FHA for FICO scores of 680 and above. For borrowers with an 85 percent LTV ratio, PMI is more economical than FHA across the FICO spectrum. However, note that PMI cancels at 78 percent LTV, whereas FHA annual premium stays for the life of the loan.

**Sources:** PMI premiums taken from Genworth rate card effective June 2018; Ginnie Mae, and the Urban Institute.

**Notes:** FHA = Federal Housing Administration; GSE = government-sponsored enterprise; LLPA = loan-level price adjustment; LTV = loan-to-value ratio; MIP = mortgage insurance premium; PMI = private mortgage insurance; UFMIP = up-front mortgage insurance premium. Mortgage insurance premiums are listed in percentage points. The PMI monthly payment calculation excludes special programs, such as Fannie Mae's HomeReady and Freddie Mac's Home Possible, which offer more favorable rates for low- and moderate-income borrowers. Calculation excludes property taxes and insurance.

## FHA versus PMI: 90 LTV

FICO	620-639	640-659	660-679	680-699	700-719	720-739	740-759	760+
<b>FHA MI premiums</b>								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
<b>PMI</b>								
GSE LLPA	3.25	2.75	2.25	1.25	1.00	0.50	0.25	0.25
PMI annual MIP	0.94	0.91	0.90	0.65	0.55	0.46	0.38	0.28
<b>Monthly payment</b>								
FHA	\$1,231	\$1,231	\$1,231	\$1,231	\$1,231	\$1,231	\$1,231	\$1,231
PMI	\$1,306	\$1,287	\$1,272	\$1,199	\$1,173	\$1,144	\$1,122	\$1,103
PMI advantage	(\$74)	(\$55)	(\$40)	\$33	\$58	\$88	\$109	\$128

### Assumptions

Property value \$250,000 Loan amount \$225,000 LTV 90% Base rate-conforming 3.77% Base rate-FHA 3.84%

## FHA versus PMI: 85 LTV

FICO	620-639	640-659	660-679	680-699	700-719	720-739	740-759	760+
<b>FHA MI premiums</b>								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
<b>PMI</b>								
GSE LLPA	3.25	3.25	2.75	1.50	1.00	0.50	0.25	0.25
PMI annual MIP	0.44	0.40	0.38	0.28	0.25	0.23	0.20	0.19
<b>Monthly payment</b>								
FHA	\$1,163	\$1,163	\$1,163	\$1,163	\$1,163	\$1,163	\$1,163	\$1,163
PMI	\$1,145	\$1,137	\$1,121	\$1,073	\$1,055	\$1,039	\$1,028	\$1,026
PMI advantage	\$18	\$25	\$42	\$90	\$108	\$124	\$135	\$137

### Assumptions

Property value \$250,000 Loan amount \$212,500 LTV 85% Base rate-conforming 3.77% Base rate-FHA 3.84%

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## ERRATA

This chartbook was revised December 20, 2019. On pages 39 and 40, the credit score ranges in the text were corrected to match the ranges in their corresponding charts—that is, 700 and above and 680 and above. Also on page 40, the statement regarding borrowers with an 85 percent LTV ratio says “PMI is more economical than FHA across the FICO spectrum”; in a previous version, “PMI” and “FHA” were reversed.









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