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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 64 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 conventional borrowers without PMI as well as borrowers with government mortgage insurance (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 losses to the government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac.

This data publication is being released as an update to the 2019 data publication *Mortgage Insurance: Data at a Glance* to provide an up-to-date snapshot of the mortgage insurance market. For an in-depth explanation of the past and present role of PMI, see the 2017 comprehensive research report *Sixty Years of Private Mortgage Insurance in the United States*, available at 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 onward, 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: 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 either FHA or VA borrowers. In general, PMI borrowers tend to be more creditworthy than FHA and VA 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 rebounded in recent years and maintained that growth during the COVID-19 recession.

Mortgage Insurance Market Share Based on Loan Count, 1972–2020

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

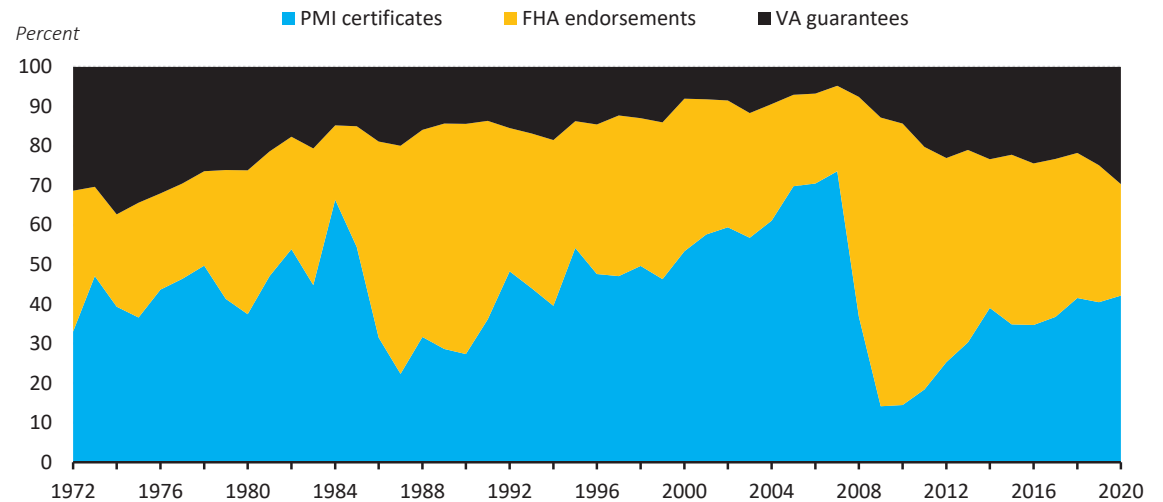
Note: FHA = Federal Housing Administration; PMI = private mortgage insurance; VA = US Department of Veterans Affairs.

Annual Mortgage Insurance Volume: PMI versus FHA and VA

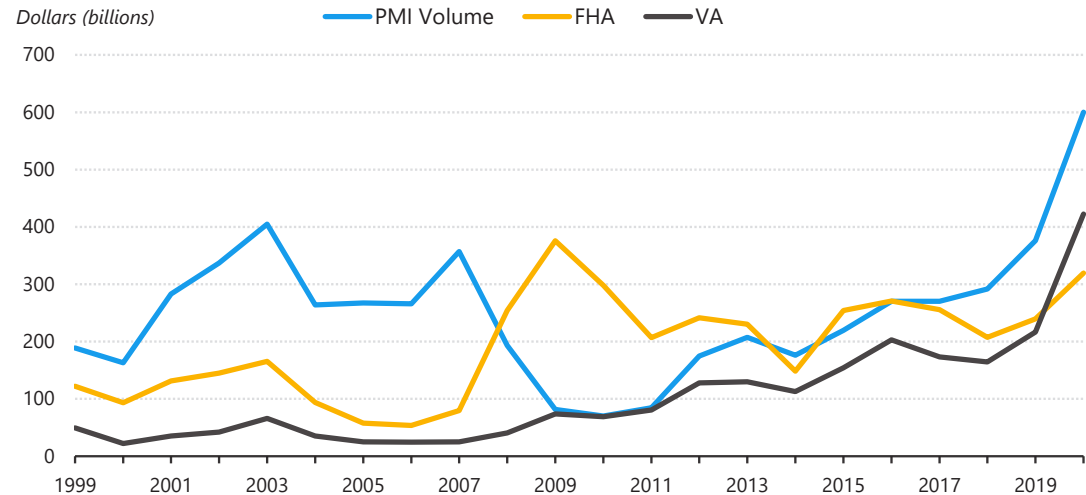
Sources: Inside Mortgage Finance and the Urban Institute.

Note: FHA = Federal Housing Administration; PMI = private mortgage insurance; VA = US Department of Veterans Affairs.

Mortgage Insurance Market Share Based on Loan Count, 1972–2020



Annual Mortgage Insurance Volume: PMI versus FHA/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 2020, 62.9 percent of loans originated were conventional loans without PMI, 15.2 percent were conventional loans with PMI, 13.1 percent were FHA loans, and 4.8 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” includes 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	128.0	6.4	89.6	707	34
	FHA	10.4	106.7	6.8	97.5	645	34
	VA	3.1	119.3	6.4	100.0	678	37
	Conventional non-PMI	67.2	136.0	5.9	70.7	734	32
	Other	3.3	105.3	7.3	80.0	630	38
	All	100.0	128.0	6.1	77.5	719	33
2005	Conventional PMI	12.5	150.5	6.0	88.7	703	37
	FHA	3.9	117.0	5.9	97.3	636	37
	VA	1.3	148.0	5.8	100.0	672	39
	Conventional non-PMI	71.7	172.0	5.9	74.5	717	37
	Other	10.7	115.8	7.4	78.0	628	39
	All	100.0	157.9	6.0	77.5	704	37
2006	Conventional PMI	12.7	152.0	6.6	88.7	702	39
	FHA	3.5	125.5	6.5	96.7	635	37
	VA	1.1	165.5	6.4	100.7	674	39
	Conventional non-PMI	72.1	167.9	6.8	74.1	709	38
	Other	10.6	135.2	7.9	79.3	624	40
	All	100.0	158.7	6.8	77.3	698	38
2007	Conventional PMI	20.4	169.5	6.5	90.0	701	39
	FHA	5.2	136.9	6.5	96.4	624	37
	VA	1.3	175.0	6.4	100.1	669	37
	Conventional non-PMI	67.7	174.4	6.5	72.7	721	37
	Other	5.4	159.7	7.4	80.0	627	39
	All	100.0	168.3	6.5	78.3	707	38
2008	Conventional PMI	20.1	190.0	6.1	85.8	737	38
	FHA	23.7	155.8	6.1	96.4	654	38
	VA	3.2	184.5	6.0	100.0	681	40
	Conventional non-PMI	50.8	188.4	5.9	70.0	750	35
	Other	2.2	100.0	5.9	80.0	688	33
	All	100.0	176.0	6.0	80.0	724	37

		% of all loans	Loan size (\$ thousands, average)	Note rate (%)	LTV	FICO	DTI
2009–10	Conventional PMI	7.3	203.4	4.9	88.2	761	33
	FHA	27.5	158.7	5.0	96.7	691	40
	VA	4.9	185.1	5.0	100.0	703	40
	Conventional non-PMI	58.9	195.3	4.9	69.0	773	32
	Other	1.4	130.1	5.0	89.6	725	32
	All	100.0	181.2	4.9	79.5	753	34
2011–16	Conventional PMI	15.1	198.0	4.1	92.7	753	34
	FHA	17.0	157.1	3.9	96.0	688	39
	VA	7.7	201.4	3.8	98.8	714	37
	Conventional non-PMI	57.3	195.0	3.9	70.2	771	32
	Other	2.9	143.9	4.0	98.9	703	34
	All	100.0	185.0	3.9	80.0	751	34
2017–20	Conventional PMI	17.9	251.7	4.1	91.7	752	36
	FHA	15.0	200.3	4.1	96.7	671	43
	VA	10.4	253.8	3.8	98.3	719	40
	Conventional non-PMI	54.9	250.0	3.9	70.0	768	34
	Other	1.7	150.5	4.1	99.9	697	35
	All	100.0	238.4	3.9	80.0	749	35
All	Conventional PMI	15.2	168.0	5.5	90.0	731	35
	FHA	13.1	142.9	5.0	96.7	673	39
	VA	4.8	187.2	4.3	99.7	706	38
	Conventional non-PMI	62.9	172.0	5.4	70.9	748	34
	Other	4.1	128.5	6.8	80.0	650	37
	All	100.0	165.0	5.4	78.8	731	35

Agency Mortgage Market

GSE MORTGAGES: PMI VERSUS NON-PMI

PMI borrowers tend to have lower credit scores and higher LTV and DTI ratios than non-PMI GSE borrowers. For 2020 originations, 22.4 percent of GSE loans had PMI. The share was higher for purchase loans (50.8 percent) than for refinance loans (10.7 percent). The average balance of a GSE PMI loan is about 2 percent larger than that of a non-PMI GSE loan. But the average value of a home where the borrower has PMI is \$317,326, compared with \$441,844 for borrowers without PMI. GSE borrowers with PMI take out larger loans relative to the property's value than non-PMI GSE borrowers. GSE PMI borrowers averaged 91.3 percent LTV ratios versus 64.2 percent LTV ratios for GSE borrowers without PMI in 2020.

All GSE Loans

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 LTV Ratios: FHA, PMI, and VA

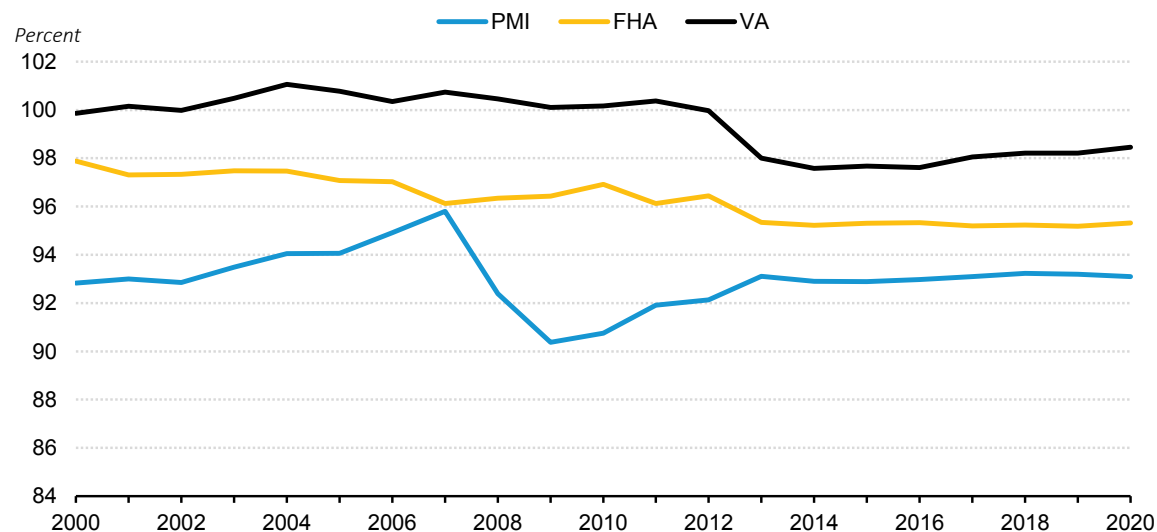
Sources: eMBS and the Urban Institute.

Notes: FHA = Federal Housing Administration; LTV = loan-to-value; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. 2019 data are through the second quarter of 2019.

All GSE Loans

	% of Loans		Loan Size (\$ Thousands, Avg.)		Note Rate (%)		Purchase Share (%)		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
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
2019	32.4	67.6	268.6	256.4	4.2	4.1	82.2	38.1	95.3	76.3	92.4	67.1	745	751	36.6	34.7
2020	22.4	77.5	289.7	283.8	3.2	3.1	66.4	18.6	93.0	69.9	91.3	64.2	749	762	35.3	32.6

Average LTV Ratio



PMI VERSUS FHA AND VA

For 2020 originations, 40.7 percent of agency mortgages had mortgage insurance (PMI, FHA, or VA). Of these insured mortgages, 42.2 percent had PMI coverage, 28.2 percent were FHA insured, and 29.7 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 (\$289,700) was larger than for FHA mortgages (\$234,900) and smaller than for VA mortgages (\$304,200). In the purchase market, 66.7 percent of agency loans had mortgage insurance, with PMI composing 51.4 percent of the insured market. Purchase loans with PMI had an average LTV ratio of 93.1 percent, lower than the 95.3 percent average ratio for FHA loans or the 98.5 percent average ratio for VA loans. PMI borrowers also had higher FICO scores and lower DTI ratios than their FHA and VA counterparts in 2020 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 percent 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
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
2019	54.2	40.5	34.6	24.9	100	268.6	225.9	289.6	4.2	4.2	3.9
2020	40.7	42.2	28.2	29.7	100	289.7	234.9	304.2	3.2	3.3	2.9

Purchase

	% of loans with mortgage insurance	% of All Insured Loans				Loan Size (\$ Thousands, Avg.)		
		PMI	FHA	VA	All	PMI	FHA	VA
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
2019	68.1	48.3	34.0	17.7	100	260.3	221.2	282.8
2020	66.7	51.4	31.7	16.9	100	285.0	236.1	317.6

Refinance

	% of loans with mortgage insurance	% of All Insured Loans				Loan Size (\$ Thousands, Avg.)		
		PMI	FHA	VA	All	PMI	FHA	VA
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
2019	37.2	23.2	35.9	40.9	100	306.7	235.7	296.1
2020	27.7	31.2	24.0	44.9	100	299.0	232.8	298.1

Purchase (%)			LTV (%)			FICO			DTI (%)		
PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA
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
82.2	67.8	48.9	92.4	91.7	94.4	745	670	711	36.6	43.2	40.2
66.4	61.2	31.1	91.3	92.0	90.5	749	677	727	35.3	42.7	39.0

Note Rate (%)			LTV (%)			FICO			DTI (%)		
PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA
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
4.3	4.3	4.0	93.2	95.2	98.2	744	671	713	36.9	43.4	41.2
3.2	3.3	3.1	93.1	95.3	98.5	748	677	720	35.8	43.1	40.4

Note Rate (%)			LTV (%)			FICO			DTI (%)		
PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA	PMI	FHA	VA
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
4.0	4.1	3.7	88.5	83.8	90.6	749	667	708	35.6	42.3	38.2
3.2	3.2	2.8	87.8	86.5	86.7	753	675	731	34.1	41.1	36.1

STATE-LEVEL ANALYSIS: ALL LOANS

For 2020 agency originations, 40.2 percent had FHA, VA, or private mortgage insurance. Of these, 42.2 percent had PMI, and the remaining 57.9 percent were either FHA or VA insured. The five states with the lowest PMI shares were Alaska, Hawaii, Mississippi, Nevada, and Virginia; Hawaii had the lowest share (21.2 percent). The five states with the highest PMI shares were the District of Columbia, Iowa, Michigan, Minnesota, and Wisconsin; the District of Columbia had the highest share (65.9 percent).

Sources: eMBS and the Urban Institute.

Notes: FHA = Federal Housing Administration; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data are based on agency issuance in 2020. National numbers include Guam, Puerto Rico, and the Virgin Islands. The District of Columbia is considered a state for this analysis.

All Loans 2020

State	% of Loans with Insurance			Number of Loans				% of all agency loans with insurance
	PMI	FHA	VA	PMI	FHA	VA	All	
National	42.2	28.2	29.7	1,930,185	1,288,913	1,356,927	4,576,025	40.2
Alabama	35.5	28.6	35.9	25,722	20,786	26,048	72,556	53.8
Alaska	31.0	15.7	53.3	3,914	1,984	6,743	12,641	56.7
Arizona	38.3	26.7	35.0	64,521	45,102	58,988	168,611	39.7
Arkansas	39.1	30.5	30.3	14,591	11,373	11,306	37,270	49.7
California	38.1	27.3	34.6	156,321	111,668	141,803	409,792	24.7
Colorado	39.0	22.6	38.5	54,997	31,837	54,352	141,186	36.2
Connecticut	51.0	33.9	15.0	22,102	14,709	6,517	43,328	45.9
Delaware	39.5	32.0	28.5	7,264	5,894	5,248	18,406	44.8
District of Columbia	65.9	11.0	23.2	4,707	783	1,658	7,148	30.7
Florida	35.0	33.7	31.3	126,386	121,955	113,204	361,545	50.5
Georgia	36.2	32.4	31.4	67,000	59,994	58,218	185,212	50.0
Hawaii	21.2	7.1	71.7	3,774	1,255	12,733	17,762	42.9
Idaho	40.2	23.5	36.3	13,746	8,023	12,407	34,176	35.6
Illinois	56.4	28.6	15.0	91,109	46,186	24,137	161,432	38.5
Indiana	45.8	33.3	20.9	47,247	34,394	21,544	103,185	44.1
Iowa	61.6	19.7	18.7	22,572	7,233	6,858	36,663	38.1
Kansas	49.4	24.1	26.5	18,317	8,937	9,827	37,081	46.1
Kentucky	41.4	31.6	27.0	22,241	16,954	14,508	53,703	44.9
Louisiana	39.2	34.8	26.0	20,948	18,626	13,921	53,495	48.4
Maine	41.4	27.3	31.3	6,216	4,107	4,706	15,029	38.0
Maryland	40.3	28.9	30.8	52,248	37,522	40,019	129,789	50.0
Massachusetts	52.8	28.4	18.9	34,445	18,517	12,314	65,276	26.7
Michigan	57.1	25.2	17.7	71,016	31,294	22,048	124,358	36.2
Minnesota	60.1	20.6	19.3	54,499	18,720	17,476	90,695	35.8
Mississippi	32.5	35.5	32.0	9,100	9,921	8,947	27,968	54.4

State	% of Loans with Insurance			Number of Loans				% of all agency loans with insurance
	PMI	FHA	VA	PMI	FHA	VA	All	
Missouri	47.4	26.9	25.7	43,168	24,519	23,462	91,149	42.2
Montana	43.0	17.4	39.6	6,766	2,743	6,232	15,741	37.5
Nebraska	51.0	19.6	29.4	14,094	5,401	8,120	27,615	41.4
Nevada	32.1	29.2	38.7	23,194	21,158	28,008	72,360	45.4
New Hampshire	46.5	26.1	27.4	9,306	5,221	5,491	20,018	36.4
New Jersey	47.9	38.4	13.8	48,830	39,138	14,059	102,027	35.5
New Mexico	33.6	30.8	35.6	10,257	9,422	10,866	30,545	52.9
New York	53.2	33.2	13.6	44,065	27,500	11,293	82,858	34.0
North Carolina	41.2	20.8	38.0	70,468	35,531	64,955	170,954	46.4
North Dakota	56.5	15.1	28.4	5,212	1,394	2,621	9,227	41.9
Ohio	47.5	31.3	21.2	69,801	45,894	31,125	146,820	45.7
Oklahoma	37.6	31.1	31.3	19,284	15,950	16,063	51,297	56.4
Oregon	44.7	21.6	33.7	29,948	14,459	22,532	66,939	33.1
Pennsylvania	49.3	31.7	19.0	63,727	40,963	24,575	129,265	44.0
Rhode Island	39.8	41.8	18.4	5,829	6,116	2,701	14,646	39.9
South Carolina	37.6	25.3	37.1	35,051	23,616	34,582	93,249	49.9
South Dakota	48.8	19.6	31.6	6,364	2,564	4,126	13,054	39.0
Tennessee	38.6	28.3	33.1	40,247	29,522	34,499	104,268	46.4
Texas	38.4	33.8	27.7	159,595	140,476	115,167	415,238	50.5
Utah	51.1	26.2	22.7	37,175	19,010	16,512	72,697	32.5
Vermont	52.1	20.6	27.3	2,622	1,035	1,373	5,030	33.2
Virginia	33.5	18.4	48.2	63,346	34,840	91,189	189,375	49.0
Washington	38.4	20.5	41.2	52,568	28,097	56,403	137,068	33.9
West Virginia	37.5	30.3	32.2	5,708	4,612	4,897	15,217	51.7
Wisconsin	60.2	18.9	21.0	43,691	13,700	15,226	72,617	33.6
Wyoming	36.5	24.0	39.5	3,752	2,466	4,052	10,270	44.5

STATE-LEVEL ANALYSIS: PURCHASE LOANS

For 2020 agency purchase originations, 64.6 percent had FHA, VA, or private mortgage insurance. Of these, 51.4 percent had PMI, and 48.6 percent were either FHA or VA insured. The five states with the lowest PMI shares of purchase originations were Alaska, Hawaii, Mississippi, New Mexico, and Oklahoma. The five states with the highest PMI shares of purchase originations were the District of Columbia, Iowa, Michigan, Minnesota, and Wisconsin.

Sources: eMBS and the Urban Institute.

Notes: FHA = Federal Housing Administration; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data are based on agency issuance in 2020. National numbers include Guam, Puerto Rico, and the Virgin Islands. The District of Columbia is considered a state for this analysis.

Purchase Loans 2020

State	% of Loans with Insurance			Number of Loans				% of all agency loans with insurance
	PMI	FHA	VA	PMI	FHA	VA	All	
National	51.4	31.7	16.9	1,280,772	789,423	421,774	2,491,969	64.6
Alabama	42.7	34.1	23.1	17,339	13,837	9,390	40,566	67.8
Alaska	40.2	19.6	40.2	2,546	1,241	2,550	6,337	74.4
Arizona	51.4	30.1	18.5	43,076	25,192	15,472	83,740	63.9
Arkansas	44.9	36.0	19.1	9,799	7,868	4,169	21,836	62.4
California	51.5	32.5	16.1	89,357	56,380	27,927	173,664	58.1
Colorado	50.8	27.3	21.9	33,184	17,801	14,311	65,296	61.8
Connecticut	56.0	35.5	8.5	14,687	9,308	2,241	26,236	66.0
Delaware	46.9	36.8	16.3	4,457	3,502	1,547	9,506	59.8
District of Columbia	79.3	8.6	12.1	3,132	339	480	3,951	60.2
Florida	43.5	37.8	18.7	93,127	80,837	40,129	214,093	64.6
Georgia	44.8	35.3	19.8	46,968	37,022	20,800	104,790	70.0
Hawaii	40.0	9.6	50.5	2,380	569	3,003	5,952	59.7
Idaho	55.5	26.5	18.0	10,903	5,196	3,544	19,643	57.2
Illinois	60.1	31.2	8.7	55,872	28,962	8,082	92,916	66.4
Indiana	55.5	33.7	10.8	32,793	19,911	6,403	59,107	66.6
Iowa	66.8	22.0	11.2	15,093	4,974	2,529	22,596	63.7
Kansas	57.4	25.8	16.8	12,652	5,691	3,702	22,045	68.4
Kentucky	48.4	36.2	15.5	15,146	11,323	4,845	31,314	64.7
Louisiana	42.3	40.7	17.0	12,100	11,652	4,857	28,609	64.3
Maine	55.6	27.7	16.6	4,532	2,259	1,356	8,147	59.1
Maryland	49.8	32.8	17.5	29,107	19,170	10,208	58,485	73.0
Massachusetts	64.2	27.9	7.9	22,781	9,883	2,818	35,482	57.3
Michigan	66.0	25.2	8.8	46,861	17,921	6,249	71,031	64.9
Minnesota	70.8	20.5	8.7	36,884	10,690	4,525	52,099	64.0
Mississippi	34.9	42.4	22.7	5,714	6,949	3,708	16,371	68.2

State	% of Loans with Insurance			Number of Loans				% of all agency loans with insurance
	PMI	FHA	VA	PMI	FHA	VA	All	
Missouri	55.6	28.8	15.6	28,786	14,891	8,079	51,756	64.0
Montana	59.5	17.6	22.9	5,021	1,485	1,934	8,440	55.8
Nebraska	61.3	21.8	17.0	9,652	3,428	2,678	15,758	66.2
Nevada	42.4	35.6	22.1	14,698	12,334	7,656	34,688	67.7
New Hampshire	60.5	25.9	13.6	6,337	2,713	1,422	10,472	60.3
New Jersey	55.5	37.4	7.1	31,469	21,205	4,026	56,700	58.8
New Mexico	42.2	36.6	21.1	7,273	6,313	3,640	17,226	71.5
New York	58.0	33.7	8.3	33,795	19,608	4,859	58,262	58.4
North Carolina	51.8	22.4	25.7	48,367	20,906	24,023	93,296	63.5
North Dakota	64.5	17.0	18.5	3,172	837	911	4,920	65.3
Ohio	56.1	32.6	11.3	50,810	29,534	10,282	90,626	68.5
Oklahoma	41.3	37.3	21.4	13,141	11,860	6,811	31,812	69.0
Oregon	59.4	24.4	16.3	19,326	7,931	5,292	32,549	56.6
Pennsylvania	56.6	33.6	9.8	43,872	26,009	7,572	77,453	65.5
Rhode Island	44.7	45.8	9.5	3,745	3,836	795	8,376	68.7
South Carolina	47.0	29.4	23.6	24,414	15,290	12,261	51,965	64.0
South Dakota	54.3	25.9	19.8	3,895	1,860	1,419	7,174	64.0
Tennessee	49.4	29.5	21.0	28,423	16,983	12,086	57,492	63.0
Texas	42.7	38.7	18.5	109,409	99,223	47,486	256,118	69.8
Utah	60.3	29.2	10.5	22,908	11,095	3,998	38,001	62.6
Vermont	63.2	21.6	15.2	1,883	643	452	2,978	51.3
Virginia	45.0	23.5	31.5	38,523	20,073	26,948	85,544	70.7
Washington	53.7	24.9	21.3	34,989	16,243	13,897	65,129	61.7
West Virginia	43.5	35.7	20.8	3,846	3,158	1,834	8,838	64.6
Wisconsin	70.8	18.5	10.7	29,381	7,699	4,439	41,519	62.6
Wyoming	46.2	28.3	25.5	2,302	1,412	1,273	4,987	60.8

STATE-LEVEL ANALYSIS: REFINANCE LOANS

For 2020 agency refinance originations, 27.7 percent had FHA, VA, or private mortgage insurance. Of these, 31.1 percent had PMI, and 60.9 percent were either FHA or VA insured. The five states with the lowest PMI shares of refinance originations were Alaska, Hawaii, Idaho, New Mexico, and Nevada. The five states with the largest PMI shares of refinance originations were the District of Columbia, Illinois, Iowa, North Dakota, and Wisconsin.

Sources: eMBS and the Urban Institute.

Notes: FHA = Federal Housing Administration; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data are based on agency issuance in 2020. National numbers include Guam, Puerto Rico, and the Virgin Islands. The District of Columbia is considered a state for this analysis.

Refinance Loans 2020

State	% of Loans with Insurance			Number of Loans				% of all agency loans with insurance
	PMI	FHA	VA	PMI	FHA	VA	All	
National	31.2	24.0	44.9	649,413	499,490	935,153	2,084,056	27.7
Alabama	26.2	21.7	52.1	8,383	6,949	16,658	31,990	42.7
Alaska	21.7	11.8	66.5	1,368	743	4,193	6,304	45.7
Arizona	25.3	23.5	51.3	21,445	19,910	43,516	84,871	28.9
Arkansas	31.0	22.7	46.2	4,792	3,505	7,137	15,434	38.5
California	28.4	23.4	48.2	66,964	55,288	113,876	236,128	17.4
Colorado	28.7	18.5	52.8	21,813	14,036	40,041	75,890	26.6
Connecticut	43.4	31.6	25.0	7,415	5,401	4,276	17,092	31.3
Delaware	31.5	26.9	41.6	2,807	2,392	3,701	8,900	35.3
District of Columbia	49.3	13.9	36.8	1,575	444	1,178	3,197	19.1
Florida	22.6	27.9	49.6	33,259	41,118	73,075	147,452	38.4
Georgia	24.9	28.6	46.5	20,032	22,972	37,418	80,422	36.4
Hawaii	11.8	5.8	82.4	1,394	686	9,730	11,810	37.5
Idaho	19.6	19.5	61.0	2,843	2,827	8,863	14,533	23.6
Illinois	51.4	25.1	23.4	35,237	17,224	16,055	68,516	24.5
Indiana	32.8	32.9	34.4	14,454	14,483	15,141	44,078	30.4
Iowa	53.2	16.1	30.8	7,479	2,259	4,329	14,067	23.1
Kansas	37.7	21.6	40.7	5,665	3,246	6,125	15,036	31.2
Kentucky	31.7	25.2	43.2	7,095	5,631	9,663	22,389	31.4
Louisiana	35.6	28.0	36.4	8,848	6,974	9,064	24,886	37.7
Maine	24.5	26.9	48.7	1,684	1,848	3,350	6,882	26.7
Maryland	32.5	25.7	41.8	23,141	18,352	29,811	71,304	39.7
Massachusetts	39.1	29.0	31.9	11,664	8,634	9,496	29,794	16.3
Michigan	45.3	25.1	29.6	24,155	13,373	15,799	53,327	22.8
Minnesota	45.6	20.8	33.6	17,615	8,030	12,951	38,596	22.5
Mississippi	29.2	25.6	45.2	3,386	2,972	5,239	11,597	42.3

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State	% of Loans with Insurance			Number of Loans				% all agency loans with insurance
	PMI	FHA	VA	PMI	FHA	VA	All	
Missouri	36.5	24.4	39.1	14,382	9,628	15,383	39,393	29.2
Montana	23.9	17.2	58.9	1,745	1,258	4,298	7,301	27.1
Nebraska	37.5	16.6	45.9	4,442	1,973	5,442	11,857	27.6
Nevada	22.6	23.4	54.0	8,496	8,824	20,352	37,672	34.9
New Hampshire	31.1	26.3	42.6	2,969	2,508	4,069	9,546	25.4
New Jersey	38.3	39.6	22.1	17,361	17,933	10,033	45,327	23.7
New Mexico	22.4	23.3	54.3	2,984	3,109	7,226	13,319	39.5
New York	41.8	32.1	26.2	10,270	7,892	6,434	24,596	17.0
North Carolina	28.5	18.8	52.7	22,101	14,625	40,932	77,658	35.1
North Dakota	47.4	12.9	39.7	2,040	557	1,710	4,307	29.7
Ohio	33.8	29.1	37.1	18,991	16,360	20,843	56,194	29.7
Oklahoma	31.5	21.0	47.5	6,143	4,090	9,252	19,485	43.4
Oregon	30.9	19.0	50.1	10,622	6,528	17,240	34,390	23.8
Pennsylvania	38.3	28.9	32.8	19,855	14,954	17,003	51,812	29.5
Rhode Island	33.2	36.4	30.4	2,084	2,280	1,906	6,270	25.6
South Carolina	25.8	20.2	54.1	10,637	8,326	22,321	41,284	39.1
South Dakota	42.0	12.0	46.0	2,469	704	2,707	5,880	26.4
Tennessee	25.3	26.8	47.9	11,824	12,539	22,413	46,776	35.0
Texas	31.5	25.9	42.5	50,186	41,253	67,681	159,120	35.0
Utah	41.1	22.8	36.1	14,267	7,915	12,514	34,696	21.3
Vermont	36.0	19.1	44.9	739	392	921	2,052	22.0
Virginia	23.9	14.2	61.9	24,823	14,767	64,241	103,831	39.1
Washington	24.4	16.5	59.1	17,579	11,854	42,506	71,939	24.0
West Virginia	29.2	22.8	48.0	1,862	1,454	3,063	6,379	40.5
Wisconsin	46.0	19.3	34.7	14,310	6,001	10,787	31,098	20.8
Wyoming	27.4	20.0	52.6	1,450	1,054	2,779	5,283	35.5

CREDIT BOX DISTRIBUTION: FICO SCORES

In December 2020, GSE borrowers with PMI 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 752 for PMI borrowers, 671 for FHA borrowers, and 722 for VA borrowers. More than half (60.5 percent) of PMI purchase borrowers had FICO scores at or above 740, compared with 10.7 percent of FHA borrowers and 41.4 percent of VA borrowers. A majority (58.0 percent) of FHA purchase borrowers had FICO scores below 680, compared with 28.4 percent of VA borrowers and 5.4 percent of PMI borrowers. Median PMI FICO scores were higher than median FHA or VA FICO scores 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 are based on agency issuance in 2020.

All Loans 2020

	Loan count	≤ 619	620–679	680–739	≥ 740	Median	Mean
All	11,300,663	0.8%	10.7%	25.1%	63.5%	759	747
PMI	1,930,185	0.0%	4.5%	33.1%	62.4%	754	749
FHA	1,256,838	6.6%	52.2%	31.0%	10.2%	671	677
VA	1,310,187	2.2%	23.3%	30.6%	43.8%	732	727
GSE non-PMI	6,669,855	0.0%	5.0%	21.1%	73.9%	773	762
Other	133,598	1.3%	35.2%	40.2%	23.3%	697	702

Purchase Loans 2020

	Loan count	≤ 619	620–679	680–739	≥ 740	Median	Mean
All	3,856,176	1.6	18.2	28.9	51.4	742	733
PMI	1,280,772	0.0	5.4	34.1	60.5	752	748
FHA	789,034	6.1	51.9	31.3	10.7	671	677
VA	421,754	2.6	25.8	30.3	41.4	722	720
GSE non-PMI	1,241,832	0.0	5.6	20.4	73.9	774	762
Other	122,784	1.3	35.9	40.1	22.7	696	701

Refinance Loans 2020

	Loan count	≤ 619	620–679	680–739	≥ 740	Median	Mean
All	7,444,487	78.2%	13.5%	2.8%	5.5%	767	755
PMI	649,413	0.0%	72.1%	23.9%	3.9%	757	753
FHA	467,804	34.8%	58.6%	3.1%	3.5%	672	675
VA	888,433	21.1%	21.9%	11.3%	45.7%	739	731
GSE non-PMI	5,428,023	99.5%	0.3%	0.1%	0.1%	773	762
Other	10,814	19.5%	27.0%	16.6%	36.9%	712	713

CREDIT BOX DISTRIBUTION: LTV RATIOS

In 2020, GSE borrowers with PMI had lower median LTV ratios than FHA and VA borrowers but higher LTV ratios than GSE borrowers without PMI. The median LTV ratio was 95 percent for PMI purchase borrowers, 96.5 percent for FHA borrowers, and 100 percent for VA borrowers. Most FHA and VA purchase borrowers (79.9 and 87.5 percent, respectively) had LTV ratios above 95 percent, compared with 17.1 percent of PMI borrowers. VA loans led the high-LTV-ratio refinance space; 15.1 percent of VA refinance loans had LTV ratios 95.0 percent or above, compared with 10.8 percent of FHA loans and 1.0 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 are based on agency issuance in 2020.

All Loans 2020

	Loan count	< 80%	80–90%	90–95%	≥ 95%	Median	Mean
All	11,300,663	66.8%	10.5%	9.3%	13.4%	78.9	75.4
PMI	1,930,185	0.0%	47.4%	40.9%	11.7%	92.0	91.3
FHA	1,256,838	11.8%	6.9%	13.3%	68.0%	96.5	92.0
VA	1,310,187	13.8%	15.8%	4.9%	65.6%	95.8	90.5
GSE non-PMI	6,669,855	100.0%	0.0%	0.0%	0.0%	68.0	64.2
Other	133,598	1.5%	3.1%	5.1%	90.3%	100.9	98.8

Purchase Loans 2020

	Loan count	< 80%	80–90%	90–95%	≥ 95%	Median	Mean
All	3,856,176	33.1%	12.2%	20.3%	34.4%	95.0	87.5
PMI	1,280,772	0.0%	32.1%	50.8%	17.1%	95.0	93.1
FHA	789,034	1.9%	4.7%	13.6%	79.9%	96.5	95.3
VA	421,754	3.5%	4.4%	4.5%	87.5%	100.0	98.5
GSE non-PMI	1,241,832	100.0%	0.0%	0.0%	0.0%	80.0	72.0
Other	122,784	1.0%	2.4%	4.7%	91.9%	101.0	99.3

Refinance Loans 2020

	Loan count	<80%	80–90%	90–95%	≥ 95%	Median	Mean
All	7,444,487	87.0%	9.5%	2.6%	0.9%	71.0	69.1
PMI	649,413	0.0%	77.6%	21.5%	1.0%	88.0	87.8
FHA	467,804	59.4%	17.9%	11.9%	10.8%	90.2	86.5
VA	888,433	37.4%	42.0%	5.6%	15.1%	90.0	86.7
GSE non-PMI	5,428,023	100.0%	0.0%	0.0%	0.0%	66.0	62.5
Other	10,814	10.3%	15.6%	14.2%	59.9%	97.5	93.4

CREDIT BOX DISTRIBUTION: DTI RATIOS

In 2020, 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 ratio was 35.0 percent for PMI borrowers, 43.8 percent for FHA borrowers, and 39.4 percent for VA borrowers. Forty-eight percent of PMI purchase borrowers had DTI ratios lower than 36 percent, and the corresponding shares for FHA and VA purchase borrowers were 21.2 percent and 33.0 percent. In addition, 54.8 percent and 32.1 percent of FHA and VA borrowers had DTI ratios at or above 43 percent in 2020, compared with 20.8 percent of PMI borrowers. The median PMI DTI ratio was lower than the median FHA or VA DTI ratio 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 are based on agency issuance in 2020.

All Loans 2020

	Loan count	< 36%	36–43%	43–48%	≥ 48%	Median	Mean
All	11,300,663	54.2%	24.0%	14.4%	7.5%	35.0	34.4
PMI	1,930,185	51.3%	29.5%	15.5%	3.7%	36.0	35.3
FHA	1,256,838	22.8%	23.7%	21.2%	32.4%	43.8	42.7
VA	1,310,187	37.3%	23.8%	16.4%	22.5%	39.4	39.0
GSE non-PMI	6,669,855	61.0%	22.1%	13.0%	3.9%	33.0	32.6
Other	133,598	51.4%	38.2%	10.1%	0.4%	35.7	34.7

Purchase Loans 2020

	Loan count	< 36%	36–43%	43–48%	≥ 48%	Median	Mean
All	3,856,176	43.3	26.9	17.4	12.5	38.0	37.1
PMI	1,280,772	48.0	31.2	16.8	4.0	37.0	35.8
FHA	789,034	21.2	24.0	21.8	33.0	44.1	43.1
VA	421,754	33.0	24.9	17.7	24.4	40.9	40.4
GSE non-PMI	1,241,832	55.2	23.6	15.8	5.4	35.0	33.8
Other	122,784	50.3	39.1	10.4	0.2	35.9	35.0

Refinance Loans 2020

	Loan count	< 36%	36–43%	43–48%	≥ 48%	Median	Mean
All	7,444,487	60.7	22.2	12.5	4.6	33.0	32.8
PMI	649,413	57.8	26.2	12.8	3.2	34.0	34.1
FHA	467,804	30.1	22.0	18.4	29.5	42.2	41.1
VA	888,433	47.1	21.1	13.5	18.3	35.3	36.1
GSE non-PMI	5,428,023	62.4	21.8	12.3	3.6	33.0	32.3
Other	10,814	73.5	19.2	4.6	2.7	29.1	28.8

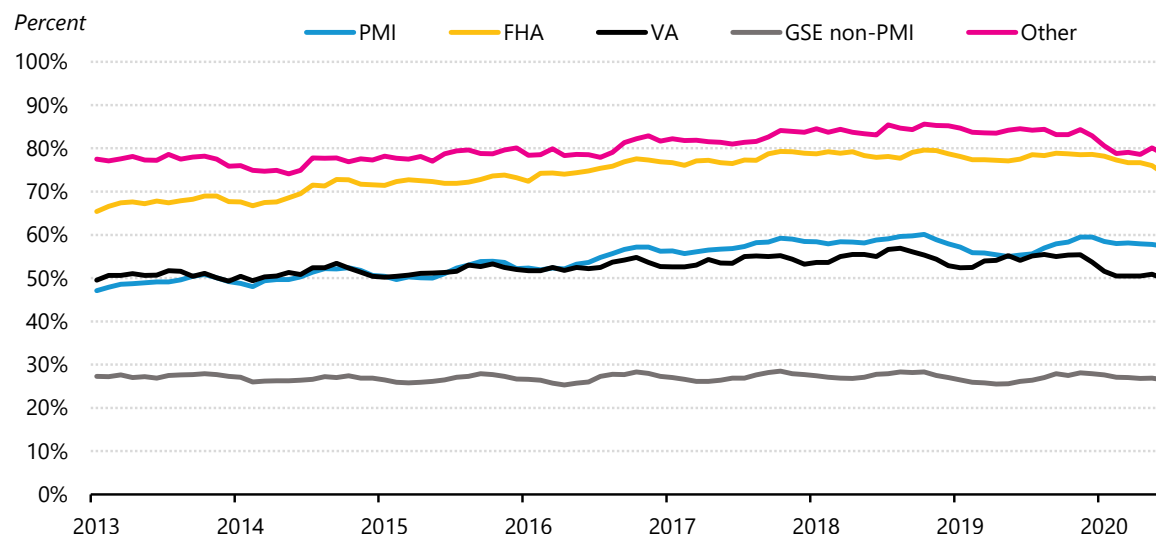
CREDIT BOX: FIRST-TIME HOMEBUYER STATUS

In December 2020, 57.4 percent of GSE borrowers with PMI, 74.1 percent of FHA borrowers, 49.8 percent of VA borrowers, and 26.5 percent of GSE borrowers without PMI were first-time homebuyers. For 2020 originations, the average first-time homebuyer was more likely than the average repeat buyer to take out a smaller loan and have a lower credit score, higher LTV ratio, lower DTI ratio, and higher interest rate.

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

Notes: DTI = debt-to-income ratio; 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 are based on agency originations in 2020.

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)	273.1	307.8	231.9	250.7	290.1	348.3	292.6	300.4	168.6	186.7
FICO score	744.8	750.7	677.1	678.2	709.6	731.7	753.0	763.8	699.5	708.0
LTV (%)	93.9	92.4	95.6	94.3	99.7	97.1	74.6	70.2	99.3	99.2
DTI (%)	35.1	37.0	42.9	43.8	39.7	41.1	32.7	34.4	34.9	35.5
Note rate (%)	3.3	3.2	3.3	3.3	3.1	3.0	3.2	3.1	3.2	3.2

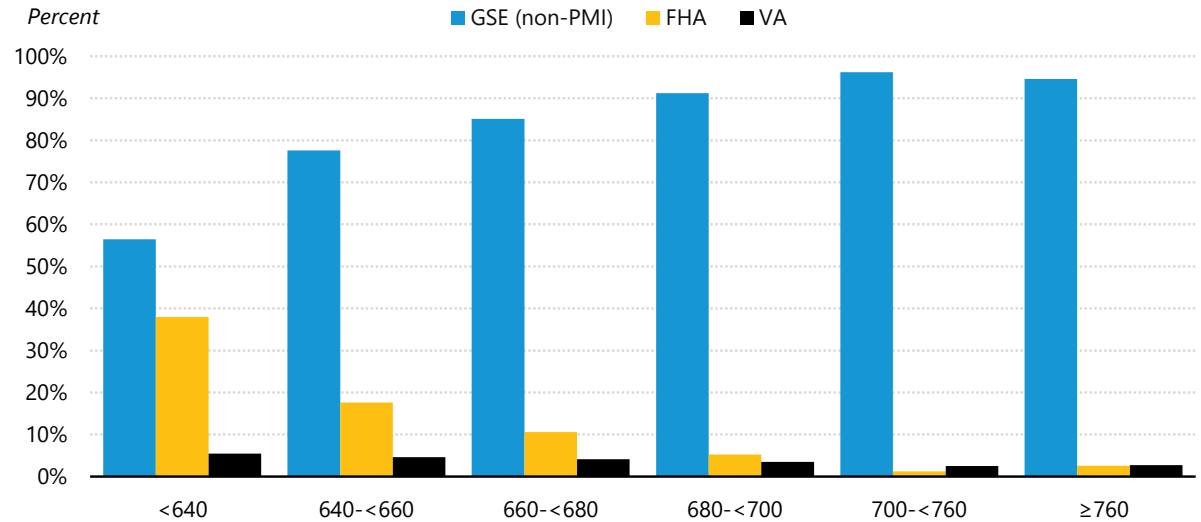
CHANNEL BY FICO SCORE AND LTV RATIO: ALL LOANS

For all 2020 originations, borrowers with LTV ratios up to 80 percent were likely to choose non-PMI GSE mortgages over any other channel, regardless of FICO score. Borrowers with LTV ratios from 80 to 95 percent and FICO scores above 680 were more likely to choose GSE loans with PMI over FHA or VA loans, while borrowers with FICO scores below 660 were more likely to choose FHA loans over PMI or VA loans. FHA loans dominated the market with LTV ratios from 95 to 97 percent and FICO scores below 700; borrowers in this LTV ratio and FICO score band were more likely to choose FHA loans over PMI or VA loans. In the market with LTV ratios above 97 percent, VA loans dominated all FICO score buckets.

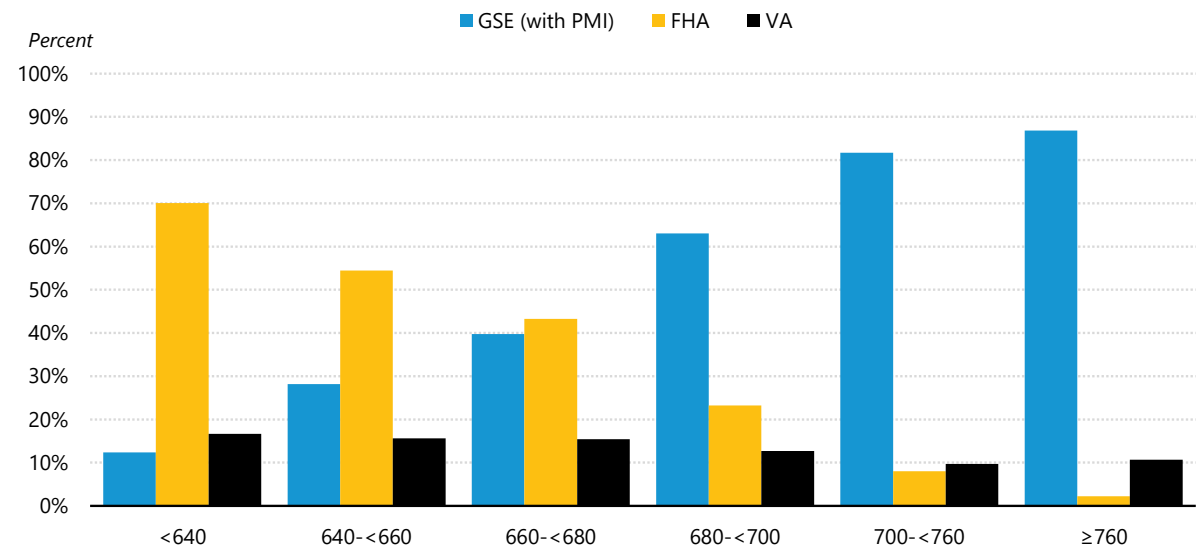
Sources: eMBS and the Urban Institute.

Notes: FHA = Federal Housing Administration; GSE = government-sponsored enterprise; LTV = loan-to-value ratio; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data are based on agency originations in 2020.

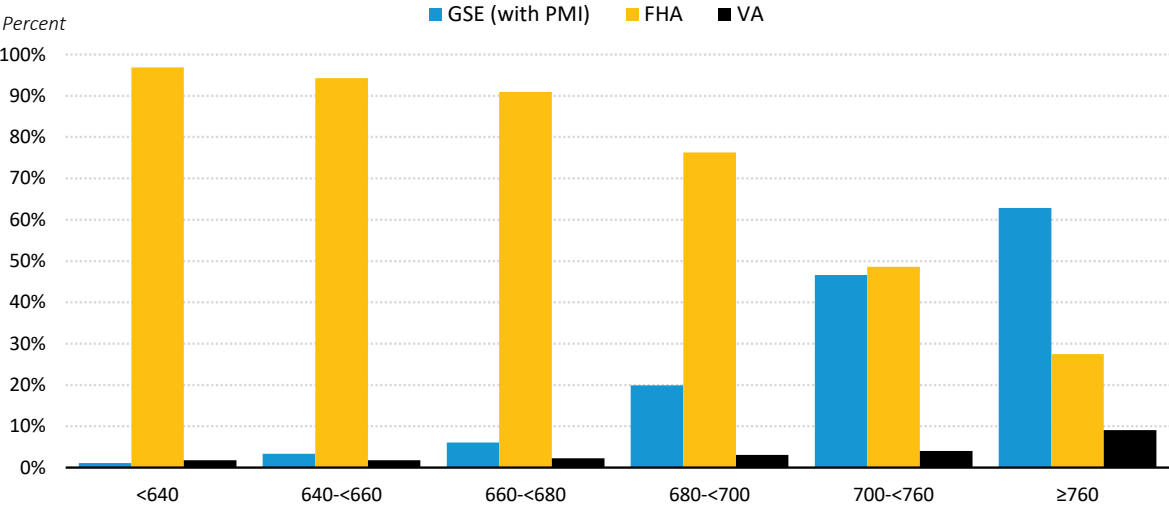
FICO Score Distribution, by Channel, for Loans with LTV Ratios up to 80 Percent



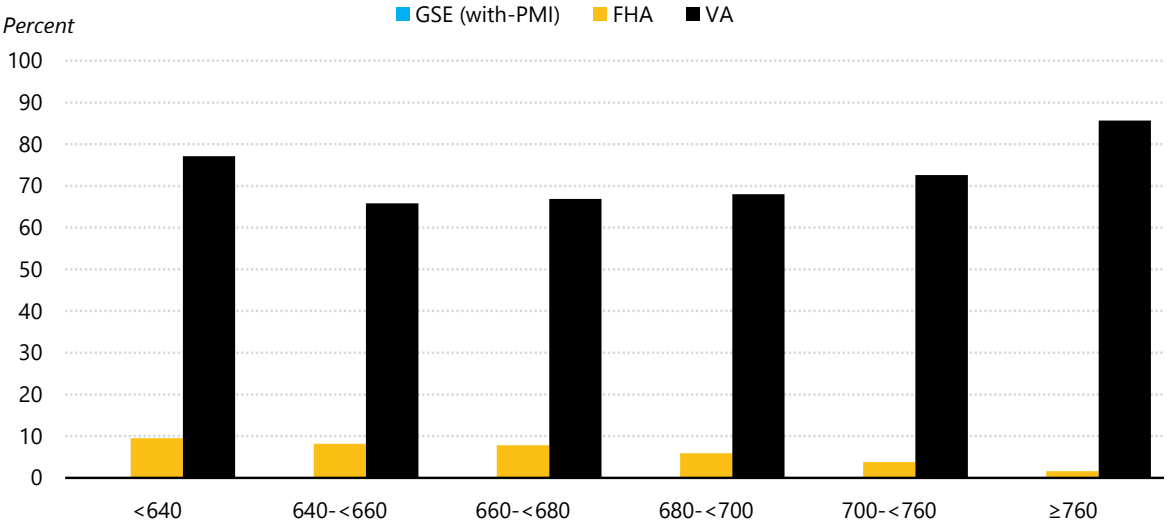
FICO Score Distribution, by Channel, for Loans with LTV Ratios from 80.01 to 94.99 Percent



FICO Score Distribution, by Channel, for Loans with LTV Ratios from 95 to 97 Percent



FICO Score Distribution, by Channel, for Loans with LTV Ratios above 97 Percent



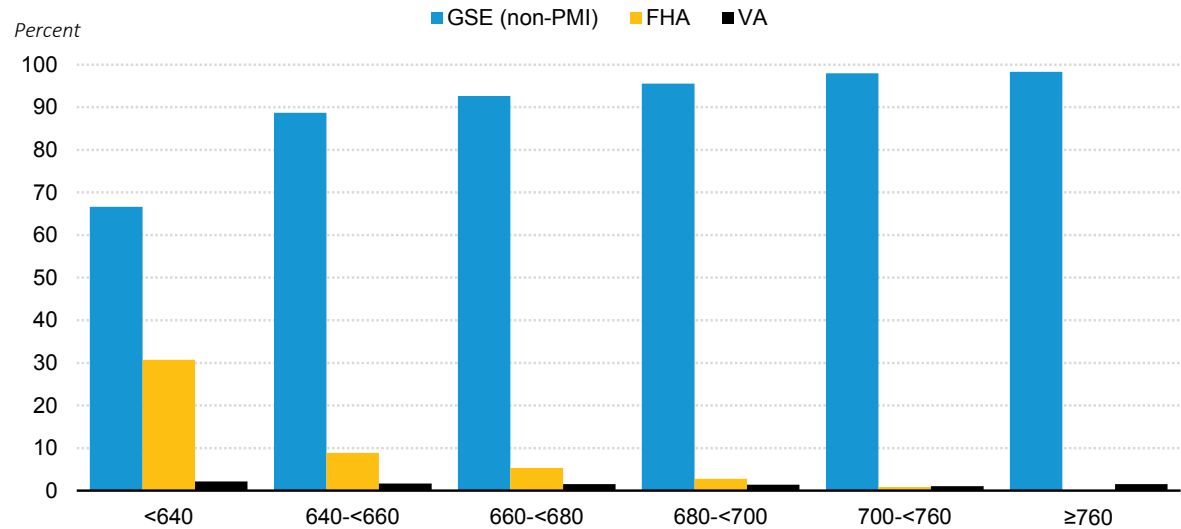
CHANNEL BY FICO SCORE AND LTV RATIO: PURCHASE LOANS

For 2020 purchase originations, borrowers with LTV ratios up to 80 percent were likely to choose non-PMI GSE mortgages over any other channel, regardless of FICO score. Borrowers with LTV ratios from 80 to 95 percent and FICO scores above 660 were more likely to choose GSE loans with PMI over FHA or VA loans, while the FHA dominated loans with FICO scores below 640. The FHA also dominated the market with LTV ratios from 95 to 97 percent and FICO scores below 700; borrowers in this segment were more likely to choose FHA loans over PMI or VA loans. Across the FICO score spectrum, VA loans dominated the lending segment with LTV ratios above 97 percent.

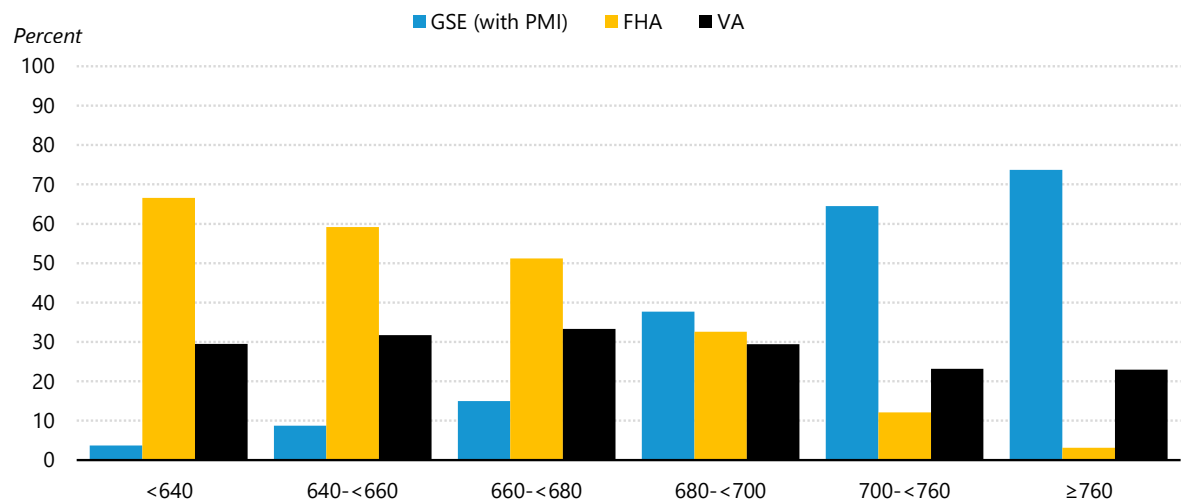
Sources: eMBS and the Urban Institute.

Notes: FHA = Federal Housing Administration; GSE = government-sponsored enterprise; LTV = loan-to-value ratio; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data are based on agency originations in 2020.

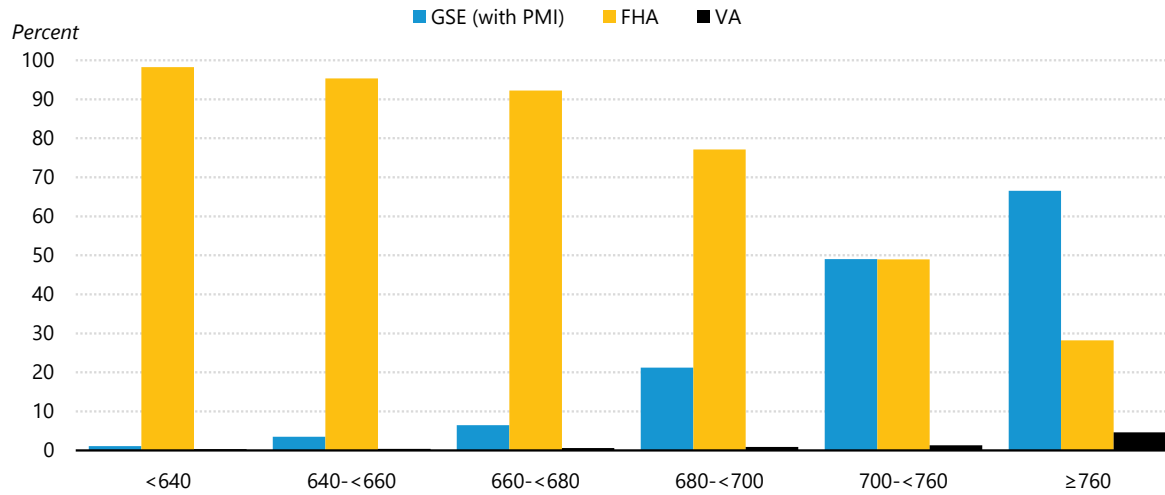
FICO Score Distribution, by Channel, for Loans with LTV Ratios up to 80 Percent



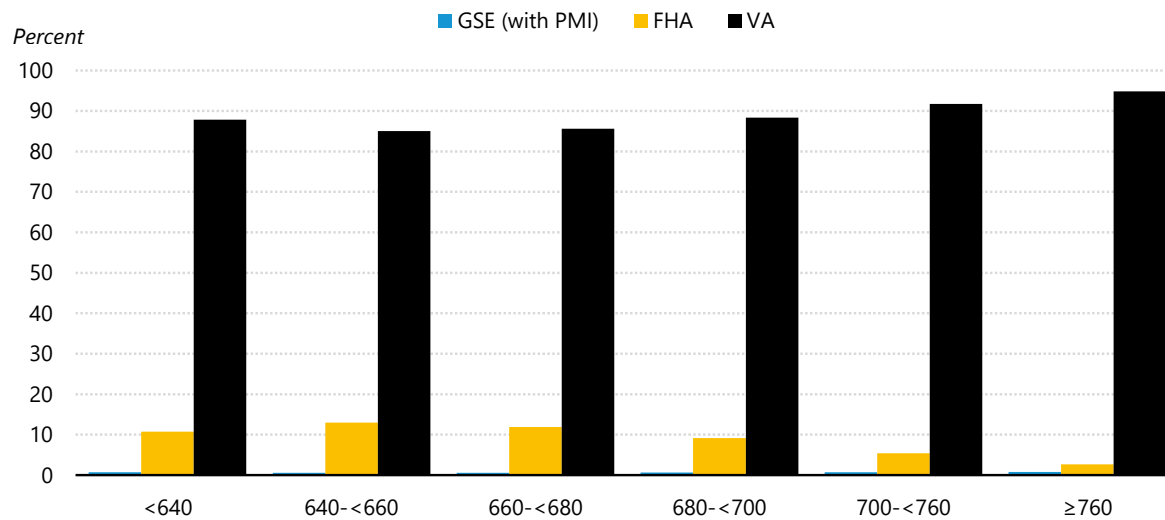
FICO Score Distribution, by Channel, for Loans with LTV Ratios from 80.01 to 94.99 Percent



FICO Score Distribution, by Channel, for Loans with LTV Ratios from 95 to 97 Percent



FICO Score Distribution, by Channel, for Loans with LTV Ratios above 97 Percent



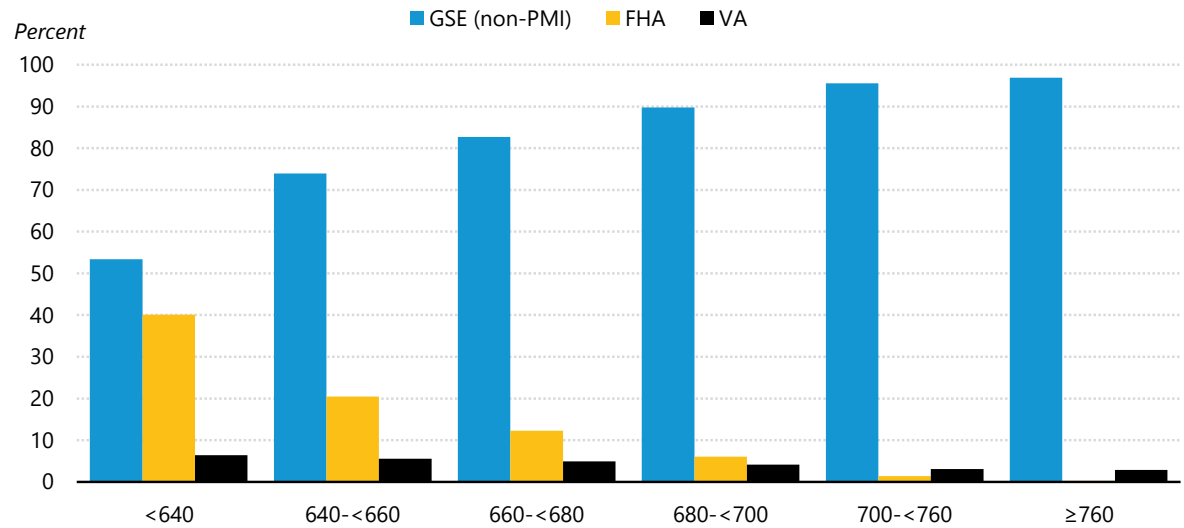
CHANNEL BY FICO SCORE AND LTV RATIO: REFINANCE LOANS

For 2020 refinance originations, borrowers with LTV ratios up to 80 percent were likely to choose non-PMI GSE mortgages over any other channel, regardless of FICO score. Borrowers with LTV ratios from 80 to 95 percent and FICO scores above 680 were more likely to choose GSE loans with PMI over FHA or VA loans. For loans with LTV ratios from 95 to 97 percent, VA loans are popular among refinance borrowers. It was the most common choice among borrowers with FICO scores at or above 700 and second behind FHA loans for borrowers with low FICO scores. VA loans dominated among loans with LTV ratios above 97 percent.

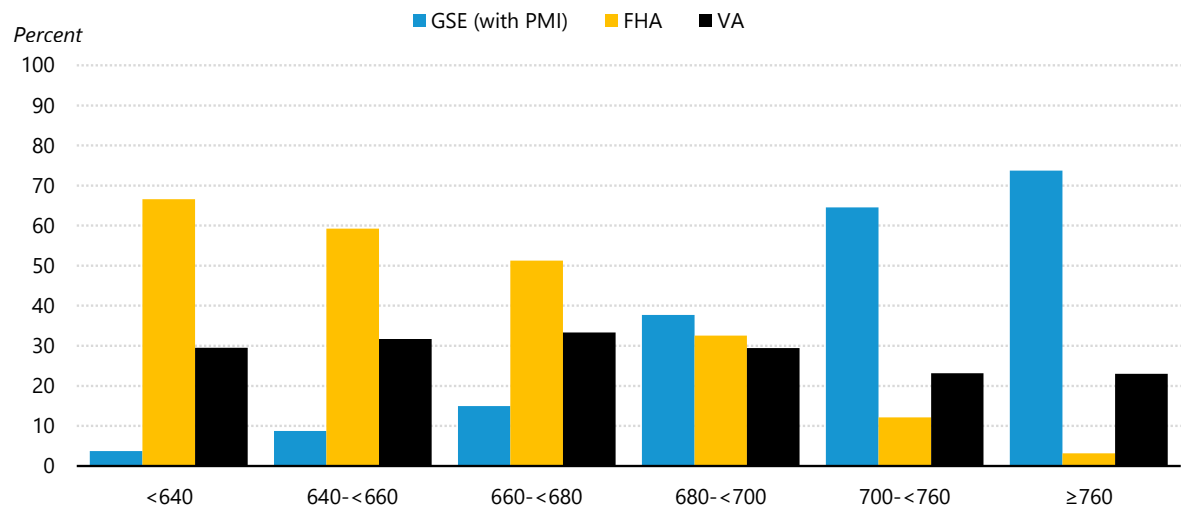
Sources: eMBS and the Urban Institute.

Notes: FHA = Federal Housing Administration; GSE = government-sponsored enterprise; LTV = loan-to-value ratio; PMI = private mortgage insurance; VA = US Department of Veterans Affairs. Data are based on agency originations in 2020.

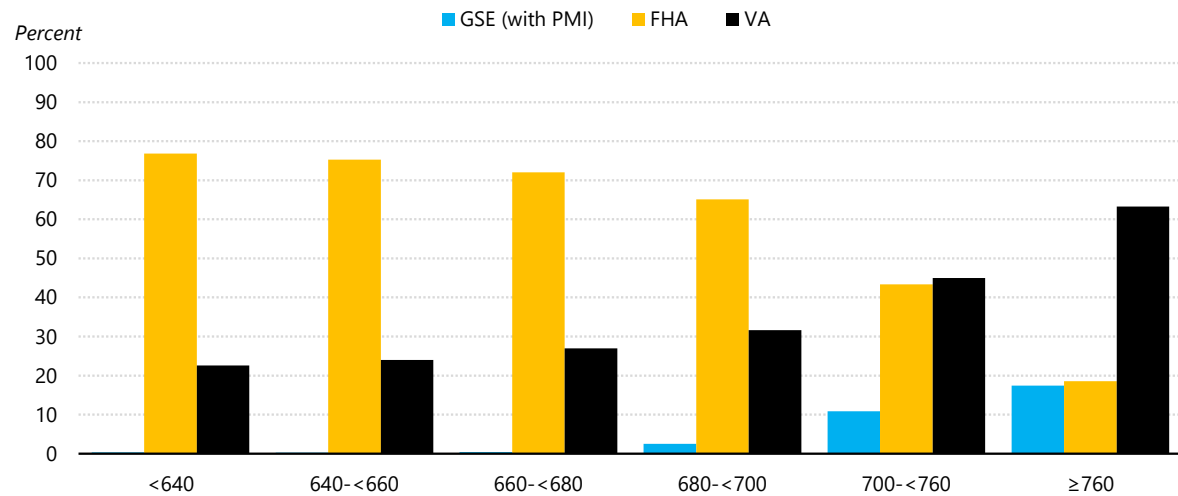
FICO Score Distribution, by Channel, for Loans with LTV Ratios up to 80 Percent



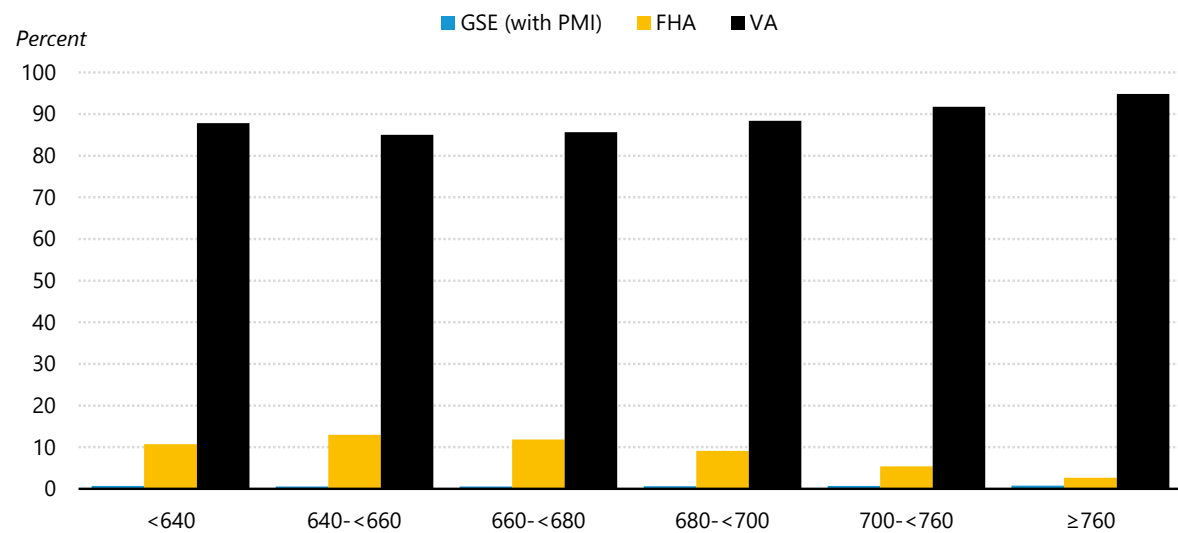
FICO Score Distribution, by Channel, for Loans with LTV Ratios from 80.01 to 94.99 Percent



FICO Score Distribution, by Channel, for Loans with LTV Ratios from 95 to 97 Percent



FICO Score Distribution, by Channel, for Loans with LTV Ratios above 97 Percent



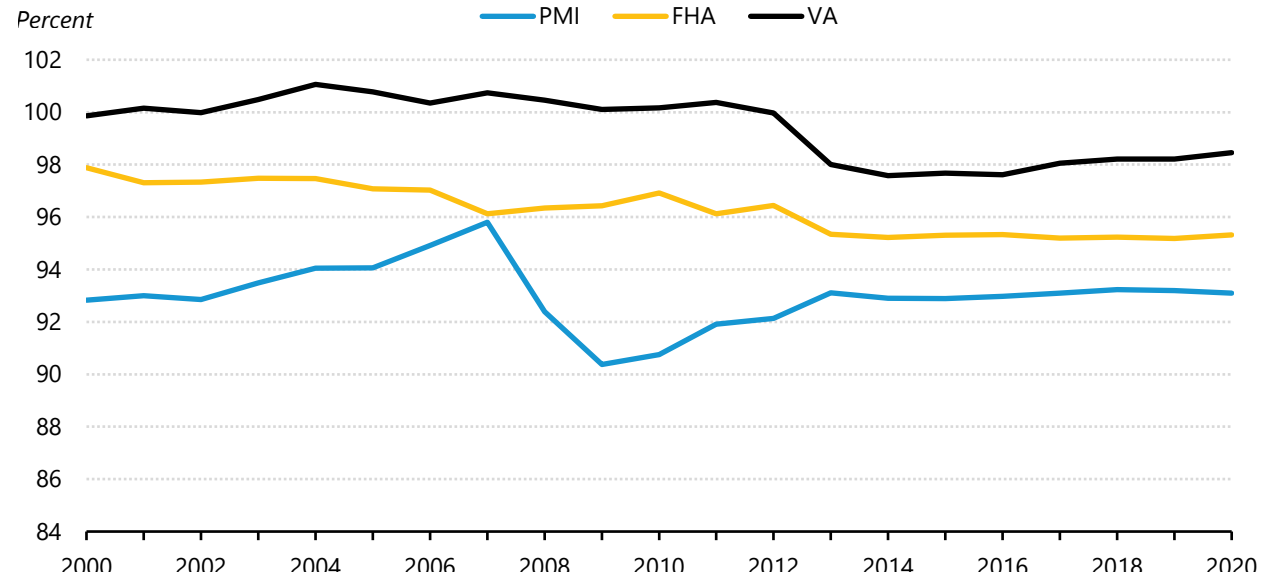
AVERAGE LTV, DTI, AND FICO TRENDS

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. DTI ratios have decreased for all three channels because of the low-interest-rate environment in 2020, while average FICO scores have gone up as lenders tightened credit standards in response to the economic uncertainty caused by the COVID-19 pandemic.

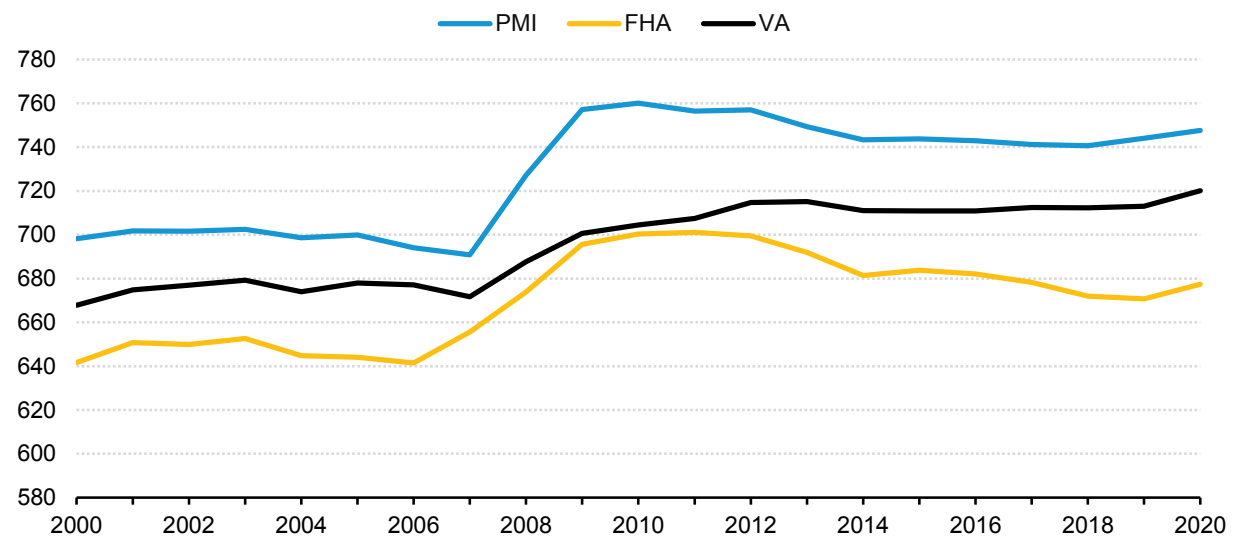
Sources: Before 2016, data are from Laurie Goodman, Alanna McCargo, Sheryl Pardo, Jun Zhu, Bing Bai, Karan Kaul, and Bhargavi Ganesh, *Mortgage Insurance at a Glance* (Washington, DC: Urban Institute, 2017); after that, they are from eMBS and the Urban Institute.

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. Private-label securities are excluded. Data are based on purchase loans only.

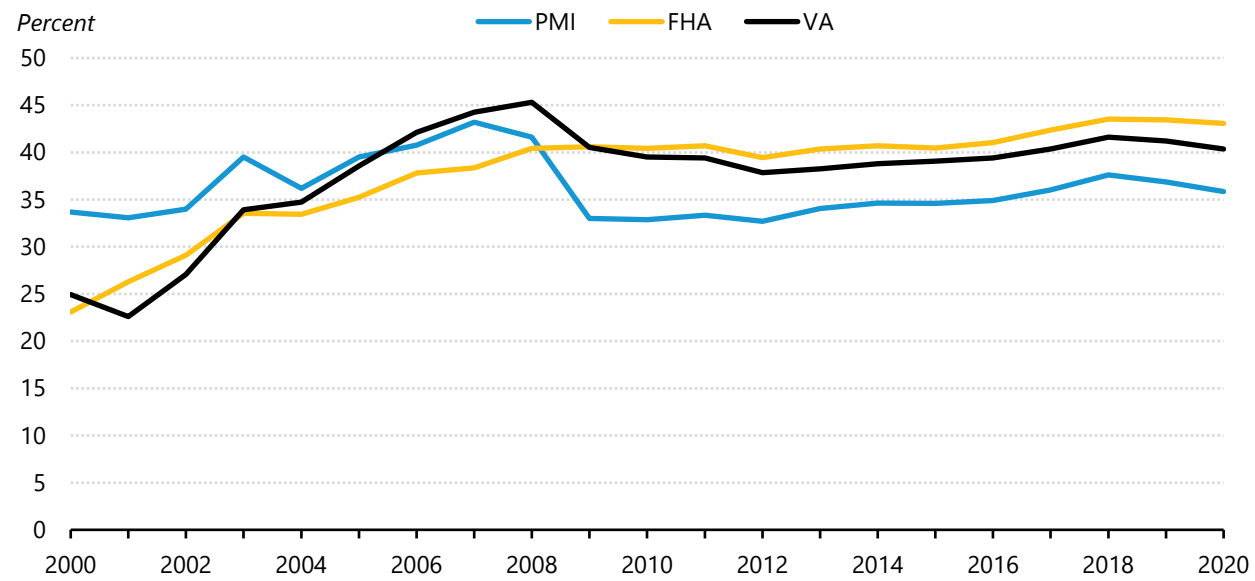
Average LTV Ratio



Average FICO Scores



Average DTI Ratios



GSE Loan-Level Credit Data



GSE LOANS IN FORBEARANCE

GSE loans with PMI are more likely to be in forbearance than GSE loans without PMI. For loans in the most recent origination cohort, 2019 through the third quarter of 2020, 5.4 percent of loans with PMI were in forbearance, compared with 3.1 percent of loans without PMI. PMI loans originated in 2017 or 2018 had the highest forbearance rate of any cohort, at 9.0 percent. PMI borrowers in forbearance had larger loan balances and higher note rates, on average, than borrowers not in forbearance, indicating higher monthly mortgage costs. PMI borrowers in forbearance also averaged lower FICO scores and higher LTV and DTI ratios.

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. The forbearance rate is calculated as the share of loans originated in each period that were in forbearance as of the fourth quarter of 2020.

Forebearance Rates for PMI and Non-PMI Originations

Origination year	PMI		Non-PMI		All	
	Count	Forb. rate	Count	Forb. rate	Count	Forb. rate
2011–2014	2,092,434	3.5%	7,412,990	2.9%	9,505,424	3.0%
2015–2016	1,737,052	6.2%	3,790,372	4.9%	5,527,424	5.3%
2017–2018	1,946,142	9.0%	3,313,618	6.7%	5,259,760	7.6%
2019–2020	2,708,810	5.4%	5,886,636	3.1%	8,595,446	3.8%

Origination Characteristics for PMI Loans in and Not in Forbearance

Origination year	Loan Size (\$ Thousands, Avg.)		Note Rate (%)		LTV (%)		FICO		DTI (%)	
	Not in forb.	In forb.	Not in forb.	In forb.	Not in forb.	In forb.	Not in forb.	In forb.	Not in forb.	In forb.
2011–2014	223.7	219.1	4.3	4.3	93.6	97.7	753.2	725.4	33.6	36.3
2015–2016	236.7	247.1	4.0	4.1	92.2	92.7	749.0	727.8	34.5	37.5
2017–2018	243.1	249.0	4.6	4.7	92.8	93.4	746.6	723.0	36.6	40.0
2019–2020	281.0	292.1	3.7	4.2	91.9	92.8	751.7	731.5	35.8	39.9

COMPOSITION

From 1999 to 2020, 23.4 percent of 30-year fixed-rate, full-documentation, fully amortizing GSE loans had private mortgage insurance. This share was as low as 8.9 percent for 2009–10 originations and was 33.6 percent for 2017–20 originations. From 1999 to 2020, the average PMI coverage was 25.1 percent. Compared with GSE loans without PMI, GSE loans with PMI are slightly smaller, are more heavily purchase loans, have higher LTV ratios, have 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; REO = real estate owned.

Loan Count and Share for GSE Loans, by PMI Category

Origination year	Loan Count		Share		Average PMI coverage
	PMI	Non-PMI	PMI	Non-PMI	
1999–2004	3,754,090	13,738,196	21.5%	78.5%	24.3%
2005	323,325	2,010,191	13.9%	86.1%	24.6%
2006	259,344	1,600,085	13.9%	86.1%	24.6%
2007	413,423	1,654,048	20.0%	80.0%	24.9%
2008	450,849	1,714,570	20.8%	79.2%	23.8%
2009–2010	520,913	5,358,277	8.9%	91.1%	23.2%
2011–2016	3,831,931	11,211,316	25.5%	74.5%	26.0%
2017–2020	4,658,832	9,206,209	33.6%	66.4%	25.3%
Total	14,212,707	46,492,892	23.4%	76.6%	25.1%

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	139.3	158.4	6.9	6.5	0.7	0.3	91.1	68.2	732.3	746.3	35.7	32.9
2005	157.2	186.5	6.0	5.9	0.7	0.4	91.2	67.8	719.1	729.4	38.6	36.4
2006	166.7	193.1	6.6	6.4	0.7	0.5	91.3	68.1	717.6	728.9	39.9	37.3
2007	182.4	200.0	6.6	6.4	0.6	0.4	91.5	68.1	714.5	731.6	40.0	37.2
2008	206.6	221.5	6.2	6.1	0.7	0.4	91.0	67.5	735.5	747.1	39.6	36.9
2009–2010	216.3	234.6	4.9	4.9	0.6	0.3	90.9	67.0	756.5	762.6	32.6	32.8
2011–2016	229.8	237.0	4.2	4.1	0.8	0.4	93.1	70.7	750.4	757.1	34.2	33.1
2017–2020	265.7	271.5	4.1	4.0	0.8	0.4	92.3	68.1	748.9	756.3	36.4	34.7
Total	212.3	214.7	5.1	5.2	0.7	0.4	92.0	68.6	742.5	750.9	35.8	33.9

DEFAULTS: 180 OR MORE DAYS DELINQUENT

GSE loans with PMI tend to go 180 or more days delinquent more frequently than GSE loans without PMI. From 1999 to 2020, 2.9 percent of GSE loans without PMI went 180 or more days delinquent, versus 4.4 percent of loans with PMI. For the highest delinquency issue year, 2007, the share of loans that went 180 or more days delinquent were 10.5 percent and 19.8 percent, respectively. For 2011–16 vintages, the rates were 1.7 percent for GSE loans without PMI and 2.3 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.

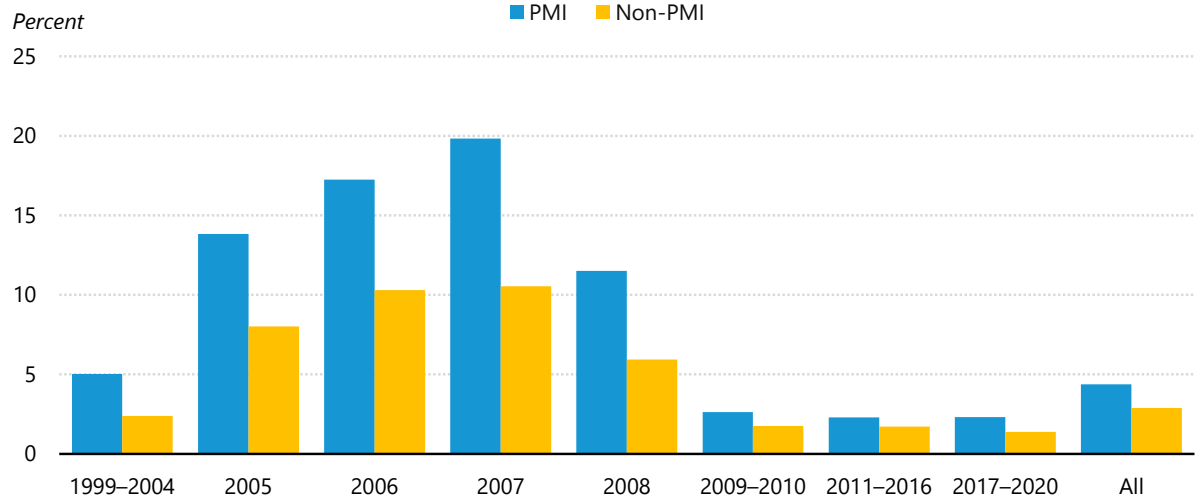
Sources: Fannie Mae, Freddie Mac, and the Urban Institute.

Notes: D180+ = loans that have been delinquent for 180 or more days; PMI = private mortgage insurance; UPB = unpaid principal balance; Q1 = first quarter. Government-sponsored enterprise credit data include 30-year fixed-rate, full-documentation, fully amortizing mortgage loans only. Fannie Mae data include loans originated from Q1 1999 through Q4 2020; performance data for these loans are also available through Q4 2020. Freddie Mac data include loans originated from Q1 1999 to Q3 2020; performance data for these loans are available through Q4 2020. 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	5.0%	2.4%	4.1%	1.9%
2005	13.8%	8.0%	13.7%	7.7%
2006	17.3%	10.3%	17.7%	10.2%
2007	19.8%	10.5%	20.8%	10.3%
2008	11.5%	5.9%	11.8%	5.4%
2009–2010	2.6%	1.8%	2.3%	1.4%
2011–2016	2.3%	1.7%	2.1%	1.5%
2017–2020	2.3%	1.4%	2.3%	1.4%
All	4.4%	2.9%	3.7%	2.5%

Historical Default Rates (D180+) for Government-Sponsored Enterprise Loans, by Origination Year



DEFAULTED LOANS AND LOSS SEVERITY

Once more than 180 days delinquent, GSE loans with PMI are less likely than those without PMI to become current or prepaid and are more likely to liquidate. From 1999 to 2020, 60.1 percent of GSE loans with PMI were liquidated, versus 56.7 percent of loans without PMI. But once the loan is liquidated (real estate owned or foreclosure alternative), the actual severity the GSEs experience is lower for loans with PMI than for those without, because mortgage insurance recoveries reduce losses.

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

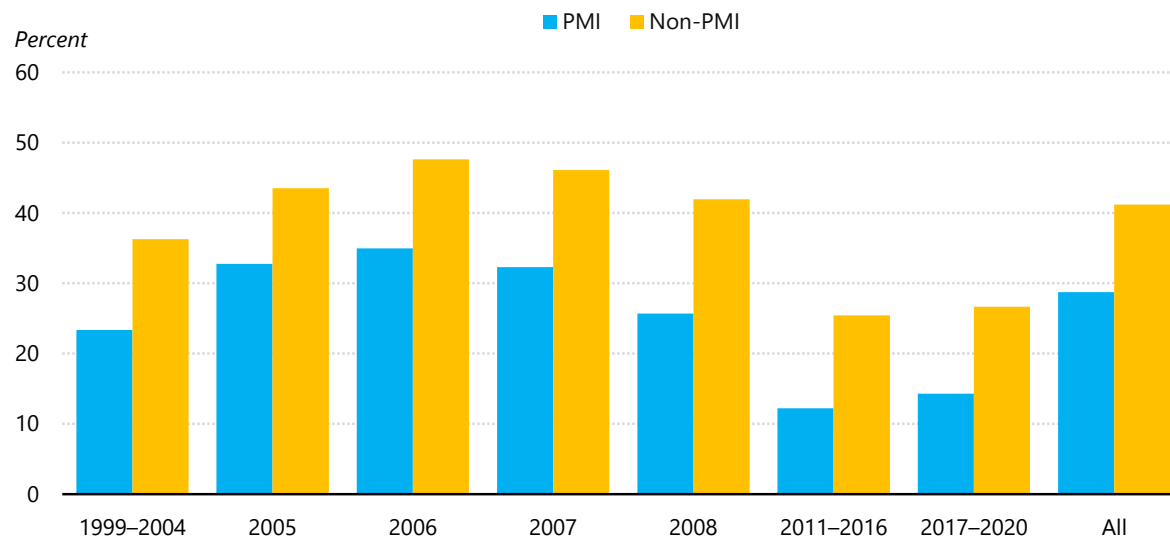
Notes: GSE = government-sponsored enterprise; PMI = private mortgage insurance; REO = real estate owned; Q1 = first quarter. Foreclosure alternatives include short sales, third-party sales, note sales, and reperforming sales. GSE credit data include 30-year fixed-rate, full-documentation, fully amortizing mortgage loans only. Fannie Mae data include loans originated from Q1 1999 through Q4 2020; performance data for these loans are also available through Q4 2020. Freddie Mac data include loans originated from Q1 1999 to Q3 2020; performance data for these loans are available through Q4 2020.

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	7.2%	9.2%	17.4%	26.3%	65.5%	53.8%	9.9%	10.7%
2005	7.4%	9.3%	9.3%	16.1%	73.4%	65.5%	9.9%	9.2%
2006	7.0%	9.0%	8.3%	13.4%	72.4%	66.9%	12.3%	10.6%
2007	6.5%	9.6%	8.9%	14.4%	66.9%	61.5%	17.8%	14.4%
2008	6.6%	9.8%	11.3%	17.2%	60.3%	53.7%	21.8%	19.4%
2009–2010	4.9%	6.3%	12.1%	17.2%	78.4%	69.7%	4.6%	6.8%
2011–2016	9.5%	8.6%	8.5%	12.8%	14.7%	20.3%	67.3%	58.3%
2017–2020	3.4%	3.2%	8.5%	10.7%	16.5%	11.6%	71.6%	74.5%
All	6.2%	7.8%	11.8%	17.3%	60.1%	56.7%	21.9%	18.2%

Loss Severity for GSE Loans with and without PMI



MORE >

LOSS SEVERITY

For the 1999–2020 origination period, the loss severity of GSE loans without PMI was 41.2 percent, higher than the 28.7 percent severity for loans with PMI. For loans with PMI, mortgage insurance recovery was 19.9 percent. Absent PMI recovery, loss severity for GSE loans with PMI would be 48.6 percent (or 19.9 percent plus 28.7 percent). 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.

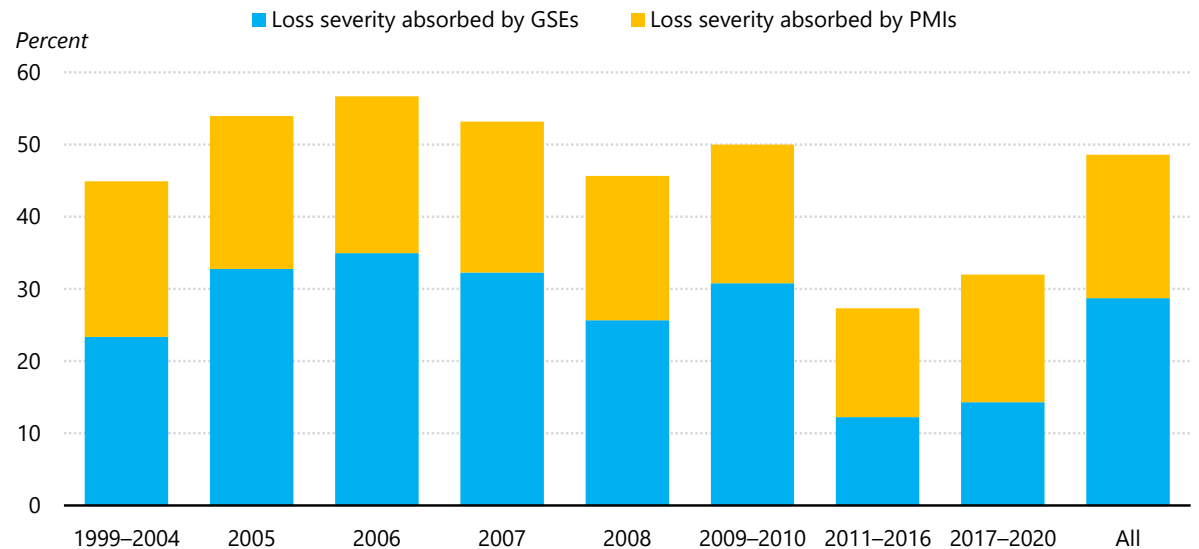
Sources: Fannie Mae, Freddie Mac, and the Urban Institute.

Notes: GSE = government-sponsored enterprise; PMI = private mortgage insurance; REO = real estate owned; Q1 = first quarter. Foreclosure alternatives include short sales, third-party sales, note sales, and reperforming sales. 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 Q4 2020; performance data for these loans are also available through Q4 2020. Freddie Mac data include loans originated from Q1 1999 to Q3 2020; performance data for these loans are available through Q4 2020.

Total

Origination year	Loss severity for loans without PMI	Total severity for PMI loans	Severity without MI recovery	MI recovery	Average Coverage Percentage
1999–2004	36.3%	23.4%	44.9%	21.6%	24.3%
2005	43.5%	32.8%	54.0%	21.2%	24.6%
2006	47.6%	35.0%	56.7%	21.7%	24.6%
2007	46.1%	32.3%	53.2%	20.9%	24.9%
2008	42.0%	25.7%	45.7%	20.0%	23.8%
2009–2010	41.2%	30.8%	50.0%	19.2%	23.2%
2011–2016	25.4%	12.2%	27.3%	15.1%	26.0%
2017–2020	26.7%	14.3%	32.0%	17.7%	25.3%
All	41.2%	28.7%	48.6%	19.9%	25.1%

Reduction in GSE Loss Severity Because of PMI



Foreclosure Alternatives

Origination year	Total severity for PMI loans	MI recovery	Severity without MI recovery	Loss severity for loans without PMI
1999–2004	17.1%	16.3%	33.4%	34.2%
2005	26.1%	21.5%	47.6%	42.6%
2006	27.4%	22.8%	50.1%	44.9%
2007	25.5%	23.0%	48.5%	44.9%
2008	20.4%	21.9%	42.3%	40.1%
2009–2010	20.4%	13.0%	33.4%	31.1%
2011–2016	8.4%	12.3%	20.6%	19.8%
2017–2020	8.2%	4.8%	13.0%	11.3%
All	20.1%	15.1%	35.2%	32.6%

REO

Origination year	Total severity for PMI loans	MI recovery	Severity without MI recovery	Loss severity for loans without PMI
1999–2004	26.4%	25.5%	51.9%	46.6%
2005	38.6%	24.4%	63.0%	52.6%
2006	42.4%	25.2%	67.6%	58.8%
2007	40.7%	25.0%	65.7%	58.8%
2008	33.2%	24.5%	57.7%	53.8%
2009–2010	39.1%	24.2%	63.3%	56.7%
2011–2016	19.0%	20.7%	39.7%	42.4%
2017–2020	16.9%	22.4%	39.3%	36.7%
All	35.6%	24.5%	60.1%	54.7%



LOSS RATE FOR GSE LOANS WITH PMI

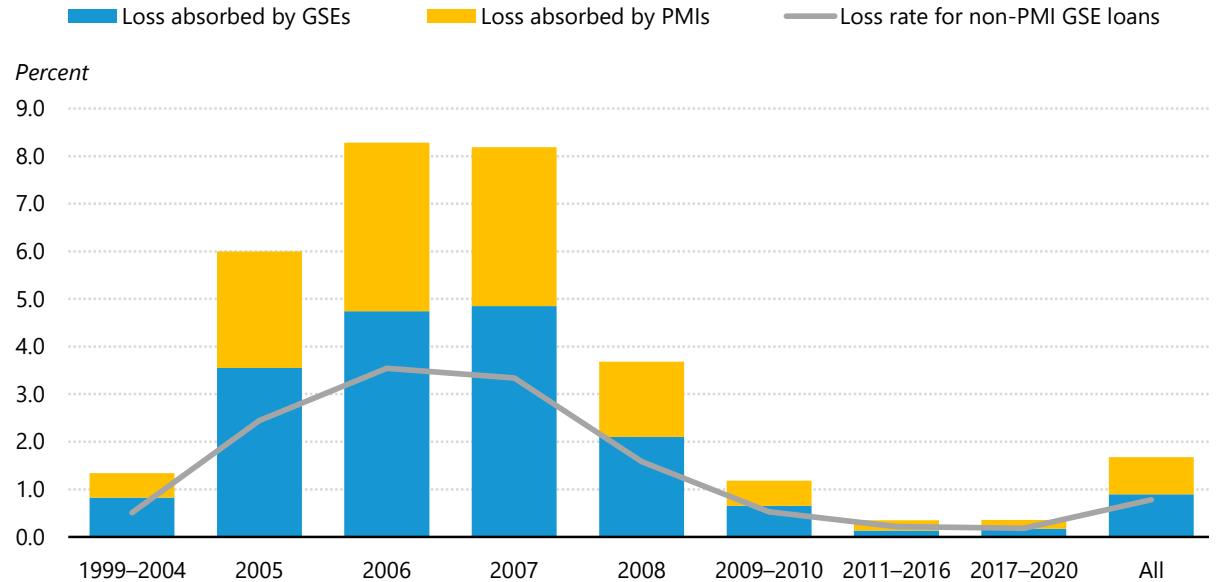
The loss rate is the ratio of total losses to the dollar volume of GSE mortgages. It combines the probability of default (loans going 180 or more days delinquent) and the loss severity rate upon liquidation. This figure shows loss rates separately for GSE loans with and without PMI. The loss rate for GSE loans without PMI (gray line) is consistent with the portion of the loss rate the GSEs absorb for loans with PMI (blue bars). The yellow bars show the portion of the loss rate the private mortgage insurers absorbed.

The presence of PMI reduces the losses the GSEs experience on loans with LTV ratios above 80 percent to the same levels as the losses they experience on loans with LTV ratios up to 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; Q1 = first quarter. Foreclosure alternatives include short sales, third-party sales, note sales, and reperforming sales. 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 Q4 2020; performance data for these loans are also available through Q4 2020. Freddie Mac data include loans originated from Q1 1999 to Q3 2020; performance data for these loans are available through Q4 2020.

Loss Rate for GSE Loans





PMI Credit Risk Transfer



INSURANCE-LINKED NOTES

The private mortgage insurers have become increasingly proactive in managing their risk. In 2015, the insurers issued \$298.9 million in insurance-linked notes (ILNs), covering \$8.2 billion in risk in force and \$32.3 billion in mortgage loans. By 2020, issuance had grown to \$4.7 billion, protecting \$115.6 billion in risk in force and \$511 billion in mortgage loans. In addition, the private mortgage insurers have executed 29 reinsurance deals since 2015, ceding nearly \$34 billion in risk on approximately \$649.2 billion in insurance in force using excess of loss (XOL) and quota share reinsurance transactions (QSR). The bottom chart shows annual ILN volume issued by various private mortgage insurers over time. 2021 totals are year-to-date through May.

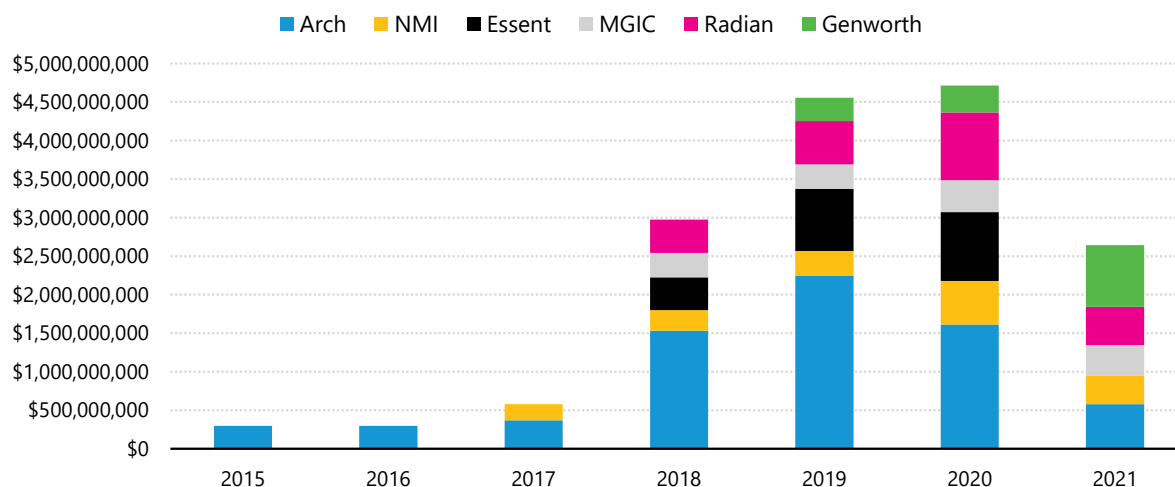
Source: US Mortgage Insurers.

Notes: IIF = insurance in force; ILN = insurance-linked notes; NMI = National Mortgage Insurance Corporation; QSR = quota share reinsurance; RIF = risk in force; XOL = excess of loss.

Private Mortgage Insurance Credit Risk Transfer

	ILN issues	IIF	RIF
2015	\$298,900,000	\$32,370,000,000	\$8,250,000,000
2016	\$298,600,000	\$26,020,000,000	\$6,640,000,000
2017	\$579,420,000	\$60,190,000,000	\$13,002,000,000
2018	\$2,975,491,000	\$298,301,000,000	\$60,433,000,000
2019	\$4,555,327,000	\$389,755,440,732	\$86,634,140,080
2020	\$4,712,746,000	\$511,123,912,753	\$115,570,044,566
2021	\$2,640,796,000	\$283,655,000,000	\$63,357,000,000
Total	\$16,061,280,000	\$1,601,415,353,485	\$353,886,184,646

Private Mortgage Insurance ILN Issuances by Year and Company



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 loans for borrowers with a FICO score of 720 or above. For borrowers with a 95 percent LTV ratio (5 percent down), PMI is more economical for FICO scores of 700 and above. But PMI cancels at 78 percent LTV, whereas the FHA annual premium stays in place for the life of the loan.

Sources: PMI premiums are 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. The calculation excludes property taxes and insurance. FHA UFMIP is financed into the loan amount.

FHA versus PMI: 96.5 Percent Loan-to-Value Ratio

FICO	620–639	640–659	660–679	680–699	700–719	720–739	740–759	760+
FHA MI premiums								
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
PMI								
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
Monthly payment								
FHA	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329
PMI	\$1,604	\$1,536	\$1,497	\$1,402	\$1,354	\$1,313	\$1,268	\$1,241
PMI advantage	(\$275)	(\$207)	(\$168)	(\$73)	(\$24)	\$17	\$61	\$88

Assumptions

Property value \$275,000 **Loan amount** \$265,375 **LTV** 96.5% **Base rate: conforming** 2.81% **Base rate: FHA** 3.02%

FHA versus PMI: 95 Percent Loan-to-Value Ratio

FICO	620–639	640–659	660–679	680–699	700–719	720–739	740–759	760+
FHA MI premiums								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PMI								
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
Monthly payment								
FHA	\$1,298	\$1,298	\$1,298	\$1,298	\$1,298	\$1,298	\$1,298	\$1,298
PMI	\$1,476	\$1,442	\$1,417	\$1,319	\$1,273	\$1,232	\$1,197	\$1,165
PMI advantage	(\$179)	(\$145)	(\$119)	(\$21)	\$25	\$65	\$101	\$133

Assumptions

Property value \$275,000 **Loan amount** \$261,250 **LTV** 95% **Base rate: conforming** 2.81% **Base rate: FHA** 3.02%

INITIAL MONTHLY PAYMENT COMPARISON

For borrowers with a 90 percent LTV ratio (10 percent down), PMI is more economical than FHA loans for FICO scores of 680 or above. For borrowers with an 85 percent LTV ratio, PMI loans are more economical than FHA across the FICO spectrum. In addition, PMI cancels at 78 percent LTV, whereas the FHA annual premium stays in place for the life of the loan.

Sources: PMI premiums are 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. The calculation excludes property taxes and insurance. We assume the FHA UFMIP is financed into the loan amount.

FHA versus PMI: 90 Percent Loan-to-Value Ratio

FICO	620–639	640–659	660–679	680–699	700–719	720–739	740–759	760+
FHA MI premiums								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PMI								
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
Monthly payment								
FHA	\$1,229	\$1,229	\$1,229	\$1,229	\$1,229	\$1,229	\$1,229	\$1,229
PMI	\$1,300	\$1,280	\$1,264	\$1,186	\$1,158	\$1,126	\$1,103	\$1,083
PMI advantage	(\$70)	(\$50)	(\$35)	\$44	\$71	\$103	\$126	\$147

Assumptions

Property value \$275,000 **Loan amount** \$247,500 **LTV** 90% **Base rate: conforming** 2.81% **Base rate: FHA** 3.02%

FHA versus PMI: 85 Percent Loan-to-Value Ratio

FICO	620–639	640–659	660–679	680–699	700–719	720–739	740–759	760+
FHA MI premiums								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PMI								
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
Monthly payment								
FHA	\$1,161	\$1,161	\$1,161	\$1,161	\$1,161	\$1,161	\$1,161	\$1,161
PMI	\$1,130	\$1,122	\$1,105	\$1,054	\$1,035	\$1,019	\$1,007	\$1,005
PMI advantage	\$31	\$39	\$56	\$107	\$126	\$142	\$154	\$156

Assumptions

Property value \$275,000 **Loan amount** \$233,750 **LTV** 85% **Base rate: conforming** 2.81% **Base rate: FHA** 3.02%

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