

Houston-The Woodlands- Sugar Land

Housing Affordability Outlook



Dr. Clare Losey
Assistant Research Economist

Dr. Harold D. Hunt
Research Economist

Reece Neathery
Research Intern



TEXAS A&M UNIVERSITY

Texas Real Estate Research Center

TECHNICAL REPORT
2 3 4 4
4TH QUARTER 2022

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Houston-The Woodlands-Sugar Land Housing Affordability Outlook 4Q2022

About this Report

Texas Real Estate Research Center economists continuously monitor many facets of both state and local housing markets. *Houston-The Woodlands-Sugar Land Housing Affordability Outlook* summarizes significant housing activity and trends as related to affordability in the Houston-The Woodlands-Sugar Land MSA. Home prices reflect single-family existing homes unless otherwise stated. This report does not seasonally adjust home prices.

This publication is designed to be a one-stop resource for information on housing affordability for potential homebuyers in Houston-The Woodlands-Sugar Land. We hope you find them as useful as we do. Your feedback is always appreciated. Send comments and suggestions to info@recenter.tamu.edu.

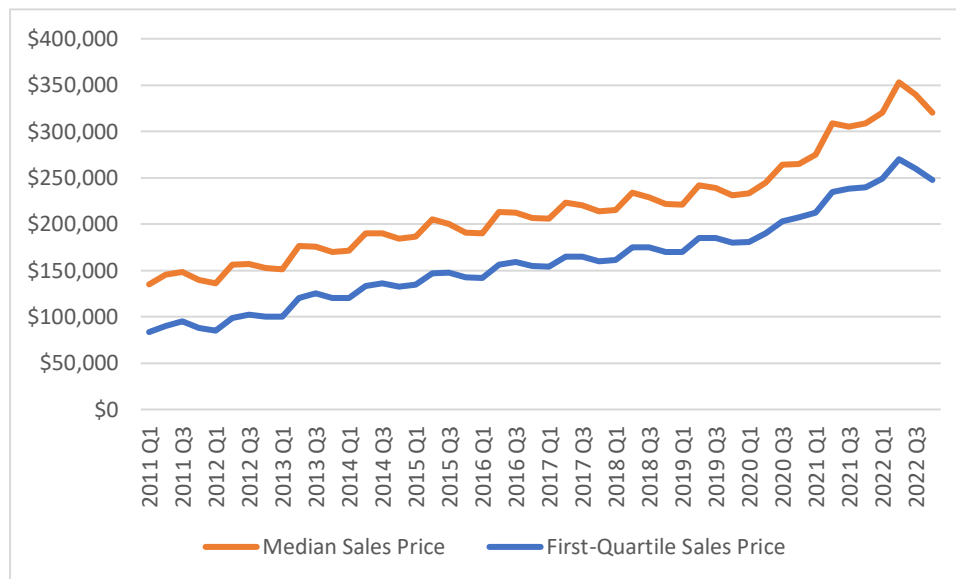
Dr. Clare Losey, Dr. Harold D. Hunt, and Reece Neathery

Purchase Affordability

Affordability remained low in 4Q2022 amid higher mortgage interest rates and still-elevated home prices. Year-over-year (YOY) growth in both the median and first-quartile sales price was modest, at 3.6 percent and 3.1 percent, respectively (Figure 1 and Table 1).¹ The YOY increase in family income followed years of significant rises (Table 2). The growth in median home price was outpaced by a substantial rise in median family income, at 13.8 percent.

The rapid rise in mortgage interest rates continued to diminish home purchasing-potential. Rates averaged 6.66 percent in 4Q2022, up considerably from 2Q2022 and 3Q2022, which averaged 5.27 and 5.62 percent, respectively (Figure 2). All other things being equal, lower (higher) mortgage interest rates translate into lower (higher) monthly mortgage payments and ease (diminish) purchase affordability. The Federal Reserve is widely anticipated to raise the federal funds rate an additional 75 basis points in 2023 to reduce inflationary pressures. Expectations dictate that mortgage rates will continue to dissipate slightly before settling in the 5 percent range. For more information on the effect of mortgage interest rates on purchase affordability, see [“How Higher Interest rates Affect Homebuying”](https://www.recenter.tamu.edu/articles/tierra-grande/How-Higher-Interest-Rates-Affect-Homebuying-2339) at <https://www.recenter.tamu.edu/articles/tierra-grande/How-Higher-Interest-Rates-Affect-Homebuying-2339>.

**Figure 1. Median and First-Quartile Sales Prices
in Houston-The Woodlands-Sugar Land**



Source: Texas Real Estate Research Center at Texas A&M University

¹ The first quartile reflects the lowest-priced 25 percent of homes sold in a particular geography. The first-quartile sales price represents the highest home price among those lowest-priced 25 percent of homes sold. If the price of the lowest 25 percent of homes sold ranges from \$100,000 to \$150,000, then the first-quartile sales price would be \$150,000.

Table 1. Median Sales Price and First-Quartile Sales Price by Quarter

Year	Median Home Price	YOY Change	First-Quartile Home Price	YOY Change
4Q2011	\$140,000		\$88,000	
4Q2012	\$153,000	9.3%	\$100,000	13.6%
4Q2013	\$170,000	11.1%	\$120,000	20.0%
4Q2014	\$184,375	8.5%	\$132,500	10.4%
4Q2015	\$191,000	3.6%	\$142,500	7.5%
4Q2016	\$206,700	8.2%	\$154,900	8.7%
4Q2017	\$214,000	3.5%	\$160,000	3.3%
4Q2018	\$222,000	3.7%	\$170,000	6.3%
4Q2019	\$230,900	4.0%	\$180,000	5.9%
4Q2020	\$265,000	14.8%	\$207,000	15.0%
4Q2021	\$309,000	16.6%	\$240,000	15.9%
4Q2022	\$320,000	3.6%	\$247,500	3.1%

Source: Texas Real Estate Research Center at Texas A&M University

Table 2. Median Family Income by Year

Year	Income for First-Time Homebuyers	YOY Change	Median Family Income	YOY Change
2011	\$52,800		\$66,000	
2012	\$53,500	1.3%	\$66,900	1.4%
2013	\$52,950	-1.0%	\$66,200	-1.0%
2014	\$53,300	0.7%	\$66,600	0.6%
2015	\$55,450	4.0%	\$69,300	4.1%
2016	\$55,350	-0.2%	\$69,200	-0.1%
2017	\$57,200	3.3%	\$71,500	3.3%
2018	\$59,900	4.7%	\$74,900	4.8%
2019	\$61,050	1.9%	\$76,300	1.9%
2020	\$63,050	3.3%	\$78,800	3.3%
2021	\$63,350	0.5%	\$79,200	0.5%
2022	\$70,850	11.8%	\$90,100	13.8%

Note: The income for first-time homebuyers reflects the income limit for low-income families, who earn no more than 80 percent of the median family income. This table reflects income figures for a four-person family.

Source: United States Department of Housing and Urban Development

Figure 2. 30-Year Fixed Rate Mortgage Average in the United States



Sources: Federal Reserve Economic Data and Freddie Mac

Repeat Homebuyer

Despite moderating home price growth, the gap between home price and family income remained wide in 4Q2022. For households earning the median family income for Houston-The Woodlands-Sugar Land in 2022 (\$90,100), the median sales price for 4Q2022 was not affordable to them unless the home price-to-income multiplier met 4 (Table 3). Only 34.2 percent of homes sold in 4Q2022 were affordable to households earning the median family income with a home price-to-income multiplier of 3 (Table 4). Households would have to earn upward of \$106,000 annually to be able to afford the median sales price (\$320,000) with a home price-to-income multiplier of 3.

**Table 3. Maximum Home Price Affordable by Family Income
and Home Price-to-Income Multiplier**

		Home Purchasing Power							
	Family Income	2	2.5	3	3.5	4	4.5	5	5.5
	\$80,000	\$160,000	\$200,000	\$240,000	\$280,000	\$320,000	\$360,000	\$400,000	\$440,000
	\$85,000	\$170,000	\$212,500	\$255,000	\$297,500	\$340,000	\$382,500	\$425,000	\$467,500
Median Family Income	\$90,100	\$180,200	\$225,250	\$270,300	\$315,350	\$360,400	\$405,450	\$450,500	\$495,550
	\$95,000	\$190,000	\$237,500	\$285,000	\$332,500	\$380,000	\$427,500	\$475,000	\$522,500
	\$100,000	\$200,000	\$250,000	\$300,000	\$350,000	\$400,000	\$450,000	\$500,000	\$550,000
	\$105,000	\$210,000	\$262,500	\$315,000	\$367,500	\$420,000	\$472,500	\$525,000	\$577,500
Workforce Households	\$108,100	\$216,200	\$270,250	\$324,300	\$378,350	\$432,400	\$486,450	\$540,500	\$594,550
	\$110,000	\$220,000	\$275,000	\$330,000	\$385,000	\$440,000	\$495,000	\$550,000	\$605,000
	\$115,000	\$230,000	\$287,500	\$345,000	\$402,500	\$460,000	\$517,500	\$575,000	\$632,500
	\$120,000	\$240,000	\$300,000	\$360,000	\$420,000	\$480,000	\$540,000	\$600,000	\$660,000
	\$125,000	\$250,000	\$312,500	\$375,000	\$437,500	\$500,000	\$562,500	\$625,000	\$687,500
	\$130,000	\$260,000	\$325,000	\$390,000	\$455,000	\$520,000	\$585,000	\$650,000	\$715,000
	\$135,000	\$270,000	\$337,500	\$405,000	\$472,500	\$540,000	\$607,500	\$675,000	\$742,500
	\$140,000	\$280,000	\$350,000	\$420,000	\$490,000	\$560,000	\$630,000	\$700,000	\$770,000
	\$145,000	\$290,000	\$362,500	\$435,000	\$507,500	\$580,000	\$652,500	\$725,000	\$797,500
	\$150,000	\$300,000	\$375,000	\$450,000	\$525,000	\$600,000	\$675,000	\$750,000	\$825,000
	\$155,000	\$310,000	\$387,500	\$465,000	\$542,500	\$620,000	\$697,500	\$775,000	\$852,500
	\$160,000	\$320,000	\$400,000	\$480,000	\$560,000	\$640,000	\$720,000	\$800,000	\$880,000

Note: Figures in red indicate the maximum affordable home price meets or exceeds the current median sales price.

Source: Texas Real Estate Research Center at Texas A&M University

**Table 4. Percentage of Homes Sold in 4Q2021 Affordable by Family Income
and Home Price-to-Income Multiplier**

		Home Purchasing Power							
	Family Income	2	2.5	3	3.5	4	4.5	5	5.5
	\$80,000	5.5%	11.4%	22.9%	37.7%	50.8%	60.6%	68.7%	74.2%
	\$85,000	6.6%	13.7%	28.3%	42.9%	55.7%	64.8%	72.2%	77.4%
Median Family Income	\$90,100	7.9%	17.7%	34.2%	49.2%	60.6%	69.2%	75.6%	80.2%
	\$95,000	9.6%	21.5%	39.3%	53.7%	64.6%	72.3%	78.4%	82.3%
	\$100,000	11.4%	27.0%	45.1%	58.5%	68.7%	75.6%	80.8%	84.5%
	\$105,000	13.5%	30.8%	49.2%	61.8%	71.4%	78.0%	82.6%	85.9%
Workforce Households	\$108,100	14.8%	34.2%	51.1%	63.9%	72.9%	79.3%	83.7%	86.6%
	\$110,000	16.3%	36.0%	53.4%	65.6%	74.2%	80.2%	84.5%	87.4%
	\$115,000	19.4%	39.7%	56.9%	68.7%	76.8%	81.9%	85.8%	88.6%
	\$120,000	22.9%	45.1%	60.6%	71.4%	78.9%	83.7%	87.2%	89.7%
	\$125,000	27.0%	48.3%	63.7%	73.6%	80.8%	85.0%	88.3%	90.5%
	\$130,000	30.4%	52.0%	66.5%	76.1%	82.2%	86.3%	89.5%	91.5%
	\$135,000	34.2%	54.8%	69.2%	78.0%	83.7%	87.4%	90.2%	92.2%
	\$140,000	37.7%	58.5%	71.4%	79.8%	84.9%	88.5%	91.2%	92.9%
	\$145,000	41.1%	60.8%	73.5%	81.2%	86.1%	89.5%	91.8%	93.2%
	\$150,000	45.1%	63.7%	75.6%	82.6%	87.2%	90.2%	92.6%	93.9%
	\$155,000	48.0%	65.7%	77.4%	83.7%	88.0%	90.9%	93.0%	94.4%
	\$160,000	50.8%	68.7%	78.9%	84.9%	89.0%	91.6%	93.4%	94.8%

Source: Texas Real Estate Research Center at Texas A&M University



Mortgage Interest Rate

Holding home price constant, the total monthly mortgage payment increases as the mortgage interest rate increases (Table 5). At a 6.66 percent rate, this payment was \$2,712 for the median-priced home in 4Q2022, over twice the total monthly mortgage payment for the median-priced home in 4Q2011.

Table 6 shows the home price-to-income multiplier by mortgage interest rate. A 6.66 percent interest rate translates into a home price-to-income multiplier of 2.95,² meaning a household could afford a maximum home price of 2.95 times its annual income. The home price-to-income multiplier declines as the mortgage interest rate increases.

The income required to qualify for a loan with a 6.66 percent mortgage interest rate was \$108,472 for the median sales price in 4Q2022 (Table 7). An estimated 45.5 percent of homeowners in Houston-The Woodlands-Sugar Land could afford the median sales price in 4Q2022 with a 6.66 percent interest rate (Table 8), a decline of over 25 percentage points from 4Q2011.

Map 1 depicts the percentage of repeat buyers who qualified for a mortgage loan with an interest rate of 6 percent in 2011, and Map 2 shows this percentage for 2022. Map 3 shows the percentage change from 2011 to 2022. The most substantial declines were in Austin-Round Rock-Georgetown, Dallas-Fort Worth-Arlington, and Sherman-Denison.

Table 5. Total Monthly Mortgage Payment for Repeat Buyers by Mortgage Interest Rate

Year	Home Price	Mortgage Interest Rate						
		3%	4%	5%	6%	6.5%	6.66%	7%
4Q2011	\$140,000	\$939	\$1,001	\$1,068	\$1,138	\$1,175	\$1,186	\$1,212
4Q2012	\$153,000	\$1,026	\$1,094	\$1,167	\$1,244	\$1,284	\$1,297	\$1,324
4Q2013	\$170,000	\$1,140	\$1,216	\$1,297	\$1,382	\$1,426	\$1,441	\$1,471
4Q2014	\$184,375	\$1,236	\$1,319	\$1,406	\$1,499	\$1,547	\$1,562	\$1,596
4Q2015	\$191,000	\$1,281	\$1,366	\$1,457	\$1,553	\$1,602	\$1,619	\$1,653
4Q2016	\$206,700	\$1,386	\$1,478	\$1,577	\$1,680	\$1,734	\$1,752	\$1,789
4Q2017	\$214,000	\$1,435	\$1,531	\$1,632	\$1,740	\$1,795	\$1,814	\$1,852
4Q2018	\$222,000	\$1,489	\$1,588	\$1,693	\$1,805	\$1,863	\$1,881	\$1,922
4Q2019	\$230,900	\$1,548	\$1,652	\$1,761	\$1,877	\$1,937	\$1,957	\$1,999
4Q2020	\$265,000	\$1,777	\$1,895	\$2,021	\$2,154	\$2,223	\$2,246	\$2,294
4Q2021	\$309,000	\$2,072	\$2,210	\$2,357	\$2,512	\$2,592	\$2,619	\$2,675
4Q2022	\$320,000	\$2,146	\$2,289	\$2,441	\$2,602	\$2,685	\$2,712	\$2,770

Note: Assumes a 30-year loan term, 80 percent loan-to-value (LTV) ratio, 30 percent debt-to-income (DTI) ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

² The home price-to-income multiplier assumes a 30-year loan term, 80 percent LTV ratio, 30 percent DTI ratio, and property taxes and insurance of 4 percent.



**Table 6. Home Price-to-Income Multiplier
for Repeat Buyers by Mortgage Interest Rate**

Mortgage Interest Rate	Home Purchasing Power
3%	3.73
4%	3.50
5%	3.28
6%	3.08
6.5%	2.98
6.66%	2.95
7%	2.89

Note: Assumes a 30-year loan term, 80 percent LTV ratio, 30 percent DTI ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

Table 7. Required Qualifying Income for Repeat Buyers by Mortgage Interest Rate

Year	Home Price	Mortgage Interest Rate						
		3%	4%	5%	6%	6.5%	6.66%	7%
4Q2011	\$140,000	\$37,555	\$40,055	\$42,716	\$45,527	\$46,983	\$47,456	\$48,472
4Q2012	\$153,000	\$41,042	\$43,774	\$46,683	\$49,754	\$51,346	\$51,863	\$52,973
4Q2013	\$170,000	\$45,602	\$48,638	\$51,870	\$55,282	\$57,051	\$57,626	\$58,859
4Q2014	\$184,375	\$49,458	\$52,751	\$56,256	\$59,957	\$61,875	\$62,498	\$63,836
4Q2015	\$191,000	\$51,235	\$54,646	\$58,277	\$62,111	\$64,099	\$64,744	\$66,130
4Q2016	\$206,700	\$55,447	\$59,138	\$63,068	\$67,217	\$69,368	\$70,066	\$71,566
4Q2017	\$214,000	\$57,405	\$61,227	\$65,295	\$69,591	\$71,817	\$72,540	\$74,093
4Q2018	\$222,000	\$59,551	\$63,516	\$67,736	\$72,192	\$74,502	\$75,252	\$76,863
4Q2019	\$230,900	\$61,938	\$66,062	\$70,451	\$75,086	\$77,489	\$78,269	\$79,945
4Q2020	\$265,000	\$71,085	\$75,818	\$80,856	\$86,175	\$88,933	\$89,828	\$91,751
4Q2021	\$309,000	\$82,888	\$88,407	\$94,281	\$100,484	\$103,699	\$104,743	\$106,985
4Q2022	\$320,000	\$85,839	\$91,554	\$97,637	\$104,061	\$107,390	\$108,472	\$110,794

Note: The required qualifying income reflects the minimum income a household must earn to qualify for a mortgage loan for a particular home price. Assumes a 30-year loan term, 80 percent LTV ratio, 30 percent DTI ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

**Table 8. Percentage of Repeat Buyers Who Earned Required Qualifying Income
by Mortgage Interest Rate**

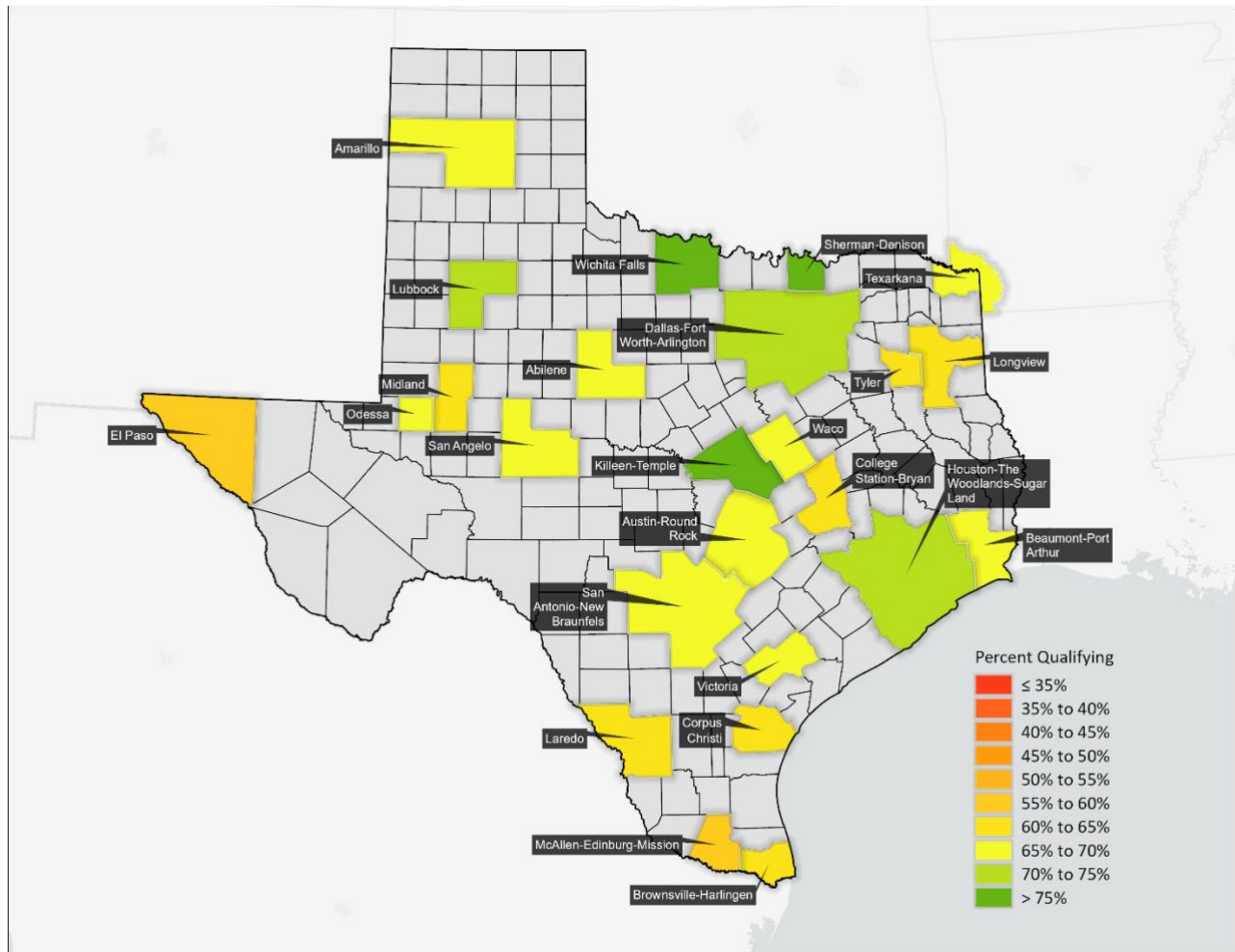
Year	Home Price	Mortgage Interest Rate						
		3%	4%	5%	6%	6.5%	6.66%	7%
4Q2011	\$140,000	78.2%	76.3%	74.3%	72.1%	71.0%	70.7%	69.9%
4Q2012	\$153,000	75.8%	73.7%	71.5%	69.3%	68.1%	67.7%	66.9%
4Q2013	\$170,000	72.4%	70.2%	67.9%	65.5%	64.3%	63.9%	63.0%
4Q2014	\$184,375	70.2%	67.9%	65.5%	62.9%	61.6%	61.2%	60.2%
4Q2015	\$191,000	69.8%	67.4%	64.9%	62.3%	60.9%	60.5%	59.5%
4Q2016	\$206,700	67.8%	65.3%	62.6%	59.8%	58.3%	57.8%	56.8%
4Q2017	\$214,000	67.6%	65.1%	62.3%	59.5%	58.0%	57.5%	56.5%
4Q2018	\$222,000	67.6%	65.0%	62.3%	59.4%	57.9%	57.4%	56.6%
4Q2019	\$230,900	67.4%	64.8%	62.1%	59.2%	57.9%	57.4%	56.5%
4Q2020	\$265,000	62.4%	59.6%	56.9%	54.0%	52.5%	52.0%	51.0%
4Q2021*	\$309,000	57.2%	54.2%	51.0%	47.7%	46.3%	45.9%	45.0%
4Q2022*	\$320,000	56.8%	53.6%	50.3%	47.3%	45.9%	45.5%	44.5%

Note: Assumes a 30-year loan term, 80 percent LTV ratio, 30 percent DTI ratio, and additional costs of homeownership at 4 percent of home price. As repeat homebuyers constitute owner-occupied households, this table reflects income data solely for owner-occupied households.

*Represents estimates using 2020 ACS 1-Year Experimental Data.

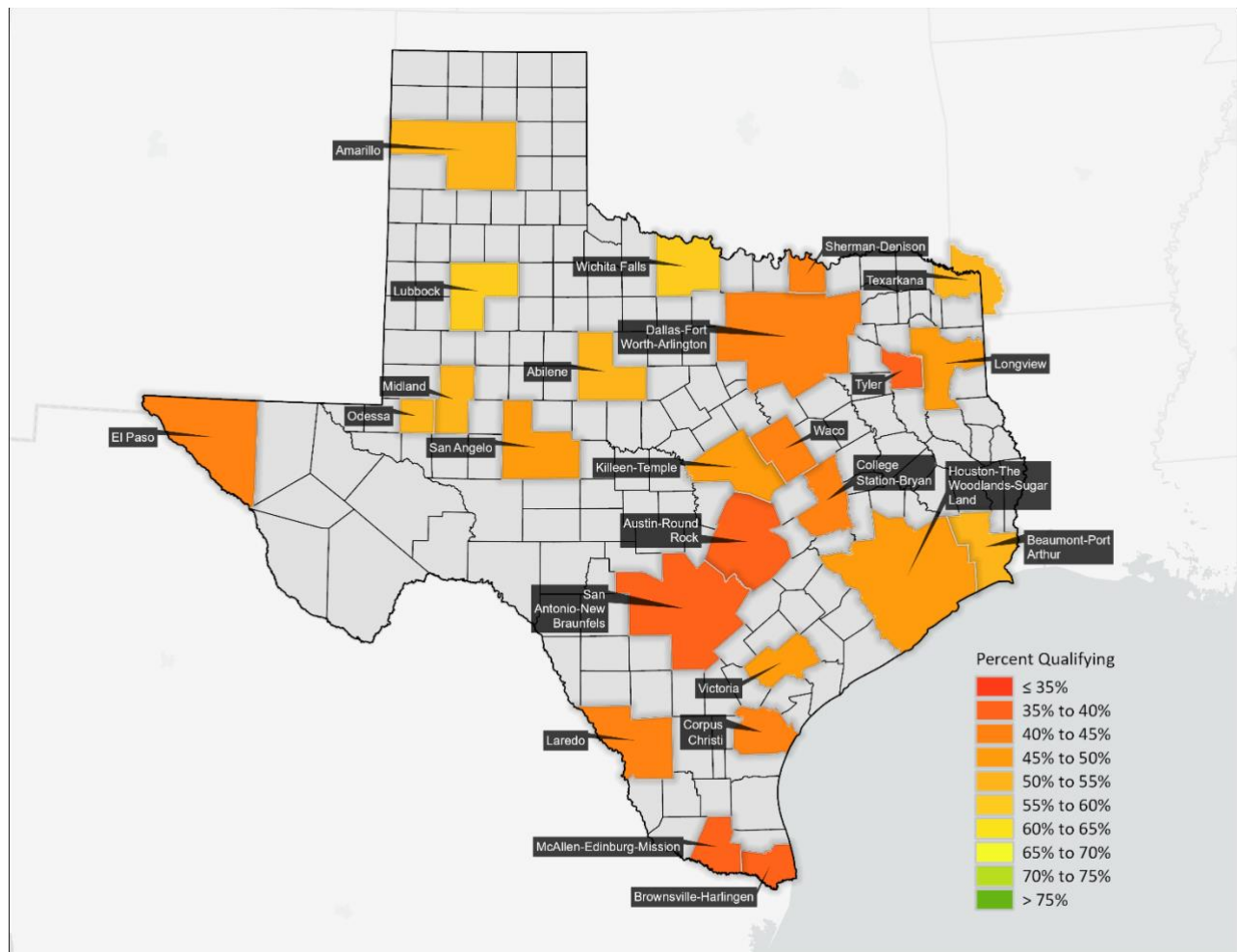
Sources: American Community Survey, U.S. Census Bureau, and Texas Real Estate Research Center at Texas A&M University

Map 1. Percentage of Repeat Buyers Qualifying for 6% Interest Rate Mortgage Loan, 2011



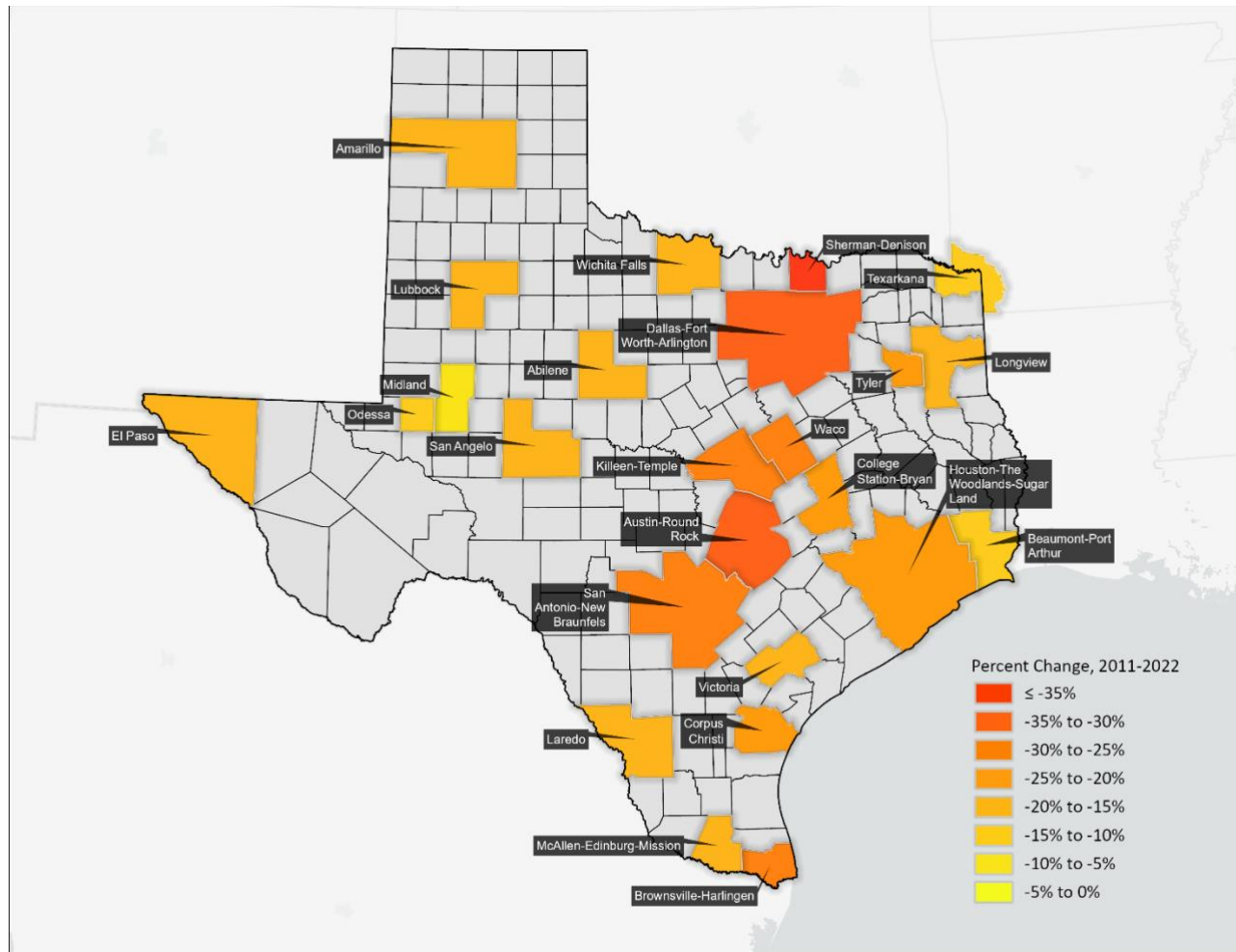
Sources: Texas Real Estate Research Center at Texas A&M University, U.S. Census Bureau, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

Map 2. Percentage of Repeat Buyers Qualifying for 6% Interest Rate Mortgage Loan, 2022



Sources: Texas Real Estate Research Center at Texas A&M University, U.S. Census Bureau, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

Map 3. Change in Percentage of Repeat Buyers Qualifying for 6% Interest Rate Mortgage Loan, 2011-22



Sources: Texas Real Estate Research Center at Texas A&M University, U.S. Census Bureau, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

Loan-to-Value Ratio

Holding home price constant, the total monthly mortgage payment increases as the loan-to-value (LTV) ratio increases (Table 9). For an 80 percent LTV ratio, the mortgage payment was \$2,712 for the median sales price in 4Q2022, over twice the total monthly mortgage payment for the median-priced home in 4Q2011.

Table 10 shows the home price-to-income multiplier by LTV ratio. An 80 percent LTV ratio translates into a home price-to-income multiplier of 2.95,³ meaning a household could afford a maximum home price of 2.95 times its annual income. The home price-to-income multiplier declines as the LTV ratio increases.

The income required to qualify for a loan with an 80 percent LTV ratio was \$108,472 for the median sales price in 4Q2022 (Table 11). An estimated 45.5 percent of homeowners in Houston-The Woodlands-Sugar Land could afford the median sales price in 4Q2022 with an 80 percent LTV ratio (Table 12), a decline of over 25 percentage points from 4Q2011.

Table 9. Total Monthly Mortgage Payment for Repeat Buyers by LTV Ratio

Year	Home Price	LTV Ratio				
		80%	85%	90%	95%	100%
4Q2011	\$140,000	\$1,186	\$1,231	\$1,276	\$1,321	\$1,366
4Q2012	\$153,000	\$1,297	\$1,346	\$1,395	\$1,444	\$1,493
4Q2013	\$170,000	\$1,441	\$1,495	\$1,550	\$1,605	\$1,659
4Q2014	\$184,375	\$1,562	\$1,622	\$1,681	\$1,740	\$1,799
4Q2015	\$191,000	\$1,619	\$1,680	\$1,741	\$1,803	\$1,864
4Q2016	\$206,700	\$1,752	\$1,818	\$1,884	\$1,951	\$2,017
4Q2017	\$214,000	\$1,814	\$1,882	\$1,951	\$2,020	\$2,089
4Q2018	\$222,000	\$1,881	\$1,953	\$2,024	\$2,095	\$2,167
4Q2019	\$230,900	\$1,957	\$2,031	\$2,105	\$2,179	\$2,253
4Q2020	\$265,000	\$2,246	\$2,331	\$2,416	\$2,501	\$2,586
4Q2021	\$309,000	\$2,619	\$2,718	\$2,817	\$2,916	\$3,016
4Q2022	\$320,000	\$2,712	\$2,815	\$2,917	\$3,020	\$3,123

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 30 percent DTI ratio, and additional costs of homeownership at 4 percent of home price. A mortgage insurance premium of 0.5 percent is added to loans with an LTV ratio of 90 percent or more.

Source: Texas Real Estate Research Center at Texas A&M University

³ The home price-to-income multiplier is based on a 30-year loan term, 6.66 percent mortgage interest rate, 30 percent DTI ratio, and property taxes and insurance of 4 percent. A 0.5 percent mortgage insurance premium is added to loans with a 90 percent or more LTV ratio.

**Table 10. Home Price-to-Income Multiplier
for Repeat Buyers by LTV Ratio**

LTV Ratio	Home Purchasing Power
80%	2.95
85%	2.84
90%	2.74
95%	2.65
100%	2.56

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 30 percent DTI ratio, and additional costs of homeownership at 4 percent of home price. A mortgage insurance premium of 0.5 percent is added to loans with an LTV ratio of 90 percent or more.

Source: Texas Real Estate Research Center at Texas A&M University

Table 11. Required Qualifying Income for Repeat Buyers by LTV Ratio

Year	Home Price	LTV Ratio				
		80%	85%	90%	95%	100%
4Q2011	\$140,000	\$47,456	\$49,256	\$51,055	\$52,854	\$54,654
4Q2012	\$153,000	\$51,863	\$53,829	\$55,796	\$57,762	\$59,729
4Q2013	\$170,000	\$57,626	\$59,811	\$61,995	\$64,180	\$66,365
4Q2014	\$184,375	\$62,498	\$64,868	\$67,238	\$69,607	\$71,977
4Q2015	\$191,000	\$64,744	\$67,199	\$69,654	\$72,109	\$74,563
4Q2016	\$206,700	\$70,066	\$72,723	\$75,379	\$78,036	\$80,692
4Q2017	\$214,000	\$72,540	\$75,291	\$78,041	\$80,792	\$83,542
4Q2018	\$222,000	\$75,252	\$78,105	\$80,959	\$83,812	\$86,665
4Q2019	\$230,900	\$78,269	\$81,237	\$84,204	\$87,172	\$90,140
4Q2020	\$265,000	\$89,828	\$93,234	\$96,640	\$100,046	\$103,452
4Q2021	\$309,000	\$104,743	\$108,714	\$112,686	\$116,657	\$120,629
4Q2022	\$320,000	\$108,472	\$112,584	\$116,697	\$120,810	\$124,923

Note: The required qualifying income reflects the minimum income a household must earn to qualify for a mortgage loan for a particular home price. Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 30 percent DTI ratio, and additional costs of homeownership at 4 percent of home price. A mortgage insurance premium of 0.5 percent is added to loans with an LTV ratio of 90 percent or more.

Source: Texas Real Estate Research Center at Texas A&M University

Table 12. Percentage of Repeat Buyers Who Earned Required Qualifying Income by LTV Ratio

Year	Home Price	LTV Ratio				
		80%	85%	90%	95%	100%
4Q2011	\$140,000	70.7%	69.3%	67.9%	66.6%	65.3%
4Q2012	\$153,000	67.7%	66.3%	64.9%	63.5%	62.1%
4Q2013	\$170,000	63.9%	62.3%	60.8%	59.3%	57.7%
4Q2014	\$184,375	61.2%	59.5%	57.9%	56.2%	54.6%
4Q2015	\$191,000	60.5%	58.8%	57.1%	55.4%	53.7%
4Q2016	\$206,700	57.8%	56.0%	54.3%	52.8%	51.4%
4Q2017	\$214,000	57.5%	55.7%	54.2%	52.7%	51.2%
4Q2018	\$222,000	57.4%	55.9%	54.3%	52.8%	51.2%
4Q2019	\$230,900	57.4%	55.8%	54.2%	52.6%	51.0%
4Q2020	\$265,000	52.0%	50.2%	48.3%	46.5%	45.1%
4Q2021*	\$309,000	45.9%	44.2%	42.6%	41.0%	39.3%
4Q2022*	\$320,000	45.5%	43.7%	42.0%	40.3%	38.5%

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 30 percent DTI ratio, and additional costs of homeownership at 4 percent of home price. A mortgage insurance premium of 0.5 percent is added to loans with an LTV ratio of 90 percent or more. As repeat homebuyers constitute owner-occupied households, this table reflects income data solely for owner-occupied households.

*Represents estimates using 2020 ACS 1-Year Experimental Data.

Sources: American Community Survey, U.S. Census Bureau, and Texas Real Estate Research Center at Texas A&M University

Debt-to-Income Ratio

A 30 percent debt-to-income (DTI) ratio translates into a home price-to-income multiplier of 2.95⁴ (Table 13), meaning a household could afford a maximum home price of 2.95 times its annual income at that interest rate. The home price-to-income multiplier increases as the DTI ratio increases.

The income required to qualify for a loan with a 30 percent DTI ratio was \$108,472 for the median sales price in 4Q2022 (Table 14). An estimated 45.5 percent of homeowners in Houston-The Woodlands-Sugar Land could afford the median sales price in 4Q2022 with a 30 percent DTI ratio (Table 15), a decline of over 25 percentage points from 4Q2011.

**Table 13. Home Price-to-Income Multiplier
for Repeat Buyers by DTI Ratio**

DTI Ratio	Home Purchasing Power
20%	1.97
25%	2.46
30%	2.95
35%	3.44
40%	3.93
45%	4.43
50%	4.92

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 80 percent LTV ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

⁴ The home price-to-income multiplier is based on a 30-year loan term, 6.66 percent mortgage interest rate, 80 percent LTV ratio, and property taxes and insurance of 4 percent.

Table 14. Required Qualifying Income for Repeat Buyers by DTI Ratio

Year	Home Price	DTI Ratio						
		20%	25%	30%	35%	40%	45%	50%
4Q2011	\$140,000	\$71,185	\$56,948	\$47,456	\$40,677	\$35,592	\$31,638	\$28,474
4Q2012	\$153,000	\$77,795	\$62,236	\$51,863	\$44,454	\$38,897	\$34,575	\$31,118
4Q2013	\$170,000	\$86,438	\$69,151	\$57,626	\$49,393	\$43,219	\$38,417	\$34,575
4Q2014	\$184,375	\$93,747	\$74,998	\$62,498	\$53,570	\$46,874	\$41,666	\$37,499
4Q2015	\$191,000	\$97,116	\$77,693	\$64,744	\$55,495	\$48,558	\$43,163	\$38,846
4Q2016	\$206,700	\$105,099	\$84,079	\$70,066	\$60,056	\$52,549	\$46,711	\$42,040
4Q2017	\$214,000	\$108,811	\$87,049	\$72,540	\$62,178	\$54,405	\$48,360	\$43,524
4Q2018	\$222,000	\$112,878	\$90,303	\$75,252	\$64,502	\$56,439	\$50,168	\$45,151
4Q2019	\$230,900	\$117,404	\$93,923	\$78,269	\$67,088	\$58,702	\$52,179	\$46,961
4Q2020	\$265,000	\$134,742	\$107,794	\$89,828	\$76,996	\$67,371	\$59,885	\$53,897
4Q2021	\$309,000	\$157,114	\$125,692	\$104,743	\$89,780	\$78,557	\$69,829	\$62,846
4Q2022	\$320,000	\$162,707	\$130,166	\$108,472	\$92,976	\$81,354	\$72,314	\$65,083

Note: The required qualifying income reflects the minimum income a household must earn to qualify for a mortgage loan for a particular home price. Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 80 percent LTV ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

Table 15. Percentage of Repeat Buyers Who Earned Required Qualifying Income by DTI Ratio

Year	Home Price	DTI Ratio						
		20%	25%	30%	35%	40%	45%	50%
4Q2011	\$140,000	53.4%	63.7%	70.7%	75.8%	79.7%	82.7%	85.0%
4Q2012	\$153,000	49.5%	60.3%	67.7%	73.2%	77.4%	80.6%	83.2%
4Q2013	\$170,000	45.1%	55.8%	63.9%	69.6%	74.2%	77.7%	80.5%
4Q2014	\$184,375	41.9%	52.5%	61.2%	67.3%	72.1%	75.8%	78.8%
4Q2015	\$191,000	41.0%	51.9%	60.5%	66.8%	71.6%	75.4%	78.5%
4Q2016	\$206,700	38.8%	49.5%	57.8%	64.6%	69.7%	73.7%	76.9%
4Q2017	\$214,000	38.9%	49.3%	57.5%	64.4%	69.6%	73.7%	76.9%
4Q2018	\$222,000	38.9%	49.3%	57.4%	64.4%	69.6%	73.7%	76.9%
4Q2019	\$230,900	38.6%	48.9%	57.4%	64.2%	69.5%	73.6%	76.8%
4Q2020	\$265,000	32.4%	43.3%	52.0%	59.0%	64.7%	69.3%	73.0%
4Q2021*	\$309,000	26.9%	37.2%	45.9%	53.4%	59.5%	64.6%	68.8%
4Q2022*	\$320,000	27.6%	36.3%	45.5%	52.9%	59.2%	64.2%	68.5%

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 80 percent LTV ratio, and additional costs of homeownership at 4 percent of home price. As repeat homebuyers constitute owner-occupied households, this table reflects income data solely for owner-occupied households.

*Represents estimates using 2020 ACS 1-Year Experimental Data.

Sources: American Community Survey, U.S. Census Bureau, and Texas Real Estate Research Center at Texas A&M University

Property Taxes and Insurance

Holding home price constant, the total monthly mortgage payment increases as the annual costs of property taxes and insurance increase (Table 16). Assuming the cost of property taxes and insurance is 4 percent of the home price, the monthly mortgage payment was \$2,712 for the median sales price in 4Q2022, over twice the total monthly mortgage payment for the median-priced home in 4Q2011.

Table 17 shows the home price-to-income multiplier by the costs of property taxes and insurance. A 4 percent property tax and insurance rate translates into a home price-to-income multiplier of 2.95,⁵ meaning a household could afford a maximum home price of 2.95 times its annual income. The home price-to-income multiplier declines as the costs of property taxes and insurance increase.

The income required to qualify for a loan with property taxes and insurance at 4 percent of home price was \$108,472 for the median sales price in 4Q2022 (Table 18). An estimated 45.5 percent of homeowners in Houston-The Woodlands-Sugar Land could afford the median sales price in 4Q2022 with property taxes and insurance at 4 percent of home price (Table 19), a decline of over 25 percentage points from 4Q2011.

**Table 16. Total Monthly Mortgage Payment for Repeat Buyers
by Additional Homeownership Costs**

Year	Home Price	Property Taxes & Insurance				
		2%	3%	4%	5%	6%
4Q2011	\$140,000	\$953	\$1,070	\$1,186	\$1,303	\$1,420
4Q2012	\$153,000	\$1,042	\$1,169	\$1,297	\$1,424	\$1,552
4Q2013	\$170,000	\$1,157	\$1,299	\$1,441	\$1,582	\$1,724
4Q2014	\$184,375	\$1,255	\$1,409	\$1,562	\$1,716	\$1,870
4Q2015	\$191,000	\$1,300	\$1,459	\$1,619	\$1,778	\$1,937
4Q2016	\$206,700	\$1,407	\$1,579	\$1,752	\$1,924	\$2,096
4Q2017	\$214,000	\$1,457	\$1,635	\$1,814	\$1,992	\$2,170
4Q2018	\$222,000	\$1,511	\$1,696	\$1,881	\$2,066	\$2,251
4Q2019	\$230,900	\$1,572	\$1,764	\$1,957	\$2,149	\$2,342
4Q2020	\$265,000	\$1,804	\$2,025	\$2,246	\$2,467	\$2,687
4Q2021	\$309,000	\$2,104	\$2,361	\$2,619	\$2,876	\$3,134
4Q2022	\$320,000	\$2,178	\$2,445	\$2,712	\$2,978	\$3,245

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 80 percent LTV ratio, and 30 percent DTI ratio.

Source: Texas Real Estate Research Center at Texas A&M University

⁵ The home price-to-income multiplier is based on a 30-year loan term, 6.66 percent mortgage interest rate, 80 percent LTV ratio, and 30 percent DTI ratio.

**Table 17. Home Price-to-Income Multiplier
for Repeat Buyers by Additional Homeownership Costs**

Property Taxes and Insurance	Home Purchasing Power
2%	3.67
3%	3.27
4%	2.95
5%	2.69
6%	2.47

Note: Assumes a 30-year loan term, 6.66percent mortgage interest rate, 80 percent LTV ratio, and 30 percent DTI ratio.

Source: Texas Real Estate Research Center at Texas A&M University

**Table 18. Required Qualifying Income for Repeat Homebuyers
by Additional Homeownership Costs**

Year	Home Price	Additional Costs of Homeownership				
		2%	3%	4%	5%	6%
4Q2011	\$140,000	\$38,123	\$42,790	\$47,456	\$52,123	\$56,790
4Q2012	\$153,000	\$41,663	\$46,763	\$51,863	\$56,963	\$62,063
4Q2013	\$170,000	\$46,292	\$51,959	\$57,626	\$63,292	\$68,959
4Q2014	\$184,375	\$50,207	\$56,352	\$62,498	\$68,644	\$74,790
4Q2015	\$191,000	\$52,011	\$58,377	\$64,744	\$71,111	\$77,477
4Q2016	\$206,700	\$56,286	\$63,176	\$70,066	\$76,956	\$83,846
4Q2017	\$214,000	\$58,274	\$65,407	\$72,540	\$79,674	\$86,807
4Q2018	\$222,000	\$60,452	\$67,852	\$75,252	\$82,652	\$90,052
4Q2019	\$230,900	\$62,876	\$70,572	\$78,269	\$85,966	\$93,662
4Q2020	\$265,000	\$72,161	\$80,995	\$89,828	\$98,661	\$107,495
4Q2021	\$309,000	\$84,143	\$94,443	\$104,743	\$115,043	\$125,343
4Q2022	\$320,000	\$87,138	\$97,805	\$108,472	\$119,138	\$129,805

Note: The required qualifying income reflects the minimum income a household must earn to qualify for a mortgage loan for a particular home price. Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 80 percent LTV ratio, and 30 percent DTI ratio.

Source: Texas Real Estate Research Center at Texas A&M University

Table 19. Percentage of Repeat Homeowners Who Earned Required Qualifying Income by Additional Homeownership Costs

Year	Home Price	Property Taxes & Insurance				
		2%	3%	4%	5%	6%
4Q2011	\$140,000	77.8%	74.2%	70.7%	67.2%	63.8%
4Q2012	\$153,000	75.3%	71.5%	67.7%	64.1%	60.4%
4Q2013	\$170,000	71.9%	67.8%	63.9%	59.9%	55.9%
4Q2014	\$184,375	69.7%	65.4%	61.2%	56.9%	52.6%
4Q2015	\$191,000	69.2%	64.8%	60.5%	56.1%	52.0%
4Q2016	\$206,700	67.2%	62.5%	57.8%	53.4%	49.6%
4Q2017	\$214,000	67.0%	62.3%	57.5%	53.3%	49.5%
4Q2018	\$222,000	67.0%	62.2%	57.4%	53.4%	49.4%
4Q2019	\$230,900	66.8%	62.0%	57.4%	53.2%	49.0%
4Q2020	\$265,000	61.8%	56.8%	52.0%	47.2%	43.4%
4Q2021*	\$309,000	56.5%	50.9%	45.9%	41.6%	37.4%
4Q2022*	\$320,000	56.0%	50.2%	45.5%	41.0%	36.5%

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 80 percent LTV ratio, and 30 percent DTI ratio. As repeat homebuyers constitute owner-occupied households, this table reflects income data solely for owner-occupied households.

*Represents estimates using 2020 ACS 1-Year Experimental Data.

Sources: American Community Survey, U.S. Census Bureau, and Texas Real Estate Research Center

First-Time Homebuyer

Higher mortgage interest rates and a sustained high first-quartile sales price constrained purchase affordability for Houston-The Woodlands-Sugarland's first-time buyers in 4Q2022. Table 20 shows the maximum home price affordable by family income and home-purchasing power. For example, households earning between \$27,750 and \$44,300 annually (i.e., between 31 and 50 percent of median family income) could afford a maximum home price between \$83,250 and \$132,900 with a home price-to-income multiplier of 3. Meanwhile, the range in the maximum home price affordable to that range in household income rises to between \$111,000 and \$177,200 should the home price-to-income multiplier measure 4.

Depending on the home price-to-income multiplier, only households earning at least \$45,000 annually could afford the first-quartile sales price in 4Q2022. Homeownership is largely not feasible to households earning less than 50 percent of median family income. In fact, homeownership really only becomes viable for households earning at least 80 percent of area median income. Even at that point it largely depends on whether mortgage lenders are willing to offer loans with high home price-to-income multipliers. Moreover, few homes are available for sale at these income thresholds. For instance, with a home price-to-income multiplier of 3, only

13.7 percent of homes for sale in Houston-The Woodlands-Sugar Land were affordable to households earning no more than 80 percent of area median income in 4Q2022 (Table 21).

Table 20. Maximum Home Price Affordable by Family Income and Home Price-to-Income Multiplier

		Home Purchasing Power							
		Home Price-to-Income Multiplier							
	Family Income	2	2.5	3	3.5	4	4.5	5	5.5
	\$25,000	\$50,000	\$62,500	\$75,000	\$87,500	\$100,000	\$112,500	\$125,000	\$137,500
Extremely Low-Income (30%)	\$27,750	\$55,500	\$69,375	\$83,250	\$97,125	\$111,000	\$124,875	\$138,750	\$152,625
	\$30,000	\$60,000	\$75,000	\$90,000	\$105,000	\$120,000	\$135,000	\$150,000	\$165,000
	\$35,000	\$70,000	\$87,500	\$105,000	\$122,500	\$140,000	\$157,500	\$175,000	\$192,500
	\$40,000	\$80,000	\$100,000	\$120,000	\$140,000	\$160,000	\$180,000	\$200,000	\$220,000
Very Low-Income Households (50%)	\$44,300	\$88,600	\$110,750	\$132,900	\$155,050	\$177,200	\$199,350	\$221,500	\$243,650
	\$45,000	\$90,000	\$112,500	\$135,000	\$157,500	\$180,000	\$202,500	\$225,000	\$247,500
	\$50,000	\$100,000	\$125,000	\$150,000	\$175,000	\$200,000	\$225,000	\$250,000	\$275,000
	\$55,000	\$110,000	\$137,500	\$165,000	\$192,500	\$220,000	\$247,500	\$275,000	\$302,500
	\$60,000	\$120,000	\$150,000	\$180,000	\$210,000	\$240,000	\$270,000	\$300,000	\$330,000
	\$65,000	\$130,000	\$162,500	\$195,000	\$227,500	\$260,000	\$292,500	\$325,000	\$357,500
	\$70,000	\$140,000	\$175,000	\$210,000	\$245,000	\$280,000	\$315,000	\$350,000	\$385,000
Low-Income Households (80%)	\$70,850	\$141,700	\$177,125	\$212,550	\$247,975	\$283,400	\$318,825	\$354,250	\$389,675
	\$75,000	\$150,000	\$187,500	\$225,000	\$262,500	\$300,000	\$337,500	\$375,000	\$412,500
	\$80,000	\$160,000	\$200,000	\$240,000	\$280,000	\$320,000	\$360,000	\$400,000	\$440,000
	\$85,000	\$170,000	\$212,500	\$255,000	\$297,500	\$340,000	\$382,500	\$425,000	\$467,500

Note: Figures in red indicate the maximum affordable home price meets or exceeds the first-quartile home sales price.

Source: Texas Real Estate Research Center at Texas A&M University



**Table 21. Percentage of Homes Sold in 4Q2021 Affordable by Family Income
and Home Price-to-Income Multiplier**

		Home Purchasing Power							
		Home Price-to-Income Multiplier							
	Family Income	2	2.5	3	3.5	4	4.5	5	5.5
	\$25,000	0.3%	0.4%	0.6%	0.8%	1.4%	1.9%	2.4%	3.2%
Extremely Low-Income (30%)	\$27,750	0.4%	0.5%	0.7%	1.2%	1.9%	2.3%	3.2%	4.6%
	\$30,000	0.4%	0.6%	1.0%	1.6%	2.3%	3.1%	4.4%	5.9%
	\$35,000	0.5%	0.8%	1.6%	2.3%	3.5%	5.0%	7.4%	9.8%
	\$40,000	0.7%	1.4%	2.3%	3.5%	5.5%	7.9%	11.4%	16.3%
Very Low-Income Households (50%)	\$44,300	0.8%	1.9%	2.8%	4.9%	7.4%	10.6%	16.4%	23.4%
	\$45,000	1.0%	1.9%	3.1%	5.0%	7.9%	11.6%	17.7%	25.0%
	\$50,000	1.4%	2.4%	4.4%	7.4%	11.4%	17.7%	27.0%	36.0%
	\$55,000	1.8%	3.2%	5.9%	9.8%	16.3%	25.0%	36.0%	45.4%
	\$60,000	2.3%	4.4%	7.9%	13.5%	22.9%	34.2%	45.1%	53.4%
	\$65,000	2.8%	5.6%	10.3%	18.0%	30.4%	41.4%	52.0%	59.6%
	\$70,000	3.5%	7.4%	13.5%	24.4%	37.7%	49.2%	58.5%	65.6%
Low-Income Households (80%)	\$70,850	3.5%	7.4%	13.7%	25.0%	38.1%	49.7%	58.8%	65.9%
	\$75,000	4.4%	8.9%	17.7%	30.8%	45.1%	54.8%	63.7%	70.2%
	\$80,000	5.5%	11.4%	22.9%	37.7%	50.8%	60.6%	68.7%	74.2%
	\$85,000	6.6%	13.7%	28.3%	42.9%	55.7%	64.8%	72.2%	77.4%

Source: Texas Real Estate Research Center at Texas A&M University

Mortgage Interest Rate

Holding home price constant, the total monthly mortgage payment increases as the mortgage interest rate increases (Table 22). A 6.66 percent rate brought the mortgage payment to \$2,415 for the first-quartile sales price in 4Q2022, nearly 3 times the total monthly mortgage payment for the same home in 4Q2011.

Table 23 shows the home price-to-income multiplier by mortgage interest rate. A 6.66 percent interest rate translates into a home price-to-income multiplier of 2.99,⁶ meaning a

⁶ The home price-to-income multiplier is based on a 30-year loan term, 95 percent LTV ratio, 35 percent DTI ratio, and property taxes and insurance of 4 percent.

household could afford a maximum home price of 2.99 times its annual income. The home price-to-income multiplier declines as the mortgage interest rate increases.

The income required to qualify for a loan with a 6.66 percent mortgage interest rate was \$82,788 for the first-quartile sales price in 4Q2022 (Table 24). An estimated 24.3 percent of renters in Houston-The Woodlands-Sugar Land could afford the first-quartile sales price in 4Q2022 with a 6.66 percent interest rate (Table 25), a decline of over 33 percentage points from 4Q2011.

Maps 4 and 5 show the percentage of first-time buyers who qualified for a mortgage loan with an interest rate of 6 percent in 2011 and 2022, respectively, while Map 6 shows the percent change from 2011 to 2022. The most substantial declines were in Amarillo, Killeen-Temple, Dallas-Fort Worth-Arlington, and Sherman-Denison.

Table 22. Total Monthly Mortgage Payment for First-Time Buyers by Mortgage Interest Rate

Year	Home Price	Mortgage Interest Rate						
		3%	4%	5%	6%	6.5%	6.66%	7%
4Q2011	\$88,000	\$669	\$717	\$768	\$822	\$850	\$859	\$878
4Q2012	\$100,000	\$760	\$815	\$873	\$934	\$965	\$976	\$998
4Q2013	\$120,000	\$912	\$978	\$1,047	\$1,121	\$1,158	\$1,171	\$1,197
4Q2014	\$132,500	\$1,007	\$1,079	\$1,156	\$1,237	\$1,279	\$1,293	\$1,322
4Q2015	\$142,500	\$1,083	\$1,161	\$1,244	\$1,331	\$1,376	\$1,390	\$1,422
4Q2016	\$154,900	\$1,177	\$1,262	\$1,352	\$1,446	\$1,495	\$1,511	\$1,545
4Q2017	\$160,000	\$1,216	\$1,303	\$1,396	\$1,494	\$1,545	\$1,561	\$1,596
4Q2018	\$170,000	\$1,292	\$1,385	\$1,484	\$1,587	\$1,641	\$1,659	\$1,696
4Q2019	\$180,000	\$1,368	\$1,466	\$1,571	\$1,681	\$1,738	\$1,756	\$1,796
4Q2020	\$207,000	\$1,573	\$1,686	\$1,807	\$1,933	\$1,998	\$2,020	\$2,065
4Q2021	\$240,000	\$1,824	\$1,955	\$2,095	\$2,241	\$2,317	\$2,341	\$2,394
4Q2022	\$247,500	\$1,881	\$2,016	\$2,160	\$2,311	\$2,389	\$2,415	\$2,469

Note: Assumes a 30-year loan term, 95 percent LTV ratio, 35 percent DTI ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

**Table 23. Home Price-to-Income Multiplier
for First-Time Buyers by Mortgage Interest Rate**

Mortgage Interest Rate	Home Purchasing Power
3%	3.84
4%	3.58
5%	3.34
6%	3.12
6.5%	3.02
6.66%	2.99
7%	2.92

Note: Assumes a 30-year loan term, 95 percent LTV ratio, 35 percent DTI ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

Table 24. Required Qualifying Income by Mortgage Interest Rate

Year	Home Price	Mortgage Interest Rate						
		3%	4%	5%	6%	6.5%	6.66%	7%
4Q2011	\$88,000	\$22,928	\$24,580	\$26,332	\$28,174	\$29,127	\$29,436	\$30,099
4Q2012	\$100,000	\$26,055	\$27,932	\$29,922	\$32,016	\$33,098	\$33,450	\$34,203
4Q2013	\$120,000	\$31,266	\$33,518	\$35,907	\$38,419	\$39,718	\$40,139	\$41,044
4Q2014	\$132,500	\$34,522	\$37,010	\$39,647	\$42,421	\$43,855	\$44,321	\$45,319
4Q2015	\$142,500	\$37,128	\$39,803	\$42,639	\$45,623	\$47,165	\$47,666	\$48,739
4Q2016	\$154,900	\$40,359	\$43,267	\$46,350	\$49,593	\$51,269	\$51,813	\$52,980
4Q2017	\$160,000	\$41,687	\$44,691	\$47,876	\$51,225	\$52,957	\$53,519	\$54,725
4Q2018	\$170,000	\$44,293	\$47,484	\$50,868	\$54,427	\$56,267	\$56,864	\$58,145
4Q2019	\$180,000	\$46,898	\$50,278	\$53,860	\$57,629	\$59,577	\$60,209	\$61,565
4Q2020	\$207,000	\$53,933	\$57,819	\$61,939	\$66,273	\$68,514	\$69,241	\$70,800
4Q2021	\$240,000	\$62,531	\$67,037	\$71,813	\$76,838	\$79,436	\$80,279	\$82,087
4Q2022	\$247,500	\$64,485	\$69,132	\$74,058	\$79,239	\$81,919	\$82,788	\$84,652

Note: The required qualifying income reflects the minimum income a household must earn to qualify for a mortgage loan for a particular home price. Assumes a 30-year loan term, 95 percent LTV ratio, 35 percent DTI ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

Table 25. Percentage of Renter-Occupied Households That Earned Required Qualifying Income by Mortgage Interest Rate

Year	Home Price	Mortgage Interest Rate						
		3%	4%	5%	6%	6.5%	6.66%	7%
4Q2011	\$88,000	67.7%	65.1%	62.4%	59.7%	58.3%	57.8%	56.8%
4Q2012	\$100,000	63.4%	60.6%	57.7%	54.7%	53.1%	52.6%	51.5%
4Q2013	\$120,000	56.2%	53.1%	50.0%	47.3%	45.9%	45.4%	44.5%
4Q2014	\$132,500	52.9%	50.1%	47.2%	44.3%	42.8%	42.3%	41.2%
4Q2015	\$142,500	50.6%	47.8%	44.8%	41.6%	40.0%	39.5%	38.3%
4Q2016	\$154,900	48.6%	45.5%	42.3%	38.8%	37.5%	37.1%	36.3%
4Q2017	\$160,000	49.1%	46.0%	42.6%	39.5%	38.3%	37.9%	37.0%
4Q2018	\$170,000	48.3%	45.0%	41.8%	39.2%	37.8%	37.4%	36.5%
4Q2019	\$180,000	47.0%	43.5%	40.9%	38.1%	36.6%	36.2%	35.2%
4Q2020	\$207,000	42.0%	39.0%	35.8%	32.5%	30.8%	30.2%	29.0%
4Q2021*	\$240,000	36.6%	33.0%	29.3%	26.0%	24.9%	24.6%	23.8%
4Q2022*	\$247,500	36.1%	32.4%	28.5%	25.9%	24.7%	24.3%	23.5%

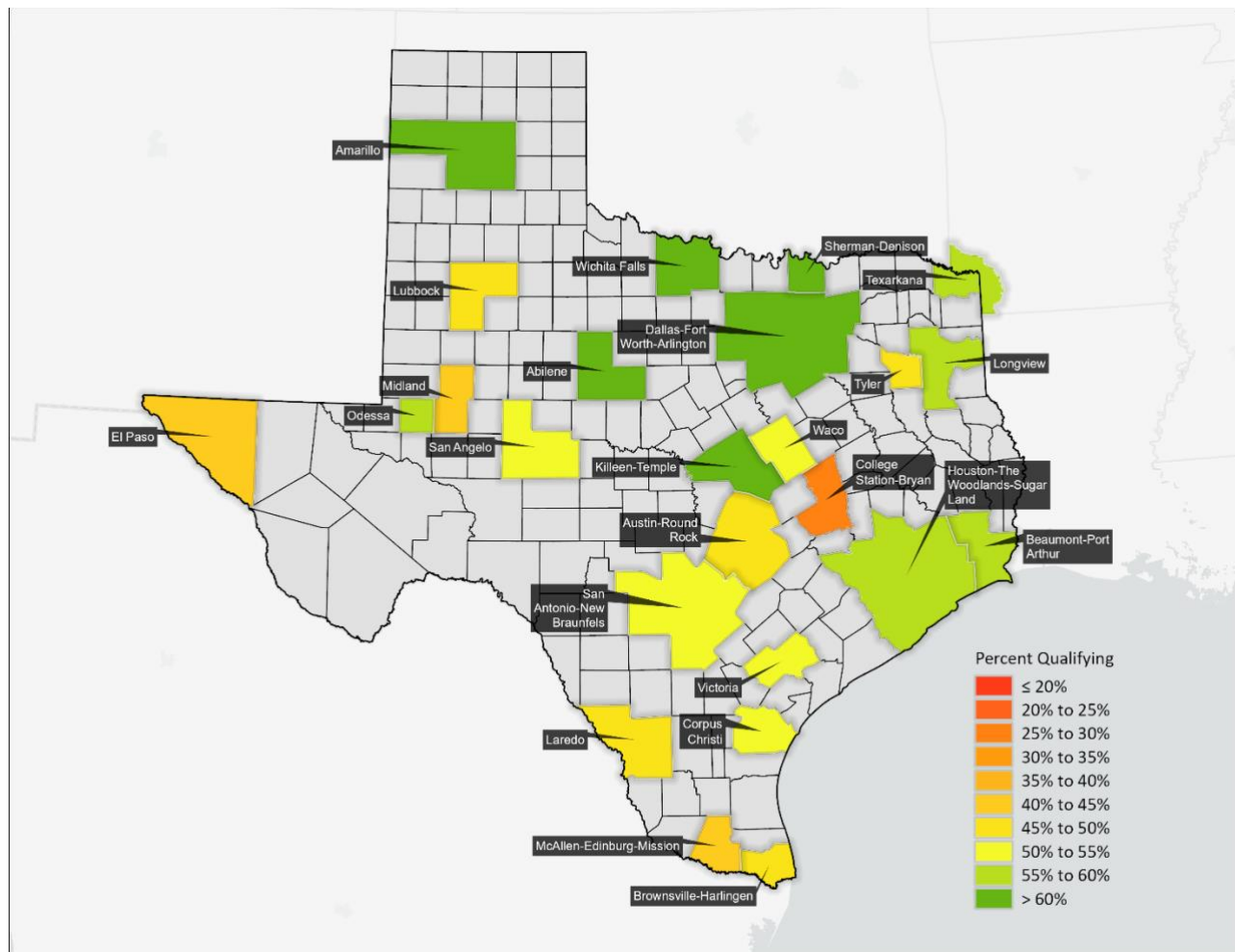
Note: Assumes a 30-year loan term, 95 percent LTV ratio, 35 percent DTI ratio, and additional costs of homeownership at 4 percent of home price. As first-time homebuyers constitute renter-occupied households, this table reflects income data solely for renter-occupied households.

*Represents estimates using 2020 ACS 1-Year Experimental Data.

Sources: American Community Survey, U.S. Census Bureau, and Texas Real Estate Research Center at Texas A&M University

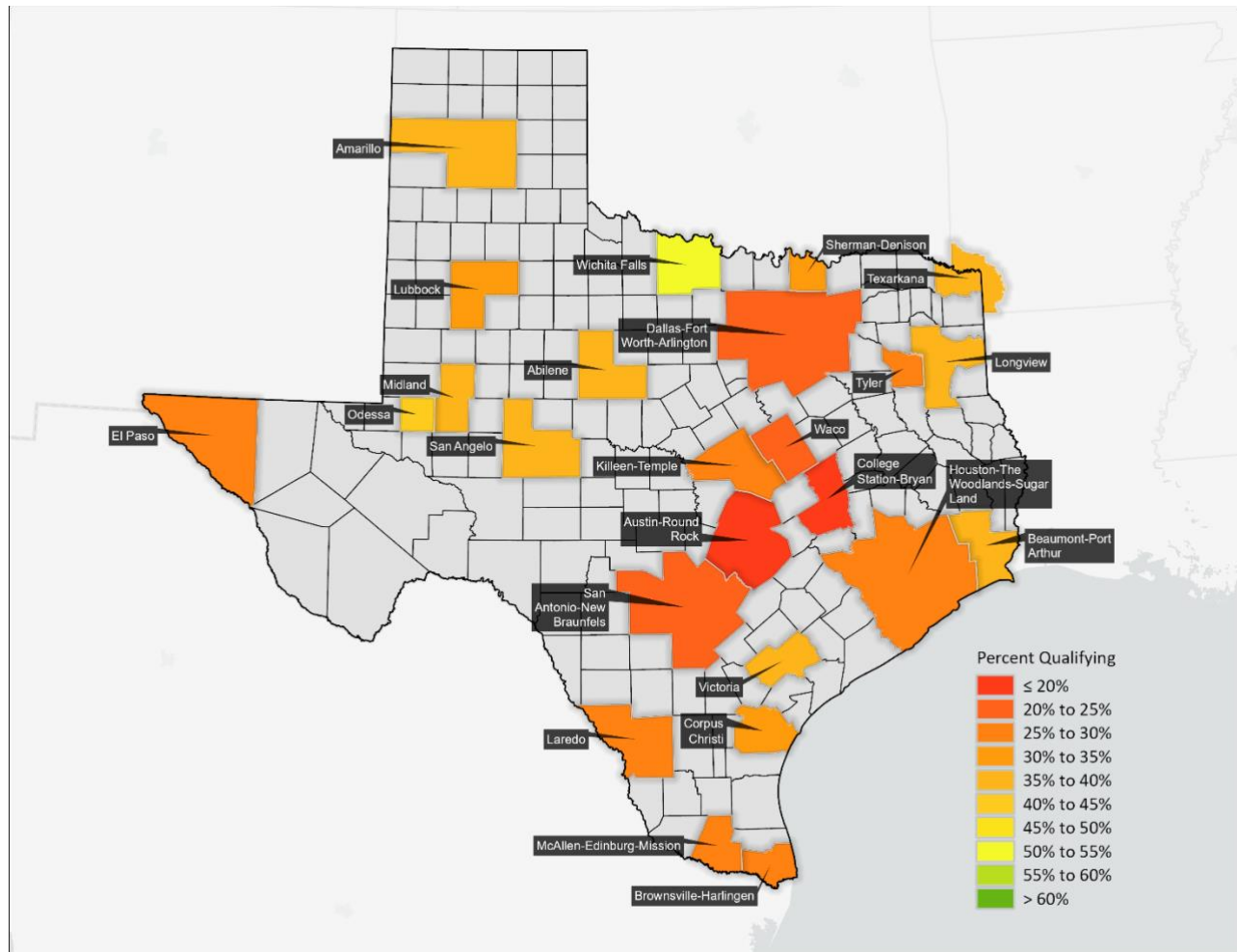


**Map 4. Percentage of First-Time Buyers Qualifying
for 6% Interest Rate Mortgage Loan, 2011**



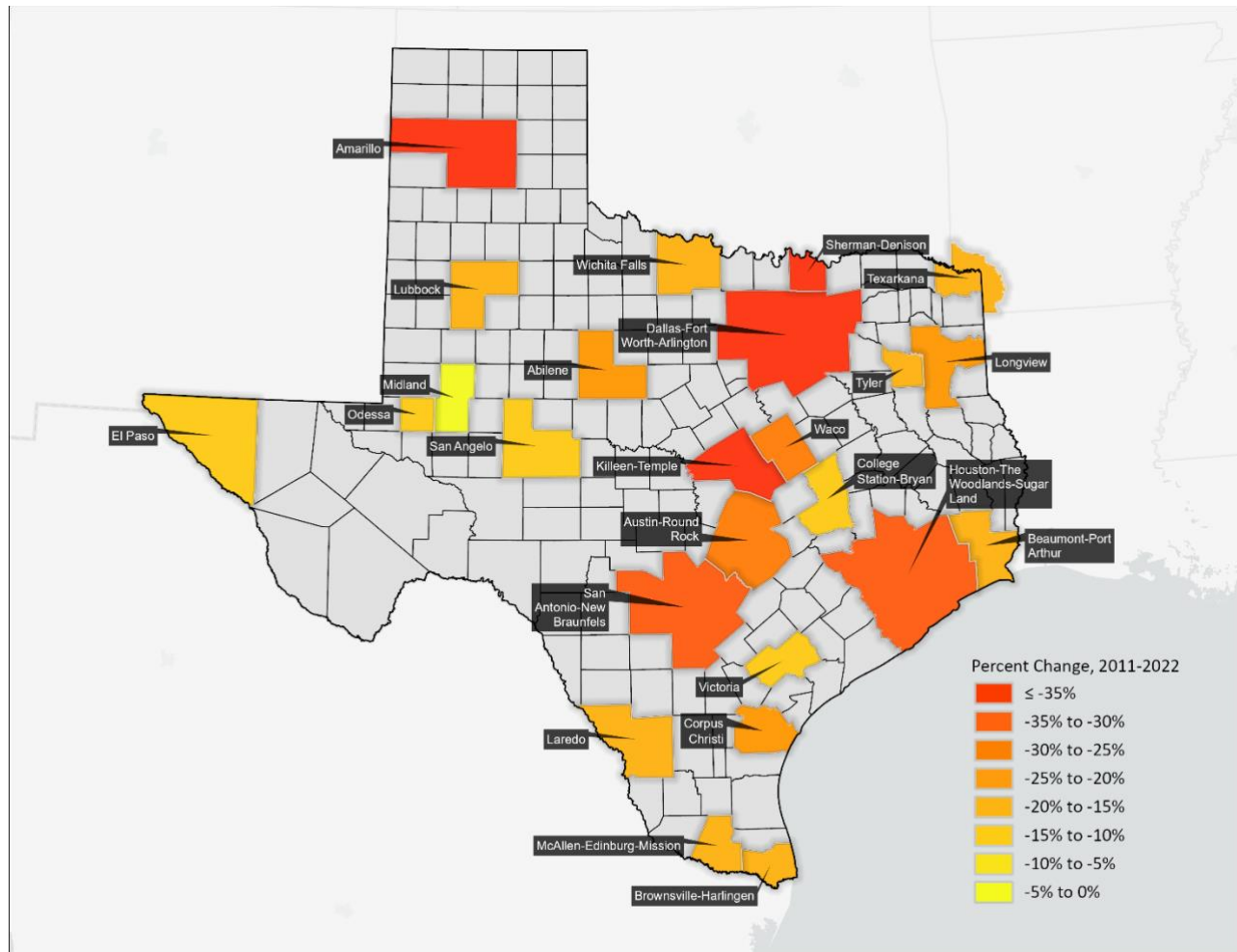
Sources: Texas Real Estate Research Center at Texas A&M University, U.S. Census Bureau, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

**Map 5. Percentage of First-Time Buyers Qualifying
for 6% Interest Rate Mortgage Loan, 2022**



Sources: Texas Real Estate Research Center at Texas A&M University, U.S. Census Bureau, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

Map 6. Change in Percentage of First-Time Buyers Qualifying for 6% Interest Rate Mortgage Loan, 2011-22



Sources: Texas Real Estate Research Center at Texas A&M University, U.S. Census Bureau, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

Loan-to-Value Ratio

Holding home price constant, the total monthly mortgage payment increases as the loan-to-value (LTV) ratio increases (Table 26). For a 95 percent LTV ratio, this payment amounted to \$2,415 for the first-quartile sales price in 4Q2022, nearly three times the total monthly mortgage payment for the same home in 4Q2011.

Table 27 shows the home price-to-income multiplier by LTV ratio. A 95 percent LTV ratio translates into a home price-to-income multiplier of 2.99,⁷ meaning a household could afford a maximum home price of 2.99 times its annual income. The home price-to-income multiplier declines as the LTV ratio increases.

The income required to qualify for a loan with a 95 percent LTV ratio was \$82,788 for the first-quartile sales price in 4Q2022 (Table 28). An estimated 24.3 percent of renters in Houston-The Woodlands-Sugar Land could afford the first-quartile sales price in 4Q2022 with a 95 percent LTV ratio (Table 29), a decline of more than 33 percentage points from 4Q2011.

Table 26. Total Monthly Mortgage Payment by LTV Ratio

Year	Home Price	LTV Ratio				
		95%	96.5%	97%	98%	100%
4Q2011	\$88,000	\$859	\$867	\$870	\$876	\$888
4Q2012	\$100,000	\$976	\$986	\$989	\$996	\$1,009
4Q2013	\$120,000	\$1,171	\$1,183	\$1,187	\$1,195	\$1,211
4Q2014	\$132,500	\$1,293	\$1,306	\$1,311	\$1,320	\$1,337
4Q2015	\$142,500	\$1,390	\$1,405	\$1,410	\$1,419	\$1,438
4Q2016	\$154,900	\$1,511	\$1,527	\$1,532	\$1,543	\$1,564
4Q2017	\$160,000	\$1,561	\$1,577	\$1,583	\$1,593	\$1,615
4Q2018	\$170,000	\$1,659	\$1,676	\$1,682	\$1,693	\$1,716
4Q2019	\$180,000	\$1,756	\$1,774	\$1,780	\$1,793	\$1,817
4Q2020	\$207,000	\$2,020	\$2,041	\$2,048	\$2,062	\$2,089
4Q2021	\$240,000	\$2,341	\$2,366	\$2,374	\$2,390	\$2,423
4Q2022	\$247,500	\$2,415	\$2,440	\$2,448	\$2,465	\$2,498

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 35 percent DTI ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

⁷ The home price-to-income multiplier is based on a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 35 percent DTI ratio, and property taxes and insurance of 4 percent.

**Table 27. Home Price-to-Income Multiplier
for First-Time Buyers by LTV Ratio**

LTV Ratio	Home Purchasing Power
95%	2.99
96.5%	2.96
97%	2.95
98%	2.93
100%	2.89

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 35 percent DTI ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

Table 28. Required Qualifying Income by LTV Ratio

Year	Home Price	LTV Ratio				
		95%	96.5%	97%	98%	100%
4Q2011	\$88,000	\$29,436	\$29,742	\$29,844	\$30,048	\$30,456
4Q2012	\$100,000	\$33,450	\$33,797	\$33,913	\$34,145	\$34,609
4Q2013	\$120,000	\$40,139	\$40,557	\$40,696	\$40,974	\$41,530
4Q2014	\$132,500	\$44,321	\$44,781	\$44,935	\$45,242	\$45,856
4Q2015	\$142,500	\$47,666	\$48,161	\$48,326	\$48,657	\$49,317
4Q2016	\$154,900	\$51,813	\$52,352	\$52,531	\$52,891	\$53,609
4Q2017	\$160,000	\$53,519	\$54,076	\$54,261	\$54,632	\$55,374
4Q2018	\$170,000	\$56,864	\$57,455	\$57,652	\$58,046	\$58,835
4Q2019	\$180,000	\$60,209	\$60,835	\$61,044	\$61,461	\$62,295
4Q2020	\$207,000	\$69,241	\$69,960	\$70,200	\$70,680	\$71,640
4Q2021	\$240,000	\$80,279	\$81,113	\$81,392	\$81,948	\$83,061
4Q2022	\$247,500	\$82,788	\$83,648	\$83,935	\$84,509	\$85,656

Note: The required qualifying income reflects the minimum income a household must earn to qualify for a mortgage loan for a particular home price. Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 35 percent DTI ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

Table 29. Percentage of Renter-Occupied Households That Earned Required Qualifying Income by LTV Ratio

Year	Home Price	LTV Ratio				
		95%	96.5%	97%	98%	100%
4Q2011	\$88,000	57.8%	57.3%	57.2%	56.9%	56.3%
4Q2012	\$100,000	52.6%	52.1%	51.9%	51.5%	50.9%
4Q2013	\$120,000	45.4%	45.0%	44.8%	44.5%	43.9%
4Q2014	\$132,500	42.3%	41.8%	41.6%	41.3%	40.6%
4Q2015	\$142,500	39.5%	38.9%	38.8%	38.4%	37.7%
4Q2016	\$154,900	37.1%	36.7%	36.6%	36.4%	35.9%
4Q2017	\$160,000	37.9%	37.5%	37.3%	37.1%	36.5%
4Q2018	\$170,000	37.4%	37.0%	36.8%	36.5%	36.0%
4Q2019	\$180,000	36.2%	35.7%	35.6%	35.3%	34.6%
4Q2020	\$207,000	30.2%	29.6%	29.5%	29.1%	28.3%
4Q2021*	\$240,000	24.6%	24.2%	24.1%	23.9%	23.4%
4Q2022*	\$247,500	24.3%	23.9%	23.8%	23.6%	23.1%

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 35 percent DTI ratio, and additional costs of homeownership at 4 percent of home price. As first-time homebuyers constitute renter-occupied households, this table reflects income data solely for renter-occupied households.

*Represents estimates using 2020 ACS 1-Year Experimental Data.

Sources: American Community Survey, U.S. Census Bureau, and Texas Real Estate Research Center at Texas A&M University

DTI Ratio

A 35 percent DTI ratio translates into a home price-to-income multiplier of 2.99⁸ (Table 30), meaning a household could afford a maximum home price of 2.99 times its annual income. The home price-to-income multiplier increases as the DTI ratio increases.

The income required to qualify for a loan with a 35 percent DTI ratio was \$82,788 for the first-quartile sales price in 4Q2022 (Table 31). An estimated 24.3percent of renters in Houston-The Woodlands-Sugar Land could afford the first-quartile sales price in 4Q2022 with a 35 percent DTI ratio (Table 32), a decline of more than 33 percentage points from 4Q2011.

⁸ The home price-to-income multiplier is based on a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and property taxes and insurance of 4 percent.

**Table 30. Home Price-to-Income Multiplier
for First-Time Buyers by DTI Ratio**

DTI Ratio	Home Purchasing Power
20%	1.71
25%	2.14
30%	2.56
35%	2.99
40%	3.42
45%	3.84
50%	4.27

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

Table 31. Required Qualifying Income for First-Time Buyers by DTI Ratio

Year	Home Price	DTI Ratio						
		20%	25%	30%	35%	40%	45%	50%
4Q2011	\$88,000	\$51,512	\$41,210	\$34,342	\$29,436	\$25,756	\$22,894	\$20,605
4Q2012	\$100,000	\$58,537	\$46,829	\$39,024	\$33,450	\$29,268	\$26,016	\$23,415
4Q2013	\$120,000	\$70,244	\$56,195	\$46,829	\$40,139	\$35,122	\$31,220	\$28,098
4Q2014	\$132,500	\$77,561	\$62,049	\$51,707	\$44,321	\$38,781	\$34,472	\$31,024
4Q2015	\$142,500	\$83,415	\$66,732	\$55,610	\$47,666	\$41,707	\$37,073	\$33,366
4Q2016	\$154,900	\$90,673	\$72,539	\$60,449	\$51,813	\$45,337	\$40,299	\$36,269
4Q2017	\$160,000	\$93,659	\$74,927	\$62,439	\$53,519	\$46,829	\$41,626	\$37,463
4Q2018	\$170,000	\$99,512	\$79,610	\$66,342	\$56,864	\$49,756	\$44,228	\$39,805
4Q2019	\$180,000	\$105,366	\$84,293	\$70,244	\$60,209	\$52,683	\$46,829	\$42,146
4Q2020	\$207,000	\$121,171	\$96,937	\$80,781	\$69,241	\$60,585	\$53,854	\$48,468
4Q2021	\$240,000	\$140,488	\$112,390	\$93,659	\$80,279	\$70,244	\$62,439	\$56,195
4Q2022	\$247,500	\$144,878	\$115,903	\$96,586	\$82,788	\$72,439	\$64,390	\$57,951

Note: The required qualifying income reflects the minimum income a household must earn to qualify for a mortgage loan for a particular home price. Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and additional costs of homeownership at 4 percent of home price.

Source: Texas Real Estate Research Center at Texas A&M University

Table 32. Percentage of Households That Earned Required Qualifying Income by DTI Ratio

Year	Home Price	DTI Ratio						
		20%	25%	30%	35%	40%	45%	50%
4Q2011	\$88,000	32.3%	42.8%	50.5%	57.8%	63.3%	67.7%	71.3%
4Q2012	\$100,000	28.7%	37.8%	46.0%	52.6%	58.7%	63.4%	67.4%
4Q2013	\$120,000	21.4%	30.8%	38.3%	45.4%	50.8%	56.3%	60.7%
4Q2014	\$132,500	18.4%	28.1%	35.0%	42.3%	48.2%	52.9%	57.7%
4Q2015	\$142,500	17.1%	25.6%	33.2%	39.5%	45.8%	50.7%	55.1%
4Q2016	\$154,900	15.5%	22.7%	31.1%	37.1%	43.3%	48.7%	53.0%
4Q2017	\$160,000	15.6%	22.5%	31.4%	37.9%	43.7%	49.2%	53.6%
4Q2018	\$170,000	14.6%	22.3%	30.5%	37.4%	42.7%	48.4%	53.0%
4Q2019	\$180,000	14.0%	21.4%	28.7%	36.2%	41.8%	47.1%	51.9%
4Q2020	\$207,000	11.3%	16.7%	23.4%	30.2%	36.9%	42.1%	46.7%
4Q2021*	\$240,000	8.1%	13.7%	18.9%	24.6%	30.5%	36.6%	41.5%
4Q2022*	\$247,500	7.5%	13.5%	18.3%	24.3%	29.8%	36.2%	41.3%

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and additional costs of homeownership at 4 percent of home price. As first-time homebuyers constitute renter-occupied households, this table reflects income data solely for renter-occupied households.

*Represents estimates using 2020 ACS 1-Year Experimental Data.

Sources: American Community Survey, U.S. Census Bureau, and Texas Real Estate Research Center at Texas A&M University

Property Taxes and Insurance

Holding home price constant, the total monthly mortgage payment increases as additional annual homeownership costs (property taxes and insurance) increase (Table 33). With a rate of 4 percent of home price, this payment amounted to \$2,415 for the first-quartile sales price in 4Q2022, nearly 3 times the total monthly mortgage payment for the same home in 4Q2011.

Table 34 shows the home price-to-income multiplier by the costs of property taxes and insurance. A 4 percent property tax and insurance rate translates into a home price-to-income multiplier of 2.99,⁹ meaning a household could afford a maximum home price of 2.99 times its annual income. The home price-to-income multiplier declines as the mortgage interest rate increases.

⁹ The home price-to-income multiplier is based on a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and 35 percent DTI ratio.

The income required to qualify for a loan with property taxes and insurance at 4 percent of home price was \$82,788 for the first-quartile sales price in 4Q2022 (Table 35). An estimated 24.3 percent of renters in Houston-The Woodlands-Sugar Land could afford the first-quartile sales price in 4Q2022 with property taxes and insurance at 4 percent of home price (Table 36), a decline of more than 33 percentage points from 4Q2022.

**Table 33. Total Monthly Mortgage Payment
by Additional Homeownership Costs**

Year	Home Price	Property Taxes & Insurance				
		2%	3%	4%	5%	6%
4Q2011	\$88,000	\$712	\$785	\$859	\$932	\$1,005
4Q2012	\$100,000	\$809	\$892	\$976	\$1,059	\$1,142
4Q2013	\$120,000	\$971	\$1,071	\$1,171	\$1,271	\$1,371
4Q2014	\$132,500	\$1,072	\$1,182	\$1,293	\$1,403	\$1,514
4Q2015	\$142,500	\$1,153	\$1,271	\$1,390	\$1,509	\$1,628
4Q2016	\$154,900	\$1,253	\$1,382	\$1,511	\$1,640	\$1,769
4Q2017	\$160,000	\$1,294	\$1,428	\$1,561	\$1,694	\$1,828
4Q2018	\$170,000	\$1,375	\$1,517	\$1,659	\$1,800	\$1,942
4Q2019	\$180,000	\$1,456	\$1,606	\$1,756	\$1,906	\$2,056
4Q2020	\$207,000	\$1,675	\$1,847	\$2,020	\$2,192	\$2,365
4Q2021	\$240,000	\$1,941	\$2,141	\$2,341	\$2,541	\$2,741
4Q2022	\$247,500	\$2,002	\$2,208	\$2,415	\$2,621	\$2,827

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and 35 percent DTI ratio.

Source: Texas Real Estate Research Center at Texas A&M University

**Table 34. Home Price-to-Income Multiplier for First-Time
Buyers by Additional Homeownership Costs**

Property Taxes and Insurance	Home Purchasing Power
2%	3.61
3%	3.27
4%	2.99
5%	2.75
6%	2.55

Note: Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and 35 percent DTI ratio.

Source: Texas Real Estate Research Center at Texas A&M University

Table 35. Required Qualifying Income by Additional Homeownership Costs

Year	Home Price	Property Taxes & Insurance				
		2%	3%	4%	5%	6%
4Q2011	\$88,000	\$24,407	\$26,921	\$29,436	\$31,950	\$34,464
4Q2012	\$100,000	\$27,735	\$30,592	\$33,450	\$36,307	\$39,164
4Q2013	\$120,000	\$33,282	\$36,711	\$40,139	\$43,568	\$46,997
4Q2014	\$132,500	\$36,749	\$40,535	\$44,321	\$48,106	\$51,892
4Q2015	\$142,500	\$39,523	\$43,594	\$47,666	\$51,737	\$55,808
4Q2016	\$154,900	\$42,962	\$47,388	\$51,813	\$56,239	\$60,665
4Q2017	\$160,000	\$44,376	\$48,948	\$53,519	\$58,091	\$62,662
4Q2018	\$170,000	\$47,150	\$52,007	\$56,864	\$61,721	\$66,579
4Q2019	\$180,000	\$49,923	\$55,066	\$60,209	\$65,352	\$70,495
4Q2020	\$207,000	\$57,412	\$63,326	\$69,241	\$75,155	\$81,069
4Q2021	\$240,000	\$66,565	\$73,422	\$80,279	\$87,136	\$93,993
4Q2022	\$247,500	\$68,645	\$75,716	\$82,788	\$89,859	\$96,930

Note: The required qualifying income reflects the minimum income a household must earn to qualify for a mortgage loan for a particular home price. Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and 35 percent DTI ratio.

Source: Texas Real Estate Research Center at Texas A&M University

Table 36. Percentage of Households That Earned the Required Qualifying Income by Additional Homeownership Costs

Year	Home Price	Property Taxes & Insurance				
		2%	3%	4%	5%	6%
4Q2011	\$88,000	65.3%	61.5%	57.8%	54.0%	50.3%
4Q2012	\$100,000	60.9%	56.7%	52.6%	48.9%	45.9%
4Q2013	\$120,000	53.4%	49.1%	45.4%	41.8%	38.1%
4Q2014	\$132,500	50.3%	46.3%	42.3%	38.2%	34.9%
4Q2015	\$142,500	48.1%	43.8%	39.5%	35.8%	33.1%
4Q2016	\$154,900	45.9%	41.1%	37.1%	34.0%	30.9%
4Q2017	\$160,000	46.3%	41.5%	37.9%	34.6%	31.3%
4Q2018	\$170,000	45.4%	41.0%	37.4%	33.8%	30.3%
4Q2019	\$180,000	43.8%	40.0%	36.2%	32.4%	28.6%
4Q2020	\$207,000	39.3%	34.8%	30.2%	25.7%	23.2%
4Q2021*	\$240,000	33.4%	28.0%	24.6%	21.6%	18.7%
4Q2022*	\$247,500	32.8%	27.4%	24.3%	21.2%	18.1%

Note: Because first-time homebuyers constitute renter-occupied households, this table reflects income data solely for renter-occupied households. Assumes a 30-year loan term, 6.66 percent mortgage interest rate, 0.5 percent mortgage insurance premium, 95 percent LTV ratio, and 35 percent DTI ratio.

*Represents estimates using 2020 ACS 1-Year Experimental Data.

Sources: American Community Survey, U.S. Census Bureau, and Texas Real Estate Research Center at Texas A&M University



Overview of Housing Affordability

Housing affordability persistently proves one of the most salient topics in housing markets across the state. Although definitions vary, housing affordability broadly denotes the relationship between home price (or rent) and household (or family) income.¹⁰ As such, housing affordability generally reflects the two housing tenures: owner- and renter-occupied housing. However, Center economists further classify owner-occupied housing affordability into two distinct categories: purchase and repayment affordability.

This report focuses only on purchase affordability. Purchase affordability measures the ability of a household to buy a home. In other words, it reflects home-purchasing potential. Repayment affordability, on the other hand, measures an existing homeowner's ability to make timely monthly mortgage payments. While purchase affordability involves all potential homebuyers, regardless of whether a household already owns a home, repayment affordability solely involves current homeowners (i.e., only owner-occupied households).

Measuring Purchase Affordability

The vast majority of homebuyers—86 percent in Texas in 2020—rely on mortgage financing to purchase a home. As such, purchase affordability largely acts as a function of income, wealth, and credit. These three factors typically constitute the primary determinants of a mortgage applicant's creditworthiness, or the applicant's ability to repay the mortgage loan, a factor heavily weighed by the mortgage lender in the decision to extend mortgage financing to an applicant. In mortgage financing, income, wealth, and credit materialize through the DTI ratio, LTV ratio, and credit score.¹¹

Other factors that affect purchase affordability include the mortgage interest rate, any additional costs of borrowing mortgage capital (such as the mortgage insurance premium, which is generally charged if the LTV ratio is 80 percent or higher), and the additional costs of homeownership—property taxes and insurance.

¹⁰ Household income reflects all households in the income distribution, including both family and nonfamily households, which consist of a householder living alone or a householder who shares his/her home with individual(s) of no relation to him/her. Meanwhile, family income includes only households in which the householder lives with at least one other related family member.

¹¹ There are two types of DTI ratios: “front-end” and “back-end” ratios. The front-end DTI ratio measures mortgage debt as a percentage of household income, while the back-end ratio reflects total household debt—mortgage loans, car loans, credit card loans, student loans, etc.—as a percentage of household income. Should mortgage debt equal \$800 per month and the monthly household income equal \$2,400, then the front-end DTI ratio is 30 percent. Should total household debt equal \$1,200 per month, then the back-end DTI ratio is 50 percent. This report uses the front-end DTI ratio. The LTV ratio measures the household's down payment as a percentage of the home price. A 5 percent down payment translates into a 95 percent LTV ratio.

Table 37 shows how characteristics of a mortgage loan or applicant affect the maximum home price affordable to a particular household. Holding all else equal, an increase in the loan term decreases the total monthly mortgage payment, which increases the maximum affordable home price. Meanwhile, an increase in the DTI ratio also raises the maximum affordable home price. However, an increase in the mortgage interest rate, LTV ratio, additional costs of homeownership, and additional costs of borrowing mortgage capital increase the total monthly mortgage payment, which decreases the maximum affordable home price and reduces home-purchasing potential.

Table 37. How Loan, Applicant Characteristics Affect Purchase Affordability

Loan or Applicant Characteristics	Effect on Purchase Affordability
Mortgage interest rate	An increase in the mortgage interest rate diminishes purchase affordability
Loan term	An increase in the loan term increases purchase affordability
LTV ratio	An increase in the loan-to-value ratio diminishes purchase affordability
DTI ratio	An increase in the debt-to-income ratio increases purchase affordability
Additional costs of homeownership (property taxes and insurance)	An increase in the additional costs of homeownership diminishes purchase affordability
Additional costs of borrowing mortgage capital (such as the mortgage insurance premium)	An increase in the additional costs of borrowing mortgage capital diminishes purchase affordability

Source: Texas Real Estate Research Center at Texas A&M University

The Center uses the home price-to-income multiplier (also known as “home-purchasing power”) to find the ratio between home price and household income, or the maximum home price affordable to a household of a particular income. For example, a multiplier of 3 indicates a household could afford a home priced at three times the household’s income (so, a household earning \$50,000 annually could afford a maximum home price of \$150,000).

The multiplier generally measures lower for conventional borrowers, a function of the lower DTI ratios that such borrowers tend to present, and higher for first-time borrowers, who depict higher DTI ratios. The home price-to-income multiplier typically measures around 3 for the repeat homebuyer, and between 3 and 4 for first-time homebuyers.

This report computes purchase affordability for both repeat and first-time homebuyers. For the repeat buyer, calculations in this report assume the prevailing mortgage interest rate

(6.66 percent in 4Q2022),¹² 80 percent LTV ratio, 30 percent DTI ratio, and property taxes and insurance of 4 percent of home value. First-time homebuyers, who tend to be younger and therefore have not accumulated as much wealth or achieved peak earnings, tend to have higher LTV and DTI ratios. The lower income, wealth, and credit of first-time homebuyers generally reduces the maximum home price affordable to them. The calculations of purchase affordability for first-time homebuyers reflect the prevailing mortgage interest rate (6.66 percent in 4Q2022), 0.5 percent mortgage insurance premium, 95 percent LTV ratio, 35 percent DTI ratio, and property taxes and insurance of 4 percent of home value.

¹² The source for the prevailing mortgage interest rate is FRED/Freddie Mac.





TEXAS A&M UNIVERSITY

Texas Real Estate Research Center

DIVISION OF ACADEMIC AND STRATEGIC COLLABORATIONS

Texas A&M University
2115 TAMU
College Station, TX 77843-2115

<http://recenter.tamu.edu>
979-845-2031

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