Texas Quarterly Apartment Report

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TEXAS A&M UNIVERSITY
Real Estate Center

Texas Quarterly Apartment Report:
4th Quarter 2019

DALLAS FORT WORTH

	OCCUPANCY RATES	ASKING RENTS
OVERALL	92.5% ▬	3.8% ▬
CLASS A	89.8% ▲	3.9% ▬

AUSTIN

	OCCUPANCY RATES	ASKING RENTS
OVERALL	92.8% ▲	4.8% ▬
CLASS A	90.1% ▲	4.2% ▬

SAN ANTONIO

	OCCUPANCY RATES	ASKING RENTS
OVERALL	91.1% ▼	3.9% ▬
CLASS A	90.0% ▼	3.1% ▼

HOUSTON

	OCCUPANCY RATES	ASKING RENTS
OVERALL	91.2% ▲	3.2% ▲
CLASS A	90.0% ▲	2.8% ▲

Sources: CoStar and Real Estate Center at Texas A&M University

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About this Report

Real Estate Center economists continuously monitor multiple facets of the global, national, and Texas economies. The *Texas Quarterly Apartment Report* is a summary of important economic indicators that help discern apartment real estate trends in the major four Texas metropolitan areas (Austin, Dallas-Fort Worth, Houston, and San Antonio).

All quarterly measurements are calculated using seasonally adjusted and trend cycled data, while percentage changes reflect nominal year-over-year estimates, unless stated otherwise. Seasonal adjustment smooths the quarterly fluctuations in the data. Furthermore, graphs are also trend cycle adjusted, which provides a clearer, less volatile view of upward and downward movements. Both enrich our analysis by producing a more accurate depiction of long-term movements in the data.

This report analyzes effective rents, as opposed to asking rents, to reflect rental concessions. This report utilizes data from ALN Apartment Data and CoStar. The time series varies by sector and geography, depending on the data available. Sectors with shorter time series limit the interpretation of the data. CoStar makes changes to its historical data series.

This quarterly publication provides data and insights on the Texas apartment real estate markets. We hope you find them useful. Your feedback is always appreciated. Please send comments and suggestions to info@recenter.tamu.edu.

Dr. James Gaines, Dr. Luis Torres, Dr. Harold Hunt, Clare Losey, Trenton Forbes, and Caleb Smoot

Texas Economic Overview

Please note. This report does not account for the impacts of the COVID-19 (coronavirus) outbreak, but reflects the market through fourth quarter 2019 and can be used as a benchmark comparison for 2020. The full impact of the virus on commercial real estate, much less the overall economy, is highly speculative at this point, and it is premature to speculate on the magnitude. Once information is available regarding the impacts of COVID-19 we will revise our forecast for 2020.

More recently, coronavirus has been a negative shock to the economy and financial markets. Lower growth expectations and increased uncertainty could derail continued expansion in 2020. The Texas economy weathered the 2014-15 oil bust on the strength of the U.S. economy and the state's diverse economy. Now the state faces the double-whammy scenario where declines in the oil industry and the U.S. economy threaten the state's economic future. The only thing there is little doubt about is that there will be negative consequences that will affect the market from users, owners, lenders, bond holders, and the general economy. We don't know how pronounced those impacts will be. Stay tuned. Future Center publications will offer detailed analysis.

The Texas economy grew at a solid pace in 2019 in the midst of one of the longest expansionary cycles in state history. Crude oil production, residential construction, housing sales, and commodity exports increased. Although initial unemployment claims rose modestly, the labor market remained strong with record low unemployment, stable job growth, and improved labor force participation. The manufacturing sector, however, struggled amid the slowing global industry and trade-related uncertainty. Although international migration was down, overall favorable economic conditions attracted migrants from other states, boosting population growth.

Even before the coronavirus, the state's economy faced headwinds from slowing national and global economies, downward pressures on oil prices, and ongoing political and trade-related uncertainties. For additional commentary and statistics, see *Outlook for the Texas Economy* at recenter.tamu.edu.

The Texas Residential Construction (Coincident) Index (Figure 1), which measures current construction activity, rose 2.2 percent annually in 2019 as industry employment increased. Momentum should continue into 2020. The index reached its highest level since before the Great Recession. Relatively low interest rates, upward-trending housing permits, and housing starts supported the positive outlook. The volume of multifamily construction loans increased in 2019, suggesting higher levels of construction in coming months.

The Austin, DFW, Houston, and San Antonio indices all pointed toward higher activity (Figure 2). Overall market trends for the majority of Texas metros show positive occupancy rate growth

combined with positive rent growth. Only Midland/Odessa is registering both negative rent growth and change in occupancy due to the uncertainty in the oil industry. With the supply of single-family starter homes constrained, young adults continue to rent units in the apartment sector. Overall market trends for the majority of Texas metros show positive occupancy rate growth combined with positive rent growth. Only Austin registered negative change in occupancy, while both Houston and Fort-Worth registered zero change in occupancy, and Midland/Odessa registered both negative rent growth and change in occupancy due to the uncertainty in the oil industry.

Both low inflation expectations and modest future growth prospects continue to weigh on nominal interest rates. Particularly, capital flows have flooded the Treasury market seeking positive returns and low risk, pushing the ten-year Treasury bill further down. The fall in the ten-year yield at the end of 2019 caused the spread in apartment capitalization rates to increase, indicating increased risk in multifamily real estate and general profitability (Figure 3).

Overall apartment cap rates for Austin and San Antonio remain the highest, followed by Houston and DFW (Figure 3). DFW has become the least risky and lowest return market for multifamily real estate based on the spread with the ten-year Treasury bill. The spread with the ten-year Treasury bill increased in 2019.

Overall market trends for the majority of Texas metros show positive occupancy rate growth combined with positive rent growth (Figure 4). Only Austin registered negative change in occupancy, while both Houston and Fort Worth registered zero change in occupancy, and Midland/Odessa registered both negative rent growth and change in occupancy due to the uncertainty in the oil industry. With the supply of single-family starter homes being constrained, young adults continue to rent units in the apartment sector. The volume of multifamily construction loans increased in 2019, suggesting higher levels of construction in the coming months (Figure 5).

Overall Apartment Sector

Table 1. Overall Apartment Forecasted Vacancy Rates, Effective Rents

MSA	Natural Apartment Vacancy Rate	Vacancy Rates (%)			Effective Rents (y-o-y %)		
		2019	2020	2021	2019	2020	2021
Austin	8.3	7.6	7.4	7.3	4.9	3.5	3.0
DFW	8.5	7.9	7.7	7.5	3.5	3.4	3.2
Houston	9.2	9.0	8.8	9.0	2.2	2.6	2.0
San Antonio	8.5	9.2	8.8	8.9	4.0	3.4	3.3

Note: Annual numbers represent the four-quarter average of the seasonally adjusted data. Rent growth is nominally estimated from the previous year's average.

Source: Real Estate Center at Texas A&M University

Austin (See Figures 6-10)

Actual vacancy continued to decline through 4Q2019, averaging 7.6 percent over 2019. Vacancy has remained below the natural vacancy (8.3 percent) since 3Q2018. Net absorption in 4Q2019 remained strong. However, the trend declined from the record number of units in 2Q2018. While remaining positive, the population growth rate continued to slow this quarter. Austin's demand for overall apartment units remained strong as exhibited with decreasing vacancies and strong net absorption. However, the Austin market is beginning to slow as net absorption and population growth soften. After averaging 7.6 percent over 2019, actual vacancy is expected to remain below the natural vacancy, averaging 7.4 percent for 2020 and 7.3 percent for 2021. In response to slowing demand, rent growth flattened over 2019, averaging 4.9 percent. Due to decreasing net absorption and population growth, rent growth is forecasted to decrease over 2020 and 2021, averaging 3.5 percent and 3.0 percent, respectively.

Austin's robust economy is driving an increase in construction starts (includes Class A) and units under construction that began in 2011. Construction starts skyrocketed to record values in all quarters of 2019. Alternatively, deliveries declined over all quarters. However, these should begin to increase near-term as units-under-construction remain high. High levels of units delivered in previous years kept vacancies close to the natural vacancy. As construction projects are delivered in 2020, Austin may experience more modest rent growth, increased vacancies, and declining net absorption.

Dallas-Fort Worth (See Figures 11-15)

Between 2016 and 2018, actual vacancy increased to slightly less than the natural vacancy (8.5 percent), remaining just above 8.0 percent. Vacancy then declined through 2019, averaging 7.9

percent. Net absorption continued to trend upward, posting large numbers during 2019. Population growth has slowed since 1Q2016, closing 4Q2019 at just under 1.0 percent. The demand for overall apartment units is promising, given the recent decreasing trend of vacancies and strong net absorption. Though population growth is slowing, it still remains positive, supporting strong demand for units. Actual vacancy is expected to average 7.7 percent in 2020 and 7.5 percent in 2021. Rent growth slowed after a peaking in 3Q2015 at 8.7 percent. However, as actual vacancies trended downward, effective rent growth began to increase again in 3Q2018. The trend continued in 2019, averaging 3.5 percent. Rent growth is forecasted at 3.4 and 3.2 percent for 2020 and 2021, respectively.

Peaking in mid-2018, construction starts (includes Class A) have trended downward. However, starts did increase in the final two quarters of 2019. Units-under-construction reached a record high in late-2018, remaining strong and relatively flat since then. The rise in vacancy between 2016 and 2018 is, in part, explained by the large number of units delivered from 2Q2016 to 1Q2019. However, deliveries declined over all quarters of 2019. With demand holding strong in the MSA, developers may begin to consider new projects.

Houston (See Figures 16-20)

Vacancies have trended lower since 2017, falling below the natural vacancy (9.2 percent) in the latter half of 2019 and averaging 9.0 percent for the year. While net absorption fluctuated since the oil downturn of 2014, it remained positive and increased during 2019. The population growth rate continues to slow. However, the population is still growing and fueling demand for units throughout Houston. The decrease in oil prices is a likely headwind for future demand in the MSA and should be watched closely. Actual vacancy is projected to remain below the natural vacancy, averaging 8.8 percent and 9.0 percent in 2020 and 2021, respectively. Rent growth began to plummet in mid-2015 in response to increasing vacancies, and rents declined from 3Q2016-2Q2017. Rents have continued to grow since 2017, and rent growth averaged 2.2 percent in 2019. Rent growth is expected to average 2.6 percent in 2020 and 2.0 percent in 2021.

Construction starts (includes Class A) began declining in 2018 although remaining relatively high. Construction starts rebounded in 2019, increasing through all four quarters. Units under construction continue to climb as they have since 2018. Deliveries have decreased steadily since 1Q2019. Low levels of deliveries have kept net absorption relatively high.

San Antonio (See Figures 21-25)

Actual vacancy has exceeded the natural vacancy (8.5 percent) for more than four years (since 3Q2016). However, vacancy decreased over the previous seven quarters, averaging 9.2 percent in 2019. While trending downward since 2Q2018, net absorption remains relatively strong through 2019. Population growth remained flat around 2.0 percent after the Great Recession until declining over 2019 to close 4Q2019 at 1.0 percent. Declining vacancies, strong net

absorption, and positive population growth provide a healthy overall outlook for demand currently. However, declining net absorption in spite of low and decreasing deliveries provides a sign that demand is beginning to slow. Anticipated actual vacancy should average 8.8 and 8.9 percent in 2020 and 2021, respectively. Rents continue to climb in response to the declining vacancy. Rent growth remained flat through 2019, averaging 4.0 percent. Rent growth is expected to moderate and average 3.4 percent and 3.3 percent in 2020 and 2021, respectively.

Construction starts (includes Class A) skyrocketed in the final three quarters of 2019, and the units under construction continue to rise. Deliveries drastically declined since late 2017. However, they may moderate in coming quarters due to the increase in units under construction. The decline in deliveries helped facilitate positive net absorption and, in part, accounts for the forecasted rent growth.

Class A Apartment Sector

Table 2. Class A Apartment Forecasted Vacancy Rates, Effective Rents

MSA	Natural Apartment Vacancy Rate	Vacancy Rates (%)			Effective Rents (y-o-y %)		
		2019	2020	2021	2019	2020	2021
Austin	9.0	10.2	10.0	9.8	4.5	4.0	2.9
DFW	9.1	11.7	11.1	11.4	2.7	3.8	3.0
Houston	9.7	9.9	10.6	11.2	1.5	2.8	2.3
San Antonio	10.0	10.5	10.0	10.1	3.2	2.7	2.2

Note: Annual numbers represent the four-quarter average of the seasonally adjusted data. Rent growth is nominally estimated from the previous year's average.
Source: Real Estate Center at Texas A&M University

Austin (See Figures 26-30)

Actual vacancy measured more than natural vacancy (9.0 percent) for 19 consecutive quarters, likely in part to a high number of units delivered during that time. Overall vacancy declined since 1Q2018, averaging 10.2 percent in 2019. While remaining strong, net absorption declined from 3Q2018-3Q2019. However, 4Q2019 net absorption increased slightly. Population growth, while remaining positive, continued to decline over the year. Similar to the demand for the overall apartment market in Austin, Class A apartments remain healthy for now while showing signs of slowing. This weakening demand is due to the vacancies beginning to stabilize above the natural vacancy rate, slowing population growth, and declining net absorption. Actual vacancy is projected to average 10.0 percent and 9.8 percent in 2020 and 2021, respectively. Rents continue to grow dramatically as rent growth averaged 4.5 percent in 2019. Rent growth moderated in 2019, and this trend is expected to continue, averaging 4.0 and 2.9 percent in 2020 and 2021, respectively.

Construction starts (includes all apartment classes) increased throughout 2019 reaching a new record this quarter. Units under construction followed this trend, also attaining a new high in 4Q2019. Continued construction by developers in the wake of high vacancies is bolstered by strong rents and population growth in the MSA. Deliveries have generally decreased in the last couple of years. However, 4Q2019 deliveries increased. Look for deliveries to continue rising in the coming quarters. This will likely hold vacancy rates above the natural vacancy.

Dallas-Fort Worth (See Figures 31-35)

While actual vacancy continues to remain above the natural vacancy (9.1 percent), it declined in all quarters of 2019, averaging 10.2 percent. Net absorption remains strong and continues the long-term upward trend in spite of a high number of units being delivered. Population growth slowed over recent years, finishing around 1.0 percent in 4Q2019. The high actual vacancies are largely explained by the massive number of units delivered in previous quarters, and the high net absorption suggests demand for Class A is strong in DFW. Declining vacancies, increasing net absorption, and a growing population suggest the demand for Class A units is strengthening. Based on forecasts, actual vacancy is expected to average 11.1 and 11.4 percent in 2020 and 2021, respectively. As the gap between actual vacancy and natural vacancy narrows, rent growth continues to climb, averaging 2.7 percent in 2019. Rents will continue growing in the MSA, and growth is expected to average 3.8 percent in 2020 and 3.0 percent in 2021.

After declining from mid-2018, construction starts (includes all apartment classes) began to rebound in the last two quarters of 2019. Units under construction remain at record levels. However, the long-run upward trend moderated through 2019. Deliveries fell again in 4Q2019, as they have every quarter this year; this helped bolster the declining vacancies. This decreasing trend follows a record number of units being delivered.

Houston (See Figures 36-40)

Houston's Class A apartment market struggled in the wake of the 2014 oil downturn. However, the market largely recovered in recent years. Actual vacancy remained near the natural vacancy (9.7 percent) for the previous five quarters, averaging 9.9 percent over 2019. Net absorption declined from a record peak in 2Q2017 and stabilized over the past two years. Population growth continues to decline in the wake of the oil downturn. A recent decline in vacancies provides some optimism for the demand for Class A units in the MSA. However, declining net absorption, declining population growth, and the recent fall in oil prices present strong headwinds for future demand in Houston. Actual vacancy is forecasted to increase, averaging 10.6 percent and 11.2 percent in 2020 and 2021, respectively. Asking rents declined considerably in the wake of the oil downturn, with rent growth falling to nearly -6.0 percent in 4Q2016, and remaining relatively volatile ever since. Supported by decreasing vacancies, asking rents increased in all quarters of 2019 and grew at an average of 1.5 percent. Rent growth is anticipated to average 2.8 and 2.3 percent in 2020 and 2021, respectively.

In response to the decline in vacancies, construction starts (includes all apartment classes) remain high, increasing in the last three quarters of 2019. However, new development may stall if net absorption continues to decline and actual vacancy increases in the future. Alternatively, the units delivered declined over the last three quarters of the year. Expect deliveries to increase in coming quarters as projects under construction reach completion. This will likely lead to higher vacancies and limit future rent growth.

San Antonio (See Figures 41-45)

Actual vacancy continues to decline, approaching the natural vacancy (10.0 percent), averaging 10.5 percent over 2019. Actual vacancy has not registered below natural vacancy since 2015. Net absorption continues to trend lower from its 2Q2018 peak while remaining relatively strong for the time being. Population growth fell almost a full percentage point over the past six quarters, ending 4Q2019 at 1.0 percent. Due to declining vacancies, strong net absorption, and a growing population, the current demand for Class A apartments is healthy but showing signs of slowing. Actual vacancy is expected to continue hovering around the natural vacancy, averaging 10.0 and 10.1 percent in 2020 and 2021, respectively. Rents continued to climb, and the 2019 rate of growth flattened, averaging 3.2 percent. Rent growth is expected to continue to moderate, averaging 2.7 percent in 2020 and 2.2 percent in 2021.

Construction starts (includes all apartment classes) climbed dramatically in the final three quarters of 2019. Units under construction increased in every quarter. Deliveries hit a record in 4Q2017 and declined through 3Q2019. Deliveries increased slightly this quarter.

Figure 1. Texas Residential Construction Index

(Index Oct 1990 = 100)
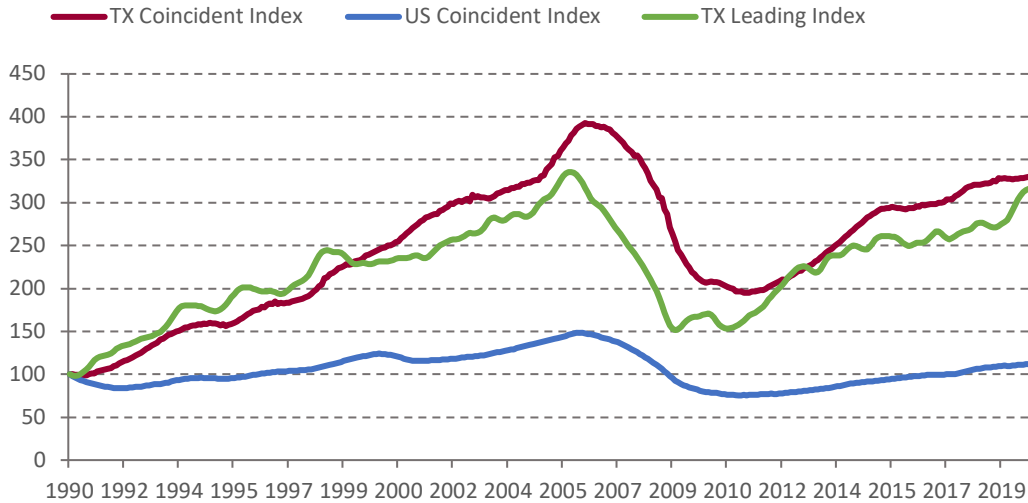
Source: Real Estate Center at Texas A&M University

Figure 2. Major MSAs' Residential Construction Leading Index

(Index Jan 1984 = 100)
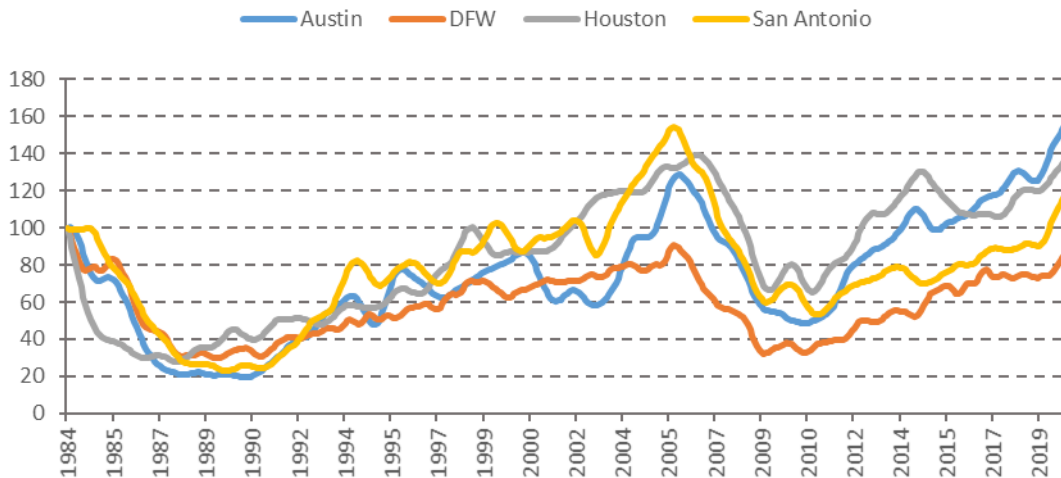
Source: Real Estate Center at Texas A&M University

Figure 3. Capitalization Rates vs. Ten-Year Treasury Bills
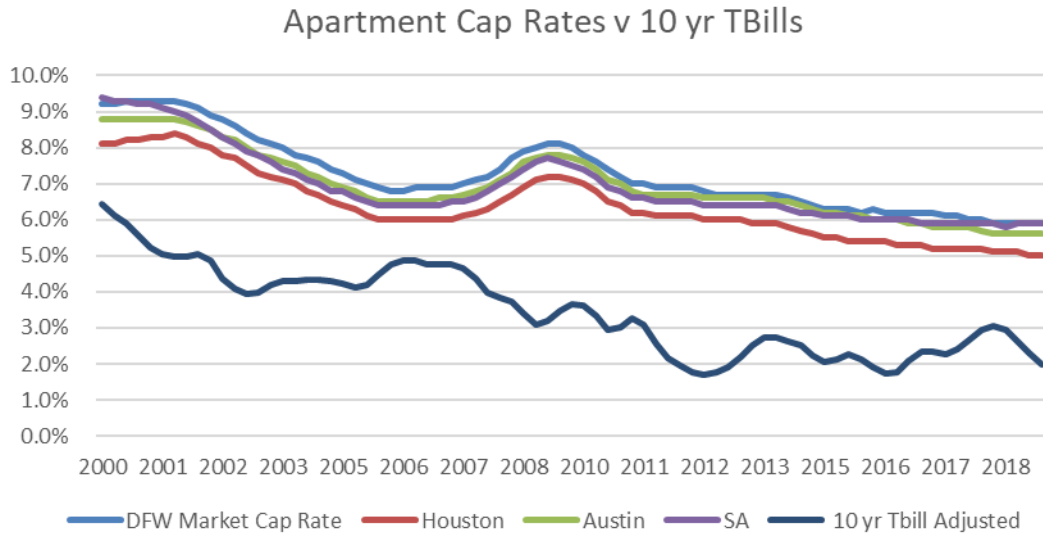
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 4. Overall Apartment Market Percent Changes in Effective Rent and Occupancy
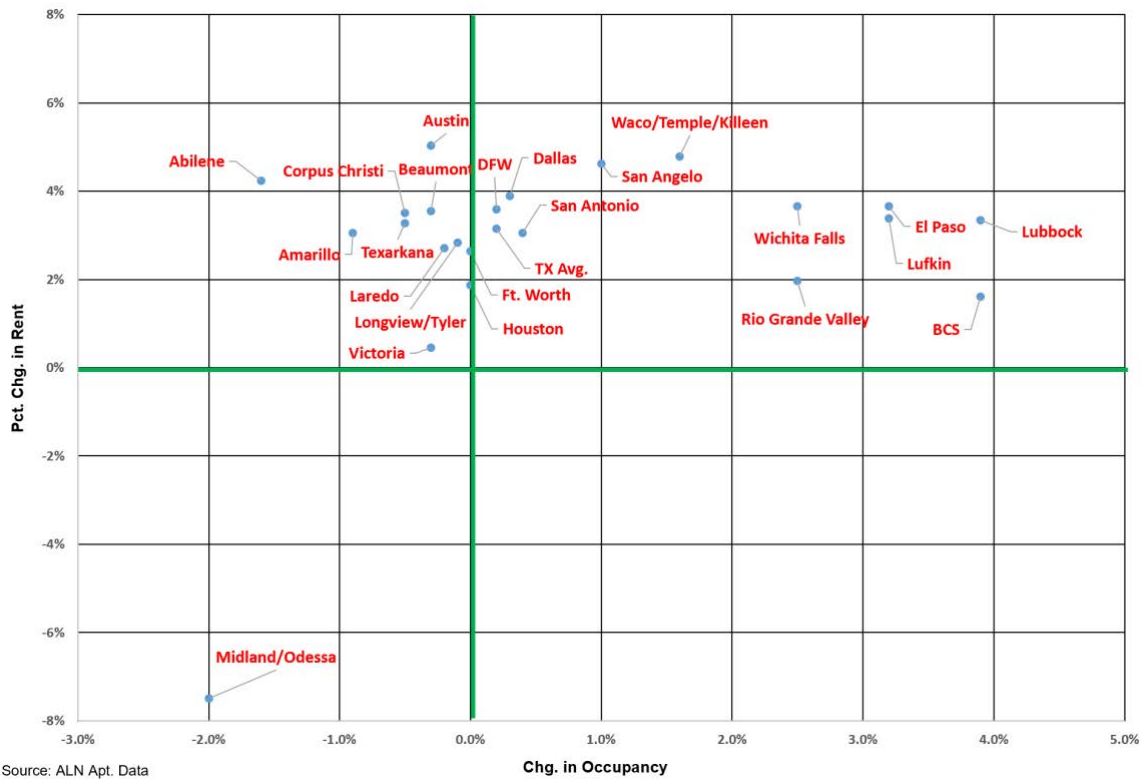
Sources: ALN Apartment Data and Real Estate Center at Texas A&M University

Figure 5. Real Multifamily Domestic Loans

(Index 1992Q4=100)
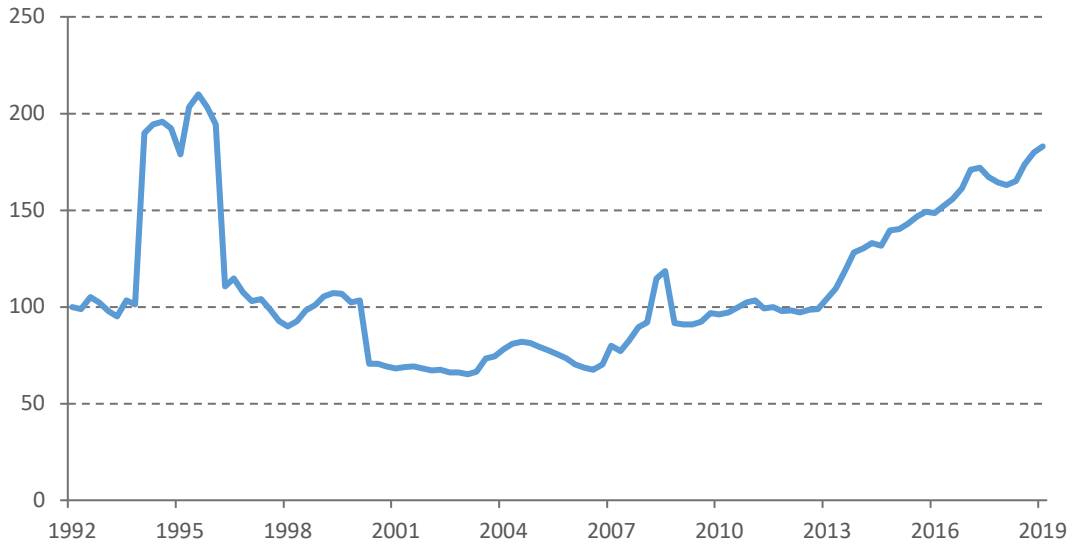
Note: Seasonally Adjusted and inflation adjusted.
Source: Federal Deposit Insurance

OCCUPANCY RATE
▲ 92.8%

EFFECTIVE RENT GROWTH (PER UNIT)
▲ 4.8%

NET ABSORPTION (UNITS)
▲ 2,526

CONSTRUCTION STARTS
▲

Note: Arrows indicate change from previous quarter with the exception of asking rent growth (change from previous year). Seasonally adjusted data.
Sources: CoStar and the Real Estate Center at Texas A&M University

Figure 6. Austin Overall Vacancy and Effective Rent Growth

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University
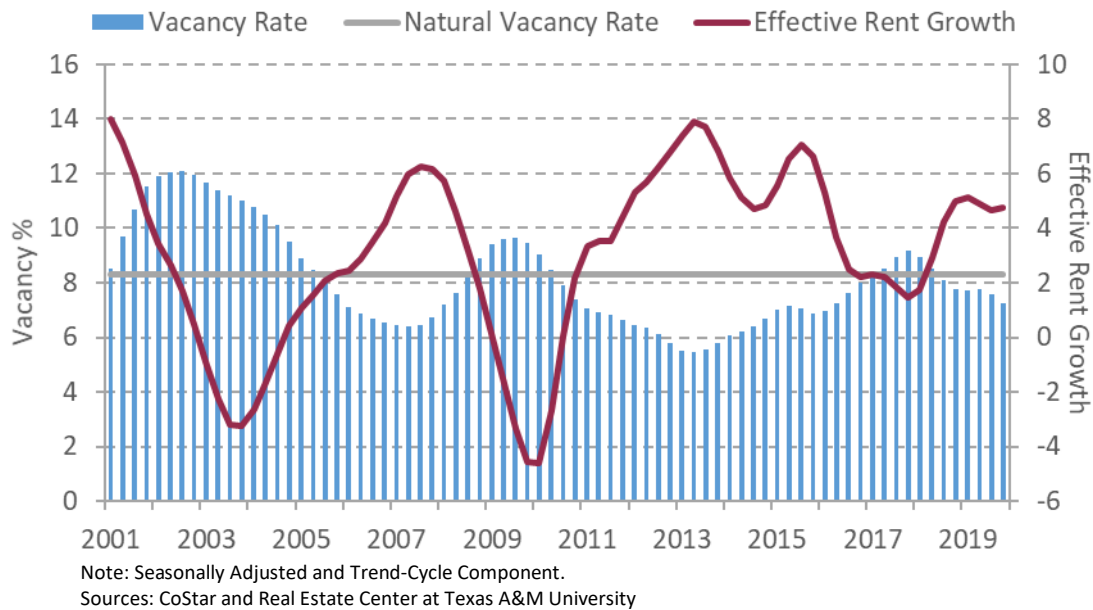
Figure 7. Austin Overall Vacancy and Population Growth

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University
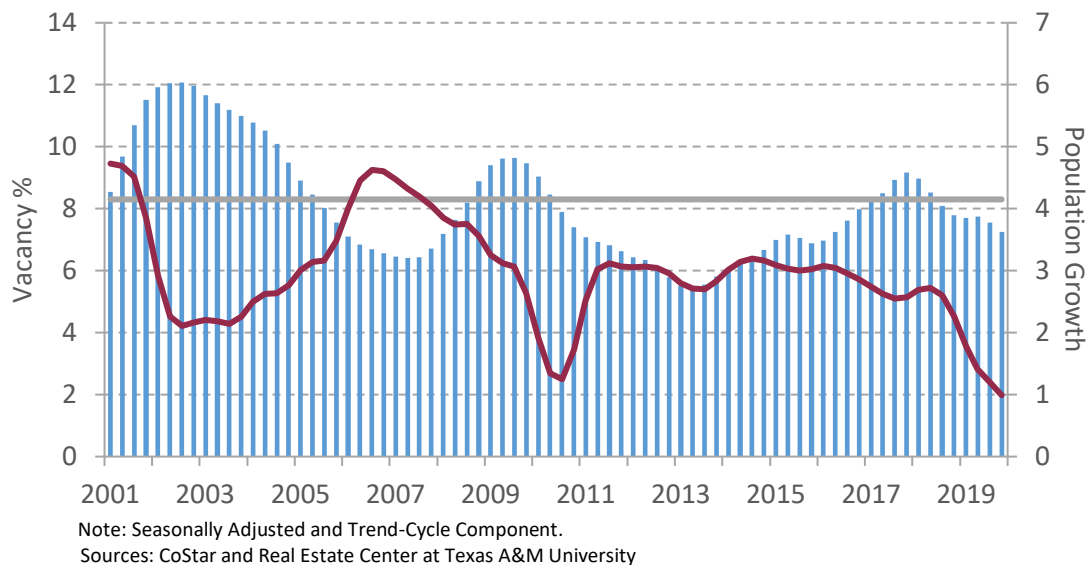
Figure 8. Austin Overall Net Absorption and Construction Starts Index
(Index 2000 Q1 = 100)
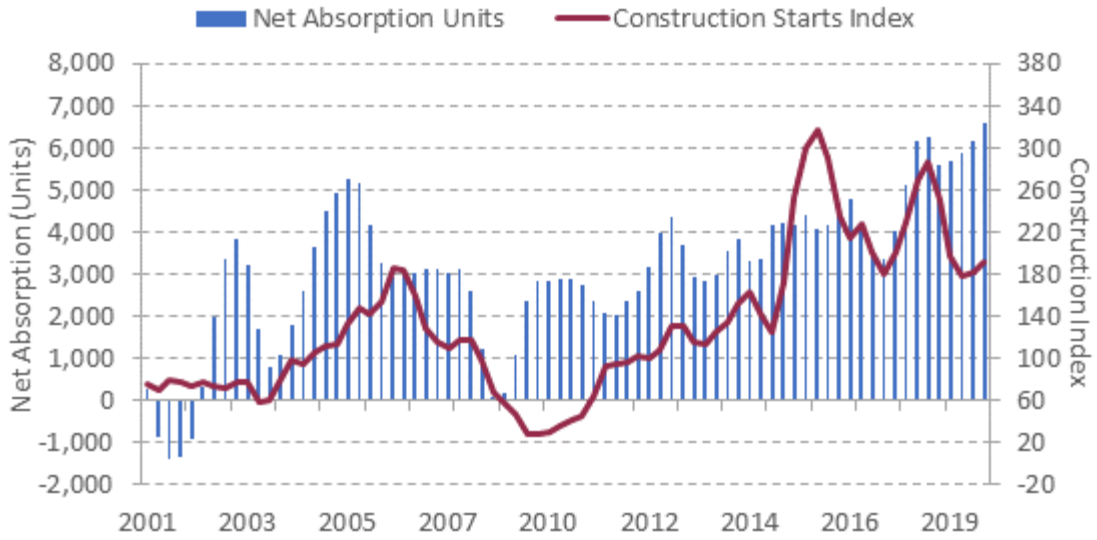
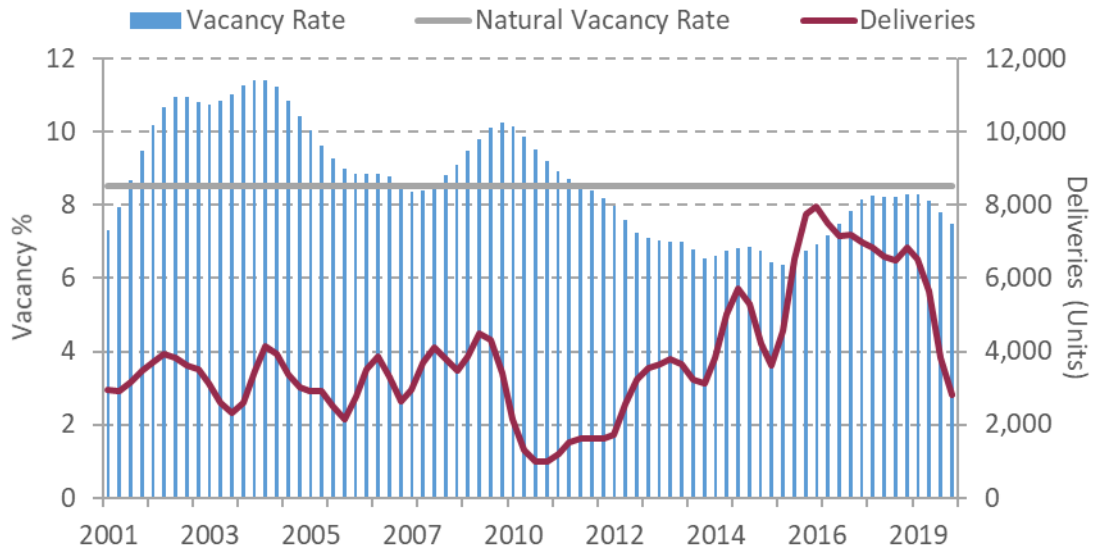Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar, Dodge Analytics, and Real Estate Center at Texas A&M University

Figure 9. Austin Overall Vacancy and Units Under Construction
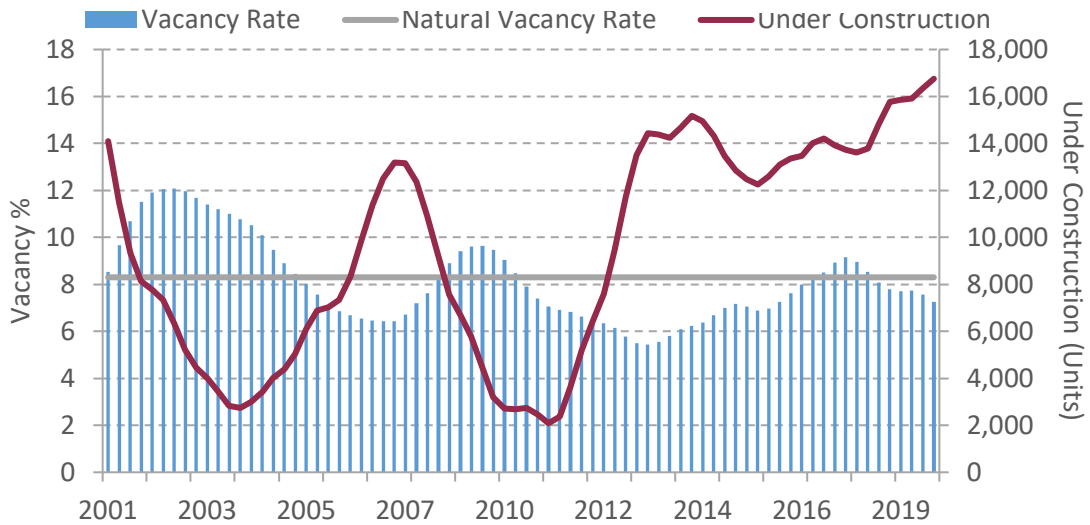
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 10. Austin Overall Vacancy and Deliveries in Units
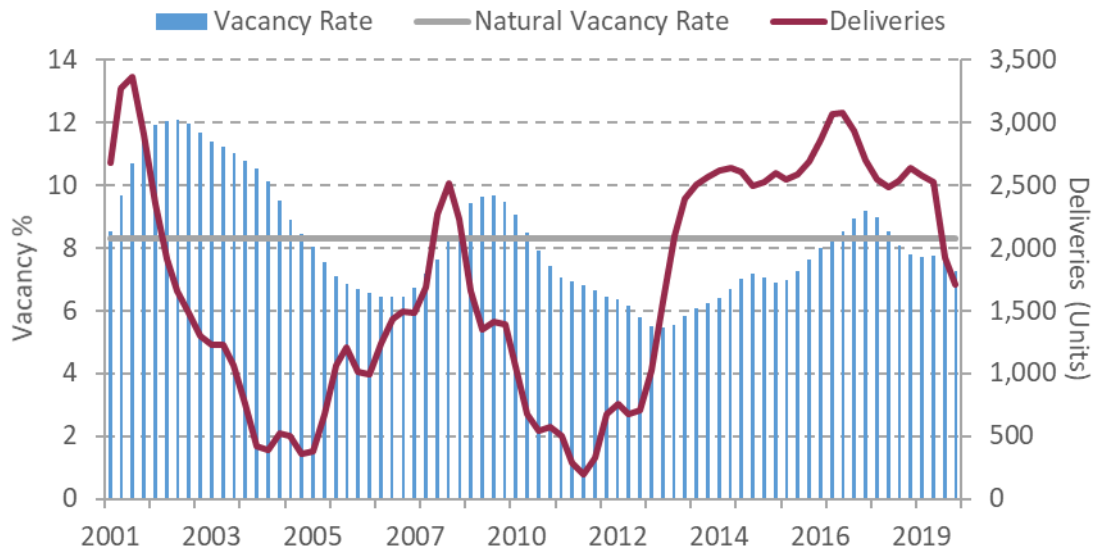
Note: Seasonally Adjusted and Trend-Cycle Component.
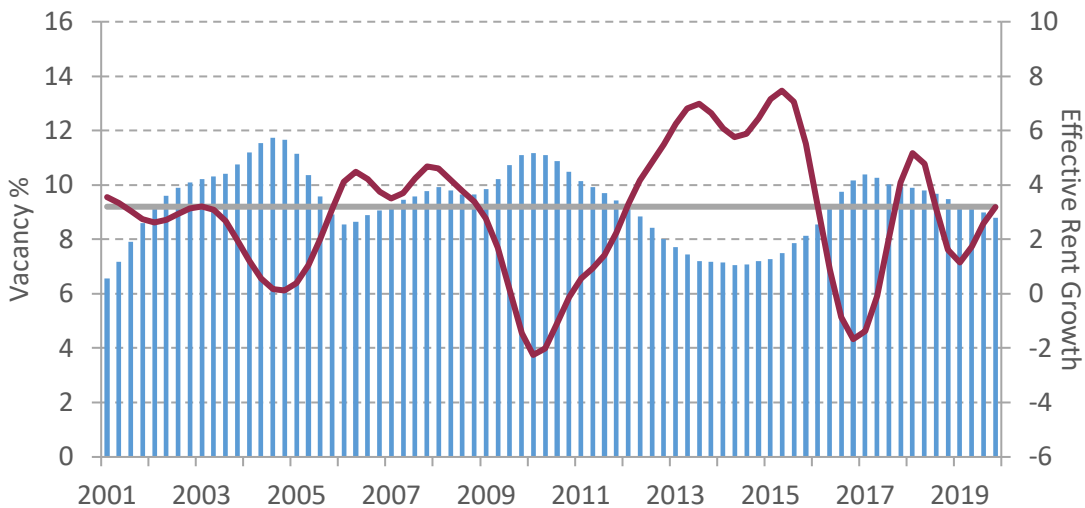Sources: CoStar and Real Estate Center at Texas A&M University

| OCCUPANCY RATE	EFFECTIVE RENT GROWTH (PER UNIT)	NET ABSORPTION (UNITS)	CONSTRUCTION STARTS
▲ 92.5%	▬ 3.8%	▲ 6,658	▲

Note: Arrows indicate change from previous quarter with the exception of asking rent growth (change from previous year). Seasonally adjusted data.
Sources: CoStar and the Real Estate Center at Texas A&M University

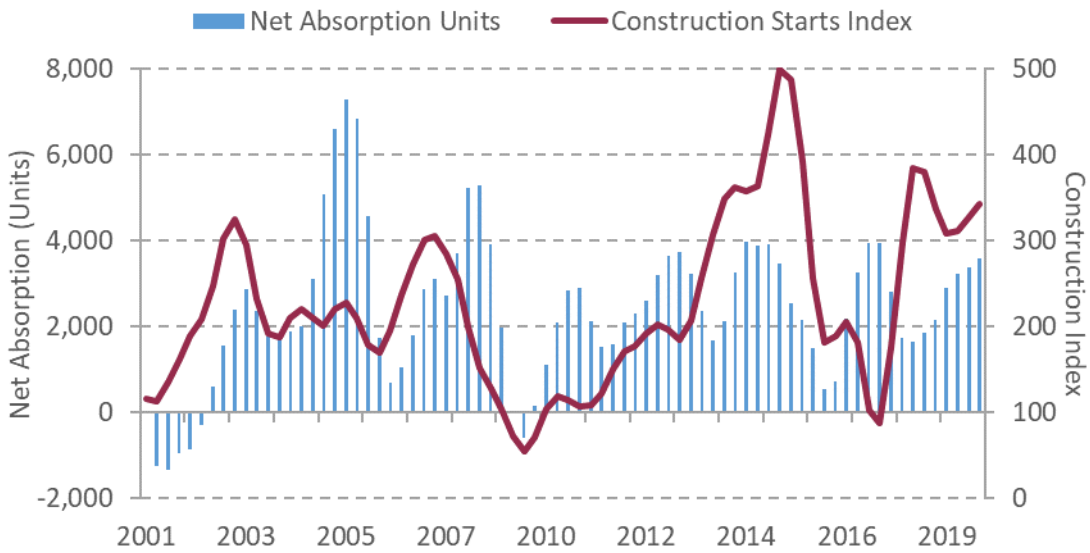**Figure 11. DFW Overall Vacancy and Effective Rent Growth**
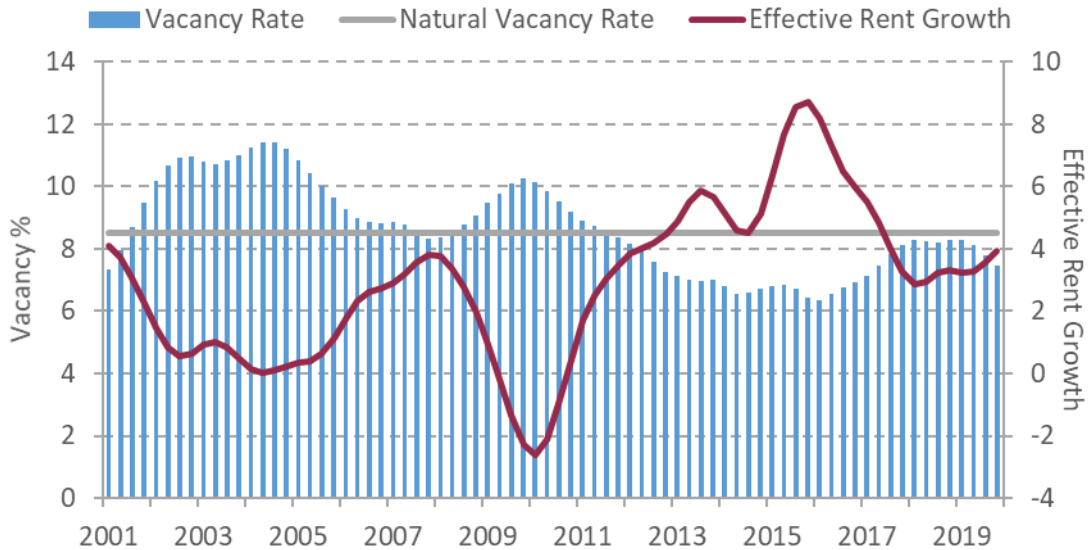
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University
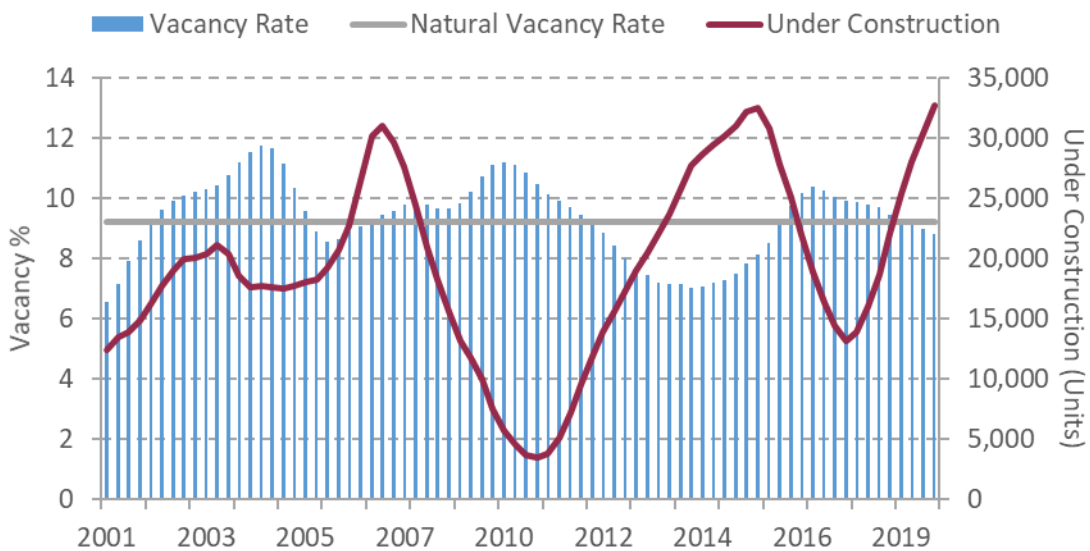
Figure 12. DFW Overall Vacancy and Population Growth
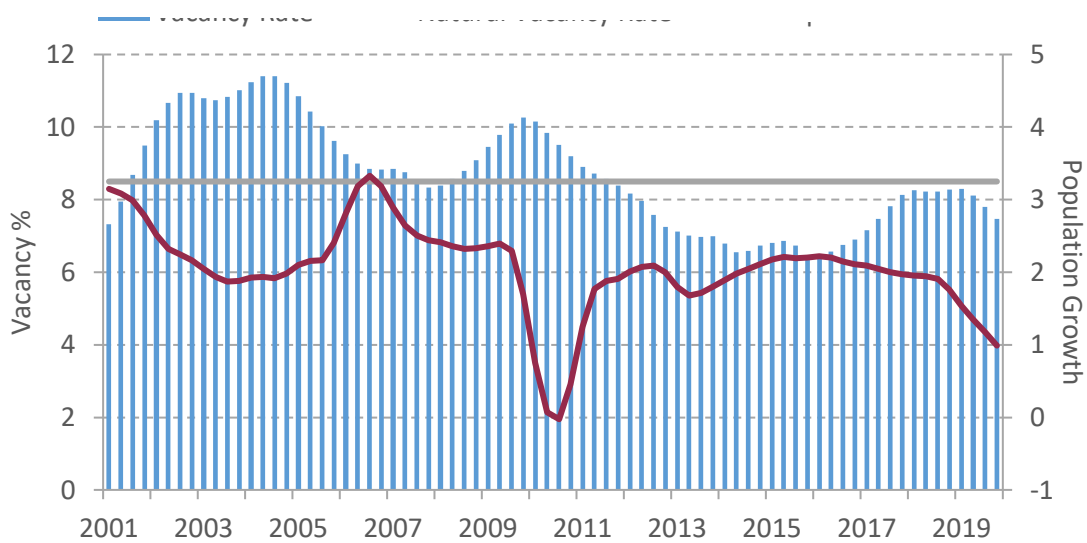
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 13. DFW Overall Net Absorption and Construction Starts Index
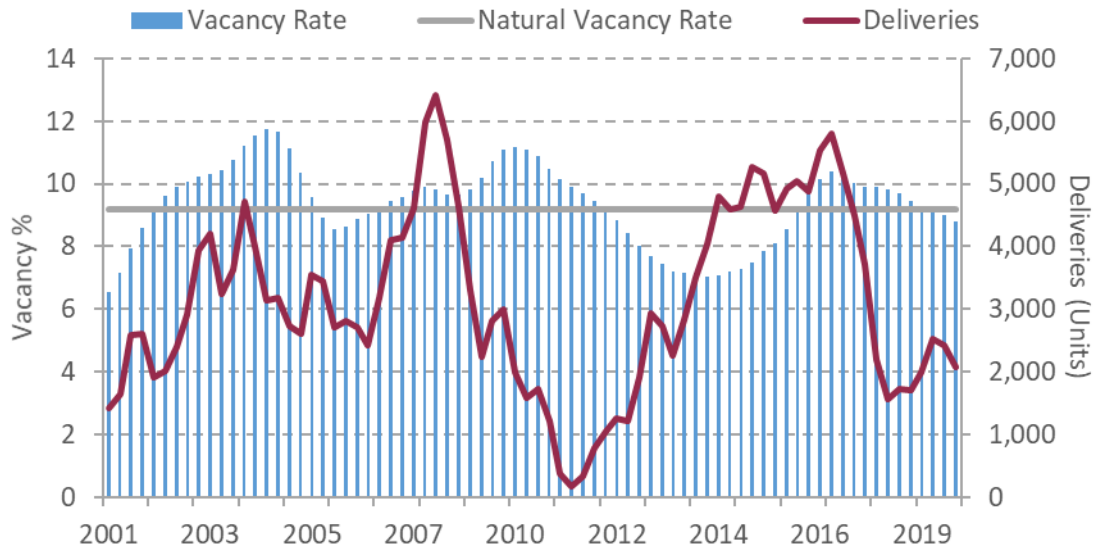### (Index 2000 Q1 = 100)
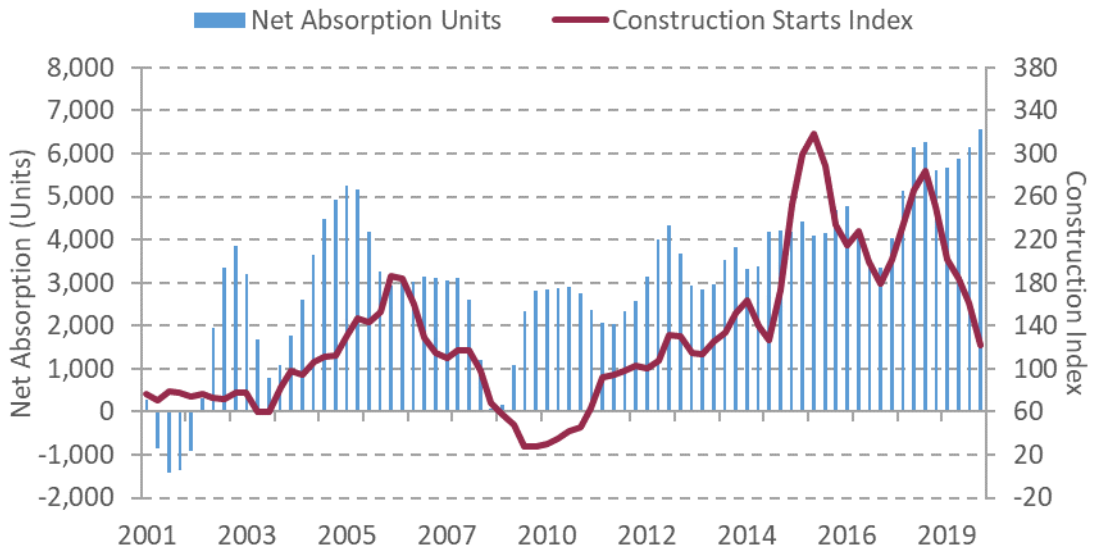
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar, Dodge Analytics, and Real Estate Center at Texas A&M University

Figure 14. DFW Overall Vacancy and Units Under Construction
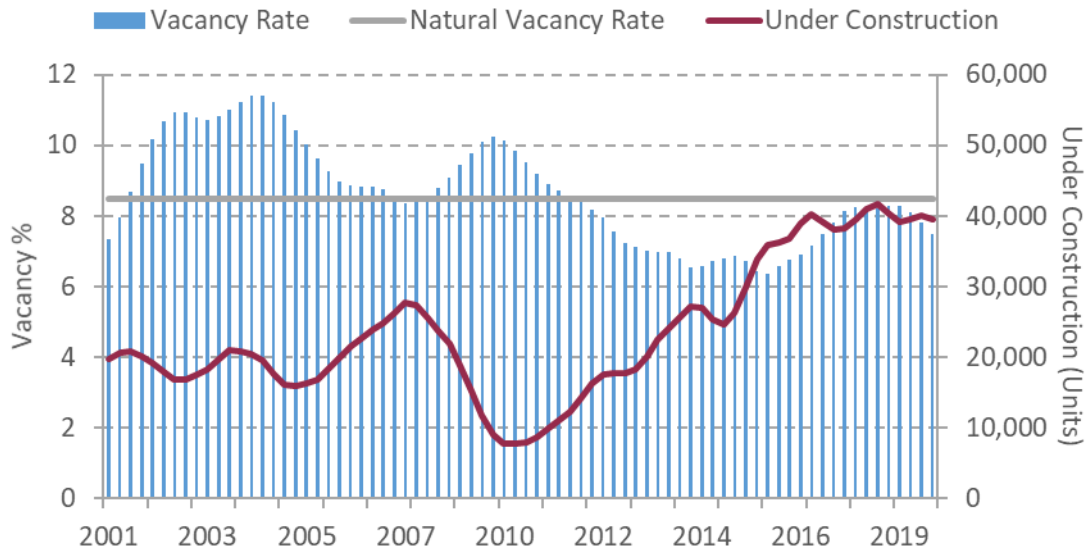
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 15. DFW Overall Vacancy and Deliveries in Units

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

OCCUPANCY RATE
▲ 91.2%

EFFECTIVE RENT GROWTH (PER UNIT)
▲ 3.2%

NET ABSORPTION (UNITS)
▲ 3,579

CONSTRUCTION STARTS
▲

Note: Arrows indicate change from previous quarter with the exception of asking rent growth (change from previous year). Seasonally adjusted data.
Sources: CoStar and the Real Estate Center at Texas A&M University

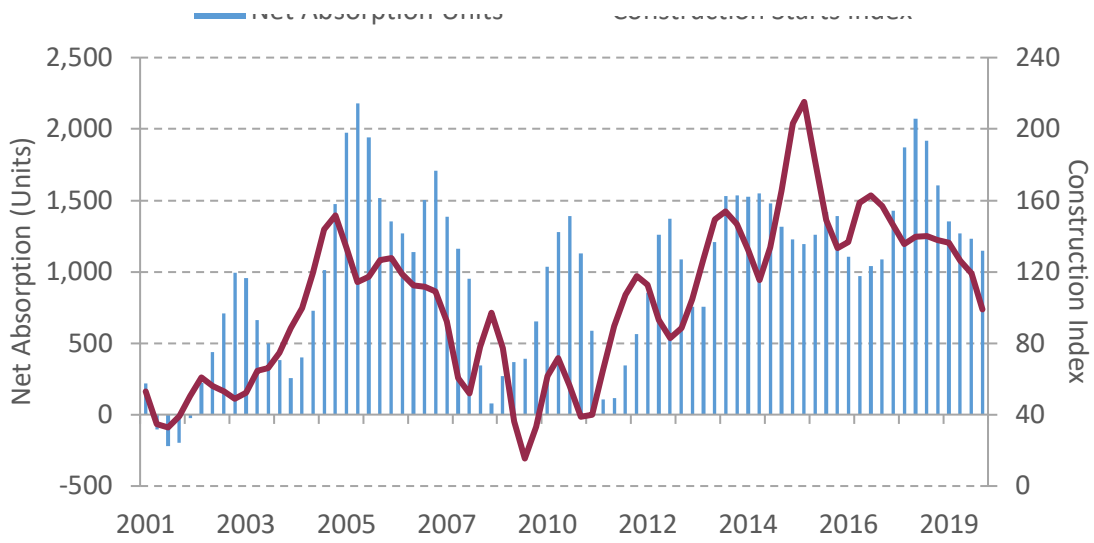**Figure 16. Houston Overall Vacancy and Effective Rent Growth**

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 17. Houston Overall Vacancy and Population Growth
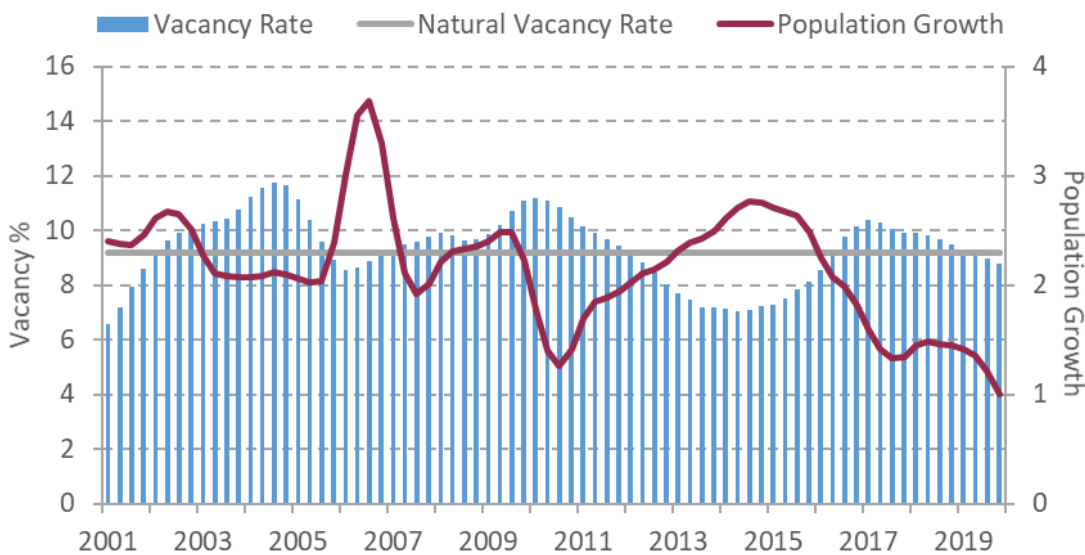
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 18. Houston Overall Net Absorption and Construction Starts Index

(Index 2000 Q1 = 100)

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar, Dodge Analytics, and Real Estate Center at Texas A&M University

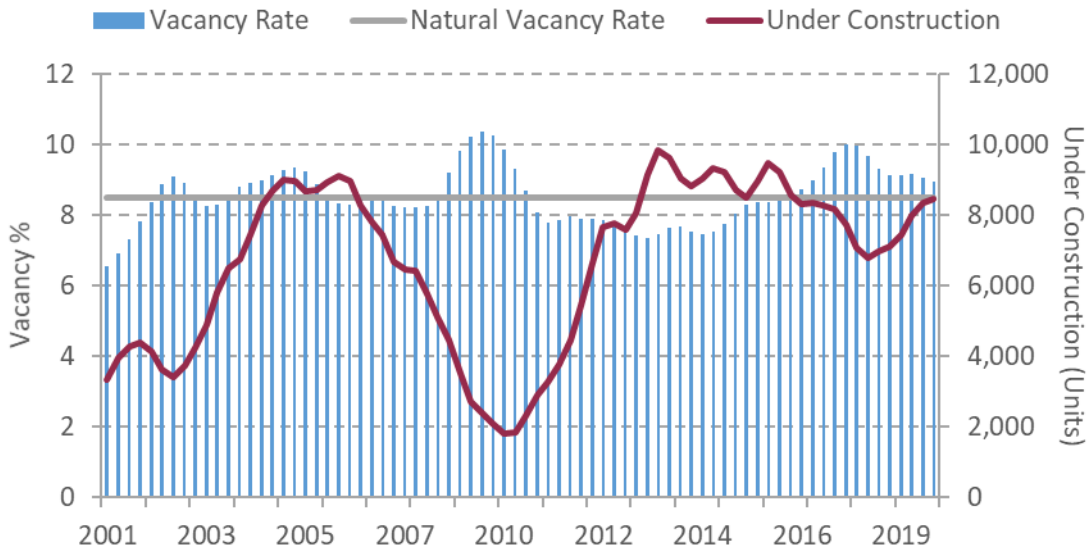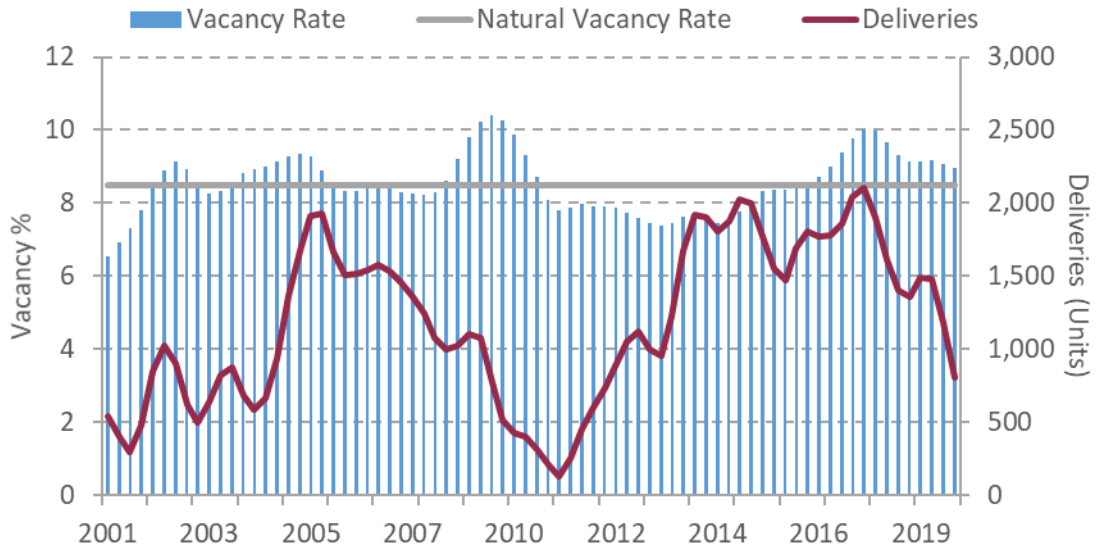**Figure 19. Houston Overall Vacancy and Units Under Construction**

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 20. Houston Overall Vacancy and Deliveries in Units

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

OCCUPANCY RATE
▼ 91.1%

EFFECTIVE RENT GROWTH (PER UNIT)
▬ 3.9%

NET ABSORPTION (UNITS)
▼ 973

CONSTRUCTION STARTS
▲

Note: Arrows indicate change from previous quarter with the exception of asking rent growth (change from previous year). Seasonally adjusted data.
Sources: CoStar and the Real Estate Center at Texas A&M University

Figure 21. San Antonio Overall Vacancy and Effective Rent Growth
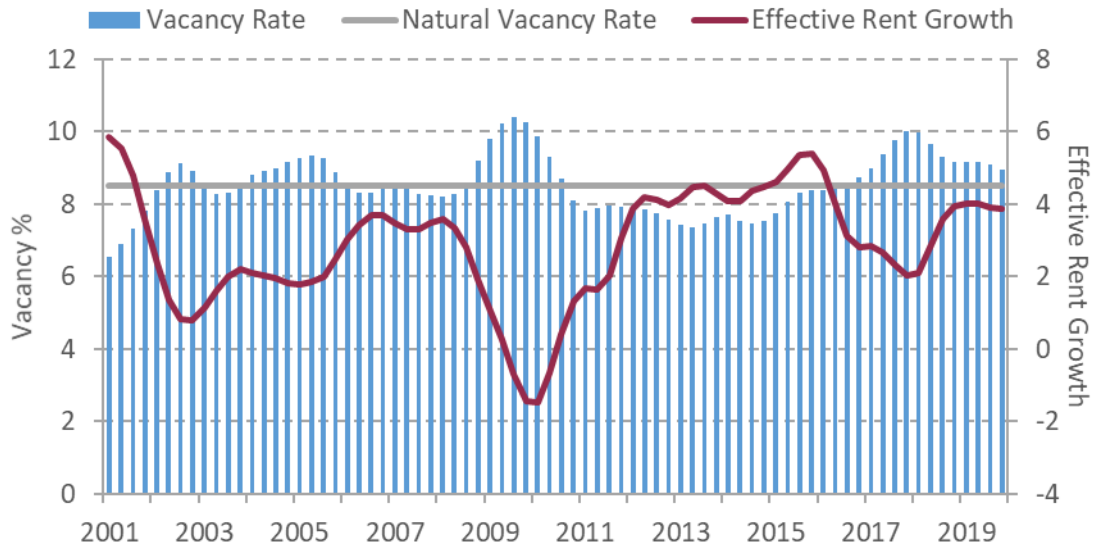
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 22. San Antonio Overall Vacancy and Population Growth
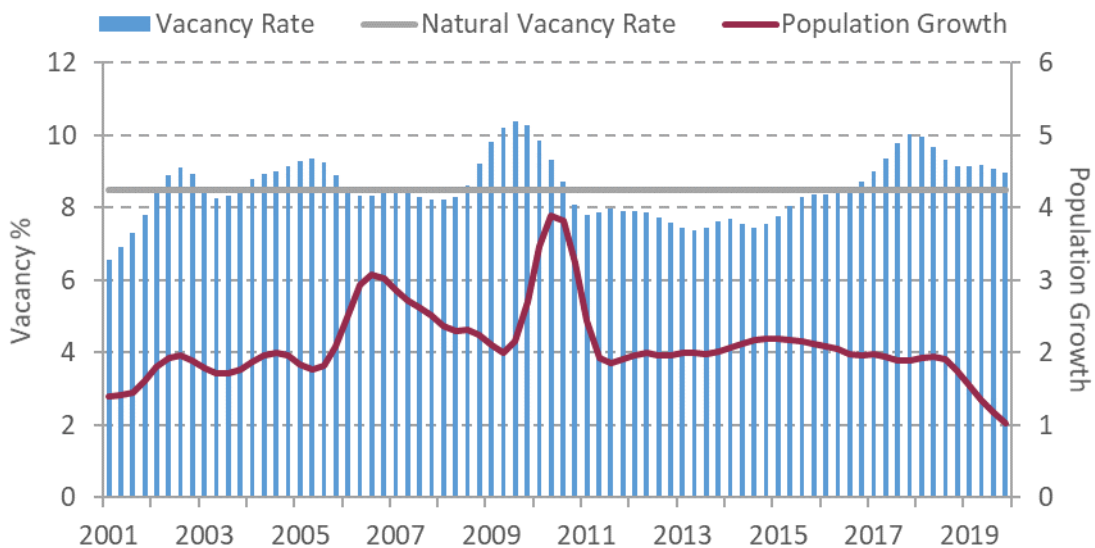
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 23. San Antonio Overall Net Absorption and Construction Starts Index
(Index 2000 Q1 = 100)

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar, Dodge Analytics, and Real Estate Center at Texas A&M University

Figure 24. San Antonio Overall Vacancy and Units Under Construction

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 25. San Antonio Overall Vacancy and Deliveries in Units

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Austin Class A

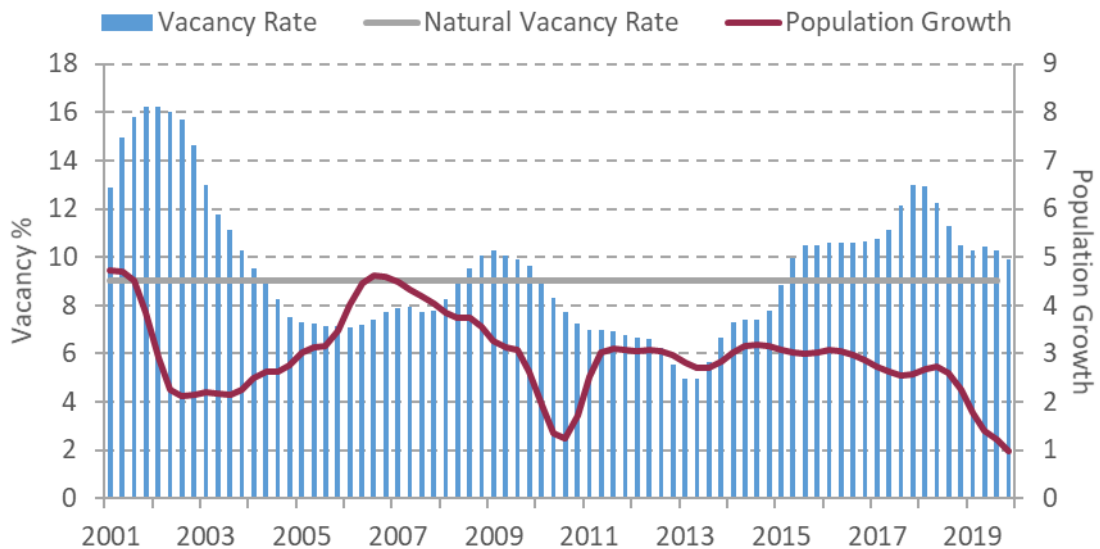| OCCUPANCY RATE	EFFECTIVE RENT GROWTH (PER UNIT)	NET ABSORPTION (UNITS)	CONSTRUCTION STARTS
90.1%	4.2%	▲ 1,833	▲

Note: Arrows indicate change from previous quarter with the exception of asking rent growth (change from previous year). Seasonally adjusted data.
Sources: CoStar and the Real Estate Center at Texas A&M University

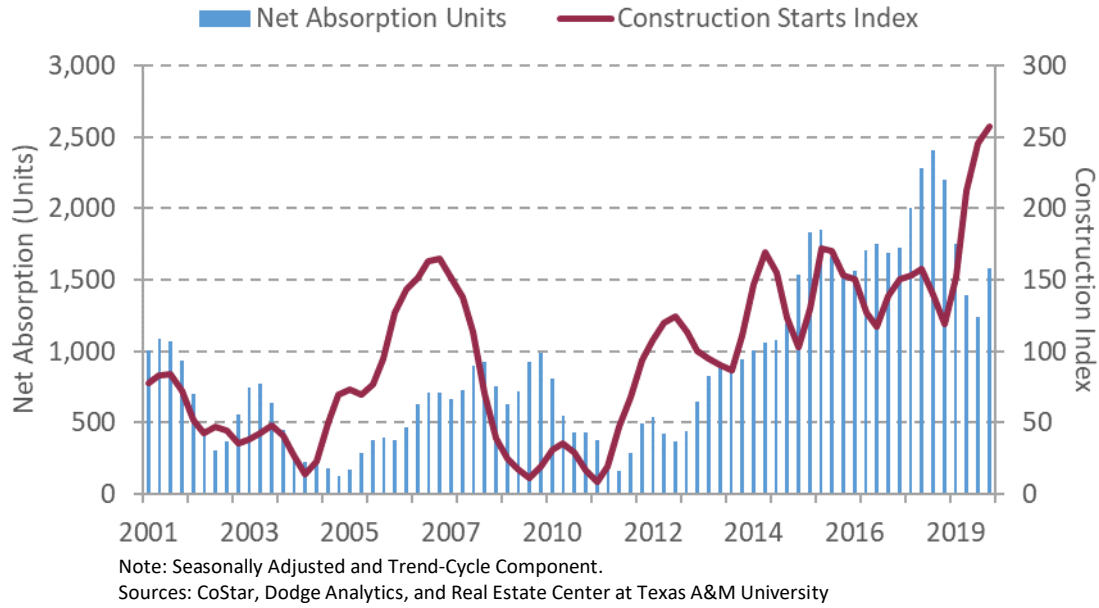**Figure 26. Austin Class A Vacancy and Effective Rent Growth**
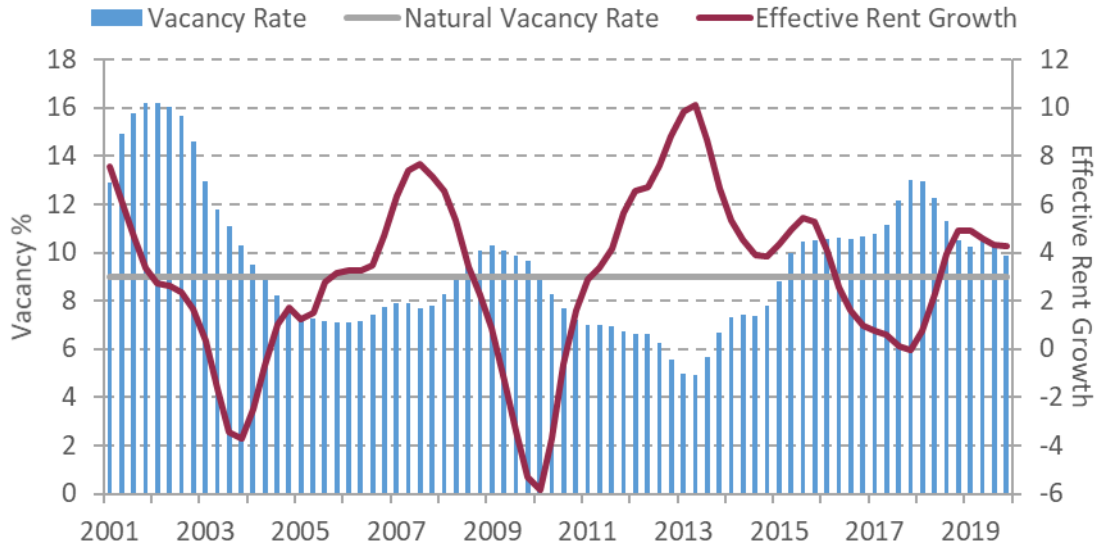
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

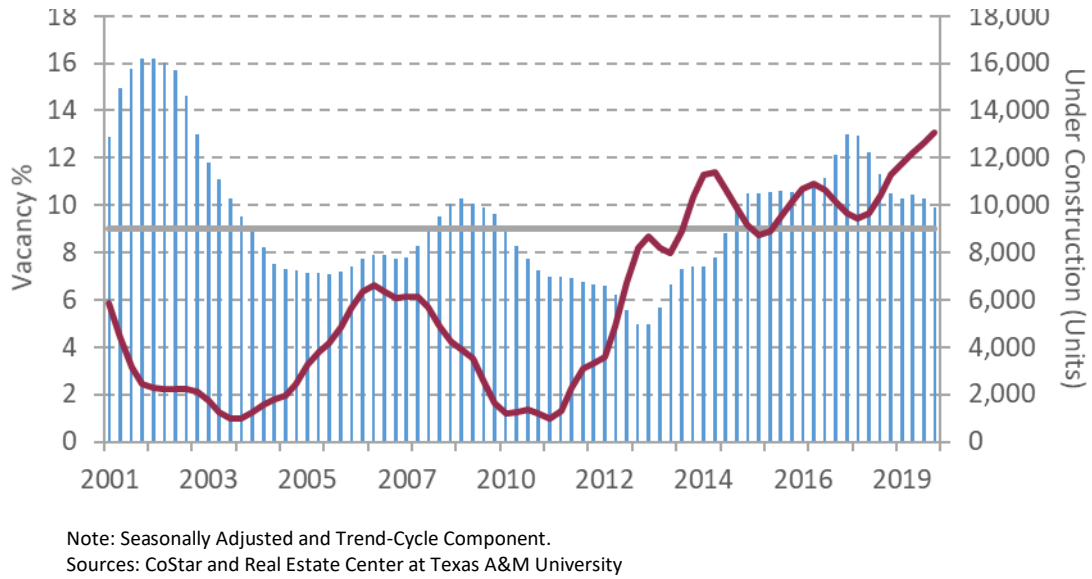**Figure 27. Austin Class A Vacancy and Population Growth**

Note: Seasonally Adjusted and Trend-Cycle Component.
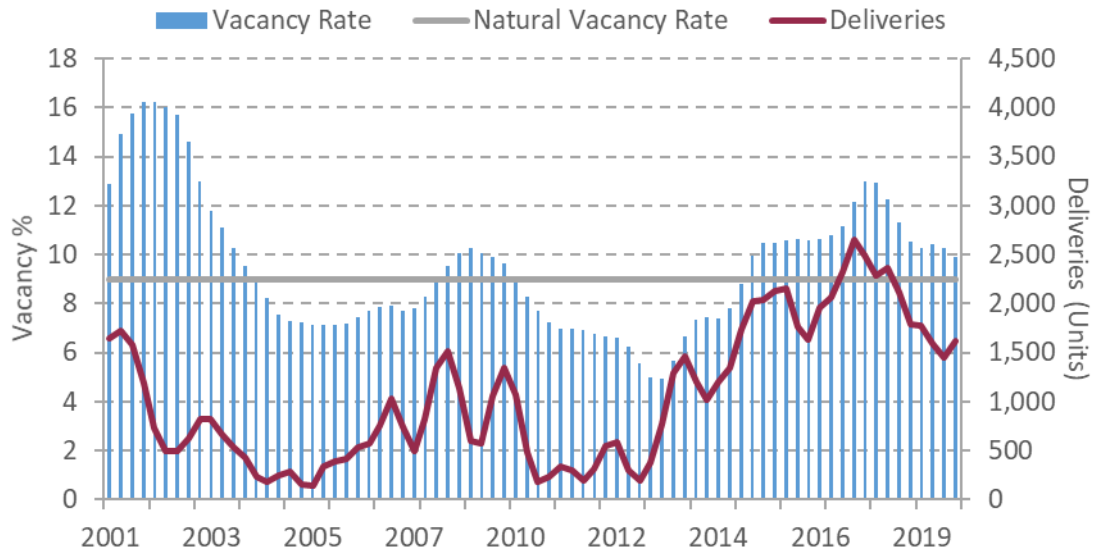Sources: CoStar and Real Estate Center at Texas A&M University

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Figure 28. Austin Class A Net Absorption and Construction Starts Index
(Index 2000 Q1 = 100)

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar, Dodge Analytics, and Real Estate Center at Texas A&M University

Figure 29. Austin Class A Vacancy and Units Under Construction

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 30. Austin Class A Vacancy and Deliveries in Units

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Dallas-Fort Worth Class A

OCCUPANCY RATE
▲ 89.8%

EFFECTIVE RENT GROWTH (PER UNIT)
▲ 3.9%

NET ABSORPTION (UNITS)
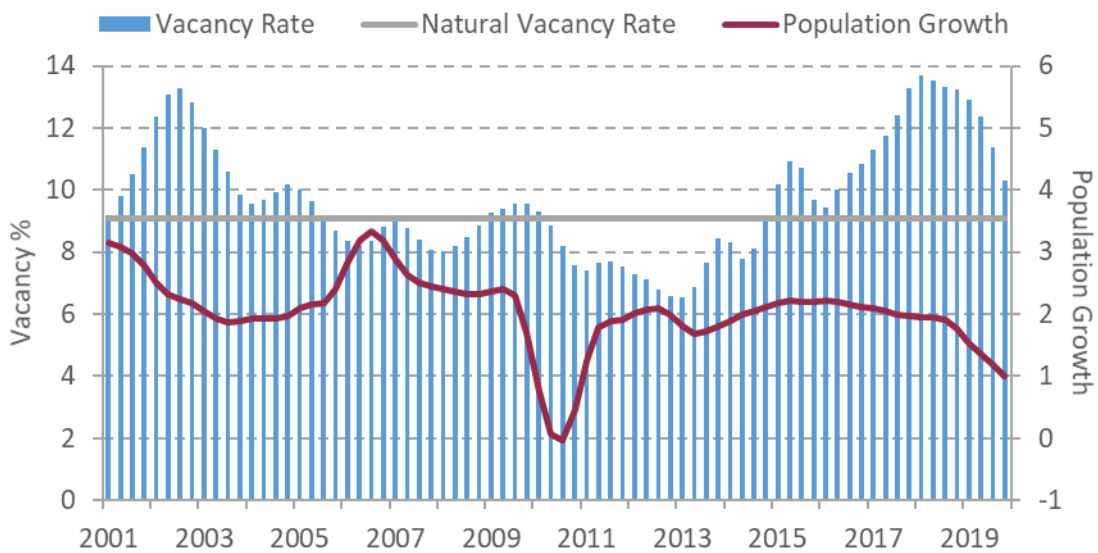▲ 5,669

CONSTRUCTION STARTS
▲

Note: Arrows indicate change from previous quarter with the exception of asking rent growth (change from previous year). Seasonally adjusted data.
Sources: CoStar and the Real Estate Center at Texas A&M University

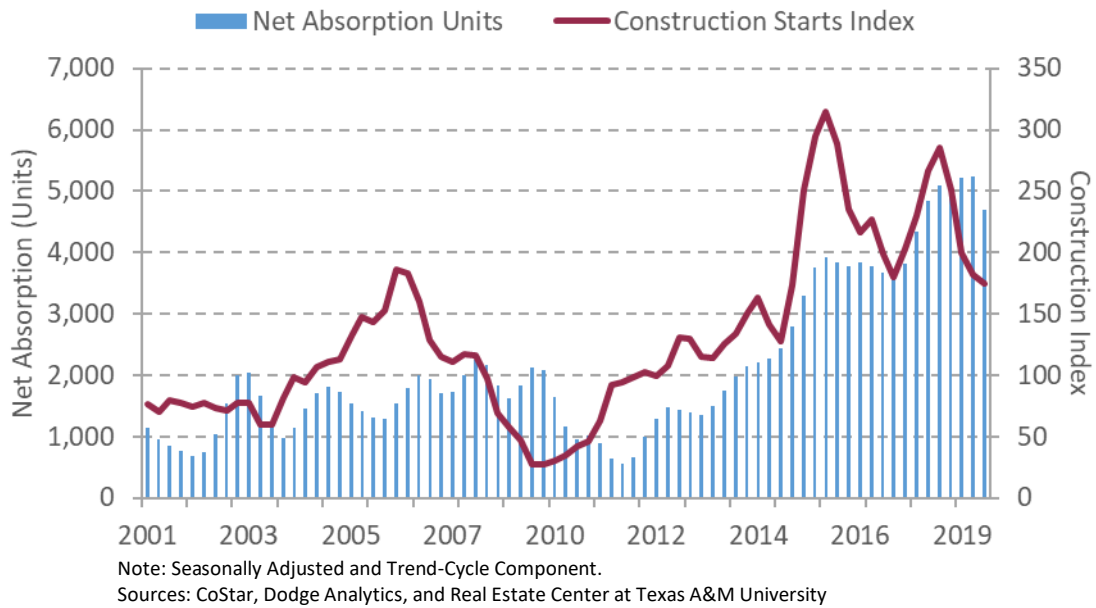**Figure 31. DFW Class A Vacancy and Effective Rent Growth**
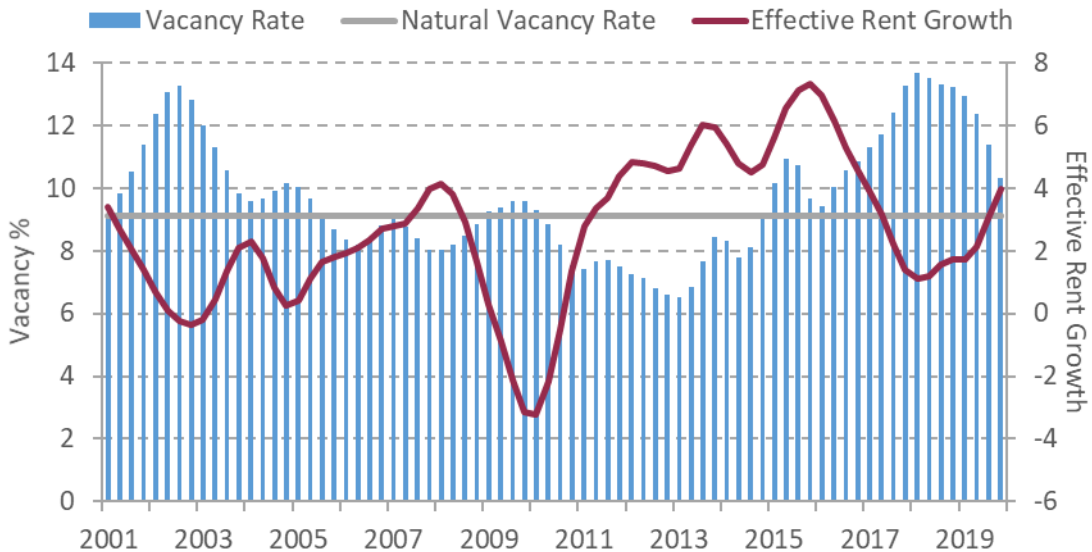
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

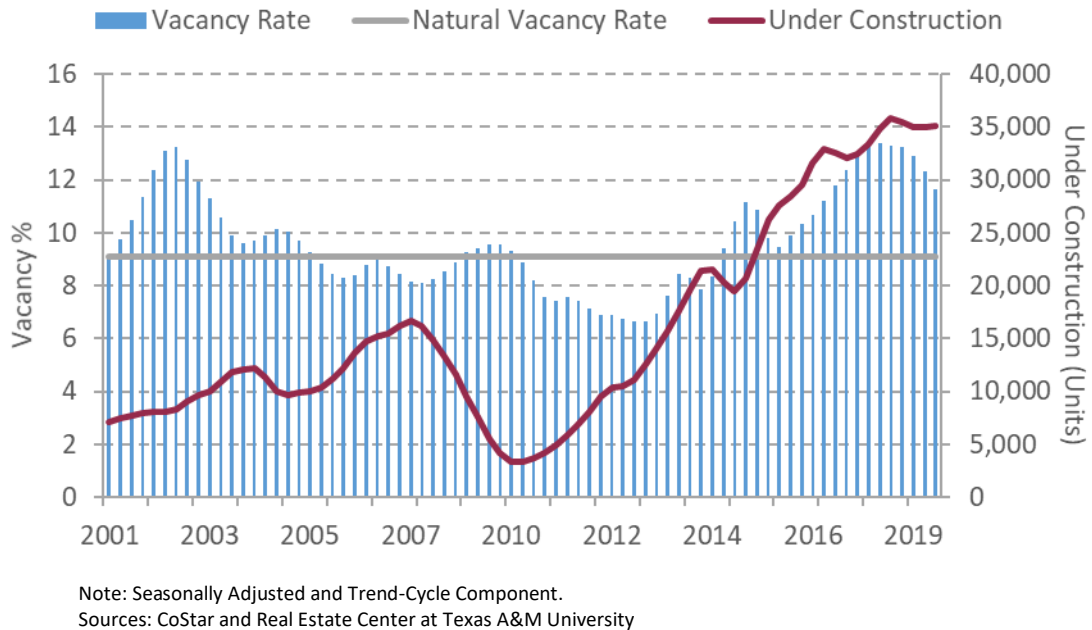**Figure 32. DFW Class A Vacancy and Population Growth**

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 33. DFW Class A Net Absorption and Construction Starts Index
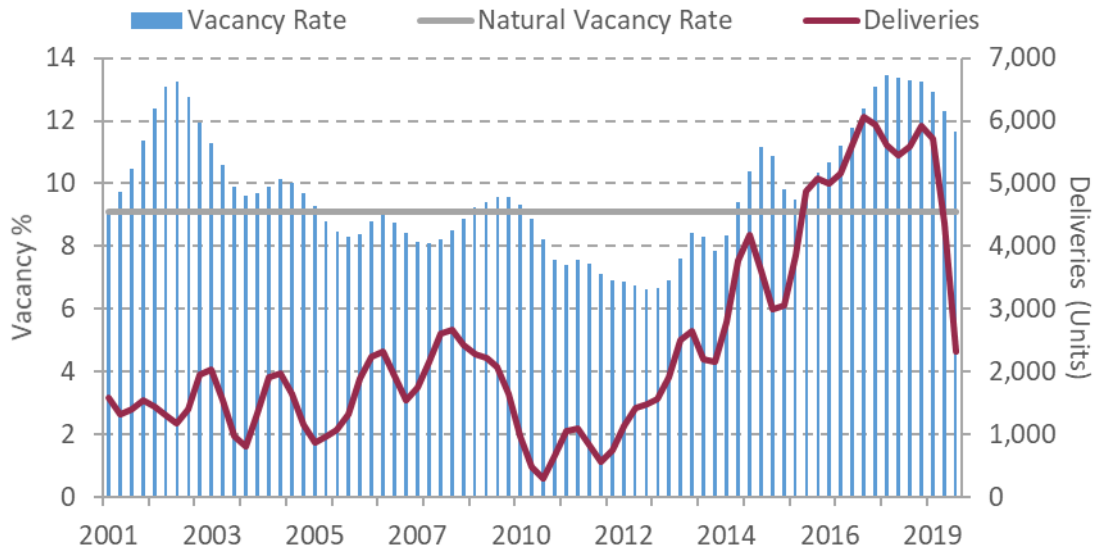**(Index 2000 Q1 = 100)**

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar, Dodge Analytics, and Real Estate Center at Texas A&M University

Figure 34. DFW Class A Vacancy and Units Under Construction

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 35. DFW Class A Vacancy and Deliveries in Units

Note: Seasonally Adjusted and Trend-Cycle Component.
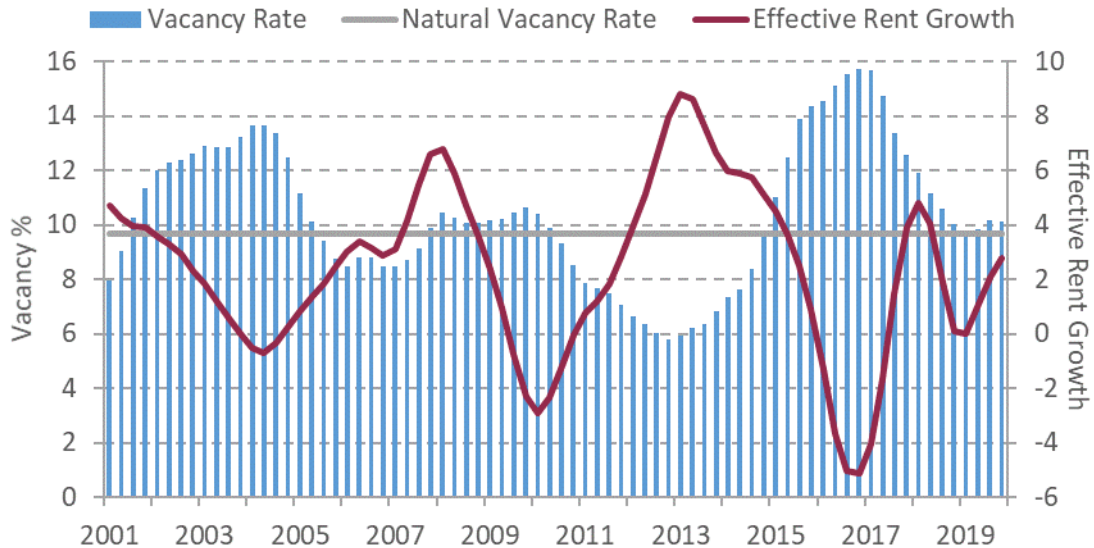Sources: CoStar and Real Estate Center at Texas A&M University

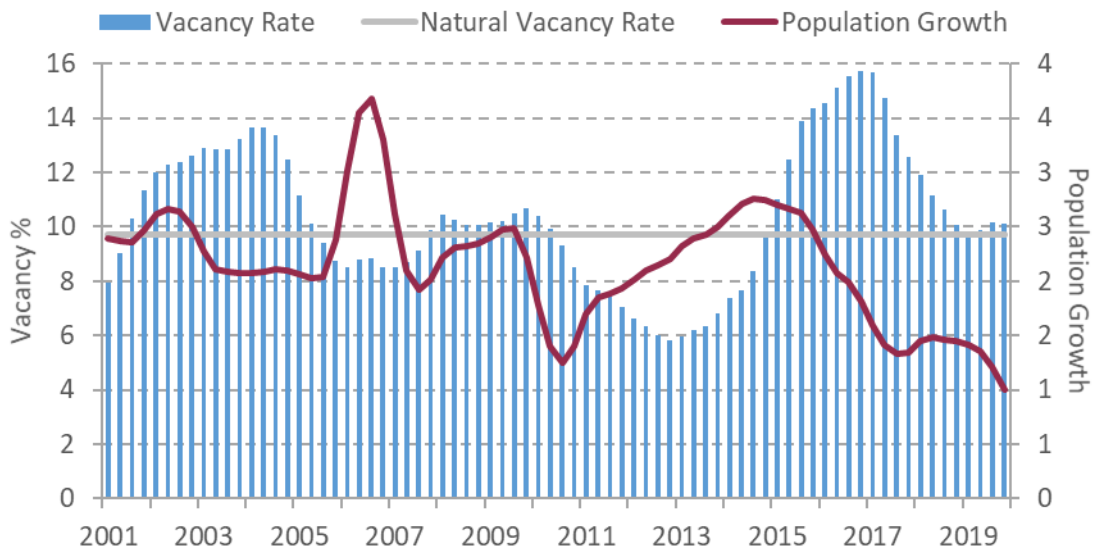| OCCUPANCY RATE	EFFECTIVE RENT GROWTH (PER UNIT)	NET ABSORPTION (UNITS)	CONSTRUCTION STARTS
90.0%	▲ 2.8%	▲ 2,347	▲

Note: Arrows indicate change from previous quarter with the exception of asking rent growth (change from previous year). Seasonally adjusted data.
Sources: CoStar and the Real Estate Center at Texas A&M University

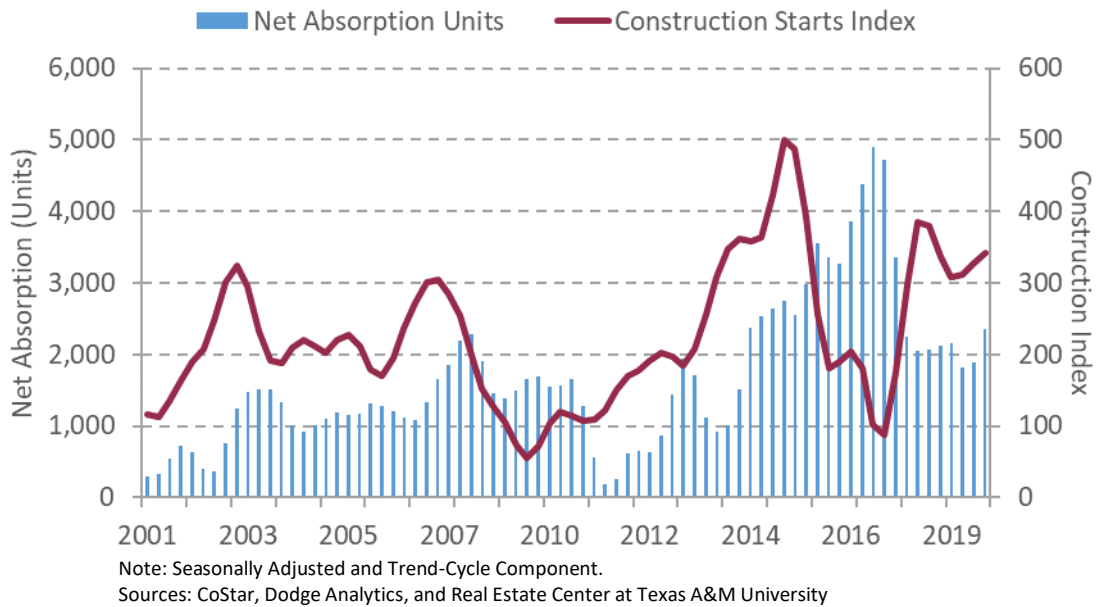**Figure 36. Houston Class A Vacancy and Effective Rent Growth**

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

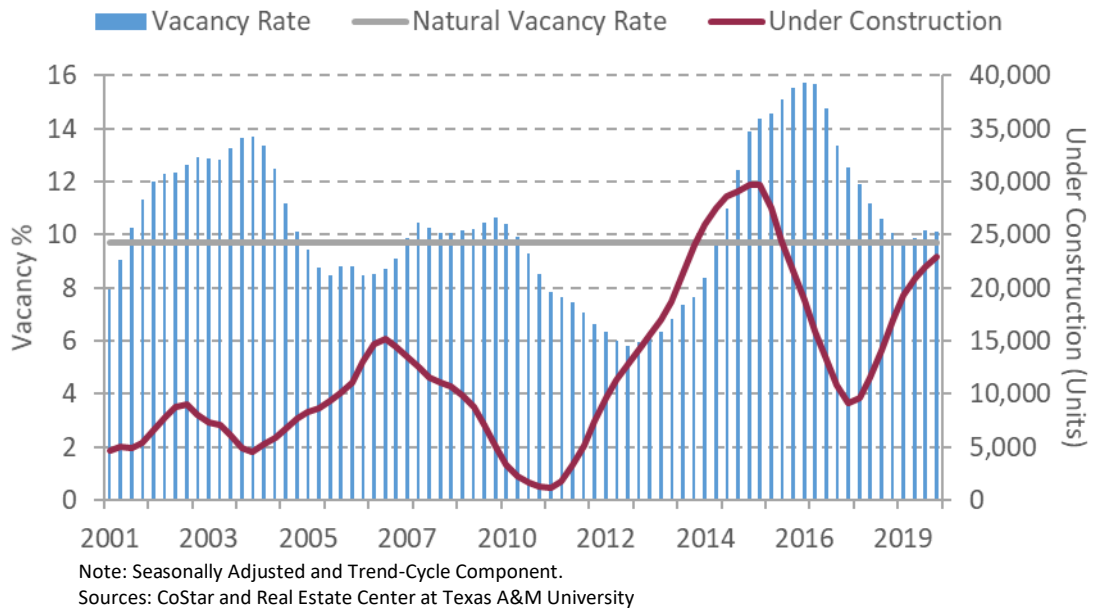**Figure 37. Houston Class A Vacancy and Population Growth**

Note: Seasonally Adjusted and Trend-Cycle Component.
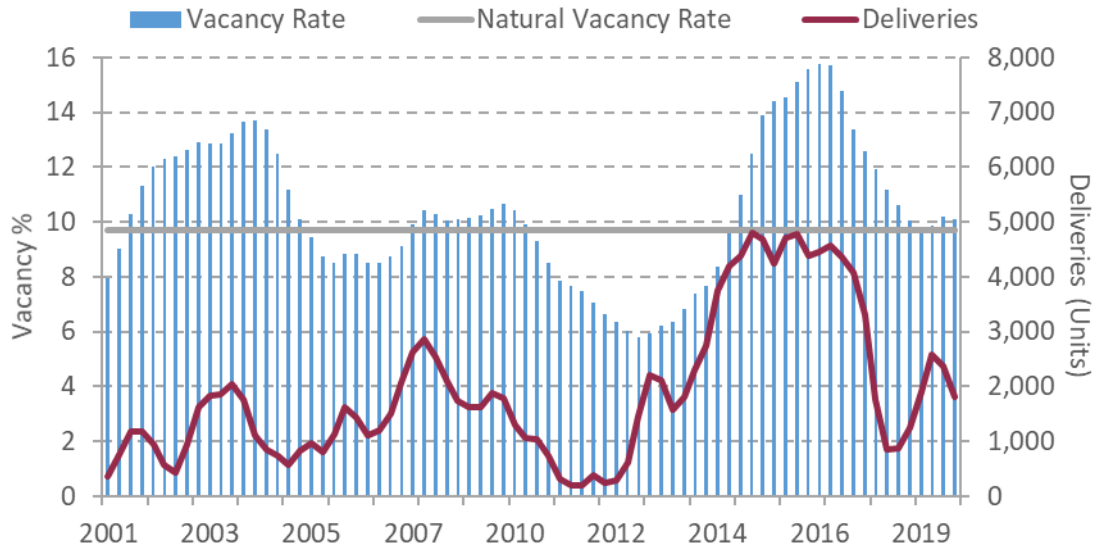Sources: CoStar and Real Estate Center at Texas A&M University

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Figure 38. Houston Class A Net Absorption and Construction Starts Index
(Index 2000 Q1 = 100)

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar, Dodge Analytics, and Real Estate Center at Texas A&M University

Figure 39. Houston Class A Vacancy and Units Under Construction

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 40. Houston Class A Vacancy and Deliveries in Units

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University
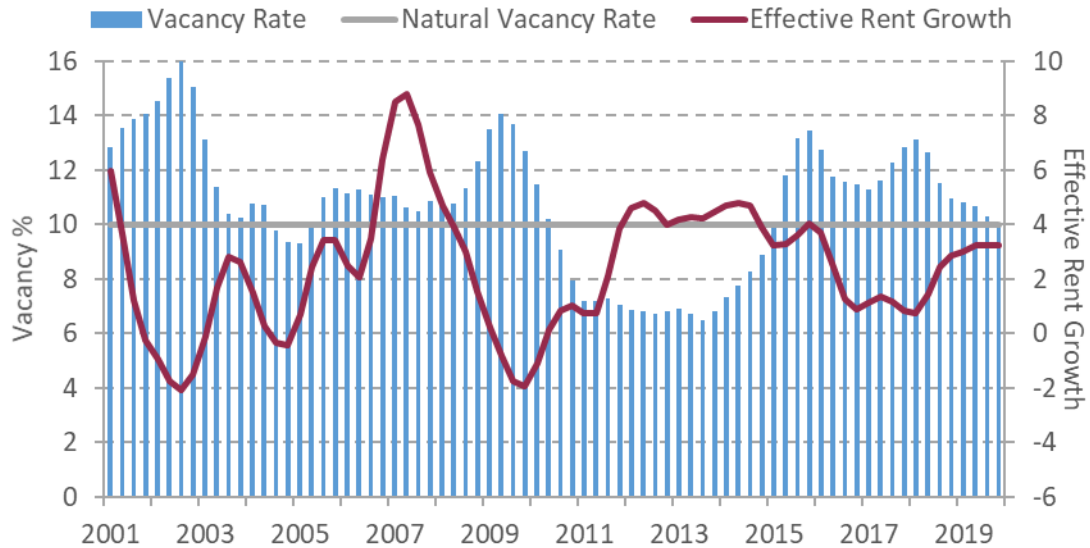
San Antonio Class A

| OCCUPANCY RATE	EFFECTIVE RENT GROWTH (PER UNIT)	NET ABSORPTION (UNITS)	CONSTRUCTION STARTS
▲ 90.0%	▼ 3.1%	▲ 745	▲

Note: Arrows indicate change from previous quarter with the exception of asking rent growth (change from previous year). Seasonally adjusted data.
Sources: CoStar and the Real Estate Center at Texas A&M University

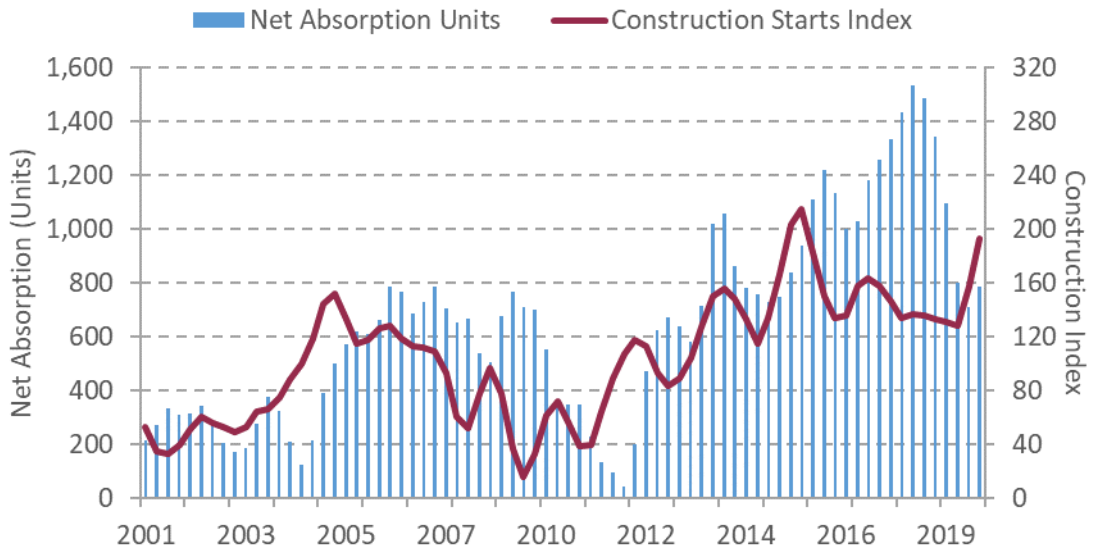## Figure 41. San Antonio Class A Vacancy and Effective Rent Growth

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 42. San Antonio Class A Vacancy and Population Growth
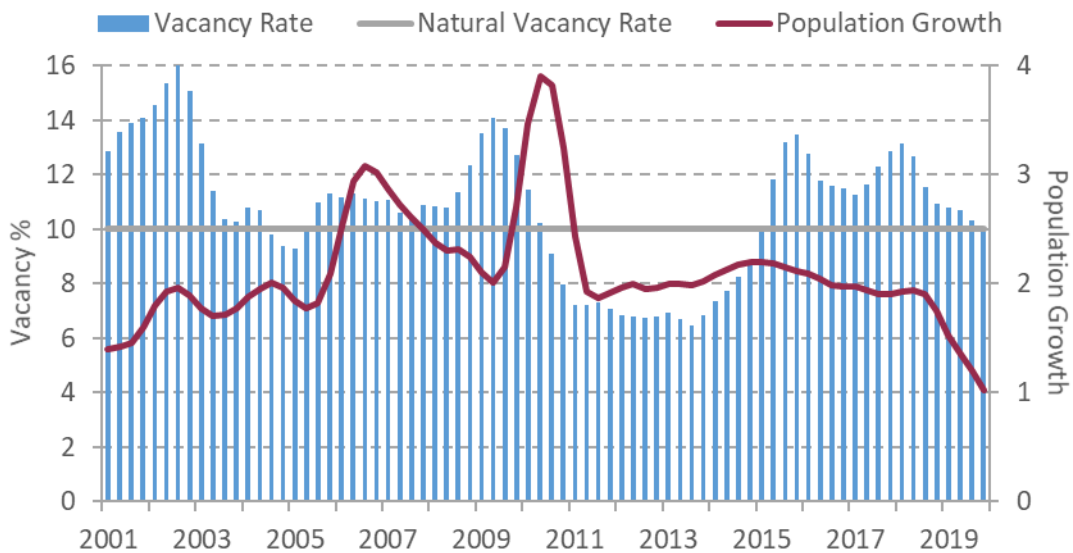
Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 43. San Antonio Class A Net Absorption and Construction Starts Index
(Index 2000 Q1 = 100)

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar, Dodge Analytics, and Real Estate Center at Texas A&M University

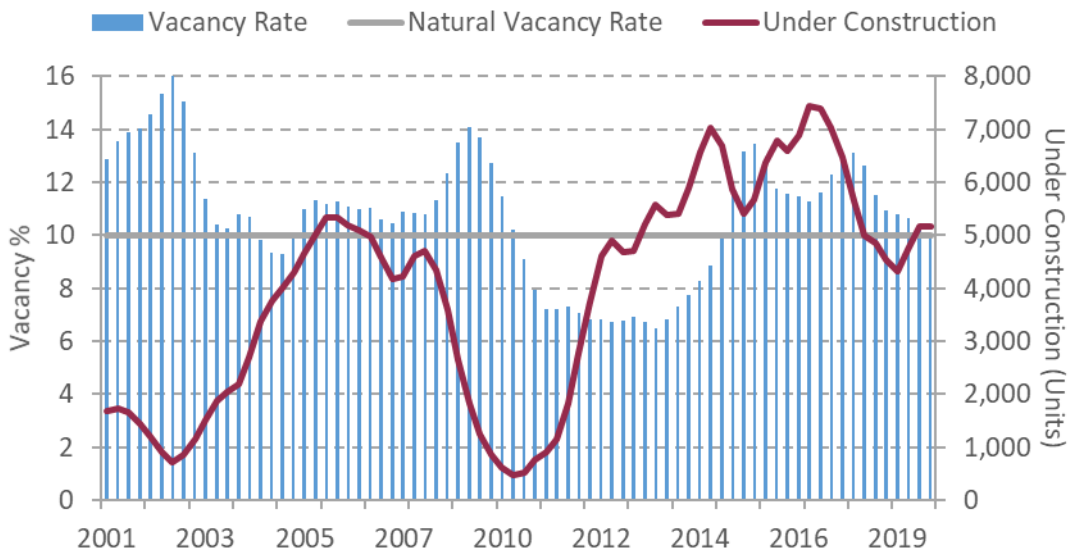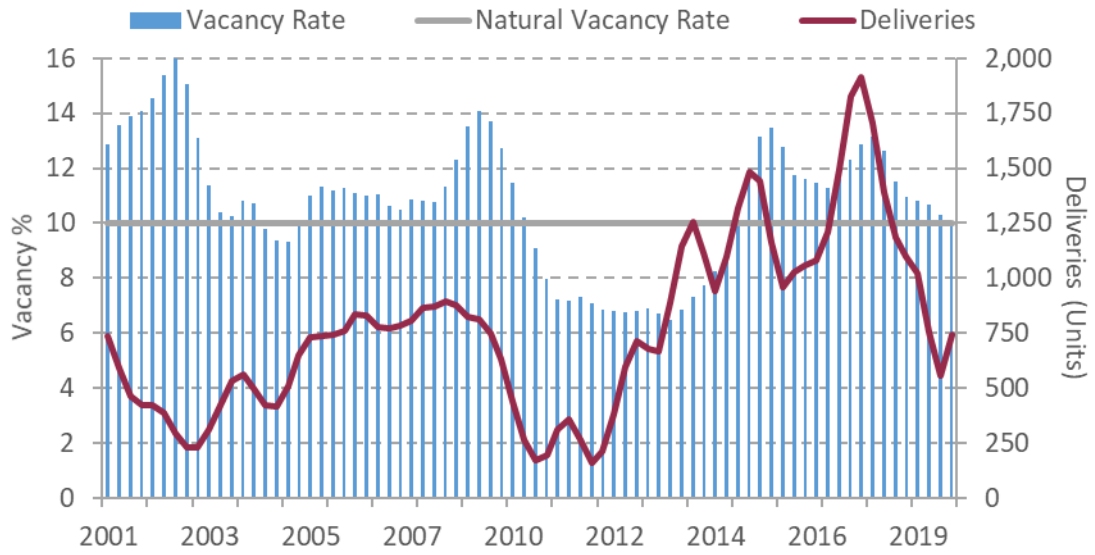## Figure 44. San Antonio Class A Vacancy and Units Under Construction

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

Figure 45. San Antonio Class A Vacancy and Deliveries in Units

Note: Seasonally Adjusted and Trend-Cycle Component.
Sources: CoStar and Real Estate Center at Texas A&M University

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Capitalization rate/cap rate:

The cap rate is computed by dividing expected net operating income (NOI) generated from the property by the current property value (V) and expressing it as a percentage. NOI is rent minus the owners share of expenses, such as taxes, insurance, maintenance, and management costs. Mortgage costs and any other costs of financing are not included in expenses.

In general, the higher the cap rate, the higher the risk. Investors compare cap rates for potential projects with their cost of funds when selecting investment projects, considering only those investments where the cap rates exceed the cost of funds.

Risk can be estimated by computing the "spread", the difference between the cap rate and some risk-free rate. Because commercial real estate investments are expected to generate streams of income over a long period., investors commonly use the U.S. ten-year Treasury rate as a risk-free rate.

Construction Starts Index: Reflects the dollar value of construction starts in relation to a specified base year (1Q2000) and is a precursor to future units under construction.

Dodge Analytics tracks commercial construction start figures as soon as a new project kicks off to estimate its total construction "value," which is essentially total construction cost. We realize that some real estate professionals may question whether calling the total dollars to be spent on a project's "construction value" actually equates to its "market value" at completion. However, for consistency, this report will use Dodge's terminology.

Effective rents: leases typically dictate this amount to be paid monthly

Natural and actual vacancy:

The natural vacancy rate represents the point at which zero real (inflation-adjusted) rent growth will occur. Natural vacancy reflects the level to which vacancy rates adjust over the long term.

The actual vacancy rate reflects the seasonally adjusted and trend cycled natural vacancy rate. The actual vacancy rate smooths the raw data by removing fluctuations created by seasonal and time trends.

Natural vacancies for the possibility of new construction are calculated separately using historical construction data. The calculated natural vacancies were compared with the actual vacancies to estimate whether new development should be expected in the various commercial real estate markets. When actual vacancy in a local market falls below natural vacancy, developers may consider building new space.

A comparison of natural vacancy and actual vacancy along with historical vacancy trends allows researchers to anticipate the future direction of commercial real estate (CRE) rental rates in real terms. When actual vacancy in a local market falls below (rises above) natural vacancy, building managers may consider increasing (decreasing) rents.

Aggregate natural vacancy in an overall market may not reflect the trigger vacancy rate an individual CRE professional uses to make decisions affecting a specific property or project. However, these measures provide indication of the direction of rents and new construction.

Net Absorption: The net change in occupied space, measured in units, over a given period. Net absorption reflects the amount of space occupied as well as the amount of space vacated.

Nominal: Value or rate that reflects current prices or rates, without adjusting for inflation.

Seasonal Adjustment: a statistical method for removing the seasonal component of a time series that exhibits a seasonal pattern.

Trend cycle component: Removes the effects of accumulating data sets from a trend to show only the absolute changes in values and to allow potential cyclical patterns to be identified.

Under Construction: reflects the number of units under construction within a particular market; applies to buildings that have not received a certificate of occupancy

Vacancy Rate: A measurement expressed as a percentage of the total amount of physically vacant units divided by the total amount of existing inventory.

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