FULL REPORT (NATIONAL AND 50 METROS)

U.S. APARTMENT DEMAND THROUGH 2035

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MAY 2022

NATIONAL MULTIFAMILY HOUSING COUNCIL

NATIONAL APARTMENT ASSOCIATION

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EXECUTIVE SUMMARY

This research updates a comparable report we wrote five years ago. Some of the key assumptions from that report have come true. Slower population growth as a result of the aging population base has amplified the need for new immigrant labor to sustain economic growth. The 2020 recession was unexpectedly created by a pandemic which triggered an almost immediate stimulus effort by the Federal government in concert with a mortgage buying program that held interest rates down.

This changed the dynamics of the housing market. Southern growth markets led housing demand, and new housing formats such as Accessory Dwelling Units (ADUs) and pre-assembled housing were once again touted as tools to combat the housing affordability issue.

We did not foresee a global pandemic nor the persistent impact on the housing market. Amplified by the pandemic, population growth almost came to a halt in 2020 and 2021. As we had indicated in the last report, without immigration, the U.S. population will grow by less than 0.5% per year.

We did not anticipate a scenario in which deaths would increase by 19% in a single year, driving national population growth down to almost zero for two years in a row. The necessary rapid adaption of technology in response to the pandemic, and a cultural change that began embracing remote work at least for those service-based jobs that could function in this new environment amplified a migration pattern not only to suburban markets but to secondary cities.

High-cost urban apartment markets such as San Francisco were slow to recover. Empty urban offices and store fronts, along with canceled entertainment venues caused a loss of urban appeal. Some recovery is underway, and we all watch anxiously to see how many of the remote work shifts become permanent.

Urban markets have indeed begun recovering, although some markets are still not back to their previous glory as data indicate that less than half of office workers are back in the office. **Economic forecasts are building in expectations that secondary cities such as Boise and Charleston will continue to grow quickly.**

POPULATION GROWTH PROJECTIONS

Nevertheless, **the aging U.S. population will continue to be a significant and primary driver of slowing demand fundamentals going forward.** Population growth slowed from around 1% per year from 1991 to 2011 to 0.6% over the past ten years and is projected to slow further to 0.4% per year through 2035. Without net in migration, population growth will slow to only 0.2% growth per year.

Immigration however is one of the great

unknowns in the forecast as it is heavily influenced by public policy. In our last forecast, we projected average net in migration rates of 866,000 from 2017 to 2021, a reduction from the 994,000 average from the previous ten years as a reflection of more restrictive immigration policies at the time.

We had anticipated that immigration would increase after that to levels that were more indicative of past trends, or 1.2 million people per year on average from 2021 to 2030. The reality is that net in migration sunk to 245,000 by 2021 as already restrictive policies were amplified by the pandemic. However, even before the onset of Covid in 2020 and after a new presidential administration, immigration trends were well below our forecast numbers.

We expect immigration to average only 562,000 a year through 2035, down from our prior research forecast of 866,000 a year.

One of the most significant changes in this forecast as compared to the last is that immigration numbers are now expected to remain relatively low throughout the forecast period, averaging only 562,000 per year through 2035, reflective of uncertainties in global health trends, geopolitical uncertainties, and at least in the near term, more introspective global policies that have dampened the previous globalization trends. In the Scenarios section, we run a scenario in which we use the same 1.2 million average immigration number as the last forecast. In this scenario, forecast population growth increases at a similar pace as the past decade, or by 0.6% per year on average through 2035.

RENTAL DEMAND PROJECTIONS

Overall, demographic growth is expected to generate demand for another 3.7 million new rental properties with 5 or more units through 2035. In a downside scenario, we assume higher homeownership rates, lingering inflation, and low immigration rates. In this scenario, the need for 5+ rental units drops to 2.4 million. In an upside scenario characterized by lower homeownership rates and immigration rates more similar to our last forecast, another 4.8 million new units in properties with 5+ units will be needed.

Overall, demographic growth is expected to generate demand for another 3.7 million new rental properties with 5 or more units through 2035.

Leading growth will be Dallas-Ft. Worth, Houston, New York, Phoenix, Austin, and

Atlanta, each of which will require more than 100,000 more rental units, or almost a million new units in total, by 2035. However, smaller secondary markets are generally growing at a faster pace, with Boise, Austin, Las Vegas, Raleigh, and Orlando expected to grow by more than 2% per year on average through 2035, approximately twice the U.S. average of 1.1% per year. Larger markets, Phoenix and Dallas, are also expected to grow by 2% per year or more.

Impact of Homeownership

Homeownership rates are another variable that could impact the need for new apartments, i.e., if fewer households buy a home, rental demand increases. While homeownership rates are also very highly influenced by public policy, a few demographic factors are putting different long-term pressures on homeownership.

First, homeownership across all income segments increases with age. Homeownership also increases with family formation (married or not). **All else equal, the aging population would cause the homeownership rate to increase by 3.8% over the forecast horizon.**

At the other end of the spectrum, homeownership rates remain significantly lower in minority populations, and particularly in the **Hispanic population base which outside of White Baby Boomers will be the largest growth segment of the population.** While this will create a downward drag on the homeownership rate, the Hispanic population is still a much smaller population segment with increasing educational attainment and homeownership rates.

In addition, there **is hesitancy in the younger population to embrace homeownership** as seen in the homeownership rates by age group whereas the younger population segments have not returned to pre-2008 (subprime mortgage crisis) homeownership rate levels. This trend is amplified as the age of first marriage, and childbirth continue to increase.

The recent jump in interest rates seems to have dampened home buying at least in the near-term as the minimum household income to buy a median-priced house has increased by 20% just since the end of 2021. However, while sales volumes have dropped from peak 2020-21 rates, they remain above the pre-pandemic pace and home prices remain strong, particularly for homes priced over $500,000[1]. Overall, these sorts of influences begin to balance each other out.

While demographic growth will create a need for new housing, there is some evidence of a current shortage of housing as the construction market was slow to return after the 2008 financial crisis and housing costs, both for owners and renters, have escalated at a double-digit pace in recent years.

We estimate another 600,000 units are needed to bring the 5+ rental back to equilibrium because of underbuilding due to the financial crisis.

Post-Financial Crisis Underproduction, Declines in Affordable Units

While the pandemic-induced slowdown in household growth over the past couple of years allowed the market to absorb much of this excess demand, we estimate **another 600,000 units are needed to bring the 5+ rental market back to an equilibrium state reflecting only moderate increases in housing costs, bringing total forecast demand to 4.3 million units.**

Housing underproduction has translated to higher housing costs—resulting in a decline of 4.7 million affordable apartments (monthly rents below $1,000) from 2015-2020

However, the above data hides a serious issue in which **the bottom of the housing market has been lost over the past five years because of escalating housing costs overall.** Specifically, 6.95 million owned housing units priced less than $200,000 were lost between 2015 to 2020 as were 4.7 million rental units with rents less than $1,000 per month. This has serious implications for underserved households as well as workforce housing. We discuss in this report, the need for 'Missing Middle' housing which allows for a properly functioning housing market that enables households of all races to build household wealth through homeownership.

Going forward, a slower growth market will necessitate that housing owners and developers more closely analyze their markets as **a number of housing segments are expected to experience faster growth while other housing segments stagnate or even decline. These may include differentiation by factors such as location, housing type, tenant age or price segment.**

Aging Renters

The 55+ and 65+ renter household age segments increase through 2035 in most of the markets in our study, and their contribution to renter household growth becomes more pronounced in the middle and later years of the forecast. **These age segments are particularly important in slow-growth markets that are experiencing a decline in younger population groups.** While homeownership rates are higher in this age group, because of the size of this segment, 55+ households already account for 30% of renter households, with the 65+ segment of this group accounting for 16% of all renter households. We noticed these trends most pronounced in lower growth markets in the Midwest and Northeast. In markets such New York, Chicago, and St. Louis, the 55+ age group will account for all of new apartment demand in total through 2035.

Regional Variations

Regionally, new demand through 2035 is focused in just three states, Texas, Florida, and California, which will require more than 1.5 million new housing units, or 40% of net new demand. However, on a percentage growth basis, **secondary cities generally lead the way. Boise, Austin, Las Vegas, Raleigh, Orlando, and Phoenix** are all expected to grow by at least double the national pace. **Dallas and Houston** are also in the top markets for percentage growth followed by **Charleston and Charlotte** to round out the top ten in our study.

Role of Single-Family Rentals

While **institutional ownership of single-family rentals (SFR) has escalated** since our last report five years ago, the market remains highly fragmented with most SFR still owned by small investors who own less than ten units. With institutional ownership at only 2% of the 12 million units in this sector, indications are that this segment is growing quickly and is likely to continue to generate merger and acquisition activity as owners scale up. The SFR market provides larger units that house a slightly older work force and are more likely to be located in good school districts. While we have limited performance data, thus far SFR seems to have provided investment returns at least equal to, if not better than, apartments over the past few years.

Worsening Affordability

Affordability continues to be a very significant housing issue, *particularly for renters*. We see a slight worsening in rental affordability since our last report despite a multitude of new housing laws as well as lower interest rates. New supply tends to focus on the upper echelon of the market which is already unaffordable to many renters. The pandemic only amplified this problem, creating double-digit price increases in many construction materials as well as increased housing prices.[2]

Affordability is a complex issue that can be caused by a multitude of issues, e.g., policies that overcomplicate or restrict supply (often unintentionally), lower incomes, and/or high housing costs. The meteoric rise in housing costs recently also motivated owners of small properties to just sell the properties, many of which could be converted back to owned properties, thus further reducing rental stock at the low end of the market.

Thus, addressing affordability is a complex issue. Throwing further housing laws into play does not seem to have worked over the past five years. Several markets contain a large number of older properties as well as lower quality (second tier affordable rental or STAR properties) that may provide an answer. The 1-to-4-unit segment of the housing market, also containing the Missing Middle segment, is approximately equal in size to the 5+ segment, but with significantly less institutional ownership, may provide ample opportunities to provide needed housing and become more efficient through institutionalization.

Affordability is particularly a critical issue for renters in markets such as Miami, Los Angeles, New Orleans, Orlando, Riverside, and San Diego where 45% or more of renters spend 35% or more of income on rent. High costs of housing are correlated with out migration to other areas. Southern metro areas rank highly for attracting residents from other areas. Atlanta, Austin, Dallas, Houston, Las Vegas, Miami, Orlando, Phoenix, Seattle, and Tampa have experienced strong in-migration trends.

[1] "Summary of April 2022 Existing Home Sales Statistics," National Association of Realtors

[2] "Housing Demand and Remote Work," Mondragon, John and Johannes Wieland, Working Paper 30041, National Bureau of Economic Research, May 2022. Paper found that half of the 23.8% increase in national home prices since 2019 was caused by shift to remote working during the pandemic.

U.S. RENTAL DEMAND

U.S. total rental demand is estimated based upon total population and household size projections, the portion of the market that desires and can afford ownership given the regulatory environment, and other factors that may impact homeownership rates such as inflation and demographic trends. The result is the number of net rental households.

In brief, the national housing rental demand model is modeled as following:

1. Estimate total population growth considering births, deaths, and net immigration;
2. Divide this by household size considering probable recessions and demographic trends;
3. Equals total households (with a qualifier on homelessness);
4. Add to this the equilibrium vacant housing from market friction, normal vacancy and second home demand;
5. Add to this the housing units lost to real depreciation and obsolescence including normal attrition for changes in use, public improvements, etc.;
6. Equals total housing unit demand;
7. Estimate the owner-occupied portion of this to derive renter demand, considering credit access, housing policies, existing household debt including student loans and credit debt, housing investment appeal, and general affordability; and
8. Allocate renter demand for new multifamily rentals of 5 units or more per building as defined by the NMHC.

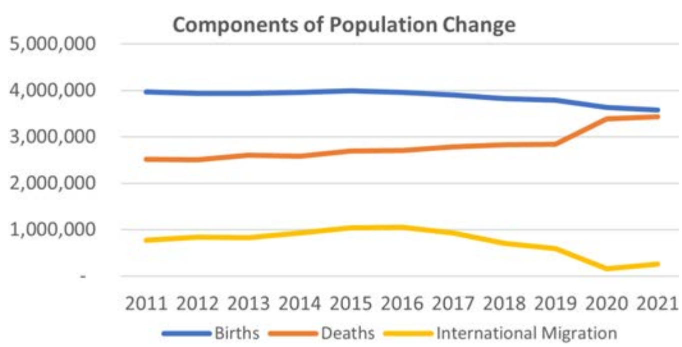
In this report, we also provide some notes on trends worth watching that might affect rental housing demand going forward, as well as a review of the single-family rental market and the supply balance.

IMMIGRATION AND THE AGING POPULATION BASE

Approximately 330.6 million persons[3] comprised the U.S. population as of the end of 2021. This figure was up by only 0.3% from the prior year, the slowest growth since the data series began in 1948. Population growth is based on three important metrics of population: births, deaths, and net international migration. Of these three parameters, net immigration is the least predictable but most important for forecasting future population because, over the long-run, the aging of the U.S. population is creating a consistent trend of slower growth. **The 65+ age group will account for two-thirds of positive population growth through 2035[4]. By 2030, one in five Americans will be 65 years or older.** By 2060, this number will increase to nearly one in four[5]. As a result of the population base aging, the number of births in the U.S. has already declined by 9.9% over the past decade.

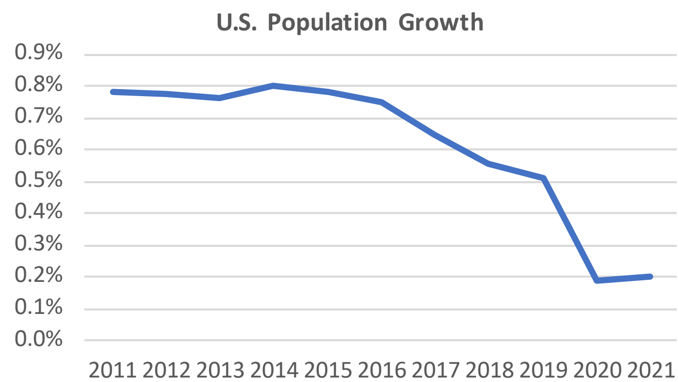
The 65+ age group will account for two-thirds of positive population growth through 2035. By 2030, one in five Americans will be 65 years or older.

While life expectancy rates are rising, the larger older population base is causing the number of deaths to rise over time. Pre-Covid, deaths increased by 12.8% from 2011 to 2019. As the pandemic struck in 2020, deaths increased by 19.6% in a single year, and then by another 1.3% in 2021. While the population forecasts assume improvement in 2022 to 2024 as the world is better equipped to handle the pandemic, over the long-term, the aging population will remain a significant drag to population growth.



Source: U.S. Census

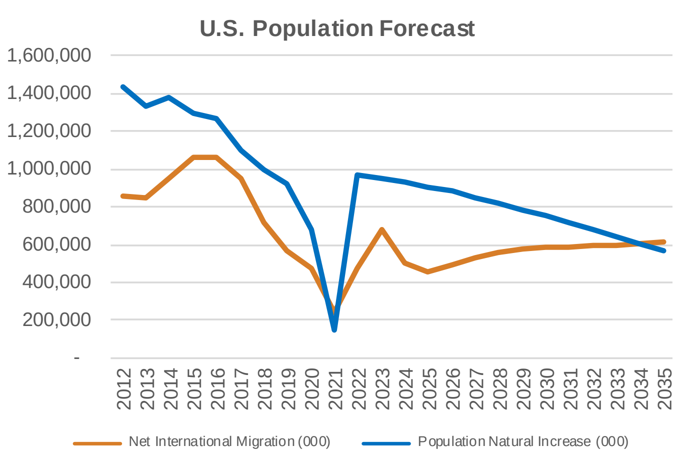
Thus, to maintain even somewhat flat population growth, an influx of net in-migration will need to occur. As we warned in the last report[5], without any net in-migration to the U.S., the U.S. population base will increase by only 0.2% per year on average through 2035, or an increase of less than 800,000 people per year. This in fact almost happened in 2020 as the pandemic nearly stopped international migration trends, combined with higher deaths creating the lowest population growth in decades.



Source: U.S. Census

However, longer term, immigration trends began declining significantly after 2016. While the current presidential administration has started to put some measures in place to improve immigration[6], immigration trends have yet to recover. Furthermore, global political instability, trade disruptions, and protectionism as well as the pandemic's severe impact on global immigration have raised questions as to whether the period of globalization has ended and started a new era that has a more protectionist bent. While some view this as a mere short-term disruption to a longer-term trend that will continue to favor a technology and cost-supported trend towards more open global economies that support immigration trends[7], the immigration forecasts at this time are less than half of our forecast five years ago. In fact, one of the largest variances in this forecast as compared to our forecast five years ago[8] is a difference in expectations regarding net in-migration. As an upside scenario, we have used the immigration forecast trends from five years ago.

As discussed in the State and MSA sections of this report, these trends will be even more apparent in local markets. Certain markets such as Chicago, Detroit, Milwaukee, St. Louis, and New Orleans are projected to decline in population by 2035. However, all of these markets are expected to have a growing 65+ renter population base over the next fourteen years. These trends should be considered carefully by real estate owners.



Source: Eigen10 Advisors, LLC, Census, Moody's

Overall, the base forecast assumes that the U.S. population will grow by an average annual rate of 0.4% per year from 2021 to 2035, adding 1.35 million new people per year to the population base; 42% of this growth is expected to come from net in-migration to the U.S. Even with the reduced immigration forecast, immigration is expected to exceed natural population growth (equal to births minus deaths) by 2035.

Regionally, the impact of immigration on population growth estimates varies widely. While border states first come to mind as areas that could be heavily reliant on immigration for population growth, we find that many of these areas also attract a large U.S. migration making immigration a small part of total growth, e.g., immigration accounted for only 16% to 21% of population growth respectively in Arizona and Texas from 2010 to 2020. To the contrary, we find that immigration is more important to slow-growth states, accounting for virtually all population growth from 2010 to 2020 in states such as Connecticut, Illinois, Massachusetts, Michigan, Mississippi, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and West Virginia. See The State and Metropolitan Area Review Sections of this report for further discussion.

[3] Because the 2020 Census release was delayed until time periods throughout 2022, this report relies heavily on the population estimates and forecasts from Moody's which were updated as of March 2022.

[4] Moody's, March 2022

[5] "Demographic Turning Points for the United States: Population Projections for 2020 to 2060," Vespa, Jonathan, et. al., Issued March 2018, Revised February 2020.

[6] "Key facts about U.S. immigration policies and Biden's proposed changes," Korgstad, Jens Manuel and Ana Gonzalez-Barrera, Pew Research Center, January 11, 2022.

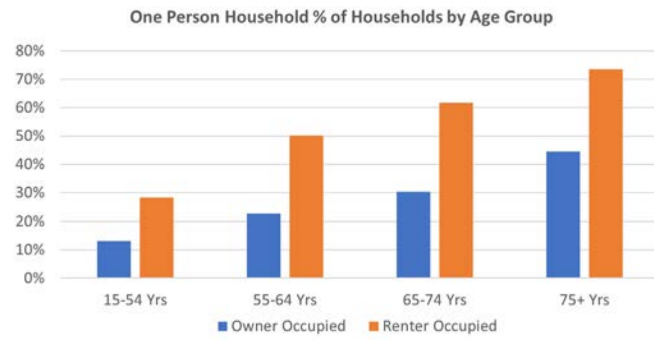
[7] "The State of Globalization in 2022," Altman, Steven A., and Caroline R. Bastian, Harvard Business Review, April 12, 2022.

[8] "U.S. Apartment Demand – A Forward Look," National Apartment Association and National Multifamily Housing Council, May 2017, Hoyt Advisors, Dinn Focused Marketing, Inc., Eigen10 Advisors, LLC.

HOUSEHOLD FORECAST

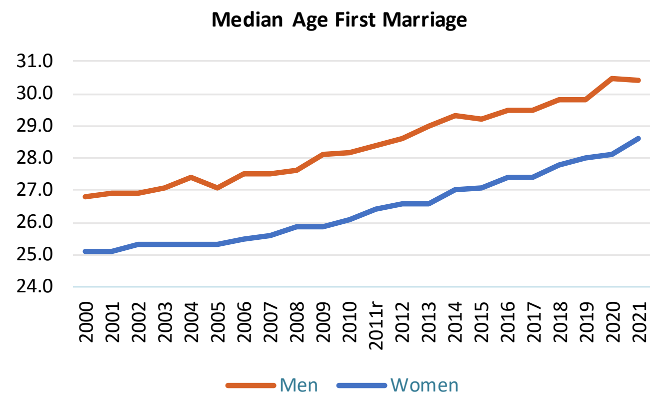
Population estimates are then converted to household estimates based on household size and adjusted for those living in group quarters, e.g. dormitories, jails, nursing homes, military and such, which are not included in the household figures. The group quarters population accounts for 2.5% of the U.S. population[9] and is removed from household estimates. Household size declined significantly from 1960 to 1990 and has made modest declines since then. From 2010 to 2020, household size held relatively steady at around 2.6 persons per household[10]. The forecast assumes a slight decline to 2.47 persons per household by 2035.

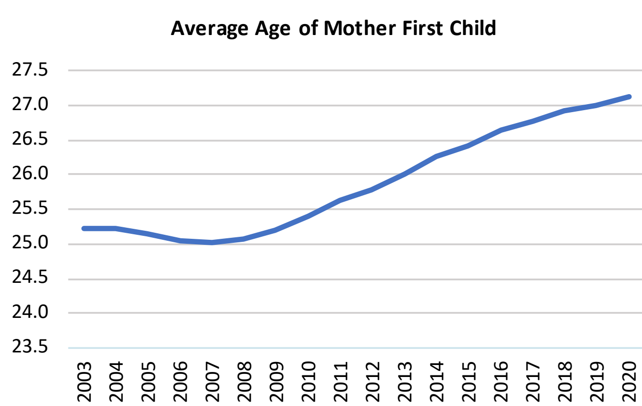
A primary cause of the decline in forecast household size is the aging population as the number of one-person households increases significantly by age. For example, 13% of owner-occupied households with a head of household aged 15 to 54 are single-person households as compared to 45% of households aged 75 or older. These figures are higher for renters where 28% of 15-54-year-old households are single-person households as compared to 74% of renter households aged 75 or older. Within our forecast time period, the 65+ population will increase from 17.3% of the population in 2021 to 21.7% by 2035.



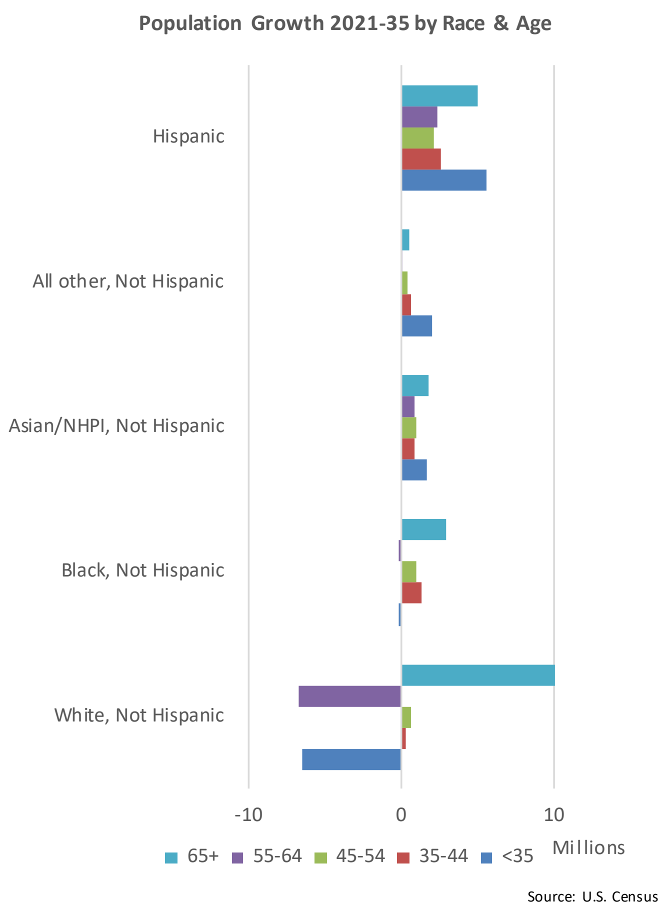
Source: U.S. Census 2020 Table B25116

At the other end of the age spectrum, younger households continue to delay marriage and family formation. The median age at first marriage increased from 28.2 for men and 26.1 for women in 2010 to 30.4 and 28.6, respectively in 2021.[11] Similarly, the average age of mothers having their first child increased from 25.4 in 2010 to 27.1 in 2020[12].





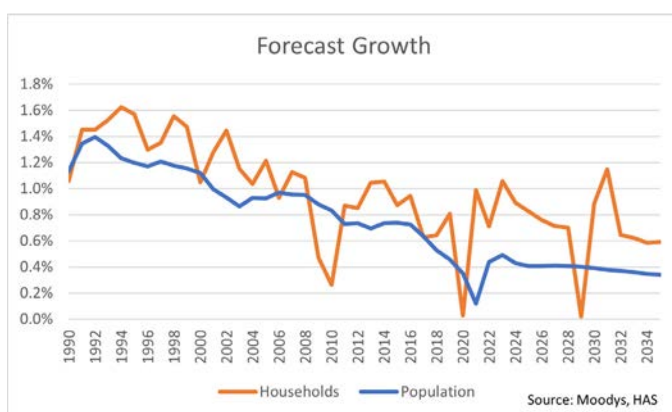
Another significant trend impacting household size is the increasing share of population growth attributed to the non-white population base. Notably, Hispanic households are projected to account for 59% of all population growth from 2021 to 2035. This population segment has a larger average household size of 3.25[13] as compared to an average of 2.42 for non-Hispanic households of all races.



However, like overall U.S. household size data, Hispanic households are also declining in size, down from 3.56 people per household in 2001.

Offsetting this larger household size trend will be growth in the White, non-Hispanic 65+ age group which has a much smaller household size as discussed in the aging section above.

The implications of the household size and population trends are projected in the figure below. The U.S. is expected to have approximately 141.3 million households by 2035. From the end of 2021 through the end of 2035, the population should grow in total by 5.5%, but the household growth rate over that same period is 10.6%, as the household size declines. This is an annual compounded growth rate, in our base case, of 0.4% in population increase and 0.7% in household increases. Note that this is a slower pace than recent historical trends when population increased by 0.9% annually on average from 2000 to 2010 and by 0.6% from 2010 to 2020. Household growth stayed a little more stable over time as household size shrank, averaging 1.0% per year from 2000 to 2010 and 0.8% from 2010 to 2020.



While the timing and severity of economic recessions are difficult to predict, the U.S. has experienced a recession every four to ten years during the past fifty years. Thus, we broadly estimate a second recession slowing down household formation rates possibly starting in 2029, with slowing noted in 2022 but not a prolonged recession. The 2029-30 recession is estimated to be severe and is based upon entitlements (Social Security and Medicare) running out of funding resulting in the need for massive tax increases and some budget cuts.[14] Normally the household growth rate exceeds that of the overall population, but here we note the effects of the slower household growth rates during projected recession years which is further impeded by lower than historic population growth. The number of households shrinks slightly in 2029 as more people double or triple up during a significant recession.

Year	Population	Net International Migration	Population Natural Increase	Households
2012	313,877,662	858,736	1,435,445	119,073,258
2013	316,059,947	849,728	1,332,557	120,318,386
2014	318,386,329	945,635	1,380,747	121,587,984
2015	320,738,994	1,060,115	1,292,550	122,650,961
2016	323,071,755	1,065,017	1,267,744	123,809,852
2017	325,122,128	948,392	1,101,981	124,589,402
2018	326,838,199	719,871	996,200	125,388,661
2019	328,329,953	568,639	923,115	126,402,009
2020	329,484,123	477,029	677,141	126,439,806
2021	**329,876,788**	**244,622**	**148,043**	**127,691,477**
2022	331,322,209	477,029	968,392	128,597,742
2023	332,955,441	682,367	950,865	129,958,221
2024	334,386,739	500,882	930,416	131,118,487
2025	335,748,105	455,051	906,316	132,200,261
2026	337,117,888	489,759	880,025	133,204,469
2027	338,501,063	531,632	851,542	134,154,003
2028	339,881,825	560,623	820,139	135,094,412
2029	341,244,835	576,465	786,545	135,118,613
2030	342,578,767	583,172	750,760	136,315,372
2031	343,881,077	588,066	714,244	137,879,952
2032	345,151,790	594,445	676,268	138,768,560
2033	346,390,201	599,390	639,022	139,631,631
2034	347,599,262	607,285	601,776	140,448,725
2035	348,780,289	615,766	565,261	141,280,929

[9] U.S. Census Bureau, Table B26203, 2020 5 yr estimates

[10] U.S. Census Table S1101

[11] U.S. Census Bureau, Families and Living Arrangements, Table MS-2.

[12] Source: Centers for Disease Control

[13] Hispanic, White segment. Source: U.S. Census, Current Population Survey, Table AVG1. Average Number of People per Household, by Race and Hispanic Origin, Marital Status, Age, and Education of Householder: 2020

[14] See the very convincing analysis of Alan Beaulieu, ***http://www.financialsense.com/contributors/dr-alan-beaulieu/us-recession-2019-depression-2030*** where he makes the case that the U.S. politicians kick the can down the road until it reaches a crisis point, that being the inability to fund Social Security, Medicaid and other entitlements, along with a maxed out Federal debt creating unsustainable borrowing capacity. The timing estimate here is very much driven by the aging Baby Boomers who will no longer be working and demanding vast increases of medical care in the last years of life.

TOTAL HOUSING DEMAND

While total housing demand parallels the number of households as projected above, the actual housing stock demanded will also be affected by the following factors:

- *the number of homeless households,*
- *the number of excess or vacant units available to fill new demand, if located in areas where demand exists,*
- *the demand for second and third homes, and last,*
- *the atrophy of physical housing units which will leave the housing market.*

Later, we will divide the housing demand into owner and renter shares, and when doing so, noting the impact of units that might be part of either stock.

Homeless Population and Households

Homelessness exists in the U.S. at the rate of about 18 persons per 10,000[15] population, about 19% of whom are considered chronic. Thus, in January 2020, more than 580,000 people were without housing and sleeping outside, in an emergency shelter, or a transitional housing program. The highest rate in any metropolitan market is Washington D.C. at 90 per 10,000 population.[16] More expensive large cities tend to have higher homeless rates. Single persons make up about 409,000 of the homeless household count. Risk is significantly tied to gender (higher in males), race, and ethnicity as historically marginalized groups remain disadvantaged due to higher unemployment rates, lower incomes, and less access to healthcare. Native Hawaiians and other Pacific Islanders have the highest rate of homelessness (109 out of every 10,000 people) followed by Native Americans (45) and Black (52).

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For 2020 the impact of homeless households requires an adjustment of about 211,000 households, a reduction of 2/10ths of 1.0%. At the national level this is not very significant, but in some metro markets such as Washington D.C., it requires a modeling adjustment for household demand.

Normally Vacant Units

The U.S. Census Bureau surveyed 141.9 million housing units in 2021, some 126.6 million occupied and 15.3 million of them as vacant representing 10.8% of the stock.[17] We can break the vacant housing statistic into three parts:

1 The normal equilibrium vacancy rate in each market where rents tend to go up when the vacancy rate is below a certain level.[18] Residential rentals have the lowest average natural vacancy rate compared to office, industrial and retail property. In some local supply constrained markets the equilibrium vacancy normally runs low, and in some elastic supply markets, it runs higher. As of the end of 2021, the rental vacancy rate for all residential was 5.6%.

2 There are also vacant homes within the owner-occupied market simply because of imperfect timing, or time needed to repair homes prior to occupancy, or from units vacated after buying a new home. As of the end of 2021, the vacancy rate for the owner-occupied segment of the housing market was 0.9%. Both the owner and renter segments of the housing markets are experiencing record low vacancy rates causing rental rates to rise. Over the previous twenty years, the rental vacancy rate averaged 8.6%, and the owner vacancy rate averaged 2.0%.

3 The third source of vacant homes is from second and third, and in some cases fourth-plus homes, owned but rarely occupied by wealthier households. These are particularly important in tourist markets, but even at the national level the counts are significant. Nationally this surplus housing figure runs about 5.0% to 6.0% of the housing stock.[19]

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15 "State of Homelessness: 2021 Edition," National Coalition to End Homelessness

16 See ***http://www.endhomelessness.org***.

17 U.S. Census, Housing Vacancies and Homeownership, Table 7. Estimates of the Total Housing Inventory for the United States: 1965 to Present

18 Source: "REVISITING THE DERIVATION OF AN EQUILIBRIUM VACANCY RATE" by Richard Parli and Norm Miller, Journal of Real Estate Portfolio Management, Vol. 20, Issue 3, 2014.

19 Includes Seasonal, Usual Residence Elsewhere and Occasional Use properties. Some units may be rented but unreported. Others might be reported as rentals but generally left vacant, so solid and reliable statistics on second homes is a challenge. U.S. Census, Housing Vacancies and Homeownership, Table 7. Estimates of the Total Housing Inventory for the United States: 1965 to Present.

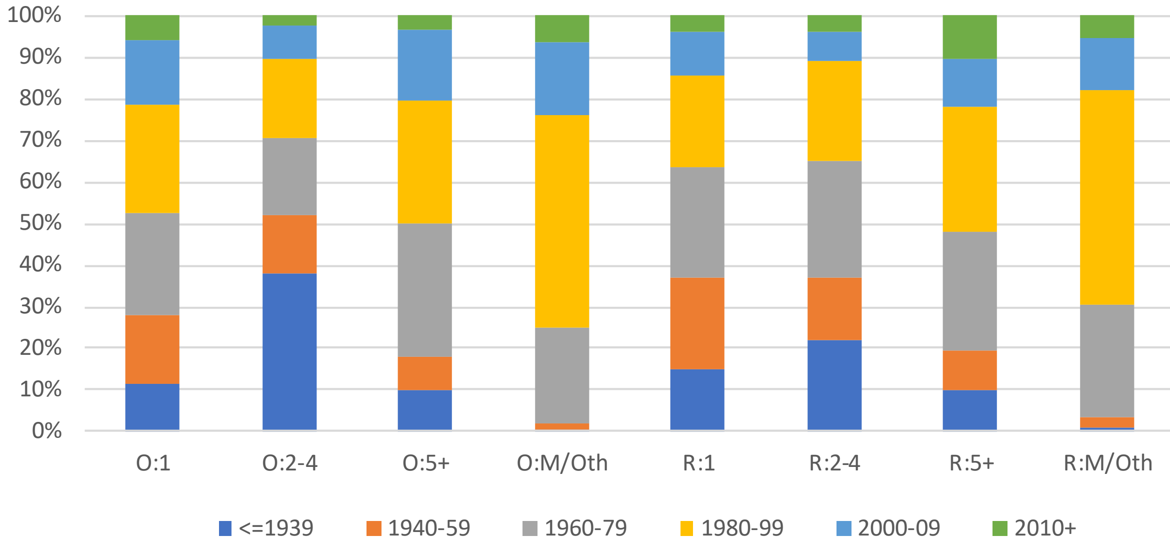
ANNUAL LOSS OF PHYSICAL HOUSING UNITS

We must also consider the obsolescence, real deterioration, and demolition of existing housing stock based on a variety of causes and also include housing units lost to the process of eminent domain for public improvements, schools, roads, and infrastructure. Fires, tornadoes, and hurricanes also take their toll, yet we seldom see eliminated housing units brought into forecast models of demand. This will be considered next.

The rate of loss of existing housing stock varies according to age and location. A study by Bokhari and Geltner suggested depreciation rates on new multi-family dwellings of 4.0% per year.[20] The depreciation tended to slow down as properties aged until they approached the end of their economic life. They found an average real depreciation rate of about 1.44% per year over the entire economic life. Quantifying the impact of real depreciation and units lost to natural causes (fires, tornadoes, hurricanes) and demolished for re-purposed property or moved or changed in use is the discussion provided in CINCH reports by HUD. CINCH stands for Components of Inventory Change.[21] CINCH data is not consistent nor annual, and the last major report covered 2015-2017. During that time, 1.093 million units of housing were permanently lost, amounting to 546,500 per year. This represented about 0.4%[22] of the housing stock per year. This is highly conservative, especially considering the average age of all housing in the U.S. is currently around 43 years for owned housing and 45 years for rented housing[23]. Additionally, the CINCH data simply represents changes in housing stock and does not consider building quality and the capital expenditures required to maintain a building and thus should not be confused with taxable depreciation rates which are faster[24].

The below figure shows the age of the U.S. housing stock broken down by owned vs. rented properties and year the units were built[25], including a category for all mobile homes and other property types. Note that there are significant differences in age of housing stock by property type. For example, 37% of single units that are rented (R:1 in the graph below) were built before 1960 as compared to only 28% of single units that are owned by the occupier (O:1 in the graph below). Conversely, almost none of the mobile home stock was built before 1960, with a large part of the current inventory built between 1980 and 1999. Rental properties that are 5 units or larger (R:5+), a segment frequently tracked by institutional owners, is more evenly distributed with 19% built before 1960, 59% built between 1960 and 1999, 12% built between 2000 and 2009, and 10% built since 2010. Note that this segment has the largest percent of inventory built since 2010.

Housing Stock by Age and Type



Source: U.S. Census

Using the general number of 1.44%, based on the average of Bokhari and Geltner estimates, results in an economic life of about 70 years for multifamily properties, which seems very reasonable, assuming owners keep them maintained.

One lesson of the Bokhari and Geltner study is that major capital improvements are required to periodically update multifamily properties, or for that matter any building, and without such capital expenditures the wear and tear and loss of real value (gross depreciation) would be much higher. We should also note that the type of buildings we observe which are 250 years-old and still standing have two attributes. They are built of very strong materials, stone or brick and very long-lasting roofs. They are also continuously occupied in strong demand areas and well maintained. Today, we tend to use materials that are much less durable.

Using the general number of 1.44%, based on the average of Bokhari and Geltner estimates, results in an economic life of about 70 years for multifamily properties.

A study by Jiro Yoshida found that the depreciation rate for single-family residences was about 1% per year but the rate varies considerably by location and other property characteristics.[26] This study used a rather limited sample of properties. To be conservative for the best case, we will use a 200-year life and a 0.5% loss rate, noting that at least two thirds of this loss will be due to natural causes. Even this very conservative estimate suggests that we need about 710,000 units of housing production in 2021 and a similar percentage of the stock each year simply to maintain what we have. We should not assume that housing, once built never disappears. We will add this 710,000 plus figure to the total U.S. required housing stock, growing in proportion to the total. Please note how sensitive this assumption is to our required housing stock. We are assuming that the existing stock will be here for a while since the average age is only 44 years, and that is why a conservative replacement assumption makes sense for the next few decades.

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[20] See "Characteristics of Depreciation in Commercial and Multi-Family Property: An Investment Perspective" ***https://mitcre.mit.edu/wp-content/uploads/2014/03/Characteristics-of-Depreciation-in-Commercial-and-Multi-Family-Property_0317.pdf.***

[21] See ***https://www.huduser.gov/portal/datasets/cinch.html***. See also ***https://www.huduser.gov/portal/datasets/cinch/cinch13/Rental-Dynamics-Report.pdf.***

[22] Note that loss rates vary by property, tenure and occupier characteristics with renter occupied properties experience loss rates that are about 52% higher than this figure.

[23] Source: U.S. Census, American Community Survey, 2020, Table B25037

[24] See for example, "Tax Policy Implications of New Measures of Economic Depreciation of Commercial Structures, PWC, Prepared for The Real Estate Research Consortium, April 2016.

[25] Source: U.S. Census, American Community Survey, 2020, Table B25127.

HOMEOWNERSHIP RATES AND RENTER PORTION OF HOUSING DEMAND

The characteristics of homeowners vary from those of renters. For example, 35% of renters are less than 35 years old with another 20% less than 44 years old. Only 10% of homeowners are less than 35 years old, with 16% less than 44 years old[27].

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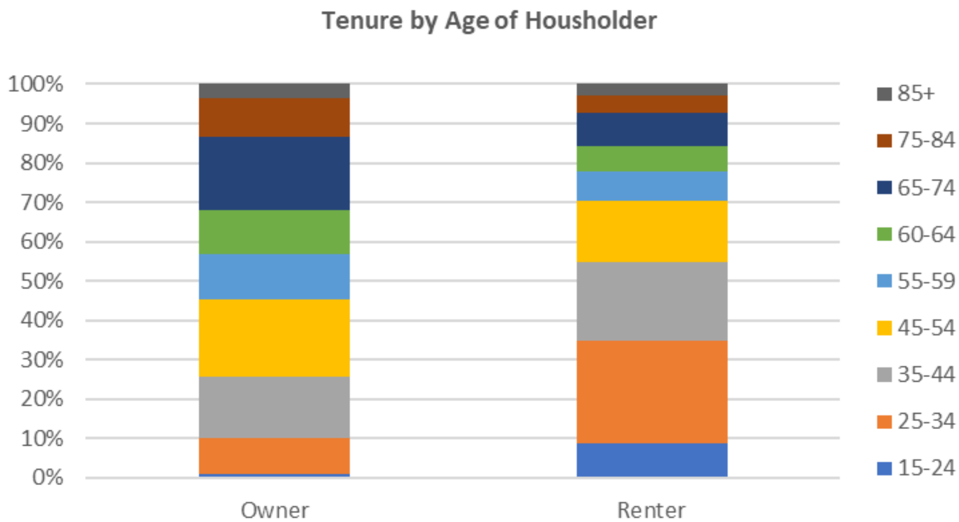
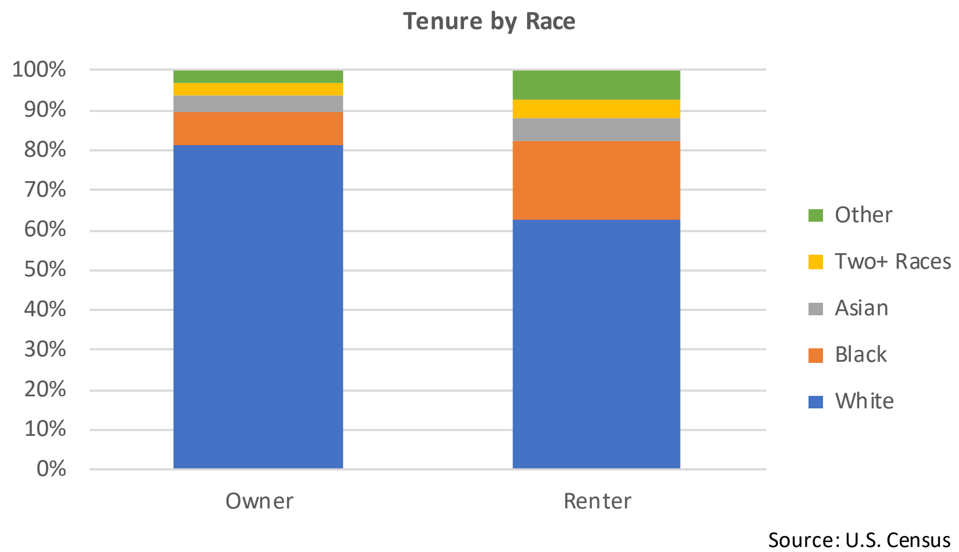


Source: U.S. Census

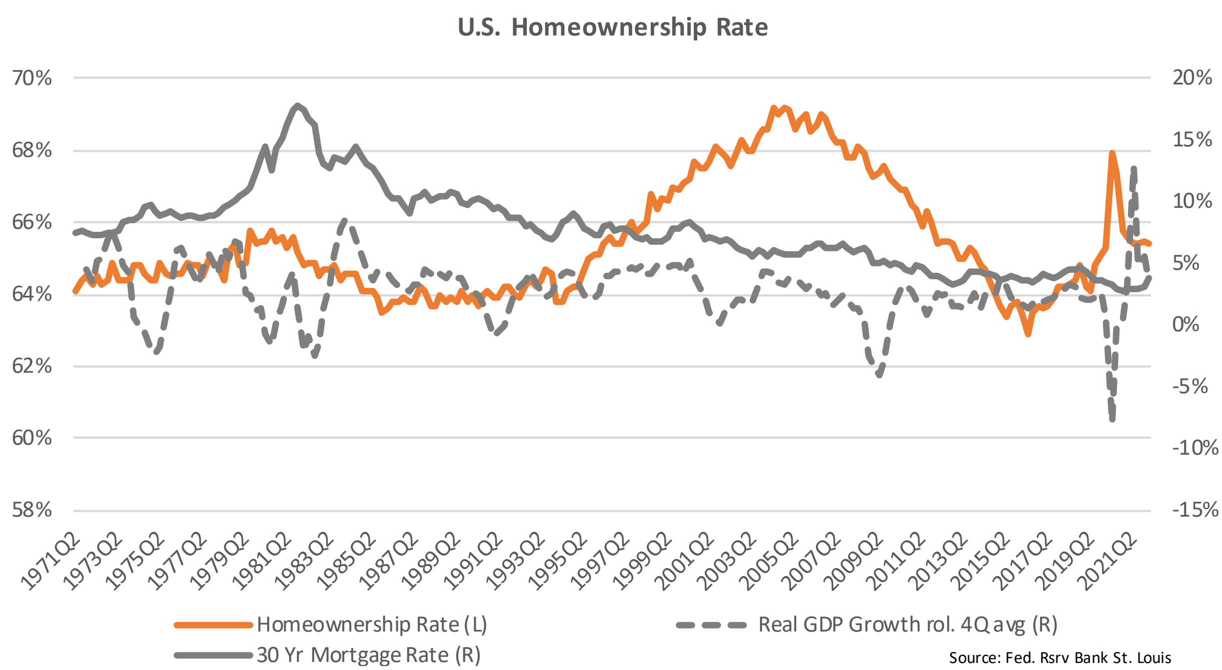
Renter demographics will become particularly important as population growth slows and becomes concentrated in certain age segments, particularly at the local level. Overall, renters are a diverse group in terms of age, race and family / household size metrics. Apartment owners should keep in mind that while homeownership rates rise significantly for the 35-to-44-year age group (first time homebuyer age is 33[28]), 65% of renters are aged 35 or older and 16% are 65 years or older.

Renters are also more ethnically diverse with White ethnicity accounting for only 63% of renters as compared to 81% of owners. People of Hispanic origin and Black by race are also more highly represented in rental properties[29] with 20% of renters Black and 19% Hispanic (as compared with 15% of owners Black and 10% of owners Hispanic).



Renter demographics are important because 1) homeownership rates vary significantly by race and age, and 2) forecast growth varies significantly from past trends as the Hispanic and older population segments are forecast to account for a large part of population growth during the forecast period.

A high rate of housing ownership has been an overall economic policy goal in the U.S., particularly during certain parts of the past 50 years, after full employment and keeping inflation under control, but as shown in the figure below, U.S. homeownership rates have historically had little to do with capital market or economic trends.



Office usage dropped to 14.6% of March 4, 2020, levels by April 15, 2020, and have since increased to only 38.0% by March 2, 2022

National policies affecting credit availability, banking regulation, and lending trends have had a significant impact on homeownership rates. Changes in political environments and policies are difficult to forecast going forward, but have had a significant impact on homeownership in the past. In fact, we were able to model homeownership rates from 1971 to 2021 with a high degree of certainty[30] using three demographic and economic factors, three policy factors, and a dummy variable representing work-from-home trends that began in the second quarter of 2020 due to the pandemic. The dummy variable was modeled as 0 through the first quarter of 2020 and then 1 from the second quarter of 2020 through the last quarter of the model which was 2022Q1 and was intended to represent the unusual conditions during the pandemic that generated new work-from-home trends. These trends have been measured by Kastle Systems which tracks keycard access activity in 2,600 buildings and 41,000 businesses across 47 states to measure how Americans are returning to the office.[31] This data shows that office usage dropped to 14.6% of March 4, 2020, levels by April 15, 2020, and have since increased to only 38.0% by March 2, 2022. The National Association of Realtors reported that:[32]

- *A "majority of recent homebuyers prefer remote work*
- *About four-in-ten recent homebuyers work remotely*
- *Commute times reach new records as homebuyers search for affordability*
- *Younger homebuyers are more willing to embrace longer commutes*
- *Close to half of recent homebuyers' report companies embracing remote work"*

As renters ventured into more suburban locations with more space during the pandemic, the U.S. homeownership rate increased by 1.3% in 2020 to 65.5% – the highest increase ever[33]. Given how slowly the Kastle Workplace Occupancy barometer is improving and the fact that a number of firms have embraced more permanent work-from-home trends for at least part of their workforce, we assume that this effect continues to slowly taper down over the next five years, returning to a score of 0 by 2027Q1.

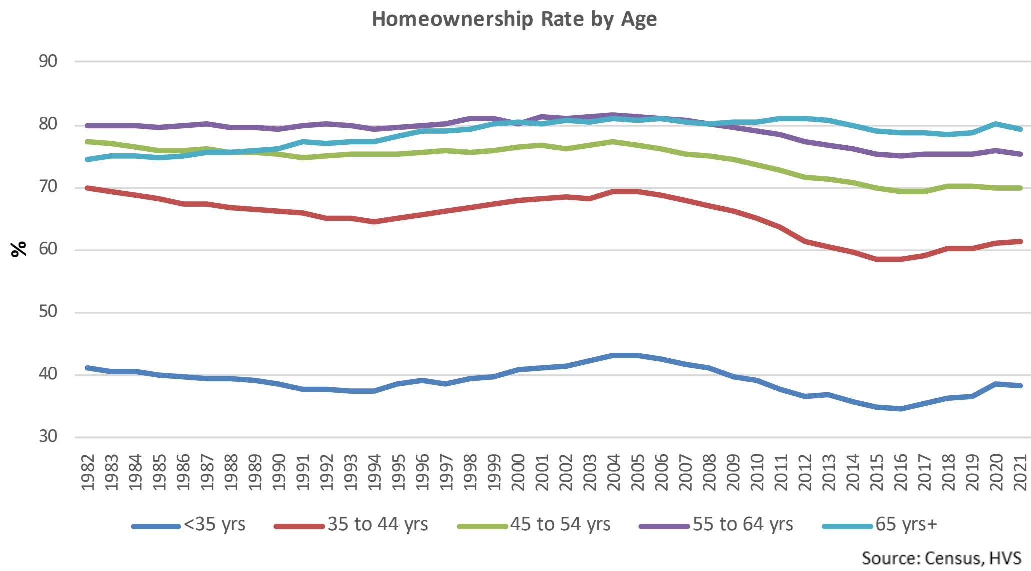
The U.S. homeownership rate increased by 1.3% in 2020 to 65.5% – the highest increase ever.

Other significant policy changes that are included in the homeownership model include the 1992 Housing and Community Development Act passed, requiring that 30% or more of Fannie's and Freddie's loan purchases be related to "affordable housing" (borrowers who were below normal lending standards). However, HUD was given the power to set future requirements, and HUD soon increased the mandates. The Gramm-Leach-Bliley Act also known as the Financial Services Modernization Act was passed in 1999. It repealed portions of the Glass Steagall act, allowing depository and investment banks to merge. Critics often cite it as a cause of the subprime crisis, allowing mergers to create 'too big to fail banks' that did not have enough regulation regarding risk and reserve requirements. The Commodities Futures Modernization Act of 2000 further limited the regulation of financial derivatives. As a response to the subprime crisis, The Housing and Economic Recovery Act was passed in 2008 in an effort to assist homeowners and restore stability and confidence in Fannie Mae and Freddie Mac.

Homeownership peaked in the U.S. in June of 2004 and remained near that level through 2006, then fell as the subprime market unraveled.

Homeownership peaked in the U.S. in June of 2004 and remained near that level through 2006, then fell as the subprime market unraveled. Subprime mortgage brokers peddling high loan-to-value mortgage options, reasonably low-interest rates, appraisals that merely justified prices paid, and rising price expectations by buyers[34] had created an unsustainable homeownership rate. Since the crash which followed in 2008 and beyond, credit standards have tightened significantly, and underwriting remains tighter than prior to the crash. While many subprime mortgage lenders are no longer in business, most lenders still sell qualified mortgages to Fannie Mae and Freddie Mac and find appraisers who will justify the value, with little skin in the game. History may repeat itself with respect to a new housing bubble, but for now we observe that as of the end of 2021, single-family mortgage delinquency rates at 2.3% are near the long-term average before the subprime crisis of 2.2% from 1991 to the end of 2007[35]. The forecast model does not assume any policy changes going forward, although modifications for example that offset or impact the applicability of mortgage interest deductions in the tax code should be watched going forward for potential impacts on homeownership rates.

The homeownership rate has not recovered to pre-subprime crisis levels, particularly for the 35 to 44 and 45 to 54 age segments. These are important age segments as they represent the jump from renters to first time homebuyers (35 to 44 age segment), and the 45 to 54 age segment also represents one of the age segments with the highest household income. The 45 to 54 age segment is also the group that was most likely impacted by the 2008 subprime crisis as they would have been at the age of first-time homebuyers at the time the crisis occurred. The challenge now is to figure out how much of this change is cyclical and how much is secular. Many of those who bought near price peaks or had their credit affected are hesitant to jump back into housing ownership.[36] Surveys of Millennials suggest that owning a home has less importance than to the prior generation. Others suggest that this reticence to jump into homeownership will change as the younger generation has children.[37]



Household wealth also plays an important part in homeownership rates. Wealth is impacted by a number of factors including job growth, income levels, savings behavior, and capital market trends. Home prices are a large contributor to wealth, and in turn support spending behavior and purchases of other goods in rising price environments.[38] All else equal, homeownership rates also tend to rise in high inflationary environments in our model. Inflation creates two incentives that support homeownership. First, if inflationary expectations become embedded into consumer expectations, buyers may purchase a property in an attempt to 'lock in' housing costs through a long-term fixed mortgage rate rather than be exposed to annual pricing changes in rents. Second, housing equity creates wealth as home prices rise. Buyers may cash out this embedded equity wealth by selling or refinancing and upgrade to a larger or better property, renovate or increase the mortgage and use the capital elsewhere. This strategy works particularly well in a low-interest rate environment.

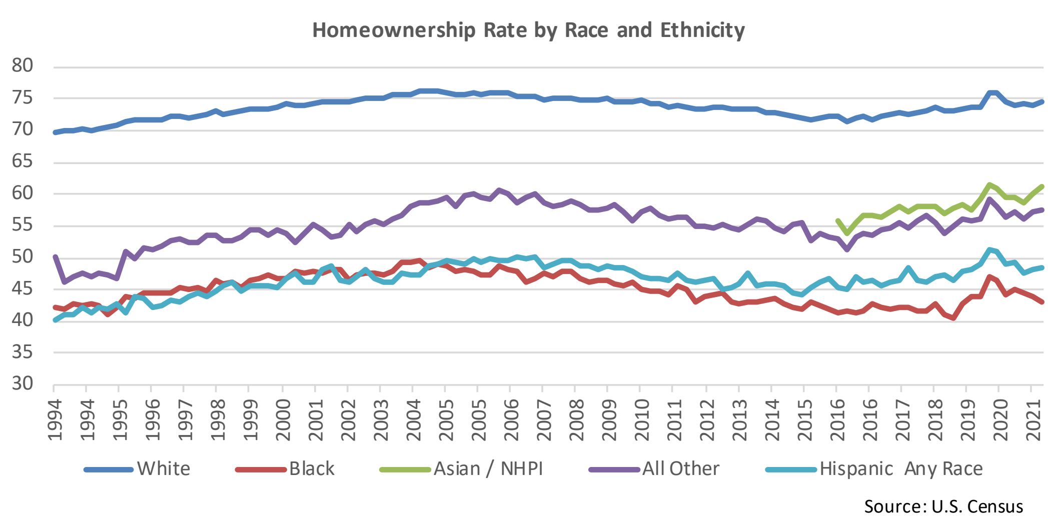
In the near term, the recent increase in interest rates seems to have at least dampened the appetite for home buying as rates on 30-year fixed-rate mortgages rose from a low of 2.8% in July 2021 to 5.1% by May 2022. Thus, the minimum household income to buy the median-priced home at current rates has gone up by approximately 20%, assuming 25% of income is used for the mortgage payment. This is simply a result of going from rates of around 4% or less on average that was typical from 2010 to 2019 to slightly above 5% today, and with higher average home prices.

In the near term, the recent increase in interest rates seems to have at least dampened the appetite for home buying as rates on 30-year fixed-rate mortgages rose from a low of 2.8% in July 2021 to 5.1% by May 2022.

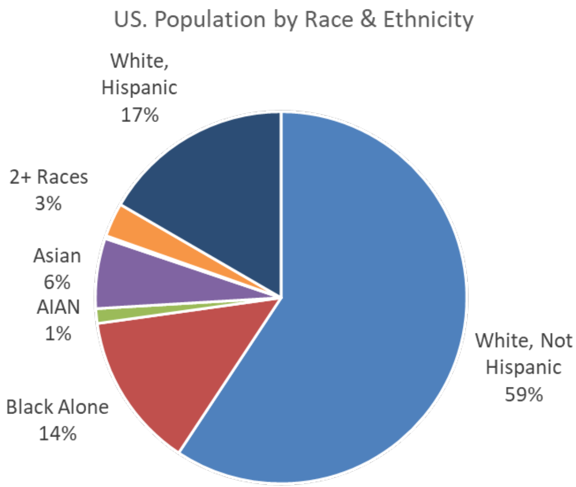
The aging of the population would cause the homeownership rate to rise by 3.8% by 2035.

Going forward, two other factors will be significant and offsetting influences on homeownership rates. First, the aging population will put upward pressure on homeownership rates as the older population segments have higher homeownership rates. All else equal, the aging of the population would cause the homeownership rate to rise by 3.8% by 2035.

However, population growth will also be dominated by the Hispanic segment which has lower homeownership rates. As of 2020, Hispanic homeownership rates were 48.4% as compared to White at 74.0%.

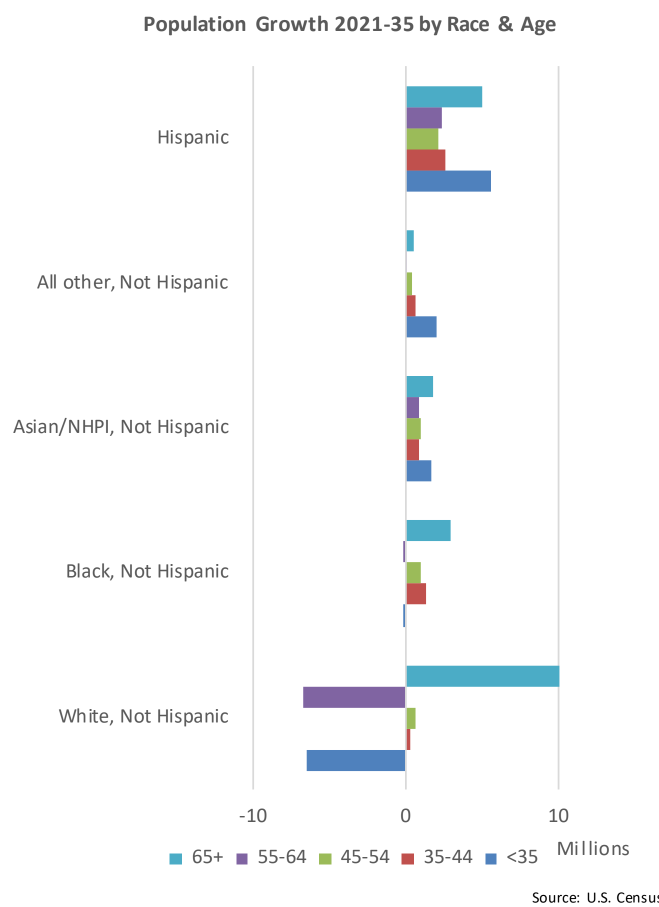


The Hispanic population will account for 59% of all population growth through 2035, as shown in the graph below. While the White population base will shrink overall, the 65+ age group will be the largest contributor to growth by age group, accounting for 34% of total growth.



While the Hispanic population will be a significant contributor to growth, it remains a relatively small percent of the total population, and thus its impact on the homeownership rate will be to put downward pressure of less than 1% on homeownership rates by 2035. Additionally, homeownership rates for the Hispanic population have been increasing overall in correlation with rising educational attainment rates and income levels.

Another factor that has put near-term upward pressure on the homeownership rates is the 2020 pandemic and its impact on migration patterns. Many service sector employees retained employment through the pandemic but in a work-from-home environment. With mortgage rates at historically low levels, first-time home-buyer purchases spiked to over 2 million by September 2020[39], from normalized levels closer to 1.7 million during the previous five years. As remote working was enabled for a good part of service-oriented industries through the pandemic, firms are having difficulty luring workers back to the office. This issue is further exacerbated by historically low unemployment rates. As a result, remote work environments have allowed workers to not only move to the far suburbs with historically lower real estate costs, but also to move to even more far-flung locations that have higher quality of life as well as lower overall costs.

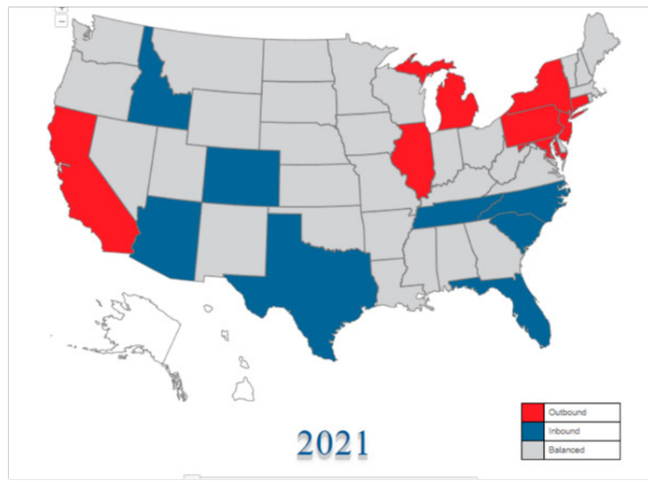


The exhibits below show the difference between migration patterns in 2019 (pre-pandemic) to 2021 post pandemic. For example, in 2019 job centers but high-cost states such as California and New York were in the top states for percent of population that had lived in a different state the year before. Post-pandemic, both California and New York were among the states with the highest outbound moves, as reported by North American Moving Services, while newcomers such as Idaho, Tennessee, and South Carolina posted significant in-migration, associated with soaring housing prices. In fact, Idaho cities accounted for five of the top six biggest home price increases since the pandemic started, with Idaho Falls leading the way with an 88% increase in home prices from March 2019 to March 2022[40].

2019

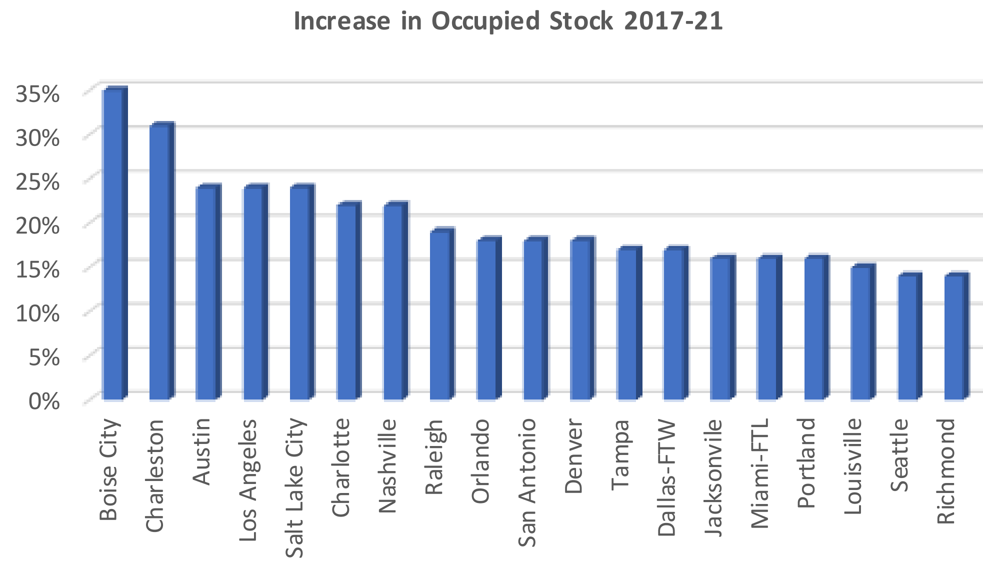
	Lived in Diff State a year ago	% of Pop	% of Total Migration	Cumulative Total
Florida	601,611	2.8%	8.1%	8.1%
Texas	559,661	2.0%	7.6%	15.7%
California	480,204	1.2%	6.5%	22.2%
North Carolina	315,215	3.0%	4.3%	26.4%
Georgia	284,541	2.7%	3.8%	30.3%
Pennsylvania	267,465	2.1%	3.6%	33.9%
Virginia	264,855	3.1%	3.6%	37.5%
New York	254,806	1.3%	3.4%	40.9%
Arizona	253,295	3.5%	3.4%	44.4%
Colorado	240,600	4.2%	3.3%	47.6%
Washington	231,956	3.1%	3.1%	50.7%

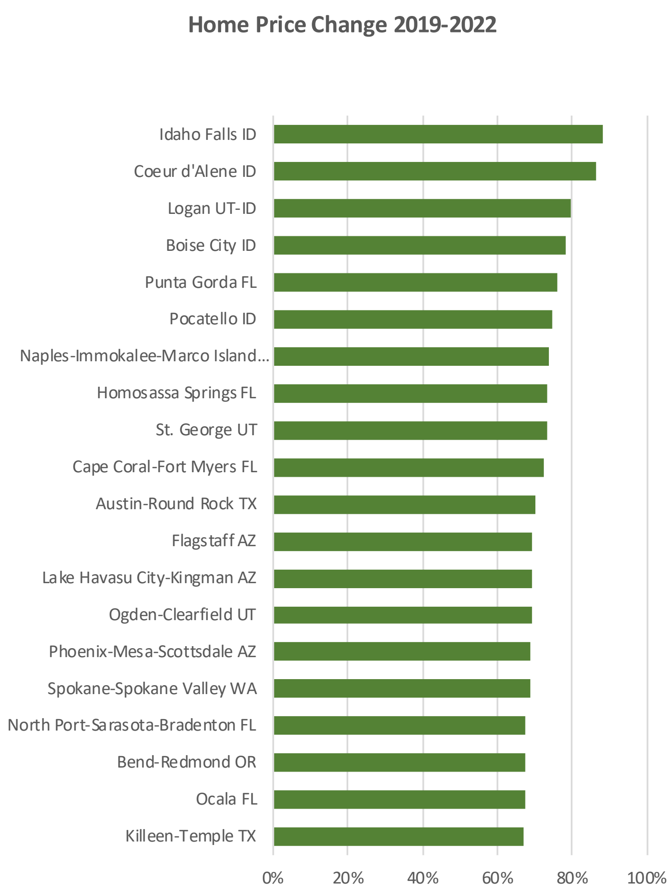
Source: US Census, North American Moving Services



Multifamily rental trends have followed a similar pattern, with significant growth in secondary markets that have low costs and high quality of life. Furthermore, even if we look over a longer time period which goes back to 2017, we see similar trends. Of the markets in our study, Boise City and Charleston lead the way with occupied stock up by 30% or more since 2017. Los Angeles is the outlier in the next tier of cities which include Austin and Salt Lake City. The Los Angeles figures reflect a significant redevelopment of the downtown market and integration of new connecting public transport over the past few years.

Idaho cities accounted for five of the top six biggest home price increases since the pandemic started, with Idaho Falls leading the way with an 88% increase in home prices from March 2019 to March 2022.

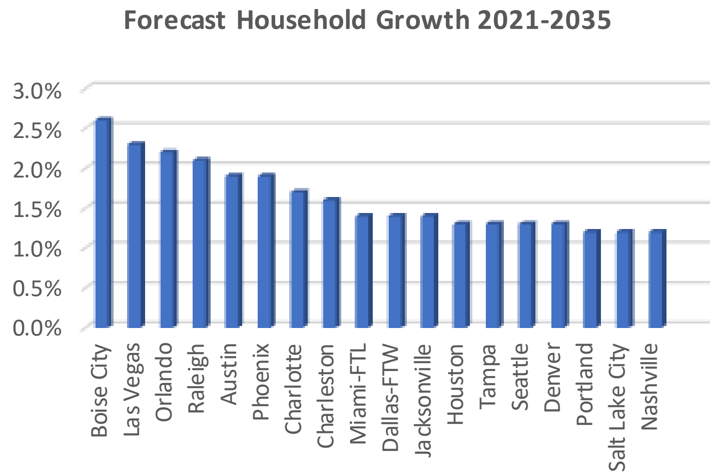




Source: Freddie Mac Home Price Index, March 2019 to March 2022

While the remote work experiment of the past couple of years has yet to play out fully, a number of firms have moved to allow permanent remote work for at least a part of their workforce. Given that movement to secondary cities began even before the pandemic started, long-term forecasts reflect similar trends, favoring secondary cities with low costs and high quality of life. Several of the top growth markets also have a strong university presence. Of the markets in our study, Boise City, Las Vegas, Orlando, and Raleigh lead household growth expectations with growth expected to increase by an average of over 2% per year through 2035.

However, in terms of number of households, larger metro areas, mostly in the southern U.S. will experience the largest gain in households through 2035. In fact, the nine metro areas in the table above will account for more than half of the household growth in the 50 metro areas



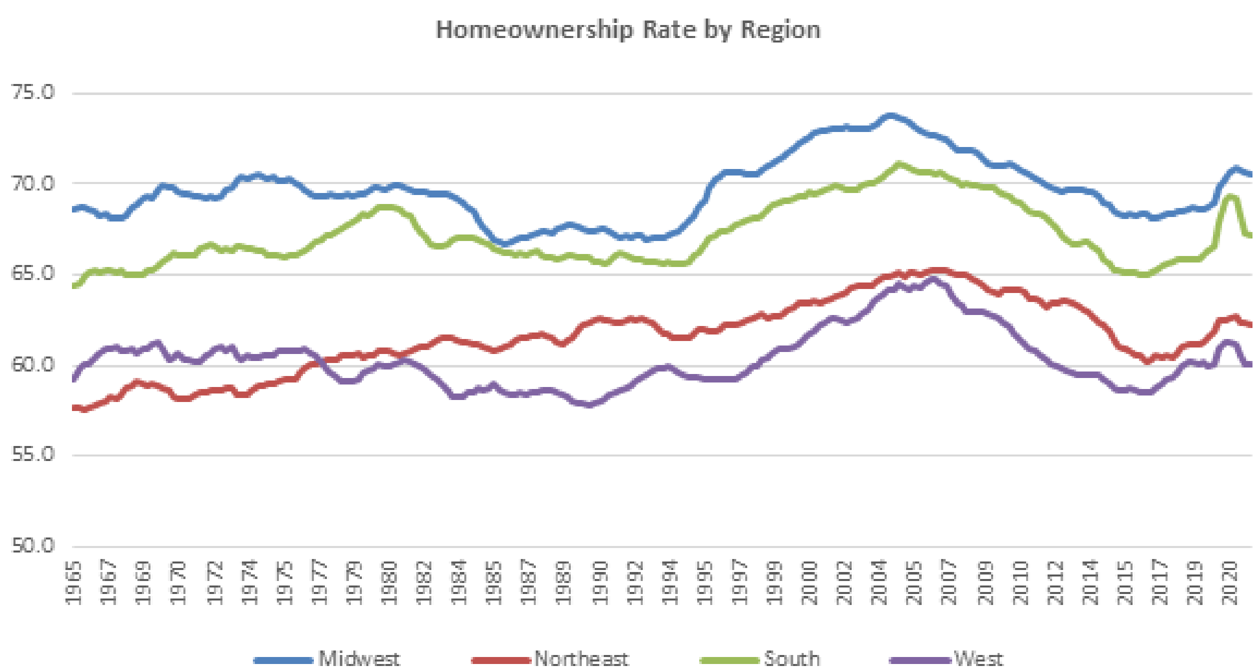
Nine MSAs account for over half of growth expectations

	# New Households (000)	% of Total*	Cumulative %
Dallas-FTW	43.8	8.5%	8.5%
Phoenix	38.8	7.5%	15.9%
Houston	37.1	7.2%	23.1%
Miami-FTL	36.0	6.9%	30.0%
Atlanta	26.9	5.2%	35.2%
Orlando	25.5	4.9%	40.1%
Las Vegas	23.2	4.5%	44.6%
Seattle	21.7	4.2%	48.8%
Charlotte	19.2	3.7%	52.5%

*of the markets in this study
Source:Moody's

reviewed in this study. Seattle is the sole city of the top nine markets that is not located in the south.

The above trends are important to homeownership rates because homeownership rates tend to be significantly higher in the south as compared to the west and northeast regions of the country. Continued movement to these low-cost locations allows home buyers to invest in housing that they may not have been able to afford coming from a more expensive location. Thus, this trend is expected to put upward pressure on homeownership rates over the next decade.



Source: US Census

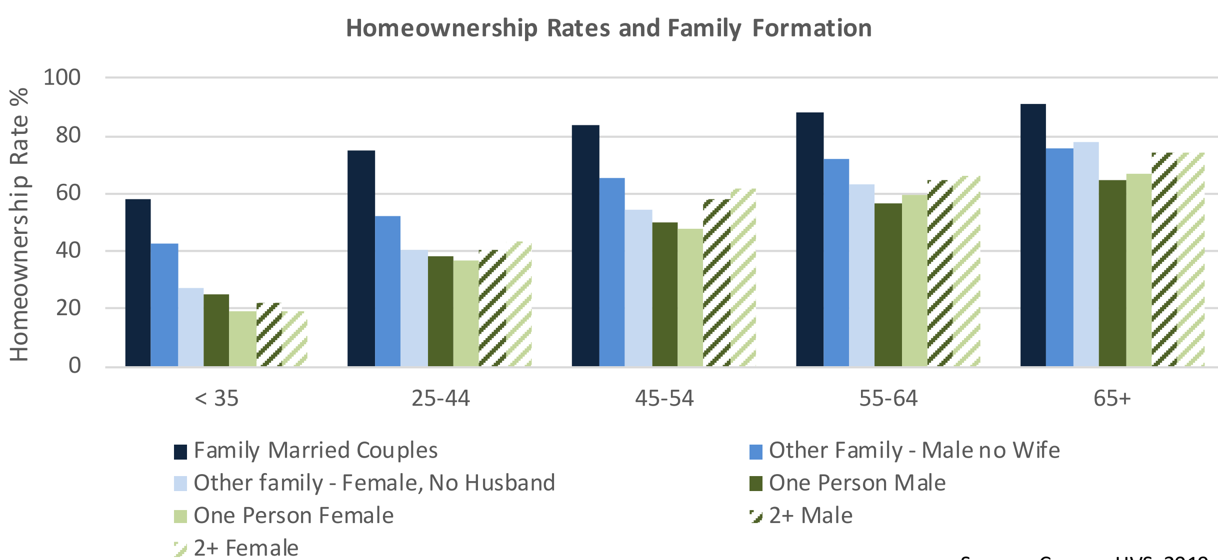
However, in addition to lower homeownership rates in the growing Hispanic population base, a number of other factors will continue to put downward pressure on homeownership rates. First, family formation is a large driver of homeownership trends as married couple households have significantly higher homeownership rates. In fact, by age 55, 88.5% of married couple households own their home. This trend holds for all age groups though as shown in the graph below. Even for those aged less than 35 years, the homeownership rate jumps from around 20% for one-person females and non-family households to nearly 60% for married households[41].

In fact, by age 55, 88.5% of married couple households own their home.

The average age of first-time homebuyers has slowly increased from 29 in 1981 to 33 in 2021.

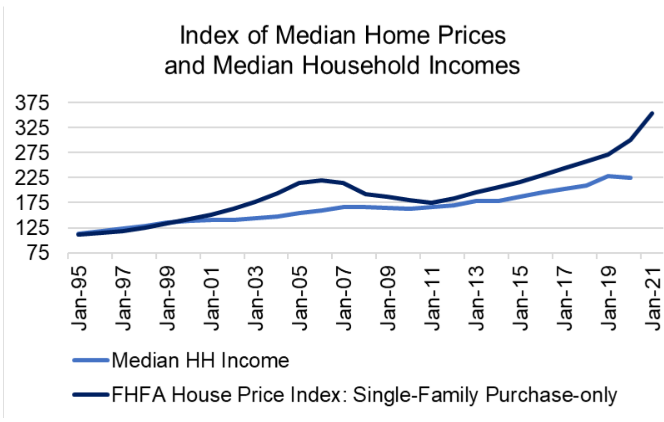
The young population though continues to get married at an older age and have their first child at an older age. In 2000, the average men's age at first marriage was 26.8, and women was 25.1. By 2021, those figures increased to 30.4 and 28.6 respectively[42]. Similarly, the mean age of a woman when she first gave birth was 27.1 in 2020, up from 25.4 in 2010[43]. The average age of first-time homebuyers has also slowly increased from 29 in 1981 to 33 in 2021.

While high inflation can be an incentive to purchase homes to lock in housing costs through a fixed-rate mortgage, it can also be a

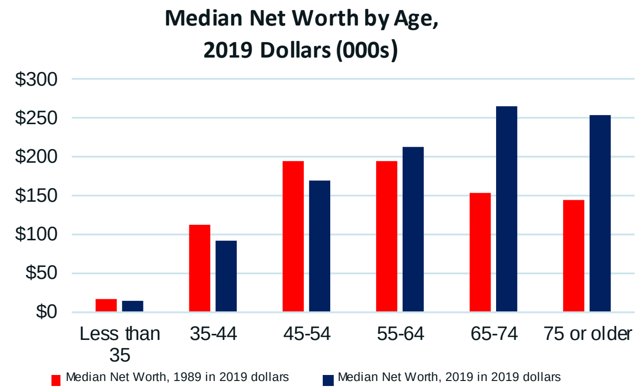


Source: Census, HVS, 2019

deterrent to homeownership if home prices rise faster than incomes, particularly if interest rates are also rising. As discussed previously, this has been the case in many areas of the country in recent years. Overall, home prices have been rising faster than incomes for almost ten years. And while this trend may create no affordability stress on homeowners during a period of declining interest rates, periods of increasing interest rates will further stress home buyers. While still low, mortgage rates spiked from 2.8% in July 2021 to 5.3% by May 2022 as the US began a period of monetary tightening, further exacerbating housing affordability.

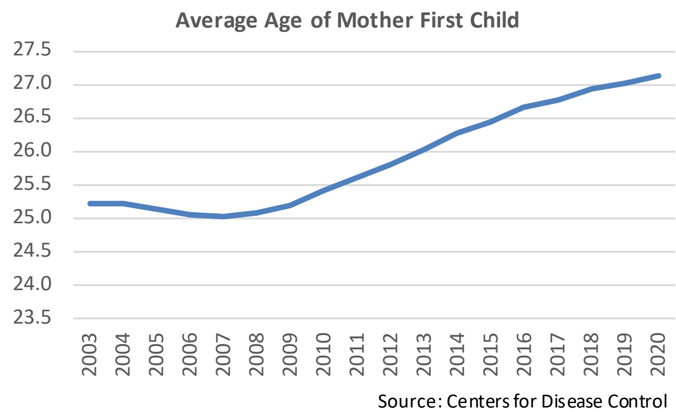


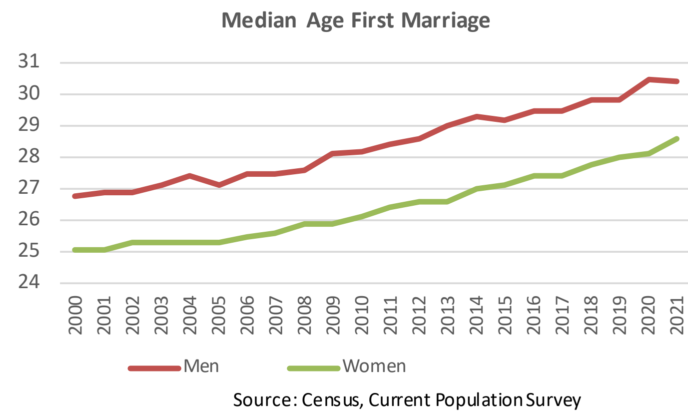
While still low, mortgage rates spiked from 2.8% in July 2021 to 5.3% by May 2022 as the U.S. began a period of monetary tightening



In 2019, the median net worth for U.S. homeowners was 40 times more than that of renters, or $255,000 for homeowners vs. $6,300 for renters

In addition to being able to pay higher mortgage rates, new homebuyers will need to provide a down payment[44]. According to the Federal Reserve's latest Survey of Consumer Finances, in 2019, the median net worth for U.S. homeowners was 40 times more than that of renters, or $255,000 for homeowners vs. $6,300 for renters. Net worth is lower by age, with very little net worth built up for persons who are first-time home buyer age (younger than 35 years old). Furthermore, as shown in the adjacent graph, adjusted for inflation, net worth is lower now as compared to 1989 for the 35-44 (as well as the 45-54) aged group. Tax laws are also not particularly favorable to homeowners, as an estimated less than half of homeowners deduct mortgage interest.



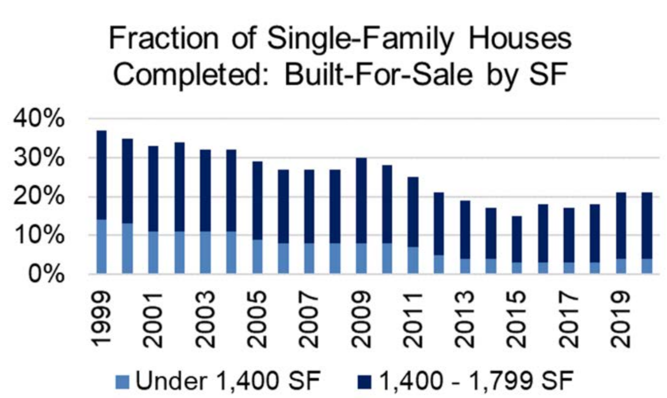


Four-bedroom homes accounted for 44% of new single-family completions in 2020, up from 29% in 1990.

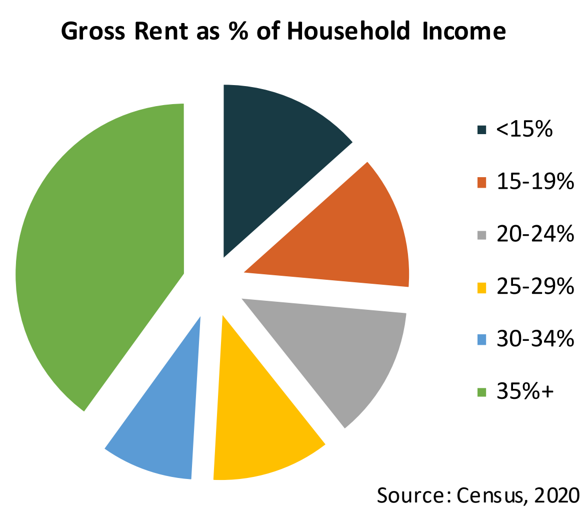
Share of single-family completions **with 4 bedrooms or more:**

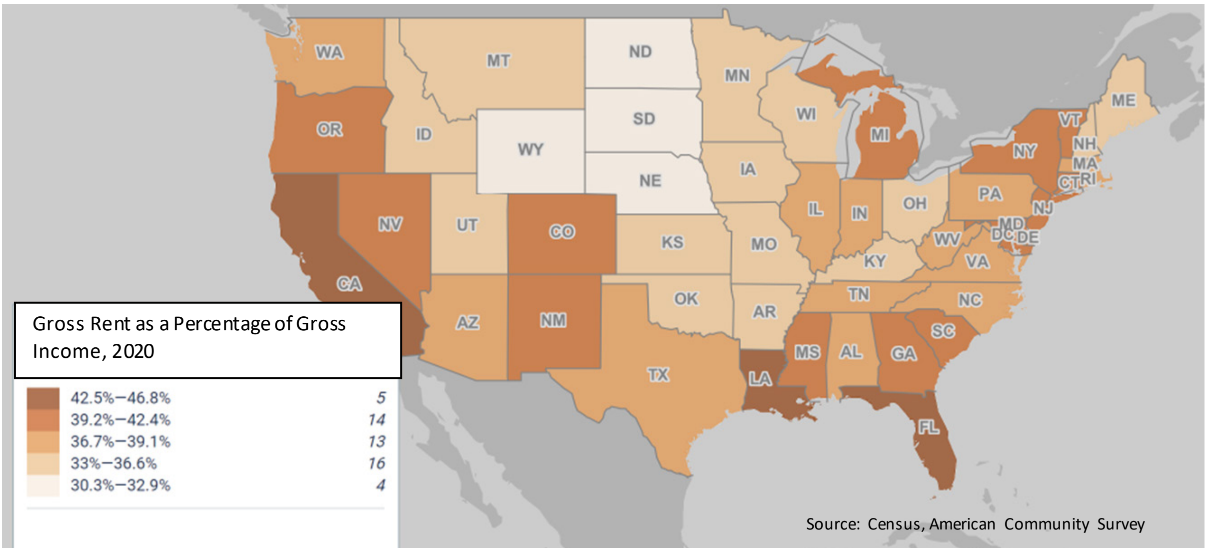
29% in 1990
35% in 2000
35% in 2010
43% in 2019
44% in 2020

Moving from renter to owner is further hindered by a lack of entry-level product in the market. Often referred to as the "Missing Middle[45]," there is an increasing lack of small and inexpensive homes that facilitate the movement from renter to owner. In fact, four-bedroom homes accounted for 44% of new single-family completions in 2020, up from 29% in 1990.



Affordability issues are significant in the rental market as well. Nearly half of renters pay 30% or more of gross income on rent.





Affordability issues are widespread geographically as shown in the map above. In addition to housing costs which tend to be higher on the urban areas of the west and northeast coasts, factors such as land availability, lower educational attainment and incomes, and housing regulation create significant impact on affordability patterns[46]. Affordability will continue to be pressured going forward given that population growth will be dominated by the 65+ age group which has a median income of $47,484, and the Hispanic population which has a median income of $54,632 as compared to the largest segment of the population (and a shrinking part of the population), White, Not Hispanic which has a median income of $70,843.[47]

In summary, U.S. homeownership rates will face significant upward pressure as the population ages into age brackets that have historically had very high homeownership rates. Homeownership will be further supported at least in the near-term by current work-from-home trends, migration to the south which has higher homeownership rates, and inflationary pressures which favor 'locking in' housing costs, particularly if inflation lingers and becomes integrated into consumer expectations[48].

In summary, U.S. homeownership rates will face significant upward pressure as the population ages into age brackets that have historically had very high homeownership rates.

However, demographic growth which will be dominated by the Hispanic population segment which has lower homeownership rates supports higher rentership rates. Numerous barriers exist for first-time homebuyers, including a lack of wealth for down payments, high housing costs (low affordability), a lack of entry-level product and escalating mortgage rates. Family formation rates which are highly correlated with homeownership continue to be pushed back to older ages. Additionally, households in the 25 to 44 age group have shown less propensity over the long run to return to the levels of homeownership that existed pre-subprime mortgage crisis.

Thus, our homeownership model becomes somewhat balanced going forward as shown in the graph below. In the base case, inflation drops to under 3% by the end of 2023, and the percent of the population that is in the high homeownership category (White, Not Hispanic) drops from 59.2% of the population to 53.7%.

Homeownership rates are expected to fall from 65.4% in the first quarter of 2022 to near 64% by the end of 2024 and then remain near that level for the remainder of the forecast period.

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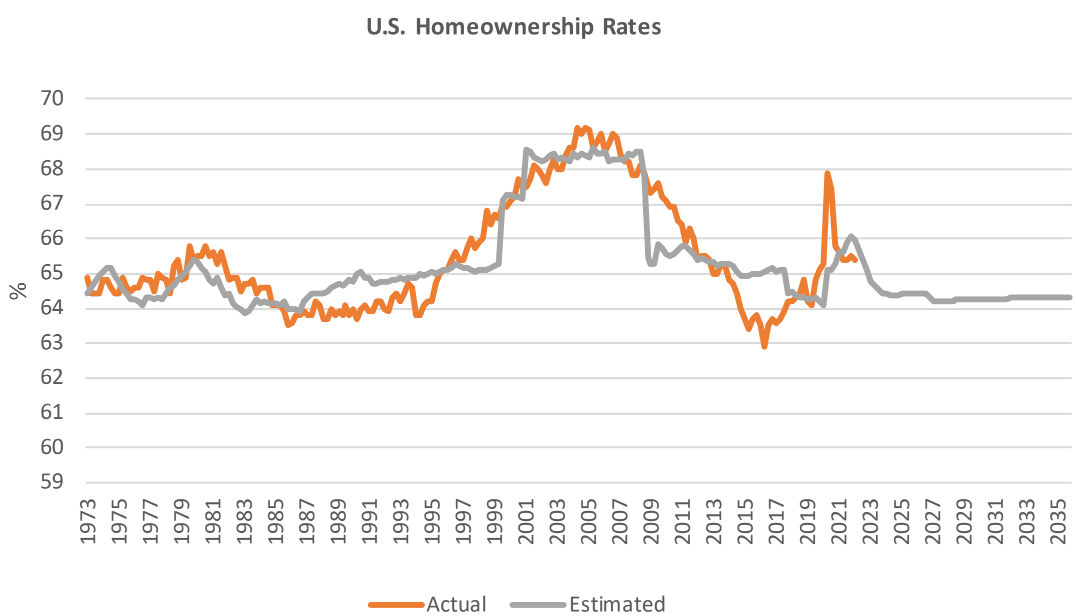


[26] "Economic Depreciation in Property Value: Cross-Sectional Variations and Their Implications on Investments" by Jiro Yoshida, Real Estate Research Institute Working Paper, April 1, 2017. Working papers can be found at ***http://www.reri.org/research/working.cfm***.

[27] Source: U.S. Census American Community Survey, 2020 Table B25007

[28] Source: "40 years of Home Buyer and Seller Data: How Does the Profile Compare?," Lautz, Jessica, National Association of Realtors, November 11, 2021

[29] Source: U.S. Census, American Community Survey 2020, Table B25003 series. Note that Hispanic is deemed by the Census as an ethnicity not a race and thus overlaps with the races in the above graph.

[30] Adjusted R square on the model of 0.774.

[31] ***https://www.kastle.com/safety-wellness/getting-america-back-to-work/***

[32] ***https://www.realtor.com/research/remote-work-2021-homebuyers/***

[33] ***https://www.nar.realtor/newsroom/u-s-homeownership-rate-experiences-largest-annual-increase-on-record-though-black-homeownership-remains-lower-than-decade-ago***

[34] See ***https://www.bloomberg.com/news/articles/2016-07-28/homeownership-rate-in-the-u-s-tumbles-to-the-lowest-since-1965***.

[35] Source: Board of Governors of the Federal Reserve System, Federal Reserve Bank of St. Louis

[36] See ***http://jchs.harvard.edu/sites/jchs.harvard.edu/files/hbtl-06.pdf a Harvard study on housing as a means to build wealth, 2013.***

[37] See ***http://rismedia.com/2016/07/25/home-ownership-still-desirable-for-millennials*** suggesting Millennials would like to own homes but are hampered by student debt and mobility concerns.

[38] See "How do house prices affect consumption? Evidence from micro data" by John Y. Campbella, João F. Coccob, Journal of Monetary Economics, Volume 54, Issue 3, April 2007, Pages 591–621 at ***https://doi.org/10.1016/j.jmoneco.2005.10.016***.

[39] "First-time Buyer Share Declines to 31% in September 2020 But Still Hits 2 Million," Cororaton, Scholastica (Gay), National Association of Realtors, October 27, 2020.

[40] Freddie Mac Home Price Index

[41] It should be noted however, that unmarried couples are becoming a larger percentage of first time sales, rising from a negligible amount in 1981 to 17% of first time buyers in 2021. Source: "40 Years of Homebuyer Data and Seller Data: How Does the Profile Compare?," Lautz, Jessica, National Association of Realtors, November 11, 2021.

[42] Source: Table MS-2. Estimated Median Age at First Marriage: 1890 to present

[43] Source: Centers for Disease Control

[44] Calculated as 6% of purchase price for first time buyers. Source: "Downpayment Expectations & Hurdles to Homeownership," Yun, Lawrence, et. al,. National Association of Realtors, April 2020

[45] ***https://missingmiddlehousing.com/***

[46] "U.S. Barriers to Apartment Construction Index," Hoyt Advisory Services, Dinn Focused Marketing, Inc. and Eigen 10 Advisors, LLC, National Apartment Association, 2019

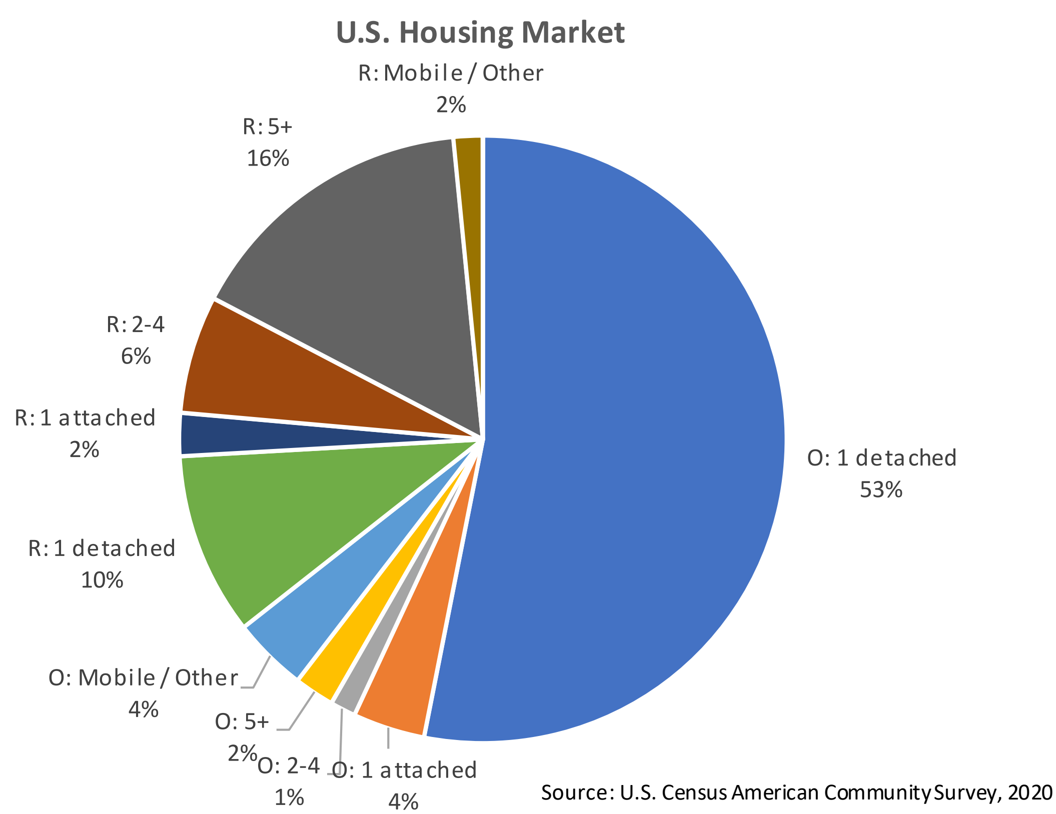
[47] Census, American Community Survey, 2020, Table S1903

[48] As of April 2022, the Federal Reserve Bank of New York Survey of Consumer Expectations shows that inflation expectations remain elevated at 6.2% for the one year ahead rate, and 3.9% for the three-year expectation.

U.S. RENTAL HOUSING DEMAND

We focused next on properties with 5 or more units which are generally of the investment size and quality needed for institutional investors and have provided a large proportion of the needed rental stock, some 16% of the housing market or 44% of the rental market (22.1 million units as of 2020) as shown in the figure below. Full methodology for this forecast is provided in the Methodology Appendix at the back of the report. *The 5+ unit segment of the rental market is the focus of the remainder of the report.*

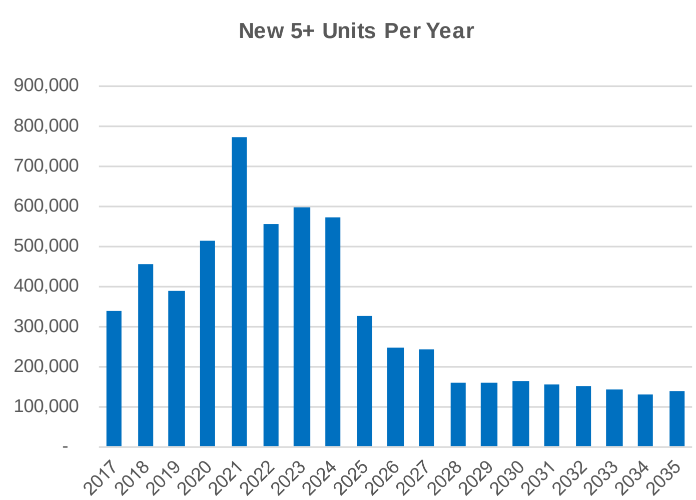
The 5+ segment was further disaggregated to the state and metropolitan market level for all states and 50 select markets throughout the U.S. by a bottoms-up approach of collecting similar data at the state and metropolitan market level. This data aggregated both Census and CoStar® data. In some markets, particularly those that are characterized by significant institutional investment, the private data providers had significantly more robust data than the Census surveys. In other markets, the Census data was more robust. Thus, a combination of data sources was used to estimate total stock at the metro market and state level. This data was then summed at the state level to an estimate for the U.S. and was significantly larger than the Census sample of 19.3 million 5+ units in the U.S. in 2020.

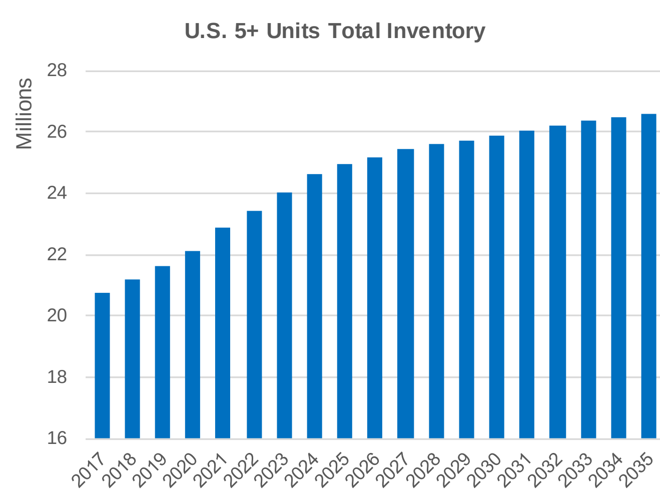


In general, the methodology to forecast demand for 5+ units were adjusted for the following factors:

- Population growth by age group was adjusted by local household size by age group to create household growth by age group.
- Local homeownership rates by age group were applied to households by age group to segregate the total forecast renter population. This calculation included an adjustment to determine the percent of population growth from U.S. vs. international sources and an adjustment to homeownership rates for international immigrants.
- The total renter population was then adjusted for the local percent of occupied housing that is in the 5+ segment, local homelessness rates, a local vacancy allowance to allow for smooth functioning of the rental market without putting significant pressure on rental rates, an adjustment to replace units that are either fully obsolete, damaged by natural disasters, etc. and an adjustment for market size due to sampling (i.e., the larger of Census or CoStar market size data).

Given the above, we model a need for 3.7 million new units through 2035 to meet demand from forecast demographic growth, or an annual average pace of about 266,000 units per year. This does not include a supply deficit that will be discussed in the next section. The significant reduction in units needed from 2026 to 2035 reflects the aging population and assumes that there is little change in the homeownership rate and that immigration trends remain subdued. We run a higher estimate of immigration in the Scenarios section of the report.



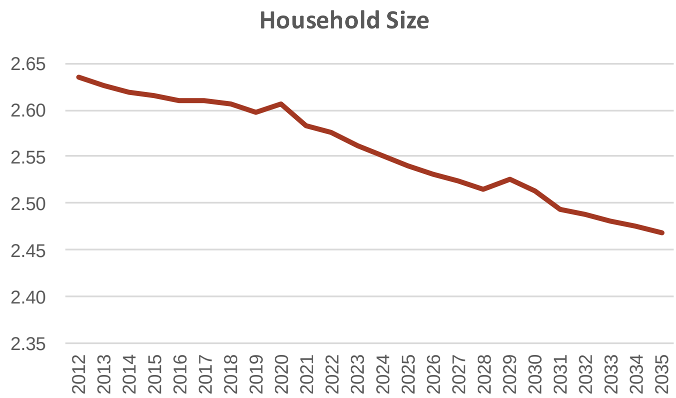


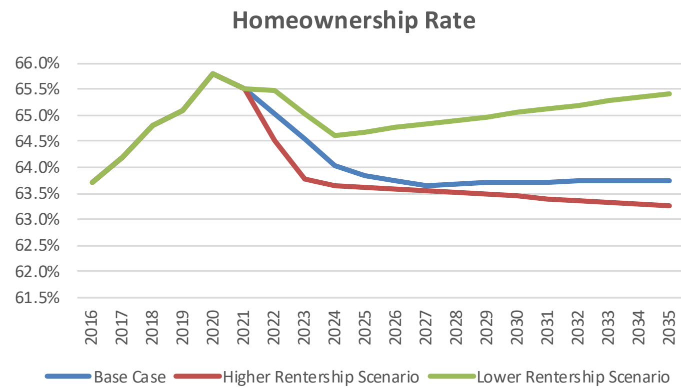
SCENARIOS ANALYSIS

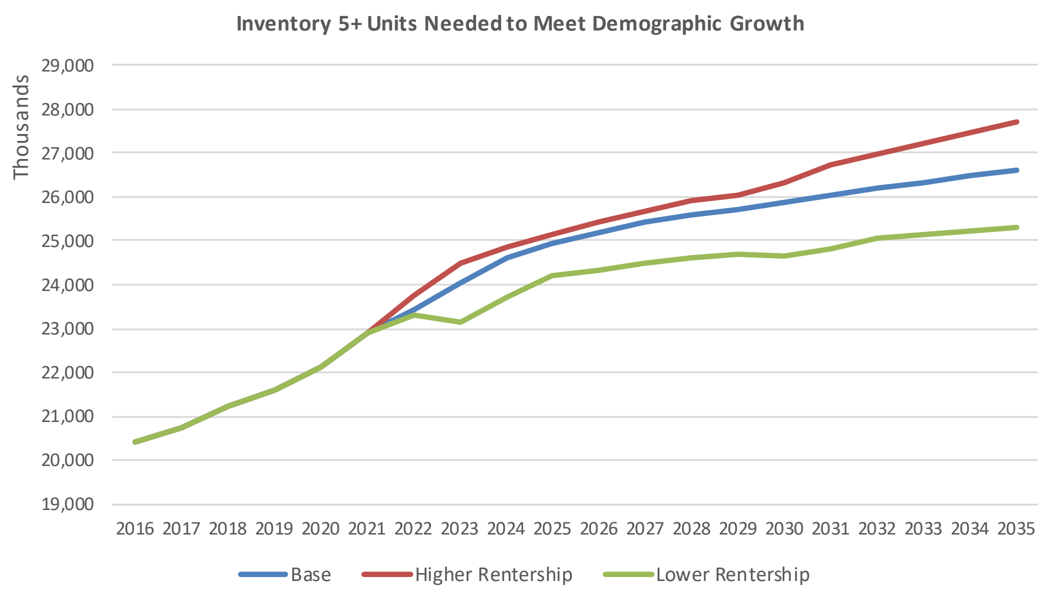
At the national level, **our base case scenario assumes a need for another 3.7 million units to meet demographic growth through 2035, or approximately 266,000 units per year on average.** This scenario is based on the assumption that the U.S. population increases by an average of only 0.4% per year as compared to an average of 0.6% since 2012, reflecting an aging population and immigration of only 562,000 per year on average through 2035 as compared to an average of 877,000 from 2012 to 2019, but only 245,000 in 2021 (reflecting restrictions from the pandemic). Without immigration, the U.S. population increases by only 0.2% per year on average through 2035. In all scenarios, we assume that household size declines due to the aging population and continued delay in family formations which allows household growth to rise faster than population growth.

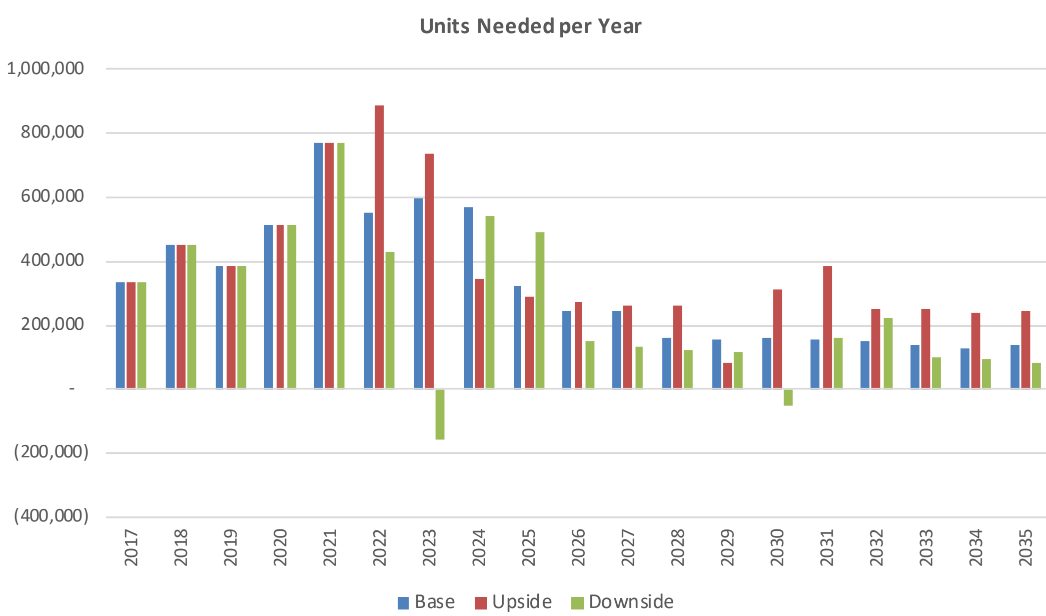
Lower Rentership / High Homeownership (Downside) Scenario: Here we assume that inflation lingers as a result of continuing supply-chain issues from the pandemic and also as a result of ongoing geopolitical stress, reflecting current consumer survey assumptions of inflation dropping to only 6% by the first quarter of 2023 and to 3.9% by the first quarter of 2024. Inflation becomes embedded in consumer expectations and behavior, driving homeownership rates up as buyers attempt to 'lock in' housing costs. The global political environment remains introspective, and immigration rates remain low as in the base case. The aging population puts upward pressure on the homeownership rate. Remote work remains permanently integrated in parts of the workforce that are service oriented, particularly for back-office type of jobs, although pressure lightens somewhat through 2024 as office usage increases from the low levels currently indicated by the Kastle survey. After falling slightly through 2024 due to less inflationary and pandemic pressure, the homeownership rate rises back to 2021 levels (65.4%) by 2035. **The downside scenario results in another 2.4 million units needed to meet demographic growth through 2035, or approximately 175,000 units per year on average.**

Higher Rentership / Strong Immigration (Upside) Scenario: In this scenario, we assume that inflation is temporary and does not become embedded in consumer behavior. People return to the office to a large part by the end of 2024, and immigration returns to closer to the assumptions we used in the last report, averaging about 1.2 million people per year, providing a higher level of minority and younger population base. Homeownership rates are slightly lower than the base case scenario, but this scenario benefits mostly from higher population growth due to strong immigration trends. Population growth increases by 0.6% per year rather than 0.4% in the base case. **This scenario results in total new units needed by 2035 of 4.8 million, or approximately 344,000 units per year on average.**


Household Size
2.65
2.60
2.55
2.50
2.45
2.40
2.35
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035


Homeownership Rate
66.0%
65.5%
65.0%
64.5%
64.0%
63.5%
63.0%
62.5%
62.0%
61.5%
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Base Case
Higher Rentership Scenario
Lower Rentership Scenario


Inventory 5+ Units Needed to Meet Demographic Growth
Thousands
29,000
28,000
27,000
26,000
25,000
24,000
23,000
22,000
21,000
20,000
19,000
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Base
Higher Rentership
Lower Rentership


Units Needed per Year
1,000,000
800,000
600,000
400,000
200,000
-
(200,000)
(400,000)
2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Base
Upside
Downside

HOUSING DEFICIT

Housing deficits can be reviewed from two angles: 1) supply not keeping up with demand and 2) vacancy rates that are too low to allow for a properly functioning market and thus cause excess increases in prices and rents. We first reviewed the housing market as a whole for housing shortages. New housing units needed were estimated based on household growth each year adjusted for the following factors:

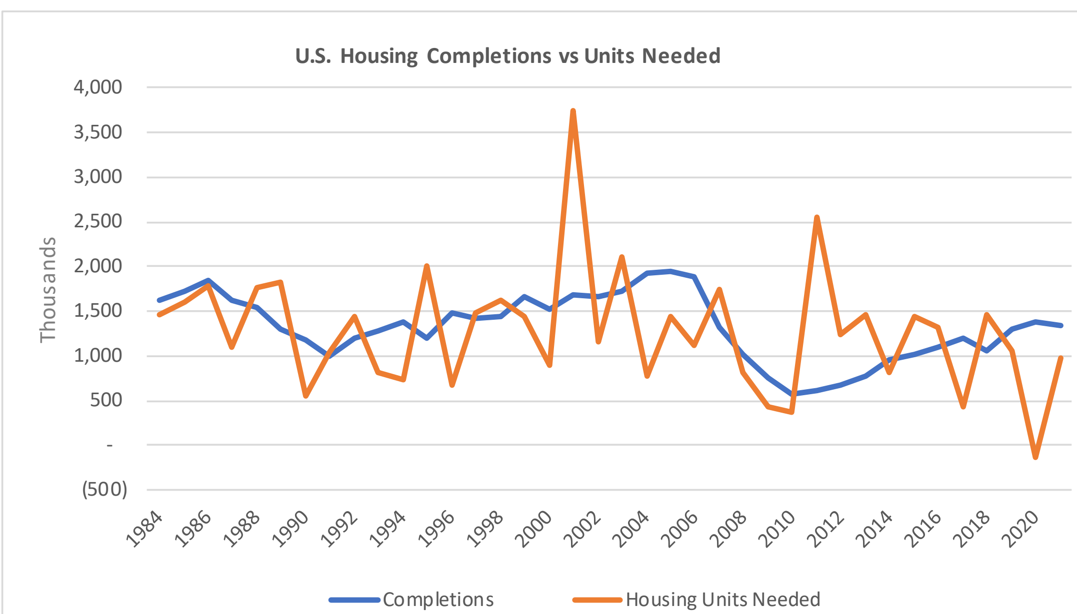
0.2% homelessness rate

2.5% in group quarters

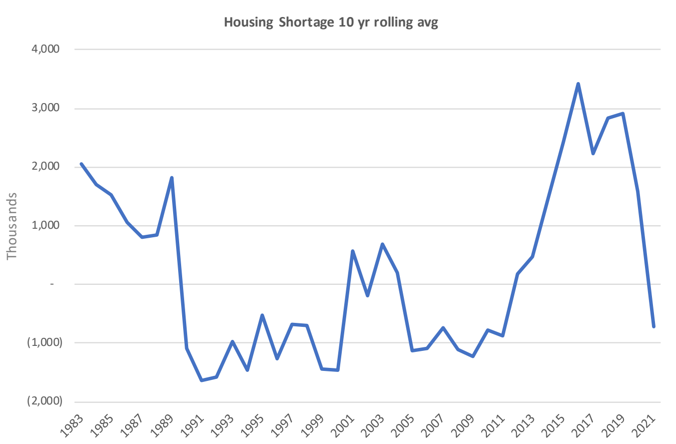
3.8% long-term vacancy, including owned and rented housing

0.4% replacement for annual housing losses due to obsolescence, natural disasters, and such.

The estimated demand was then compared to the number of housing units completed[49] as shown in the graph on the right. Overall, completions generally track demand over the long run. Notably, the construction market was slow to recover after the 2008 subprime crisis. Demand significantly exceeded supply from 2011 to 2014. However, population growth has consistently slowed since that time. This trend amplified in 2020 and 2021 as a result of the pandemic when a significant increase in deaths and reduced immigration resulted in almost no population growth. Meanwhile, new completions, while not back to the levels of the 1990s, have continued to increase.



Excess housing was created in years that completions exceeded household growth as adjusted above, with the reverse creating years of housing shortage. We then created a rolling ten-year sum of the excesses and deficits to track long-term trends in housing supply-demand balance as shown in the graph below.

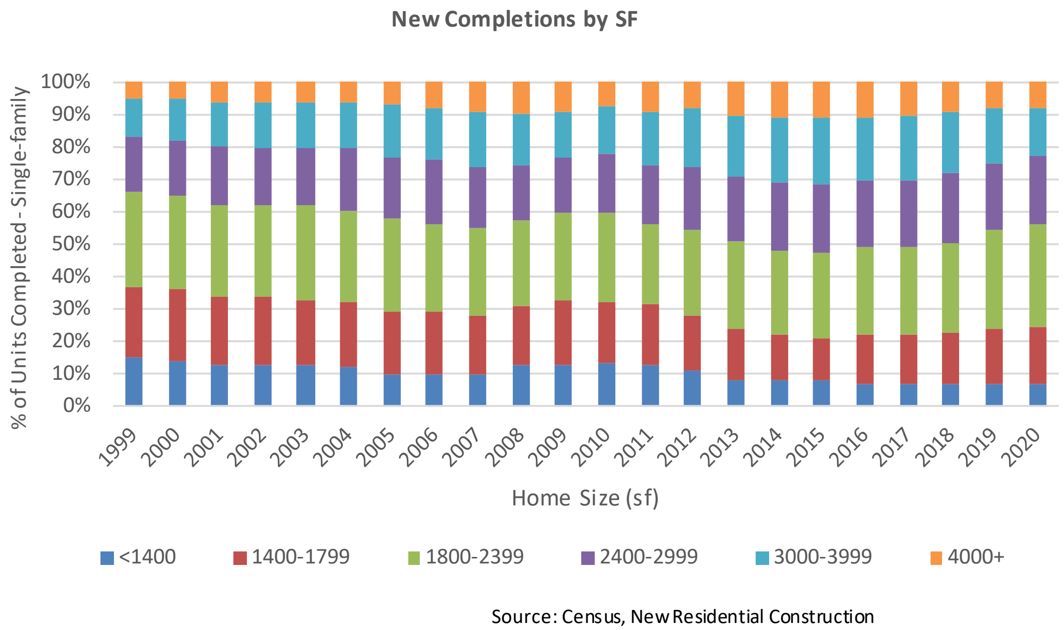


While the slow response of the construction market after the 2008 downturn resulted in a housing shortage of more than 3 million units by 2016, the resulting decline in demand, amplified by the pandemic, should begin to be offset by rising supply.

Despite rising costs, permits (up 3.1% yoy as of April 2022) and starts (up 14.6% yoy as of April 2022) seem to indicate that the construction market will continue to produce more units in the near-term.

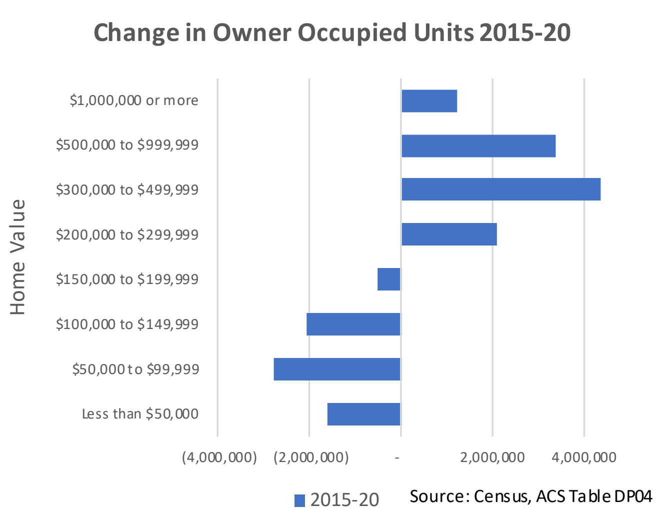
However, housing needs are local and specific to certain price points and characteristics. Most significantly, housing shortages exist specifically for the lower and entry segments of both the owned and the rented segments of the housing market which have been impacted by two trends: 1) new construction tends to focus on the higher price points in the market, and 2) significant price growth that has exceeded income growth over the past few years has reduced the inventory at lower price points. This has created a significant gap in the ability of renters to become homeowners as entry-level properties become less available.

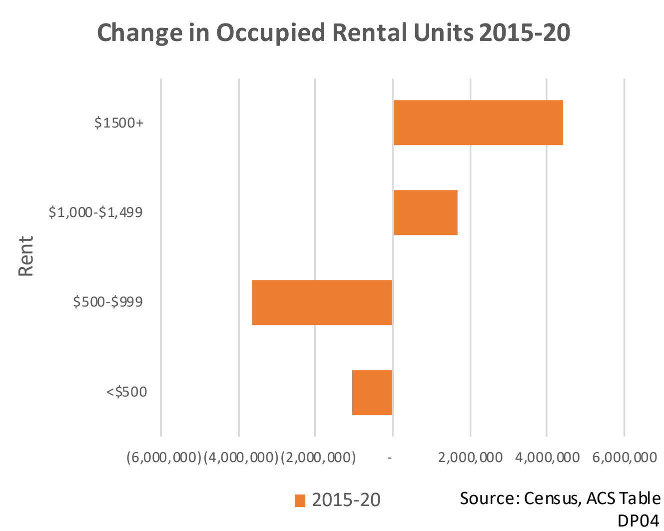
For example, new single-family construction of units less than 1,800 square feet in size are down significantly from the previous decade as shown in the graph below. Furthermore, 33% of contractor built single-family homes were larger than 3,000 square feet in 2000. In municipalities with fixed development fees that are not prorated by size, larger more expensive units may be driven by local policy and fee structures. At the same time, we are seeing more micro units in the less affordable markets, simply because the rents per square foot have risen significantly, as households attempt to find affordable options.



The below graphs show the results of these impacts: 6.95 million owned housing units priced less than $200,000 were lost between 2015 to 2020, as were 4.7 million rental units with rents less than $1,000 per month.

These housing segments are critical to supporting the underserved population as well as to provide a ladder to move from renter to owner, a significant step to building household net worth.

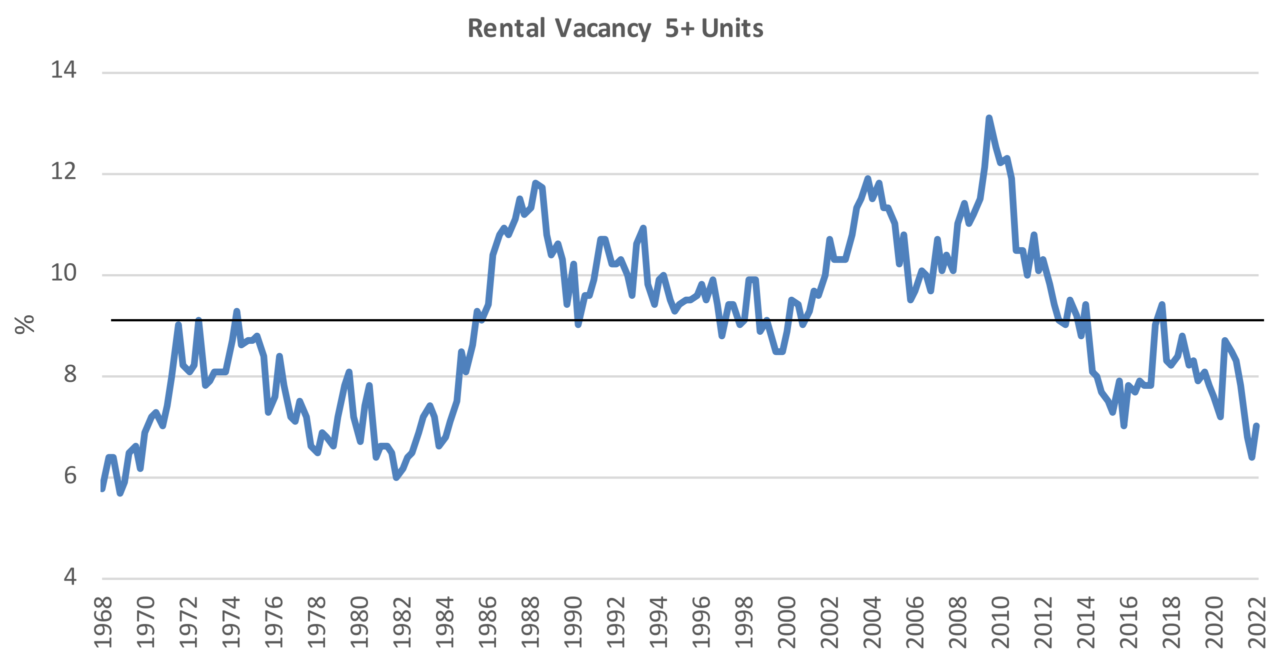




Reviewing the vacancy trends specifically in the 5+ rental market, we note that units that are held for sale or rent may be temporarily vacant when they are in transition between tenants or buyer and seller. Thus, a certain vacancy rate always persists in the market to allow ample time for occupant transitions. Short of inventory, a lack of vacant units causes prices and rental rates to rise rapidly as demand exceeds supply. Rapidly rising housing costs create affordability issues, if they are rising faster than income levels relative to the costs, including mortgage rate increases as part of the equation. A 'natural' vacancy rate is one that allows for proper functioning of a market and is generally accompanied by moderate price or rental increases.

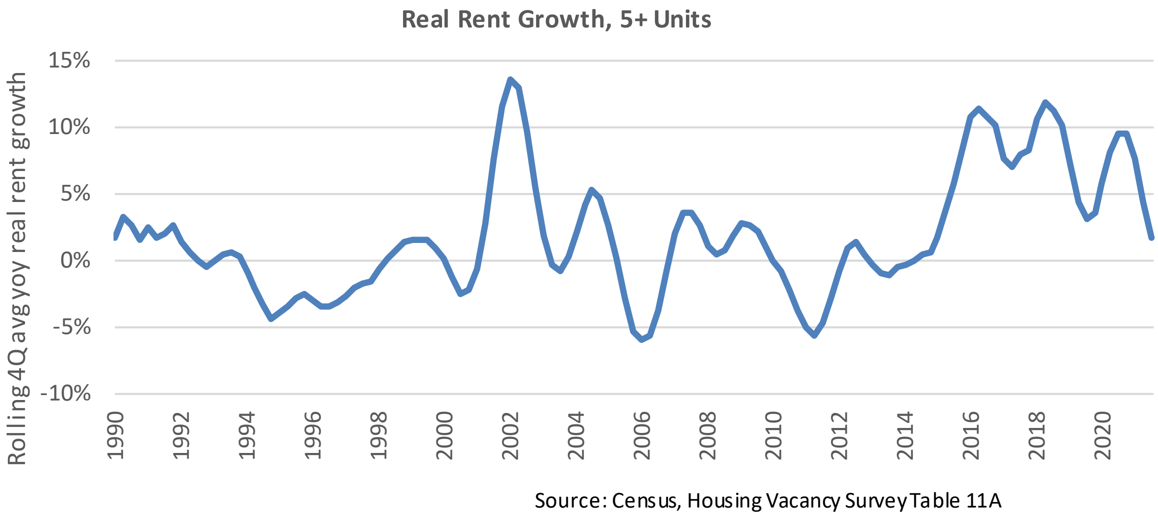
In addition to the above vacancy types, the U.S. Census tracks other types of housing vacancies such as vacation homes that are temporarily occupied by persons who usually live elsewhere. Vacation units are counted by the Census as vacant, while the primary residence is counted as occupied. Housing units intended for only seasonal use such as those at some resort areas or for migratory housing, are also counted as vacant. All in all, the Census tracks seven different types of housing vacancies as well as vacancy rates for owner vs. renter occupied housing.

As shown in the graph below, the U.S. rental vacancy rate for properties with 5 or more units fell to a 39 year low of 6.4% in the fourth quarter of 2021, rising to 7.0% in the first quarter of 2022, well below the long-term average of 9.0%.



Source: Census, Housing Vacancy Survey

Consequently, rental rates began rising rapidly in 2016. Even after adjusting for inflation, rental rates increased by an annual average of 7.5% per year over the past seven years. Vacancy rates during the 2003 to 2015 time period that were not accompanied by rapidly rising rents averaged 10.3%.



Given the inventory of 5+ apartment units in 2021 of 22.9 million units, **an additional inventory of 447,000 to 747,000 units or an average of approximately 600,000 units would be needed to return the market to vacancy levels that allow a more frictionless transaction market with more moderate rental rate increases.**

[49] Census, New Privately-Owned Housing Units Completed: Total Units, Thousands of Units, Annual, Seasonally Adjusted Annual Rate, Federal Reserve Bank of St. Louis

THE SINGLE-FAMILY RENTAL MARKET

Single-family housing is the largest segment of the housing market, accounting for 69% of the housing market or 80.5 million units[50] and valued at $23 trillion[51]. After the housing crisis of 2008, many formerly owner-occupied units became part of the rental stock. In fact, several investment funds were created to own and operate single-family housing units as part of the rental stock. While institutional ownership of single-family rentals (SFR) has increased tremendously over the past decade, the market remains highly fragmented. Of the 80.5 million single-family housing units, the one-unit rental market includes 14.6 million occupied housing units, 12.0 million of which are single-family detached and 2.6 million are single-family attached units[52], in whole estimated to generate $18 billion in rent per year[53] and house 44.6 million people[54]. Of the 12 million detached rentals, 2.7 million receive some sort of rent reduction[55]. While this paper will focus on the one-unit part of the market, the two-to-four-unit segment of the rental market includes another 7.7 million units. Combined, these two segments are approximately equal in size to the institutional 5+ unit rental market.

Nearly 300,000 single-family homes are now owned as rental units by institutional investors, equivalent to about 2% of the total SFR market, and up from around 200,000 in 2017. Thus, the market continues to be highly fragmented as 85% of SFR investors own less than 10 units[56], and an estimated 45% own only one unit[57]. A list of the largest institutional investors is listed below. The two largest, Invitation Homes (INVH) and American Homes 4 Rent (AMH) are publicly listed REITs. Tricon completed an IPO in October 2021, bringing the total units managed by single-family REITs to 133,658[58].

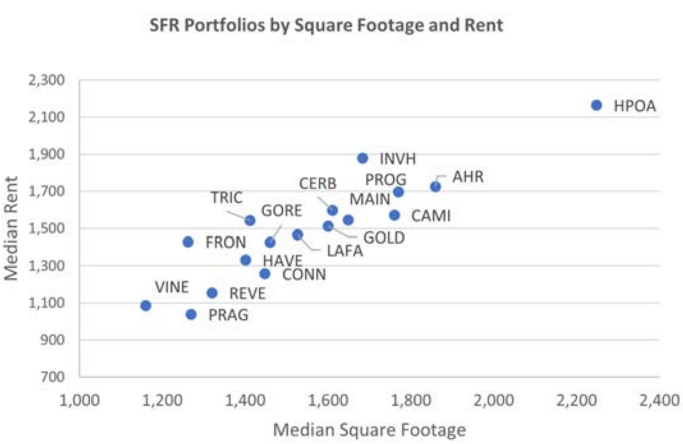
Company	Median Purchase Year	Number of Homes (000)	Median Home Vintage Yr	Median SF	Median Rent	Median AVM ($000)
Invitation Homes	2013	76.0	1994	1,683	$1,879	$288
American Homes 4 Rent	2013	48.6	2003	1,859	$1,725	$249
Progress Residential	2016	32.8	2003	1,770	$1,697	$246
Cerberus Capital Mgmt	2018	24.2	1991	1,611	$1,596	$209
Main Street Renewal	2018	23.0	1996	1,649	$1,546	$202
Tricon American Homes	2013	18.6	1998	1,412	$1,543	$215
Home Partners of America	2018	14.4	2000	2,248	$2,164	$341
Front Yard Residential	2016	11.8	1985	1,262	$1,430	$177
Connorex-Lucinda	2017	8.2	1972	1,448	$1,258	$136
Vinebrook Homes	2018	7.0	1957	1,160	$1,086	$94
Gorelick Brothers Capital	2015	2.5	1983	1,460	$1,427	$183
Camillo Properties	2015	1.6	2015	1,760	$1,571	$193
Lafayette Real Estate	2014	1.5	1988	1,526	$1,466	$189
Golden Treen Insite Ptnrs	2016	1.2	1999	1,600	$1,512	$201
Havenbrook Homes	2014	1.1	1973	1,401	$1,331	$155
Prager Property Mgmt	2017	1.1	1969	1,270	$1,039	$96
Reven Housing Reit	2015	0.8	1965	1,320	$1,155	$125
Other	2014	1.9	1974	1,030	$1,390	$189
Total / Avg	**2015**	**276.3**	**1998**	**1,624**	**$1,682**	**$240**

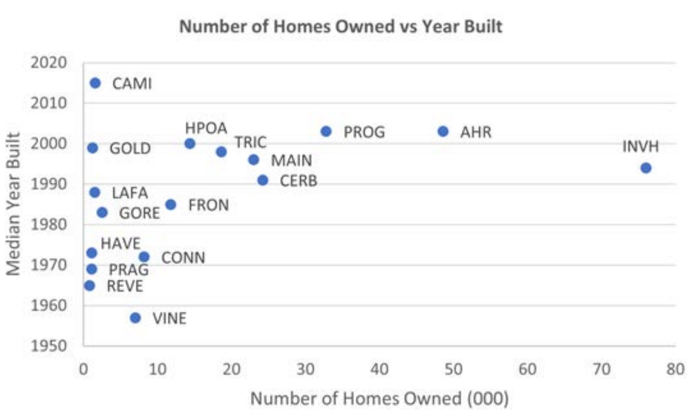
Source: Amherst, March 2021, data as of Q42020. Shading indicates high (dark) to low (white).

Invitation Homes, originally funded by Blackstone, was the first to purchase a distressed SFR portfolio in 2012 after the subprime crisis. Since then, more than 17 institutional firms have invested in excess of $66 billion in SFR. Institutional owner SFR portfolios vary in size and value as shown in the following graphs.

Nearly 300,000 single-family homes are now owned as rental units by institutional investors and up from around 200,000 in 2017.

At one end of the spectrum, Vinebrook, Prager Property Management, and Reven Housing Reit own some of the oldest and smallest properties in the data sample which also allows them to offer some of the lowest rents, averaging around $1,000 per month. As mentioned previously in the report, this is a critical price point, below which the U.S. housing market has shrinking inventory. At the other end of the spectrum, Home Partners of America stands out with larger and pricier homes than its competitors, and is also one of the newer portfolios, with average home vintage year of 2000.

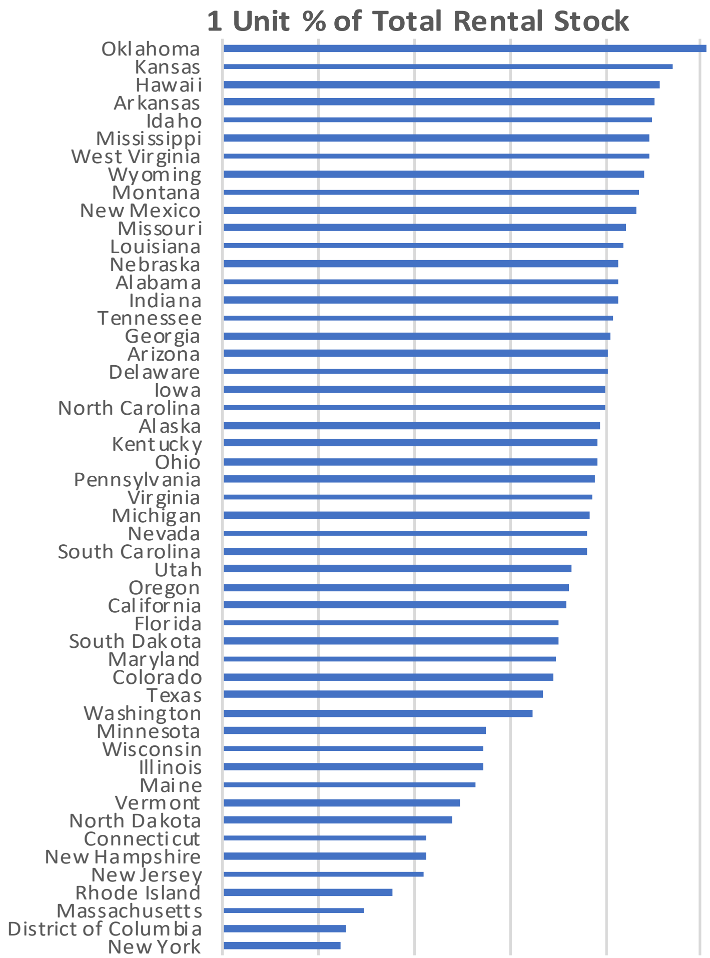




SFR is the largest rental segment in many states. More than half of the total rental stock is in single unit (detached and attached) rentals in Oklahoma, and more than 40% of the rental stock in another 16 states. These states tend to have an abundance of relatively inexpensive land. However, in terms of the number of one-unit housing that has been built since 2010, the largest states generally top the rankings. Nine states account for more than half of new one-unit rentals built since 2010.

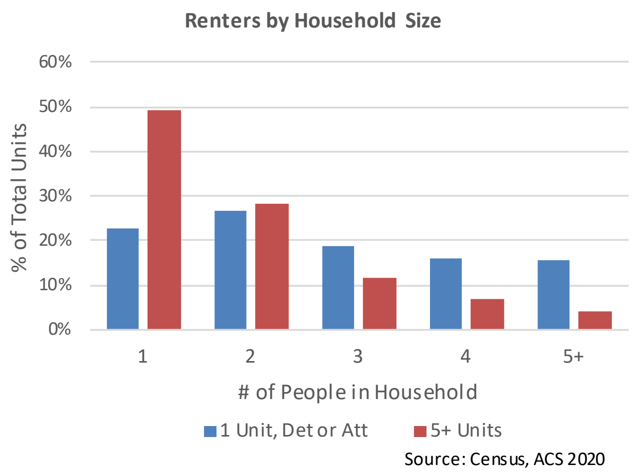
State	1 Unit Rentals Built 2010 or later	Cumulative % of Total	% of Rental Market Built Since 2010
Texas	84,959	16%	19%
California	47,456	24%	19%
Florida	40,046	32%	21%
North Carolina	30,734	37%	23%
Georgia	23,397	41%	23%
Washington	18,946	45%	17%
Virginia	15,392	48%	19%
Arizona	15,386	51%	26%
Tennessee	15,208	53%	20%
Pennsylvania	14,098	56%	22%
United States	**546,426**		**19%**

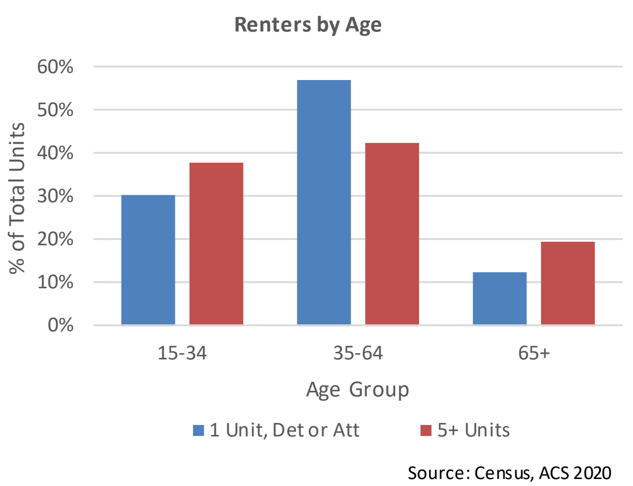
*Includes detached and attached units
Source: US Census American Community Survey, 2020

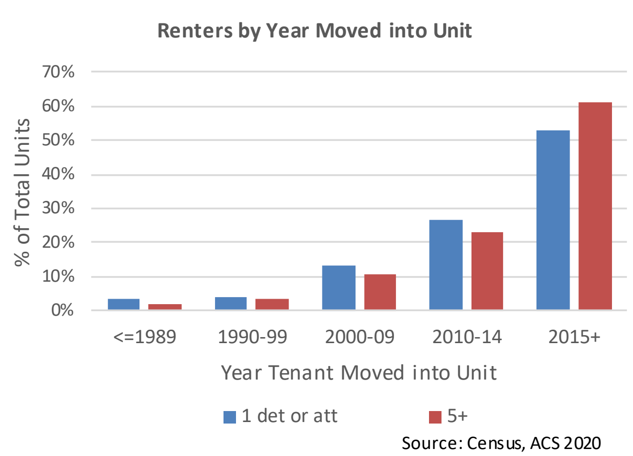


Institutional owners have a higher ownership concentration in the southern half of the country with limited exposure in high-cost coastal locations. One key factor in the establishment of SFR as an asset class has been the ability to reach minimum concentration scale thresholds for the efficient management of units. Because of the need for scale, much of this asset class is clustered in markets hit hard by the housing crisis, where rents relative to acquisition costs were attractive. Recent interest rate increases are likely to put some pressure on investors who are focused on leveraged returns which may be good news for homebuyers in markets with institutional investor concentrations. The need for scale has also driven multiple mergers and acquisitions over the years. The below map shows an example of markets which have high concentrations of institutional owners.[59]

Top Markets – SFR Institutional Portfolios
800 - 500 properties
1501 - 2,500 properties
2,501 - 3,500 properties
3,501+ properties
Source: Amherst Pierpoint, April 2021







Tenants in SFR[60] properties differ from tenants in 5+ unit properties.

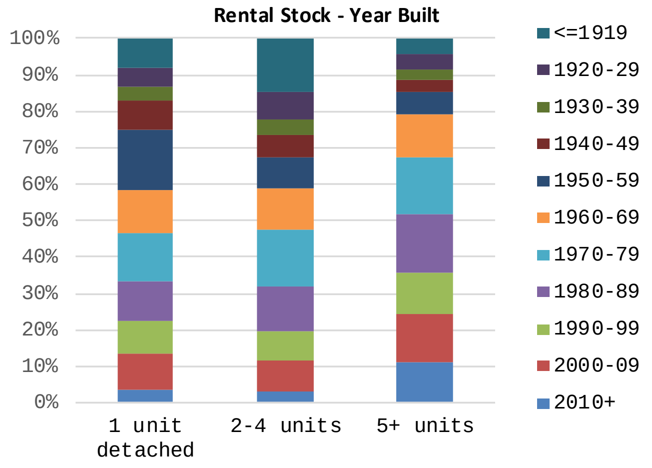
First, SFR households tend to be larger. Forty nine percent of tenants in properties with 5 or more units are one-person households, whereas only 23% of SFR households are one-person. Thirty two percent of SFR households are larger than three people as compared to only 11% for 5+ properties.

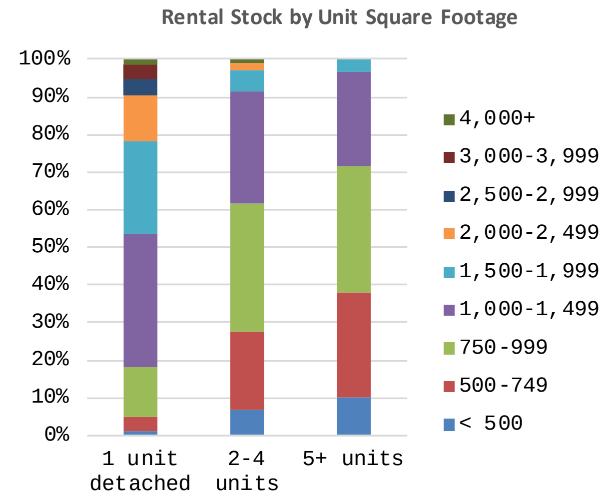
Tenants in SFR tend to be older. In fact, more than 50% of SFR households have a head of household in the 35 to 64 year age group. SFR attract fewer renters in both the 15 to 34 age group as well as in the 65+ age group.

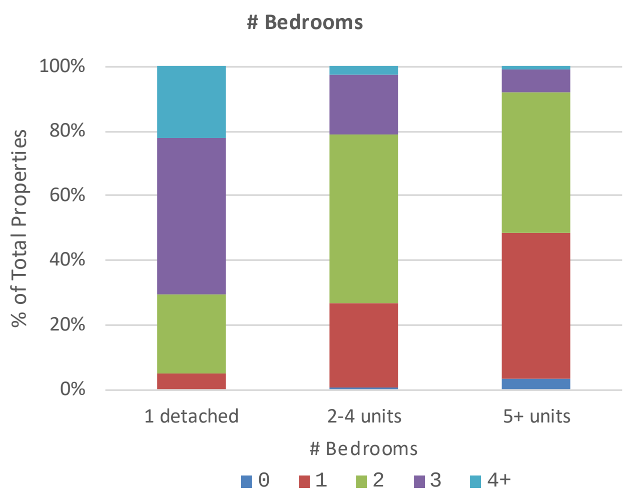
SFR tenants stay in the residence slightly longer. As of 2020, slightly more than half of SFR households had moved into their home since 2015 as compared to 61% of tenants in 5+ unit properties.

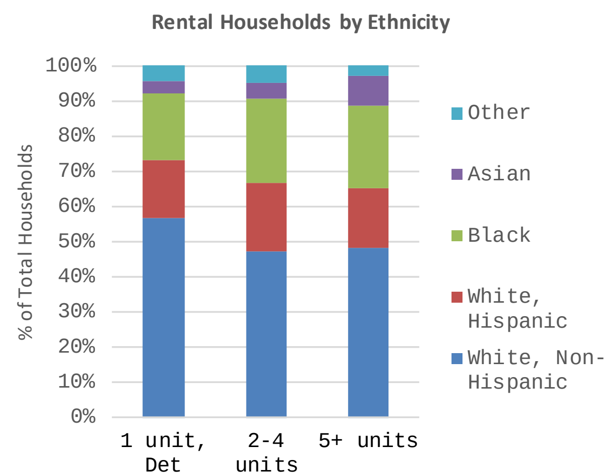
The following page shows other variances. SFR properties are generally larger with 3 bedroom the most common compared to 1 to 2 bedrooms for 5+ units. SFR average rents were $935 in 2019, similar to mid-size (5-19 unit) apartment rents.

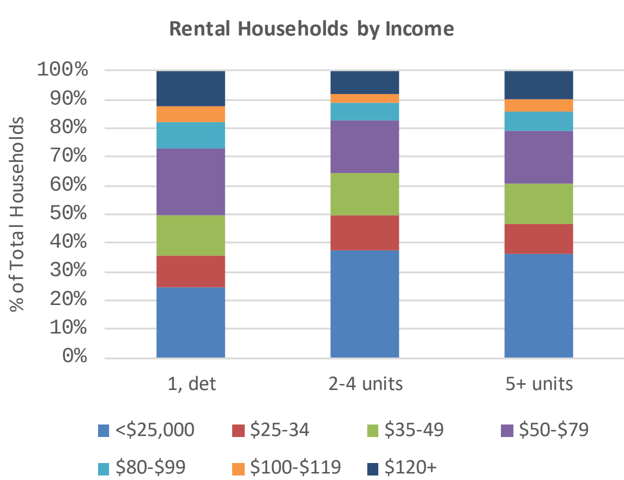
SFR households have a slightly higher percentage of White, non-Hispanic and also higher median household incomes ($50,000 for SFR as compared to $31,500-$41,500 for 5+ units). Education increases with property size (23% bachelors or higher in 1 unit detached compared to 41% for properties with 50+ units. Conversely, 79% of SFR are in good school districts compared to 68% for 5+. 53% of SFR households moved into their house from another house (usually a rental) rather than from an apartment.

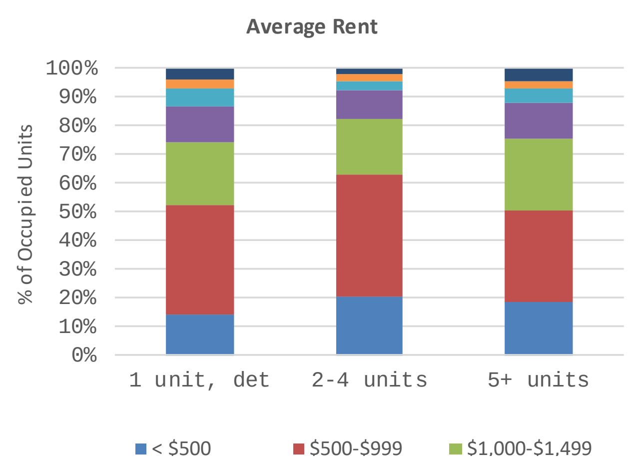






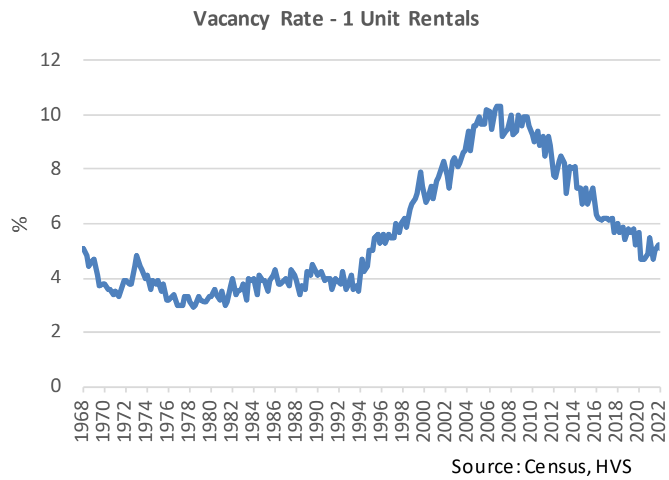




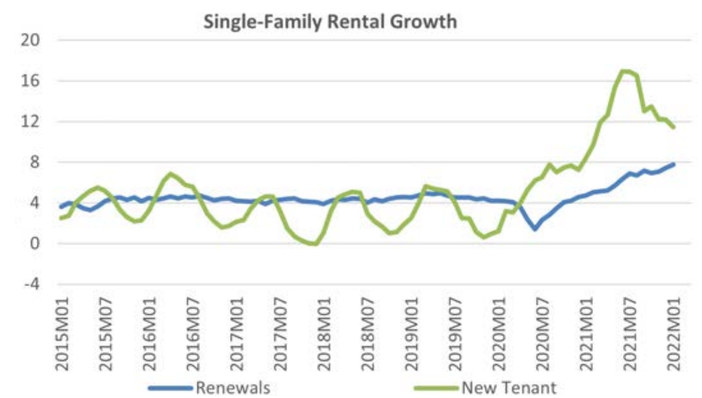


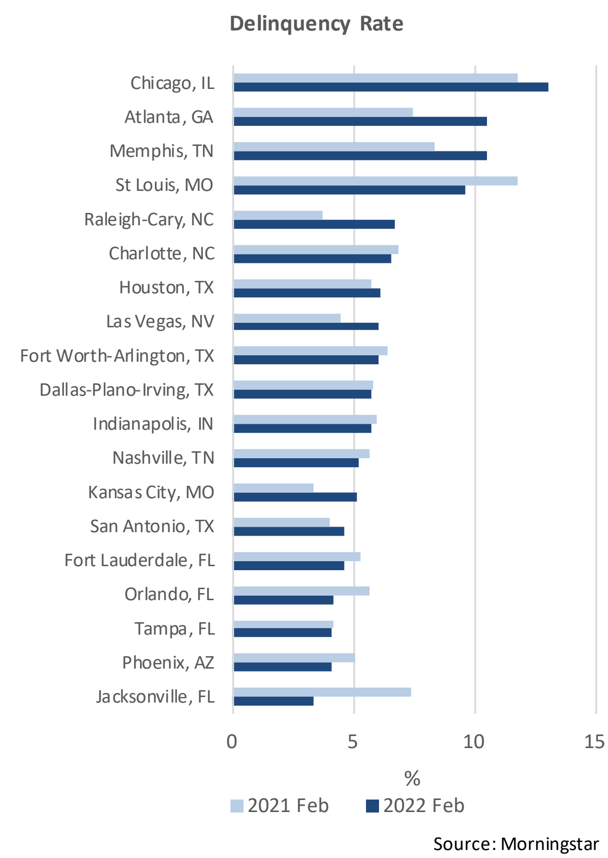
Census, Housing Survey Interactive Tables, 2019

One unit vacancy rates as reported by the U.S. Census continued to decline through the pandemic, reaching a twenty-seven year low of 5.0% in the third quarter of 2021 and remaining near that level at 5.1% as of the first quarter of 2022.

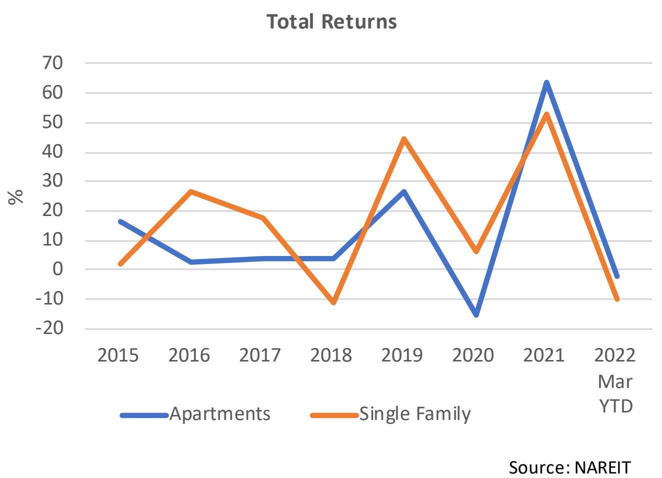


Morningstar data tracks 39 single-borrower securitized loans, seasoned at least a year, including 129,000 properties. Vacancy rates on this portfolio remain low at 3.4% in February 2021, with retention rates at 86.9%[61]. Consequently, rental growth remains strong at 7.0% on average in February 2022. Rental growth for new tenants is higher, at 11.5% as of January. Regionally, SFR rental growth as of January 2022 is highest in Phoenix (+10.0%), followed by Las Vegas, Atlanta, Tampa, Jacksonville, Nashville, and Charlotte where rents are up by over 7% yoy.

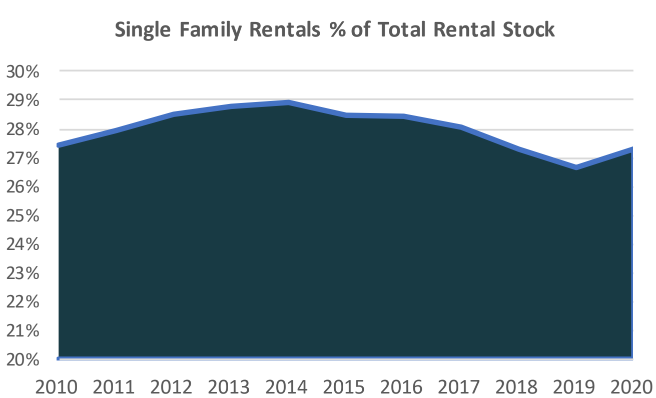


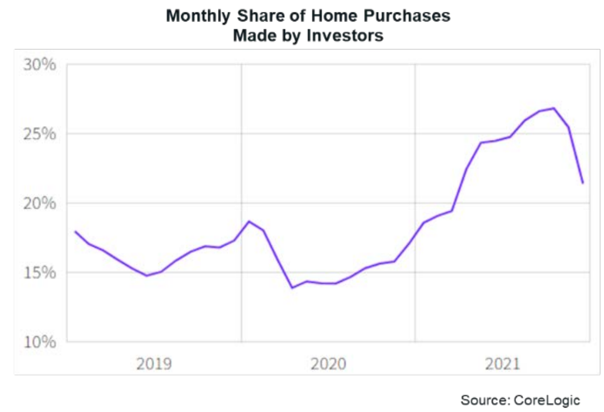


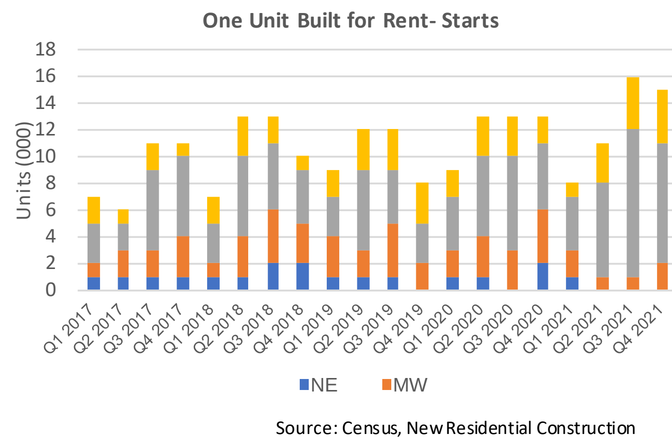
As a result of the pandemic, average tenant delinquency increased dramatically over the past 22 months, averaging 7.0% in February 2022. Highest tenant delinquency rates by major market are in Chicago, Atlanta, Memphis, and St. Louis. Loan 60+ day delinquencies remain low at 3.6% in February 2022 as compared to 2.85% in April 2020[62].

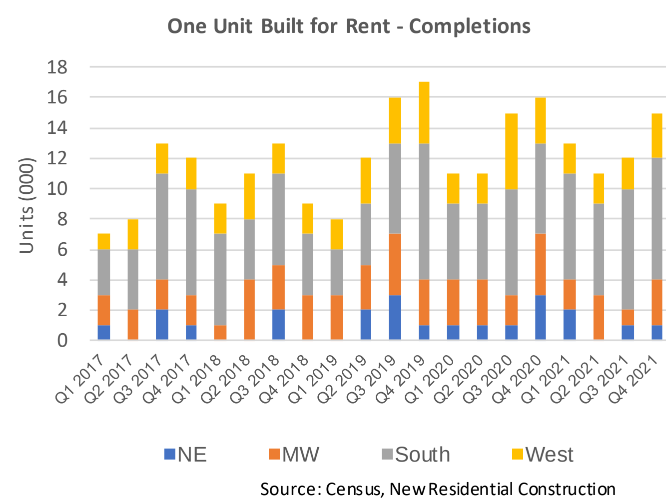


The NAREIT single-family rental index includes two REITS: Invitation Homes and American Homes 4 Rent. Single-family REIT performance has outperformed apartments since the single-family index began in 2015, with an average total return of 19.7% as compared to 14.5% for apartments for the seven year period ending 2021[63]. Dividend yields as of March 2022 average 2.06% for SFR and 2.53% for apartments.









While institutional ownership of SFR has grown considerably over the past seven years, ownership remains highly fragmented and the SFR market overall has not increased as a component of the larger housing market as

shown in the graph above.
The institutional segment of the market is expected to continue increasing its market share as estimates as high as 25% to 33% of recent home purchases are estimated to be made by investors (including small investors).

Build for rent (BFR) starts increased in the second half of 2021 to record high numbers. Starts are highly concentrated in the South particularly over the past four quarters. BFR completions follow a similar pattern.

Overall, the SFR market has a large market cap and ample opportunity to become further institutionalized. Other housing investors are increasingly investing in this sector as part of a multi-pronged housing strategy that includes other components of the housing market such as apartments or single-family homebuilding. For example, large homebuilders such as Toll Brothers, Pulte and Lennar Homes have formed joint ventures with financial partners and SFR operators to build built-for-rent (BFR) properties.

We expect that SFR will continue to be a viable rental choice, especially for families who require more bedrooms, something lacking in typical multifamily. High home price appreciation could incentivize some of the existing SFR units to be sold and converted back to owner-occupied housing. Additionally, more rental demand is coming from smaller households. For this reason, we do not expect the SFR units to increase as a percentage of the rental stock overall over the long run.

[50] Excludes group quarters such as dormitories, senior housing, jails, and such. Census American Community Survey, 2020.

[51] U.S. Census American Community Survey, Table B25080, 2020

[52] U.S. Census American Community Survey, Table B25032, 2020; single-family attached housing units are separated by a ground-to-roof wall, are not stacked vertically, and have separate heating systems and utility meters.

[53] U.S. Census American Community Survey, Table B25066, 2020

[54] U.S. Census American Community Survey, Table B25033, 2020

[55] U.S. Census Housing Survey, Interactive Tables, 2019

[56] "A primer, The market in single-family rental debt," Fisher, Mary Beth, Amherst Pierpoint, April 2021.

[57] "GSE Financing of Single-Family Rentals, What Have We Learned from the Invitation Homes Deal?," Goodman Laurie and Karan Kaul, Urban Institute, May 2017.

[58] NAREIT May 2022

[59] "A primer, The market in single-family rental debt," Fisher, Mary Beth, Amherst Pierpont, April 2021. Map represents the markets with the highest concentration of Kroll Bond Rating Agency-rated SFR securitizations which includes 88,246 properties in total.

[60] On this data set, SFR includes one unit attached as well as one unit detached properties. Source: Census American Community Survey 2020 Tables B25129, B25124 and B25125.

[61] "Single-Family Rental Research-Performance Summary Covering All DBRS Morningstar-Rated Securitizations," Jadhav, Rohit, et. al., Morningstar DBRS, March 2022.

[62] "Single-Family Rental Research-Performance Summary Covering All DBRS Morningstar-Rated Securitizations," Jadhav, Rohit, et. al., Morningstar DBRS, March 2022.

[63] NAREIT REIT Watch April 2022

STATE KEY ISSUES

- More than 1.5 million new rental units will be needed by 2035 in just three states: Texas, Florida, and California. These three states account for 40% of net new demand needed in the forecast horizon. Approximately 371,000 more units will be needed in North Carolina and Arizona accounting for another 10% of the 3.7 million total units needed to meet demographic demand by 2035.

- The following states are expected to grow by 30% or more by 2035, at an annual pace of growth of 2% per year on average or almost twice the 1.1% pa growth expected for the U.S. on average: Nevada, Idaho, Arizona, Florida, Utah, North Carolina, and South Carolina.

- Consistent with historic trends, these high growth states tend to be relatively lower-cost locations than the prime coastal locations, often with growing job bases and/or high quality of life locations in the southern and western regions of the U.S.

- These trends are fairly consistent with historic patterns. Texas, Florida, and California added 1.2 million new apartments with 5 or more units from 2011 to 2021. Another 756,000 units were added in six states: North Carolina, Washington, Georgia, Virginia, Colorado, and New Jersey. Combined, the above nine states accounted for 57% of the 3.5 million new units added over the past ten years.

- At least one in five households are 65 years or older in 28 states, with high concentrations particularly in the South, Midwest, and Northeast. In Florida and Pennsylvania, one in four households are 65+, closely followed by New Mexico, Connecticut, Ohio, Michigan, New York, and Arizona. While this age cohort has a high homeownership rate, it still accounts for 16% of all renters, and will account for a large part of rental growth in a number of low-growth states. Additionally, the 55+ population is larger than the population younger than 35 years in 37 states.

- International immigration is assumed to account for 42% of all new U.S. population growth from 2021 to 2035. Most dependent on international immigration for growth are several generally slow-growth states which include Alaska, Connecticut, Hawaii, Illinois, Massachusetts, Michigan, Mississippi, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont and West Virginia. These states are particularly susceptible to changing immigration policies.

More than 1.5 million new rental units will be needed by 2035 in just three states: Texas, Florida, and California.

- Domestic migration is also an important source of growth for several states. While remote working trends have yet to fully play out, recent trends suggest that secondary cities with high quality of life attributes are the beneficiaries of this trend, notably, several Mountain and Northwest states recently.

- The propensity to rent is and has always been higher in high-growth and high-cost states where housing affordability constraints ownership demand, e.g., California, D.C., and New York as well as Nevada, have homeownership rates less than 60%.

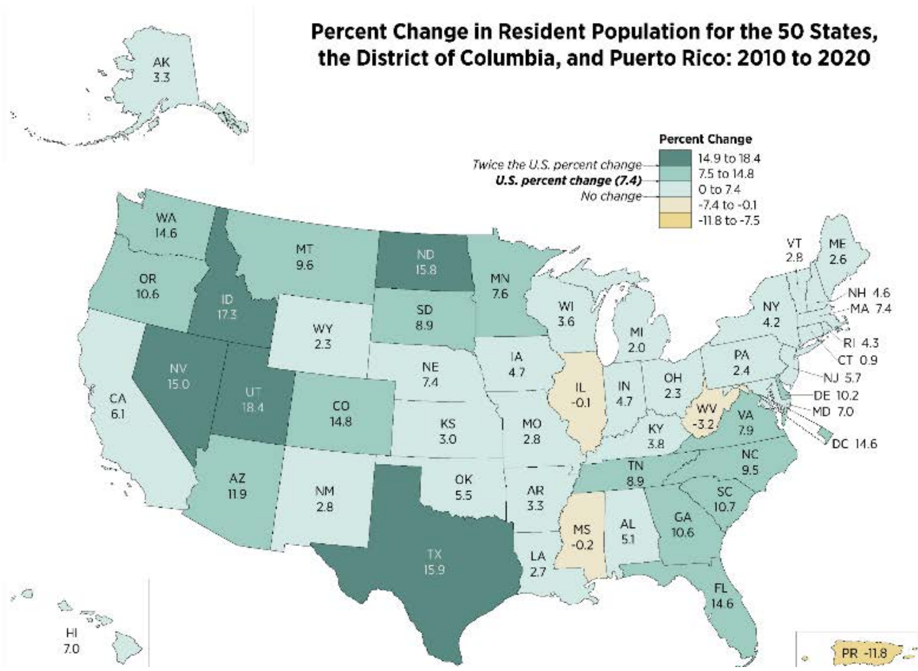
- Affordability issues are widespread. More than 40% of renters are paying 35% or more of their income on rent in California, Colorado, Connecticut, Florida, Georgia, Hawaii, Louisiana, Maryland, Mississippi, Nevada, New Jersey, New York, Oregon, and South Carolina.

STATE TRENDS

Similar methodology was applied at the state level to estimate rental demand through 2035 for each of the 50 states. See Appendix 2 for rankings and Appendix 4 for methodology. Forecast trends follow a fairly similar trend to historic growth patterns that are shown in the map below. Going forward, the fastest growth through 2035 is expected in Nevada, Idaho, Arizona, Florida, Utah, North Carolina, and South Carolina.

Historic Population Growth

An interesting set of states outperformed our forecast from five years ago. The number of occupied apartment units increased by a total of 20% or more from 2016 to 2021 and significantly exceeded our 2016 forecast in Colorado, DC, Idaho, New Jersey, South Carolina, and Utah. Tennessee also significantly exceeded growth expectations with occupied units up by 19% since 2016. Florida and North Carolina also grew by 20% but performed more closely to expectations. To some extent, the 2016-21 time period was

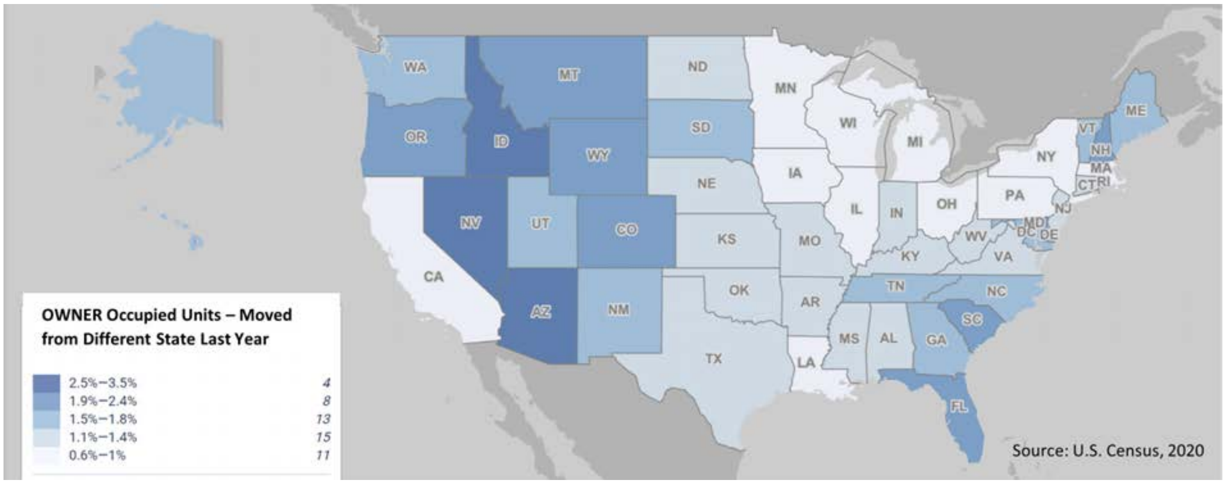


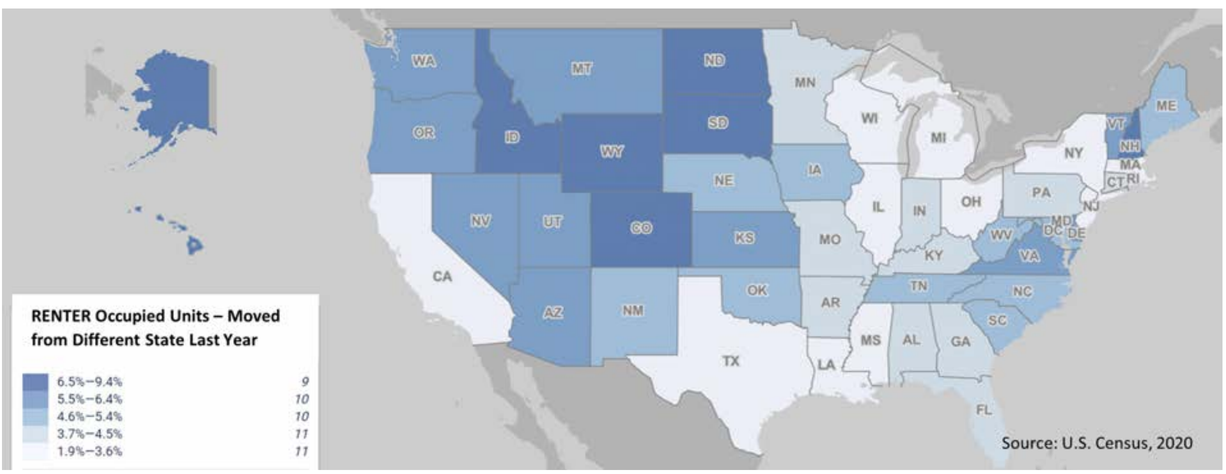
Percent Change in Resident Population for the 50 States, the District of Columbia, and Puerto Rico: 2010 to 2020

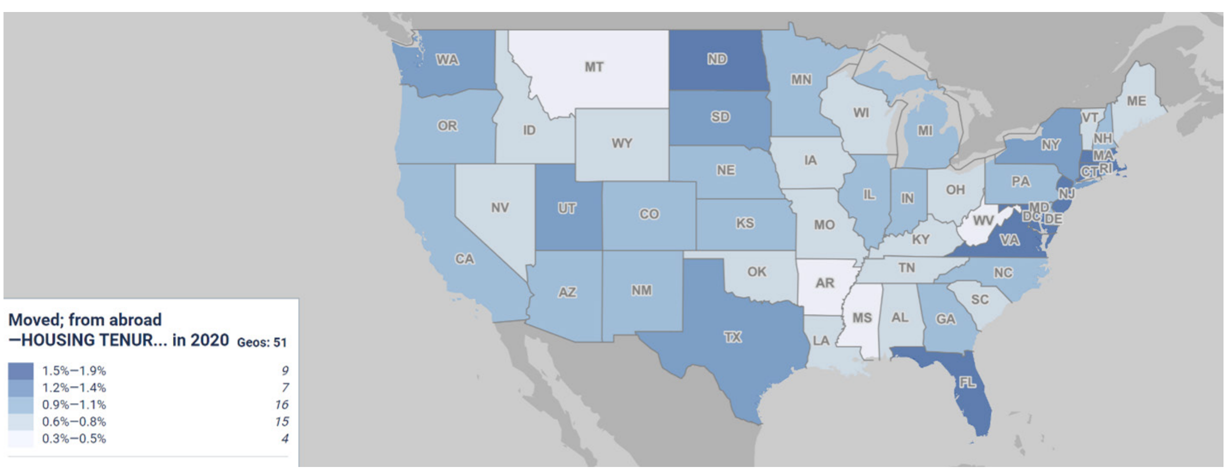
Source: U.S. Census

distorted by the pandemic in 2020 to 2021. In fact, only Idaho was on trend to significantly outperform the forecast as of 2019. Few states underperformed the forecast. Vermont was the largest underperformer, with occupied apartment units increasing by a total of 4.4% from 2016 to 2021 as compared to 8.9% forecast.

As we predicted, immigration trends were an uncertain part of the forecast. Compounded by significant declines during the pandemic, net immigration significantly underperformed our forecast, dropping to under 250,000 in 2021 as compared to 1.0 million in the forecast. Immigration trends will continue to be a source of uncertainty in the forecast. At the state level, immigration may come from other states or from other countries. The below maps illustrate recent trends as measured by the U.S. Census 2020 five-year estimates.







The first map shows the percentage of owner-occupied housing units in which the household lived in a different state the previous year. Interestingly, the scale of this map is much lower than that of the renter-occupied map just below it. For owner-occupied properties, up to 3.5% of households have moved into the state within the past year in top states, particularly in the Mountain states. For renter-occupied units, top states such as Colorado and Idaho attract up to 9% of households from other states. With the exception of California, the western U.S. in general attracts both owners and renters from other states. While markets such as Texas are known for attracting businesses, the state also has a more balanced population base with a younger population that creates natural population growth from births exceeding deaths. This provides some balance and stability to population growth.

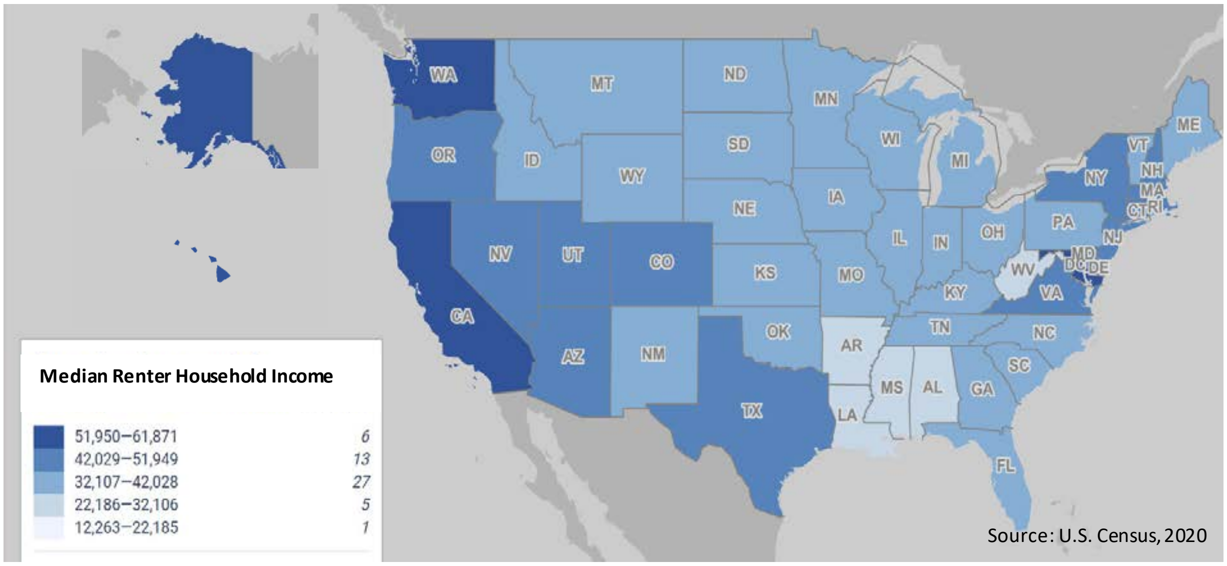
The bottom map on the previous page illustrates the percentage of renter-occupied unit renters that lived in a different country the previous year. While border states such as Texas and Florida rate high, a number of Mid-Atlantic states around DC as well as Massachusetts also rate high on this score with 1% to 2% of tenants from a different country.

The natural population growth (births minus deaths) also proved to be surprisingly volatile over the past five years. This was caused primarily by the pandemic as deaths rose significantly and births slightly declined creating almost no natural population growth in 2021. Markets without strong in-migration from either other states or other countries are particularly susceptible to low-growth trends. While all states are expected to experience positive growth going forward, the following states are expected to experience less than 0.5% growth in apartment demand per year through 2035: Alaska, Connecticut, Illinois, Louisiana, Mississippi, New York, Ohio, and West Virginia. It should be noted, however, that slow-growth trends can sometimes hide significant needs in certain segments of the housing market. These may be located in certain municipalities, age sectors, or price sectors. We encourage review of the metro market details in Appendix 3 to better understand these trends.

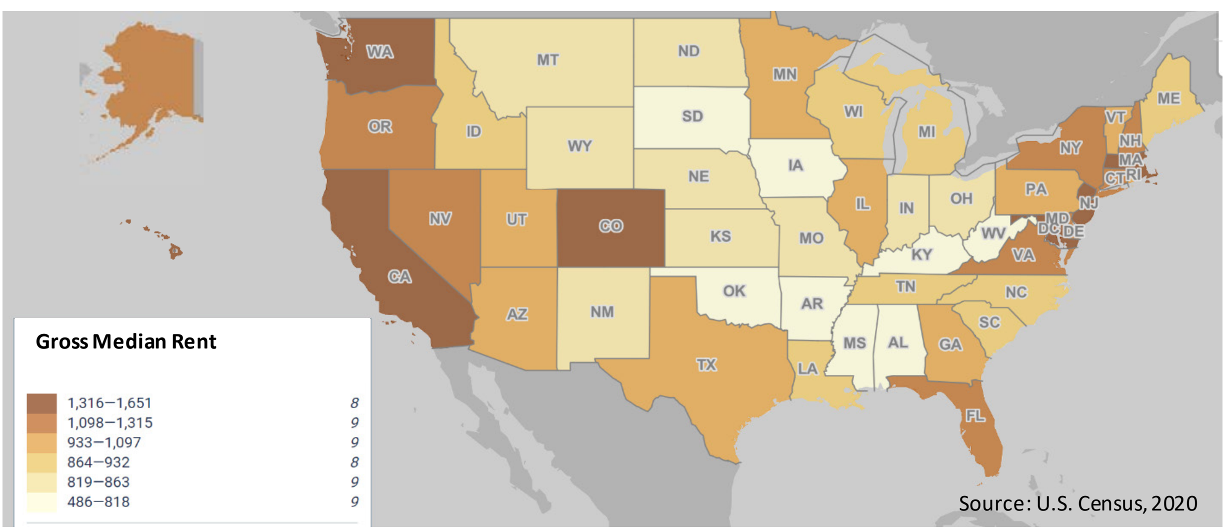
Affordability

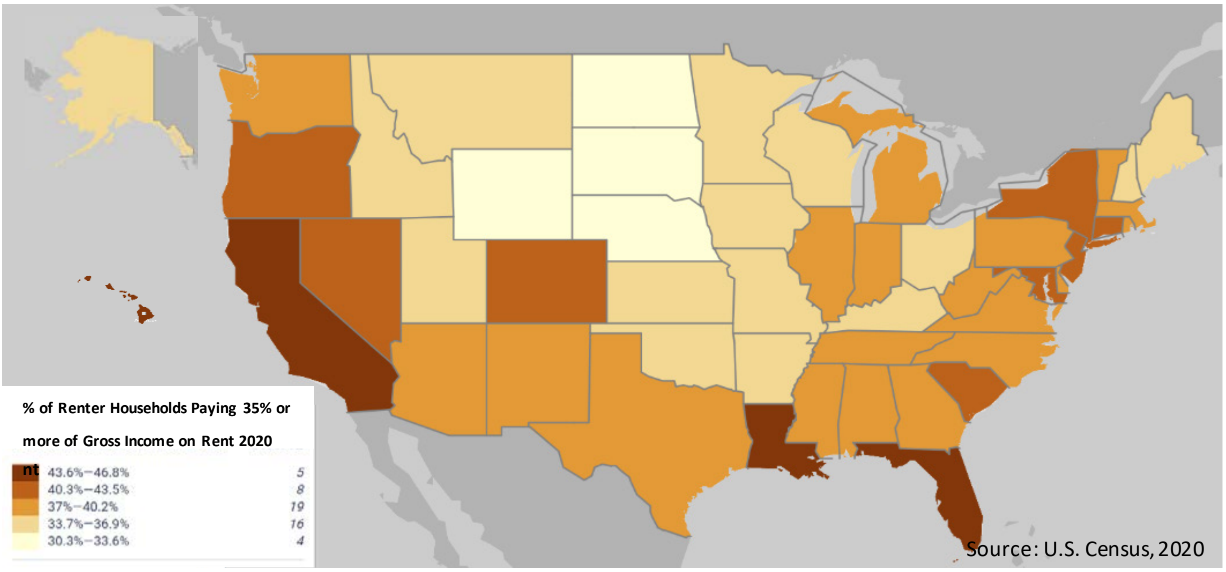
Affordability continues to be a significant issue throughout much of the country. The roots of affordability vary by region, but are generally a combination of incomes, local housing policy, and land costs which may be related to policy and/or land availability. The below map shows the significant variances that exist in renter incomes. Renter household incomes are higher in coastal markets, particularly the west coast.

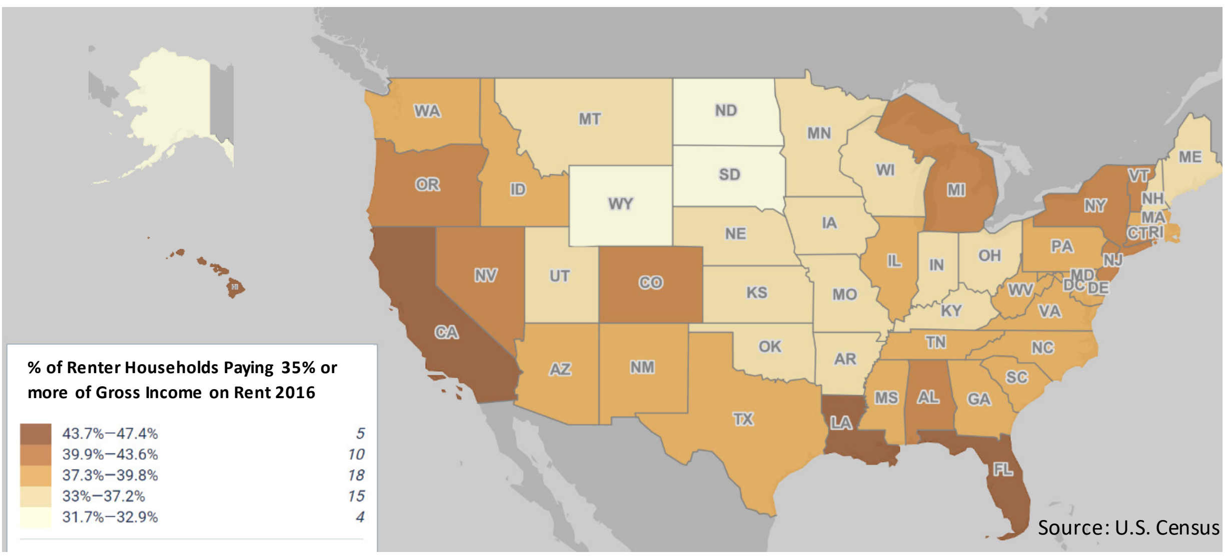
However, as shown in the maps below, rents are also higher on the coasts which are often restricted by complicated housing policies. Thus, as shown in the second map below, housing affordability problems are widespread. In markets such as California, high incomes are offset by even higher housing costs. Louisiana is a different issue with lower incomes outpaced by higher housing costs. As housing affordability measures compare



incomes (with no consideration of net worth) to housing costs, markets such as Florida that have large retirement communities may have somewhat misleading affordability measures. However, in the most extreme states more than 43% of renters are paying 35% or more of gross income on rent, a level that is considered to be an affordability stress point. As shown on the bottom graph on the previous page which shows the percentage of renters in 2016 that paid more than 35% of income on rent, the affordability issue is little changed over the past five years with scores slightly worsening by 2021.







Second Tier Affordable Rentals (STAR)

For investors looking to rehabilitate and improve older properties, the proportion of buildings built before 1980 varies significantly by geographic area. In many of the northern states, more than 60% of the multifamily rental stock with five or more units was built before 1980. California was in this category five years ago but has significantly increased its housing stock, and now only 55% of stock was built before 1980. In contrast, less than 30% of rental stock in states such as Arizona, Arkansas, Georgia, Nevada, North Carolina, North Dakota, South Carolina, Texas, and Utah were built before 1980. While it is unknown how many of these properties have already been improved or renovated, they create a significant market size. In total, 9.3 million units were built before 1980 in the U.S. These units may also serve mid to lower-income households which are a significant proportion of the population base.

In total, 9.3 million units were built before 1980 in the U.S.

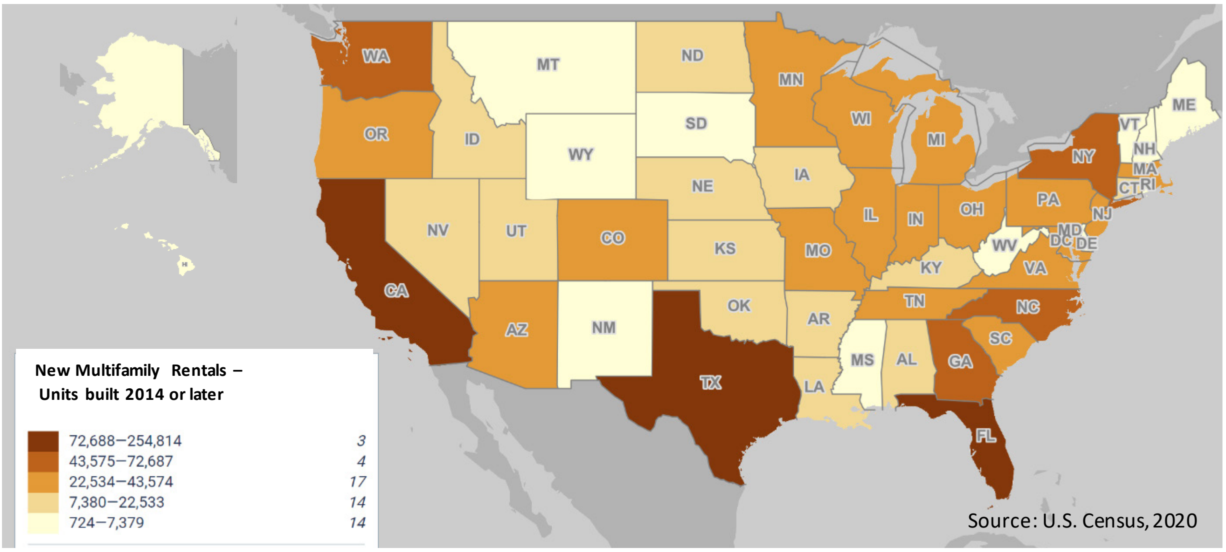
Another product type is of significant size and generally left out of the institutional rental market, although they are a critical and ongoing multifamily supply component. We call these units Second Tier Affordable Rentals or STAR units. STAR units are characterized as older and lower quality units. Using CoStar® ratings of 1 to 5 for sites of five units or more, STAR units are those with lower CoStar® ratings of 1 to 2. Costar® ratings are based on a number of criteria including building structure and systems, amenities, site and landscaping, and certifications such as LEED and Green Globes. Properties rated 2 have functional architectural design and systems, below average finishes, and one to no additional amenities. They have minimal to no landscaping and exterior spaces, and are unlikely to hold green or energy efficient certifications. Properties rated 1 may require significant renovation and are possibly functionally obsolete. STAR facilities are likely to serve lower income populations which are a significant part of the population base in some metro areas, and may represent, in some areas, potential investment targets for upgrading to higher quality properties.

States such as California, New York, Michigan, and Ohio have a high proportion of STAR units. At the metro market level, more than half of the 5+ unit multifamily rental properties are STAR units in Los Angeles, New York, and San Francisco as compared to a metro market average of 31%. Conversely, less than 20% of the rental stock is STAR units in markets such as Atlanta, Austin, Charlotte, Dallas, Las Vegas, Orlando, Phoenix, Raleigh, Tampa, and Washington DC.

New Construction Activity

As shown in the map below, of the 1.5 million new rental units built since 2014, 32% are located in just three states: California, Texas, and Florida. In our forecast which amplifies this trend somewhat, these three states will account for 44% of new supply needed or 1.5 million of the 3.4 million new units needed to meet demographic growth by 2035.

Of the 1.5 million new rental units built since 2014, 32% are located in just three states: California, Texas, and Florida.


New Multifamily Rentals –
Units built 2014 or later
72,688–254,814 3
43,575–72,687 4
22,534–43,574 17
7,380–22,533 14
724–7,379 14
WA
MT
ND
MN
ME
OR
ID
SD
WI
MI
VT
NH
NY
MA
CT
RI
WY
NE
IA
PA
NJ
NV
UT
CO
KS
IL
IN
OH
MO
MD
DC
DE
WV
KY
VA
CA
TN
NC
OK
AR
AZ
NM
SC
MS
AL
GA
TX
LA
FL
Source: U.S. Census, 2020

METRO MARKET KEY ISSUES

- More than 100,000 new units will be needed by 2035 in each of Dallas, Houston, New York, Phoenix, Austin, and Atlanta. While New York is one of the top markets by number of units, it should be noted that it is a large market and is expected to be one of the slowest growing markets based on growth rate.

- Second-tier cities primarily top our fastest growing markets. Boise, Austin, Las Vegas, Raleigh, Orlando, and Phoenix are all expected to grow by at least double the national pace. Dallas and Houston are also in the top markets for growth followed by Charleston and Charlotte to round out the top ten.

- In addition to new units driven by net new demand, a sizeable portion of the needed rental housing will be driven by the aging of the structures. More than 50% of the 5+ unit rental stock was built before 1980 in New York, Cleveland, Cincinnati, Detroit, Milwaukee, Philadelphia, Chicago, Boston, Los Angeles, Louisville, San Francisco, Minneapolis, New Orleans, and St. Louis.

- Second Tier Affordable Rentals (STAR) are also a significant part of the rental market. These lower quality properties generally fly below institutional radars, but represent more than half the 5+ unit rental market in Los Angeles, San Francisco, and New York, but are also more than 40% of the market in Chicago, Cincinnati, Cleveland, Detroit, Milwaukee, and San Diego. Some analysts call this NOAH for Naturally Occurring Affordable Housing. Our research suggests that NOAH units are often not tracked by traditional databases, and even the U.S. Census sometimes under-counts this lower quality housing stock.

- U.S. metro markets will face different challenges during the next fourteen years. Some markets are facing serious affordability issues. Half or more of renters in Miami spend 35% or more of their income on rent with 45% or more of renters in Los Angeles, New Orleans, Orlando, Riverside, and San Diego spending 35% or more of income on rent.

- Affordability is a much larger problem for renters than owners. However, a lack of entry-level housing is likely to be creating a significant barrier to homeownership, thus preventing some households from moving from renters to owners. Markets with low ownership affordability tend to lower homeownership rates. This is a significant problem as homeownership

More than 100,000 new units will be needed by 2035 in each of Dallas, Houston, New York, Phoenix, Austin, and Atlanta.

provides a source of household net worth over time.

- Despite the passing of numerous housing laws over the past five years and lower interest rates, affordability issues have become slightly worse than when we first wrote this report five years ago.

- Some of the affordability issues can be traced to a lack of sufficient new supply and the high cost of entitlement which drives up housing costs, while other markets are affected more by low-income levels and declining economic bases. New supply can be restricted by geographical topography as well as by governmental processes and rules. Markets that have high barriers to entry tend to have higher costs and lower ownership affordability rates and a positive, but lesser positive correlation to rental affordability.

- High costs of housing are correlated without migration to nearby areas or even cross-state locations for some areas. For example, Los Angeles which ranks at the bottom for both owned and rental affordability has experienced negative migration patterns since 2000, with slightly better in-migration rates in the neighboring and more affordable Riverside-San Bernardino area as well as out-of-state exits to Las Vegas. Thus, it is clear that housing costs do inhibit the economic growth of a region by inhibiting the ability to hire and retain employees. New York and Chicago exhibit similar persistent long-term out-migration trends.

- Similar to the state trends, southern metro areas rank highly for attracting residents from other areas. Atlanta, Austin, Dallas, Houston, Las Vegas, Miami, Orlando, Phoenix, Seattle, and Tampa experience strong in-migration trends. These markets have more reasonable housing costs and are relatively business friendly.

- Renter income levels vary widely. However, commute times may be masking some of the affordability issues. For example, one in four rental households earns more than $150,000 per year in the San Francisco rental market. However, the high cost of housing may be driving renters to longer commutes outside the metro area. At the other end of the spectrum, a third or more of the rental households in several markets, particularly in the Midwest and South, earn less than $20,000 per year as of 2020.

- The aging population may be a key source of growth in rental households particularly in low-growth markets. The 55+ age cohort is expected to be the primary growth generator through 2035 (outpacing all other age categories combined) in markets such as New York, St. Louis, and Chicago.

METRO MARKET TRENDS

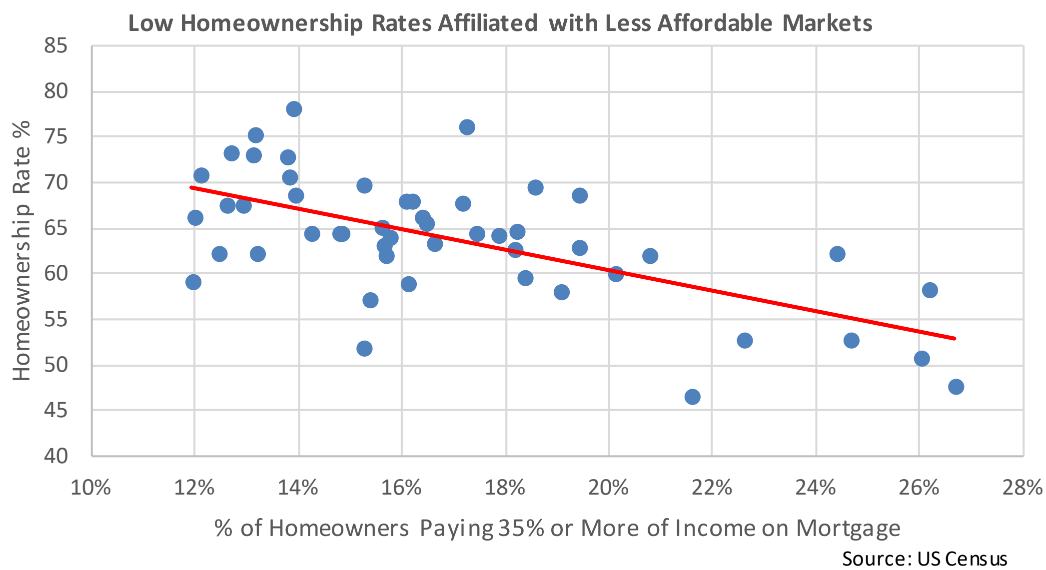
Demand for multifamily properties with five or more units was further estimated for 50 metropolitan markets. See Appendix 3 for a list of markets. The forecasting methodology is similar to that used at the state level, adjusting household growth for a modeled recession around 2030 and adjusting for homeownership rates, age, immigration, homelessness, long-term vacancy levels, the age of stock, and the 5+ rental unit percentage of the rental housing market. Methodology is further described in Appendix 4. Historical figures for the years 2016 to 2021 are based on estimates of existing multifamily 5+ total inventory as developed by the HAS team from several sources including the U.S. Census and CoStar®. Forecasts represent the number of units needed in properties with five or more units to keep vacancy rates at long-term stable rates that are typical for that market. The model does not forecast supply, so if supply exceeds this pace, then vacancy could rise. The forecast also does not remove units that could fall outside of typical institutional investor portfolios (STAR units).

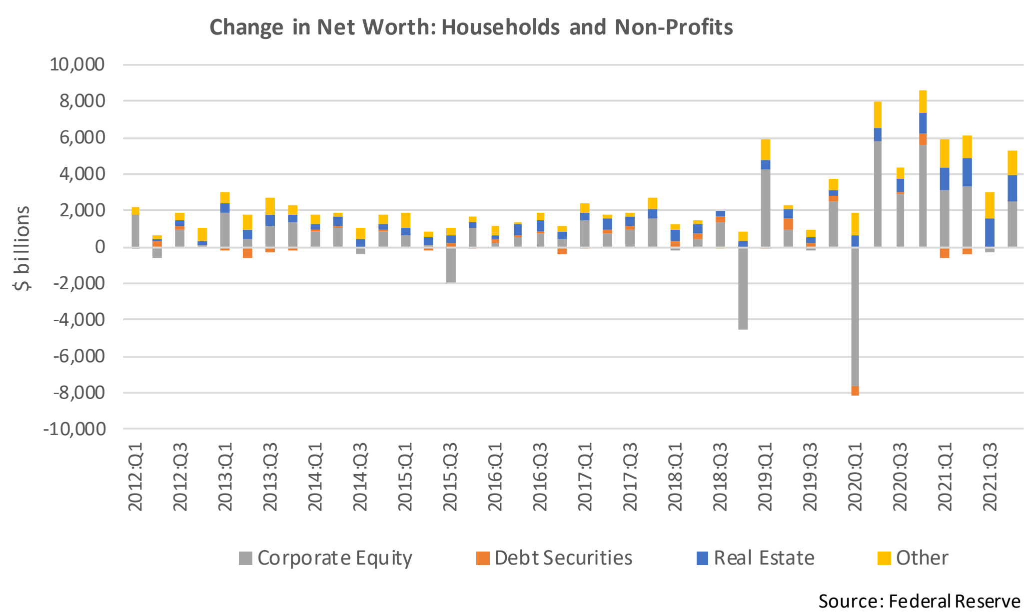
The metro market analyses included a review of supply growth occurring at the local level by reviewing the increase in 5+ housing stock over the past ten years as compared to underlying demand. First, the average increase per year in 5+ stock was calculated from 2011 to 2021. Second, the average increase per year in rental households was calculated from 2011 to 2021. The Multifamily Supply Restrictions Index is ranked based on the average ranking of the increase in 5+ rental stock from 2011 to 2021 and the excess percentage growth in stock delivered as compared to percentage growth in rental households from 2011-2021. High rankings (1) indicate high growth markets in which supply is at least keeping pace if not exceeding demand whereas low rankings (50) indicate slow-growth markets and/or where supply from 2011-2021 was less than demand.

The index is also shown on each of the Metro Market Overview pages. Of the markets in this study, Charleston ranks first, followed by Charlotte and Boise. These 5+ apartment markets have increased in size by more than 40% over the past ten years. At the other end of the spectrum, low-growth markets such as Cleveland, Detroit, and Birmingham rank at the bottom of the pack at rank 48 to 50 respectively. Markets which had ranked in a previous report[64] as having significant regulatory and/or physical supply restrictions also rank low, e.g., San Diego ranked at 40, San Jose at 42, San Francisco at 45, and Los Angeles at 47.

While there are significant variations by market, we find that the supply restriction index loosely correlates to rental markets that are less affordable as measured by the percent of households that spend 35% or more of their gross income on rent. That is, markets that have more supply restrictions tend to be less affordable. Note that affordability is a measure of both income and housing costs. Thus, given the same rents, markets with higher incomes will spend less of their income on rent as compared to rental costs and move further to the left on the below graph.

Markets that are less affordable are correlated to lower homeownership rates as shown in the graph below. While this may create higher rentership rates, it may be a more detrimental impact to the population over the long run as home equity has proved to be a significant source of household wealth. In fact, real estate has accounted for 27% of household net worth creation over the past decade and 25% over the past twenty years as shown in the bottom graph. Underserved populations, particularly



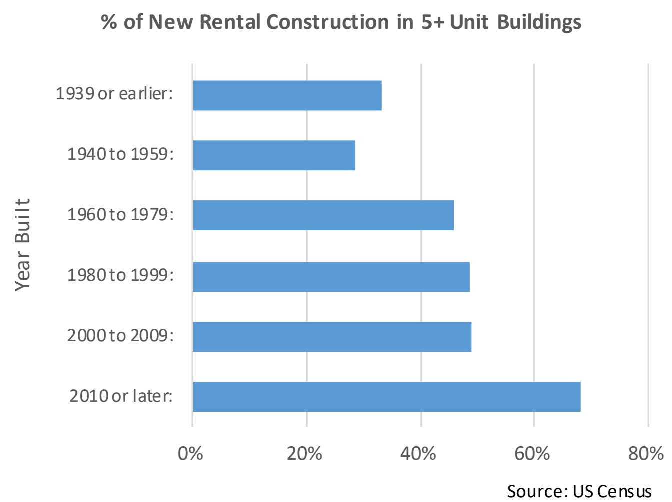


the Black population which has significantly lower homeownership rates has not been able to lock into this generational source of household wealth creation. Much has been written in recent years regarding the 'Missing Middle' of the housing market[65].

Of the 1.5 million new rental units built since 2014, 32% are located in just three states: California, Texas, and Florida.

As home prices escalated by 42% over the past three years, entry-level housing has become extremely expensive. The pandemic did little to help as production costs escalated and labor became scarce. For example, a recent National Association of Home Builders analysis found that the jump in lumber costs added about $36,000 to the average price of a new single-family home[66]. Housing policies in many areas have also created barriers to entry-level construction. A 2018 survey of land use practices in nearly 2,800 communities found that 93 percent imposed minimum lot sizes in their jurisdictions. Some 40 percent of these communities set a one-acre minimum, including 27 percent with two-acre minimums. These factors can drive up the price of development with limited amounts of land and higher material costs.

The term "Missing Middle Housing" was coined by architect and principal of Optics Design, Dan Parolek, who wrote the book, "Missing Middle Housing." It is defined as, "transformative concept that highlights a time-proven and beloved way to provide more housing and more housing choices in sustainable, walkable places." Missing middle housing provides for a variety of housings units, such as fourplexes, duplexes, cottage courts, and multiplexes on a single-family home lot. It is built in locations between detached homes and mid to high rise multiple family apartments. These units provide a lower cost mechanism that allows renters to transition from renting to homeownership.



Our analyses find that these smaller properties are increasingly becoming a smaller part of the construction market. From 1960 to 2009, properties with 5 or more units accounted for about 49% of the new rental construction market. However, after 2010 the 5+ segment jumped to 68% of the new construction market. In markets such as Baltimore, Boston, Chicago, Los Angeles, Miami, Milwaukee, New York, Salt

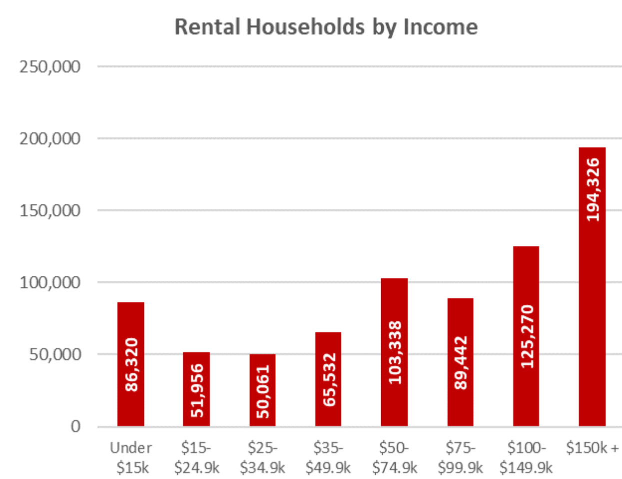
Lake City, San Francisco, San Jose, Seattle, and DC, 5+ properties have accounted for more than 80% of new construction since 2010. In Denver and Minneapolis, 88% of new construction has been in larger properties with five or more units.

Smaller unit Missing Middle Housing also provides other benefits to communities. In an era that is becoming more cognizant of environmental impacts of our buildings and communities, Missing Middle Housing is more often associated with urban areas, some of which is more walkable. Missing Middle Housing may also provide more diversity to a community and allow families to mature and age in the same community. While markets such as California have initiated housing policies that allow, for example, overrides to Homeowners' Association (HOA) rules to allow the construction of Accessory Dwelling Units (ADUs), much needs to be done to revise policies regarding factors such as parking ratios, lot sizes, and such that are currently preventing the construction of smaller units. Rapid home price escalation has also created incentives to owners of small rental properties to sell those units, some of which may be converted back to owned properties. As the graphs in Appendix 3 show, several markets have lost inventory in the lower priced end of the market, creating further pressure on affordability.

New supply conversely tends to be oriented towards higher rent, class A product. Thus, we also frequently see a higher proportion of older buildings and particularly buildings that we classify as Second Tier Affordable Rentals (STAR) buildings in supply restricted markets. These are non-institutional sites of typically lower unit count, lower quality, and greater age, a critical and ongoing multifamily supply component. See the Metro Market Overview section in Appendix 4 for classification methodology for this segment of the market. These buildings create affordable rental options and may create opportunities to upgrade the site to a higher use in good locations in growing markets.

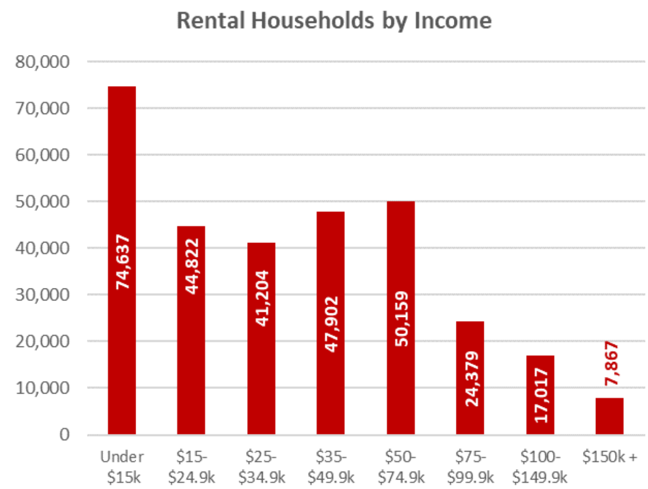
The Metro Market Overviews as shown in Appendix 3 illustrate the significant and important variances in both tenant characteristics and the built environment that occur by metro market. For example, income levels for renters in San Francisco are among the highest of 50 metros studied, while renter income levels in Cleveland are more oriented towards lower incomes.

San Francisco



Source: U.S. Census, 2020

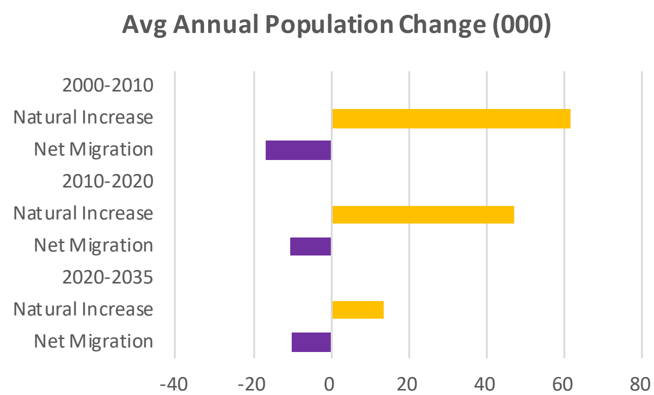
Cleveland



While San Francisco boasts a large share of renters earning household income of more than $100,000 per year, 47% of renters earn less than $75,000 per year. With more than half the market charging rents of $2,000 per month or more, an income of at least $80,000 is required just to afford a mid-priced unit, and an income of $120,000 or more is required to afford newer high-end construction rentals. In a market with high rental costs, this creates a severe affordability issue for middle-class workers. Additionally, the market's severe affordability issue for owned housing drives the rentership rate up and keeps higher income households as renters. While this at first may seem attractive for multifamily owners, when rental costs become too high, tenants begin to leave the market. San Francisco was able to escape an exodus of tenants since 2010 due to the growing tech industry and in-migration from Asia, although the urban center of the market exhibited prolonged weakness during the pandemic as tenants moved to lower cost locations near and far, enabled by remote working. It is yet to be seen how this trend will play out over the long run.

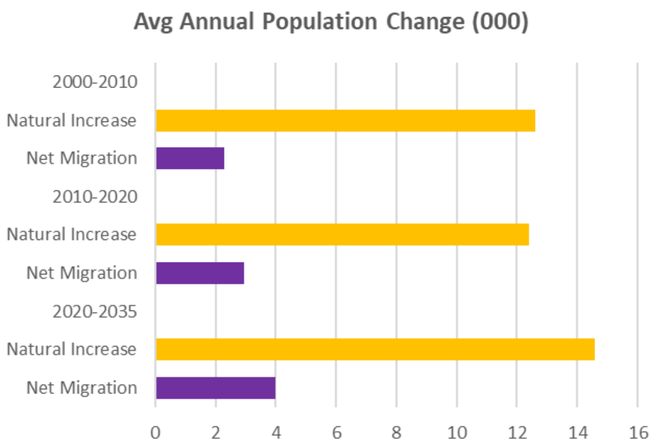
Another example of a market with affordability issues is Los Angeles which has low affordability in both the owned and rented markets. This market has shown consistent outmigration trends as shown in the graph below.

Los Angeles

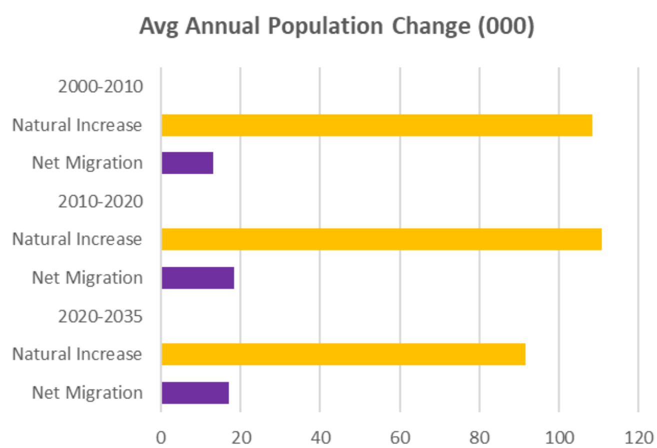


A number of markets, particularly in the Mountain and West regions, and in states with low costs and strong fiscal positions have been able to draw both corporations (through tax incentives) and individuals from high-cost areas. As the Baby Boomers begin to retire, a number of high quality of life locations have also gained significant migration trends in recent years. Boise and Dallas are two examples as shown below. These markets gain new tenants through both natural increases (births minus deaths) as well as net in-migration to the area from other metro markets, states, and countries.

Boise

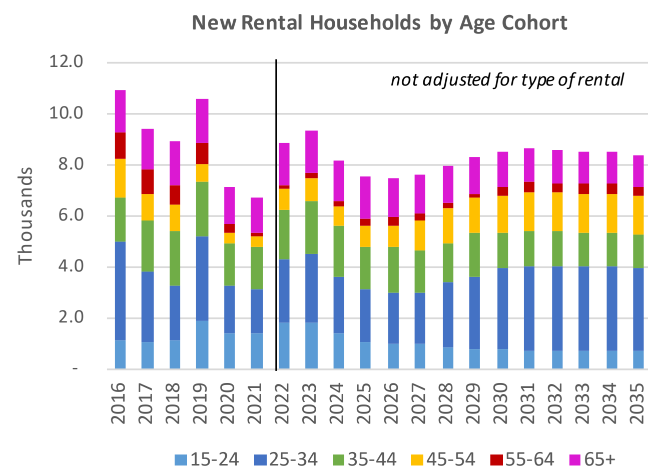


Dallas



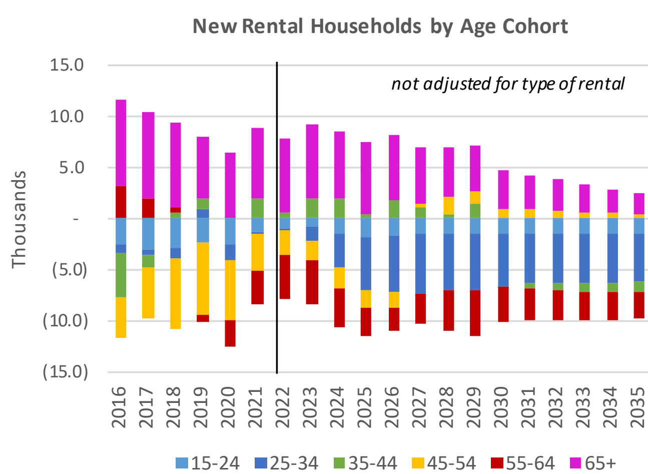
The demographics of local markets, and more particularly submarkets and neighborhoods, should also be carefully considered. We see large variations in renter growth by age group across metropolitan markets. In select high growth markets with good migration trends, e.g., Austin as shown below, we see new tenant demand coming from all age groups.

Austin



While the results vary widely, the Chicago market as shown below is more typical of slow-growth markets where new tenant demand is increasingly coming from older households.

Chicago, IL



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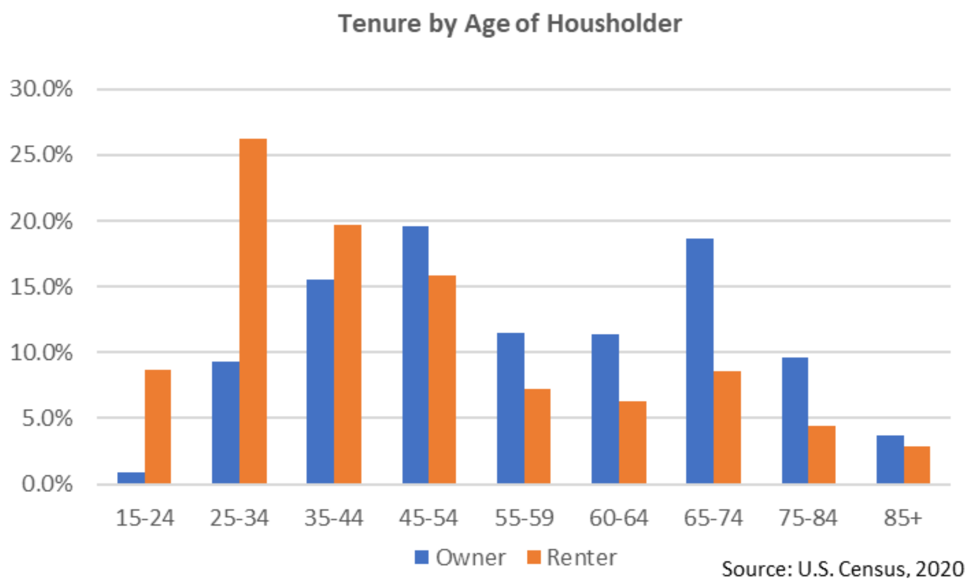
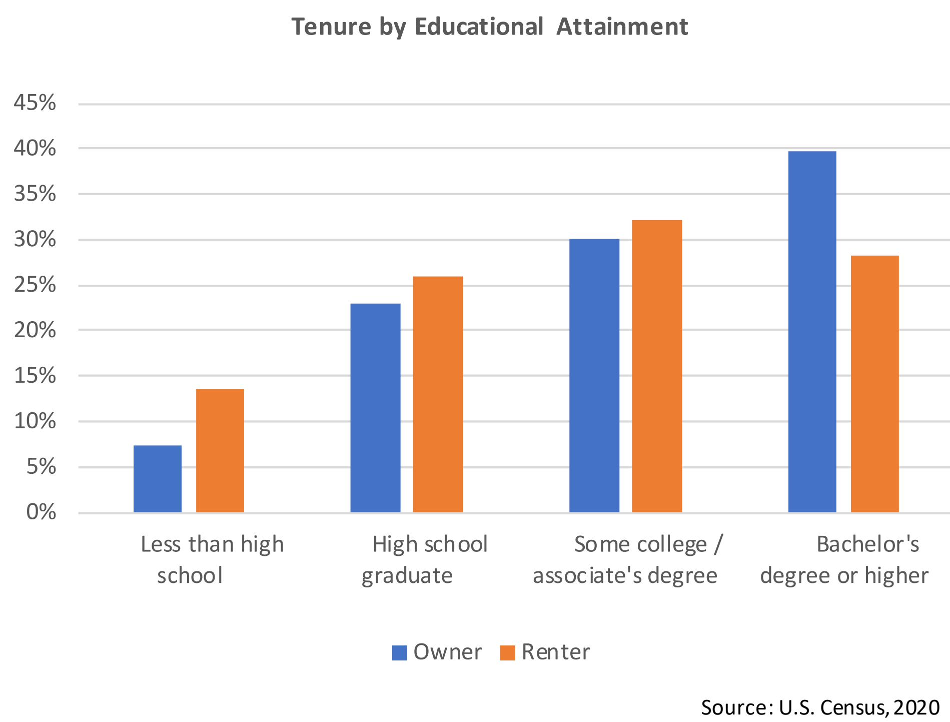
64 "Barriers to Apartment Construction Index," National Apartment Association, Hoyt Advisors, May 2019

65 Parolek, D. G. (2020, July 01). Missing Middle Housing. Retrieved from ***www.missingmiddlehousing.com***

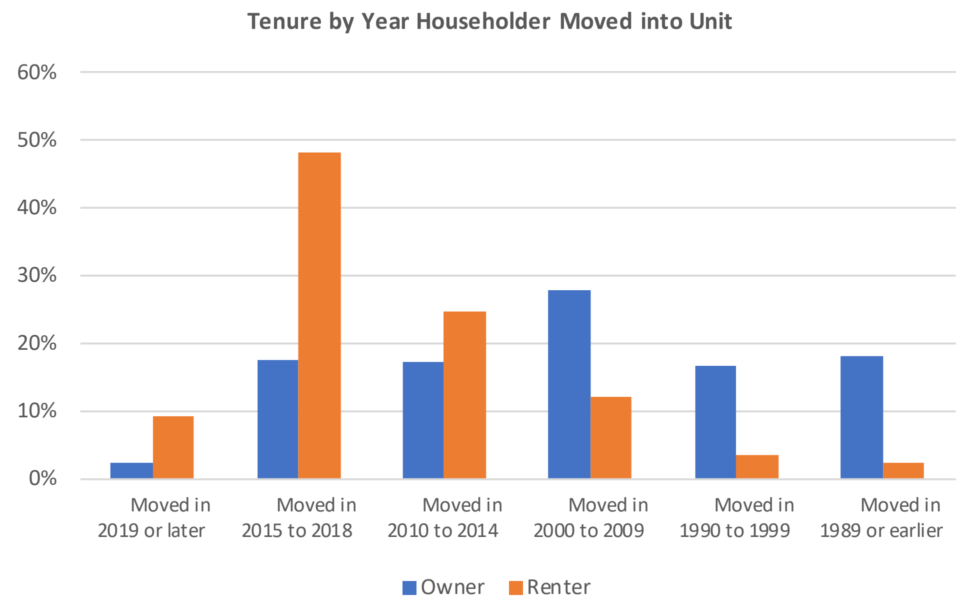
66 The State of the Nation's Housing 2021. (n.d.). Retrieved from ***https://www.jchs.harvard.edu/state-nations-housing-2021***

APPENDIX 1: RENTER VS. OWNER DEMOGRAPHICS

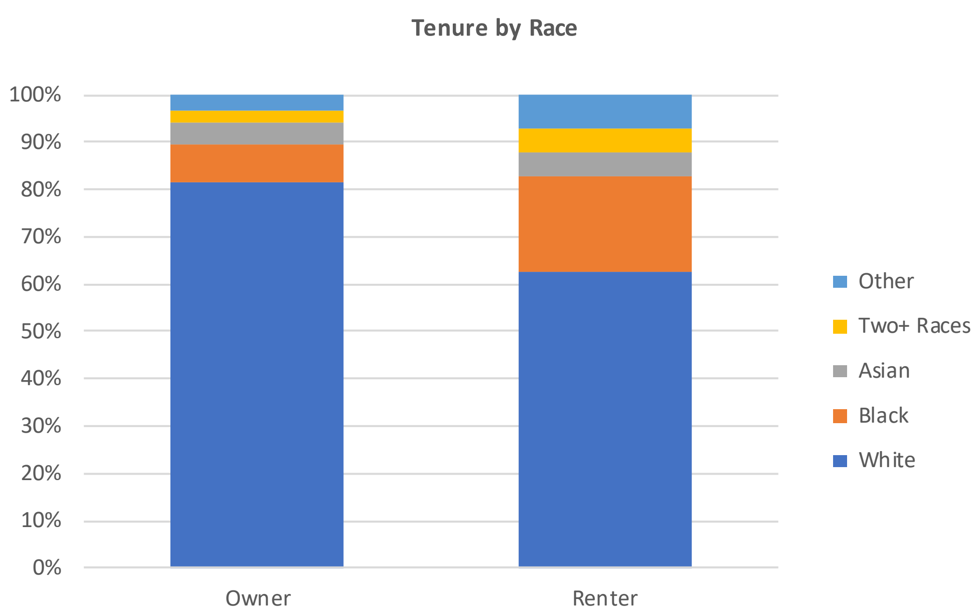




APPENDIX 1: RENTER VS. OWNER DEMOGRAPHICS, (CONT.)



Source: U.S. Census, 2020



Source: U.S. Census, 2020

APPENDIX 2: STATE AND METRO MARKET TABLES

Population Growth by Age Group 2021 to 2035 (000)

	20-24	25-29	30-34	35-39	40-44	45-49	50'54	55-59	60-64	65+
Alaska	-4.5	-12.9	-16.4	-3.3	11.6	12.9	3.0	-3.3	-15.7	28.8
Alabama	-19.7	-15.3	-17.4	-5.2	22.6	38.5	10.7	-22.3	-44.0	136.0
Arkansas	-4.8	-4.0	-13.1	-6.9	11.3	21.1	3.8	-13.4	-27.2	67.6
Arizona	71.5	63.1	50.4	77.6	112.8	118.2	80.9	78.7	16.8	845.5
California	-325.3	-455.2	-390.3	34.2	419.0	394.3	22.9	-11.8	-389.8	2,130.9
Colorado	37.8	34.1	20.7	48.2	89.2	91.6	52.4	8.4	-35.7	432.9
Connecticut	-37.5	-53.3	-46.1	-10.1	33.4	23.8	-29.0	-9.1	-58.4	185.3
District of Columbia	5.4	-2.5	3.8	1.3	4.0	8.0	4.4	-25.0	-3.1	18.6
Delaware	-1.3	-3.2	-4.1	0.4	7.8	9.6	2.3	-15.0	-4.9	101.0
Florida	69.7	50.8	40.8	211.1	359.4	335.1	135.9	29.4	-16.4	2,557.7
Georgia	55.7	48.0	37.4	59.0	101.4	112.9	55.1	-284.7	-20.4	671.4
Hawaii	-6.2	-13.9	-18.6	-5.9	10.3	13.6	2.7	-5.3	-23.4	96.8
Iowa	-10.3	-22.8	-24.3	-16.2	19.1	36.9	15.6	-58.6	-31.0	153.1
Idaho	19.7	15.7	5.3	8.4	32.4	48.6	46.7	-0.1	9.0	182.4
Illinois	-113.4	-131.5	-140.6	-61.5	37.6	56.1	-57.4	-5.1	-169.4	403.2
Indiana	-8.7	-10.2	-5.1	12.0	60.7	80.9	22.9	-19.8	-62.9	232.5
Kansas	-11.6	-16.0	-20.8	-8.9	20.7	31.2	8.3	-5.4	-33.8	119.7
Kentucky	-19.6	-13.0	-15.1	-2.2	25.2	33.3	-0.9	-13.5	-47.2	130.3
Louisiana	-37.0	-42.2	-53.8	-26.2	25.7	42.7	7.1	-17.2	-61.4	147.8
Massachusetts	-33.7	-49.0	-33.2	24.2	70.3	47.8	-32.1	24.0	-77.1	440.5
Maryland	-22.3	-55.3	-63.3	5.0	91.1	79.7	-11.1	-147.7	-83.3	253.9
Maine	-14.9	-19.9	-24.0	-11.5	9.0	14.7	1.7	-40.8	-22.7	66.1
Michigan	-81.6	-99.0	-94.6	-32.8	64.9	86.7	-0.7	-20.5	-132.7	316.6
Minnesota	-9.6	-29.0	-45.5	-11.4	67.0	81.0	24.0	-33.3	-59.4	355.5
Missouri	-25.8	-35.6	-46.3	-14.3	53.7	70.0	-1.8	-40.2	-85.5	167.0
Mississippi	-22.4	-21.7	-24.6	-18.4	3.1	15.8	0.8	-78.3	-25.8	91.1
Montana	1.0	-6.5	-13.0	-6.9	10.1	20.7	14.7	-70.9	-12.1	74.6
North Carolina	50.4	59.9	80.7	91.1	98.2	97.2	42.9	-15.4	-30.8	766.1
North Dakota	4.6	-1.2	-2.6	0.4	8.7	13.2	7.1	-96.6	-8.4	25.9
Nebraska	4.6	0.0	-5.6	1.0	17.6	23.4	8.7	-42.9	-18.9	99.1
New Hampshire	-10.8	-18.0	-17.7	-5.3	15.6	18.3	1.2	-69.3	-21.1	80.5
New Jersey	-64.8	-73.8	-77.4	-5.2	74.8	62.8	-37.4	-17.3	-95.7	477.3
New Mexico	-11.8	-20.5	-27.8	-7.6	18.5	24.0	8.5	-1.9	-20.9	153.5
Nevada	29.5	35.3	39.0	50.1	58.9	53.2	38.9	-12.7	23.6	343.7
New York	-150.7	-239.8	-235.2	-57.6	123.4	88.2	-133.2	-3.6	-245.6	1,064.8
Ohio	-63.7	-77.4	-83.0	-8.8	102.8	121.6	2.9	-10.8	-160.9	289.7
Oklahoma	2.7	-2.5	-10.9	0.1	31.5	43.0	15.2	-16.1	-39.1	71.9
Oregon	9.5	-4.9	-19.2	4.5	53.4	75.7	61.2	-97.5	-29.5	270.4
Pennsylvania	-103.9	-142.4	-131.2	-30.4	109.2	133.6	-15.3	-12.3	-200.7	547.6
Rhode Island	-9.7	-12.1	-9.0	-5.0	4.7	8.4	-2.6	25.1	-15.2	52.3
South Carolina	10.1	11.5	13.4	32.7	61.1	70.9	37.6	-257.5	-11.5	429.8
South Dakota	0.8	-1.5	-6.1	-3.3	7.3	12.9	5.3	-118.1	-9.6	54.0
Tennessee	17.2	30.5	25.3	43.2	69.8	76.8	28.3	-19.9	-42.2	289.6
Texas	266.7	246.5	174.5	298.3	527.8	576.9	399.2	13.8	0.4	1,884.8
Utah	38.8	36.9	31.3	29.3	46.4	65.8	62.6	-153.8	14.7	240.7
Virginia	-10.6	-32.6	-25.5	34.6	97.5	90.4	-1.7	-12.9	-83.2	505.8
Vermont	-6.1	-11.6	-11.5	-4.2	7.5	9.7	1.9	0.8	-11.6	34.7
Washington	19.2	1.7	-2.3	69.5	168.3	170.1	95.4	-5.9	-45.2	540.2
Wisconsin	-27.1	-57.8	-68.8	-36.7	38.4	63.2	11.0	-18.9	-73.1	281.0
West Virginia	-17.9	-18.7	-19.0	-16.8	-0.3	12.4	6.0	126.4	-28.4	33.2
Wyoming	-5.3	-7.3	-9.2	-4.7	5.2	10.1	7.6	33.9	-7.4	44.3

5+ Apartment Demand by State

State	New Units Needed 2021-2035	Rank	% Chg Per Year	Rank	Average Rank
Alaska	638	51	0.2%	51	51
Alabama	29,301	26	0.8%	27	27
Arkansas	12,697	36	0.5%	42	39
Arizona	172,986	5	2.2%	3	4
California	376,081	3	0.9%	26	15
Colorado	118,268	8	1.7%	8	8
Connecticut	6,972	43	0.2%	49	46
District Of Columbia	22,664	30	1.0%	19	25
Delaware	11,613	38	1.5%	11	25
Florida	471,825	2	2.1%	4	3
Georgia	162,158	6	1.4%	13	10
Hawaii	7,197	42	0.6%	39	41
Iowa	19,985	32	0.9%	25	29
Idaho	27,385	27	2.5%	2	15
Illinois	26,730	28	0.2%	50	39
Indiana	54,119	17	1.1%	17	17
Kansas	17,166	34	0.8%	28	31
Kentucky	21,582	31	0.7%	30	31
Louisiana	12,143	37	0.4%	44	41
Massachusetts	47,252	21	0.6%	38	30
Maryland	47,919	20	0.7%	31	26
Maine	5,299	45	0.7%	34	40
Michigan	47,959	19	0.6%	40	30
Minnesota	68,827	15	1.1%	16	16
Missouri	38,594	24	0.7%	32	28
Mississippi	4,366	47	0.3%	47	47
Montana	6,801	44	1.2%	15	30
North Carolina	197,933	4	1.9%	6	5
North Dakota	9,727	40	0.9%	24	32
Nebraska	17,985	33	1.0%	21	27
New Hampshire	9,895	39	0.9%	23	31
New Jersey	42,231	22	0.5%	43	33
New Mexico	14,268	35	0.9%	22	29
Nevada	98,578	9	2.5%	1	5
New York	95,574	10	0.3%	48	29
Ohio	38,968	23	0.3%	46	35
Oklahoma	24,357	29	0.8%	29	29
Oregon	78,866	14	1.5%	12	13
Pennsylvania	66,633	16	0.7%	35	26
Rhode Island	5,222	46	0.6%	41	44
South Carolina	87,697	13	1.9%	7	10
South Dakota	8,343	41	1.1%	18	30
Tennessee	90,619	12	1.4%	14	13
Texas	653,285	1	1.6%	10	6
Utah	50,015	18	2.0%	5	12
Virginia	92,270	11	1.0%	20	16
Vermont	2,532	49	0.6%	37	43
Washington	161,277	7	1.7%	9	8
Wisconsin	38,408	25	0.7%	33	29
West Virginia	2,739	48	0.4%	45	47
Wyoming	1,777	50	0.7%	36	43

Population Growth by Age Group 2021 to 2035 (000)

	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Albuquerque	-2.7	-8.4	-12.8	-11.8	6.1	14.0	4.7	-16.0	-15.3	75.5
Atlanta	4.7	32.2	69.3	54.7	82.3	-2.1	37.1	-18.4	40.8	372.2
Austin	39.9	58.2	62.9	46.6	65.0	55.3	39.9	10.2	17.3	160.6
Baltimore	-5.5	-25.0	-34.7	-12.7	50.8	47.4	0.2	-59.4	-30.7	109.4
Birmingham-	-9.0	-8.6	3.4	-0.8	2.7	-6.5	1.9	-12.5	-10.4	50.3
Boise City	11.3	11.9	18.0	3.3	9.7	27.1	37.7	14.1	7.0	75.0
Boston	-35.4	-49.8	-31.2	23.0	90.9	16.1	-15.4	-97.7	-31.6	295.1
Chicago	-63.0	-89.2	-57.0	-21.0	37.7	-3.5	-4.6	-128.6	-65.6	298.8
Charlotte	5.9	12.2	45.3	50.9	57.2	-6.4	7.4	-8.1	17.9	172.9
Charleston	1.1	1.3	9.3	7.7	14.8	1.9	8.8	-7.0	1.0	65.5
Cincinnati	-10.2	-12.8	1.8	1.8	18.2	14.3	14.7	-25.9	-14.1	108.3
Cleveland	-20.2	-26.3	-15.6	-13.5	2.8	3.3	-2.4	-38.6	-28.4	62.7
Columbus	2.8	-3.2	13.0	13.2	36.7	33.3	26.3	-14.8	-1.9	127.2
Dallas-Ft Worth	81.7	118.0	124.0	87.7	150.9	136.8	100.7	2.2	26.7	456.5
Denver	17.1	33.4	48.1	29.5	47.6	31.7	6.6	-14.7	1.3	142.3
Detroit	-36.6	-70.7	-39.8	-28.4	34.8	17.1	6.6	-68.9	-31.4	151.6
Houston	71.8	105.4	112.5	79.0	135.7	119.5	85.7	-0.5	22.7	406.9
Indianapolis	-2.1	-5.0	26.7	20.0	22.5	6.8	35.9	-11.5	-2.2	112.1
Jacksonville	8.9	10.8	5.9	9.5	33.0	24.8	5.1	-24.5	-11.4	150.2
Kansas City	-8.9	-12.3	-1.6	-6.8	11.3	14.8	20.4	-25.8	-22.2	95.6
Las Vegas	17.5	17.5	48.2	71.7	68.9	21.4	1.9	6.8	42.0	239.5
Little Rock	-5.3	-1.6	5.1	-0.1	1.5	-1.4	4.0	-6.2	-4.9	31.2
Los Angeles	-18.1	-140.1	-170.1	30.0	258.2	138.6	-49.9	-201.2	-73.6	551.6
Louisville	-10.0	-7.7	4.6	2.0	3.6	-4.3	6.4	-15.9	-11.4	57.5
Memphis	-5.4	-2.3	9.0	7.5	9.7	-1.6	4.5	-13.7	-3.9	62.0
Miami-FtL-WPB	27.9	30.8	13.8	29.5	132.6	97.0	15.2	-100.8	-46.7	668.9
Milwaukee	-6.5	-16.1	-12.0	-16.0	0.1	14.3	18.1	-22.5	-18.5	82.8
Minneapolis	5.1	-18.4	-2.7	-15.4	38.4	78.7	53.1	-35.5	-22.3	218.6
Nashville	1.9	6.6	27.3	26.7	30.6	8.2	9.6	-15.3	2.9	107.1
New Orleans	-12.6	-10.5	-9.4	-14.7	-5.8	2.6	4.9	-22.4	-22.6	34.5
New York	-123.6	-222.1	-187.1	-0.4	291.7	141.8	-87.2	-373.9	-131.4	966.6
Oklahoma City	-2.6	4.3	11.0	0.1	7.4	4.6	12.0	-9.3	-13.3	53.1
Orlando	36.6	41.3	31.2	38.5	85.9	63.5	25.1	-25.4	-3.2	300.6
Philadelphia	-26.8	-65.2	-45.8	-14.7	71.6	50.7	32.5	-107.6	-56.9	318.6
Phoenix	57.3	63.6	63.7	83.0	115.7	61.3	33.1	-10.3	18.3	518.3
Portland	10.5	-1.7	20.2	10.5	38.5	43.5	37.3	-2.3	5.0	105.5
Raleigh	9.5	14.0	35.7	40.1	42.7	1.6	8.6	2.8	16.7	100.0
Richmond	-2.6	-4.4	-1.1	7.1	19.9	8.8	-2.0	-20.6	-10.6	67.0
Riverside	20.6	-19.7	-30.0	40.6	121.3	73.2	7.1	-48.7	-4.0	261.1
Sacramento	-2.9	-22.0	-28.2	5.4	43.6	23.0	-8.4	-36.8	-14.1	110.0
San Francisco	7.5	-31.6	-47.9	33.1	120.4	69.7	-2.7	-61.8	-14.1	275.4
San Jose	4.5	-12.6	-18.8	14.8	52.8	30.9	0.0	-24.4	-4.4	104.4
San Diego	-0.6	-32.3	-40.8	12.8	68.2	36.6	-7.9	-46.0	-15.0	154.5
Salt Lake City	-0.9	9.6	32.1	21.0	4.8	2.9	6.9	18.7	7.5	52.7
San Antonio	22.7	32.8	34.3	21.6	39.7	35.6	25.2	-3.9	4.3	157.6
Seattle	22.6	-10.2	24.0	44.4	111.1	106.6	43.5	-39.9	-6.1	204.6
St. Louis	-16.2	-20.6	-10.5	-12.0	13.0	12.7	12.2	-45.3	-34.3	109.0
Tampa	12.5	14.4	5.4	13.1	60.8	45.2	5.2	-55.2	-29.3	352.1
Virginia Beach	-4.6	-6.7	-1.6	9.3	24.1	9.3	-2.9	-26.2	-12.9	81.5
Washington DC	15.2	-20.5	-32.6	36.7	148.3	71.4	32.7	-88.8	-28.3	282.6

5+ Apartment Demand by Metropolitan Area

Market	New Units Needed 2021-2035 (000)	Rank	% Chg Per Year	Rank	Weighted Average Rank	Market	New Units Needed 2021-2035 (000)	Rank	% Chg Per Year	Rank	Weighted Average Rank
Albuquerque	4,191	48	0.5%	43	48	Miami-FtL-WPB	99,595	7	1.3%	24	14
Atlanta	116,167	6	1.5%	17	7	Milwaukee	6,530	45	0.4%	46	47
Austin	117,107	5	2.6%	2	1	Minneapolis	67,756	15	1.5%	20	16
Baltimore	21,034	32	0.6%	38	36	Nashville	38,453	25	1.5%	16	20
Birmingham-	4,531	46	0.5%	42	46	New Orleans	-563	49	-0.1%	49	49
Boise City	17,900	36	2.9%	1	18	New York	141,169	3	0.4%	45	27
Boston	42,151	24	0.7%	32	30	Oklahoma City	11,886	41	0.8%	29	37
Charleston	19,263	34	1.9%	9	23	Orlando	90,755	10	2.2%	5	5
Charlotte	60,046	16	1.9%	10	8	Philadelphia	45,292	20	0.8%	30	28
Chicago	30,658	27	0.3%	47	40	Phoenix	121,824	4	2.2%	6	4
Cincinnati	21,677	31	1.0%	26	31	Portland	54,746	18	1.5%	19	17
Cleveland	-1,231	50	-0.1%	50	50	Raleigh	44,481	22	2.3%	4	9
Columbus	45,026	21	1.4%	22	21	Richmond	15,483	38	0.9%	27	33
Dallas-Ft Worth	269,906	1	2.0%	7	2	Riverside	43,881	23	1.4%	23	24
Denver	71,847	14	1.6%	14	12	Sacramento	16,236	37	0.7%	35	38
Detroit	12,970	40	0.3%	48	45	Salt Lake City	23,127	30	1.6%	13	22
Houston	209,084	2	1.9%	8	3	San Antonio	59,180	17	1.8%	11	13
Indianapolis	37,504	26	1.4%	21	26	San Diego	26,199	29	0.6%	39	34
Jacksonville	30,080	28	1.7%	12	19	San Francisco	53,856	19	0.9%	28	25
Kansas City	18,449	35	0.7%	34	35	San Jose	19,822	33	0.8%	31	32
Las Vegas	74,845	12	2.4%	3	6	Seattle	94,944	9	1.5%	18	10
Little Rock	4,401	47	0.6%	40	44	St. Louis	11,663	42	0.5%	41	43
Los Angeles	78,035	11	0.4%	44	29	Tampa	73,152	13	1.6%	15	11
Louisville	8,497	44	0.6%	37	42	Virginia Beach	14,982	39	0.7%	33	39
Memphis	9,536	43	0.6%	36	41	Washington DC	95,996	8	1.0%	25	15

Rental Stock by Units in Structure

	Rental Stock by Number of Units							% of Total			
	1, det/att	2 to 4	5 to 19	20 to 49	50+	Mobile, etc.	Total	1 unit	2-4units	5-19	20+
Albuquerque	45,252	18,646	21,381	8,419	15,275	7,717	116,690	39%	16%	18%	20%
Atlanta	290,578	69,944	211,729	65,132	107,735	25,176	770,294	38%	9%	27%	22%
Austin	89,433	37,569	90,842	39,327	62,817	9,886	329,874	27%	11%	28%	31%
Baltimore	132,161	39,349	111,851	16,486	53,041	2,030	354,918	37%	11%	32%	20%
Birmingham-	49,194	15,999	35,932	9,612	10,609	9,032	130,378	38%	12%	28%	16%
Boise City	36,757	15,699	11,212	4,431	6,486	3,561	78,146	47%	20%	14%	14%
Boston	93,652	249,011	159,927	78,971	123,833	3,802	709,196	13%	35%	23%	29%
Charleston	31,765	14,405	26,775	8,088	7,499	11,002	99,534	32%	14%	27%	16%
Charlotte	128,846	30,365	86,520	30,821	30,003	24,821	331,376	39%	9%	26%	18%
Chicago	272,702	317,534	320,315	104,679	223,678	10,376	1,249,284	22%	25%	26%	26%
Cincinnati	94,252	55,660	87,285	16,777	25,877	6,716	286,567	33%	19%	30%	15%
Cleveland	104,362	55,402	63,843	20,633	61,971	1,776	307,987	34%	18%	21%	27%
Columbus	100,736	67,728	87,280	21,068	26,725	4,289	307,826	33%	22%	28%	16%
Dallas-Ft Worth	305,743	108,192	318,833	109,259	188,194	24,222	1,054,443	29%	10%	30%	28%
Denver	108,468	32,360	102,886	59,134	78,763	4,854	386,465	28%	8%	27%	36%
Detroit	218,193	64,027	130,150	31,838	70,366	12,730	527,304	41%	12%	25%	19%
Houston	271,166	81,238	270,417	88,294	193,612	36,653	941,380	29%	9%	29%	30%
Indianapolis	107,569	38,989	80,640	13,868	23,488	6,563	271,117	40%	14%	30%	14%
Jacksonville	76,942	23,899	50,553	18,034	18,256	13,239	200,923	38%	12%	25%	18%
Kansas City	120,593	44,155	74,446	21,283	29,057	4,125	293,659	41%	15%	25%	17%
Las Vegas	141,590	57,046	95,597	19,397	44,985	7,164	365,779	39%	16%	26%	18%
Little Rock	39,280	16,308	27,666	5,240	7,551	8,590	104,635	38%	16%	26%	12%
Los Angeles	631,156	320,129	567,976	307,301	391,238	25,005	2,242,805	28%	14%	25%	31%
Louisville	59,093	33,307	43,330	9,449	12,763	4,317	162,259	36%	21%	27%	14%
Memphis	94,152	29,078	51,916	6,928	14,758	6,407	203,239	46%	14%	26%	11%
Miami-FtL-WPB	241,554	110,845	200,103	120,439	185,766	14,294	873,001	28%	13%	23%	35%
Milwaukee	52,307	77,062	54,672	32,912	36,651	1,171	254,775	21%	30%	21%	27%
Minneapolis	99,309	42,691	71,083	71,305	123,111	3,507	411,006	24%	10%	17%	47%
Nashville	83,414	32,104	70,374	20,817	30,826	12,414	249,949	33%	13%	28%	21%
New Orleans	61,842	48,583	29,668	12,534	19,233	4,781	176,641	35%	28%	17%	18%
New York	357,368	836,925	632,028	586,012	1,000,864	8,523	3,421,720	10%	24%	18%	46%
Oklahoma City	88,133	21,748	44,516	10,031	14,373	7,506	186,307	47%	12%	24%	13%
Orlando	121,931	40,347	100,482	34,029	30,215	12,919	339,923	36%	12%	30%	19%
Philadelphia	270,041	154,924	148,526	57,782	121,635	5,396	758,304	36%	20%	20%	24%
Phoenix	244,168	70,146	144,394	40,650	99,856	22,595	621,809	39%	11%	23%	23%
Portland	107,133	56,450	85,696	36,134	68,752	7,064	361,229	30%	16%	24%	29%
Raleigh	57,180	17,203	52,474	16,287	19,344	11,197	173,685	33%	10%	30%	21%
Richmond	66,028	20,741	44,471	9,580	18,786	3,155	162,761	41%	13%	27%	17%
Riverside	237,017	66,990	89,179	23,654	55,289	22,341	494,470	48%	14%	18%	16%
Sacramento	139,285	46,527	72,859	19,750	41,724	6,179	326,324	43%	14%	22%	19%
Salt Lake City	38,390	20,722	30,389	17,253	20,118	1,620	128,492	30%	16%	24%	29%
San Antonio	104,198	41,091	88,297	26,877	35,233	11,624	307,320	34%	13%	29%	20%
San Diego	171,996	60,554	136,348	53,849	89,494	9,112	521,353	33%	12%	26%	27%
San Francisco	207,847	138,874	175,307	91,968	147,324	4,925	766,245	27%	18%	23%	31%
San Jose	88,977	39,369	54,015	28,682	68,887	3,532	283,462	31%	14%	19%	34%
Seattle	160,714	74,087	150,991	78,463	134,643	9,825	608,723	26%	12%	25%	35%
St. Louis	128,372	79,522	77,036	18,293	36,687	9,852	349,762	37%	23%	22%	16%
Tampa	147,101	56,707	100,085	37,190	55,168	27,432	423,683	35%	13%	24%	22%
Virginia Beach	100,229	40,441	70,611	13,340	22,974	5,498	253,093	40%	16%	28%	14%
Washington DC	212,942	55,579	248,489	50,273	237,663	4,979	809,925	26%	7%	31%	36%

5+ Rental Stock by Year Built

	2010+	2000-2009	1980-1999	1960-1979	1940-1959	<=1939
Albuquerque	7%	9%	39%	35%	7%	2%
Atlanta	12%	20%	42%	22%	3%	1%
Austin	26%	20%	36%	15%	1%	1%
Baltimore	11%	10%	30%	33%	8%	8%
Birmingham	12%	12%	38%	27%	6%	5%
Boise City	18%	16%	40%	21%	3%	3%
Boston	10%	9%	19%	27%	10%	24%
Charleston	22%	20%	32%	20%	4%	2%
Charlotte	22%	19%	38%	16%	2%	1%
Chicago	6%	9%	22%	31%	13%	19%
Cincinnati	6%	9%	30%	34%	10%	10%
Cleveland	4%	5%	20%	41%	15%	15%
Columbus	15%	13%	35%	28%	6%	4%
Dallas-Ft Worth	16%	15%	42%	22%	3%	1%
Denver	16%	14%	31%	29%	6%	4%
Detroit	3%	7%	30%	40%	11%	8%
Houston	16%	18%	35%	27%	3%	1%
Indianapolis	14%	12%	35%	27%	6%	6%
Jacksonville	12%	21%	35%	24%	5%	2%
Kansas City	13%	11%	31%	30%	7%	8%
Las Vegas	8%	20%	51%	17%	3%	1%
Little Rock	20%	16%	38%	20%	4%	2%
Los Angeles	6%	7%	25%	38%	16%	9%
Louisville	11%	11%	28%	33%	9%	8%
Memphis	9%	15%	33%	27%	12%	4%
Miami-FtL-WPB	10%	13%	33%	34%	8%	2%
Milwaukee	7%	9%	28%	30%	13%	13%
Minneapolis	11%	10%	28%	35%	7%	9%
Nashville	21%	14%	35%	24%	4%	1%
New Orleans	8%	12%	28%	38%	6%	9%
New York	6%	6%	12%	23%	21%	32%
Oklahoma City	15%	12%	35%	32%	3%	2%
Orlando	15%	20%	44%	17%	2%	1%
Philadelphia	8%	8%	22%	37%	13%	13%
Phoenix	10%	16%	46%	24%	4%	1%
Portland	14%	13%	35%	25%	6%	7%
Raleigh	26%	20%	39%	12%	2%	1%
Richmond	10%	12%	33%	27%	8%	10%
Riverside	8%	15%	43%	26%	5%	2%
Sacramento	6%	15%	36%	32%	8%	3%
Salt Lake City	23%	12%	31%	23%	5%	5%
San Antonio	20%	18%	35%	21%	3%	2%
San Diego	7%	10%	37%	37%	7%	2%
San Francisco	6%	9%	21%	32%	12%	20%
San Jose	13%	13%	30%	35%	7%	2%
Seattle	17%	13%	34%	25%	5%	6%
St. Louis	8%	10%	28%	32%	9%	12%
Tampa	12%	17%	43%	25%	3%	1%
Virginia Beach	13%	13%	36%	28%	7%	4%
Washington DC	13%	13%	27%	30%	12%	5%
US	**10%**	**12%**	**30%**	**29%**	**9%**	**10%**

Single-family Rental Stock by Year Built Second Tier Affordable Rentals (5+ Units)

	# Units	2010+	2000-2009	1980-1999	1960-1979	1940-1959	<=1939
Albuquerque	45,252	3%	17%	30%	26%	19%	5%
Atlanta	290,578	4%	21%	35%	24%	11%	4%
Austin	89,433	11%	22%	30%	22%	11%	4%
Baltimore	132,161	3%	6%	21%	23%	24%	22%
Birmingham-	49,194	2%	10%	19%	29%	29%	12%
Boise City	36,757	8%	21%	31%	22%	11%	7%
Boston	93,652	3%	7%	16%	20%	20%	34%
Charleston	31,765	8%	16%	25%	32%	15%	5%
Charlotte	128,846	5%	20%	25%	25%	19%	7%
Chicago	272,702	1%	10%	17%	26%	27%	19%
Cincinnati	94,252	2%	7%	15%	23%	27%	26%
Cleveland	104,362	1%	4%	8%	20%	34%	31%
Columbus	100,736	3%	8%	20%	25%	25%	19%
Dallas-Ft Worth	305,743	6%	16%	28%	27%	19%	5%
Denver	108,468	4%	11%	23%	29%	23%	10%
Detroit	218,193	1%	5%	10%	23%	45%	17%
Houston	271,166	8%	16%	25%	28%	17%	5%
Indianapolis	107,569	3%	11%	20%	22%	25%	20%
Jacksonville	76,942	5%	19%	26%	24%	19%	7%
Kansas City	120,593	3%	8%	18%	29%	25%	17%
Las Vegas	141,590	6%	32%	41%	16%	4%	0%
Little Rock	39,280	7%	12%	22%	35%	19%	6%
Los Angeles	631,156	2%	4%	16%	26%	35%	18%
Louisville	59,093	3%	6%	16%	26%	29%	20%
Memphis	94,152	2%	10%	24%	31%	26%	6%
Miami-FtL-WPB	241,554	3%	12%	30%	30%	21%	4%
Milwaukee	52,307	2%	4%	11%	20%	32%	31%
Minneapolis	99,309	3%	13%	26%	23%	17%	17%
Nashville	83,414	6%	15%	25%	26%	19%	10%
New Orleans	61,842	3%	9%	19%	35%	23%	12%
New York	357,368	2%	6%	17%	23%	28%	25%
Oklahoma City	88,133	6%	9%	17%	32%	26%	10%
Orlando	121,931	7%	21%	38%	21%	10%	3%
Philadelphia	270,041	2%	6%	13%	18%	27%	34%
Phoenix	244,168	4%	28%	31%	26%	9%	2%
Portland	107,133	5%	13%	25%	25%	16%	16%
Raleigh	57,180	11%	22%	31%	19%	11%	5%
Richmond	66,028	3%	11%	23%	30%	22%	11%
Riverside	237,017	3%	19%	33%	24%	17%	5%
Sacramento	139,285	2%	14%	30%	30%	19%	5%
Salt Lake City	38,390	6%	12%	22%	30%	19%	12%
San Antonio	104,198	7%	15%	24%	26%	21%	7%
San Diego	171,996	2%	9%	26%	33%	21%	8%
San Francisco	207,847	2%	5%	18%	28%	28%	19%
San Jose	88,977	3%	6%	19%	41%	22%	9%
Seattle	160,714	6%	14%	24%	24%	18%	14%
St. Louis	128,372	3%	7%	14%	27%	30%	19%
Tampa	147,101	4%	17%	27%	31%	16%	4%
Virginia Beach	100,229	4%	10%	30%	30%	19%	8%
Washington DC	212,942	4%	13%	33%	25%	16%	10%
US	**14,689,597**	**4%**	**11%**	**22%**	**26%**	**22%**	**15%**

Percent of Households Paying 35% or More of Income on Housing

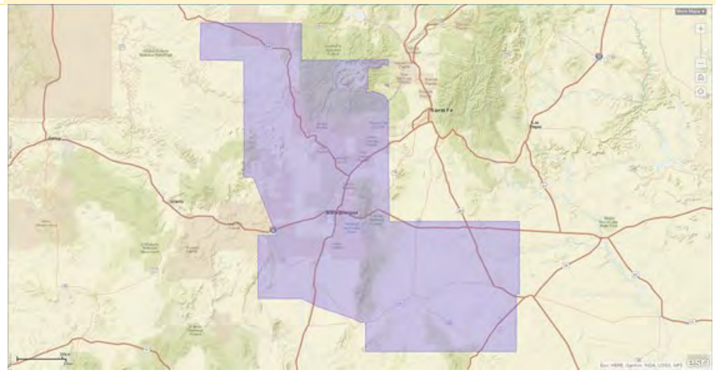
	Renters	Rank (Least Affordable)	Owners	Rank (Least Affordable)
Albuquerque	42%	13	17%	18
Atlanta	40%	21	16%	29
Austin	37%	34	16%	25
Baltimore	40%	23	16%	26
Birmingham-	39%	26	14%	38
Boise City	35%	46	14%	37
Boston	39%	28	20%	9
Charleston	43%	11	17%	19
Charlotte	36%	43	14%	40
Chicago	39%	27	19%	11
Cincinnati	36%	44	13%	45
Cleveland	37%	33	15%	35
Columbus	34%	50	13%	41
Dallas-Ft Worth	37%	38	16%	28
Denver	40%	22	17%	21
Detroit	40%	19	15%	33
Houston	40%	18	16%	27
Indianapolis	38%	30	12%	48
Jacksonville	39%	24	16%	24
Kansas City	35%	48	12%	47
Las Vegas	42%	12	19%	12
Little Rock	37%	37	13%	44
Los Angeles	47%	4	27%	1
Louisville	34%	49	13%	46
Memphis	43%	9	15%	31
Miami-FtL-WPB	53%	1	26%	2
Milwaukee	39%	25	15%	32
Minneapolis	36%	42	13%	42
Nashville	37%	39	14%	39
New Orleans	47%	3	17%	20
New York	43%	10	26%	3
Oklahoma City	36%	40	12%	50
Orlando	45%	6	19%	10
Philadelphia	41%	14	19%	13
Phoenix	38%	29	16%	23
Portland	41%	16	18%	16
Raleigh	35%	47	12%	49
Richmond	40%	17	15%	34
Riverside	48%	2	24%	5
Sacramento	44%	7	21%	8
Salt Lake City	35%	45	14%	36
San Antonio	40%	20	16%	30
San Diego	47%	5	25%	4
San Francisco	37%	35	23%	6
San Jose	36%	41	22%	7
Seattle	37%	36	18%	14
St. Louis	38%	31	13%	43
Tampa	44%	8	18%	15
Virginia Beach	41%	15	18%	17
Washington DC	38%	32	16%	22

APPENDIX 3: METRO MARKET OVERVIEWS

The following Metro Market Overviews provide key metrics on each of 50 select metropolitan rental markets that invite local market leadership response.

METRO MULTIFAMILY DEMAND OVERVIEW

ALBUQUERQUE

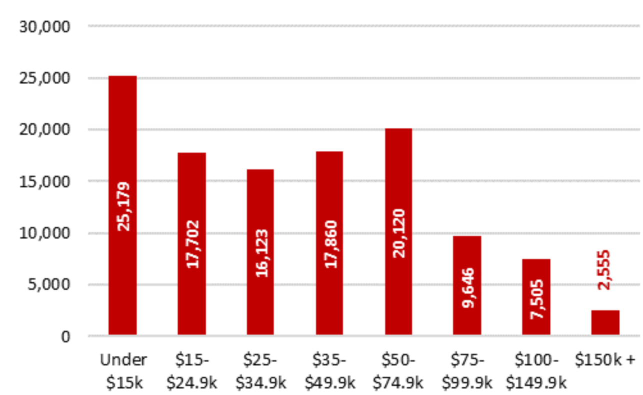


4,191 Apartment units needed by 2035

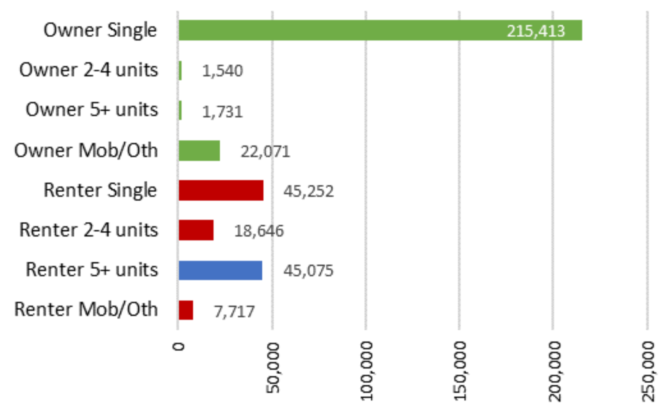
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
48	58	41	25%

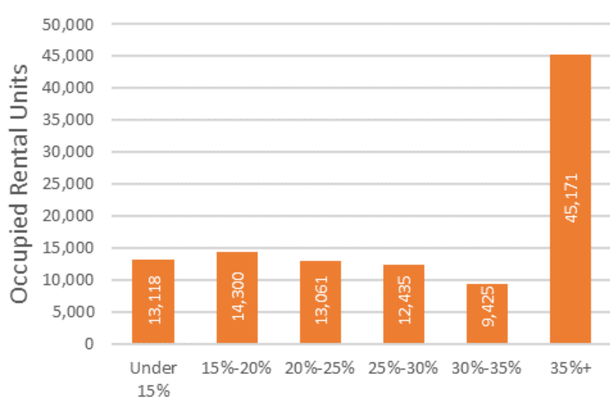
Rental Households by Income



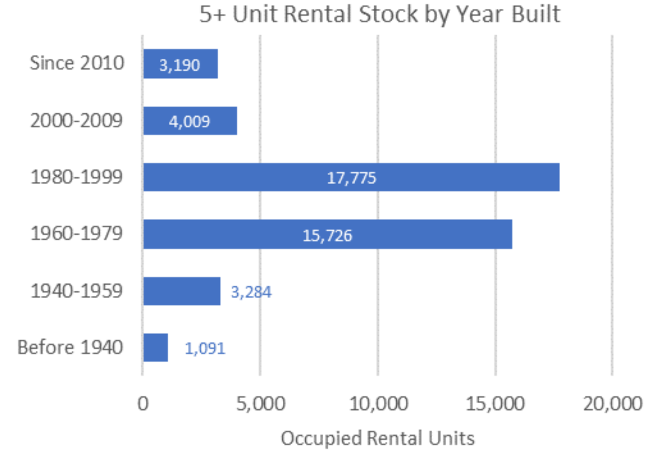
Housing Stock by Tenure & Type



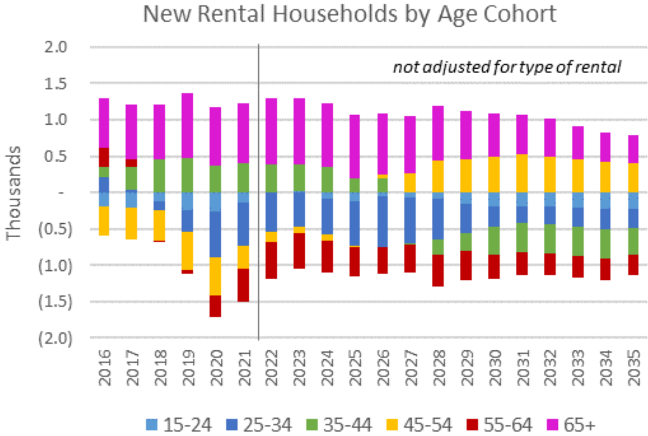
Rent as a Percent of Household Income



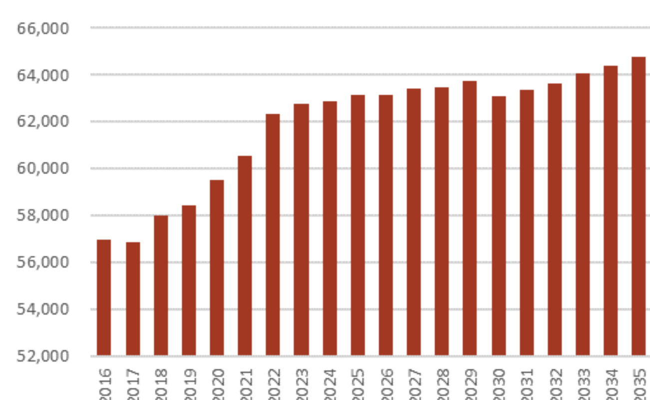
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



5+ Units Apartment Demand Forecast

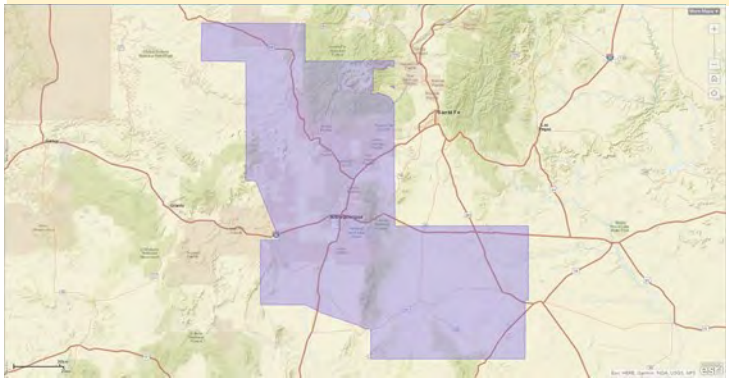


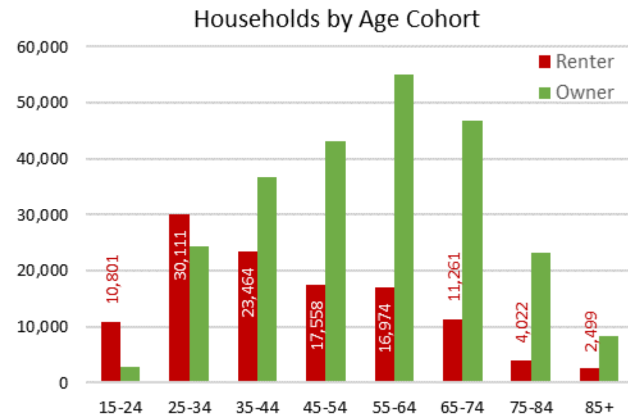
NMHC NATIONAL MULTIFAMILY HOUSING COUNCIL

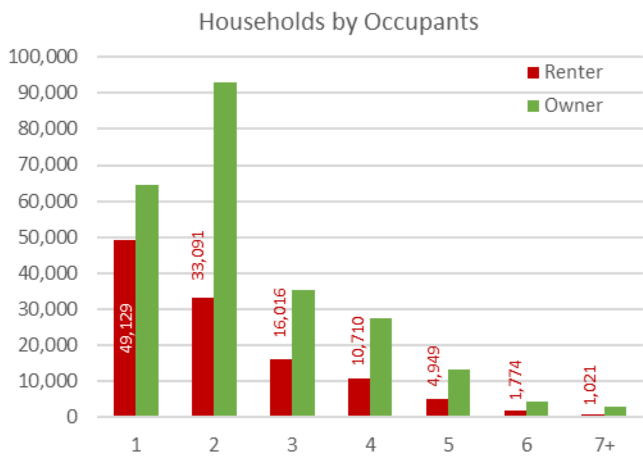
NAA NATIONAL APARTMENT ASSOCIATION

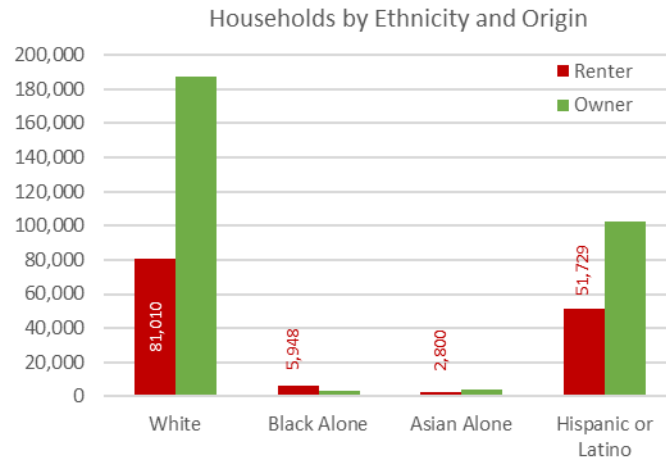
HAS University of San Diego E10A

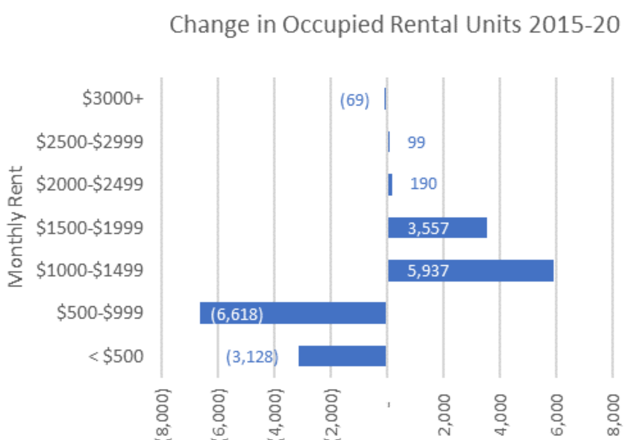
ALBUQUERQUE page 2

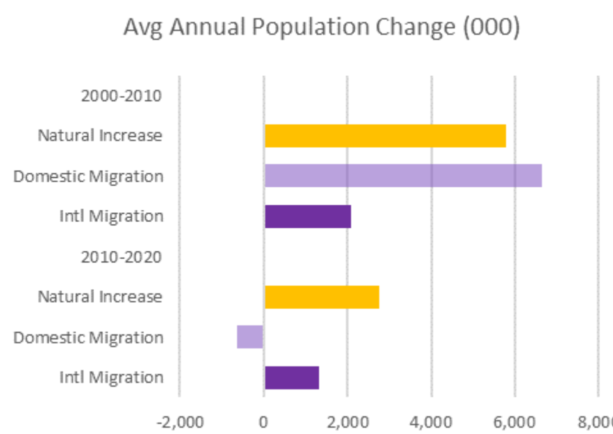












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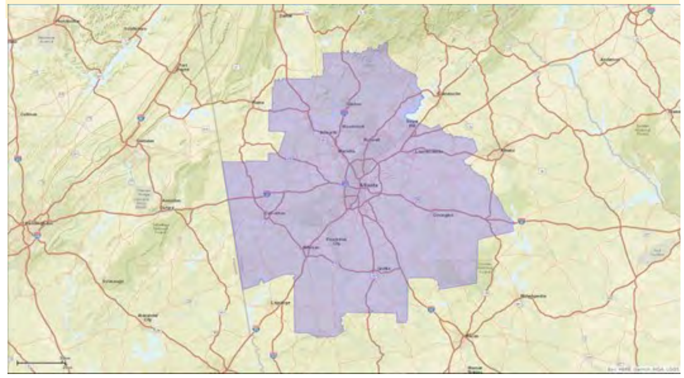
METRO MULTIFAMILY DEMAND OVERVIEW

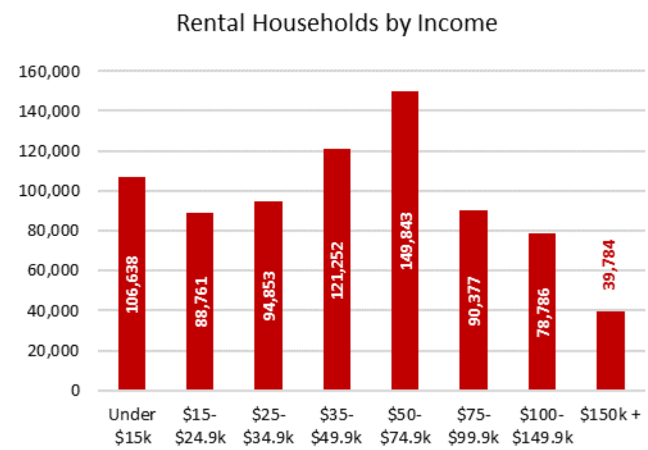
ATLANTA

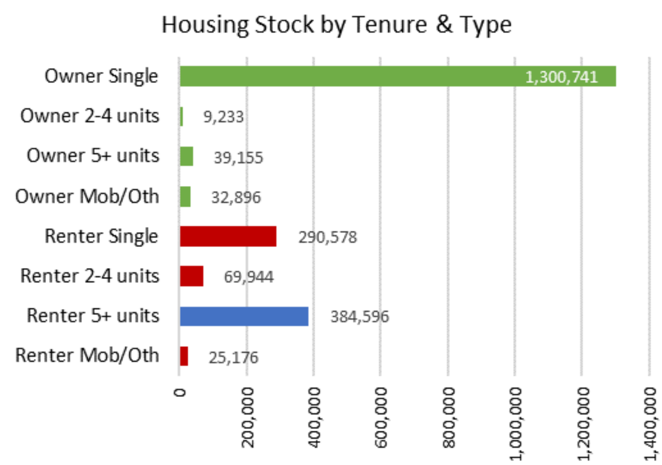


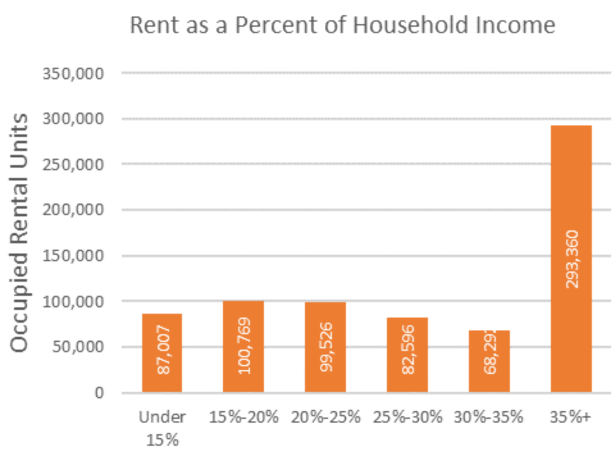
116,167 **Apartment units needed by 2035**

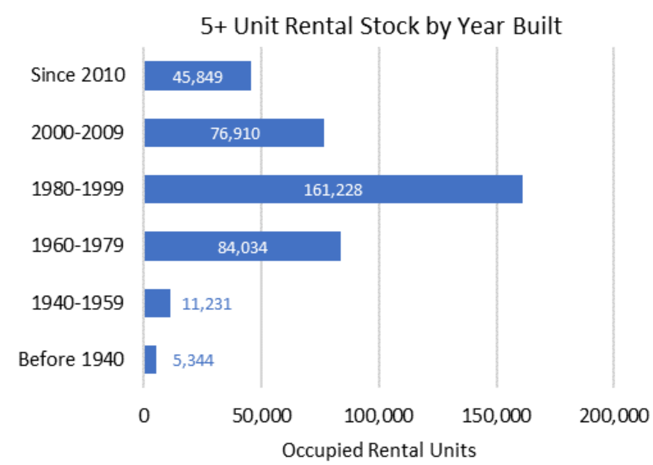
Definitions on following page

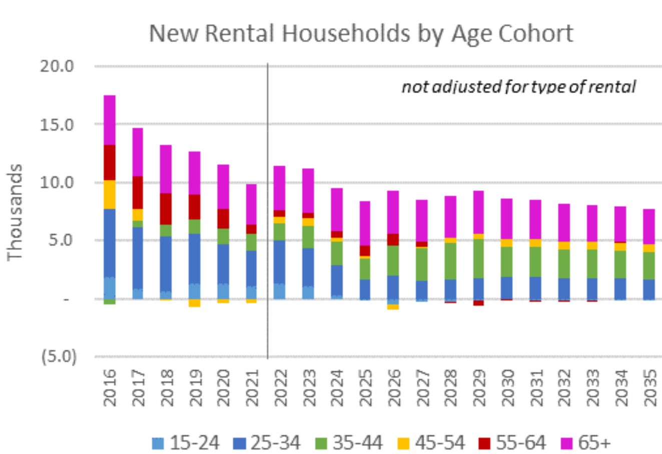
DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
7	60	33	15%

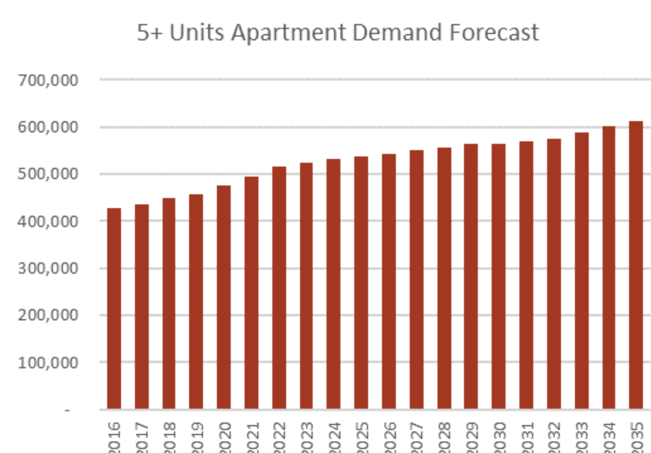






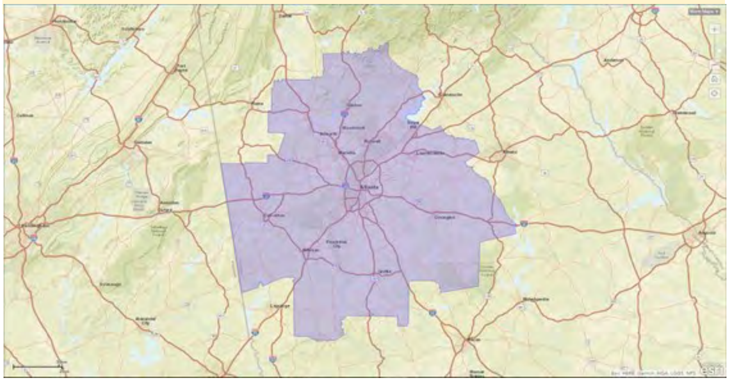


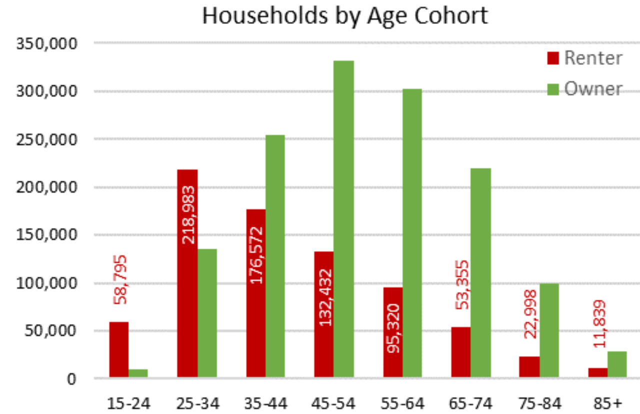


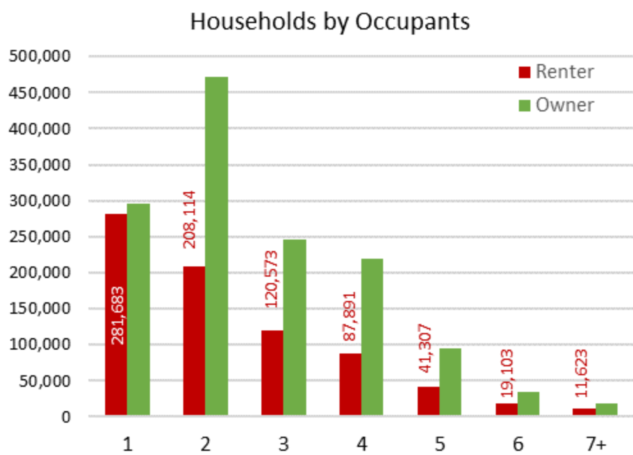


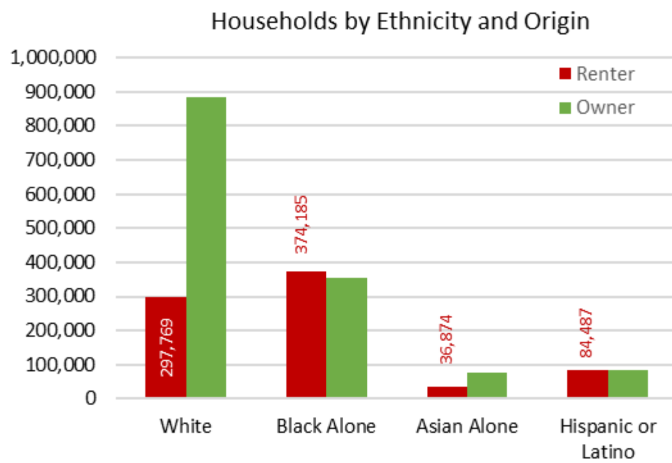
NATIONAL MULTIFAMILY HOUSING COUNCIL NATIONAL APARTMENT ASSOCIATION

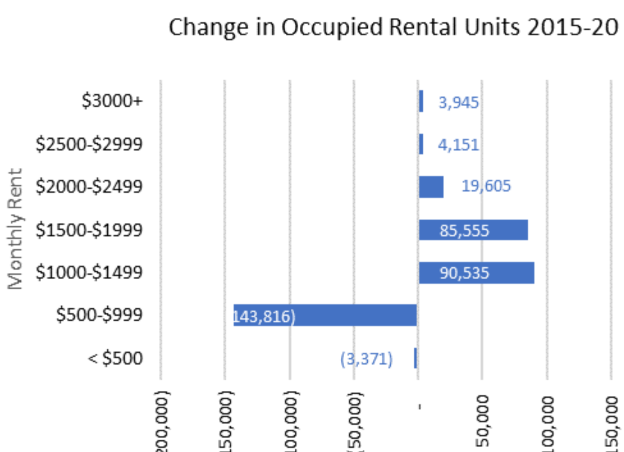
ATLANTA page 2

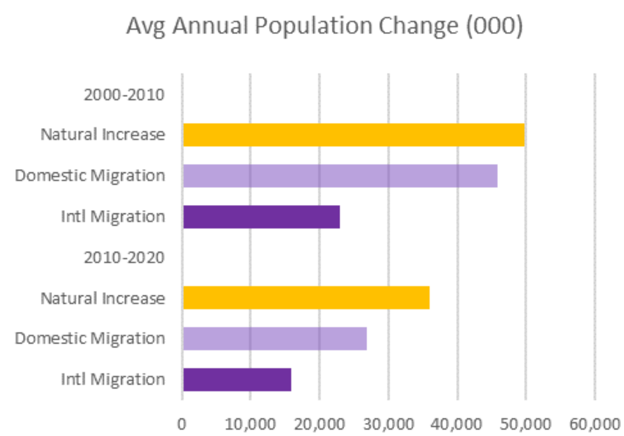












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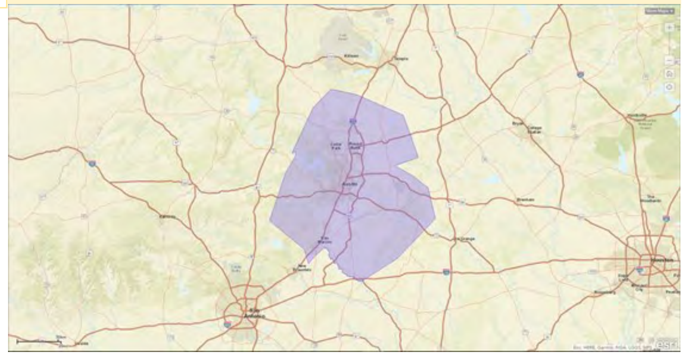
NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION
HAS
University of San Diego School of Business
E10A Capital Properties ESG

METRO MULTIFAMILY DEMAND OVERVIEW

AUSTIN

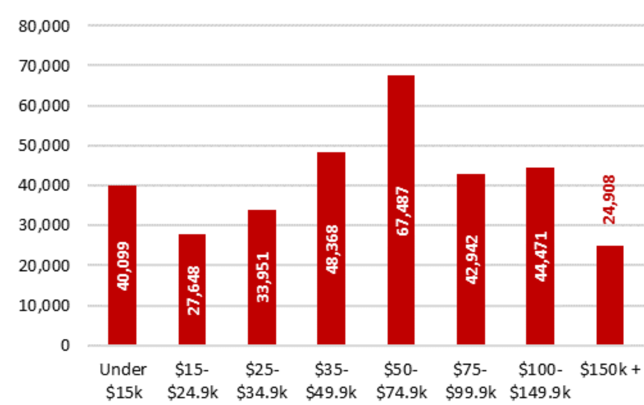


117,107 Apartment units needed by 2035

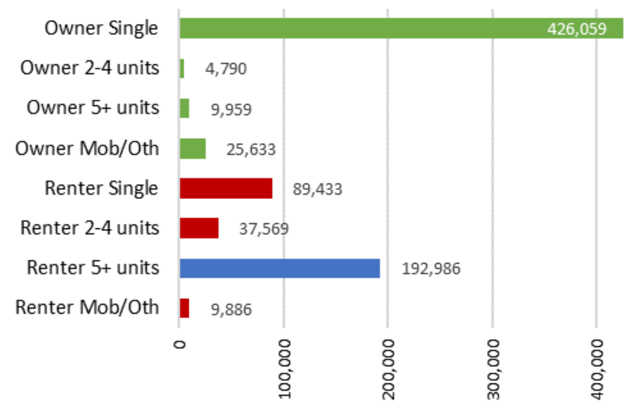
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
1	63	5	12%

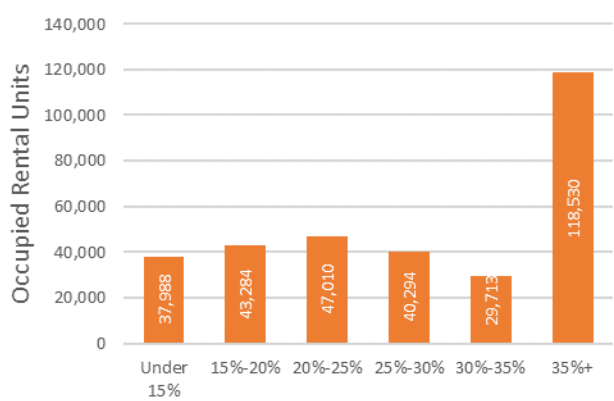
Rental Households by Income



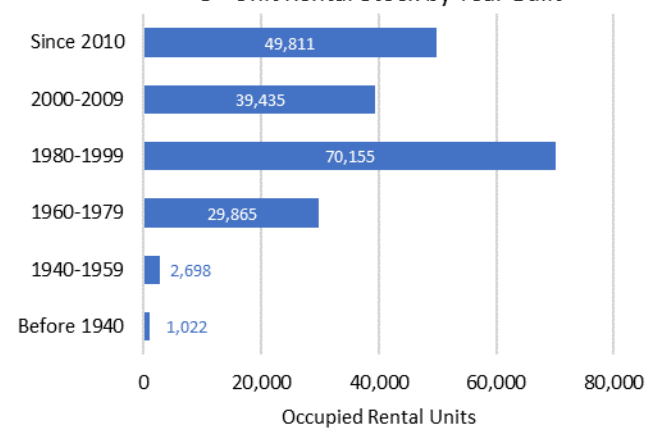
Housing Stock by Tenure & Type



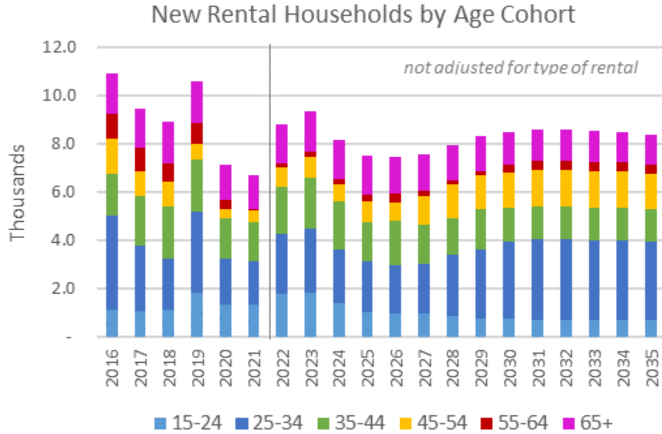
Rent as a Percent of Household Income



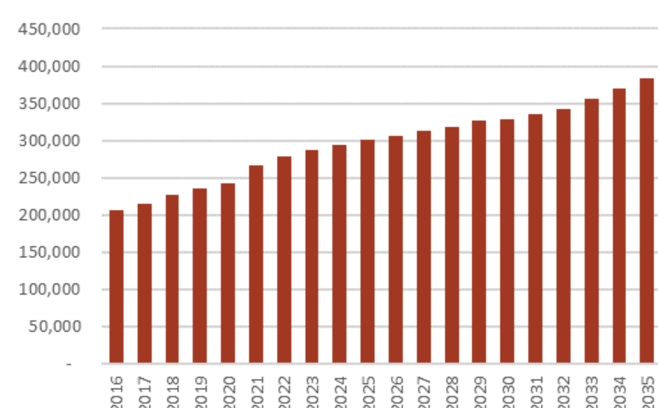
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



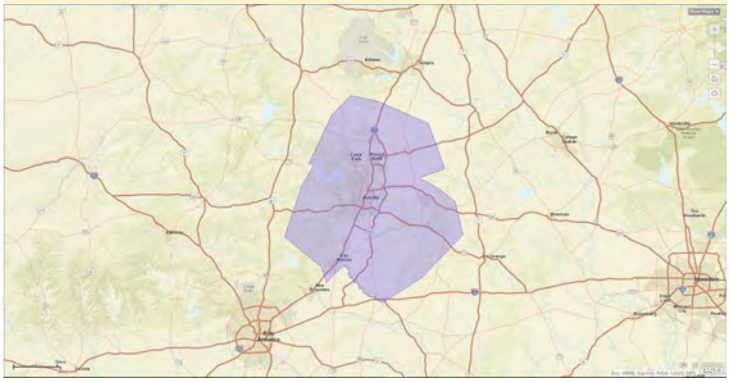
5+ Units Apartment Demand Forecast

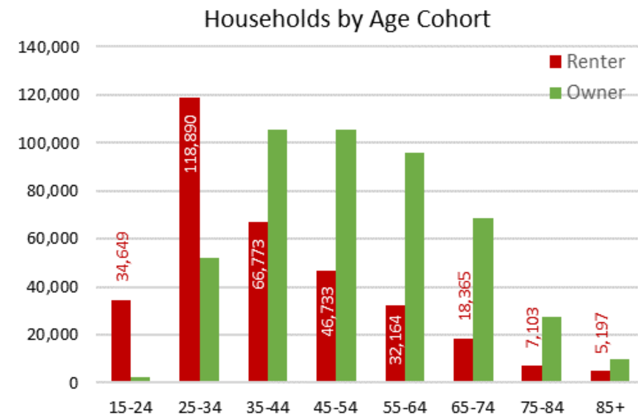


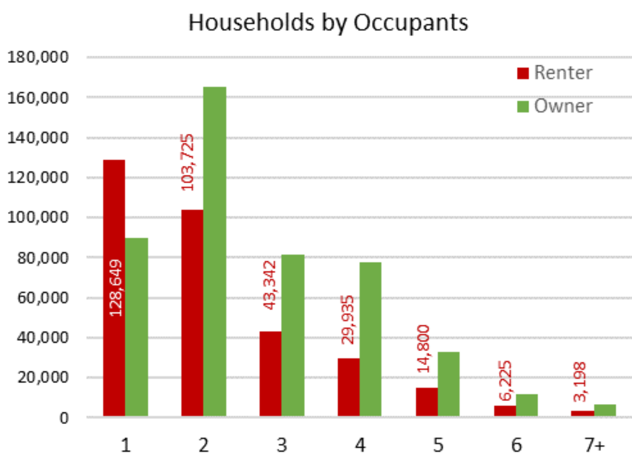
NATIONAL MULTIFAMILY HOUSING COUNCIL

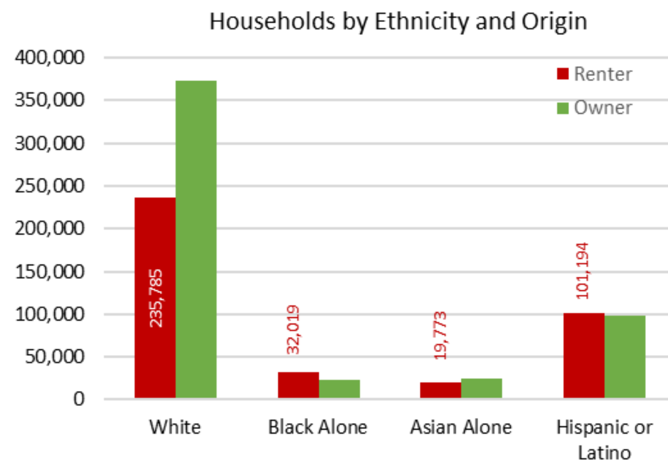
NATIONAL APARTMENT ASSOCIATION

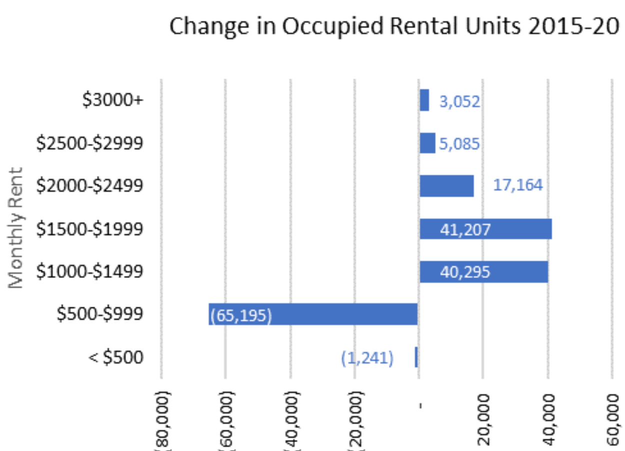
AUSTIN page 2

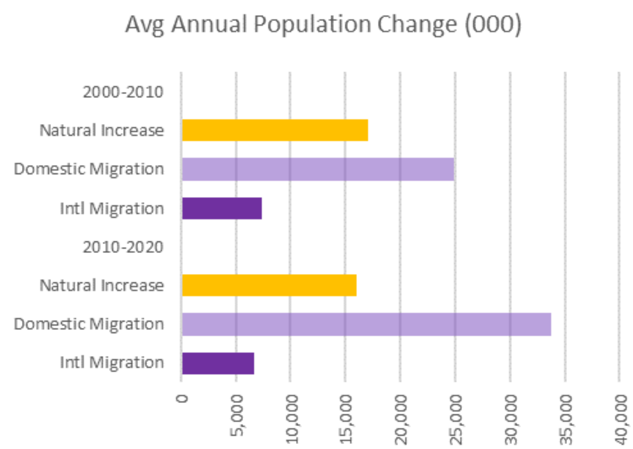












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METRO MULTIFAMILY DEMAND OVERVIEW

BALTIMORE

21,034

Apartment units needed by 2035

Definitions on following page

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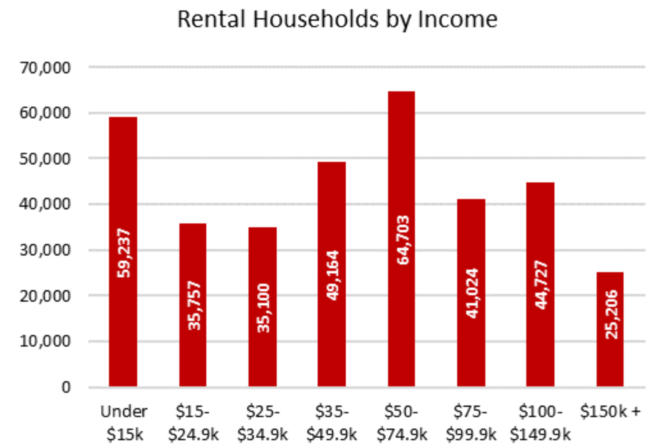
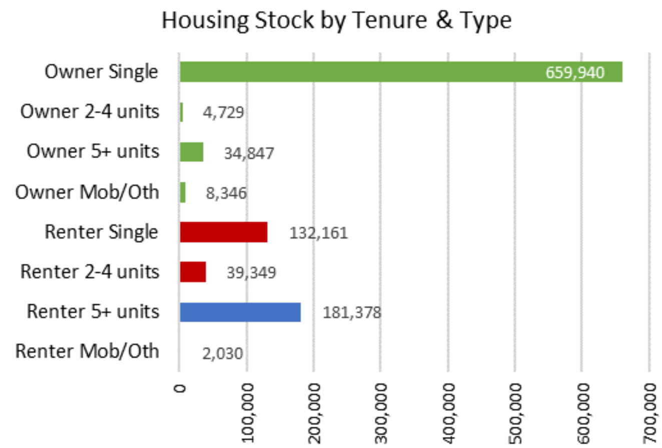
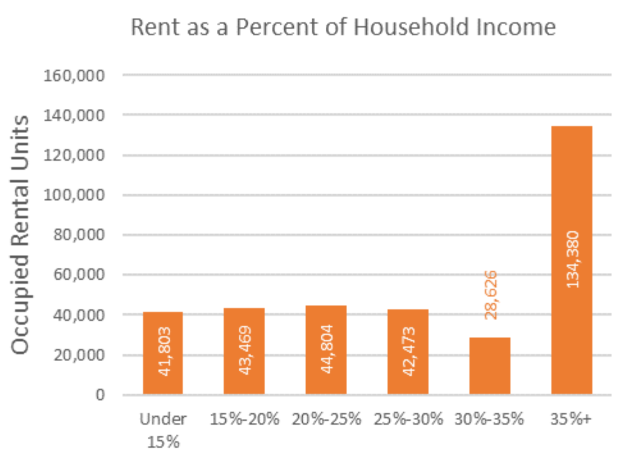
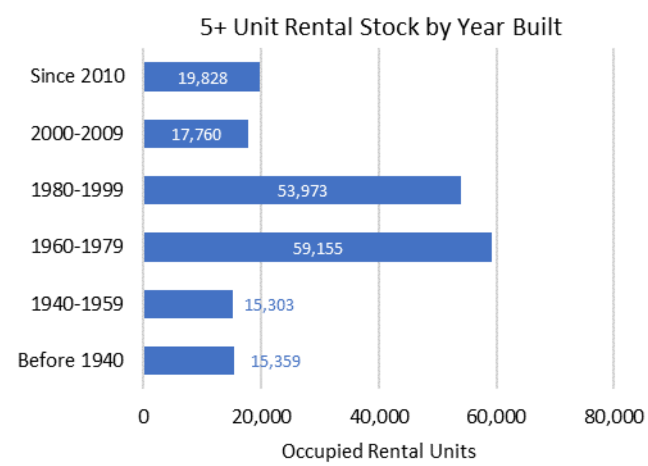
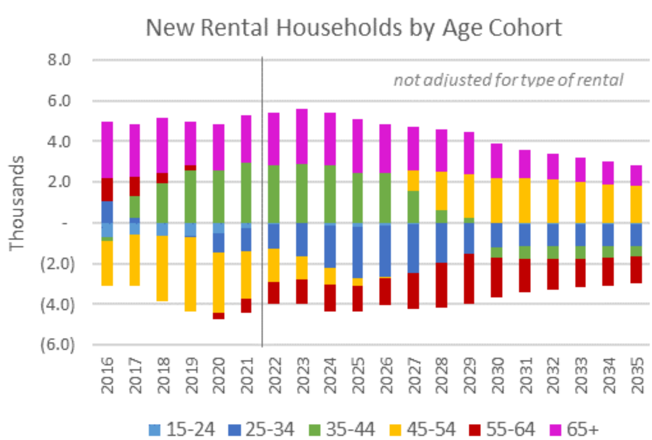
36	60	29	38%

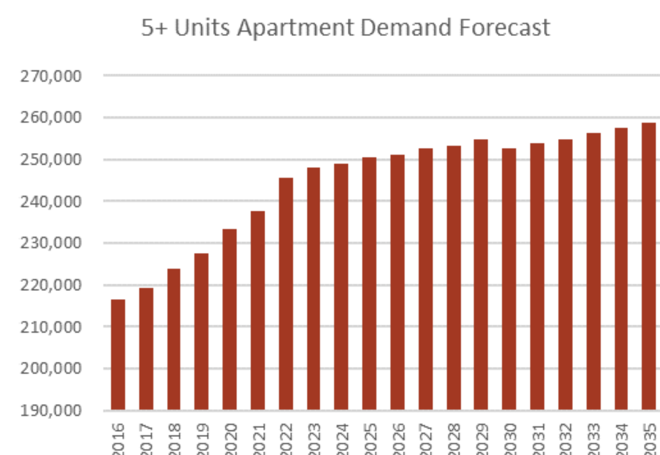








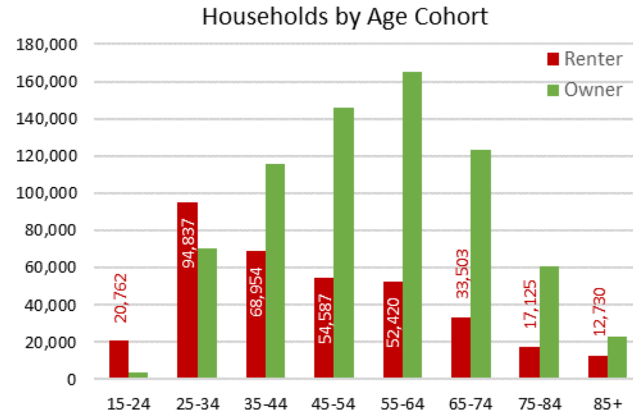


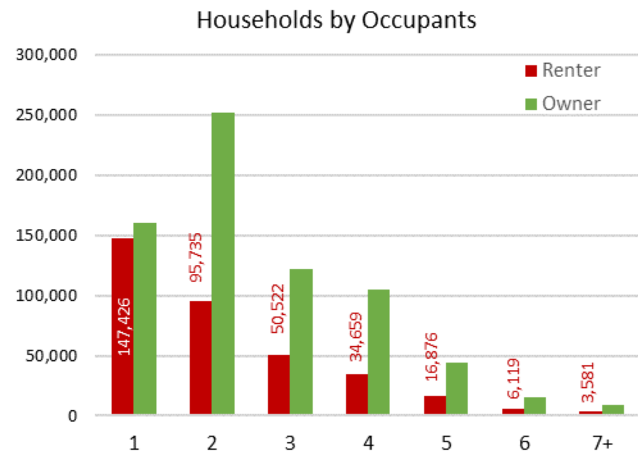


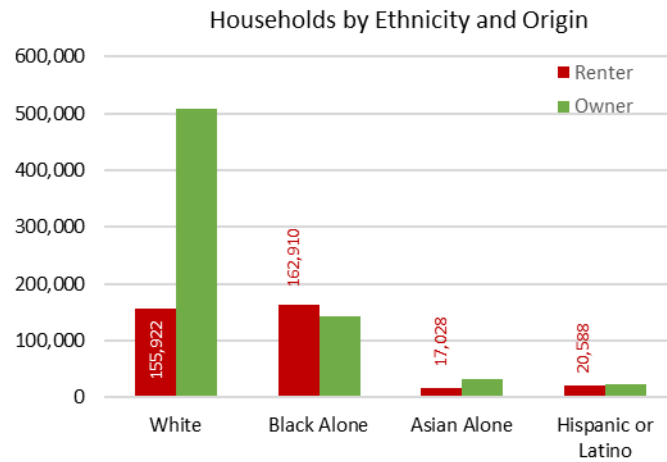
NATIONAL MULTIFAMILY HOUSING COUNCIL

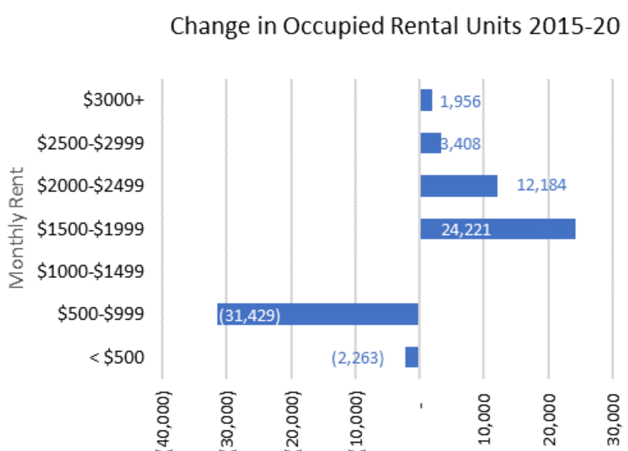
NATIONAL APARTMENT ASSOCIATION

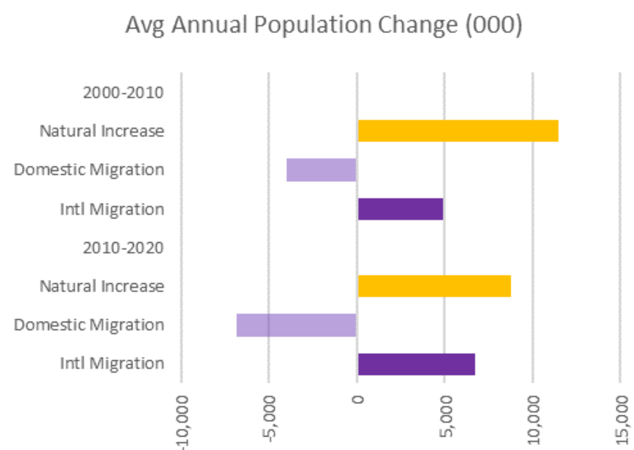
BALTIMORE page 2











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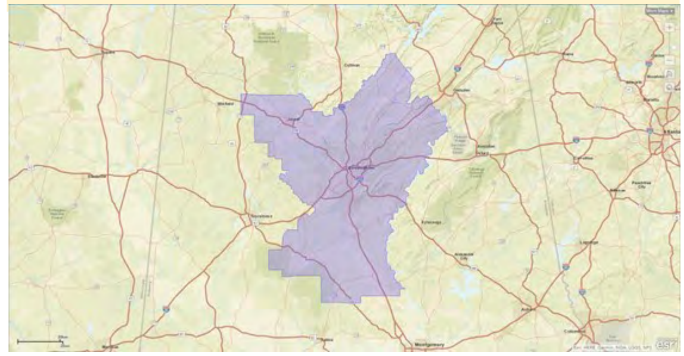
METRO MULTIFAMILY DEMAND OVERVIEW

BIRMINGHAM



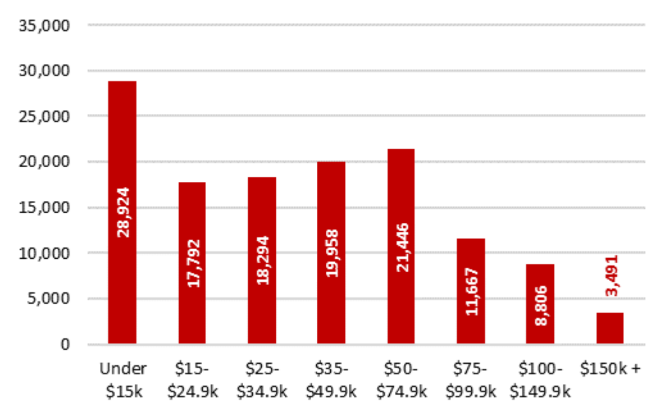
4,531

Apartment units needed by 2035

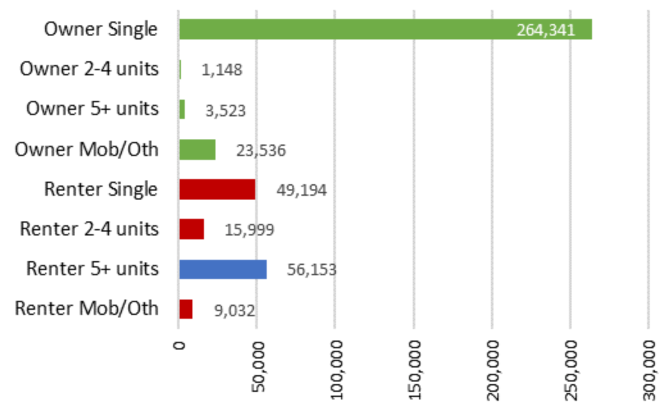
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR SHARE*
46	61	50	26%

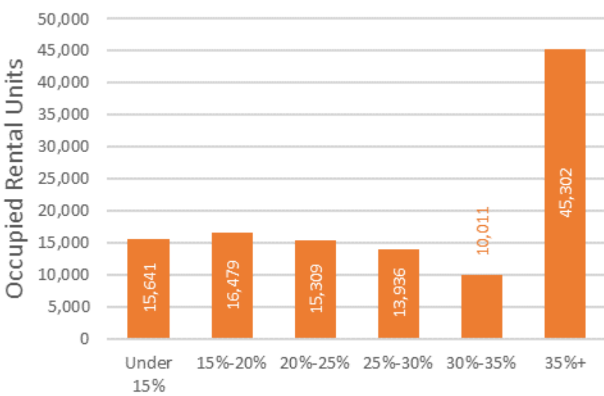
Rental Households by Income



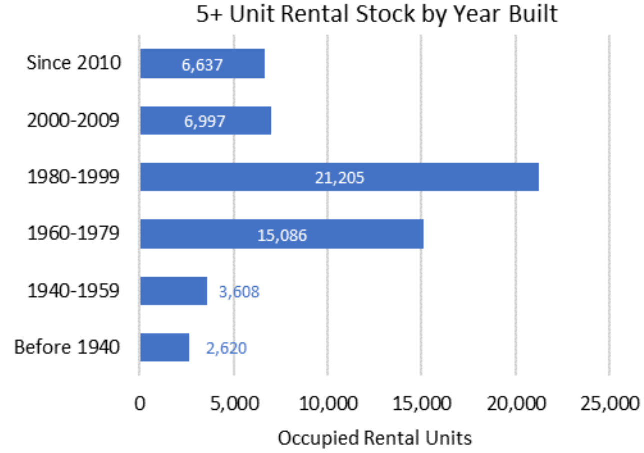
Housing Stock by Tenure & Type



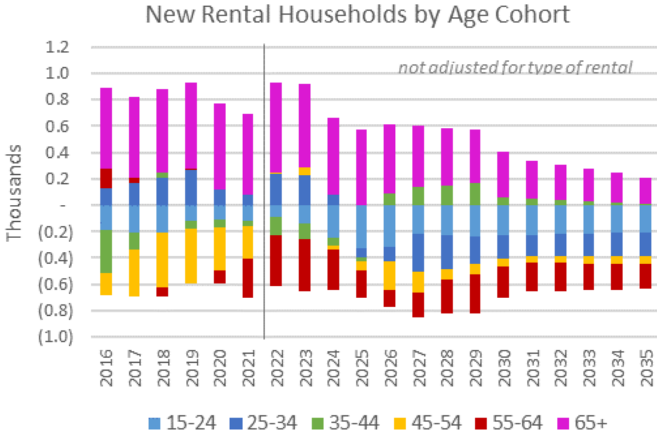
Rent as a Percent of Household Income



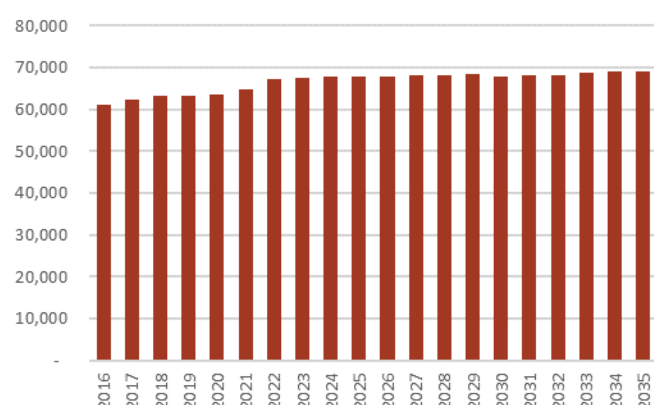
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort

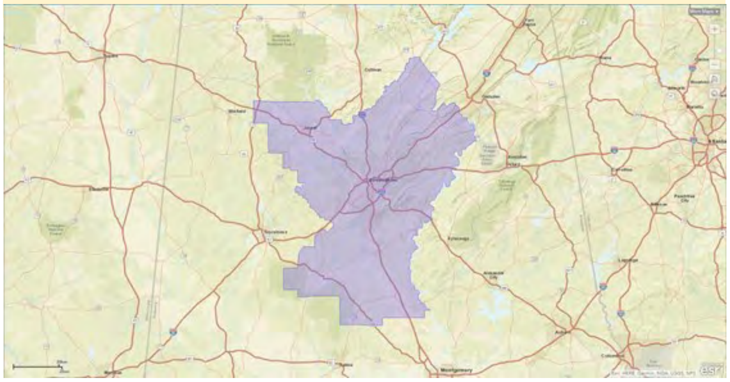


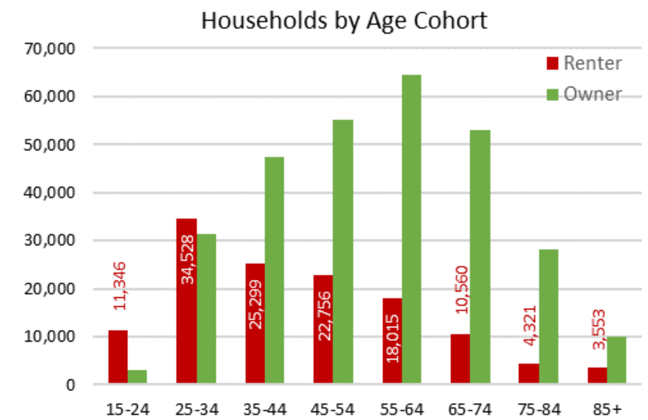
5+ Units Apartment Demand Forecast

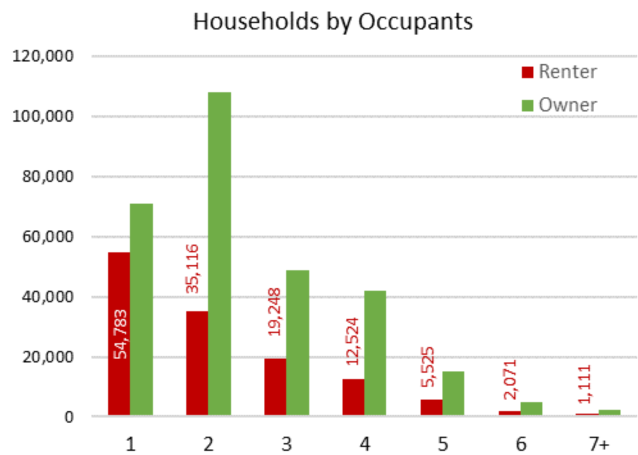


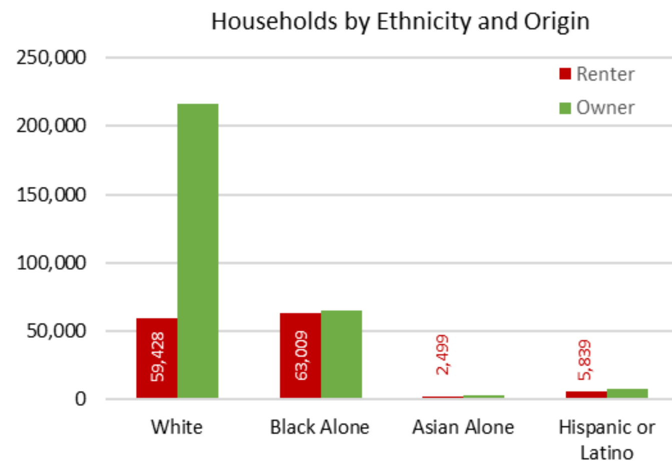
NMHC NATIONAL MULTIFAMILY HOUSING COUNCIL NAA NATIONAL APARTMENT ASSOCIATION HAS University of San Diego SCHOOL OF BUSINESS E10A Capital Properties ESG

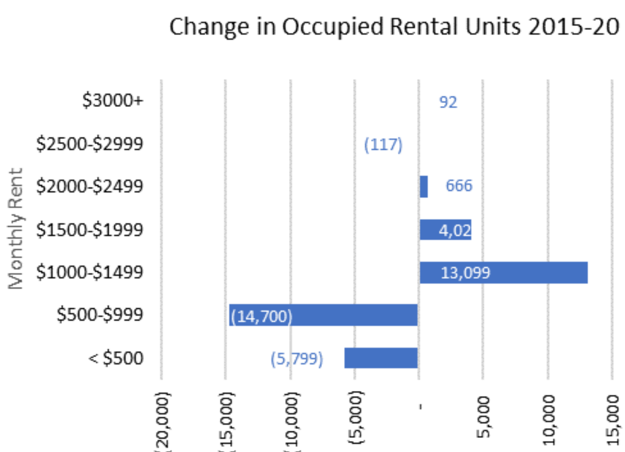
BIRMINGHAM page 2

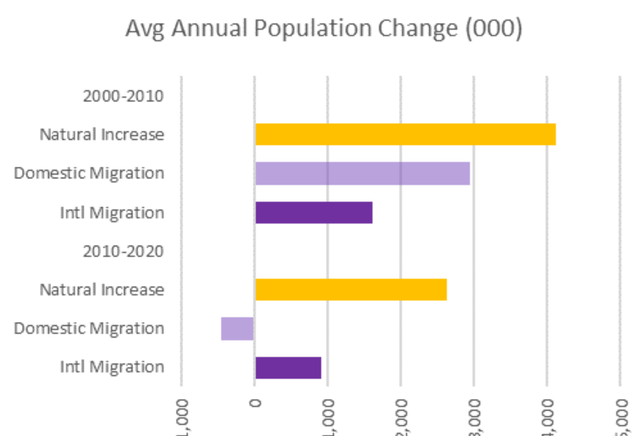












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METRO MULTIFAMILY DEMAND OVERVIEW

BOISE CITY

17,900 Apartment units needed by 2035

Definitions on following page

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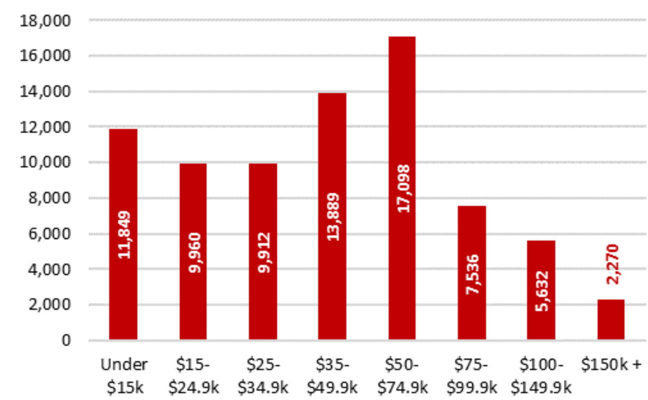
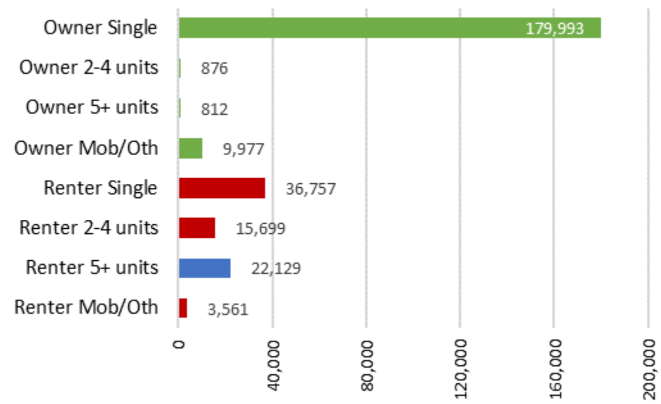
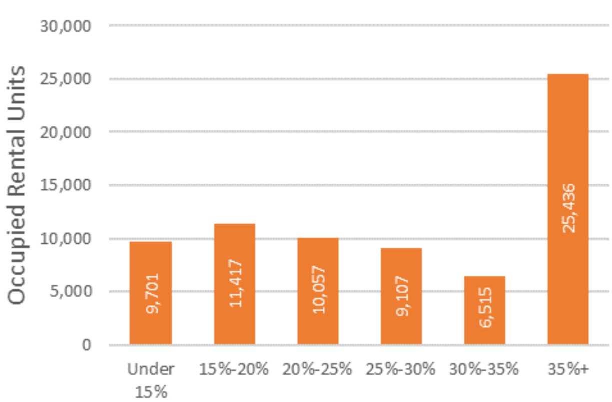
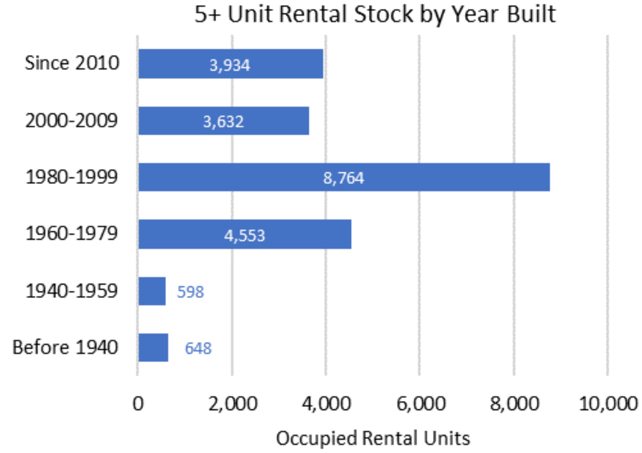
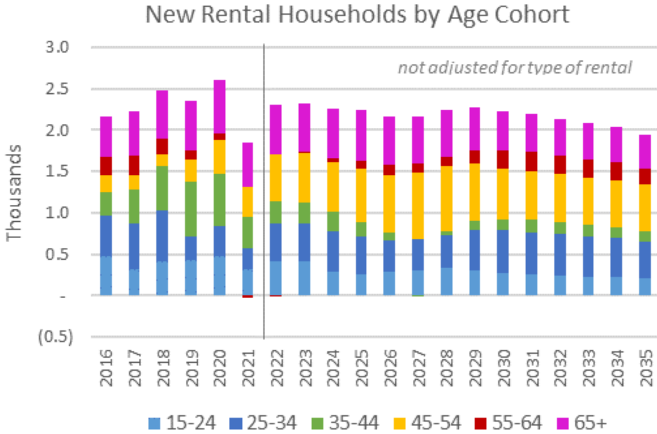
18	65	3	23%

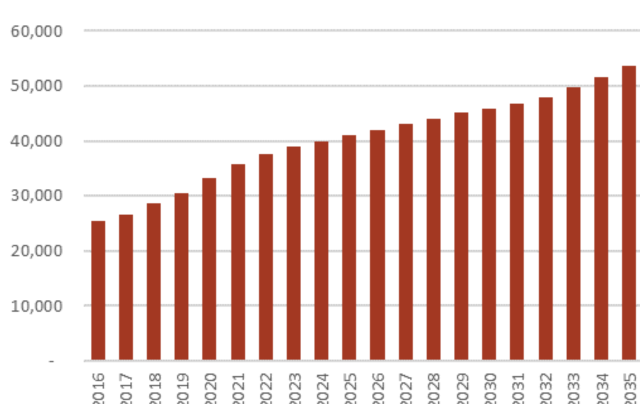












NATIONAL MULTIFAMILY HOUSING COUNCIL

NATIONAL APARTMENT ASSOCIATION

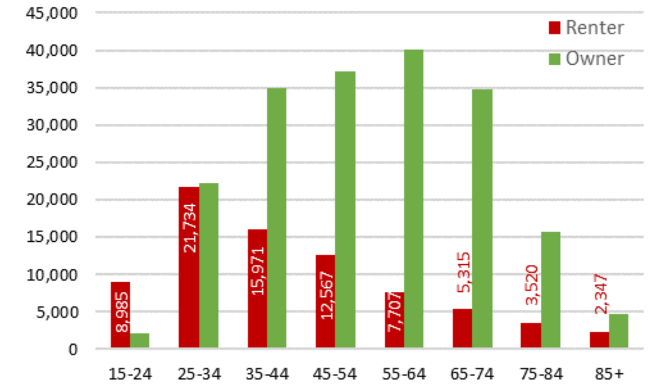
HAS

University of San Diego School of Business

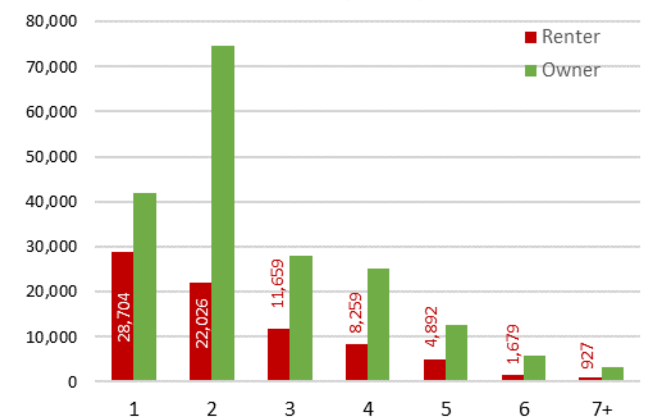
E10A

BOISE CITY page 2

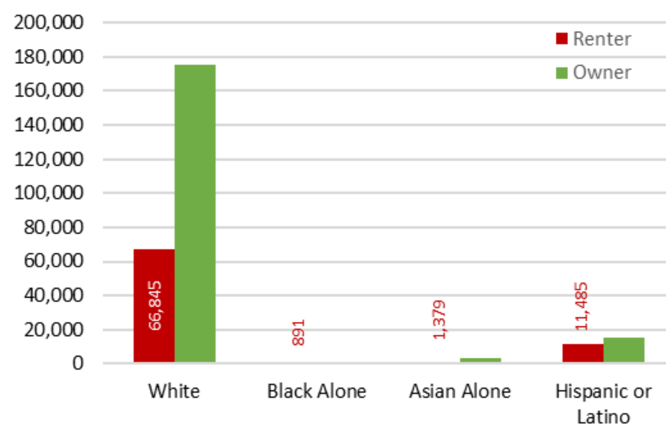
Households by Age Cohort



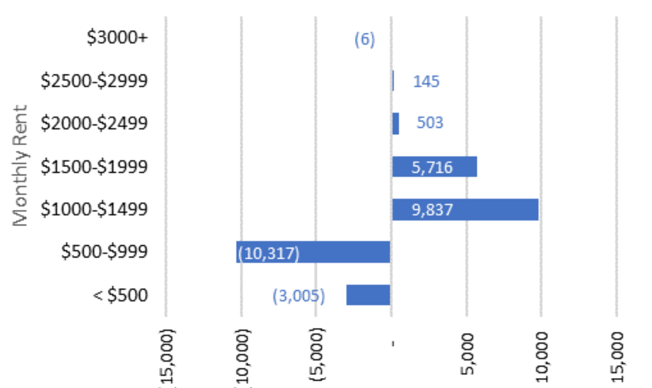
Households by Occupants



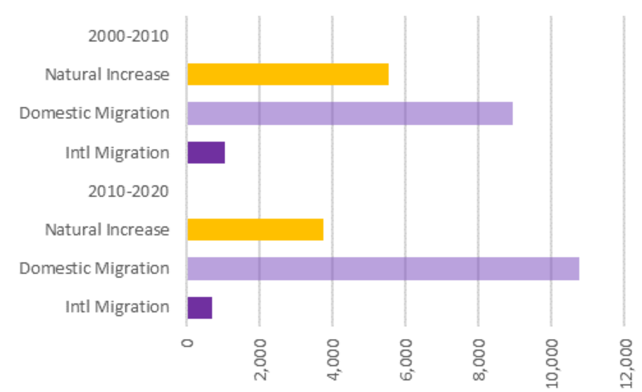
Households by Ethnicity and Origin



Change in Occupied Rental Units 2015-20



Avg Annual Population Change (000)



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NATIONAL MULTIFAMILY HOUSING COUNCIL NATIONAL APARTMENT ASSOCIATION

METRO MULTIFAMILY DEMAND OVERVIEW

BOSTON

42,151 Apartment units needed by 2035

Definitions on following page

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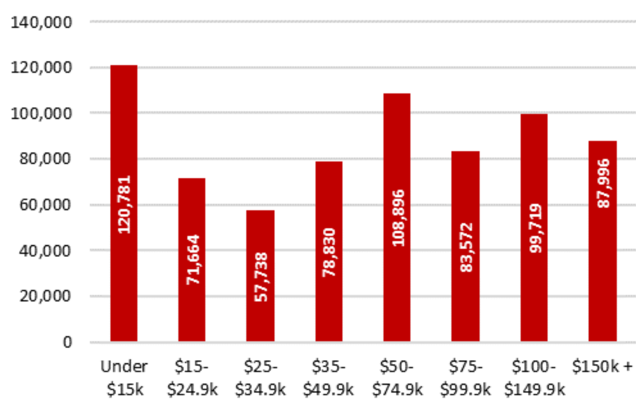
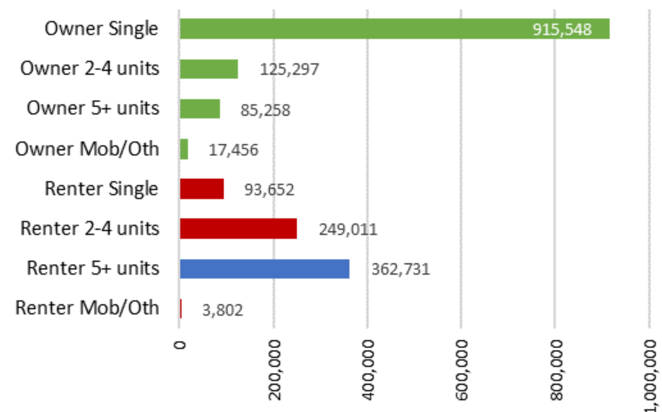
30	61	31	38%

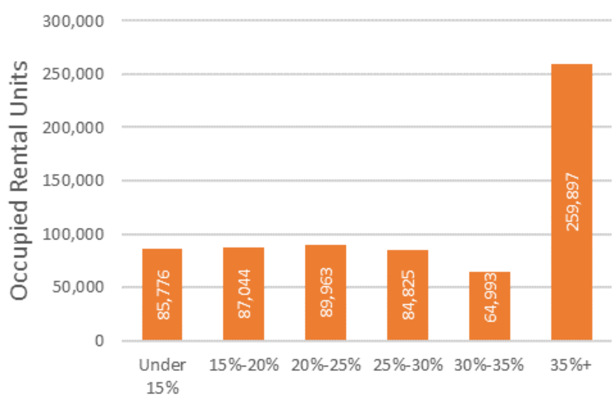
Rental Households by Income



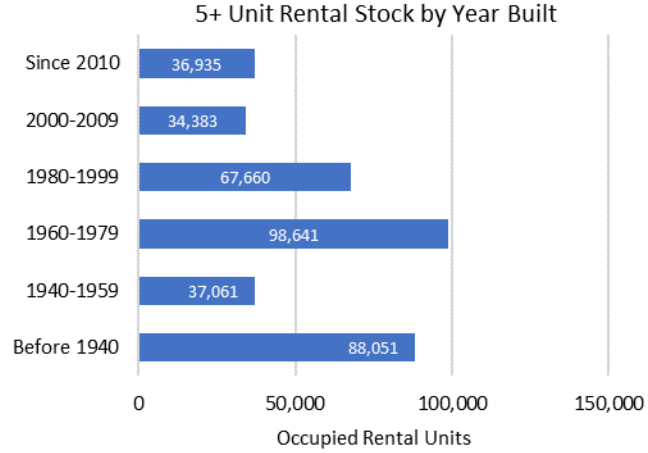
Housing Stock by Tenure & Type



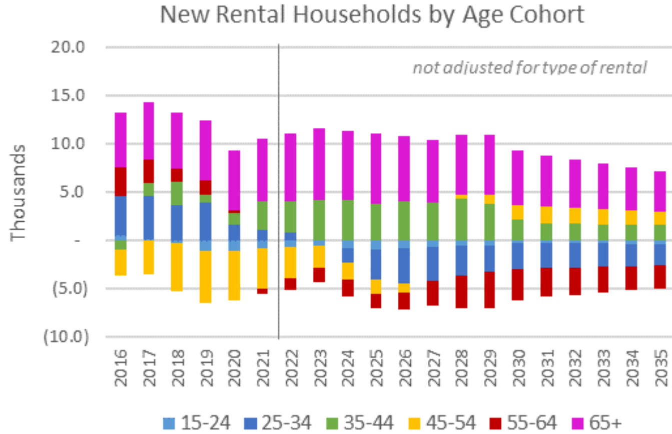
Rent as a Percent of Household Income



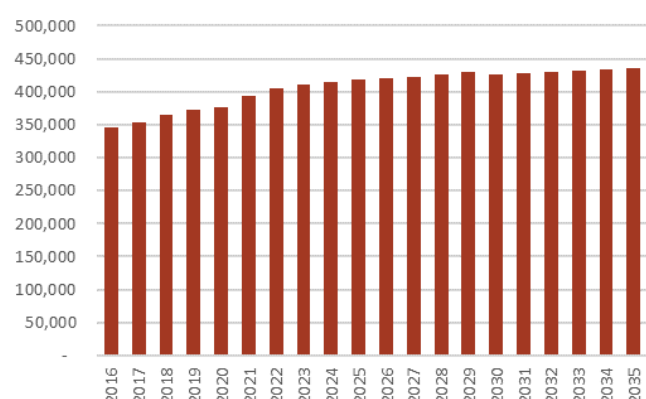
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort

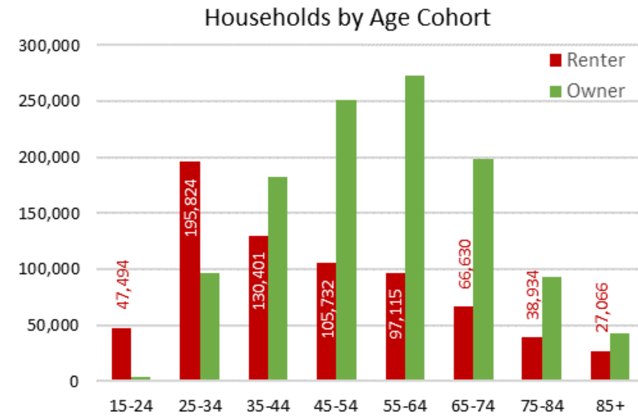


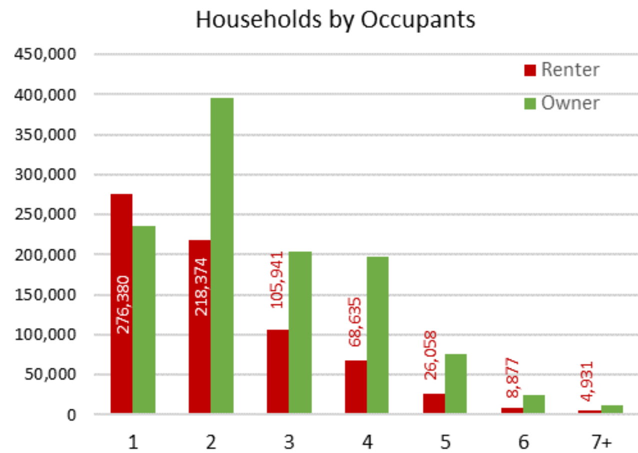
5+ Units Apartment Demand Forecast

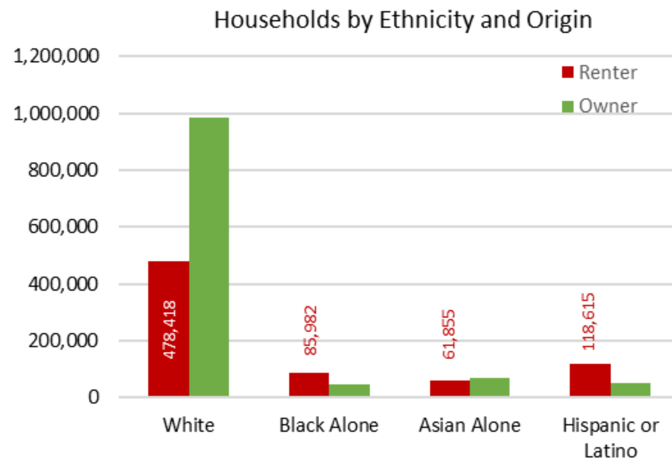


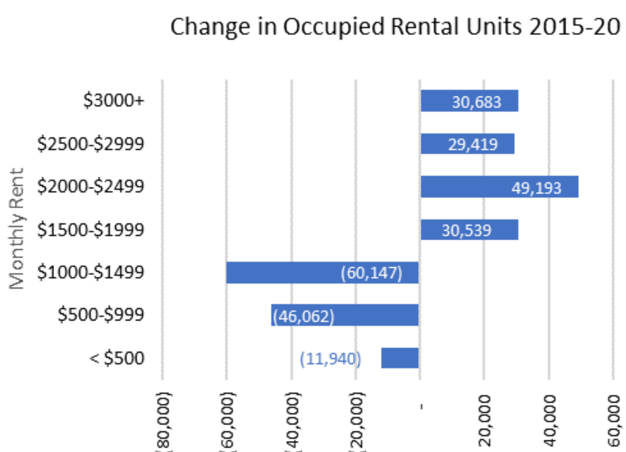
NMHC NATIONAL MULTIFAMILY HOUSING COUNCIL NAA NATIONAL APARTMENT ASSOCIATION HAS University of San Diego SCHOOL OF BUSINESS E10A Capital Properties ESG

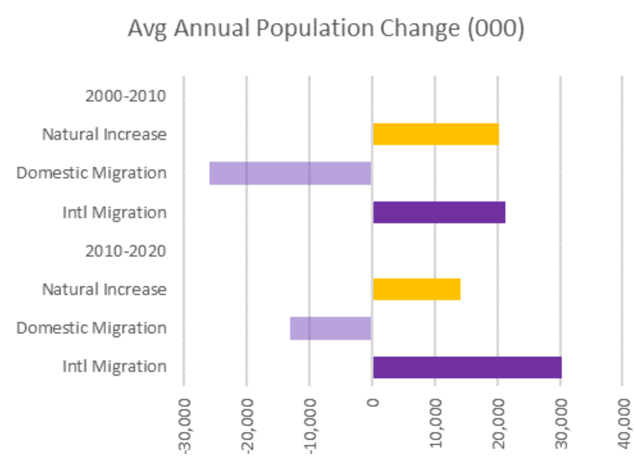
BOSTON page 2











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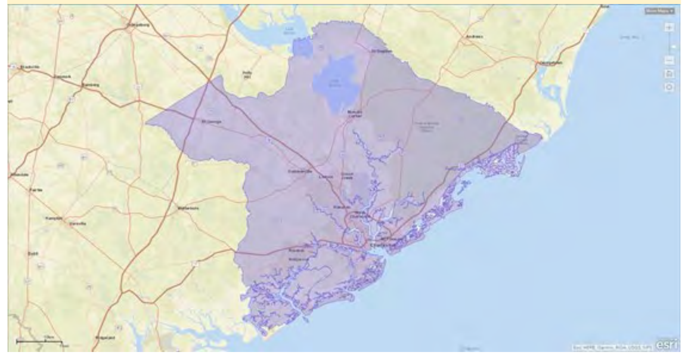
METRO MULTIFAMILY DEMAND OVERVIEW

CHARLESTON



19,263 Apartment units needed by 2035

Definitions on following page

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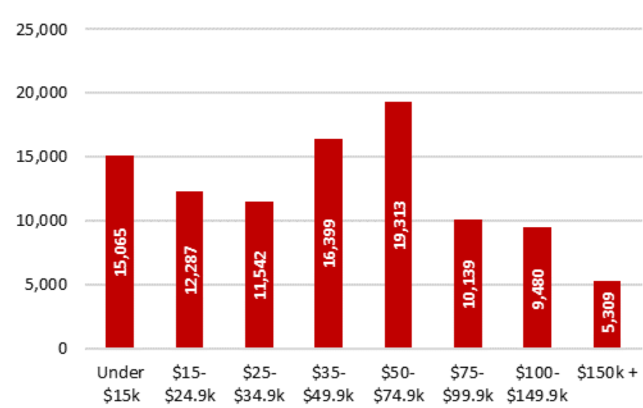
23	57	1	22%

Rental Households by Income



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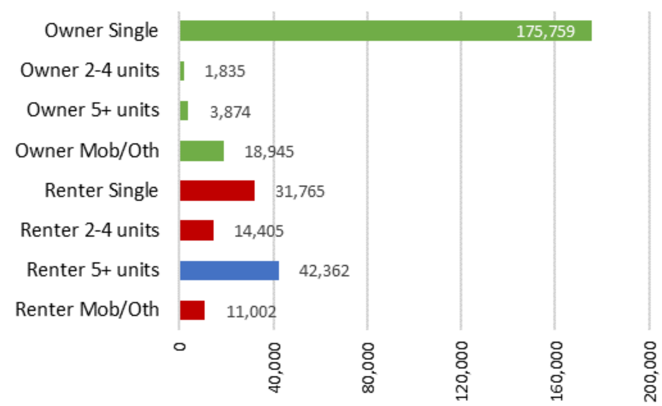

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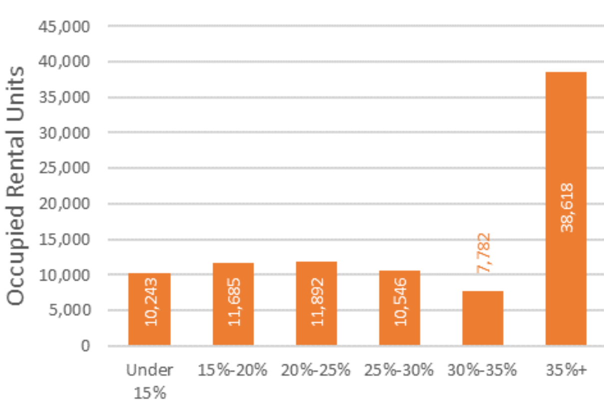
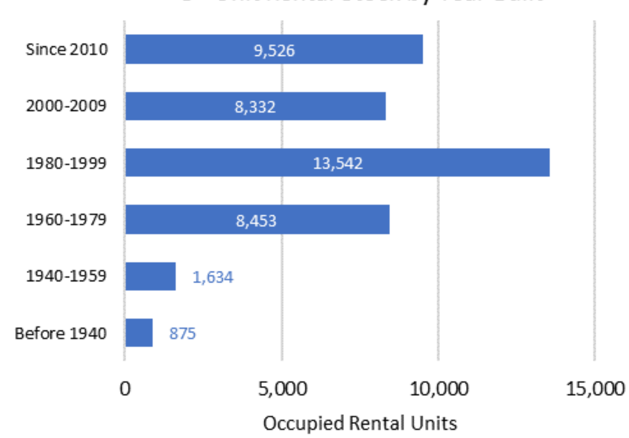


5+ Unit Rental Stock by Year Built



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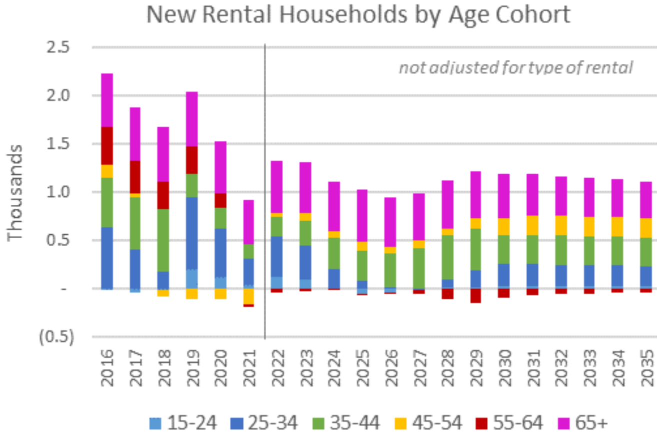
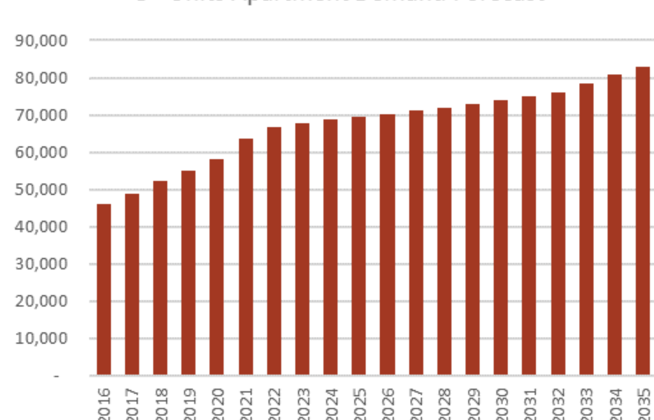


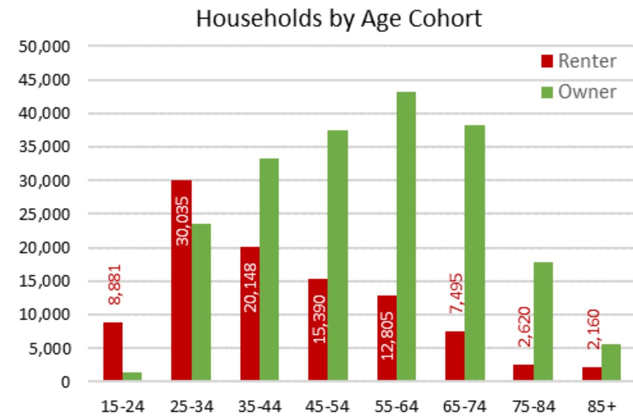
5+ Units Apartment Demand Forecast

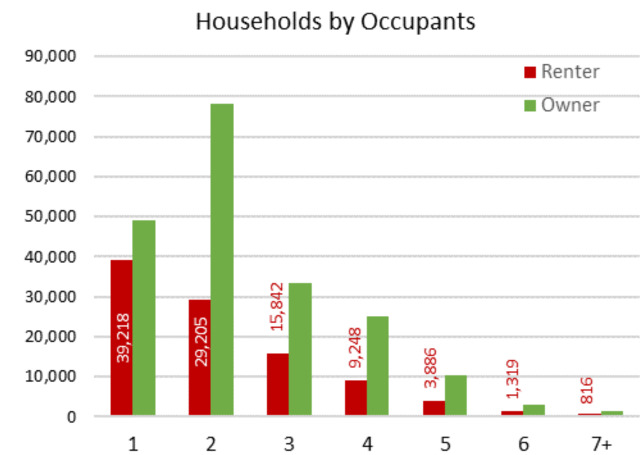


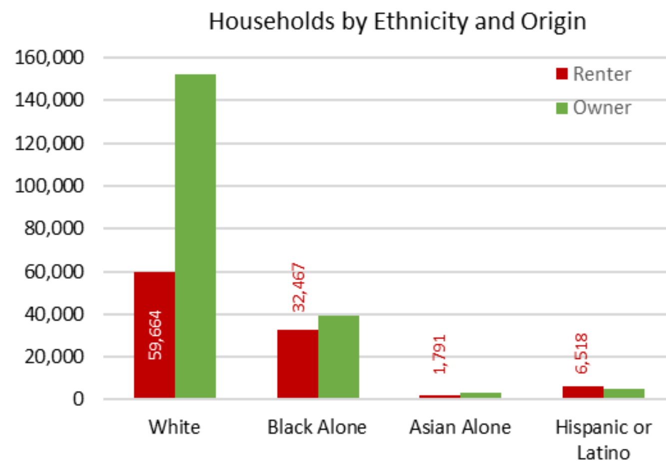
NATIONAL MULTIFAMILY HOUSING COUNCIL

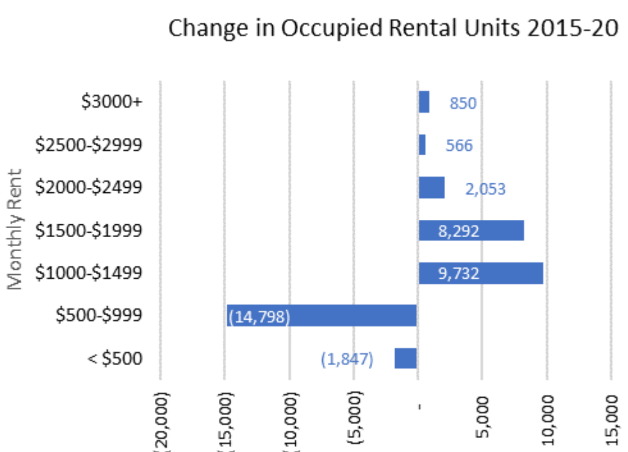
NATIONAL APARTMENT ASSOCIATION

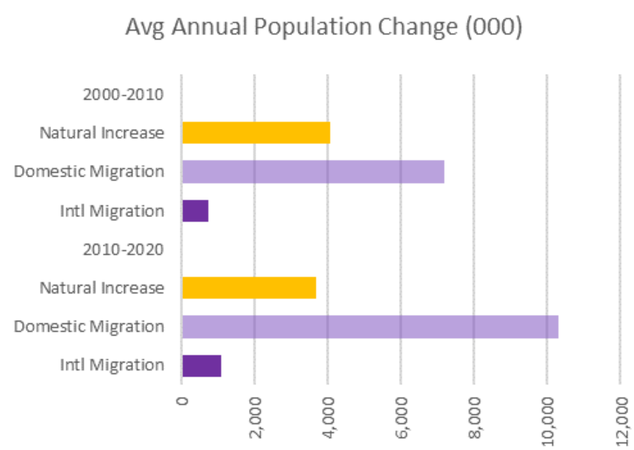
CHARLESTON page 2











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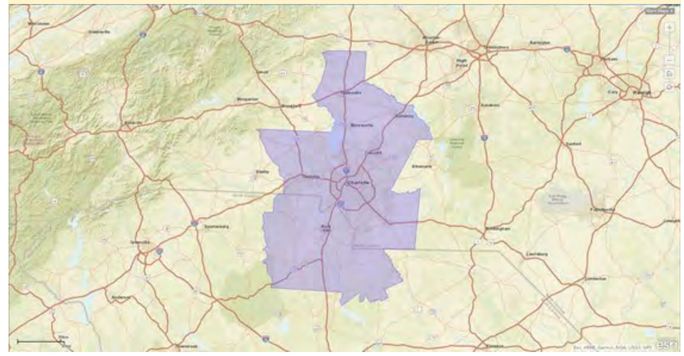
METRO MULTIFAMILY DEMAND OVERVIEW

CHARLOTTE



60,046

Apartment units needed by 2035

Definitions on following page

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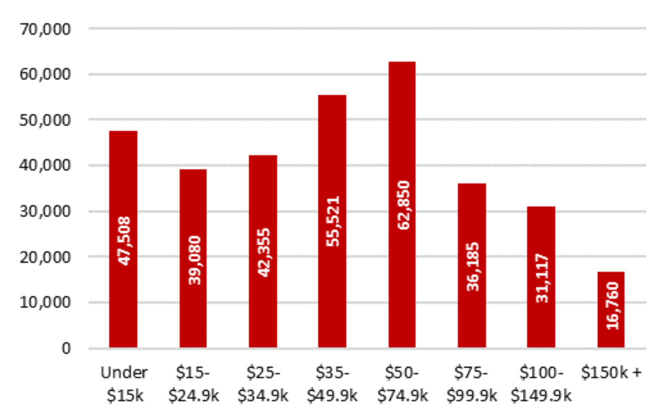
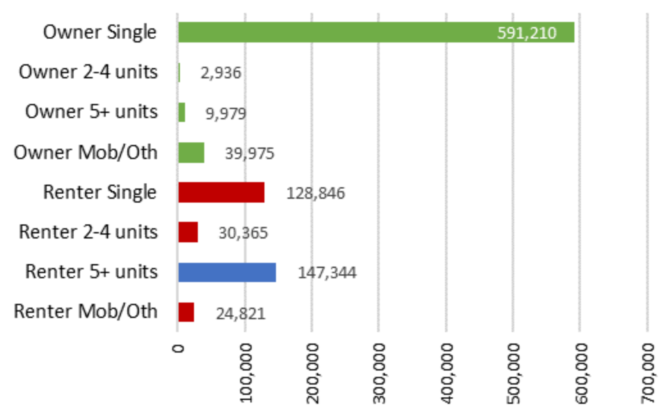
8	64	2	14%

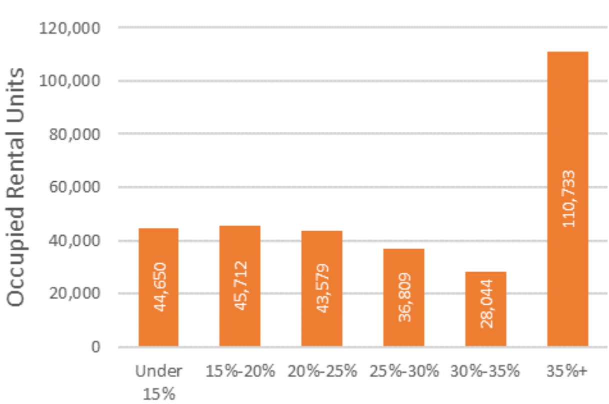
Rental Households by Income



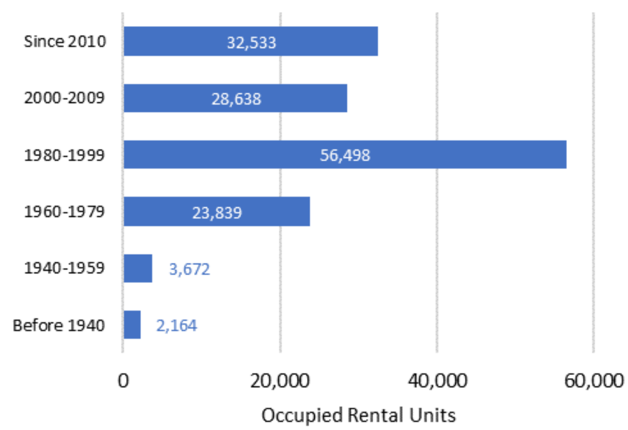
Housing Stock by Tenure & Type



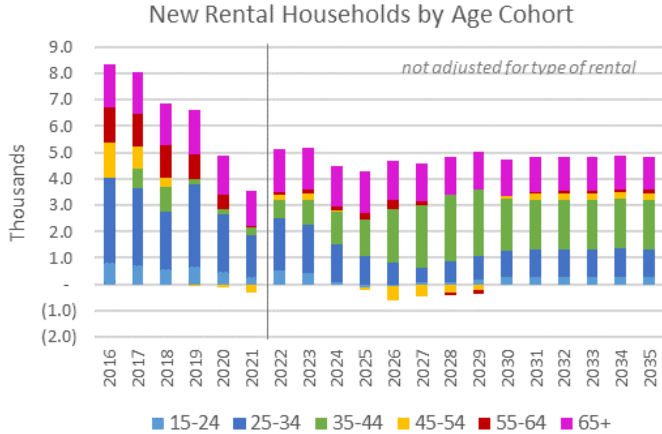
Rent as a Percent of Household Income



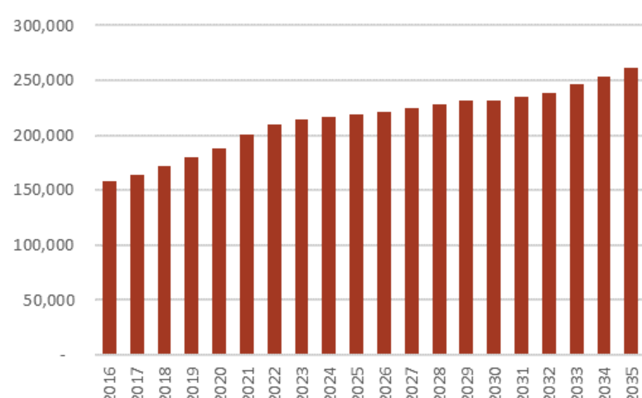
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



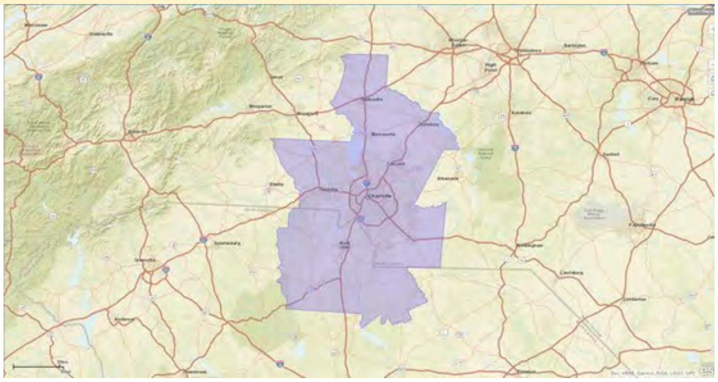
5+ Units Apartment Demand Forecast

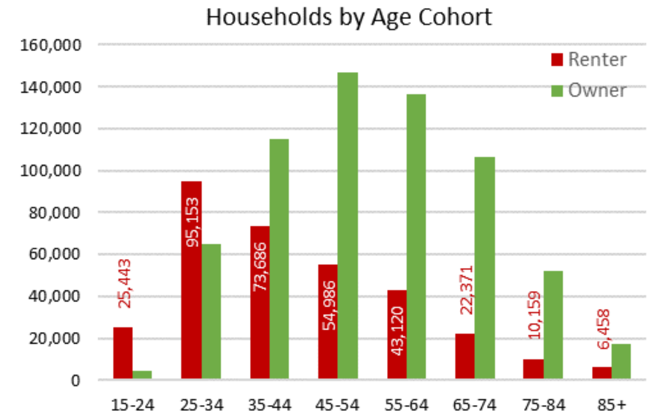


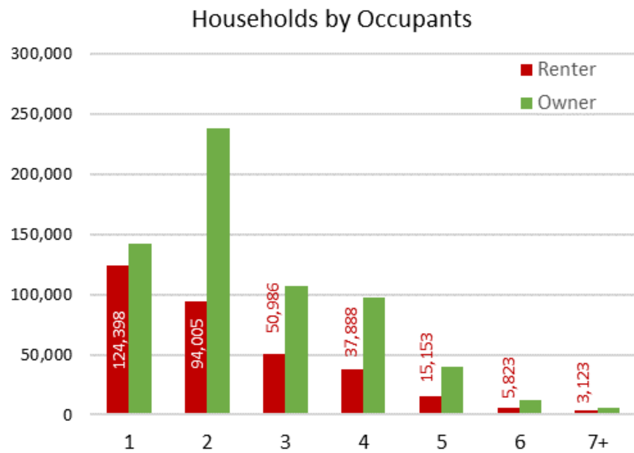
NATIONAL MULTIFAMILY HOUSING COUNCIL

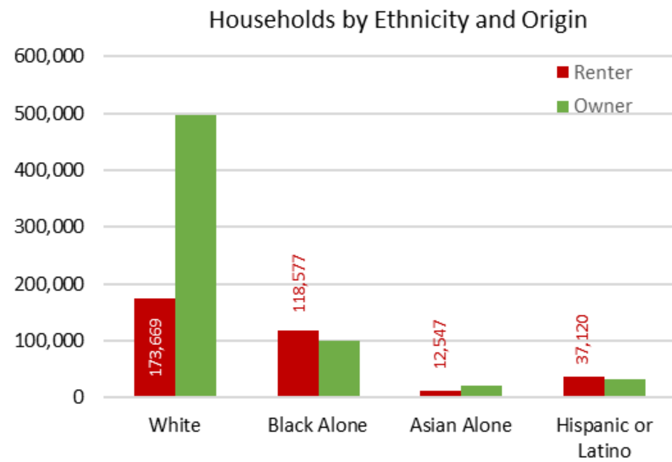
NATIONAL APARTMENT ASSOCIATION

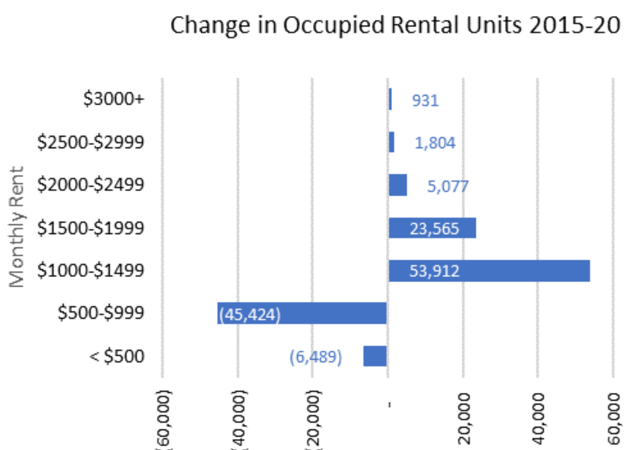
CHARLOTTE page 2

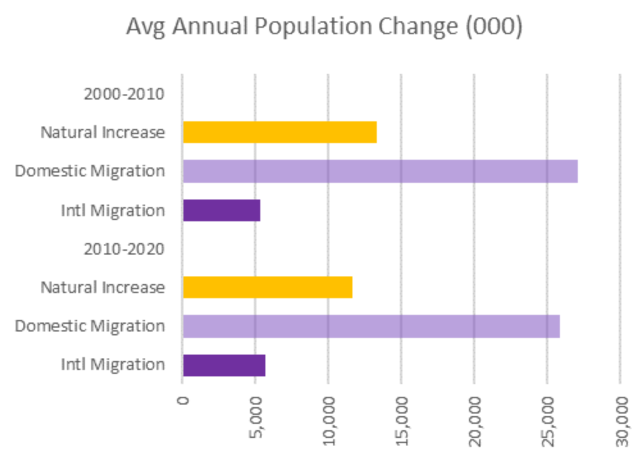












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METRO MULTIFAMILY DEMAND OVERVIEW

CHICAGO

30,658

Apartment units needed by 2035

Definitions on following page

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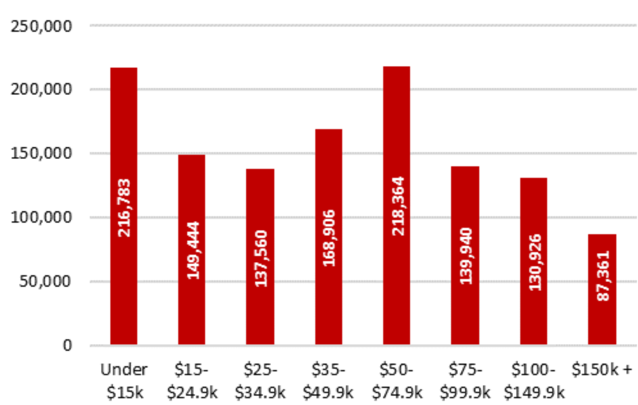
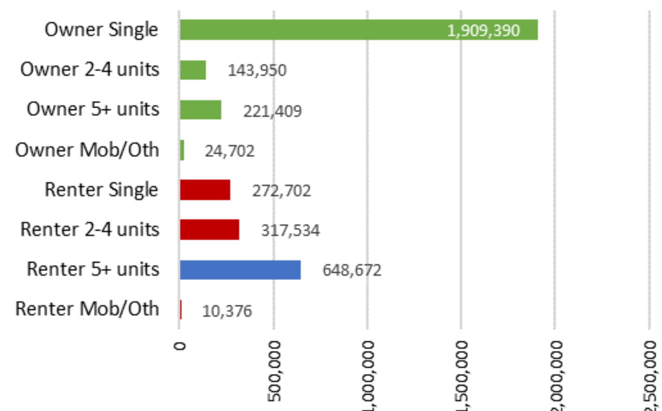
40	61	34	41%

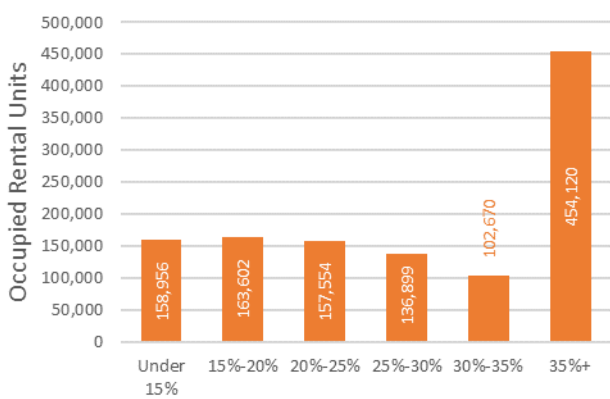
Rental Households by Income



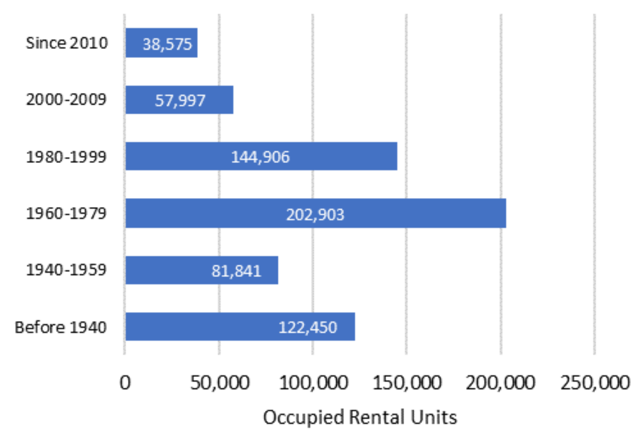
Housing Stock by Tenure & Type



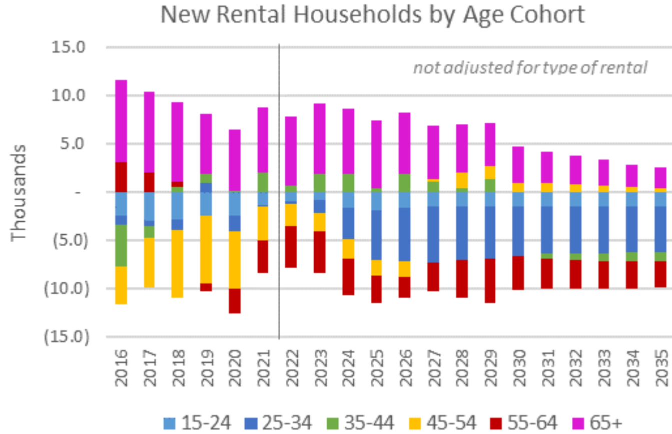
Rent as a Percent of Household Income



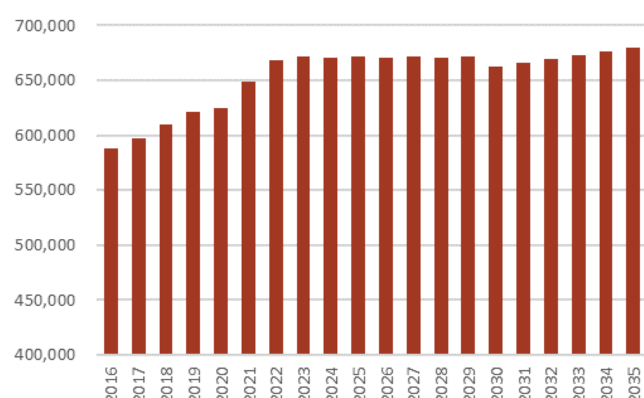
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



5+ Units Apartment Demand Forecast



NATIONAL MULTIFAMILY HOUSING COUNCIL

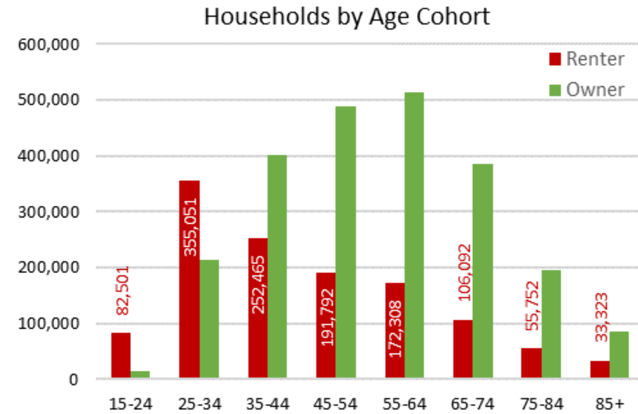
NATIONAL APARTMENT ASSOCIATION

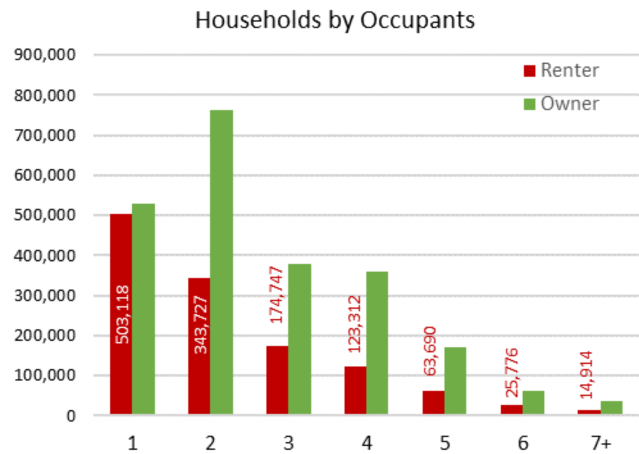
HAS

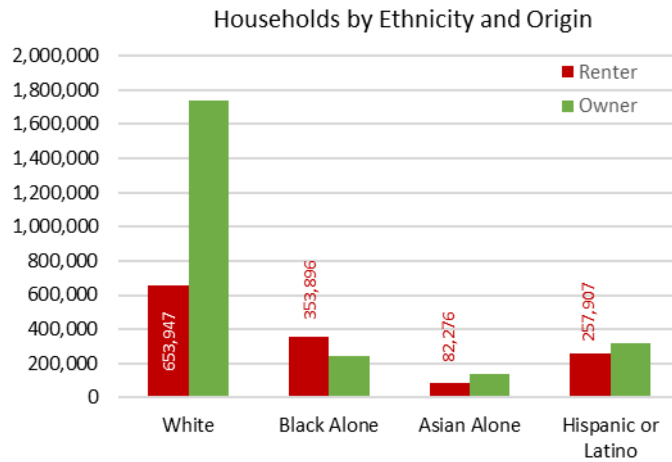
University of San Diego SCHOOL OF BUSINESS

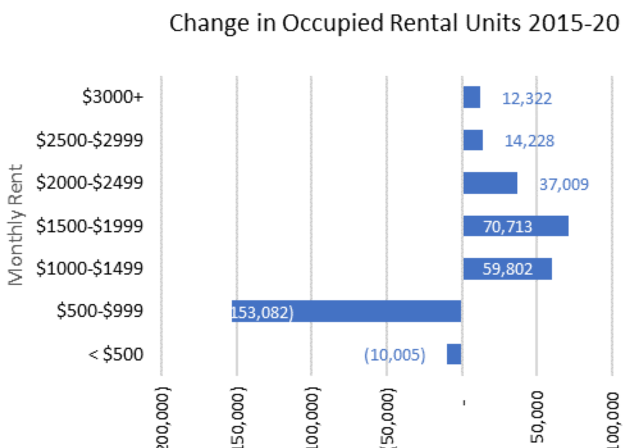
E10A Capital Properties ESG

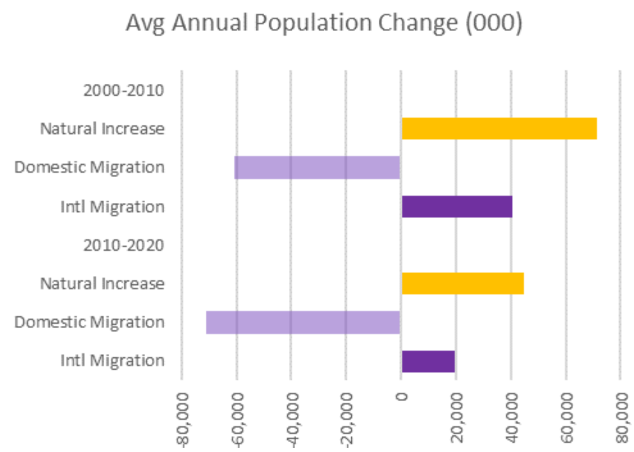
CHICAGO page 2











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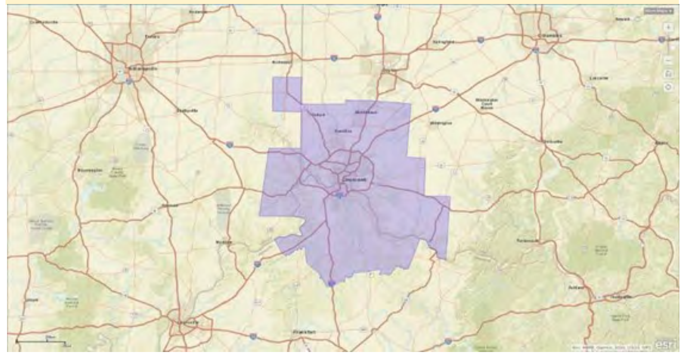
METRO MULTIFAMILY DEMAND OVERVIEW

CINCINNATI

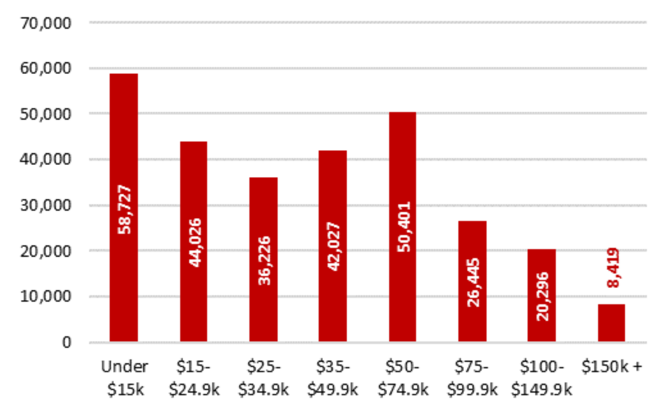


21,677 Apartment units needed by 2035

Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
31	64	21	46%

Rental Households by Income



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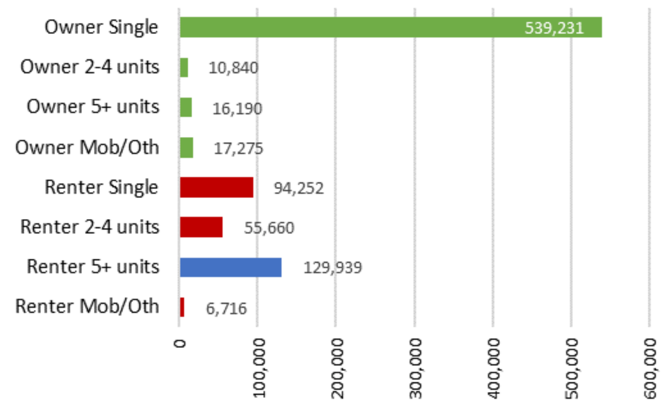
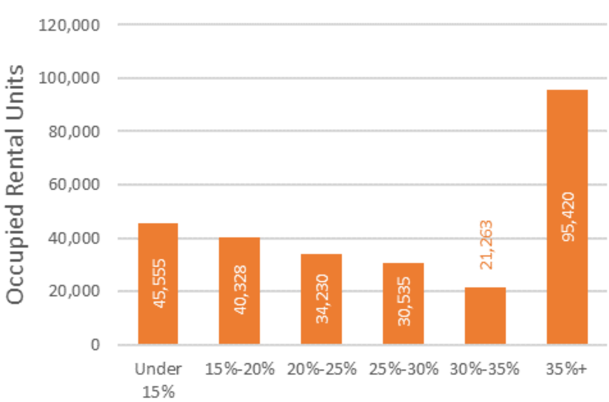
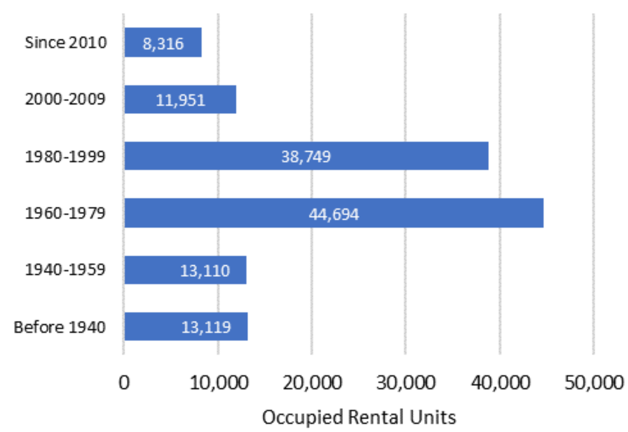


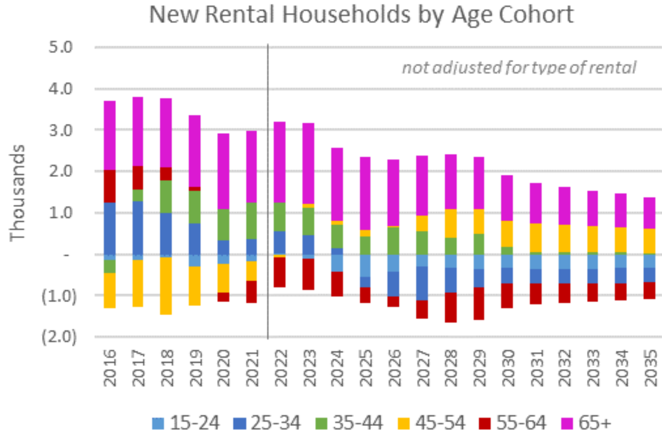
Rent as a Percent of Household Income



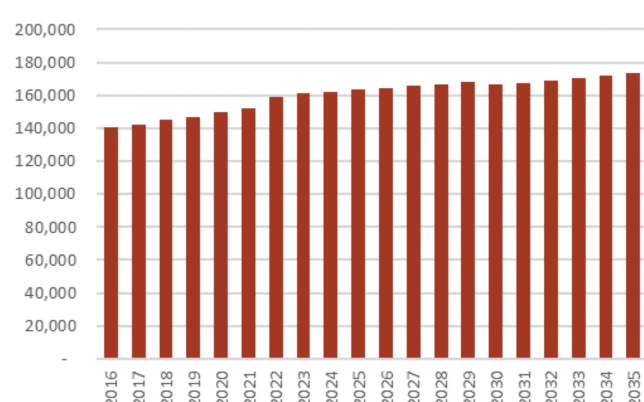
5+ Unit Rental Stock by Year Built



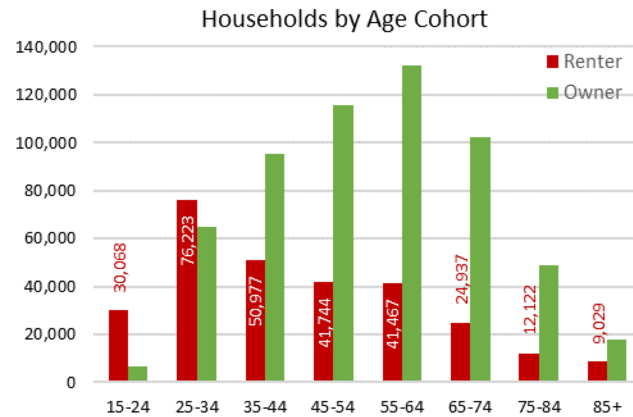
New Rental Households by Age Cohort

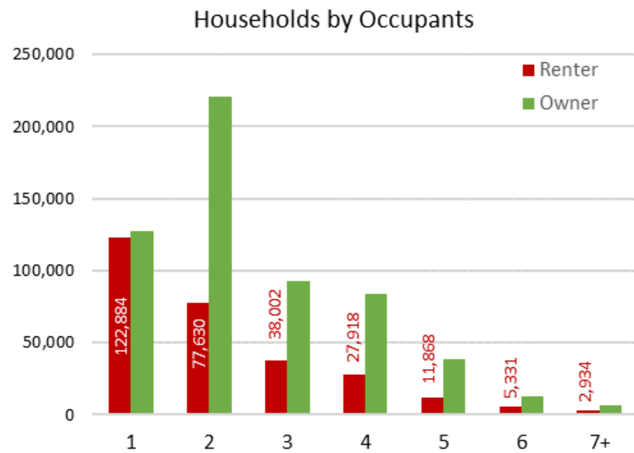


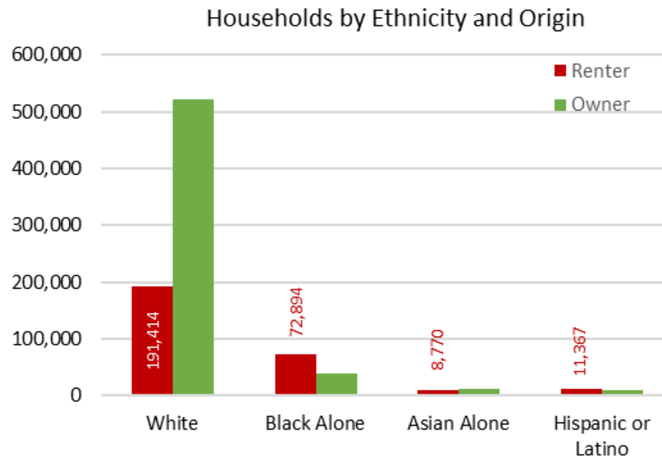
5+ Units Apartment Demand Forecast

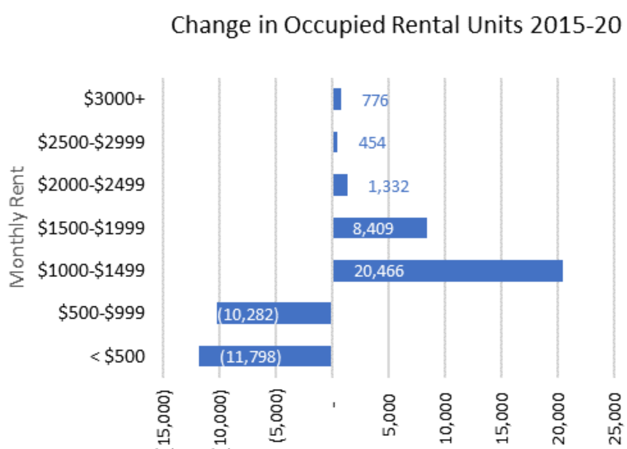


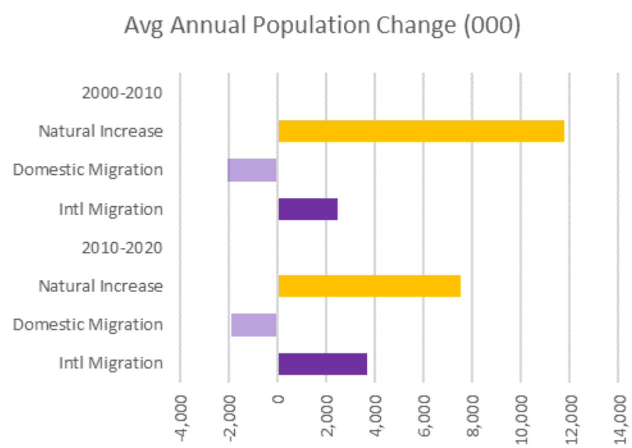
CINCINNATI page 2











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METRO MULTIFAMILY DEMAND OVERVIEW

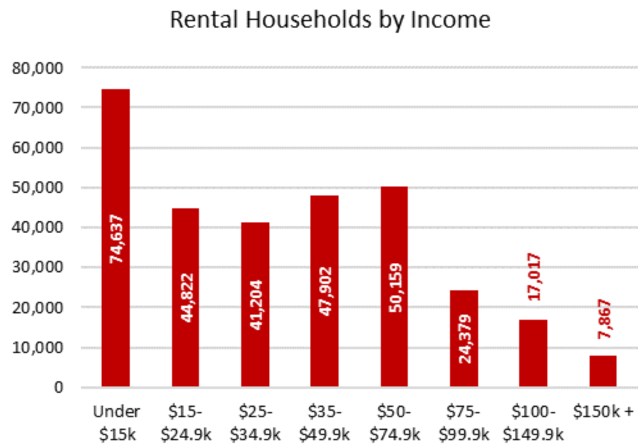
CLEVELAND

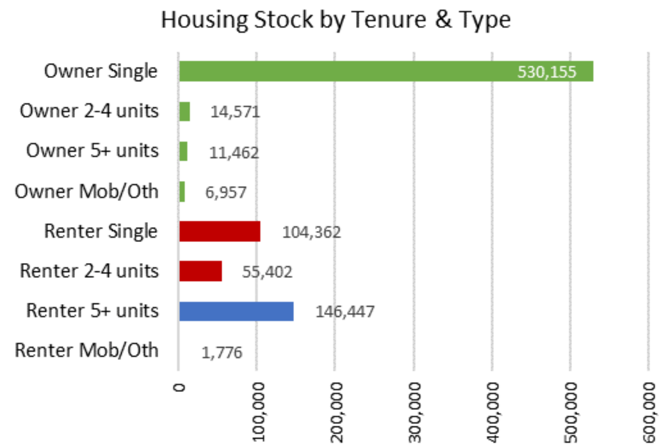
-1,231

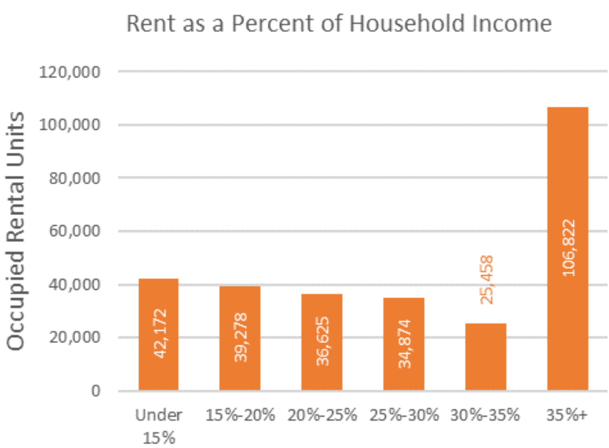
Apartment units needed by 2035

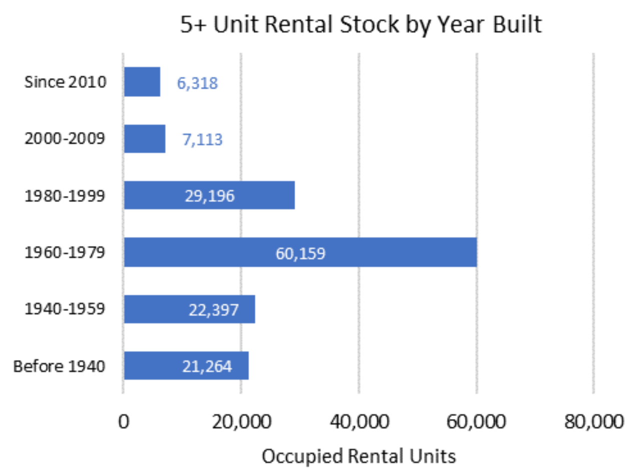
Definitions on following page

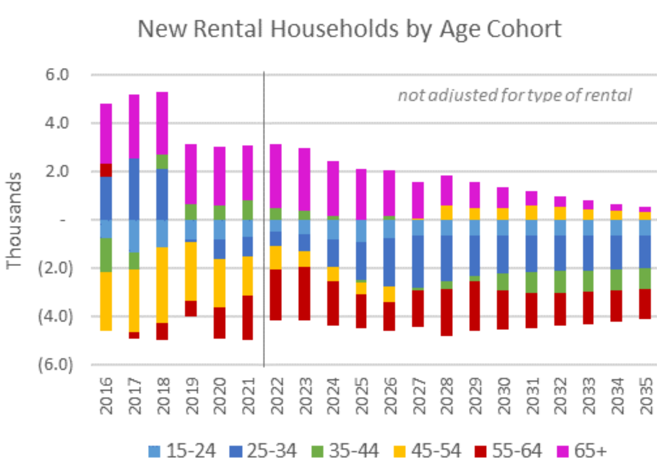
DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
50	63	48	47%

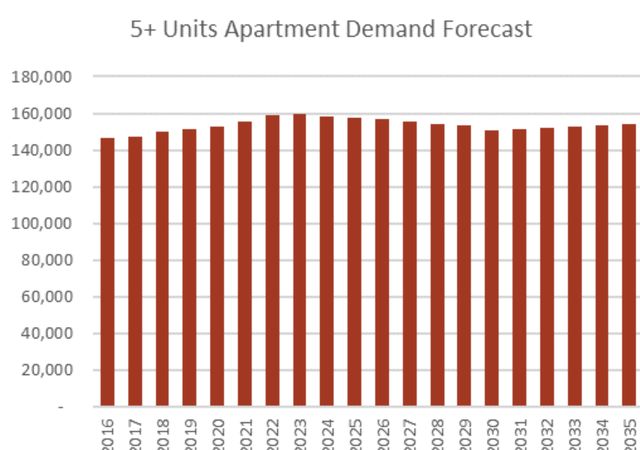








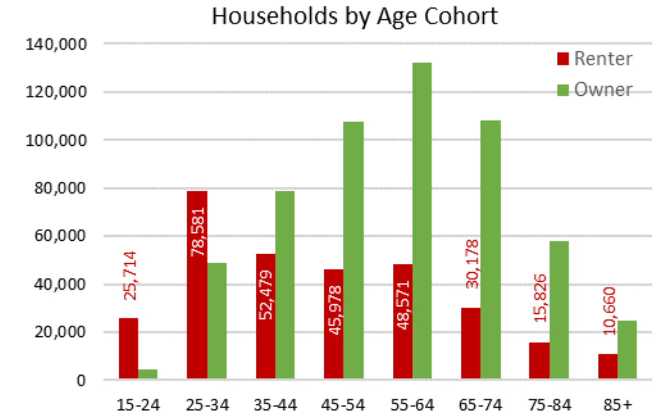


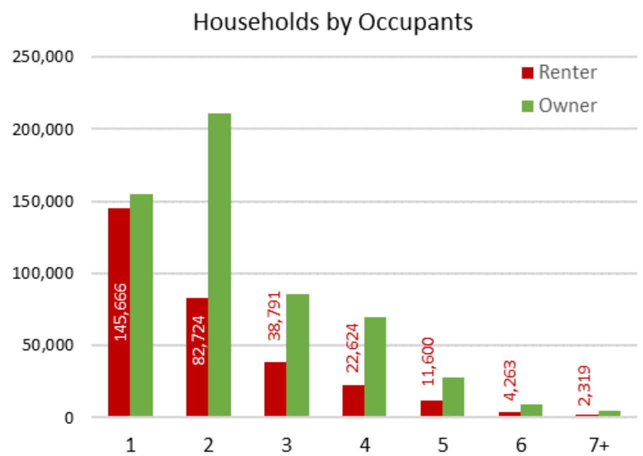


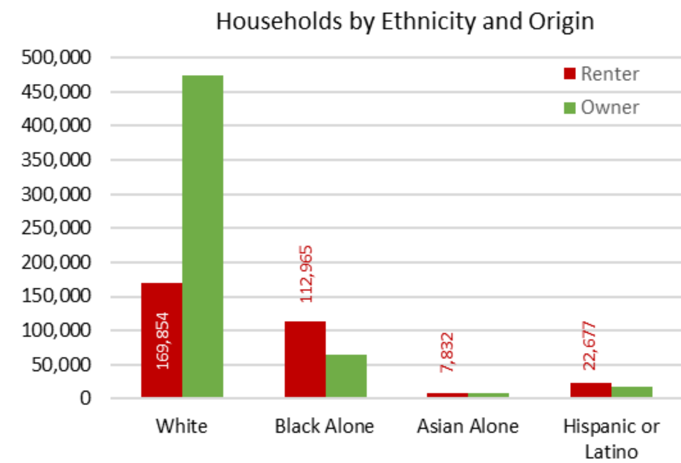
NATIONAL MULTIFAMILY HOUSING COUNCIL

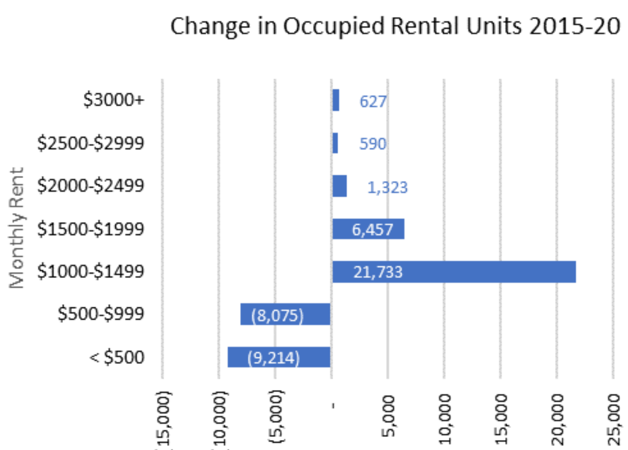
NATIONAL APARTMENT ASSOCIATION

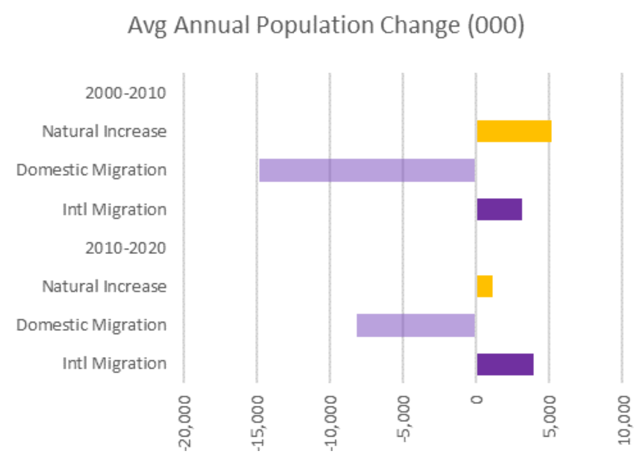
CLEVELAND page 2











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METRO MULTIFAMILY DEMAND OVERVIEW

COLUMBUS

45,026

Apartment units needed by 2035

Definitions on following page

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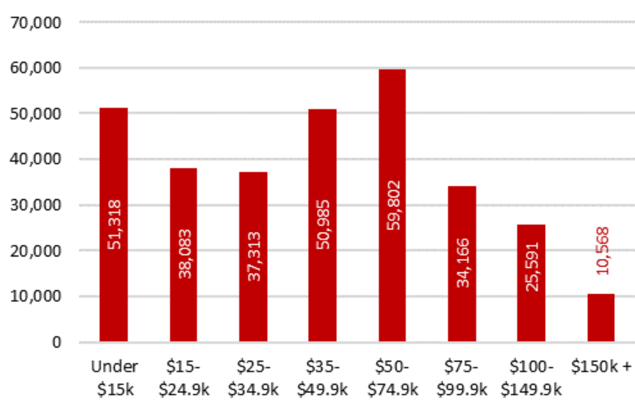
21	66	10	34%

Rental Households by Income



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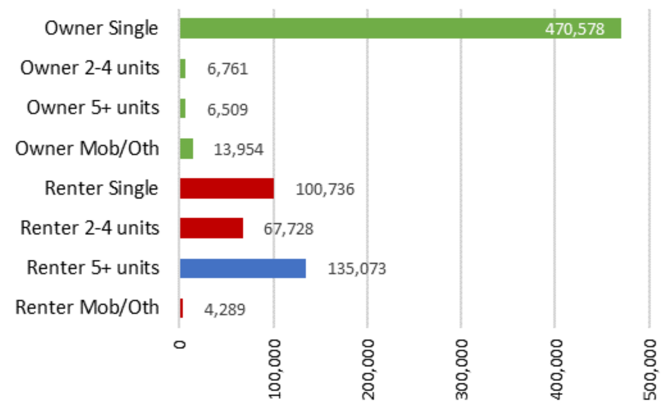

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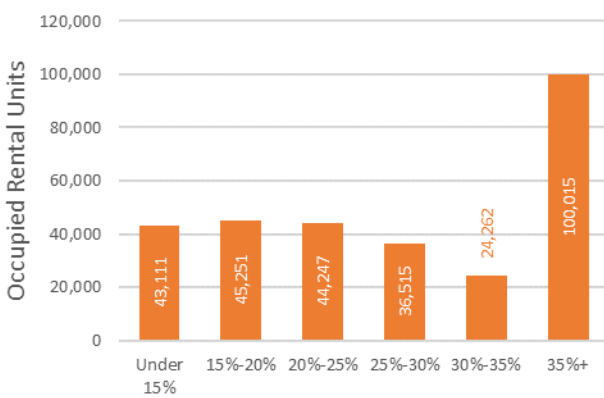
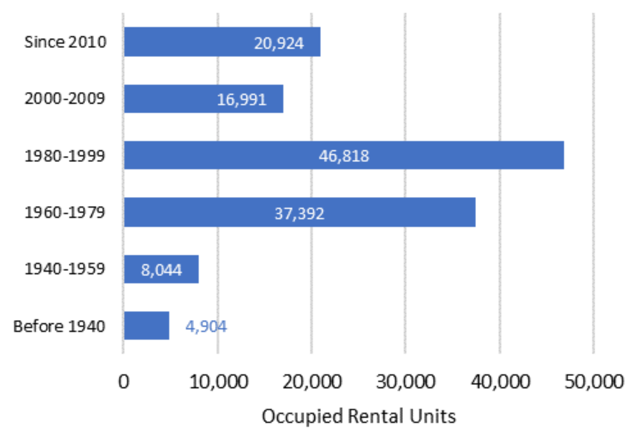


5+ Unit Rental Stock by Year Built



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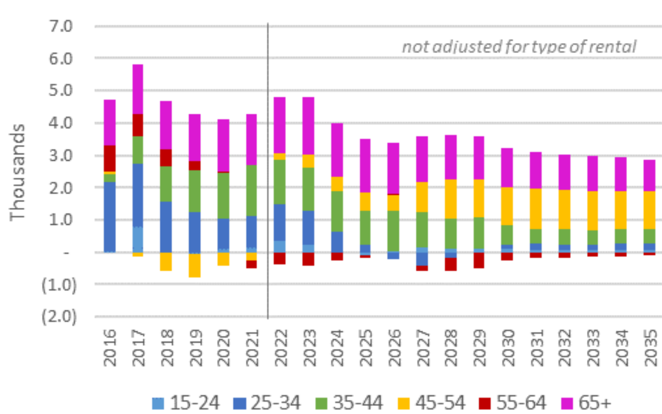
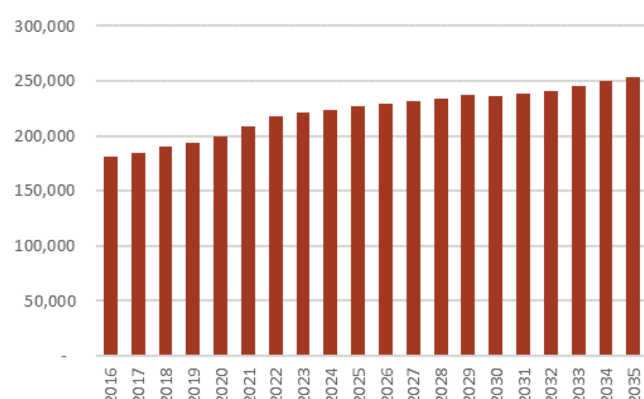


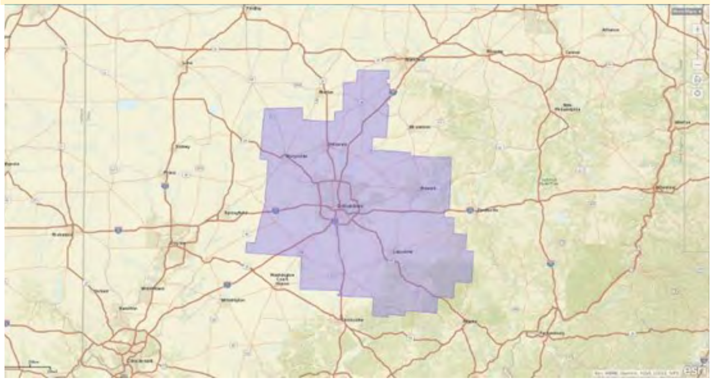
5+ Units Apartment Demand Forecast

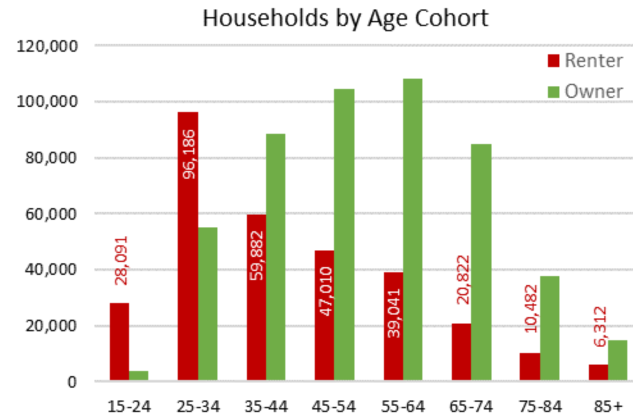


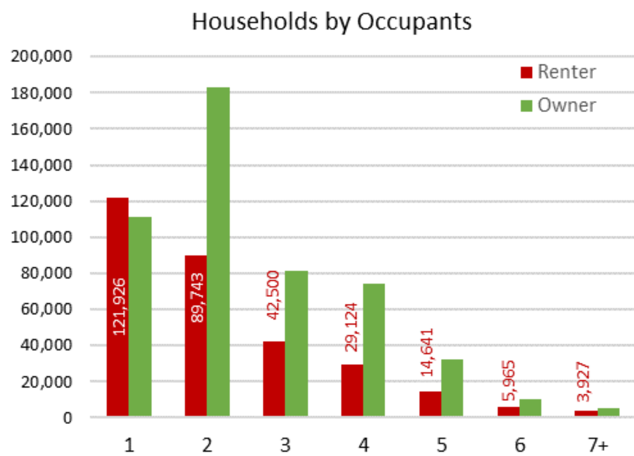
NATIONAL MULTIFAMILY HOUSING COUNCIL

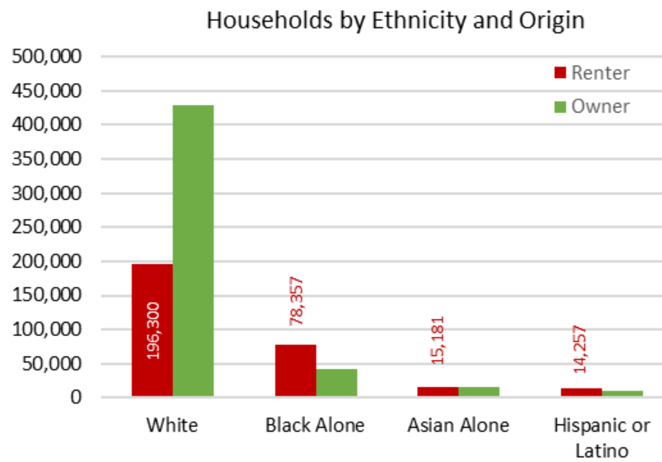
NATIONAL APARTMENT ASSOCIATION

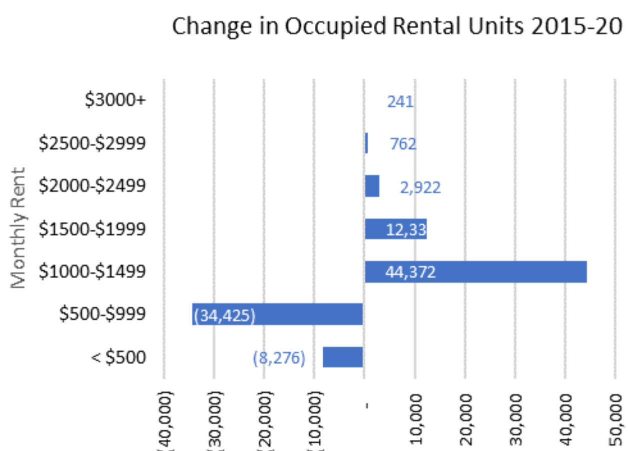
COLUMBUS page 2

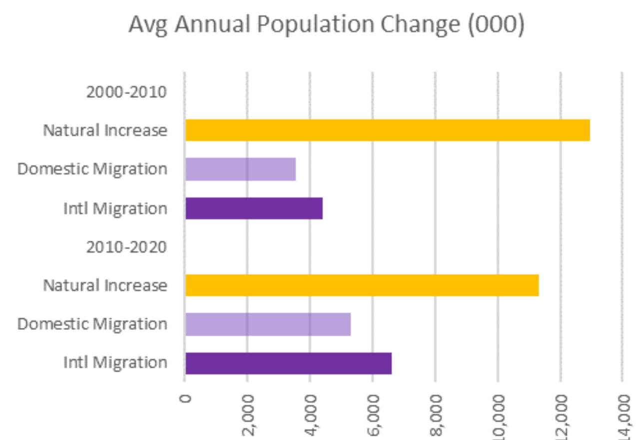












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NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION

METRO MULTIFAMILY DEMAND OVERVIEW

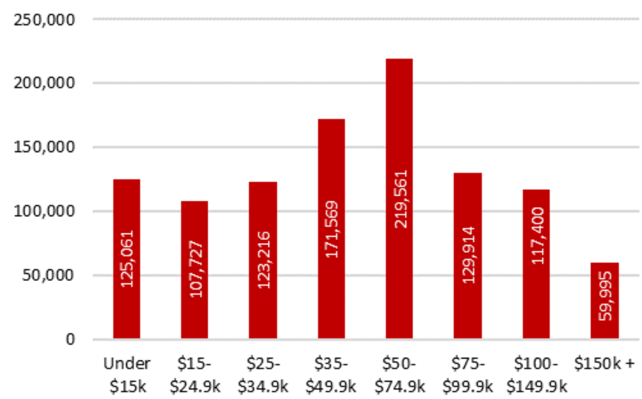
DALLAS

269,906 Apartment units needed by 2035

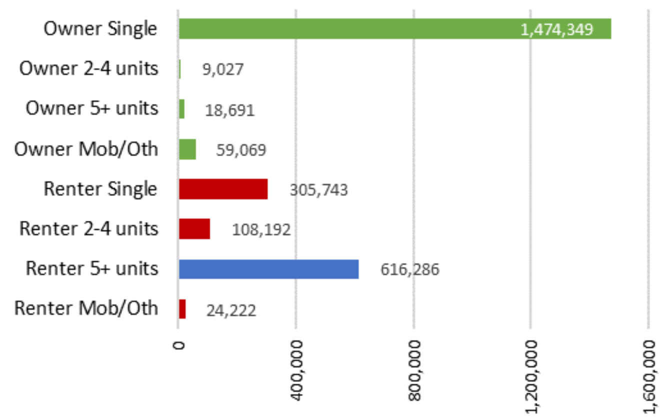
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
2	63	20	14%

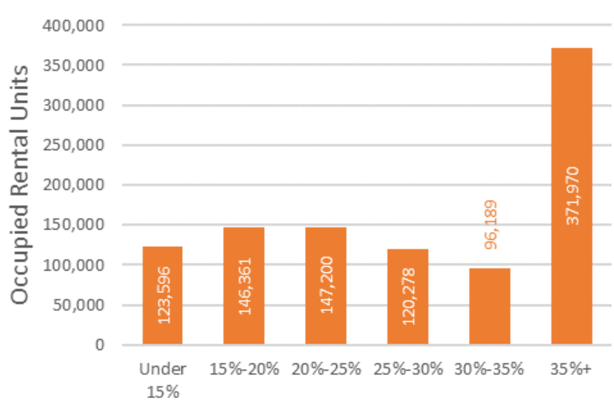
Rental Households by Income



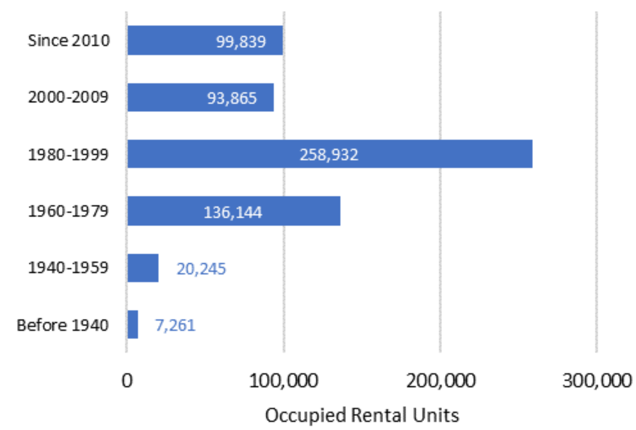
Housing Stock by Tenure & Type



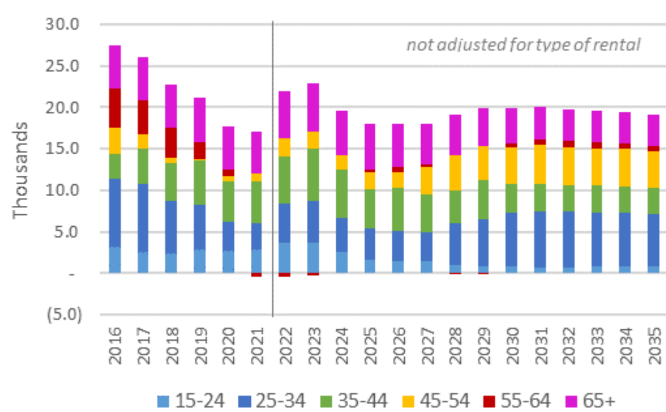
Rent as a Percent of Household Income



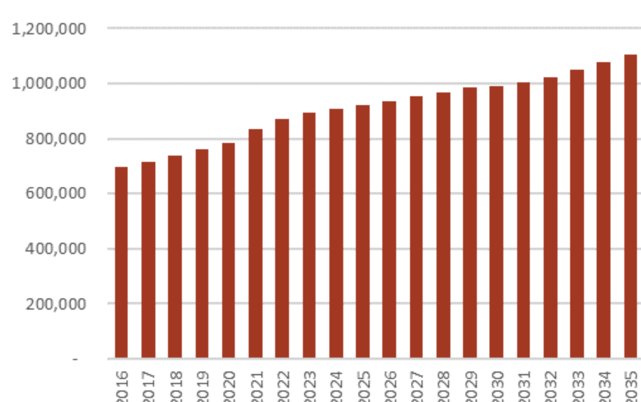
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



5+ Units Apartment Demand Forecast



NATIONAL MULTIFAMILY HOUSING COUNCIL

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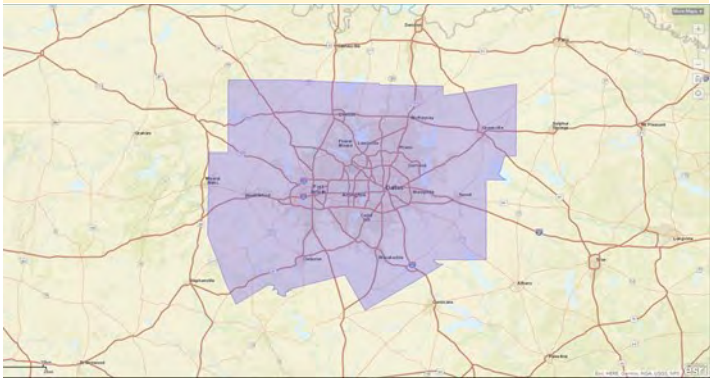
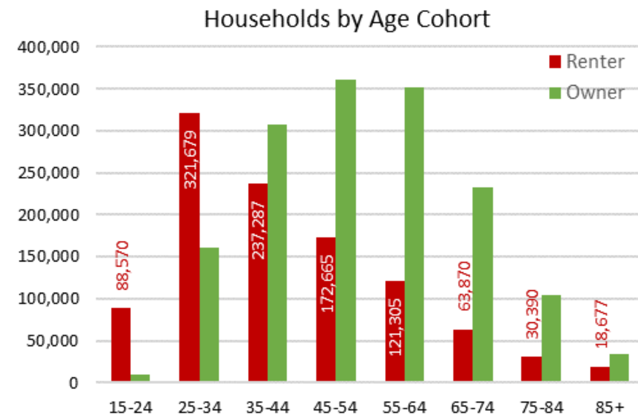
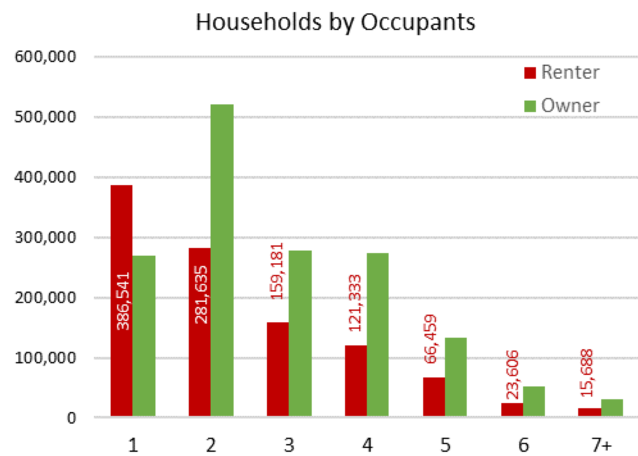
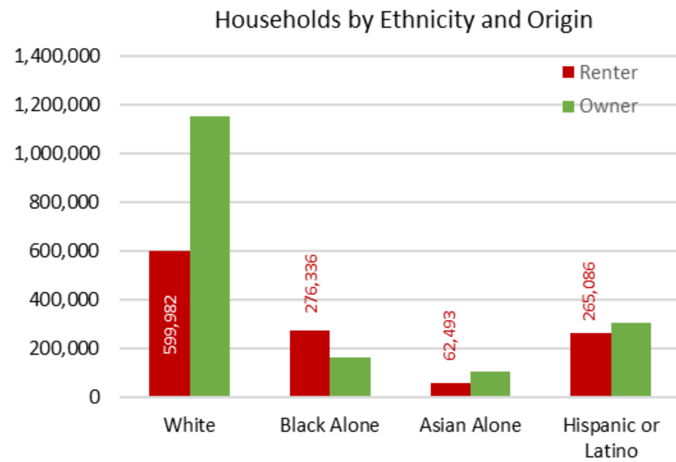
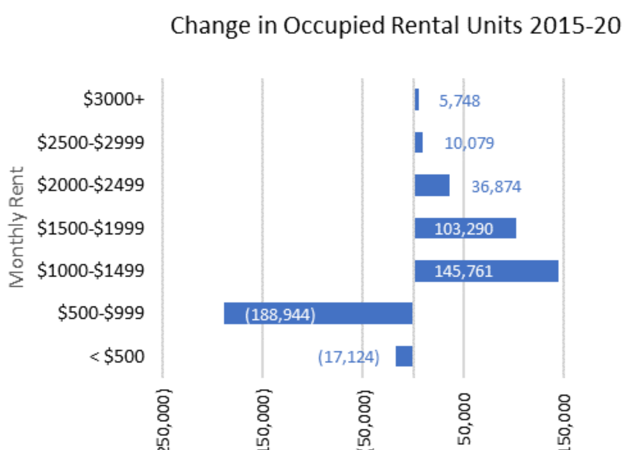
DALLAS page 2

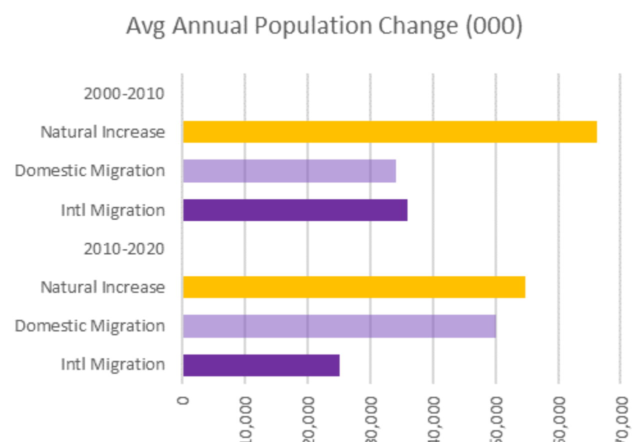












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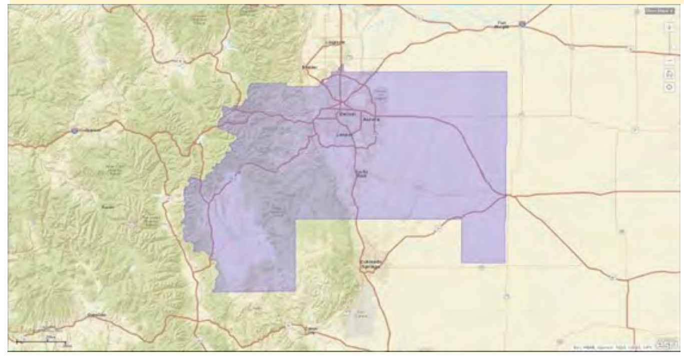
METRO MULTIFAMILY DEMAND OVERVIEW

DENVER

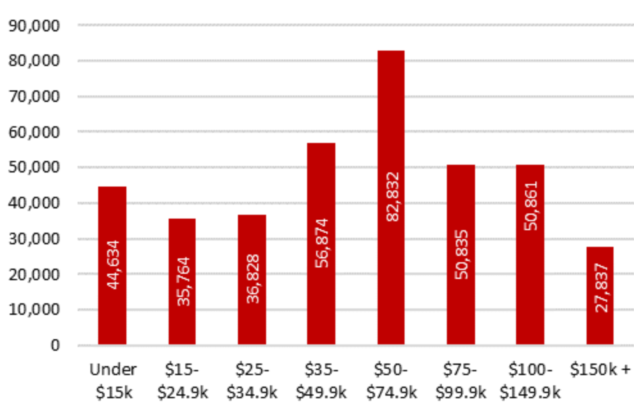


71,847 Apartment units needed by 2035

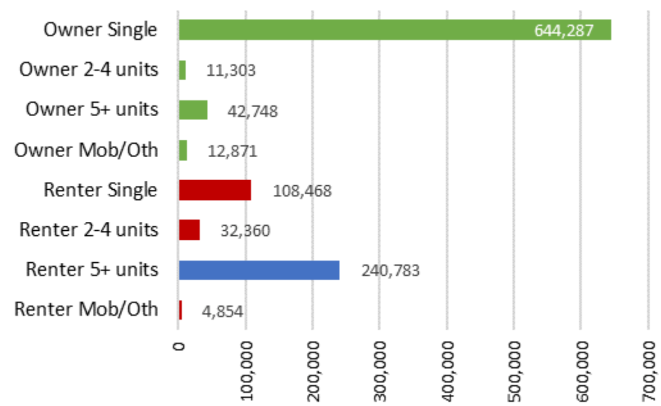
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
12	60	8	22%

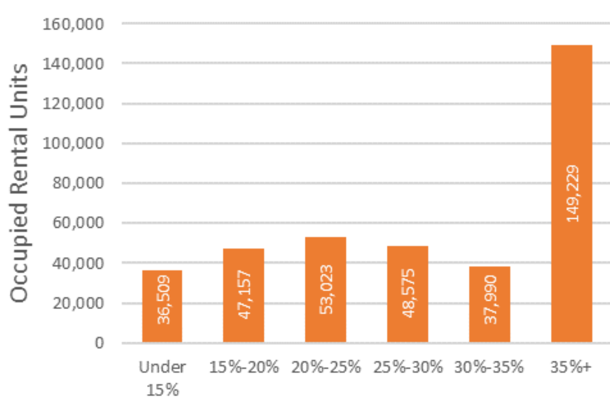
Rental Households by Income



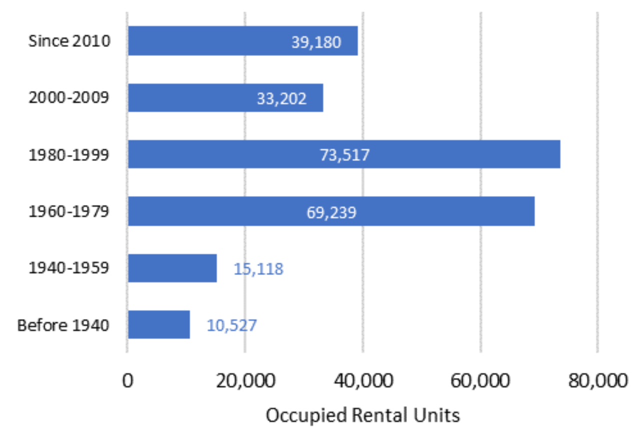
Housing Stock by Tenure & Type



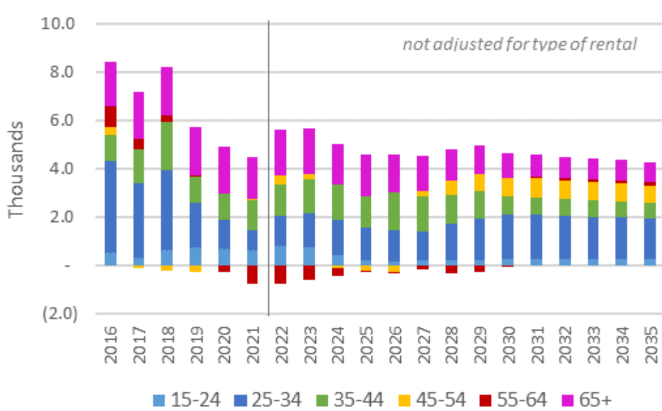
Rent as a Percent of Household Income



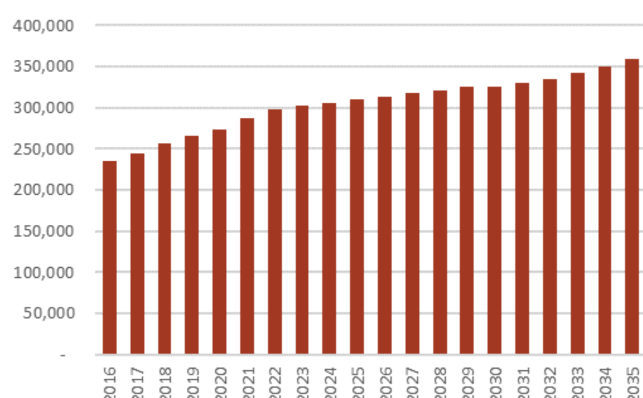
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort

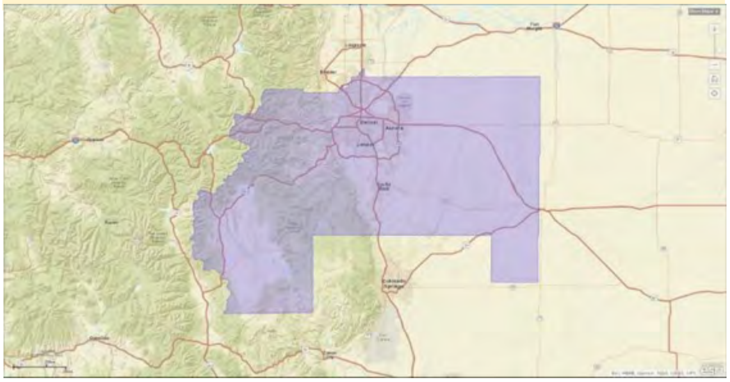


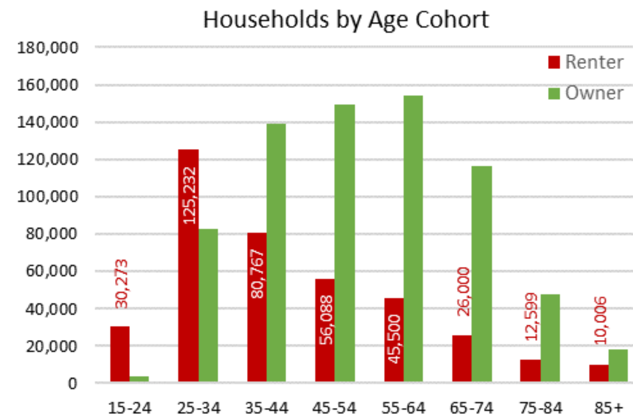
5+ Units Apartment Demand Forecast

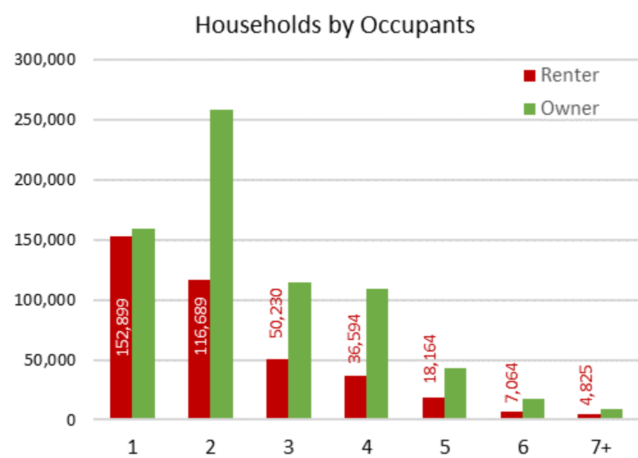


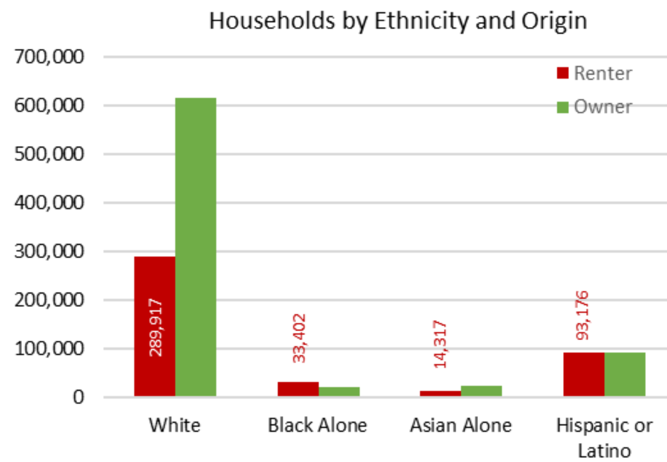
NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION

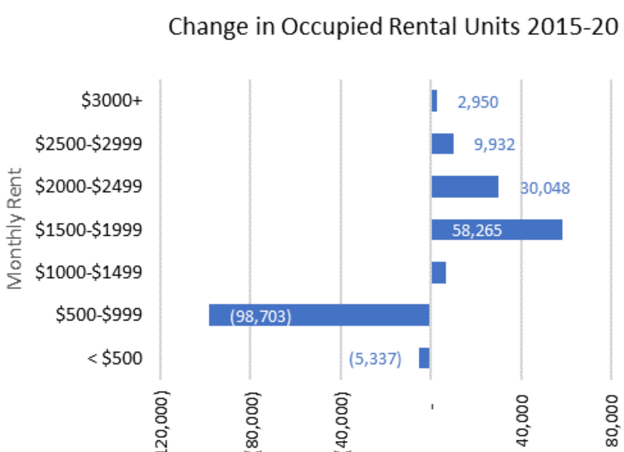
DENVER page 2

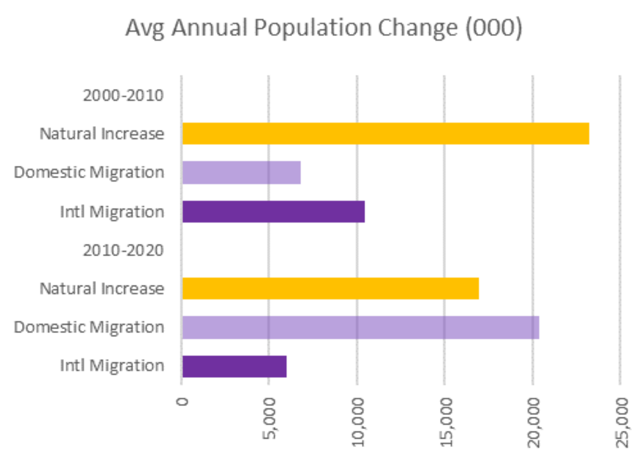












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METRO MULTIFAMILY DEMAND OVERVIEW

DETROIT

12,970 Apartment units needed by 2035

Definitions on following page

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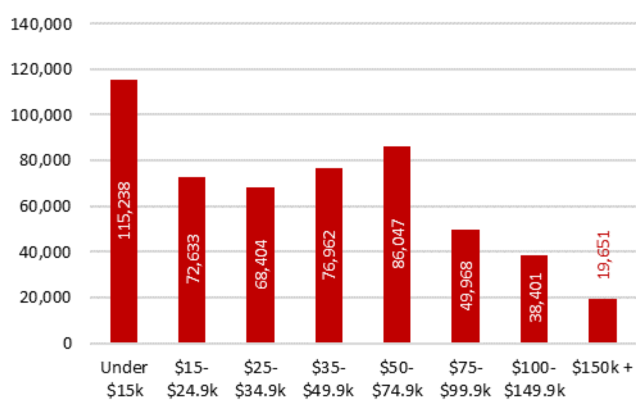
45	60	49	44%

Rental Households by Income



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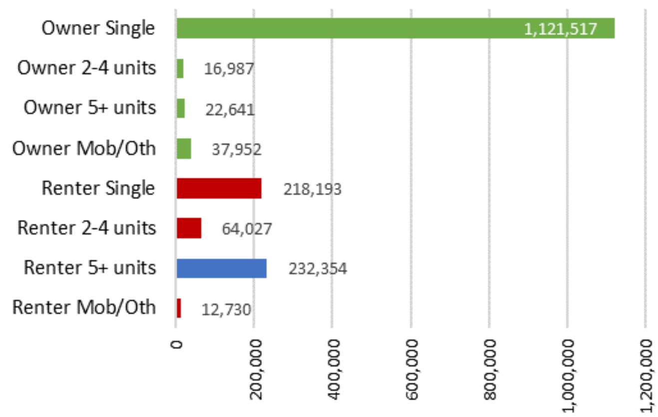
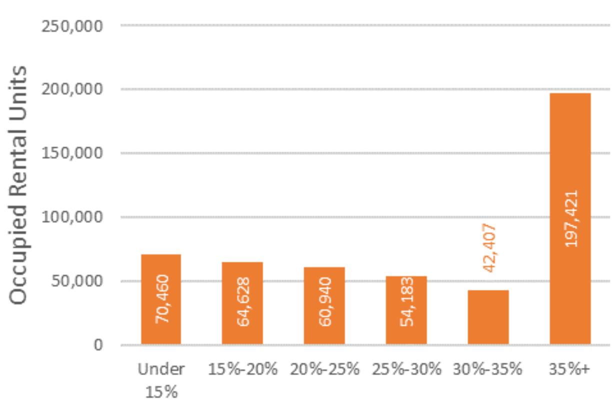
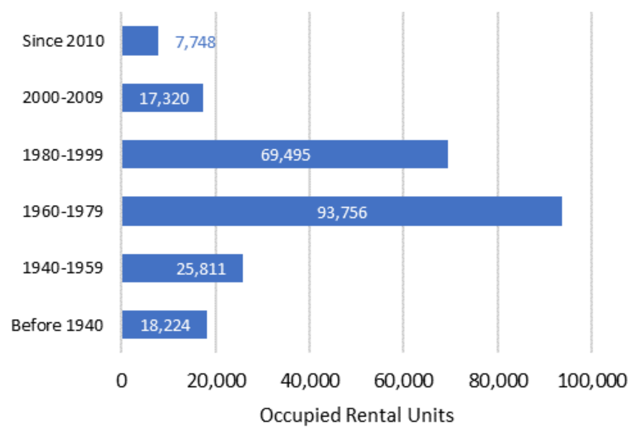


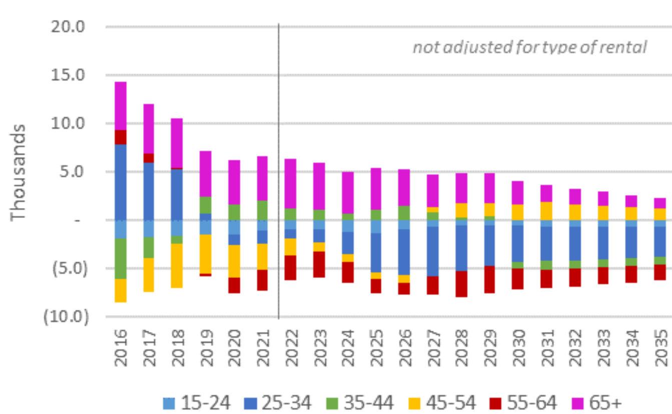
Rent as a Percent of Household Income



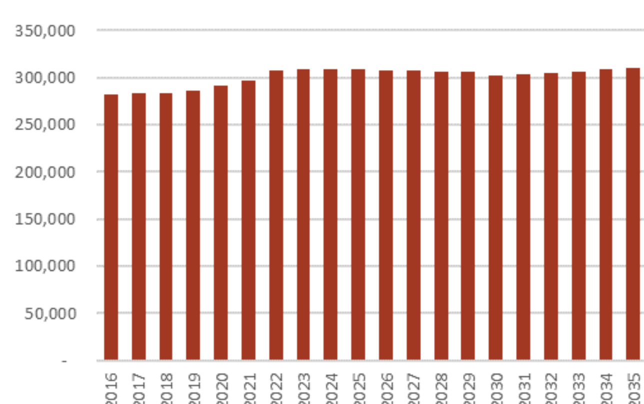
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



5+ Units Apartment Demand Forecast



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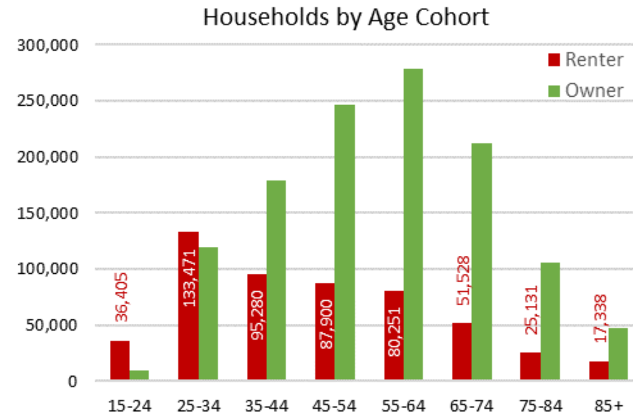
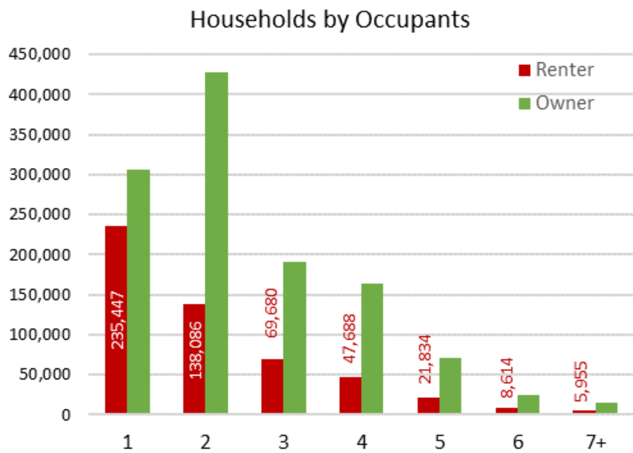
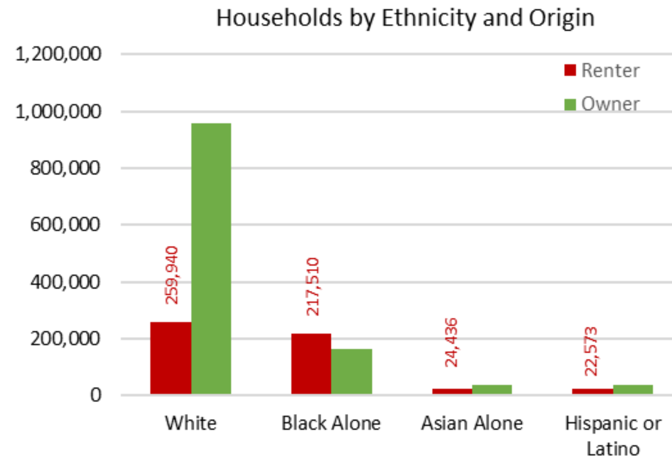
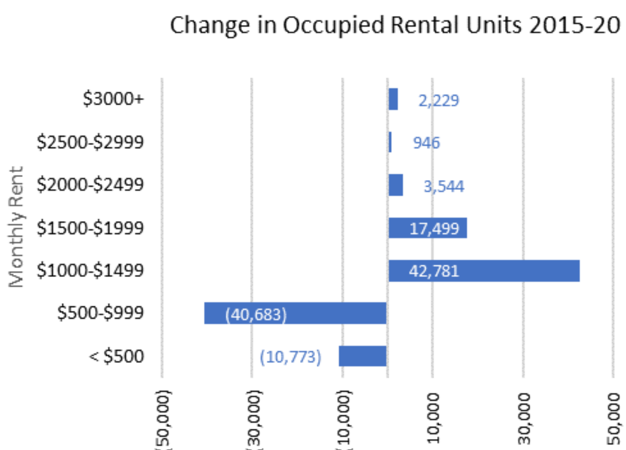
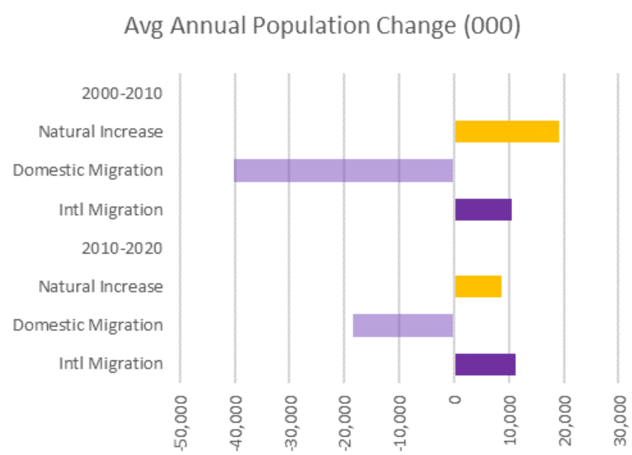
DETROIT page 2











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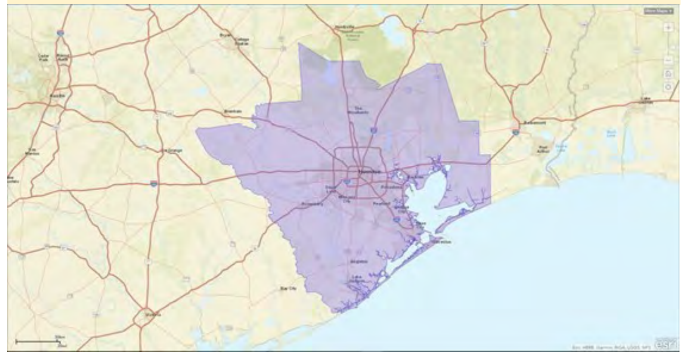
METRO MULTIFAMILY DEMAND OVERVIEW

HOUSTON



209,084 Apartment units needed by 2035

Definitions on following page

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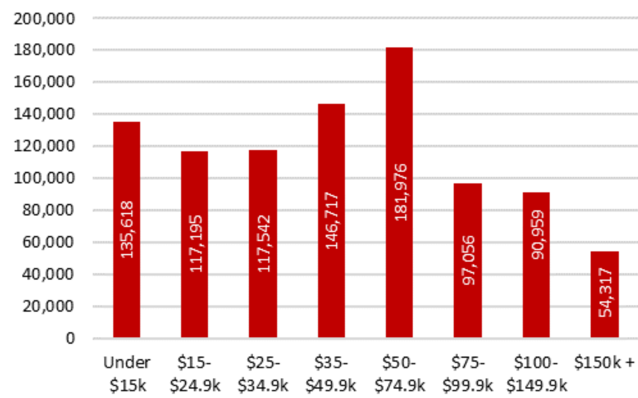
3	60	18	22%

Rental Households by Income



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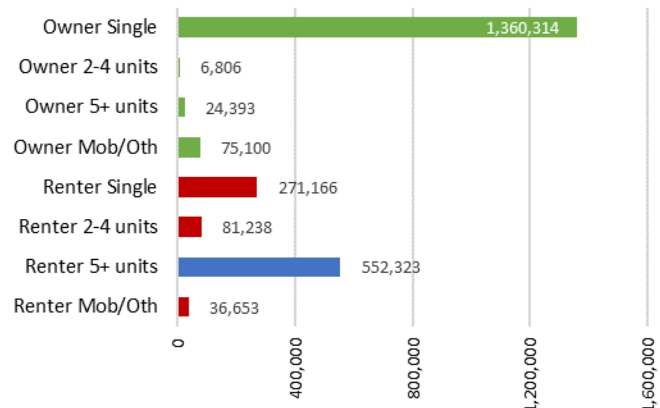

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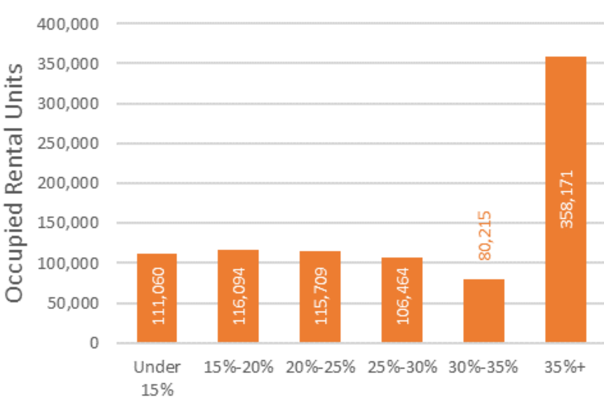
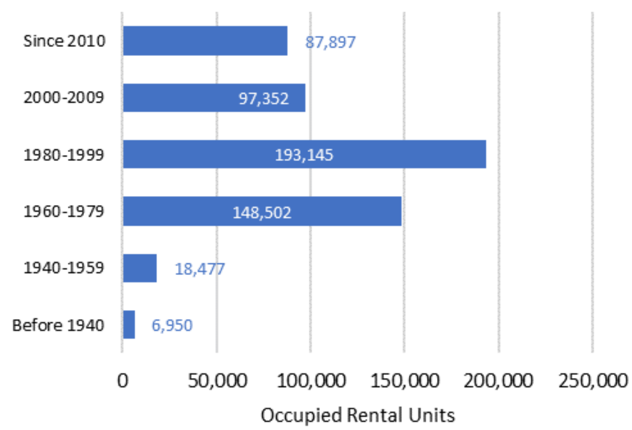


5+ Unit Rental Stock by Year Built



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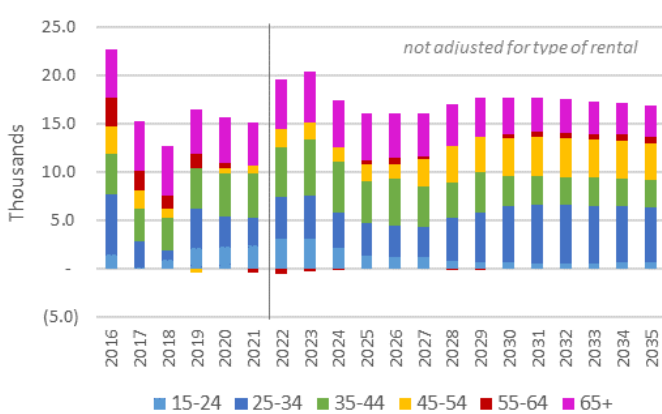

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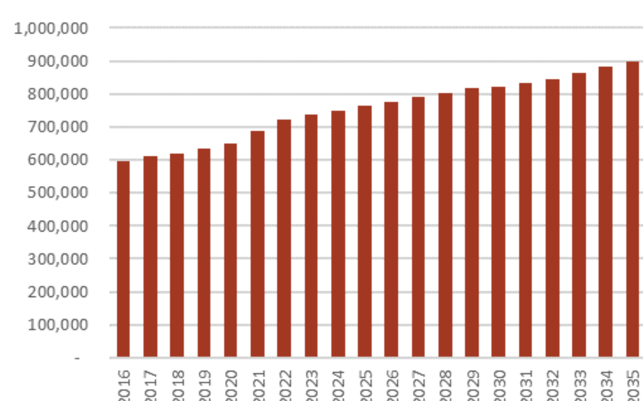
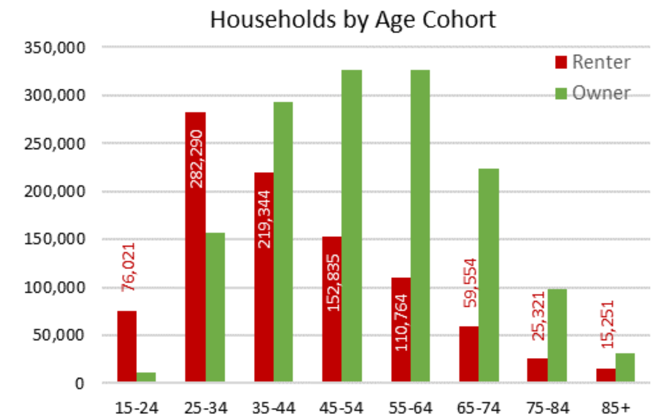
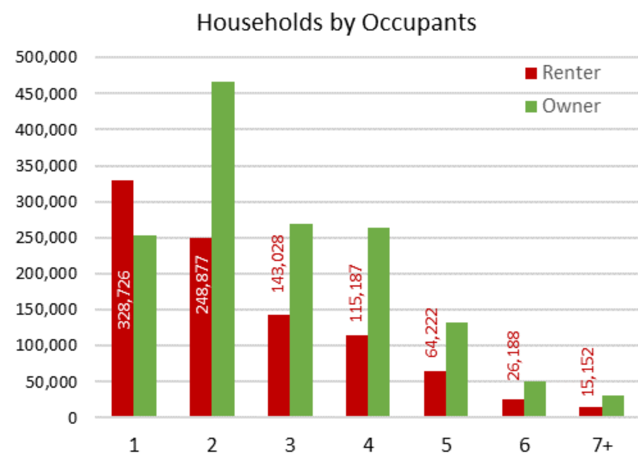


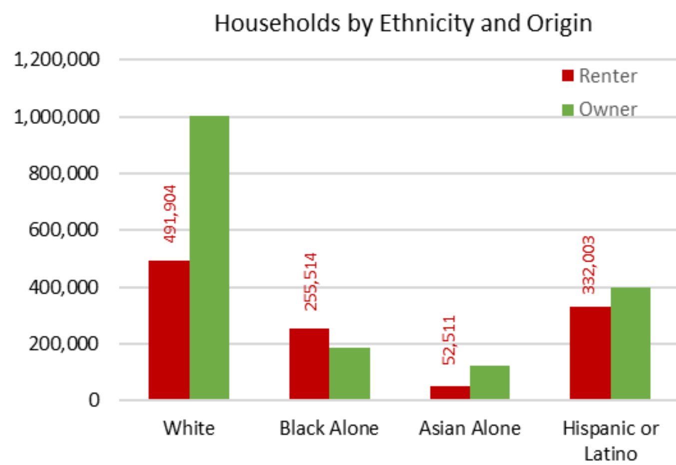
NATIONAL MULTIFAMILY HOUSING COUNCIL

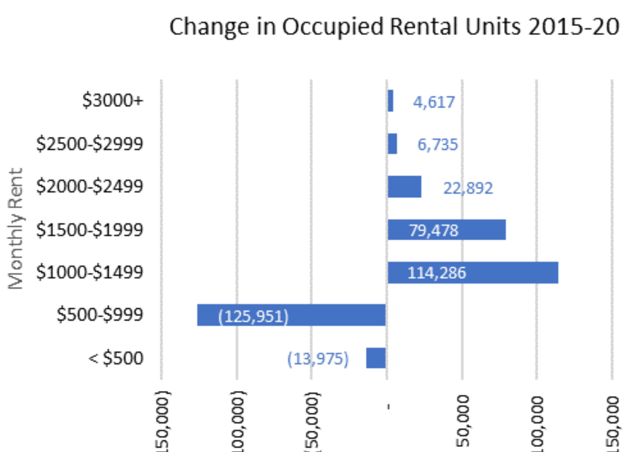
NATIONAL APARTMENT ASSOCIATION

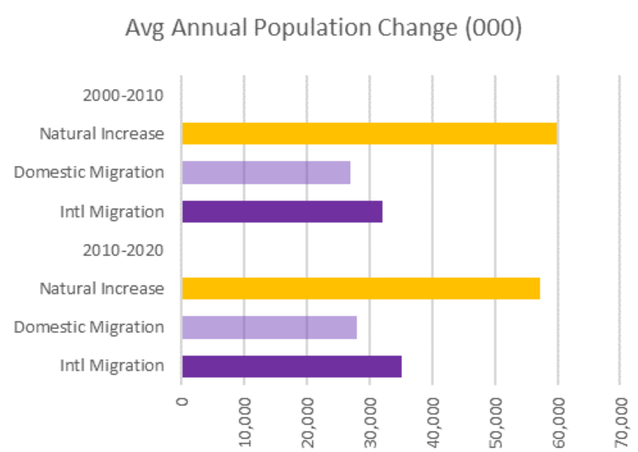
HOUSTON page 2











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METRO MULTIFAMILY DEMAND OVERVIEW

INDIANAPOLIS

37,504 Apartment units needed by 2035

Definitions on following page

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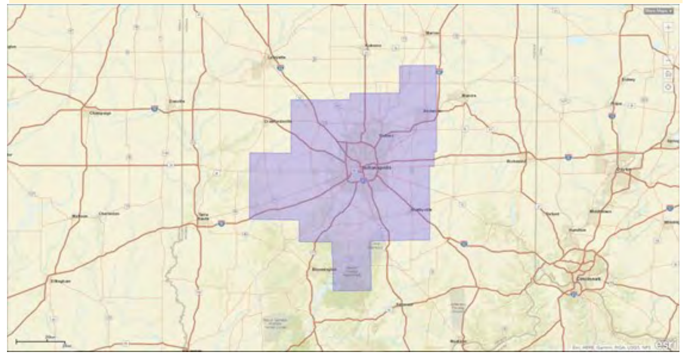
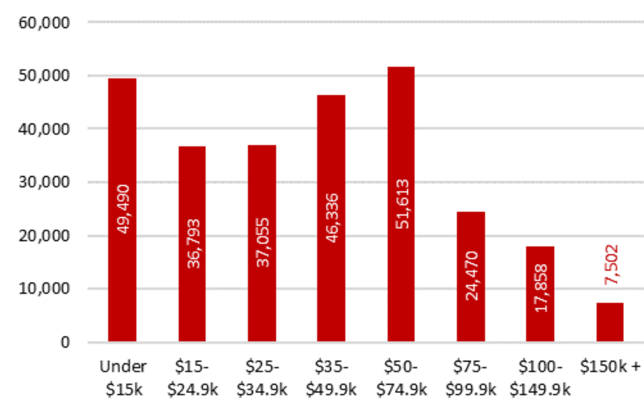
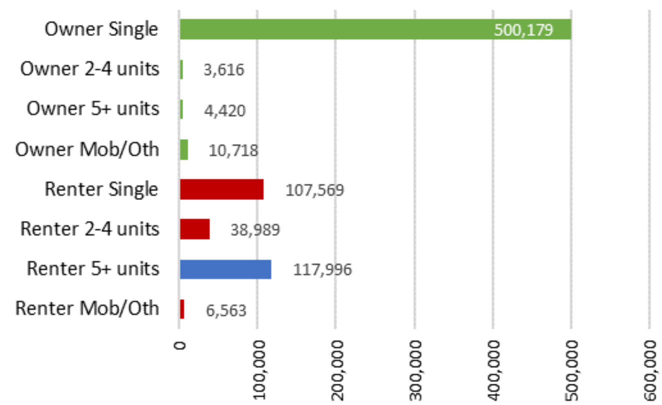
26	62	22	20%



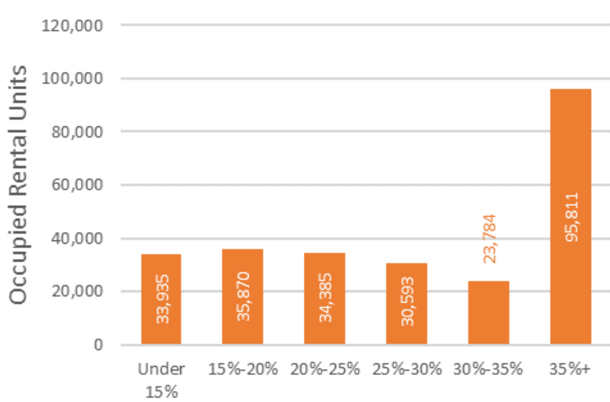
Rental Households by Income



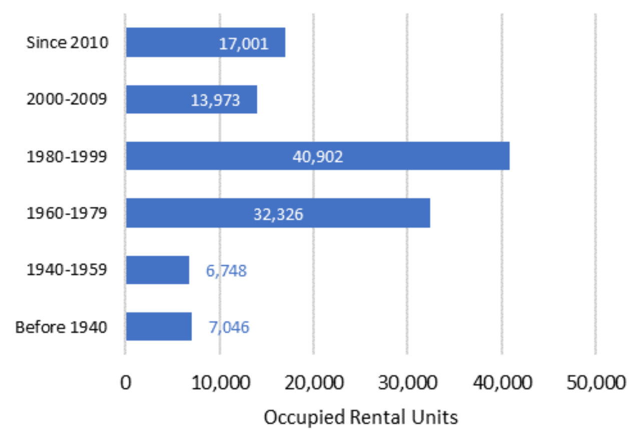
Housing Stock by Tenure & Type



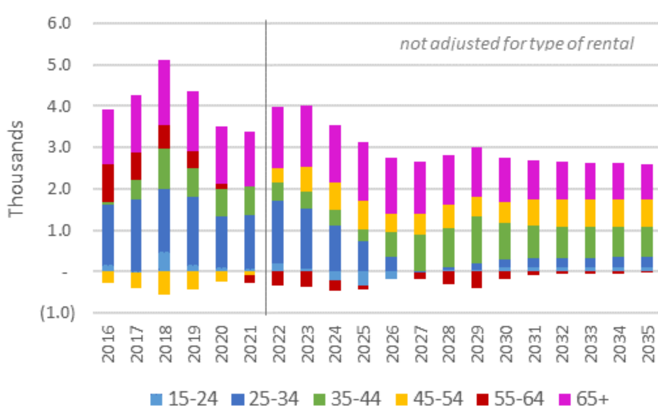
Rent as a Percent of Household Income



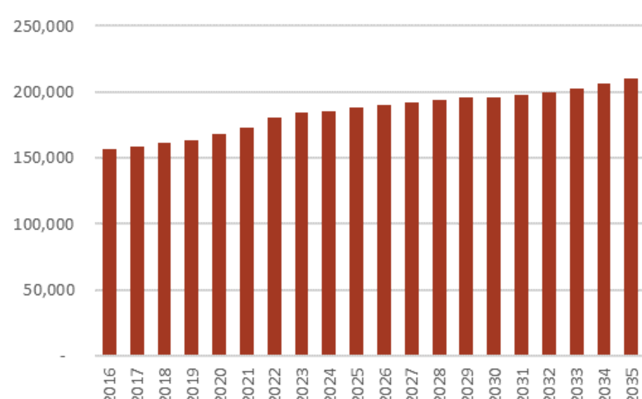
5+ Unit Rental Stock by Year Built



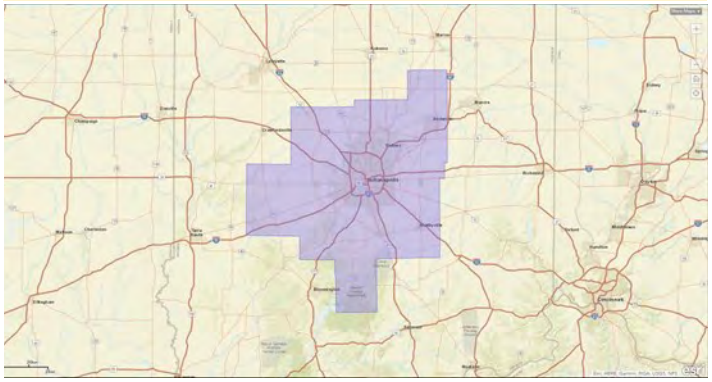
New Rental Households by Age Cohort

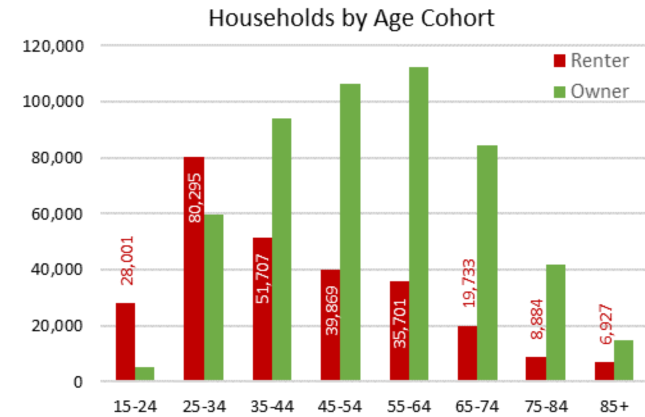


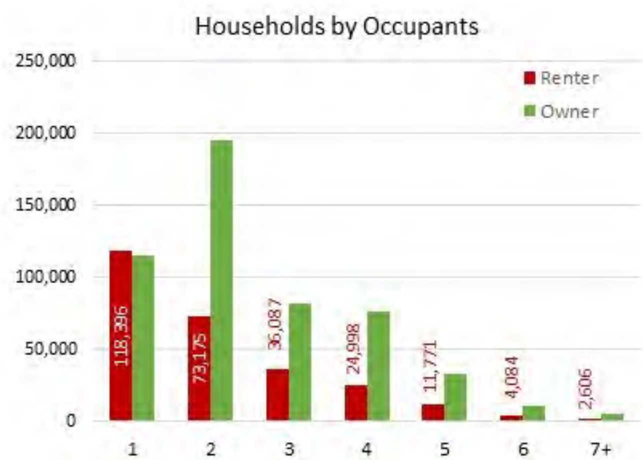
5+ Units Apartment Demand Forecast

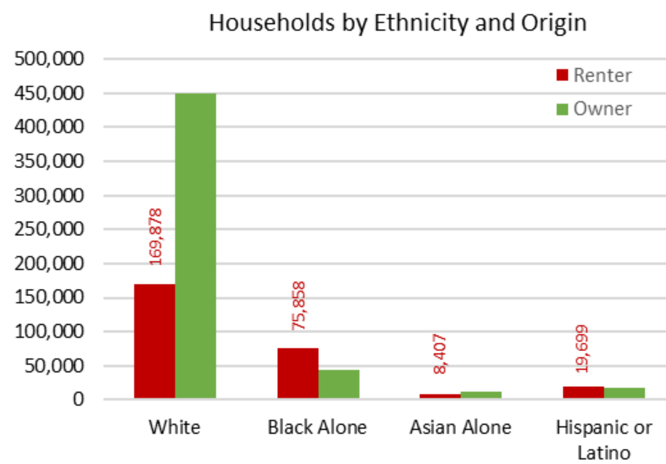


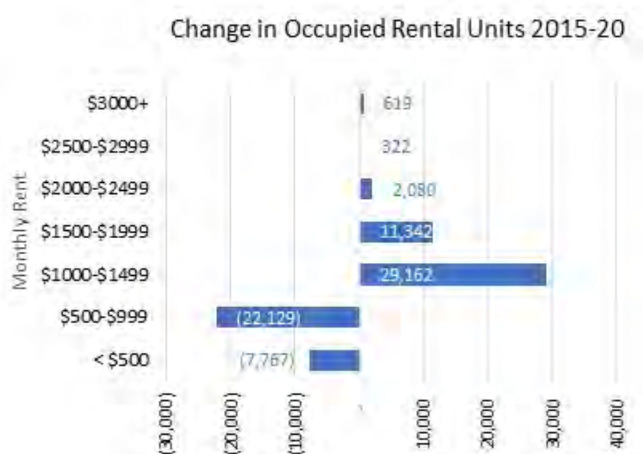
INDIANAPOLIS page 2

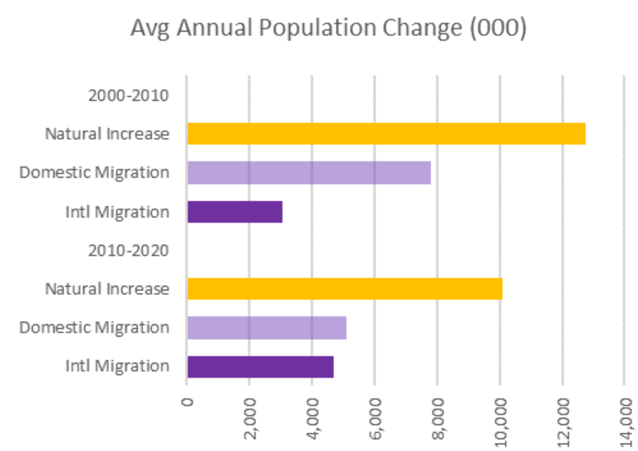












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METRO MULTIFAMILY DEMAND OVERVIEW

JACKSONVILLE

30,080 Apartment units needed by 2035

Definitions on following page

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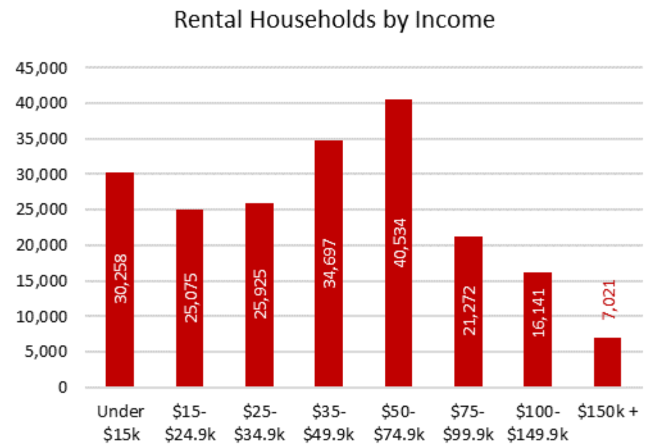
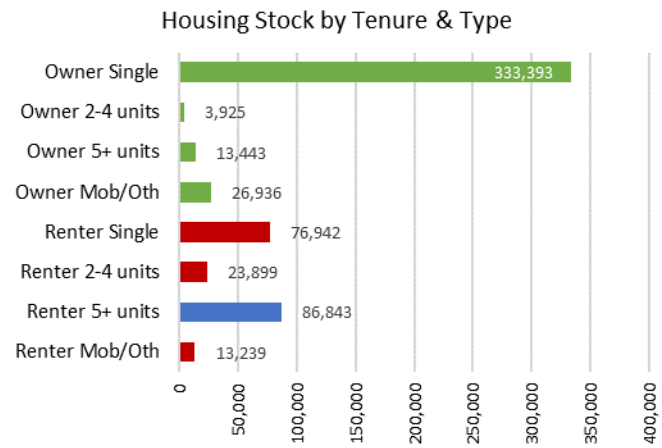
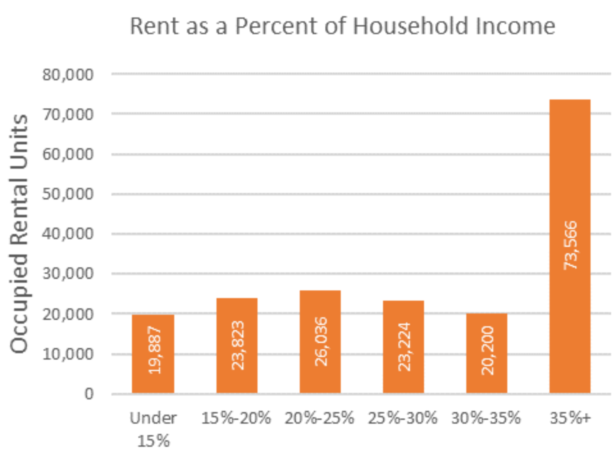
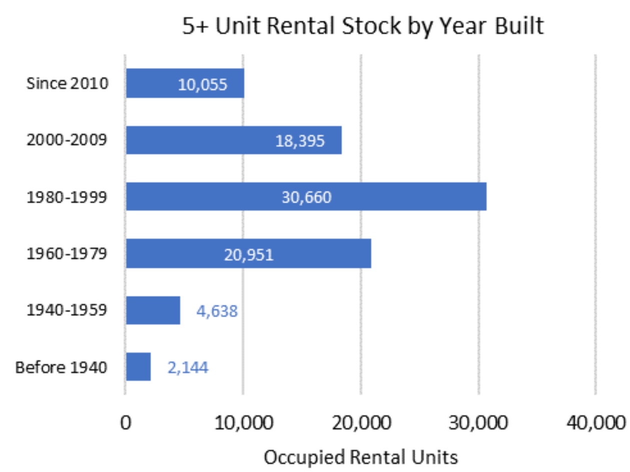
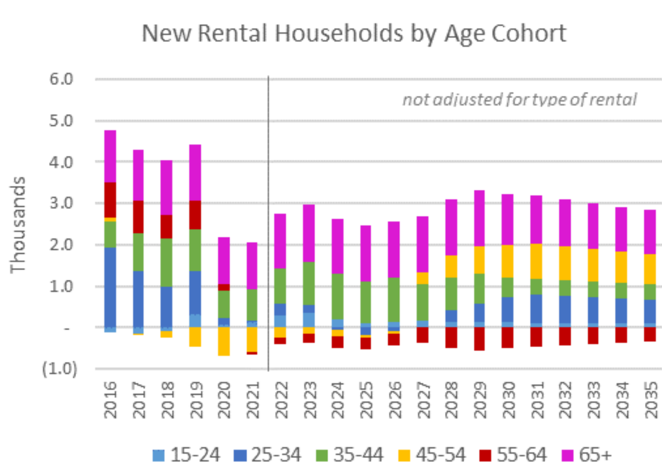
19	61	3	24%

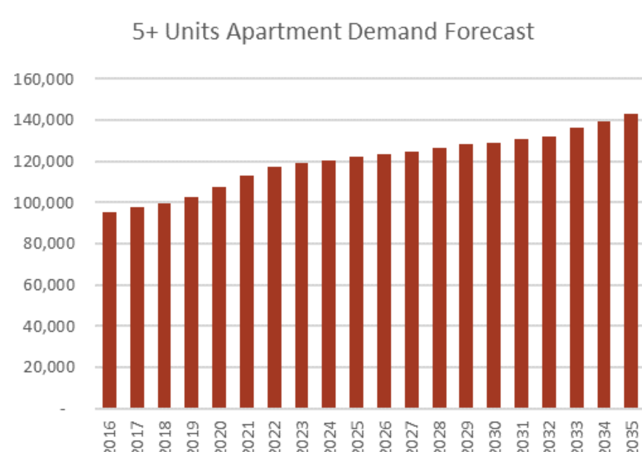




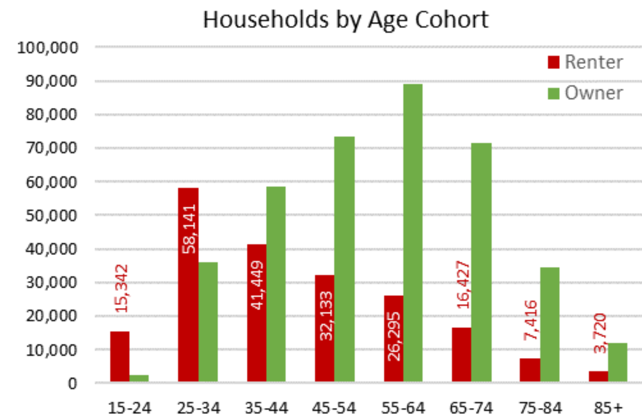


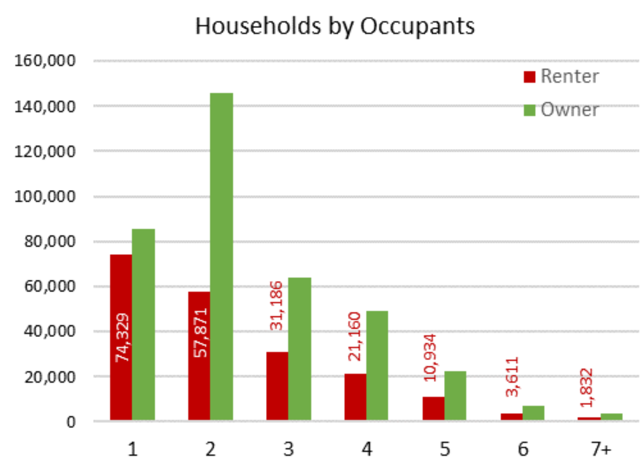


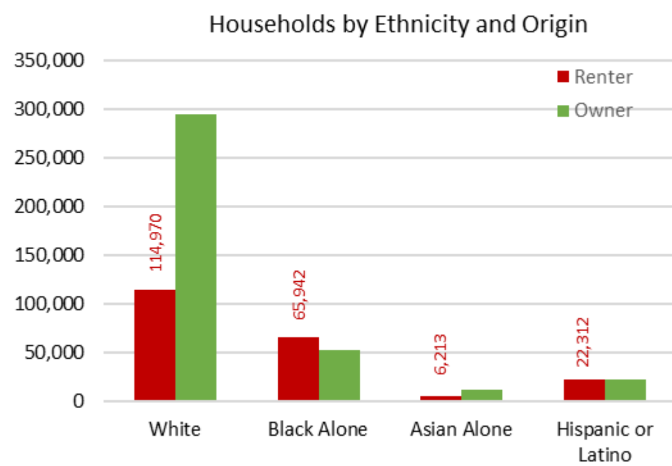


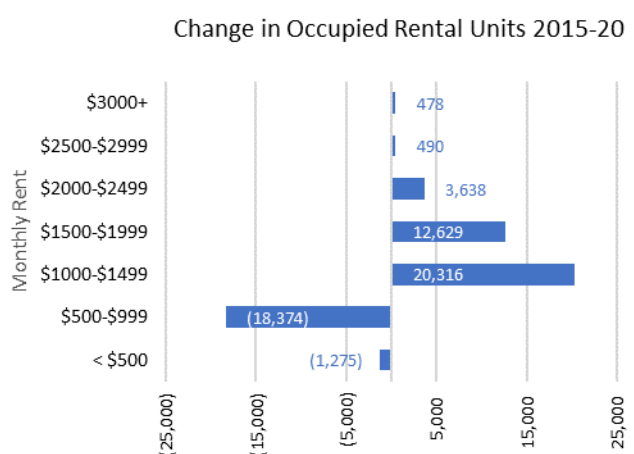


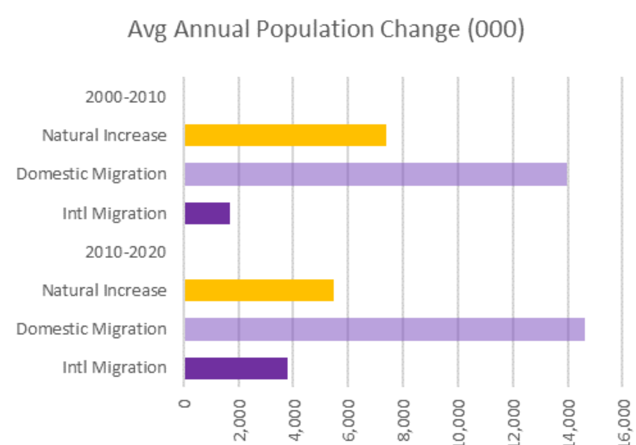
JACKSONVILLE page 2











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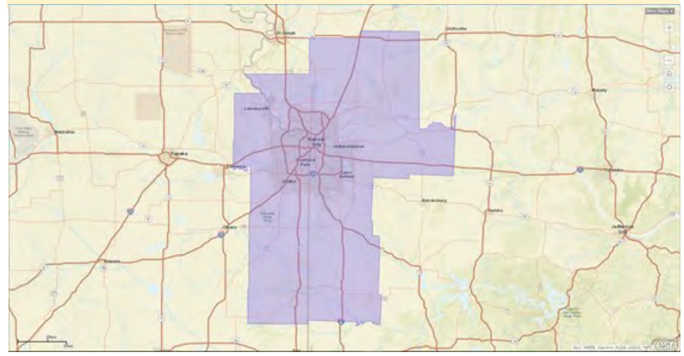
METRO MULTIFAMILY DEMAND OVERVIEW

KANSAS CITY



18,449 **Apartment units needed by 2035**

Definitions on following page

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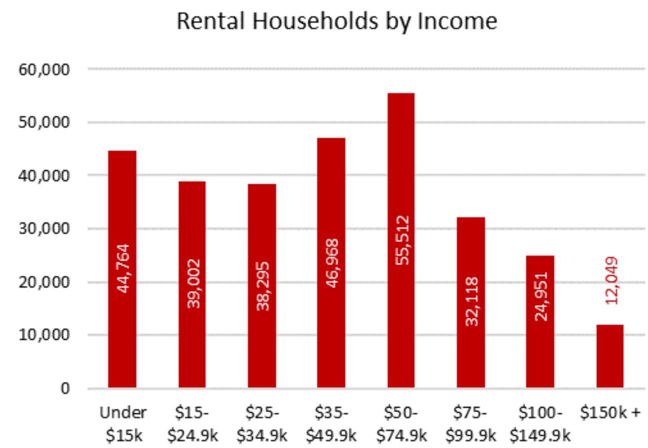
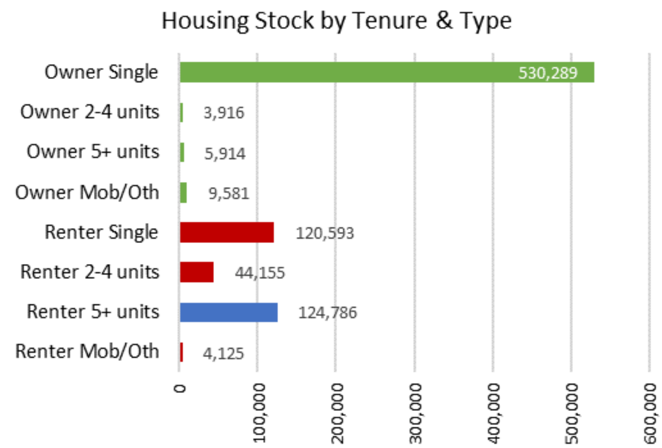
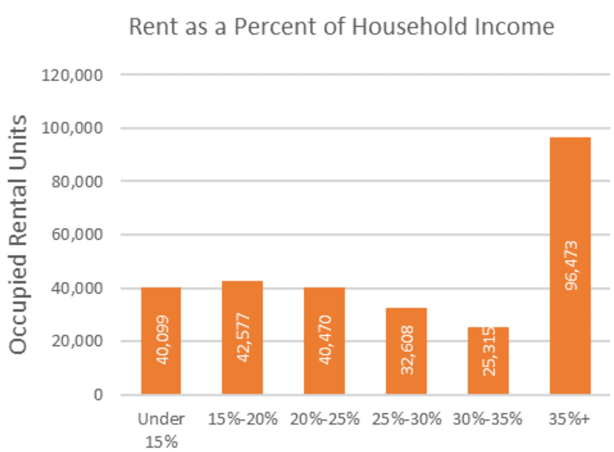
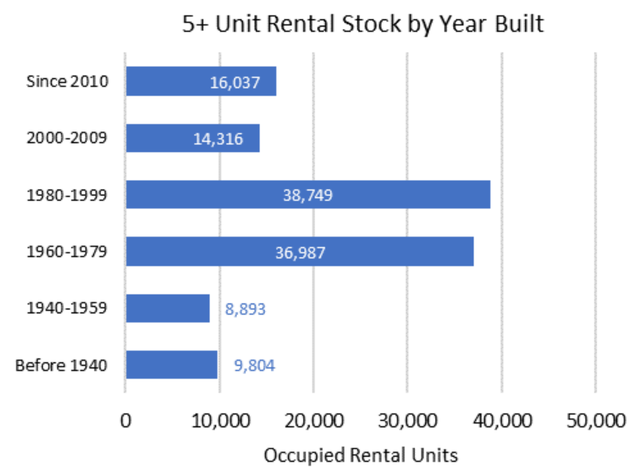
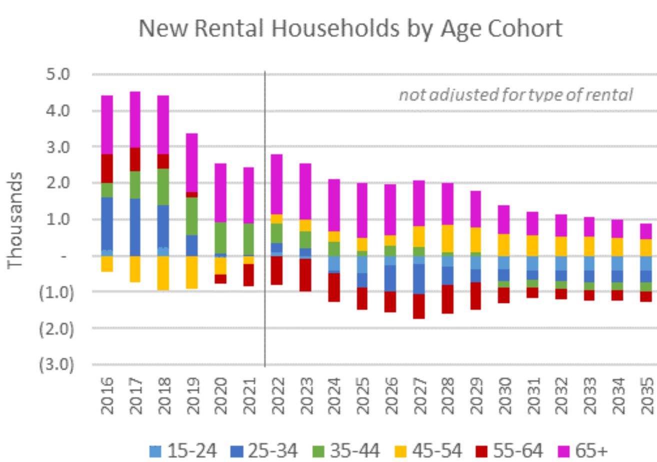
35	65	38	29%

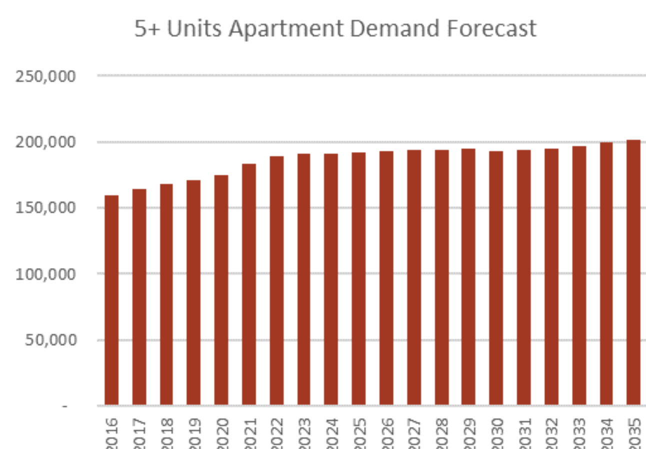












NATIONAL MULTIFAMILY HOUSING COUNCIL

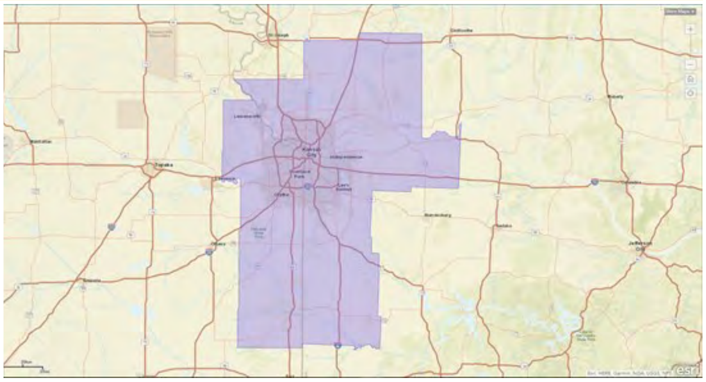
NATIONAL APARTMENT ASSOCIATION

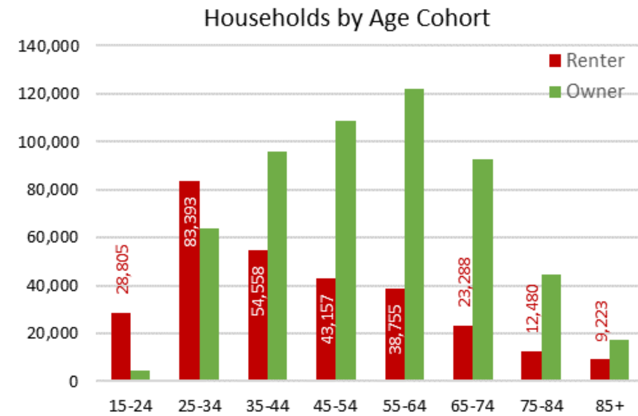
HAS

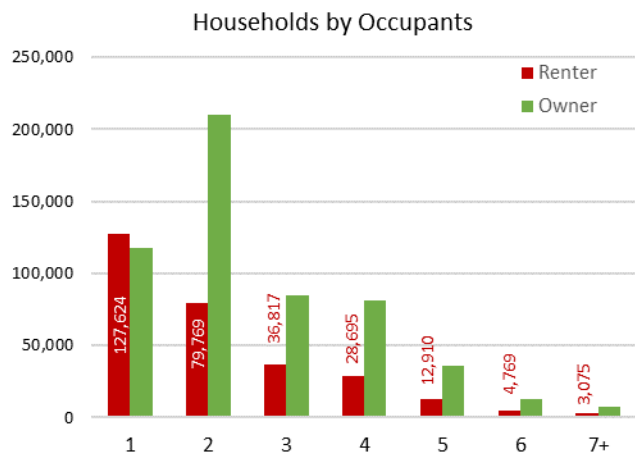
University of San Diego SCHOOL OF BUSINESS

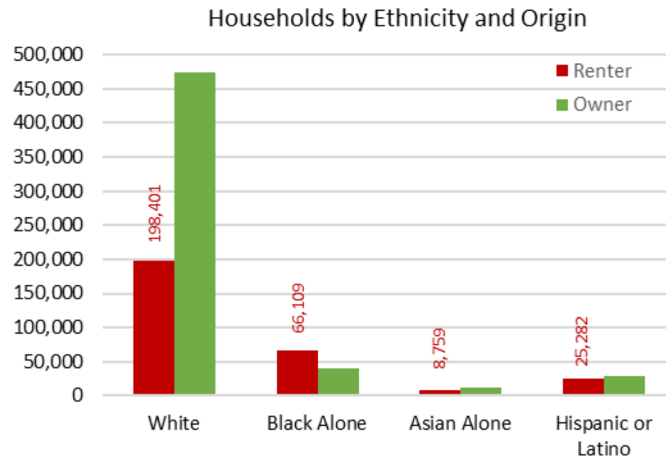
E10A Capital Properties ESG

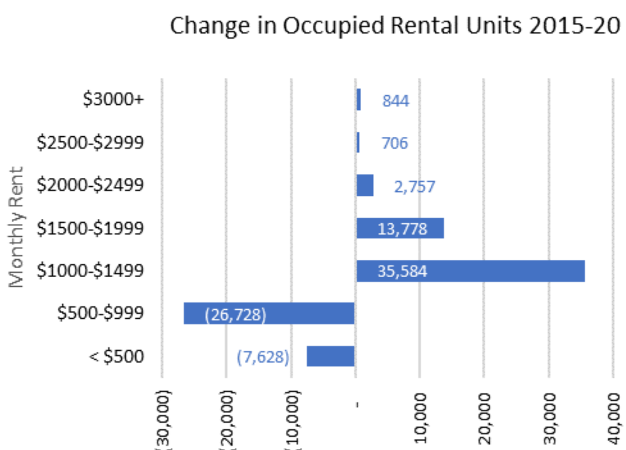
KANSAS CITY page 2

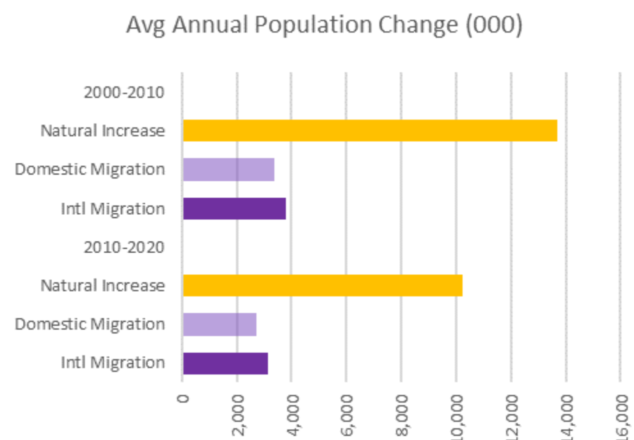












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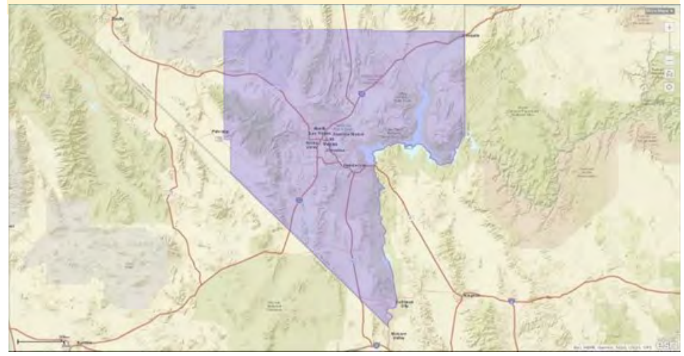
METRO MULTIFAMILY DEMAND OVERVIEW

LAS VEGAS



74,845 Apartment units needed by 2035

Definitions on following page

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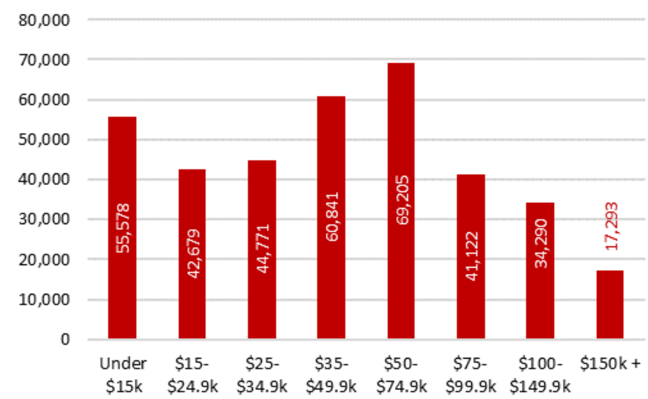
6	58	28	18%

Rental Households by Income



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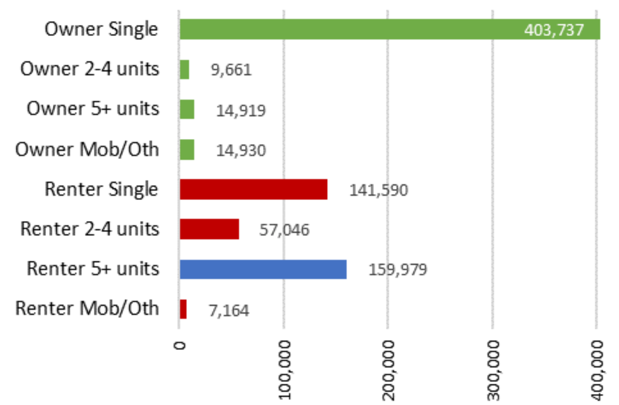
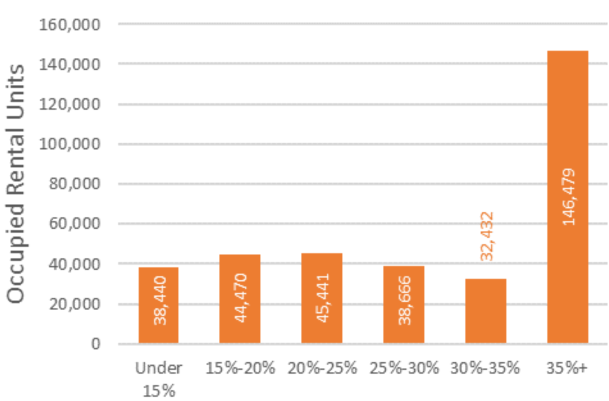
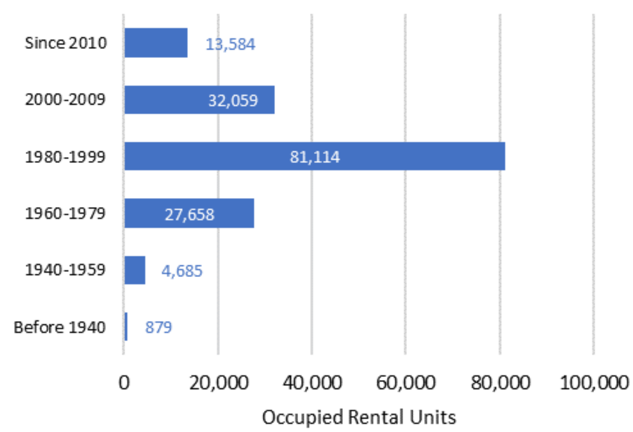


Rent as a Percent of Household Income



5+ Unit Rental Stock by Year Built



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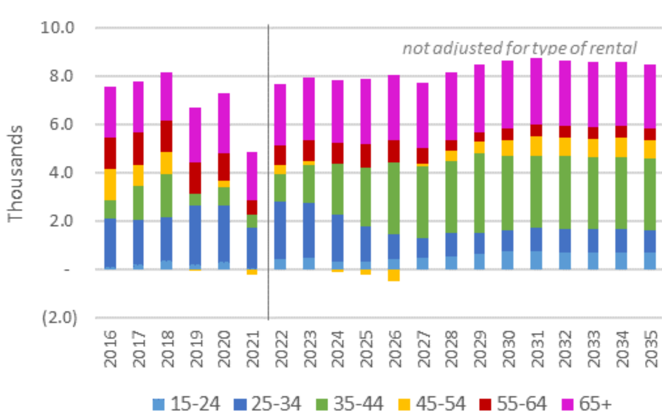
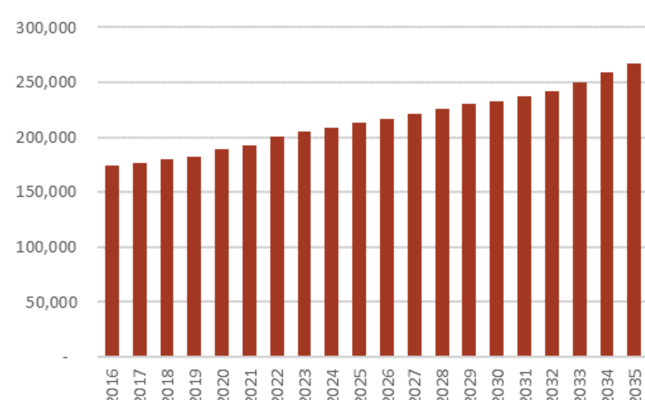


5+ Units Apartment Demand Forecast



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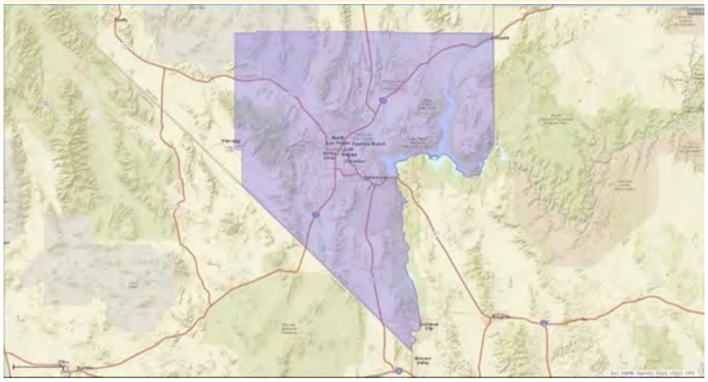
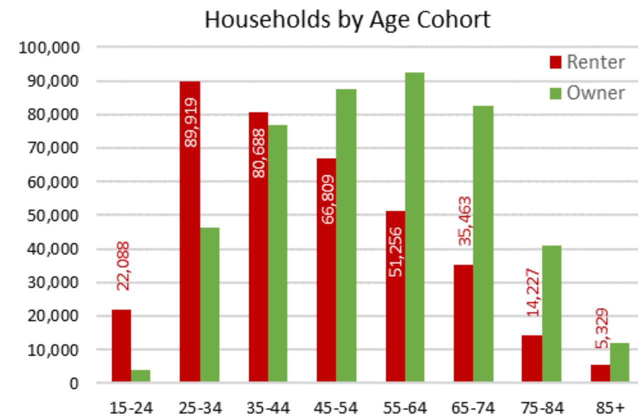
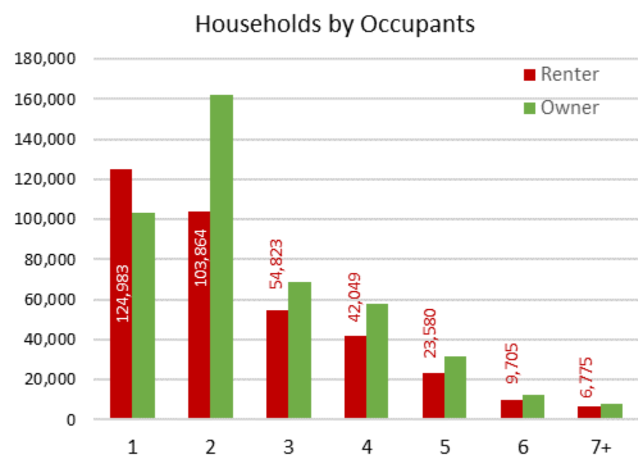
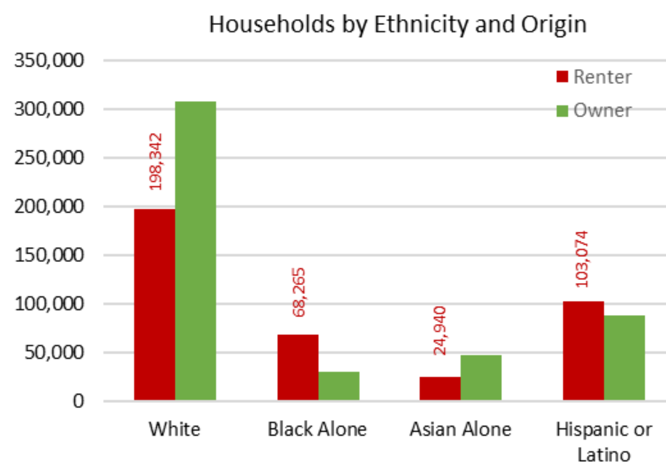
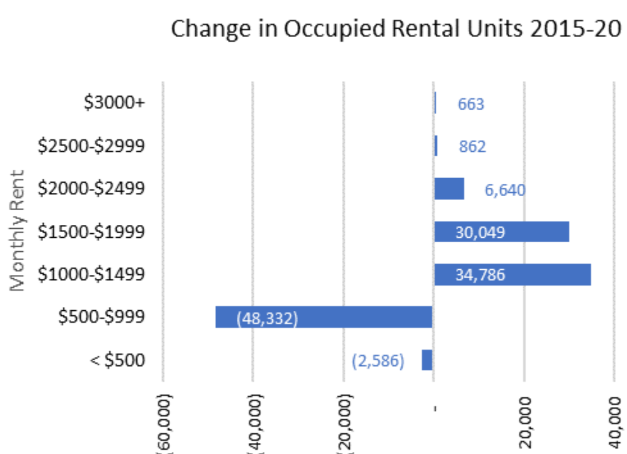
LAS VEGAS page 2

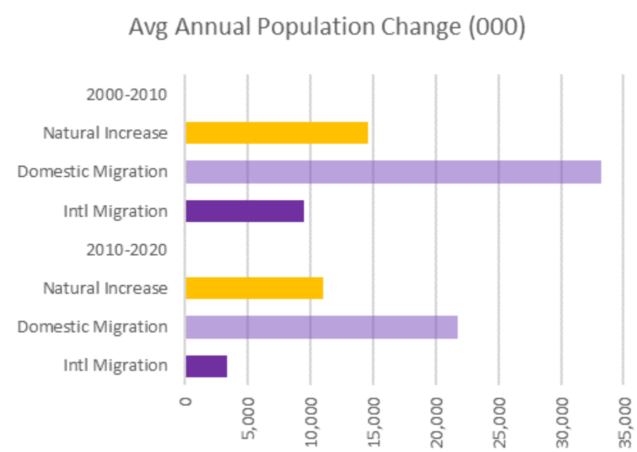












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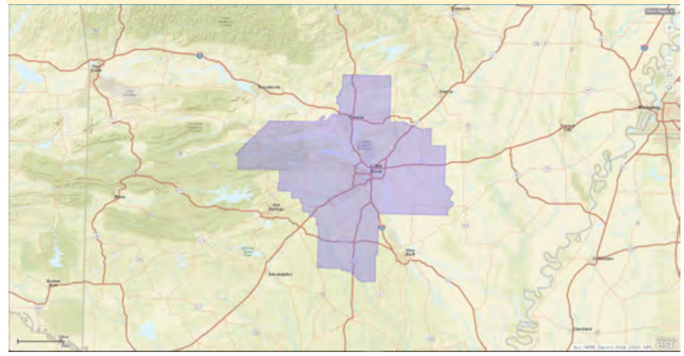
METRO MULTIFAMILY DEMAND OVERVIEW

LITTLE ROCK

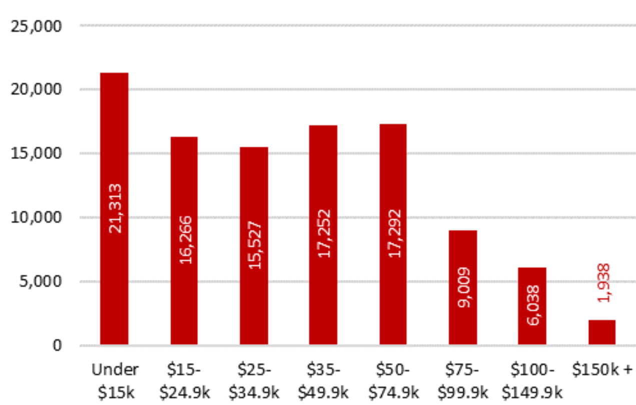


4,401 Apartment units needed by 2035

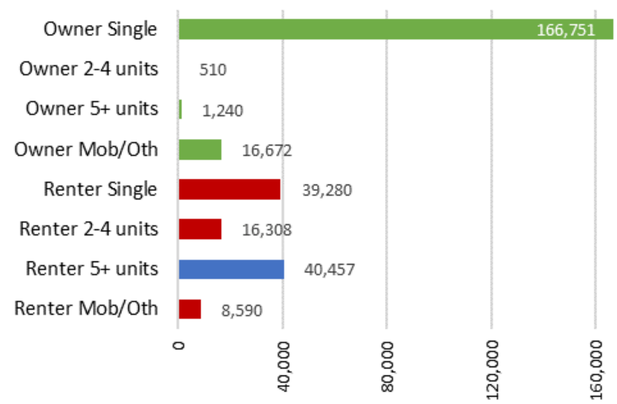
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
44	63	38	30%

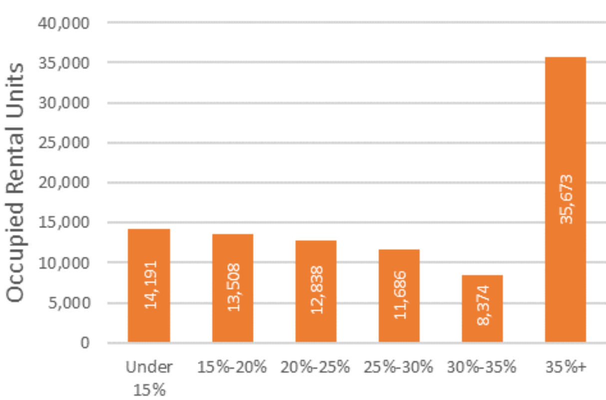
Rental Households by Income



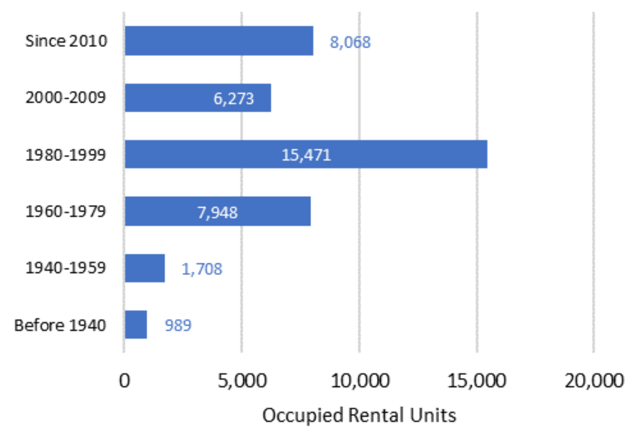
Housing Stock by Tenure & Type



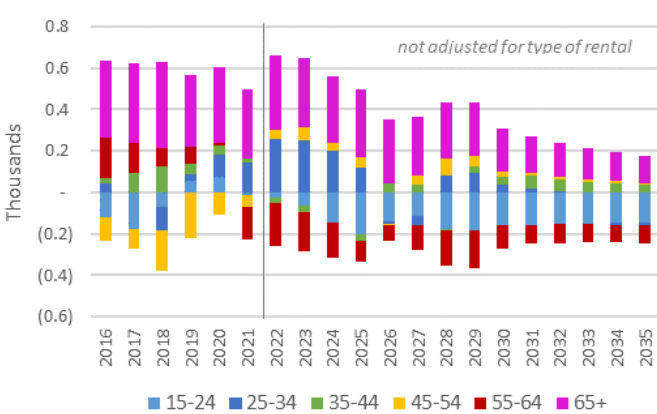
Rent as a Percent of Household Income



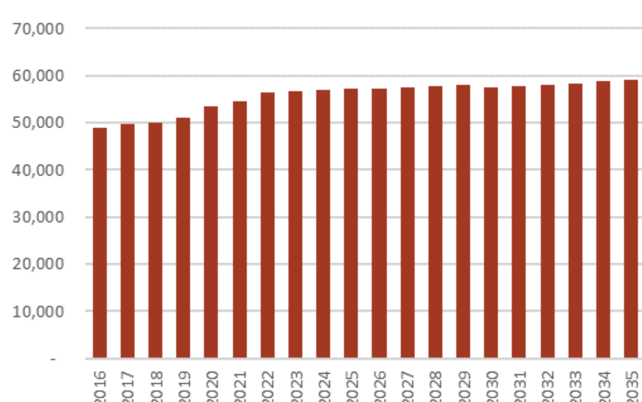
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



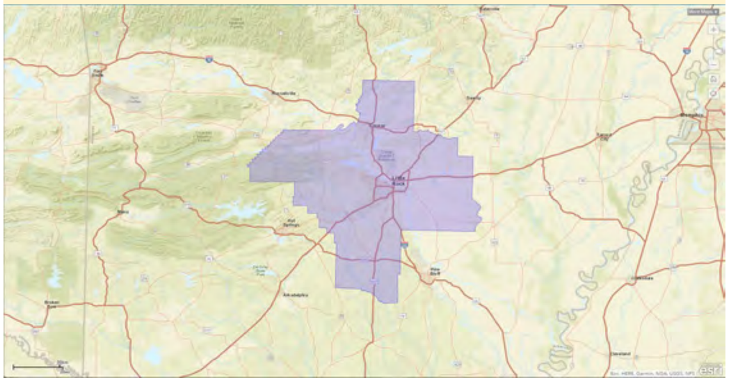
5+ Units Apartment Demand Forecast

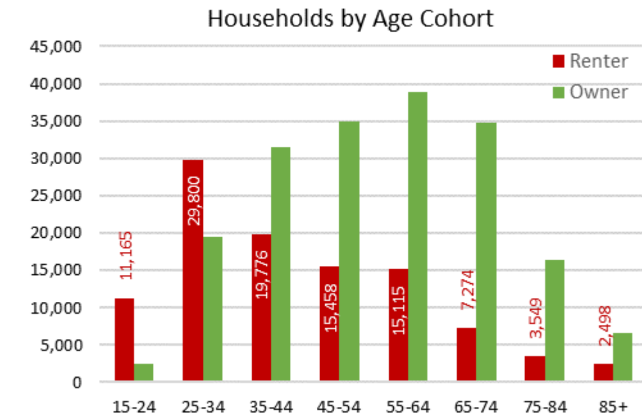


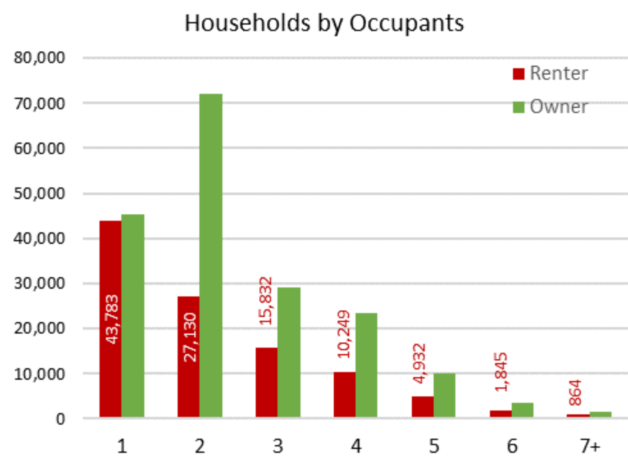
NATIONAL MULTIFAMILY HOUSING COUNCIL

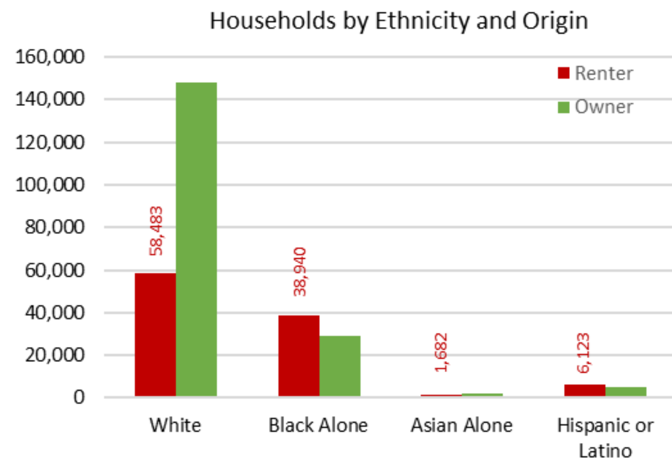
NATIONAL APARTMENT ASSOCIATION

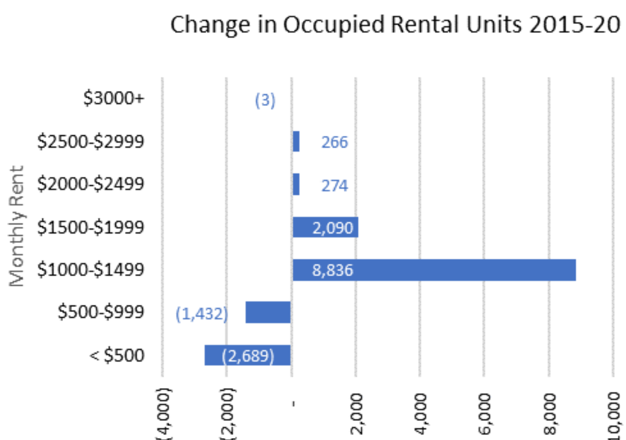
LITTLE ROCK page 2

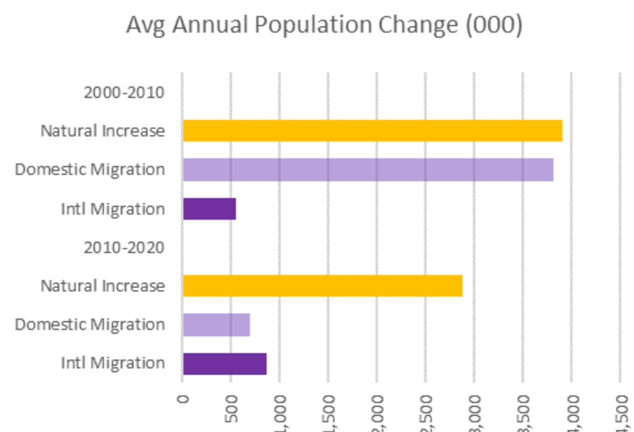












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NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION
HAS
University of San Diego SCHOOL OF BUSINESS
E10A Capital Properties ESG

METRO MULTIFAMILY DEMAND OVERVIEW

LOS ANGELES

78,035

Apartment units needed by 2035

Definitions on following page

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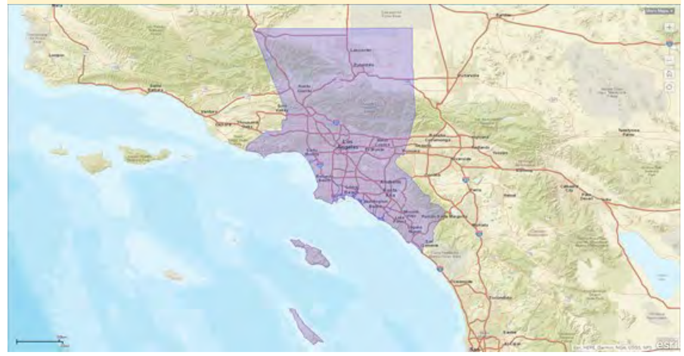
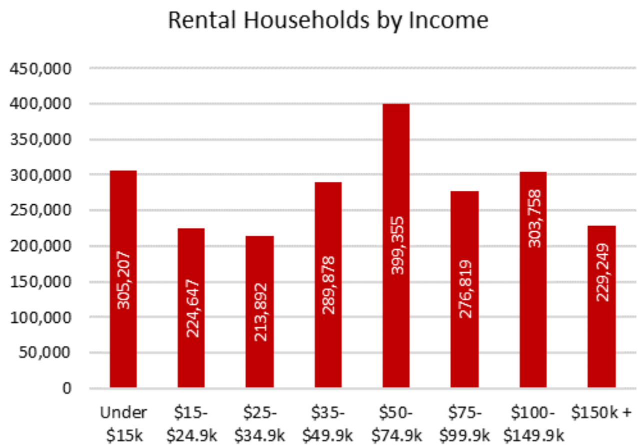
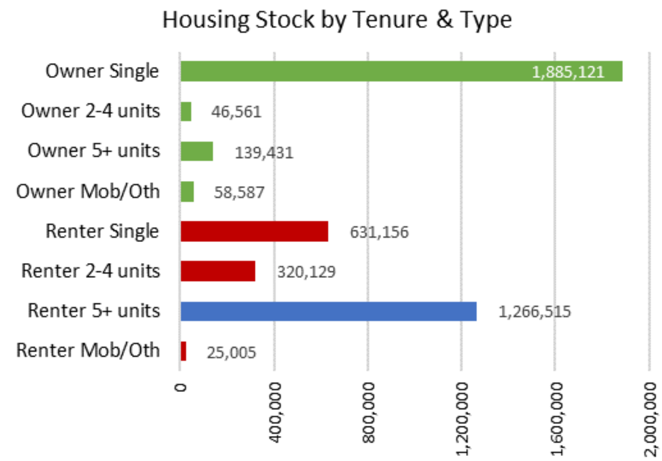
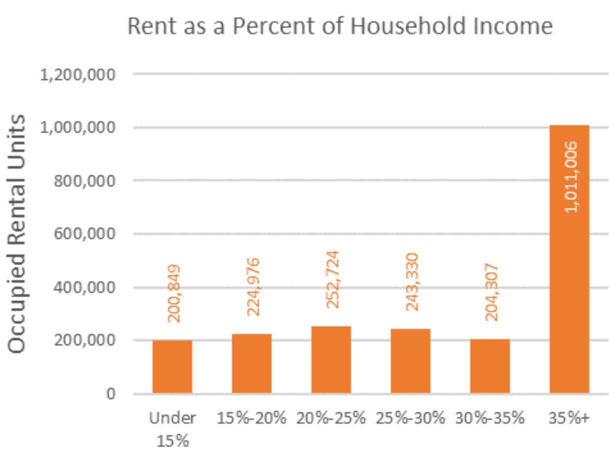
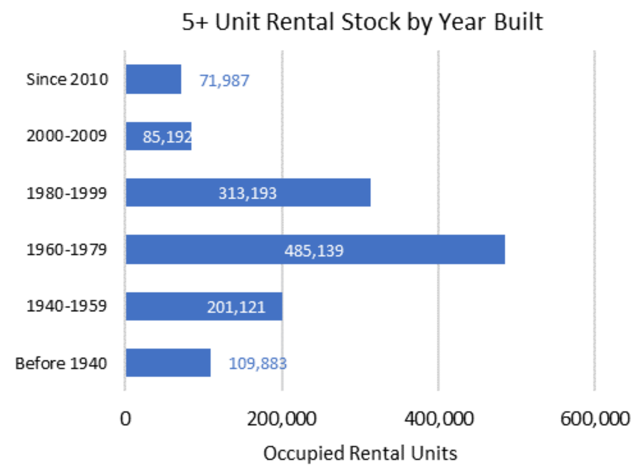
29	53	47	64%

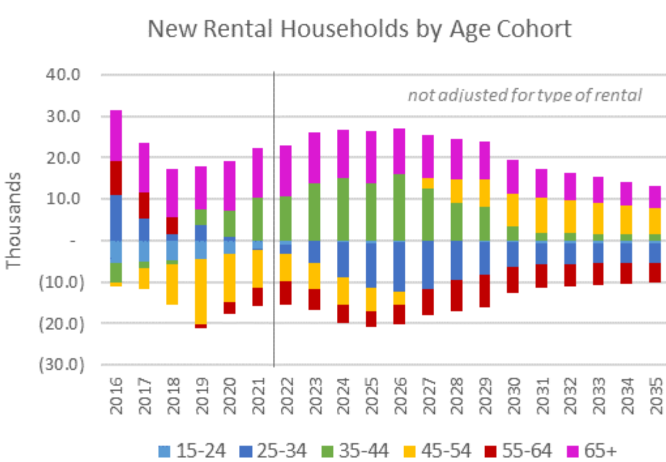


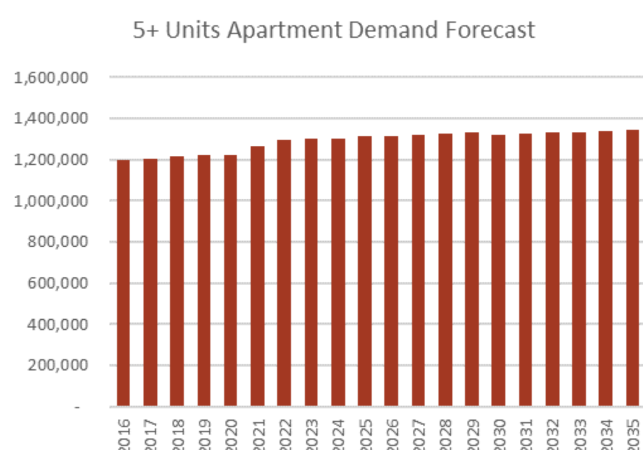












NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION
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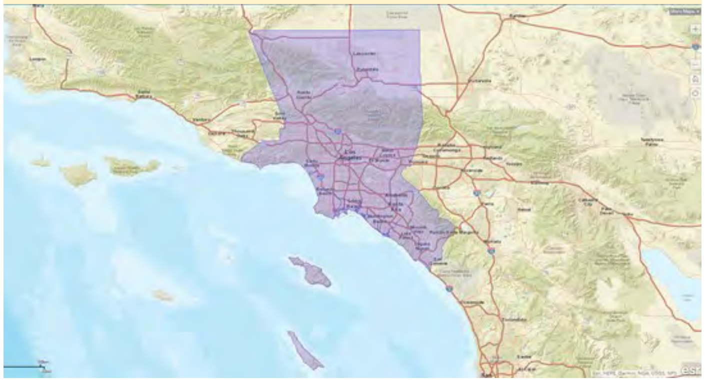
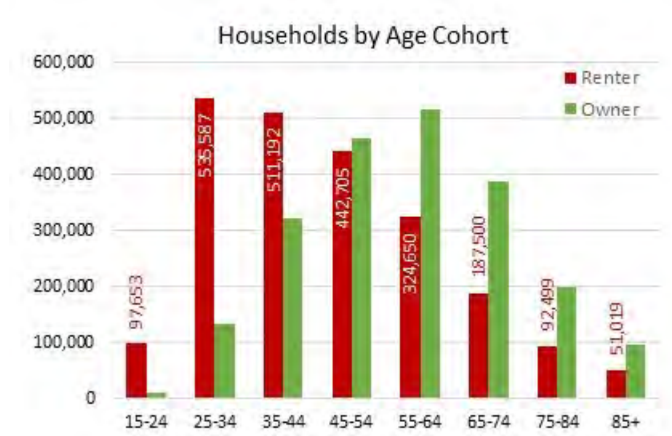
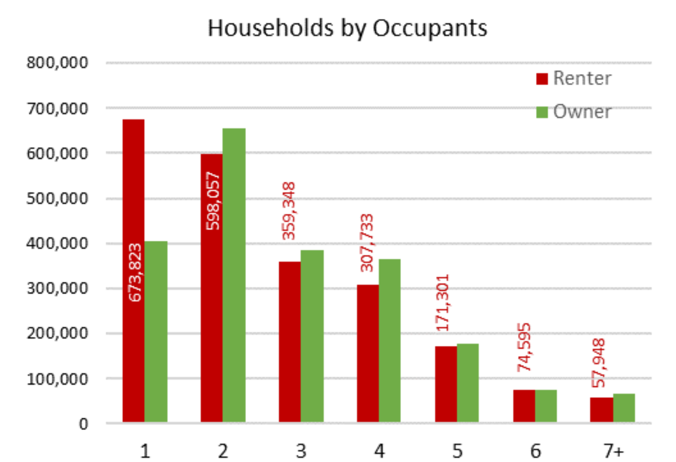
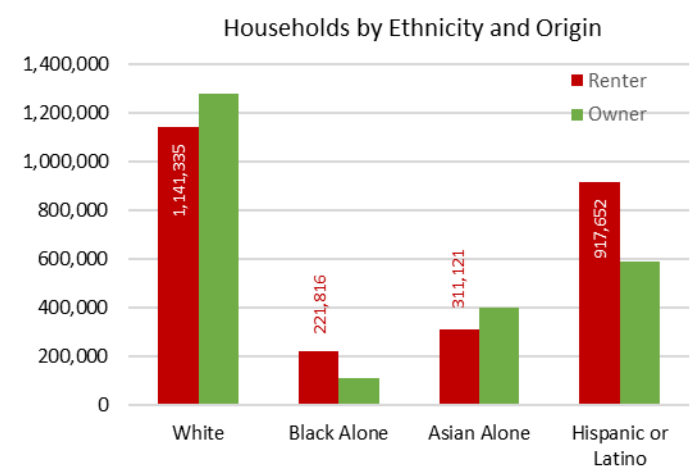
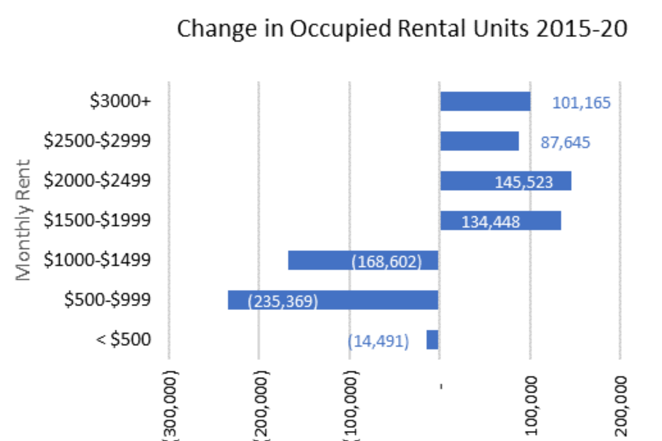
LOS ANGELES page 2

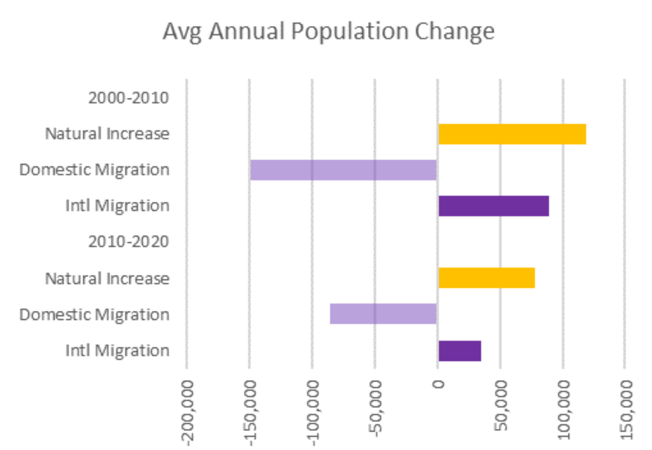












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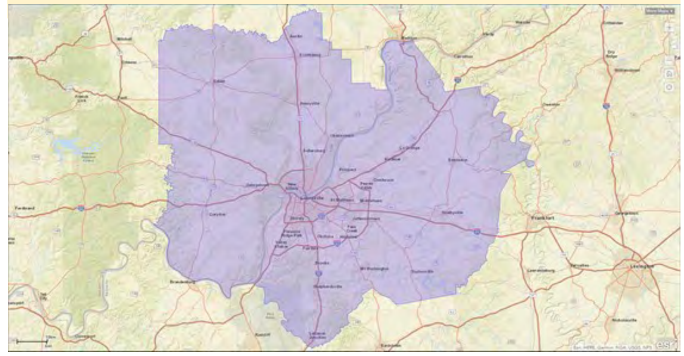
METRO MULTIFAMILY DEMAND OVERVIEW

LOUISVILLE



8,497

Apartment units needed by 2035

Definitions on following page

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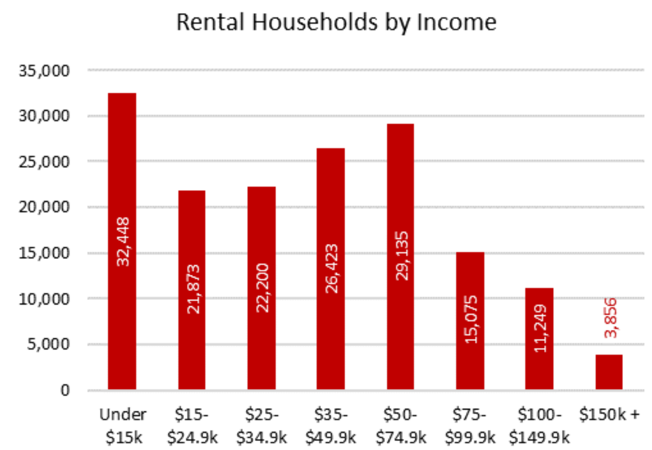
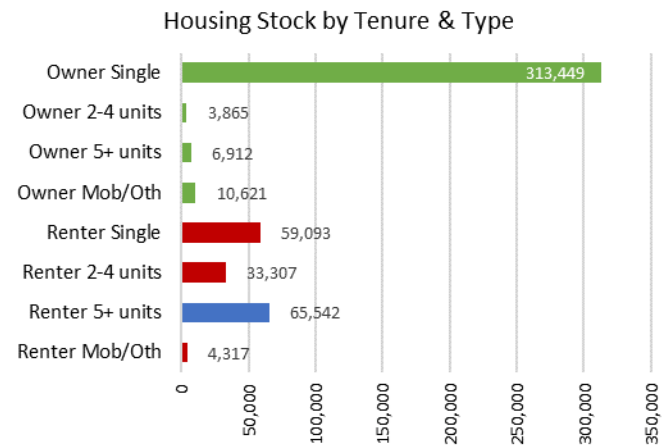
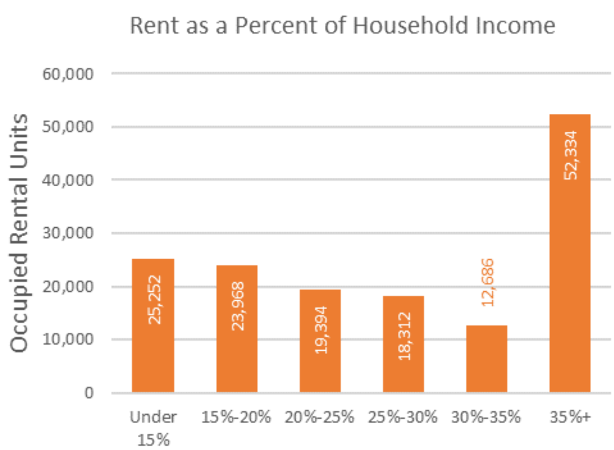
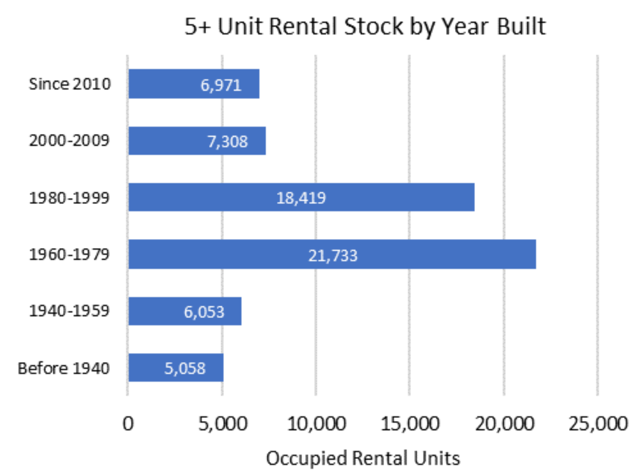
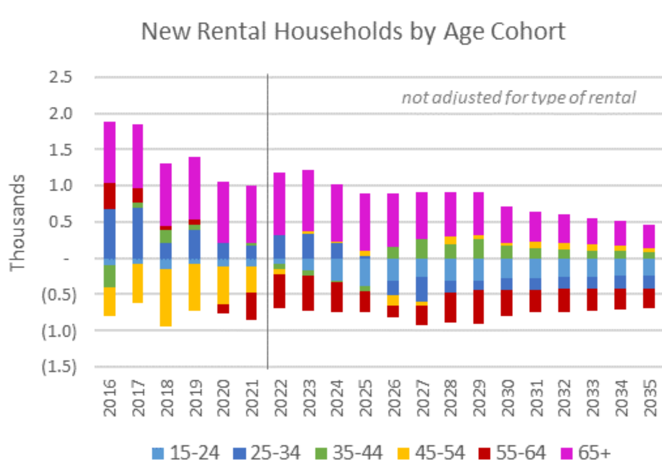
42	66	11	35%

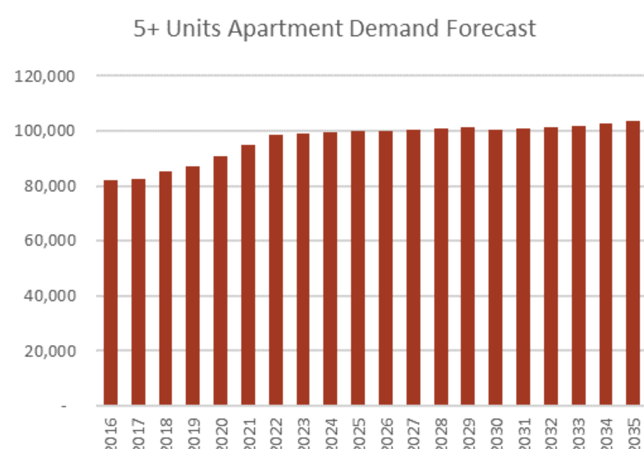




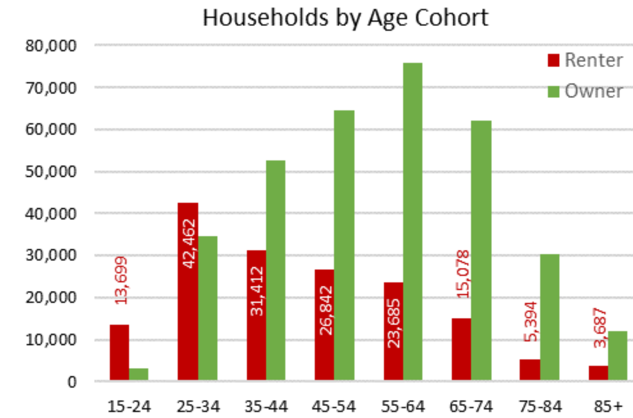


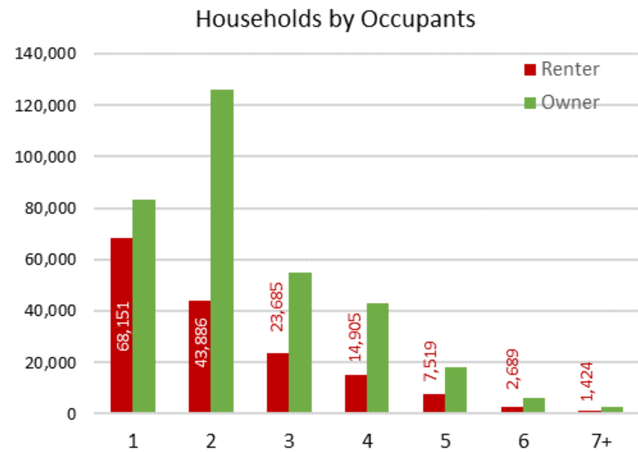


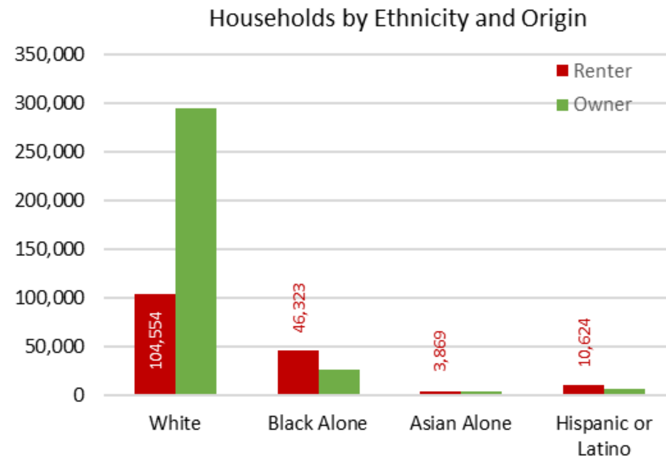


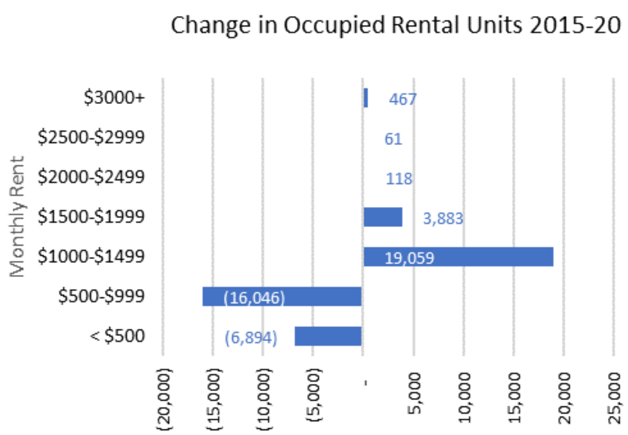


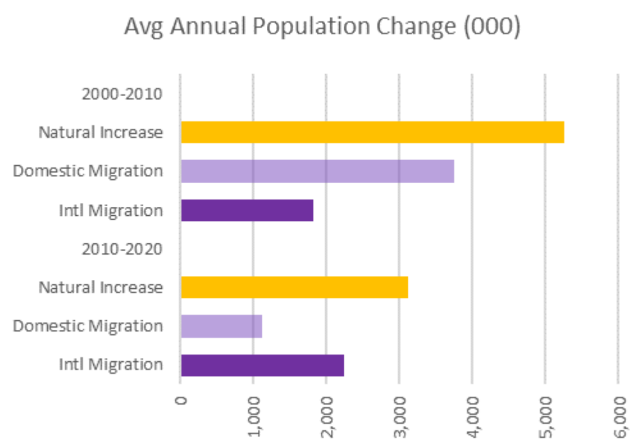
LOUISVILLE page 2











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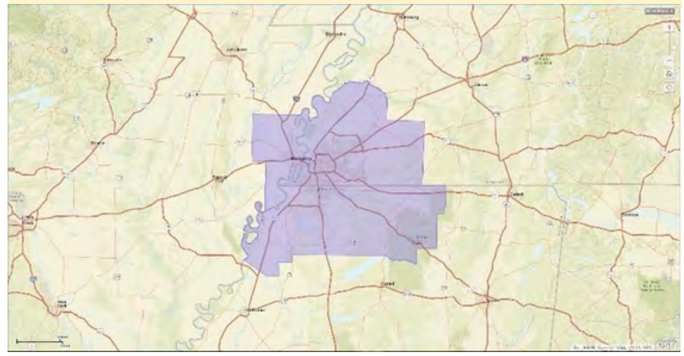
METRO MULTIFAMILY DEMAND OVERVIEW

MEMPHIS



9,536

Apartment units needed by 2035

Definitions on following page

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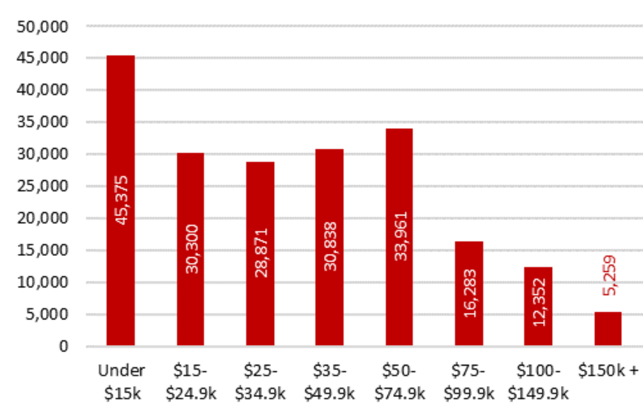
41	57	43	39%

Rental Households by Income



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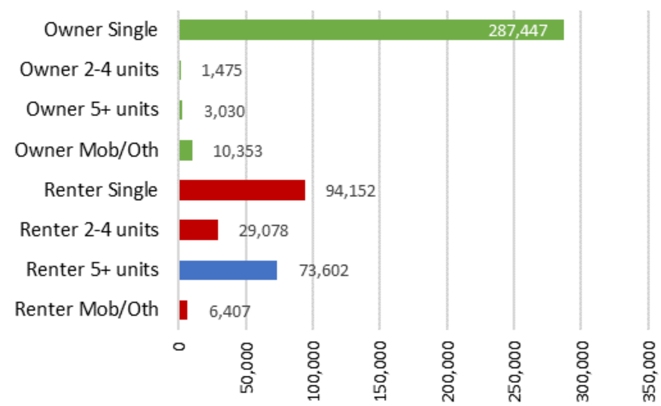
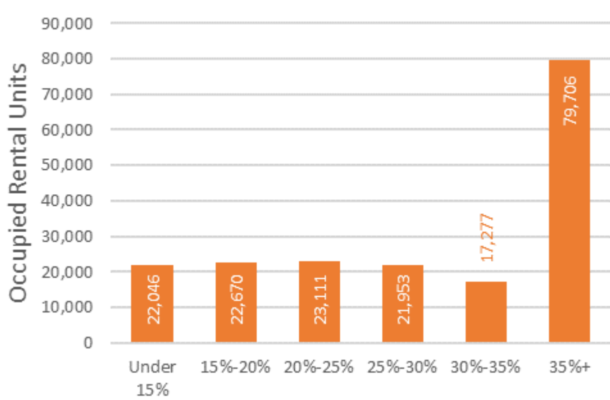
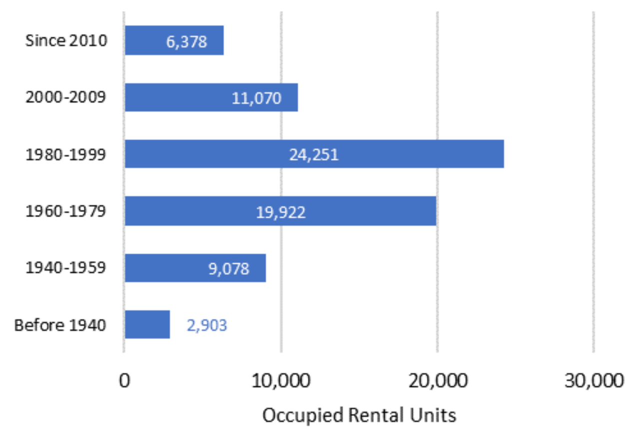


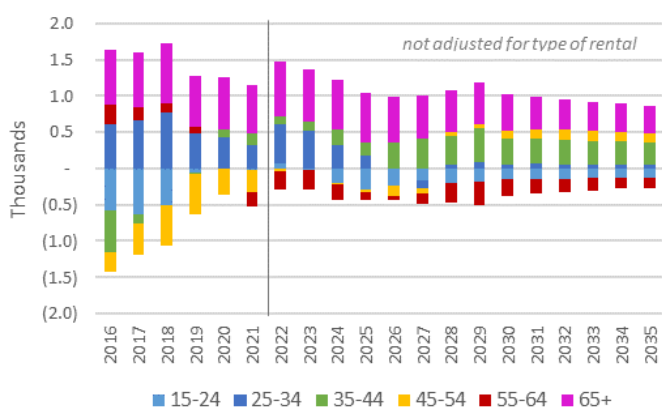
Rent as a Percent of Household Income



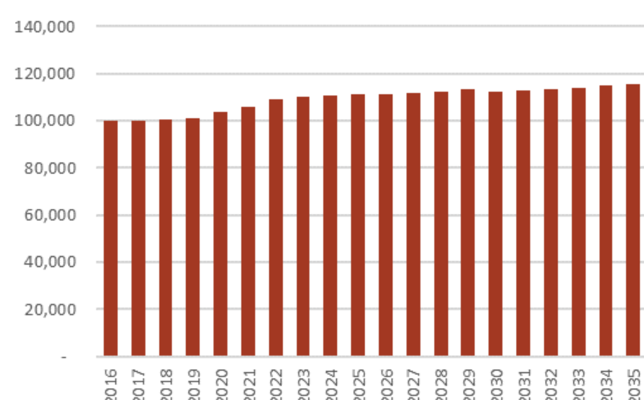
5+ Unit Rental Stock by Year Built



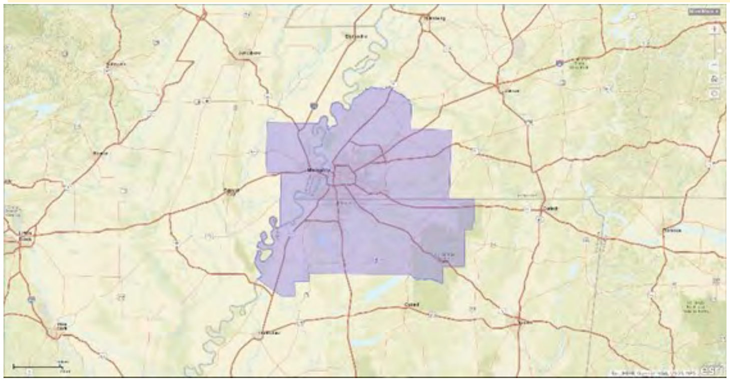
New Rental Households by Age Cohort



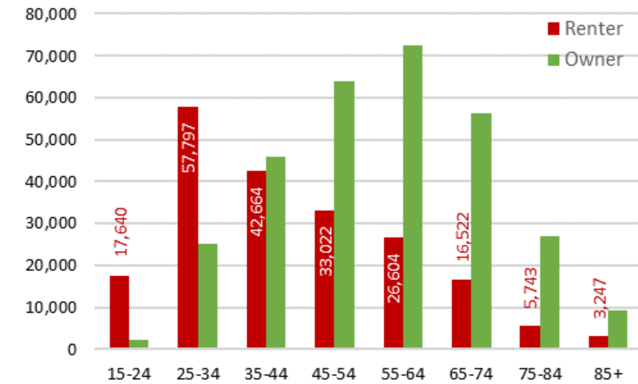
5+ Units Apartment Demand Forecast



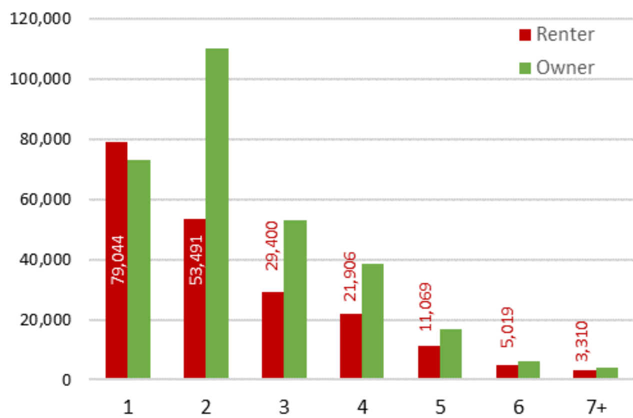
MEMPHIS page 2



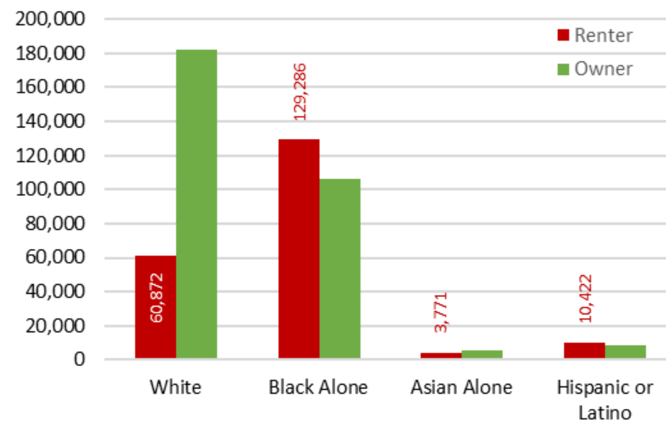
Households by Age Cohort



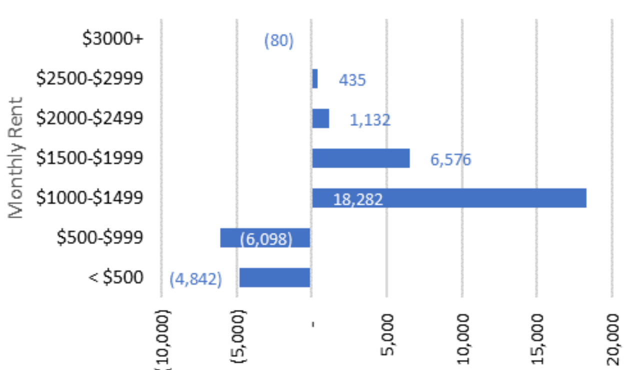
Households by Occupants



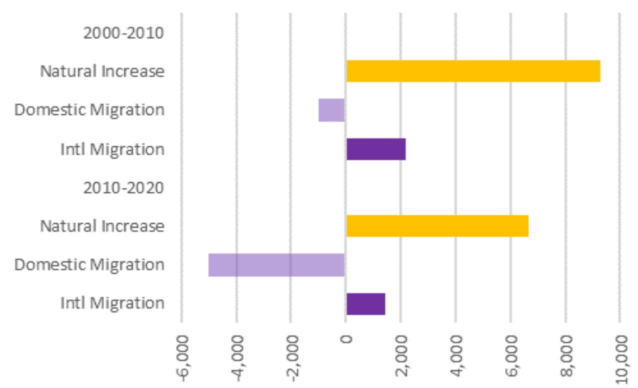
Households by Ethnicity and Origin



Change in Occupied Rental Units 2015-20



Avg Annual Population Change (000)



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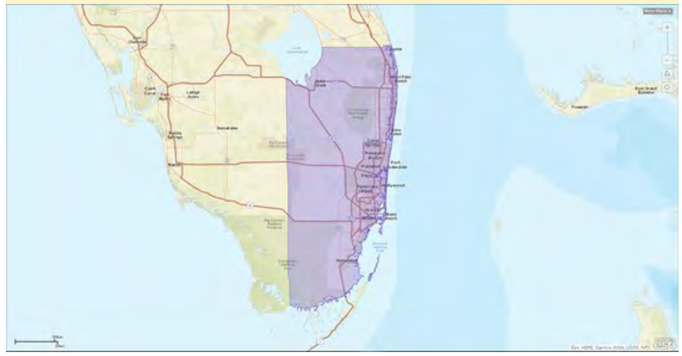
METRO MULTIFAMILY DEMAND OVERVIEW

MIAMI

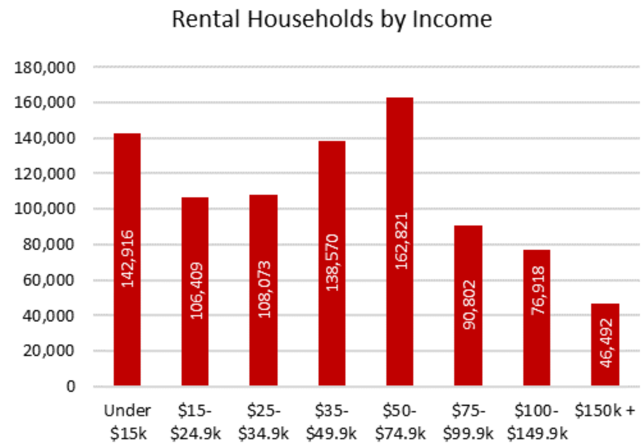


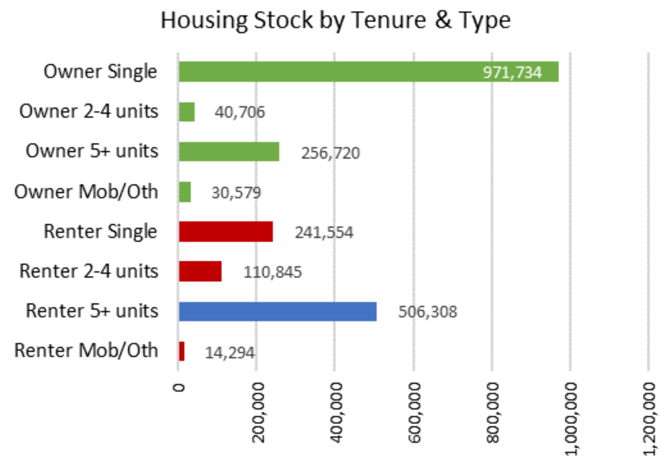
99,595

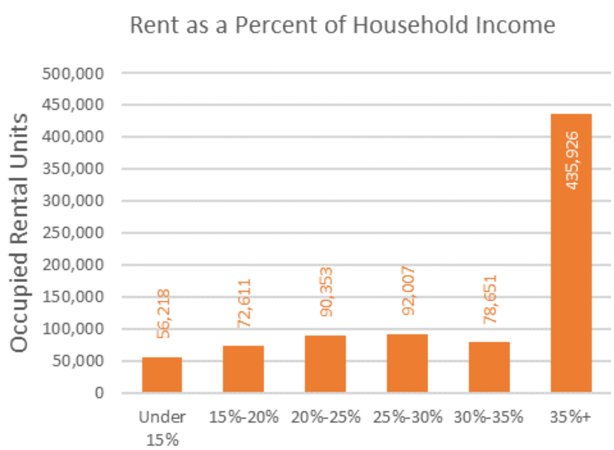
Apartment units needed by 2035

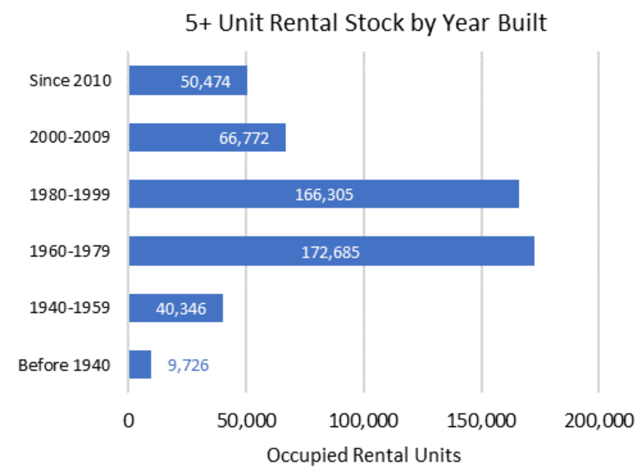
Definitions on following page

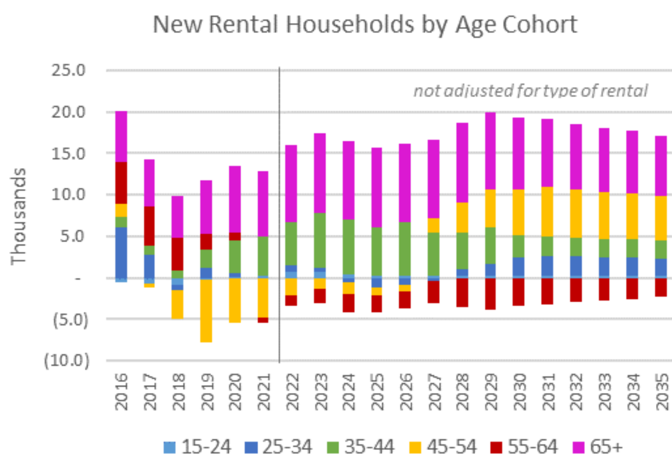
DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
14	47	22	35%

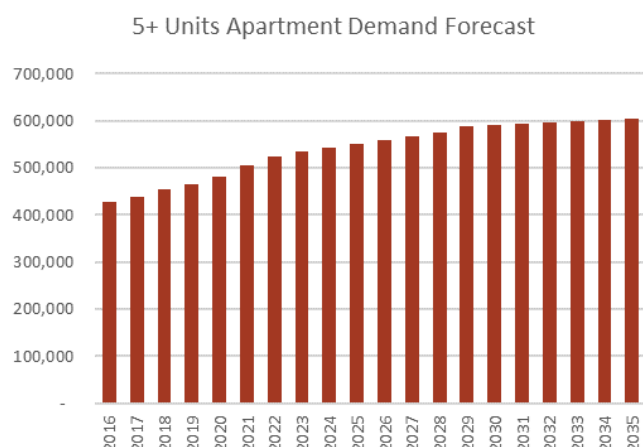




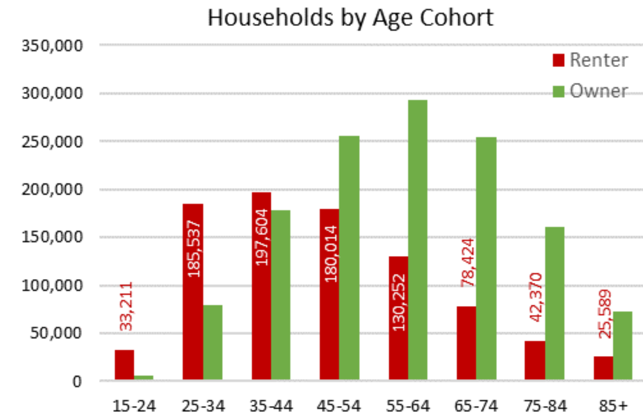


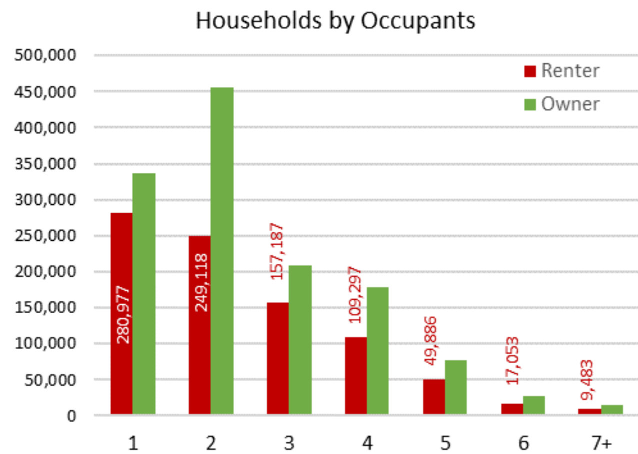


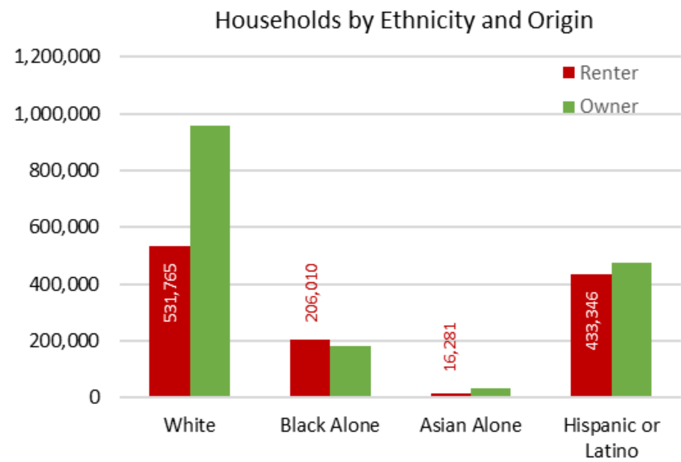


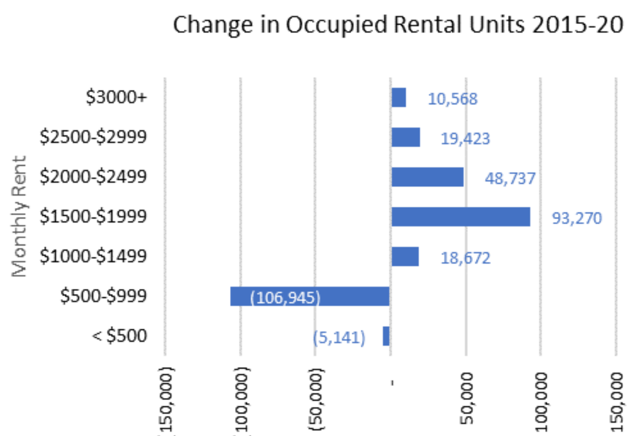


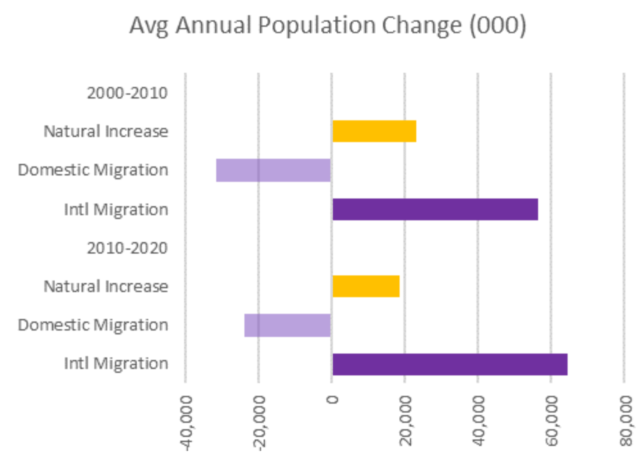
MIAMI page 2











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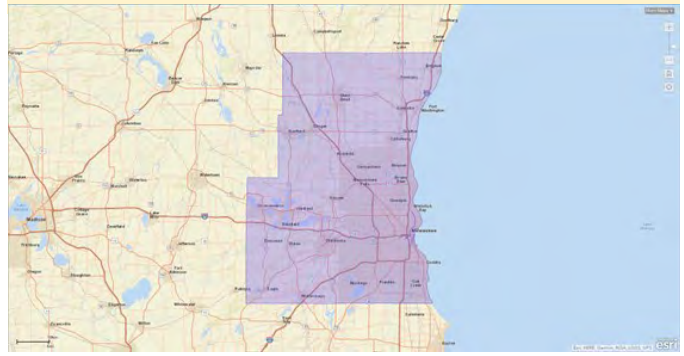
METRO MULTIFAMILY DEMAND OVERVIEW

MILWAUKEE

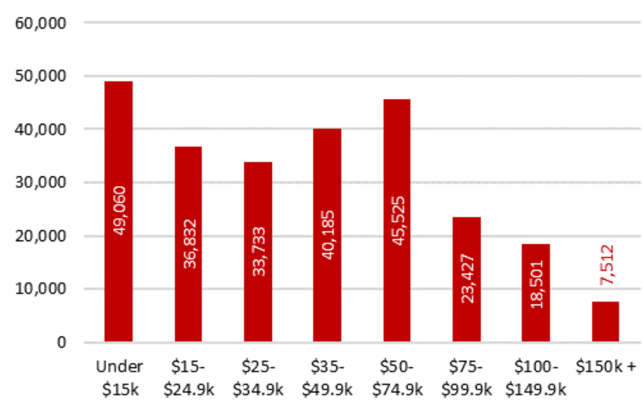


6,530 Apartment units needed by 2035

Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
47	61	34	41%

Rental Households by Income



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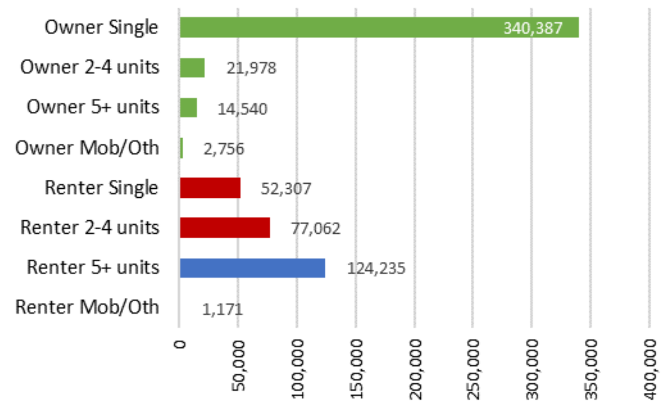
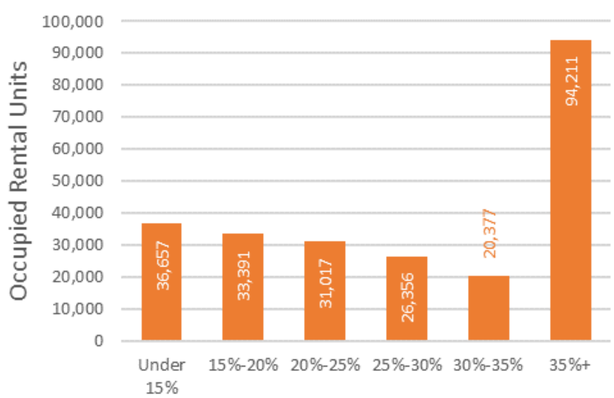
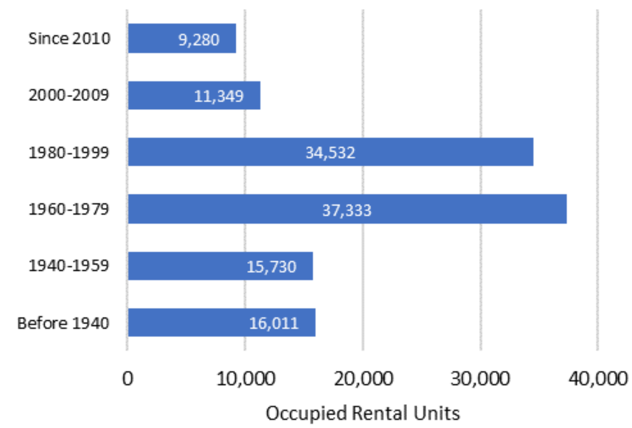


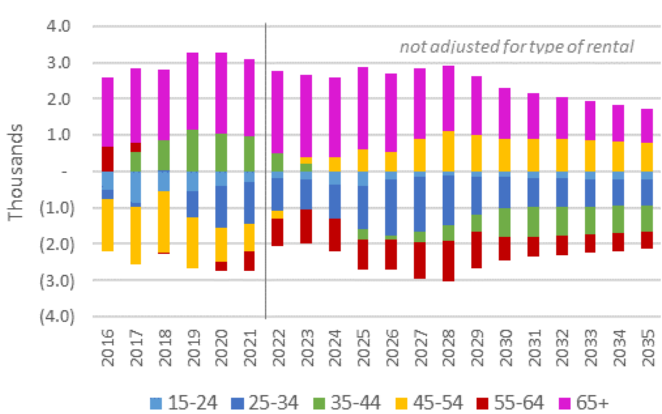
Rent as a Percent of Household Income



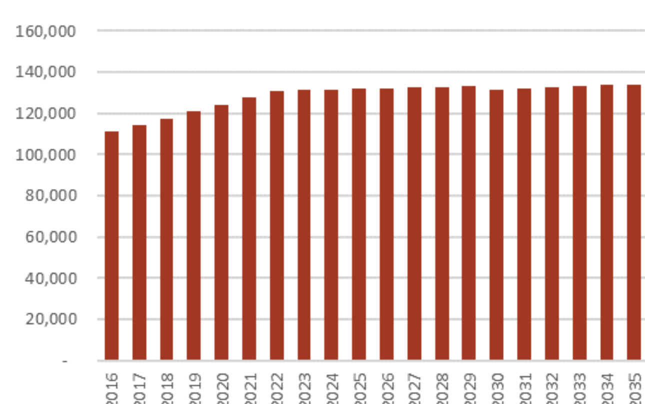
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



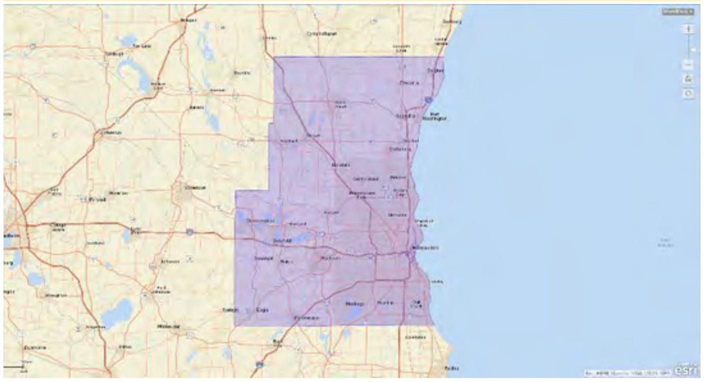
5+ Units Apartment Demand Forecast

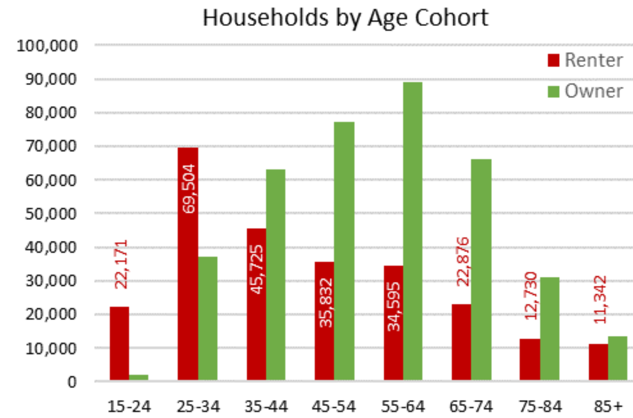


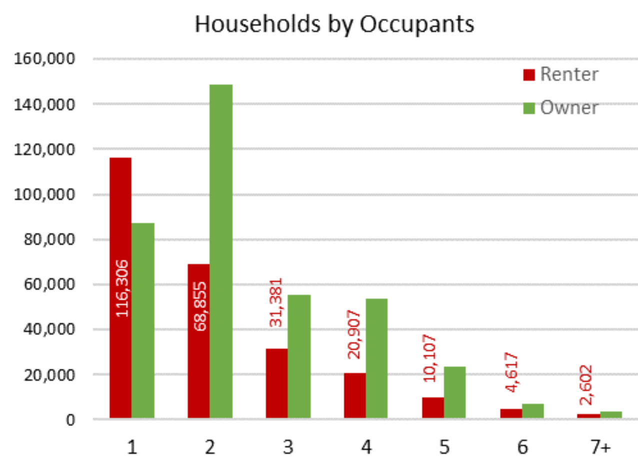
NATIONAL MULTIFAMILY HOUSING COUNCIL

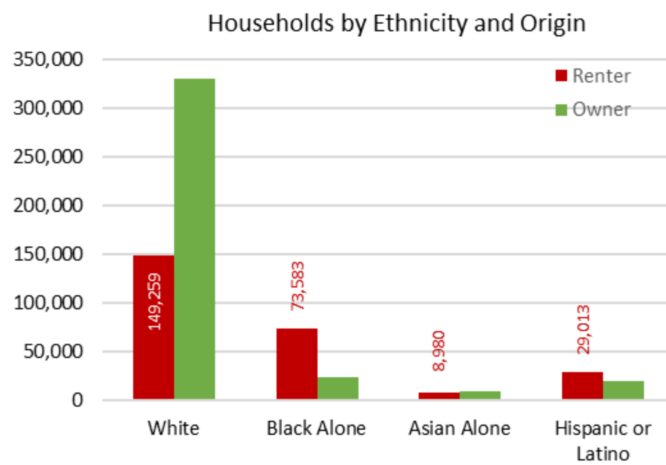
NATIONAL APARTMENT ASSOCIATION

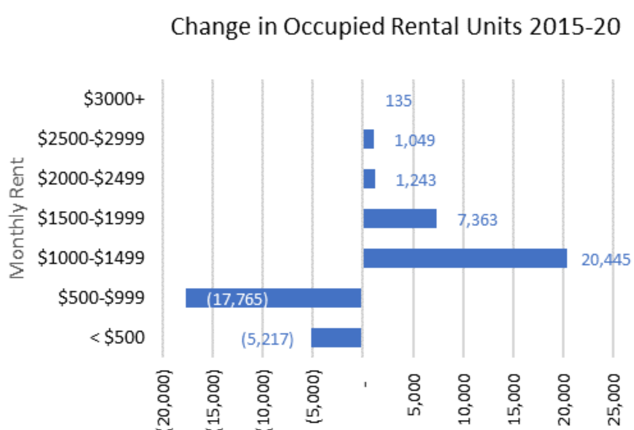
MILWAUKEE page 2

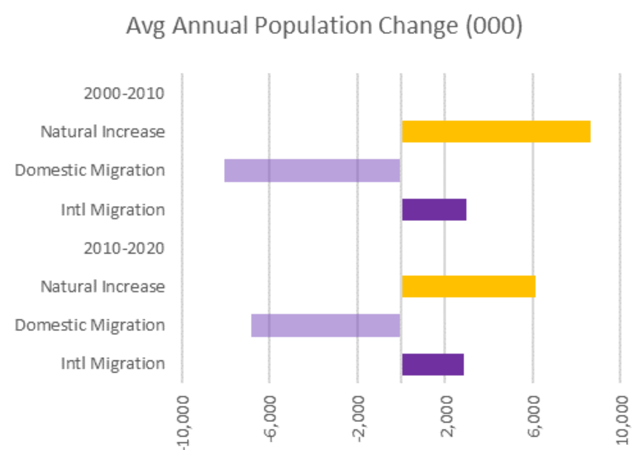












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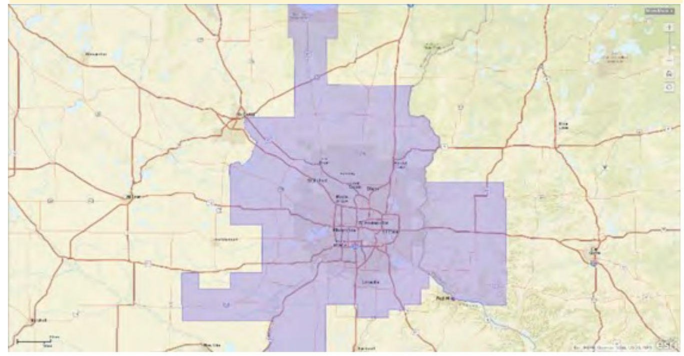
METRO MULTIFAMILY DEMAND OVERVIEW

MINNEAPOLIS



67,756 Apartment units needed by 2035

Definitions on following page

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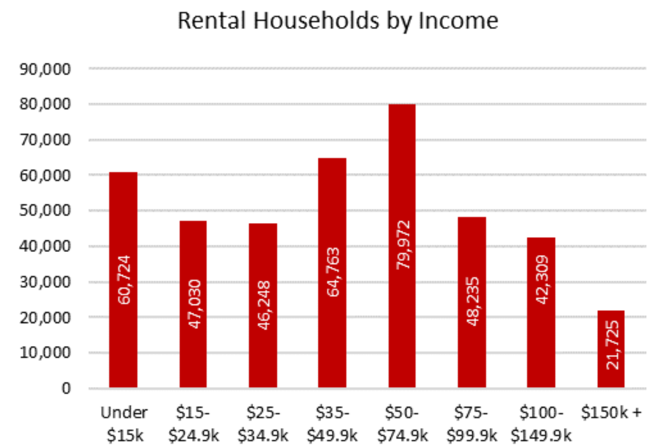
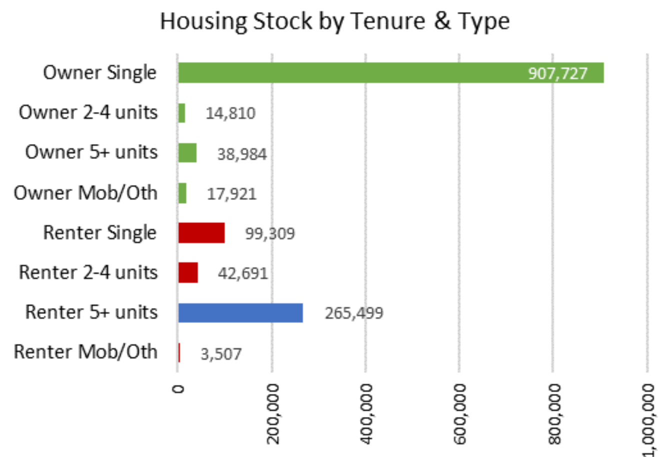
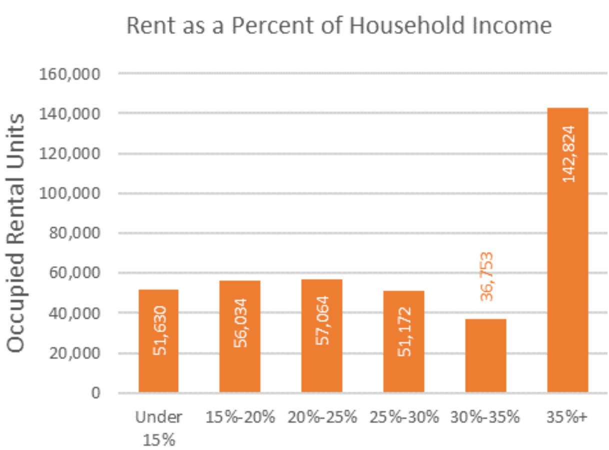
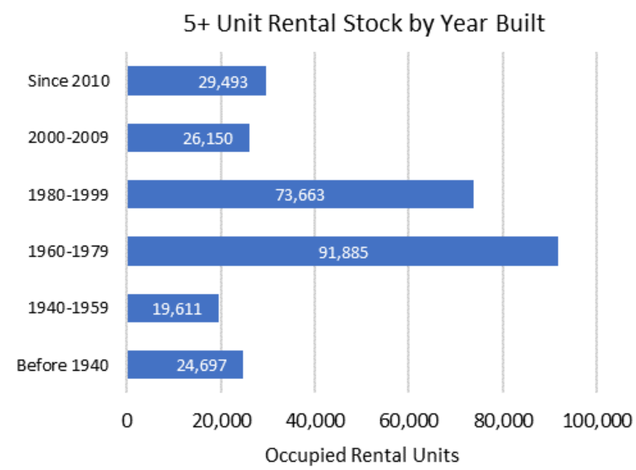
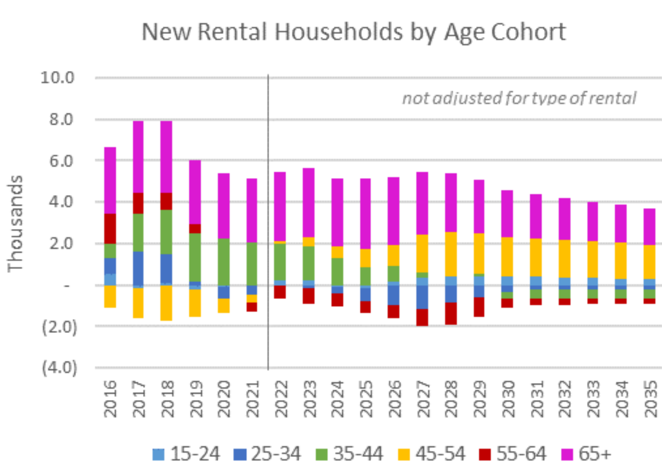
16	64	9	38%

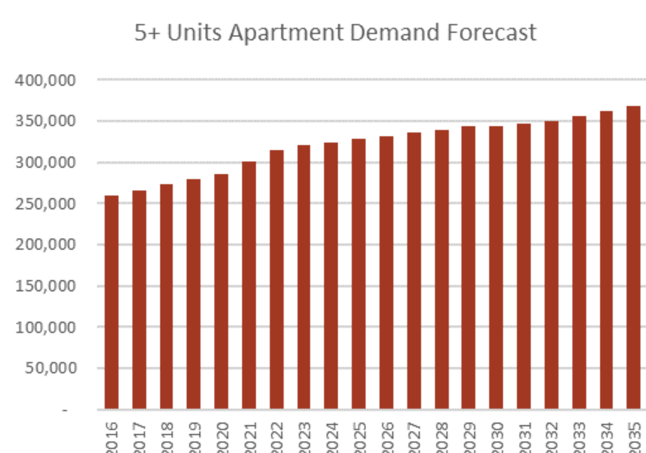




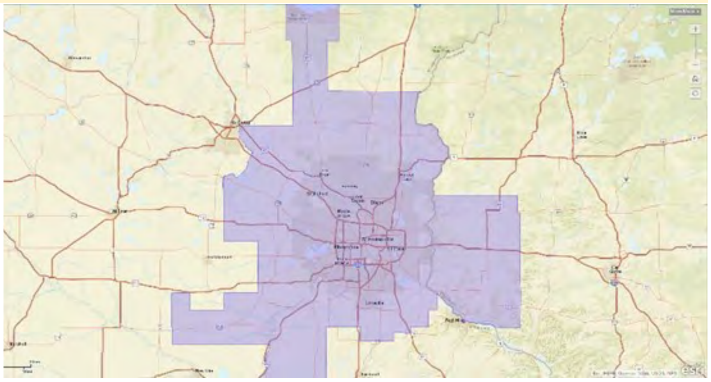


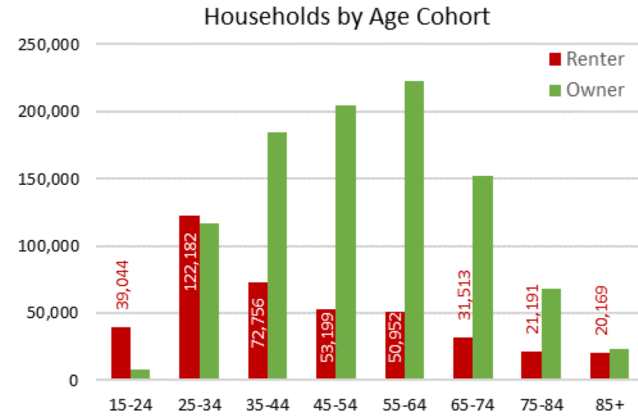


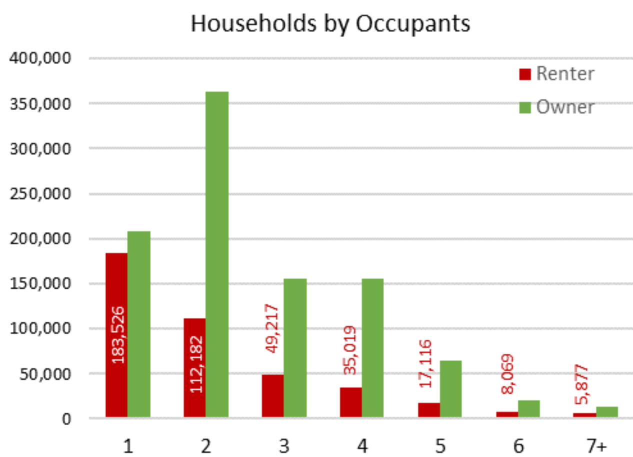


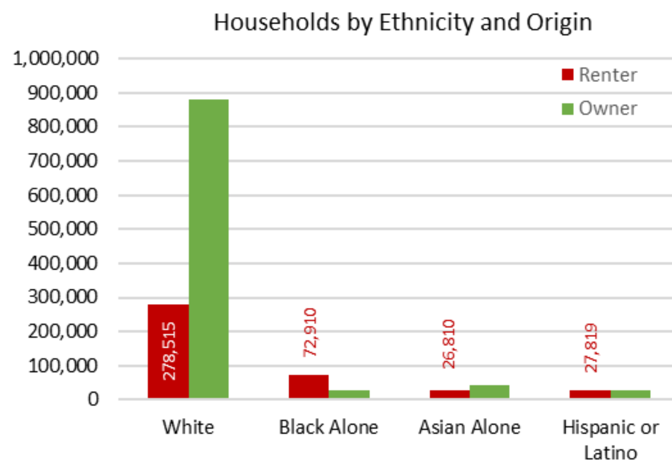


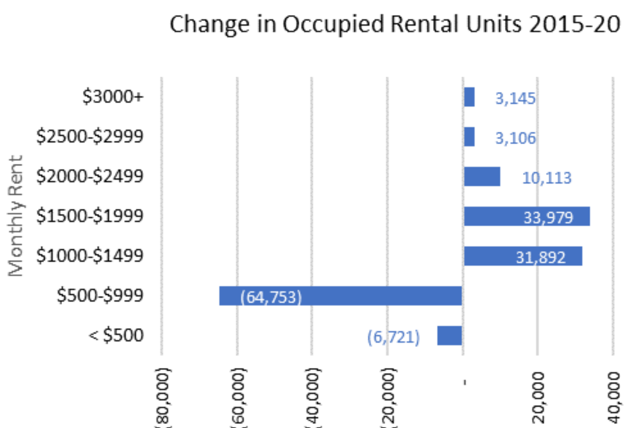
MINNEAPOLIS page 2

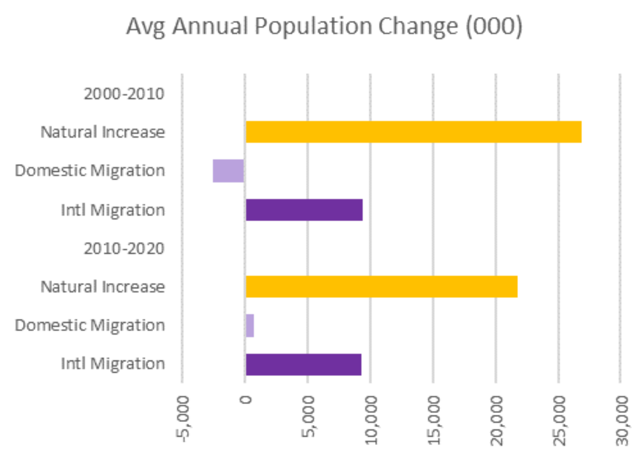












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NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION
HAS
University of San Diego SCHOOL OF BUSINESS
E10A Capital Properties ESG

METRO MULTIFAMILY DEMAND OVERVIEW

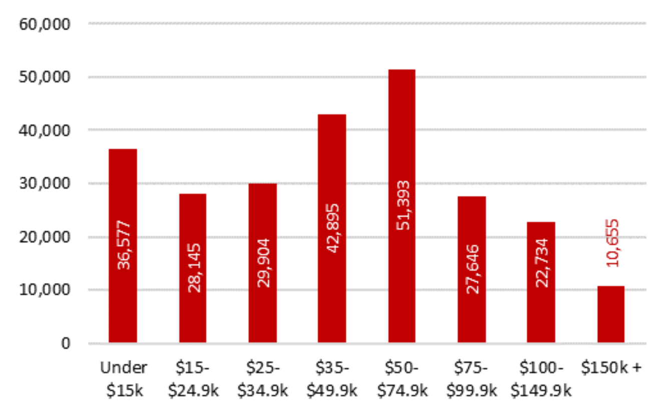
NASHVILLE

38,453 Apartment units needed by 2035

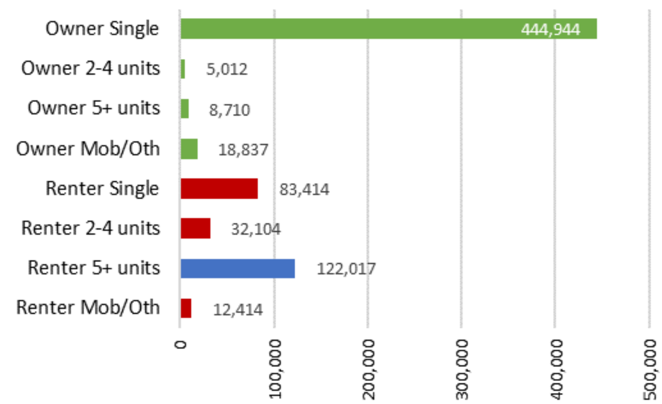
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
20	63	13	25%

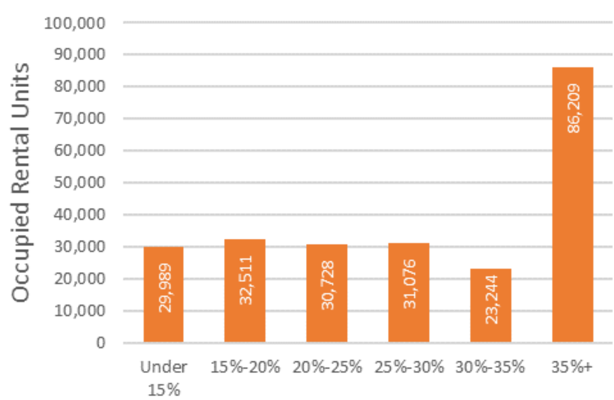
Rental Households by Income



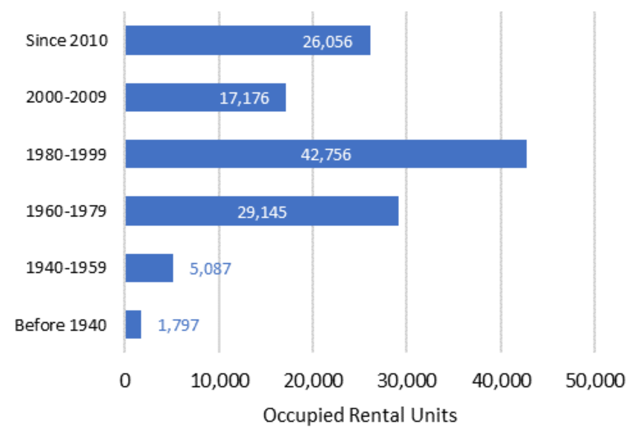
Housing Stock by Tenure & Type



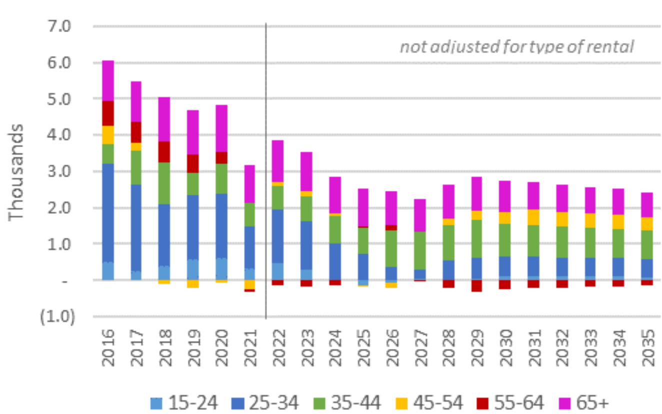
Rent as a Percent of Household Income



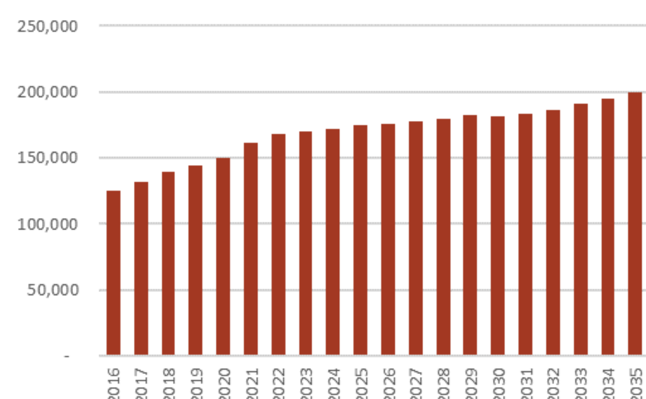
5+ Unit Rental Stock by Year Built



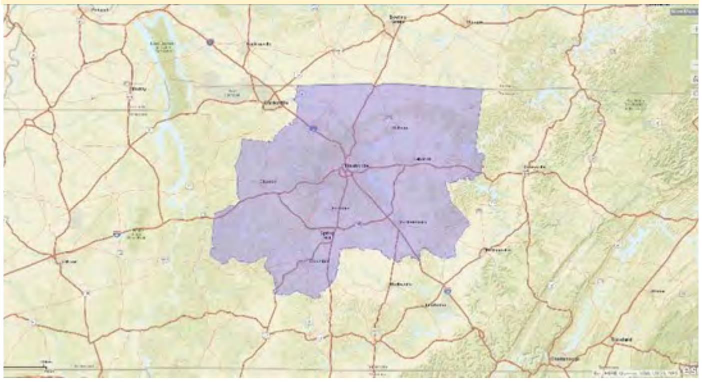
New Rental Households by Age Cohort

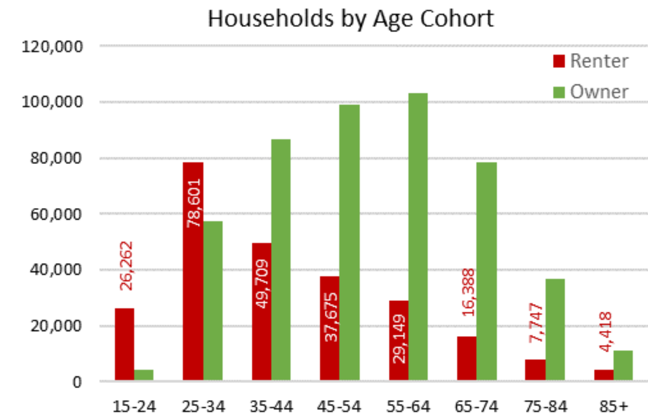


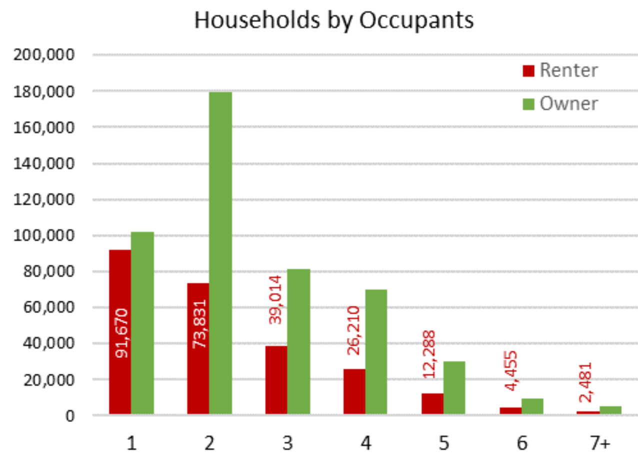
5+ Units Apartment Demand Forecast

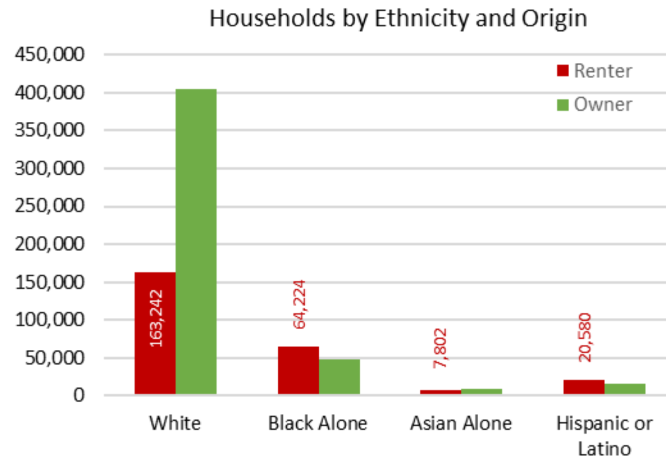


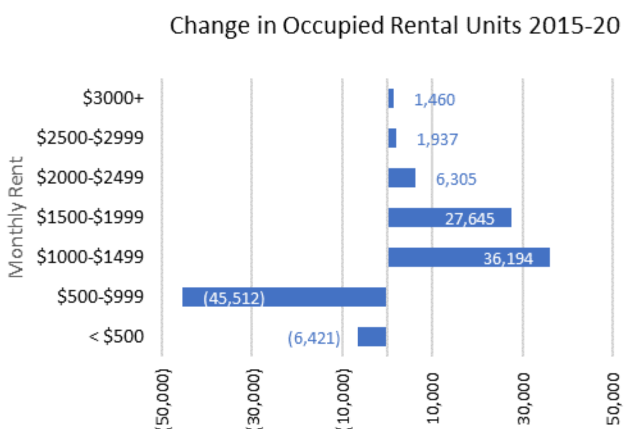
NASHVILLE page 2

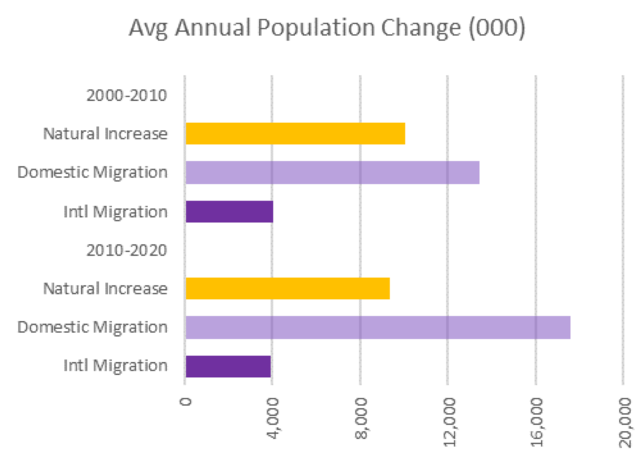












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METRO MULTIFAMILY DEMAND OVERVIEW

NEW ORLEANS

-563

Apartment units needed by 2035

Definitions on following page

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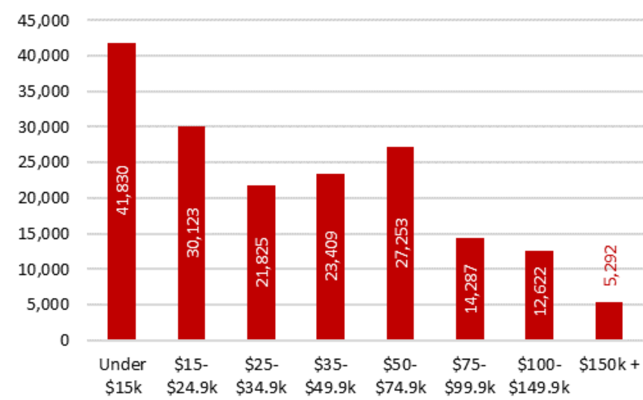
49	53	34	39%

Rental Households by Income



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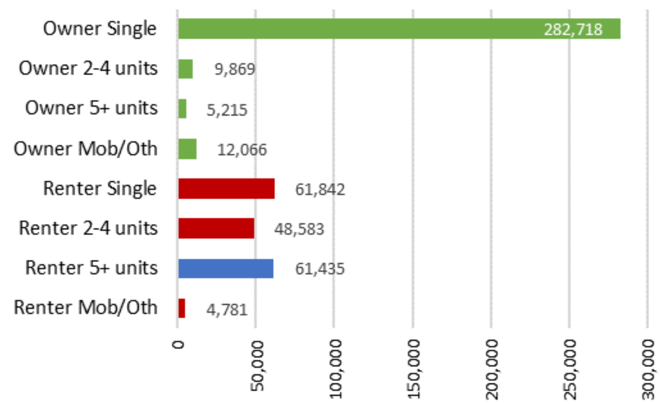

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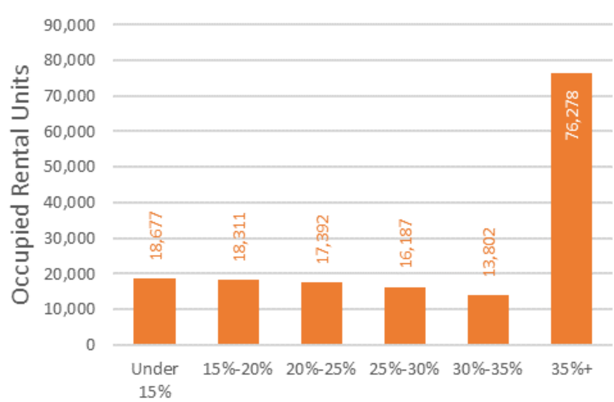

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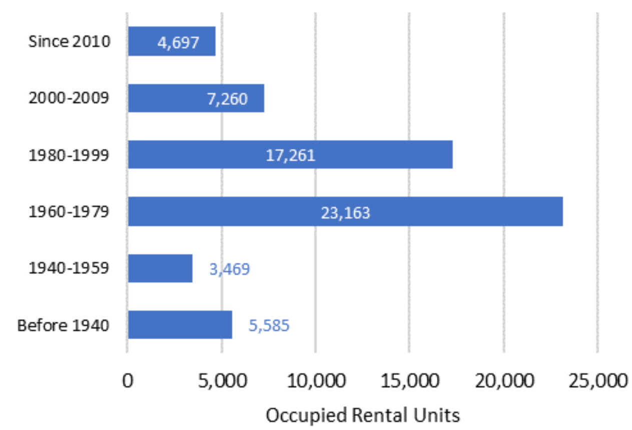

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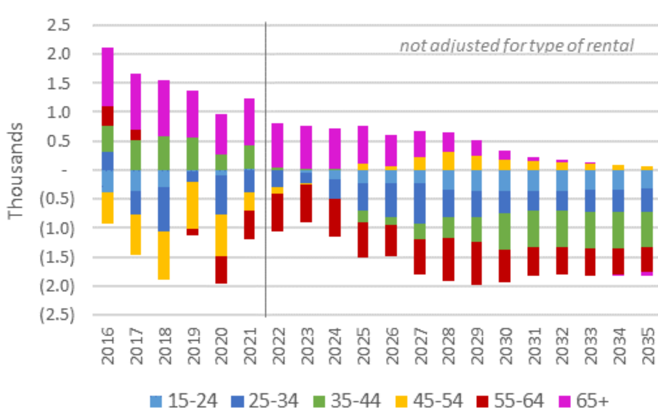
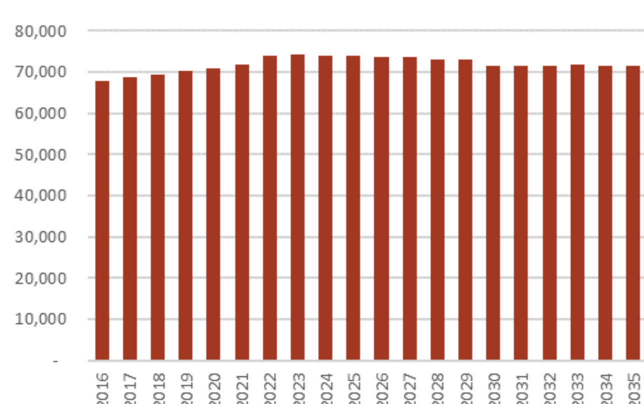
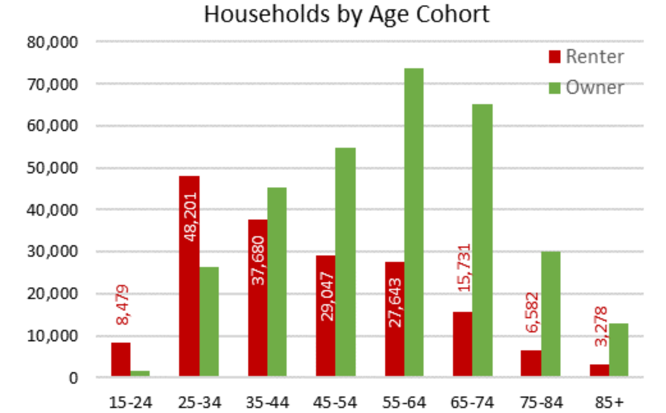
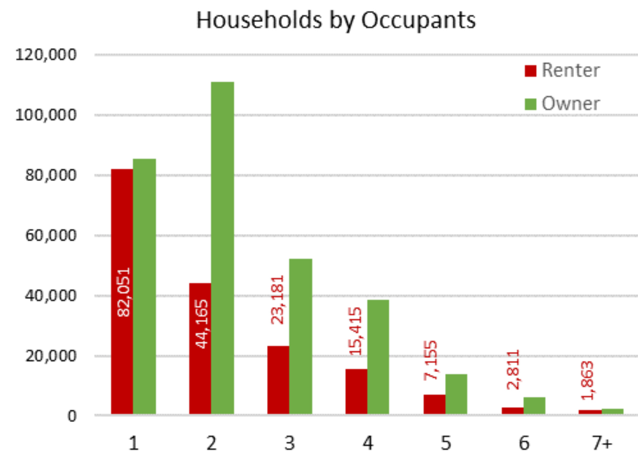


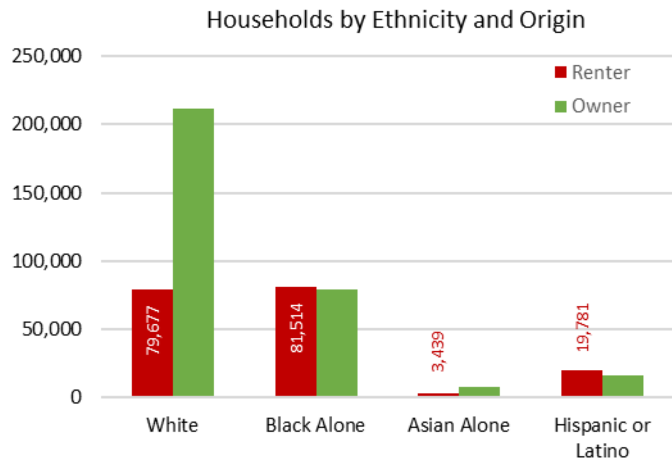
5+ Units Apartment Demand Forecast

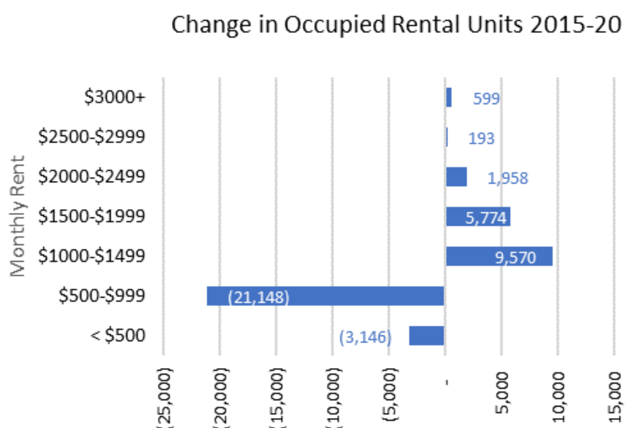


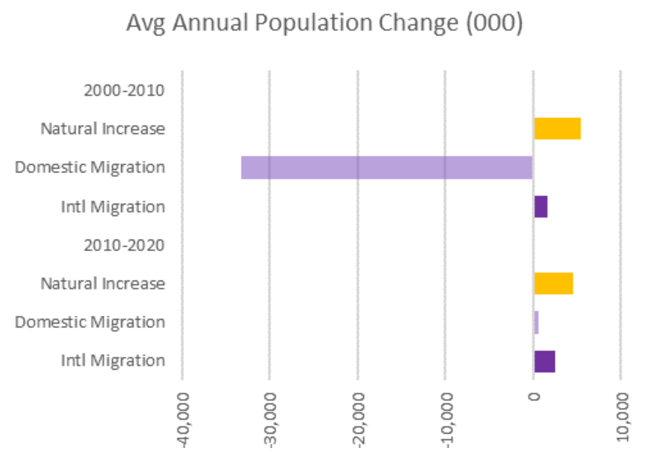
NEW ORLEANS page 2











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METRO MULTIFAMILY DEMAND OVERVIEW

NEW YORK

141,169

Apartment units needed by 2035

Definitions on following page

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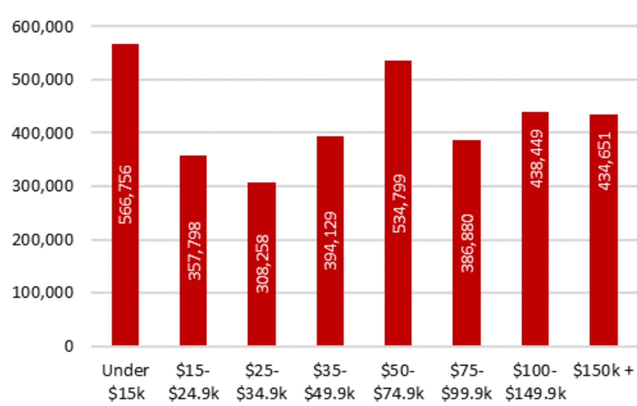
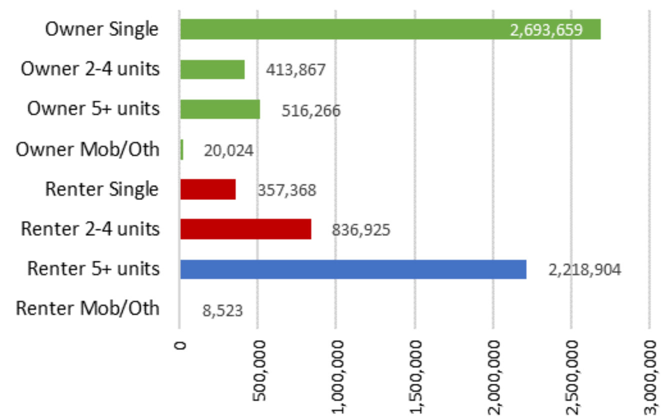
27	57	46	51%

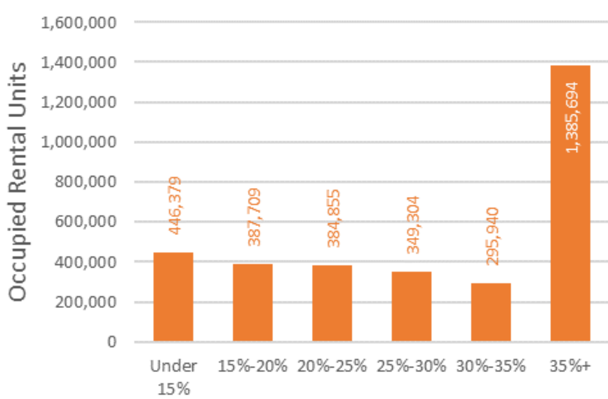
Rental Households by Income



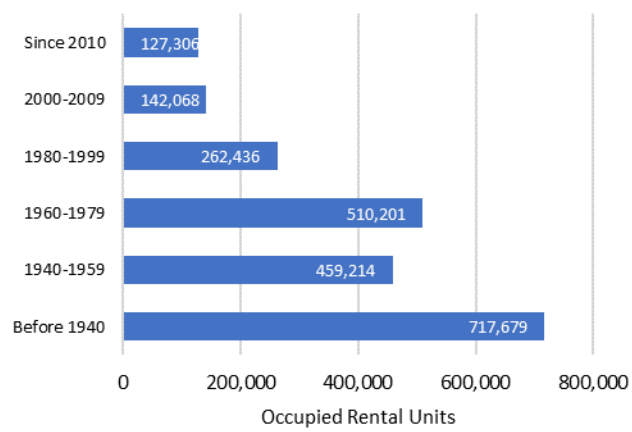
Housing Stock by Tenure & Type



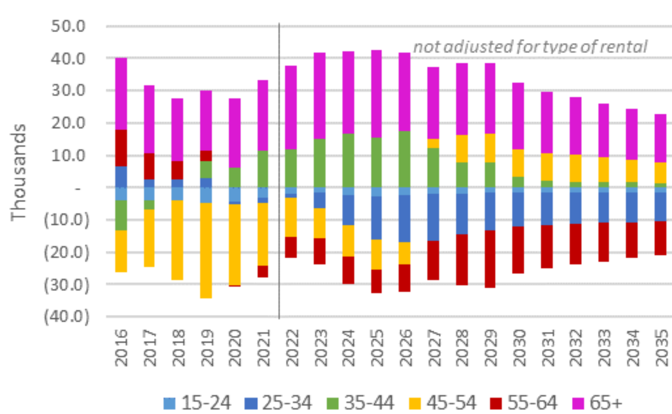
Rent as a Percent of Household Income



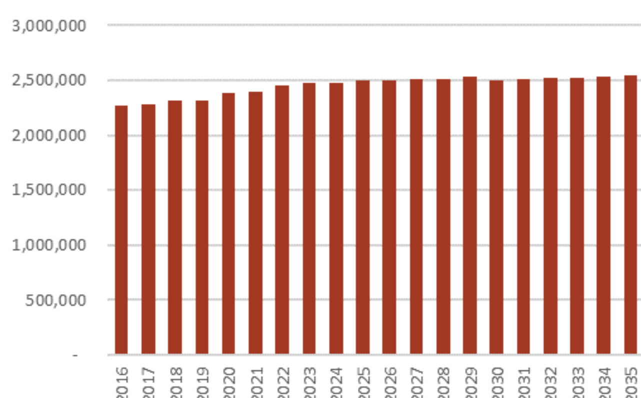
5+ Unit Rental Stock by Year Built



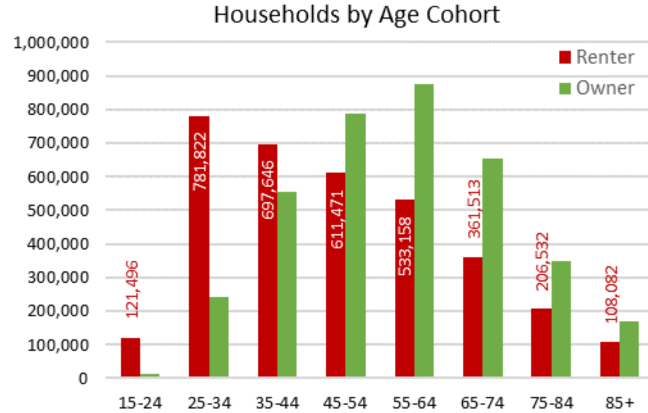
New Rental Households by Age Cohort

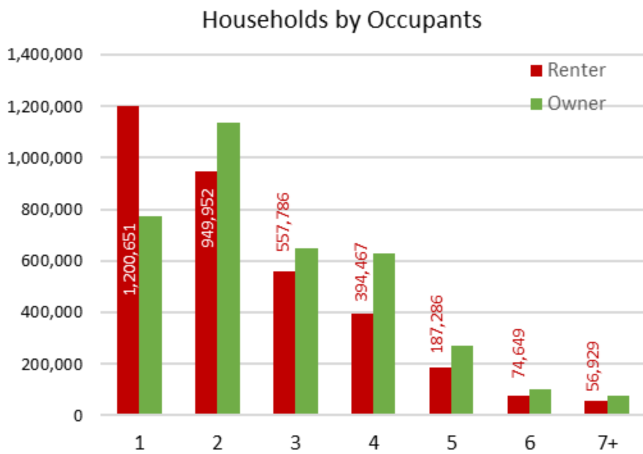


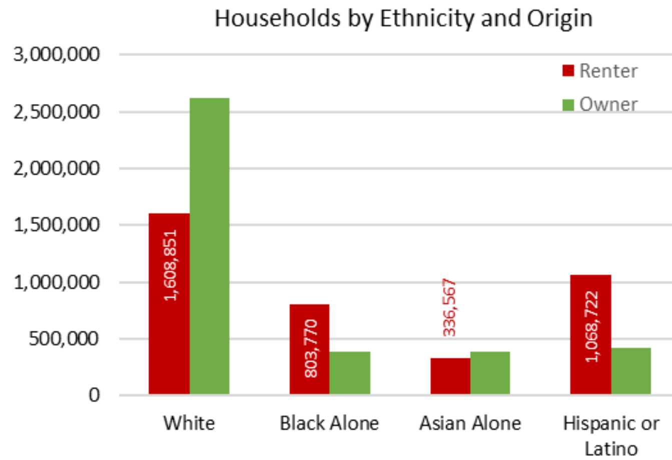
5+ Units Apartment Demand Forecast

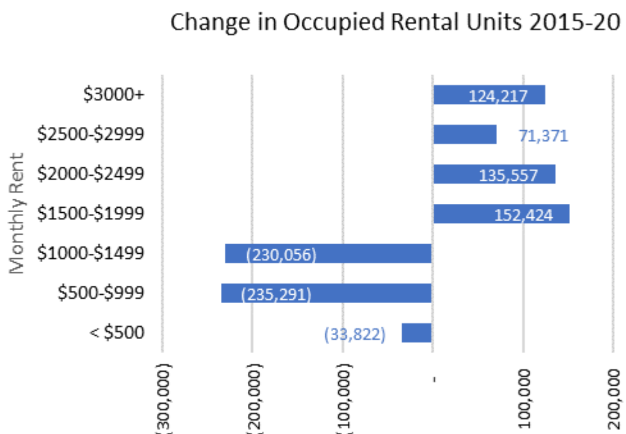


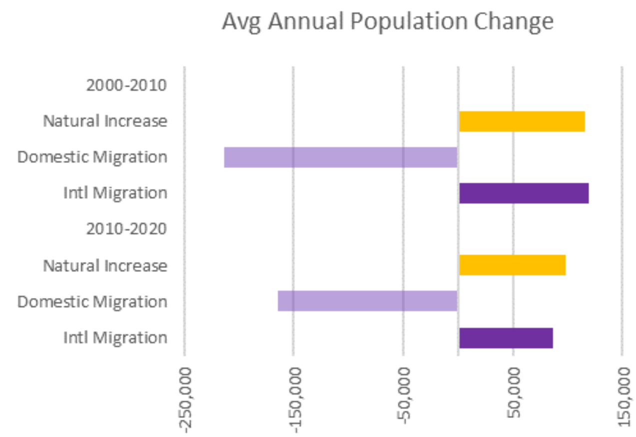
NEW YORK page 2











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NATIONAL MULTIFAMILY HOUSING COUNCIL

NATIONAL APARTMENT ASSOCIATION

University of San Diego School of Business

E10A Capital Properties ESG

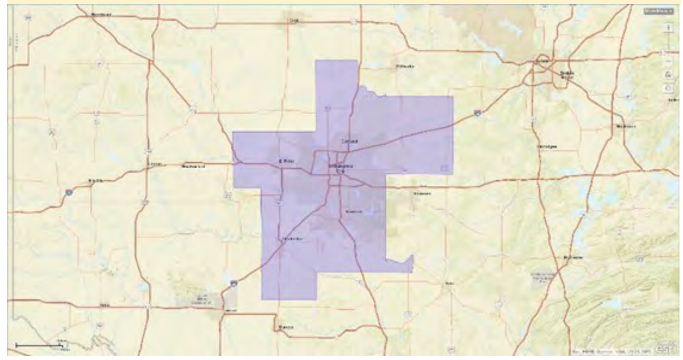
METRO MULTIFAMILY DEMAND OVERVIEW

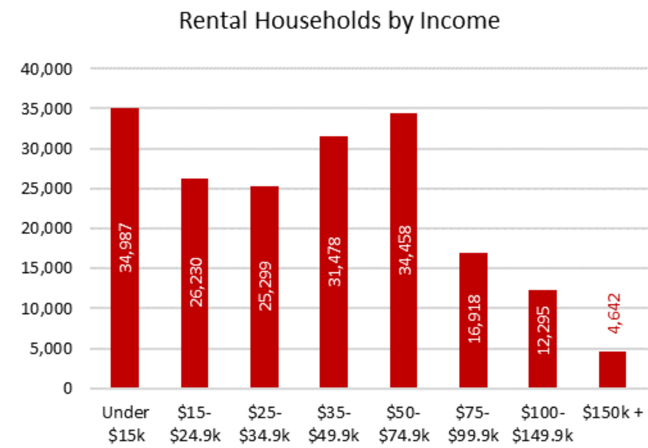
OKLAHOMA CITY

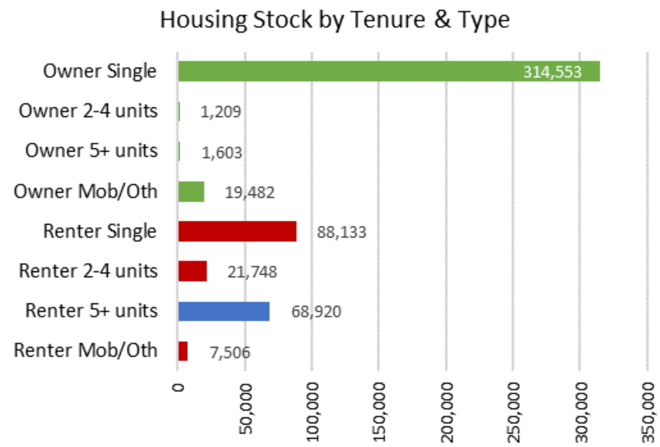
11,886 Apartment units needed by 2035

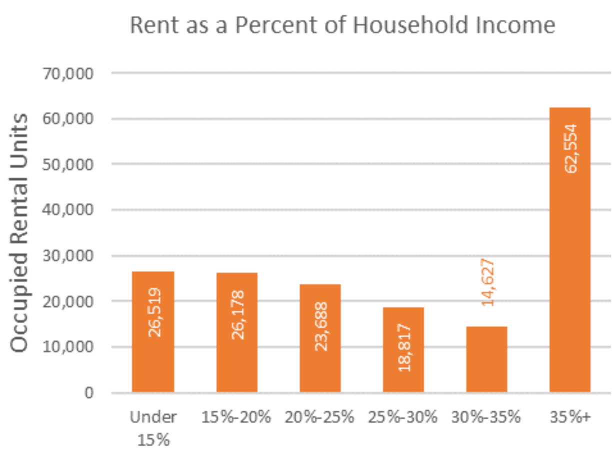
Definitions on following page

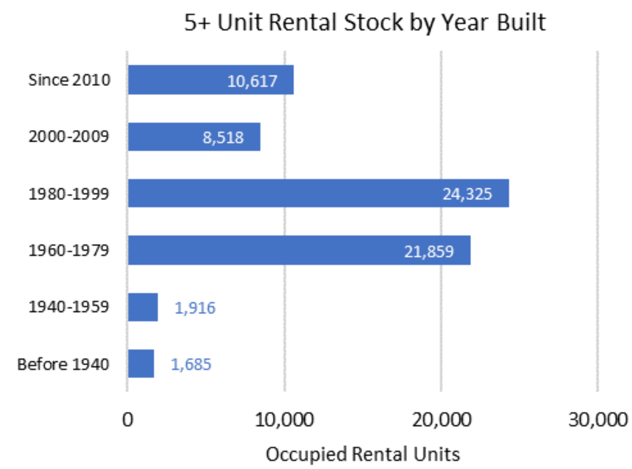
DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
37	64	44	38%

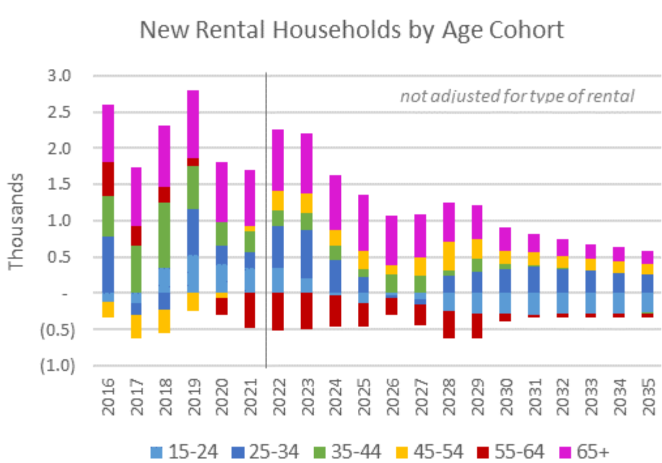


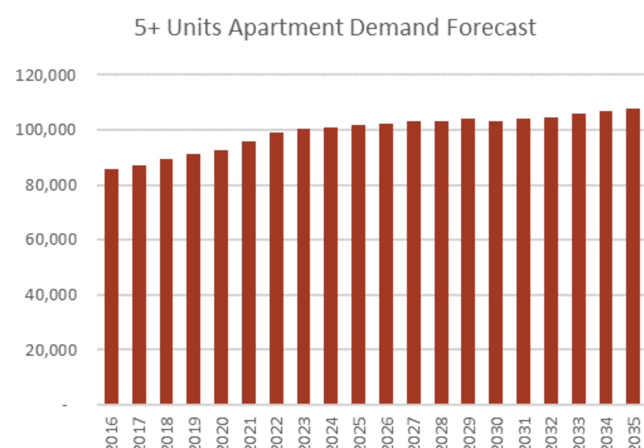








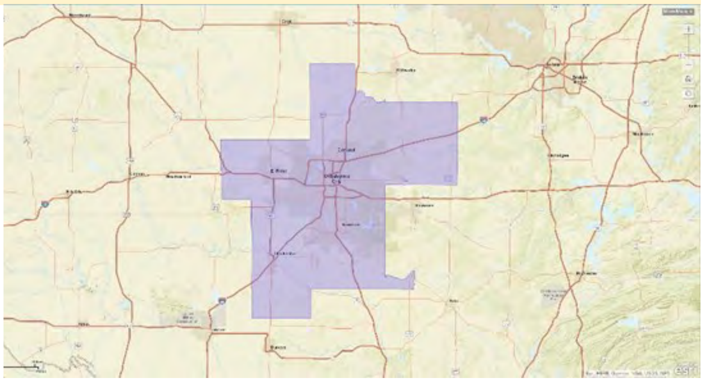


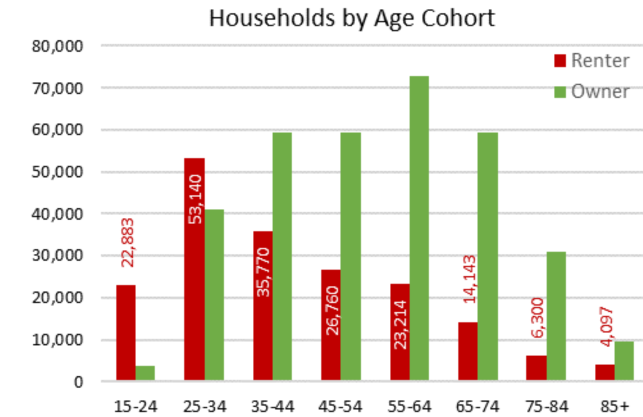


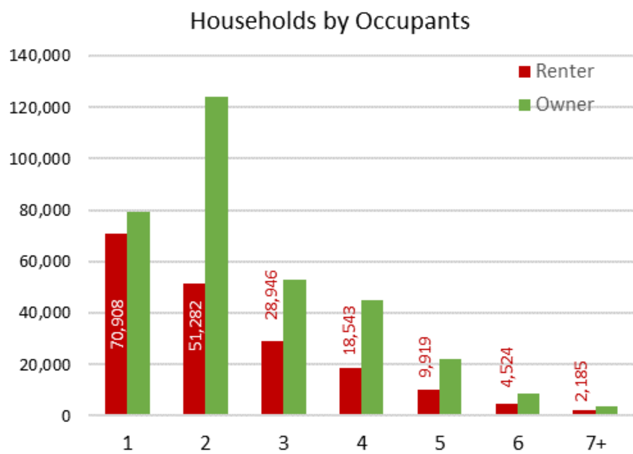
NATIONAL MULTIFAMILY HOUSING COUNCIL

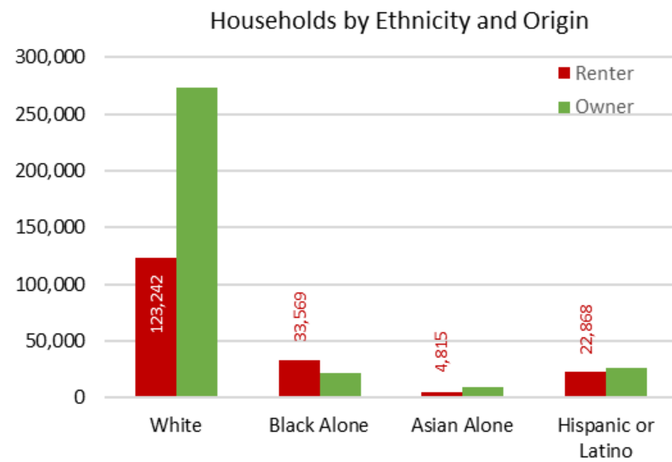
NATIONAL APARTMENT ASSOCIATION

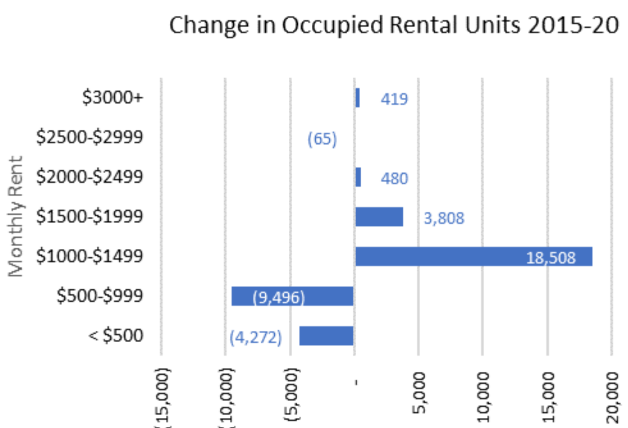
OKLAHOMA CITY page 2

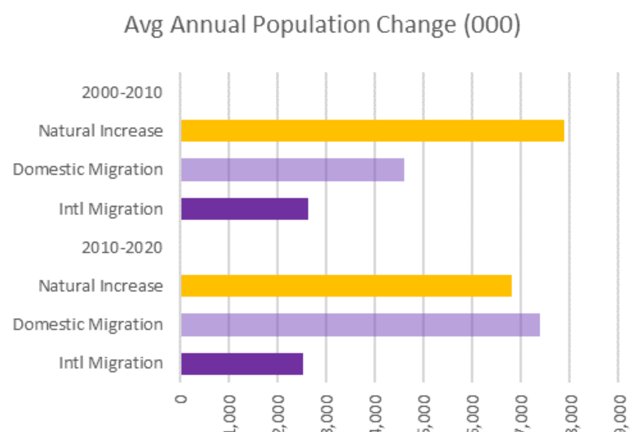












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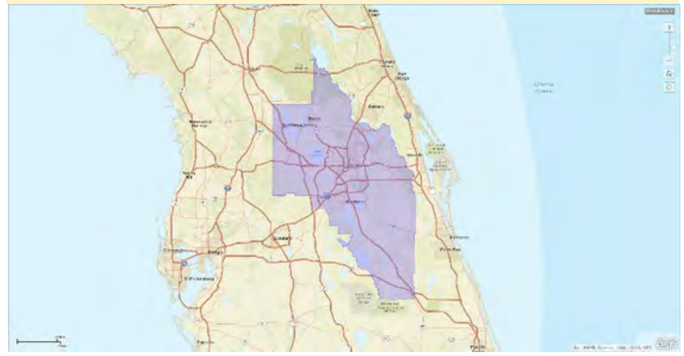
METRO MULTIFAMILY DEMAND OVERVIEW

ORLANDO



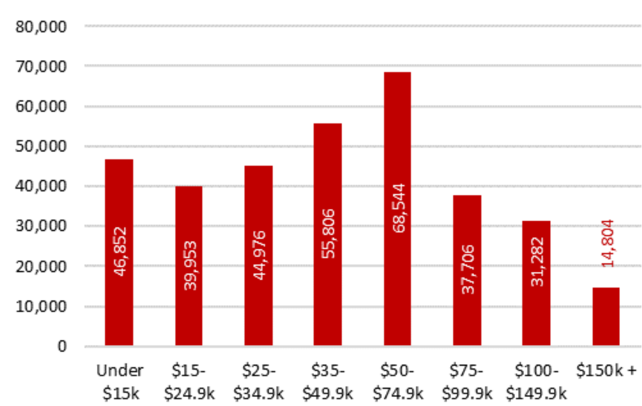
90,755

Apartment units needed by 2035

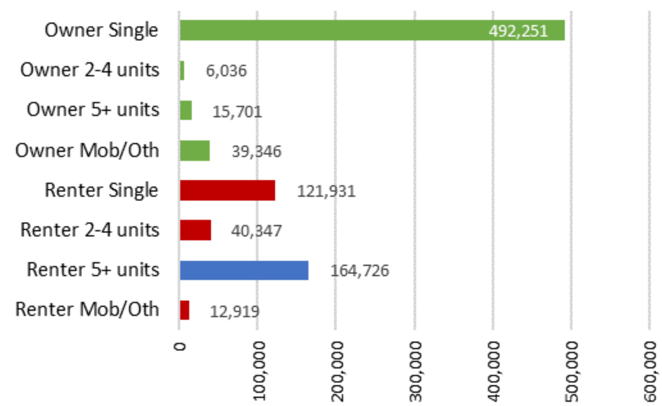
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
5	55	29	13%

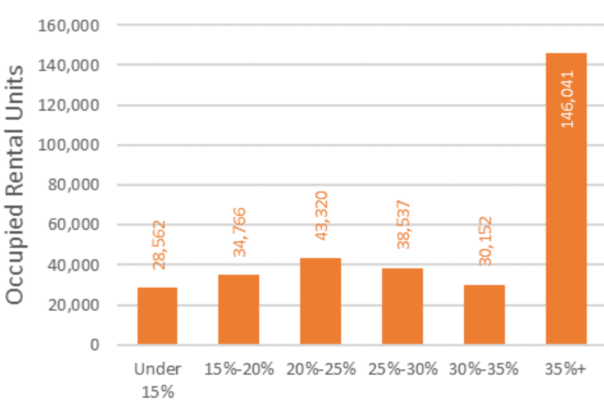
Rental Households by Income



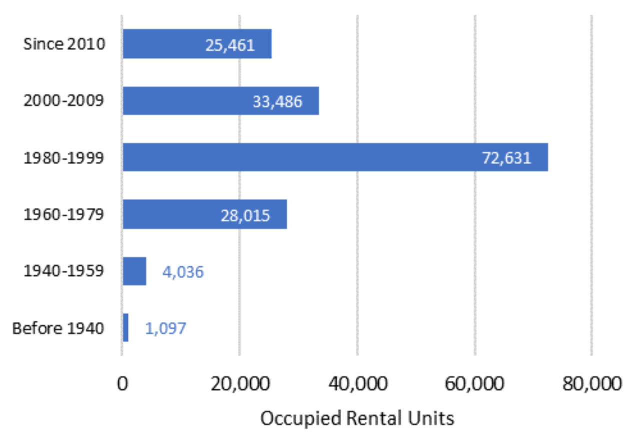
Housing Stock by Tenure & Type



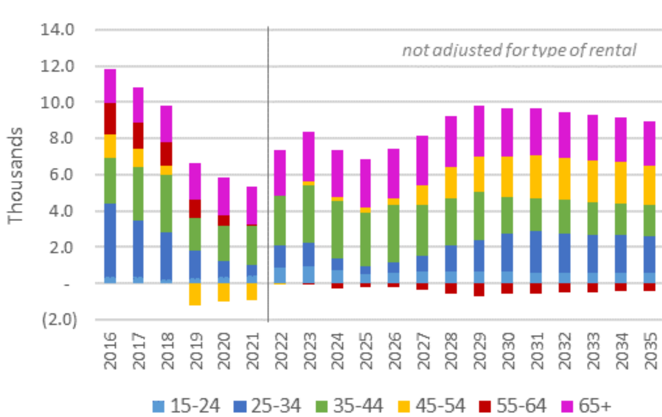
Rent as a Percent of Household Income



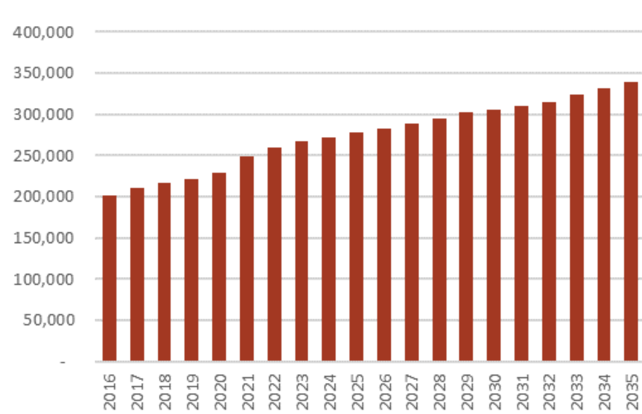
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



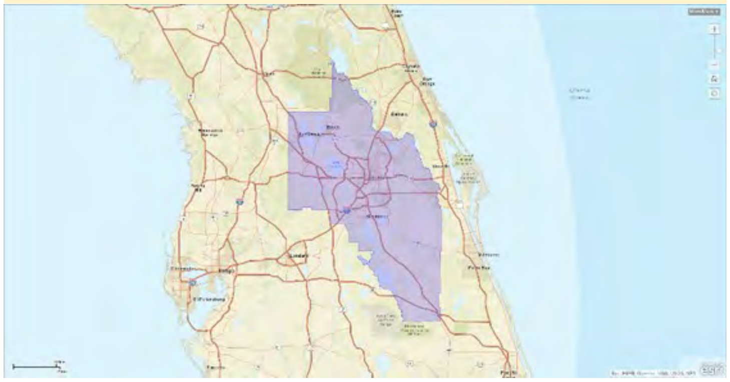
5+ Units Apartment Demand Forecast

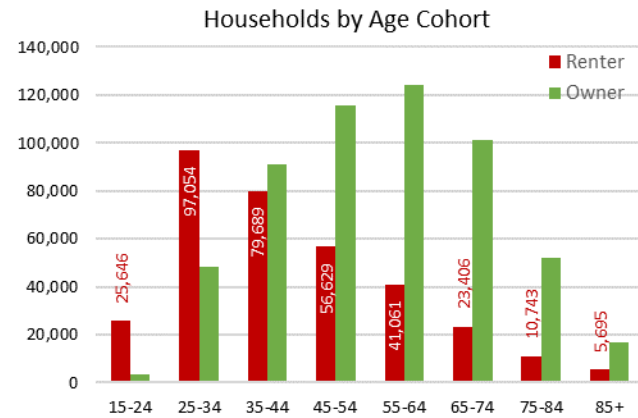


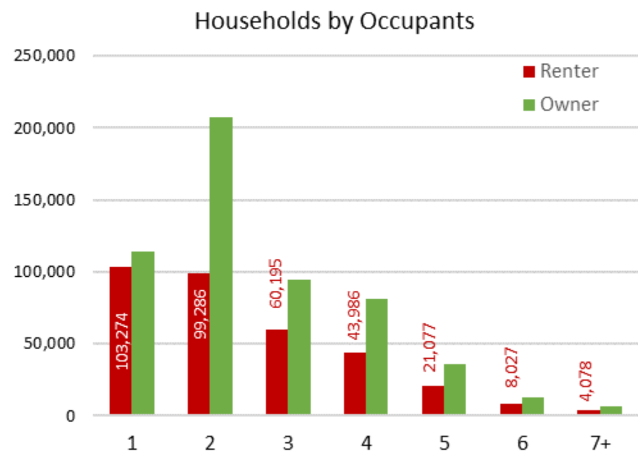
NATIONAL MULTIFAMILY HOUSING COUNCIL

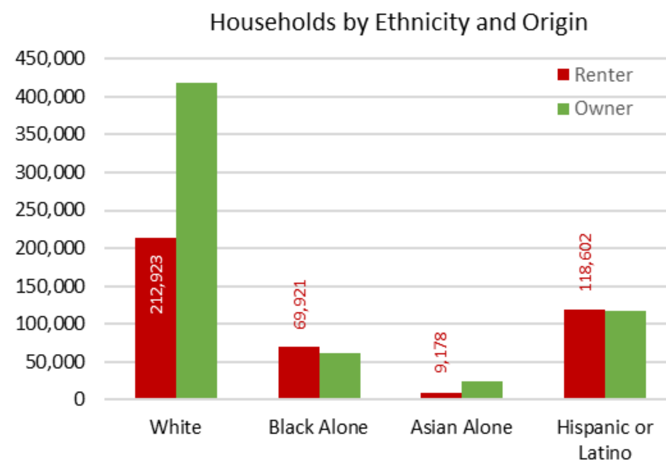
NATIONAL APARTMENT ASSOCIATION

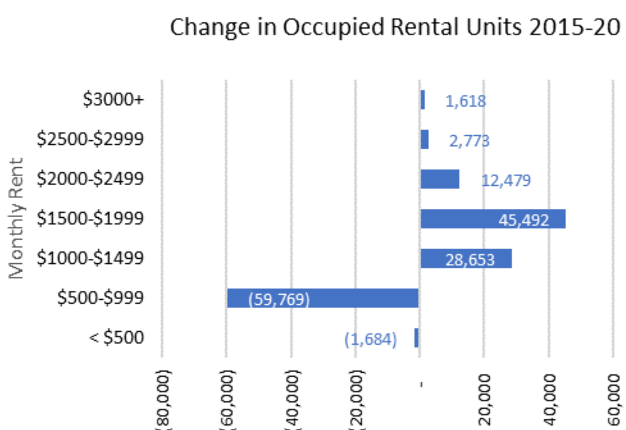
ORLANDO page 2

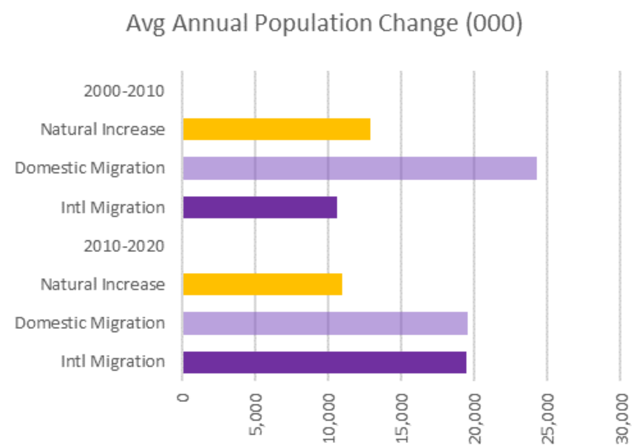












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METRO MULTIFAMILY DEMAND OVERVIEW

PHILADELPHIA

45,292

Apartment units needed by 2035

Definitions on following page

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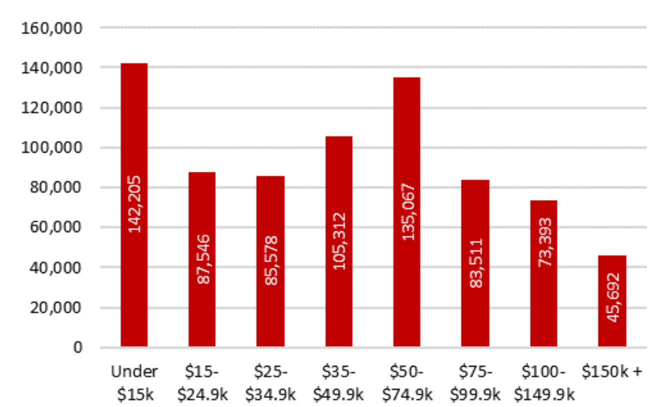
28	59	26	34%

Rental Households by Income



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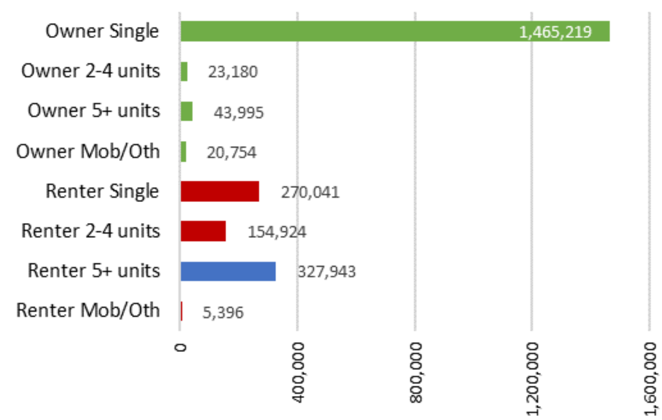

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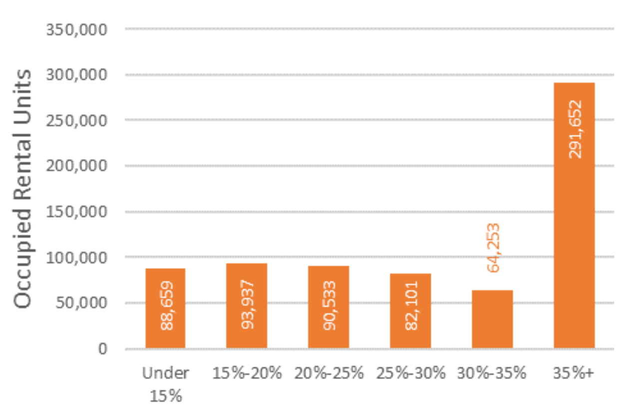

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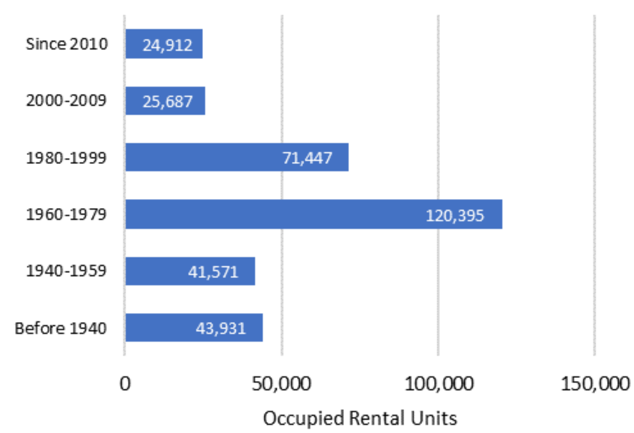

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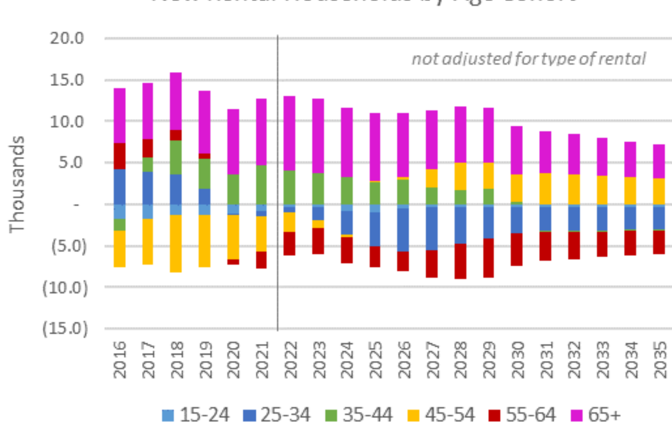
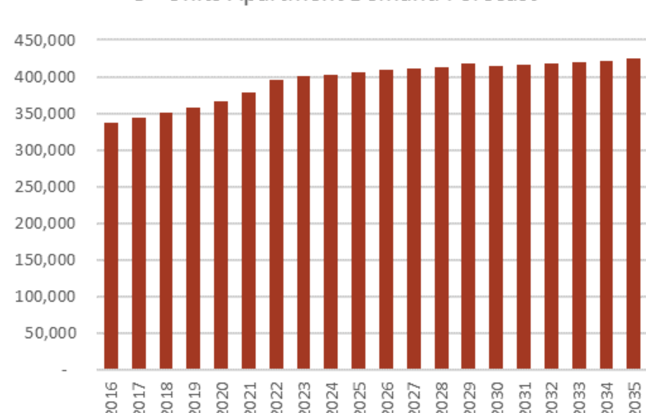
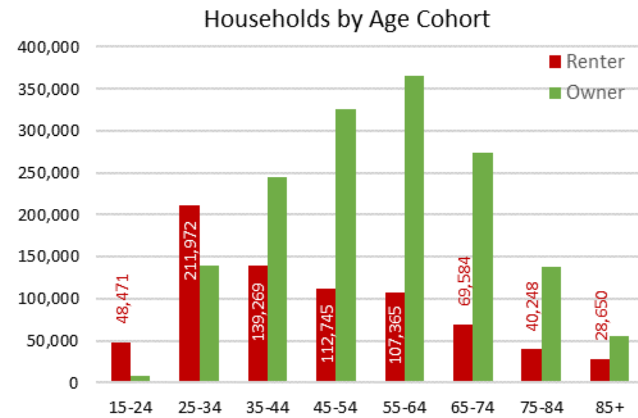
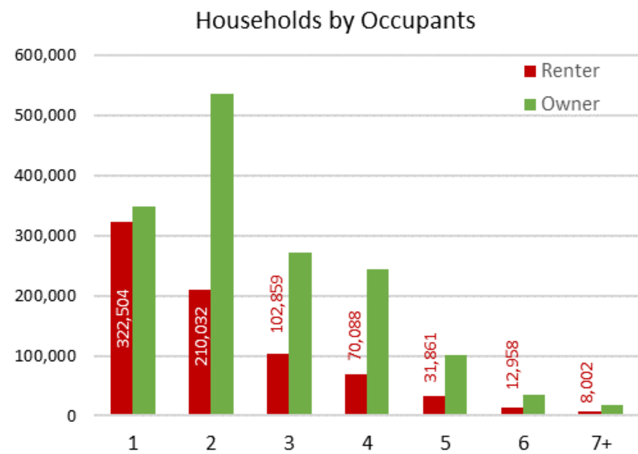


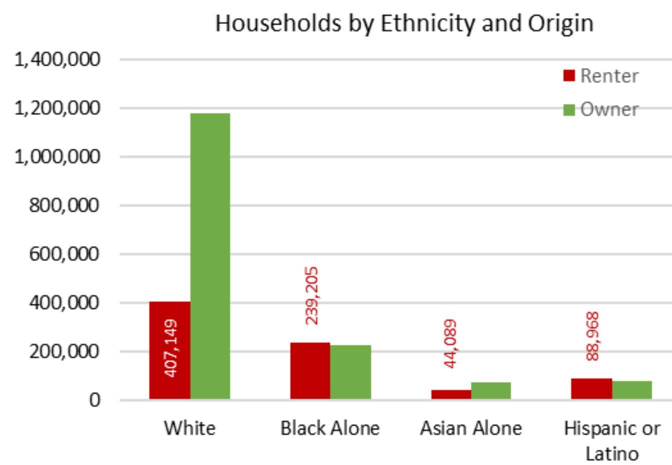
5+ Units Apartment Demand Forecast

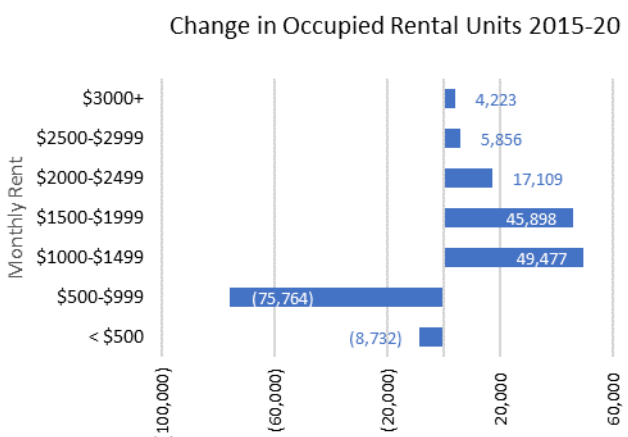


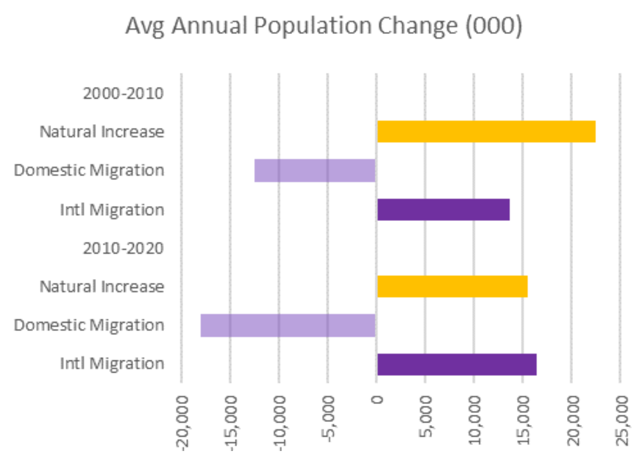
PHILADELPHIA page 2











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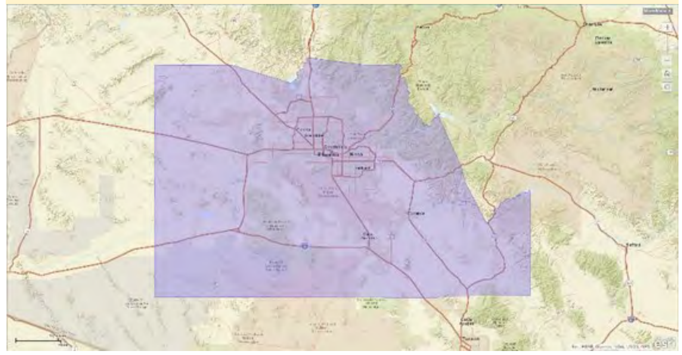
METRO MULTIFAMILY DEMAND OVERVIEW

PHOENIX

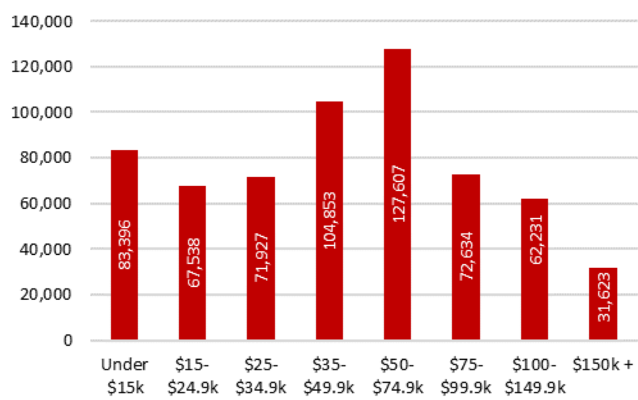


121,824 Apartment units needed by 2035

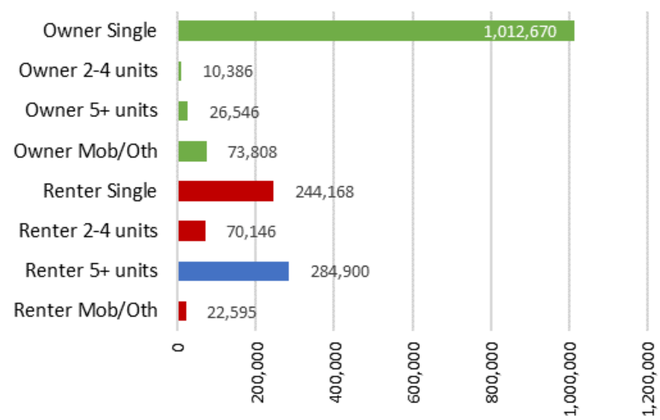
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
4	62	14	19%

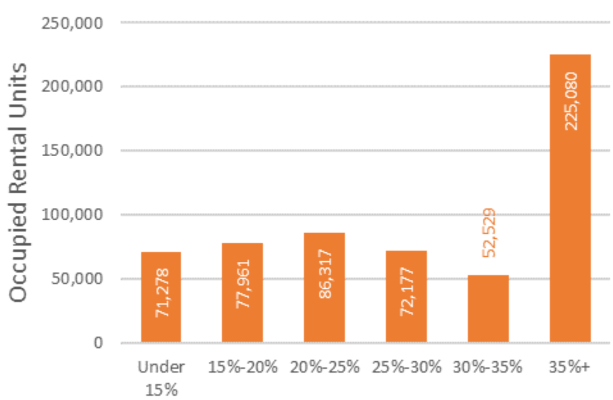
Rental Households by Income



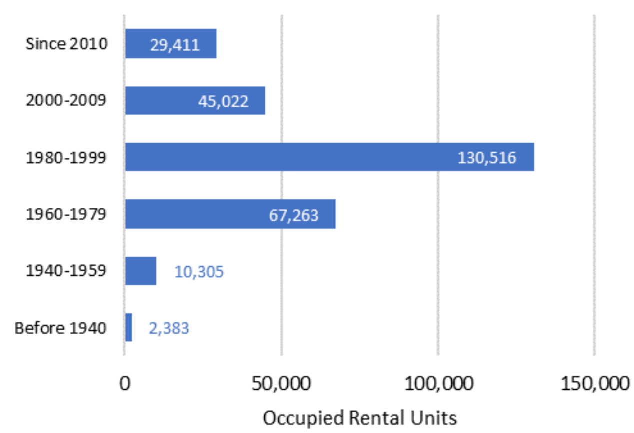
Housing Stock by Tenure & Type



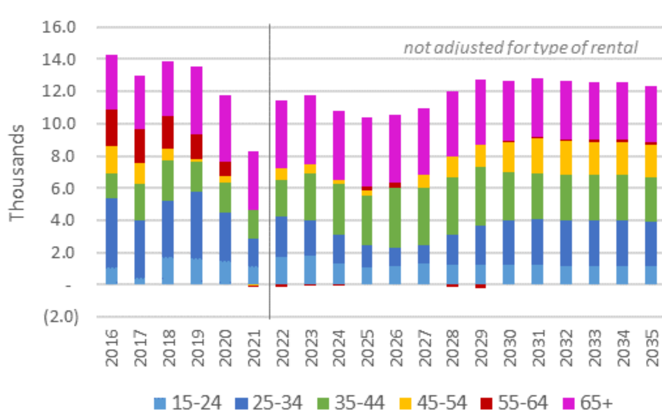
Rent as a Percent of Household Income



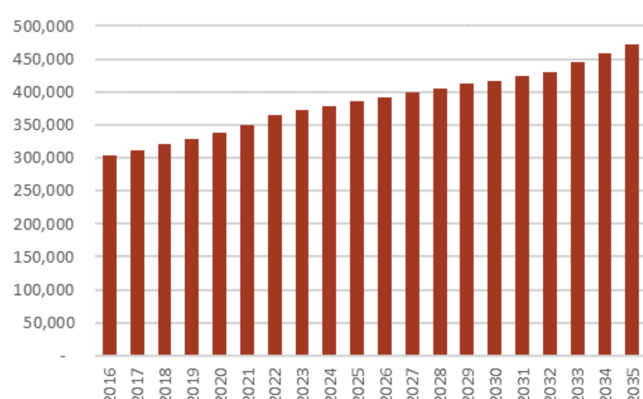
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



5+ Units Apartment Demand Forecast



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NAA NATIONAL APARTMENT ASSOCIATION

HAS

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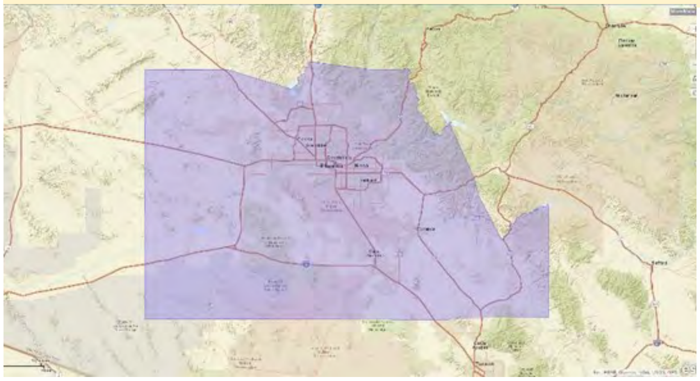
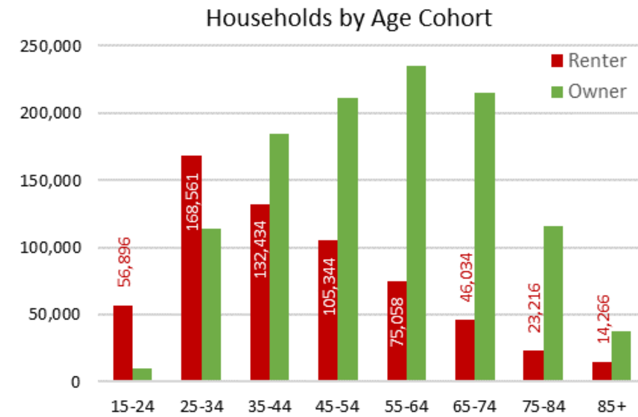
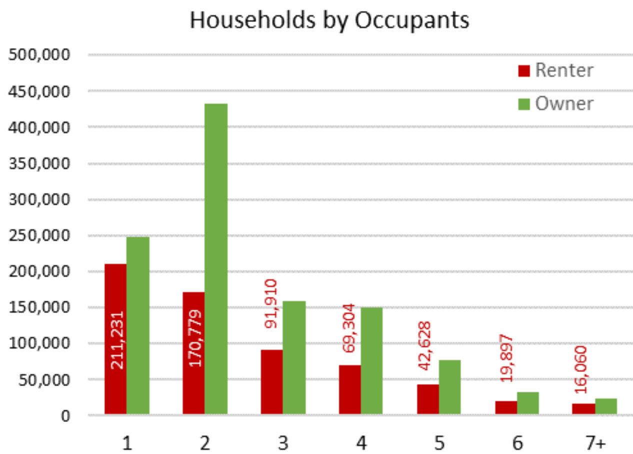
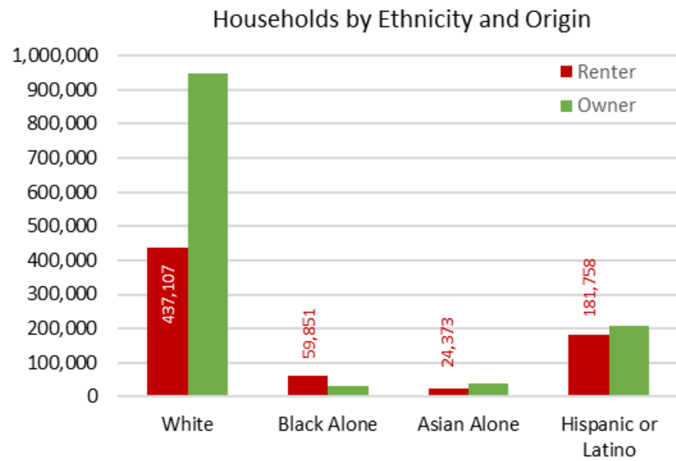
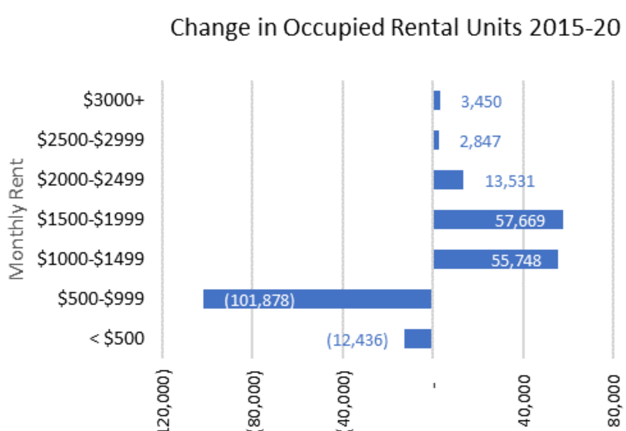
PHOENIX page 2

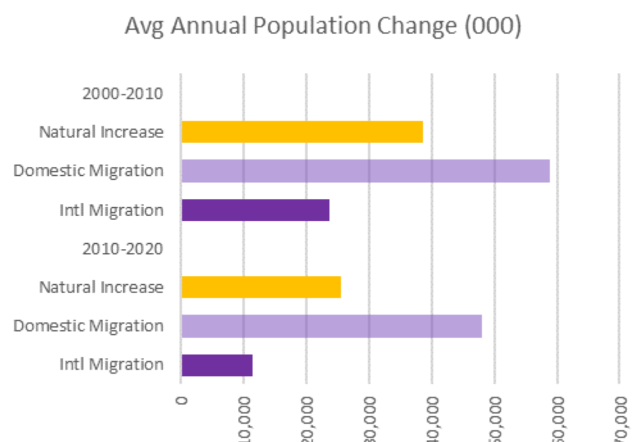












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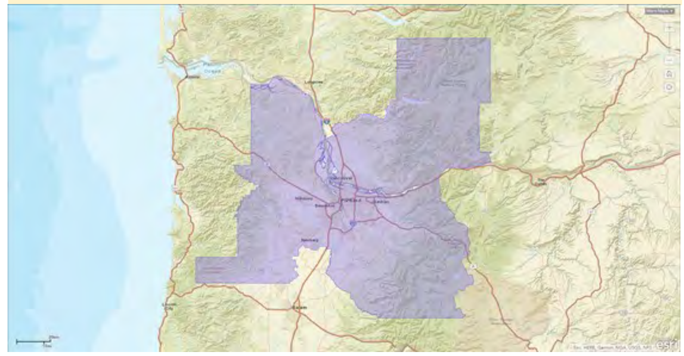
METRO MULTIFAMILY DEMAND OVERVIEW

PORTLAND

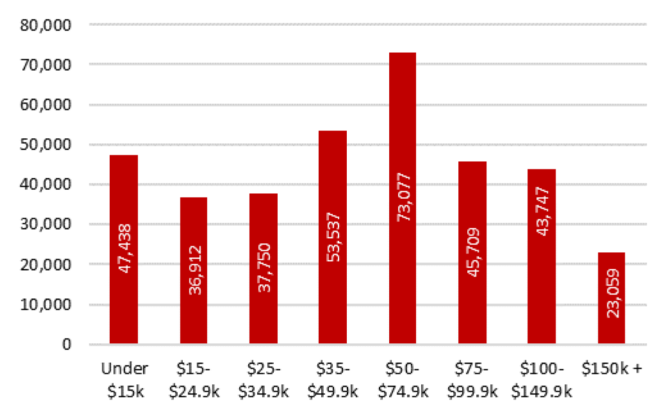


54,746 Apartment units needed by 2035

Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
17	59	11	31%

Rental Households by Income



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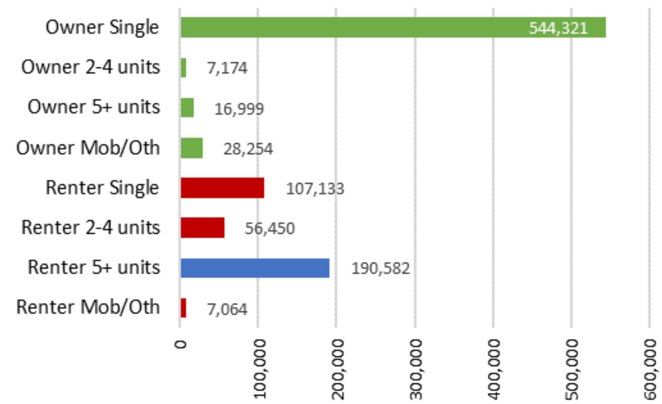
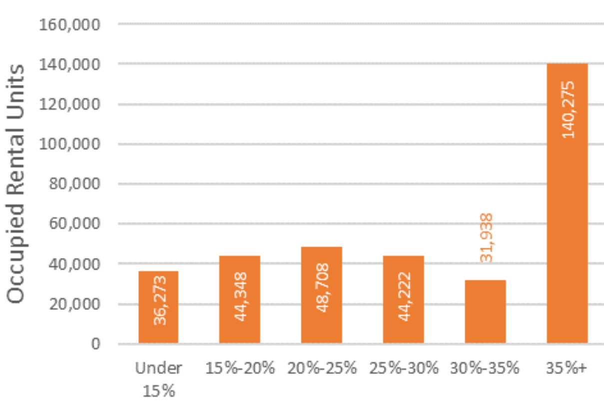


Rent as a Percent of Household Income



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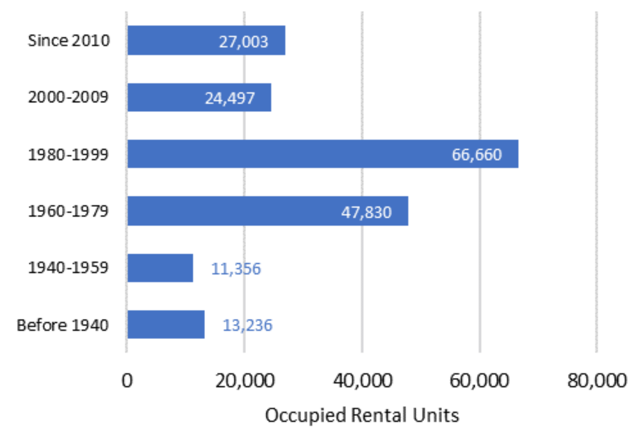

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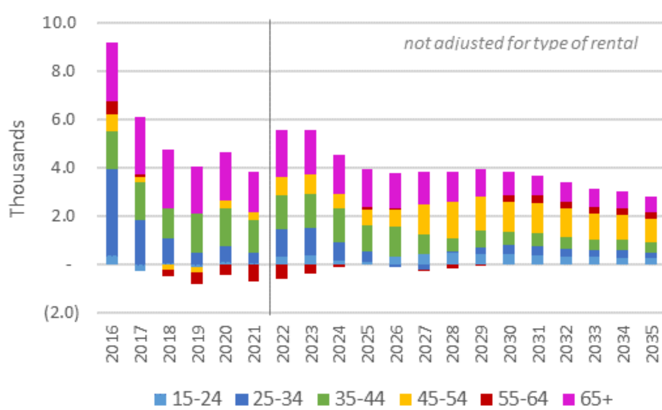
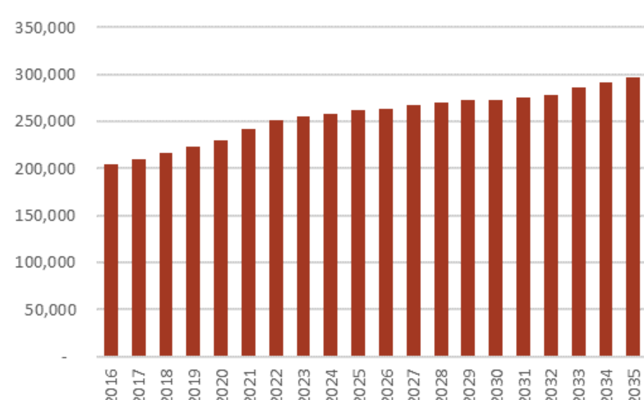


5+ Units Apartment Demand Forecast



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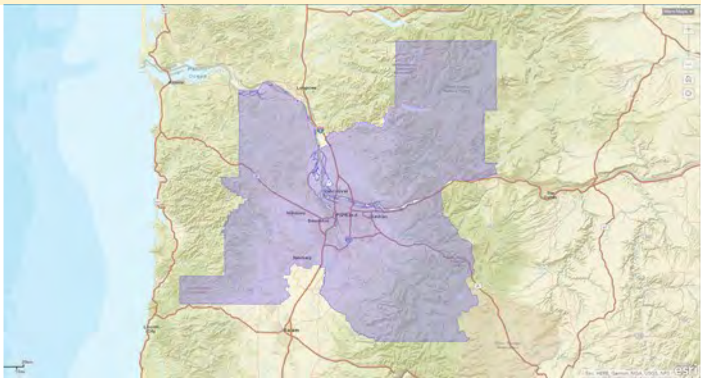
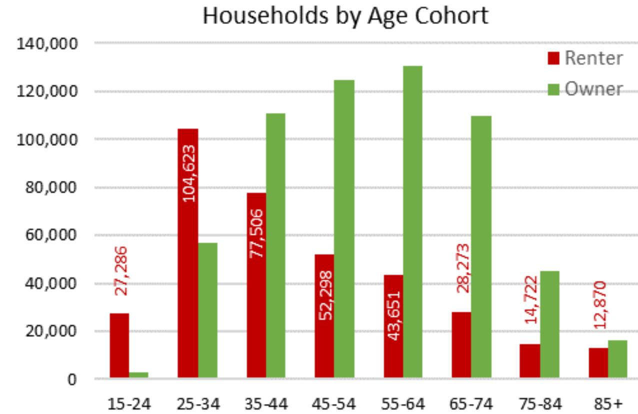
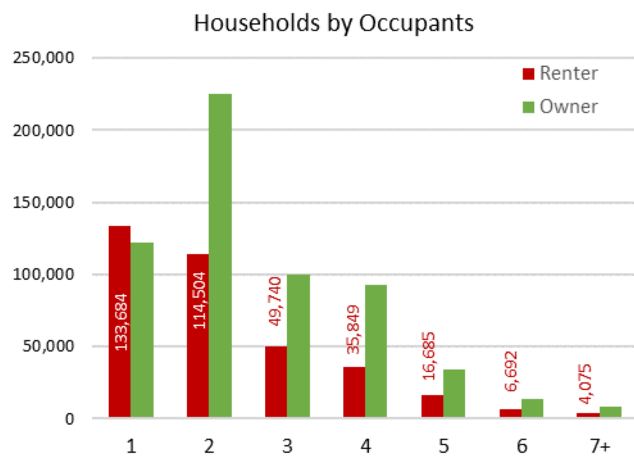
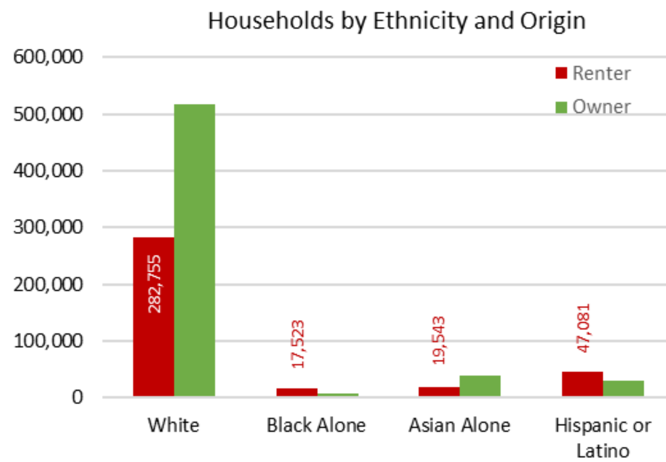
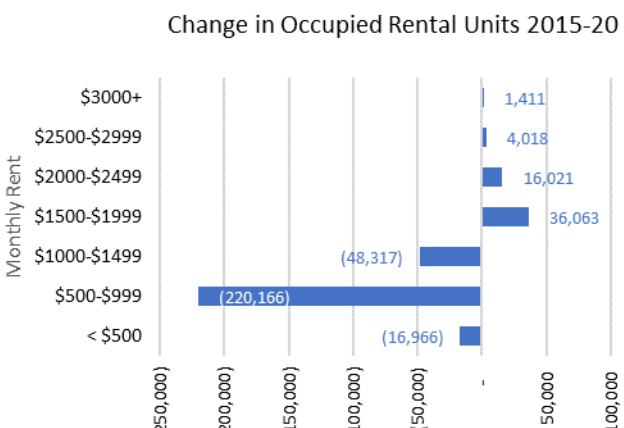
PORTLAND page 2

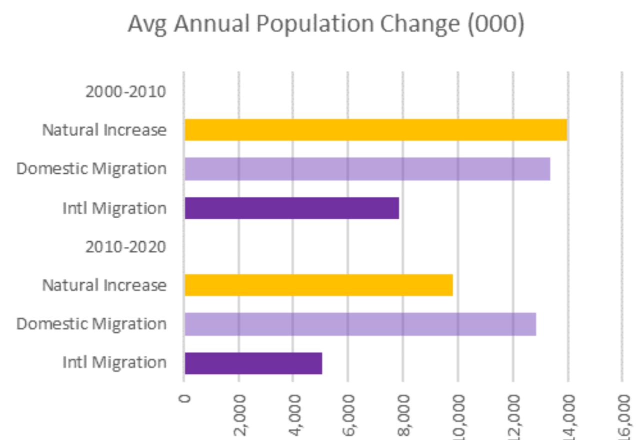












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METRO MULTIFAMILY DEMAND OVERVIEW

RALEIGH

44,481 Apartment units needed by 2035

Definitions on following page

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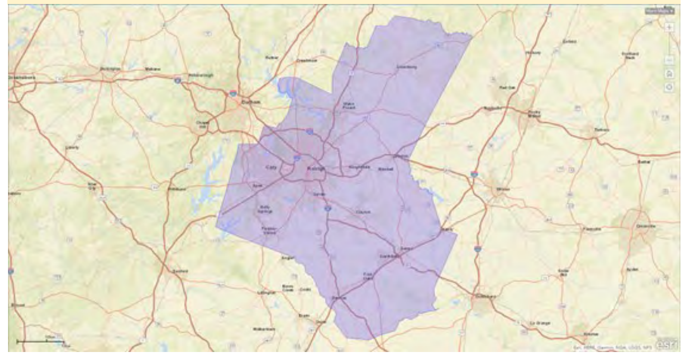
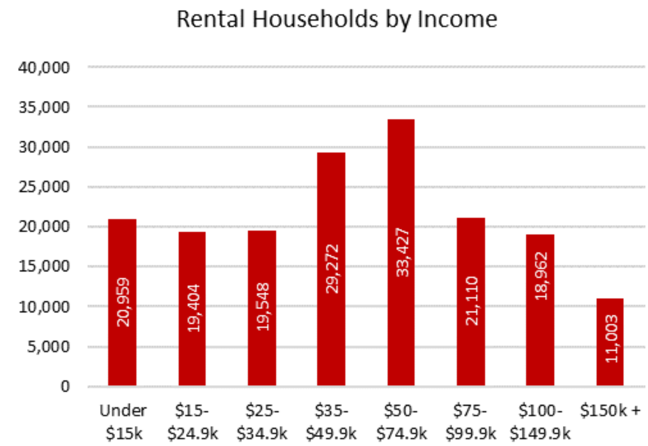
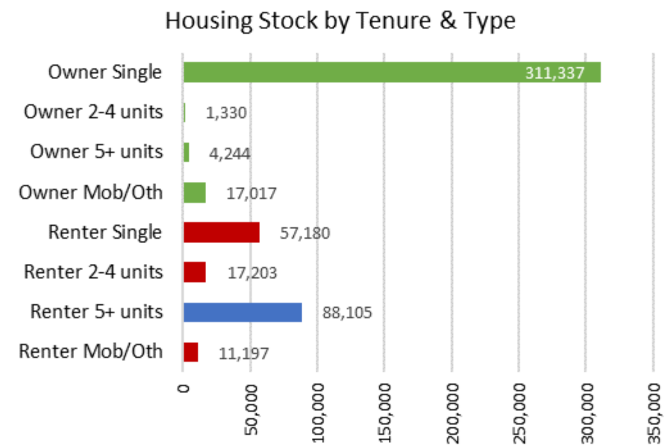
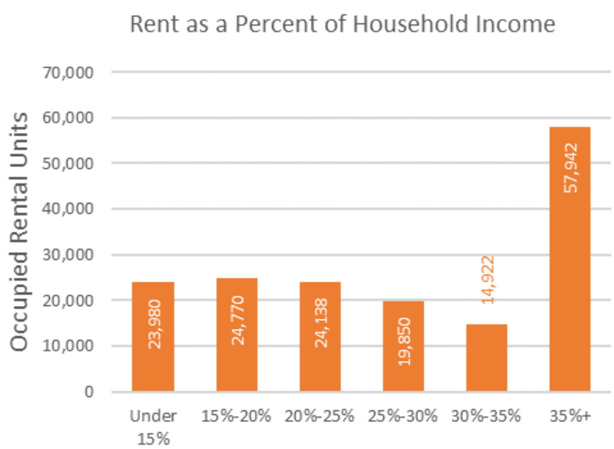
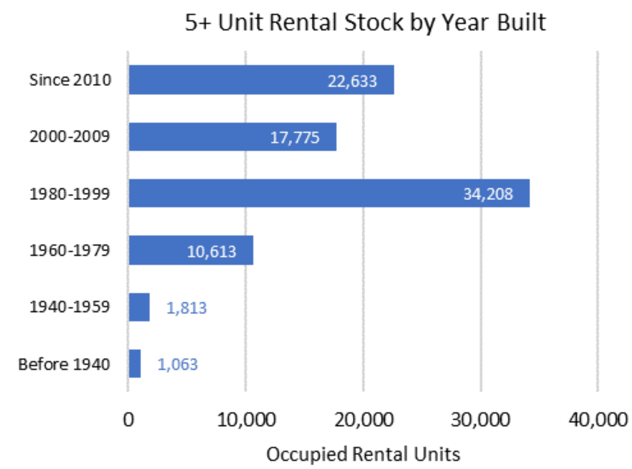
9	65	17	13%

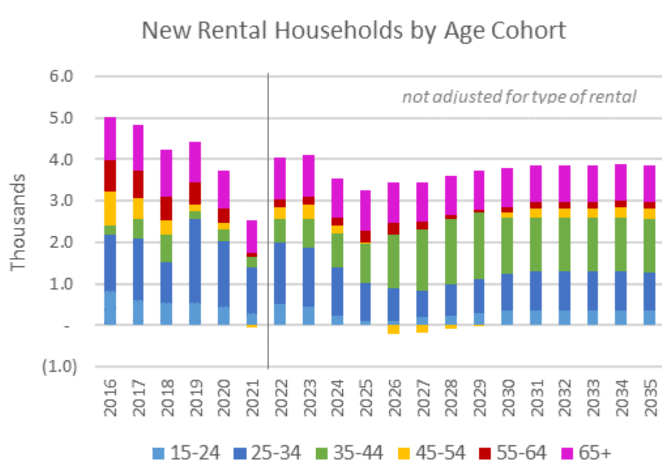


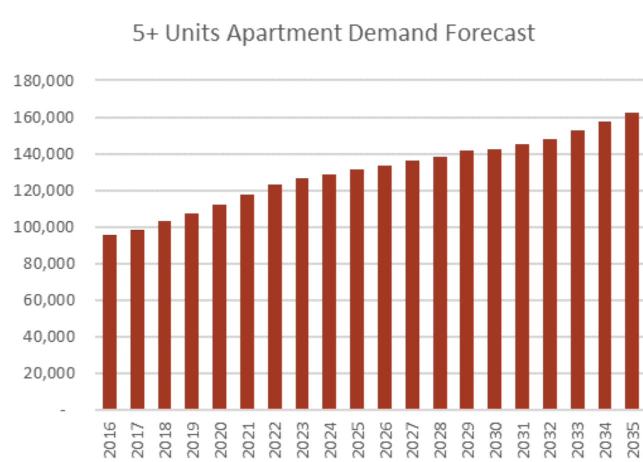




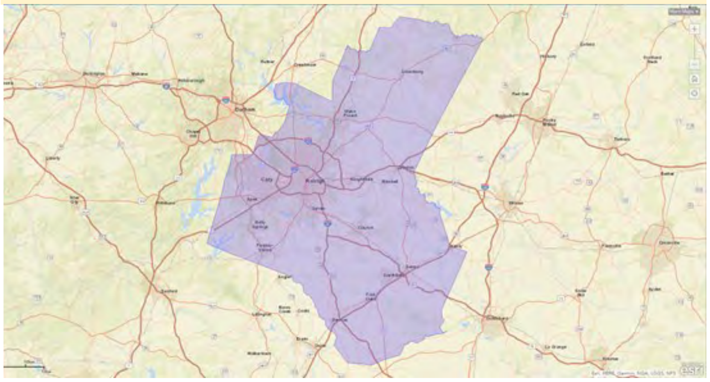


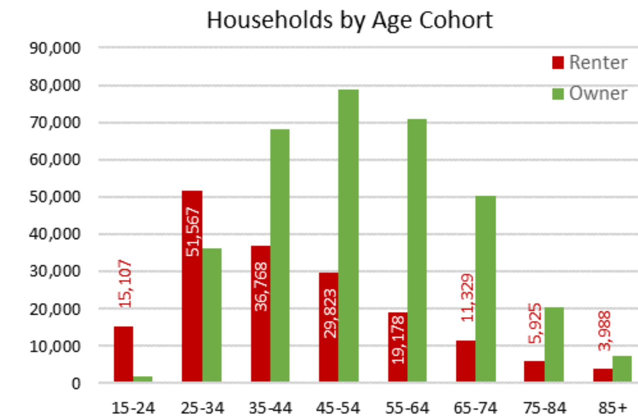


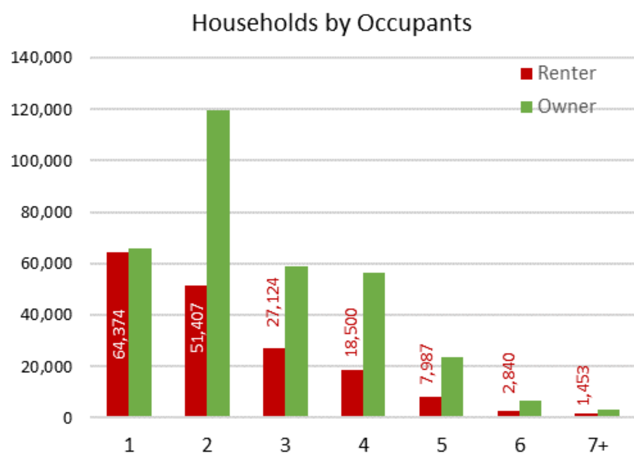


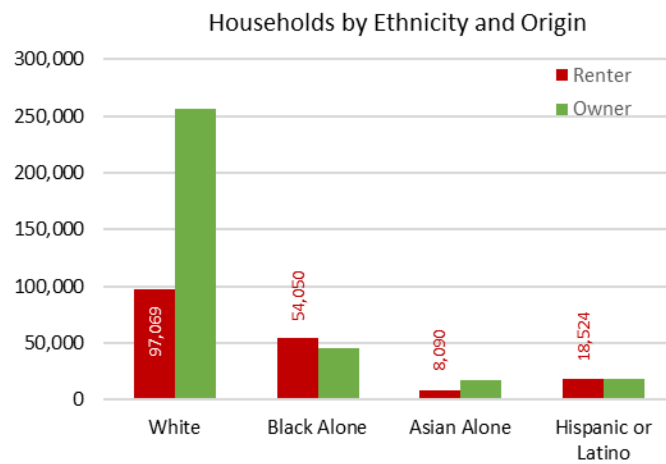


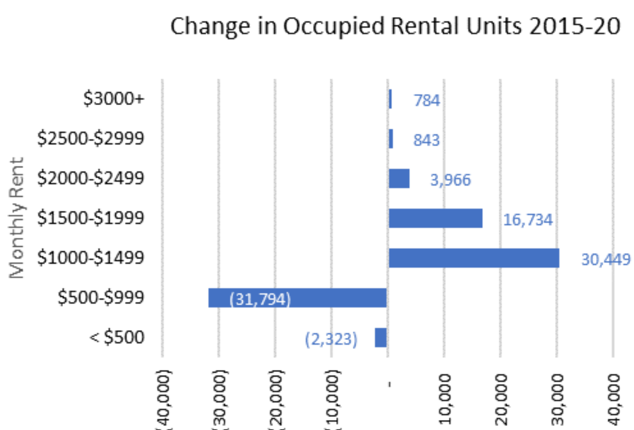
RALEIGH page 2

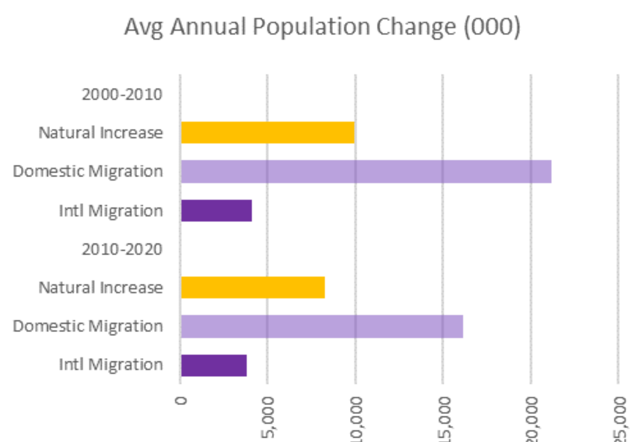












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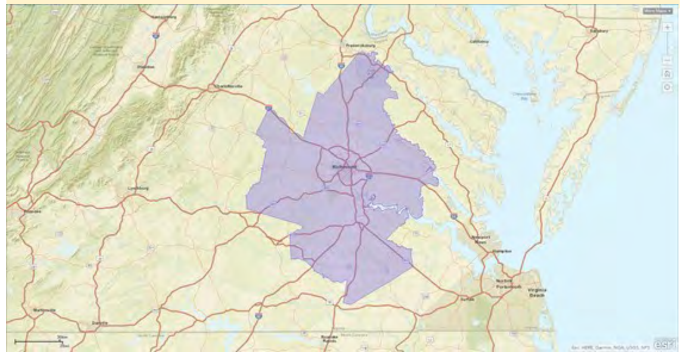
METRO MULTIFAMILY DEMAND OVERVIEW

RICHMOND



15,483 Apartment units needed by 2035

Definitions on following page

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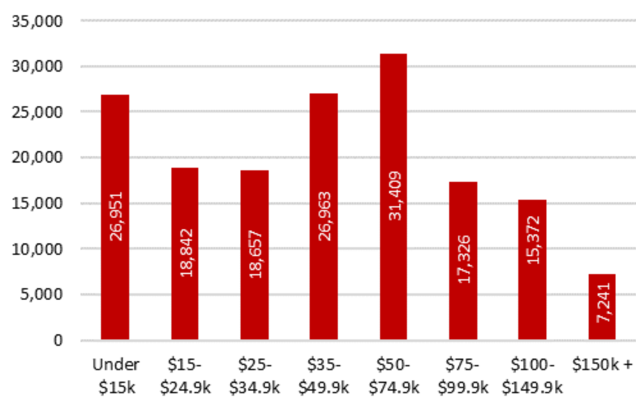
33	60	19	35%

Rental Households by Income



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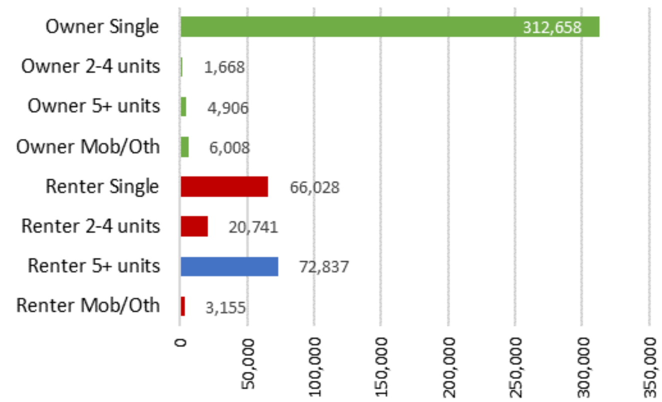

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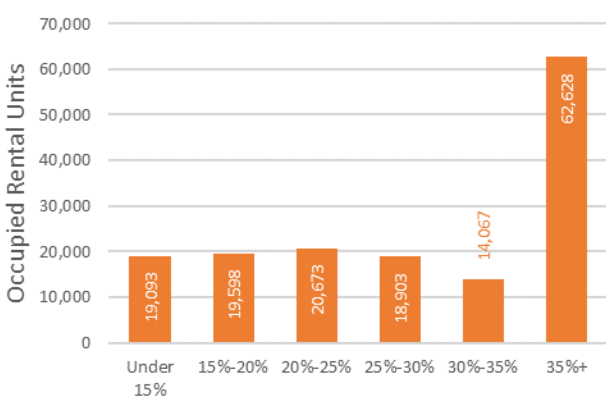
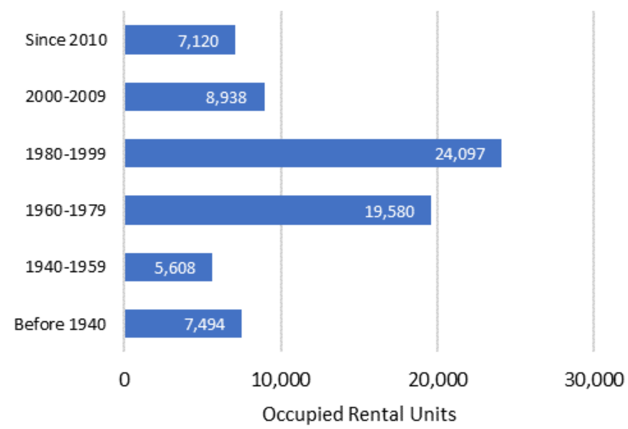


5+ Unit Rental Stock by Year Built



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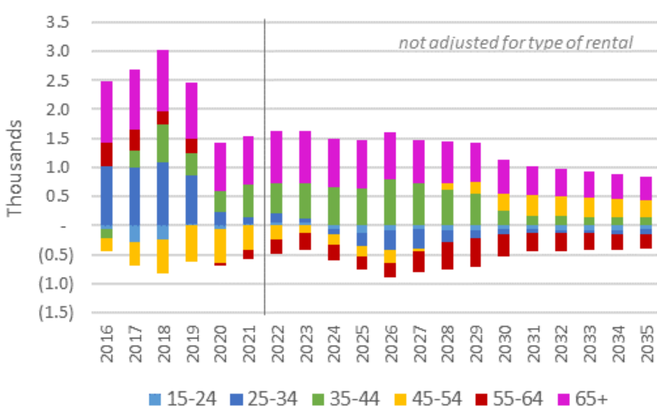
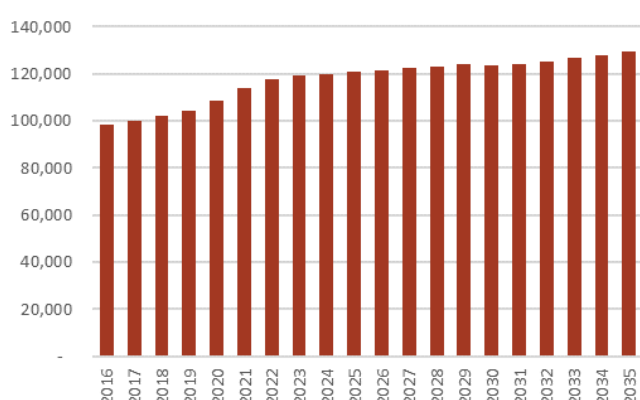


5+ Units Apartment Demand Forecast



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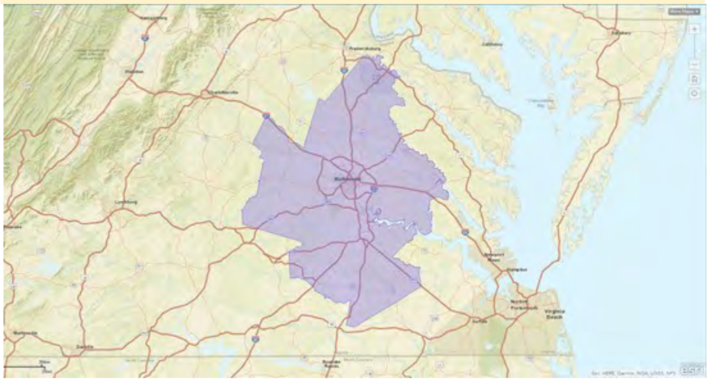
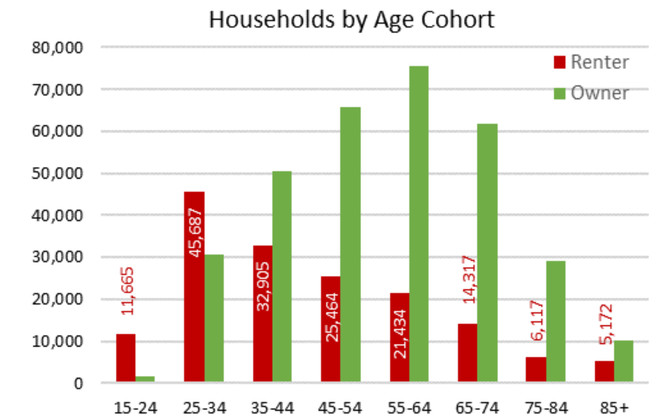
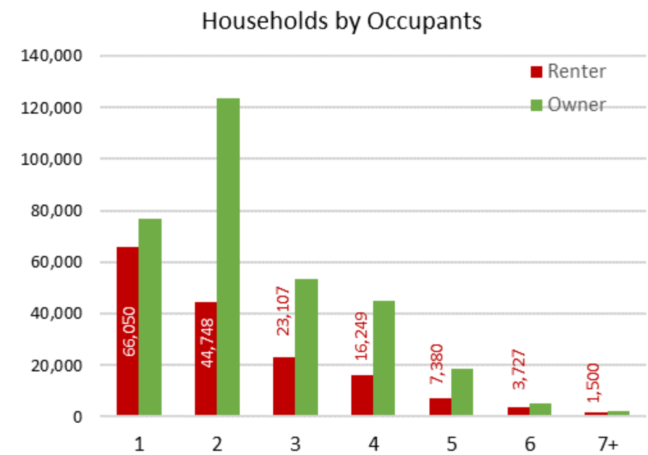
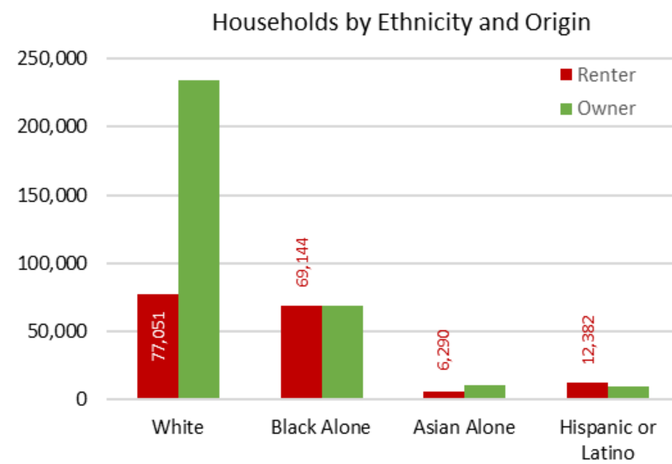
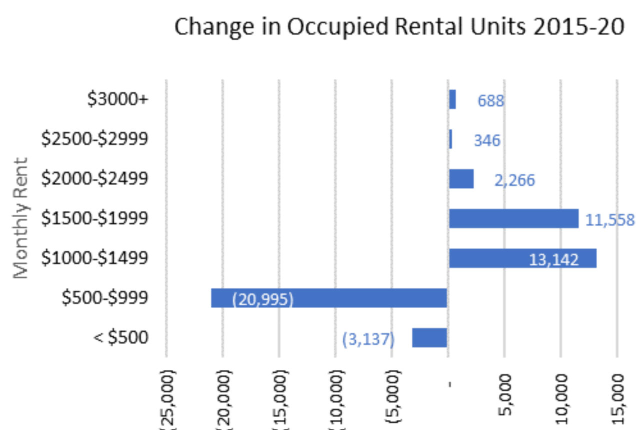
RICHMOND page 2

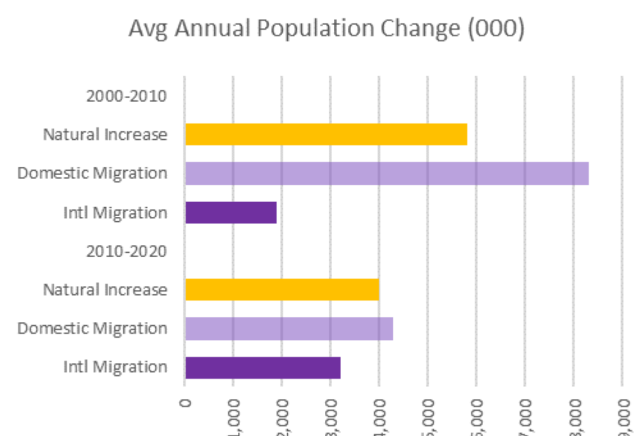












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METRO MULTIFAMILY DEMAND OVERVIEW

RIVERSIDE

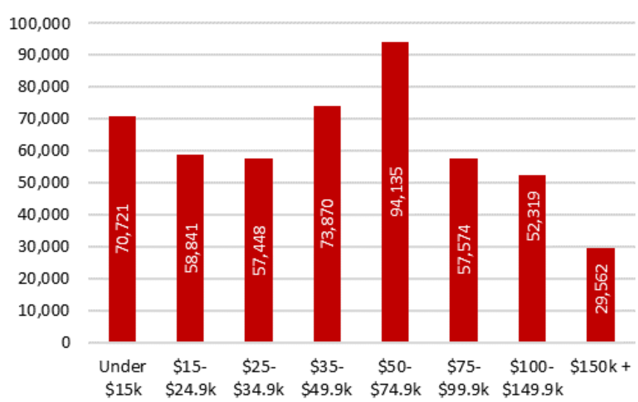
43,881

Apartment units needed by 2035

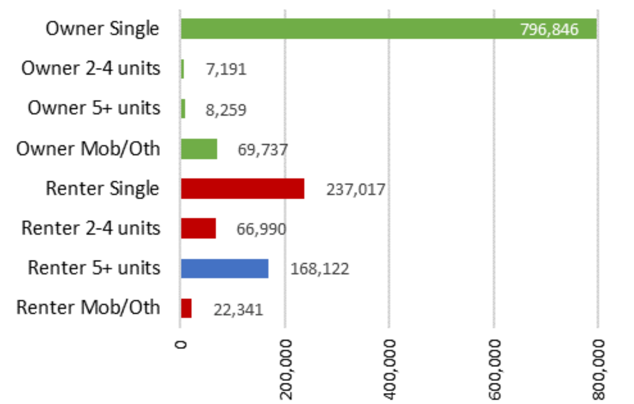
Definitions on following page

DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
24	52	37	34%

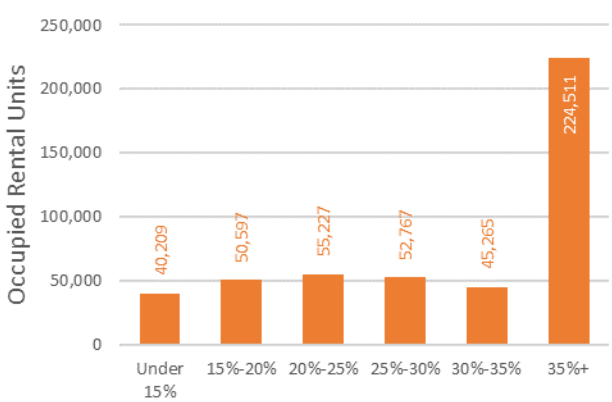
Rental Households by Income



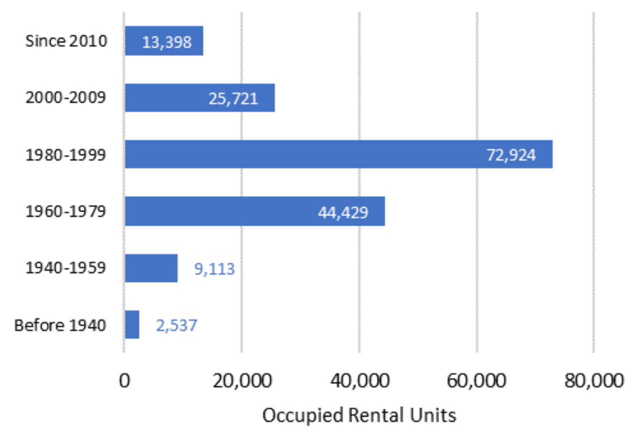
Housing Stock by Tenure & Type



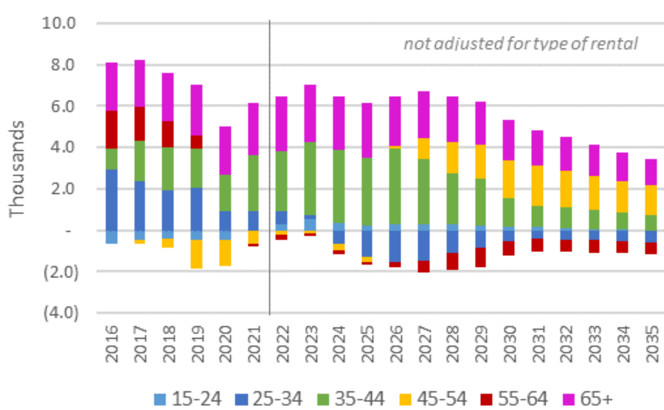
Rent as a Percent of Household Income



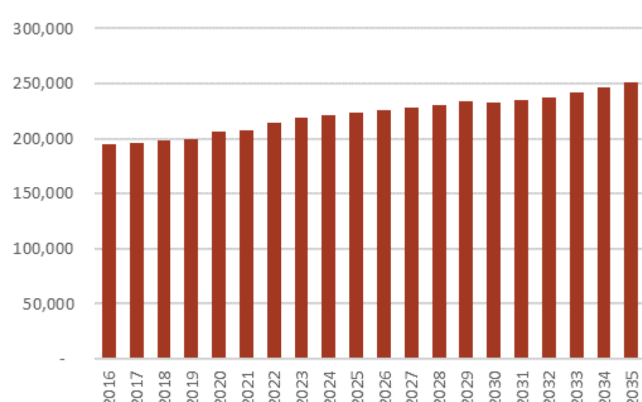
5+ Unit Rental Stock by Year Built



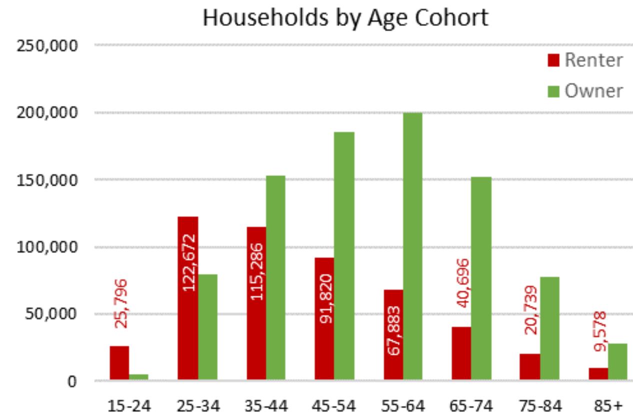
New Rental Households by Age Cohort

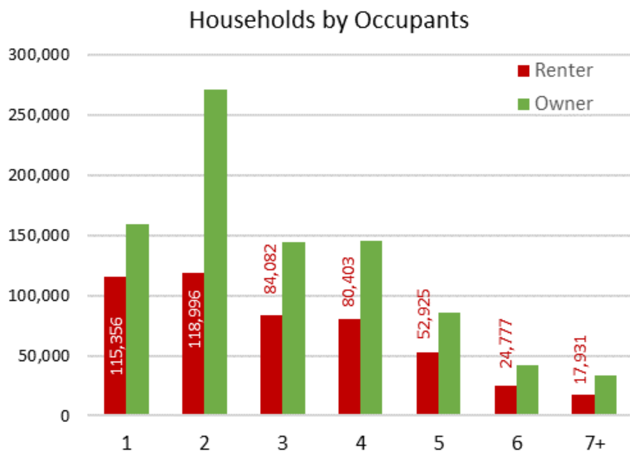


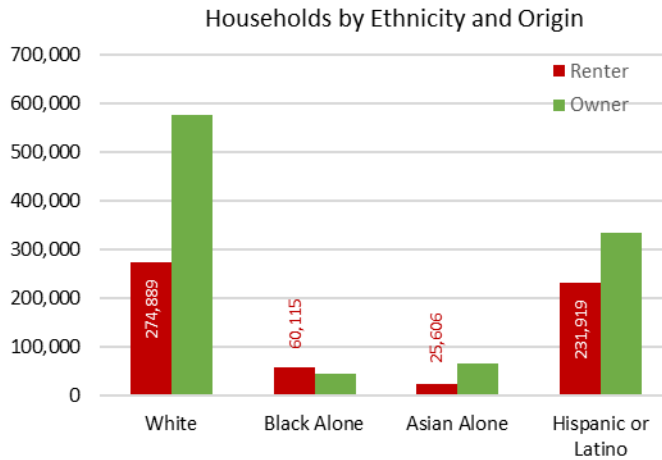
5+ Units Apartment Demand Forecast

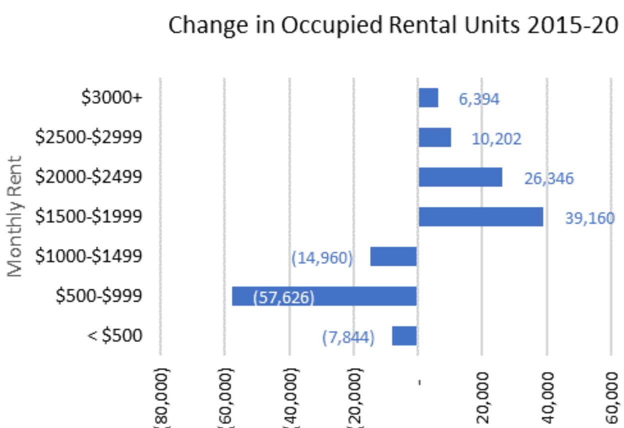


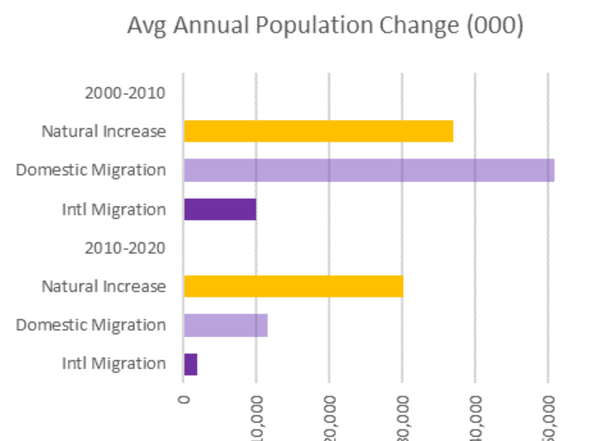
RIVERSIDE page 2











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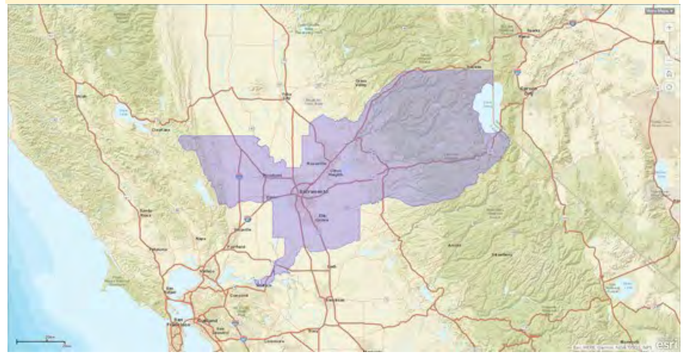
METRO MULTIFAMILY DEMAND OVERVIEW

SACRAMENTO



16,236

Apartment units needed by 2035

Definitions on following page

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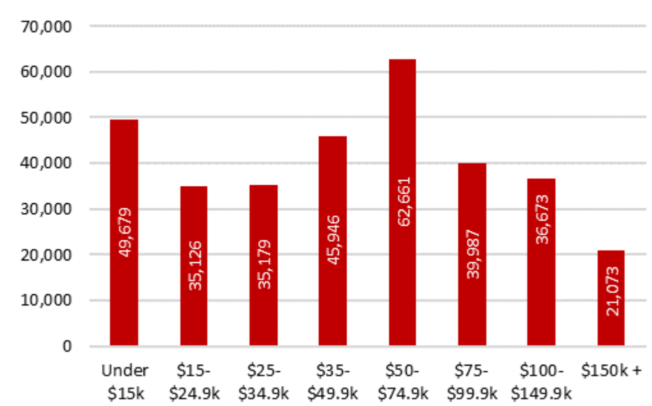
38	56	32	37%

Rental Households by Income



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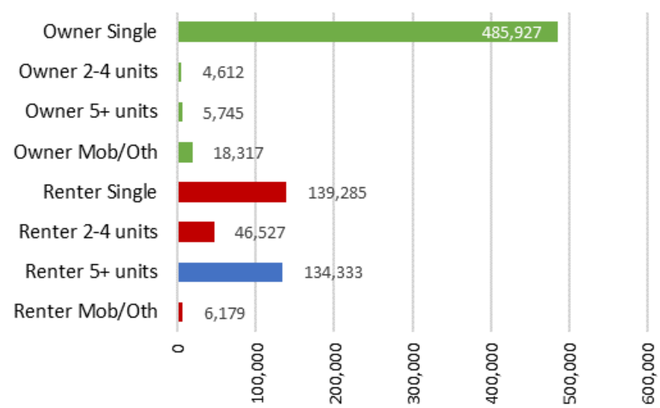

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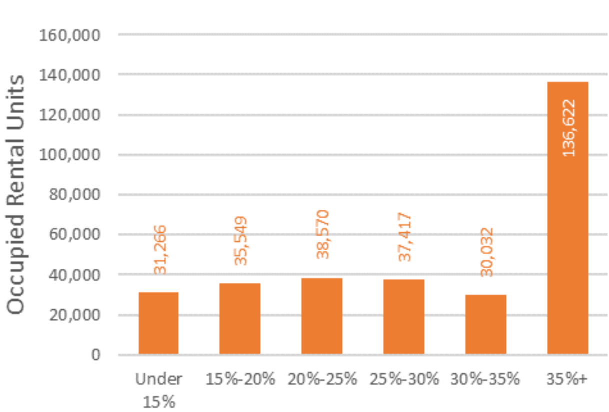
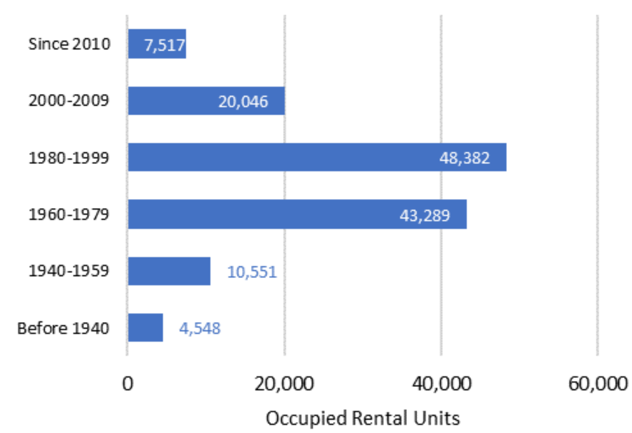


5+ Unit Rental Stock by Year Built



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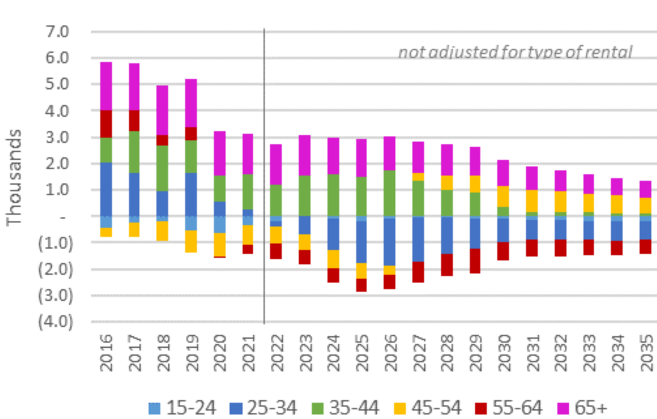

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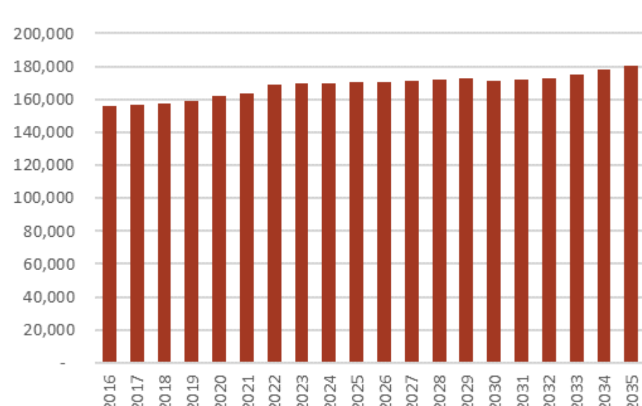
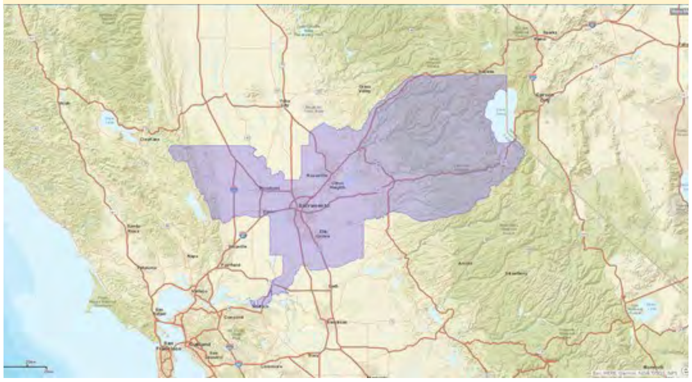
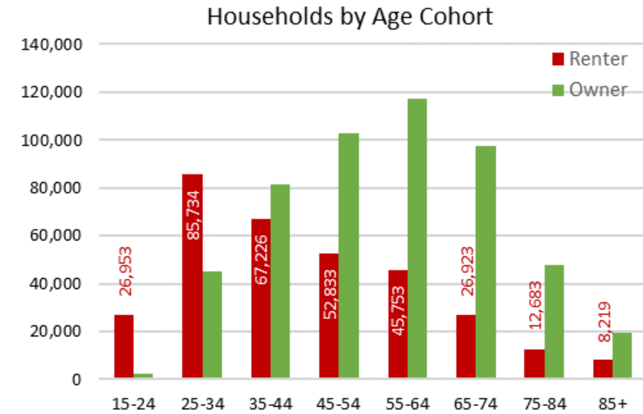
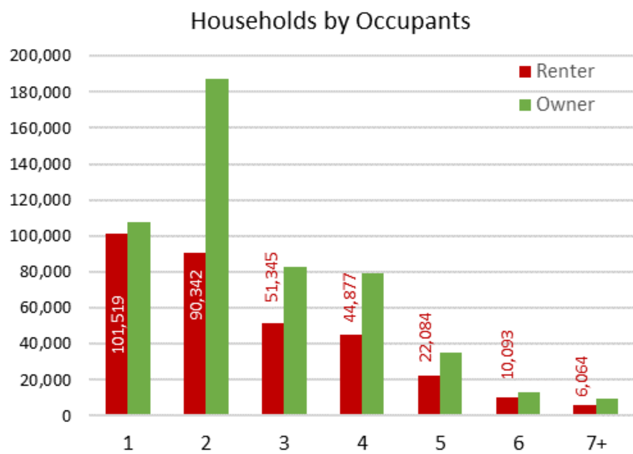


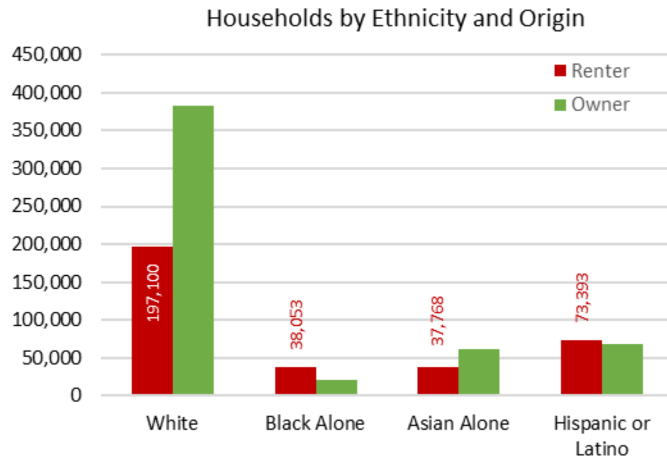
NMHC NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION
HAS
University of San Diego School of Business
E10A Capital Properties ESG

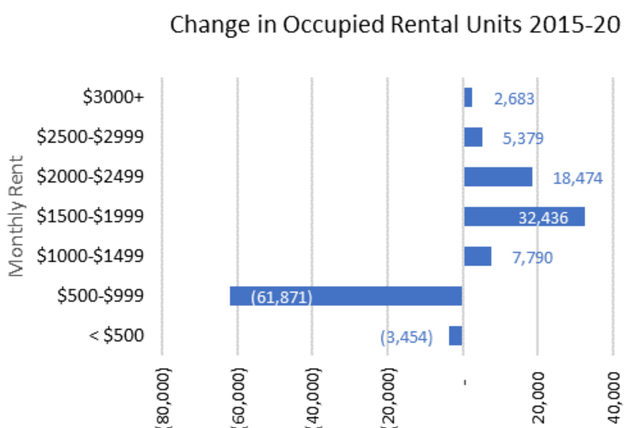
SACRAMENTO page 2

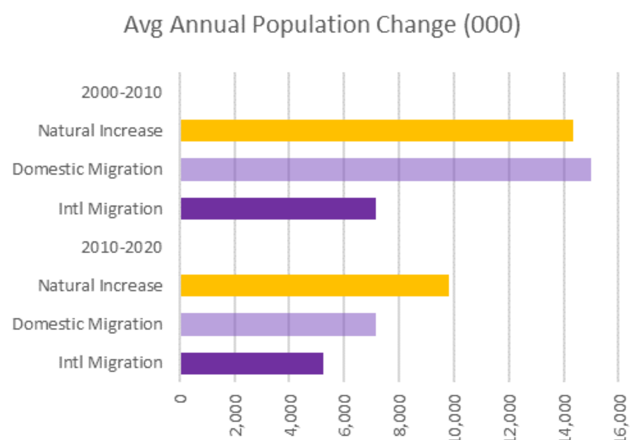












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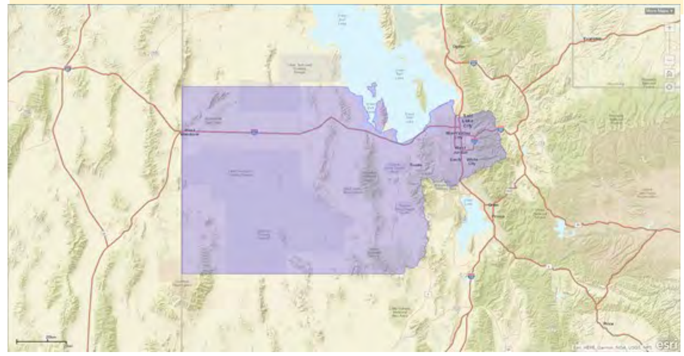
METRO MULTIFAMILY DEMAND OVERVIEW

SALT LAKE CITY



23,127 Apartment units needed by 2035

Definitions on following page

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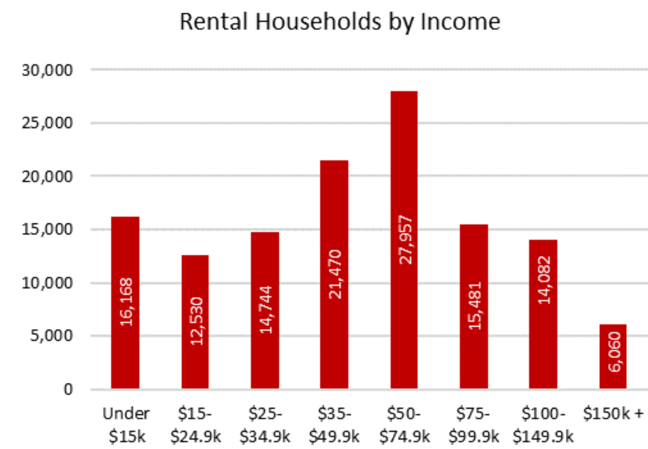
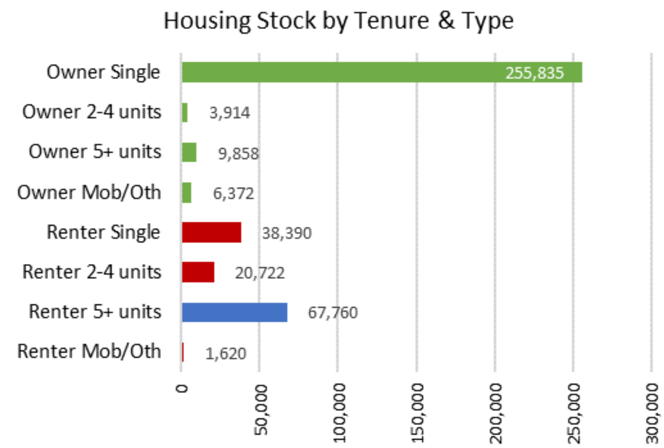
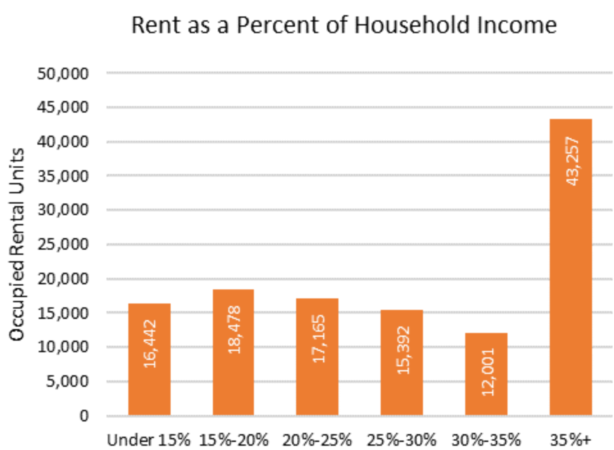
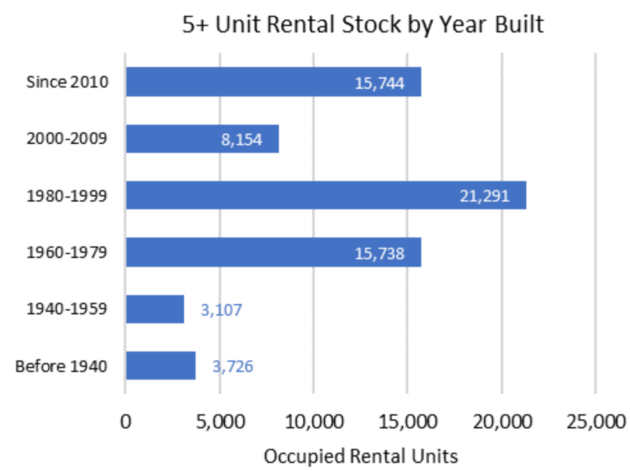
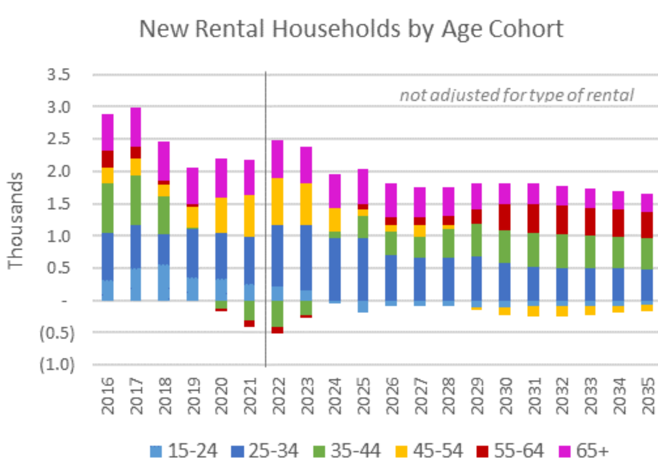
22	65	6	21%

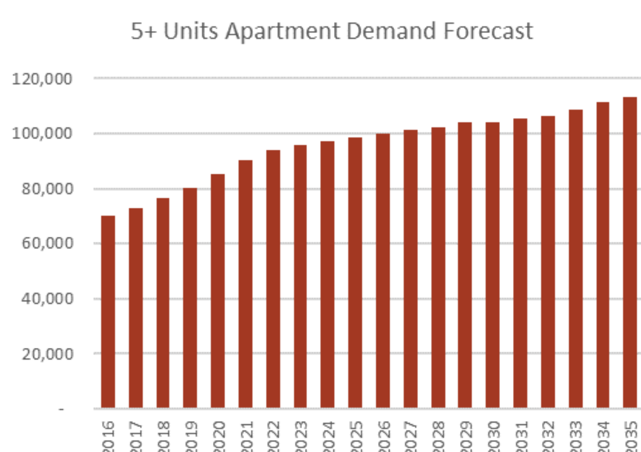




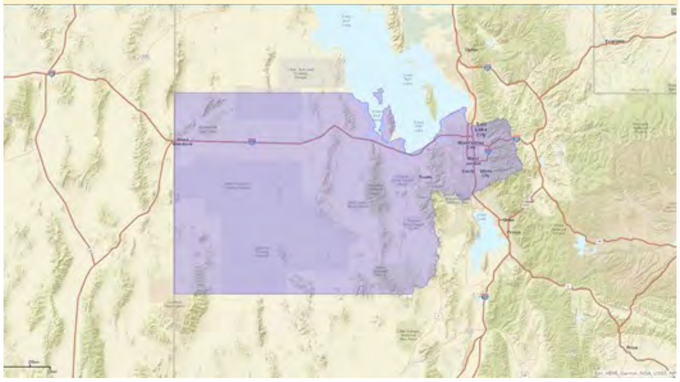


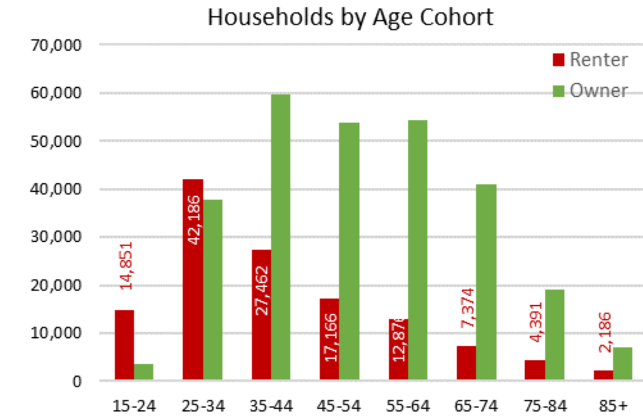


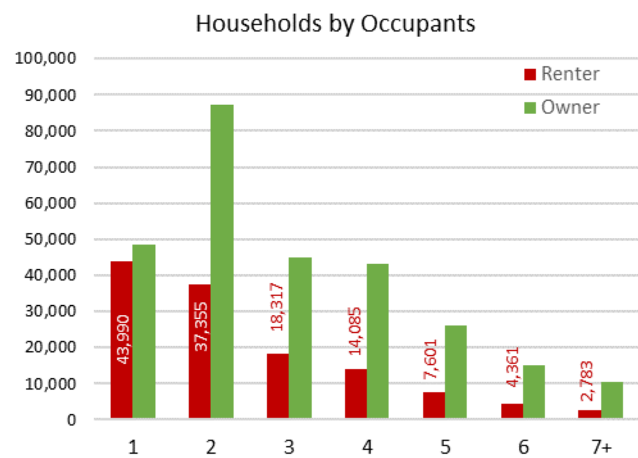


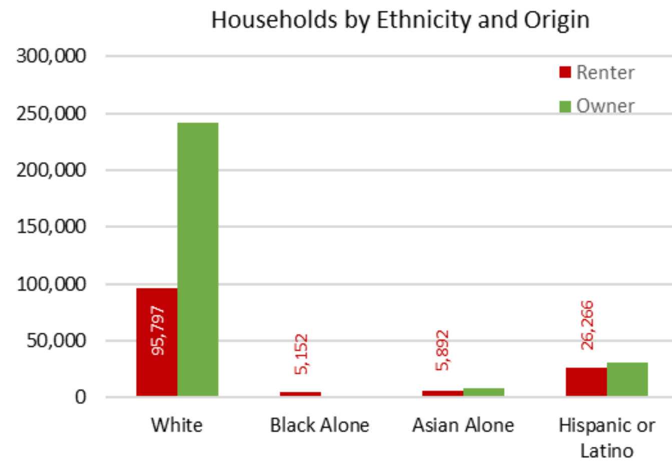


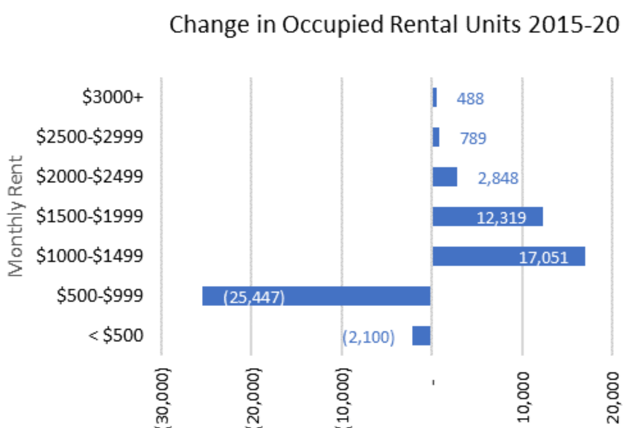
SALT LAKE CITY page 2

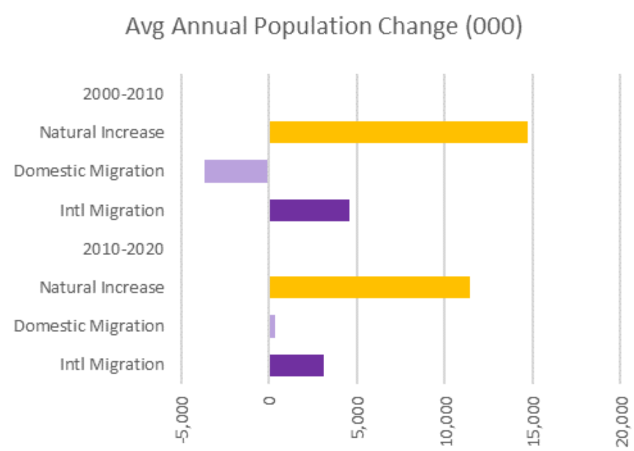












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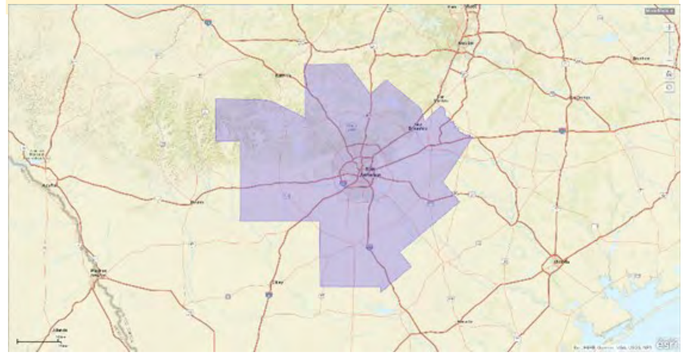
METRO MULTIFAMILY DEMAND OVERVIEW

SAN ANTONIO



59,180 Apartment units needed by 2035

Definitions on following page

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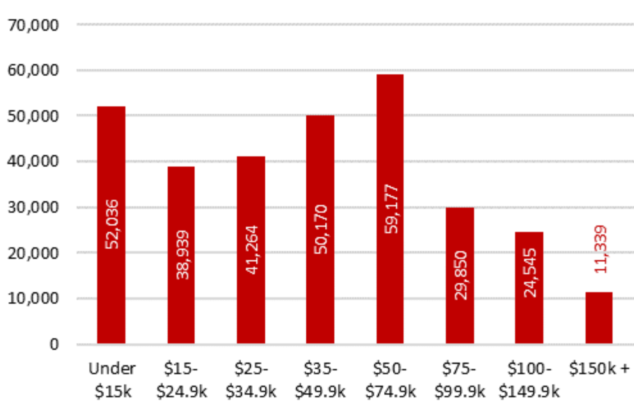
13	60	24	18%

Rental Households by Income



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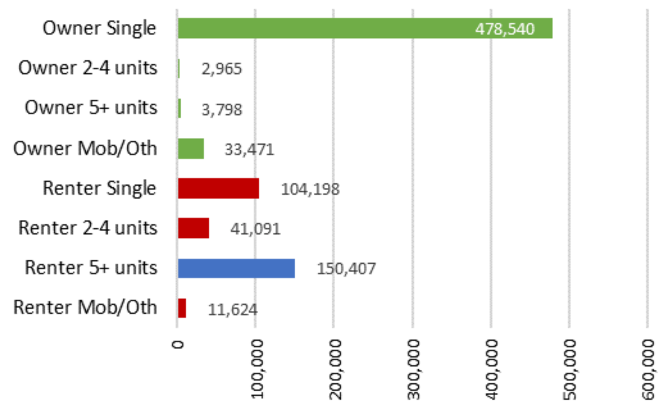

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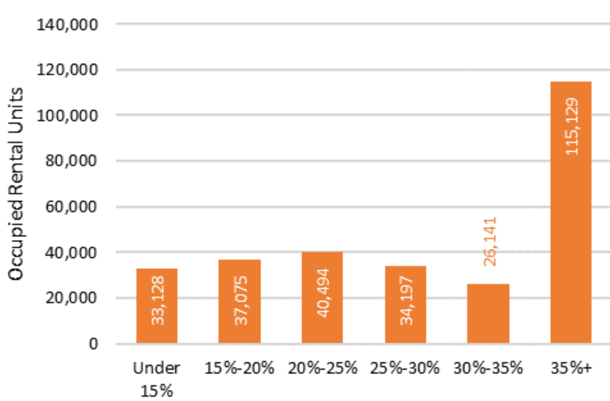
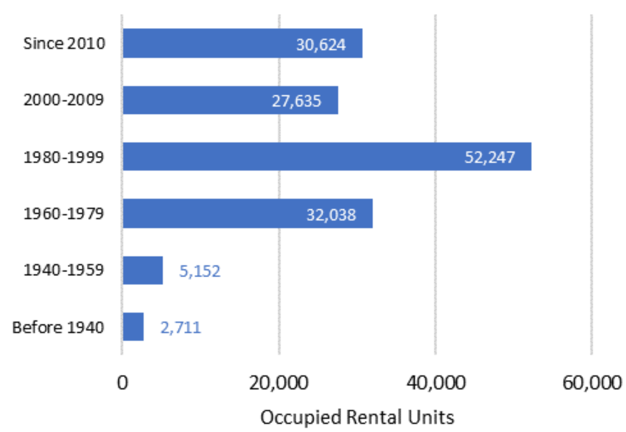


5+ Unit Rental Stock by Year Built



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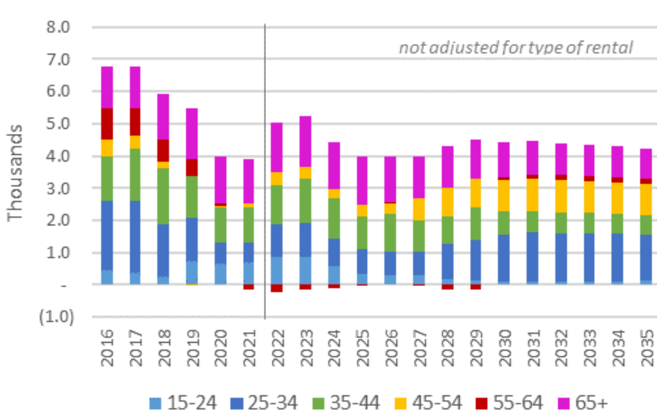
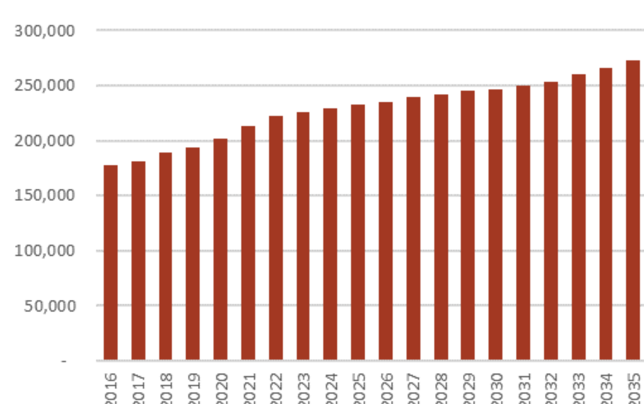
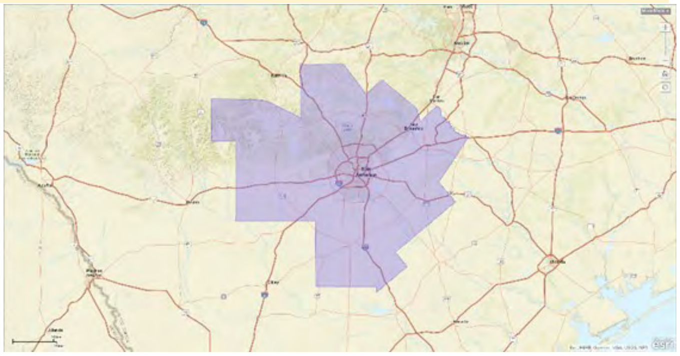
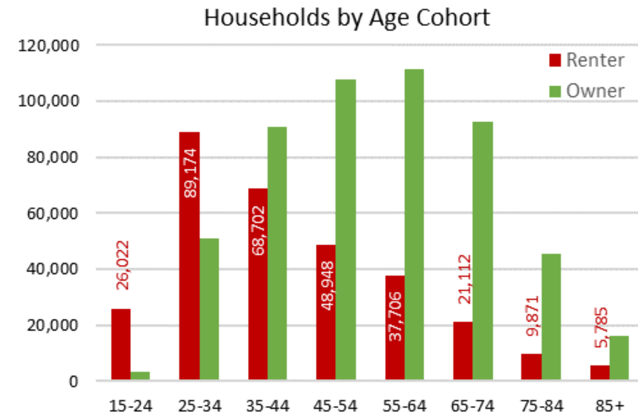


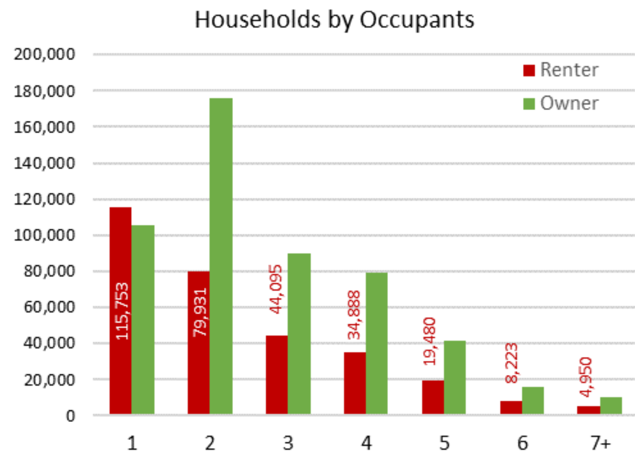
5+ Units Apartment Demand Forecast

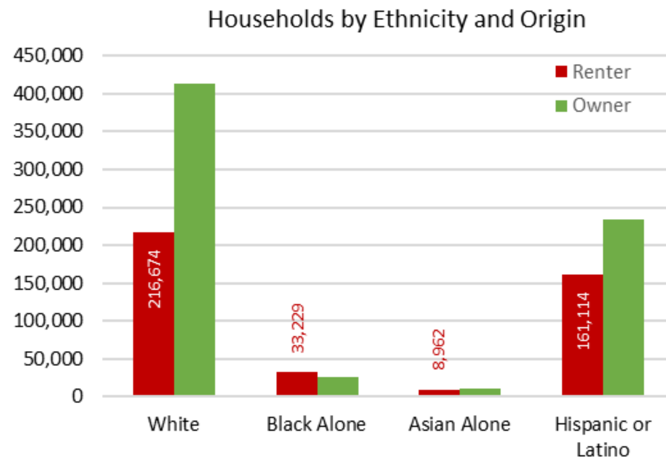


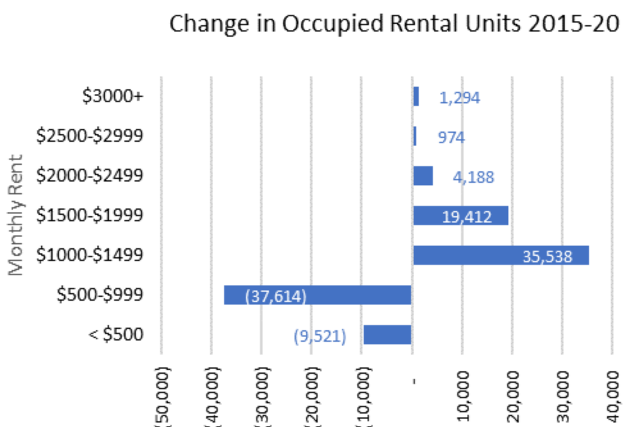
SAN ANTONIO page 2

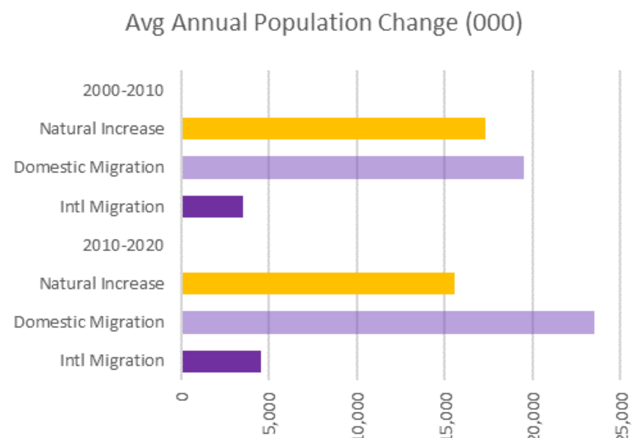












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METRO MULTIFAMILY DEMAND OVERVIEW

SAN DIEGO

26,199 Apartment units needed by 2035

Definitions on following page

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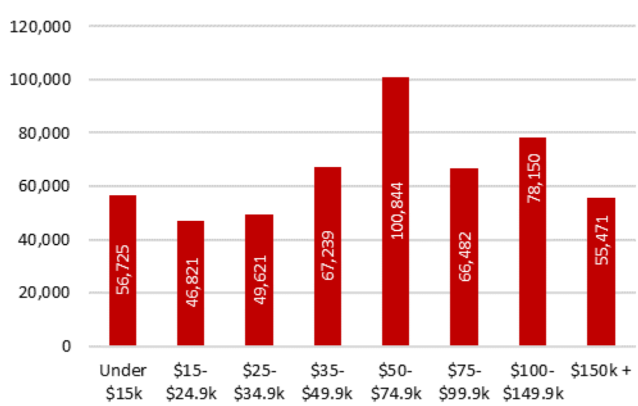
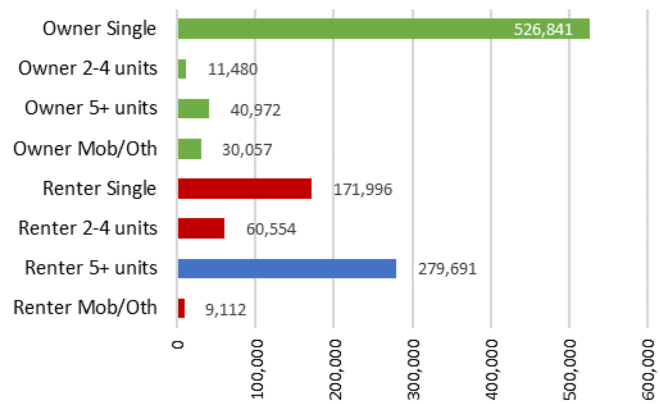
34	53	40	48%

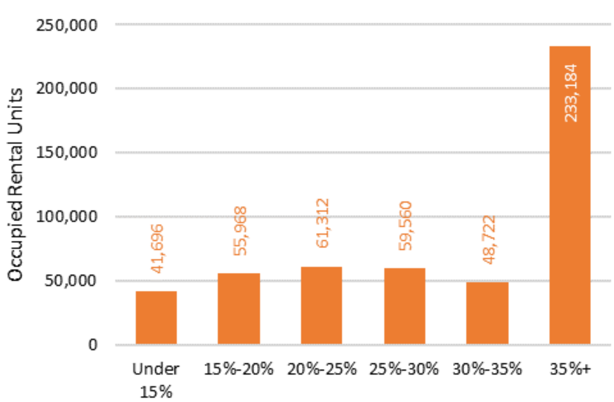
Rental Households by Income



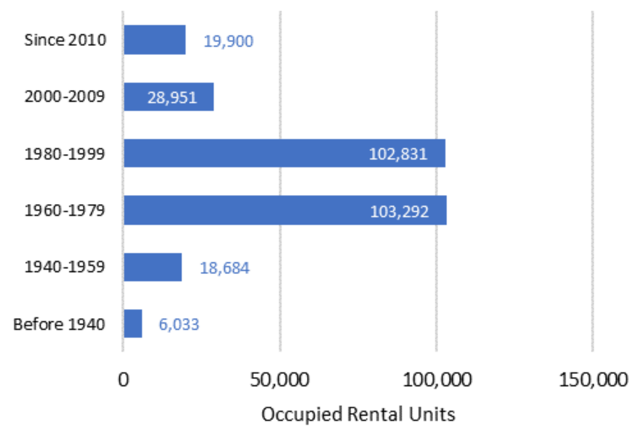
Housing Stock by Tenure & Type



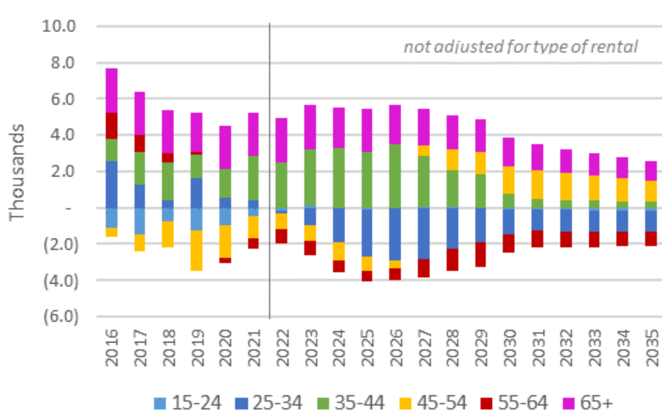
Rent as a Percent of Household Income



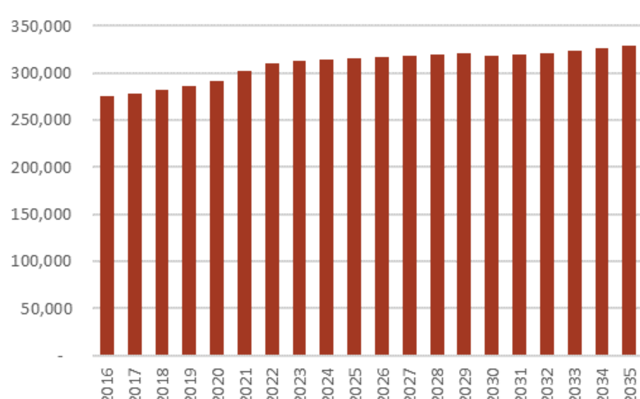
5+ Unit Rental Stock by Year Built



New Rental Households by Age Cohort



5+ Units Apartment Demand Forecast

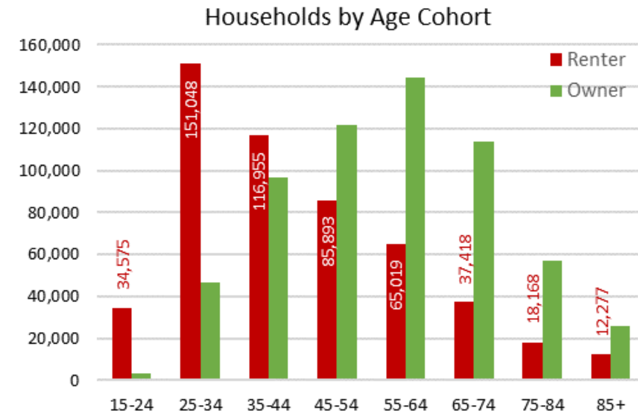


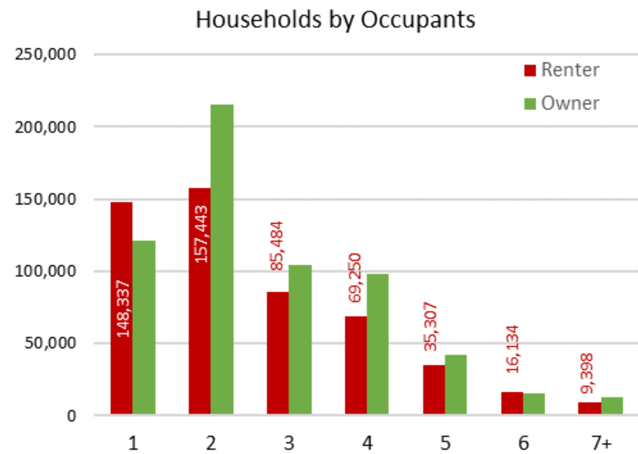
NMHC NATIONAL MULTIFAMILY HOUSING COUNCIL

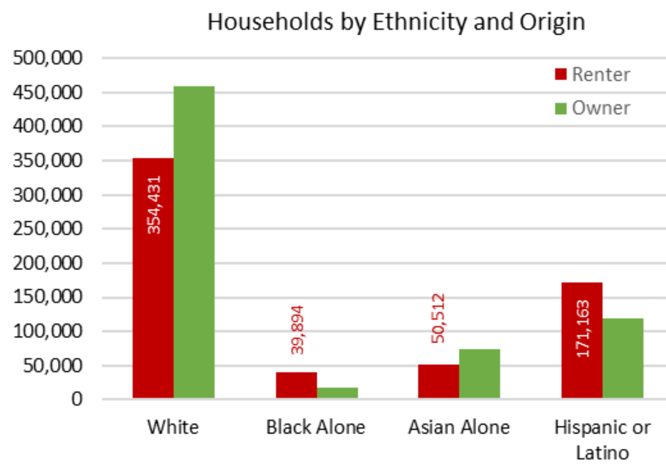
NAA NATIONAL APARTMENT ASSOCIATION

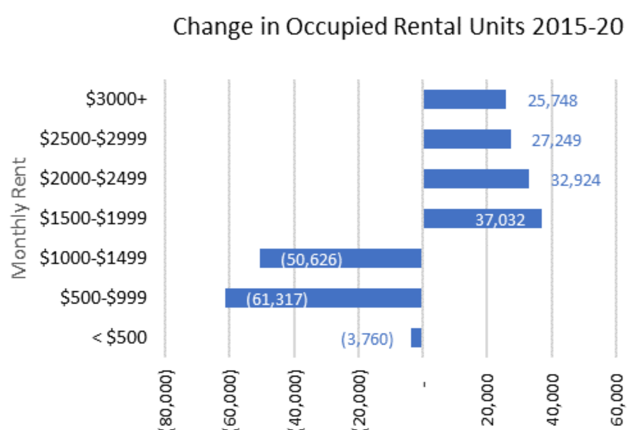
HAS University of San Diego SCHOOL OF BUSINESS E10A Capital Properties ESG

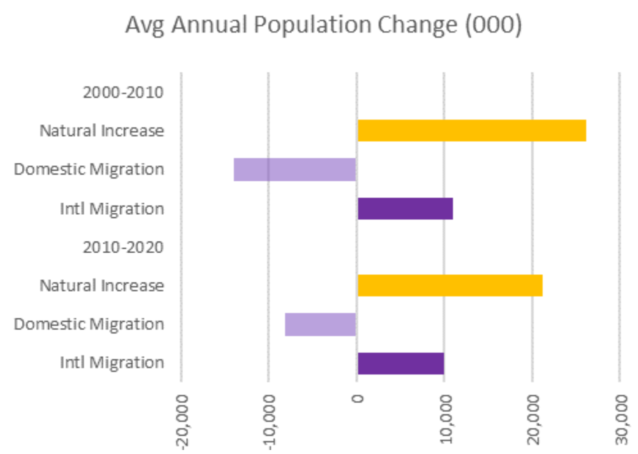
SAN DIEGO page 2











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METRO MULTIFAMILY DEMAND OVERVIEW

SAN FRANCISCO

53,856

Apartment units needed by 2035

Definitions on following page

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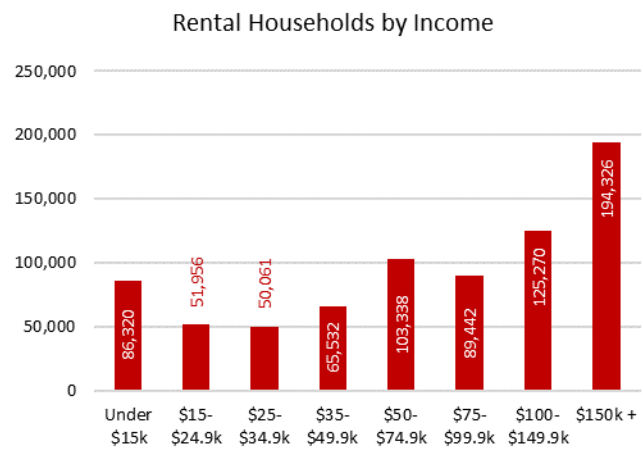
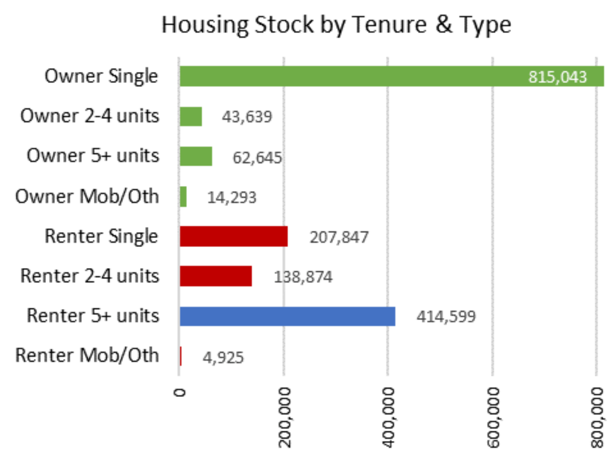
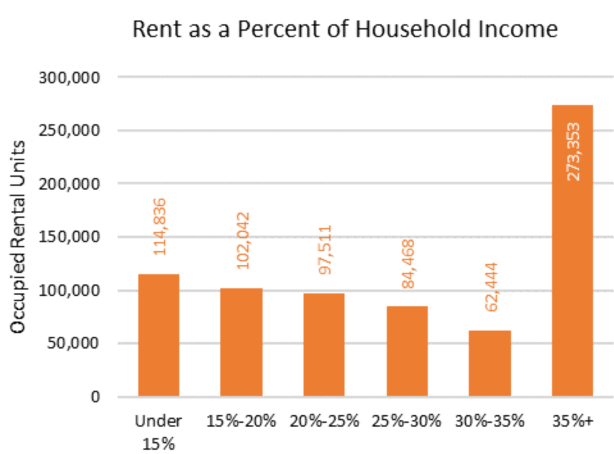
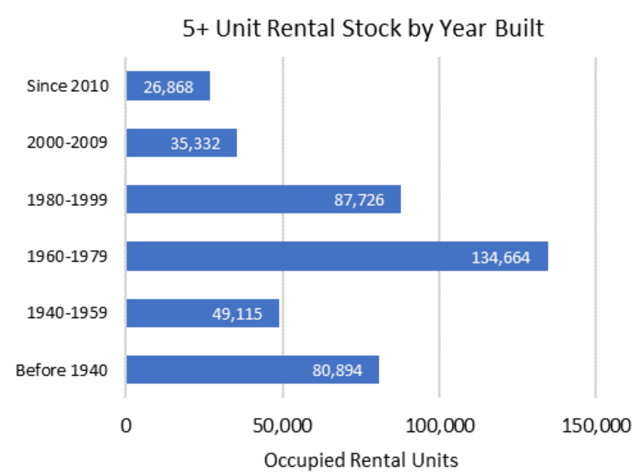
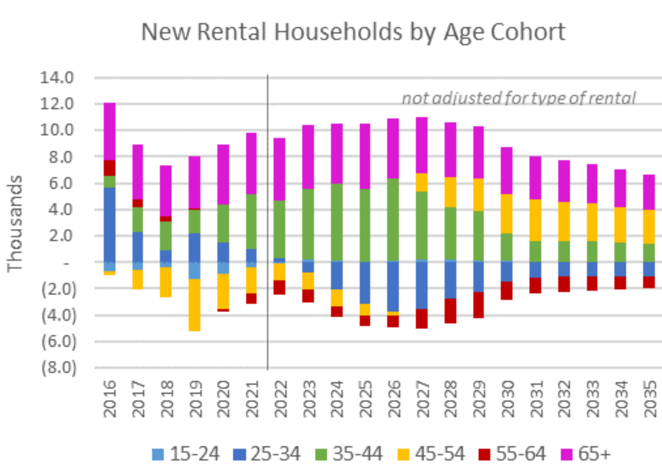
25	63	45	54%

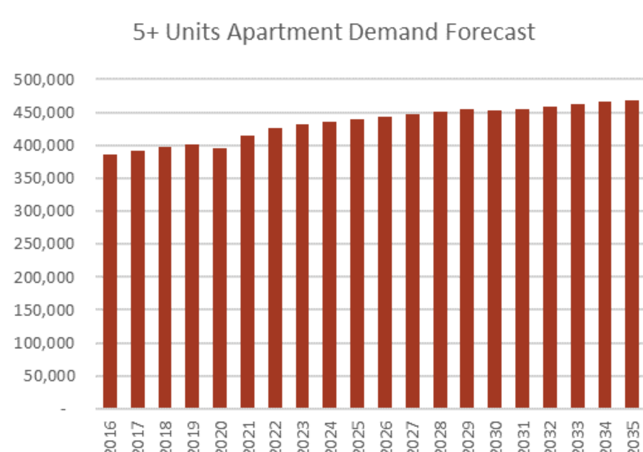




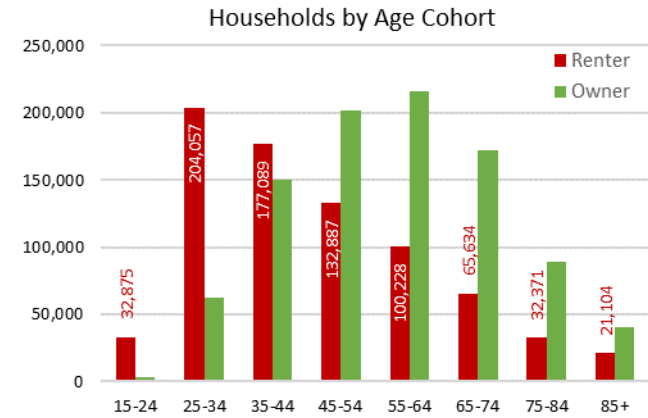


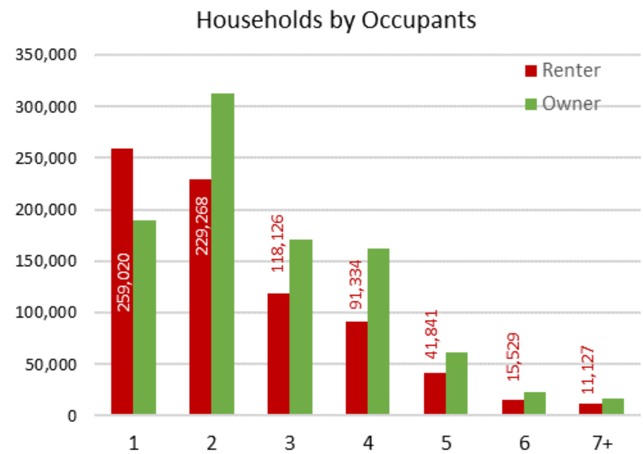


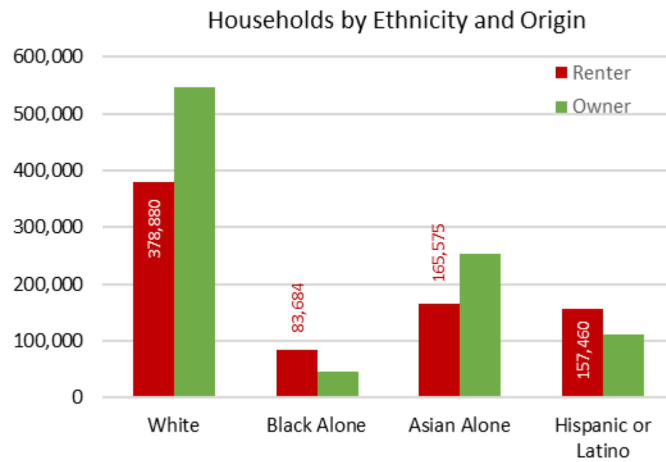


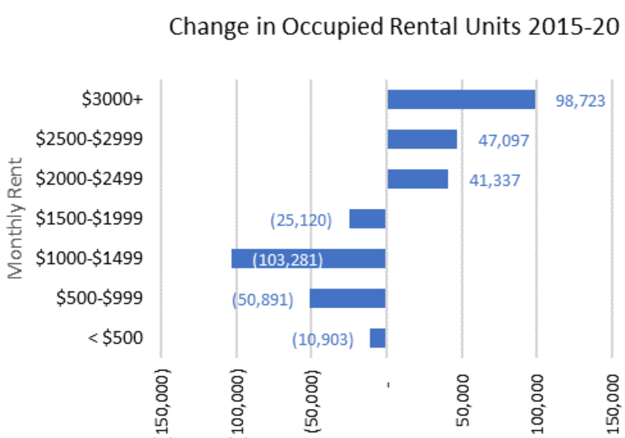


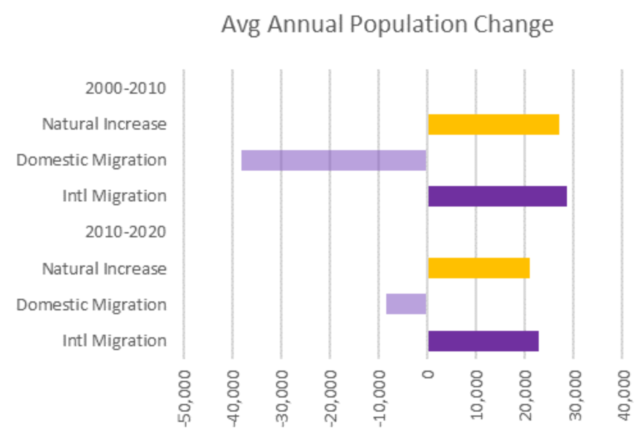
SAN FRANCISCO page 2











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METRO MULTIFAMILY DEMAND OVERVIEW

SAN JOSE

19,822

Apartment units needed by 2035

Definitions on following page

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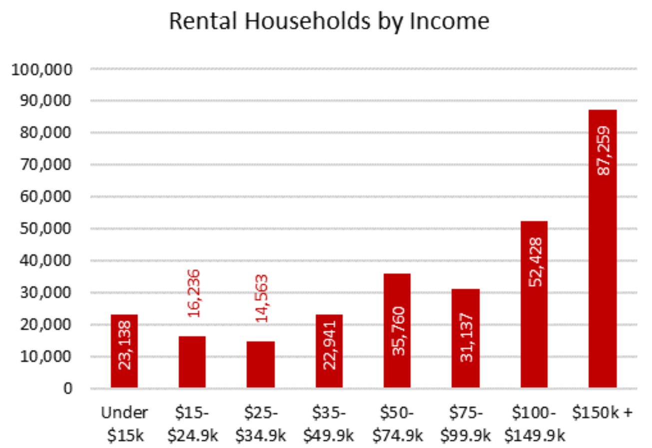
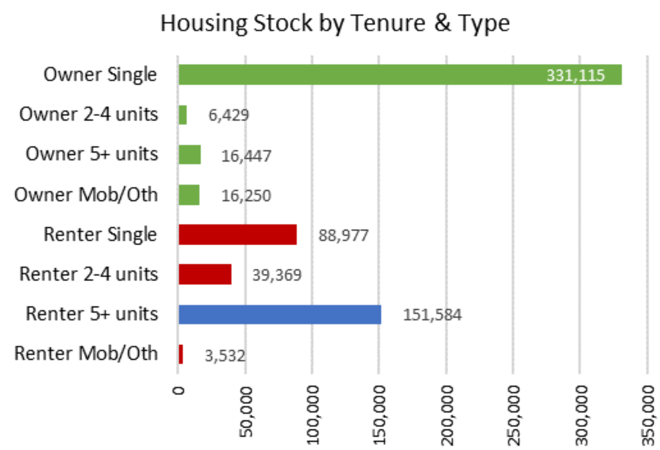
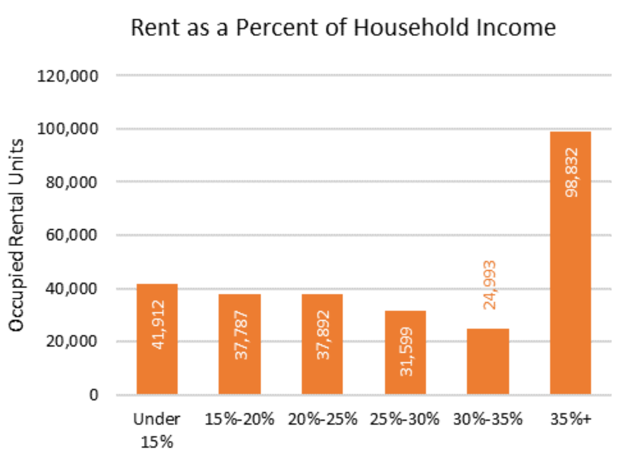
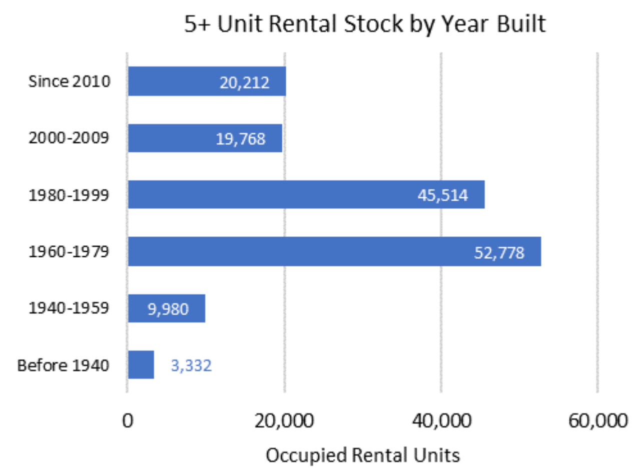
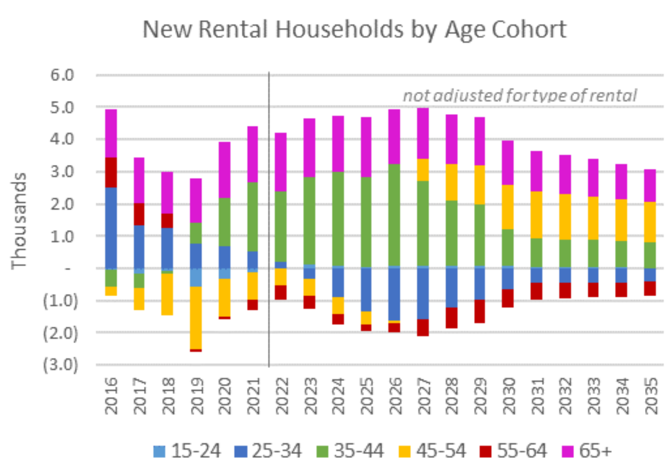
32	64	42	38%

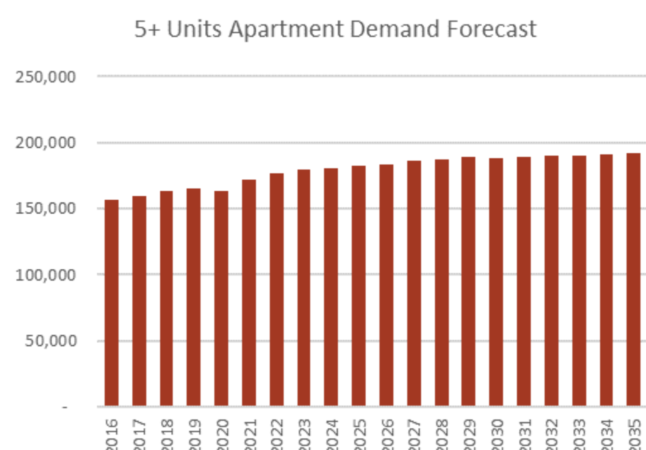




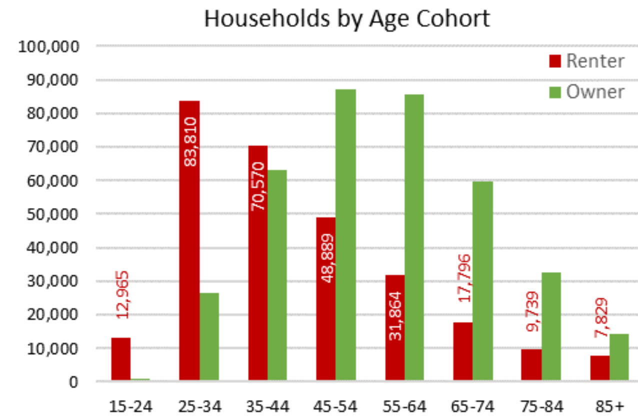


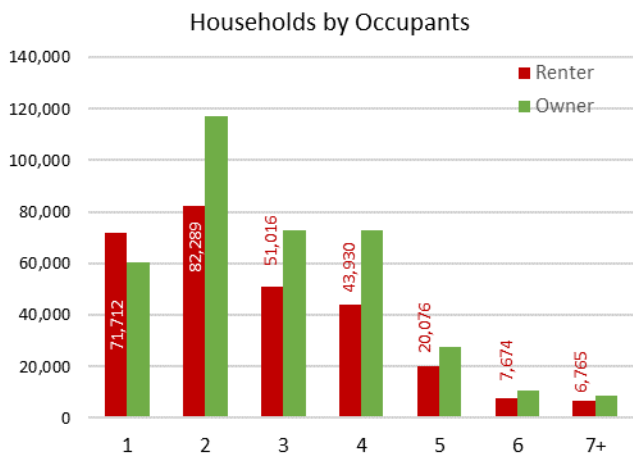


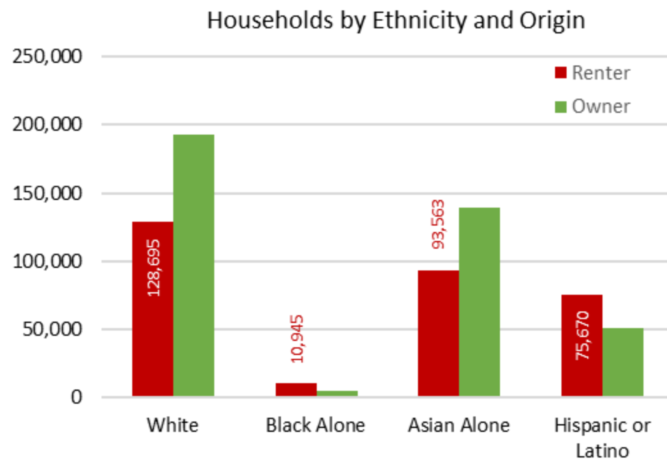


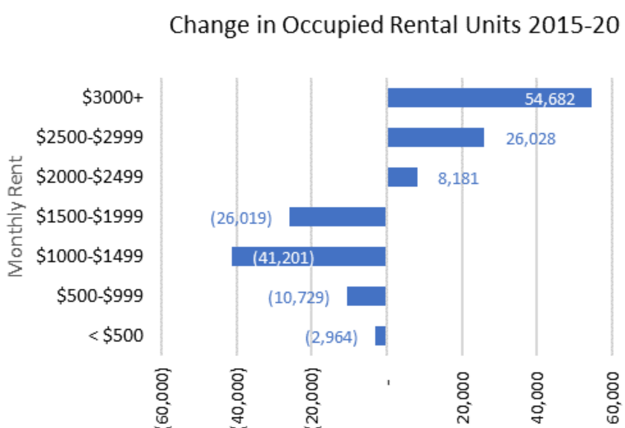


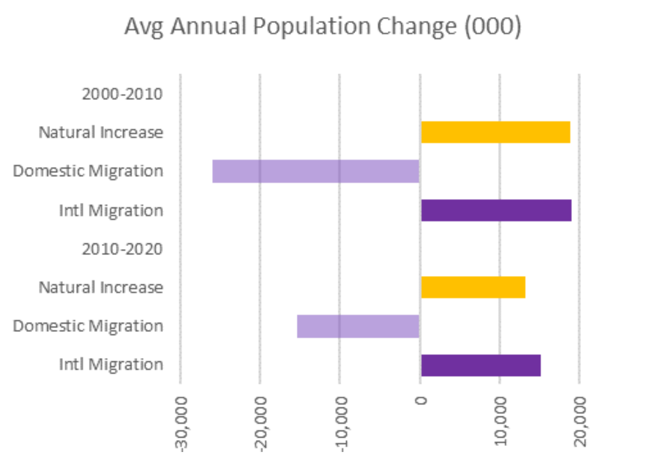
SAN JOSE page 2











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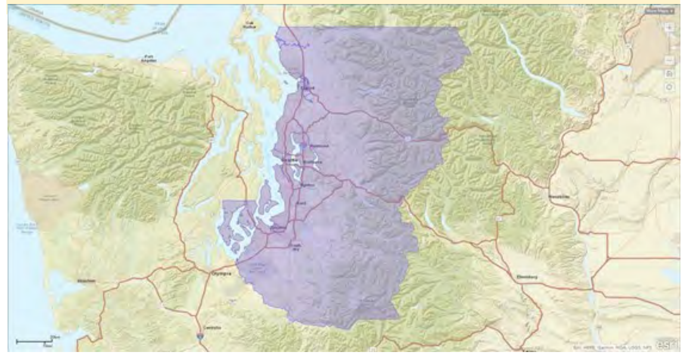
METRO MULTIFAMILY DEMAND OVERVIEW

SEATTLE



94,944 Apartment units needed by 2035

Definitions on following page

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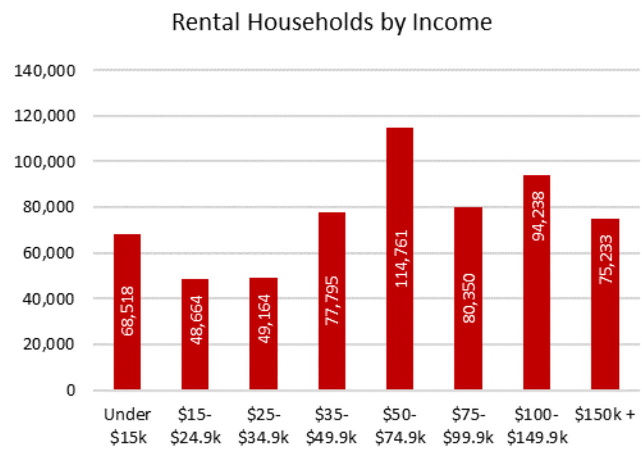
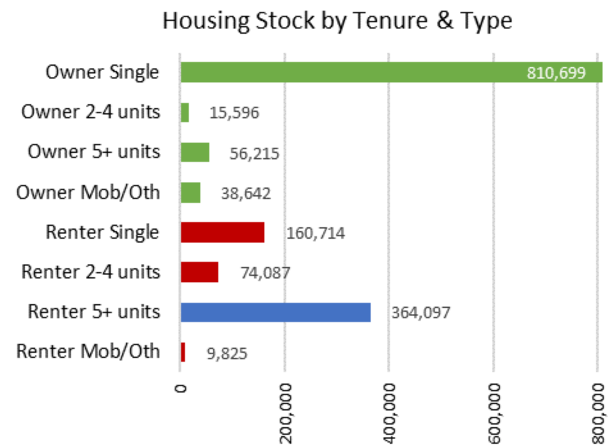
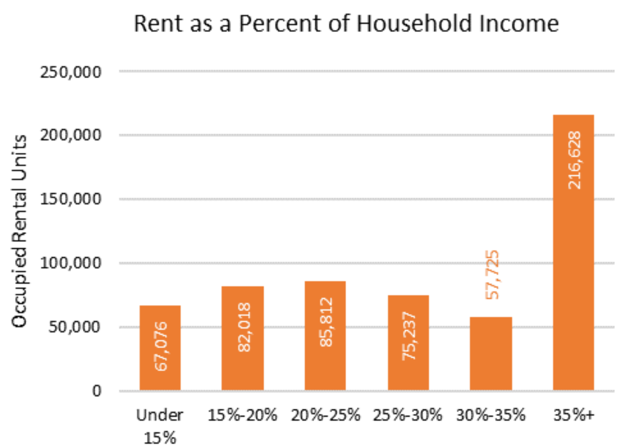
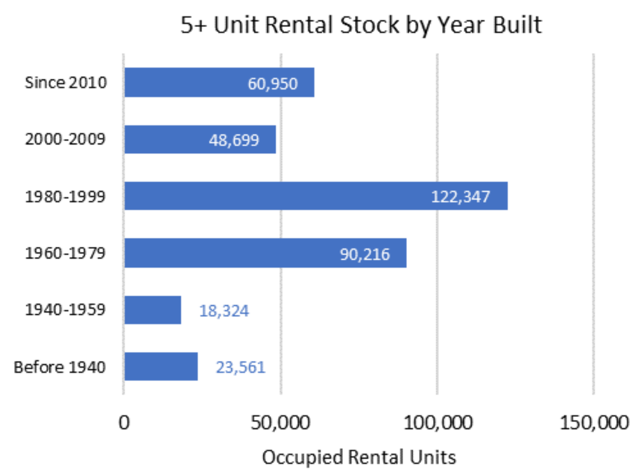
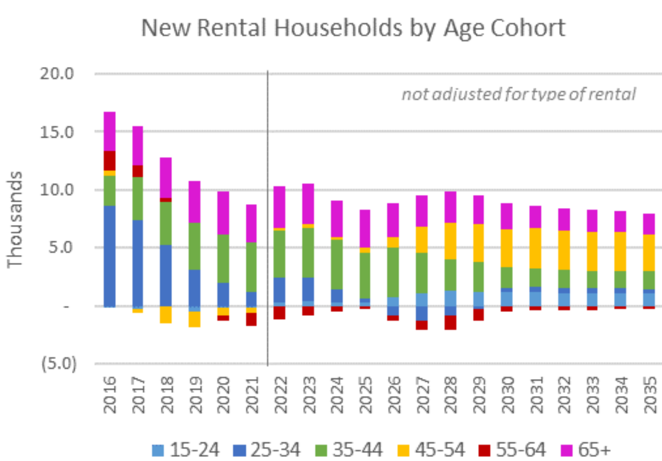
10	63	15	26%

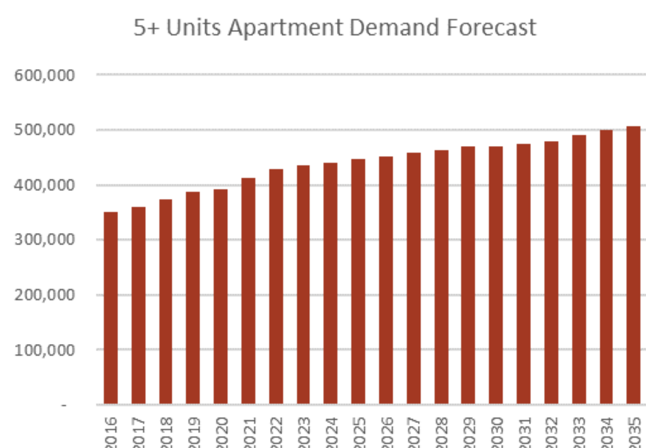








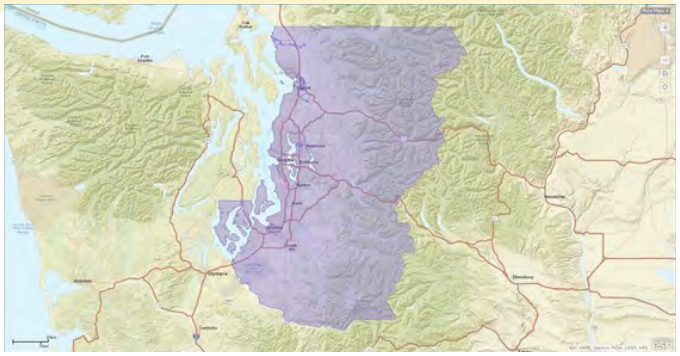


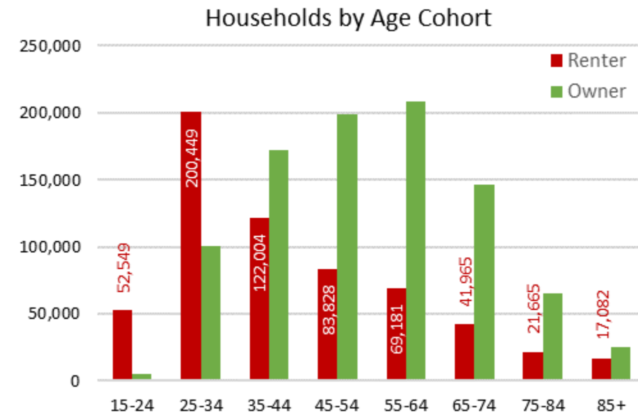


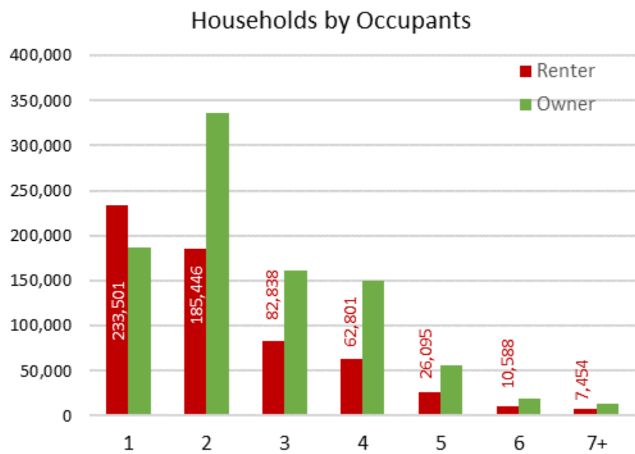
NATIONAL MULTIFAMILY HOUSING COUNCIL

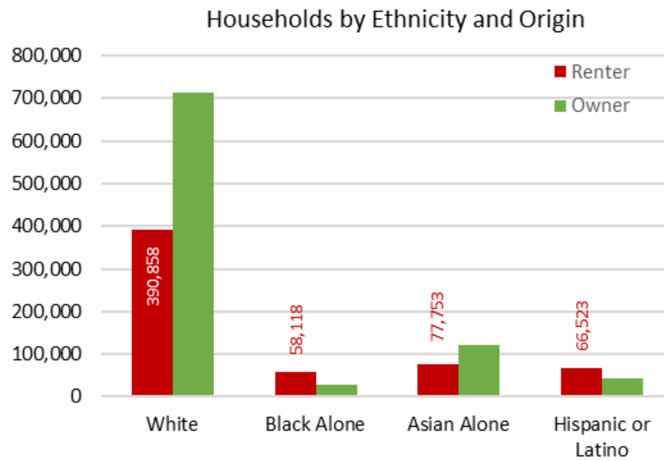
NATIONAL APARTMENT ASSOCIATION

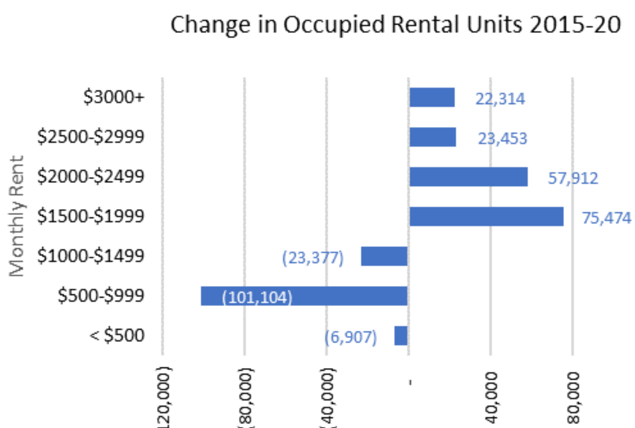
SEATTLE page 2

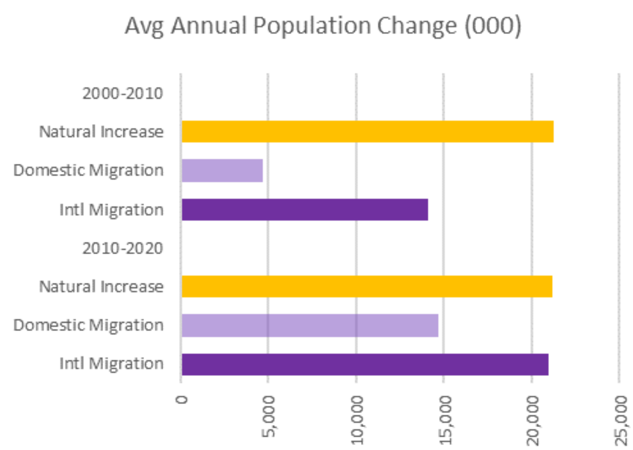












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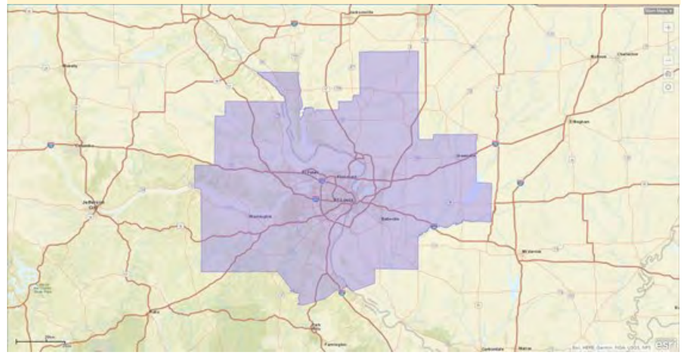
NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION

METRO MULTIFAMILY DEMAND OVERVIEW

ST. LOUIS



11,663 Apartment units needed by 2035

Definitions on following page

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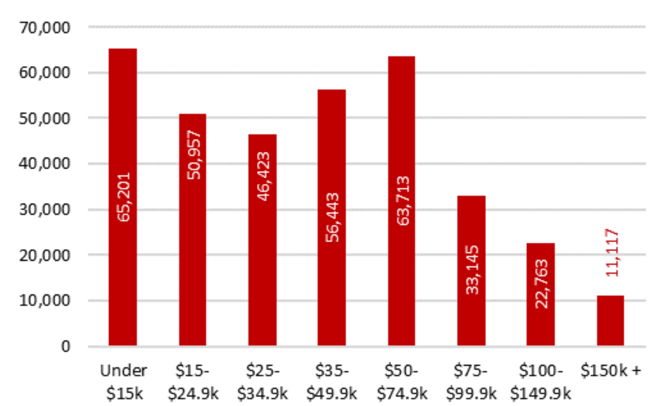
43	62	27	37%

Rental Households by Income



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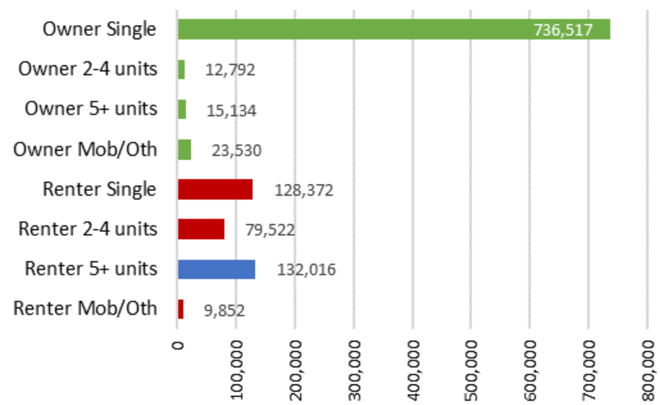

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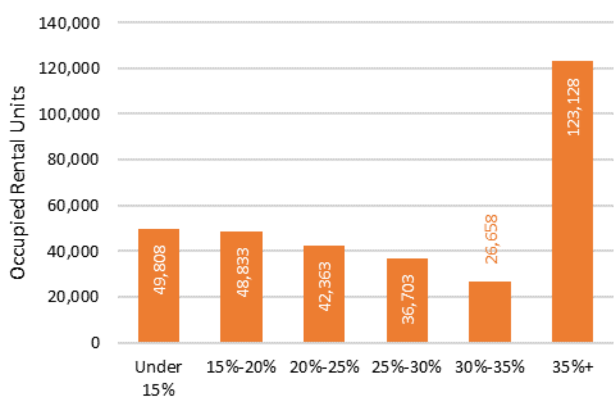
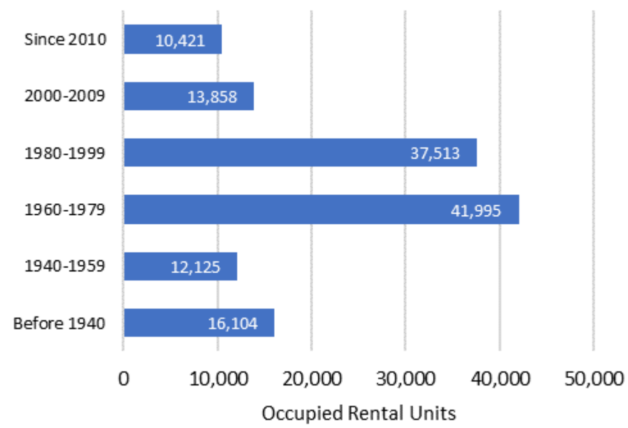


5+ Unit Rental Stock by Year Built



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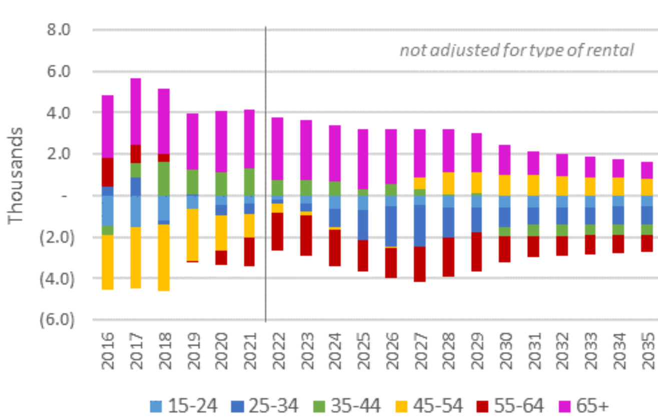
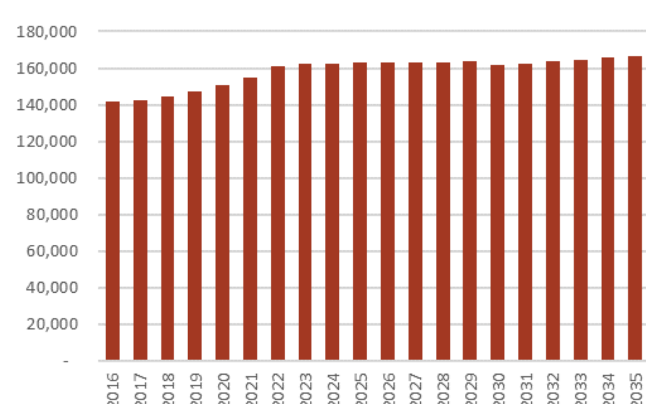


5+ Units Apartment Demand Forecast



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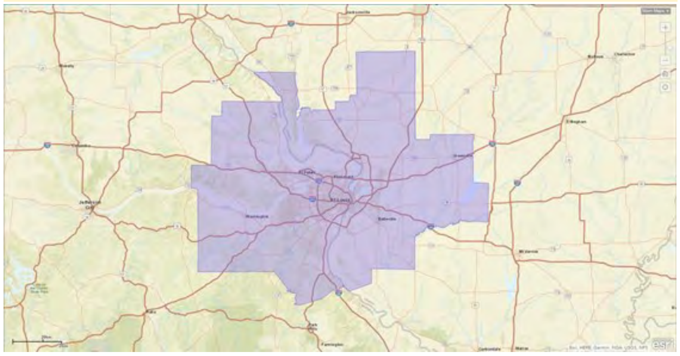
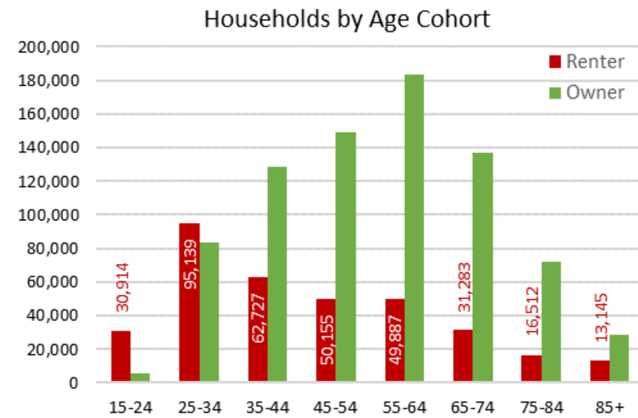
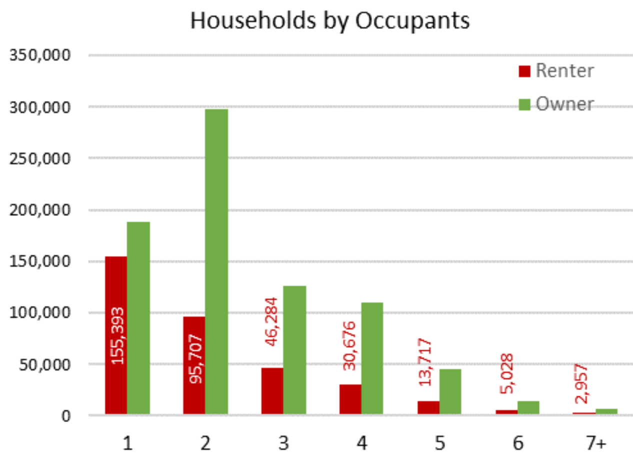
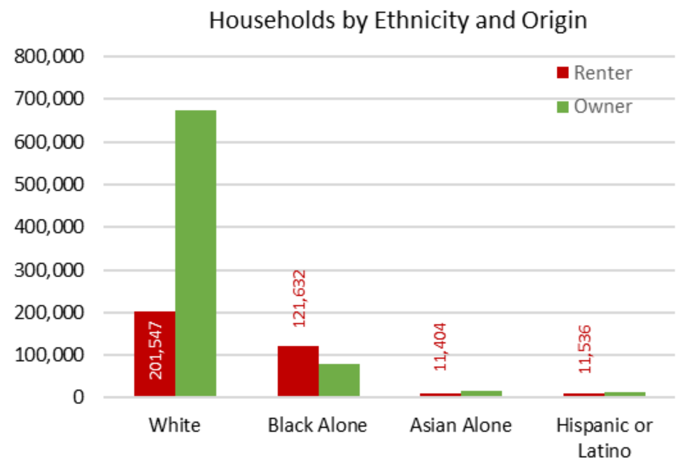
E10A Capital Properties ESG

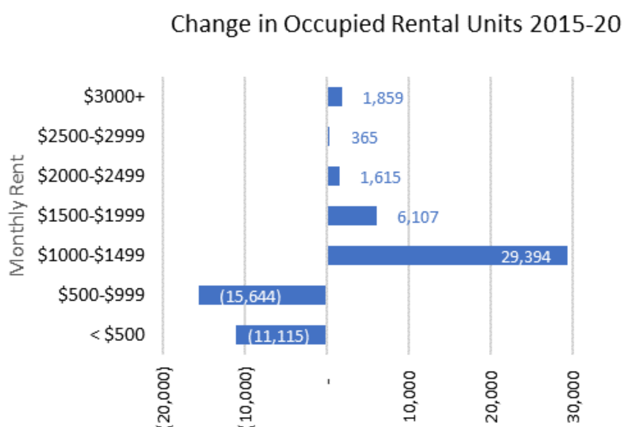
ST. LOUIS page 2

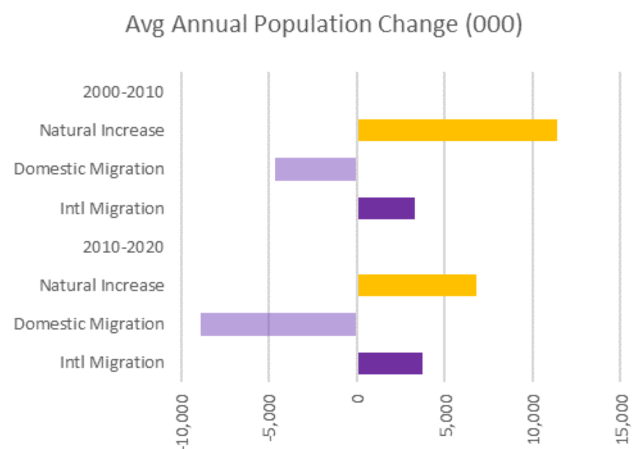












RANKING and DEFINITIONS:

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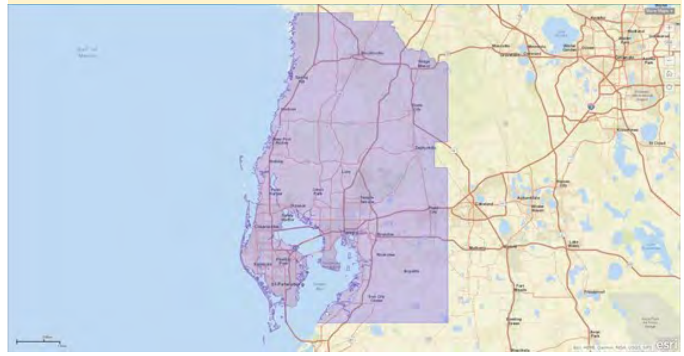
METRO MULTIFAMILY DEMAND OVERVIEW

TAMPA



73,152 Apartment units needed by 2035

Definitions on following page

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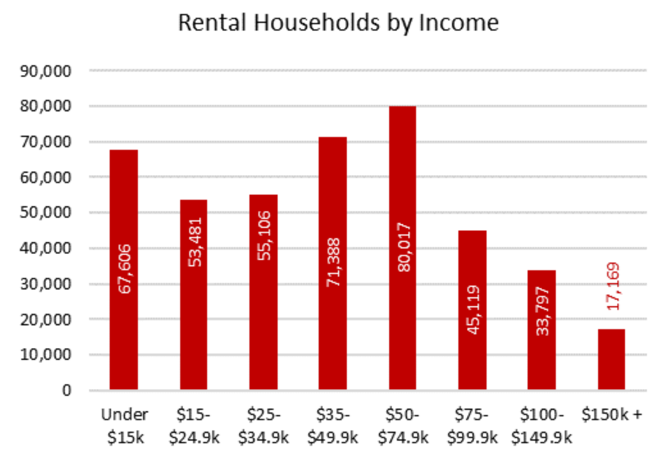
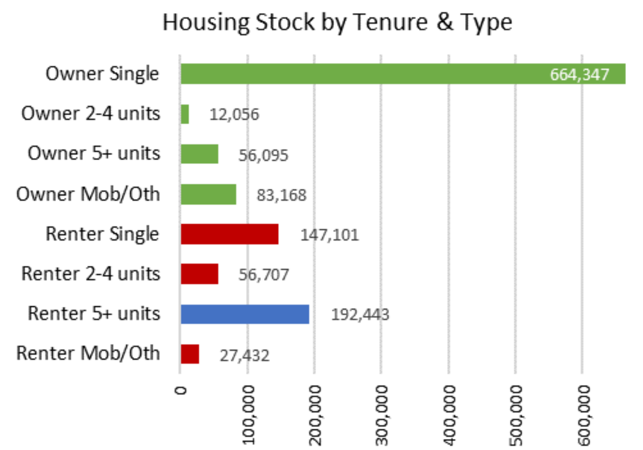
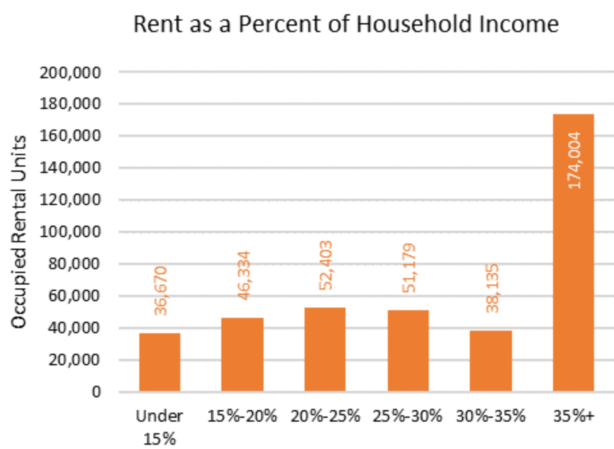
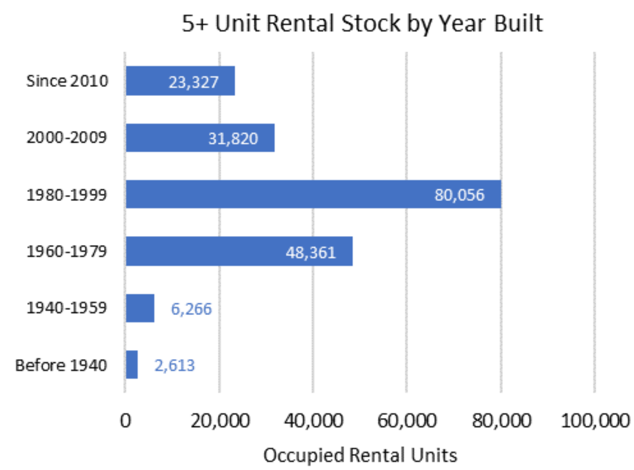
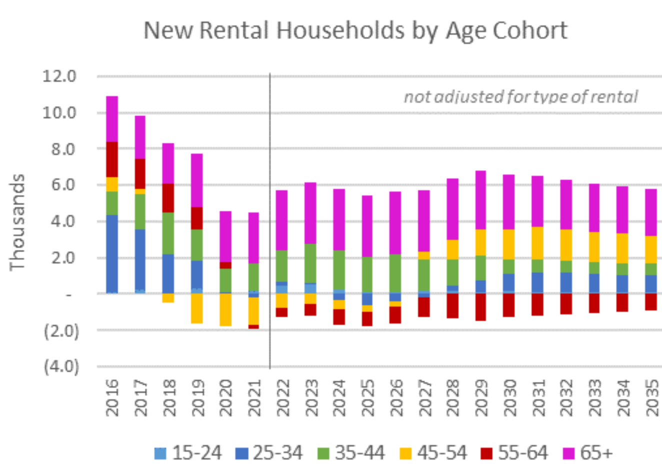
11	56	7	20%

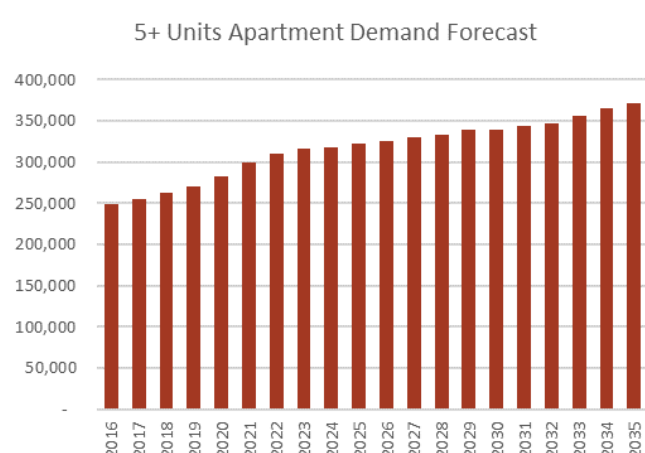




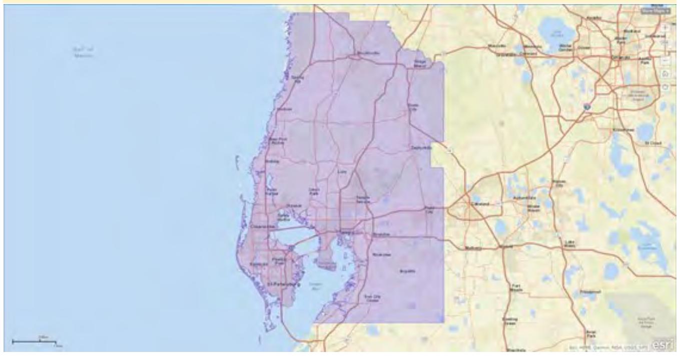


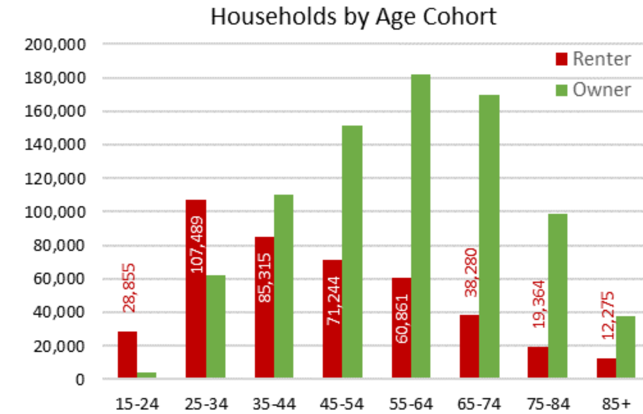


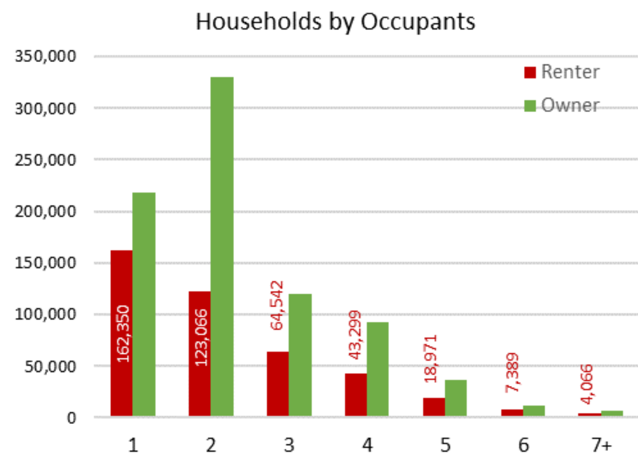


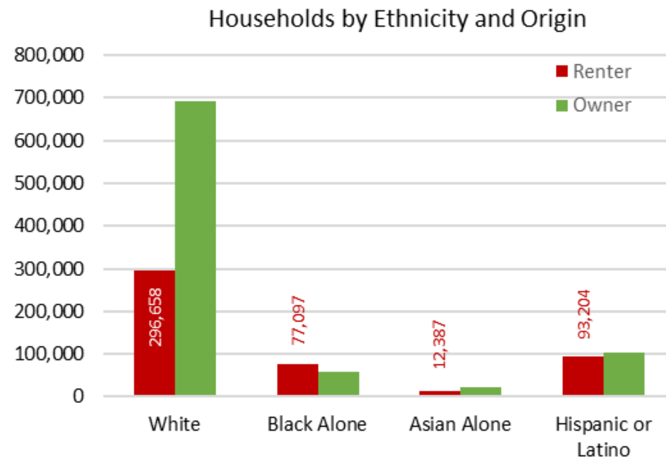


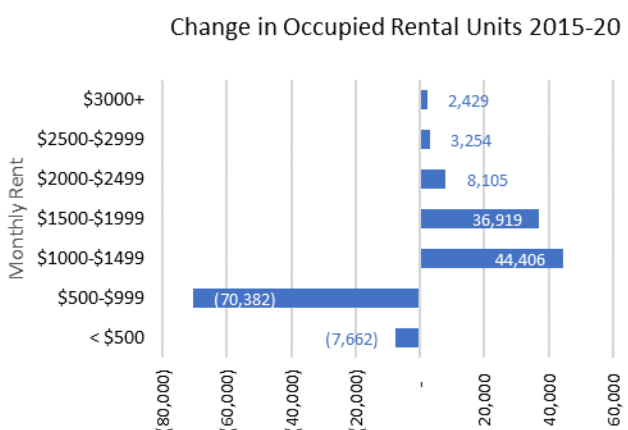
TAMPA page 2

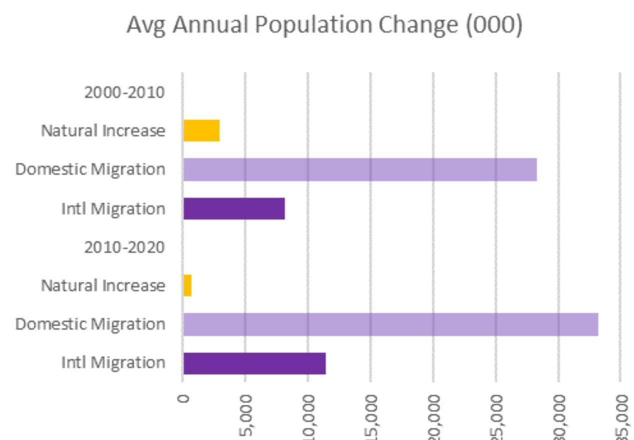












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METRO MULTIFAMILY DEMAND OVERVIEW

VIRGINIA BEACH

14,982 Apartment units needed by 2035

Definitions on following page

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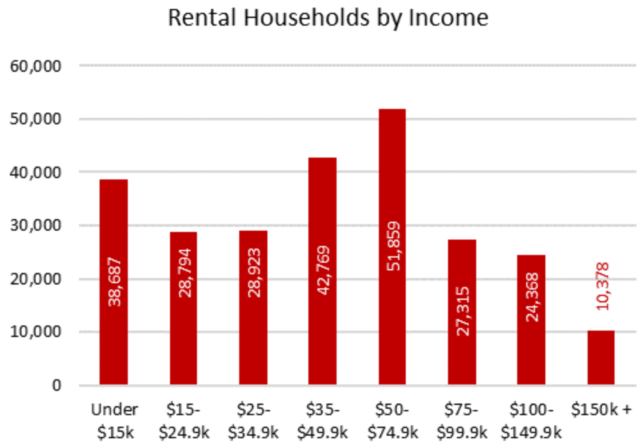
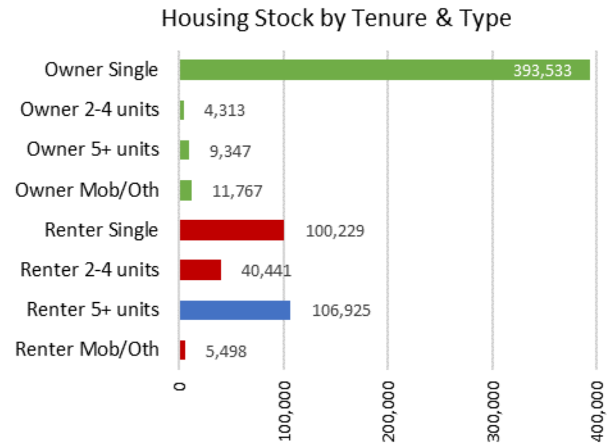
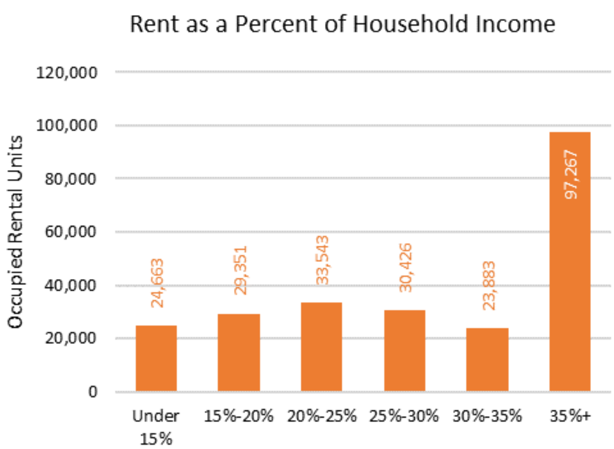
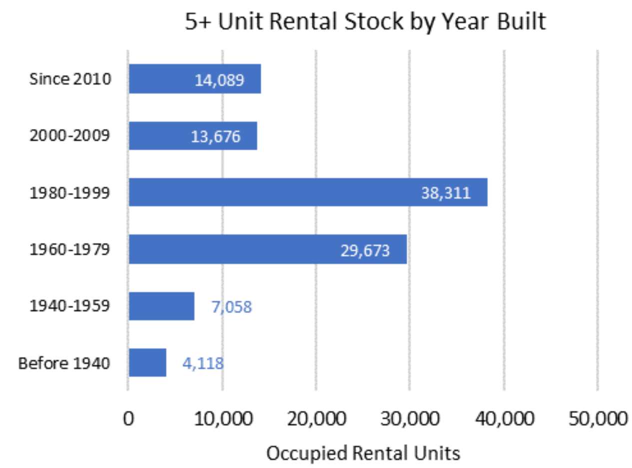
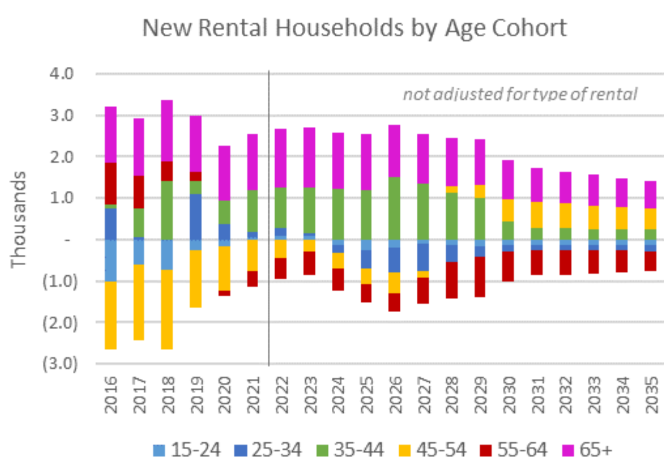
39	59	14	36%

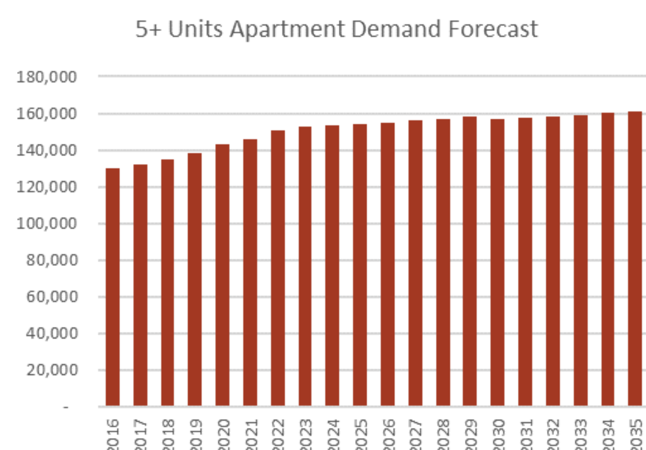








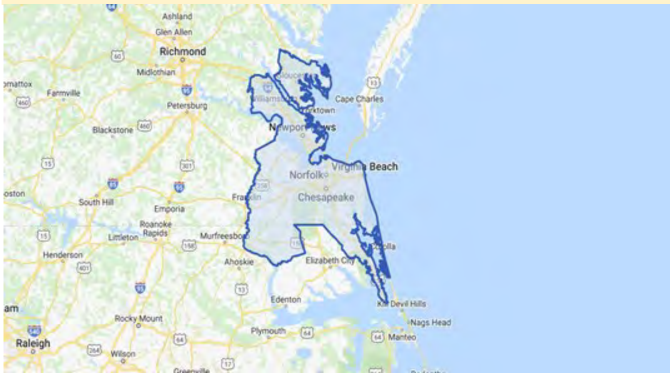


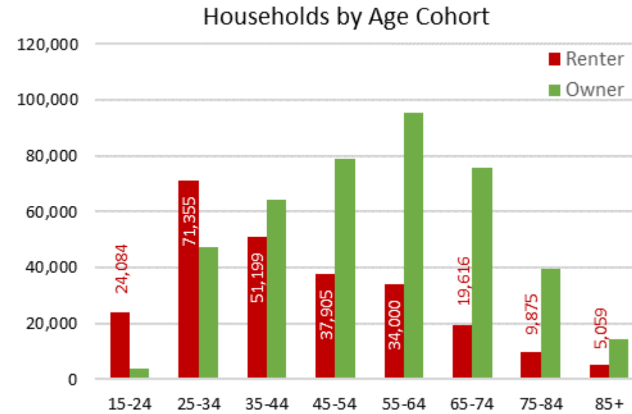


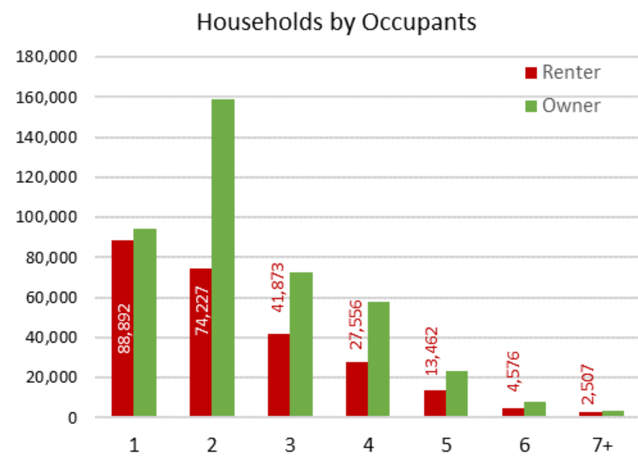
NATIONAL MULTIFAMILY HOUSING COUNCIL

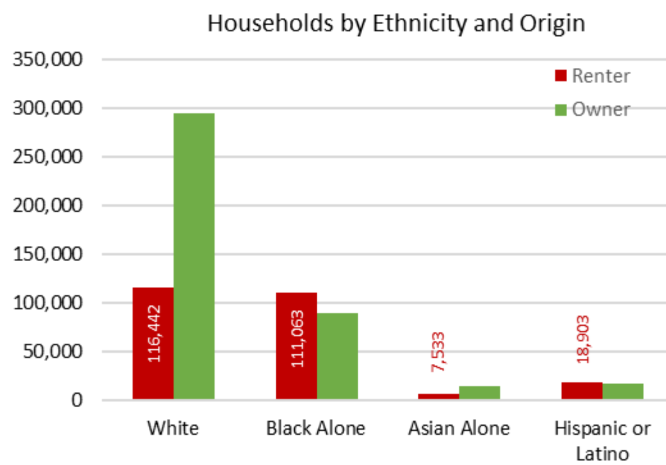
NATIONAL APARTMENT ASSOCIATION

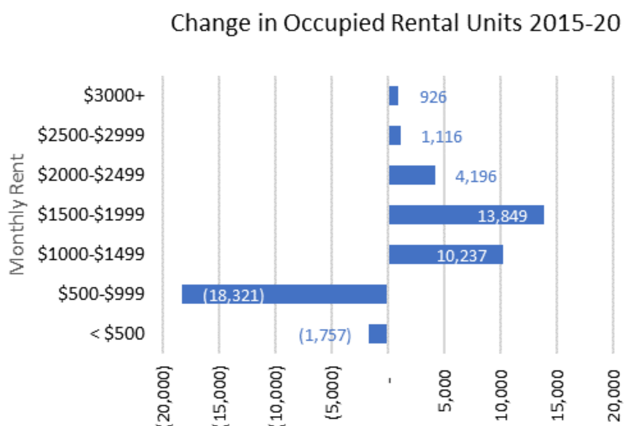
VIRGINIA BEACH page 2

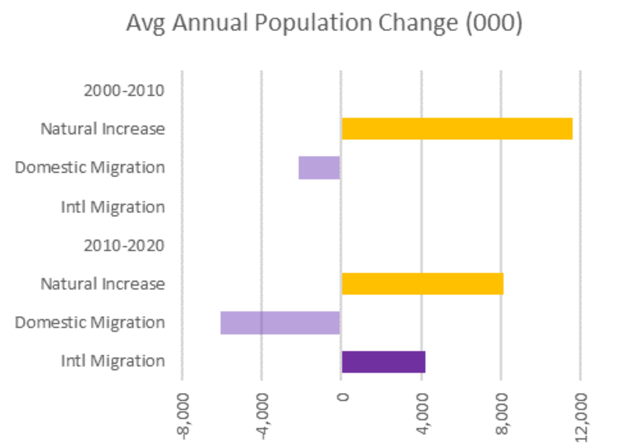












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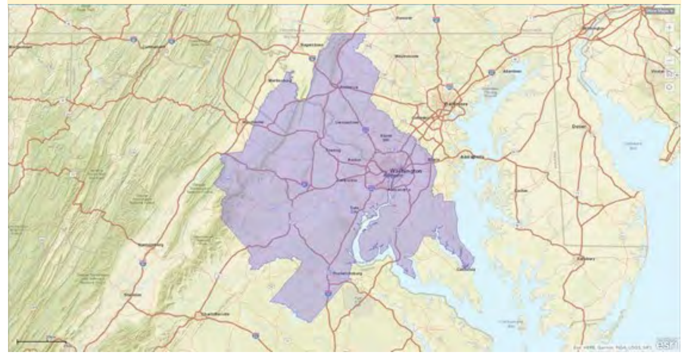
METRO MULTIFAMILY DEMAND OVERVIEW

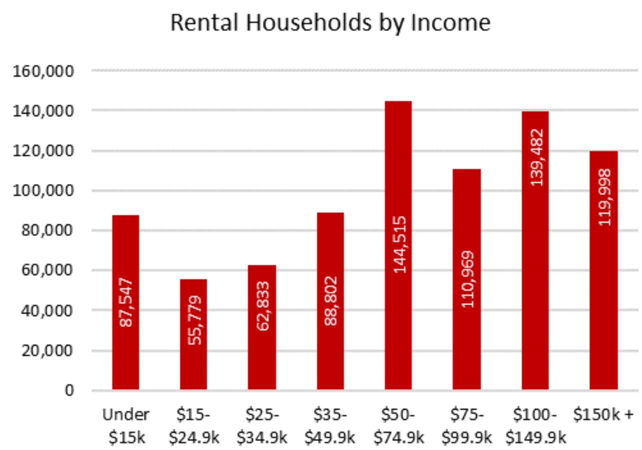
WASHINGTON, D.C.

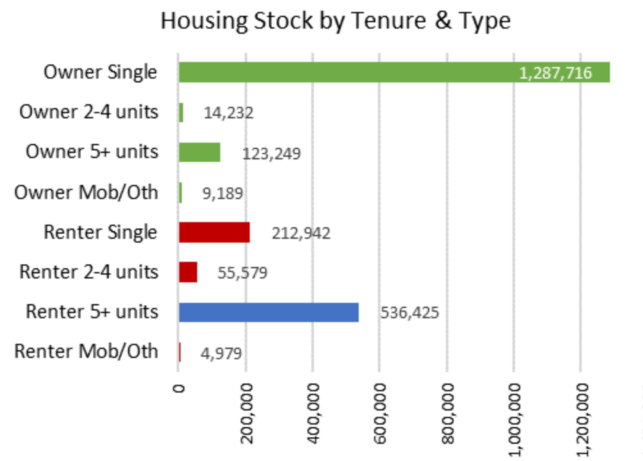


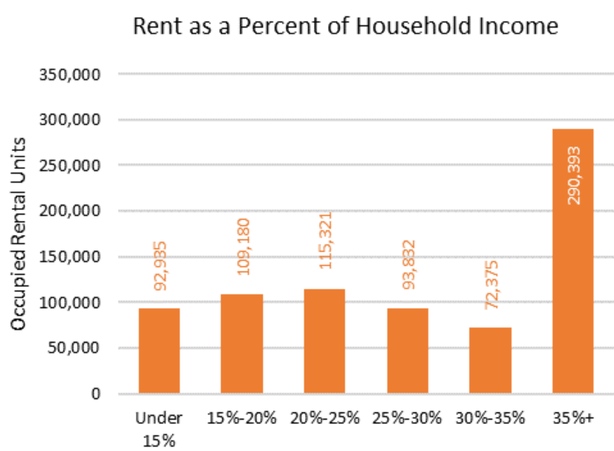
95,996 Apartment units needed by 2035

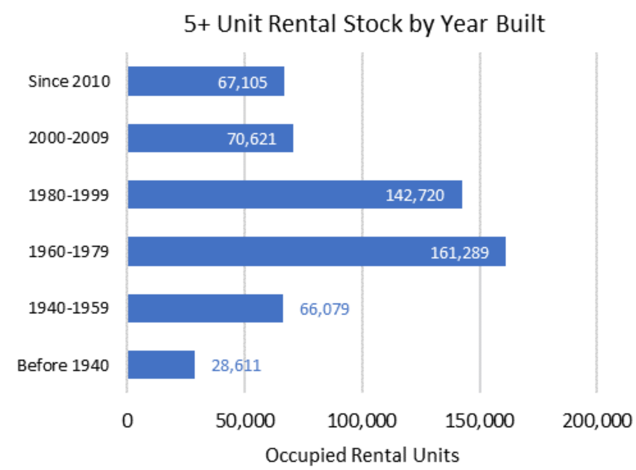
Definitions on following page

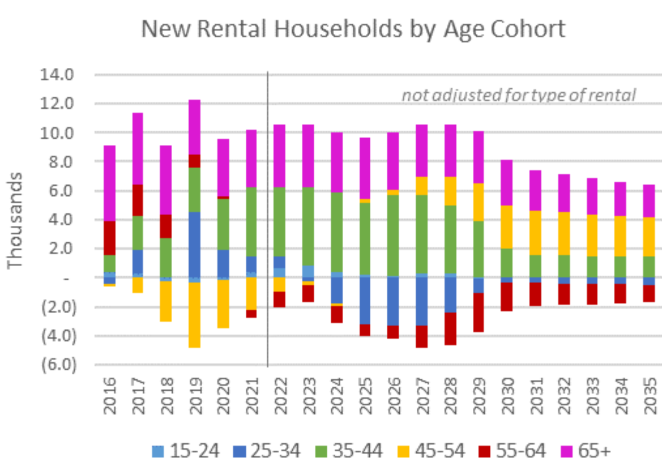
DEMAND RANKING	AFFORD-ABILITY	MF SUPPLY / RESTRICTIONS	STAR* SHARE
15	62	24	19%

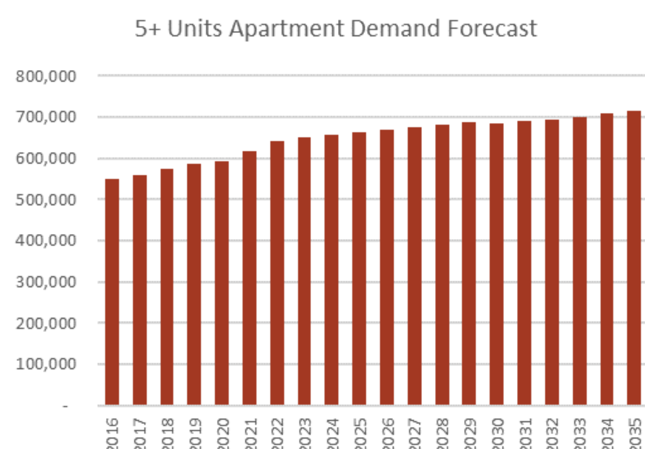




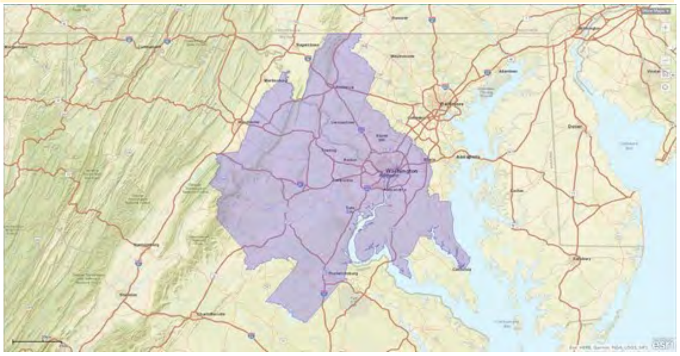


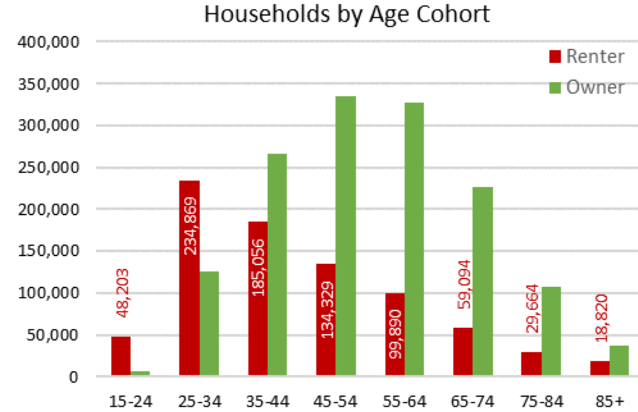


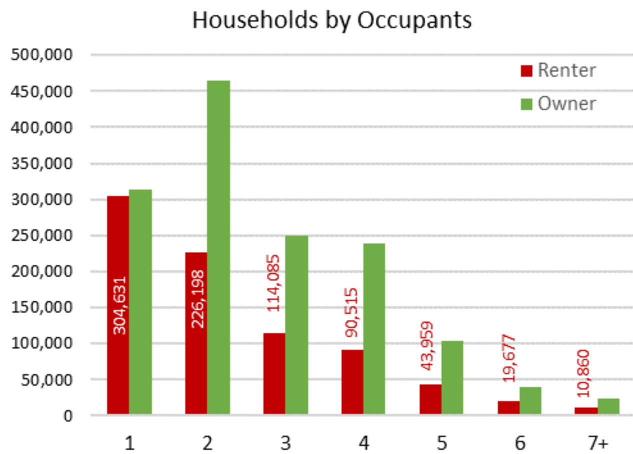


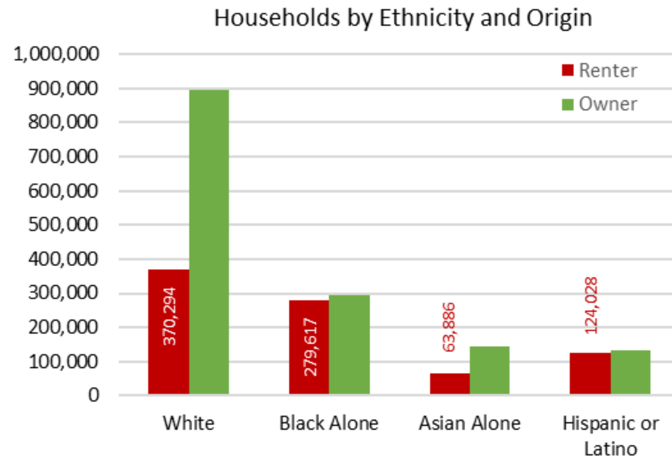


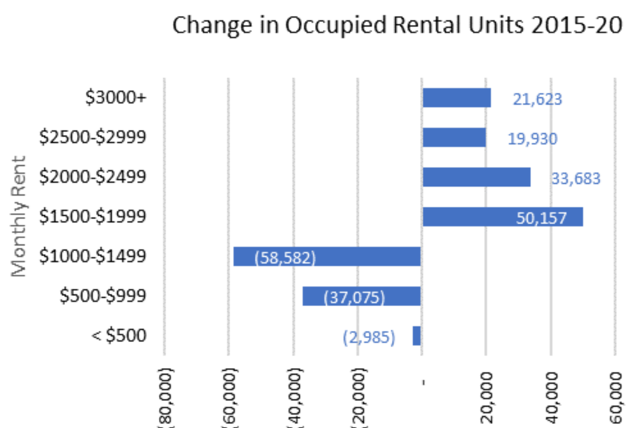
WASHINGTON, D.C. page 2

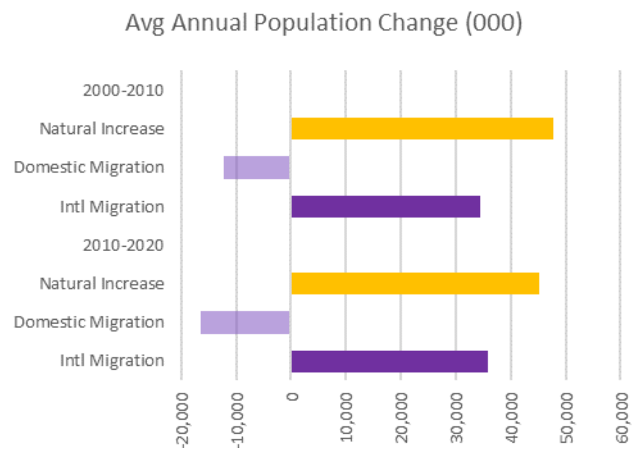












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NATIONAL MULTIFAMILY HOUSING COUNCIL
NATIONAL APARTMENT ASSOCIATION
HAS
University of San Diego School of Business
E10A Capital Properties ESG

APPENDIX 4: METHODOLOGY

Metro Market Demand Methodology

The metro market demand models begin with the forecast number of households from Moody's base-case forecast. Because the national model was based on an HAS derived household forecast, the metro market household forecasts are adjusted by the difference in the HAS and Moody's forecast each year. However, the HAS national forecast is almost identical to the Moody's forecast as the resulting HAS national household forecast is.05% lower than the Moody's by 2035. Metro markets are adjusted for the difference between the two national forecasts each year although this is a very minimal adjustment.

Like the national model, the metro area model defines the renter households by adjusting the number of households by one minus the homeownership rate for each year and subtracts out the homeless rate. The metro market homeownership rate is specified by the equivalent metropolitan area homeownership rate as provided by the U.S. Census Bureau. The model uses the statewide homeless rate as similar data was not available at the metropolitan area level. While homeless rates surely vary by metropolitan area, this homeless adjustment is quite small, with a median rate of 0.16% of population. Actual data were collected for 2009, 2011 to 2015 and 2020. The forecast did not assume a change in the homeless rate from the 2020 figure.

The U.S. Census Bureau provides a quarterly estimate of homeownership rates for select metropolitan areas. The survey's methodology can result in wide swings in estimates of homeownership rates from quarter to quarter. Thus, an annual average of quarterly homeownership rates was used to observe the historic trend in homeownership for each metro area. Forecast metro market homeownership rates were estimated based on demographic trends.

To estimate historical renter households, the rentership rate for each age cohort for each metro market was multiplied by the households for that age cohort. Renter households were derived by dividing the population growth by age cohort by the headship rate by age cohort. For forecast renter households, for each age cohort, the incremental annual population growth was divided by an estimate of population per household (headship rate) for that age cohort to get incremental households for that year. Households were then split into international in-migration households and domestic growth households by multiplying the incremental household by the average percent of growth from 2010 to 2020 created by international in-migration. International rental households were then estimated by multiplying the rentership rate for international in-migrants for that age cohort. Similarly, new domestic rental households were estimated by multiplying the rentership rate for each age cohort by the new domestic households for that age cohort. Total renter households for each year equal the previous year total renter households plus the incremental total international in-migrating renter households by age cohort plus the incremental total domestic households by age cohort for that year.

The forecast homeownership rate for each year is estimated by dividing the rental households by the total households for that year. Homeownership rates from the metro model were slightly higher when aggregated than trends suggested by the national model. Thus, annual homeownership rates were adjusted downwards by 0.09% per year so that the metro area homeownership rate trends in aggregate were more like the national trend. Actual homeownership rates were used from 2005 to 2021. The 2022 homeownership rate was estimated by multiplying the 2021 actual rate by the modeled change from 2021 to 2022, and so on.

Forecast rental households were then adjusted for three factors to forecast demand for the institutional rental market, or those properties with 5 or more units. First, an estimate of the amount of total rental stock attributed to properties with 5 or more units (5+) was estimated by reviewing several sources of data, including the U.S. Census and CoStar®. This factor ranged from 26% (West Virginia) to 74% (D.C.) with a median of 42%. Second, some markets have significantly older multifamily stock than other markets, indicating that those markets will need more new stock to offset obsolete aging stock. However, it is difficult to tell how much of the stock has already been updated in each market. Thus, we made only a slight adjustment upward for markets with older stock. The amount of stock built after 1980 was calculated for each market and ranged from 23% (New York) to 76% (North Carolina) with a median of 57%. An aging factor was developed by dividing the U.S. average percent of the market built after 1980 (45%) by the metro area average built after 1980. The national model assumed 0.5% of stock would need to be replaced each year due to obsolescence. For each metro market, this 0.5% was multiplied by the aging factor; i.e., markets with stock that is older than the U.S. are assumed to need slightly more stock per year to replace obsolete buildings. The model also assumes that enough demand will be needed in each market to keep vacancy at a similar rate as the long-term average for that market. As the total market inventory increases in size, the current vacant units will become a smaller amount of the total, and thus vacancy would decline, excluding the impact of actual new supply. Thus, demand was also adjusted for a long-term vacancy factor. The long-term average vacancy from 2002 to 2021 was used as the long-term vacancy factor. The model assumes that enough units will need to be produced each year to maintain vacancy rates at a similar level, and thus the demand for each year is increased by this vacancy factor.

Actual occupied units were used for 2007 to 2021 based on HAS estimates derived from multiple sources. The forecast applied the

2021-2022 growth rate from the modeled figures from 2021 to 2022 to the 2021 actual estimate to get the 2022 estimate and so on.

State Demand Methodology

The methodology to forecast multifamily demand for the states followed a similar methodology as the metropolitan areas. Demand for the states was further adjusted so that the state forecasts add up to the national forecast both historically and on a forecast basis. This was done by prorating the proportion of demand for each state as compared to the total forecast for all the states to the U.S. forecast demand.

Metro Market Overviews Methodology

5+ Unit Apartment Demand Forecast is developed by the Hoyt Advisory Services (HAS) team and represents the number of rental apartment units in buildings with five or more units (defined as multifamily units throughout) and those multifamily units that will be needed to meet demand going forward.

Historical figures for the years 2007 to 2021 are based on estimates of existing multifamily 5+ total inventory as developed by the HAS team from several sources including the U.S. Census and CoStar®.

Forecasts are based on demographic, economic and capital market trends and consider aging and domestic and international immigration trends specific to that metropolitan area as well as housing affordability and ownership trends, among other factors. Actual units could be lower than this level in areas with geographic and political restrictions. In this case, upward pressure could develop on rental rates. Actual units could also be larger than forecast demand in markets where construction exceeds demand.

5+ Unit Rental Stock by Year Built tracks the number of units in rented buildings with five or more units by year built. Note that this graph is specific to only the 5+ unit sector of the rental market and thus will have lower numbers than other graphs such as the adjacent “Rent as a Percent of Household Income” graph which includes all sizes of rental units. The 5+ Unit share of the total rental stock can be seen in the graph above it titled “Housing Stock by Tenure and Type.”

Affordability is the percentage of renters paying less than 35% or more of gross income on rent as provided by the U.S. Census American Community Survey, 2020 five-year estimates. Higher numbers indicate that rental housing is more affordable and vice-versa. Of the metropolitan areas in this report, this index ranges from 47 (Miami) to 66 (Columbus) with an average of 60.

Demand Ranking is the relative rank among the 50 multifamily metro markets in this study of the HAS forecasted multifamily housing demand for rental stock with 5 or more units based two growth factors: 1) the average percentage growth in demand from 2021 to

2035 and 2) the absolute growth in demand from 2021 to 2035. The rankings range from 1 (Austin) to 50 (Cleveland). Note that percentage growth rankings tend to favor smaller metropolitan markets while absolute growth rankings tend to favor larger metropolitan markets. Thus, the index ranks based on a blend of both percentage growth and absolute number of new renters. See the tables in Appendix 2 for separate rankings by percentage growth and total growth.

MF Supply Restrictions (Multifamily Supply Restrictions Index) is an HAS composite of methodology using the Wharton Residential Land Use Restrictions Index and the Lacroix developable land index. This index represents the difficulty of creating new supply which may vary from the amount of new supply delivered as high growth metro markets may also experience higher supply growth despite the difficulty of approving new projects. The result of higher supply restrictions may be longer approval and development timelines adding to the development risks and higher construction costs which lead to less affordable rental markets. Of the markets in this study, this index ranges from 19.5 (Honolulu) to -6.0 (New Orleans) with an average of 2.0. Higher indices represent markets with more stringent regulatory environments in regard to new housing supply.

The Wharton Residential Land Use Restrictions Index is based on data and a nationwide survey of local land use regulations including process and approvals, rules, and outcomes. The index includes eleven sub-indices measuring the stringency of the local regulatory environment, including local political pressure, local project approval, local assembly, supply restrictions, density restrictions, open space, exactions, and approval delay. The Lacroix index was developed by Sumner La Croix, Ph.D. at the Economic Research Organization at the University of Hawaii and measures the developable area within a 50-kilometer radius from a central city. Factors such as oceans, wetlands, lakes, rivers, and other bodies of water as well as areas with a slope above 15% are defined as undevelopable. The Multifamily Supply Restrictions Index is the sum of each sub index for the metro market divided by the average for that sub index for all the metro markets in this study.

STAR Share is that share of metro rental housing stock with five or more units HAS qualified as Second-Tier Affordable Rentals or those non-institutional sites of typically lower unit count, lower quality and greater age, a critical and ongoing multifamily supply component. Using CoStar® ratings of 1 to 5 for sites of five units or more, STAR units are those with lower CoStar® ratings of 1 to 2. Costar® ratings are based on several criteria including building structure and systems, amenities, site and landscaping, and certifications such as LEED and Green Globes. Properties rated 2 have functional architectural design and systems, below average finishes and one to no additional amenities. They have minimal to no landscaping and exterior spaces, and are unlikely to hold green or energy efficient certifications. Properties rated 1 may require significant renovation and are possibly functionally obsolete. STAR facilities are likely to serve lower income populations which are a significant part of the population base in some metro areas, and may represent, in some areas, potential investment targets for upgrading to higher quality properties. The STAR share ranges from 64% (Los Angeles) to 12% (Austin) with a metro market average of 31% for markets included in this study.

Sources

Demographic data was drawn from several U.S. Census Bureau surveys, including the 2020 American Community Survey (ACS) which was the most recent ACS survey at the time of this report. Economic and demographic trend and forecast data was drawn from Moody's Analytics® supplemented by other sources including U.S. Census Bureau, Federal Reserve and other forecast surveys such as the Federal Reserve Bank of Philadelphia Survey of Professional Forecasters. Property market data was derived from the U.S. Census Bureau and CoStar® Realty Information.

This report was prepared for the National Multifamily Housing Council and the National Apartment Association by Hoyt Advisory Services and Eigen10 Advisors, LLC.

Hoyt Advisory Services (HAS) is a subsidiary of the Homer Hoyt Institute (HHI), an independent, non-profit research and educational foundation established in 1967 to improve the quality of public and private real estate decisions by expanding and disseminating the real estate body of knowledge, stimulating innovation in the discipline of real estate and land economics, building bridges among academia, industry, and government, and developing innovative approaches to the solution of real estate problems.

Research supported by HAS must meet the highest standards of scholarship, and it must further the improvement of decision making in the real estate industry. That is, it must combine rigor with relevance. HAS is able to engage PhDs from leading universities along with practitioners with proven, appropriate real estate expertise for the project, in this case partnering with Eigen10 Advisors, LLC.

Eigen10 Advisors, LLC provides real estate consulting services in the areas of investment analysis, portfolio structuring, capital formation strategies, market analysis, econometric modeling, and forecasting, reporting and ESG services.

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Reasonable efforts have been made to ensure that the data contained in this study reflect accurate and reliable information and are based on information that to our knowledge was current as of the date of this report. This study is based on estimates, assumptions, and other information developed from independent research efforts, models, and general industry knowledge. No responsibility is assumed for inaccuracies in reporting by any data source used in preparing or presenting this study. This report represents a view of reasonable expectations as of the time the report was written, but such information, estimates, or opinions are not offered as predictions or assurances that particular results or events will occur. Actual results may vary from those described in this report, and the variations may be material. Therefore, no warranty or representation is made that any of the data, projected forecasts or results contained in this study will be achieved.