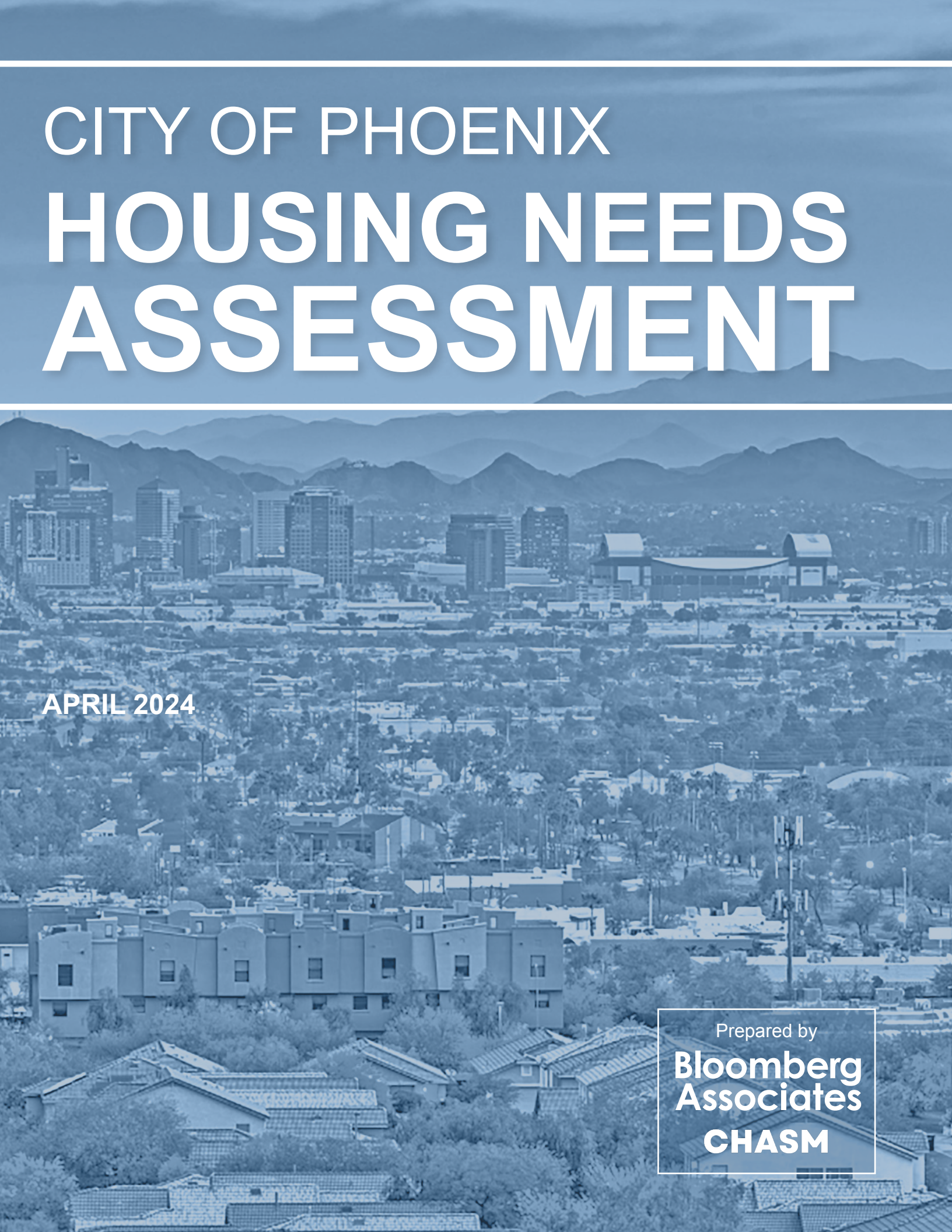
CITY OF PHOENIX

HOUSING NEEDS ASSESSMENT



APRIL 2024

Prepared by
Bloomberg Associates
CHASM

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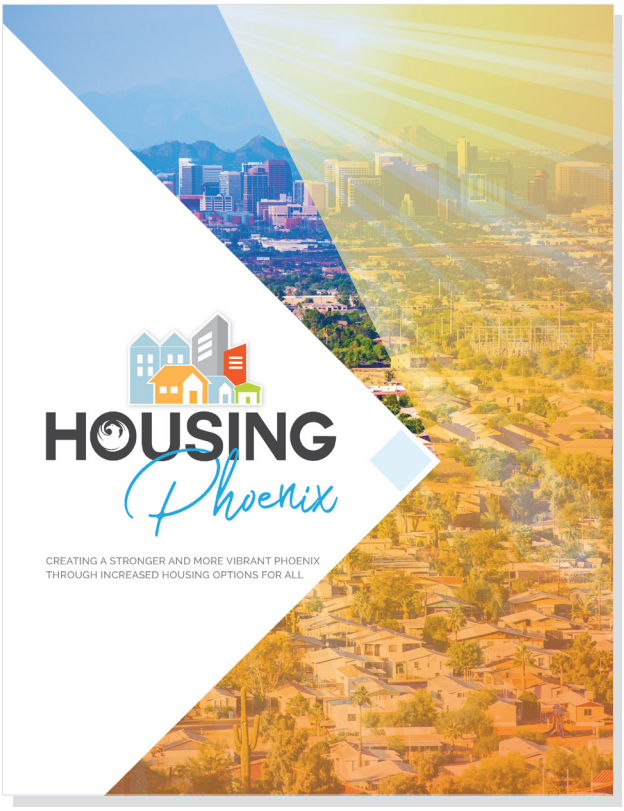
Executive Summary

Background

Facing the pressures that come with extraordinary growth and economic success, the Phoenix City Council approved the **Housing Phoenix Plan** in 2020, which established an ambitious goal to create or preserve 50,000 units by 2030. Building on that report with deeper analyses and new data, this Housing Needs Assessment provides a current evaluation of the City of Phoenix's progress and its future needs. Prepared by Bloomberg Associates and Chasm in partnership with the City, this work aims to support the City of Phoenix as it tackles the urgent challenge of providing high-quality, affordable housing for a growing population.



For more information, please visit
https://www.phoenix.gov/housing/plan

The objectives of this analysis are to:

- understand recent demographic and housing trends in Phoenix as compared to other local jurisdictions and national peer cities;
- explore the effects of recent trends on the housing market and variances across areas within Phoenix;
- calculate the city's affordable rental housing gap relative to household income levels and assess ownership affordability challenges;
- estimate a range of future housing needs using the City's household and housing unit growth projections through 2050; and
- provide a basis for additional housing analyses and policy recommendations.

The assessment is organized in two parts. The first section provides an updated view of Phoenix's ***current*** housing landscape, highlighting key trends in the city's housing market and household growth. The gap between the number of households and the supply of available housing affordable at various income levels is also highlighted. The second section builds on the trends identified in the first section to anticipate Phoenix's likely ***future*** housing needs. Three different growth scenarios were used for this analysis, with projected housing needs analyzed at the city- and urban village area-levels.

Phoenix is well-known for its growth and dynamism. Yet, this growth must be understood – and planned for – to ensure that all current and future Phoenicians can continue to call the city home. This Housing Needs Assessment is another step towards that goal, providing an updated view of the city's housing challenges and opportunities as the City of Phoenix continues to create a stronger and more vibrant city through increased housing options at all income levels and family sizes.

Key Findings

Recent Population and Housing Trends

- From 2000 to 2020, Phoenix experienced significant growth. Yet as population gains accelerated (from 9% growth in 2000–2010 to 11% growth in 2010–2020), housing production slowed (from 19% growth in 2000–2010 to 7% growth in 2010–2020) as the number of vacant units declined.

- 59% of the city's housing units are owner-occupied. Single-family homes represent 67% of Phoenix's housing supply, both owner- and renter-occupied.

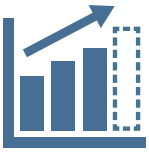
- An ample supply of naturally occurring affordable housing (NOAH) contributed to the city's relative affordability in the 2010s.[i] However, NOAH is vulnerable to shifting market forces and the supply has diminished as demand accelerated.
- The COVID-19 pandemic exacerbated pressures on the housing market. As Phoenix and the Maricopa County area became a hotspot for migration, home sales prices grew by 56% and rents grew by 47% from 2019 to 2022, significantly outpacing the U.S. average.

The Affordable Housing Gap

- As of 2021, there was a gap of approximately 44,000 units between what extremely low- and very low-income Phoenix households (defined as earning below 50% Area Median Income[ii]) can afford to pay and units renting at prices affordable to those incomes.[iii]

- With all households competing for the most affordable units, some higher-income households are occupying units that would otherwise be affordable to lower-income households. Consequently, there is even greater pressure on the market serving the most vulnerable Phoenicians. When considering the units that are not only affordable but also available, the gap effectively increases from 44,000 to 59,000 units.
- Owners are similarly pressured by housing costs, with the ability to purchase a home in Phoenix out of reach for most residents today. The most affordable areas in the city are also the areas with higher shares of low-income and non-White populations.

Future Needs



- Looking forward, the City of Phoenix projects it will add 213,000 households by 2050, representing a 1.0% compound annual growth rate (CAGR), with much of the near-term growth concentrating in a few select urban village areas. Multifamily housing is projected to grow at a faster pace than single-family housing (1.4% and 0.7% CAGR, respectively).
- If income distribution in the future were to remain consistent with incomes today, that growth could result in an additional 64,000 cost-burdened households earning below 50% AMI. If income distributions were to follow the trajectory of the past ten years, nearly all Phoenix households at those lowest income levels will be priced out.

- Areas that have experienced more dramatic losses in the share of extremely low- and very low-income households over the last decade reflect areas with higher shares of non-White populations, a trend that could continue over the next decade. The implied intersection between issues of housing affordability and racial equity warrants deeper analysis in the future.

i. Please refer to pages 9 and A13 for more information about NOAH.
ii. Please refer to page 12 for AMI Levels in the Phoenix metropolitan area.
iii. Please refer to page 14 for how housing affordability is defined in this report.

Recent Trends

City of Phoenix

1.61 Million
Population, 2020

630,750
Housing Units, 2020

5th largest city
in the U.S. by Population, 2020

36% of Maricopa County Population, 2020

22% of Arizona Population, 2020

+162k people (+11%)
Population Growth 2010–2020

3rd largest population growth
among U.S. cities, 2020–2022

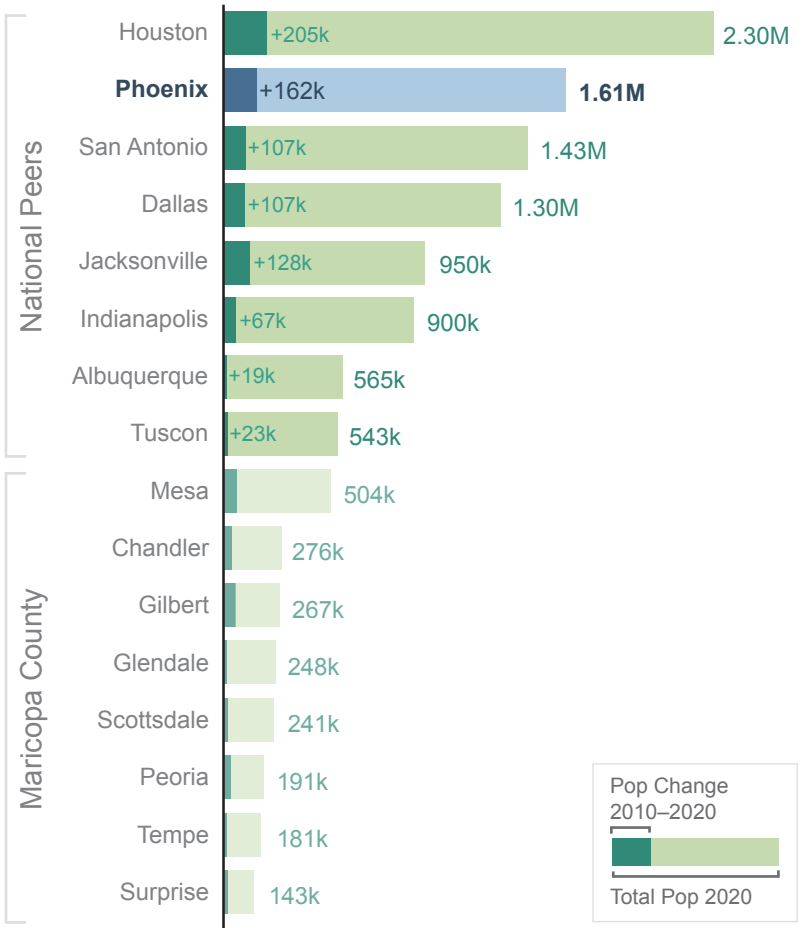
From 2010 to 2020, Phoenix gained more residents than other cities and towns in Maricopa County and most of its national peers.

Today Phoenix is home to more than 1.6 million people living in nearly 631,000 homes, making it the fifth largest city in the United States. Phoenix added more than 162,000 new residents from 2010 to 2020, representing an increase of 11%. Phoenix's population grew faster than its national peers, and its total population gain through 2020 was second only to Houston, Texas.

Phoenix added more than 162,000 new residents since 2010, equivalent to nearly the entire population of the city of Tempe.

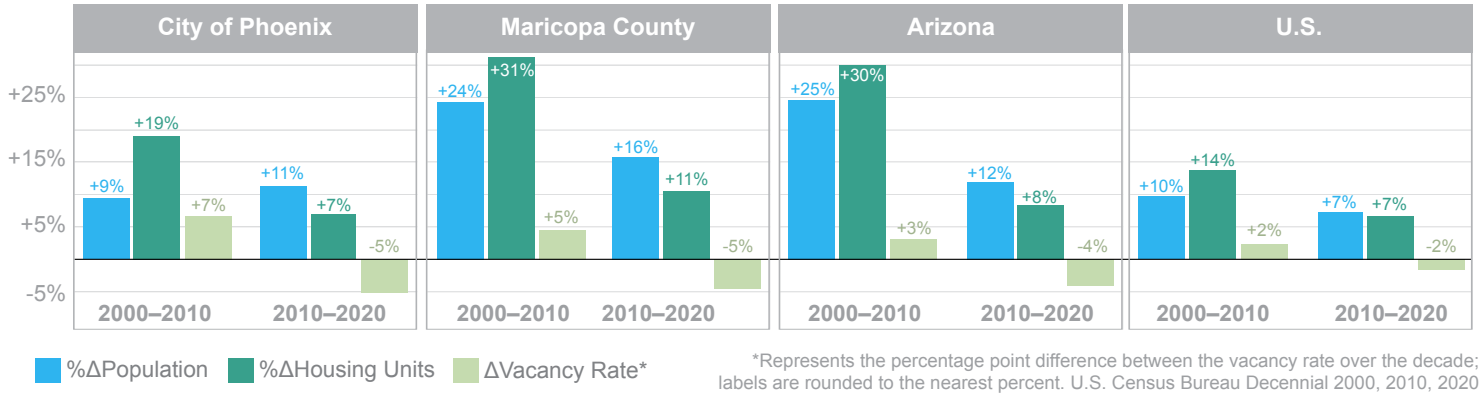
The city's population grew more in total than any other Maricopa County town or city between 2010 and 2020. However, its growth rate – represented as a percentage gain – was slower than some of Phoenix's Maricopa neighbors. Maricopa County gained just over 600,000 residents from 2010 to 2020, adding population at more than twice the rate of the national average. Phoenix accounted for 27% of the county's population growth since 2010 despite housing 36% of the county's population. Therefore, the city housed a smaller share of Maricopa County's growth than it had historically.

Total Population, 2020



U.S. Census Bureau Decennial Census 2010, 2020 Redistricting Files

% Population Change, % Housing Growth, and Change in the Vacancy Rate, 2000–2010 vs. 2010–2020



*Represents the percentage point difference between the vacancy rate over the decade; labels are rounded to the nearest percent. U.S. Census Bureau Decennial 2000, 2010, 2020

Higher rates of housing growth and vacancy from 2000 to 2010 helped Phoenix accommodate accelerated population growth in the following decade.

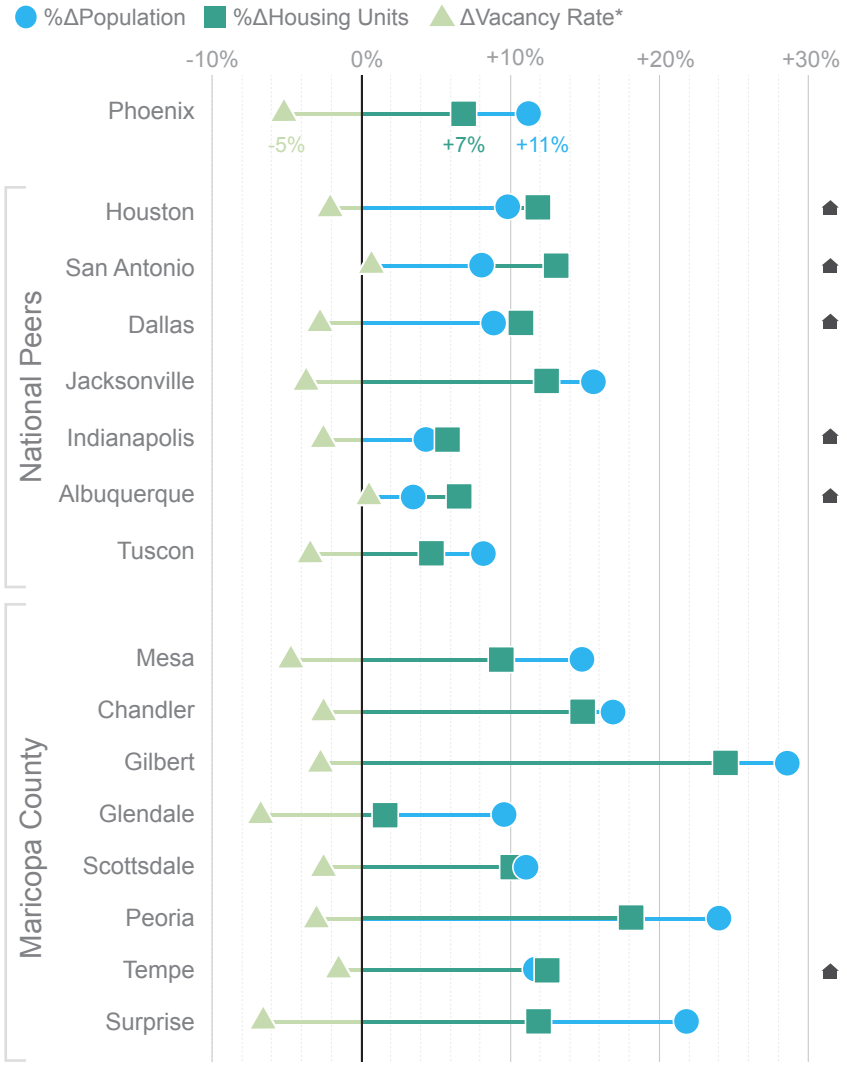
From 2000 to 2010, Phoenix added housing at double the rate of its population growth, +19% versus +9%, respectively. The city also experienced an increase in the rate of vacant housing, which rose from 6% in 2000 to 13% in 2010, in the aftermath of the 2007/08 housing market crash. This increased vacancy, which included newly constructed but unoccupied units, was higher than the Arizona and national average over the same period.

From 2010 to 2020, Phoenix diverged from its national peers, which mostly added housing at faster rates than population.

From 2010 to 2020, Phoenix's population grew at a faster rate than its housing supply, +11% versus +7%, respectively. The vacancy rate decreased, presumably as new residents occupied both the available supply and the newly added supply during the previous decade. The pattern of change over those two decades, with faster *housing* growth in the earlier decade, followed by faster *population* growth in the later decade, mirrors Maricopa County and the state.

However, Phoenix, like the rest of Arizona, differed its national peers — like Houston, Dallas, and Albuquerque — where housing supply grew at a faster rate than population, and the U.S. where population and housing grew at roughly the same rate.

% Population, % Housing, and Vacancy Rate Change* 2010–2020



Denotes where % housing growth outpaced % population growth

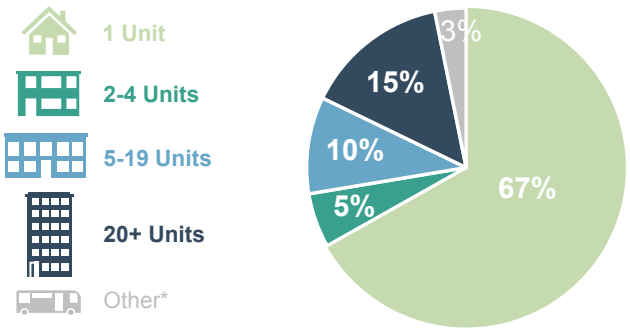
*Represents the percentage point difference between the vacancy rate from the prior year to the current year. U.S. Census Bureau Decennial 2000, 2010, 2020

Most housing units in Phoenix are owner-occupied, single-family homes. Rental housing, notably in multifamily buildings, is concentrated along major transit corridors and in proximity to employment centers.

Like many "sunbelt" cities built primarily after World War II, Phoenix's housing stock is dominated by single-family homes, which represent 67% of the total housing supply today. By contrast, larger multifamily buildings, with 20 units or more, represent 15% of units, and other types of housing, including mobile homes, represent 3% of units.

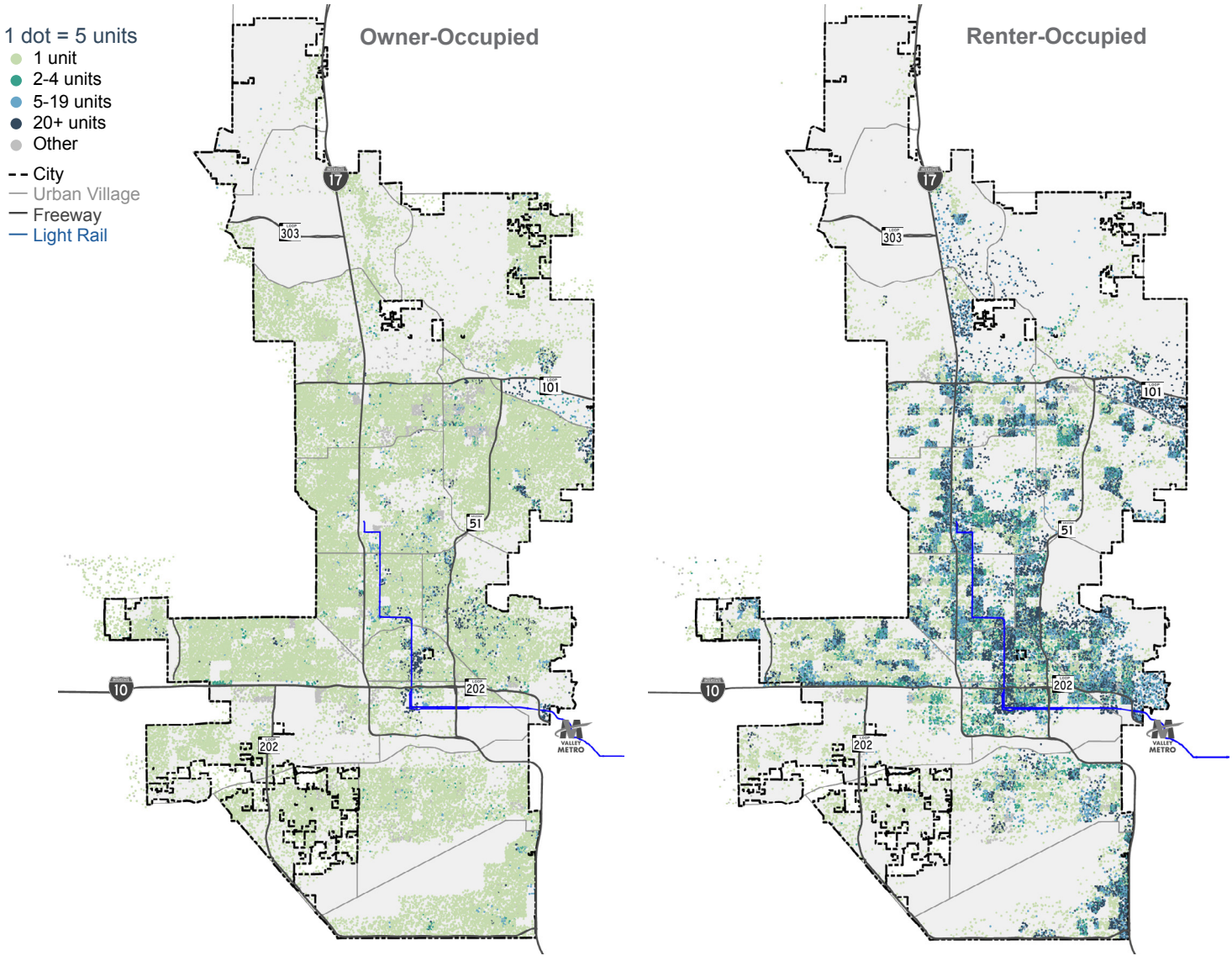
Single-family homes are spread throughout the city, but multifamily units are concentrated in select geographies, notably along the light rail and freeway corridors, and in downtown Phoenix.

Housing Units by Building Size, 2021



U.S. Census Bureau American Community Survey (ACS) 1-Year Estimates 2021. Other includes mobile homes, RVs, and other housing types.

Housing Units by Building Size and Tenure for Phoenix Census Tracts, 2021



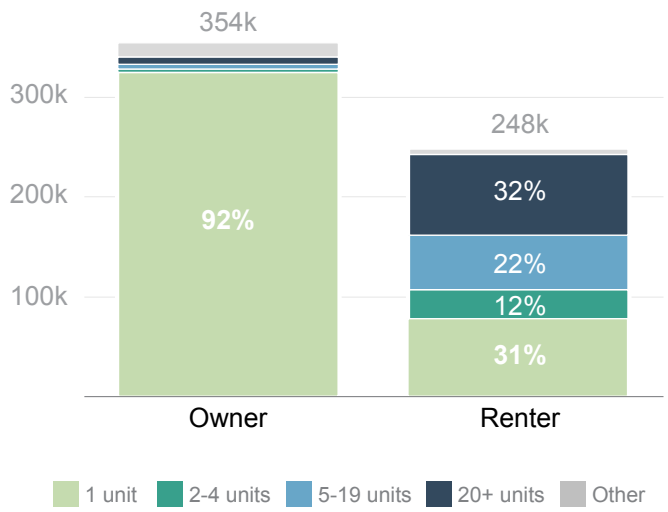
U.S. Census Bureau ACS 5-Year Estimates 2017-2021. Select Census Tracts extend beyond the city boundary; Arizona freeways 101, 202, 303 solely represent portions falling within city boundary.

Rental units are spread across a mix of building types, including single-family and multifamily buildings of various sizes.

The vast majority (92%) of households that own their own home in Phoenix live in single-family homes, which includes both attached and detached buildings. Even many households that rent live in single-family homes, representing 31% of Phoenix renter households.

Renter-occupied housing units are predominantly in multifamily buildings. The largest share is in buildings with 20 or more units, and the smallest share is in small multifamily buildings with 2 to 4 units. By contrast, just 5% of owners live in multifamily properties of any size.

Housing Units by Building Size and Tenure, 2021

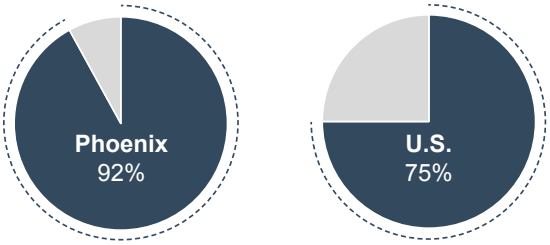


Other includes mobile homes, RVs, and other housing types.
U.S. Census Bureau ACS 1-Year Estimates 2021

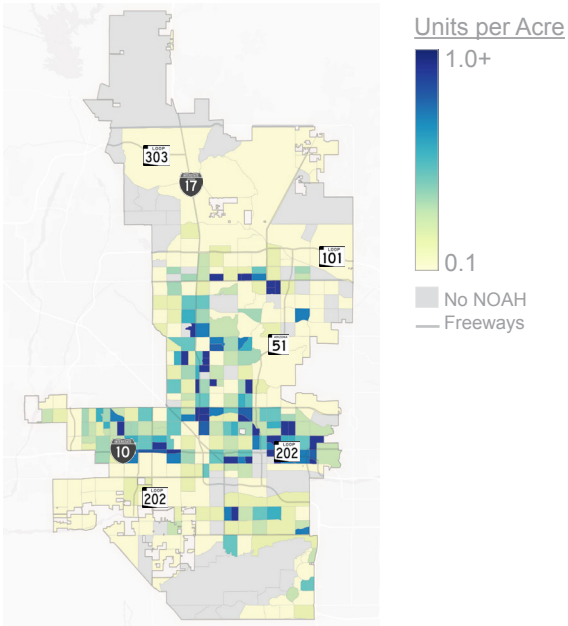
Though the city has benefited from a relatively ample supply of naturally occurring affordable housing, those units represent a vulnerable share of the overall rental supply.

Naturally occurring affordable housing (NOAH) refers to privately-owned housing that is affordable to low-income households making under 80% AMI without requiring additional subsidy.[1,2] NOAH represents a larger share of affordable rental units in Phoenix than the national average. In 2019, about 92% of rental units in Phoenix that were affordable to households making less than 80% AMI were NOAH.[3] However, NOAH stock is highly vulnerable to market shifts, because (unlike subsidized housing) it is not subject to regulatory agreements that control rent increases for an established term or duration of affordability.

NOAH as a Share of Affordable Rental Housing, 2019



Density of NOAH Units (by Census Tract), 2019



E. Dekker (2022). Hot Market?! Assessing the Stability of Naturally Occurring Affordable Housing via Extreme Heat and Development Pressure

During the COVID-19 pandemic, demand for housing grew, driving price increases for both home sales and rental units as inventory tightened.

The COVID-19 pandemic exacerbated existing pressures on the Phoenix housing market, already constrained by a decade of housing production which was outpaced by population growth.

From 2020 to 2022, capturing the peak period of the pandemic, Phoenix gained more than 32,000 people, the third-largest population growth among all U.S. cities.

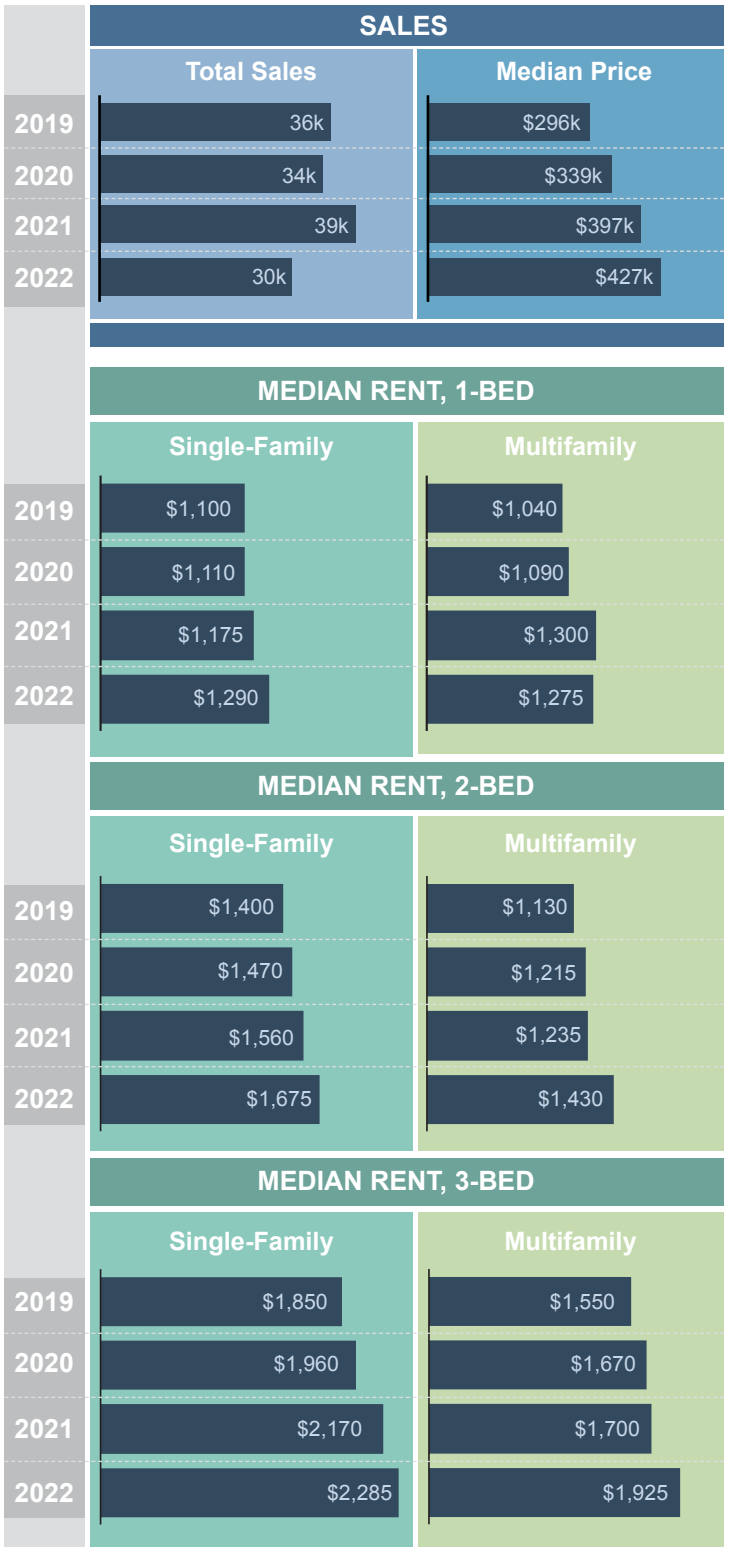
As many cities lost population from 2020 to 2021 at the outset of the COVID-19 pandemic, Phoenix's population grew by 0.8%. That pattern continued the following year, and the city's population grew by 1.2% from 2021 to 2022. In total, the city gained slightly over 32,000 residents from 2020 to 2022, falling slightly behind San Antonio and Fort Worth (which gained 33,690 and 33,150 residents, respectively).[4] Migration fueled this population growth, with **Maricopa County experiencing the highest net migration inflows, both domestic and international, of any U.S. county in each year since 2020.**[5]

Increased demand, coupled with constrained supply and very low interest rates, placed additional strain on an already pressed housing market.

According to the Federal Reserve, sales prices in Arizona grew by 45% from the first quarter (Q1) of 2020 to Q1 2022, compared to the national average increase of 29% over the same period. By comparison, in the prior three-year period (Q1 2018 to Q1 2020), Arizona prices grew by 15% relative to the national average gain of 10%.[6]

In Phoenix, median sale prices increased by an astounding 56% in the three years between 2019 and 2022, while median rents increased by 47%. There were price gains across all building types, whether multifamily or single-family, small unit or larger unit.

Phoenix Housing Market Trends, 2019* to 2022



*Note: All prices are reported in 2022-dollars (adjusted for inflation) and are rounded. Prices represent asking values (i.e., listed amount) and not final contract amounts. Data provided by Maricopa Association of Governments (MAG); sales data via Information Market and rental data via RealData/Apartment Insights.

Since 2019, sales and rental prices have increased by at least 20% and up to 60% throughout Phoenix.

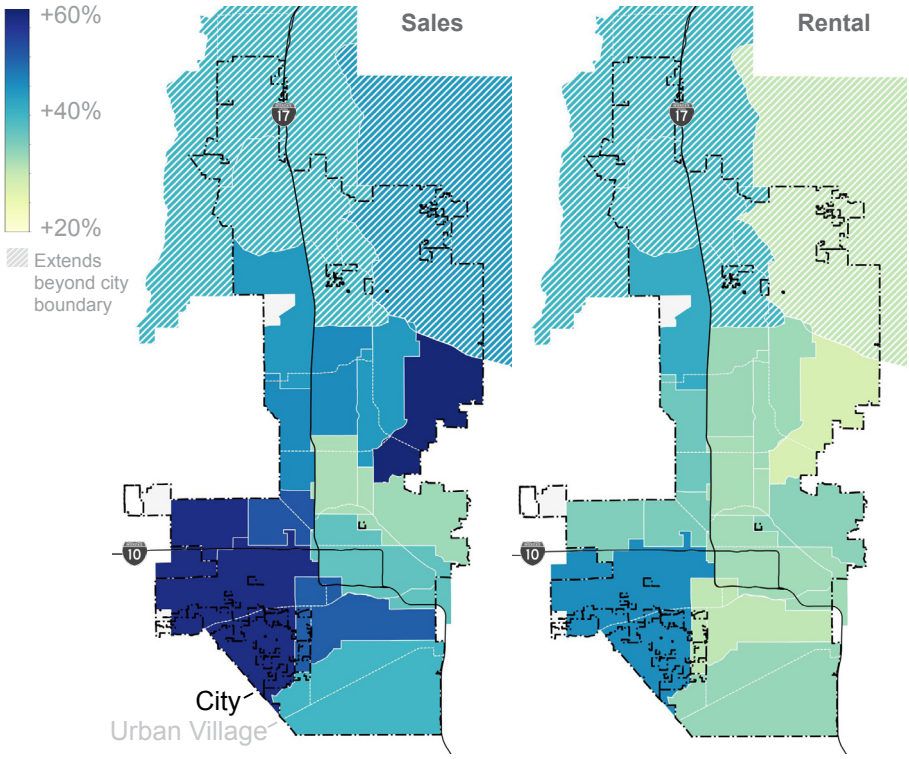
For-sale prices rose most dramatically in two parts of the city: west and southwest of downtown in the Maryvale, Estrella and Laveen urban village areas and northeast of downtown in the Paradise Valley and Camelback East areas, close to the border with Scottsdale. The eastern portion of Maryvale had the lowest median for-sale price in 2019 and was the only area with a median asking price below $200,000 for a single-family home (in 2022-dollar equivalent). That area experienced over 50% price growth from 2019 to 2022.

Rents increased the most on the west side of the city, notably in areas west of Interstate 17 where rents had been among the lowest pre-COVID, with especially high increases in Estrella and Deer Valley. However, it is important to note that while prices increased at the highest rate in those areas, those areas house a limited amount of the city's overall rental supply, as well as a greater share of the city's non-White populations.[7] There is a greater concentration of rental units east of Interstate 17, especially downtown, where prices increased at a lower rate than for-sale properties.

Phoenix sales prices also increased at a higher rate than other cities in Maricopa County, and much higher than the U.S. average.

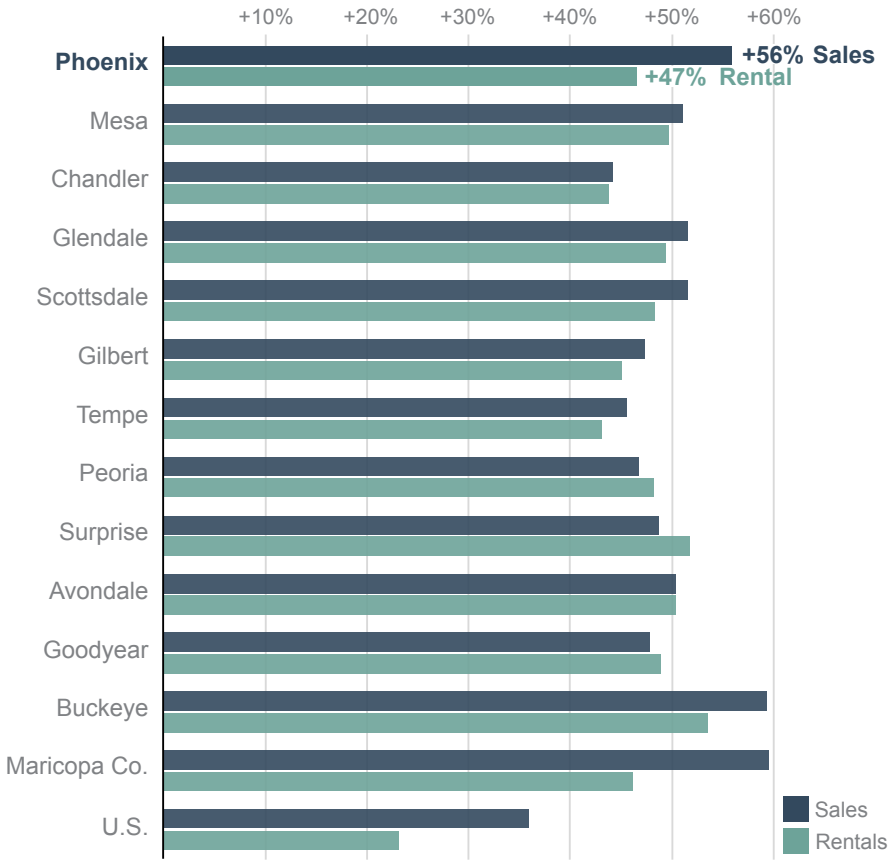
Amongst the largest Maricopa County jurisdictions, Phoenix median for-sale price growth lagged only Buckeye during the pandemic. The city also considerably outpaced the national average median for-sale and rental price growth. In contrast to home sale prices, rent increases in Phoenix during the same period hewed closer to neighboring Maricopa County cities.

% Change in Median Price by Census PUMA, 2019 to 2022



PUMA = Public Use Microdata Area; an area that represents >100,000 people
Information Market; RealData/Apartment Insights, both provided by MAG

% Change in Median Price for Maricopa Cities, 2019 to 2022

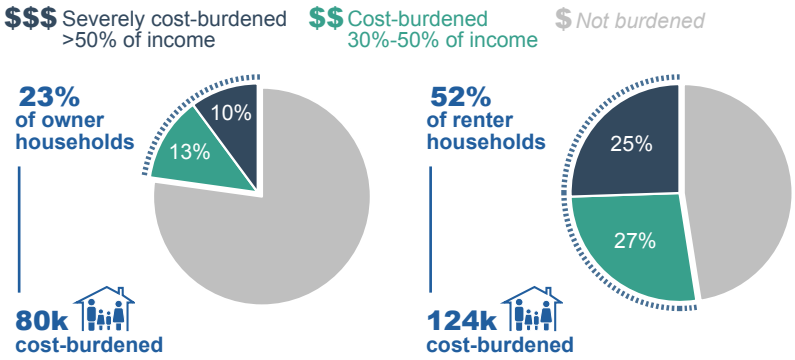


Zillow Home Value Index (ZHVI) and Observed Rent Index (ZORI), retrieved May 2023

More than half of Phoenix renter households and nearly one-quarter of owner households spend more than 30% of their income on rent or housing costs.

Households are considered cost burdened when they pay more than 30% of their gross income towards housing costs, which includes both monthly rent and utility payments. In Phoenix, renter-occupied households are far more likely to be cost burdened than owner-occupied households. 52% of renter-occupied households are considered cost burdened in the city, and about 25% are considered severely cost burdened (meaning they pay more than 50% of income towards shelter), compared to just 13% of owner households that are cost burdened and 10% that are extremely cost burdened. Non-White households are 1.5 more likely to be renters in Phoenix[8], which suggests non-White households are more vulnerable to shifts in the housing market.

Cost-Burdened Households, 2021



U.S. Census Bureau ACS 1-Year Estimates 2021
Excludes households for which income or payments were not reported

More than half of Phoenix owner households earn above 120% Area Median Income (AMI), while three-quarters of renter households earn below 120% AMI.

The U.S. Department of Housing and Urban Development (HUD) sets the Area Median Income (AMI), representing a median family income, for metropolitan and nonmetropolitan areas throughout the country. In the Phoenix metropolitan area, the Area Median Income for a family of four in 2021 was $79,000 (i.e., 100% AMI). AMI limits vary by household size, as can be seen in the table at the right.

More than 60% of owner households in Phoenix earn more than the area median income (100% AMI), while around 70% of renter households earn less. The majority of renter households earn below 80% AMI, representing 54% of renter households. 16% of renter households are considered extremely low-income, earning less than 30% AMI. By contrast, just 7% of owner households are extremely low-income.

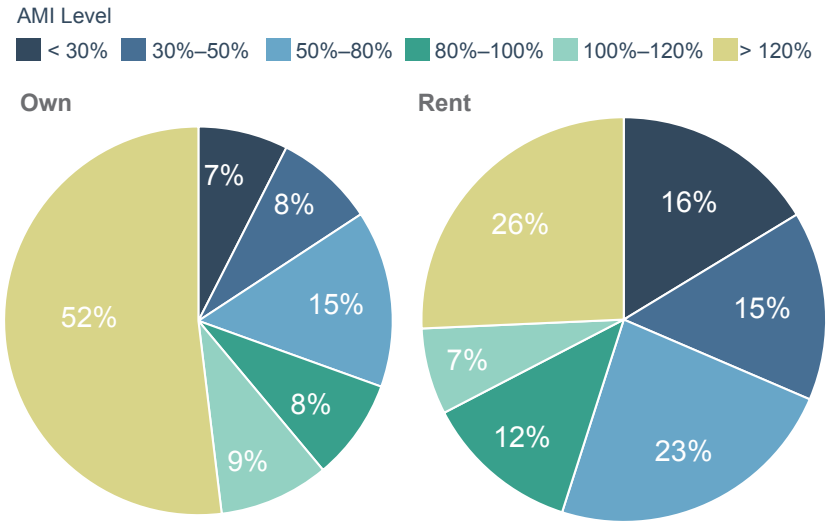
2021 Area Median Income Limits, Phoenix Metro Area

100% AMI 4-person Household $79,000

	1 person	2 person	3 person	4 person	5 person	6 person	7 person
120% AMI	$66,360	$75,840	$85,320	$94,800	$102,480	$110,040	$117,600
100% AMI	$55,300	$63,200	$71,100	$79,000	$85,400	$91,700	$98,000
80% AMI	$44,250	$50,600	$56,900	$63,200	$68,300	$73,350	$78,400
50% AMI	$27,650	$31,600	$35,550	$39,500	$42,700	$45,850	$49,000
30% AMI	$44,250	$50,600	$56,900	$63,200	$68,300	$73,350	$78,400

City of Phoenix, FY2021 HUD Income Limits for 50% and 80% AMI; all other income and size categories calculated using the data provided.

Households by Area Median Income (AMI) Level, 2021

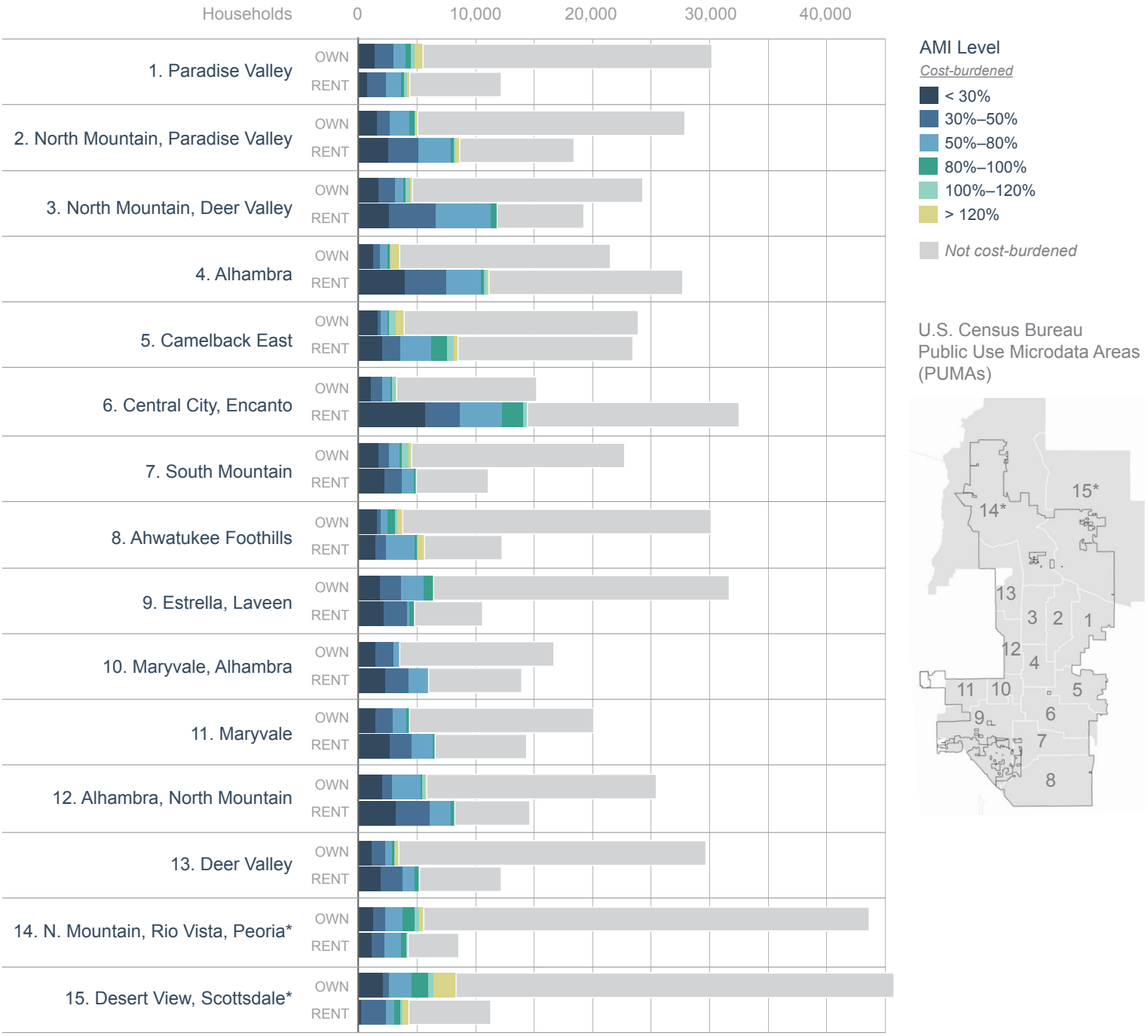


Chasm analysis of U.S. Census Bureau Public Use Microdata (PUMS) ACS 1-Year Estimates 2021; References 2021 HUD Income Limits for Maricopa County

Cost-burden is especially high in areas of Phoenix where renter households outnumber or equal the number of owner households.

When looking at cost-burden by AMI level in specific sections of Phoenix, represented as Census Public Use Microdata Areas (PUMAs), there is a clear correlation between the concentration of rental supply and household cost-burden. In some areas like North Mountain/Alhambra (PUMA 12 identified below) and Deer Valley (PUMA 13), more than half of renters are cost burdened. Other areas like Central City/Encanto (PUMA 6) have lower rates of rent-burden in aggregate, but higher numbers of rent-burdened extremely low-income (under 30% AMI) households.

Cost-burdened Households by AMI Level for Phoenix Public Use Microdata Areas (PUMAs), 2021



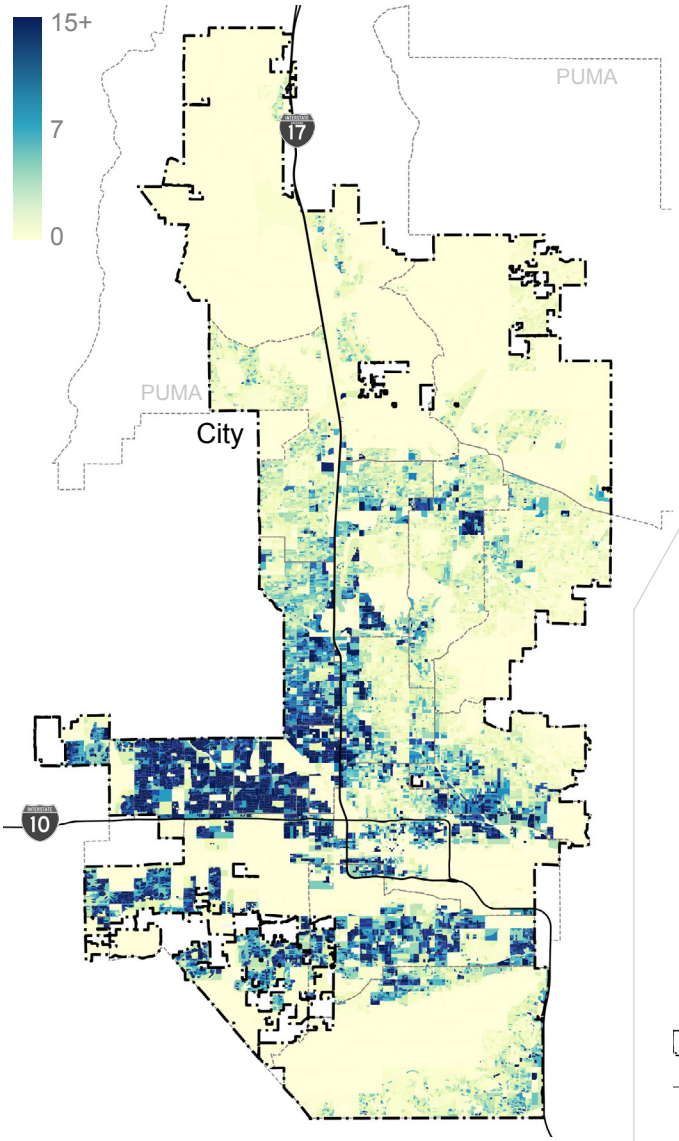
U.S. Census Bureau Public Use Microdata Areas (PUMAs)

Chasm analysis of U.S. Census Bureau PUMS ACS 1-Year Estimates 2021; 2021 HUD Income Limits for Maricopa County
*Note: PUMAs 14 and 15 have significant portions that fall outside of City of Phoenix borders and include portions of other jurisdictions. It is not possible in this dataset to separate the households within the city boundary from those that fall in neighboring jurisdictions. Census PUMAs generally represent a population of 100,000 or more and enable detailed cross-tabulations of Census household and person characteristics. Please refer to the Appendix for more information.

Areas with higher shares of non-White and Hispanic populations reflect areas that are more vulnerable to increasing housing costs.

Within Phoenix, areas that have higher concentrations of non-White and/or Hispanic populations reflect areas where households are more vulnerable to fluctuations in the housing market or increases in housing costs. That includes areas where there are also higher concentrations of extremely low- and very low-income households (earning below 50% AMI), areas that are predominantly renter-occupied, and areas with higher shares of cost-burdened households. This vulnerability is especially true for urban village areas west of Interstate 17 and north of Interstate 10, which have also experienced higher rates of evictions (as shown on page 24) over the last several years.

Non-White and/or Hispanic* Population per Acre by Census Block, 2020

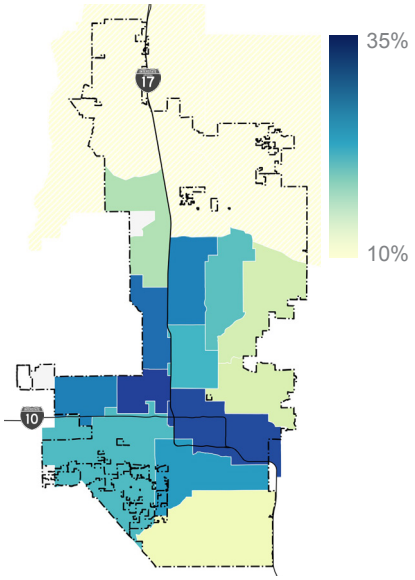


*Note: Race and Hispanic origin are asked as two separate questions by the Census Bureau. Data are used to create a mutually exclusive non-White and/or of Hispanic origin category that excludes persons identifying as "White Alone". Those who report Hispanic origin are included in the "Hispanic" population, regardless of race reported. Non-White also includes those reporting/identifying as more than one race.

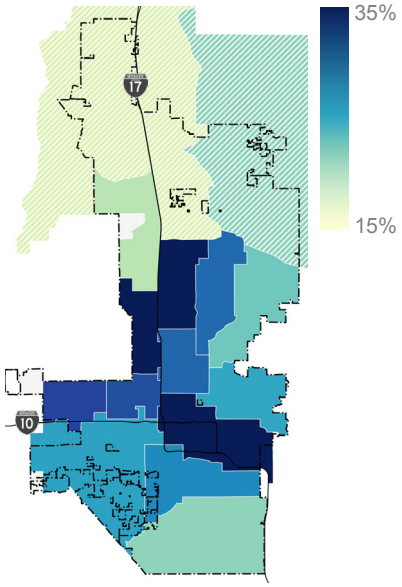
Share of Total Households by PUMA, 2021

% Earning Below 50% AMI

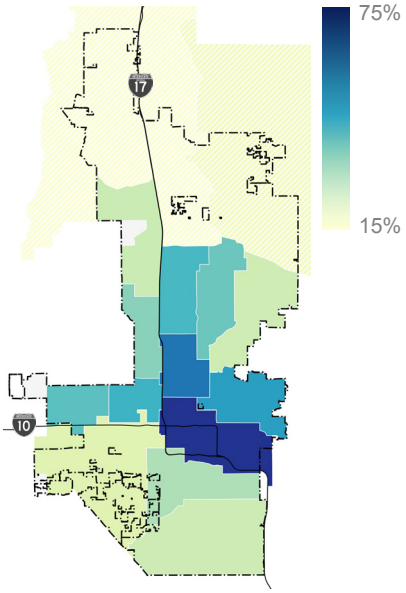
Extends beyond city boundary



% Cost Burdened



% Renter-Occupied



Chasm analysis of U.S. Census Bureau PUMS ACS 1-Year Estimates 2021; 2021 HUD Income Limits for Maricopa County; U.S. Census Bureau 2020 Redistricting Data Files; U.S. Census Bureau TIGER/Line data files.

The Affordable Housing Gap

Assessing Rental Affordability

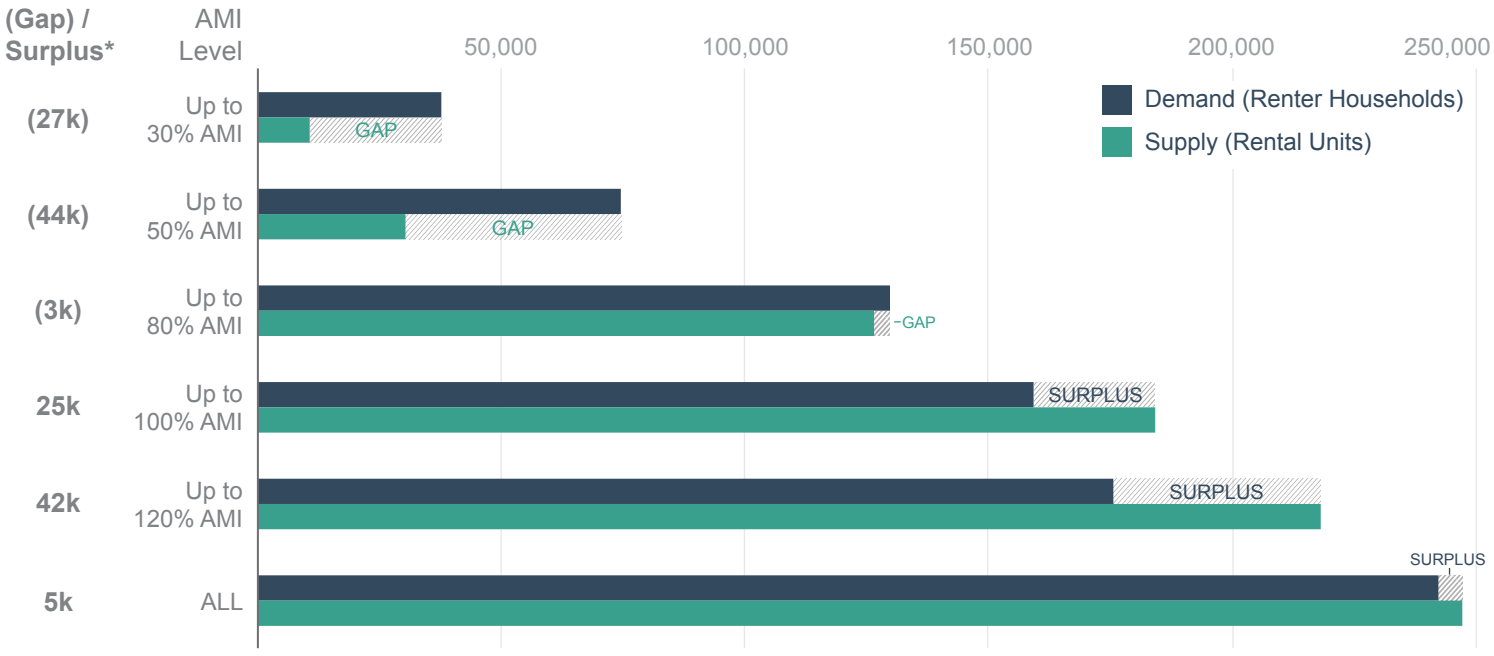
Using U.S. Census Bureau data, this analysis categorizes households by AMI level according to their self-reported incomes and household sizes. It also categorizes rental units by AMI level using household size and self-reported gross rent data, which includes utilities, irrespective of household income. These two categorizations enable a comparison of rental supply and demand by AMI level. Please refer to the Appendix for more information.

Phoenix's extremely low- and very low-income renter households have the most limited affordable housing options.

Extremely low-income households earning less than 30% AMI represent around 38,000 Phoenix renter households. Yet, there are only 11,000 housing units in the city that are affordable to that group (meaning where the sum of gross rent and utilities would be no more than 30% of household income).

The gap increases to approximately 44,000 when adding very low-income households earning between 30% and 50% AMI. Only 31,000 units are affordable to the 75,000 rental households that make under 50% AMI.

Cumulative Gap / Surplus in Rental Units by AMI Level, 2021



*Note: Gap and surplus estimate labels are rounded to the nearest thousand. Bars in the graph represent precise estimates produced by the analysis. Two of the PUMAs included in this analysis extend beyond the city border, and numbers reported here include those areas in the totals. Please refer to the appendix for more information.
Chasm analysis of U.S. Census Bureau PUMS ACS 1-Year Estimates 2021; 2021 HUD Income Limits for Maricopa County

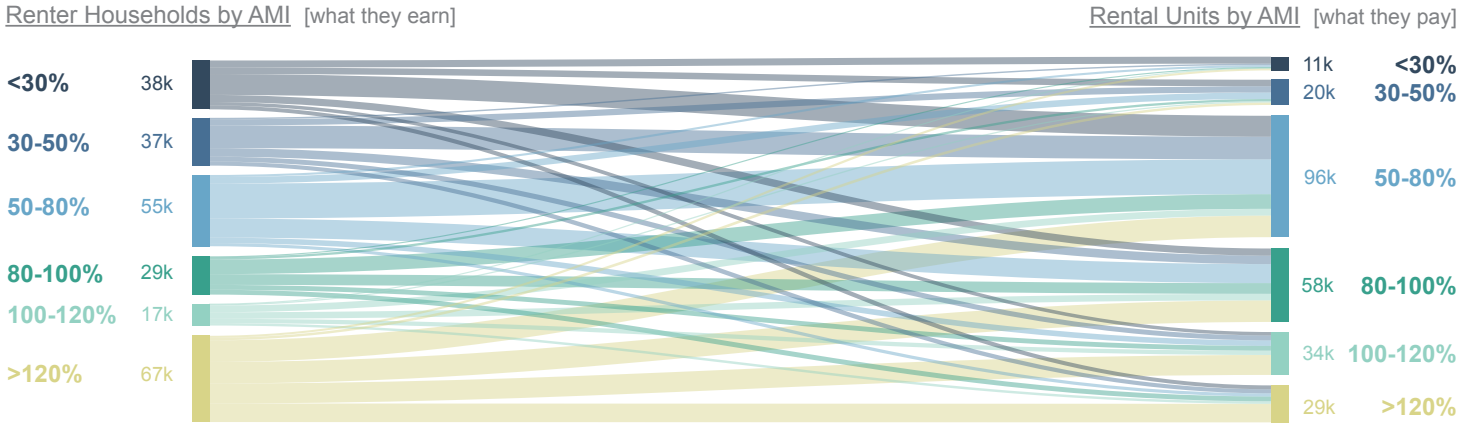
Households are all competing for the most affordable units, pushing the lowest income households into situations where they are more cost burdened.

From extremely low (below 30% AMI) to more moderate (up to 120% AMI) household incomes, expanding the housing supply affordable to all income levels is needed to accommodate Phoenix's growing population.

Nevertheless, the gap in supply that is affordable to the lowest income renter households is even greater when factoring in the number of units that are both affordable and available (i.e., when you only count those units that are affordable at a certain AMI which are not currently occupied by a higher-income household). Most extremely low-income (below 30% AMI) and very low-income (below 50% AMI) Phoenix renter households are cost burdened and living in units affordable only to households earning 50 to 80% AMI or higher. Low-income households are competing for affordable units with sizable shares of higher-earning households, who are spending less than 30% on housing costs by living in units that are affordable to households earning less. When considering units that are both affordable *and* available, there are gaps at every income band below 100% AMI.

That means even fewer homes are affordable and available to the most vulnerable households, effectively increasing the gap for extremely low- and very low-income households (under 50% AMI) from 44,000 to 59,000.

Renter Households' Income and Housing Costs by AMI Level, 2021



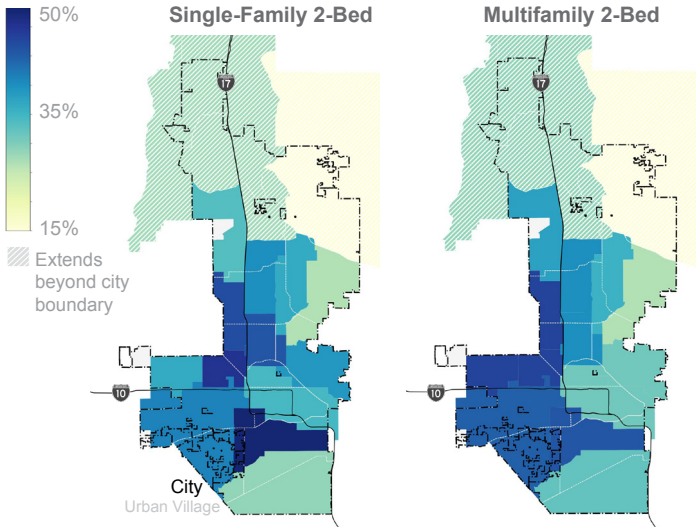
Chasm analysis of U.S. Census Bureau PUMS ACS 1-Year Estimates 2021; Units rounded to nearest thousand; please refer to the Appendix for more information.

In the current market, areas concentrated along the west side of Interstate 17 and south of downtown are among the most affordable to Phoenix's renter households.

On average for the city, only 40% of Phoenix households could afford the median price for a single-family 2-bedroom rental, and 44% of Phoenix households could afford the median price for a multifamily 2-bedroom rental. This means the majority of Phoenix renters would likely pay more than 30% of their income on housing if they were to move into a different rental unit in the current market.

Within the city, areas west of Interstate 17 – notably in Alhambra, Maryvale, and North Mountain, as well as in South Mountain, are among the most affordable to Phoenix renters. A high percentage of Phoenix renter households (living anywhere in the city) can afford a median-priced rental unit in those areas. Those areas also house higher shares of the city's non-White and lower income populations.

% of Phoenix Renter Households that Can Afford the Median Price for a Rental Unit in each PUMA



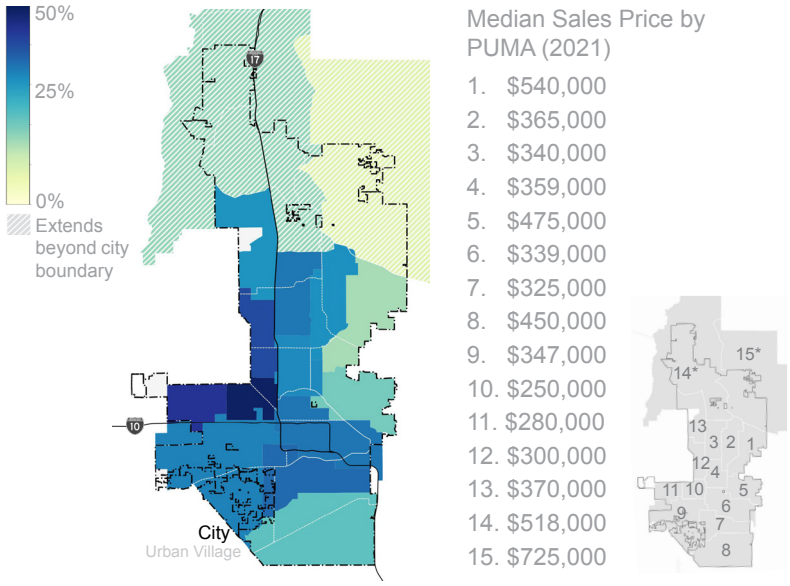
Chasm analysis; Rental price data provided by MAG; mapped to Census PUMA.

Homeownership is out of reach for most Phoenix households. In nearly all areas, both renter and owner households are unable to afford a new home at the median sales price, even with federal loan assistance.

When comparing average household income in Phoenix to the income required to afford the monthly mortgage payment for a new home—assuming the median sales price in each area and a Federal Housing Administration (FHA) loan—underscores how few Phoenix households could affordably purchase a home in most parts of the of the city (i.e., spend 30% or less of their income on mortgage payments).[9]

In the most affordable areas, Maryvale and Alhambra, around half of Phoenix residents could affordably purchase a home at the median price with an FHA loan. In contrast, areas along the eastern border, especially farthest north and south, were out of reach for most Phoenix residents. Just 10% of Phoenix households could afford a home at the median price in the Desert View area, and 15% could afford the Paradise Valley area.

% of All Phoenix Households that Can Afford the Median Sales Price in each PUMA, with an FHA Loan

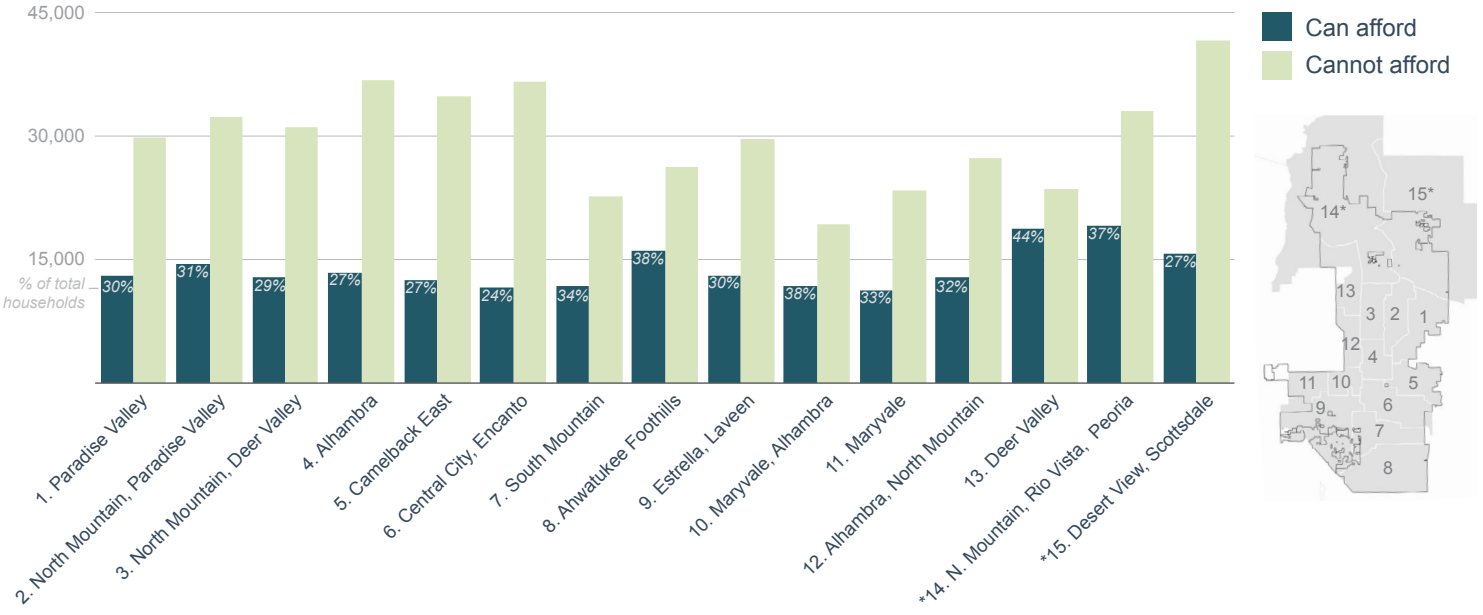


Chasm analysis; FHA terms provided by City of Phoenix Housing Department; For-sale price data provided by MAG; Mapped by PUMA with additional boundaries as reference.

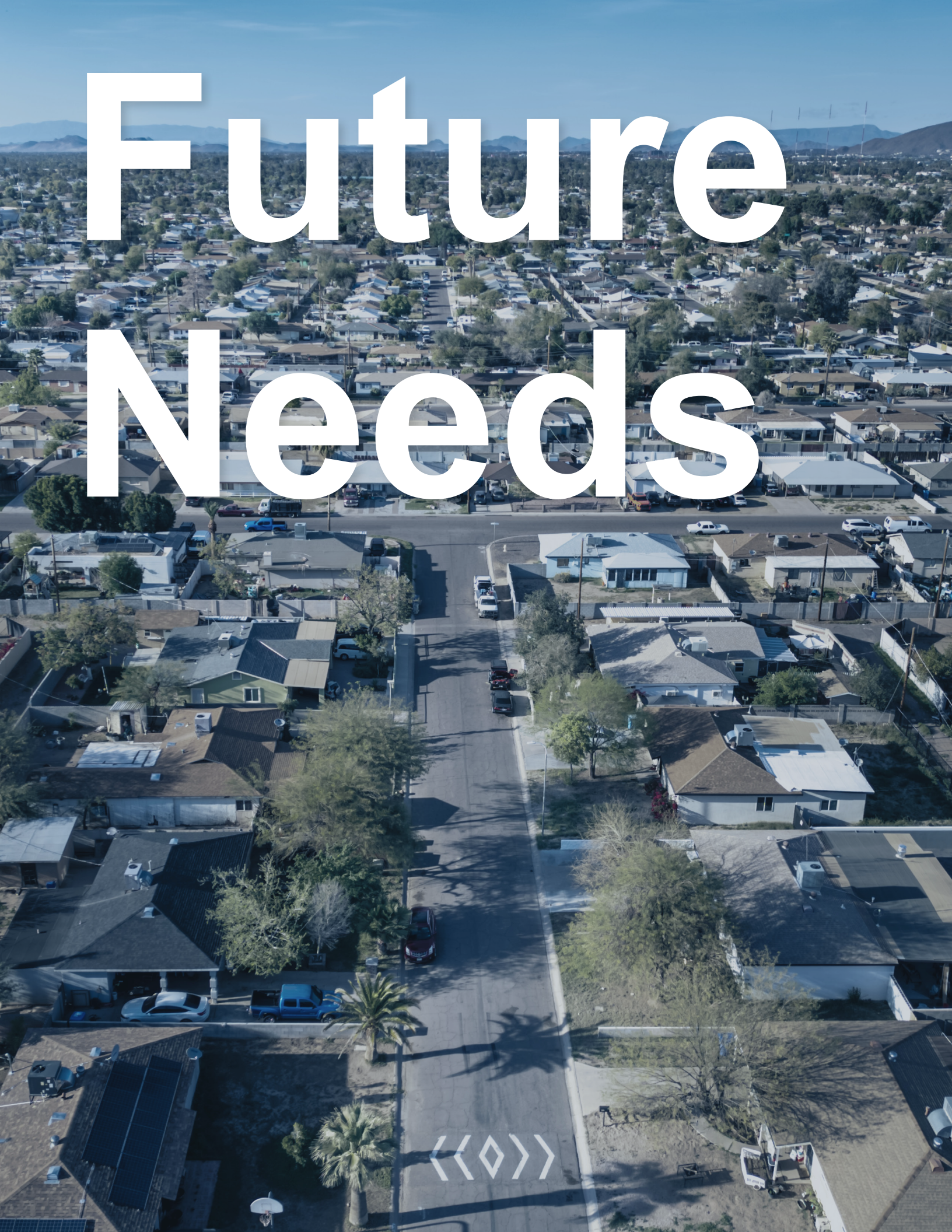
In the current market, purchasing an affordable home close to where they already live, versus anywhere in the city, is even more out of reach for most Phoenix households.

Looking at affordability within their own neighborhoods (rather than citywide), there is limited opportunity for households to purchase close to where they already live. Relatively few households would be able to afford the monthly payments on a median-priced home in their existing neighborhood in Phoenix without spending more than 30% of their income on housing, with rates ranging from a low of 24% of households that could afford the Central City/Encanto area to a high of 44% of households in the Deer Valley area.

Households that Can or Cannot Afford the Median Sales Price within their PUMA of Residence (with FHA Loan)



*Note: Includes areas outside of city. Chasm analysis of U.S. Census Bureau, real estate data provided by MAG; FHA terms provided by City of Phoenix Housing Department;

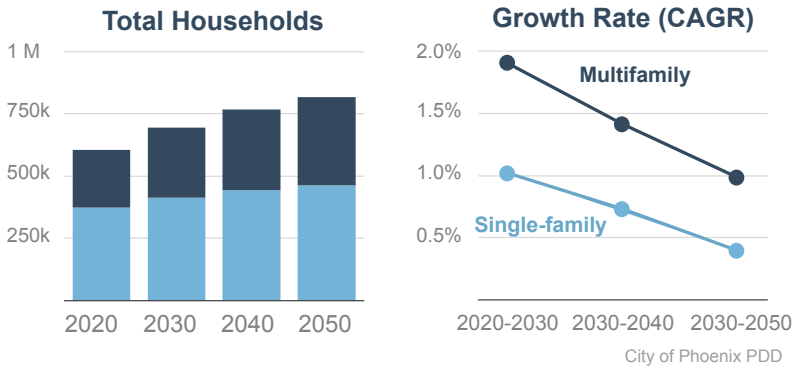

Future
Needs

The City of Phoenix projects that by 2030 it will be home to 88,000 more households than it is today, and by 2050 it will have 213,000 more households.

The City of Phoenix Planning & Development Department (PDD) prepared preliminary household and housing unit projections for areas throughout the city, assuming varying growth rates in the supply of single-family and multifamily housing units over the next three decades.[10] This analysis builds off the PDD projections to explore three possible scenarios for how income will be distributed through 2050. These scenarios incorporate existing income distribution patterns and historic shifts in income distribution for households both in single-family and multifamily buildings.

City of Phoenix | Projected Household Growth 2020 to 2050

PDD estimates it will have nearly 694,000 households by 2030, adding approximately 88,000 at a compound annual growth rate (CAGR) of 1.4%. This is a slightly faster rate than over the previous decade, during which Phoenix households grew at 1.3% CAGR relative to the U.S. rate of 0.8%. In the following 20 years, from 2030 to 2050, the PDD projects growth will slow (to 0.8% CAGR), and there will be nearly 819,000 households, 35% more than there are today, by 2050.



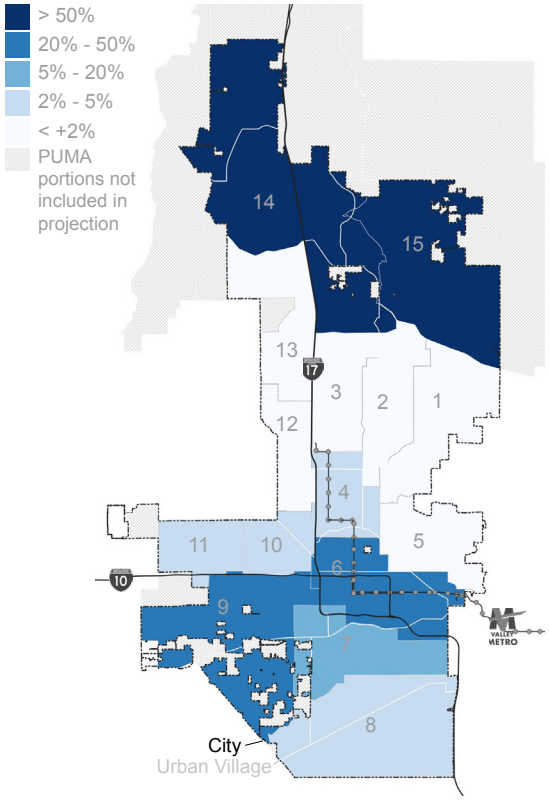
Phoenix Urban Village Areas | Projected Household Growth 2020 to 2030

Through 2030, PDD projects households will grow at the highest rate in the northernmost areas of the city like the Desert View and Rio Vista areas, with the addition of multifamily units forecast to outpace single-family units. The Central City and Encanto areas are projected to add the most units in real terms, nearly all of which are multifamily. The Estrella and Laveen areas are also projected to grow substantially, with a much higher share of household growth in single-family homes.

Census Public Use Microdata Area (PUMA)	2020 - 2030 Change Single-Family	Multi-family	Total	2030 House-holds
1. Paradise Valley	+389	-2	+386	45,897
2. North Mountain, Paradise Valley	+736	-5	+731	47,337
3. North Mountain, Deer Valley	+821	+63	+885	43,754
4. Alhambra	+413	+1,203	+1,616	51,123
5. Camelback East	+250	+351	+600	48,589
6. Central City, Encanto	+553	+20,617	**+21,170**	81,846
7. South Mountain	+3,484	+794	+4,278	38,551
8. Ahwatukee Foothills	+1,494	-10	+1,484	43,716
9. Estrella, Laveen	+12,592	+6,315	**+18,907**	58,048
10. Maryvale, Alhambra	+144	+1,012	+1,156	37,491
11. Maryvale	+1,488	-2	+1,486	33,098
12. Alhambra, North Mountain	+329	+296	+625	39,132
13. Deer Valley	+895	-6	+889	40,988
14. North Gateway, Rio Vista*	+4,217	+8,080	**+12,297**	31,969
15. Desert View*	+10,095	+8,763	**+18,858**	19,623

*Projections represent portions of PUMAs that fall solely within the city boundary.

% Household Change by PUMA, 2020 to 2030



City of Phoenix PDD; mapped by PUMA with reference boundaries.

This analysis explores three scenarios for future household income distribution, building off the City of Phoenix's projections for household growth.

Key Assumptions

To represent "today", this analysis uses the PDD total household count for 2020, the most recent year for which data is available, and applies the distribution of households by AMI level calculated using U.S. Census Bureau microdata. For the citywide projections, historic and current income distributions informing the three scenarios represent the city total. For urban village approximation projections, income distributions and household characteristics are specific to those subareas. Occupancy rates calculated for single-family and multifamily housing units are held constant in the future.

In the future, all three scenarios use PDD's preliminary projections and result in the same total household count by 2050. This analysis looks at how Phoenix incomes might be distributed relative to the regional median income (i.e., AMI), assuming that it either remains constant from today to 2050 or that the pattern of shifts in income distribution experienced over the last decade (represented as 2012 to 2021, relative to AMI levels in their respective years) continues into future decades. No additional assumptions are made regarding inflation or the regional median income in the future, nor are other factors such as housing cost or choice projected. Both Scenarios 1B and 2 additionally factor in PDD preliminary projections for housing growth by multifamily and single-family units. Please refer to the Appendix for more information.

SCENARIO 1A

Household income distribution in the future is the same as household income distribution today. This scenario does not factor in differences in income distribution between multifamily and single-family households currently or in the future.

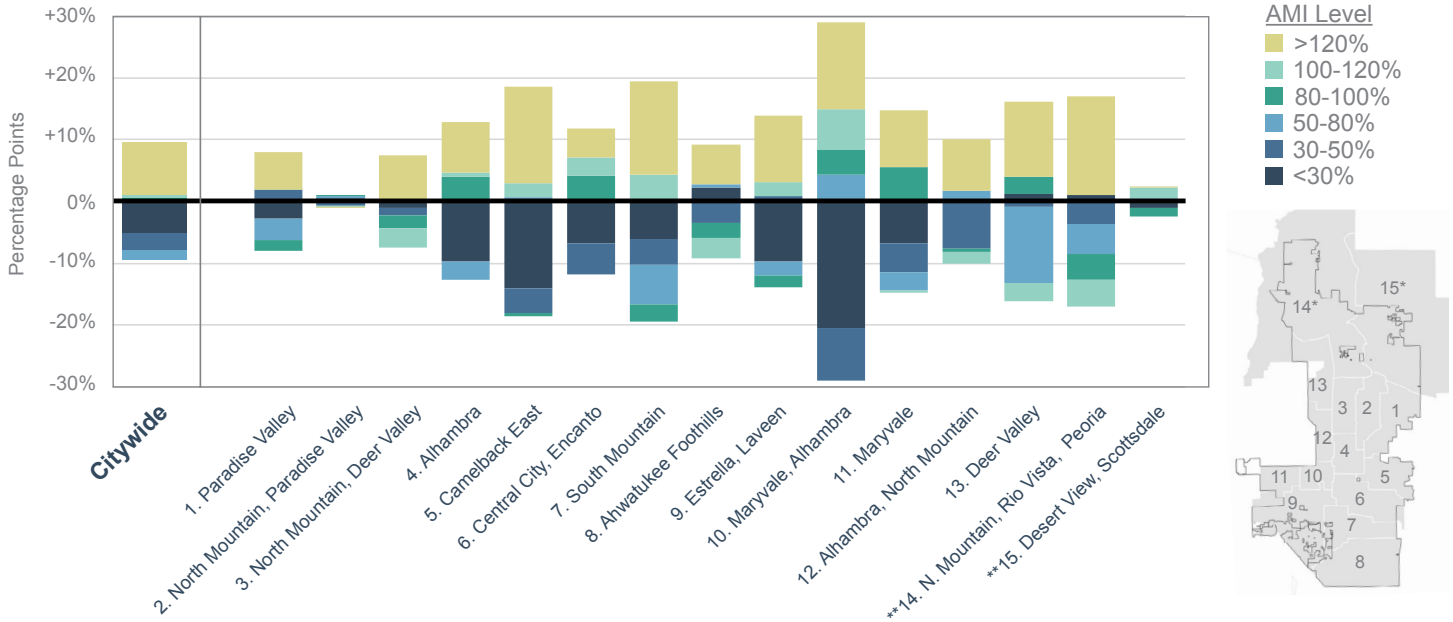
SCENARIO 1B

Household income distribution in the future is the same as income distribution today. However, this scenario factors in ***differences in income distribution between households in single-family and multifamily units,*** with incomes in multifamily buildings skewing lower than those in single-family homes. Households in multifamily units are projected to grow at a faster rate.

SCENARIO 2

Building on 1B, ***household income distribution in the future represents a continuation of recent trends, with declining shares of low-income households and increasing shares of high-income households***. Represented as percentage point shifts in the number of households by AMI level (i.e., distribution) from 2012 to 2021, this trend is illustrated below.

Percentage Point Change in Distribution of Households by AMI Level 2012 to 2021, Citywide* and PUMAS



*Citywide average excludes weighting effects from income distribution change for PUMAs that fall largely outside of the city boundary. **Includes areas outside of city. Chasm analysis of U.S. Census Bureau ACS 1-Year Estimates PUMS 2012 and 2021 referencing HUD 2012 FY Income Limits and HUD 2021 FY Income Limits. Represents the percentage point change in the share of households by AMI from 2012 to 2021 relative to income levels by household size in each respective year. The distribution of households by AMI in 2012 versus 2021 can be viewed in the Appendix.

These scenarios produce a wide range of outcomes, with the city gaining up to 60,000 households earning under 50% AMI over the next 30 years to a near total loss of households at that income level.

Implications for Future Income Distribution

The three scenarios are intended to demonstrate a range of outcomes, from loss to gain of lower income households by 2050. As a proxy for understanding the affordability gap in the future, this analysis also projects the number of lower income households (earning below 80% AMI) that might be cost burdened in the future, assuming the shares of cost-burdened households by AMI level that exists today are held constant for all scenarios through 2050.

SCENARIO 1A

Assuming that the income distribution of new households added between 2020 and 2050 reflects today's income distribution, **this scenario adds households at all AMI levels, including at the lowest income levels**. As illustrated on the previous page, trends over the last decade depict declining shares of households earning below 80% AMI throughout the city, but this scenario conservatively assumes that trend stalls and today's distribution is held constant.

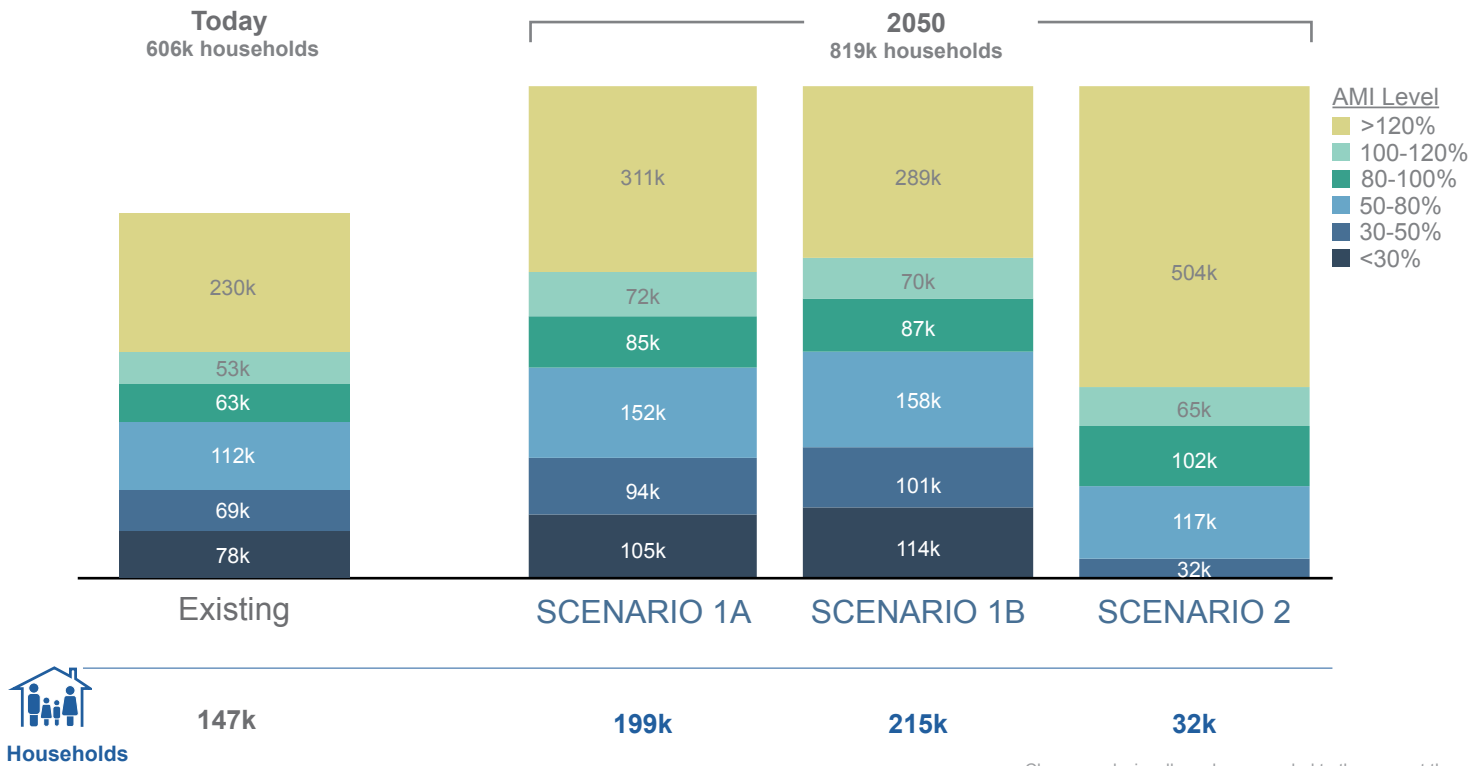
SCENARIO 1B

With multifamily buildings projected to grow at a faster rate and incomes of households in multifamily buildings skewing lower than those in single-family buildings, future income distribution in Scenario 1B skews lower than 1A, which does not account for growth by building typology. **Scenario 1B therefore results in slightly more households earning below 100% AMI by 2050 than Scenario 1A**.

SCENARIO 2

By projecting shifts in the distribution of households by AMI level observed over the last decade linearly 30 years into the future, with continual loss of lower income households in each decade from 2020 to 2050, **Scenario 2 yields a more extreme outcome. As a constantly declining share of the city's households, it results in significantly fewer households earning below 80% AMI and none below 30% AMI by 2050**.

Phoenix Households Today and in 2050 (Projected) by AMI Level



Chasm analysis; all numbers rounded to the nearest thousand.

In all three household income distribution scenarios, a growing number of Phoenix's lowest income households would be housing cost burdened in the future, if they can find housing at all.

Projected Change in Households by Income and Cost-Burden

SCENARIO 1A

Holding income distribution constant in the future results in nearly **52,000 additional households earning below 50% AMI** by 2050, as seen in the top chart.

Today, there are approximately 96,000 cost-burdened households earning below 50% AMI. Assuming a constant share of households at those income levels are cost burdened in 2050, **Scenario 1A results in an additional 47,000 cost-burdened households below 50% AMI in the future,** as seen in the bottom chart.

SCENARIO 1B

Among the three scenarios, **Scenario 1B results in the largest growth in lower income households** by reflecting a higher rate of multifamily growth that skews overall household income distribution lower. By 2050, it projects an **additional 61,000 households earning below 50% AMI** (top chart), 9,000 more than Scenario 1A.

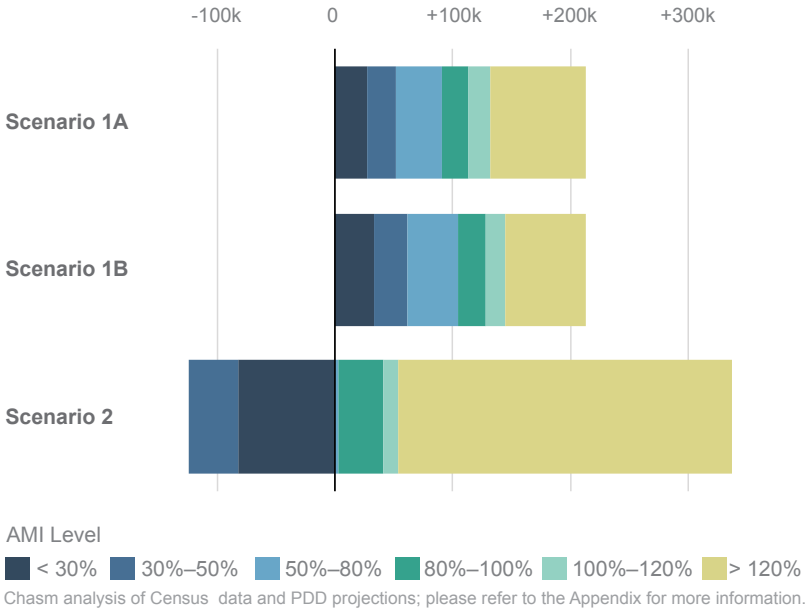
Similarly assuming the share of cost-burdened households by income level remains constant in 2050, **Scenario 1B results in an additional 64,000 cost-burdened households earning below 50% AMI** (bottom chart), also the highest of the three scenarios.

SCENARIO 2

Scenario 2 implies no households below 30% AMI could affordably live in Phoenix by 2050, and all households remaining between 30% and 50% AMI would likely be cost burdened. It suggests extremely low-income households would be priced out to surrounding cities or out of the metro area entirely in the future.

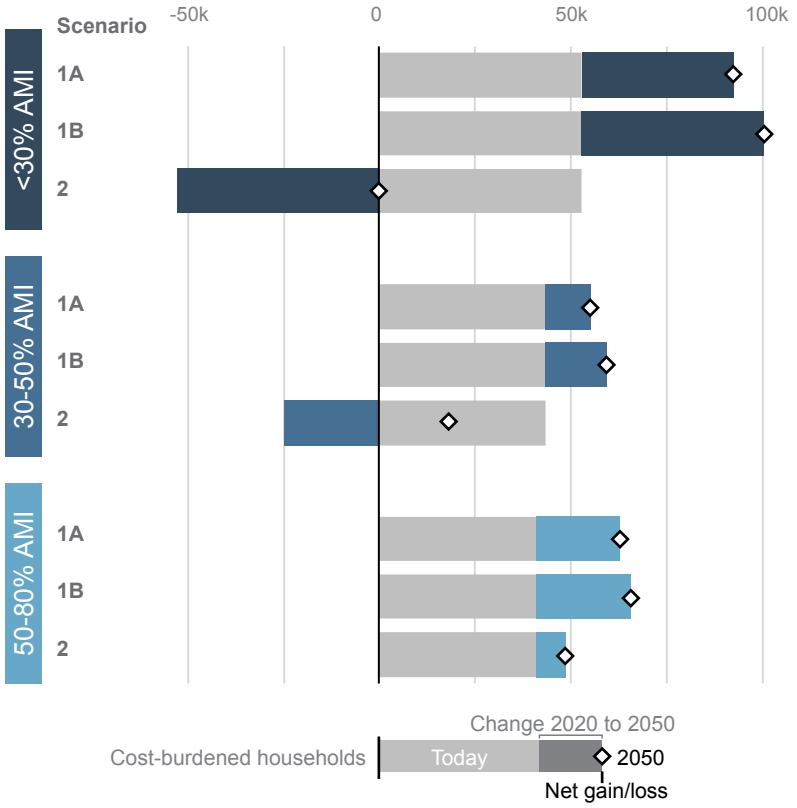
However, this analysis does not account for changes in housing cost, households' willingness to bear burdensome housing costs, or for the continuation or expansion of subsidized/income restricted housing that would ensure additional shares of lower-income households could remain.

Change in Phoenix Households by AMI 2020 to 2050 (Projected)



Chasm analysis of Census data and PDD projections; please refer to the Appendix for more information.

Cost-Burdened Phoenix Households Earning Below 80% AMI by 2050 (Projected)



Chasm analysis of Census data and PDD projections; assumes a constant rate of cost-burdened households by AMI in 2020 and 2050. Please refer to the Appendix for more information.

Within Phoenix, areas that are projected to add the most housing are the areas most likely to accommodate the projected growth in low-income households.

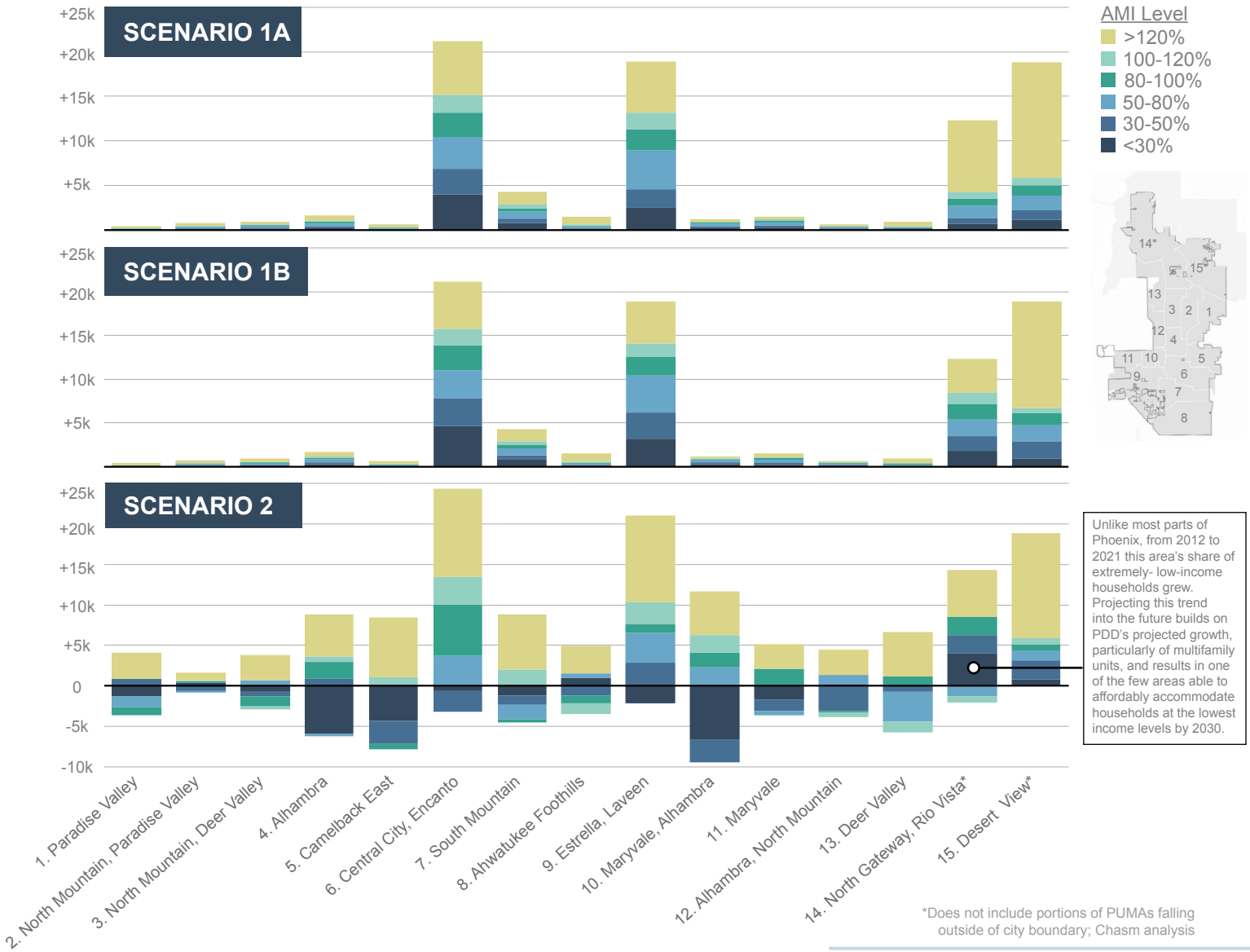
Looking at U.S. Census Bureau PUMAs as a general approximation of urban village area trends over the next decade, Scenarios 1A and 1B (despite their differences) paint a more stable picture than Scenario 2 across Phoenix neighborhoods.

In Scenarios 1A and 1B, the nuances between multifamily and single-family growth are less impactful over a single decade. **Both scenarios show households at all income levels geographically concentrating in the select areas projected by PDD to significantly add housing,** while other areas in the city hold relatively constant through 2030. Therefore, the number of low-income households increases in the areas that see substantial household growth.

If shifts in income distribution observed over the last decade continued into the next decade, Scenario 2 results in citywide turnover. The loss of households at the lowest income levels is offset by gains in households at the highest income levels. That volatile turnover, however, results in limited net growth for most areas.

Building on the geographic concentration observed in Scenarios 1A and 1B, in **Scenario 2 only the areas projected to substantially grow will be able to house lower income populations, and areas that do not add housing are at further risk of losing low-income populations.** This is especially true of areas like Maryvale, Alhambra, and Camelback East, where low-income populations exist in higher shares today.[11]

Change in Households by AMI Level (Projected) and PUMA of Residence, 2020 to 2030



*Does not include portions of PUMAs falling outside of city boundary; Chasm analysis

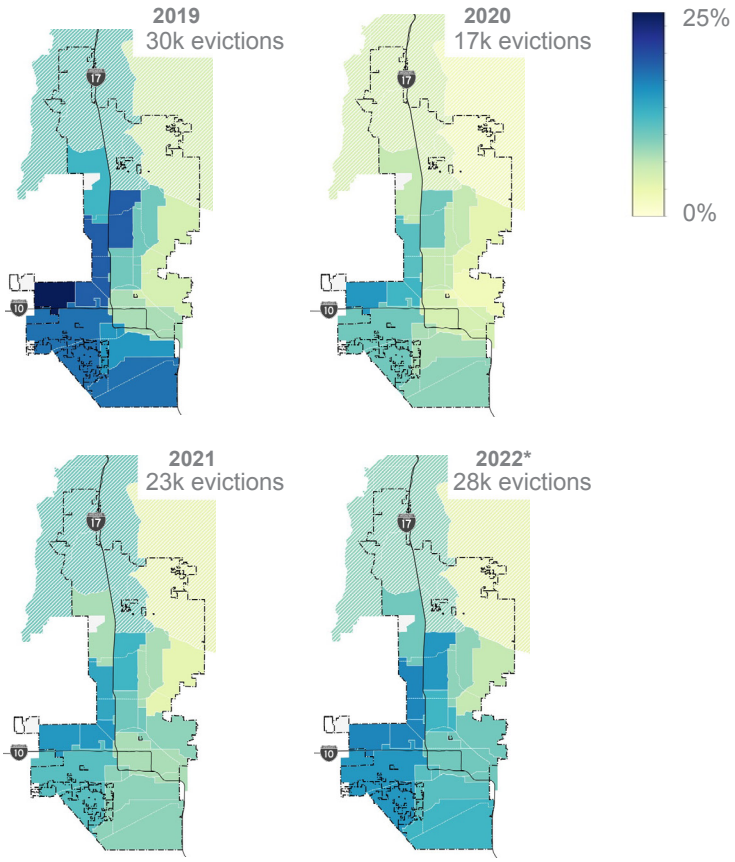
Future housing need may also be shaped by market forces or policy relating to evictions, homelessness, ownership, and short-term rentals.

Evictions, which had slowed during the pandemic, are back on the rise.

Evictions per 100 renter households were highest prior to the pandemic, particularly in western and southern parts of the city. 2020 and 2021 saw a decline in evictions over 2019, as temporary moratoriums were enacted and federal assistance was readily available during the pandemic. However, evictions rose in those same areas by 2022, and in 2023 Phoenix's eviction filings trailed only New York City among the 34 major U.S. cities tracked by the Eviction Lab at Princeton University.[12]

Areas like Maryvale, Alhambra, and North Mountain experienced much higher rates of eviction than other parts of the city. Currently, Arizona does not allow for some of the eviction protections that are common in other states like California, Oregon, and Colorado. However, the City can continue and expand its provision of assistance to households facing rental instability. Providing this type of assistance will be essential if the City of Phoenix continues to rely on NOAH as its main source of affordable housing for low-income residents.

Annual Evictions as a Percentage of Renter Households*



*Renter households uses a consistent base of 2021 and the percentage share is illustrative. 2022 data were only available through August 2022 prior to discontinued tracking; an annual number was created using the monthly average.
Maricopa County Justice Courts, prepared by MAG; Census ACS 2021 1-Year Estimates

There are already an estimated 6,900 homeless individuals in Phoenix[13], which could increase as a result of housing instability.

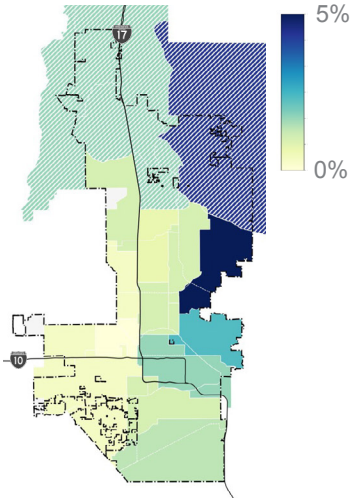
In response to rising rates of homelessness, the City of Phoenix developed the Strategies to Address Homelessness Plan in 2020. The plan outlined short-term, medium-term, and long-term strategies to address homelessness across several focus areas, including housing as well as mental health, workforce development, encampment cleanups, communications strategies, and community engagement. Building on the housing strategies recommended in the plan, sustained initiatives, and funding to create affordable housing and stabilize low-income tenants can help prevent first-time homelessness risks and disrupt the prevalence of chronic homelessness in Phoenix. If these initiatives are not sustained and bolstered in the future and the projected increase in cost-burdened low-income households is realized, it will result in an increase in the homeless population.

Short-term rentals can place additional pressure on the limited supply of rental housing.

While short-term rentals represent the equivalent of just 2% of the city's rental stock, there are clear concentrations in select neighborhoods. Short-term rentals listed on platforms like AirBNB and VRBO were predominantly located in areas along the eastern border of Phoenix, from Central City in the south to Desert View in the north. Median nightly prices were highest in those areas closest to/overlapping with Scottsdale, namely in Paradise Valley and Desert View. Those areas also have the highest concentrations of short-term rental listings per capita, with those units equating to 5% of the housing stock in those areas.

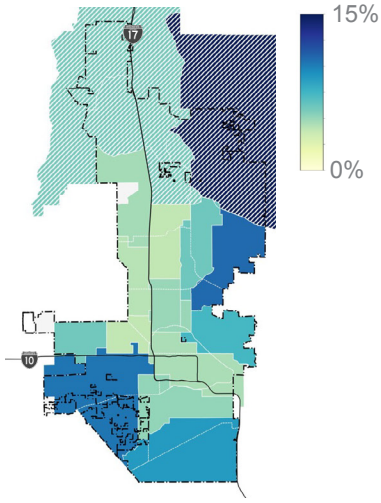
Short-term Rentals as % of Rental Stock, 2022

10k+ short-term listings



Out-of-State Owners per 1,000 Housing Units, 2022

43k out-of-state home owners



AirDNA data and Maricopa County Tax Assessor data aggregated by MAG to PUMAs; normalized to Census ACS 2021 1-Year Estimates.

Out-of-state ownership and seasonal populations further impact supply.

There are 43,000 Phoenix property owners registered as having permanent addresses outside of Arizona. The presence of seasonal and temporary populations means that many units sit unoccupied, which may also overlap with the short-term rental market. The highest concentrations of out-of-state owners are in areas like Paradise Valley and Desert View along the north/east border and Estrella, Laveen, and Ahwatukee Foothills along the south/west border of the city. Additional research is needed to understand how trends in out-of-state ownership have impacted the housing market in Phoenix over time.

Other extraneous environmental and political challenges may also impact future housing needs.

The region is facing a series of interrelated environmental challenges that could impact the future location and intensity of new housing development.

Depletion of finite freshwater resources coupled with climate change induced drought is limiting the ability of some jurisdictions within the region to accommodate additional capacity. Implications of these challenges were not included in growth projections but should be considered in the development of future policy and program responses.

Additionally, in-migration from both legal and undocumented immigrants into Phoenix may impact the housing situation.

Although population projections account for legal immigration, projections of how many new undocumented immigrants will arrive and eventually settle in Phoenix is difficult to estimate and is not included in this analysis

Sources & Notes

End Notes

1. Dekker, Eliza. (2023). Hot Market?! Assessing the Stability of Naturally-Occurring Affordable Housing Via Extreme Heat and Development Pressure in Phoenix, Arizona [Master's Capstone, Columbia University Graduate School of Architecture, Planning, and Preservation]. Columbia Academic Commons. https://academiccommons.columbia.edu/doi/10.7916/j4j2-xz39

2. Kang, S., & Jeon, J. S. (2021). Toward suburbs: Examining neighborhood-level changes in naturally occurring affordable housing stock in Florida, USA. Cities, 116, 103267

3. Dekker (2023).

4. U.S. Census Bureau Population Estimates Program (PEP) 2022 Vintage; "Annual Estimates of the Resident Population for Incorporated Places of 50,000 or More, Ranked by July 1, 2022 Population: April 1, 2020 to July 1, 2022".

5. U.S. Census Bureau PEP 2022 Vintage; "Annual Resident Population Estimates, Estimated Components of Resident Population Change, and Rates of the Components of Resident Population Change for States and Counties: April 1, 2020 to July 1, 2022".

6. Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis, "All-Transactions House Price Index for Arizona, Quarterly, Not Seasonally Adjusted" and "All-Transactions House Price Index for the United States, Quarterly, Not Seasonally Adjusted"

7. See Page 14; Appendix A12-A13

8. Non-White includes non-White Hispanic (and therefore White represents White, non-Hispanic); Table S2502; U.S. Census Bureau American Community Survey (ACS) 1-Year Estimates, 2021

9. Note, this analysis does not account for variability in down payment contribution that may reduce monthly payments. Please refer to the Appendix for more information.

10. Applied Economics for City of Phoenix Planning and Development Department, Preliminary Growth Forecast, January 2024

11. See Page 14

12. The Eviction Lab at Princeton University, "Eviction Filings by Location" , accessed March 15, 2024; https://evictionlab.org/eviction-tracking/.

13. Represents total unsheltered and unsheltered homeless. Maricopa Association of Governments, "2023 Point-in-Time Homelessness Count", https://azmag.gov/Programs/Homelessness/Data/Point-In-Time-Homelessness-Count.

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Data Sources

U.S. Census Bureau Decennial Census and Redistricting Files, 2000, 2010, 2020

U.S. Census Bureau American Community Survey 1-Year and 5-Year Estimates

U.S. Census Bureau Public Use Microdata Survey (ACS 1-Year)

Maricopa Association of Governments

Special thanks to the following groups who have contributed to this report:

City of Phoenix Housing Department

City of Phoenix Planning & Development Department

Maricopa Association of Governments

Prepared by

Bloomberg Associates
Chasm LLC.

Appendix

Methodology Overview

Additional Analyses

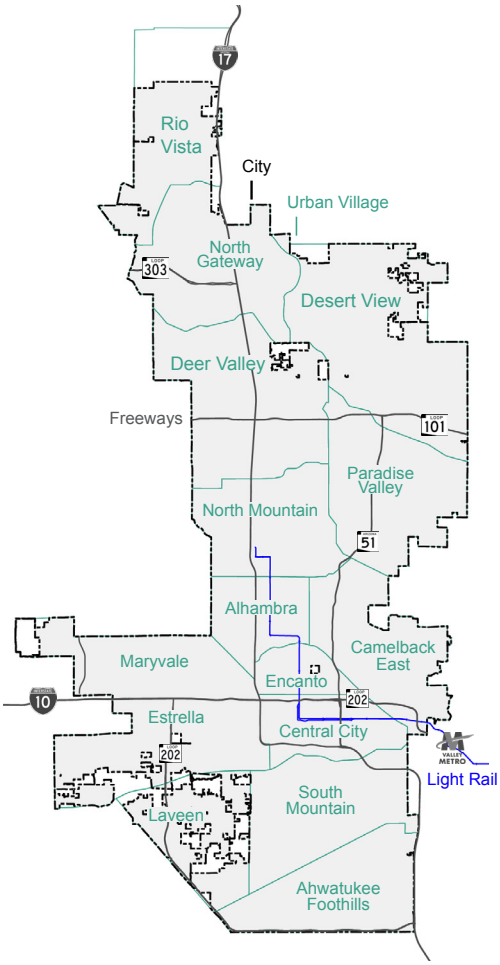
Report Geographies

This analysis utilizes varying geographies to represent demographic, socioeconomic, and housing trends within the city of Phoenix and for the city of Phoenix as a whole. These geographies are explained below:

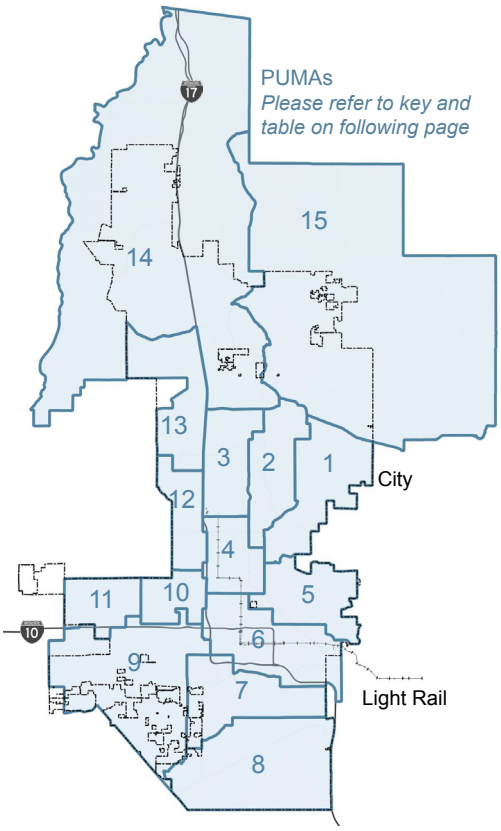
- **City of Phoenix:** Represents the municipal boundary and area for which services are provided by the City government. This excludes select unincorporated areas within the larger city boundary, as can be seen on the map.
- **Urban Villages**: Phoenix is divided into 15 urban villages. Demographic, socioeconomic, and housing trends representing these areas later in the Appendix (pages A10 on). Those prepared using the U.S. Census Bureau Decennial Census, the comparable unit of geography represent U.S. Census Bureau Census Blocks. For all other U.S. Census Bureau data, representations of urban villages in the Appendix use Census Block Groups (a larger unit of geography). It should be noted that urban village trends calculated using Census Block Groups would include some areas that are excluded from or fall outside of the municipal boundary, which includes unincorporated areas. For more information on Phoenix's urban villages, please refer to https://www.phoenix.gov/villages.
- **Census Public Use Microdata Areas (PUMAs)**: Census PUMAs are statistical geographic areas representing a population of 100,000 or more, used for tabulating and sharing Decennial Census and American Community Survey (ACS) Public Use Microdata Sample (PUMS) data. These geographies are valuable for cross-tabulating a wide range of demographic (person) and housing (unit) characteristics. Geographies in this report represent the 2010 Census PUMA boundaries to align with microdata files made available between 2012 and 2021. Boundaries in the years prior to 2012 and after 2021 are different, and for analytic consistency over time this analysis maintains one set of PUMA boundaries (i.e., 2010 boundaries). More information about PUMAs can be found on Census website: https://www.census.gov/programs-surveys/geography/guidance/geo-areas/pumas.html

  PUMA boundaries do not align with urban village boundaries, and, in the north, with the city boundary. On many maps illustrated in the report, areas extending further west and north are not shown to their full extent, but the full extent is captured in the

Phoenix Urban Villages



Census PUMAs (2010)

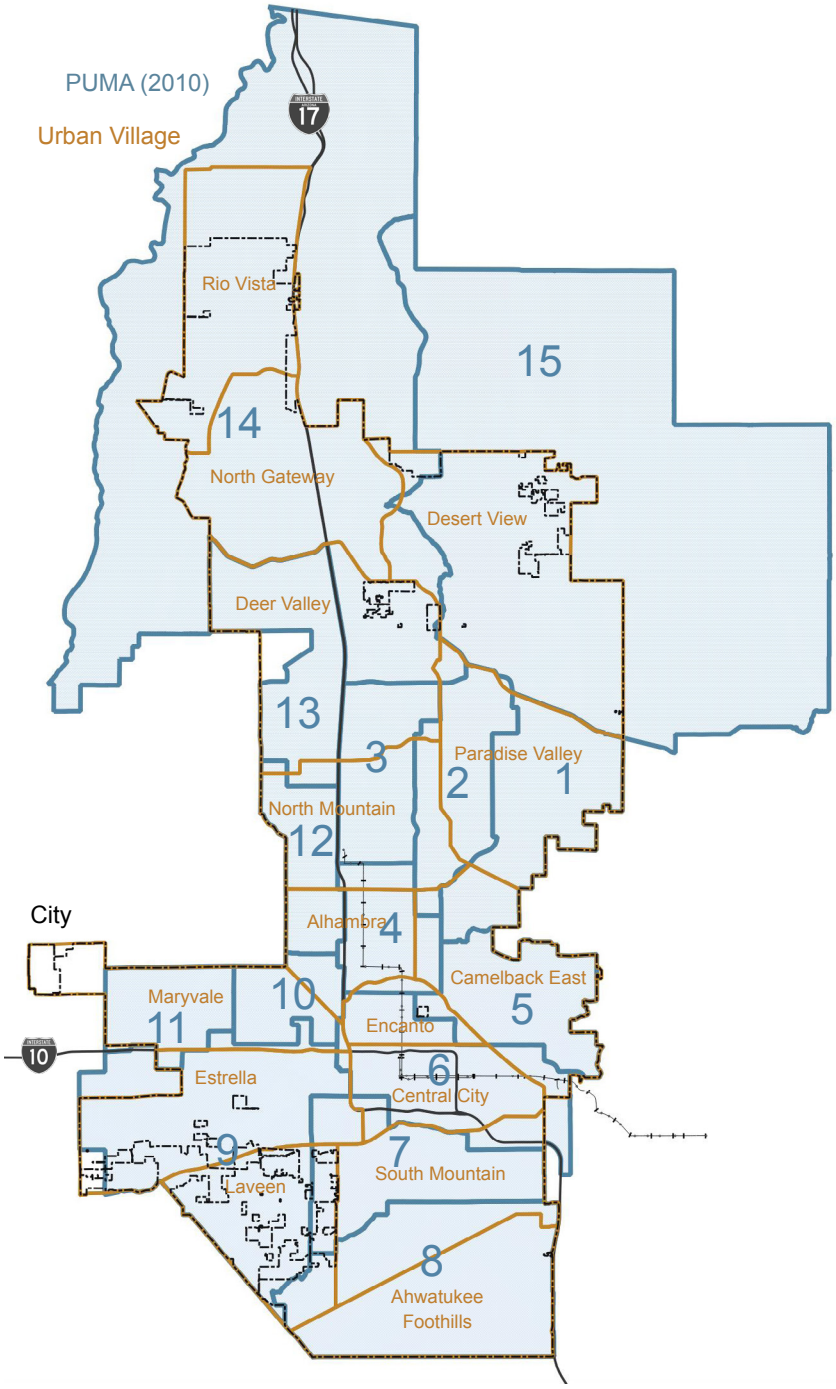


analyses and data reported for those PUMAs, unless otherwise noted. In northwest Phoenix, PUMA boundaries extend significantly beyond city borders into neighboring jurisdictions, including Scottsdale, Cave Creek, and other surrounding communities. Northernmost PUMAs may skew towards representing population and housing characteristics of non-Phoenix residents, but there are limited sound approaches for separating those areas when using Census microdata.

- **Alignment Between Urban Villages and Census PUMAs:** As shown on the map at the right, there is limited direct alignment between Phoenix urban village boundaries and those of Census PUMAs. However, in order to understand trends within Phoenix, these divisions generally align in scale and are helpful for assessing demographic, socioeconomic, and housing trends.

This report assigns titles to PUMAs based on the urban villages represented, which are referred to throughout the report as "urban village areas". The report does not use PUMA titles or geographic identifiers assigned by the U.S. Census Bureau.

Phoenix Urban Villages and Census PUMAs (2010)



Census PUMAs or "Urban Village Areas"

1. Paradise Valley
2. North Mountain, Paradise Valley
3. North Mountain, Deer Valley
4. Alhambra
5. Camelback East
6. Central City, Encanto
7. South Mountain
8. Ahwatukee Foothills
9. Estrella, Laveen
10. Maryvale, Alhambra
11. Maryvale
12. Alhambra, North Mountain
13. Deer Valley
14. N. Gateway, Rio Vista, Peoria
15. Desert View, Scottsdale

Characteristics of Census PUMAs Extending Beyond Phoenix Borders

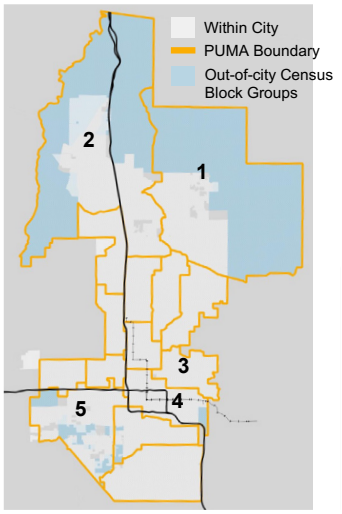
To understand the effects of including PUMAs that fall partially outside of the Phoenix jurisdictional boundary, the following tables and graphs characterize the population and housing distribution for Census Block Groups that comprise the in-city versus out-of-city areas. Select PUMAs along the eastern city border intersect with Phoenix but predominantly represent jurisdictions to the east, and are not included in this assessment.

The two PUMAs with the largest share of population and housing that fall outside of the city boundary are in the northernmost areas capturing the Desert View, North Gateway, and Rio Vista urban village areas. However, demographic comparisons show that the characteristics of the in-city portions generally reflect the out-of-city portions. As noted on the prior pages, these represent 2010 PUMA boundaries.

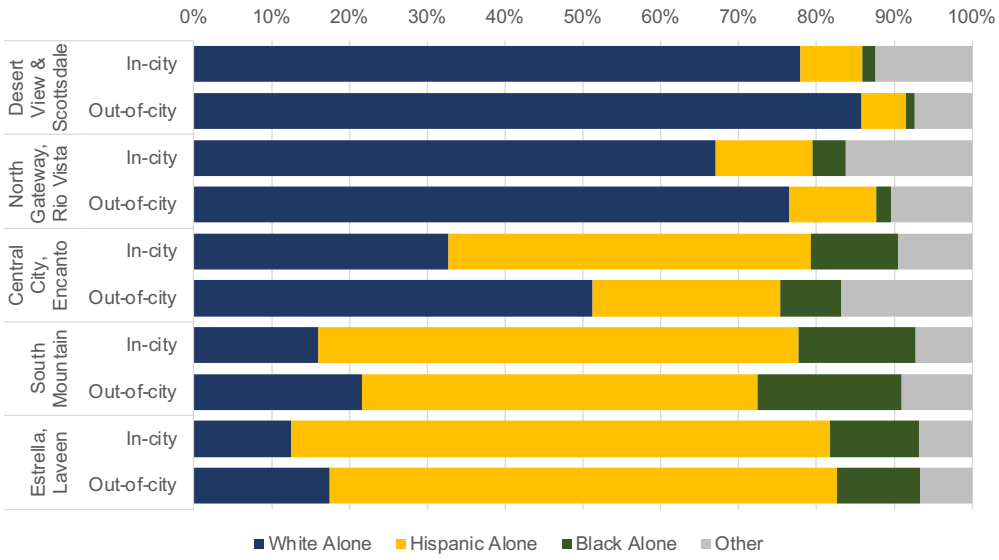
In-City vs. Out-of-City Population and Housing (2020) for Phoenix PUMAs

Urban Village Areas	POPULATION				HOUSING			
Census PUMA	In-city	Out-of-city	Total	% In-city	In-city	Out-of-city	Total	% In-city
1. Desert View & Scottsdale	59,315	71,410	130,730	**45%**	26,982	38,642	65,624	**41%**
2. North Gateway, Rio Vista, & Peoria	37,000	103,575	140,575	**26%**	15,776	38,714	54,490	**29%**
3. Central City, Encanto	113,475	2,670	116,145	**98%**	53,325	1,218	54,543	**98%**
4. South Mountain	112,900	4,335	117,230	**96%**	35,167	1,222	36,389	**97%**
5. Estrella, Laveen	143,090	23,690	166,780	**86%**	40,701	7,002	47,703	**85%**
Total	465,780	205,680	671,460	**69%**	171,951	86,798	258,749	**66%**

Map of Affected PUMAs



In-City vs. Out-of-City Mutually Exclusive Race/Ethnicity for Phoenix PUMAs



Additional Notes on Population and Housing Trends

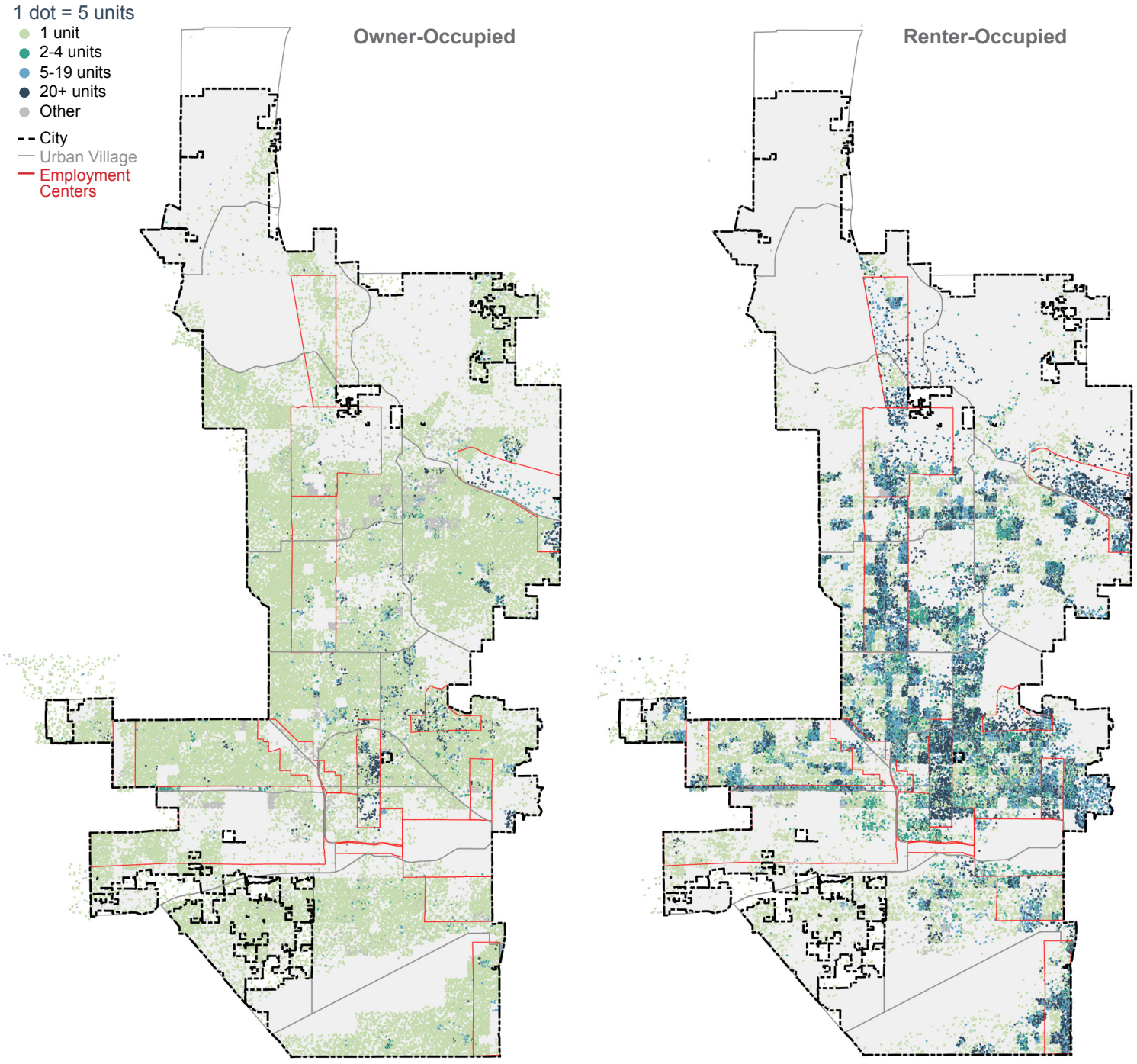
To assess trends in population, housing, and vacancy for Phoenix, neighboring Maricopa County jurisdictions, the State of Arizona, U.S., and national comparator cities, this report relies on the Decennial Census enumerations - the most reliable and consistent source for longer-term longitudinal analysis.

To assess recent trends in the housing market with a focus on the period since COVID-19, this analysis looks at the period between 2019 and 2022. Comparable Census-provided estimates for vacancy and housing unit count were not available (or reliable) for the geographies or period used in those analyses, which focuses on individual (interim) years.

Housing Units by Building Size and Tenure with Employment Centers

The following map represents housing units by building size (categories indicated in legend) and tenure (i.e., owner-occupied vs. renter-occupied) with boundaries for Employment Centers overlaid. Employment Centers represent GIS data available via Maricopa Association of Governments. For more information, please refer to their website: https://geodata-azmag.opendata.arcgis.com/datasets/AZMAG::job-centers-2017/about.

Housing Units by Building Size and Tenure for Phoenix Census Tracts, 2021



U.S. Census Bureau ACS 5-Year Estimates 2017-2021. Select Census Tracts extend beyond the city boundary;

Rental Housing Gap

Renter Households by Area Median Income Level vs. Units Affordable to Renter Households by AMI (Cumulative), 2021

	Up to 30% AMI			Up to 50% AMI			Up to 80% AMI			Up to 100% AMI			Up to 120% AMI			All		
Public Use Microdata Area	Demand	Supply	Gap	Demand	Supply	Gap	Demand	Supply	Gap	Demand	Supply	Gap	Demand	Supply	Gap	Demand	Supply	Gap
1. Paradise Valley	744	282	-462	2,315	852	-1,463	4,673	3,836	-837	5,690	7,272	1,582	7,208	9,270	2,062	12,204	12,427	223
2. North Mountain, Paradise Valley	2,725	516	-2,209	5,313	2,098	-3,215	9,420	9,971	551	11,625	14,195	2570	13,235	17,110	3875	18,388	18,913	525
3. North Mountain, Deer Valley	2,585	170	-2,415	6,610	1,557	-5,053	13,129	9,231	-3,898	15,428	15,261	-167	15,721	18,503	2,782	19,263	19,312	49
4. Alhambra	4,315	1,280	-3,035	9,055	4,237	-4,818	15,743	17,408	1,665	19,099	22,977	3878	21,668	25,430	3762	27,680	27,896	216
5. Camelback East	2,148	602	-1,546	4,148	2,111	-2,037	10,167	10,027	-140	13,047	16,427	3,380	16,201	20,592	4,391	23,411	23,887	476
6. Central City, Encanto	6,438	2,679	-3,759	11,270	6,475	-4,795	16,856	17,455	599	22,036	25,137	3101	24,649	30,144	5495	32,514	33,447	933
7. South Mountain	2,777	1,483	-1,294	4,606	3,180	-1,426	7,391	7,494	103	8,437	10,087	1,650	8,714	10,925	2,211	11,037	11,354	317
8. Ahwatukee Foothills	1,417	342	-1,075	2,367	483	-1,884	5,386	1,799	-3,587	6,302	6,176	-126	7,086	9,718	2,632	12,253	12,505	252
9. Estrella, Laveen	2,343	640	-1,703	4,388	2,479	-1,909	7,055	7,552	497	8,444	9,197	753	9,079	9,918	839	10,601	10,795	194
10. Maryvale, Alhambra	2,588	982	-1,606	4,623	1,986	-2,637	8,626	11,957	3,331	10,044	13,638	3594	11,133	14,109	2976	13,926	14,109	183
11. Maryvale	2,925	535	-2,390	5,051	1,885	-3,166	8,794	10,288	1,494	11,447	13,448	2001	11,819	14,200	2381	14,335	14,492	157
12. Alhambra, North Mountain	3,353	940	-2,413	6,288	2,212	-4,076	9,495	10,543	1,048	11,490	13,434	1944	11,649	14,969	3320	14,609	15,146	537
13. Deer Valley	1,935	181	-1,754	3,903	728	-3,175	5,435	5,318	-117	6,769	9,499	2730	7,076	10,747	3671	12,179	12,179	0
14. N. Gateway, Rio Vista, Peoria	1,225	49	-1,176	2,300	49	-2,251	3,936	2,429	-1,507	4,947	5,127	180	6,047	6,660	613	8,526	8,623	97
15. Desert View, Scottsdale	207	118	-89	2,369	118	-2251	3,487	1,254	-2233	4,211	2,366	-1,845	4,390	5,645	1,255	11,304	11,837	533
Total*	37,725	10,799	**-26,926**	74,606	30,450	**-44,156**	129,593	126,562	**-3,031**	159,016	184,241	**25,225**	175,675	217,940	**42,265**	242,230	246,922	**4,692**

Renter Households by Area Median Income Level vs. Units Affordable to Renter Households by AMI (by Band), 2021

	Up to 30% AMI			30% to 50% AMI			50% to 80% AMI			80% to 100% AMI			100% to 120% AMI			120% AMI+		
Public Use Microdata Area	Demand	Supply	Gap	Demand	Supply	Gap	Demand	Supply	Gap	Demand	Supply	Gap	Demand	Supply	Gap	Demand	Supply	Gap
1. Paradise Valley	744	282	-462	1,571	570	-1,001	2,358	2,984	626	1,017	3,436	2,419	1,518	1,998	480	4,996	3,157	-1,839
2. North Mountain, Paradise Valley	2,725	516	-2,209	2,588	1,582	-1,006	4,107	7,873	3,766	2,205	4,224	2019	1,610	2,915	1305	5,153	1,803	-3350
3. North Mountain, Deer Valley	2,585	170	-2,415	4,025	1,387	-2,638	6,519	7,674	1,155	2,299	6,030	3,731	293	3,242	2,949	3,542	809	-2,733
4. Alhambra	4,315	1,280	-3,035	4,740	2,957	-1,783	6,688	13,171	6,483	3,356	5,569	2213	2,569	2,453	-116	6,012	2,466	-3546
5. Camelback East	2,148	602	-1,546	2,000	1,509	-491	6,019	7,916	1,897	2,880	6,400	3,520	3,154	4,165	1,011	7,210	3,295	-3,915
6. Central City, Encanto	6,438	2,679	-3,759	4,832	3,796	-1,036	5,586	10,980	5,394	5,180	7,682	2502	2,613	5,007	2394	7,865	3,303	-4562
7. South Mountain	2,777	1,483	-1,294	1,829	1,697	-132	2,785	4,314	1,529	1,046	2,593	1,547	277	838	561	2,323	429	-1,894
8. Ahwatukee Foothills	1,417	342	-1,075	950	141	-809	3,019	1,316	-1,703	916	4,377	3,461	784	3,542	2,758	5,167	2,787	-2,380
9. Estrella, Laveen	2,343	640	-1,703	2,045	1,839	-206	2,667	5,073	2,406	1,389	1,645	256	635	721	86	1,522	877	-645
10. Maryvale, Alhambra	2,588	982	-1,606	2,035	1,004	-1,031	4,003	9,971	5,968	1,418	1,681	263	1,089	471	-618	2,793	0	-2793
11. Maryvale	2,925	535	-2,390	2,126	1,350	-776	3,743	8,403	4,660	2,653	3,160	507	372	752	380	2,516	292	-2224
12. Alhambra, North Mountain	3,353	940	-2,413	2,935	1,272	-1,663	3,207	8,331	5,124	1,995	2,891	896	159	1,535	1376	2,960	177	-2783
13. Deer Valley	1,935	181	-1,754	1,968	547	-1,421	1,532	4,590	3,058	1,334	4,181	2847	307	1,248	941	5,103	1,432	-3671
14. N. Gateway, Rio Vista, Peoria	1,225	49	-1,176	1,075	0	-1,075	1,636	2,380	744	1,011	2,698	1,687	1,100	1,533	433	2,479	1,963	-516
15. Desert View, Scottsdale	207	118	-89	2,162	0	-2162	1,118	1,136	18	724	1,112	388	179	3,279	3,100	6,914	6,192	-722
Total*	37,725	10,799	**-26,926**	36,881	19,651	**-17,230**	54,987	96,112	**41,125**	29,423	57,679	**28,256**	16,659	33,699	**17,040**	66,555	28,982	**-37,573**

Estimates in gray deemed not statistically reliable at the 90% confidence interval. The directionality (i.e., gap/surplus) is considered statistically significant, therefore the exact number may not be reliable, but the existence of the indicated gap/surplus is likely. *Total includes areas extending beyond city borders. A positive gap implies a surplus of units.

Source: Chasm analysis of U.S. Census Bureau ACS 1-Year 2021 PUMS

Using Census American Community Survey (ACS) Public Use Microdata Survey (PUMS) records for PUMAs that fall entirely or partially within the city of Phoenix boundaries, indicated above, this analysis uses reported renter household counts, household income, household size, and gross rent payments (i.e., including utilities) to identify the gap between what households can afford (i.e. demand) versus what they pay (i.e., supply). Household characteristics are limited to occupied households, as gross rent payments, for example, are not available for vacant units. This is a limitation of the analysis, and it is likely that there is additional rental supply not captured.

The housing gap illustrated above, both cumulative and by band, represents the sum of PUMAs falling fully or partially within the city borders, and therefore may account for some portion of demand and supply contributed from jurisdictions neighboring the North/ Northwest Phoenix areas. Notably, areas outside Northwest Phoenix included in this analysis have incomes that skew higher than the Phoenix average. However, those non-Phoenix households largely mirror the demographics and income distributions of Phoenix households that fall within the city boundary in that same PUMA. For example, the characteristics of households residing in the Desert View area of Phoenix are quite similar to those residing in Cave Creek or Scottsdale across the city border (identified as #15 above).

In many cases, the results for individual PUMAs were not deemed statistically reliable at the 90% confidence interval when incorporating the error estimates associated with the survey cross-tabulations. All demand and supply estimates stated above include a degree of error, which is provided by the U.S. Census Bureau. The sum of PUMAs, however, was deemed statistically reliable. Therefore, the PUMA-level, sub-city trends illustrated above are most representative of tendency and order-of-magnitude, and numbers as presented in the table should be considered approximations rather than exact estimates.

Renter Households by Rental Housing Cost and Affordability Level, 2021

A	B	C	D	E	F	G
Income Range	Renter Households	Affordable Units	Absolute Difference Between Renters and Affordable Units (C-B)	Affordable & Available Units	Absolute Difference Between Renters and Affordable & Available Units (E-B)	Affordable Units Occupied by Higher Income Households (C-E)
Up to 30% AMI	37,725	10,799	(26,926)	5,599	(32,126)	5,200
Up to 50% AMI	74,606	30,450	(44,156)	15,585	(59,021)	14,865
Up to 80% AMI	129,593	126,562	(3,031)	78,544	(51,049)	48,018
Up to 100% AMI	159,016	184,241	25,225	114,529	(44,487)	69,712
Up to 120% AMI	175,675	217,940	42,265	132,816	(42,859)	85,124

Chasm analysis

The affordable rental gap further widens when taking into consideration the number of units by income band that are available to households of that income band, versus those that are unavailable because they are occupied by households at a higher income level, as discussed on page 15.

As seen in the table above, the need becomes more acute when removing households that are spending well below 30% of their income on housing, placing even greater downward pressure on the lower income households.

Owner Housing Affordability

Median Sales Price 2021 and Estimated Home Purchase & Monthly Payment Costs

Public Use Microdata Area	2021 Median Sales Price	Assumptions	Estimated Purchase Costs			Affordability	4p Household Income Limits (Phoenix MSA 2021)
			3.5% Down Payment	Monthly Mortgage Payment	Annual Estimated Payment	Approximate Annual Household Income Needed	
1. Paradise Valley	$540,000	30-year fixed rate FHA loan 5.75% interest Private mortgage insurance premium 0.55% Property tax 0.5% Homeowners insurance 0.3% *does not include homeowners' fees, origination, other costs	*$18,900*	$3,640	$43,700	$145,650	120% AMI $94,800
2. North Mountain, Paradise Valley	$365,000		*$12,800*	$2,460	$29,520	$98,410	
3. North Mountain, Deer Valley	$340,000		*$11,900*	$2,290	$27,500	$91,670	
4. Alhambra	$359,000		*$12,600*	$2,420	$29,010	$96,710	100% AMI $79,000
5. Camelback East	$475,000		*$16,600*	$3,200	$38,420	$128,070	
6. Central City, Encanto	$339,000		*$11,900*	$2,290	$27,420	$91,400	
7. South Mountain	$325,000		*$11,400*	$2,190	$26,290	$87,630	80% AMI $63,200
8. Ahwatukee Foothills	$450,000		*$15,800*	$3,030	$36,400	$121,330	
9. Estrella, Laveen	$347,000		*$12,100*	$2,340	$28,100	$93,560	
10. Maryvale, Alhambra	$250,000		*$8,800*	$1,690	$20,220	$67,400	50% AMI $39,500
11. Maryvale	$280,000		*$9,800*	$1,890	$22,650	$75,490	
12. Alhambra, North Mountain	$300,000		*$10,500*	$2,020	$24,270	$80,890	
13. Deer Valley	$370,000		*$13,000*	$2,490	$29,920	$99,760	30% AMI $26,500
14. North Gateway, Rio Vista, Peoria	$518,000		*$18,100*	$3,500	$42,900	$139,660	
15. Desert View, Scottsdale	$725,000		*$25,400*	$4,890	$58,640	$195,470	

Note: This analysis uses Phoenix Housing Department standard assumptions for an FHA loan with 3.5% down payment and no additional assistance. Tax and insurance rates derived from Phoenix Housing standard terms. Source: Sales price data provided by MAG via The Information Market, sales prices rounded to the nearest thousand; Phoenix Housing Department; Chasm analysis.

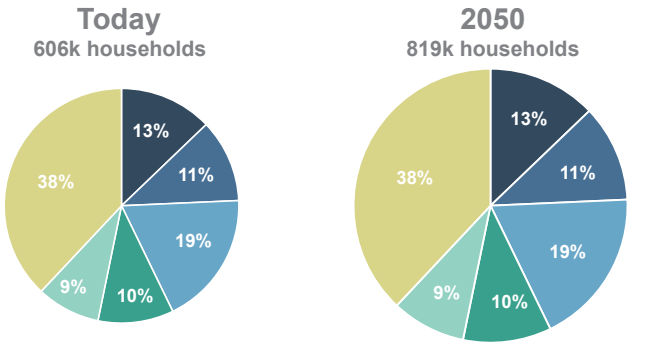
Census data only captures monthly costs current homeowners report spending on housing (i.e., mortgages, taxes, utilities, and other fees) relative to their household income. Those payments do not capture the cost in the current market to purchase a new home, or current affordability levels relative to household income.

Using the latest available household income data (2021) and median sales price data in the same year, we can estimate monthly payments against household income levels in those areas assuming a standard Federal Housing Administration (FHA) supported loan. That enables comparing how many households could affordably purchase a new home if paying less than 30% of their household income on monthly costs. This estimate does not account for money needed for upfront costs to support a down payment, legal and other associated fees, or long-term maintenance and repairs. Of course, many existing owner households presumably own a home that experienced similar appreciation as other homes in their area and could theoretically "afford" a home because of the higher price they could sell their home for and thus have a larger down payment or buy down the interest rate. These calculations do not model such a scenario, and only account for households looking to afford a home based on their income alone.

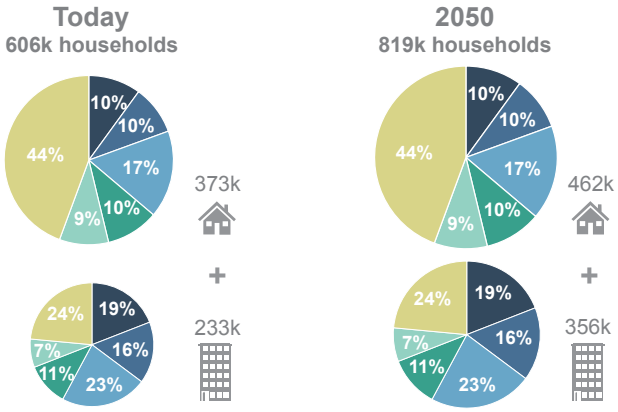
Future Needs

To model future needs, or the incremental affordability gap as it might be expected to grow through 2050, the following three income distribution scenarios were explored. All three scenarios are built on the assumption that households and housing units by multifamily versus single-family grow as projected by the City of Phoenix Planning & Development Department (PDD).

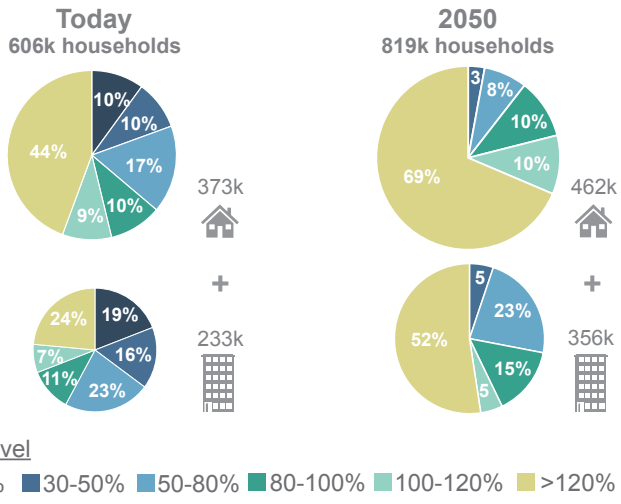
1A Income distribution for all households in the future remains the same as today.



1B Income distribution in the future remains the same as today, but accounts for housing typology.



2 Income distribution follows the linear trajectory of the past decade into future decades, and accounts for housing typology.



Assumptions

- Total households grow as projected by the City, from 605,848 in 2020 to 818,763 in 2050.
- The household income distribution by AMI of future households is identical to the distribution of household income by AMI today.
- This scenario does not account for inflation, changes in actual household income, or other economic factors; it solely maintains income distribution relative to AMI level.

- Households grow as projected by the City, with different projections for single-family versus multifamily buildings. Multifamily is projected to grow more and at a faster rate.
- Income distribution assumptions by AMI of future households is identical to the distribution of household income by AMI today, but overall income distribution is skewed because it accounts for income distribution in single family and multifamily separately.
- Because multifamily will grow faster and incomes skew lower for those households, the future income distribution in this scenario results in more households at lower AMIs than 1A.

- Households grow as projected by the City, with different projections for single-family versus multifamily buildings (same as 1B).
- Income distribution by AMI of future households will reflect a linear continuation of shifts in income distribution by AMI over the last decade, with separate trajectories assumed for households in multifamily versus single-family buildings.
- Over the last decade, the City of Phoenix has seen a decline in the share of households at the lowest AMI levels for residents in both single-family and multifamily buildings, but at different rates. Continuing this trend forward results in fewer households at the lowest income levels and more at the highest income level each decade.

Additional Notes on Future Needs Assumptions

- **Household growth by multifamily and single-family:** PDD does not project household growth by the building size/type future households might occupy, but solely the number of housing units by those typologies independent of the total number of households. Using the current occupancy rate by building typology calculated from the Census ACS for PUMAs and the city (i.e., for single-family and multifamily in Scenarios 1B and 2), this analysis assumes a constant occupancy level across decades, consistent with PDD assumptions. The occupancy rate is used to adjust the distribution of multifamily versus single-family units and derive household equivalents. Those occupancy rates can be seen in the table at the right.

Occupancy Rates (2021 ACS 1-Year Estimates)		
Census PUMA	**Single-Family**	**Multifamily**
1. Paradise Valley	93.1%	81.7%
2. North Mountain, Paradise Valley	95.9%	91.0%
3. North Mountain, Deer Valley	96.6%	89.7%
4. Alhambra	94.6%	88.5%
5. Camelback East	89.4%	88.5%
6. Central City, Encanto	90.3%	86.4%
7. South Mountain	95.1%	91.6%
8. Ahwatukee Foothills	96.0%	88.1%
9. Estrella, Laveen	96.8%	97.7%
10. Maryvale, Alhambra	98.7%	96.3%
11. Maryvale	97.8%	90.8%
12. Alhambra, North Mountain	98.2%	90.0%
13. Deer Valley	97.1%	91.4%
14. N. Gateway, Rio Vista, Peoria	95.8%	80.3%
15. Desert View, Scottsdale	89.6%	79.3%
City of Phoenix	**95.3%**	**89.5%**

Chasm analysis of U.S. Census Bureau ACS 1-Year Estimates 2021 PUMs Microdata

- **Scenario 1A**: Census 2021 ACS 1-Year Estimates PUMS data are used to generate income distribution in the current (i.e., 2021) year. The income distributions (i.e., percent allocation across income levels) are applied to the PDD-reported number of households in the base year and future years. The income distribution reflects the sum of PUMAs falling entirely or mostly within city borders. It excludes the two northernmost PUMAs, as this would unfairly weight the city's income distribution higher.

- **Scenario 1B**: This scenario was calculated similarly to 1A, but as noted represents the sum of multifamily and single-family households, rather than all households. It similarly excludes the two northernmost PUMAs in determining the income distribution reflective of the city.

- **Scenario 2**: This uses the 2012 ACS 1-Year Estimates, FY 2012 HUD Income Limits, 2021 ACS 1- Year Estimates, and FY 2021 HUD Income Limits. It calculates the household income distributions by AMI in the base year (2012, the earliest year that maintains the same geographies as the latest year) and the current year (2021), and excludes the two northernmost PUMAs as previously described.

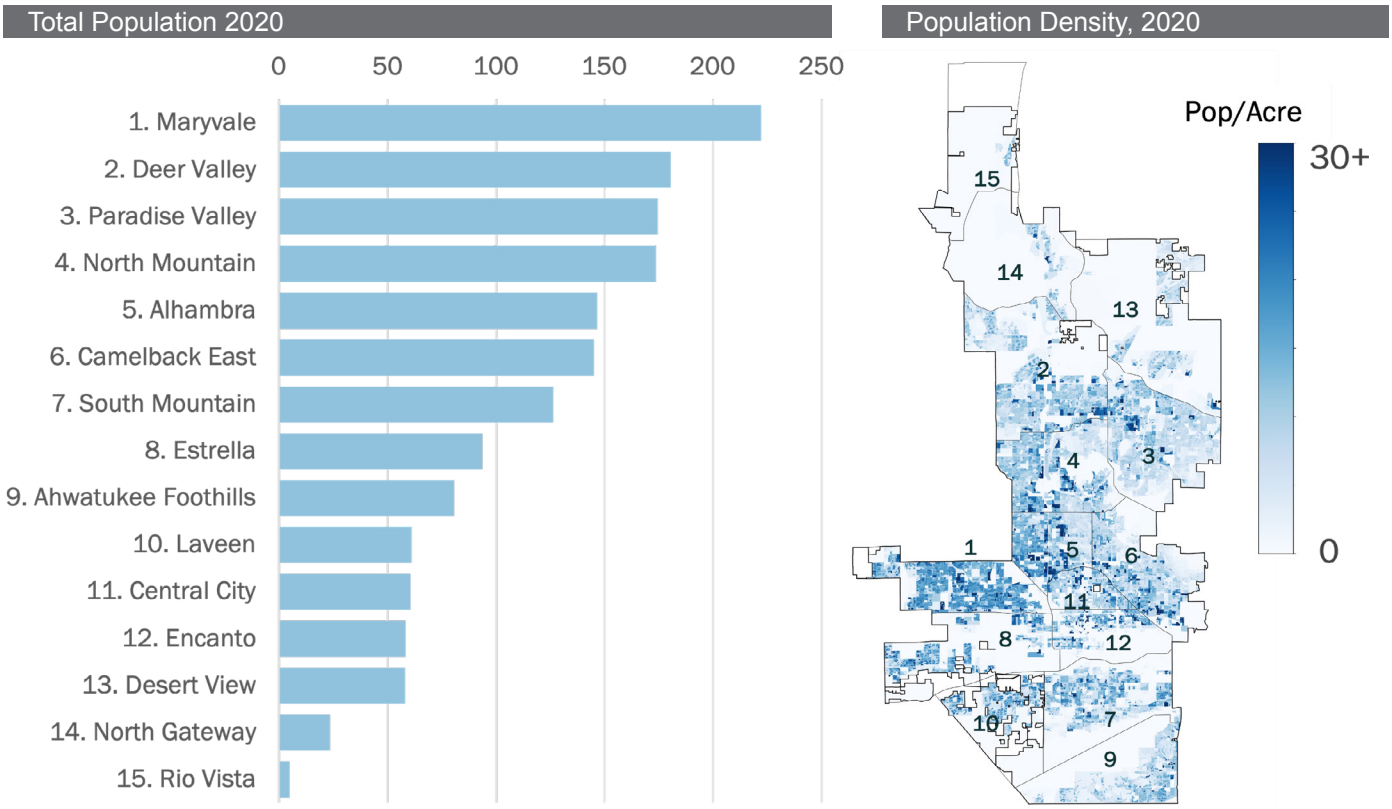
  It then calculates the percentage point shift in household income distribution by AMI from the base year to the current year and applies that linearly forward over the following three decades. So, for example, if 18% of households earned <30% AMI in the base year and 14% of households earned <30% AMI in the current year, there is a percentage point shift of 4% fewer households at the lowest income level. Because the shares are relative to AMI levels in their respective years and not actual income, and because AMI is a metropolitan/regional figure that accounts for incomes outside of the city, this scenario explores what might happen with the sustained shift in loss of lower income households and gain in higher income households within the city limits. In that same example, a percentage point shift of 4% fewer households at the lowest income level is projected out for the following three decades (i.e., 10% of households at <30% AMI by 2030, 6% of households at <30% AMI by 2040, and 2% of households at <30% AMI by 2050).

  This analysis does not allow us to draw conclusions about whether the shifting of low-income households to other parts of the region is fueled by displacement or instead by increases in individual household income (in place), resulting in the inability of new low-income households to move to Phoenix.

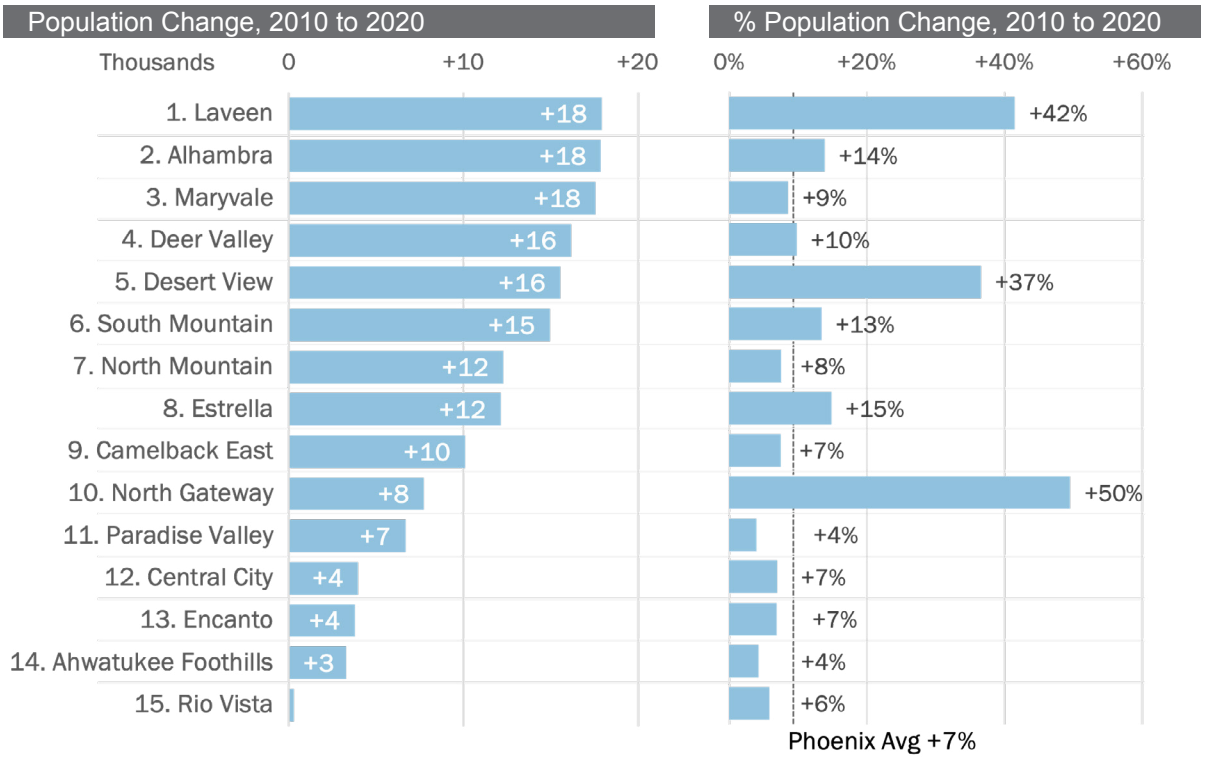
Cost-Burden: To generate order-of-magnitude estimates for incremental cost-burden in the future by scenario, this analysis assumes the share of households that are cost burdened by AMI level today is the same in the future. That share is applied to the projected number of households by AMI level in the future. For example, 88% of households in Phoenix below 30% AMI are cost burdened today (i.e., in 2021). In the future, it is assumed that 88% of households below 30% AMI will be cost burdened. That 88% is applied to the estimated number of households under 30% AMI by scenario in 2050. The other respective shares are 59% of households between 30% and 50% AMI and 41% of households between 50% and 80% AMI are cost burdened (as calculated from an analysis of Census PUMS data).

Demographic and Socioeconomic Conditions

Total Population (thousands) and Population Density (by Census Block) in Phoenix Urban Villages, 2020



Population Change (thousands) and Percent Population Change in Phoenix Urban Villages, 2010 to 2020

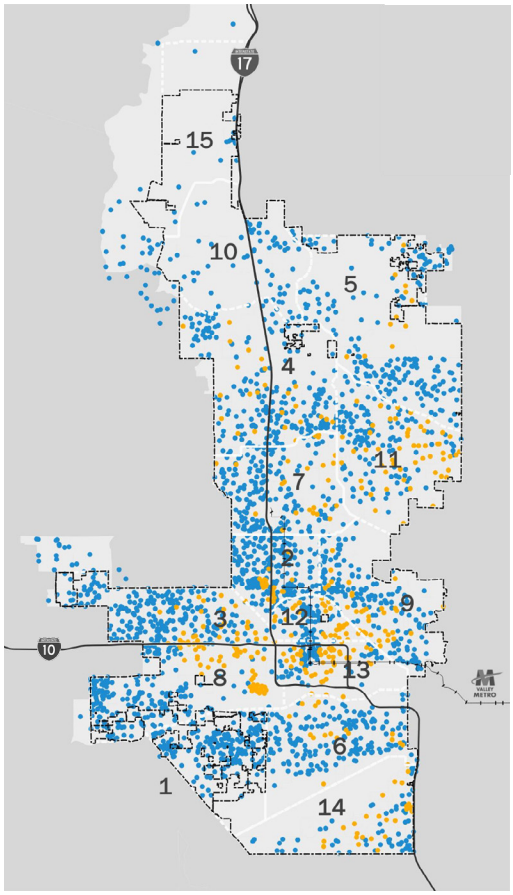


Chasm analysis of U.S. Census Bureau Decennial Census 2010 and Redistricting Files 2020

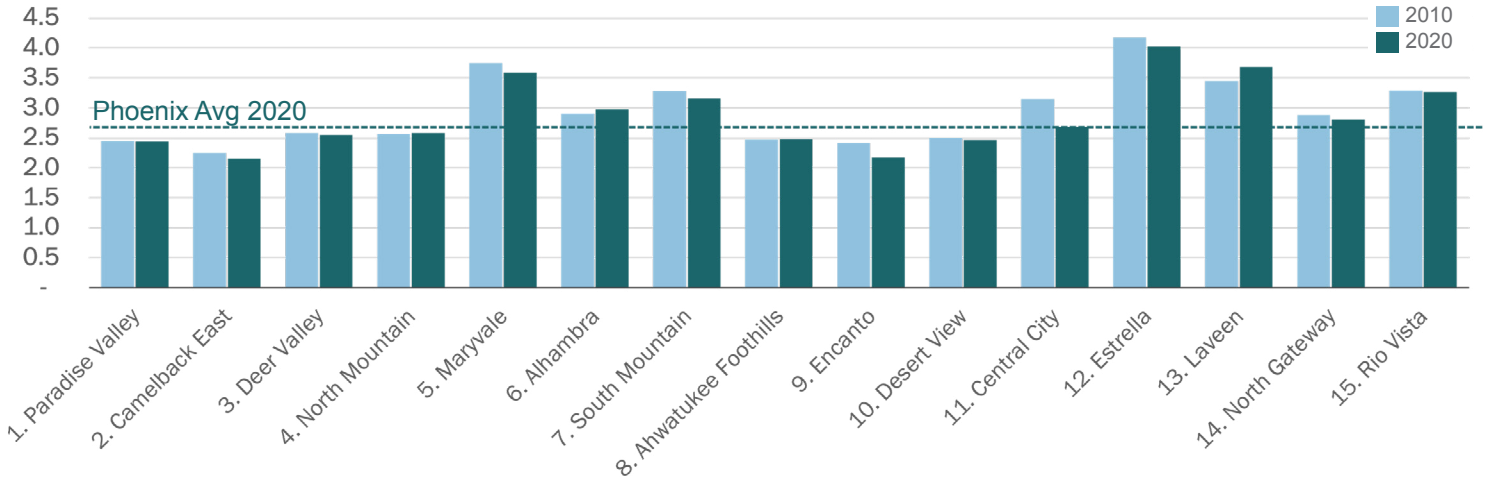
Map of Population Change, 2010 to 2020 (Census Block Groups)

1 Dot = 100 people
- Gained
- Lost
- City
- Urban Village

1. Laveen
2. Alhambra
3. Maryvale
4. Deer Valley
5. Desert View
6. South Mountain
7. North Mountain
8. Estrella
9. Camelback East
10. North Gateway
11. Paradise Valley
12. Central City
13. Encanto
14. Ahwatukee Foothills
15. Rio Vista



Average Household Size in Phoenix Urban Villages, 2010 vs. 2020



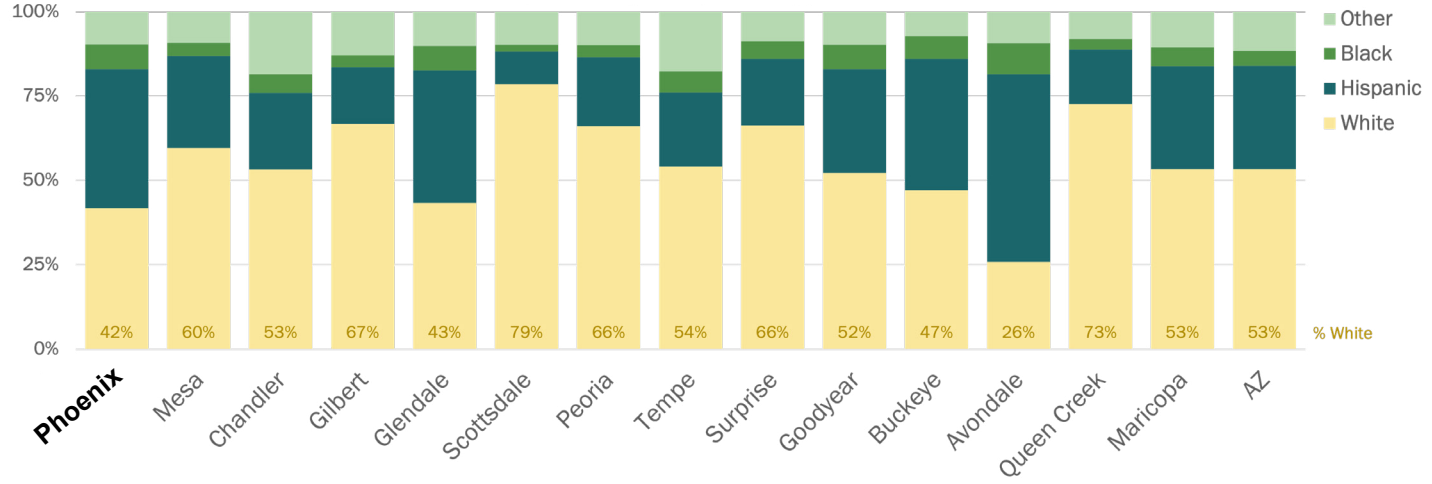
Chasm analysis of U.S. Census Bureau Decennial Census 2010 and Redistricting Files 2020

Population by Mutually Exclusive Race/Ethnicity in Phoenix, Maricopa County, and Arizona

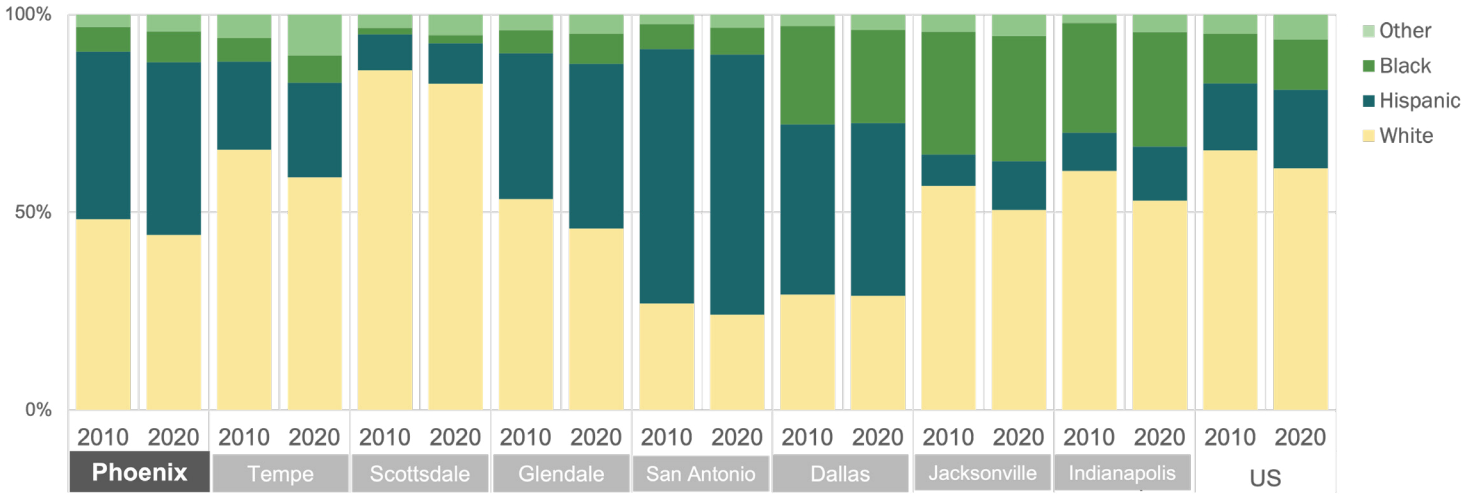
	Population 2010					Share of Population			
	Total	White Alone	Hispanic Alone	Black Alone	Other	White Alone	Hispanic Alone	Black Alone	Other
Phoenix	**1.45M**	**673k**	**590k**	**87k**	**53k**	**47%**	**41%**	**6%**	**7%**
Rest of Co.	2.37M	1.57M	539k	91k	174k	66%	23%	4%	7%
Maricopa	3.82M	2.24M	1.13	177k	143k	59%	30%	5%	7%
Arizona	6.39M	3.70M	1.90	239k	392k	58%	30%	4%	9%
% of County	*38%*	*30%*	*52%*	*49%*	*36%*				
% of State	*23%*	*18%*	*31%*	*36%*	*17%*				

	Population 2020					Share of Population			
	Total	White Alone	Hispanic Alone	Black Alone	Other	White Alone	Hispanic Alone	Black Alone	Other
Phoenix	**1.61M**	**672k**	**662k**	**119k**	**92k**	**42%**	**41%**	**7%**	**10%**
Rest of Co.	2.81M	1.69M	690k	127k	310k	60%	25%	5%	11%
Maricopa	4.42M	2.36M	1.35M	245k	268k	53%	31%	6%	11%
Arizona	7.15M	3.82M	2.19M	317k	577k	53%	31%	4%	12%
% of County	*36%*	*28%*	*49%*	*48%*	*34%*				
% of State	*22%*	*18%*	*30%*	*37%*	*19%*				

Population by Mutually Exclusive Race/Ethnicity in Phoenix and Maricopa County Cities, 2020

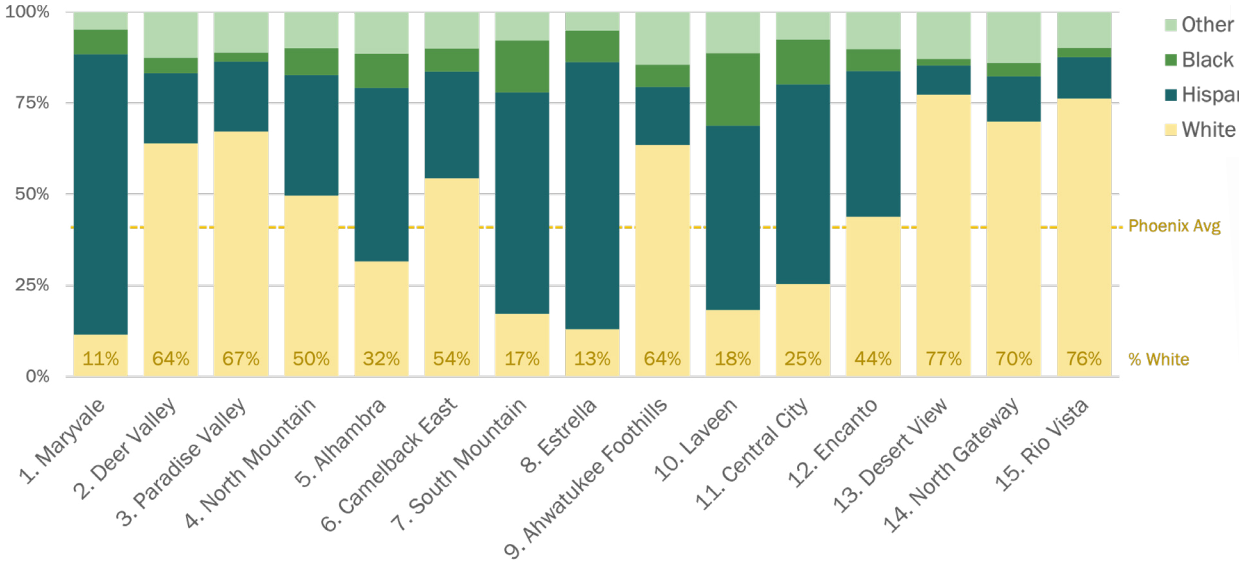


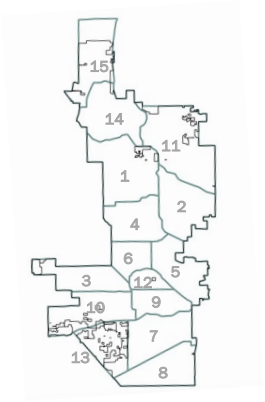
Population by Mutually Exclusive Race/Ethnicity in Phoenix and Comparable Cities, 2010 vs. 2020



Chasm analysis of U.S. Census Bureau Decennial Census 2010 and Redistricting Files 2020

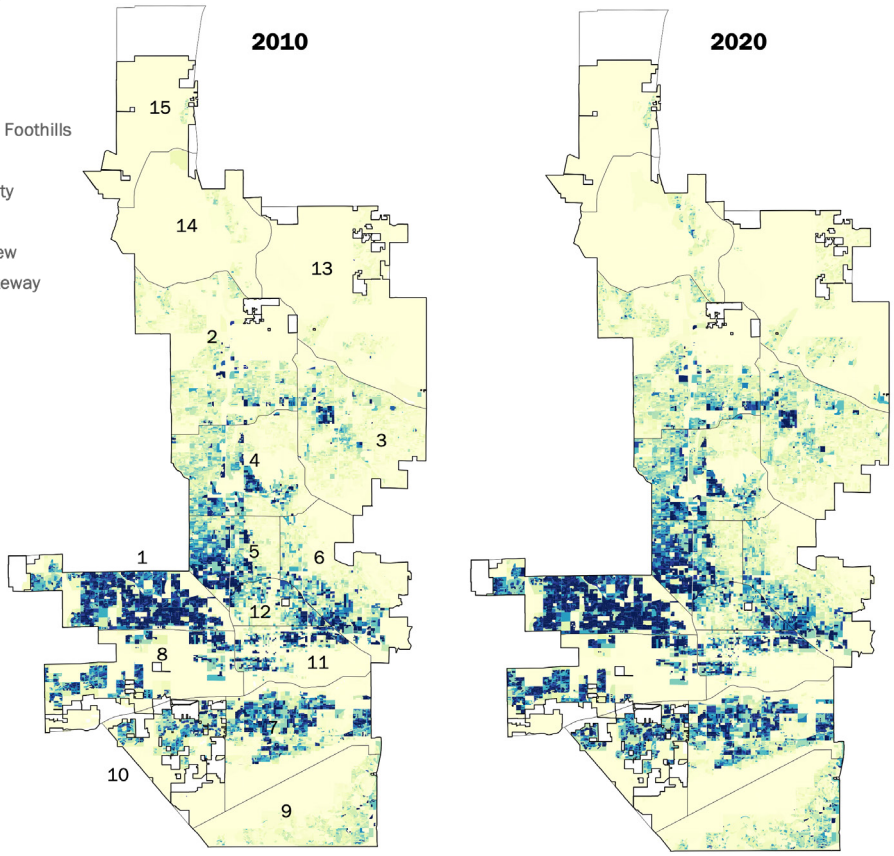
Population by Mutually Exclusive Race/Ethnicity in Phoenix Urban Villages, 2020





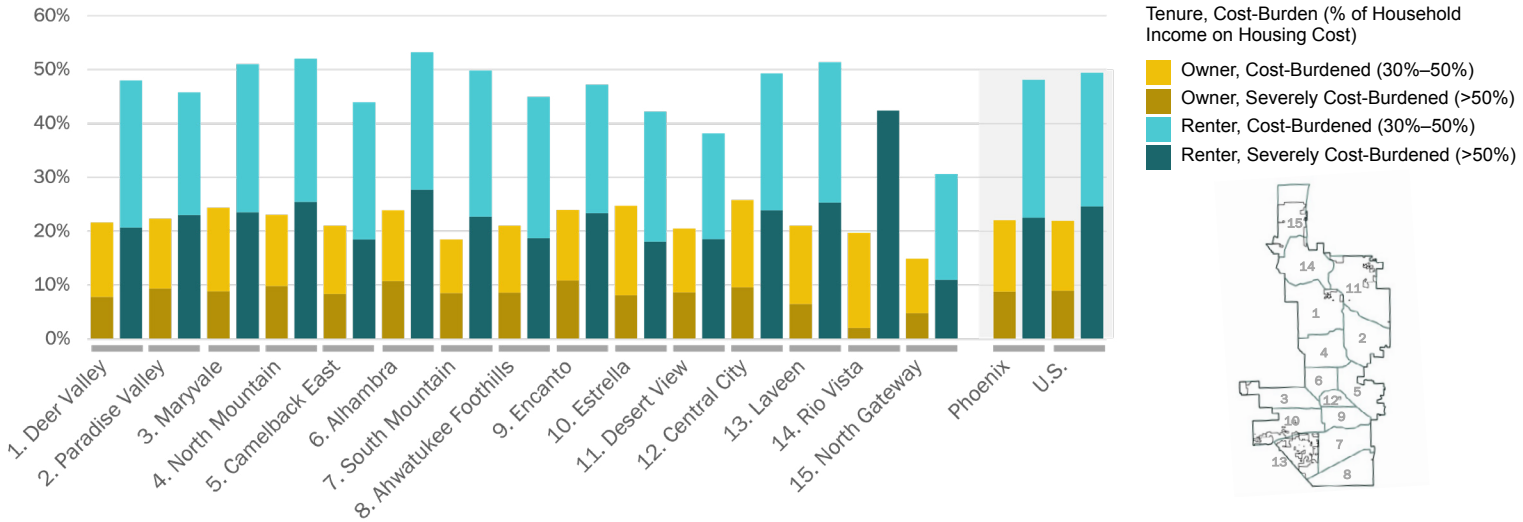
Mutually Exclusive Race/ Ethnicity by Census Block Group in Phoenix Urban Villages, 2010 vs. 2020

1. Maryvale
2. Deer Valley
3. Paradise Valley
4. North Mountain
5. Alhambra
6. Camelback East
7. South Mountain
8. Estrella
9. Ahwatukee Foothills
10. Laveen
11. Central City
12. Encanto
13. Desert View
14. North Gateway
15. Rio Vista

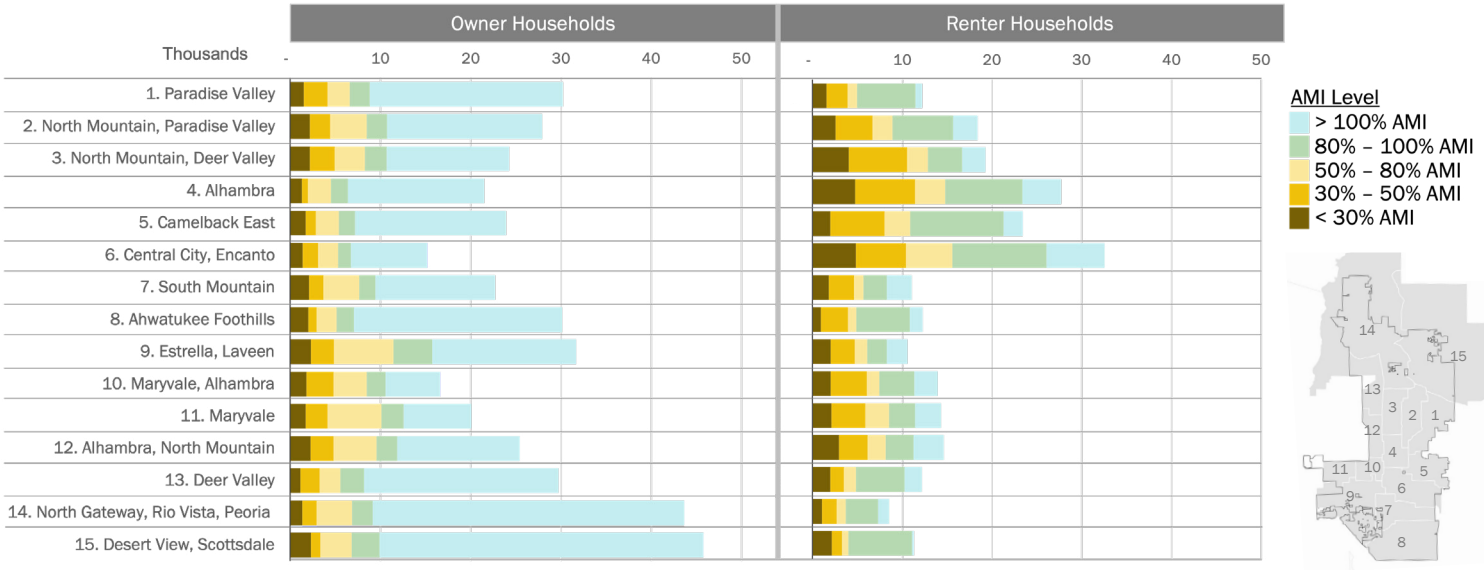


Chasm analysis of U.S. Census Bureau Decennial Census 2010 and Redistricting Files 2020

Cost-Burdened and Severely Cost-Burdened Households in Phoenix Urban Villages, 2017-2021 Average



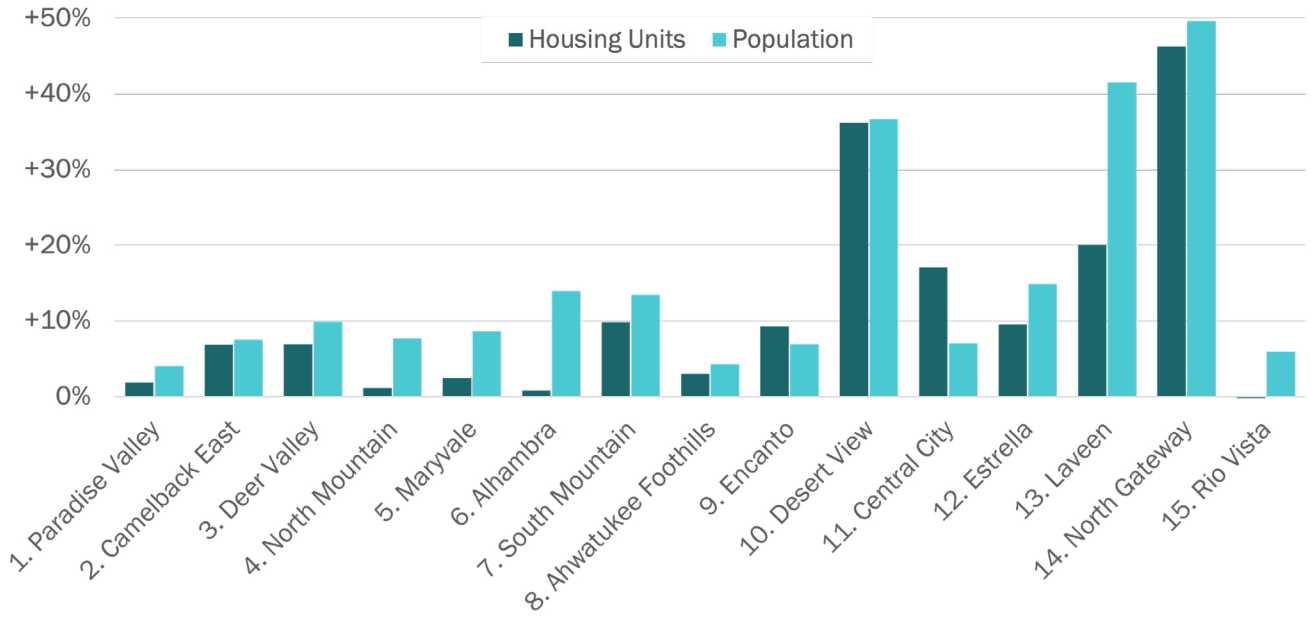
Households by Area Median Income (AMI) Level and Tenure by Census PUMA, 2021



Chasm analysis of U.S. Census Bureau ACS 1-Year Estimates 2021 and 5-Year Estimates 2017-2021, Public Use Microdata Files; HUD FY2021 AMI Limits for Maricopa County/Phoenix metropolitan area

Housing Supply

Percent Change in Housing Units vs. Percent Change in Population for Phoenix Urban Villages, 2010 to 2020



Housing Unit Density by Census Block in Phoenix Urban Villages, 2010 vs. 2020

1. Maryvale
2. Deer Valley
3. Paradise Valley
4. North Mountain
5. Alhambra
6. Camelback East
7. South Mountain
8. Estrella
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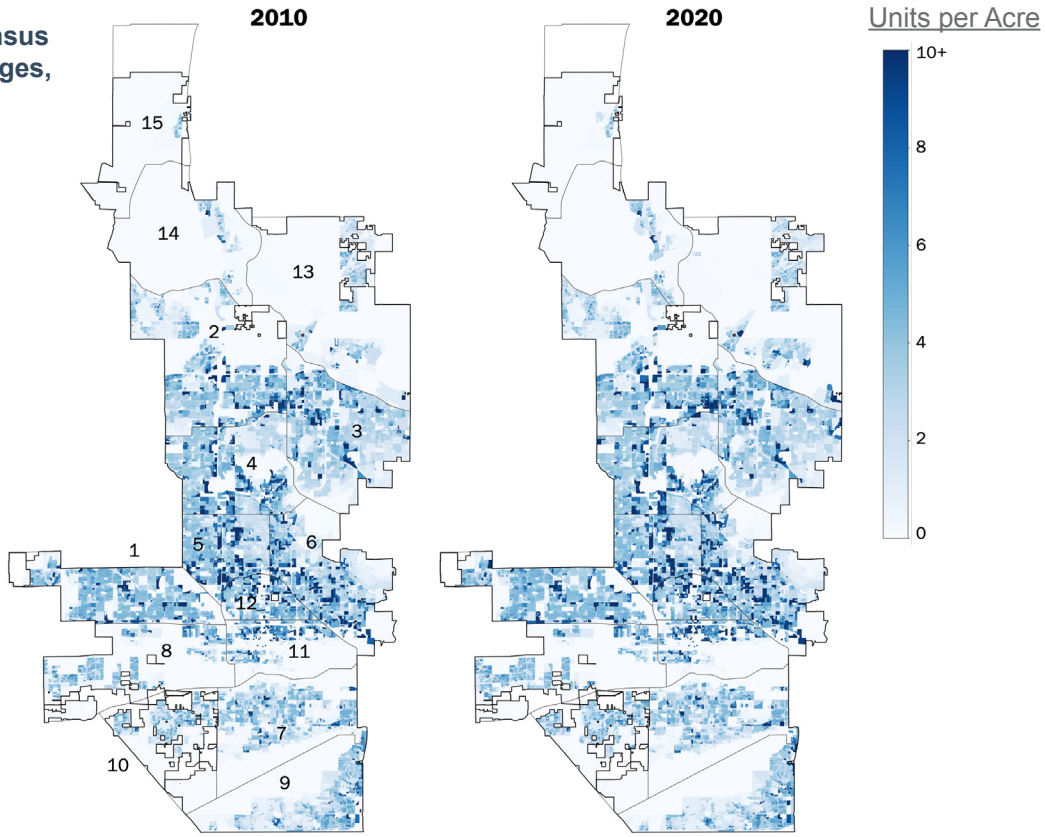
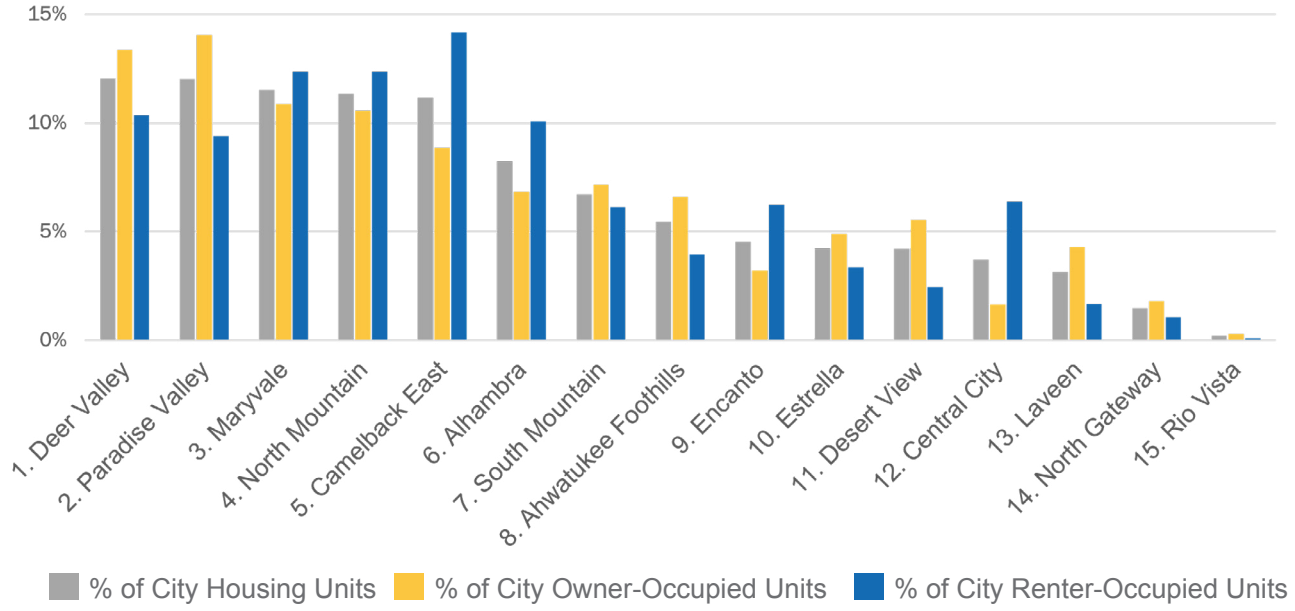


Chasm analysis of U.S. Census Bureau Decennial Census 2010 and Redistricting Files 2020

Phoenix Urban Villages' Share of City Housing Supply by Tenure, 2017-2021 Avg.



Phoenix Overcrowding by Tenure (using Census PUMAs*), 2021

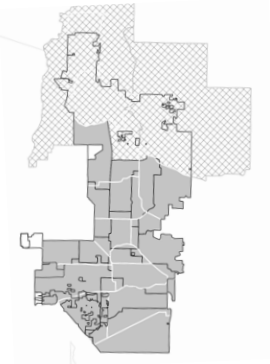
People in Household

# of Bedrooms

	Owner-Occupied					Renter-Occupied				
	1	2	3	4	5+	1	2	3	4	5+
1	2%	1%	0%	0%	0%	23%	7%	2%	1%	1%
2	6%	6%	1%	1%	1%	10%	14%	7%	5%	4%
3	10%	16%	9%	7%	6%	1%	4%	4%	5%	5%
4	3%	8%	5%	5%	5%	1%	1%	1%	1%	3%
5+	0%	1%	1%	1%	2%	0%	0%	0%	0%	0%

Over-housed

Overcrowded



Chasm analysis of U.S. Census Bureau ACS 1-Year Estimates 2021 and 5-Year Estimates 2017-2021, Public Use Microdata Files

Naturally Occurring Affordable Housing (NOAH) in Phoenix

Naturally occurring affordable housing refers to privately-owned housing units that are affordable to households making under 80% AMI without government subsidy or binding income-restrictions. NOAH is often found in older, low-rise "garden apartments." NOAH figures in this report are drawn from an analysis performed by a Bloomberg Associates Data Research Fellow, using the U.S. Department of Housing and Urban Development's (HUD) publicly available Comprehensive Housing Affordability Strategy (CHAS) data. CHAS data was first used to estimate the total number of rental units affordable to 0 to 80% AMI households at a Census Tract level over three 10-year time intervals – 2000, 2010, and 2019. The number of units accounted for in HUD's LIHTC and Public Housing datasets was then subtracted from the larger overall affordable units number to arrive at an estimate for NOAH. This method is based on the NOAH methodology identified in Kang & Jeon, 2021.[i]

According to this analysis, NOAH accounts for 92% of affordable housing stock in Phoenix – a number well above the national average. Between 2000 and 2019, the number of NOAH units in Phoenix actually increased quite significantly. Research in Spader, 2023[ii] suggests that this trend mirrors a pronounced period of downward "filtering" – a process through which the overall supply of lower-cost housing increases – that coincided with the Great Recession in 2007/08, during which time vacancy rates in Phoenix also increased rapidly.

At the neighborhood level over, the same 2000-2019 period, NOAH appeared to be shifting outward from downtown. NOAH density appeared to be decreasing closer to the core, but increasing along arterial roads about 3-5 miles from the city center. However, there are limits to the conclusions that can be drawn from the 2000-2019 data at a neighborhood level since the conversion from 2000 census tract levels to 2010 census tract levels might have led to modifiable areal unit problem (MAUP) errors, since NOAH units are not necessarily dispersed evenly throughout tracts.

Over the past few years, especially in the wake of the COVID-19 pandemic, vacancy rates in Phoenix have sharply contracted and rents have soared. While NOAH data is not available in the post-pandemic period, NOAH units have likely declined in tandem with the escalating rents seen across the Phoenix housing market.

i. Kang, S., & Jeon, J. S. (2021). Toward suburbs: Examining neighborhood-level changes in naturally occurring affordable housing stock inFlorida, USA. Cities, 116, 103267
ii. Spader, J. (2024). Has Housing Filtering Stalled? Heterogeneous Outcomes in the American Housing Survey, 1985–2021. Housing Policy Debate, 1–23. https://doi.org/10.1080/10511482.2023.2298256

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