



THE UNIVERSITY OF ARIZONA
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES

Southwest Institute for Research on Women



HOUSING INSECURITY INDICATORS & POTENTIAL HOMELESSNESS ESTIMATES FOR ARIZONA AND PIMA COUNTY

Updated with Week 53 Census Household Pulse
Survey Data – February 13th 2023

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INTRODUCTION

This most recent survey wave contains multiple pieces of concerning news. Despite hardship caused by inflation, the positive macroeconomic situation has continued to hold steadily at the national and state levels (AZ unemployment has increased *very* modestly in recent months, but remains well below historical averages). In a previous survey wave, collected December 9th-19th 2022, the proportion of non-current renters was 8.9%. In the most recent survey, conducted January 4th-16th 2023, this proportion rose to 11.2%. In the December 2022 survey wave nearly a fifth of non-current renters (19%) reported viewing eviction in the next two months as “very likely”. The intensity of this indicator increased slightly in January with 21% of non-current renters viewing eviction as “very likely” in the next two months. *This stubbornly high level of housing insecurity among Arizona renters is unusual given historically low unemployment, and contrasts with continuing improvement in the financial position of Arizona mortgage holders.* Rising rents and inflation are the likely the central drivers of this disconnect, especially for households with limitations on their ability to benefit from the strong labor market.

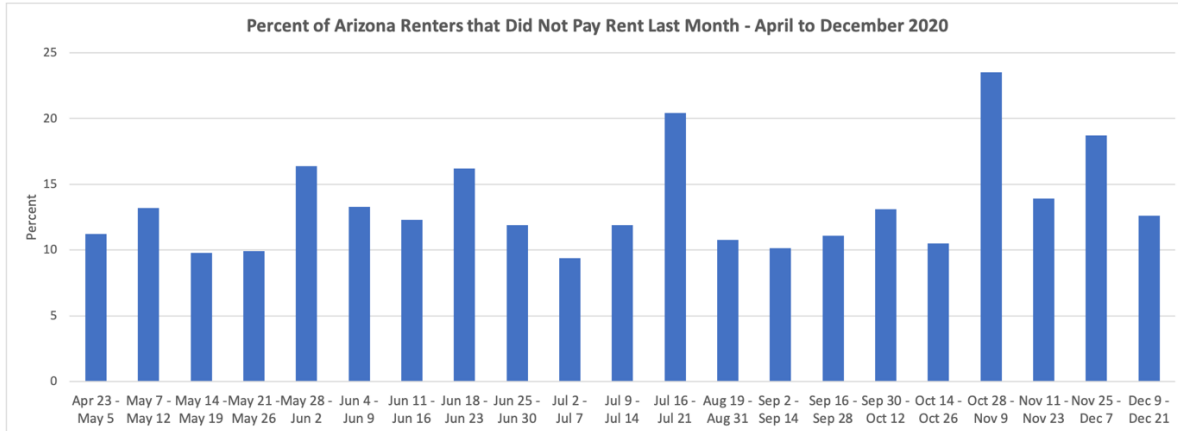
In a previous report from mid-October, 81% of non-current renters had not applied for rental assistance, this proportion fell to 52% in the most recent wave. This suggests that more non-current renters are seeking out rental assistance, however it is unclear if rental assistance will reach these households. Mortgage holders in Arizona continue to be in a strong financial position. Only 3.7% reported being not current on mortgage payments (3.6% in the previous survey). Of those that are not current on payments 14% see a foreclosure in the next two months as “very likely”. This is a large increase relative to the <1% seeing foreclosure as very likely in the last survey wave, but this is very small percentage of all mortgage holders so large swings are possible in these proportions and don’t necessarily indicate much (future surveys will reveal if this is a trend).

There is continuing good news to report on rents. Tucson rent prices have been decreasing, albeit very modestly, in recent months. This reversal of recent trends is a very welcome relief, but does not erase the increases in average and median rents experienced over the past two years (which remain the area of 30-33% even after including the small recent declines in median rents). Statewide 69% of Arizona renters reported an increase in their monthly rent in the last year and 57% reported an increase of \$100 or more. This indicates that most renters have been directly impacted by increases in rent prices in Arizona over the past year. Disparities in financial strain along the lines of household incomes have increased in this and recent survey waves. Measures of households not being current on rental payments and those experiencing great difficulty meeting spending needs indicate that lower-income and BIPOC households in Arizona are slipping behind disproportionately.

Nationwide, individuals reporting that they have serious disabilities are increasingly disproportionately likely to report being behind on rent payments. It appears that members of historically marginalized groups (especially people living with disabilities) are not benefiting from the improved economy as quickly on average as other demographic groups. Counts of calls to 211 from Pima County indicate a substantial increase in calls related to housing and shelter, utilities, and food requests in the last 6-8 months. *In January we observed the largest monthly count of eviction filings in Pima County since the onset of the pandemic.* Last, figures from Maricopa’s HMIS data indicate a 10% increase in the total number of people experiencing homelessness in Maricopa County between January and December of 2022 (and a 20% increase in the “balance of the state”, the areas outside of Maricopa and Pima counties).

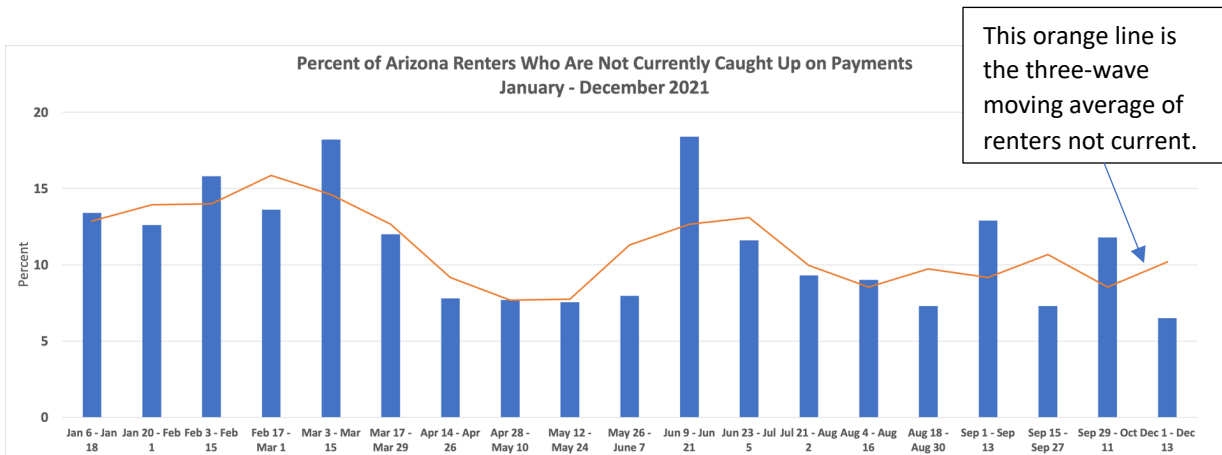


Indicators of the Scope of the Problem: Did Not Pay Rent Last Month

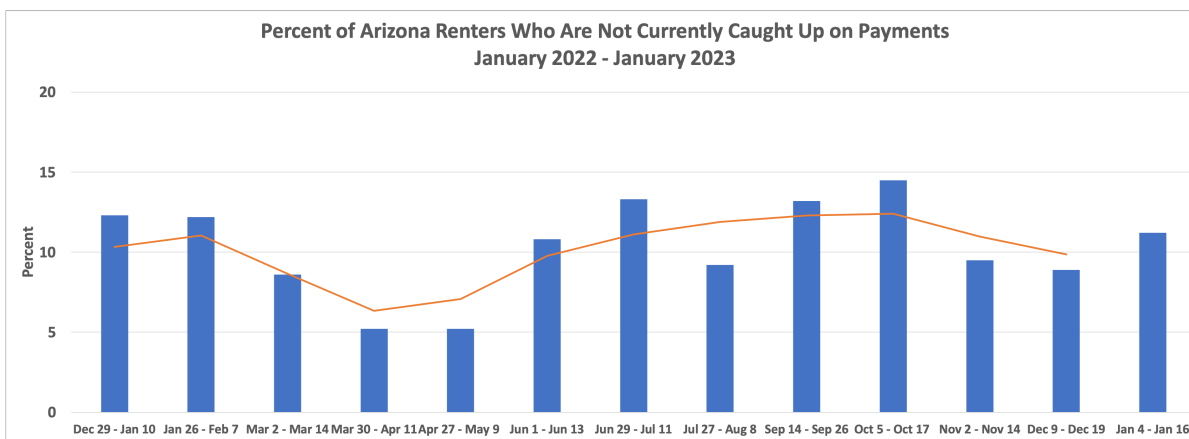


Source: Census Household Pulse Surveys Weeks 1-21

Indicators of the Scope of the Problem: Not Currently Caught Up On Rent



This orange line is the three-wave moving average of renters not current.

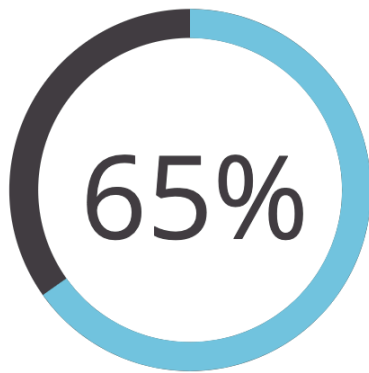
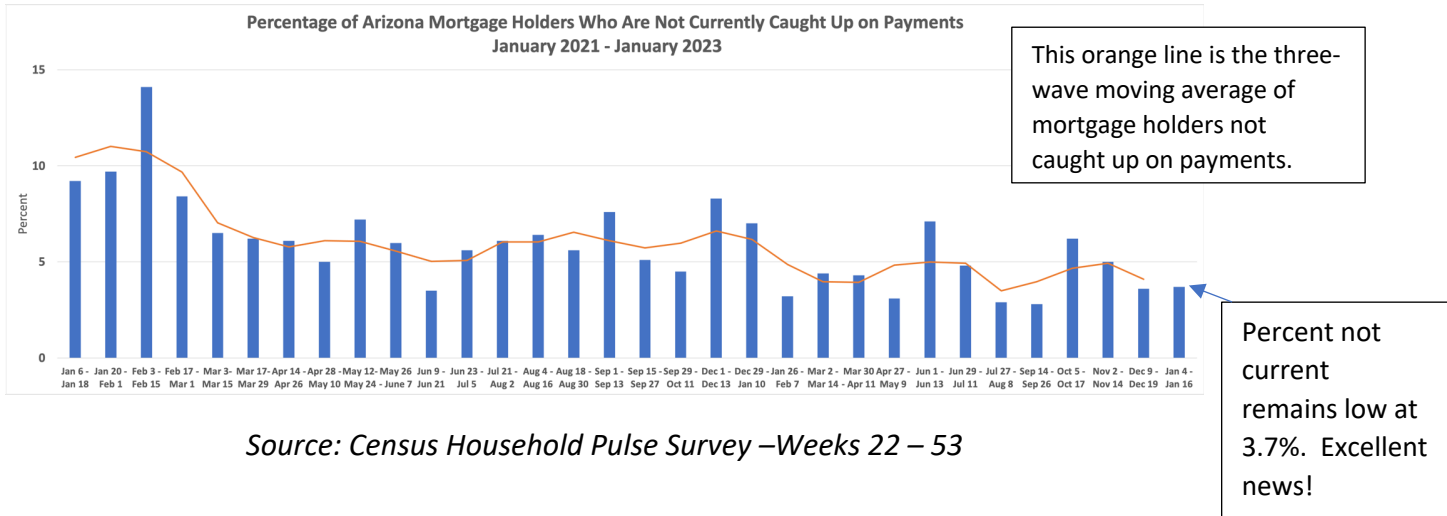


The % not current on rent increased to 11.2% from 8.9% last wave. This is surprisingly high given low unemployment.

Source: Census Household Pulse Survey –Weeks 22 – 53



Indicators of the Scope of the Problem: Not Caught Up On Mortgage Payments

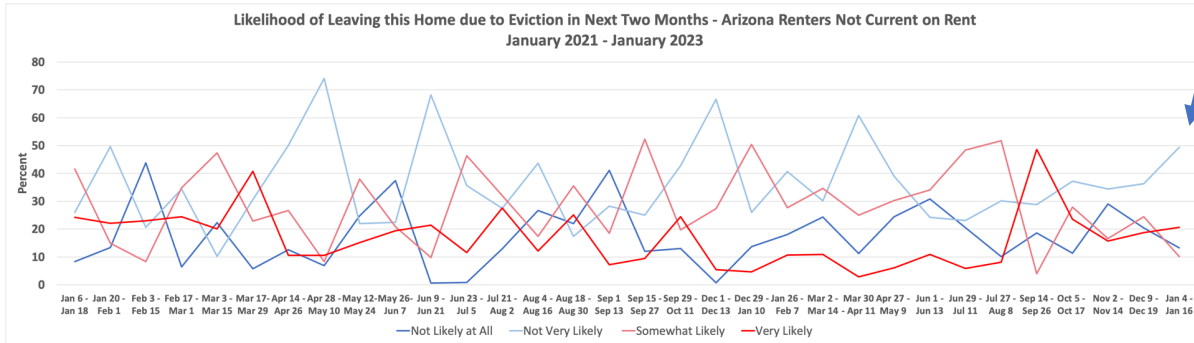


Homeownership Rate in Arizona in 2021

Source: U.S. Census Bureau

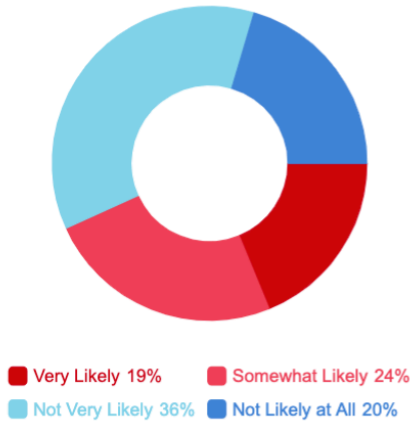
Indicators of the Scope of the Problem: Likelihood of Leaving Due to Eviction Among Arizona Renters Not Caught Up on Rent

The trends in the graph below are based on questions only asked of Arizona renters not caught up on their rent: **11.2% of all AZ renter households – January 4th- 16th 2023.**

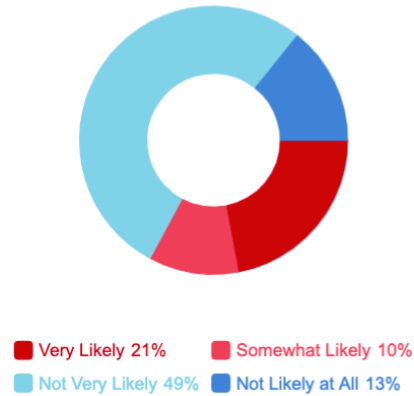


Source: Census Household Pulse Survey – Weeks 22 – 53

Likelihood of Leaving this Home due to Eviction in Next 2 Months
Arizona Renters Not Current on Rent - December 9 - 19 2022



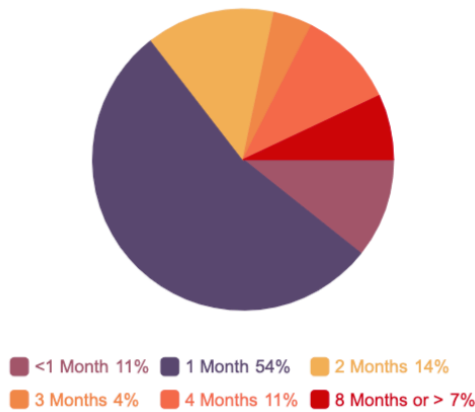
Likelihood of Leaving this Home due to Eviction in Next 2 Months
Arizona Renters Not Current on Rent - January 4-16, 2023



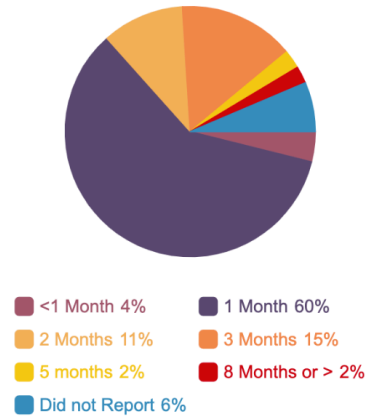
Indicators of the Scope of the Problem: Months Behind on Rent and Rental Assistance

The following graph display responses to questions only asked of Arizona renters not caught up on their rent: 11.2% of all AZ renter households – January 4th- 16th 2023.

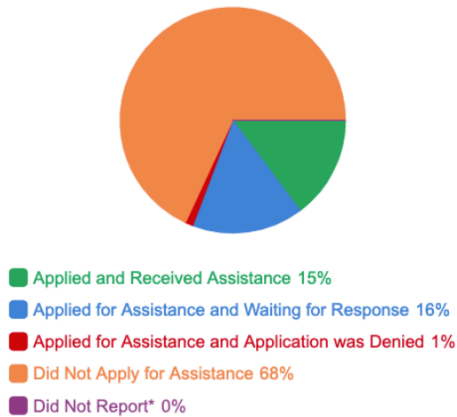
Months Behind on Rental Payments
Arizona Renters Not Current on Rent - November 2 - 14 2022



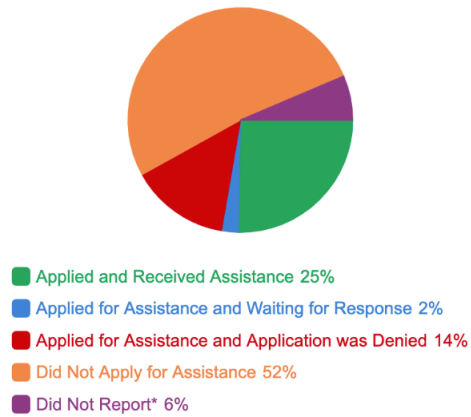
Months Behind on Rental Payments
Arizona Renters Not Current on Rent - January 4 - 16 2023



Rental Assistance Through State or Local Government
Arizona Renters Not Current on Rent - December 9 - 19 2022



Rental Assistance Through State or Local Government
Arizona Renters Not Current on Rent - January 4 - 16 2023



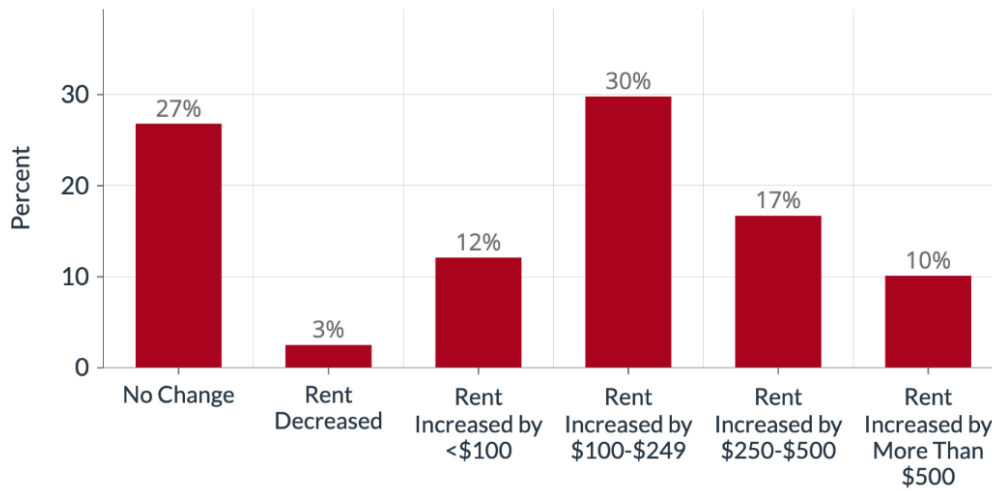
*Not actually 0%, but too small to estimate.

This survey indicates that the majority of Arizona renters who are behind on their rent, 75%, are only 1 or 2 months behind on their payments. In the previous report from mid-October, 81% of non-current renters had not applied for rental assistance, this proportion was 52% in the most recent wave. This survey captured increased receipt of rental assistance, and a larger proportion of non-current renters seeking assistance. This is good, except that we know that the application process for rental assistance is closed in Pima County.

Indicators of the Scope of the Problem: Increasing Rents

The Census Household Pulse survey asks renter-occupied households whether their monthly rent has changed in the past 12 months. 69% of Arizona renters reported an increase in their monthly rent in the last year and 57% reported an increase of \$100 or more. This indicates that most renters are being directly impacted by rising rent prices in Arizona.

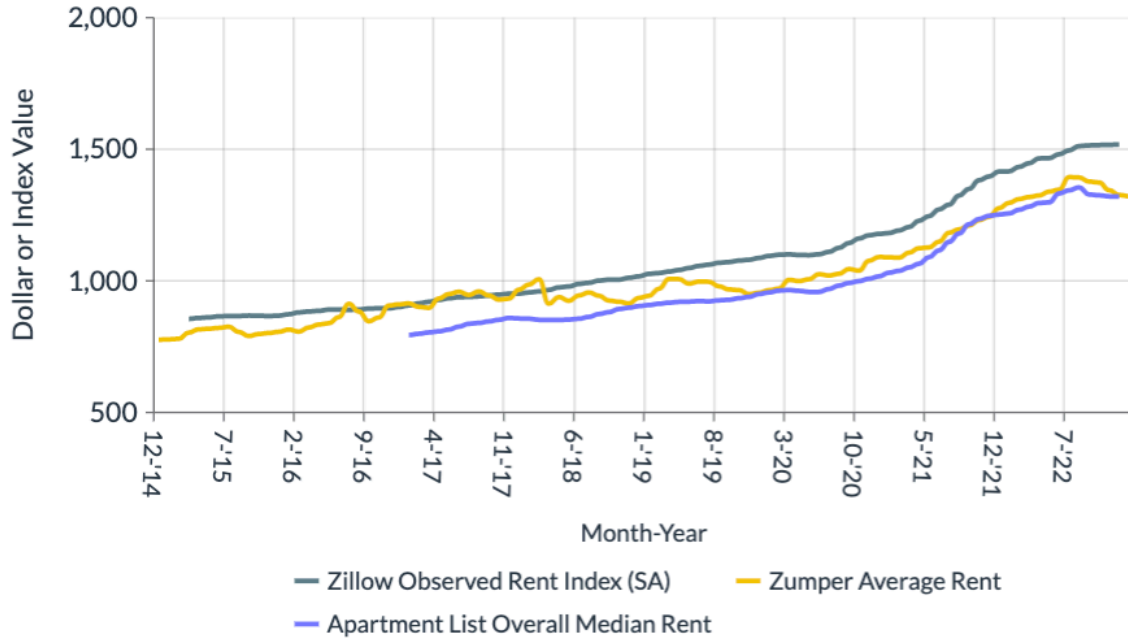
Monthly Rent Change During Last 12 Months
Arizona Renters - January 4 - 16 2023



Despite this there is some very good news in the rent data. Rents in Tucson have begun to decline very modestly in recent months. This is likely a direct, but downstream, impact of recent increases in interest rates pursued by the Federal Reserve to combat inflation. The chart below displays recent trends in average or median rents as measured by various real-estate marketplace companies. Average or median rents have risen 30-33% in Tucson between November of 2020 and November 2022 (these changes include the recent declines). And while these summary measures are informative, they don't provide a grounded real dollar sense of that is happening with rents (as people don't rent an average or median apartment). In the next graph below, data from Zumper provides average rents in Tucson by unit size in current dollars (not adjusted for inflation). Adjusting for inflation (adjusting rents to 2022 dollars) the cost of rent in Tucson between August 2020 and August 2022 rose: 19% for studios, 16% for 1-bedroom units, 23% for 2-bedroom units, 13% for 3-bedroom units, and 22% for 4-bedroom units. Recent declines in rents appear similar across unit-types (studio, 1-bedroom, etc.), although these similar declines constitute larger reductions at the lower end as a percentage of the total rent cost.

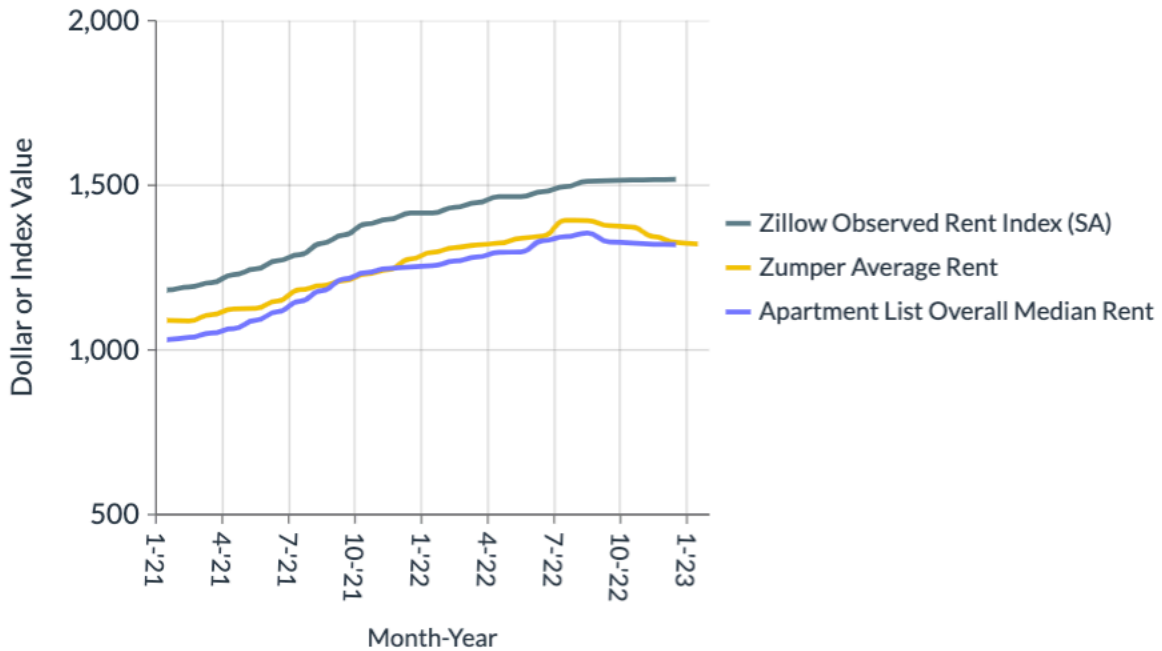
Tucson Rent Prices

Average/Median Rent Price Indicators Dec-2014 - Jan-2023



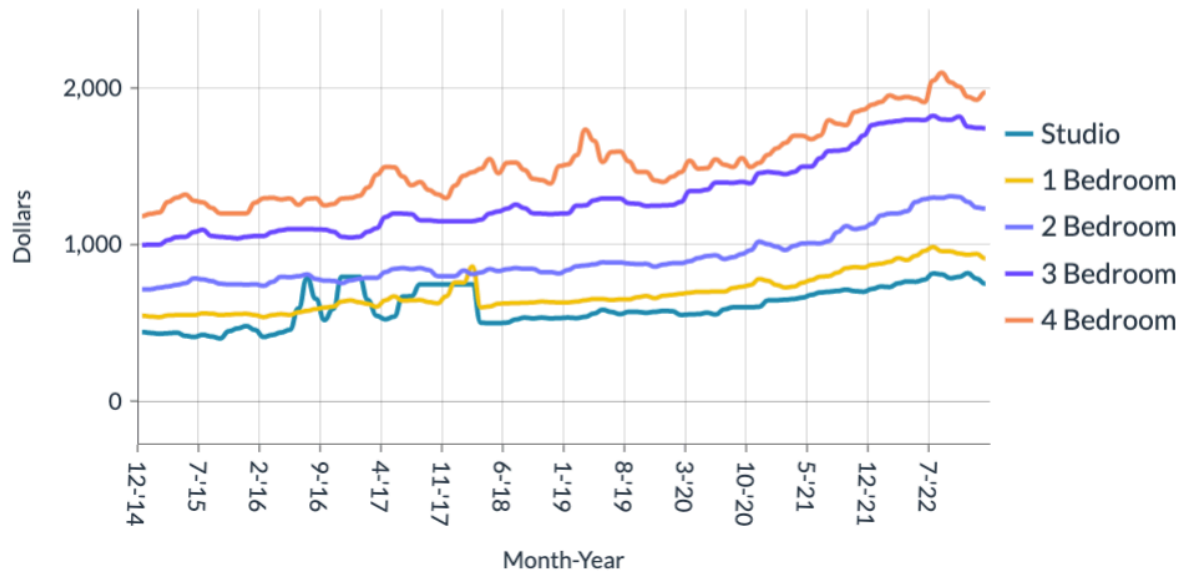
Tucson Rent Prices

Average/Median Rent Price Indicators Jan 2021 - Jan 2023



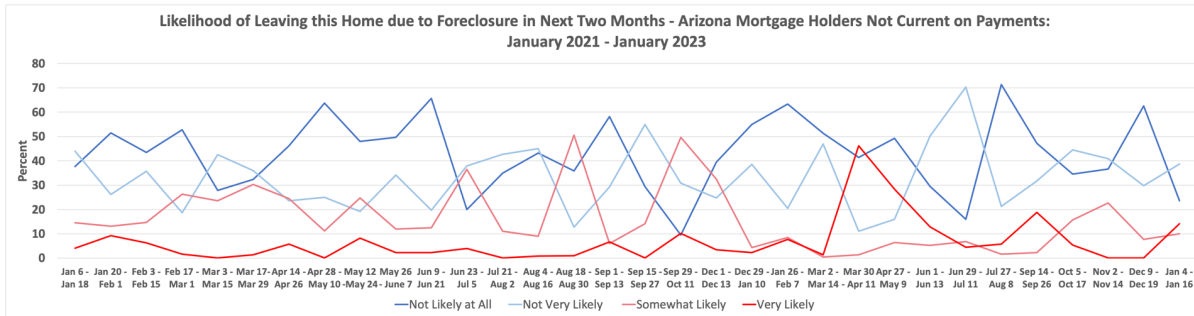
Tucson Average Rent by Unit Size

Zumper Data - Dec 2014 - Jan 2023



Indicators of the Scope of the Problem: Leaving Due to Foreclosure Among Arizona Mortgage Holders Not Caught Up on Payments

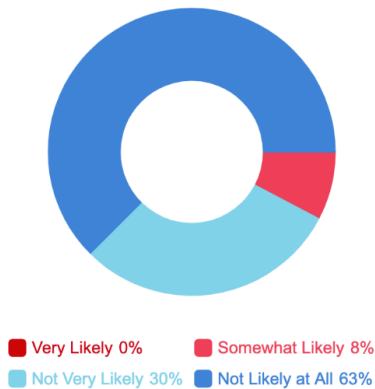
The trends in the graph below are based on questions only asked of Arizona mortgage holders not caught up on their payments: **3.7% of all AZ mortgage holding households – January 4th- 16th 2023.**



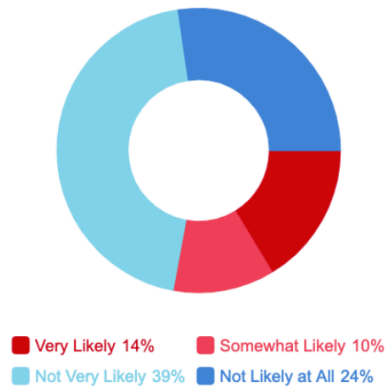
Source: Census Household Pulse Survey –Weeks 22 – 53

This most recent survey wave captured an increase in the share of non-current mortgage holders who report that foreclosure is “very likely” from 0% last wave to 14% this wave. (But this is among the very small % of non-current mortgage holders.)

Likelihood of Leaving this Home due to Foreclosure in Next Two Months - Arizona Mortgage Holders - December 9 - 19 2022



Likelihood of Leaving this Home due to Foreclosure in Next Two Months - Arizona Mortgage Holders - January 4 - 16 2023



Indicators of the Scope of the Problem: Estimates of Rental Shortfall– ARIZONA

Estimates of the number of individuals behind on rent and the size of their rental debts (at both the state and county level) have been made available in the *National Equity Atlas* data tool. This tool is produced by PolicyLink and the USC Equity Research Institute. The methodology used to produce these estimates is provided in the appendix to this report. These estimates rely on Census Household Pulse survey data and the estimates below are based on the data collected as a part of Wave 52 of the survey conducted December 9th – 19th 2022.

National Equity Atlas – Estimates based on Wave 52 of the Census HPS

Estimated Number of Arizona Households Behind on Rent	Estimated Total Rental Debt Statewide	Estimated Rental Debt per Household
87,000	\$164.2 million	\$1,890

These estimates are based on Wave 52 data of the Census Household Pulse Survey. The Census Household Pulse Survey asks if renting households are current on their rent. In the most recent wave of the survey, Week 53 conducted January 4th – 16th 2023, 11.2% of Arizona renter households reported not being current on their rent payments. There were 927,771 renter-occupied units in Arizona in 2020, according to a Census American Community Survey (1-year) estimate.

11.2% of 927,771 = 103,910 AZ renter households who are not current on their rent payments.

Not all, and perhaps only a minority, of households reporting that they are not current on rent payments will actually experience an eviction. These households were then asked about their perception of how likely it is that they will have to leave their home due to eviction in the next two months. 20.6% of these households that are not current on their rent reported being “very likely” to be evicted, while another 10.1% said this is “somewhat likely”.

20.6% of 103,910 = 21,406 AZ renter households who think it is “very likely” that they will be evicted in the next two months.

30.7% of 103,910 = 31,901 AZ renter households who think it is either “somewhat likely” or “very likely” that they will be evicted in the next two months.



Indicators of the Scope of the Problem: Estimates of Rental Shortfall– PIMA COUNTY

The *National Equity Atlas* data tool also provides county level estimates. The estimates below are also based on the data collected as a part of Wave 52 of the Census Household Pulse survey conducted December 9th – 19th 2022.

National Equity Atlas – Estimates based on Wave 52 of the Census HPS

Estimated Number of Pima County Households Behind on Rent	Estimated Total Rental Debt Countywide	Estimated Rental Debt per Household
13,870	\$12.5 million	\$900

These estimates are based on Wave 52 data of the Census Household Pulse Survey. The Census Household Pulse Survey asks if renting households are current on their rent. In the most recent wave of the survey, Week 53 conducted January 4th – 16th 2023, 11.2% of Arizona renter households reported not being current on their rent payments. There were 151,943 renter-occupied units in Pima County in 2020, according to a Census American Community Survey (1-year) estimate.

11.2% of 151,943 = 17,018 Pima County renter households who are not current on their rent payments.

Not all, and perhaps only a minority, of households reporting that they are not current on rent payments will actually experience an eviction. These households were then asked about their perception of how likely it is that they will have to leave their home due to eviction in the next two months. 20.6% of these households that are not current on their rent reported being “very likely” to be evicted, while another 10.1% said this is “somewhat likely”.

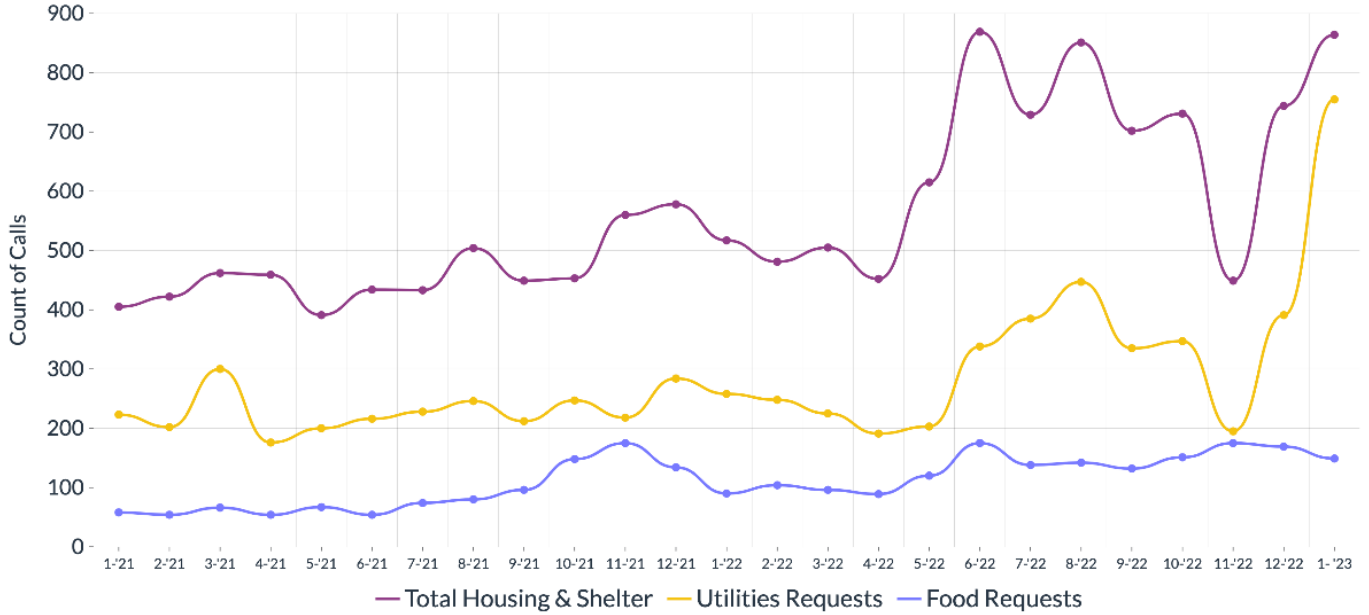
20.6% of 17,018 = 3,506 Pima County renter households who think it is “very likely” that they will be evicted in the next two months.

30.7% of 17,018 = 5,224 Pima County renter households who think it is either “somewhat likely” or “very likely” that they will be evicted in the next two months.

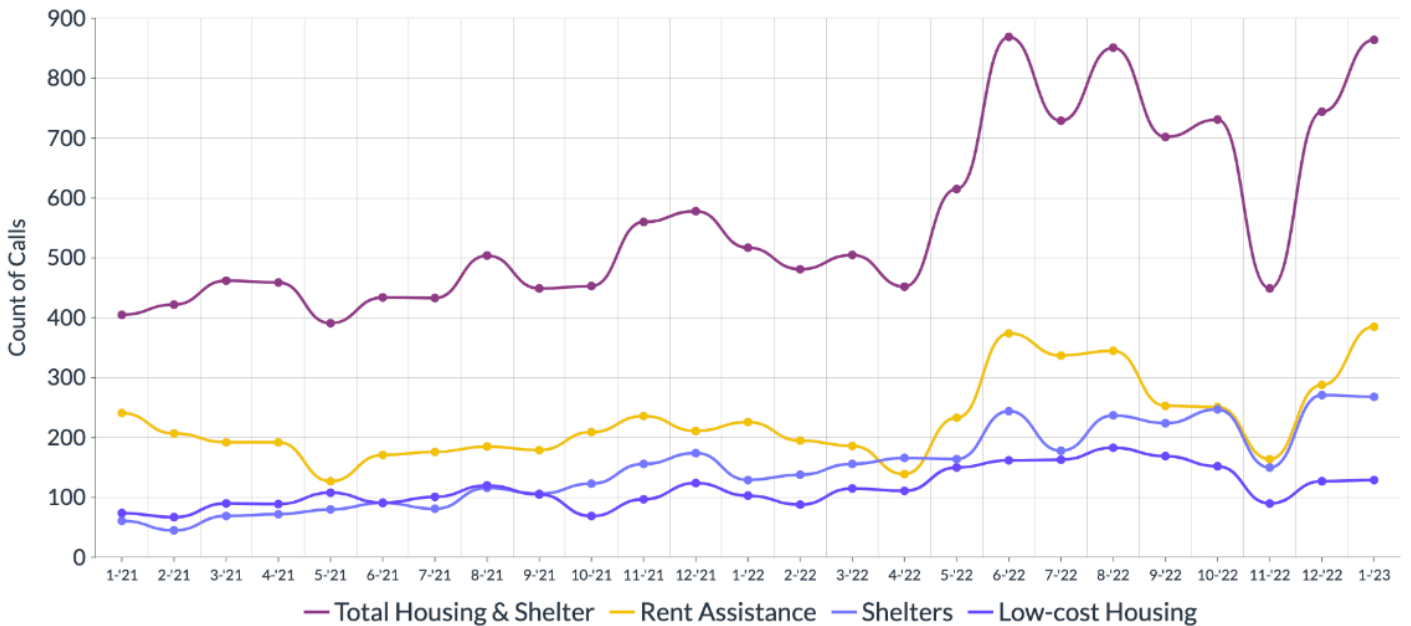


Indicators of the Scope of the Problem: Volume of Calls to 211 in Pima County

Count of Pima County 211 Calls by Month & Reason for Call
Jan 2021 - Jan 2023



Count of Pima County 211 Housing & Shelter Calls by Month
Jan 2021 - Jan 2023

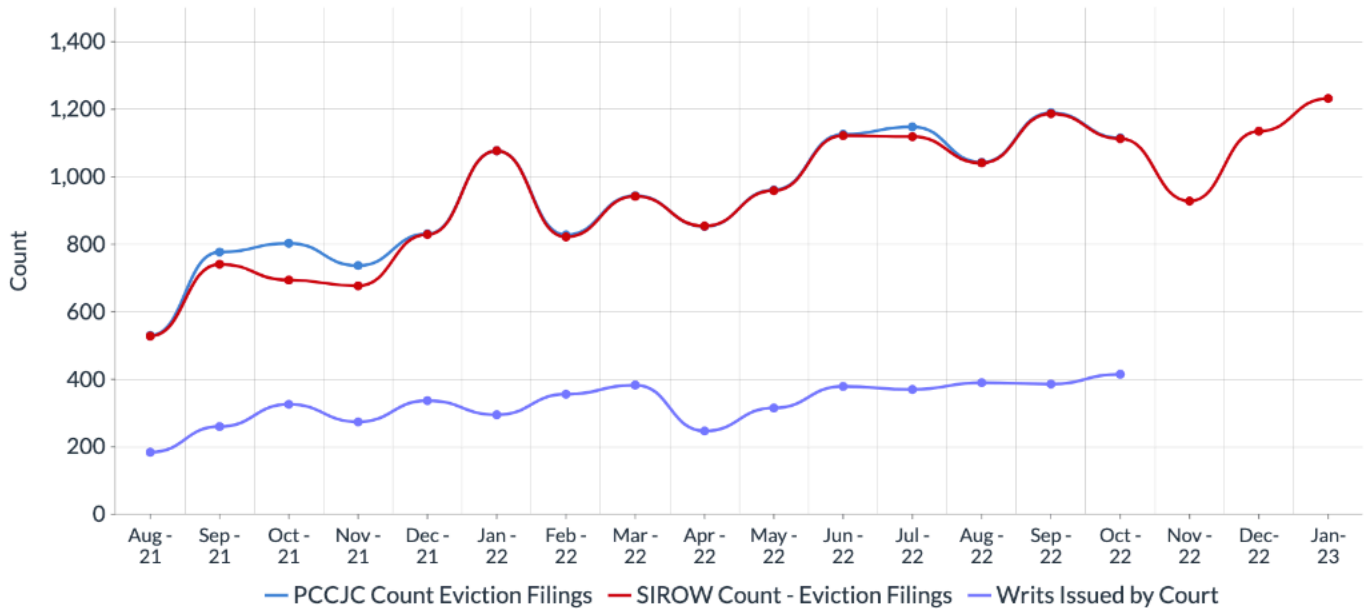


Eviction Filings and Writs Issued

The Supreme Court allowed a lower court decision to end the CDC’s extension of the eviction moratorium on the evening of August 26th 2021. Below the total count of eviction filings and writs issued in Pima County is provided for August 2021 to January 2023, by month. Eviction filings rose between April and September of 2022, with September having the largest monthly count of eviction filings observed since January of 2021. In January 2023 the total count of eviction increased 4% relative to the count in September. Unfortunately, the count of evictions continues to climb with the count in January constituting the highest count in the pandemic-era in Pima County.

Total Eviction Filings & Writs Issued

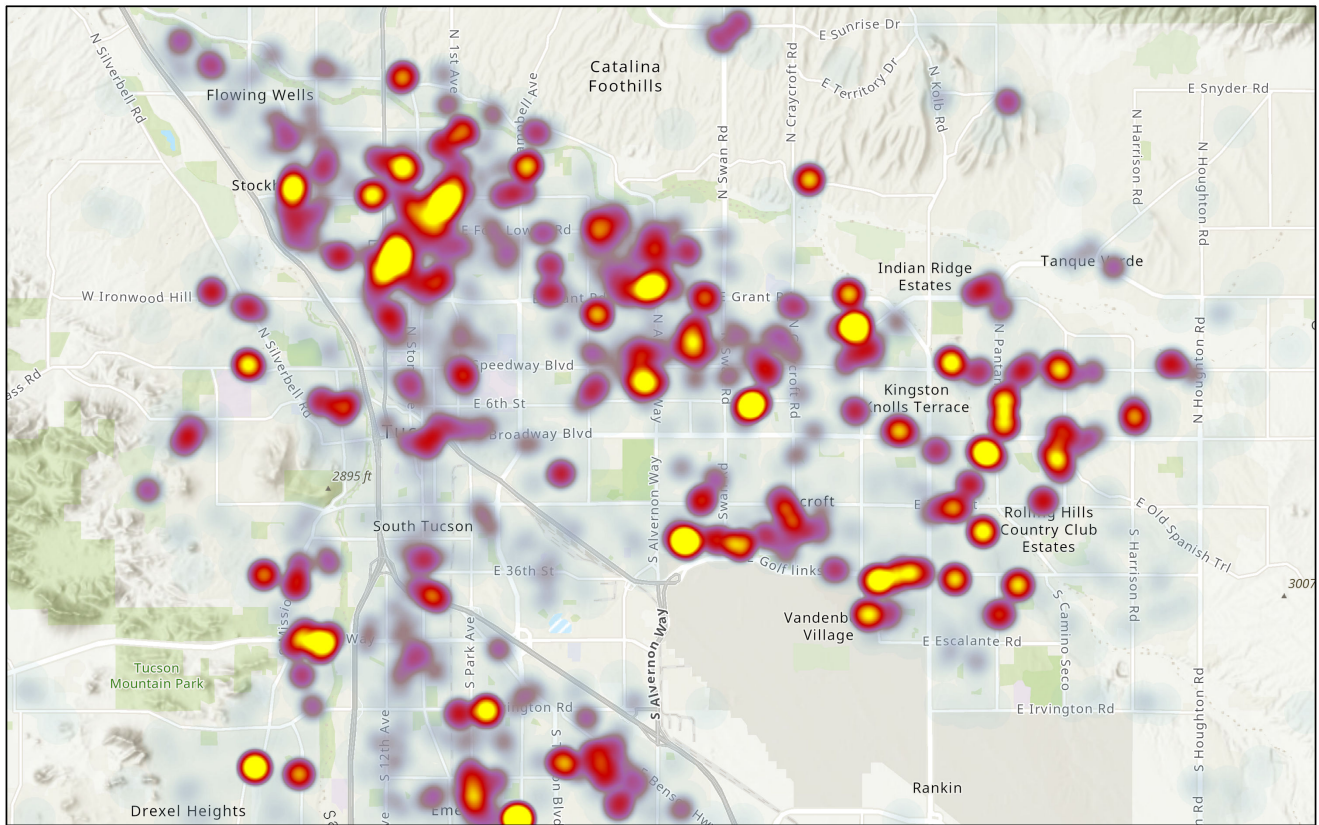
Pima County Aug 2021 - Jan 2023



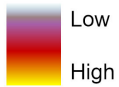
Source: Pima County Consolidated Justice Court



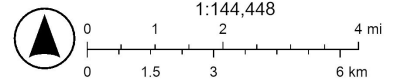
Pima County Eviction Cases Heat Map: January 2022-January 2023 (n=13,531)



2/10/2023



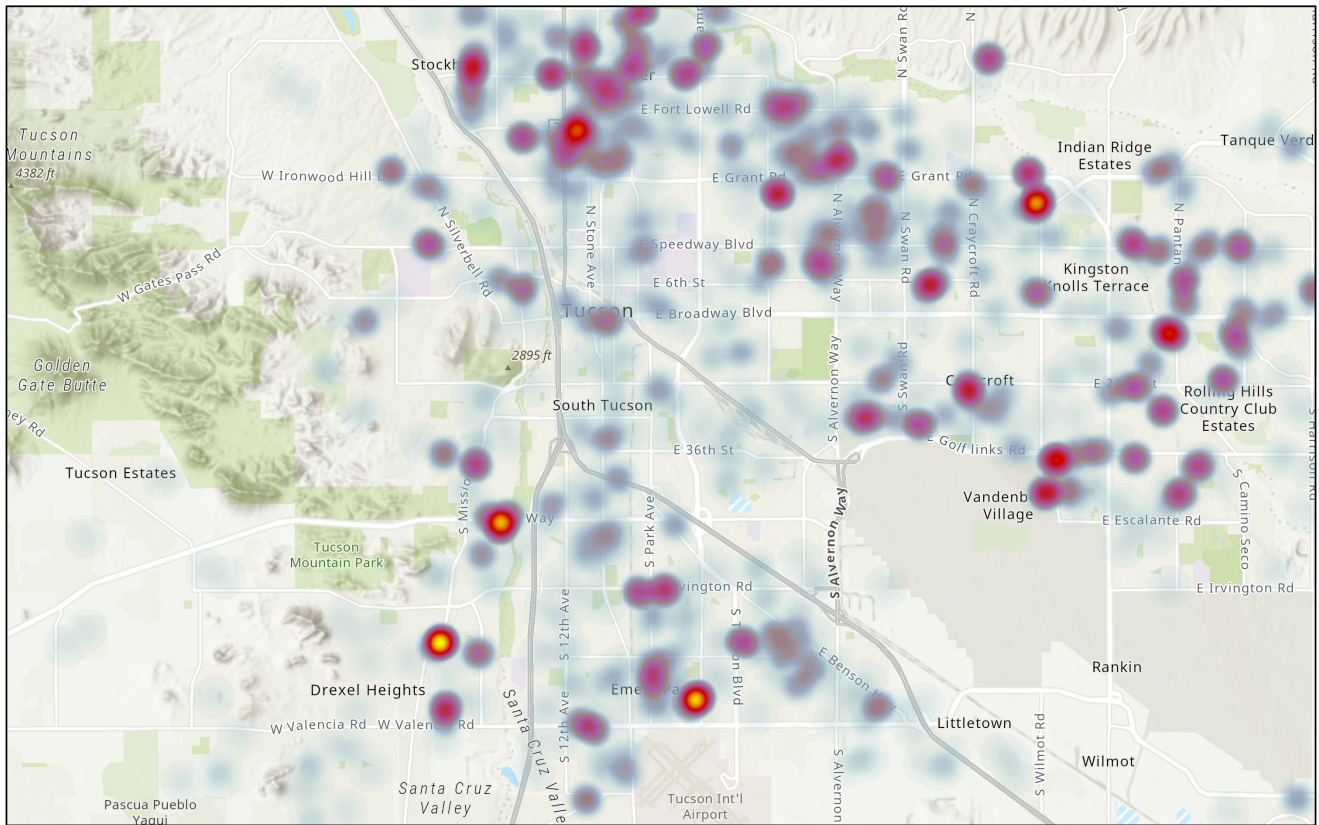
World Hillshade



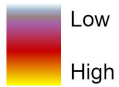
Esri, CGIAR, USGS, CONANP, Esri, HERE, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land

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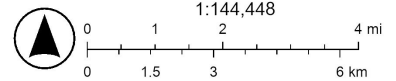
Pima County Eviction Cases Heat Map: November 2022-January 2023 (n=3,295)



2/10/2023



World Hillshade



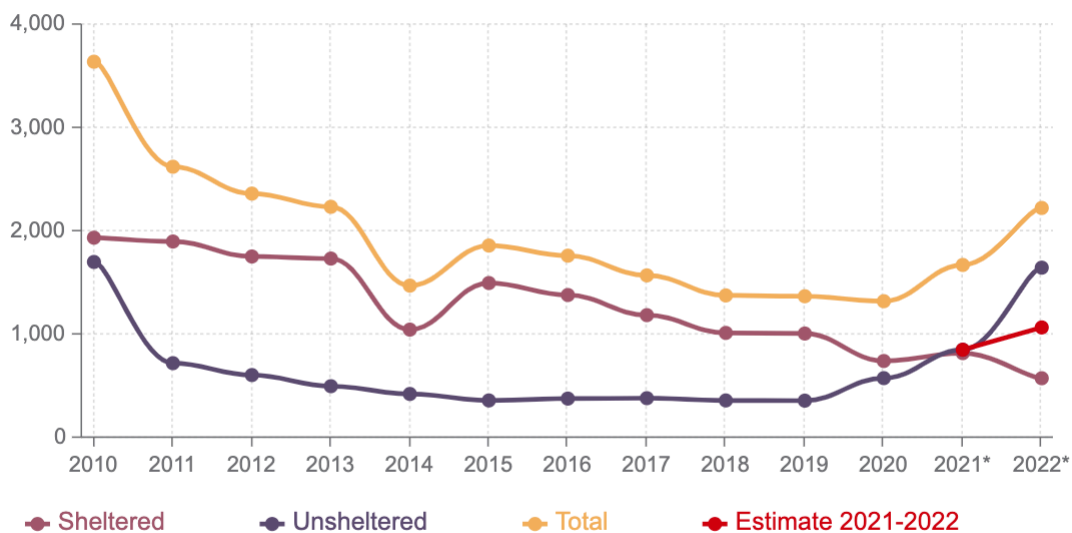
Esri, CGIAR, USGS, CONANP, Esri, HERE, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land

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Homelessness

The chart below displays trends in sheltered, unsheltered, and total homelessness for Pima County as captured in the annual Point in Time (PIT) counts for the years 2010-2022. The number of people experiencing homelessness in Pima County has increased over the last two years. Unfortunately, the usual “street count” portion of the PIT, which surveys individuals experiencing unsheltered homelessness, was cancelled in both 2021 and 2022 due to the pandemic¹. The figure for the count of people experiencing homelessness in 2021 was estimated using a statistical procedure² based on characteristics of communities similar to Pima County. In this instance, characteristics of Pima County were used to estimate the count of people experiencing unsheltered homelessness, but no data from local data sources on people experiencing homelessness were involved. In 2022, based on guidance from HUD, a different technique was used drawing information from the local Homeless Management Information System (HMIS) to generate a count of people experiencing unsheltered homelessness in Pima County. HMIS and the PIT count are very different in their implementation and HMIS

Total Count of Individuals Experiencing Homelessness
January PIT Counts for Tucson/Pima County CoC 2010-2022



*Unsheltered counts were estimated in 2021-2022 (using different techniques) due to the ongoing pandemic. Since the methodology used to generate these counts changed considerably between 2020, 2021, and 2022, an unknown portion of recent increases are likely a result of changes in methodology.

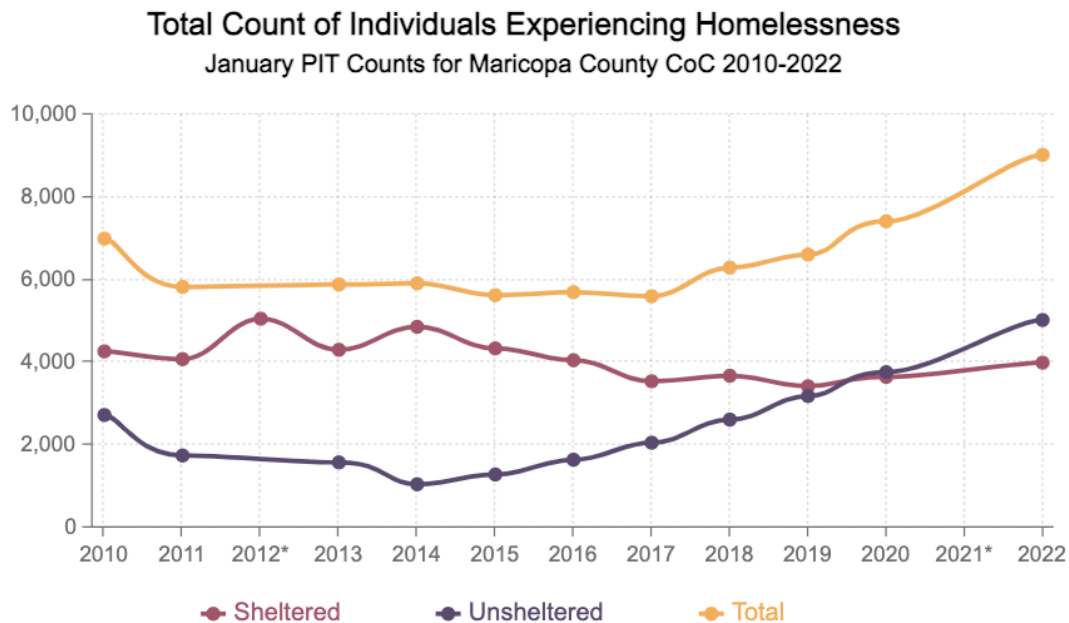
captures substantially more individuals and families than are counted in the PIT count. As a result, some significant portion of the increase in the count of people experiencing *unsheltered* homelessness is due to this change in methodology. To be clear, all of the people counted in the HMIS data for 2022 are real people experiencing unsheltered homelessness. The issue is that the number of people who would have been “seen” through the lens of a traditional PIT count would likely have been substantially lower.

¹ A small “surge count” was conducted in 2022 and informs the 2022 subpopulation estimates, but was not used to generate the total count of people experiencing unsheltered homelessness.

² A multi-level modeling approach was used to estimate the associations between CoC-level economic factors and year-to-year changes in the rate of unsheltered homelessness. These model results were then used to predict the rate of unsheltered homelessness in 2021 in Pima County based on the levels of 5 independent variables (unemployment, poverty, the rental vacancy rate, median rent, and the homeownership rate) in Pima County in 2020.

In order to get a sense of how much of this increase is due to methodology changes versus real increases in the number of people experiencing homelessness, I estimated the projected count of people experiencing unsheltered homelessness in 2022 based on the same statistical methodology used to estimate the count in 2021. These two estimates are provided in the table above in red. We can now compare two different approaches to measuring the number of people experiencing unsheltered homelessness. The official count provided to HUD based on the (HUD recommended) HMIS approach, suggests a 68% increase in the total count of people experiencing homelessness in Pima County between 2020 and 2022. If we used the statistically estimated unsheltered count for 2022, then the increase in the total count of people experiencing homelessness over this two-year period is 24%. The data used to generate these statistical estimates is information on communities for the years 2008-2018. It is very likely that these statistical estimates are *understating* the count of people experiencing unsheltered homelessness because of the extremely unique circumstances of the pandemic and the accompanying severe recession (which would not be able to be modeled with these data). Consequently, using the best currently available data the increase in the number people experiencing homelessness in Pima County from 2020 and 2022 is likely somewhere between 24-68%.

A comparison with Maricopa County is helpful here, as Maricopa cancelled their 2021 PIT but conducted their 2022 as usual (to my knowledge). The graph below displays trends in the counts of people experiencing homelessness in Maricopa County, which experienced a 22% increase in the total number of people experiencing homelessness between 2020 and 2022. The size of this increase suggests that the most likely magnitude of change in homelessness in Pima County is on the lower end of the 24-68% range suggest by these different approaches.

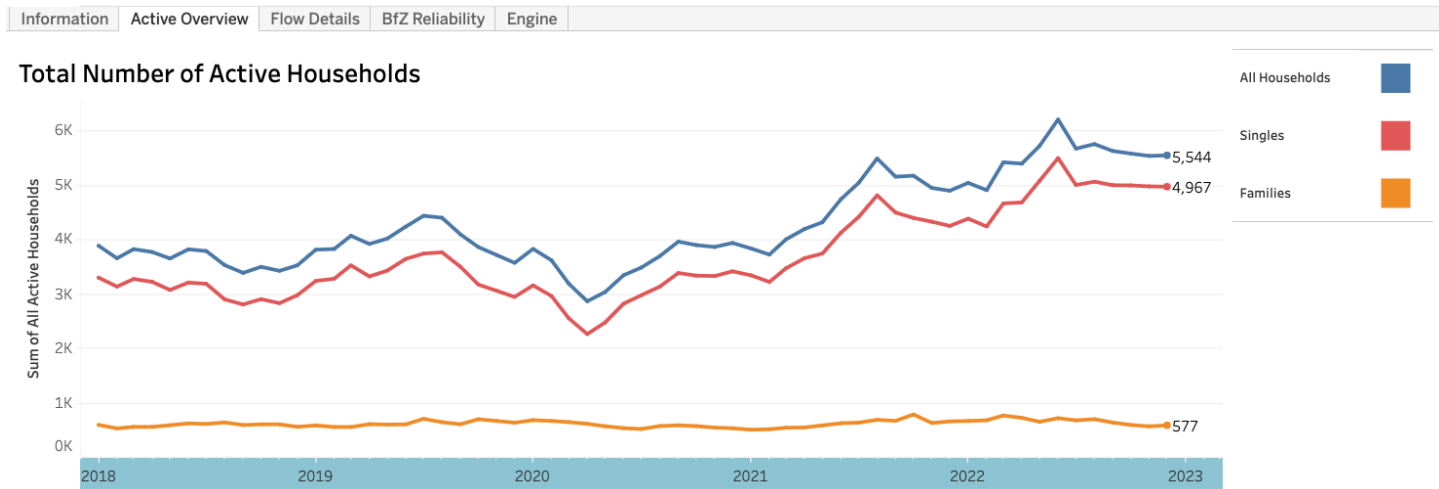


*The PIT count was not conducted in 2021 due to the pandemic, and the unsheltered count was not reported in 2012.

These trends are based on data collection efforts that were most recently conducted in January of 2022. What has unfolded in regards to homelessness over this past year? While data is not currently available on a sub-annual basis to track changes in the count of people experiencing homelessness in Pima County, figures from

Maricopa’s HMIS data indicate a 10% increase in the total number of households experiencing homelessness in Maricopa County between January and December of this year. The same information from the “balance of state” (“BOS” which is all of Arizona less Pima and Maricopa counties) indicates a 20% increase in households experiencing homelessness between January and November of 2022.

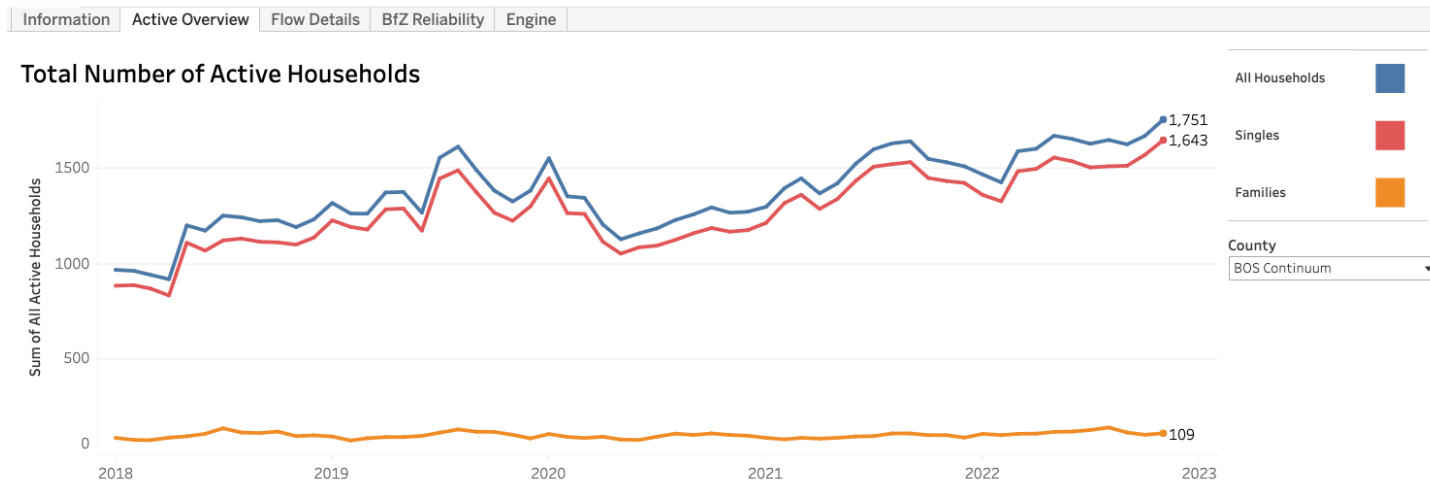
Maricopa System Flow Dashboard by [HMIS AZ - Solari Crisis and Human Services](#)



Source: HMIS AZ – Solari Crisis and Human Services

<https://public.tableau.com/app/profile/hmisaz/viz/MaricopaSystemFlowDashboard/Information>

BOS System Flow Dashboard by [HMIS AZ - Solari Crisis and Human Services](#)



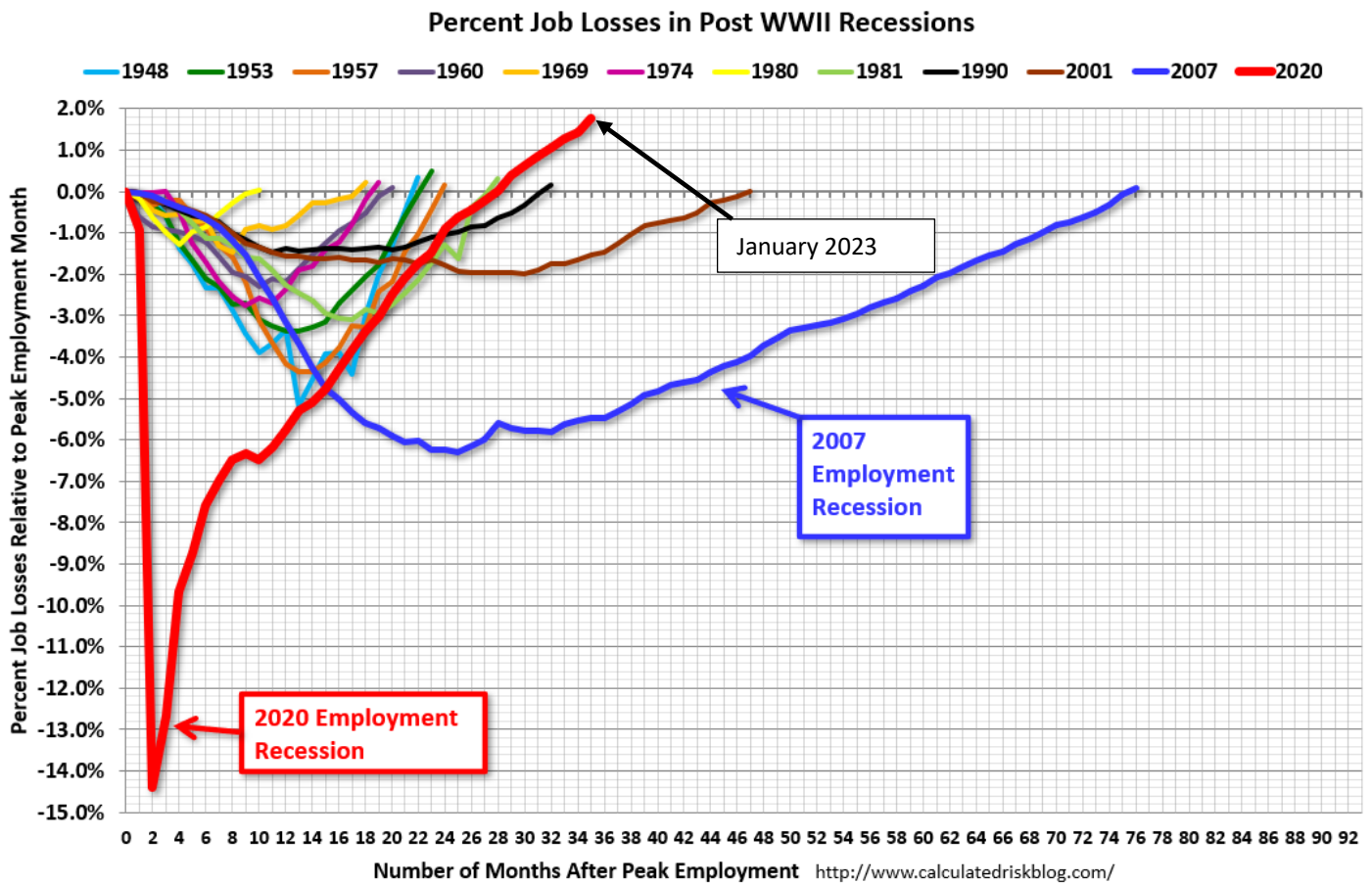
Source: HMIS AZ – Solari Crisis and Human Services

<https://public.tableau.com/app/profile/hmisaz/viz/BOSSystemFlowDashboard/Information>



The Road Ahead

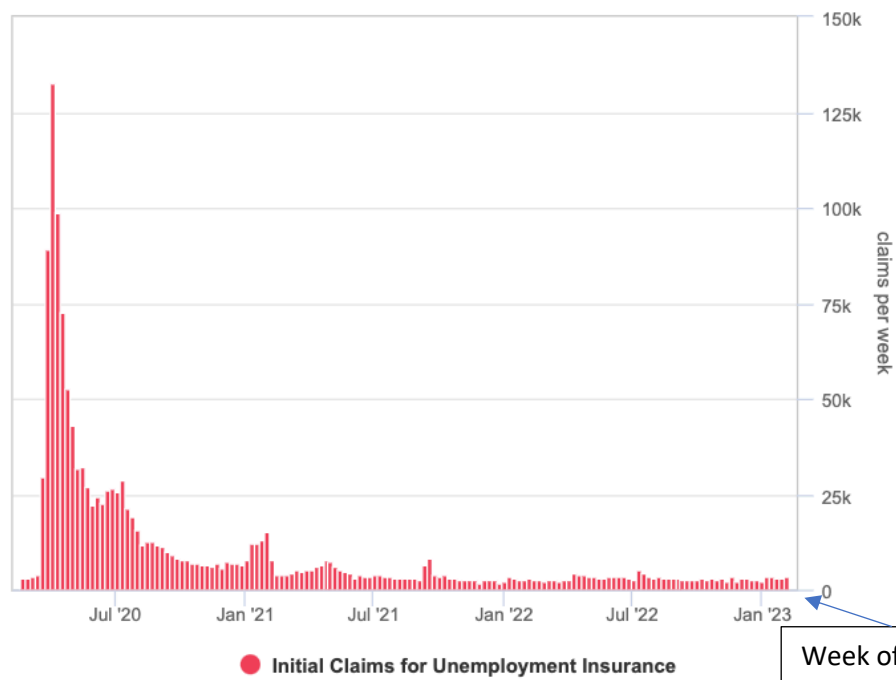
We are currently experiencing continuing job growth at the national-level, and a small uptick in unemployment at the state level. In the medium-term, most economists are expecting that recent interest rate increases by the Federal Reserve are likely to cool (or reverse) this rate of growth. The households at high risk of experiencing a housing disruption in the coming months remain disproportionately lower income, households of color, and households with members with disabilities. I remain concerned about the likelihood of homelessness among those households that experience housing disruptions, especially as renters renew leases at much higher rates, the affordable housing stock continues to shrink, and considering the fact that not everyone can take advantage of the strong labor market.



Source: Calculated Risk Finance & Economics

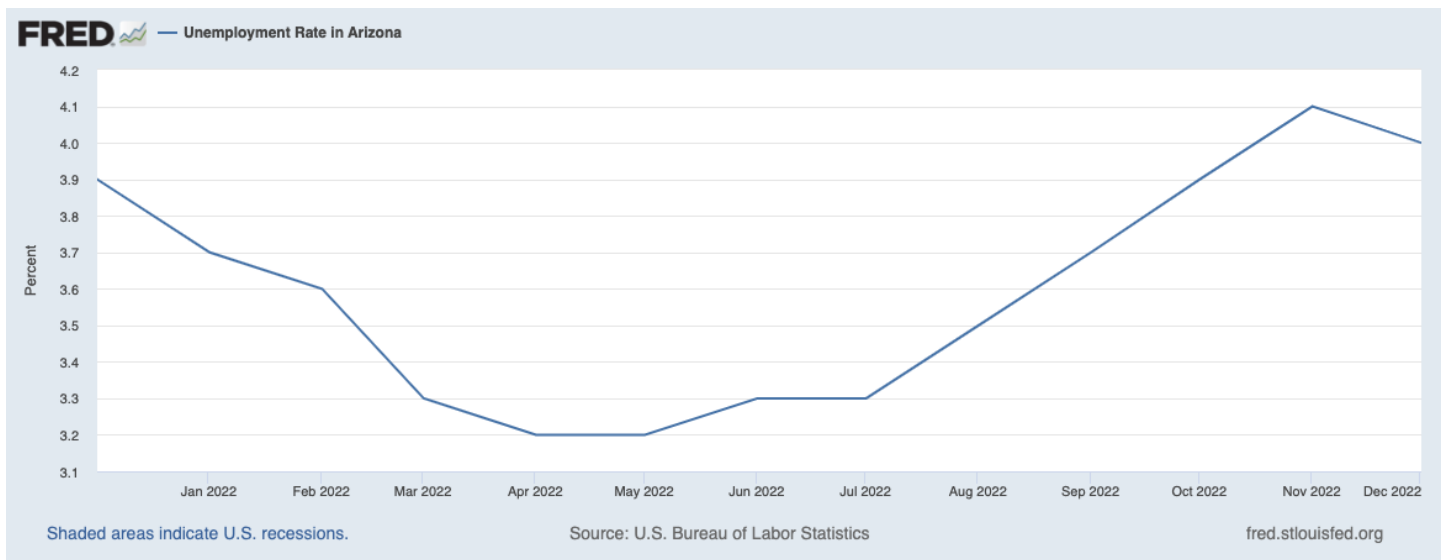


Arizona Initial Claims for Unemployment Insurance



Source: UA Economic and Business Resource Center

Arizona Unemployment Rate Dec 2021- Dec 2022 (Seasonally Adjusted)



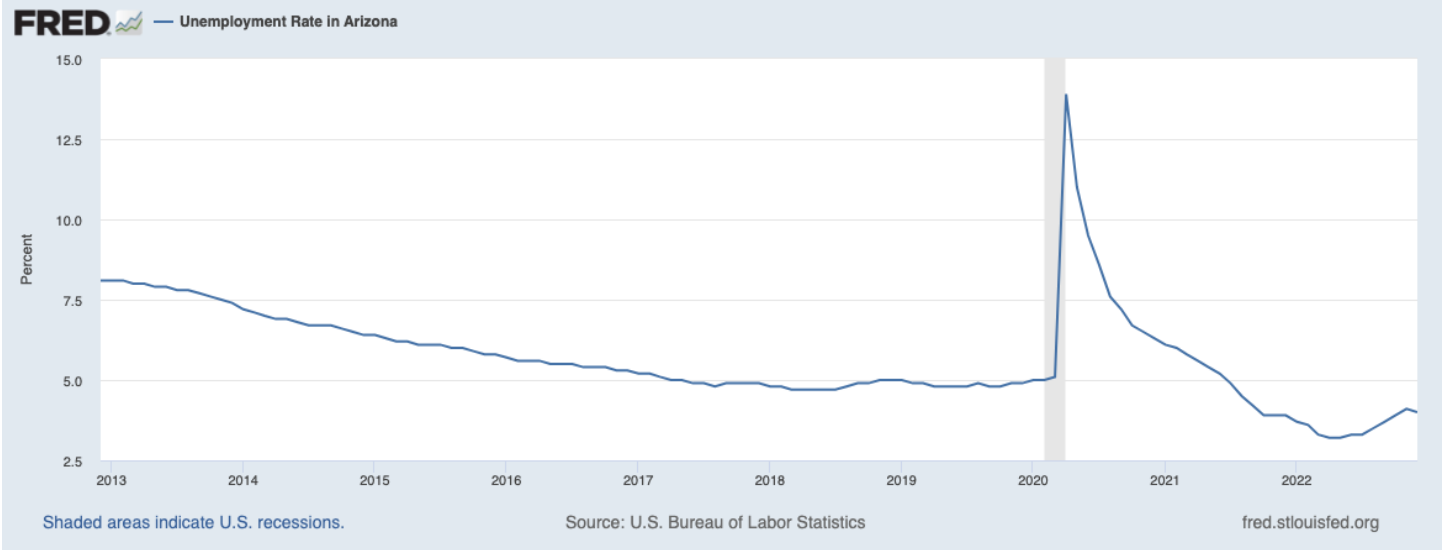
Shaded areas indicate U.S. recessions.

Source: U.S. Bureau of Labor Statistics

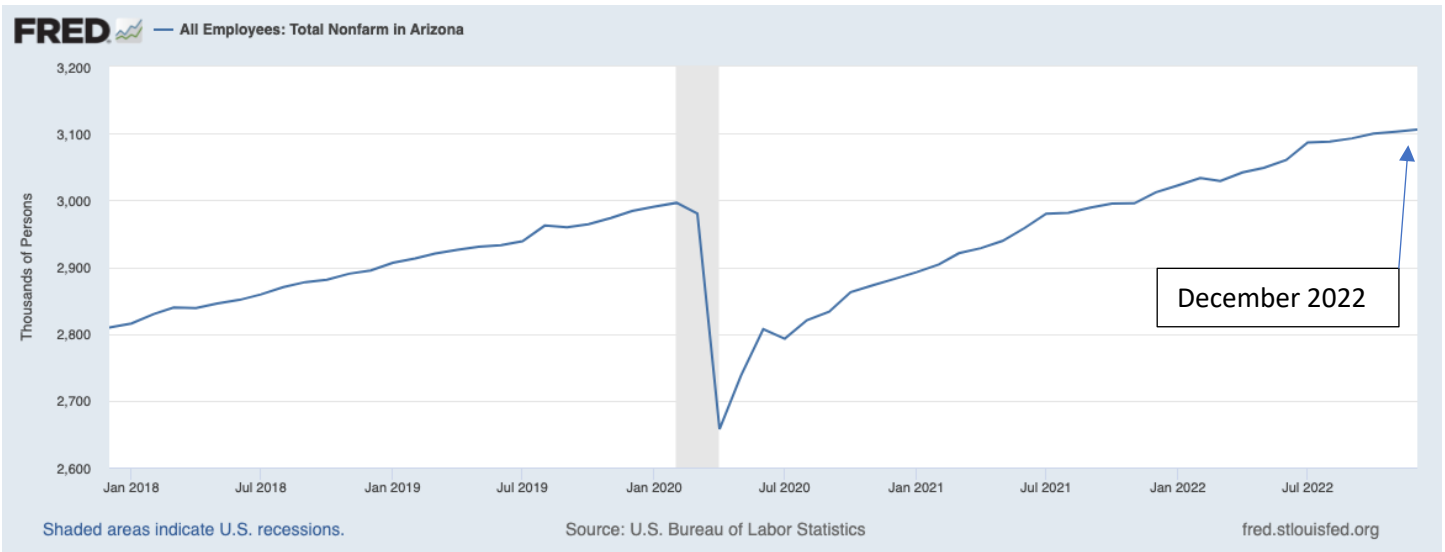
fred.stlouisfed.org



Arizona Unemployment Rate Dec 2012- Dec 2022 (Seasonally Adjusted)



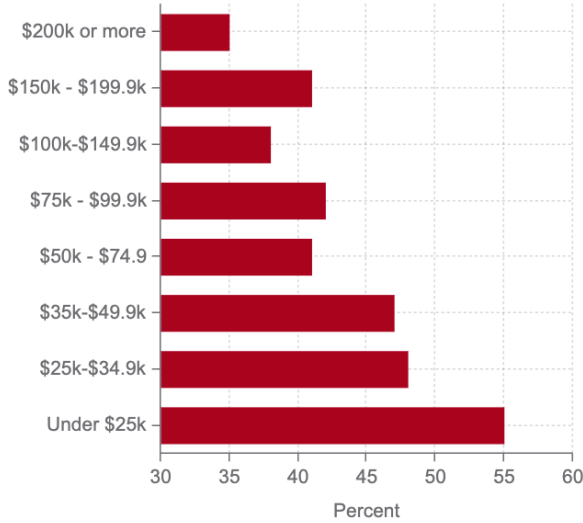
Total Nonfarm Employment Arizona



Income Disparities

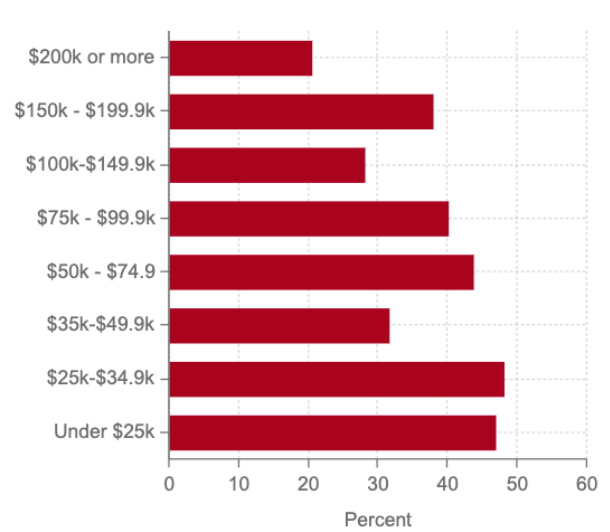
The COVID-19 recession has been uniquely unequal in its impacts, hitting lower income workers and households particularly hard. Worse, the recovery from these disproportionate impacts has also been skewed towards those with more resources, resulting in the so-called “K”-shaped recovery.

Household Experienced Loss of Employment Income Since March 13, 2020 - ARIZONA



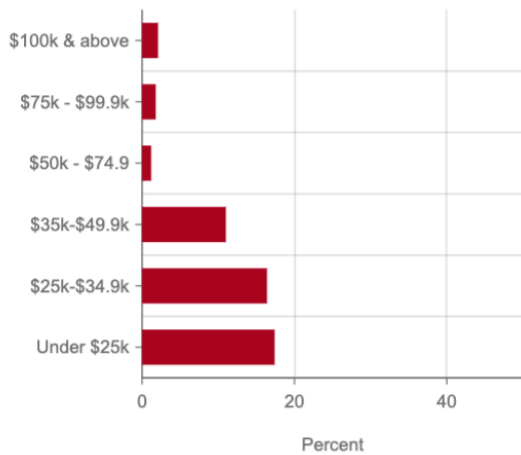
Source: Census HPS Week 14 –Sept 2nd- 14th 2020

Household Experienced Loss of Employment Income Since March 13, 2020 - ARIZONA



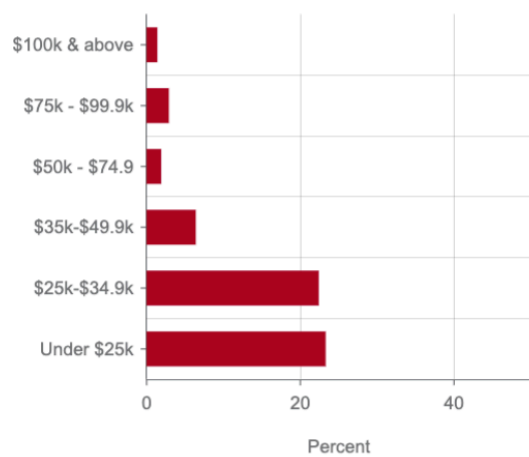
Census HPS Week 27 –March 17th– 29th 2021

Renter Households Not Current on Rent by Income ARIZONA Renter Households - December 9 - 19th 2022



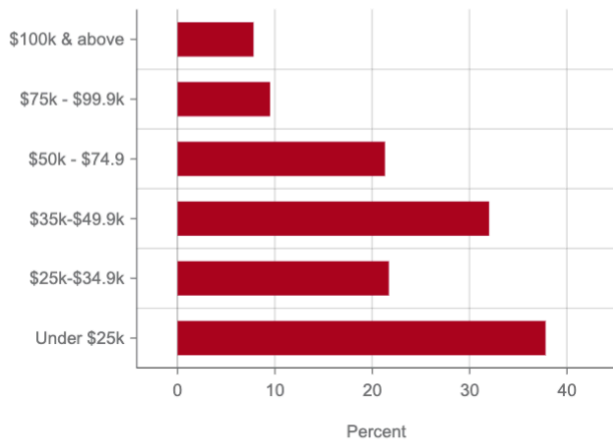
Source: Census HPS Week 52 –Dec 9 – 19th 2022.

Renter Households Not Current on Rent by Income ARIZONA Renter Households - January 4 - 16th 2023

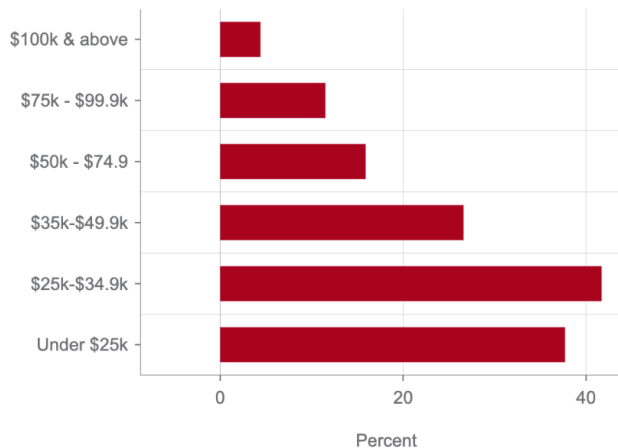


Census HPS Week 53 –Jan 4 – 16th 2023.

Households Finding it Very Difficult to Meet Usual Expenses
ARIZONA Households by Income - December 9 - 19 2022



Households Finding it Very Difficult to Meet Usual Expenses
ARIZONA Households by Income - January 4 - 16 2023



Source: Census Household Pulse Survey –Week 52

Census Household Pulse Survey –Week 53

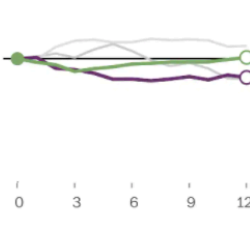
The coronavirus crisis is different

Job growth (or loss) since each recession began, based on weekly earnings

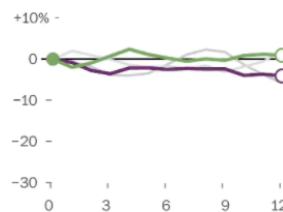
1990 recession



2001 recession



2008 recession



Coronavirus crisis



Notes: Based on a three-month average to show the trend in volatile data.
Source: Labor Department via IPUMS, with methodology assistance from Ernie Tedeschi of Evercore ISI
THE WASHINGTON POST

Source: Long et al. "The covid-19 recession is the most unequal in modern history." Washington Post. Sept 30 2020.

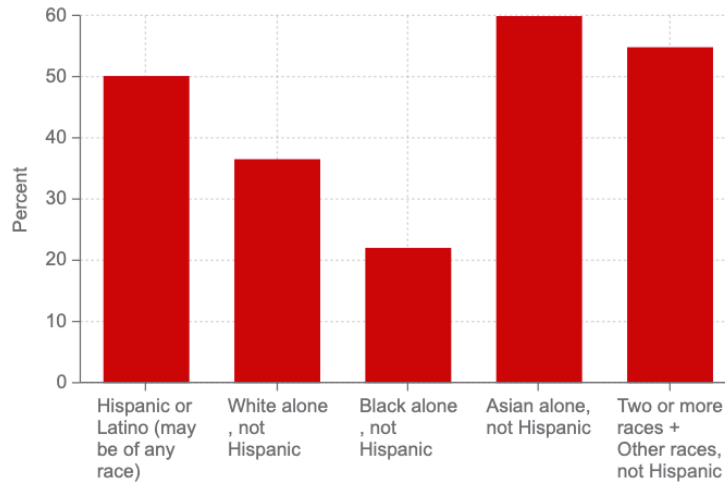
Consequently, lower-income households are at particularly high risk of housing insecurity and homelessness during this economic recovery.



Racial/Ethnic Disparities

The current recession is also disproportionately impacting individuals and communities of color, trends evident in both losses of employment income and housing insecurity.

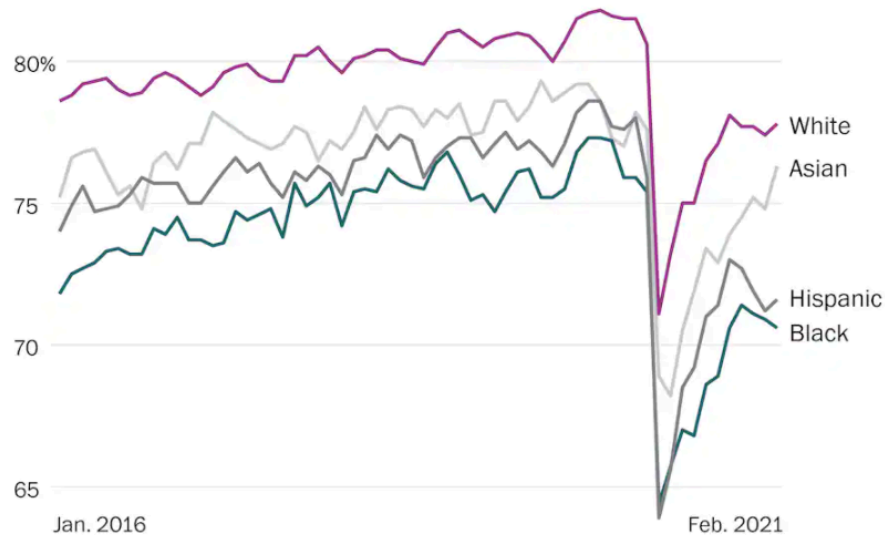
**Experienced Loss of Employment Income Since March 13, 2020
ARIZONA by Race/Ethnicity**



Source: Census Household Pulse Survey –Week 26 – March 3rd – 15th 2021

Share of prime-age adults who have jobs

Employment-population ratio of those 25-54 years old by race or ethnicity



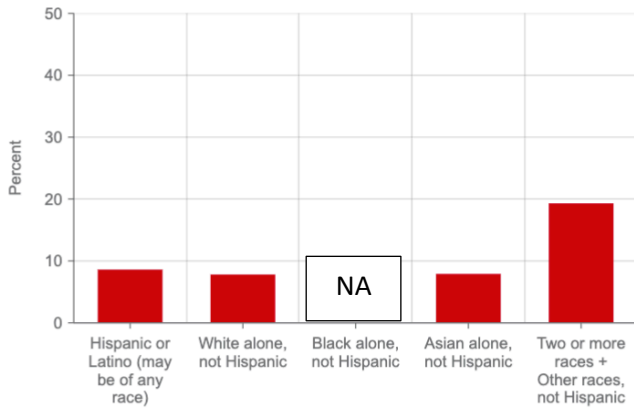
Source: Labor Department

THE WASHINGTON POST

Source: Siegel, R. "The soft underbelly to a looming economic boom: Millions will miss out." *Washington Post*. March 30 2021.

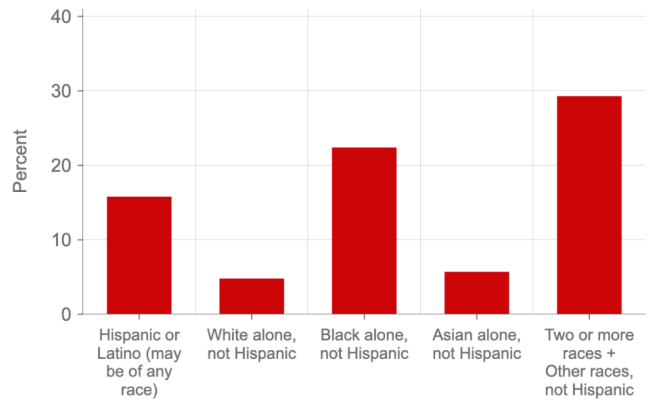


Percent Not Current on Rent by Race/Ethnicity
ARIZONA Renter Households - December 9 - 19 2022



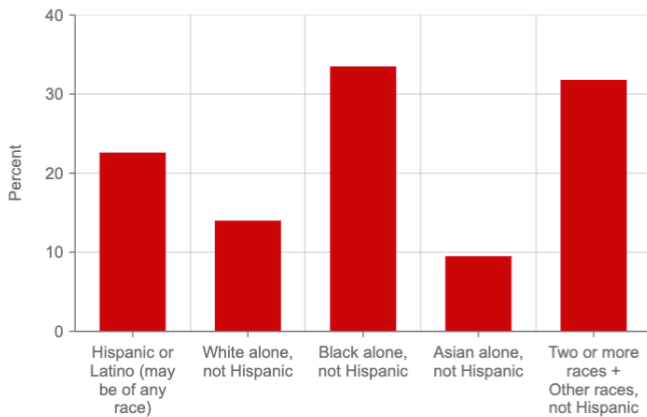
Source: Census Household Pulse Survey –Week 52

Percent Not Current on Rent by Race/Ethnicity
ARIZONA Renter Households - January 4-16 2023



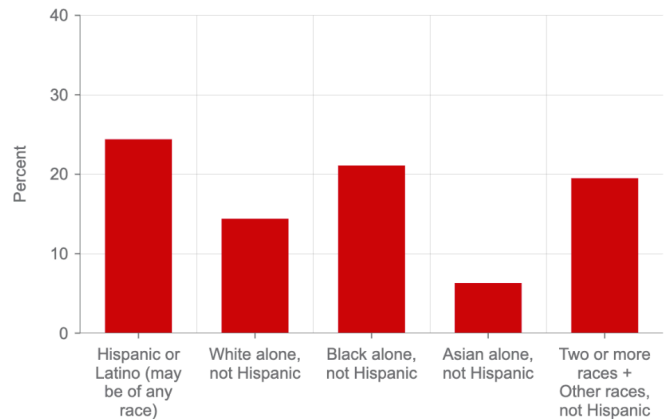
Census Household Pulse Survey –Week 53

"Very Difficult" to Pay Usual Expenses in Last Week
ARIZONA Households - December 9-19 2022



Source: Census Household Pulse Survey –Week 52

"Very Difficult" to Pay Usual Expenses in Last Week
Arizona Renter Households - January 4th - 16th 2023



Census Household Pulse Survey –Week 53

Those behind on rent are overwhelmingly low-income households who experienced job and income losses during the pandemic.

Characteristics of Renters Behind on Rent, Arizona

People of Color



Low Income



Unemployed



Households with Children

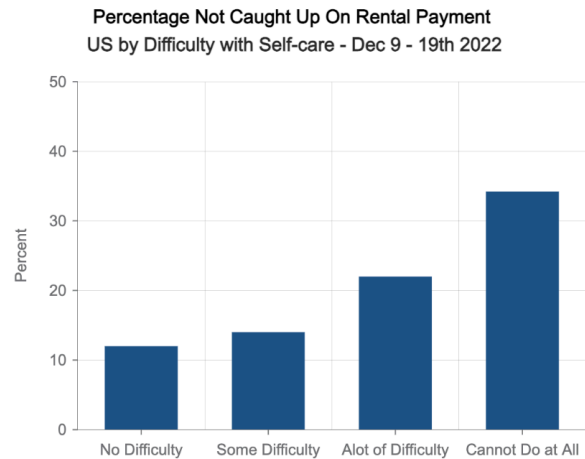
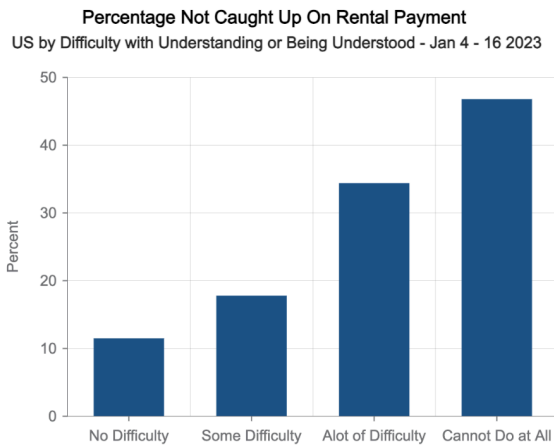
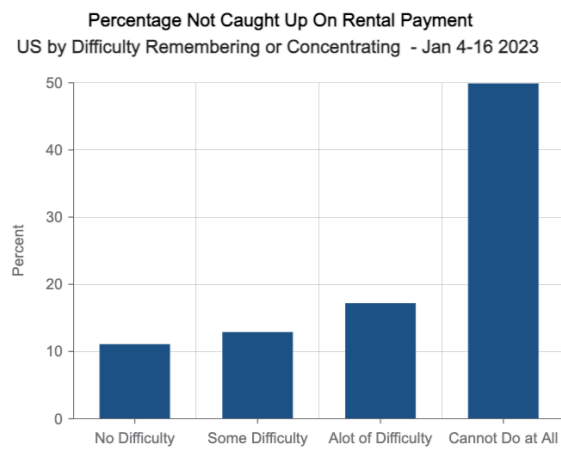
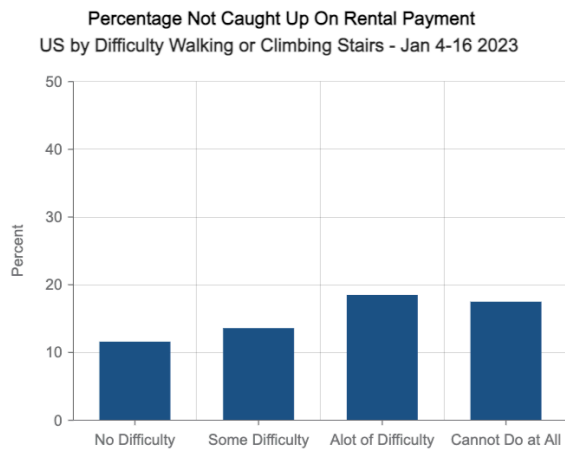
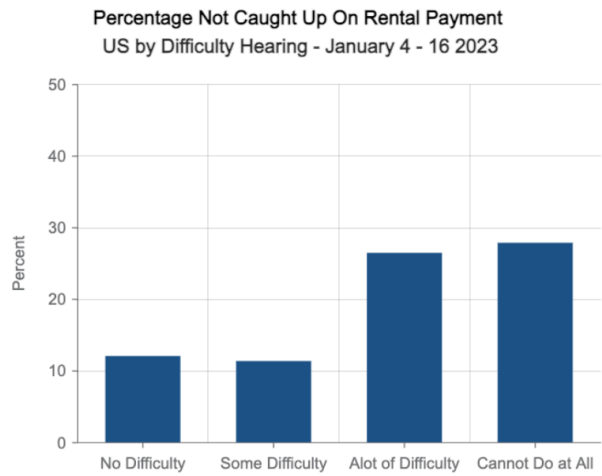
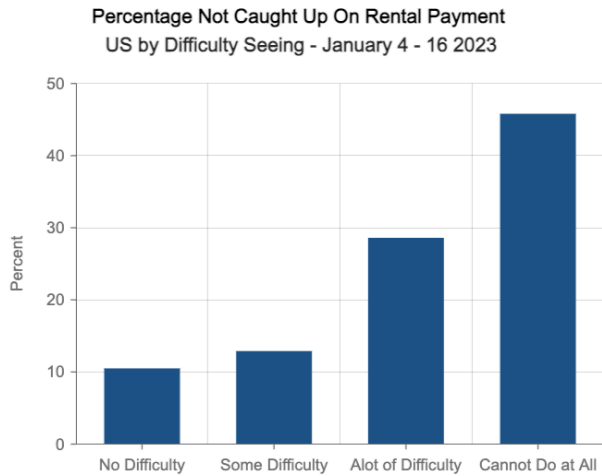


Source: National Equity Atlas – Estimates based on Wave 52 of the Census HPS (Dec 9 – 19th 2022)



Disparities by Ability

Across the categories of ability/disability tracked in the Census Household Pulse Survey (difficulty seeing, hearing, remembering or concentrating, and walking or climbing stairs, etc.) substantially higher percentages of individuals with difficulties in these areas reporting being not current on their rent payments. These data are for the United States at large, as the state-level subpopulations are too small to measure reliability at the state level.



Appendix: National Equity Atlas Rent Debt Methodology³

This document describes our current methodology for estimating the number of renter households behind on rent and the total and per household rent debt for the United States and selected counties, regions, and states, as presented in the Rent Debt Dashboard.

Our estimates use the share of households behind on rent from the Census Household Pulse survey and the median contract rent paid by households from the American Community Survey, both broken down by income bracket, to determine the total amount of monthly rent owed by households behind on rent. We then multiply these monthly figures by the average number of months that households are in arrears to estimate total rent debt. We assume that approximately 25 percent of behind households are one month behind, 28 percent are two months behind, 12.5 percent are three months behind, and 5.5 percent have not paid for the entire pandemic. We use three data sources:

1. Household rent and income data from the 5-year 2019 American Community Survey (ACS) summary file and microdata.
2. Data on late payment of rent from the U.S. Census Bureau's Household Pulse Survey for states and the 15 largest metros. The Pulse survey is updated every two weeks.
3. Distribution of rent arrears estimates derived from the University of Southern California's Center for Economic and Social Research's "[Understanding Coronavirus in America](#)" panel survey, which has been collected between April 2020 and March 2021.

The process and data are further described below:

Household Pulse Survey data is filtered to include only renting households paying a non-zero rent in the most recent survey wave. Those households are assigned a rent status based on their response to the survey question: "Is this household currently caught up on rent payments?." The percentage of households in rent arrears – the "behind rate" – is calculated by household income category and by geography. Households are initially grouped into three income categories: those with an annual income less than \$50,000, those with an annual income between \$50,000 and \$100,000, and those with an annual income greater than \$100,000. Pulse estimates are available for all 50 states and for the 15 largest metropolitan regions in the US. For geographies where regional data are available, we use regional estimates of behind rates; for geographies where regional data are not available, we use statewide estimates of behind rates. If the unweighted count of observations for a given income category within a metropolitan region falls below 100 in the most recent Pulse survey wave, statewide behind rates are used for households in that income category in that metropolitan region instead. If unweighted counts of statewide observations fall below 100 for either of the top two income categories but the two categories combined have more than 100 observations, a single rate is used for both of the categories. If unweighted counts of statewide observations fall below 100 for the top two income categories combined or for the lowest income category, a single behind rate is used for all households in the state. If a state has fewer than 100 unweighted observations, national behind rates are used and rent debt estimates are not calculated for that state.

The estimates of the percent of households behind on rent by income bracket are necessarily broad, in geographic terms, given data availability in the Household Pulse Survey. However, to estimate monthly rent debt for households that are behind, they are applied to estimates of median monthly contract rent by income bracket that are geographically specific (i.e. based on the same cities and counties for which the rent debt estimates are ultimately

³ Source: <https://nationalequityatlas.org/rentdebtmethodology>



reported). We use median rent (rather than mean rent) based on the assumption that renters who are behind on rent are likely to have lower monthly rent than the average for each income bracket. Estimating median monthly contract rent by income bracket was straightforward for states, regions, and larger cities and counties as they could be drawn directly from the ACS microdata. For smaller cities and counties not identified in the ACS microdata, however, we developed an approach that relied primarily on the ACS summary file with some inputs from the microdata.

Specifically, we drew information from Table B25122 of the ACS summary file on the number of households by income bracket gross rent bracket and utilized a Pareto interpolation procedure to estimate median monthly gross rent for each of the aforementioned income brackets in each geography. This procedure required an upper bound for the top gross rent category (\$2,000 or more), which is not provided in Table B25122. To adjust our estimate to reflect median contract rent (rather than median gross rent, which includes the cost of utilities), we also needed an adjustment ratio to apply to our resulting Pareto estimates.

We estimated these data inputs for each of the smaller city and county geographies using ACS microdata for the Public Use Microdata Area (PUMA) or PUMAs they intersect. This was accomplished using population-based crosswalks we developed between 2010 PUMAs and 2010 counties, and between 2010 PUMAs and 2010 census-defined places (which include all cities), by taking a population-weighted average of the PUMA-level measures for each smaller city and county geography. Following this approach, we estimated the maximum gross rent, median gross rent, and median contract rent for overall and for each income bracket. The estimated maximum gross rent is inputted into the Pareto interpolation procedure to estimate median gross rent by income bracket for each of the smaller city and county geographies. Those initial estimates were then adjusted to reflect median contract rent by multiplying by the ratio of median contract to gross rent from the PUMA-based estimates. The approach seeks to utilize as much geographically-specific information from the ACS summary file as possible and substitutes in less geographically-specific information from the ACS microdata as necessary.

We assume that differences between reported rents from the 2019 5-year ACS (which reflect a 2015-2019 average expressed in inflation-adjusted 2019 dollar values) and 2020 actual rents are negligible for households that have not moved in 2020, as those households were likely locked into pre-pandemic leases and/or month-by-month agreements with fixed/stable rents. The total amount of monthly rent owed by behind households is then calculated by multiplying estimated median monthly rent for each income category by the number of Pulse households in that income category and summing those values for each geography (city or county). Regional and statewide estimates are produced by

summing estimates from their constituent county geographies. These figures are converted to total rent debt by adjusting based on our estimate that households were, on average, 3.75 months in arrears. There is no source of data on the distribution of rent arrears among behind households, so we estimated this distribution based on the University of Southern California (USC) [“Understanding Coronavirus in America” panel survey](#) from April 2020 through March 2021. Restricting the sample to renter households that were recorded at some point during each of the twelve months from April 2020 to March 2021 and determining a household’s behind status in each month based on their response closest to the end of the month, we measure how many months each household reports not paying their rent. Using this method, we found that approximately 25 percent of behind households are one month behind on rent, 28 percent are two months behind, 12.5 percent are three months behind, and 5.5 percent have not paid for the entire pandemic.

These estimates do not take into account the requirement of the California eviction moratorium passed in August 2020 (AB 3088) that Covid-19-affected tenants must pay 25 percent of rent accrued between September 1, 2020 and January 31, 2021 by January 31, 2021 to be protected from eviction. This incentive likely decreases the amount of arrears.

