



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 37 Census Household Pulse
Survey Data – September 23rd 2021

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INTRODUCTION

The passage of the \$900 billion relief bill in late December and the passage of the \$1.9 trillion American Rescue Plan Act in March, make forecasting the likely number of individuals displaced from housing or at risk of homelessness nearly impossible. The macroeconomic situation remains serious, but there are very strong signs of improvement. At the national level, the July employment report was extremely strong and indicated that employers added nearly 1 million jobs in July (see page 20). This robust growth slowed significantly in August, with most economists attributing this slowdown to the spread of the Delta variant. The course of the pandemic is very likely to shape the strength and speed of the ongoing economic recovery.

After many months of slow job growth in Arizona, the rate of job growth accelerated significantly in June and July (see page 22). UA economic George Hammond stated, “Arizona job growth exploded in June with the state adding 37,800 seasonally-adjusted jobs over the month. That was the largest gain since last June and was six times higher than average monthly job gains from 2015-2019.”¹ Despite that strong job growth the unemployment rate in Arizona only fell from 6.8% in June to 6.6% in July, as more Arizonans have been entering the labor force in recent months. In August, the unemployment rate dropped substantially to 6.2%, a decline driven mostly by employment growth and only partially by a small decline in labor force participation. More recent data on the number of initial unemployment applications in Arizona have fallen to pre-pandemic levels for the first time since the onset of the recession in February and have stayed low through early-September (see page 21). This is great news and suggests that the economy in Arizona has continued to recover in recent weeks.

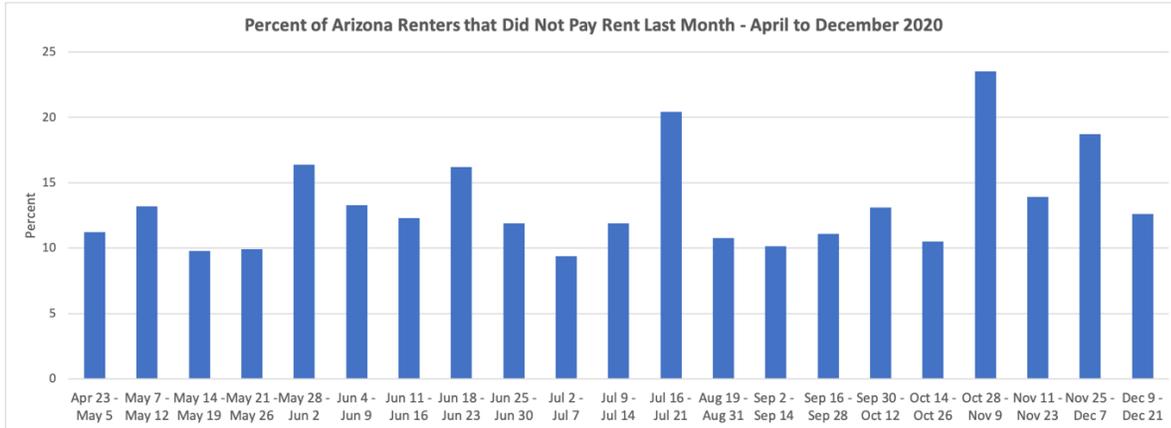
The most recent Census Household Pulse Survey wave, conducted September 1th–13th, indicates that the proportion of Arizona renters not current on rent was 12.9%. This is up from 7.3% in late August, but still below the 18.4% reporting not being current on their rent in mid-June. We don’t yet know if this is a consequence of sample variation or if this survey is capturing the impacts of the Delta variant and the slowdown in economic growth in August. However, while the proportion of renter households not current on their rent did increase, the proportion who reported that they were “very likely” to experience an eviction in the next two months fell dramatically from 25.1% in the last wave to 7.2% in this most recent survey wave. This is very good news, and is potentially a direct result of the distribution of rental assistance and the improving economy. In addition, the proportion seeing eviction as “somewhat likely” in the next two months also decreased to 18.5% from 35.5% in the previous wave. This represents a very substantial reduction in the proportion of non-current Arizona renters who think eviction is somewhat or very likely in the next two months. Further, the majority of non-current renters (69%) are only 1 month behind on their rent, and this helps explain why the vast majority of non-current renters (81%) have not applied for rental assistance.

The big, and largely unknowable, question is, how many individuals and families are going to fall through the cracks before assistance or the economic recovery reaches them? The following report compiles indicators that provide rough insight into the potential magnitude of these challenges that lie ahead.

¹ Hammond, George W. “Here’s How Arizona Jobs Exploded in June” AZ BIG MEDIA. July 27, 2021.

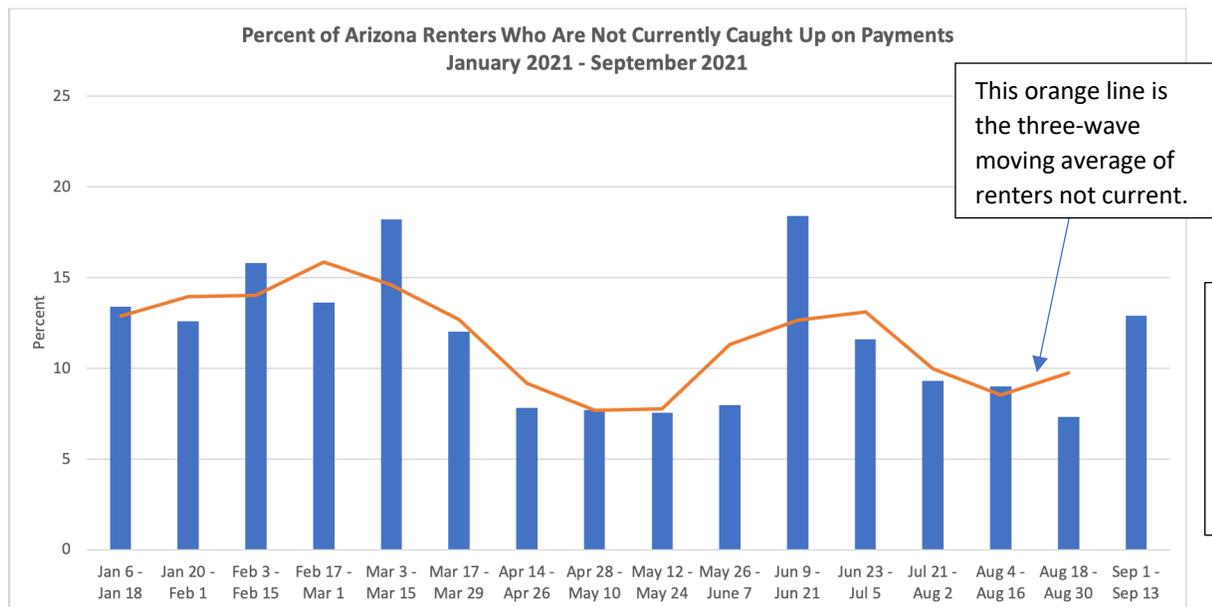


Indicators of the Scope of the Problem: Did Not Pay Rent Last Month



Source: Census Household Pulse Surveys Weeks 1-21

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



Source: Census Household Pulse Survey –Weeks 22 – 37

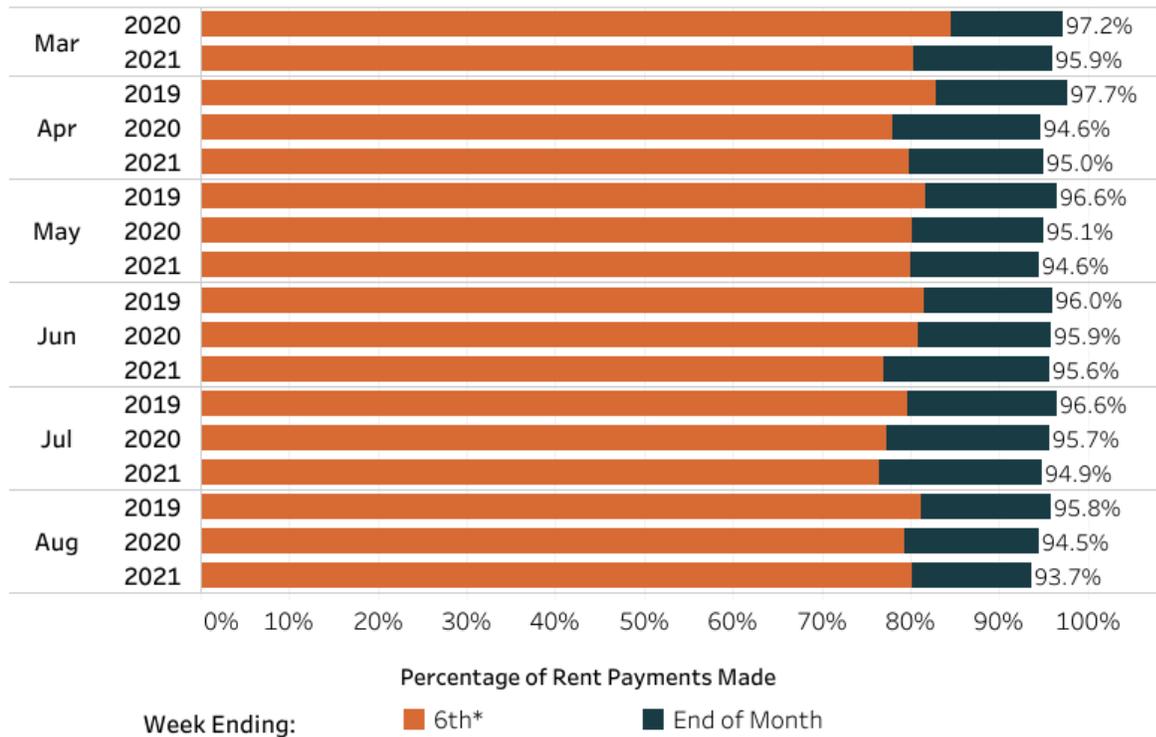


Indicators of the Scope of the Problem: National Indicators of Ability to Pay Rent

It has been widely noted that the levels of inability to pay rent reported in the Census Household Pulse Survey are not consistent with the levels of strain captured in other measures, particularly those collected by industry research. The National Multifamily Housing Council collects national rental payment data from an enormous sample of apartments (see figure below).

Rent Payment Tracker: Full Month Results

**Data collected from between 11.1 - 11.7 million apartment units each month

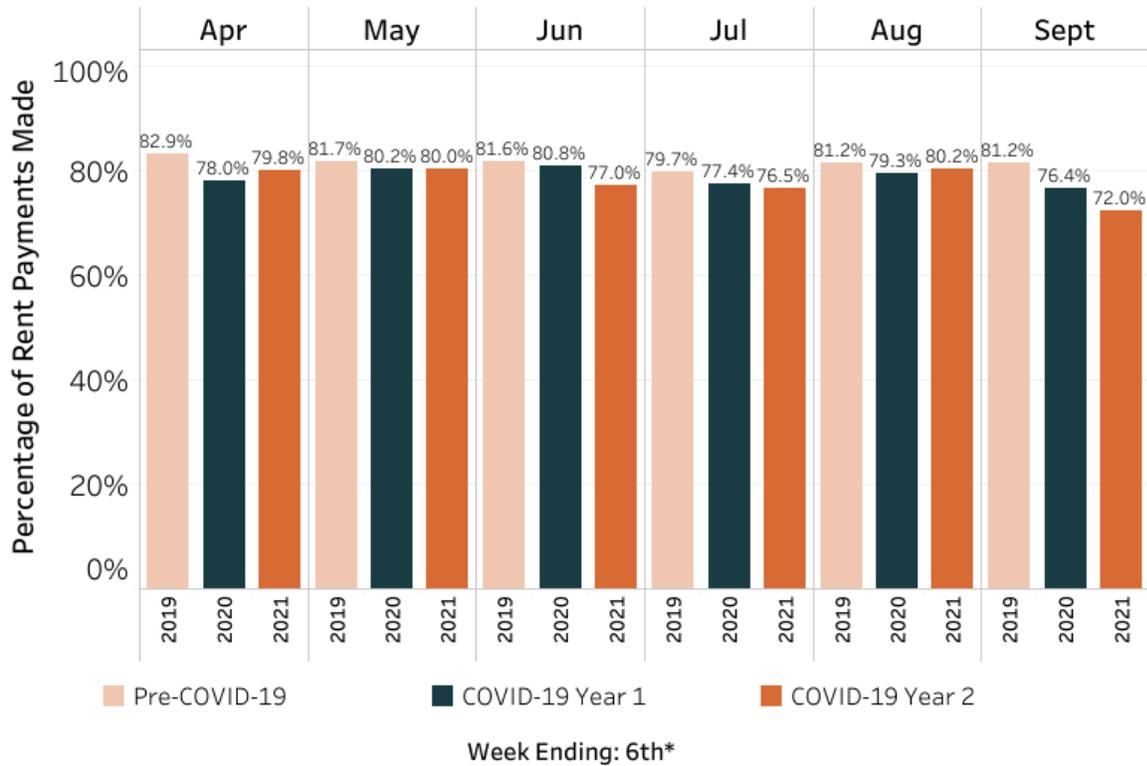


Source: National Multifamily Housing Council

As of the end of August 2021 93.7% of renters had paid the rent, compared to 95.8% who had paid by the end of August 2019 (see graph above). As of the 6th of September 2021, 72.0% of renters had paid the rent, compared to 81.2% who had paid by the 6th September 2019 (see graph below). In previous reports I have noted the consistent difference in the data signals received from the Census Household Pulse Survey and this national survey from the NMHC. The Census data consistently captured a substantially larger proportion of renter households that were not currently than was found in this NMHC survey. These differences have fallen to a negligible level with both surveys suggesting that 6-7% of renters were not current on their rent at the end of August. In addition, it is worth noting that the finding (below) that only 72% of renters reported being current as of the 6th of September would normally be a cause for concern. However, the NMHC notes that the holiday weekend in combination with recent natural disasters are likely to have caused reporting issues that make this figure not directly comparable to previous years.

Rent Payment Tracker: Weekly Results

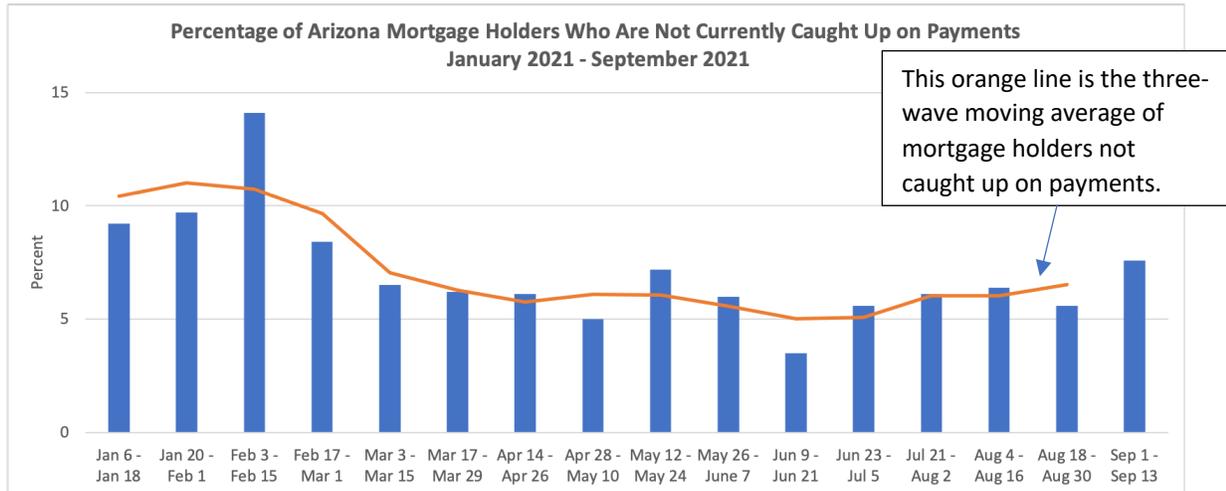
**Data collected from between 11.1 - 11.7 million apartment units each month



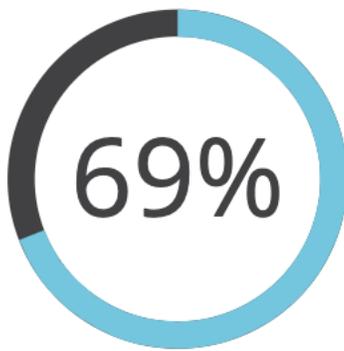
Source: National Multifamily Housing Council



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



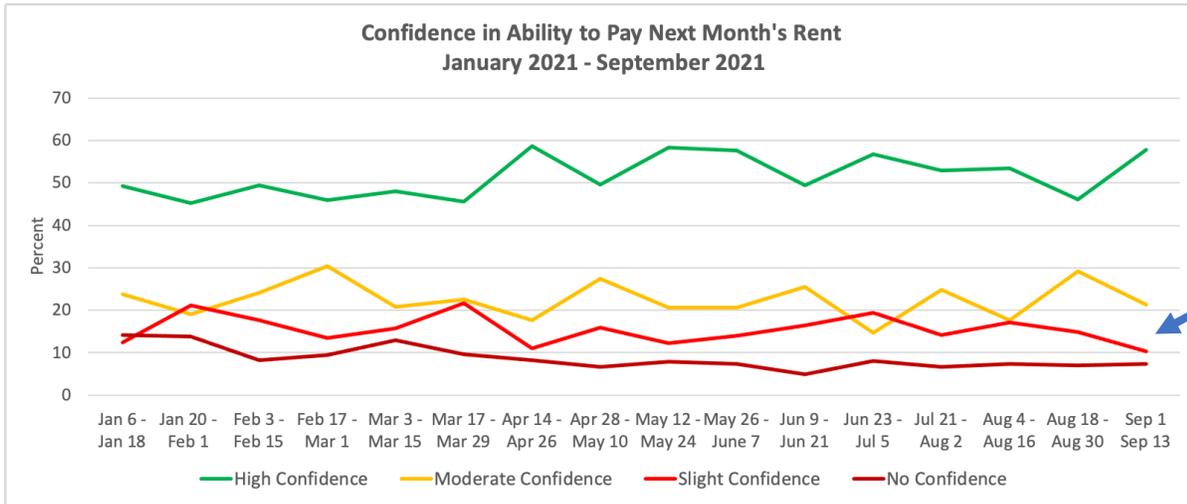
Source: Census Household Pulse Survey –Weeks 22 – 37



Homeownership Rate in Arizona in 2020

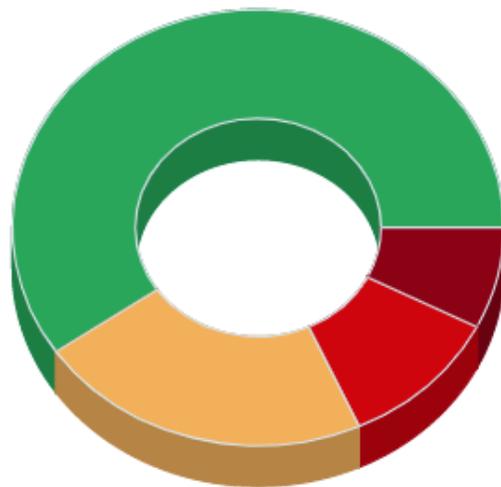
Source: U.S. Census Bureau

Indicators of the Scope of the Problem: Ability to Pay Next Month's Rent Arizona Renters



Source: Census Household Pulse Survey –Weeks 22 - 37

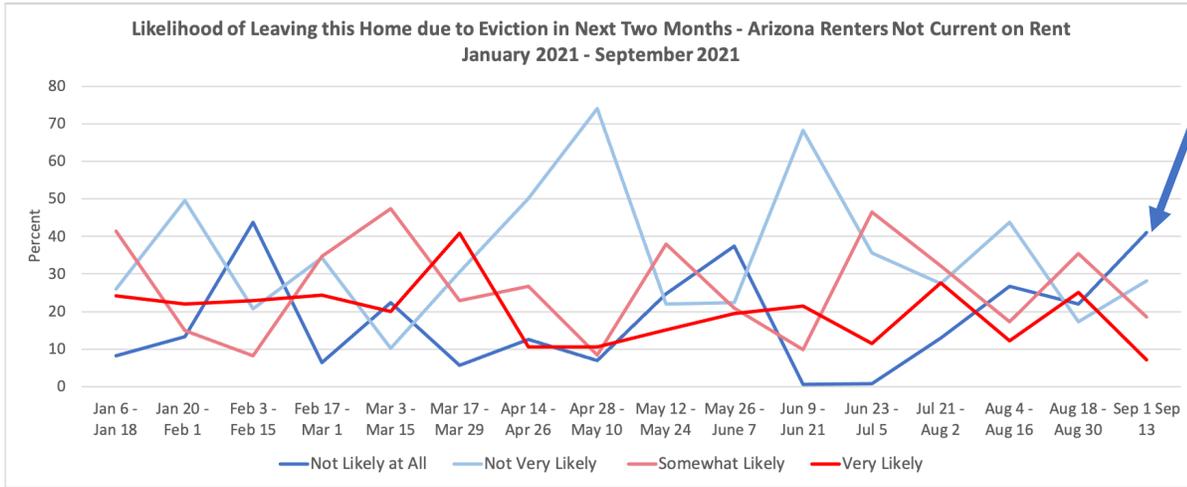
Confidence in Ability to Pay Next Month's Rent Arizona Renters - Sept 1-13 2021



■ No Confidence	7%	■ Slight Confidence	10%
■ Moderate Confidence	21%	■ High Confidence	58%

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

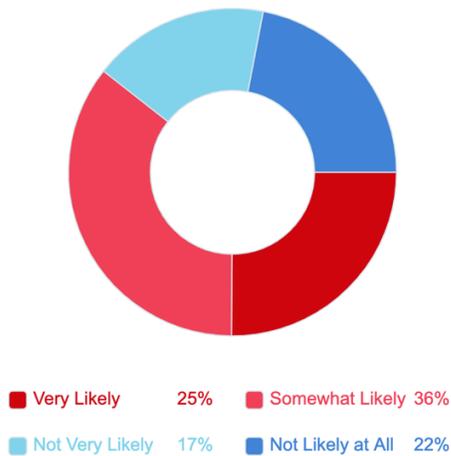
The trends in the graph below are based on questions only asked of Arizona renters not caught up on their rent: 12.9% of all AZ renter households – September 1st – 13th



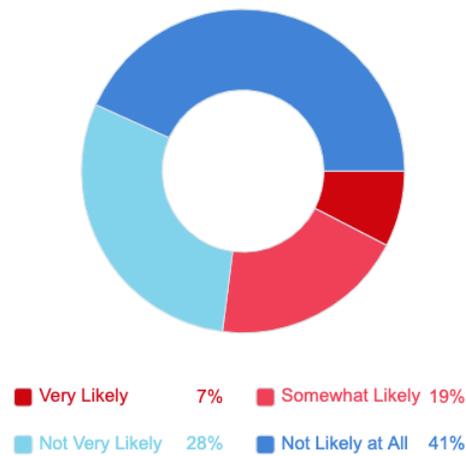
Recent positive shifts with the proportion of non-current renters seeing eviction as “very” or “somewhat likely” decreasing substantially in this most recent wave.

Source: Census Household Pulse Survey – Weeks 22 – 37

Likelihood of Leaving this Home due to Eviction in Next 2 Months
Arizona Renters Not Current on Rent - August 18 - 30



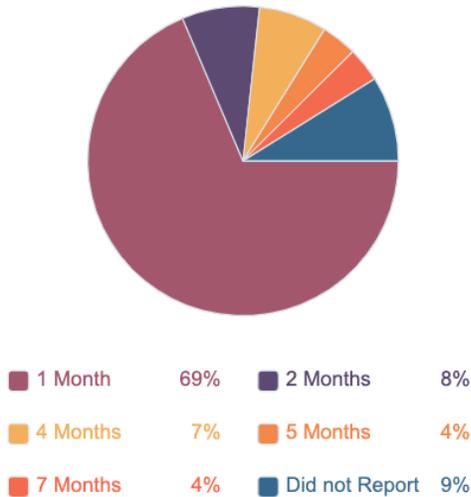
Likelihood of Leaving this Home due to Foreclosure in Next 2 Months
Arizona Mortgage Holders Not Current on Payments - September 1-13



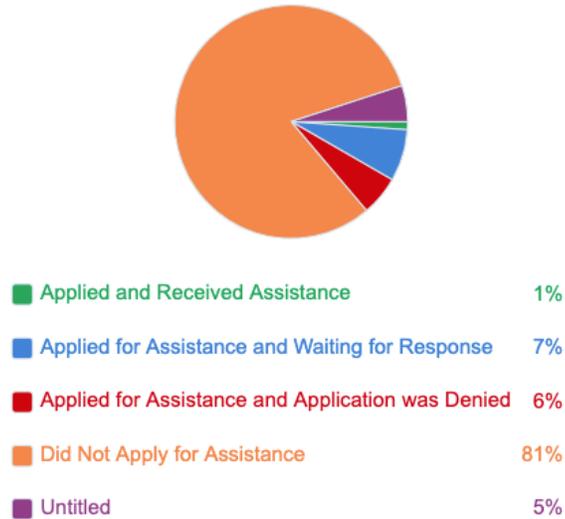
Indicators of the Scope of the Problem: Months Behind on Rent and Rental Assistance

The following graph display responses to questions only asked of Arizona renters not caught up on their rent: 12.9% of all AZ renter households – September 1st – 13th

Months Behind on Rental Payments
Arizona Renters Not Current on Rent - Sept 1 - 13



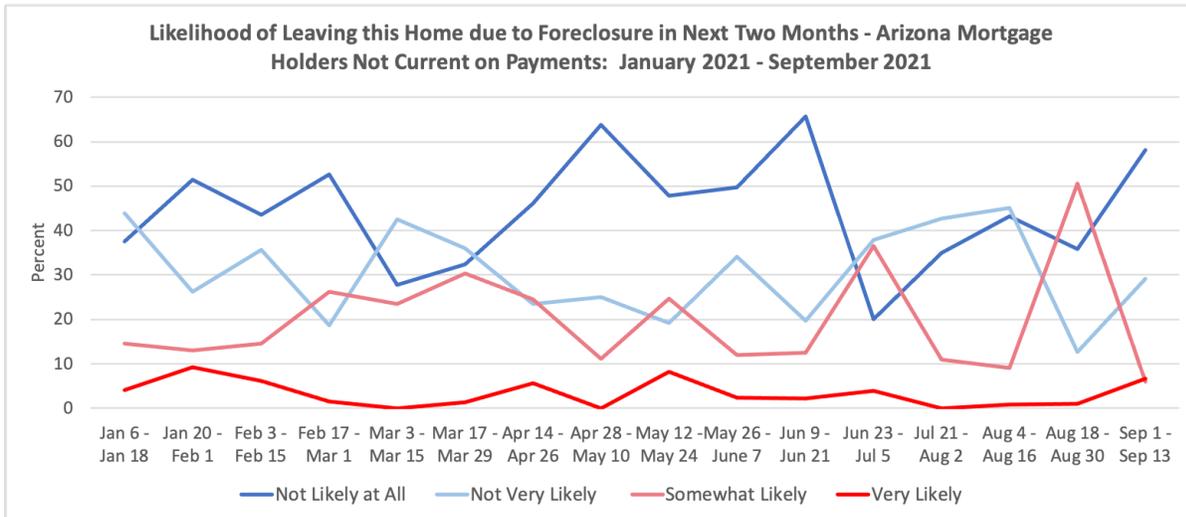
Rental Assistance Through State or Local Government
Arizona Renters Not Current on Rent - September 1 - 13



The majority of Arizona renters who are behind on their rent are only 1 or 2 months behind on their rental payments (77%). This is great and welcome news, and suggests that the pool of renters who are very behind on rent has been declining substantially in recent weeks. Turning to application and receipt of rental assistance, only 6% of non-current renter households report having applied and being denied assistance. Most noteworthy is the fact that the vast majority of non-current rental households in Arizona have not applied for assistance (81%). This suggests enormous potential benefit to outreach and promotion efforts in regards to the availability of rental assistance.

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

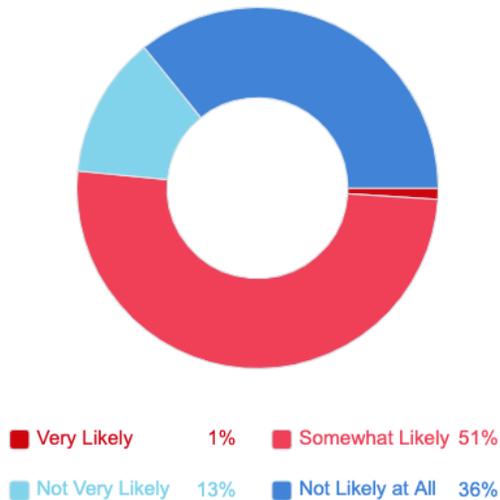
The trends in the graph below are based on questions only asked of Arizona mortgage holders not caught up on their payments: **7.6% of all AZ mortgage holding households – September 1st – 13th**



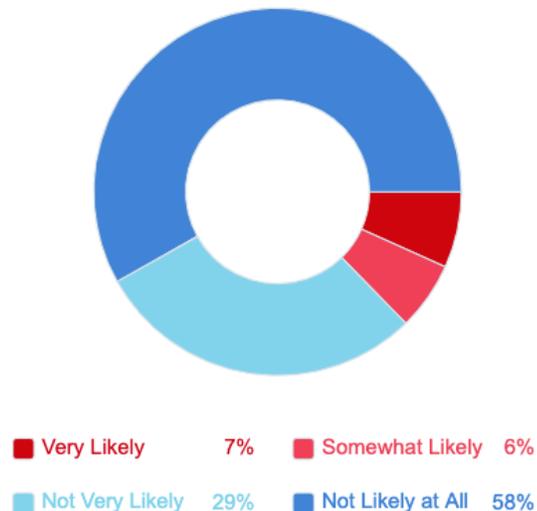
Percentage seeing foreclosure as “somewhat likely” decreased dramatically this wave. Proportion answering “very likely” remained very low.

Source: Census Household Pulse Survey – Weeks 22 – 37

Likelihood of Leaving this Home due to Foreclosure in Next Two Months - Arizona Mortgage Holders - August 18-30



Likelihood of Leaving this Home due to Foreclosure in Next Two Months - Arizona Mortgage Holders - Sept 1 - 13



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 36 of the survey conducted August 18th- 30th 2021. The percentage of renters not current statewide in Wave 36 was 7.3%.

National Equity Atlas – Estimates based on Wave 36 of the Census HPS

Estimated Number of Arizona Households Behind on Rent	Estimated Total Rental Debt Statewide	Estimated Rental Debt per Household
67,000	\$163.0 million	\$2,400

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 36 of the Census Household Pulse survey conducted August 18th- 30th 2021.

National Equity Atlas – Estimates based on Wave 36 of the Census HPS

Estimated Number of Pima County Households Behind on Rent	Estimated Total Rental Debt Countywide	Estimated Rental Debt per Household
8,350	\$18.2 million	\$2,200



“Back of the Envelope” Estimates of Potential Displacement and Homelessness Based on Estimates of Total Households Behind on Rent Payments- ARIZONA

The estimates provided below take the estimated number of Arizona households behind on their rent (and the adjusted estimates) from the National Equity Atlas and then provides ranges of possible outcomes for both displacement and homelessness as a result of these potential housing displacements. Many and probably most will be helped enormously by current and forthcoming assistance. The exercise here provides examples of the size of the potential increase in homelessness depending on the proportion of these at-risk households that actually experience a housing disruption. What does it look like, for example, if 20% of the vulnerable households estimated by the National Equity Atlas to be at risk actually experience a housing displacement? No sophisticated modeling approaches were used to generate these figures, just calculations of proportions of the National Equity Atlas estimates of households at risk. **As such, these are “back of the envelope” calculations to provide a rough sense of the ranges of strain that could emerge depending on the extend of the ameliorative impacts of forthcoming relief assistance (unemployment insurance, stimulus checks, rental assistance, & etc). Please do not cite or distribute these figures without these caveats and without checking with the author first. See next page for caveats.**

At Risk Pop ARIZONA	Estimate of # of Households Potentially Facing Housing Disruption or Eviction Filings	Adjustment (not all housing insecurity results in displacement) and forthcoming assistance will reduce hardship. Number of Households	Number of People Average HH Size in AZ = 2.69 #HH*2.69	Assuming 25% of displaced actually become homeless	Assuming 10% of displaced actually become homeless
Renters not Current	67,000	10% result in displacement: 6,700	18,023	4,506	1,802
Renters not Current	67,000	20% result in displacement: 13,400	36,046	9,012	3,605

These National Equity Atlas estimates from late-August only provide an estimate of the number of Arizonans not current on their rent and an estimate of the extent of their rental debt. The exercise above then simply provides ranges of possible impacts depending on how many people are actually displaced from their housing. In order to get a rough sense of whether these estimates are realistic, we can compare these estimates to other available indicators. These estimates are based on Wave 36 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 37 conducted September 1st-13th, 12.9% of Arizona renter households reported not being current on their rent payments. There were 927,771 renter-occupied units in Arizona in 2019, according to a Census American Community Survey (1-year) estimate.

12.9% of 927,771 = 119,683 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. 7.2% of these households that are not current on their rent reported being “very likely” to be evicted, while another 18.5% said this is “somewhat likely”.

7.2% of 119,683 = 8,617 AZ renter households who think it is “very likely” that they will be evicted in the next two months.

25.7% of 119,683 = 30,758 AZ renter households who think it is either “somewhat likely” or “very likely” that they will be evicted in the next two months.

These comparisons suggest that the hypothetical scenario outlined above of 20% of the Arizona renter households not current on their payments being at risk of a potential housing displacement (roughly 12k rental households) may be a better estimate of the extent of financial strain among Arizona renters. **To be clear, the vast majority of these households will benefit substantially from forthcoming benefits and relief assistance and most will be at substantially lower risk of eviction as a result.**



“Back of the Envelope” Estimates of Potential Displacement and Homelessness Based on Estimated Total Eviction Filings - PIMA COUNTY

The estimates provided below take the estimated number of Pima County households behind on their rent (and the adjusted estimates) from the National Equity Atlas and then provides ranges of possible outcomes for both displacement and homelessness as a result of these potential housing displacements. Many and probably most will be helped enormously by current and forthcoming assistance. No sophisticated modeling approaches were used to generate these figures, just calculations of proportions of the National Equity Atlas estimates of households at risk. **These are “back of the envelope” calculations to provide a rough sense of the ranges of strain that could emerge depending on the extend of the ameliorative impacts of forthcoming relief assistance (unemployment insurance, stimulus checks, rental assistance, & etc).**

At Risk Pop PIMA COUNTY	Midpoint* of Estimates of # of Households Potentially Facing Housing Disruption or Eviction Filings	Adjustment (not all housing insecurity results in displacement) and forthcoming assistance will reduce hardship. Number of Households	Number of People Average HH Size in AZ = 2.69 #HH*2.69	Assuming 25% of displaced actually become homeless	Assuming 10% of displaced actually become homeless
Renters not Current	8,350	10% result in displacement: 835	2,246	562	225
Renters not Current	8,350	20% result in displacement: 1,670	4,492	1,123	449

Please do not cite or distribute these figures without these caveats and without checking with the author first.

These National Equity Atlas estimates from late-August only provide an estimate of the number of Pima County renters not current on their rent and an estimate of the extent of their rental debt. The exercise above then simply provides ranges of possible impacts depending on how many people are actually displaced from their housing. In order to get a rough sense of whether these estimates are realistic, we can compare these estimates to other available indicators. These estimates are based on Wave 36 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 37 conducted September 1st-13th 2021, 12.9% of Arizona renter households reported not being current on their rent payments. There were 151,943 renter-occupied units in Pima County in 2019, according to a Census American Community Survey (1-year) estimate.

12.9% of 151,943 = 19,601 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. 7.2% of these households that are not current on their rent reported being “very likely” to be evicted, while another 18.5% said this is “somewhat likely”.

7.2% of 19,601 = 1,411 Pima County renter households who think it is “very likely” that they will be evicted in the next two months.

25.7% of 19,601 = 5,037 Pima County renter households who think it is either “somewhat likely” or “very likely” that they will be evicted in the next two months.

These comparisons suggest that the hypothetical scenario outlined above of 20% of Pima County renter households not current on their payments being at risk of a potential housing displacement (roughly 2,500 households) may be a better estimate of the percentage of households at risk (when compared with the information offered in the Census Household Pulse survey). **To be clear, the vast majority of these households will benefit substantially from forthcoming benefits and relief assistance and most will be at substantially lower risk of eviction as a result.**

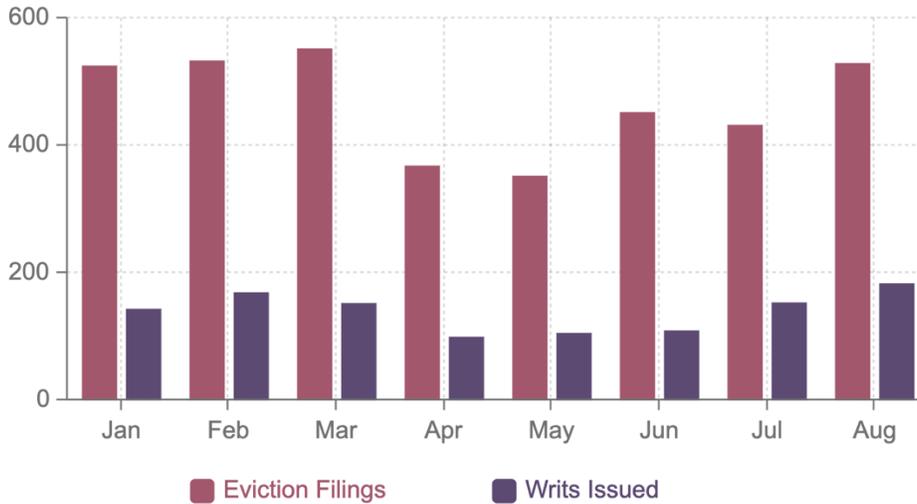


Eviction Filings and Writs Issued

The Supreme Court allowed a lower court decision to end the CDC’s extension of the eviction moratorium on the evening of August 26th. Below the total count of eviction filings and writs issued in Pima County is provided for all of 2021 by month, and since 8/2/21 by week. Eviction filings and writs for August and September do not indicate a dramatic increase in either since the end of the moratorium, rather both appear to be continuing at rates similar to those that occurred during the moratorium in 2021.

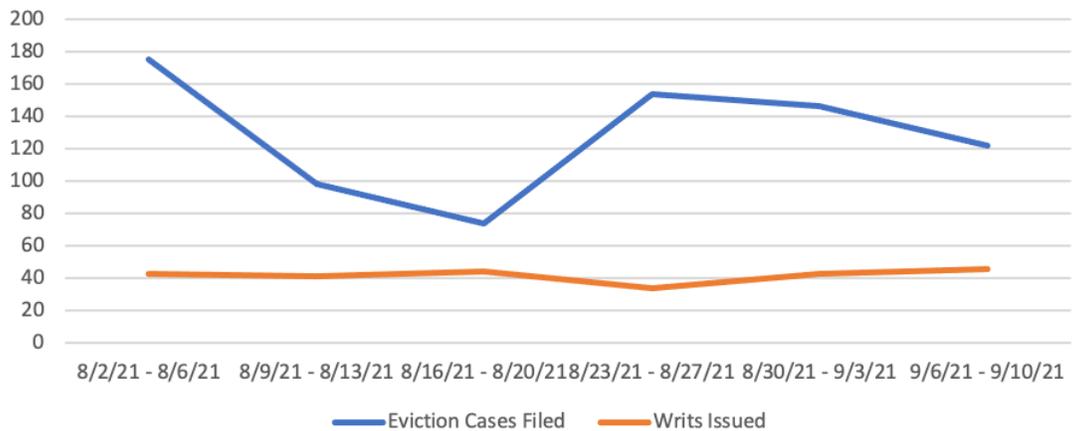
Total Eviction Filings & Writs Issued

Pima County 2021



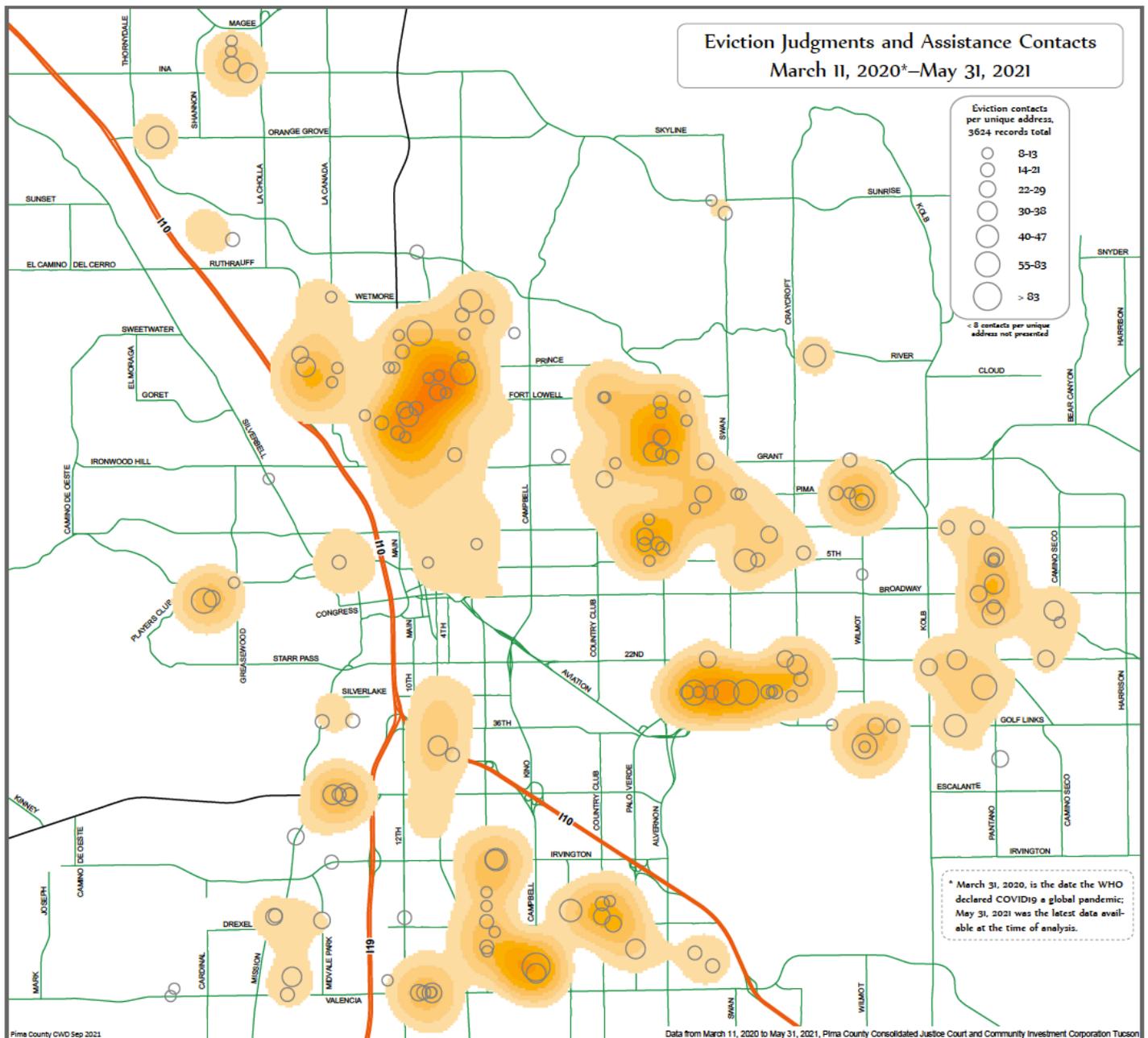
Eviction Filings and Writs Issued by Week

Pima County - August 2nd to September 10th 2021



Evictions Judgements and Assistance Contracts – Tucson

The map below displays the geographic concentration of all eviction judgements issued from March 11, 2020 – May 31, 2021 overlaid on the concentration of rental assistance contracts issued by the Community Investment Corporation (CIC). There is clearly a strong relationship between the concentration of evictions and rental assistance as we would hope and expect. These specific areas are also highly likely to be the areas where currently unfolding evictions judgements are occurring.

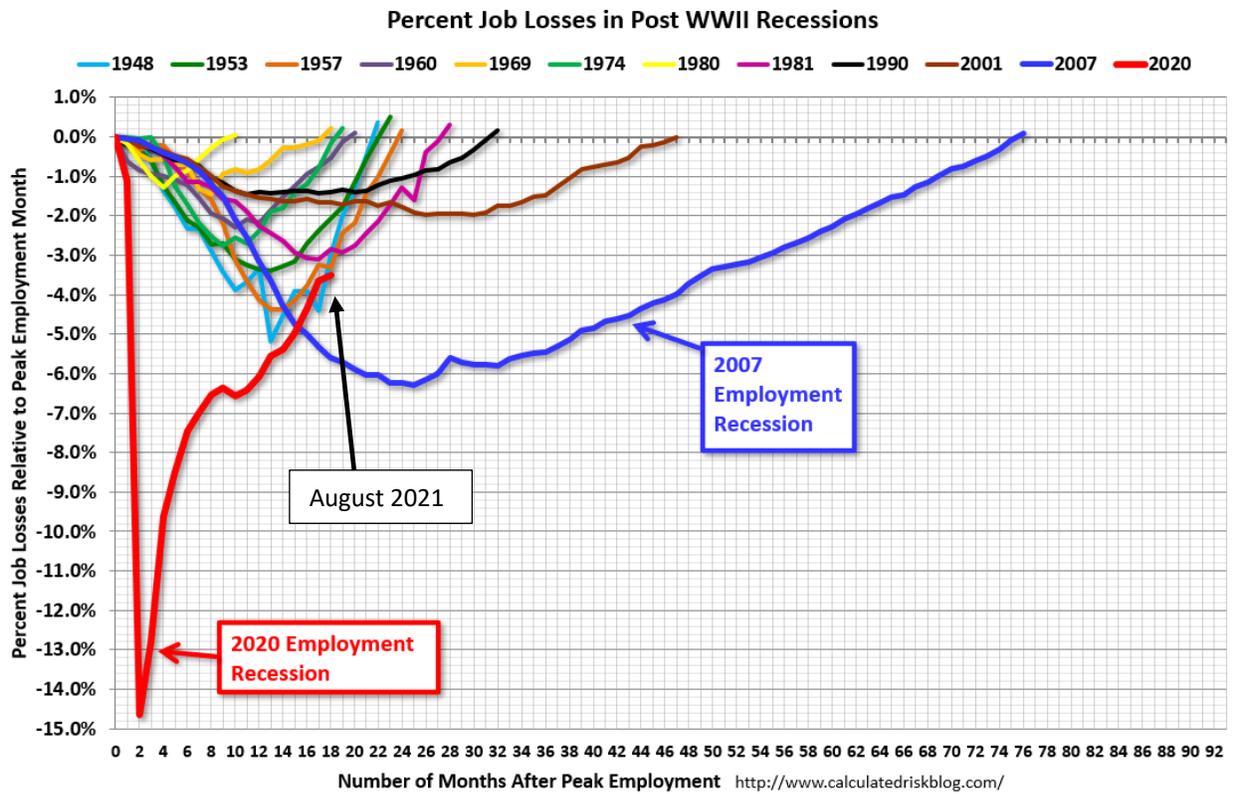


Source: Joel Viers, Pima County



The Road Ahead

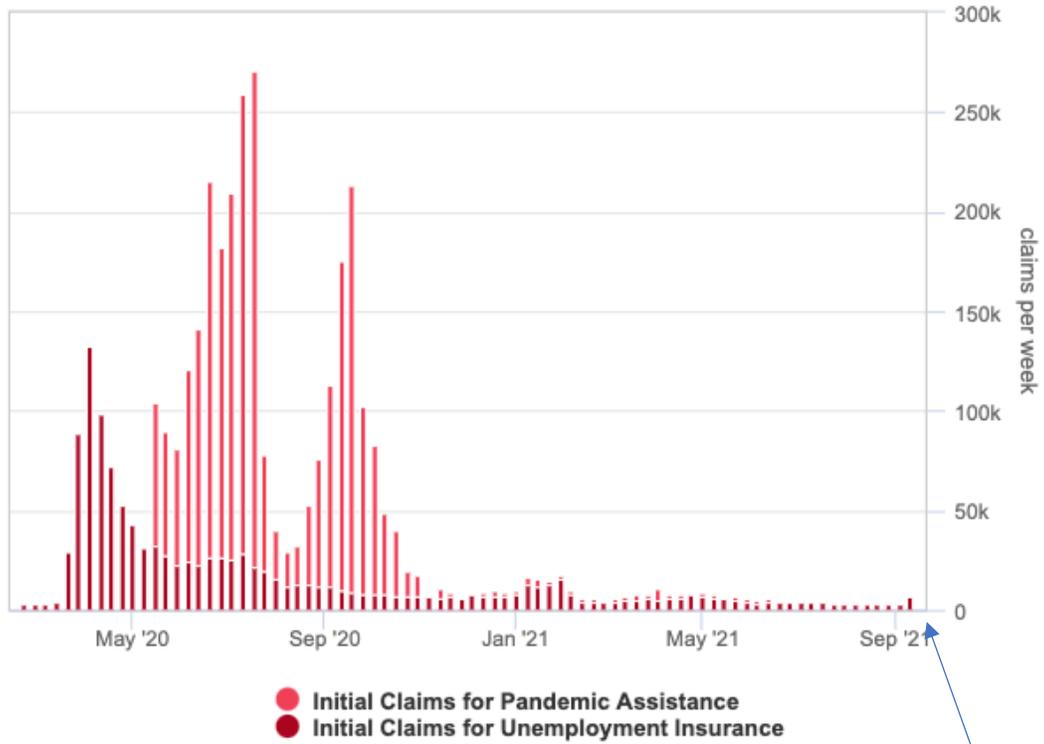
We are currently experiencing job growth at both the national and state level. This growth slowed in August, but is likely to continue at this reduced rate in the short-term. In the medium-term, most economists are expecting continuing robust growth and falling unemployment. The households at high risk of experiencing a housing disruption in the coming months remain disproportionately lower income and households of color. I remain concerned about the likelihood of homelessness among those households that experience a housing disruption over the next couple of months, as it is not guaranteed that employment opportunities will replace lost earnings.



Source: Calculated Risk Finance & Economics



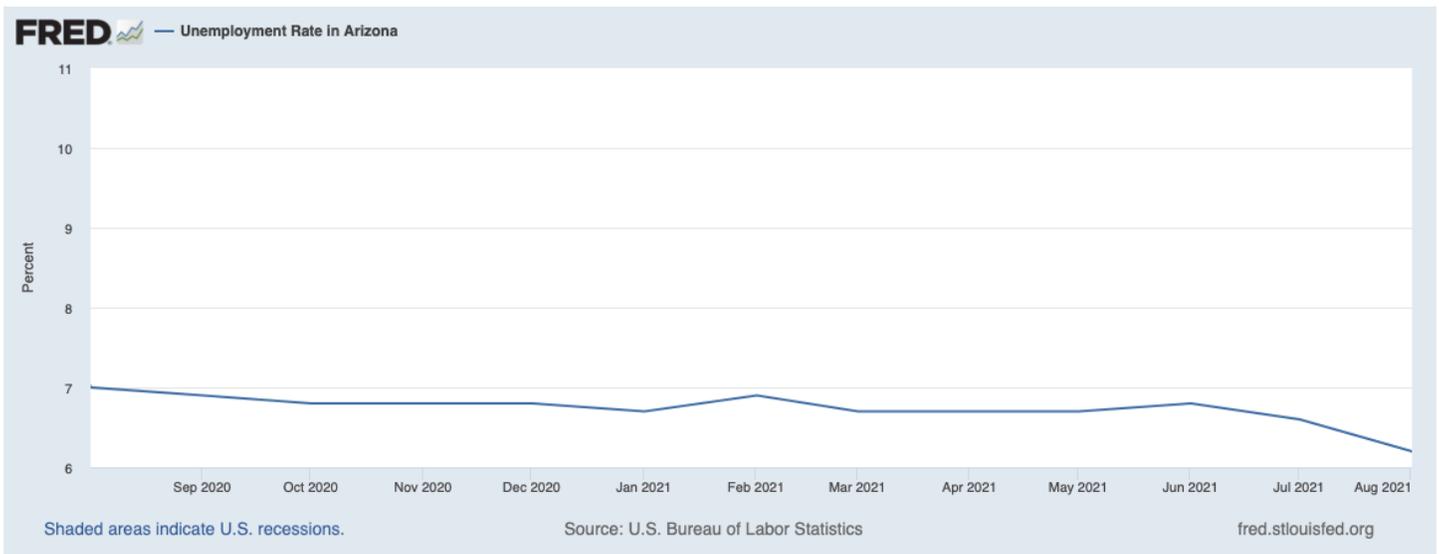
Arizona Initial Claims for Unemployment Insurance and Pandemic Assistance



Source: UA Economic and Business Resource Center

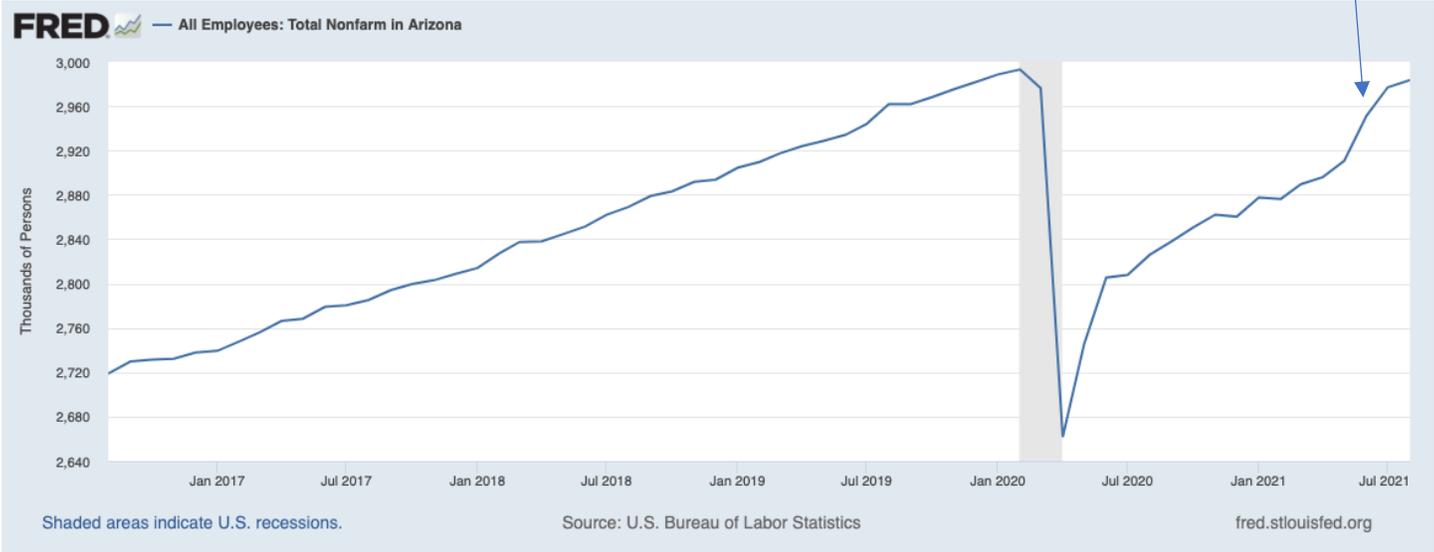
Week of September 11th

Arizona Unemployment Rate



Total Nonfarm Employment Arizona

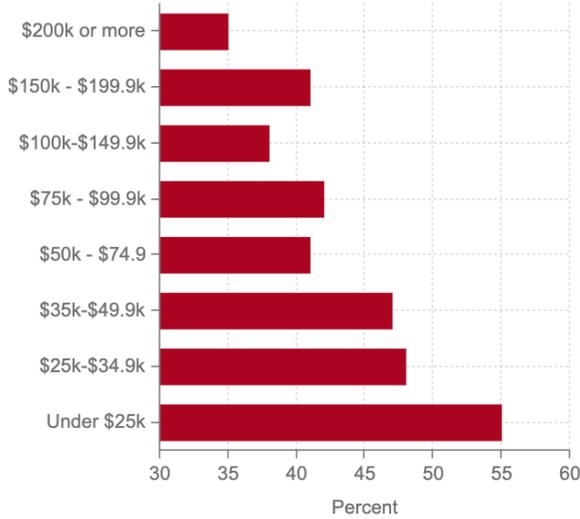
Extremely strong job growth in June, strong growth in in July, growth slowed substantially in August.



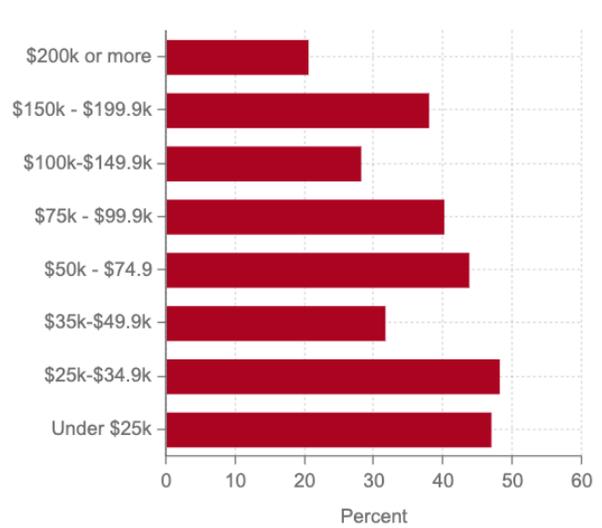
Income Disparities

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



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

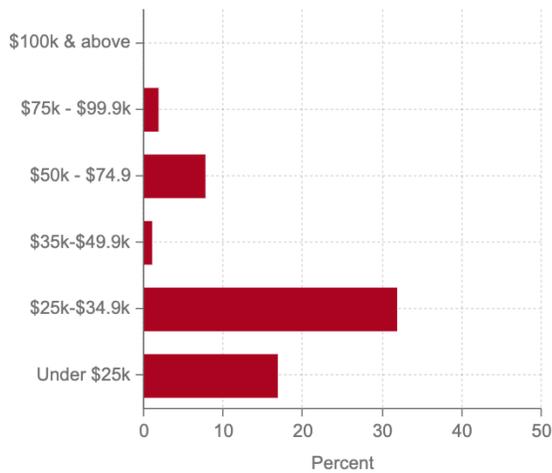


Source: Census HPS Week 14 –Sept 2nd- 14th 2020

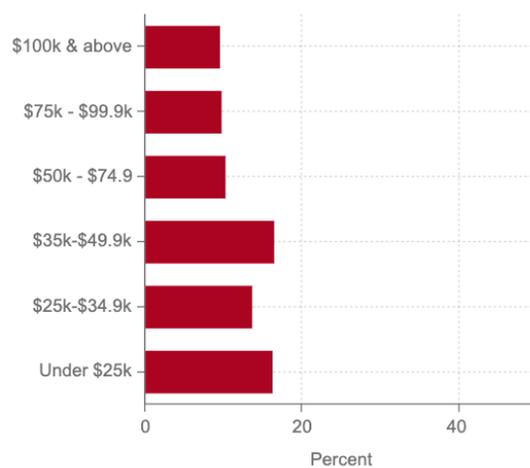
Census HPS Week 27 –March 17th– 29th 2021

Households with children began receiving Child Tax Credit payments between these two waves.

Renter Households Not Current on Rent by Income ARIZONA Renter Households - June 23 - July 5 2021



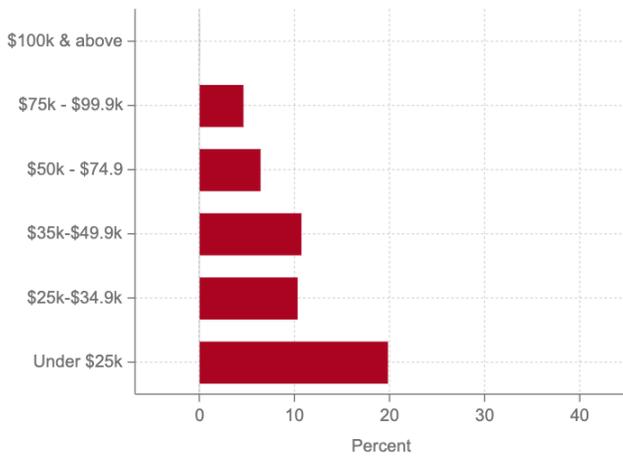
Renter Households Not Current on Rent by Income ARIZONA Renter Households - September 1-13 2021



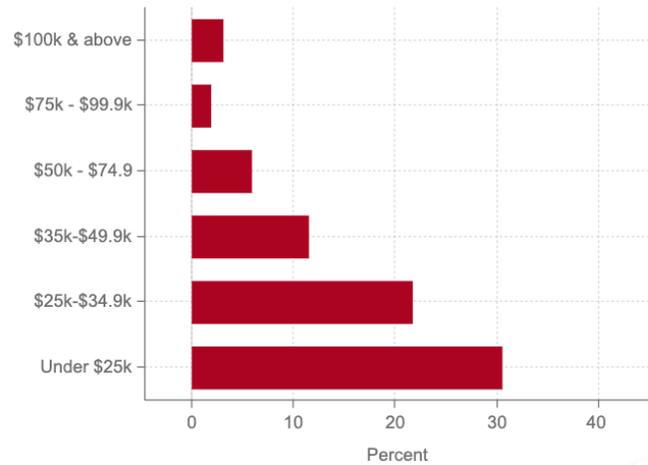
Source: Census HPS Week 33 –June 23rd– July 5th 2021.

Census HPS Week 37 –September 1st – 13th 2021.

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



Households Finding it Very Difficult to Meet Usual Expenses
ARIZONA Households by Income - September 1-13



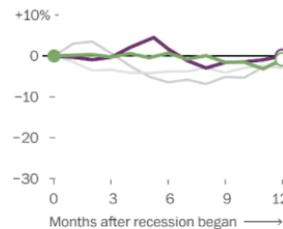
Source: Census Household Pulse Survey –Week 35

Census Household Pulse Survey –Week 37

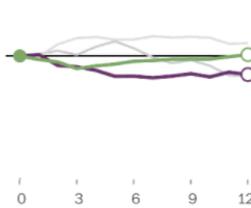
The coronavirus crisis is different

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

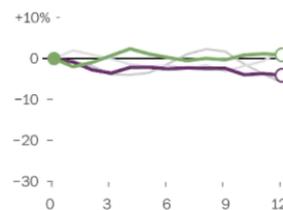
1990 recession



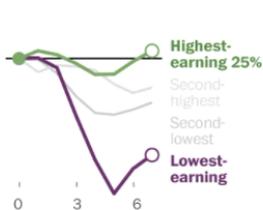
2001 recession



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

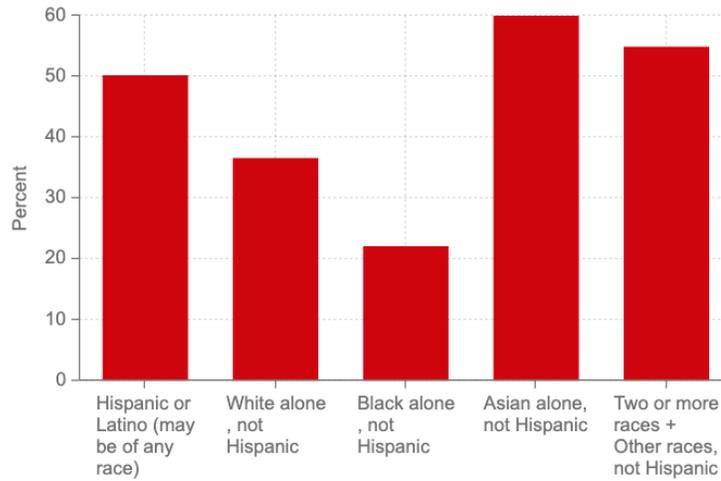
Source: Long et al. "The covid-19 recession is the most unequal in modern history." Washington Post. Sept 30 2020.

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

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.

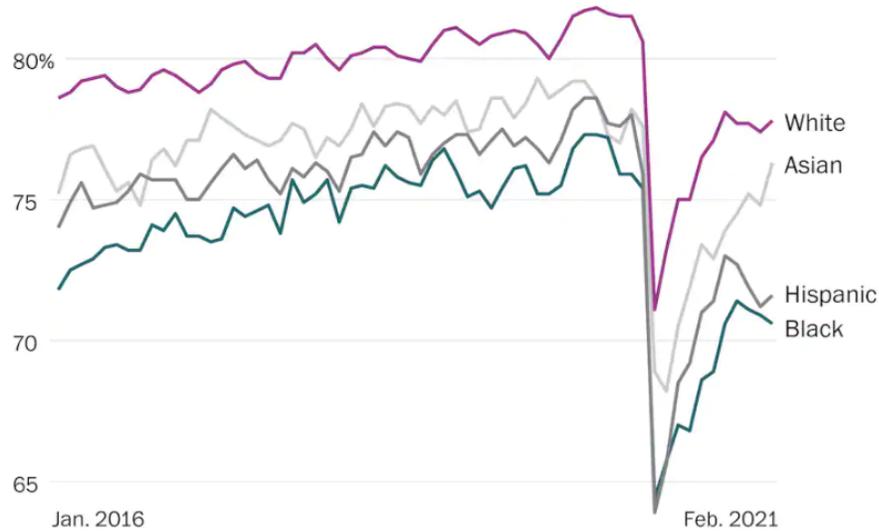
**Experienced Loss of Employment Income Since March 13, 2020
ARIZONA by Race/Ethnicity**



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



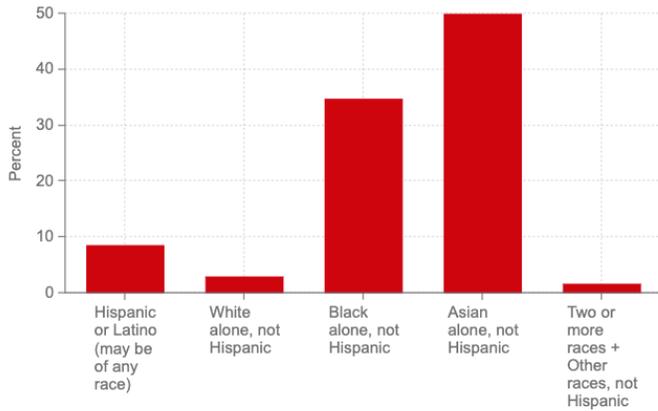
Source: Labor Department

THE WASHINGTON POST

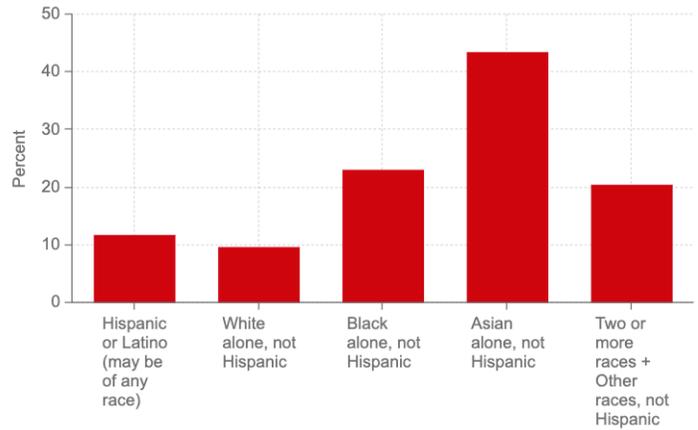
Source: Siegel, R. "The soft underbelly to a looming economic boom: Millions will miss out." *Washington Post*. March 30 2021.



Percent Not Current on Rent by Race/Ethnicity
ARIZONA Renter Households - August 18-30 2021



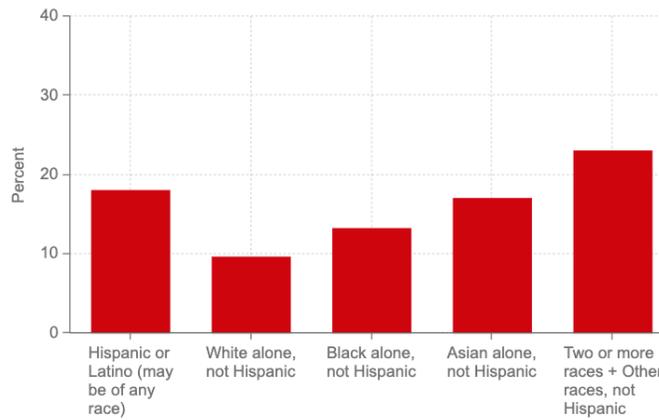
Percent Not Current on Rent by Race/Ethnicity
ARIZONA Renter Households - September 1-13 2021



Source: Census Household Pulse Survey –Week 36

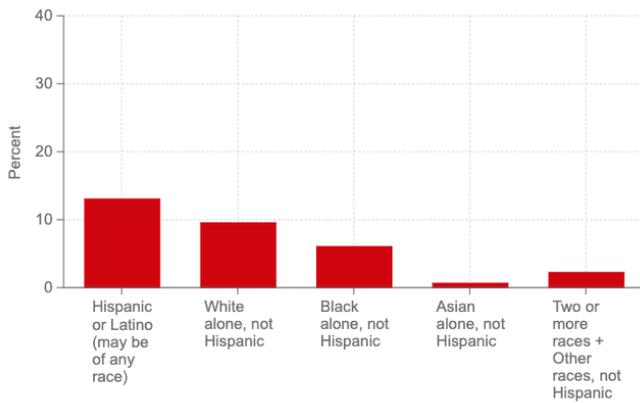
Census Household Pulse Survey –Week 37

"Very Difficult" to Pay Usual Expenses in Last Week
ARIZONA Renter Households - March 3 - 15th

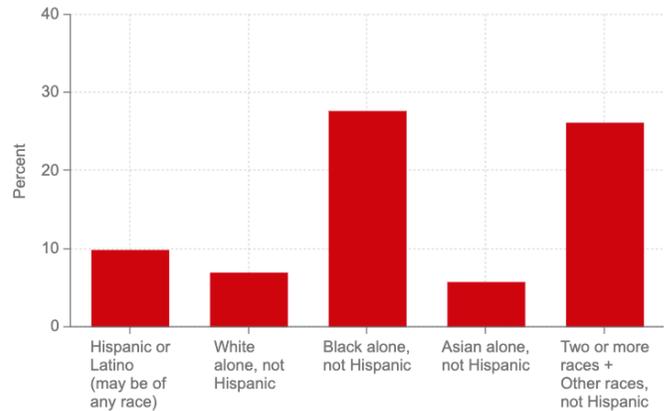


Source: Census Household Pulse Survey –Week 26

"Very Difficult" to Pay Usual Expenses in Last Week
Arizona Renter Households - August 18-30 2021



"Very Difficult" to Pay Usual Expenses in Last Week
ARIZONA Renter Households - September 1-13 2021



Source: Census Household Pulse Survey –Week 36

Census Household Pulse Survey –Week 37



Appendix: National Equity Atlas Rent Debt Methodology²

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

² 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.

