ASU Knowledge Exchange
for Resilience
Arizona State University

COVID-19 & Evictions Agent-Based Modeling Results

Key Takeaways

- **Our model predicts that once the moratorium is lifted, roughly 20% of renting households in Maricopa County will be affected by housing insecurity.**

- **The model also projects significant household debt at the end of the moratorium — up to $1 billion in total rent and utility arrears. This debt will continue to increase as evicted households are rehoused but not recovered financially enough to pay full rents.**

- **If renters do not have to save to pay rehousing costs and are quickly rehoused, we predict another jump in evictions as renters who can't maintain the new rental payments are evicted again.**

- **The model showed that even with agencies working at max capacity, all assistance funds will have been depleted by the end of the moratorium.**

Background and Methods

The KER Eviction Model describes eviction dynamics within the context of the rental and utility assistance landscape for the greater Phoenix metropolitan area. This model is an agent-based model, in which each agent represents a renting household, and the population of these households derives from sampling a subset of the American Community Survey five-year data from 2015 to 2019. The sample captures income, rent and utility costs, as well as details about building type, household size, employment and income source. The model replicates the household budget decisions each month, where each household pays rent, utilities and subsistence costs. If a household experiences a shortfall during a month, it can request assistance from either a rental or utility assistance agency, and is granted that assistance according to the agency rules. If the household is unable to pay its rent over consecutive months, it will be evicted from the property and will seek rehousing once it has paid its debts and saved enough for rehousing deposits.

The model was adapted to explore the possible consequences of the CDC moratorium on evictions starting in March 2020, expected to end with July 2021. The model was used to explore a series of questions relating to the degree of COVID-19-related housing insecurity, the timing of resuming evictions, and the effects of stimulus and debt reduction policies.

The model was further modified to incorporate housing assistance rule changes in the ERA1 and ERA2 programs. Most notably, households can obtain assistance to pay 12 months of back rent, and can also obtain funds to cover rehousing expenses. We also updated the economic shock scenarios to match the monthly expected loss of income reported in the Census Bureau's PULSE survey data from the Bureau of Labour up to May 2021, and

then gradually tapered off the shock through 2022. The baseline rate, just under 6% of renters, is the model's eviction rate without an economic shock.

We do not know precisely how many households are assisted each month by the various agencies, so we've run the model with a variety of assistance capacities, from 250 households per agency per month up to 10,000.[1]

Findings

Figure 1 shows the number of households each month unhoused due to an eviction. As these households find homes, that number decreases. We see that without the requirement for rehousing costs, households are quickly rehoused, but they still can't maintain rental payments so are evicted again, thus there is a bounce in the graph which eventually tapers off. Most importantly, the model predicts that once the moratorium is lifted, roughly 20% of renting households will face the threat of eviction. Table 1 shows the number of households under threat of eviction as the moratorium ends. Figure 2 shows the same information but with a first and last month's rent rehousing cost that isn't paid for through assistance, and the bounce disappears, but at the end of 2022 about the same number of households are without homes due to evictions. The remainder of the graphs will use the funded rehousing costs version since that is the current rule, but at the end of 2022 about the same number of households are without homes due to evictions.

Figure 3 shows the predicted number of evictions per month. Again, we see the bounce due to the assistance in rehousing which generates a two month delay between eviction cycles. Figure 4 shows the same information as in Figure 1 but with the households broken into single individual households and multi-person households, and we observe that the majority of households facing eviction are multi-person households.
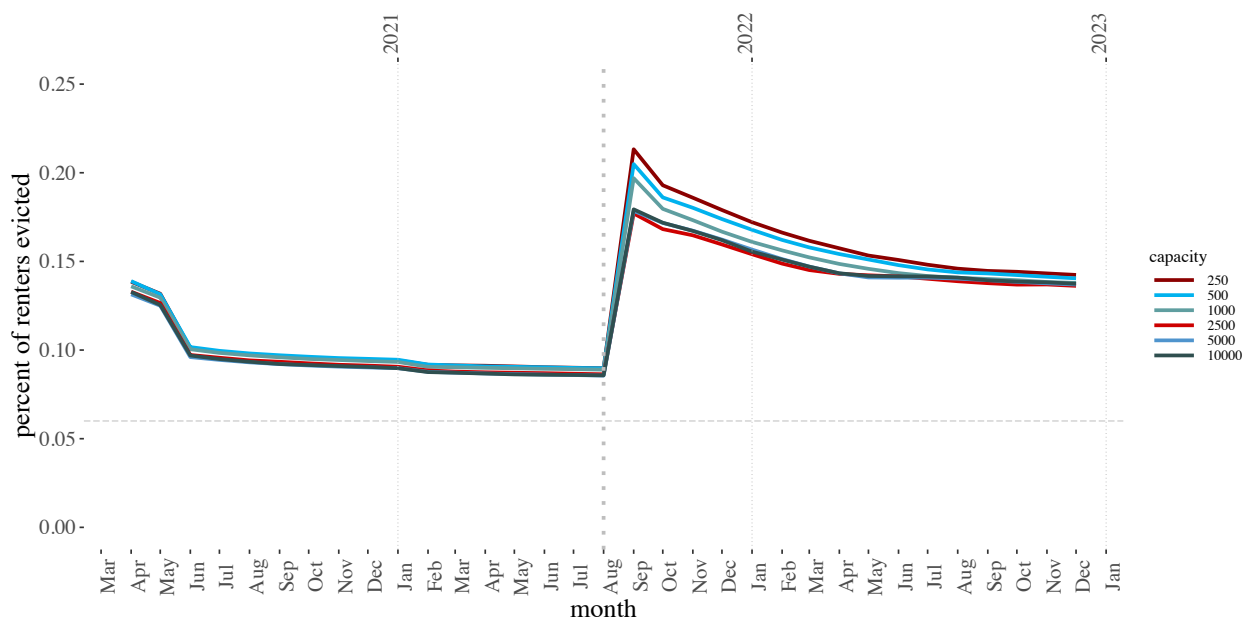

Figure 1: Percentage of rental population without housing due to an eviction and with rehousing costs funded by a program.

[1] Information from the City of Phoenix ERA dashboard, https://opengov.civicdashboards.com/embed/371959, suggests the actual capacity may be around 500 households a month.

Capacity	Eviction Threat	Single-Person	Multi-Person	Percentage of Renters
250	74,350	17,770	56,580	19.35%
500	73,330	16,990	56,340	19.09%
1,000	71,340	16,820	54,520	18.57%
2,500	69,190	15,570	53,620	18.02%
5,000	68,050	15,700	52,350	17.72%
10,000	68,720	15,470	53,250	17.89%

Table 1: Households at risk of eviction by household type based on capacity of rental assistance agencies, in the case where rehousing costs are funded by a program. The percentage of renters is based on the number of renters in the model, 384,060.

We also modeled the demand for assistance versus the number of appointments available. The number of appointments is based on both the agency capacity as well as the agency funds. If an agency has no more funds, it won't be able to assist households even if it has capacity. Note the increase in demand for assistance during the pandemic. The number of appointments granted falls to 0 around the end of the moratorium because the agencies are out of funds, as demonstrated in Figure 6, where we show the available funds per month, primarily obtained through the ERA programs, for three municipally-based agencies. The Maricopa agency represents the municipalities of Tempe, Gilbert and Chandler. These funds were spent during the pandemic to keep households current in their rental payments. Note that when agency capacity increases, funds drop more quickly.

Essentially, this model describes the consequences of the steady accumulation of housing-related debt during the course of the eviction moratorium. Previous simulations have demonstrated the importance of a full economic recovery before the end of the moratorium so that households could begin to pay down their housing debt. The model predicts significant housing debt at the end of the moratorium, which will continue to increase as evicted households are rehoused, but still not recovered financially enough to pay full rents, and these projections are given in Table 2. Note that this model does not include the expected increase in rental costs, partly because we expect an increase in the supply of rental units at the end of the moratorium, which may reverse that increase.

We don't yet know whether this surge in evictions will lead to a similar increase in the number of households experiencing homelessness. However, a preliminary regression analysis of Homeless Management Information System (HMIS) data by David Little and Michael Simeone of ASU Libraries shows that from 2017 to 2018, one household out of every 3 to 4 households evicted entered the continuum of care system that supports those in housing crisis.
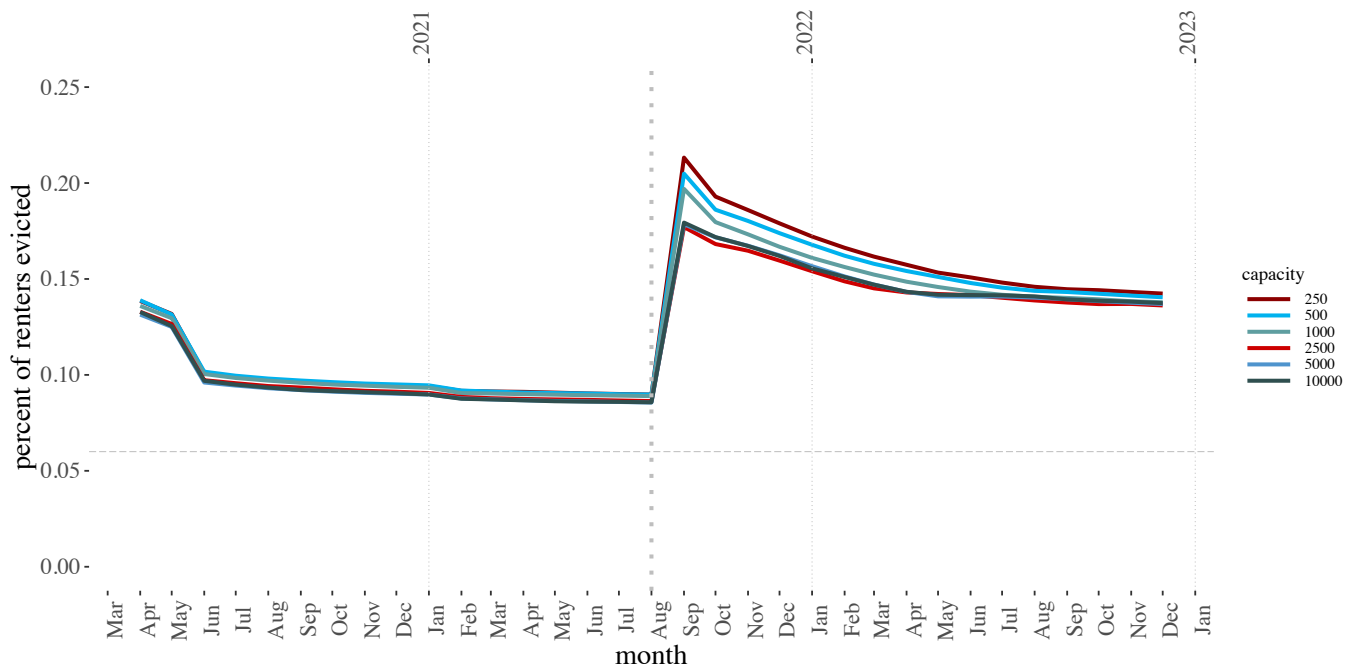
Figure 2: Percentage of rental population without housing due to an eviction but with rehousing costs not funded by a program.
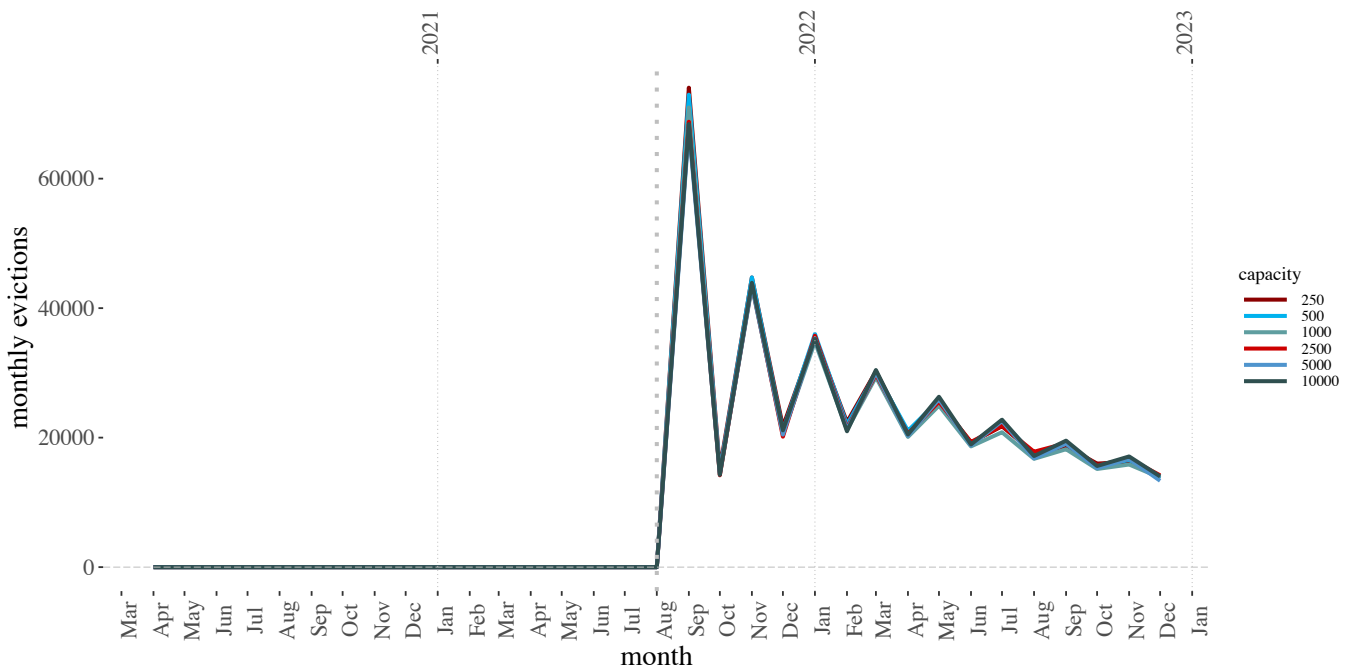

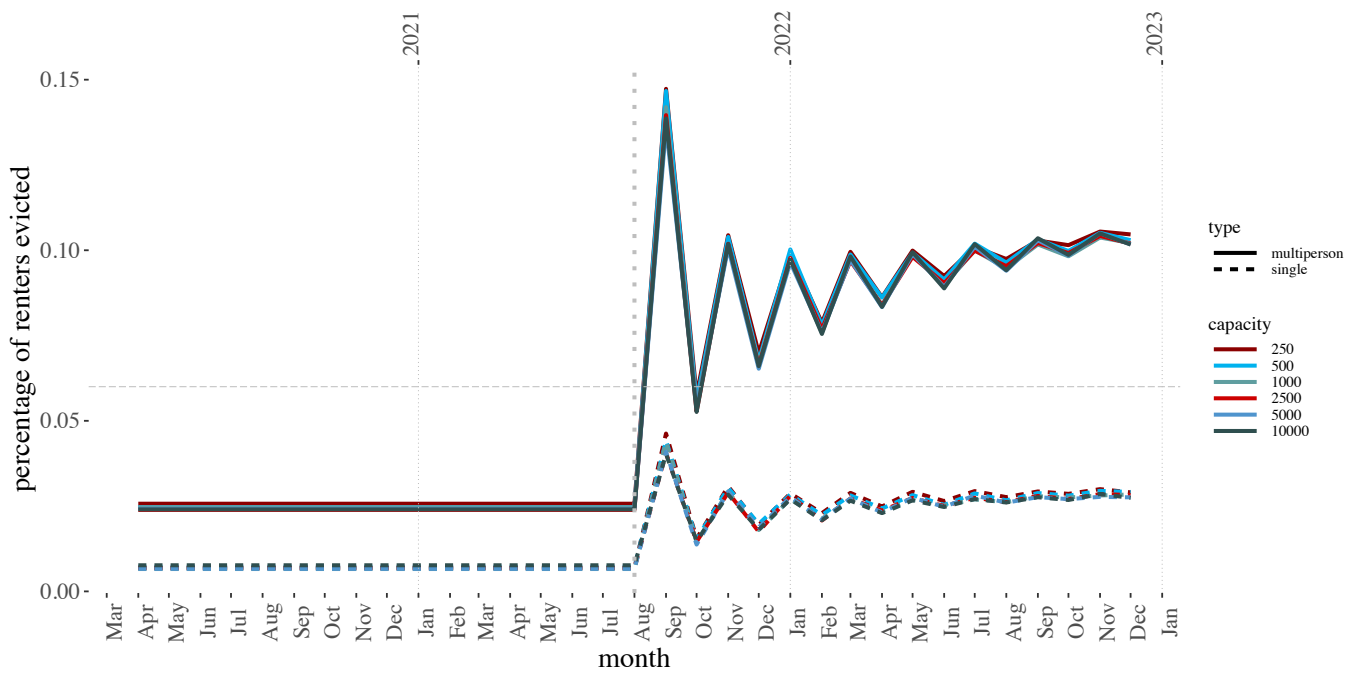*Figure 3: Evictions per month once moratorium ends*

Figure 4: Percentage of evicted entities that are single individuals or multiple individual
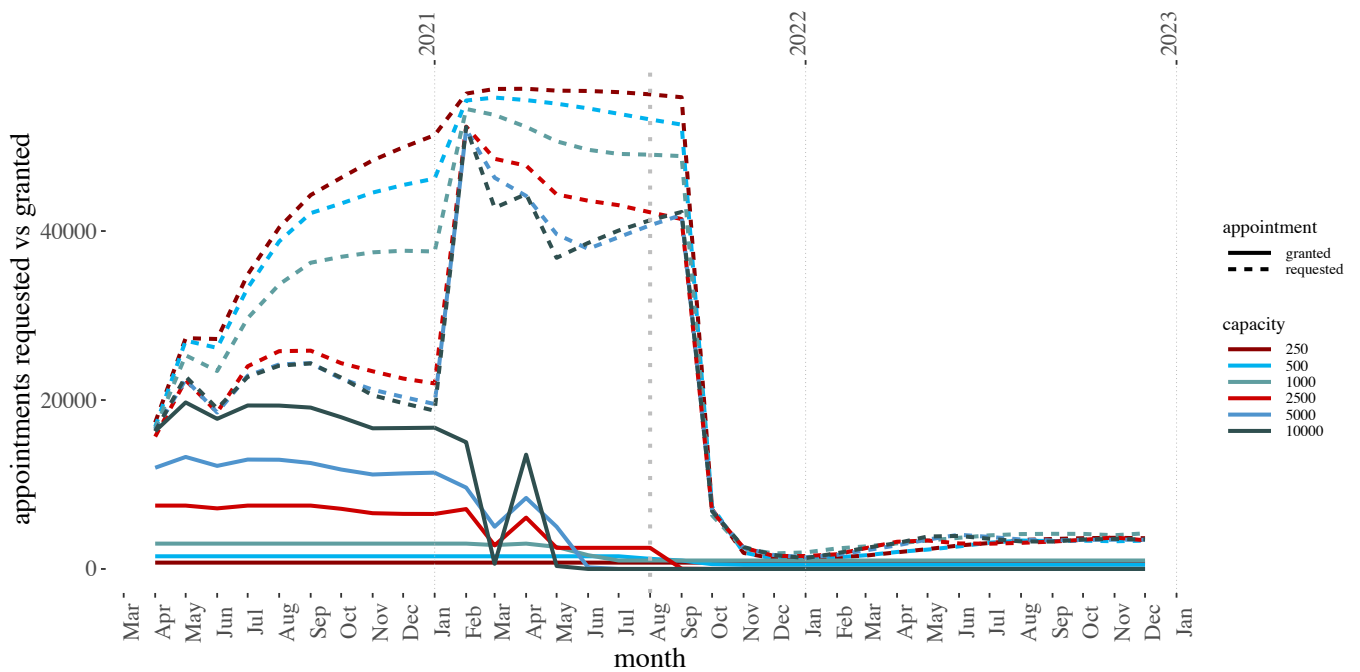

Figure 5: Requests for rental assistance vs rental assistance appointments available.
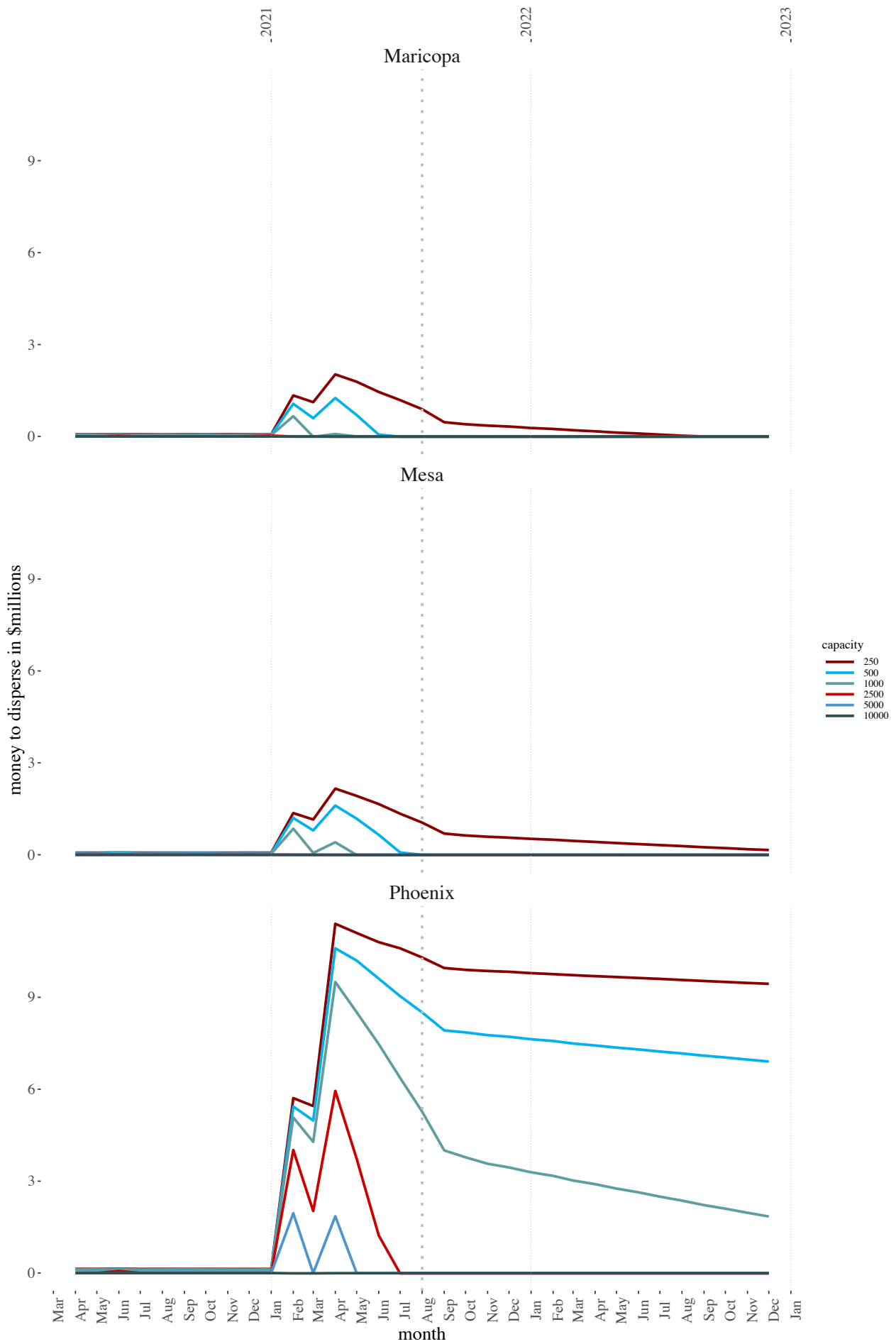
Figure 6: Available assistance funds.

Capacity	Total Arrears	Rental Arrears	Utility Arrears	Per Capita Arrears
250	1.015 billion	857 million	158 million	2,643
500	977 million	824 million	153 million	2,544
1,000	926 million	781 million	145 million	2,411
2,500	841 million	708 million	133 million	2,190
5,000	828 million	698 million	130 million	2,156
10,000	827 million	697 million	130 million	2,153

Table 2: Amount of household debt as of July 2021 from utility and rent arrears. The per capita arrears represents the total amount divided by the number of renters in the model (384060).

References

Sean Bergin, J Applegate (2021, July 31). "Model of Rental Evictions in Phoenix During the Covid-19 Pandemic" (Version 1.0.0). CoMSES Computational Model Library. Retrieved from: https://www.comses.net/codebases/4db84f11-90a2-4d2e-a2c9-ea43574b5c46/releases/1.0.0/

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Citation

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Authored by: J M Applegate, PhD, Assistant Research Professor, School of Complex Adaptive Systems, Arizona State University; Sean Bergin, PhD, Assistant Research Professor, School of Complex Adaptive Systems, Arizona State University

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Disclosure

VIRGINIA G.
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Arizona State University