

Where to Prioritize Emergency Rental Assistance to Keep Renters in Their Homes

Technical Appendix

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This document describes the definitions and methods behind the Emergency Rental Assistance Priority Index, which is displayed in our “Where to Prioritize Emergency Rental Assistance to Keep Renters in Their Homes” digital feature. The index estimates the level of need in a census tract by measuring the prevalence of low-income renters who are at risk of experiencing housing instability and homelessness. To do this, it examines neighborhood conditions and demographics. The index is intended to reflect the housing instability risk that has resulted from historical and COVID-19 risk factors and is designed to prioritize the distribution of resources among populations in need during the pandemic in a way that promotes equity. We created the index as part of the [Framework for an Equitable COVID-19 Homelessness Response](#), a partnership of leading housing and homelessness organizations formed to provide local homeless and housing assistance systems with guidance on how to use federal funding for an equitable emergency response to and long-term recovery from COVID-19.

The digital feature was published in August 2020 and updated with more recent data in April 2021. This technical appendix was also updated, both to reflect the changes made to the feature and to include the results of testing we did to determine how well the index identified neighborhoods with relatively high numbers of evictions.

Data

We generated census tract-level values for our index and its three subindexes. To do this, we used data from the American Community Survey (ACS) five-year estimates, the Urban Institute’s “Where Low-Income Jobs Are Being Lost to COVID-19” data tool,¹ and the US Department of Housing and Urban Development’s Comprehensive Housing Affordability Strategy (CHAS) dataset. For each source, we used the most recent data available: the 2015–19 estimates for the ACS, the March 2021 update of Urban’s job-loss data tool,² and the 2013–17 CHAS data. The feature displays the percentile that a tract falls into, both for the full index and each subindex, compared with all other census tracts in its state.

Indicator Selection and Definitions

The Emergency Rental Assistance Priority Index is made up of three subindexes—Housing Instability Risk, COVID-19 Impact, and Equity—intended to measure pre-pandemic housing instability risk factors, the health and economic impacts of COVID-19, and inequities experienced by marginalized communities that have been historically and systemically denied opportunities to improve their housing and economic stability. We selected indicators within each subindex based on a review of literature; data available on homelessness, evictions, and COVID-19 impacts; and partner feedback. We grouped indicators into subindexes according to the relevant risk category. All indicators are not weighted equally, and subindexes are not weighted based on the number of indicators. More details on the weighting of indicators and subindexes within the index are below.

Housing Instability Risk Subindex

- *Share of people living in poverty*: percentage of the population living below the federal poverty level during the past 12 months (2015–19 ACS data, table C17002)
- *Share of renter-occupied housing units*: percentage of occupied housing units that are renter-occupied (2015–19 ACS data, table B25003)
- *Share of severely cost-burdened low-income renters*: percentage of households whose annual incomes are less than \$35,000 and pay 50 percent or more of their incomes in gross rent (2015–19 ACS data, table B25074)
- *Share of severely overcrowded households*: percentage of renter-occupied households with more than 1.5 occupants per room (2015–19 ACS data, table B25014)
- *Share of unemployed people*: percentage of the labor force that is unemployed (2015–19 ACS data, table B12006)

The purpose of the feature is to help local leaders prioritize rental assistance, so we took various approaches to focus the index on renters. Several indicators in the Housing Instability Risk subindex are limited to renters: the share of renter-occupied housing units, severely cost-burdened households, and severely overcrowded households. The Housing Instability Risk subindex also contains population-level metrics that have documented ties to housing instability and homelessness. Evidence demonstrates that using neighborhood-level targeting of prevention assistance can help prevent homelessness and reduce shelter entry (Rolston, Geyer, and Locke 2013).

Shares of people living in poverty, renter-occupied housing units, low-income renters with severe cost burdens, and severely overcrowded households have all been linked to housing instability and homelessness. Poverty, particularly deep poverty, has been tied to the loss of, or eviction from, housing (Lundberg and Donnelly 2019). And some studies have found that areas with higher poverty are associated with homelessness, particularly increased sheltered homelessness in urban areas (Nisar et al. 2019). The share of renters has also been tied to homelessness (Hanratty 2017), and a recent study found that shares of renters with a high cost burden and shares of crowded housing units are correlated with higher rates of homelessness (Nisar et al. 2019).

Research exploring a link between unemployment and homelessness has had mixed results: one study found that unemployment was correlated with homelessness in high-cost rental markets (Nisar et al. 2019), while others found limited relationships. Still, one leading economist predicted that homelessness could increase 40 to 45 percent in 2020 based on an analysis tied to unemployment rates.³

COVID-19 Impact Subindex

- *Share of adults without health insurance*: percentage of noninstitutionalized people ages 19 to 64 who do not have health insurance (2015–19 ACS data, table C27012)
- *Share of low-income jobs lost to COVID-19*: Among residents with jobs that pay \$40,000 or less, the estimated percentage who have lost their jobs since February 2020 (March 2021 update to Urban’s “Where Low-Income Jobs Are Being Lost to COVID-19”)

This subindex includes the uninsured rate to indicate households that could be more vulnerable if a member contracts COVID-19. We also include close-to-real-time information on job losses to reflect the impact of COVID-19 on employment—and, by proxy, economic security. We could not include COVID-19 infection and morbidity data because they are not available nationally at the census tract level.

Equity Subindex

- *Share of people of color*: percentage of people designated in the dataset as a race or ethnicity other than white non-Hispanic (2015–19 ACS data, table B03002)
- *Share of extremely low-income renter households*: percentage of renter-occupied households that earn 30 percent of area median income or less (2013–17 CHAS tabulations, table 8)
- *Share of households receiving public assistance*: percentage of households whose income in the past 12 months included assistance from public benefit programs such as Temporary Assistance for Needy Families or the Supplemental Nutrition Assistance Program (2015–19 ACS data, table B19057)
- *Share of people born outside the United States*: percentage of the population born outside the United States (2015–19 ACS data, table B05002)

People of color are disproportionately represented among people experiencing homelessness (Henry et al. 2020) and among people evicted from rental housing (Desmond 2012; Greenberg, Gershenson, and Desmond 2016). Also, Black, Latinx, Indigenous, and Asian people are overrepresented in COVID-19 exposure, illness, and morbidity rates.⁴ Emphasizing race in the index reflects that these socioeconomic realities are the consequences of structural racism and emphasizes the need for assistance to be distributed in a way that promotes equity within communities.

We include indicators of extremely low-income renter households and public assistance receipt for neighborhood context. Although receipt of public assistance can be a protective factor for households by filling income gaps, studies have found that it can also predict homelessness (Von Wachter et al. 2019). Public assistance amounts may not protect households from losing their housing, particularly during a crisis, and involvement with these programs or other local assistance may indicate preexisting needs. Shinn and co-authors (2013) focused on individual-level characteristics of New York City families who applied for certain services (including demographics and previous interactions with homeless assistance systems) and found current receipt of public assistance to be a predictive factor of future shelter entry.

Additionally, we include the share of people born outside the United States because they are typically excluded from most federal assistance, which can lead to various household insecurities, including food and housing insecurity (Capps et al. 2002).

Methodology

This section describes how we constructed the index and validated our approach, as well as the limitations that we identified and that communities should take into consideration when using the index as part of a community-based process for prioritization of rental assistance.

Index Construction

We used R to read in tract-level data from our three data sources. Each indicator was converted to a percentage and then standardized into z-scores. The z-scores were indexed to the state level to make statewide comparison easier for users. For example, to calculate the z-score for the percentage of people of color indicator for a tract in California, we subtracted the average percentage of people of color across all tracts in California from the tract's percentage of people of color and then divided by the standard deviation of the percentage of people of color across all tracts in California. Importantly, this state level indexing means that subindex and total index values cannot be compared across states.

To construct our subindex values for each tract, we took weighted averages of our indicators. We weighted each indicator equally within its subindex, with one exception. In the Equity subindex, we weighted the race indicator higher than the other indicators to recognize that people of color are disproportionately represented among people experiencing homelessness and among people evicted from rental housing as a result of historical and structural racism that excluded people of color from housing and economic opportunities and to recognize the greater health and economic impacts people of color are facing from COVID-19.

Finally, we took weighted averages of the three subindex values to construct the Emergency Rental Assistance Priority Index. We weighted each subindex differently to prevent a subindex from having outsized influence on the overall index simply because it contained more indicators. We chose to weight the Housing Instability Risk subindex higher than the other subindexes to prioritize indicators empirically tied to community rates of homelessness and housing instability. The weights we used were 50 percent for the Housing Instability Risk subindex, 40 percent for the Equity subindex, and 10 percent for the Covid-19 Impact subindex. Table 1 displays the weights used for each subindex and the total index.

TABLE 1

Indicator Weights

Indicator (all percentages)	Weight within subindex	Weight within total index
Housing Instability Risk		0.5
People living in poverty	0.2	0.1
Renters	0.2	0.1
Severely cost-burdened households	0.2	0.1
Severely overcrowded households	0.2	0.1
Unemployed people	0.2	0.1
COVID-19 Impact		0.1
Adults without health insurance	0.5	0.05
Low-income jobs lost to COVID-19	0.5	0.05
Equity		0.4
People of color	0.5	0.2
Extremely low-income renter households	0.167	0.067
Households receiving public assistance	0.167	0.067
People born outside the United States	0.167	0.067

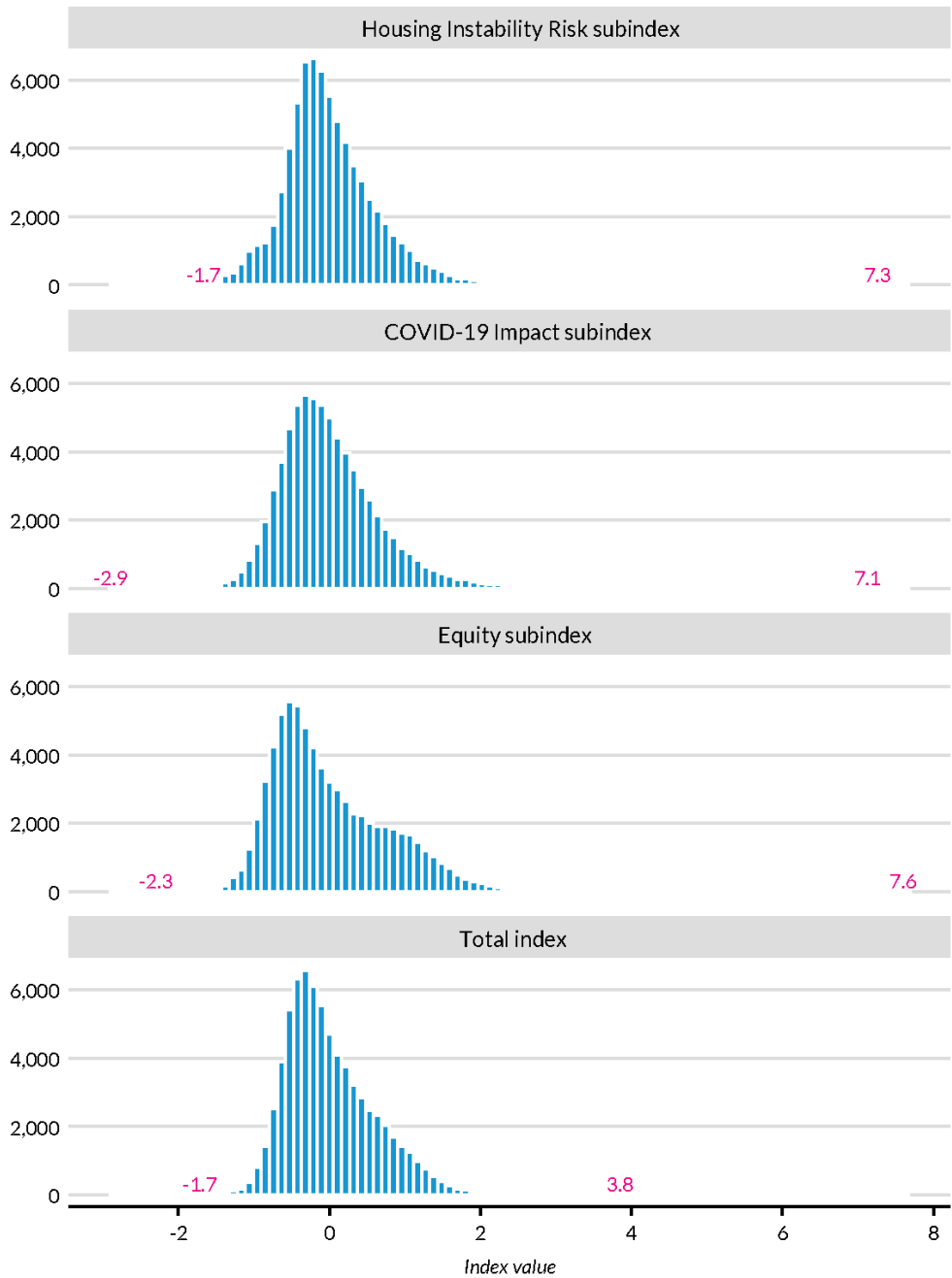
INDEX DISTRIBUTIONS

The feature maps and displays tracts’ state percentiles instead of their raw index/subindex values. We do this because the index values vary widely across states and subindexes. We also want users to focus on the neighborhoods within their states and how to allocate resources to the communities with the highest need. For context, figure 1 shows the distributions of the total index values and subindex values for each census tract in the US. The magenta numbers in each chart are the minimum and maximum index values among all tracts. Higher total index values mean that those communities are in greater need of rental assistance.

FIGURE 1

Histograms of Index Distributions among All US Census Tracts

Count of census tracts



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Source: Authors' analysis of data from the 2015–19 American Community Survey five-year estimates, 2013–17 US Department of Housing and Urban Development Comprehensive Housing Affordability Strategy dataset, and Urban Institute's March 2021 COVID-19 job-loss data tool.

Notes: The magenta numbers in each chart are the minimum and maximum index values among all tracts. High total index values mean a tract is more in need of rental assistance.

For the total index, we took a closer look at the tracts with the highest 5 percent of values and saw that these values were driven by high z-scores among a few indicators: the share of people who are unemployed, the share of households receiving public assistance, and the share of severely overcrowded households. This occurred because the state mean for these indicators was much lower than the individual values for each of these tracts, which led to very high z-scores. (For example, if the state mean for the share of people who are unemployed was 6 percent, the standard deviation was 2 percent, and a tract within the state had 60 percent of its residents unemployed, that tract's z-score would be $(60-6)/2$, or 27. Most z scores fall between + 5 and -5.) And a high z-score in even a single indicator could cause the index value to become inflated. We chose not to limit these z-scores or the total index values for tracts because we believe the high index values reflect the exceptionally high need for rental assistance in these tracts. The raw index values can be downloaded from the Urban Data Catalog at <https://datacatalog.urban.org/dataset/rental-assistance-priority-index>.

ADJUSTMENTS

We adjusted our data to ensure that outliers did not skew our indexes and maps.

- We filtered out 320 all-water census tracts, where most indicators had values of 0.
- If a tract had 0 extremely low-income renter households, we grayed it out in the map. This applied to 4,202 tracts out of 73,681 total tracts.

Validation

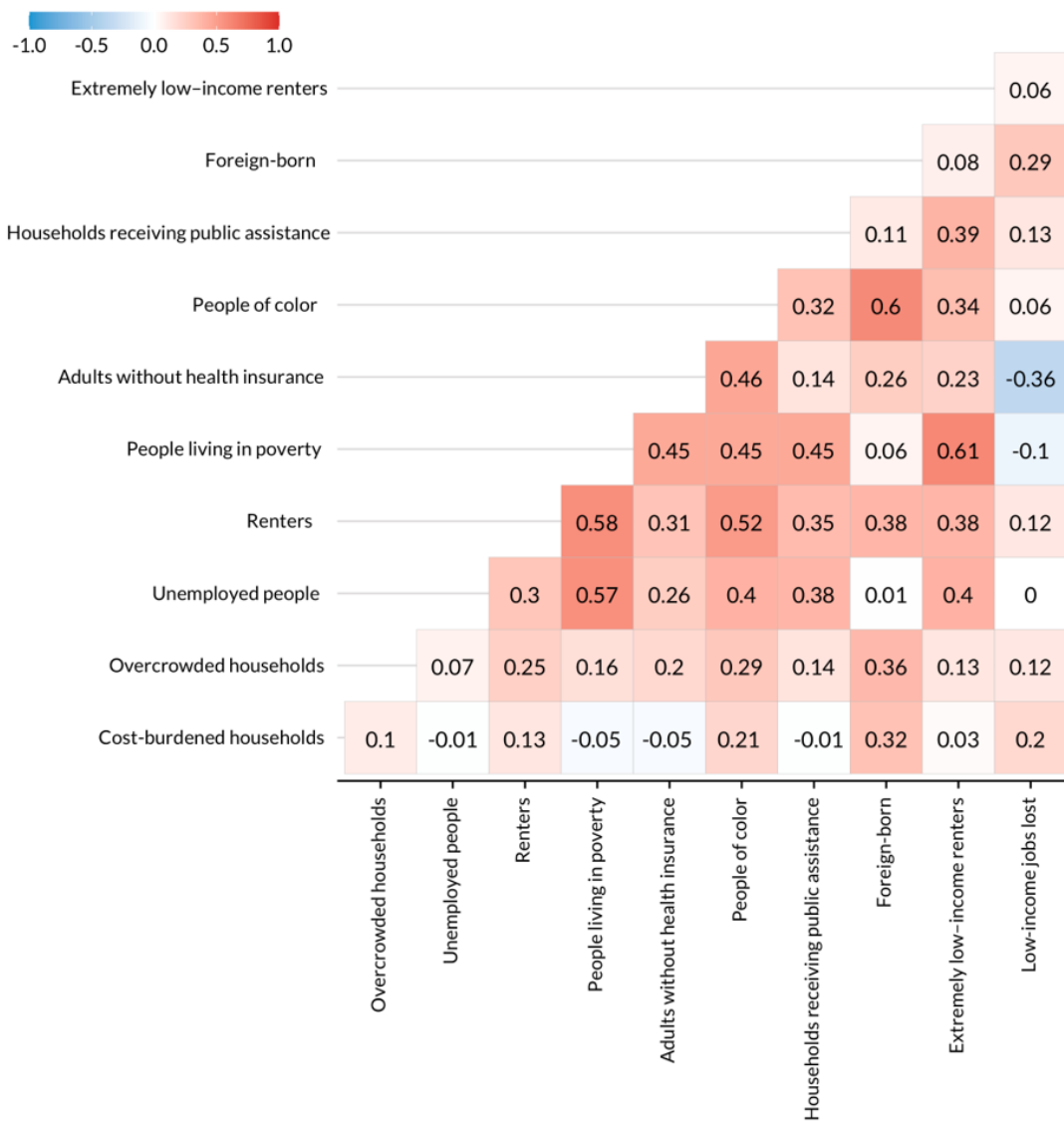
We performed a few data quality checks to ensure that our index and subindex values made sense.

INDICATOR CORRELATIONS

To ensure that our indicators were not highly collinear and capturing the same patterns, we looked at the correlations between each of our indicators (figure 2). The two variables with the highest absolute correlation value were share of extremely low-income renter households and share of people living in poverty (0.61). And out of our 55 pairs of indicators, only 4 others had individual correlations above an absolute value of 0.5. So we felt reasonably confident that our indicators were suitable for use in this index.

FIGURE 2

Indicator Correlation Matrix



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Source: Authors’ analysis of data from the 2015–19 American Community Survey five-year estimates, 2013–17 US Department of Housing and Urban Development Comprehensive Housing Affordability Strategy dataset, and Urban Institute’s March 2021 COVID-19 job-loss data tool.

Notes: The matrix shows the correlation between each of our indicators. All indicators are percentages.

GROUND TRUTHING

Before the publication of the digital feature in August 2020, we checked our index against local knowledge in four communities: Baltimore; Columbus, Ohio; Houston; and Richmond, Virginia. We spoke with representatives from local government offices, community resource planners, and service

providers to understand how they interpreted the information in our index and to get feedback on how the index was presented. In general, stakeholders said the index identified areas that they agreed historically had high levels of housing instability and entries to homelessness and that had other prevalent economic needs. As a result of these conversations, we made two changes to the visual presentation of the index: we (1) added the raw number of extremely low-income renters for each tract so that once users identify tracts that are high priority based on the index, they can compare the scale of need across priority tracts within a county, and (2) shifted the color scale to more clearly delineate differences among higher-percentile tracts.

Testing the Index against Eviction Trends

After we published the index in August 2020 but before the update in April 2021, we tested the index's relationship with past and current neighborhood-level eviction trends using data made available through Princeton University's Eviction Lab Eviction Tracking System (Batko et al. 2020). We correlated pre-pandemic eviction filings with the overall index at the neighborhood level. Two-thirds of states showed strong or moderate positive correlations, validating the tool's success in identifying priority emergency rental assistance neighborhoods with higher numbers of eviction filings. We also found that the overall index showed stronger correlations to eviction filings than its component Housing Instability Risk, COVID-19 Impact, and Equity subindexes.

We also considered the relationship between the index and current eviction filings for 14 cities tracked by the Eviction Lab during the pandemic. We correlated the overall index, each subindex, a modified index that excluded the COVID-19 Impact subindex, and each of the individual indicators with eviction filings between March and August of 2020 and baseline eviction filings (comparable measures before 2020). Historical indicators correlated more strongly with eviction filings than did indicators that incorporated COVID-19 job losses. The COVID-19 Impact subindex showed the weakest correlation to the 2020 and baseline eviction filings, and baseline eviction filings correlated more strongly than the 2020 eviction filings for most of the indexes and indicators. These findings indicate it may have been too early to observe impacts of the pandemic on eviction filings. Wide variation in correlations across the 14 cities demonstrated the importance of considering local context and using local data in tandem with the index to equitably target emergency rental assistance.

Limitations

This index and the accompanying analyses have several limitations. Our index and subindexes are built primarily on historical census data and estimates that may not capture the current need in each neighborhood. Except for the job-loss indicator, all data are from 2019 or earlier. Furthermore, each dataset comes from a slightly different time frame—2015–19 for the ACS; 2013–17 for the CHAS data; and 2021 for the job-loss data—so some indicators may be out of date. Also, data on COVID-19 infections and morbidity are not available nationally at the census tract level, so our index does not include that information. We recommend that local officials use this tool in conjunction with real-time information about neighborhoods that have been heavily affected by the pandemic; this could strengthen the efficacy of rental assistance distribution.

Another limitation of our analysis is that we used only one measure of people of color: those designated in the ACS dataset as a race or ethnicity other than white non-Hispanic. We recognize the limitation of not disaggregating this data further into individual racial and ethnic groups—groups experience different housing instability risks and COVID-19 health and economic risks. We chose to use the single persons of color measure for two reasons: (1) separating race into individual indicators could mean that tracts with a smaller overall share of people of color but more diversity within racial subgroups would be weighted more heavily than a tract with a higher overall share of people of color made up of one racial subgroup, and (2) data for some racial or ethnic subgroups are unreliable at the tract level because of high measurement error.

In the ground-truthing process, we discovered that this index highlights tracts near universities that probably have large populations of student renters. This is likely because students often have low incomes and may be measured as housing cost burdened and living in overcrowded homes, but they are not usually considered a high priority for emergency rental assistance. There may be students who need emergency rental assistance during this period, but this result illustrates the need to pair the tool with local knowledge for the most accurate interpretation.

Notes

- ¹ Graham MacDonald, Christopher Davis, Ajjit Narayanan, Vivian Sihan Zheng, and Yipeng Su, “Where Low-Income Jobs Are Being Lost to COVID-19,” Urban Institute, updated March 5, 2021, <https://www.urban.org/features/where-low-income-jobs-are-being-lost-covid-19>.
- ² The data tool uses the US Bureau of Labor Statistics Current Employment Statistics and State and Metro Area Employment, Hours, and Earnings data from March 2021 and the 2014–18 ACS IPUMS data. For more information, see Graham MacDonald, Christopher Davis, Ajjit Narayanan, Vivian Sihan Zheng, and Yipeng Su, “Where Low-Income Jobs Are Being Lost to COVID-19: Technical Appendix,” last updated June 5, 2020, https://www.urban.org/sites/default/files/2020/06/05/where_low-income_jobs_are_being_lost_to_covid-19_technical_appendix_1_0.pdf.
- ³ “Analysis on Unemployment Projects 40-45% Increase In Homelessness This Year,” Community Solutions, May 11, 2020, <https://community.solutions/analysis-on-unemployment-projects-40-45-increase-in-homelessness-this-year/>.
- ⁴ COVID Tracking Project and Boston University Center for Antiracist Research, “The COVID Racial Data Tracker,” Atlantic, accessed July 24, 2020, <https://covidtracking.com/race>.

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For more information on this project, see <https://www.urban.org/features/where-prioritize-emergency-rental-assistance-keep-renters-their-homes>.



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