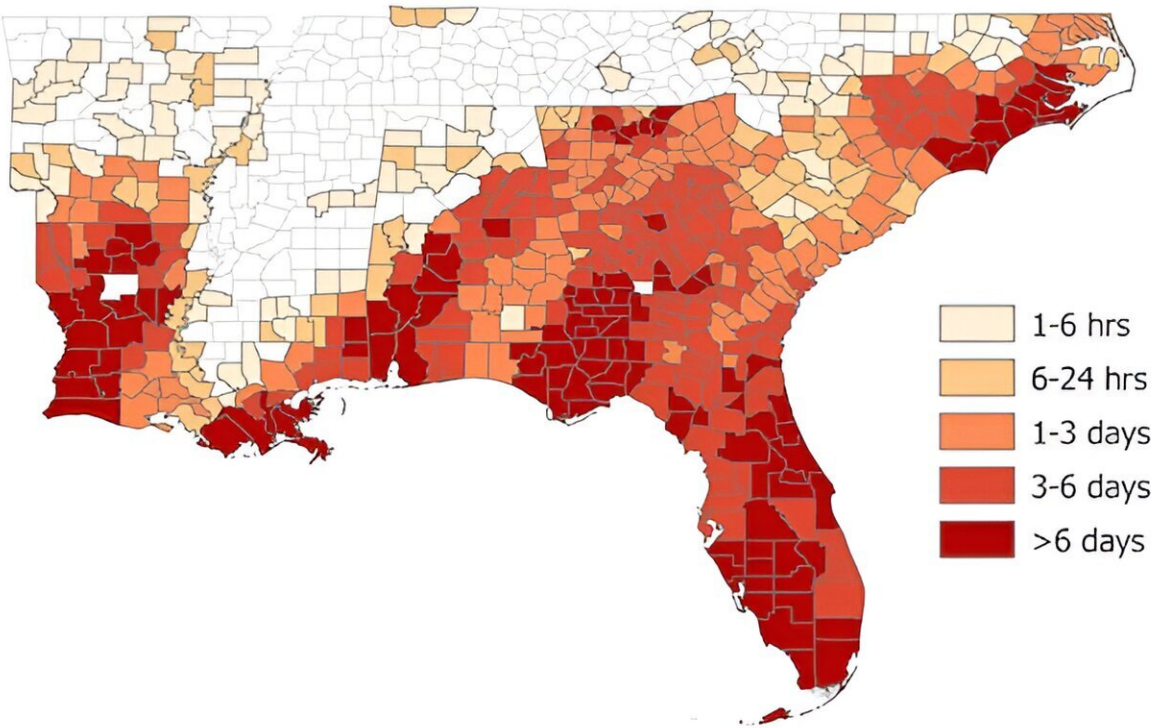


Power outages leave poor communities in the dark longer: Evidence from 15M outages raises questions about recovery times

February 8 2024, by Chuanyi Ji and Scott C. Ganz



The top map shows the total duration of power outages over eight storms by county. The lower map is a comparison with socioeconomic status taken into account, showing that counties with lower average socioeconomic status have longer outages than expected. Credit: [Ganz et al, 2023, PNAS Nexus](#)

Electricity is essential to just about everyone—rich and poor, old and young. Yet, when severe storms strike, socioeconomically disadvantaged communities often wait the longest to recover.

That isn't just a perception.

We analyzed [data from over 15 million consumers](#) in 588 U.S. counties who lost power when hurricanes made landfall between January 2017 and October 2020. The results show that poorer communities did indeed wait longer for the lights to go back on.

A 1-decile drop in [socioeconomic status](#) in the Centers for Disease Control and Prevention's [social vulnerability index](#) was associated with a 6.1% longer outage on average. This corresponds to waiting an extra 170 minutes on average for power to be restored, and sometimes much longer.

Implications for policy and utilities

One likely reason for this disparity is written into utilities' [standard storm recovery policies](#). Often, these policies prioritize [critical infrastructure](#) first when restoring power after an outage, then large commercial and industrial customers. They next seek to recover as many households as they can as quickly as possible.

While this approach may seem procedurally fair, these recovery routines appear to have an unintended effect of often making vulnerable communities wait longer for electricity to be restored. One [reason may be](#) that these communities are farther from critical infrastructure, or they may be predominantly in older neighborhoods where power infrastructure requires more significant repairs.

The upshot is that households that are [already at greater risk](#) from severe

weather—whether due to being in flood-prone areas or in vulnerable buildings—and those who are least likely to have insurance or other resources to help them recover are also likely to face the longest storm-caused power outages. Long outages can mean refrigerated food goes bad, no running water and delays in repairing damage, including delays in running fans to dry out water damage and avoid mold.

Our study spanned 108 service regions, including investor-owned utilities, cooperatives and public utilities. The differential impact on poorer communities did not line up with any particular storm, region or individual utility. We also found no correlation with race, ethnicity or housing type. Only average socioeconomic level stood out.

How to make power recovery less biased

There are ways to improve power recovery times for everyone, beyond the necessary work of improving the stability of power distribution.

Policymakers and utilities can start by reexamining power restoration practices and power infrastructure maintenance, such as replacing aging utility poles and trimming trees, with disadvantaged communities in mind.

Power providers already have [granular data on power usage](#) and [grid performance in their service regions](#). They can begin experimenting with alternative recovery routines that consider the vulnerability of their customers in ways that do not substantially affect average [recovery](#) duration.

For socioeconomically [vulnerable regions](#) that are likely to experience long outages because of their locations and possibly the aging energy infrastructure, utilities and policymakers can proactively ensure that households are well prepared to evacuate or have access to backup

sources of power.

For example, the U.S. Department of Energy announced in October 2023 that it would invest in [developing dozens of resilience hubs and microgrids](#) to help supply local power to key buildings within communities when the wider grid goes down. Louisiana plans several of these hubs, using solar and large-scale batteries, in or near disadvantaged communities.

Policymakers and utilities can also invest in broader energy infrastructure and [renewable energy](#) in these [vulnerable communities](#). The U.S. Department of Energy's [Justice40 program](#) directs that 40% of the benefit from certain federal energy, transportation and housing investments benefit disadvantaged communities. That may help residents who need public help the most.

Severe weather events are becoming more common as global temperatures rise. That increases the need for better planning and approaches that don't leave low-income residents in the dark.

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