

Research Brief

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THE RELATIONSHIP BETWEEN EXPOSURE TO HURRICANE HARVEY AND MORTALITY AMONG NURSING HOME RESIDENTS

Keywords: natural disasters, hurricanes, nursing homes, long-term care, mortality

Purpose of the Study: To better understand how Hurricane Harvey (and its after effects) were associated with nursing home residents' risk of death in 2017.

Key Findings:

- ✓ Long-stay residents (90+ days residing in a nursing home) had an increased risk of death 90 days after the hurricane.
- ✓ Long-stay residents with chronic obstructive pulmonary disease (COPD) had an even more heightened risk of death after the hurricane.

Major Policy/Practice Implication: The after effects of natural disasters may create conditions, such as power loss, that disrupt the care of vulnerable, long-stay nursing home residents and may lead to higher risk of death.

IMPORTANT BACKGROUND INFORMATION

Older adults who reside in nursing homes (NH) are especially vulnerable during disasters due to high incidences of chronic conditions, such as Alzheimer's disease, diabetes, chronic heart failure, and chronic obstructive pulmonary disease (COPD). Even more, the after effects of natural disasters, such as flooding after hurricanes, can disrupt access to health services and basic needs that may result in trauma, drowning, infection, injury, and death among NH residents. Research demonstrates that long-stay NH residents (90+ days in a NH) have a greater risk of death after disasters compared to short-stay NH residents (less than 90 days in a NH) who are usually admitted to NHs for rehabilitation after surgery or injury.

STUDY METHODS

Researchers analyzed data from federally mandated resident assessments and Medicare records from 2015 to 2017 with a focus on demographic information, clinical characteristics of NH residents, and mortality data. The study sample included 57,716 residents who resided in Texas NHs on August 22, 2017, that were exposed to Hurricane Harvey. Specifically, researchers examined mortality rates 30 days after the hurricane and 90 days after the hurricane among both short-stay and long-stay residents. They also compared post-hurricane mortality rates to mortality rates by the same dates in 2015 and 2016 that did not have natural disasters. Researchers used Stata 17 to analyze data, adjusting for demographic factors and NH conditions that might bias data.

KEY FINDINGS

- ✓ **Long-stay NH residents had an increased risk of death 90 days after the hurricane.** Mortality rates were 1.2% higher in 2017 than in 2015. In 2015, 6.3% of long-stay NH residents died within 90 days post-hurricane, while 7.5% of long-stay residents died in 2017. This equates to about 196 more deaths in 2017, or a 20.6% increase in deaths.
- ✓ **Long-stay residents with chronic obstructive pulmonary disease (COPD) had a higher risk of death.** In 2017, 9.2% of long-stay residents with COPD died within 90 days post-hurricane, while 7.2% of long-stay residents with COPD died in 2015. This statistically significant difference equates to a 27.78% increase in deaths.

PRACTICE AND POLICY IMPLICATIONS

Long-stay residents are more likely to be chronically ill than short-stay residents, which may make them more vulnerable to death after disasters. This research demonstrates that increases in death after hurricanes were seen over a longer period of time (90 days) likely due to disruption in access to healthcare, health supplies, and environmental conditions, such as heat. This became highly evident among long-stay residents with COPD who may have struggled with heat, air pollution, and limited access to oxygen due to power outages. Practitioners and policy makers should consider these long-term effects and policies/practices that might mitigate them, such as prioritizing returning power to nursing homes with high populations of vulnerable long-stay residents.

Percentage changes in the relative risk of event (died within 90 days of landfall) among the Texas NH residents in affected zone by the specified diagnosis in the 2017 year compared to 2015 year.

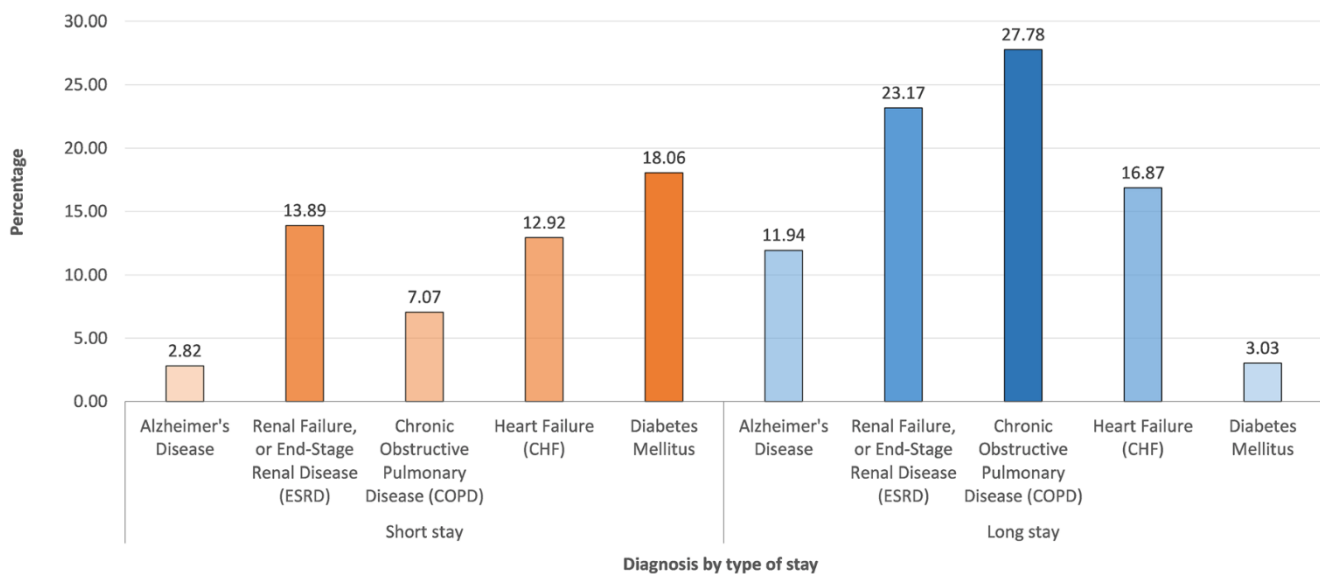


Figure 1 demonstrates the relative percent increases in deaths from 2015 to 2017 based on chronic health condition. Orange represents short-stay residents, while blue represents long-stay residents. When accounting for all factors, such as NH characteristics, only long-stay residents with COPD demonstrated a statistically significant increase in deaths.

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