

Statistical analysis details extent, causes of direct, indirect deaths post Hurricane Sandy

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As government officials, relief workers, and residents continue to rebuild Puerto Rico's infrastructure after last summer's Hurricane Maria, biostatistics and public health researchers have discovered more about mortality rates and causes from Hurricane Sandy in 2012. Their findings appear in a recent issue of the *American Journal of Public Health*.

Hurricane Sandy was directly responsible for approximately 150 deaths, half of which were in the United States. These deaths typically are due to drownings from [storm](#) surge and are easily quantifiable. Indirect deaths, those not directly attributable to the storm, often result from household accidents following electrical outages or disruptions in ongoing medical treatment and are difficult to measure.

"Even though we live in a time when communities and residents can prepare in advance of dangerous storms, we can better target our efforts by studying the impact of past hurricanes on mortality," said Soyeon Kim, senior research scientist at the Frontier Science Foundation (formerly associate professor of biostatistics, Rutgers School of Public Health). "Our data suggest that mitigation efforts and/or support services may be needed for at least the immediate quarter following a storm, especially among the elderly population and residents located in the most severely affected areas."

To estimate the extent of indirect deaths and their causes in New Jersey—a state severely affected by Sandy from its southern tip to its northern apex—Kim and her colleague Amy Davidow, associate

professor of biostatistics at Rutgers School of Public Health, together with colleagues from the New Jersey Department of Health, compared the rates of all deaths and cause-specific deaths in New Jersey during the month and quarter following Sandy with deaths that occurred at the same time in previous years. Their findings include the following:

- Mortality was 6% higher in the month of the storm than in the analogous month in non-Sandy years. For areas that experienced the most severe impact, mortality increased 12% over the same time period. Sustained excesses in mortality at this level continued into the quarter following Sandy.
- Cardiovascular disease-related deaths increased by 6% in the month and quarter of the storm.
- Deaths from respiratory diseases like induced asthma increased 8% in the month of Sandy and increased to 24% higher than expected during the quarter. Infectious causes of [death](#) followed a similar pattern.
- The largest increases in mortality for the month of the storm were due to unintentional injuries, increasing by 23%, but only 10% for the quarter.
- Mortality in persons aged 76 and older rose by 10% in the month of Sandy and 13% in the following quarter. Of particular concern were deaths due to unintentional injury in this vulnerable population: rising by 33% in the month of Sandy and 26% in the quarter after the storm.

"Even today, five years after Sandy, some homes are still being rebuilt and residents have yet to return to their homes, thus the indirect effects of Sandy on [mortality](#) may have continued beyond the period we studied," continued Kim. "It's our hope that emergency planners, responders, and [health](#) care professionals consider these findings in

planning response efforts for future natural disasters in other communities."

More information: Soyeon Kim et al. "Hurricane Sandy (New Jersey): Mortality Rates in the Following Month and Quarter", *American Journal of Public Health* 107, no. 8 (August 1, 2017): pp. 1304-1307. [DOI: 10.2105/AJPH.2017.303826](https://doi.org/10.2105/AJPH.2017.303826)

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