The Effect of Extreme Temperatures on Patient Financial Distress and Hospital Fiscal Performance

Zhong, Sophie (School: Yorktown High School)

The occurrence of extreme hot and cold events is expected to rise with climate change. While the existing literature has demonstrated that extreme temperatures can adversely affect health outcomes, little is known about their financial impact on patients and hospitals. To fill this gap, I built a panel dataset of 36,961 observations covering 4,568 U.S. hospitals between 2011 and 2019, consisting of hospital financial records and county-level weather and socioeconomic information from publicly available sources. A two-way fixed effects model was used for analysis. The results show that extreme heat above 80°F increases hospital uncompensated care costs, indicating higher unpaid hospital bills and greater financial distress for patients. Specifically, one additional day of extreme heat is associated with a $30,087, or 0.4%, increase in unaffordable medical expenses. In contrast with excessive heat, extreme cold temperatures below 20°F do not have a statistically significant relationship with patients' financial burden. To alleviate the financial strain of affected patients, policymakers should consider implementing financial counseling programs and developing financial assistance policies specifically designed for extreme heat events. Finally, I find that when temperatures fall outside 60°F-80°F, a range considered comfortable and moderate for humans, hospitals tend to achieve higher profitability.

Awards Won:
Fourth Award of $600