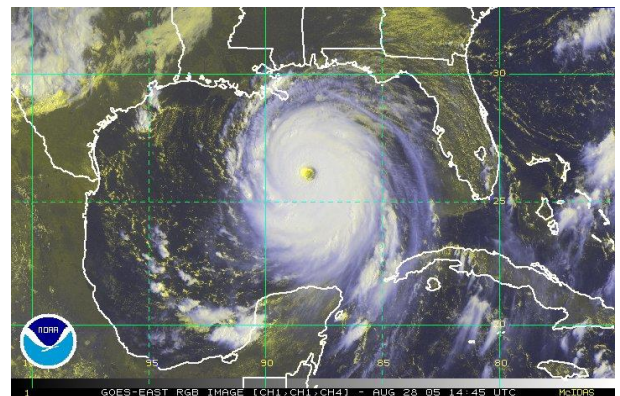# Research Fact Sheet

Research project: E3: Evaluating Equity in Evacuation: A Practical Tool and a Case Study

What's the issue?

Hurricanes Katrina in 2005 (1,833 deaths) and Maria in 2017 (3,057 deaths) illustrate the danger such disasters pose to people without cars who cannot evacuate easily. Too often, evacuation plans assume people have cars, and officials have no way of identifying which communities need extra help. Although the COVID-19 virus required sheltering in place rather than evacuating, again those without cars were left without an efficient way to access medical help and grocery stores. For all types of emergencies, officials need to be able to plan for everyone.

What did the research discover?

This project developed a new tool that planners and emergency preparedness officials can use to identify where low-income people live and estimate their car ownership. Researchers chose Anne Arundel County, Maryland, as a case study since its entire eastern border is water, including the Chesapeake Bay. Using three sources of data, nine variables and a mathematical function, researchers created a synthetic population and then paired it with a transportation application. A binomial car-ownership model has been estimated for the State of Maryland, and researchers also created a census tract-level map.

How can I implement this?

The proposed population synthesizing method can provide reliable and granular-level input for activity-based models developed to understand the travel and behavioral pattern for individuals in cities and small towns. This helps planners and policy makers consider how to address the needs of underserved communities and measure the accessibility of different population segments for effective and equitable evacuation planning.

Access the full report:

https://www.morgan.edu/school_of_engineering/research_centers/urban_mobility_and_equity_center/research/completed_research/e3_equity_in_evacuation.html