

Old Dominion University

ODU Digital Commons

News Items

Institute for Coastal Adaptation and Resilience
(ICAR)

10-18-2019


ODU Researchers' Flood Adaptation Study Honored at International Conference

News @ ODU

Follow this and additional works at: https://digitalcommons.odu.edu/odurc_news



Part of the [Civil and Environmental Engineering Commons](#), and the [Climate Commons](#)

 > [News @ ODU](#) > [2019](#) > [October](#) > [ODU Researchers' Flood Adaptation Study](#)

ODU Researchers' Flood Adaptation Study Honored at International Conference

October 18, 2019



Joshua Behr



Carol Considine

A study by two Old Dominion University researchers about the potential cost-savings of a city strategically buying houses prone to damage from severe storms was recently awarded top paper at an international engineering conference.

At September's Institution of Civil Engineers Coastal Management 2019 conference in La Rochelle, France, a paper by Joshua Behr and Carol Considine was singled out from among 175 submissions from many countries for its novel and groundbreaking approach to mitigating damage from storm damage and flooding as sea levels rise worldwide.

"Part of the recognition at the conference came from the contrast," said Behr, associate professor at ODU's Virginia Modeling, Analysis and Simulation Center (VMASC). "Every other presentation involved hardening coastlines and building protective barriers. No one considered the value of strategic retreat."

The paper by Behr and Considine, supported by funding from the Commonwealth Center for Recurrent Flooding Resiliency (CCRFR), makes the case that there can be a greater return on investment over time for communities systematically buying parcels of storm damage-prone properties than for building massive flood-protection infrastructure or periodically rebuilding flood-damaged homes.

Because of a lack of trust within communities about governments buying private citizens' homes, "retreat is one of the adaptation strategies not discussed very often," said Considine, assistant dean and associate professor with ODU's Batten College of Engineering and Technology.

To investigate the business case in support of this approach, Behr and Considine used the Federal Emergency Management Agency's (FEMA) HAZUS program to project residential damage estimates from three storm simulations. From those damage estimates they determined a "pilot program area" - an area that had repetitive loss, that was partly located within a Special Flood Hazard Area (SFHA). The pilot program area was then evaluated for buyouts based on property values.

Behr and Considine assumed a modest municipal investment of \$1 million per year in voluntary buyouts of vulnerable residential homes, vacant lots and church properties over 31 years. This would then transform the area into multi-use green space, with parks and a water basin that could be used for floodwater retention and recreation by residents.

The projected cost savings were just under \$40 million, showing a return on investment of 20 percent with a single major storm event. Future research will investigate methods for incentivizing this type of strategic green space buyouts while avoiding the pitfalls of gentrification often associated with relocating residents.

The researchers' estimates of return on investment also includes the savings over time in housing displaced populations as well as reductions in mortality and health savings stemming from improved physical and mental wellness of residents. As well, "there are positive returns on investment in population well-being from the creation of green space," Behr added, which are not included in the calculations.

While this analysis focused only on the pilot program area, Considine said the methodology could be followed to suggest the best course of action for low-lying residential neighborhoods in any flood-prone coastal community.

"If we're going to talk about sea level rise, we need to talk about our vulnerable communities and start that adaptation process, rather than wait. Be preventive," she said.

Established in 2016, the Commonwealth Center for Recurrent Flooding Resiliency (CCRFR) engages the expertise, resources, and intellectual vibrancy of the College of William & Mary and Old Dominion University in support of building resilience to rising waters.