

Assessing the Impact of Hurricanes and Sea-Level Rise on Households in Charlotte County, Florida

Charlotte County is located on the southwest coast of Florida. It is highly vulnerable to hurricanes, directly impacted by 57 hurricanes since 1842. As of the 2020 Census, it has a population of 184,998 and 82,755 households, according to the U.S. Census Bureau. While previous studies have assessed the impact of past hurricanes, there needs to be more research evaluating the potential combined impacts of hurricane events and sea-level rise on Charlotte County's households. This project aims to bridge this gap and determine how hurricane events, storm surges, and sea-level rise could impact households in Charlotte County. The project will use various spatial analysis tools and spatial distribution data that encompassing the extent of households per unit and the historical hurricane events within Charlotte County. In addition, it will analyze storm surge zoning and census data to generate maps displaying the areas most affected by hurricanes and the number of households impacted in the county. In this project, I will identify regions susceptible to storm surges, extending the scope to include areas predicted to flood due to projected sea level rise for 2030. Using this information, I can estimate the population within impacted areas, the potential loss of residential housing, and the number of households per unit. An interactive web application will be utilized to display the project results. Charlotte County will be divided into areas of suitability categories. Areas expected to experience hurricane-related flooding and sea-level rise will be classified as least suitable. Areas predicted to have hurricane-related flooding but not located within the sea-level rise zone will be considered moderately suitable. Regions not susceptible to hurricane-related flooding and outside the sea-level rise zone will be categorized as the most suitable.

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