

THE ECONOMIC IMPACTS OF CLIMATE CHANGE IN FLORIDA'S RURAL AREAS

ENVIRONMENTAL DEFENSE FUND - FLORIDA | 2021



EARTH ECONOMICS

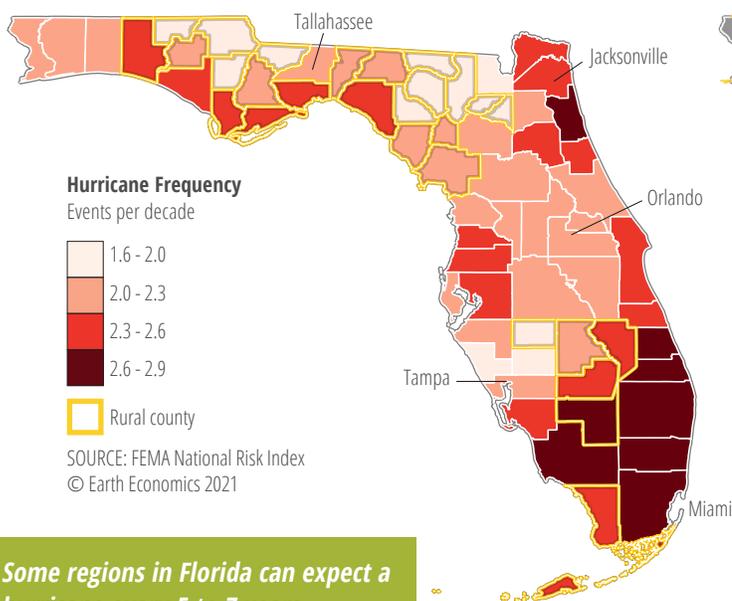
In 2019, tourism contributed \$96.5 billion to Florida's economy and tourist spending supported 13% of total jobs statewide.¹ Florida's economy depends to a large extent on tourism revenue; when hurricanes strike, rural areas often feel the negative economic impacts more acutely than urbanized areas which are relatively less dependent on tourism. A hurricane can render a destination less desirable by damaging the amenities, facilities, and infrastructure services that attract tourists; the tourism sector suffers when tourists choose to visit areas unaffected by hurricanes, taking with them the spending that supports local jobs. Depending on the extent of cleanup needed to return to normal, this effect can persist over time. Recent research finds that on average, Florida counties lost \$10.1 million during a hurricane-impacted month, \$12.2 million the following month, and \$6.9 million

the second month after impact.¹¹ For rural counties which have smaller revenues, these economic losses are substantial.

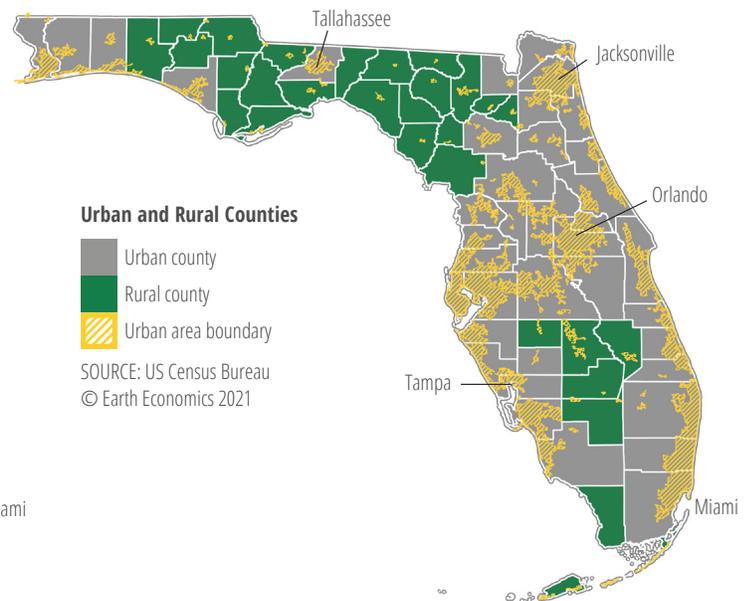
RURAL AREAS ARE DISPROPORTIONATELY IMPACTED BY HURRICANES

Almost half of Florida's counties are classified as rural, clustered within the Everglades watershed to the south and the Big Bend/Panhandle region in the north. As Map 2 shows, most "urban" counties also contain large areas of rural communities, seen as the gray areas outside of the yellow urban area boundaries. For this reason, county level analysis can mask the extent of economic damage inflicted by hurricanes on small businesses in rural, inland areas.

Map 1. Hurricane frequency in Florida, by county



Map 2. Urban and rural counties in Florida



Some regions in Florida can expect a hurricane every 5 to 7 years.

RURAL COUNTY ECONOMIES ARE MORE SUSCEPTIBLE TO THE IMPACTS OF HURRICANES THAN THEIR URBAN COUNTERPARTS

Huang and Medeiros (2020) use data from 2002 through 2018 to investigate how hurricanes in Florida impact tax revenues generated by tourism-associated industries (e.g., hotel and lodging, restaurant and bars, transportation). Their analysis finds that **rural counties that experienced hurricanes saw a decrease in sales tax revenue** over the 17-year period when compared to rural counties that did not experience a hurricane. **In contrast, urban counties saw no statistical difference in sales tax returns** when comparing counties with and without hurricanes. This analysis demonstrates the vulnerability of rural areas to shocks like hurricanes, and highlights the relative reliance of rural economies on the tourism sector.

Huang, A., & Medeiros, M., 2020. How do hurricanes impact the tourism economy? *Anatolia*: 1-4.



CLIMATE MITIGATION AND ADAPTATION INVESTMENTS SUPPORT RURAL ECONOMIES

Mitigation refers to investments that reduce emissions of carbon dioxide and other greenhouse gases to reduce future climate change impacts. Adaptation refers to investments that help us adjust to the climate change impacts that are already locked in, such as increased hurricane intensity. Reducing the impacts of hurricanes on rural communities requires building resilient and diversified economies, supporting recovery, and implementing multiple mitigation and adaptation strategies.

BUSINESS-AS-USUAL

CLIMATE IMPACTS: More severe hurricanes with more damaging winds and rainfall.

INFRASTRUCTURE IMPACTS: Damage and disruption to tourism amenities (beaches, parks), infrastructure (roads, water supply), and supply chains (food, fuel).

ECONOMIC IMPACTS: More cancellations and postponed travel plans lead to lower business activity and taxable revenue.

By 2050, Florida tourism can expect to bring in \$40 billion less in annual revenue, employing 1 million fewer people.ⁱⁱⁱ



Coastal Hardening

MITIGATION WITH ADAPTATION

CLIMATE IMPACTS: Current hurricane and precipitation patterns stay the same.

INFRASTRUCTURE IMPACTS: Less frequent and extensive need to repair, restore, and protect natural and built infrastructure.

ECONOMIC IMPACTS: Florida experiences similar patterns of tourism growth. Nature-based solutions, such as beach and wetland restoration, may help reduce climate risk with a benefit-cost ratio of 3.7 to 4.9.^{iv}

With mitigation, the tourism industry can be expected to bring in upwards of \$317 billion in revenues by 2050.^v



Mangrove Forest Buffer

“Disney, Universal, all the big parks, they’ll survive just fine. It’s all of the smaller tour operators, the people that make their living on taxi rides, gator boat rides, they’re really going to be hurt. Since our economy is built on small businesses, there’ll be a huge impact, the housekeepers, all those people living paycheck to paycheck. For them this is devastating.”

— A rural business owner reflecting on the impacts of Hurricane Irma in 2017^{vi}

ⁱ Rockport Analytics. 2021. Florida’s Tourism Economy Experiences Another Record Year in 2019 But Shifts Into a Lower Gear of Growth

ⁱⁱ Brown, C.E., Alvarez, S., Eluru, N., Huang, A. 2021. The economic impacts of tropical cyclones on a mature destination, Florida, USA. *Journal of Destination Marketing & Management* 20(100562): 1-12.

ⁱⁱⁱ Stanton, E.A., Ackerman, F. 2007. Florida and Climate Change: The Costs of Inaction. Tufts University, Medford, MA. Available online at: <https://data.globalchange.gov/report/gdae-flclimch-2007>

^{iv} Reguero, B.G., Beck, M.W., Bresch, D.N., Calil, J., Meliane, I. 2018. Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States. *PLoS ONE* 13, e0192132: 1-24.

^v Stanton, E.A., Ackerman, F. 2007. Florida and Climate Change: The Costs of Inaction. Tufts University, Medford, MA. Available online at: <https://data.globalchange.gov/report/gdae-flclimch-2007>

^{vi} Luscombe, R., Glenza, J. 2017, September 12. Florida tourist industry counts the cost of Irma’s devastation. *The Guardian*, London, UK. Available online at: <https://www.theguardian.com/world/2017/sep/12/hurricane-irma-florida-tourism-industry-suffering#top>