# Proposed Solutions to Address Coastal Flooding in Miami, Florida

**Team 8: Michelle Huynh**: huynhmy@uci.edu; **Calvin Lee**: calvil12@uci.edu; **Michael Lee**: michatl4@uci.edu; **Jacqueline Markham**: markhamj@uci.edu

## The Problem

- Increased coastal flooding globally
  - Changing weather patterns, sea level rise, melting ice-caps
- Buildings and infrastructure not prepared/built with this in mind
- More homes and lives at risk as flooding increases

## Relation to Sustainability & Climate Change

- Issue spurred by climate change
- Combined community and building-level approach
- Natural solutions (e.g., mangroves)
- Solutions contingent upon collaboration

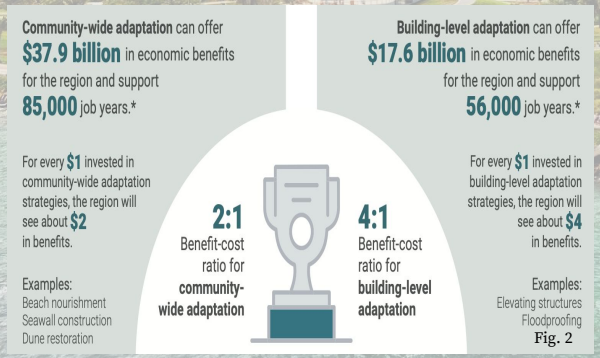

Fig. 2

## Findings

Proposed solutions:
- Increasing elevation of coastal structures
- Building pumps and other man-made and natural barriers (wetlands and mangroves)
- An oyster reef restoration project

Data & Information:
- Army Corps of Engineers Website and related study documents
- Local news channels and municipal sites
- Miami-Dade Back Bay and Collier County

Funding Propositions:
- Private sector: funding will come from incentivized investments into climate resilience projects
- Public sector: federal and municipal bonds like disaster-relief grants and general obligation bonds

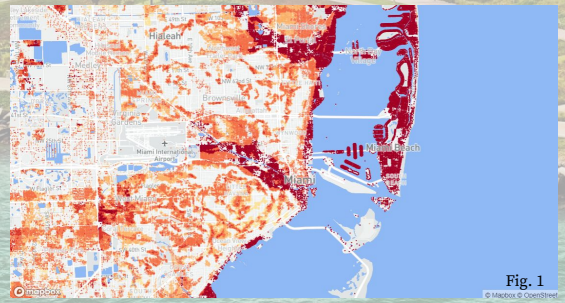

Fig. 1

TOTAL LOSSES BY COUNTY IF NO ACTION IS TAKEN
2020–2070 CUMULATIVE LOSSES (2019 DOLLARS)
Fig. 3

| | PROPERTY IMPACTS | SALES OUTPUT IMPACTS | SALES & TOURISM TAX IMPACTS | PROPERTY TAX IMPACTS |
|---|---|---|---|---|
| BROWARD | $63.911B | $5.279B | $161M | $825M |
| MIAMI-DADE | $106.5B | $8.354B | $361M | $2.388B |
| MONROE | $20B | $8.560B | $567M | $674M |
| PALM BEACH | $29.6B | $2.117B | $82M | $548M |
| REGION | $220.1B | $24.310B | $1.171B | $4.435B |

## Conclusions

- Cost of community-level adaptation: $2.101 billion[1]
- Cost of building-level adaptation: $1.8 billion[1]
- Approximately, $1.9 billion is spent on infrastructure by the Miami-Dade County[2]
- Net benefits to both types of solutions ($7.5 billion and $17.36)[1]

## Works Cited

**Figure 1.** *Flood Factors across Miami.* Flood Factor. (2021). *Miami, Florida.*
**Figure 2.** *There is a Compelling Business Case for the Region to Make Investments in Resilient Infrastructure Now.* Urban Land Institute. (2020). *The Business Case for Resilience in Southeast Florida.* Urban Land Institute.
**Figure 3.** *Total Losses by County if No Action is Taken.* Urban Land Institute. (2020). *The Business Case for Resilience in Southeast Florida.* Urban Land Institute.
**1.** Urban Land Institute. (2020). *The Business Case for Resilience in Southeast Florida.* Urban Land Institute.
**2.** *FY 2020-21 Adopted Budget Volume 1.* FY 2020-2021 Adopted Budget - Volume 1. (n.d.).