

# Lumberton Update on Wave 6

Session (C): The Art & Science of Field Studies:  
Past, Present, and Future



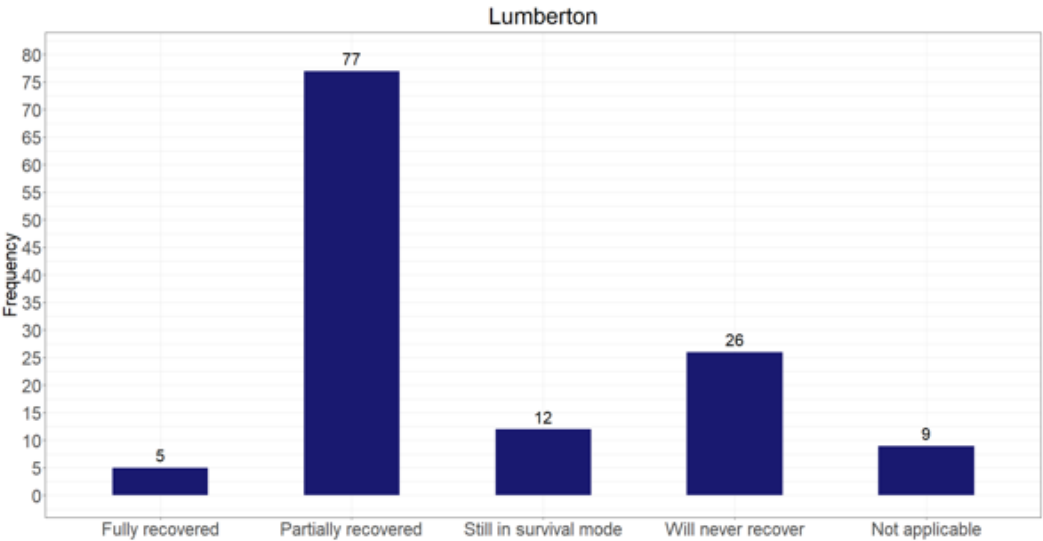
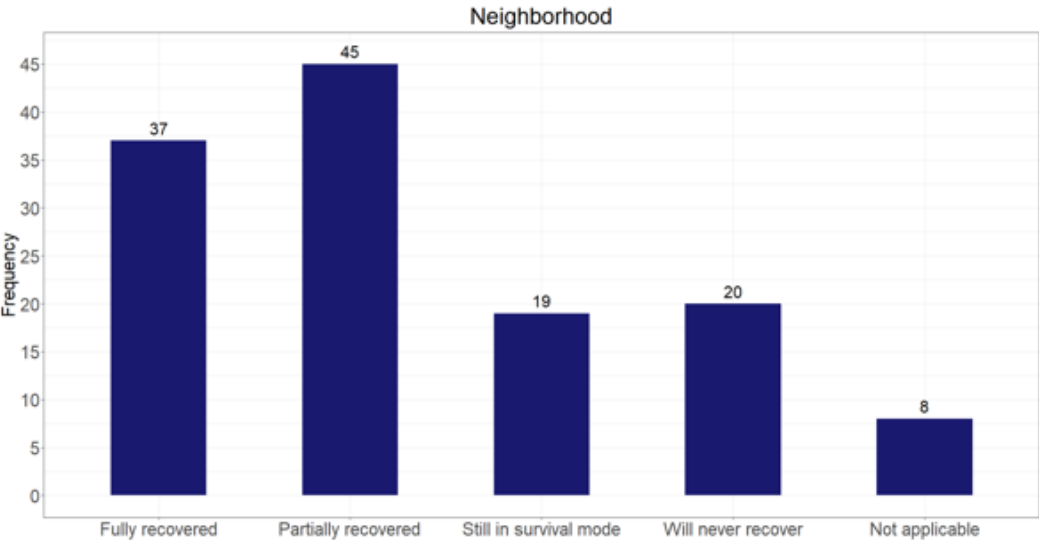
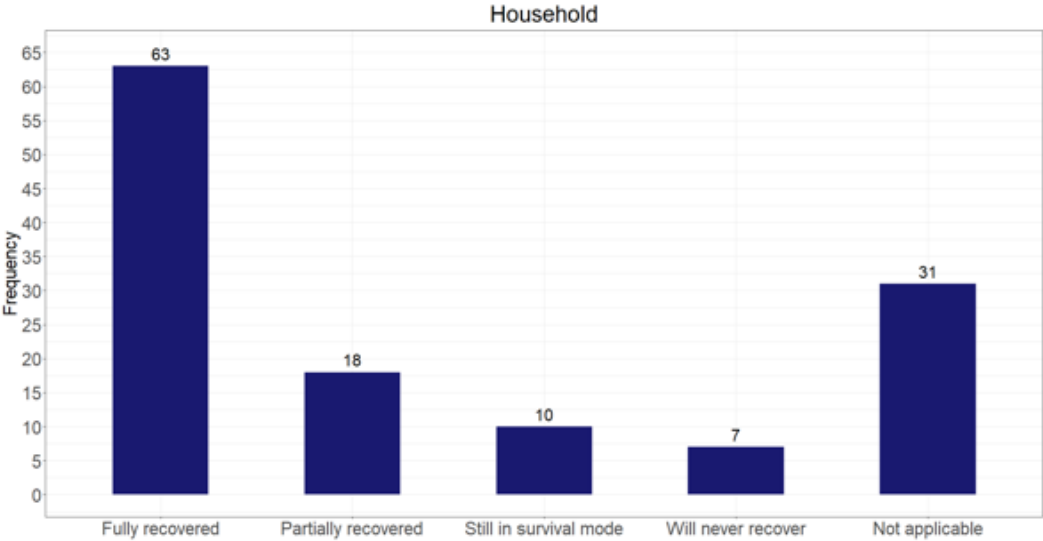
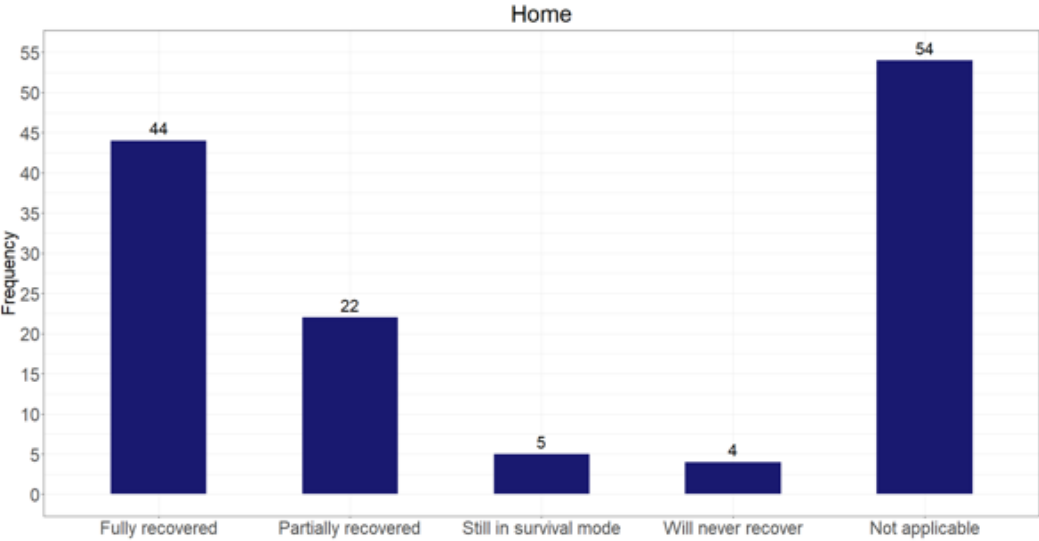
NIST CENTER FOR RISK-BASED COMMUNITY RESILIENCE PLANNING



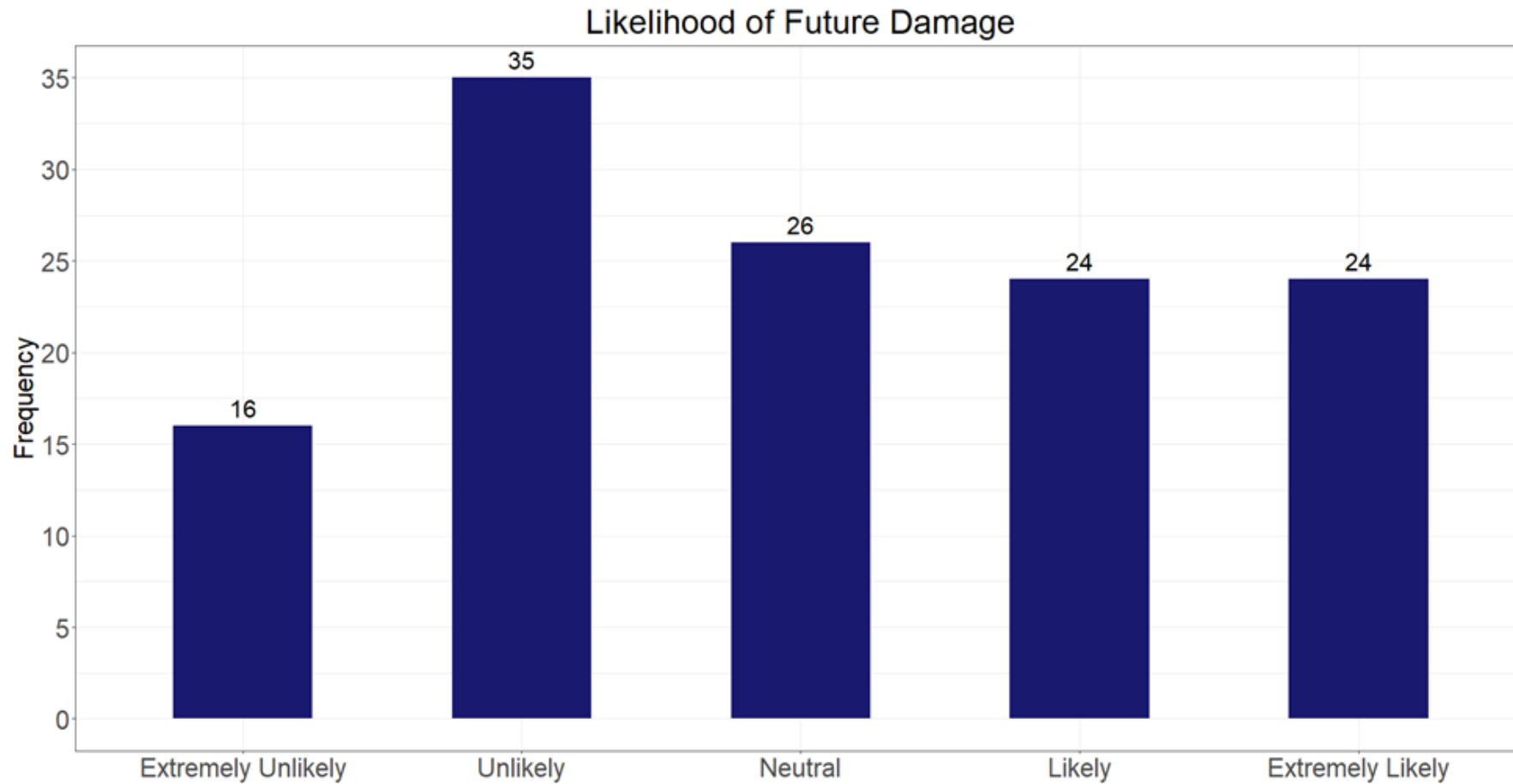
# Wave 6 Housing Survey

- Structured questionnaire administered in person
- Stratified cluster sampling strategy of Census blocks and housing units
- Since last scheduled field trip, aims were:
  - document continued recovery processes
  - capture final snapshot of mitigation and capacity-building
  - fill in prioritized data fields missed in previous waves
- Planned for October 21-28, 2023 but ended October 25

Perceived Recovery of...



# Continued Vulnerabilities



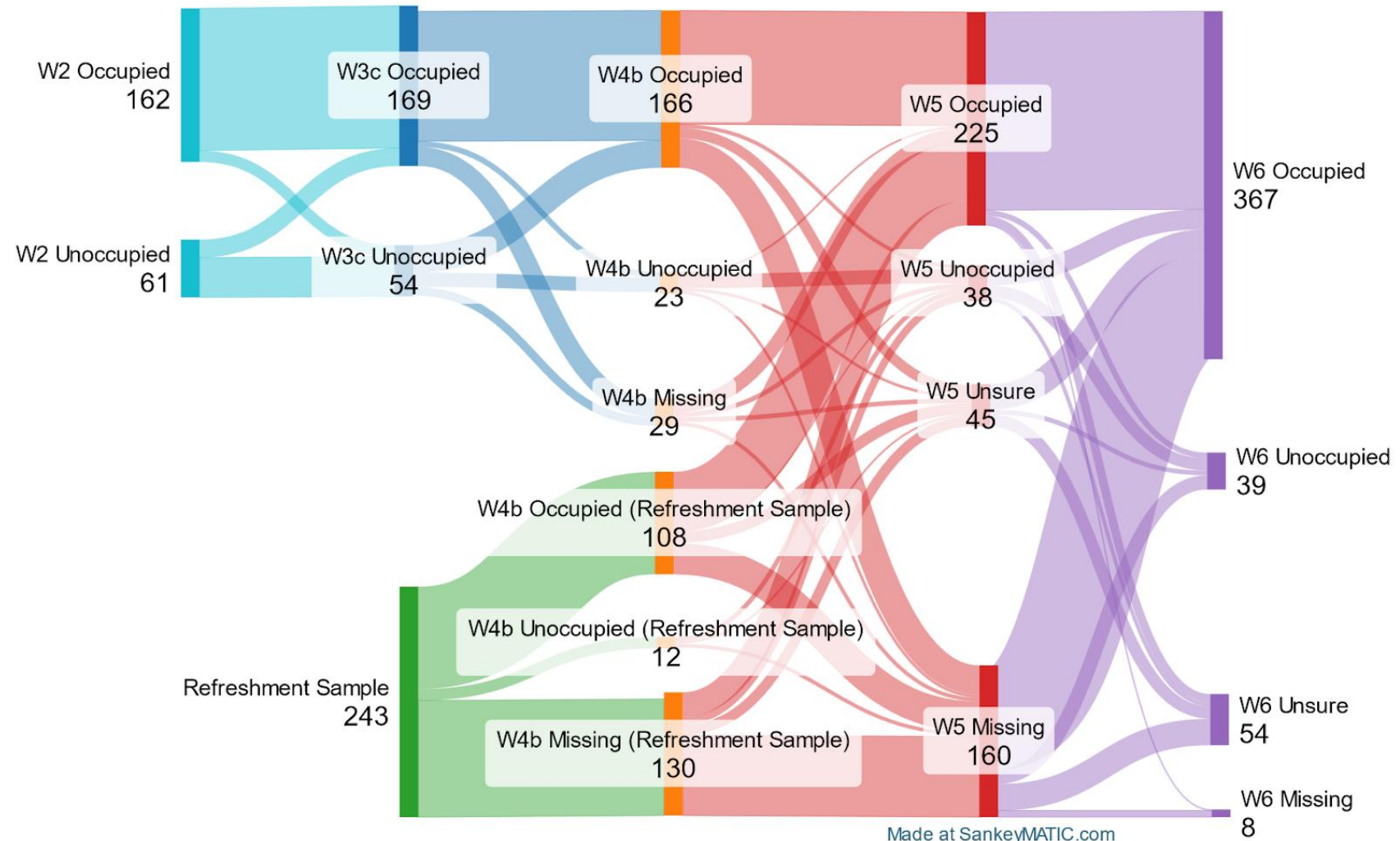
# Business Interruption/Recovery

- Wave 6 data collection in 2 parts:
  - Qualitative interviews (minimally structured)
  - Numerical data on operational status and building occupancy
- Again, some disconnect between original goals and results
  - Related to field study's interruption

# Interviews

- Interviews recorded and transcribed through Otter.ai
  - Content analysis through inductive coding
- Anecdotes confirmed a struggling community, substantial inequities, and still incomplete recovery
  - “everybody will kind of pull together and try and help out in a time of need”
  - “on this street they’re all for themselves”
- Caveats:
  - n=8 and uncertain representativeness

# Occupancy and Operational Status



Made at SankeyMATIC.com

Graphic courtesy of Maria Watson

# Infrastructure Edition



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# Post-Event Intervention and Planning

Waves 1-4



Fall 2018



Sep. 2019



Feb. 2021

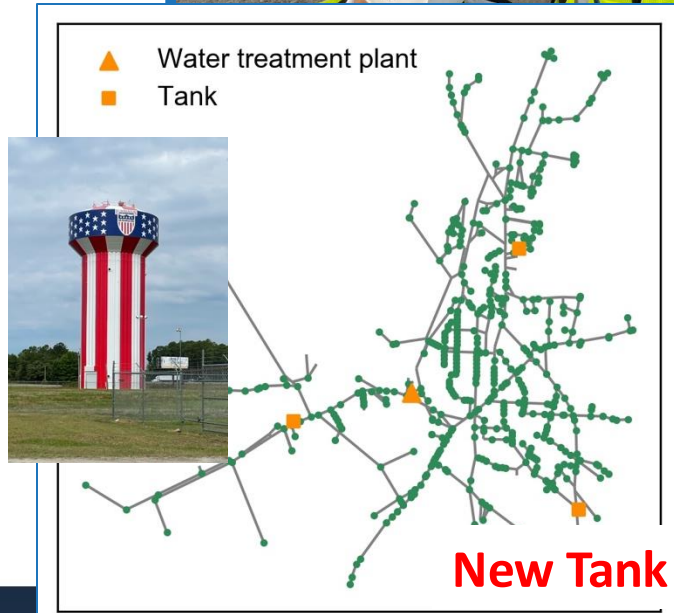
**Lumberton gets \$3.1 million federal grant to help build floodgates**



# Post-Event Intervention and Execution

## Wave 5

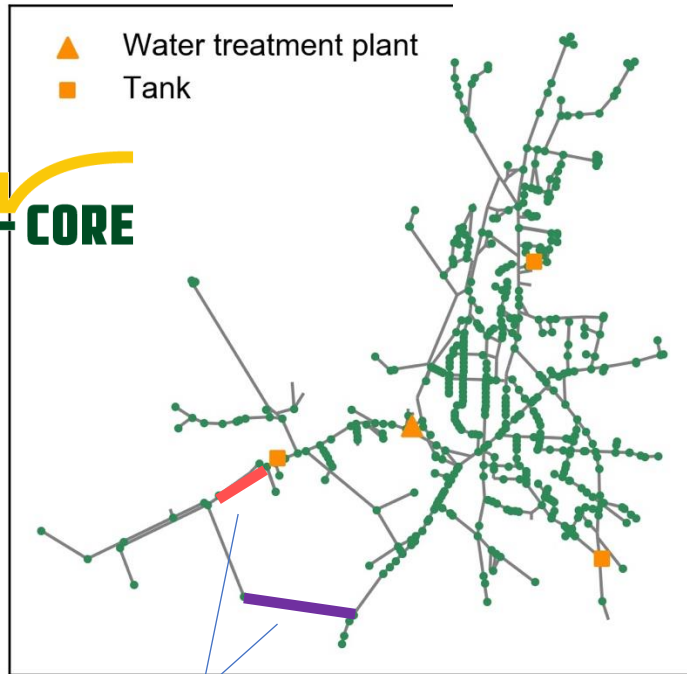
Solar



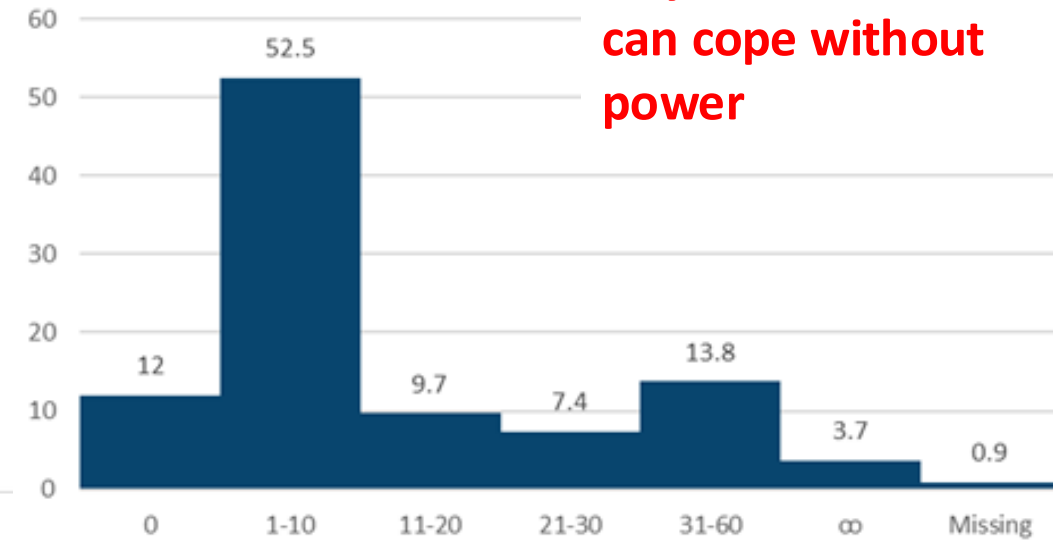
# Post-Event Execution and What-Ifs

Wave 6

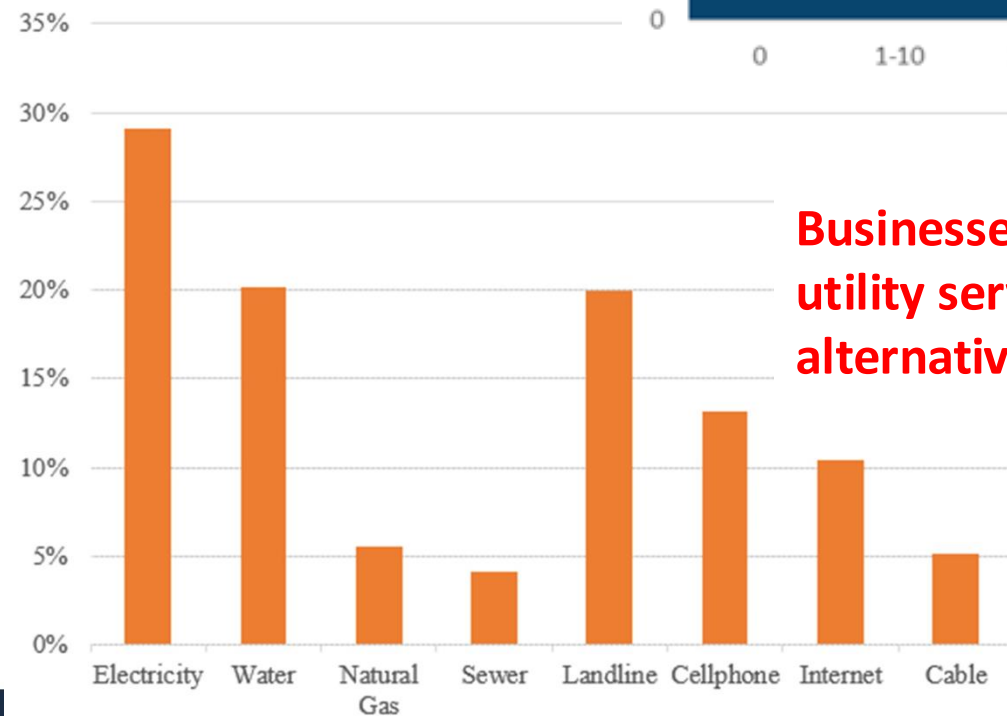
Decision support  
models



Add assets to maximize  
redundancy



Days households  
can cope without  
power



Businesses with  
utility service  
alternatives





# Post-Event Execution and New Foci

## Wave 6

### Deterrence Systems

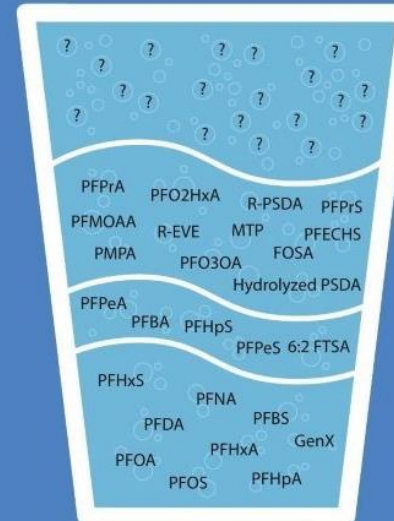


### Smart Metering



### Water Quality

### PFAS in Drinking Water



### Ag Leadership

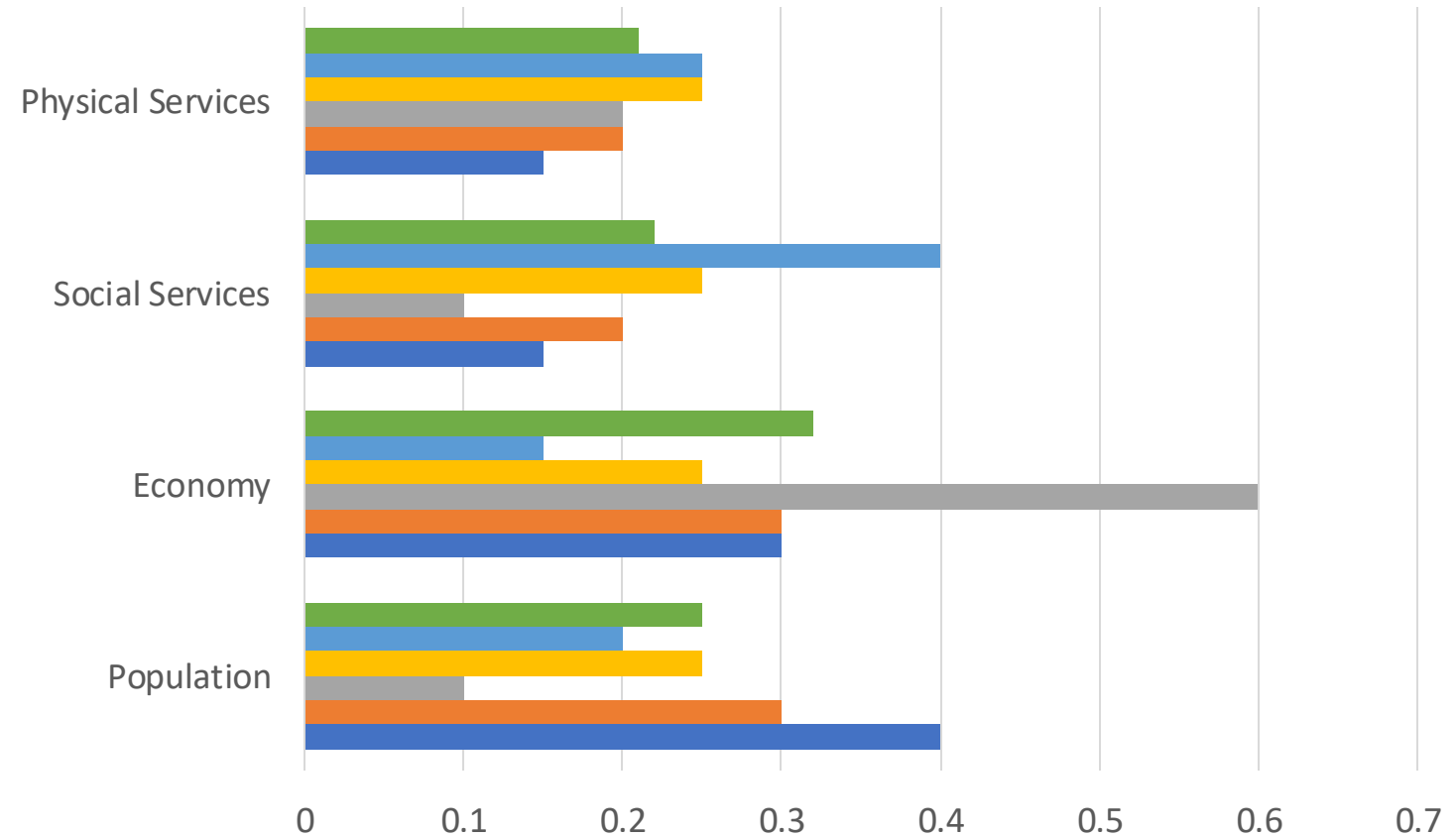


### Electrification of Transportation



# State of Stability Indicators

## Wave 6 Infrastructure Preferences



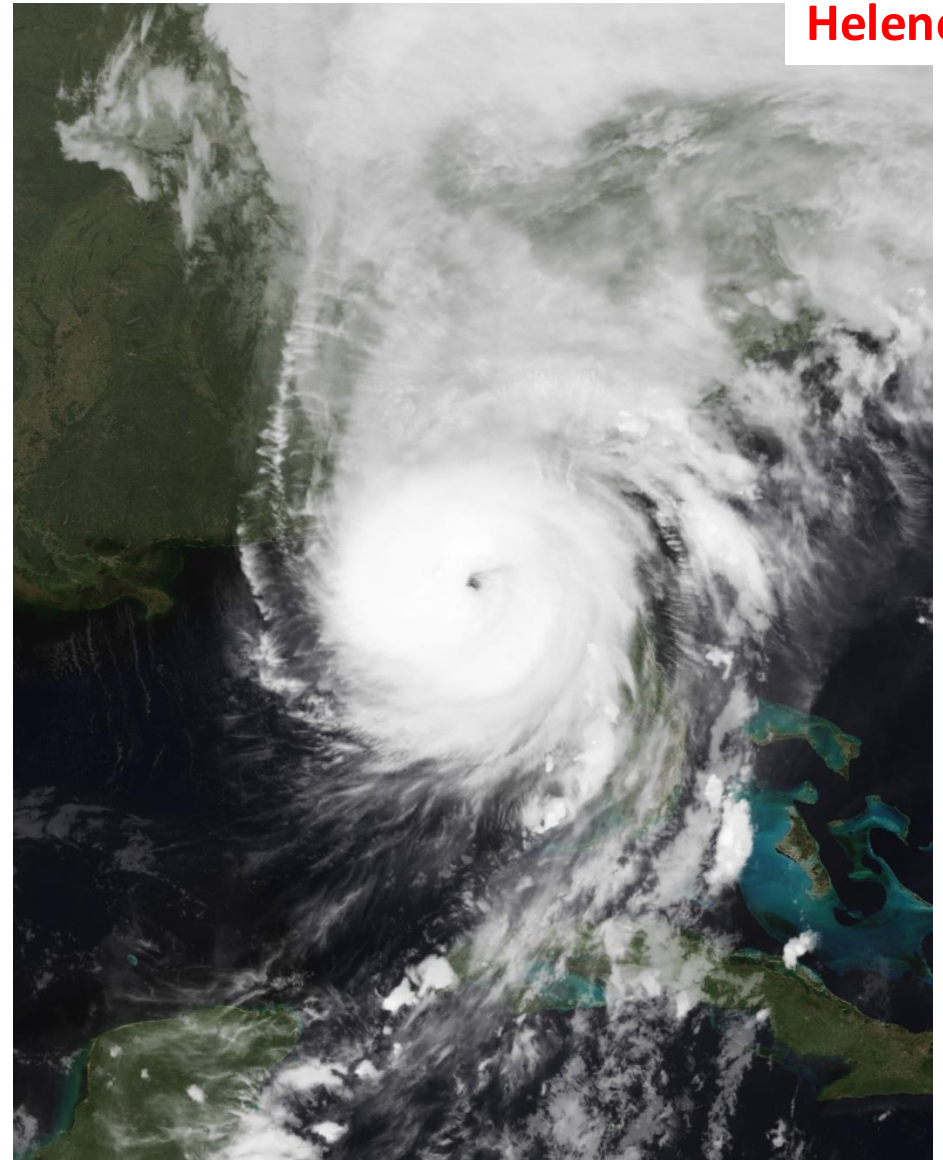


# Wave 7



Helene

Wave 7, ...,10, ...,25, ...



Helene

# Future of Field Studies in Resilience?

- Continued need to standardize field safety protocols
  - for research team
  - for community / respondents / participants
- Broad set of disciplines could aid in follow-up or in hindsight
- Still questions about
  - structures (houses, business sites) vs. people (households, business owners/workers)
  - how long should longitudinal studies last



# Notes

- INSPIRE
- Stability metrics
- Computational connections
  - Lumberton water
  - PTS
  - INSPIRE

- 
- Field studies: pairing infrastructure interviews with household and business questions on backups and outage times
  - Decision making under uncertainty focus: PrOACT
  - Need for modeling