

Commute Trip and Travel Behavior Shifts Assessment in Response to Major Disasters

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Hurricane IDA decreased work trips in middle-southeast Louisiana, with north counties recovering post-hurricane. Severe impacts in the south resulted in sustained work trip reductions.

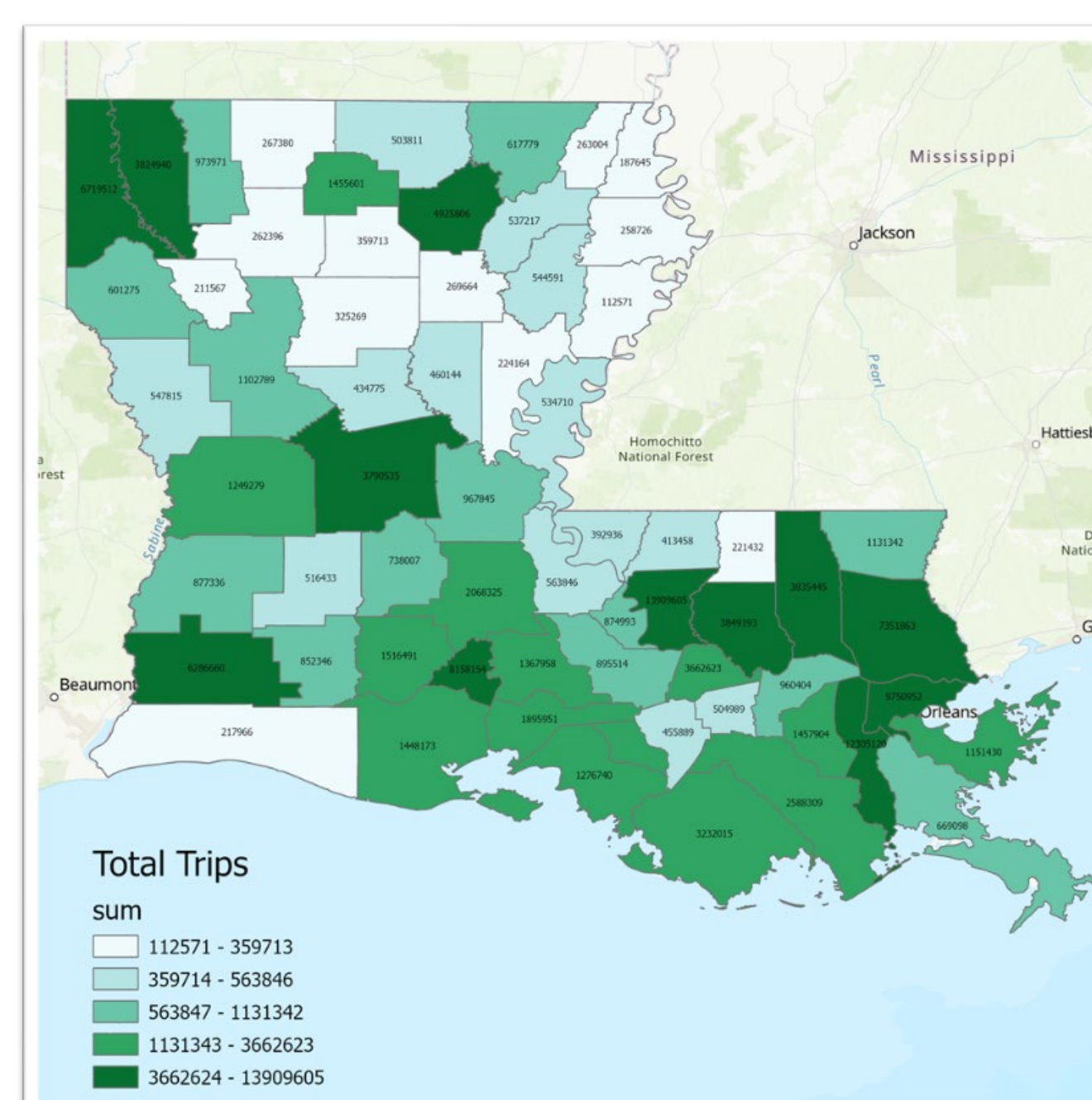
• Introduction

- Explore impacts of disasters on travel patterns, focusing on Hurricane Ida in 2021.
- Understand community resilience through changes in mobility behavior during disasters.
- Investigate socioeconomic influences on resilience and evacuation decisions

- Construct an explanatory model based on data, revealing pathways during evacuation and the pandemic.
- Provide insights for resilience planning and effective disaster response strategies

• Data & Methods

- Utilized massive mobile device location data for the study
- Adopted the methodology employed by the Maryland Transportation Institute to identify home and work locations
- Aggregated data at the county level for the state of Louisiana



Total Trips Distribution in LA

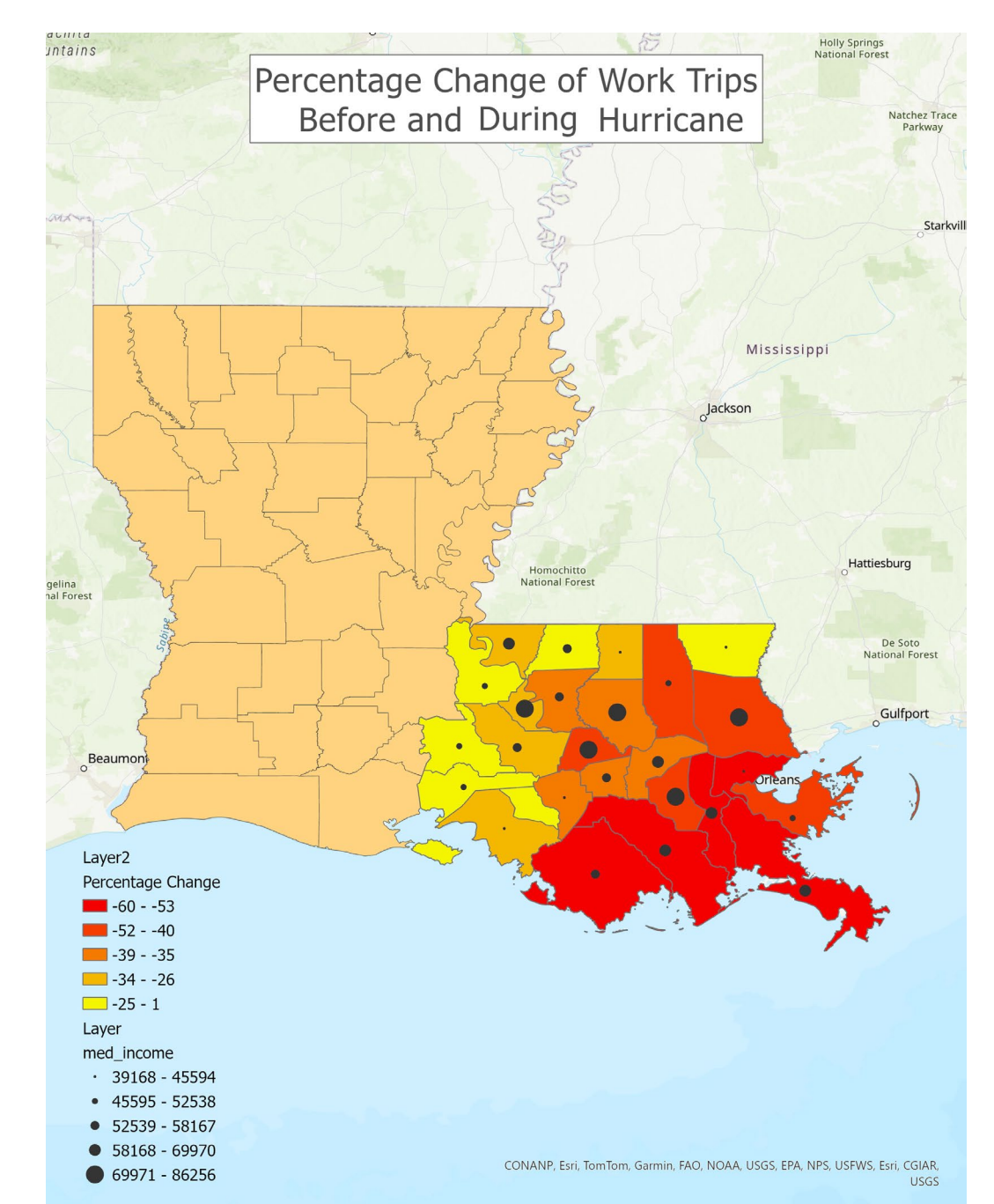
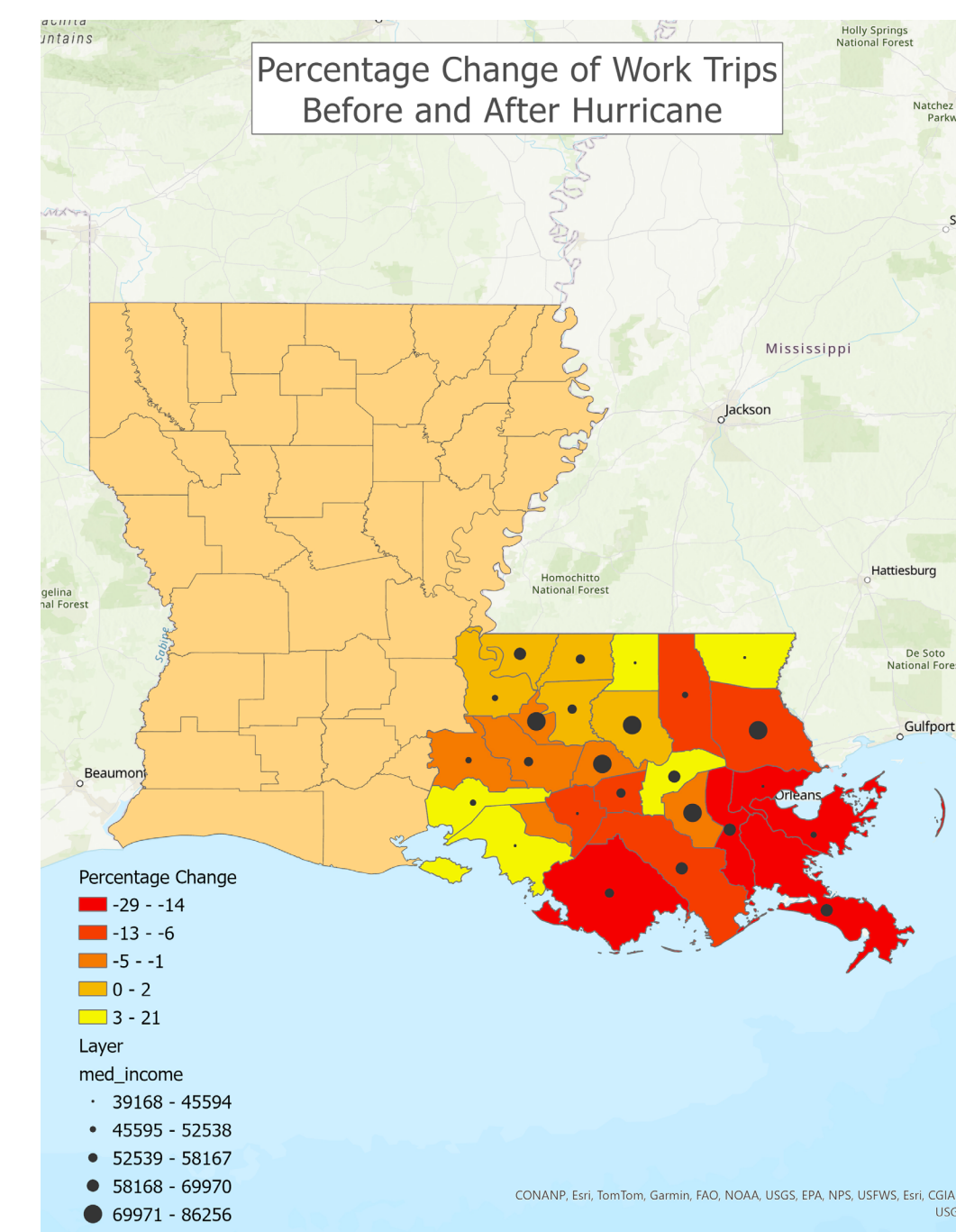
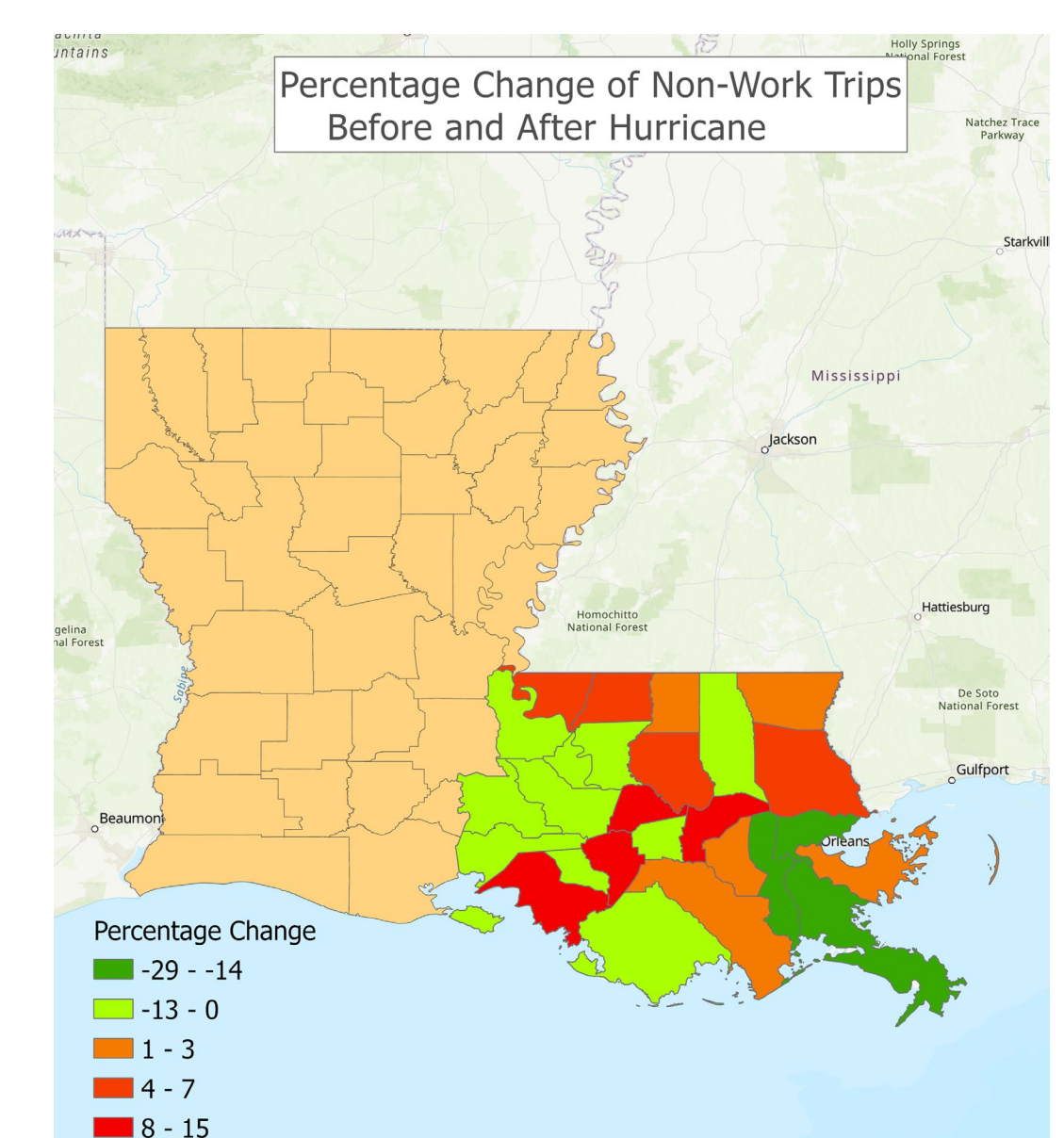
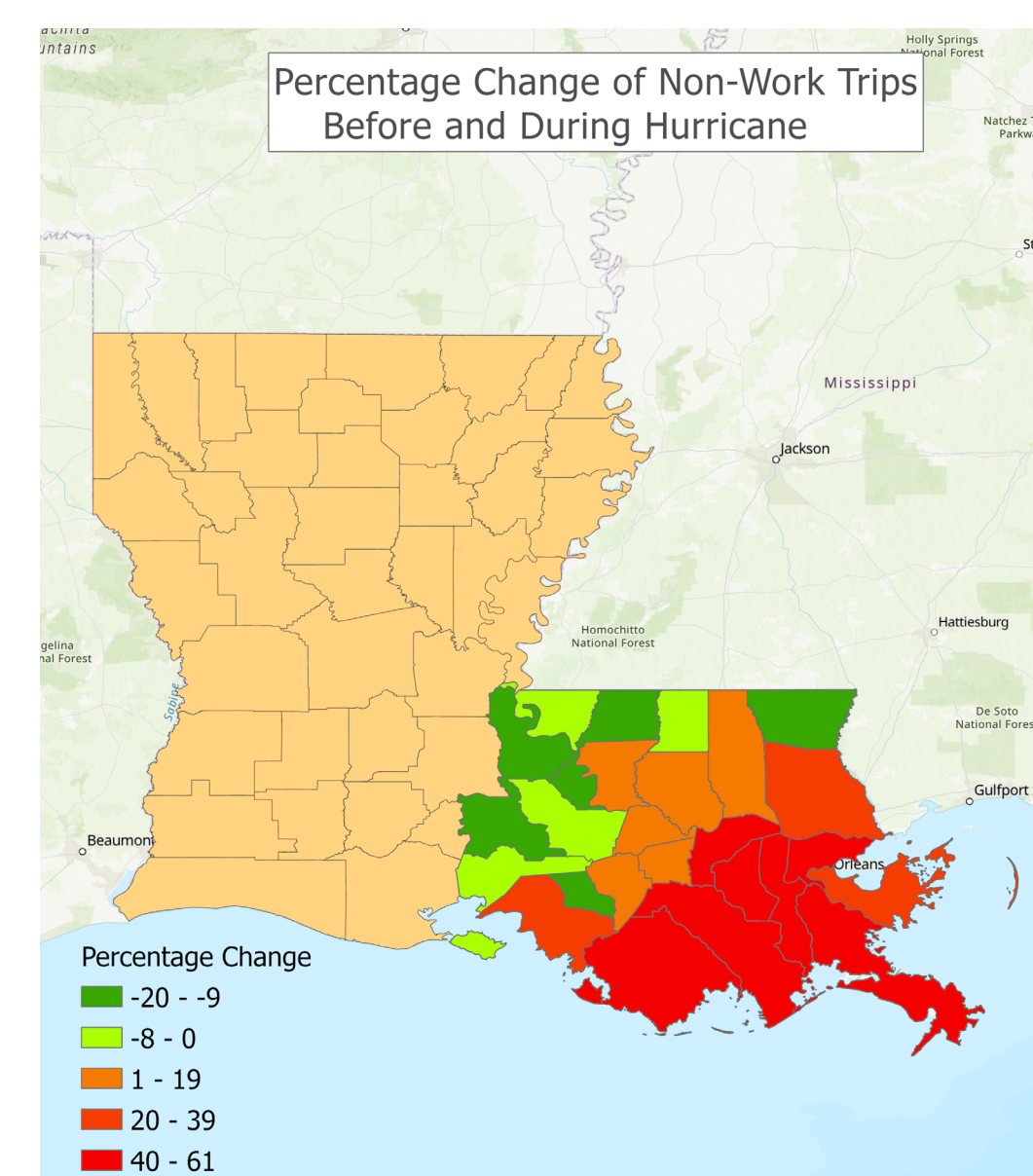
• Timeframes for analysis:

- Pre-disaster week (20 - 27 August 2021): Establishing baseline travel behavior.
- During disaster week (28 August - 5 September 2021): Capturing immediate impacts on travel behavior.
- Post-disaster week (6 - 13 September 2021): Assessing the recovery and adaptation of travel patterns.
- Calculated travel behavior changes: Examined mobility patterns before, during, and after the disaster.
- Assessed the recovery rate of trips, focusing on how quickly and to what extent commuting and travel behavior returned to pre-disaster levels.

References

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• Results & Conclusion



- Work trips for all counties decreased during Hurricane IDA compared to one week before the disaster.
- Non-work trips in southeast counties increased during the hurricane, possibly indicating evacuation patterns.
- Work trip reduction during the hurricane was more pronounced in middle southeast counties (Terrebonne, Lafourche, Jefferson) compared to northern counties.
- North counties showed recovery one week after the hurricane, with work trips increasing, possibly due to the reopening of schools and universities.
- In contrast, south counties, where the hurricane impact was more severe, continued to experience lower work trips even one week after the hurricane
- Recovery of work trips in these counties showed correlations with income in specific areas, warranting further investigation through zip code-level analysis and geographic weighted regression