

Understanding the Effect of Facebook's Neighbourhood Social Connections on Hurricane Evacuation

Samiul Hasan, University of Central Florida

(joint work with Tasnuba Binte Jamal and Md Mobasshir Rashid)

Background

- Low compliance to evacuation orders is a major concern for hurricane evacuation planning
- Observing the actions of peers can influence one's evacuation decisions → effect of social cues
- Few studies could empirically investigate such effect

Research Question

Do connections in a social media platform (e.g., Facebook) among the people of a local neighborhood correlate with their evacuation decisions?

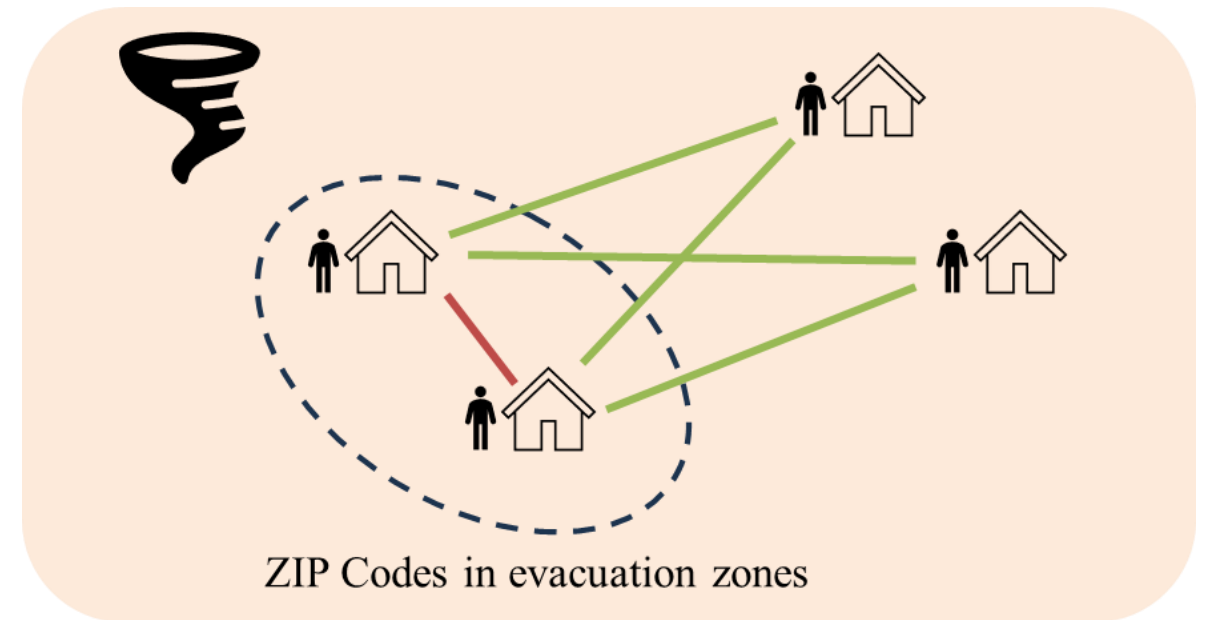
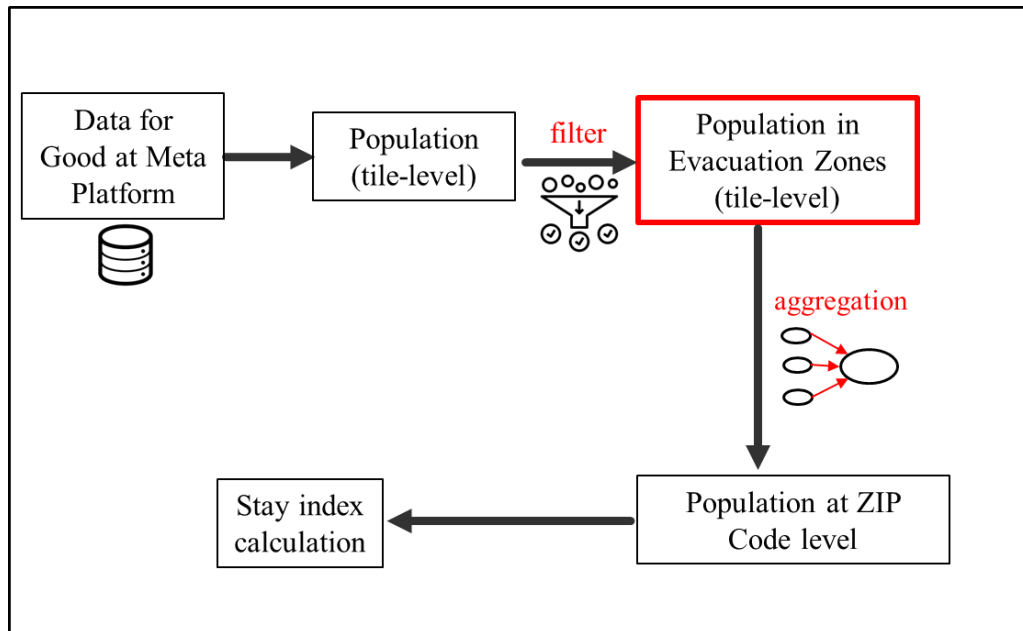


Data and Analytic Approach

- Facebook population data (during evacuation period of Hurricane Ian)
- Facebook's Social Connectedness Index (only for ZIP Codes under evacuation orders)

$$\text{Stay Index, } SI_i = \frac{\text{population in crisis period}}{\text{population in baseline period}}$$

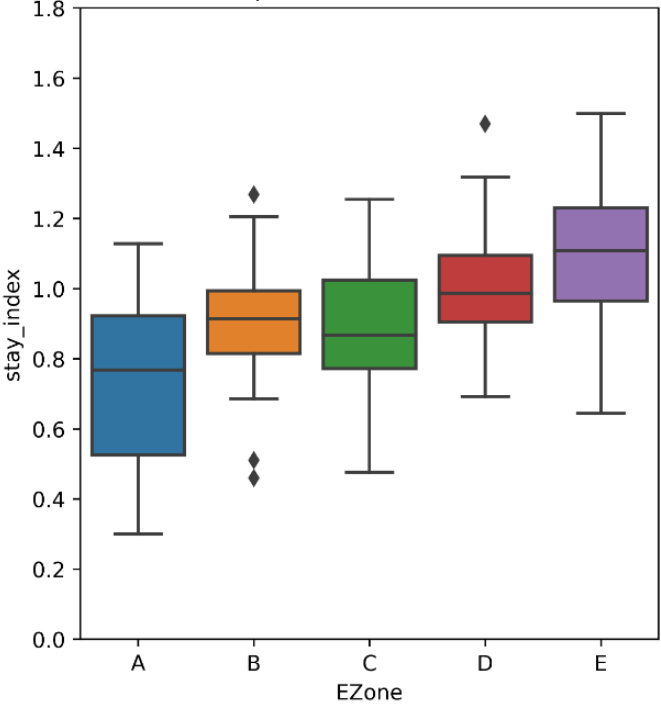
$$\text{Neighborhood Connection Index, } NCI = \frac{\text{connection within a ZIP Code } i}{\text{total connections (excluding } i)}$$



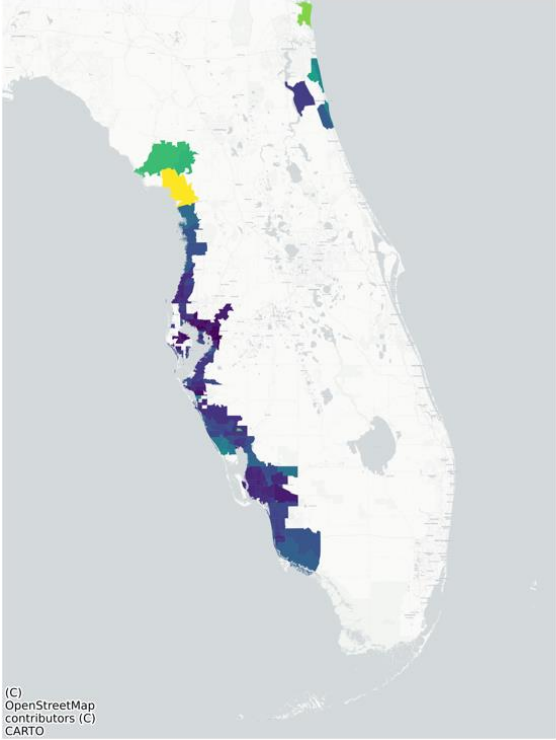
Results

Stay Index

Sept. 28, 03:00 - 11:00



Neighborhood Connection Index



Beta Regression Results

Variables	Coefficient
Dependent Variable: Stay Index (September 28, 3 am – 11 am)	
Spatial Risk Factors	
Intercept	-2.124
Evacuation zone A (base)	-
Evacuation zone B	0.453
Evacuation zone C	0.674
Evacuation zone D	0.842
Evacuation zone E	1.294
Neighborhood Connection Index (NCI)	4.134
Demographic Features	
Median household income	-0.191
Owner Occupied House	0.028
Total population over 65 years	-0.0253
Pseudo R-squared	0.4511
All variables were significant at 95% confidence interval	

- Low risk zones had higher stay index values
- Probabilities of staying in zones B to E were increasing compared to zone A
- In areas with higher neighborhood connection index, people had less evacuation compliance → supporting the effect of social cues.