

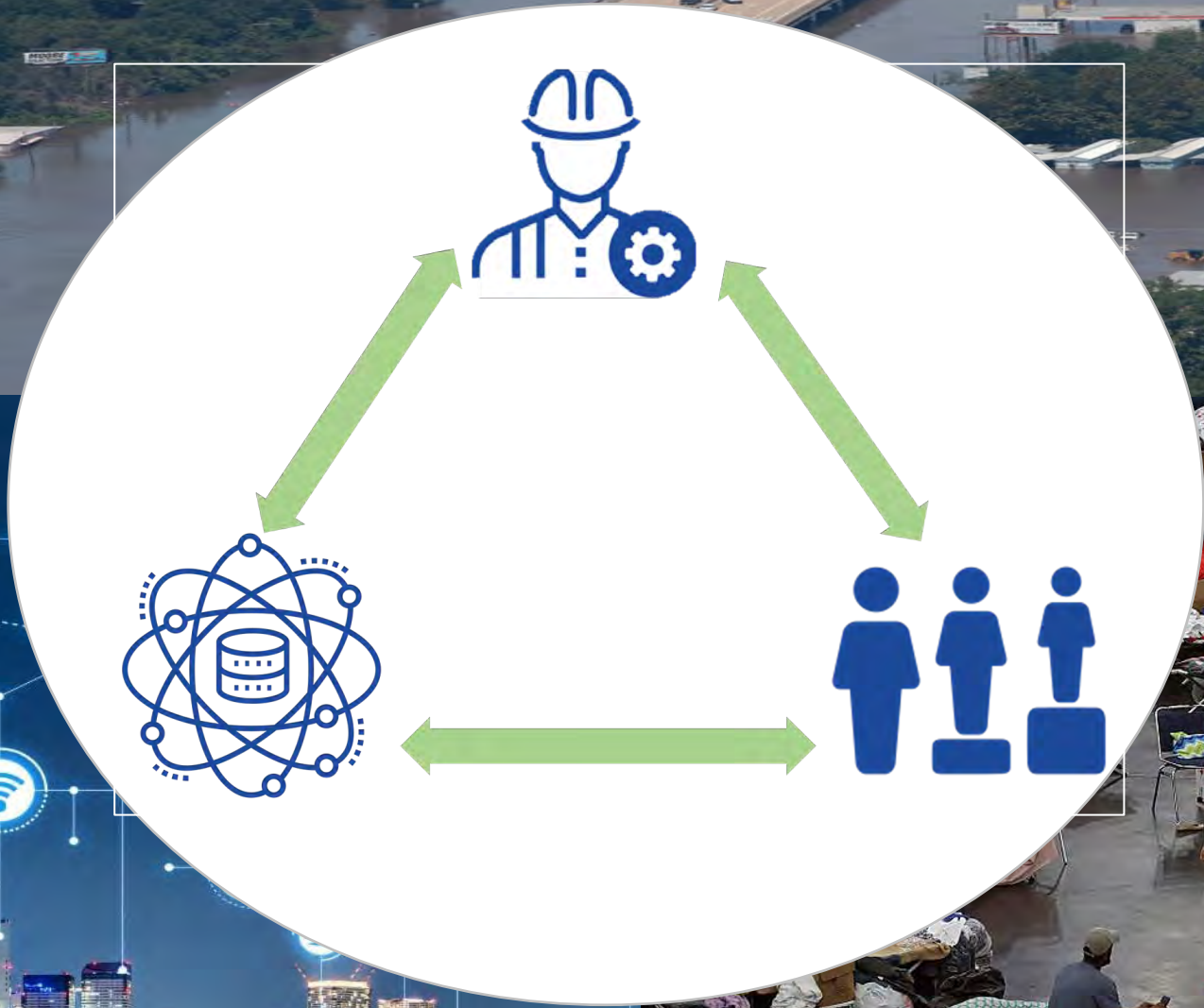
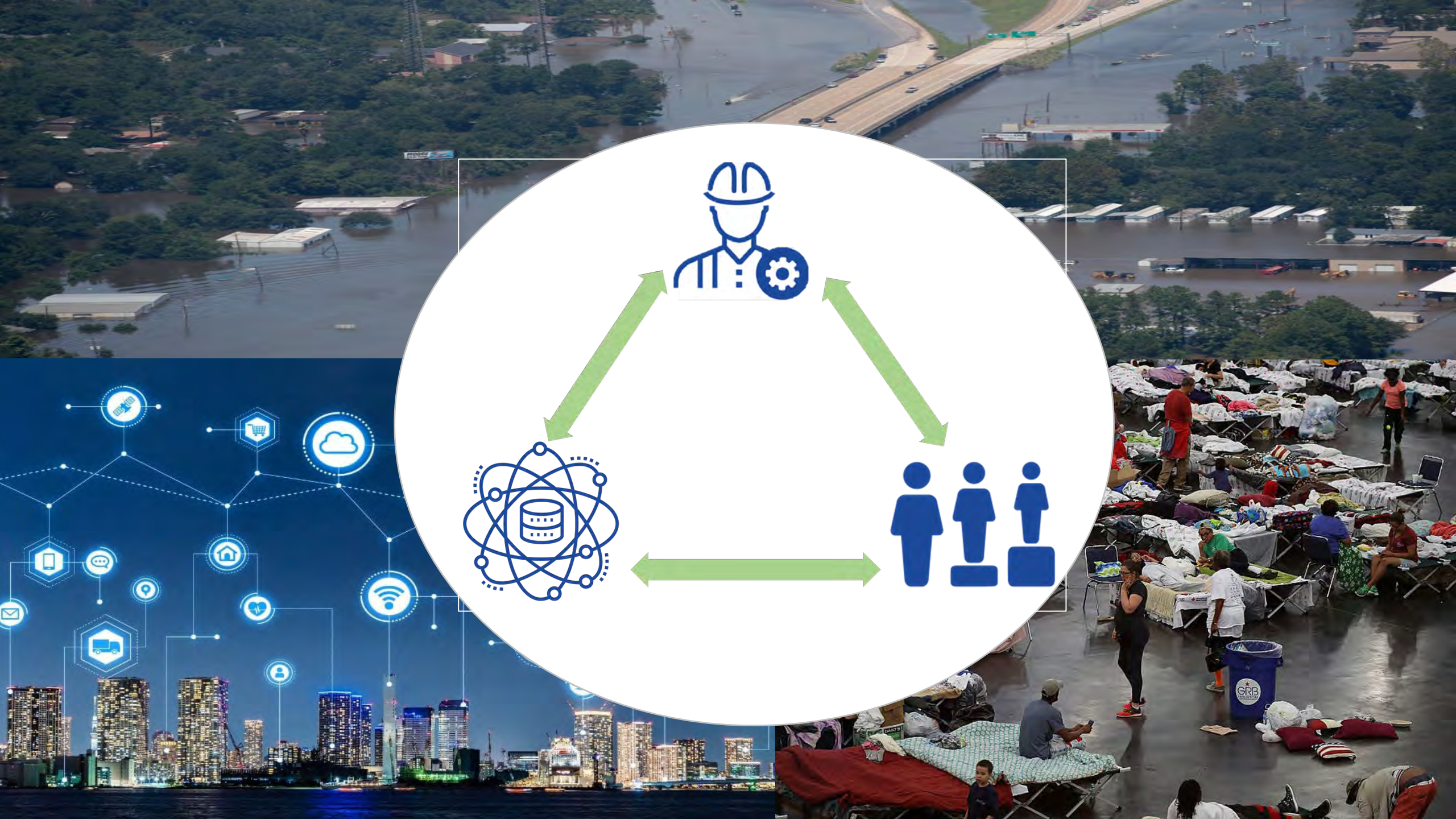
An aerial photograph showing a residential neighborhood that has been severely impacted by flooding. The houses are surrounded by deep water, and there is a large amount of debris, including wood and other materials, scattered in the foreground. The scene is dark and somber, highlighting the damage to the community.

Integrating Equity Standards in Infrastructure Management and Restoration

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**National Academies
has acknowledged the
“discrimination and biases
inherent in infrastructure
planning.”**





Human Mobility Data

Data for Good Movement

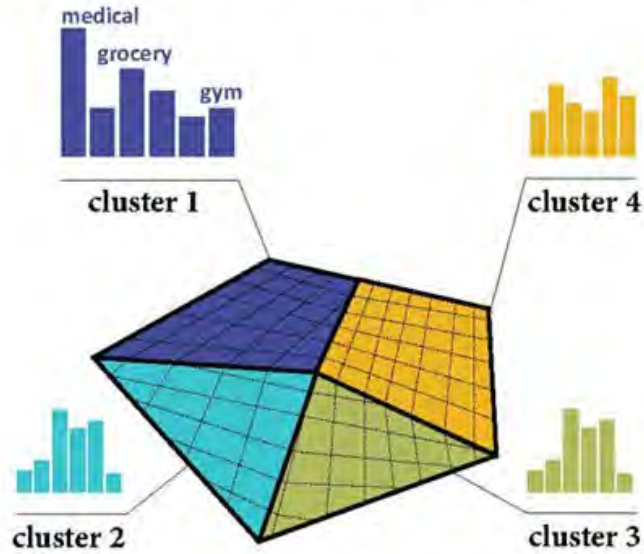
Third-party apps of consented and anonymized location information

Platform-as-a-service (PaaS) that provides a secure and privacy-preserving environment



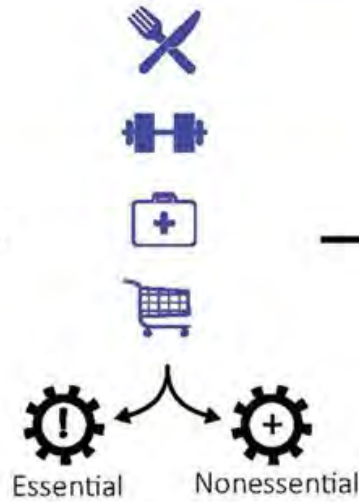
Primary clustering

Group home census block groups (CBG)



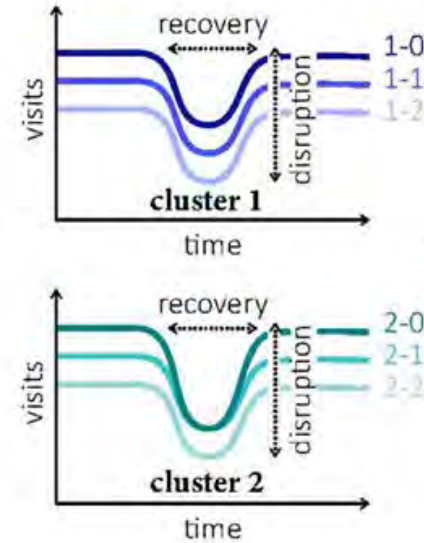
Categorize

Separate into essential & nonessential POIs



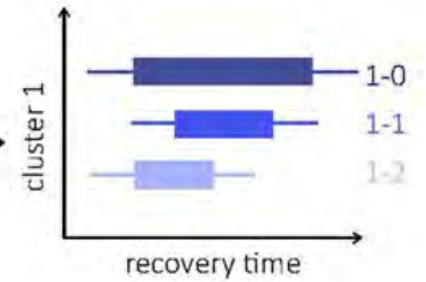
Secondary clustering

Cluster based on maximum point of disruption and period of recovery



Determine Trajectories

Calculate period of recovery

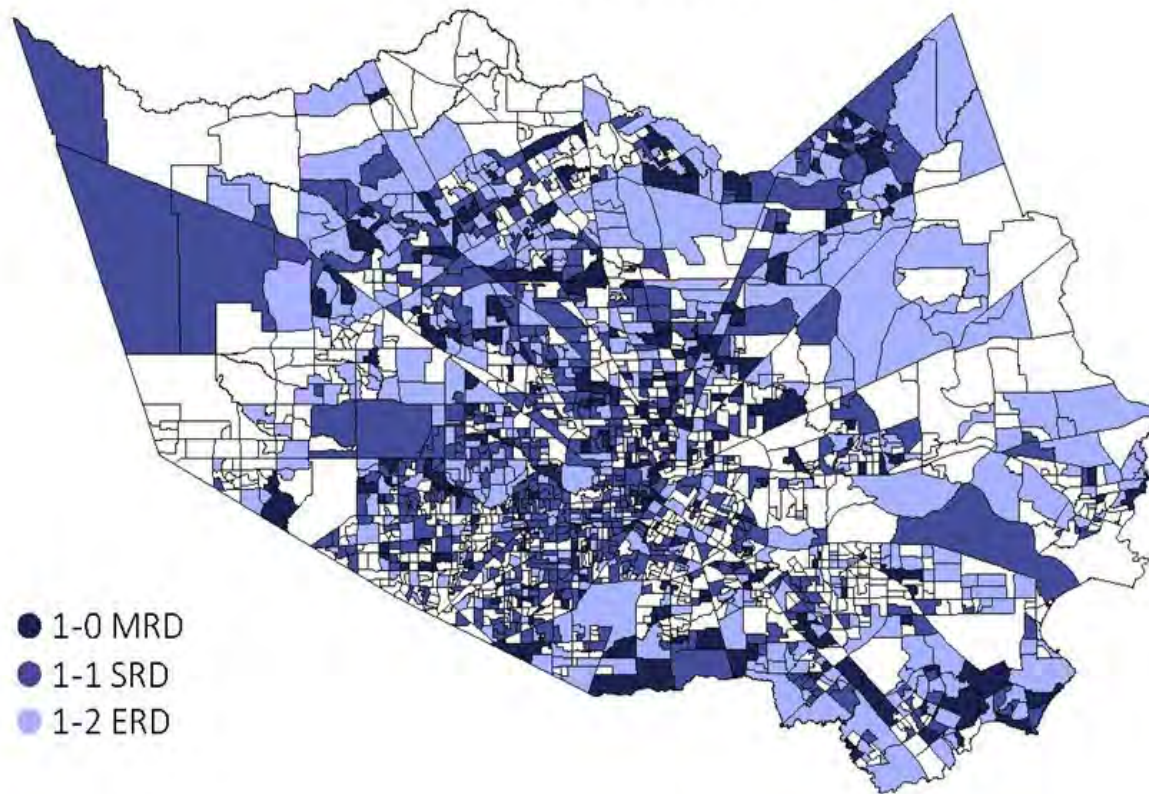


Methodology Framework

The test bed was Hurricane Harvey in Harris County, TX in 2017.

- SRD: short recovery duration
- MRD: moderate recovery duration
- ERD: extreme recovery duration

1 Cluster 1



Essential

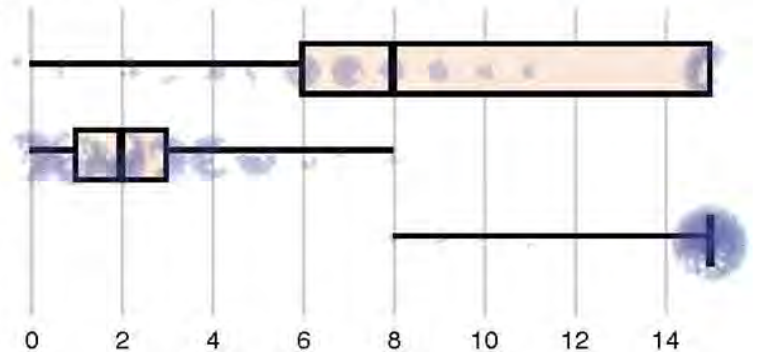


Health & Personal Care 77.40%

1-0 MRD

1-1 SRD

1-2 ERD



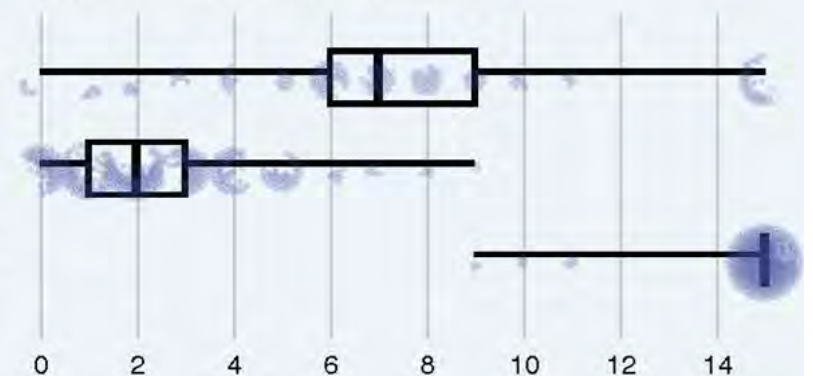
Non essential

Stores & dealers 65.57%

1-0 MRD

1-1 SRD

1-2 ERD



Contributions



- Established the potential of using human mobility data



- Understand the relationship to essential and non-essential services



- Recognize differential recovery rates of similar lifestyles based on equity



- Impact of lifestyle extends beyond hazards

Challenge: What is the balance between representation and privacy?





— Thank-you BAF! —
