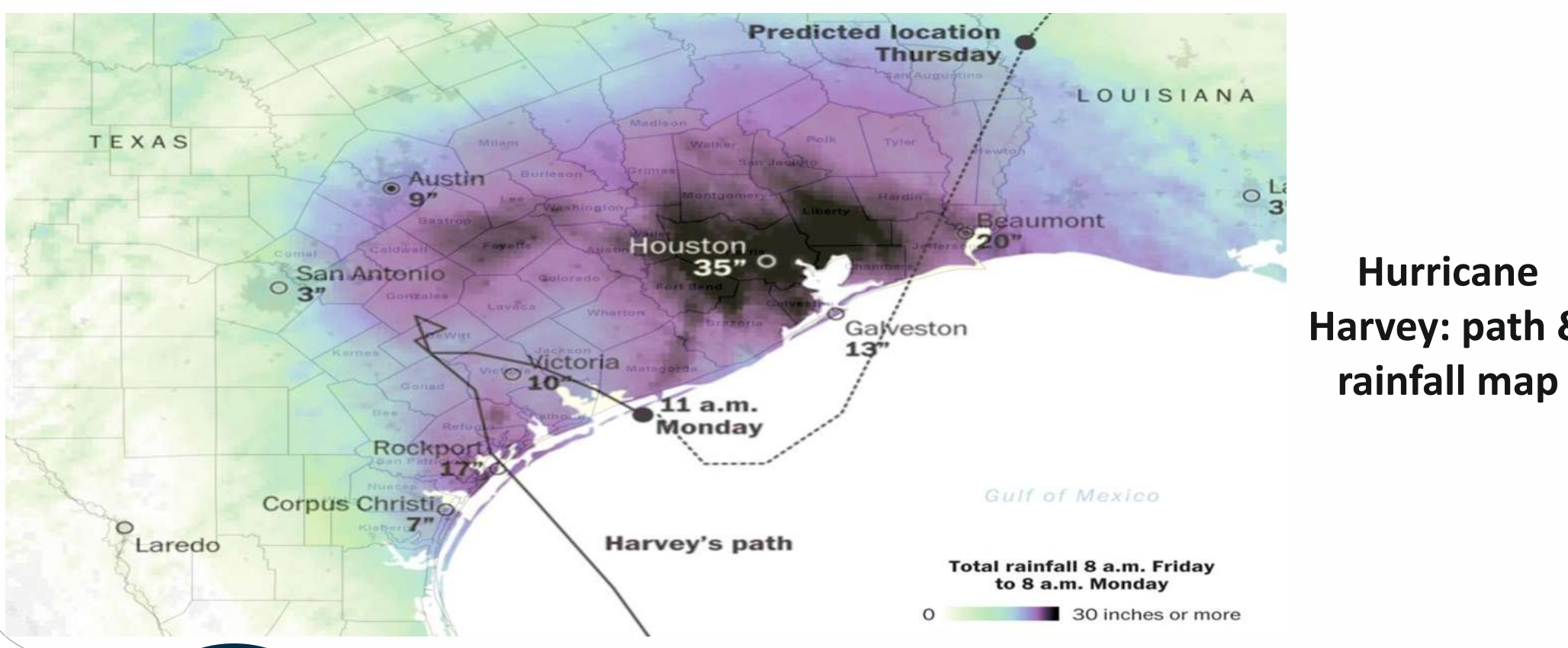
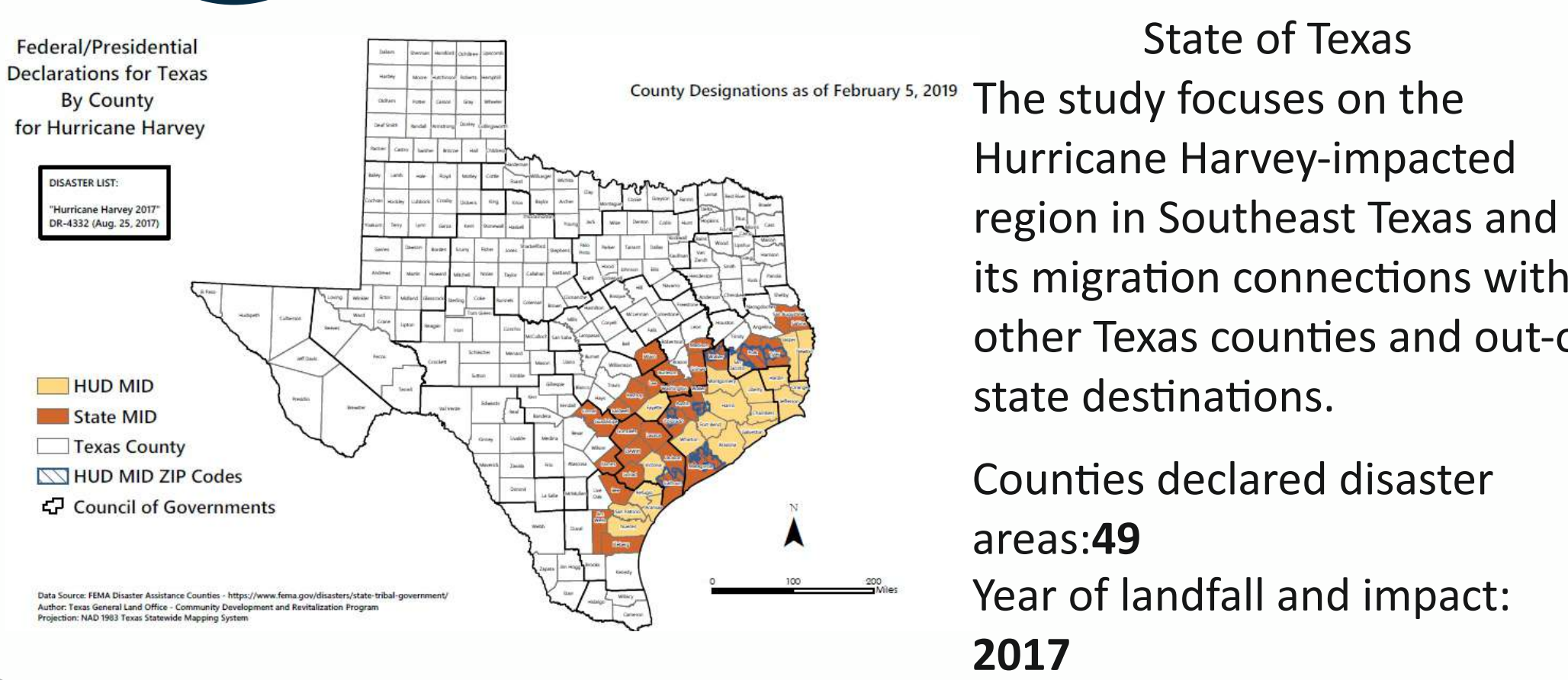


Overview

In August 2017, Hurricane Harvey became one of the costliest disasters in U.S. history, flooding the Houston metropolitan region and 49 federally-declared Texas counties. Disasters don't just damage buildings, they reshape **where people choose to live**. This project examines how Hurricane Harvey reshaped migration patterns across Texas by analyzing county-to-county origin-destination flows before and after the disaster. Rather than treating migration only as population gain or loss, the study uses a multi-scale framework to examine metropolitan conditions, county-level classification, inter-county ties, network stability, and origin-destination community structure.

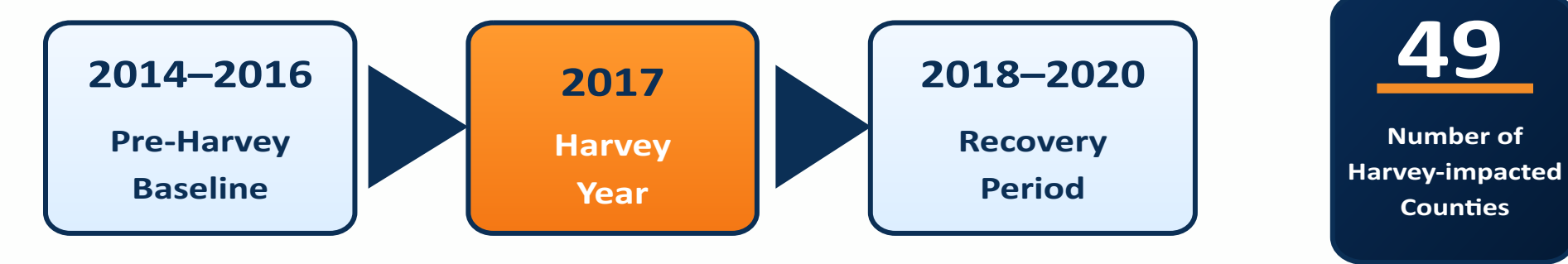


Study Area



Data Source & Period

The analysis uses IRS county-to-county migration flow data based on tax-filing households. The pre-Harvey baseline covers **2014–2016**, and the recovery period covers **2018–2020**.



Inflow	Outflow	Counting unit
Movement INTO a focus county	Movement OUT OF a focus county	How a move is counted
Origin = anywhere in the U.S. Destination = one of the 49 impacted counties	Origin = one of the 49 impacted counties Destination = anywhere in the U.S.	N1 = returns filed ~ households migrated

This study counts only **cross-county moves**. A household that moved within the same county is treated as a non-migrant, consistent with the IRS definition, which classifies same-county moves as non-migration.

Multi-Scale Analysis

- #### MSA Features

 - Income
 - Race/Ethnicity
 - Household Size
 - Poverty Rate
 - Unemployment Status
- #### County Tiers

County Classification and Harvey impacted region
- #### Inter County Ties

Migration flows between counties

In-Ties: Send to Harvey Region
Out-Ties: Receivers from Harvey Region
- #### Network stability

Ties stability & change

Common Ties: Stable
Lost-Ties: Pre-Harvey
New-Ties: Post-Harvey
- #### Community Detection (Origin-Destination)

 - Detect Communities
 - Identify restructuring
 - Uncover Key origin & destination groups



Findings

- All six metros share the same broad trajectory: rising incomes, falling poverty, and unemployment across the period. Harvey did not visibly bend these slow-moving economic indicators.
- Harris County's net migration turns sharply negative around 2016-2017 - households leaving faster than arriving.

Suburban metro counties climb steadily upward, gaining households across the recovery period.

Rural/exurban areas after 2018 gained more households.
- The Harvey region became more connected to out-of-state counties and strengthened urban/suburban inflow channels. Impacted rural/exurban in-ties declined even as flows slightly increased.

Out-migration expanded toward non-impacted suburban and rural/exurban Texas counties, while out-of-state flow volume grew only modestly.
- Most migration ties remained stable, indicating strong network persistence after Harvey.

Disruption was concentrated in rural/exurban and out-of-state connections, where lost and new ties formed a larger share.

Overall, Harvey reshaped the network selectivity rather than causing system-wide collapse.
- Six matched migration communities persisted from pre- to post-Harvey. There was no wholesale collapse of the regional migration system. The Houston-Dallas corridor expanded; the Beaumont-East Texas community strengthened rural ties. The Austin fringe lost connections. Change was community-specific.

Research Implication

These findings can guide equitable disaster recovery and housing policy by identifying where migration pressure and network disruption concentrate.

- Flag at-risk peripheries:** Rural/exurban counties showed greater tie disruption, suggesting a need for targeted recovery support in lower-resource areas.
- Pre-position aid along migration corridors:** Persistent ties can help agencies anticipate where displaced households are likely to move before demand peaks.
- Protect receiving communities:** Assess whether suburban and exurban counties absorbing post-disaster inflows have sufficient affordable housing, services, and local capacity.