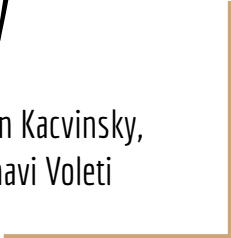# 2023 Turkey Earthquake Effects on Migration, Infrastructure, & Demography

Begum Akkas, Evan Fantozzi, Jonathan Kacvinsky, Riley Morrison, Teddy Kolios, Vyshnavi Voleti

Context

- On, February 6th, 2023, a series of powerful earthquakes and aftershocks caused widespread damage to southeast Turkey and northwest Syria. Another earthquake on February 20 compounded the destruction.

- ~53,000 people died and ~3.6 million were displaced, many permanently.

- The impacted region is one of the most populous *and* economically disadvantaged in Turkey. Many residents are displaced Syrian refugees.

Why is this important?

- **Tragedy scale reinforces the importance of building code policy and enforcement.** Many buildings were misleadingly marketed as "luxury" or "earthquake-safe", despite failing to comply with codes

- **Natural disasters amplify already existing humanitarian emergencies.** Studying how people and governments respond to intersecting events, like war and natural disaster, can help us build more effective interventions

- **Demographic recovery isn't automatic**, and affected regions can suffer population decline and brain drain if they don't receive sufficient investment following disasters

Earthquake Epicenters

Turkey: Earthquake Epicenters and Fault Line Ruptures (2023)
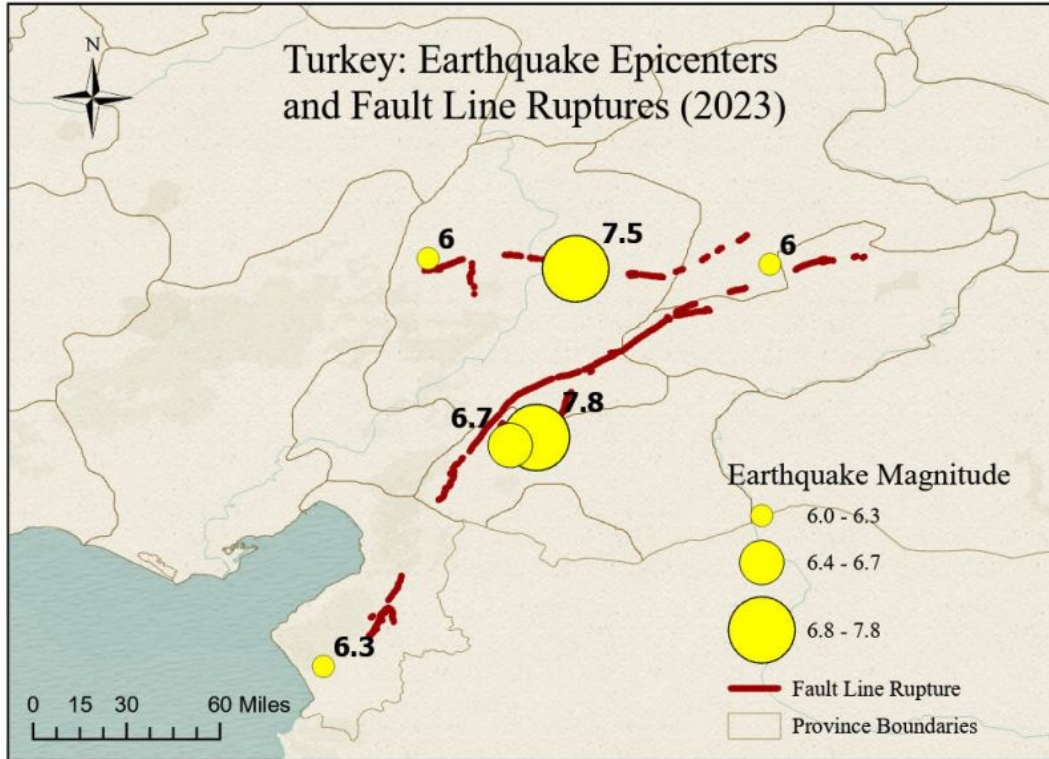
- Earthquake epicenters primarily located in 2-3 provinces
- Extensive fault line ruptures
- Smaller earthquakes product of aftershocks
- Comparison: Haiti 2010 earthquake was magnitude 7.0
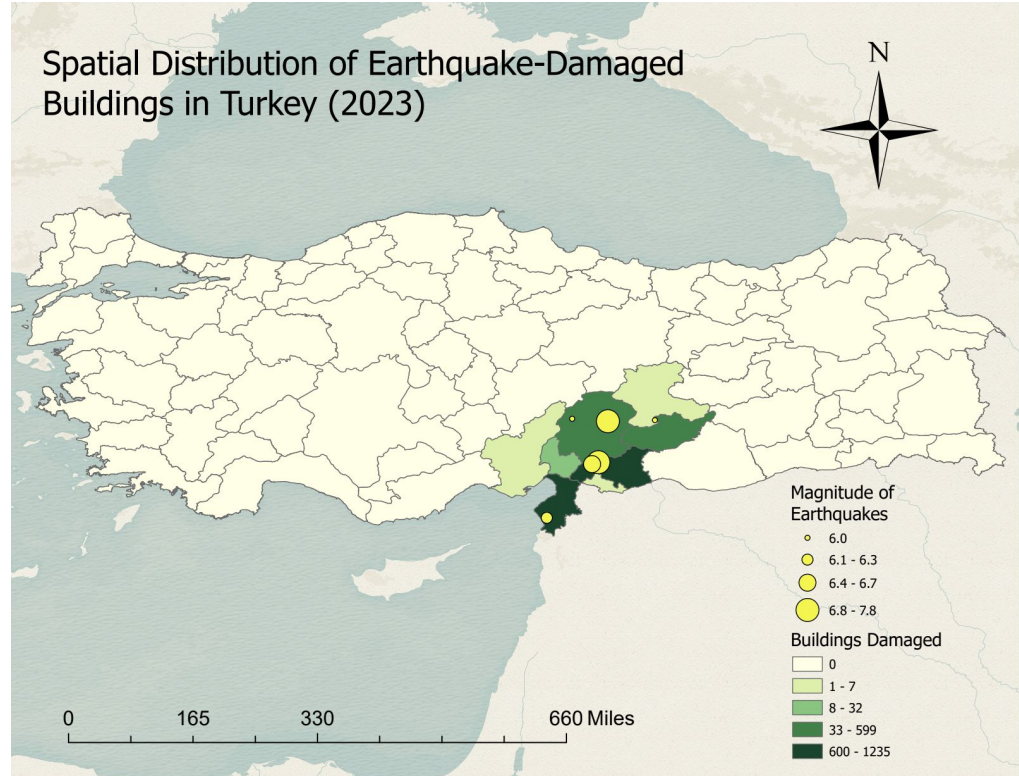
Areas Hit Hardest by the Earthquake

- Data from Copernicus Emergency Management Service (EU funded program)
- Highlights areas of interest (AOIs) within provinces most impacted by the earthquake
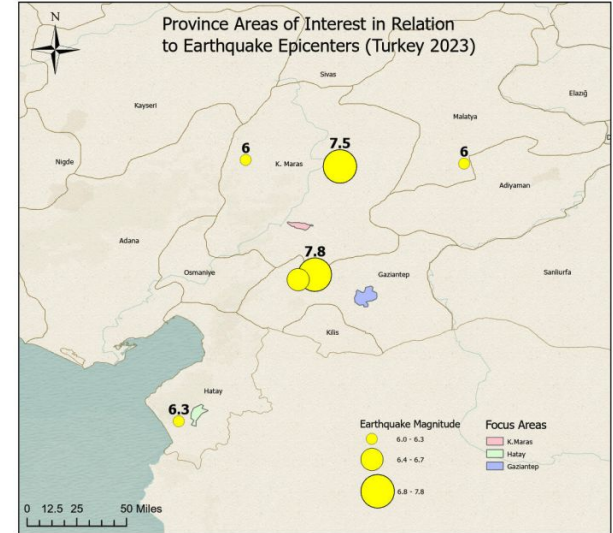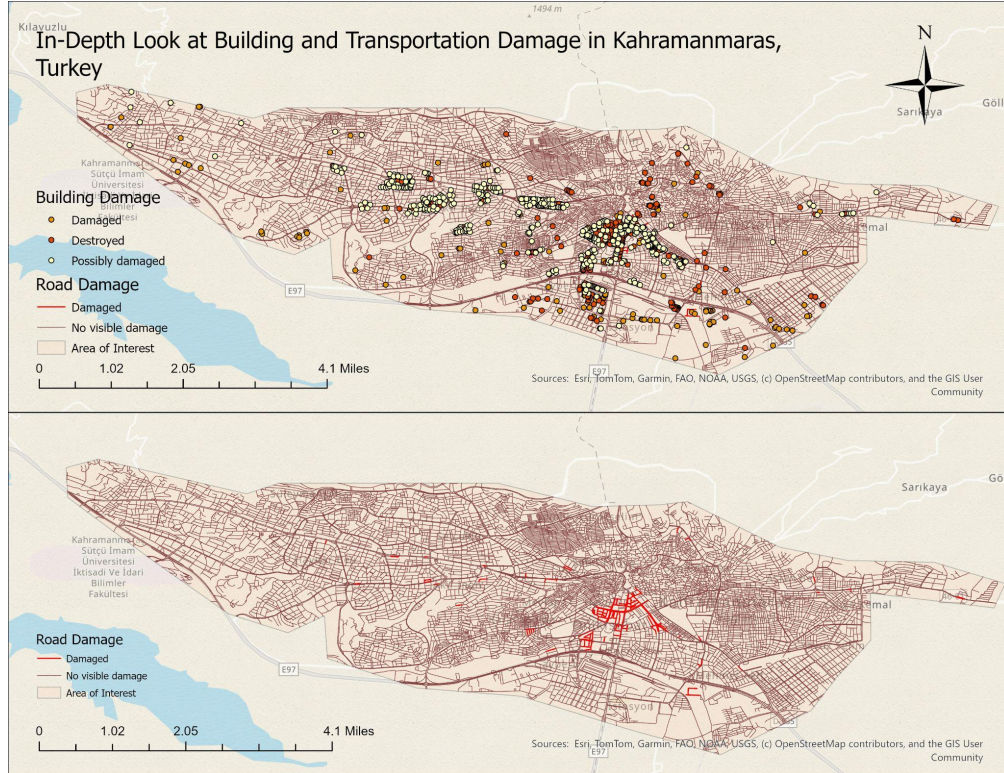- Will look closer at damage within these AOIs (buildings & roads)
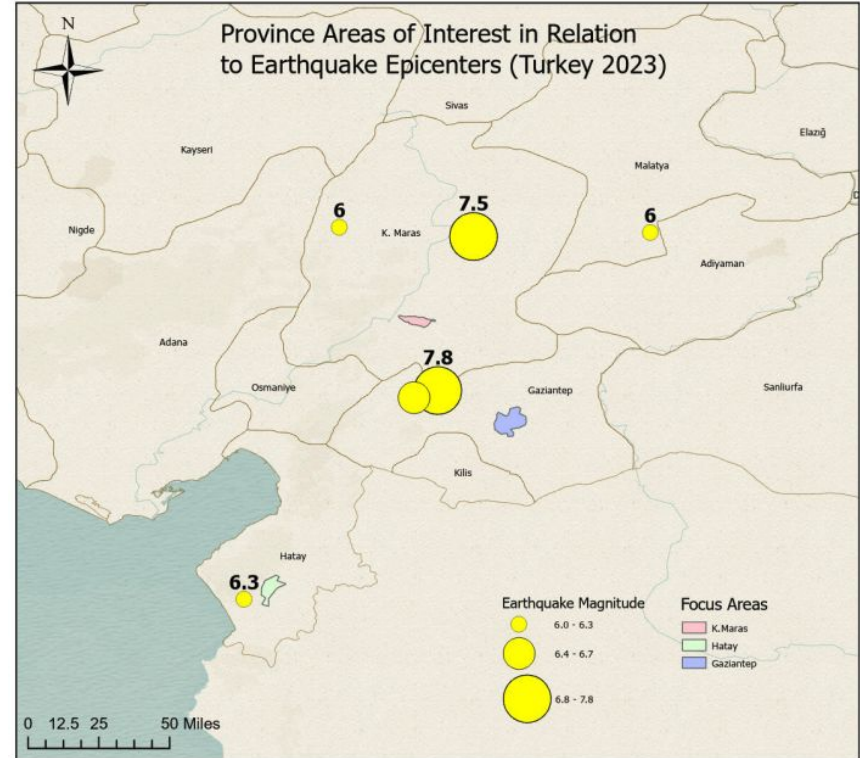
# Infrastructural Impact

Provinces Most Affected:

- **Kahramanmaras***
- **Hatay***
- **Gaziantep***
- Osmaniye
- Malatya
- Adaya
- Kilis
- Adiyaman

Spatial Distribution of Earthquake-Damaged Buildings in Turkey (2023)

Magnitude of Earthquakes
- 6.0
- 6.1 - 6.3
- 6.4 - 6.7
- 6.8 - 7.8

Buildings Damaged
- 0
- 1 - 7
- 8 - 32
- 33 - 599
- 600 - 1235

0   165   330   660 Miles
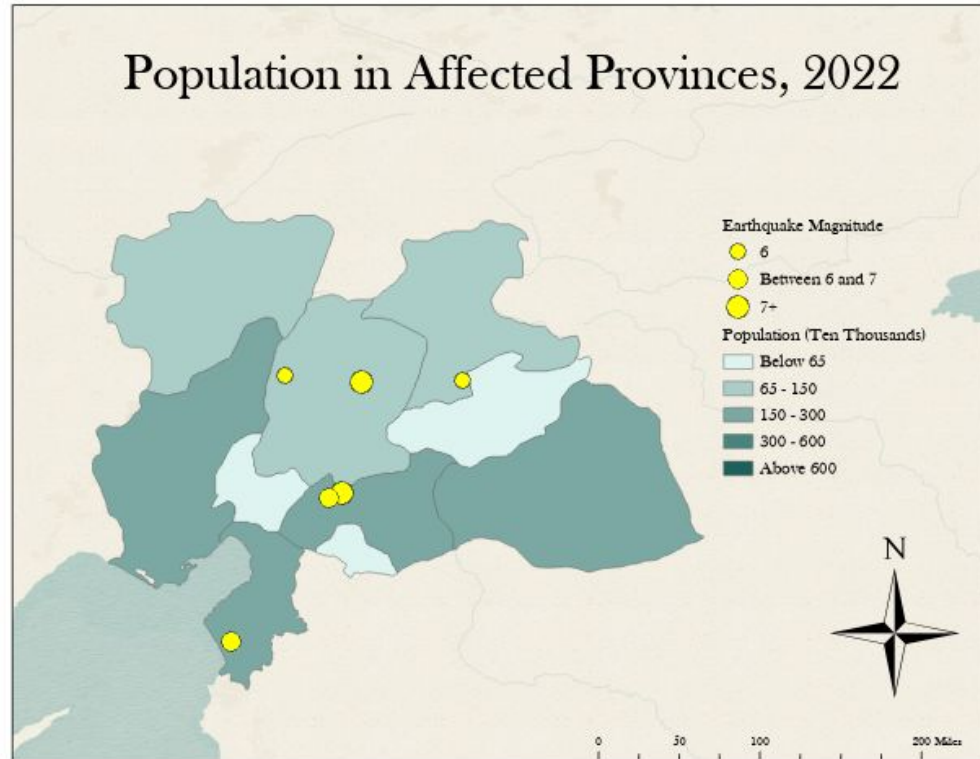
Zooming Into Key Area of Impact in Kahramanmaras

Zooming Into Key Area of Impact in Antakya, Hatay
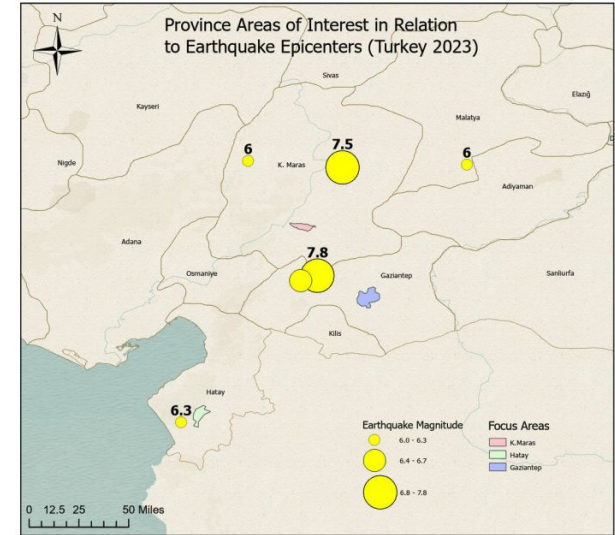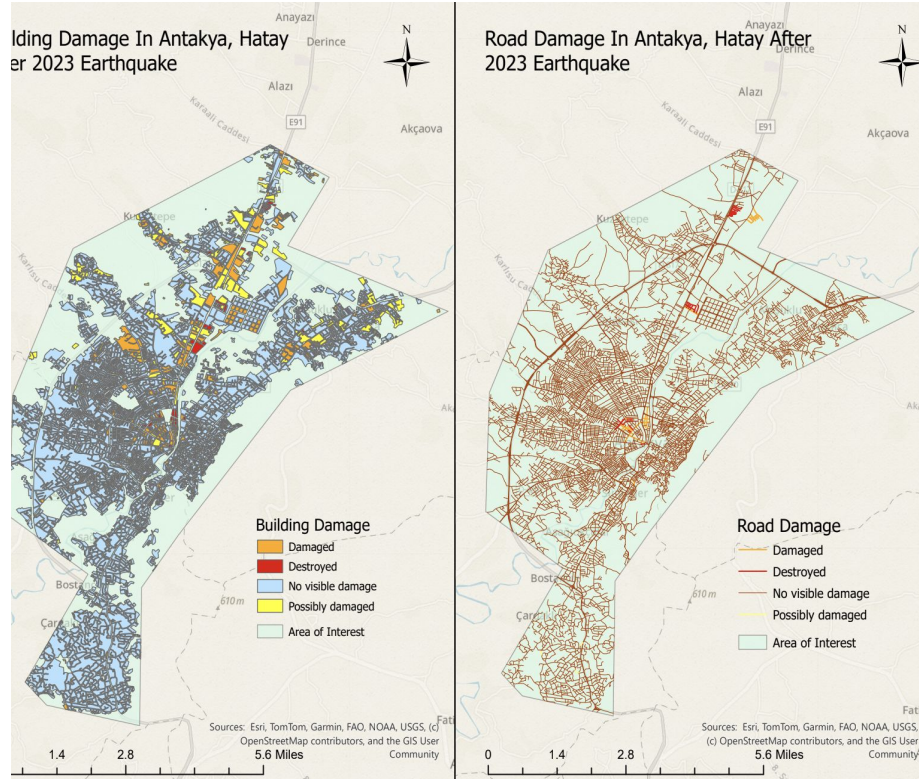
Population Pre-Earthquake

Population Pre-Earthquake

Population Change

Population Change in Turkey, 2022 - 2024
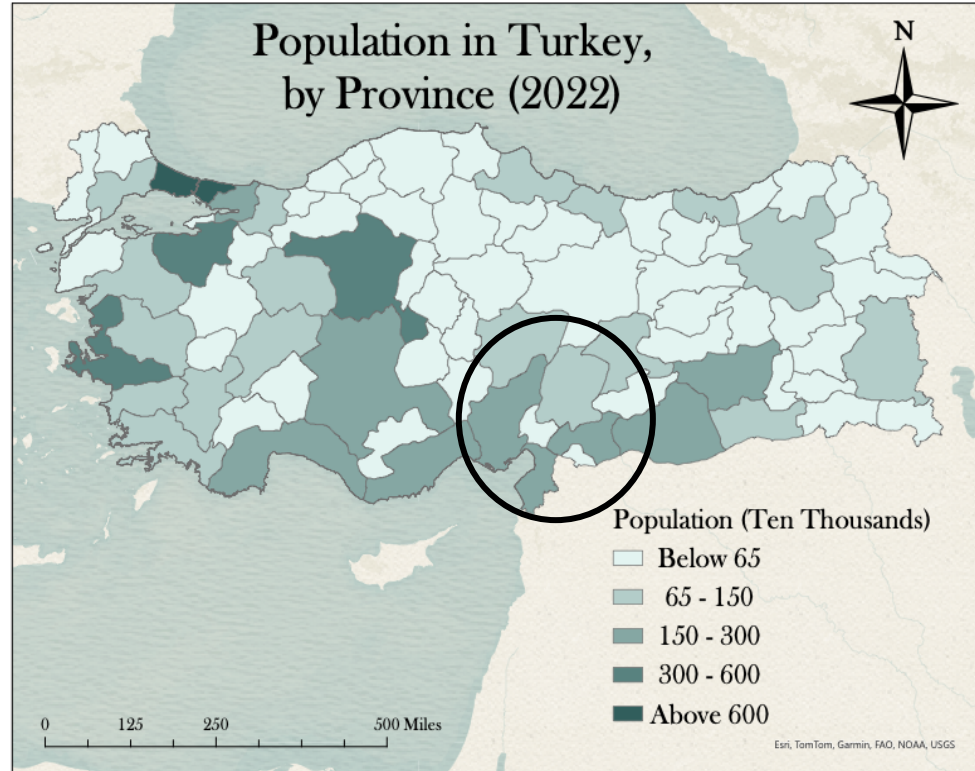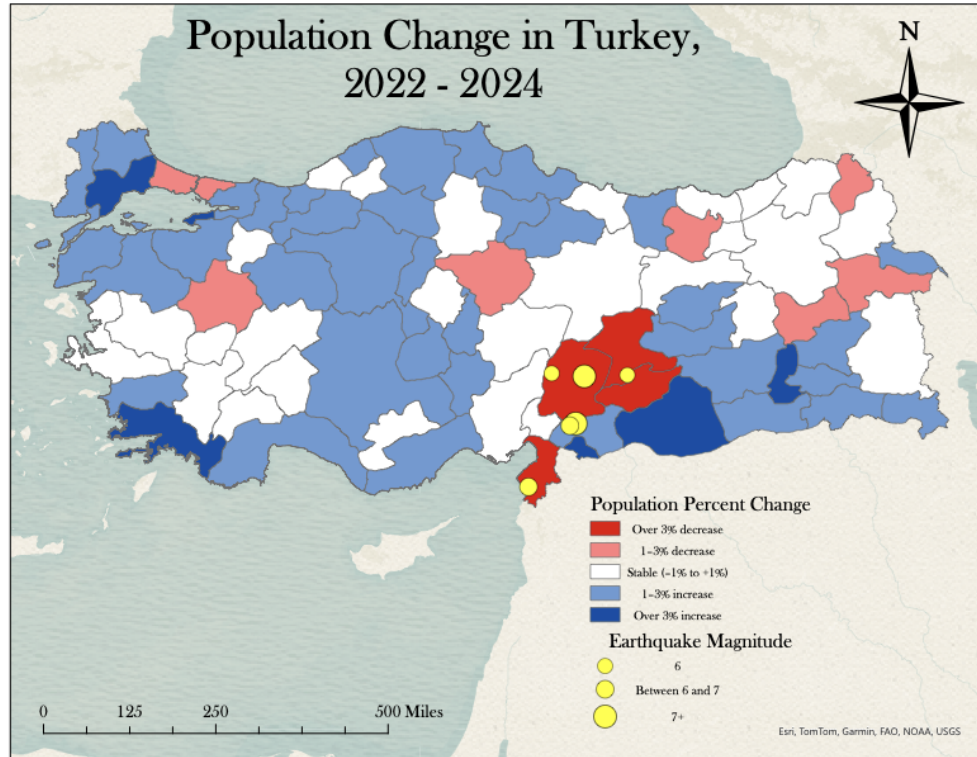
Data Citations

- Earthquake locations, times, magnitudes ([data](#))
- Fault lines and fault rupture ([data](#))
- HOTOSM Turkey Destroyed Buildings ([data](#))
- Areas Impacted ([data](#))
- Internal Migration patterns post-earthquake ([data](#))