

# The Salience of Disaster: How Experience Outweighs Information in Pricing Earthquake Risk

Hilmi Buğra ABBASOĞLU – Burak KALKAN  
Koç University



SSRN

## Why Earthquakes?

- Sudden and unpredictable
- No seasonal pattern or advance warning
- Risk is **known ex ante** but rarely experienced
- Minimal anticipatory behavior or selective migration

## Research Question

- **Do markets price natural disaster risk only after it becomes salient?**

## Data Sources

- Housing prices: Monthly county-level listings (Jan 2018 – Aug 2024)
- Seismic risk: Official hazard maps (1996, 2018)
- Insurance: Policy issuance and renewals
- Social ties: Hometown origin data
- Demographics: Education, socio-economic index, housing supply
- Voter registration
- Coverage: 350 counties, >80% of Turkish population

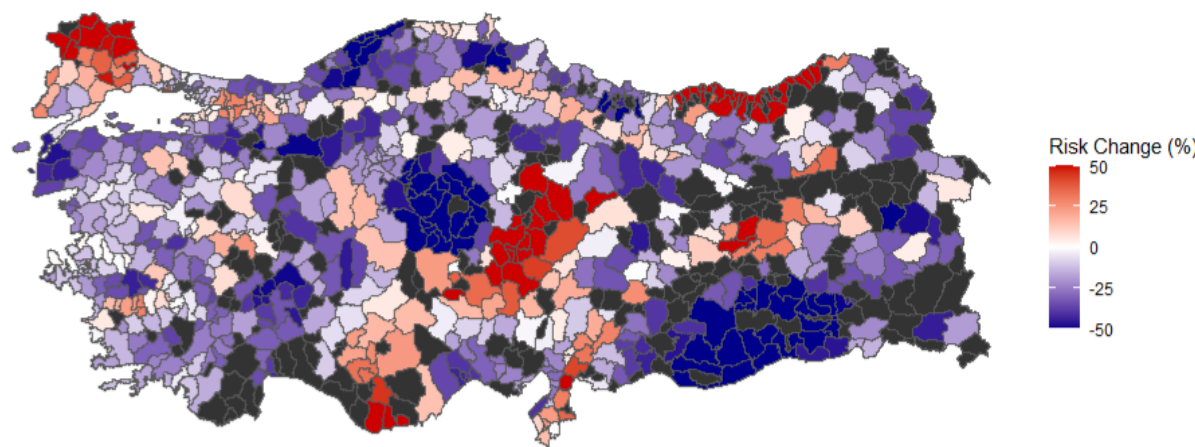


- The 2018 earthquake hazard map update had **no effect** on housing prices or insurance.
- After the 2023 earthquake, high-risk counties reprice sharply, despite no physical damage.
- **1 s.d. higher seismic risk → 4% home price decline**
- Price declines are larger in socially connected counties.
- Insurance uptake: increase in new policies post-earthquake
- Robustness: No evidence of migration-driven demand shifts

## Two Exogenous Shocks: Information vs. Experience

### 2018 Earthquake Hazard Map Revision

- Official nationwide revision of seismic risk (PGA)
- Publicly released, scientifically rigorous
- Changes risk classification across counties
- Purely probabilistic information



$$\text{HomePrice}_{ct} = \alpha_c + \gamma_t + \beta \cdot (\text{Treatment}_c \times \text{Post}_t) + \varepsilon_{ct}$$

$$\text{Treatment} = (\text{NewRisk}_c / \text{OldRisk}_c) - 1$$

	Home Price	Home Price	Home Price	Home Price
$\Delta \text{Risk} \times \text{Post}$	0.338 (0.33)	0.399 (0.32)	0.310 (0.38)	0.422 (0.33)
Average home size (m <sup>2</sup> )		4.933 (3.64)	5.430 (4.54)	4.594 (3.56)
# of home sales			-0.104 (0.07)	
Occupancy permit				-0.000 (0.00)
Observations	5,040	5,040	4,481	4,846
R-squared	0.979	0.980	0.982	0.980
County FEs	Yes	Yes	Yes	Yes
Month $\times$ Year FEs	Yes	Yes	Yes	Yes

#### No effect on:

- Home prices
- Rent prices
- Transaction volumes
- Earthquake insurance uptake

#### Null effects persist:

- In high-risk counties
- In high-income counties
- In highly educated counties
- In mortgage-financed transactions

**Abstract probability updates are not salient to trigger perceived risk.**



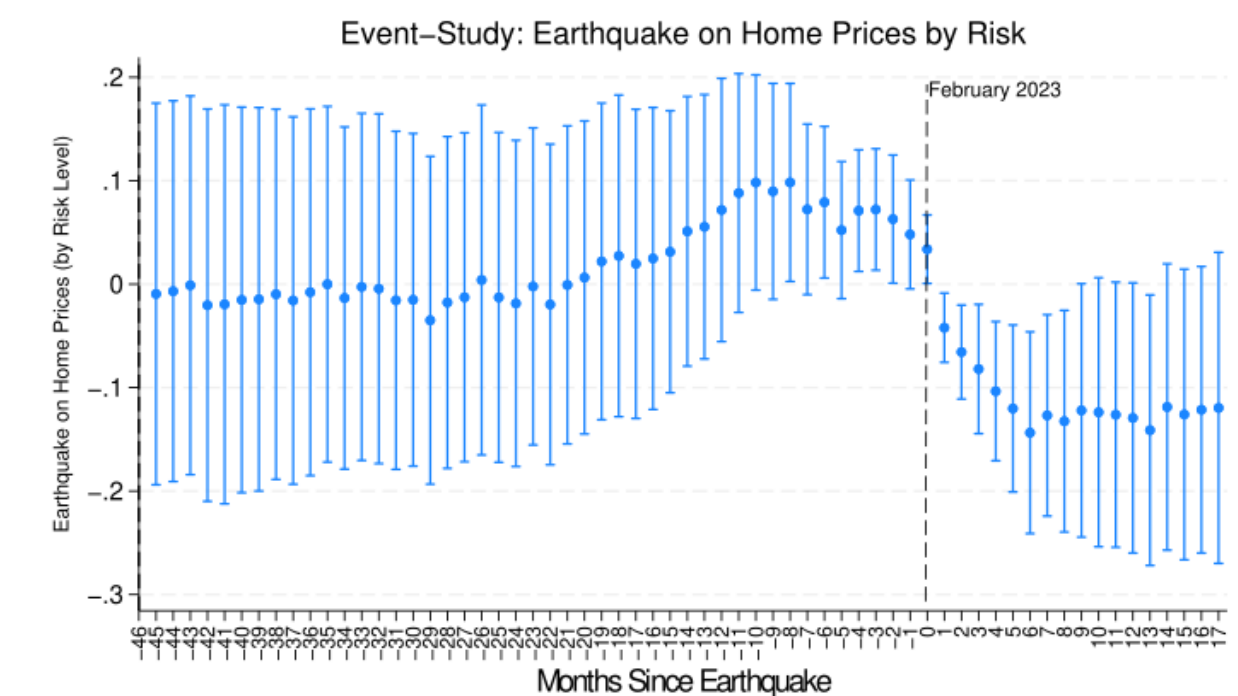
Abstract Probability



Perceived Immediacy

### 2023 Türkiye Earthquake

- Unexpected, catastrophic (50,000+ fatalities)
- Local physical damage, national psychological impact
- No change in underlying risk outside affected region
- Pure experience-driven salience



	Home Price	Home Price	Home Price
Risk $\times$ Post	-0.128** (0.05)	-0.177*** (0.06)	
Risk (PGA)		0.259 (0.20)	
Average home size (m <sup>2</sup> )	0.000 (0.00)	0.005*** (0.00)	
New construction		0.007* (0.00)	
Occupancy permits	0.001* (0.00)	0.000 (0.00)	
Distance $\times$ Post			-0.000 (0.00)
<i>Standardized Coefficients</i>			
Risk $\times$ Post	-0.039*	-0.059**	
Risk (PGA)		0.072	
Comparable area	0.005	0.177***	
New construction		0.047	
Occupancy permits	0.008	0.002	
Observations	22,399	18,199	22,399
R-squared	0.978	0.787	0.978
County FEs	Yes	No	Yes
City FEs	No	Yes	No
Month $\times$ Year FEs	Yes	Yes	Yes

$$\text{HomePrice}_{ct} = \alpha_c + \gamma_t + \beta \cdot (\text{Risk}_c \times \text{Post}_t) + \varepsilon_{ct}$$

## Social Spillover & Network Effect

	Home Price	Home Price
Family Ties $\times$ Post	-0.192 (0.26)	0.574*** (0.20)
Risk $\times$ Post		0.010 (0.05)
Risk $\times$ Family Ties		0.000 (0.00)
Risk $\times$ Family Ties $\times$ Post		-2.733*** (0.63)
Observations	22,399	22,399
R-squared	0.978	0.978
County FEs	Yes	Yes
Month $\times$ Year FEs		Yes

