

# Beyond building damage: Business struggles, business resilience, and women entrepreneurs during the 2023 Kahramanmaraş Earthquake Sequence

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**Learning From Earthquakes**

Increasing community resilience through earthquake investigations

# Overview

- EERI LFE Business Resilience Reconnaissance
  - Virtual
  - Gaziantep business women stories
- Collaborative study with Women Entrepreneurs
  - Survey and roundtable methodology
  - Findings about business closures, recovery challenges and strategies, lessons learned
- Conclusion
  - Takeaways on methods and functional recovery
  - Research next steps
  - LFE Business Resilience directions

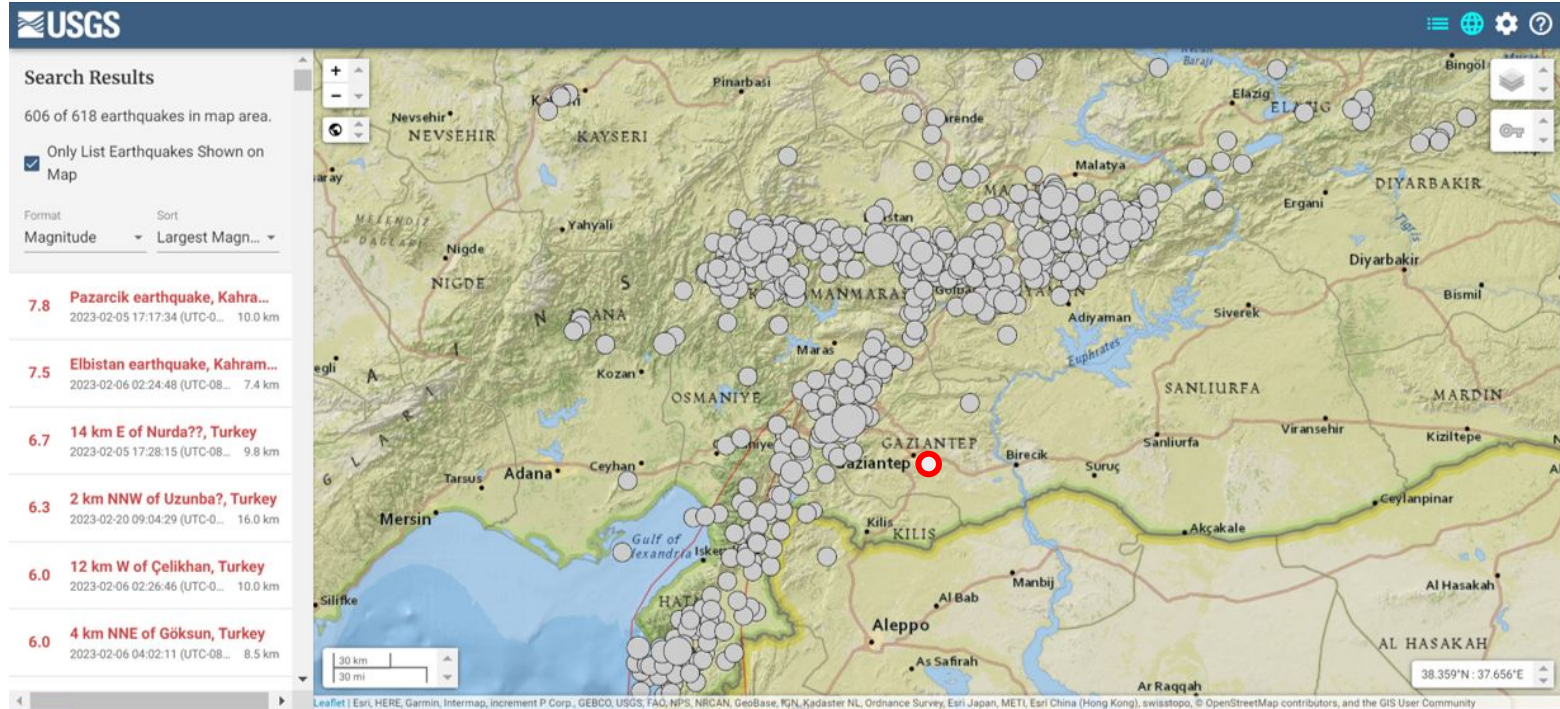


Historic Gaziantep Castle Damaged

Creator: Anadolu Agency | Credit: Anadolu Agency via Getty Images  
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# Kahramanmaraş Earthquake Sequence 2023-24

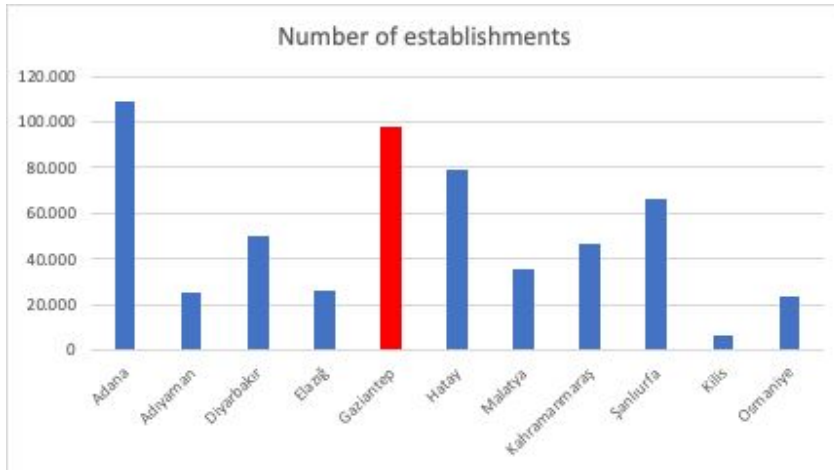
Earthquake sequence, Feb 6, 2024 (largest on top) (Source:



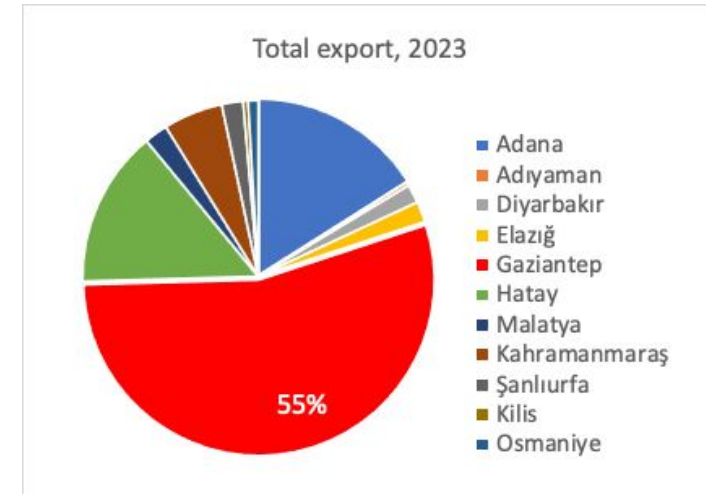
# Case Study: Gaziantep

## Gaziantep province

- Population: 2,164,134
- GDP per capita: 8,725 \$
- Highly industrialized, leading economic position in the region



Source:  
TURKSTAT





# Virtual Reconnaissance

- Supply chain & port fire
- Gas and electric outages
- Effects on key industries e.g., steel
- More damage to residential than commercial/industrial buildings

İskenderun Port Fire  
burned for 2 days



# Stories from Informal Interviews

- US specialist in post-conflict and humanitarian program introduced us to two businesswomen in Gaziantep city
- 2 months after
  - Confusion about the response
  - Damage, customer loss
  - Unpreparedness and no assistance
  - Exhausted from feeding, housing, helping employees
  - Communication outage and sewage problems
  - Agriculture, schools, carpet making
  - Migration and culture shift
- 8 months after
  - “Back to normal” in city, not suburbs
  - Labor and housing shortages and rent increases
  - Building assessment competition and demanded by customers
  - Unsafe perceptions & heat deterred tourism & business travel
  - Stresses of aftershocks and inflation
  - Concern about Istanbul and construction-based economy



*Gaziantep city center damage*

*“Hope the lessons will not be forgotten..Have to be reminded”*

*“Joke in Turkey, they are like cockroaches, it’s really hard to kill us.”*

# Collaboration

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Ezgi Orhan, Ph.D.  
Cankaya University,  
Turkiye



ORHAN, E. (2014) The **role of lifeline losses in business continuity** in the case of Adapazari, Turkey, *Environmental Hazards*, 13(4).

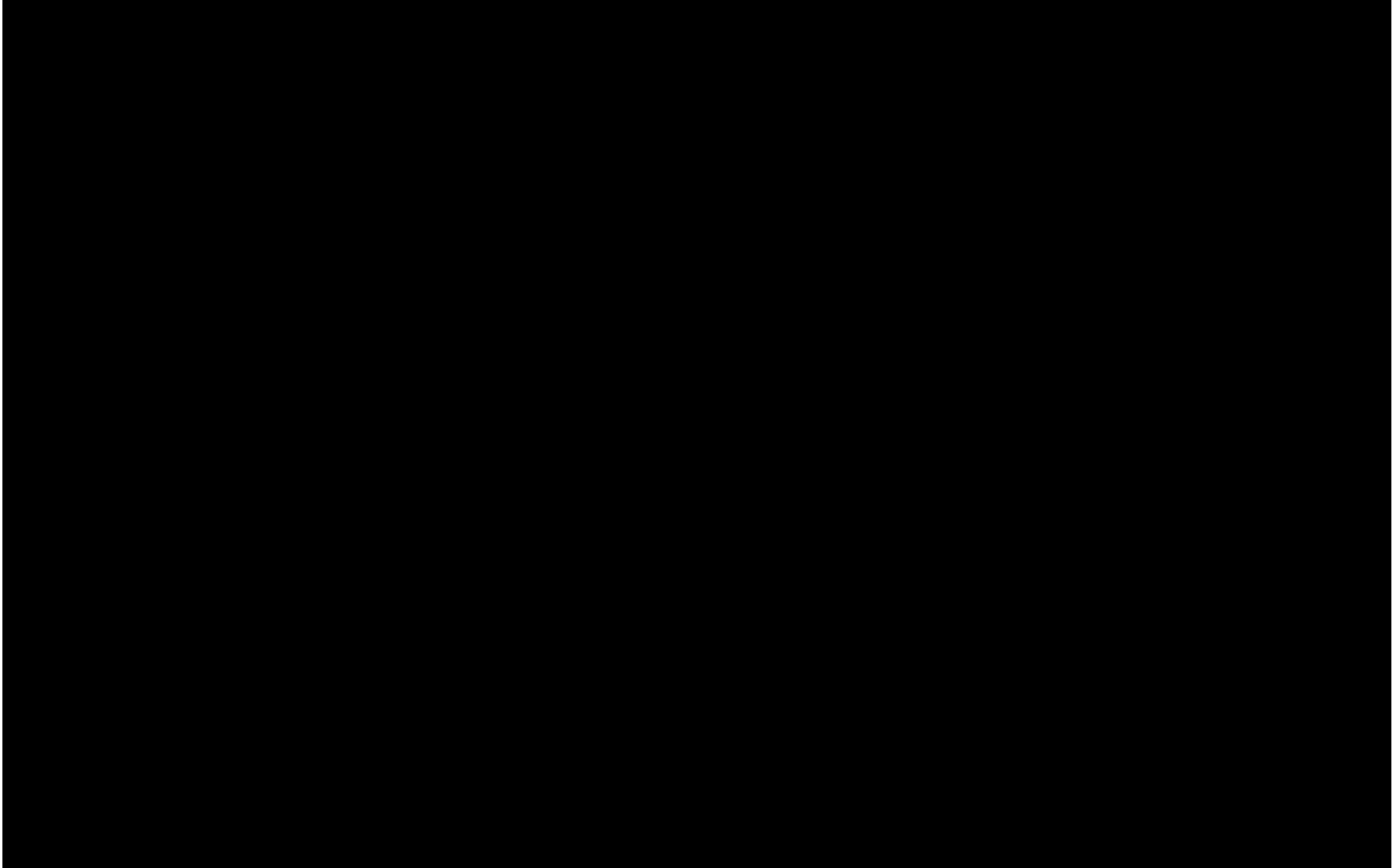
ORHAN, E. (2015) The consequences of security cognition in **post-disaster urban planning practices** in the case of Turkey, *Natural Hazards*, 76(1).

ORHAN, E. (2016), **Urban spatial structuring following disasters**: Empirical findings from location choices of businesses in Adapazari, Turkey, *Journal of Risk Research*, 19(7).

ORHAN, E. (2016), Building the community resilience: **Lessons from business preparedness** in the case of Adapazari, Turkey, *Disasters*, 40(1).

ORHAN, E. (2016) **Lessons learned from businesses to ensure community level recovery** in a post-disaster period: A case from Adapazari, Turkey, *Natural Hazards Review*, 17(1).

- What insights are offered by the affected firm experiences in business disaster recovery?





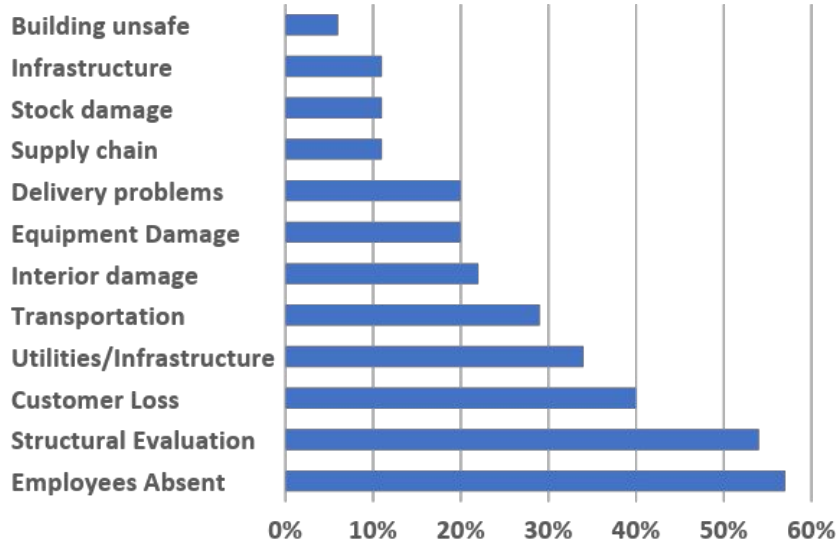
# Findings and Insights across Survey and Roundtables

Major Findings	Structural & Site	Network	Institutional	Human	Economic
Business Closure	Damage (slight to total) Neighboring impacts	Utility shutoffs, road damage, port fire, limited transportation services	Delayed inspections; changing assessments	Employees not coming to work (many reasons), fear of aftershocks	Delayed or refused insurance, lacked information or not eligible for programs
Challenges and Needs	Impacts not stable (aftershocks, flooding, cold); higher rents	Gas inspection system not adequate or timely	Slow to respond; closure of courts, Schools closed, used for shelter	Need to support families; traumatized (safer living in cars)	Higher operating costs, wages; customer refunds, lawsuit
Recovery Strategies	Some relocated to vineyard homes, few relocated their businesses (too costly)	Recovery relies on power, gas and water to begin	Limited aid from government and nonprofits; advantage of industry park	Assistance from family and to employees and their families	Personal assets (eg cars), savings; a few commercial loans. Some up- or down- sizing
Lessons	Newer buildings did better, rebuild stronger; housing vulnerable	Advanced planning for inspection and implementation	Wider eligibility needed for aid; improve building inspection system	Those providing support need support, women have unique roles	Firm networks can support each other and the broader community

# What caused business disruption, and what role did building damage play?



## Survey responses on why businesses did not operate



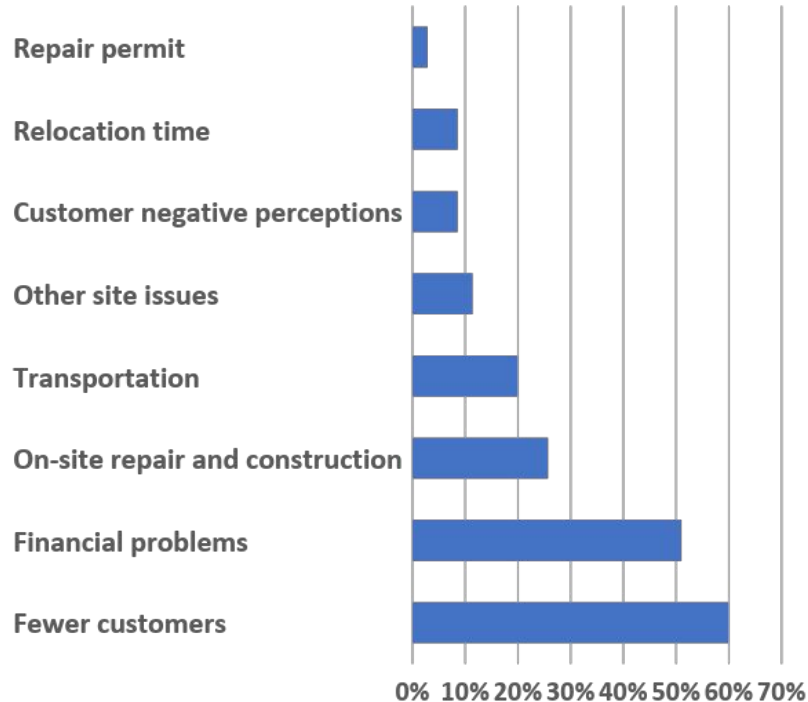
## What roundtable participants said

- We couldn't manage much from home because there was **no internet for the first 3-4 days**.
- The **building inspection report** came out as undamaged. However, **electricity, water and natural gas were not provided** for a long time.
- I did not lose any employees, but as a whole industry, we experienced a **loss of patients**.
- ...**disruption continued due to employees**. There are people who come to work from the villages through the Islahiye-Nurdağı road. ... Apart from this, **we were also affected by the major damage in Iskenderun Port**.

# Challenges as Businesses Tried to Recover



## Survey responses on main problems faced after the earthquake



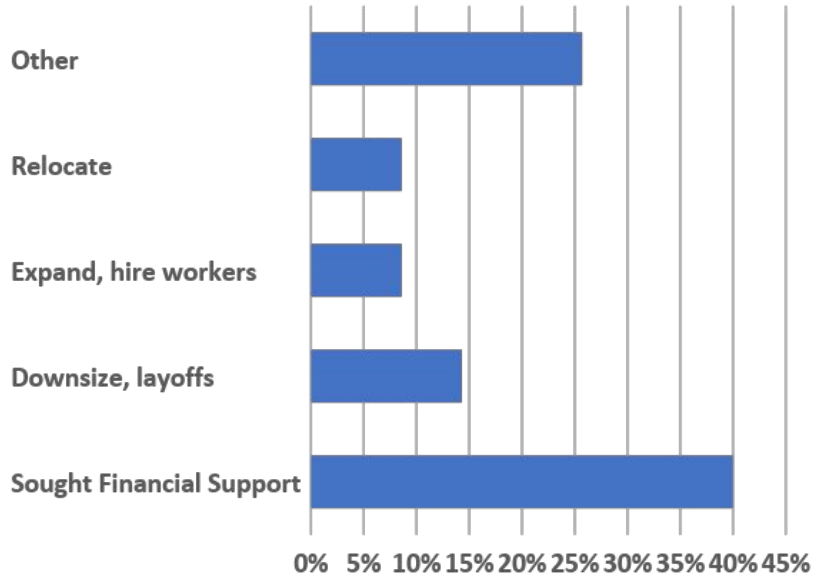
## What roundtable participants said

- ...my factory remained closed for 2 months. Even though I couldn't sell, **banks and other creditors did not postpone payments.**
- I lost my job, ...I had not rehabilitated myself psychologically, **I was also hit financially. Then I was hit by inflation.**
- Employers somehow took care of their employees, paid their salaries, and found a place to stay, but **the employers were not taken care of.**
- As a woman in the business world, after the disaster, I had the **obligation to take care of children** and schools were closed.
- I ...went out to distribute aid to ...Kahramanmaraş, Hatay and Nurdağı regions. .... I paid for it [gasoline, staff salaries] all myself. **I spent all my savings.**
- Our **customers naturally started to decrease.**(B9)
- After the earthquake, most of the flights and tour programs, and **holiday plans were canceled** (A1)

# Recovery Strategies



## Survey responses on recovery strategies



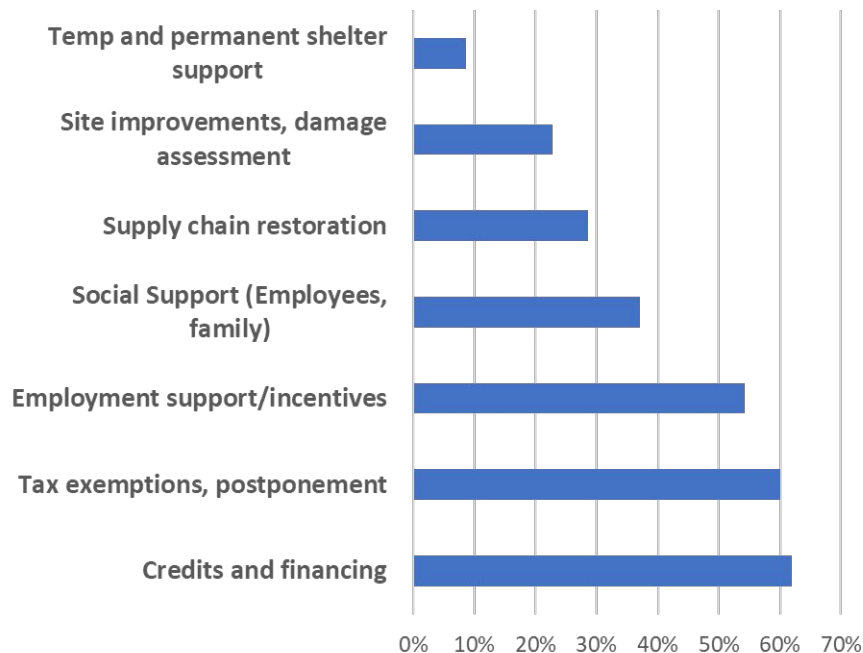
## What roundtable participants said

- **...we fixed all the equipment** after the earthquake. We could not provide education for about 3 months, and **3 months later we started distance education**. My students went to different provinces,...
- 'Since we were in the construction industry, construction was not allowed anyway.... We were able to return to our normal life after about six months. In fact, after the 6-month period, **our work has increased compared to before the earthquake**, because the construction needs have also increased.
- **Since Gaziantep is an industrial city, the problem of infrastructure provision here (2nd OIZ) was solved in a very short time.** It was given to OIZ faster.
- I closed my business, then continued in the wedding industry but **opened a bridal shop**.... While I was previously an employer, now I have to **work alone**.
- We went to the Chamber of Commerce, they say we support **newly established businesses**. Chamber of Industry supports **only industrialists**.
- It was determined that the structure was undamaged. Even **though my financial loss was huge, I could not benefit** from this [earthquake damage] support.

# What else do businesses need to recover?



## Survey responses on additional needs



## What roundtable participants said

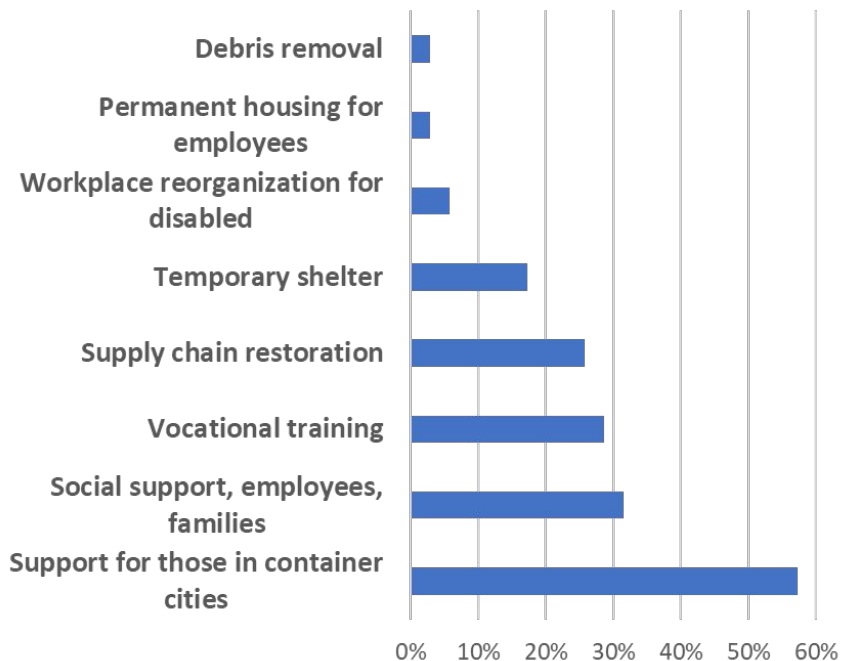
- The Psychiatric Association and the Psychologists Association have done a lot of work, but first, people's **shelter and safety** must be ensured.
- We can recover faster if we are **supported financially**.
- The government has now introduced something called 'unemployment insurance'. No one wants to work to benefit from the insurance. **If the state provided support to us, we would hire employees.**
- Support must be provided from the state so that such structural changes can take place. Especially for us, government should develop particular **solutions for woman entrepreneurs.**



# Community Support



## Survey responses on business support for community recovery

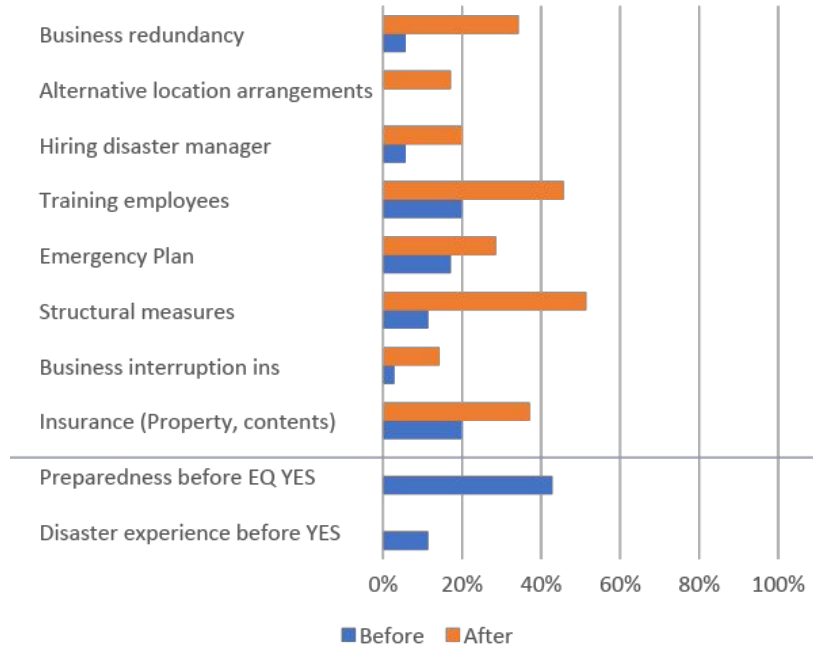


## What roundtable participants said

- Being a member of GAGIKAD kept us together and we **did not feel alone** in this process. It's a great thing to know about each other.
- We are ready to participate in any kind of **cooperation**. I think **female entrepreneurs** should be supported more, this does not necessarily have to be financial support.
- As an association, we rehabilitated ourselves by going to the field and **providing aid** to those in need. The **solidarity** between us kept each other alive.
- My father's company produces materials such as disposable surgical drapes... We **donated the products we had in stock to the university**. The professors at the university hospital called and said 'I need an orthopedic set urgently.'
- Now we are trying to **support each other** by advertising and promoting our members.
- (moderator) Let's take it to the next stage, and explain to local and central administrations and international organizations the expectation here. **Let's make your collective voice heard.**
- **This is the first time someone has listened to us. Thank you very much.**

# Preparedness Before and After the Earthquakes

## Survey responses on preparedness



## What roundtable participants said

- ...in Japan ...they educate everyone from childhood and raise awareness.
- "I think an emergency action plan should be made for these stations. ...**external teams that intervene in the station must be included** in those ...plans."
- **No one was prepared.** Schools had drills but children didn't understand them.
- Before the earthquake, **I do not think there would be an earthquake in Gaziantep**, since it was always talked about as if Gaziantep is safe. That's why we didn't take any precautions
- to substitute the energy outages we could have a generator. But, the **building management did not allow residents to have a generator** because it made noise. For this reason, we did not take any precautions regarding the electricity breakouts

# Lessons from the Roundtables



## Financial

- “At first, cash was needed the most, but we didn't have much.”
- We had earthquake insurance...but insurance companies did not pay for 5-6 months
- ...that we need always to set aside some budget, and I realized that I needed to have a **backed-up savings**.

## Data and Communications:

- We transferred all data to a **central system**. I can follow the data of all stations online. I can monitor the field, the status of the stations and the team. This earthquake taught us this.
- We have a **WhatsApp** group for the first communication with the employees, I sent a message from there for the first communication.

## Employee Retention

- The **government** could have supported our employees and their insurance could have been paid.
- Even though the minimum wage was increased, I gave employees 2 minimum wages. ... At that time, instead of making a profit, I spent twice as much as I earned.

## Business Women's Place

- The great disadvantage of women was this: the main source of income in the family was their husband's business. After the earthquake, men first tended to close their wives' businesses in order to avoid further losses. ...
- Even though we are all businesswomen, most depend on our fathers or husbands.

# Takeaways for Research Design

- I. Complementary approaches of informal conversation, survey, and workshops
- II. Participatory knowledge production
  - Importance of the participatory process: Learn from the participants and their experiences.
  - Narrowing the gap in knowledge caused by a distant setting: collaboration with local researchers and organizations.
  - Reciprocal approach: knowledge learned contributes to local response capabilities.
- III. Women's perspective on business and disaster



# Takeaways for Functional Building Recovery

- **Multi-hazards** of earthquake hazards compounded by precipitation/flood and cold
- **Seasonality** of functional lifeline systems (e.g., gas for heat) affected where people lived and ability to work
- **Content** damage to data and equipment
- Building **inspection**
  - **time** to assess business buildings
  - **skepticism** and loss of customers
- **Gaps** with permitting, inspection, and insurance



“Residents struggle to flee quake-hit Turkish city of Gaziantep”. Source: Al Jazeera, Feb 7 2023



# Takeaways for Functional Community Recovery

1. Functional community recovery is a **balance** of residential and commercial/industrial functional building recovery.

> **Aid policy** incentivising residents to work for economic recovery

2. **People** (employees, customers) need to be functional

- **Health facilities** for physical and psychological treatment
  - Psychologically affected by lost loved ones, feeling unsafe (aftershocks and perceived building safety), survivor's guilt
- Habitable and safe **housing**
- Available child, elderly etc **care** facilities
- **Transportation** infrastructure and services between homes and workplaces

> **Community recovery policies** geographically synchronizing these functionalities with consideration of women participation in the labor market

3. **Business recovery** is crucial to community recovery through care of employees and population in need

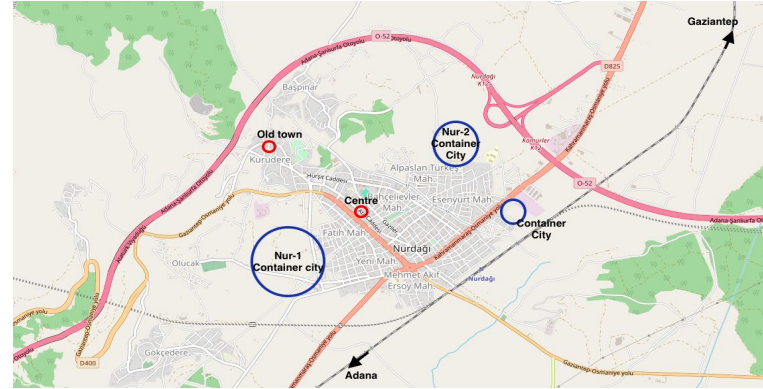


Figure. Distribution of container cities (Source: Open street map, 25.03.2024)


See Poster: Women's labor force participation in the 2023 Kahramanmaraş earthquake-stricken region: The case of Nurdağı, Gaziantep

# Turkiye Business Resilience Research Next Steps


1. **Women entrepreneur** research documentation and dissemination
  - **Journal article** (Earthquake Spectra)
  - **Executive summary** of lessons learned for **local institutions** e.g. Gaziantep Chamber of Commerce.
2. **Women labor participation** research in container city driven by influential business participant (see poster)
  - **Press release** of findings and challenges for **use by the Association** and to share with others in Türkiye.
3. **Webinar** with the cross-national team to discuss the studies
  - > opportunity for **other reconnaissance participants** from US and Türkiye to comment on study and implications for their work.
4. Potential to expand business resilience LFE to more impacted areas

# EERI LFE Business Resilience Directions

- Continuing development of collaborative qualitative and quantitative methods
- Preparing to learn from large US earthquake with reciprocity
- Integrating people, businesses, policies into functional recovery

**Learning From Earthquakes**  
Increasing community resilience through earthquake investigations

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LFE Business Resilience Survey Working Group




Photo: Peggy Sarabandi

Developing new tools for  
resilience reconnaissance

Left: Closed businesses following the 2014 M6.0 South Napa Earthquake.

# Join us for our committee meeting!

EN  ▼




## 2024 EERI Annual Meeting (2024AM)

April 9–12, 2024

Sheraton Grand Seattle, 1400 6th Ave, Seattle, WA 98101

 [BACK](#)

### Learning From Earthquakes (LFE) Business Resilience Working Group Meeting

Wednesday, April 10, 2024 at 12:30 PM–1:30 PM PDT 

Cedar

#### Description

Join us to meet other members interested in business resilience after disasters; learn about our collaboration on business/labor impacts after the 2023 Kahramanmaraş earthquake sequence; and discuss functional recovery from the perspective of business recovery.

This meeting is open to all 2024AM attendees. You are encouraged to pick up your lunch to eat in the meeting room.