University of Colorado **Boulder**

**Capturing Disaster Data Before It Disappears:
The Quick Response Research Award Program**

50th Annual Natural Hazards Workshop
Wednesday, July 16, 2025

NSF Award #1635593

Natural Hazards Center

Presenters

Jessica Austin

Natural Hazards Center

Sara O'Connor

California State University, Long Beach

Burçak Basbug

Middle East Technical University

Julia Crowley

University of Missouri-Kansas City
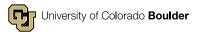
Michaela Howells

Colorado State University

Danielle Rivera

University of California Berkeley

University of Colorado **Boulder**

Quick Response Research Award Program Overview

1986 Program Established

$196,128 Funding Awarded, 2020-Present

With the support of the **National Science Foundation**, the Natural Hazards Center **Quick Response Research Award Program** provides funds and training for eligible researchers to collect perishable data in the aftermath of extreme events to document disaster before memories fade and physical evidence is erased. Funded researchers receive editorial support to publish brief abstracts and reports on the Natural Hazards Center website.
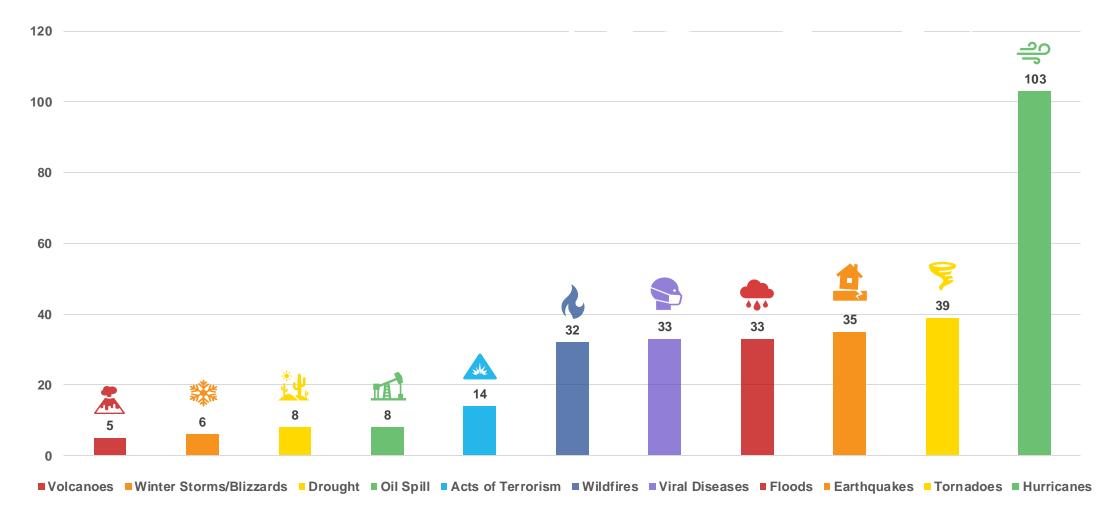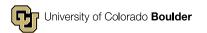
10 Special Calls for Proposals, 2018-Present

$1,000 to $5,000 Award Range

246 Proposals Submitted, 9/2018-Present

359 Reports Written, 1986-Present

629 Researchers Supported, 1986-Present

221 Institutions Represented, 1986-Present

NSF · NATURAL HAZARDS CENTER · University of Colorado **Boulder**

TOP TEN TYPES OF DISASTERS STUDIED

Volcanoes: 5, Winter Storms/Blizzards: 6, Drought: 8, Oil Spill: 8, Acts of Terrorism: 14, Wildfires: 32, Viral Diseases: 33, Floods: 33, Earthquakes: 35, Tornadoes: 39, Hurricanes: 103

POPULATIONS OF INTEREST STUDIED

Children

Students

Women

Older Adults

Renters

People With Disabilities

Racial Minority Populations

TOP TEN KEYWORDS

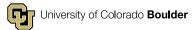| Keyword	Value
Government	81
Mental health	66
Behavior	61
Vulnerability	61
Information	55
Evacuation	37
Collaboration	36
NGO	34
Community	31
Media	31

University of Colorado **Boulder**
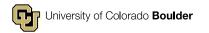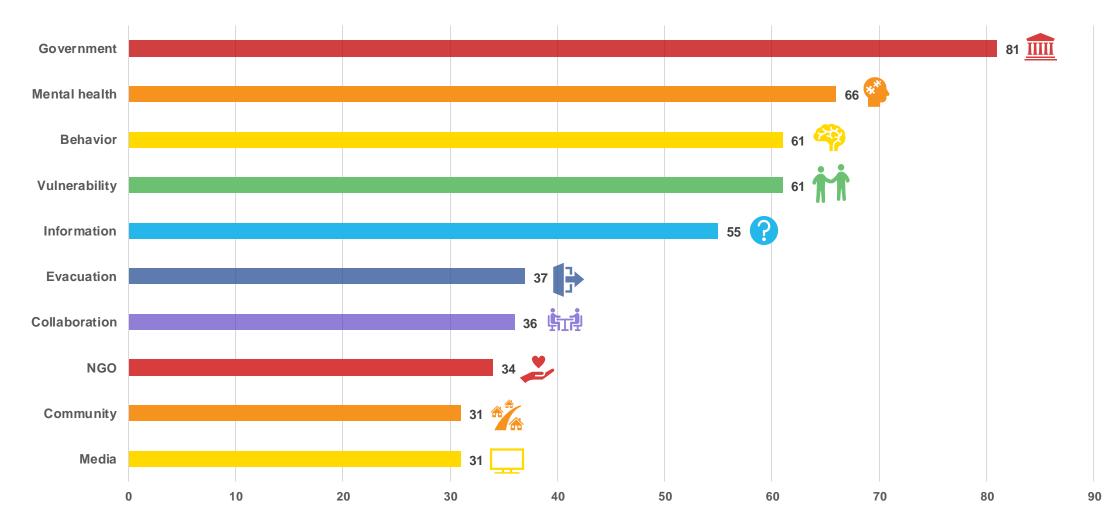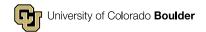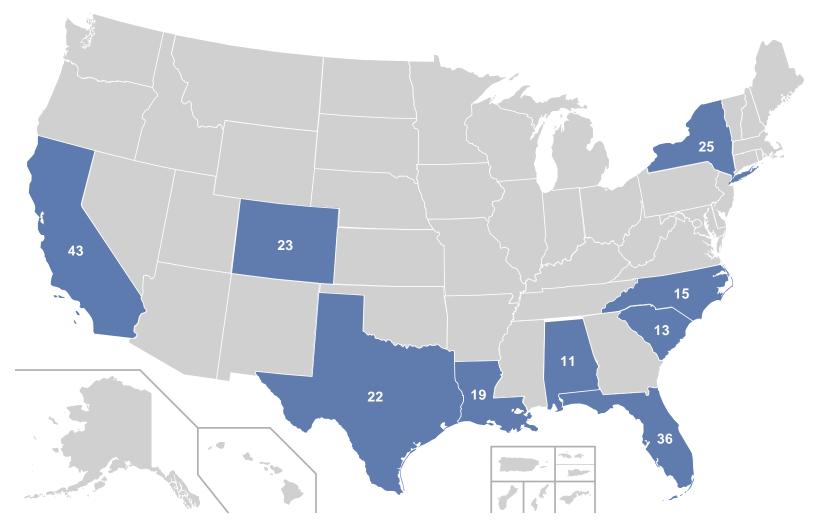
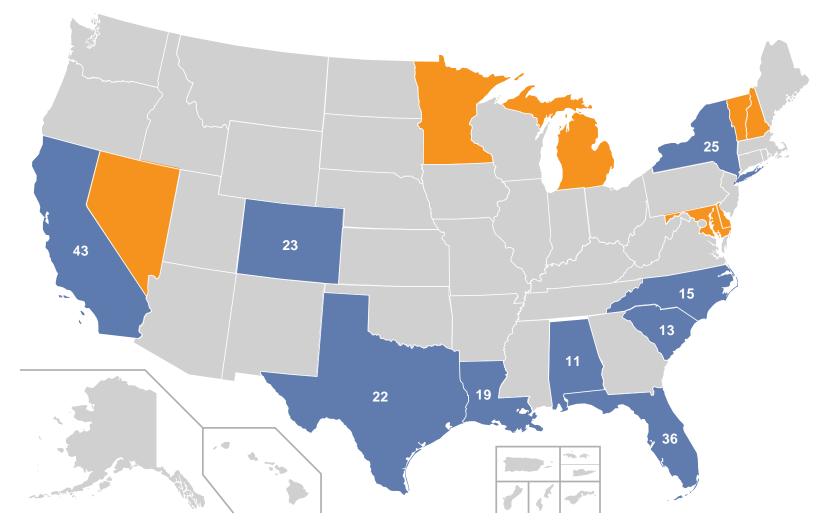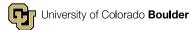# EVENTS STUDIED: STATES WITH THE MOST REPORTS

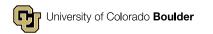# EVENTS STUDIED: STATES WITH THE MOST AND ZERO REPORTS
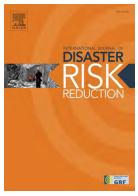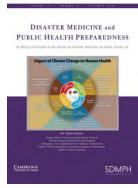
PUBLICATIONS

PUBLICATIONS
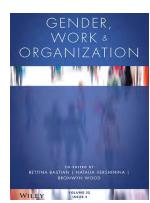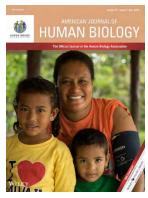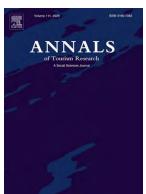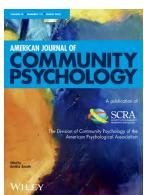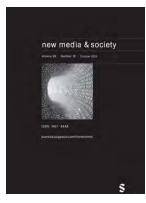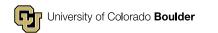
PROGRAM WEBSITE VIEWS

22,943
QR Award Program Landing Page

15,037
QR Reports Landing Page

6,587
Recently Awarded Projects Page
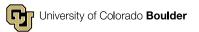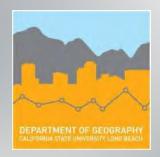
123,772
QR Award Program Report Views

Capturing Quality Qualitative Data

Lessons learned from 2 Quick Response Projects in Malibu, California

Presented By: Sara O'Connor

July 16, 2025

Background

2018 Woolsey Fire
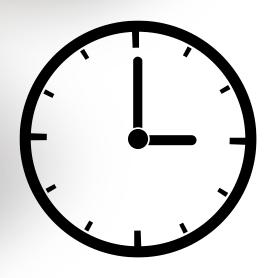
2019 Quick Response Report

2024 Certification of the Brigade

2024 Broad and Franklin Fires

2025 Palisades Fire

2025 Quick Response Report

Lessons Learned

Time-Stratefied Interview Sample

Focusing on hope and adaptation

Timing Interviews

Quality data does not exist in the immediate aftermath

Timing interviews based on interviewee preparedness

Knowing when to change interview plans

Focusing on Hope

Ask people about processes and look towards future

Shape research towards aspirations

Be a vehicle for implementing community based visions
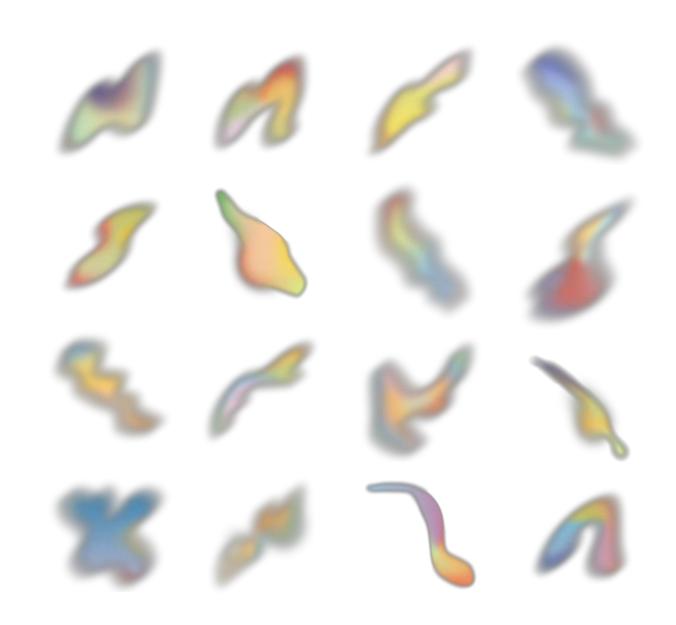
What do you gain?

Ethical Research and High

Quality Data

Be a part of a community's

journey forward

Thank you!

Stay in touch!
Sara.OConnor@csulb.edu
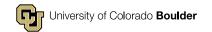
February 6, 2023 Kahramanmaraş Earthquakes & Follow-up

Burçak Başbuğ,
Professor of Disaster Science and Statistics,
Middle East Technical University, Ankara-Türkiye

July 16, 2025

University of Colorado **Boulder**

February 6, 2023 Kahramanmaraş Earthquakes: Grants 2023 & 2024

Being in the field! Reality!

- Empathy
- Support
- Knowledge sharing
- Learning
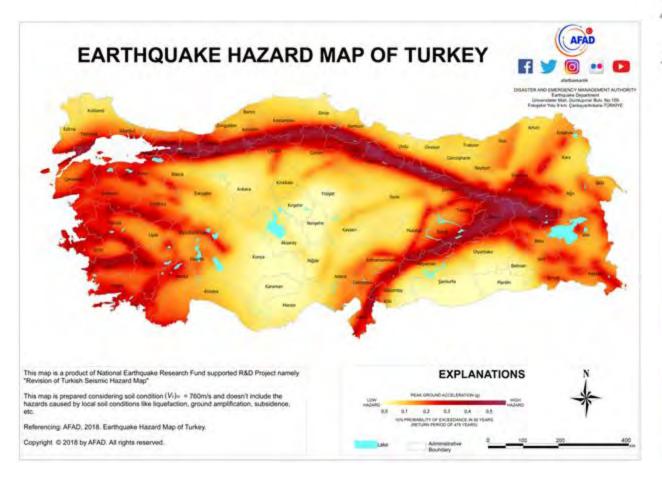
Seismicity of Türkiye
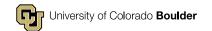
List of Earthquakes in the Region

Year	Place
BC 130	Antakya
BC 69	Antakya
AD 35	Antakya
115	Antakya
245	Antakya
526	Antakya
713	Antakya&Aleppo
1138	Antakya
1760	Antakya&Aleppo
1822	Antakya
1872	Antakya&Aleppo, Damascus, Antep
...	
2023	
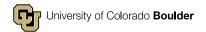
Wrap-Up

- Centennial Earthquake with two earthquakes at the same province, on the same day, 9 hours apart!
- 11 provinces were hit directly!
  - Hatay, Kahramanmaraş, Adıyaman, Gaziantep …
- Almost 14 million population been affected! …
- Multi-hazard/Cascading events: Flood, fire, epidemic followed!

University of Colorado **Boulder**

Acknowledgements

- Prof. Louise K. Comfort, Prof. Süleyman Çelik & BB (March 2023) : for response, work has been published in the Earthquake Spectra - NSF Award #1635593
- October 2024: for recovery, SSEER (Team leader Prof. Louise K. Comfort) & EERI (Team leader Mike Mieler) joint reconnaissance trip
- Prof. Lori Peek and the Quick Response Award Program
- AFAD, all other stakeholders and the community!

University of Colorado **Boulder**

By: U.S. Department of Defense
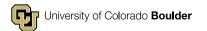
Disaster Debris Management

Julia Crowley, Ph.D., AICP
University of Missouri-Kansas City

University of Colorado **Boulder**
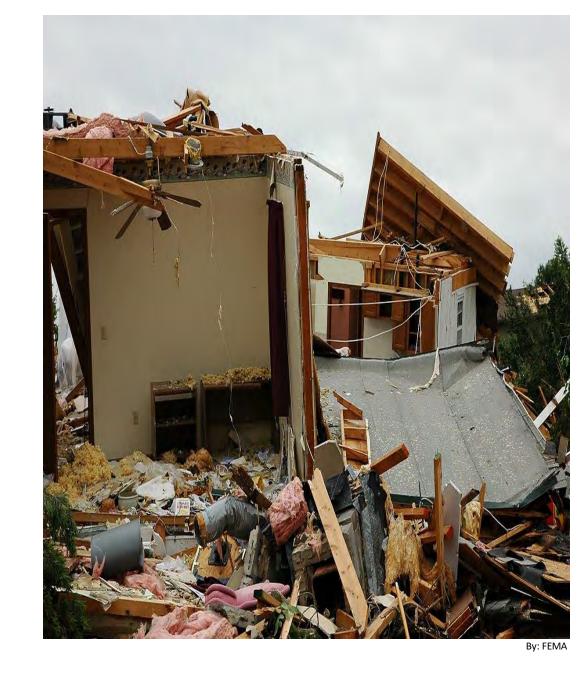
Disaster Debris

"Scattered items and materials either broken, destroyed, or misplaced by a disaster" (FEMA 2012, p. vii).

By: FEMA

University of Colorado **Boulder**

Research Questions
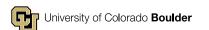
1. How did pre-disaster debris management planning impact the response and recovery phases of the Maine floods of December 2023?

2. What were the most significant debris management challenges of the Maine floods of December 2023?

By: FEMA

By: FEMA

Main Findings

Debris management planning
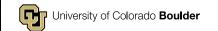
Home rule

Resource constraints

Concerns over more extreme weather events

Additional Funding and Research

- FEMA Higher Education Program Research Award

- Study on local planning resource constraints

- Crowley, J. (2024). Disaster Debris Management and the Maine Floods of December 2023. *International Journal of Disaster Risk Reduction*, 104911.

Acknowledgements

Hurricane Florence

Landfall September 14th, 2018

Questions:

- Role of disasters in prenatal stress?

- Disasters, prenatal stress, identity?

- Built on pre-existing community relationships

- Participant observation – additional trauma?

Methods

- Interviewed 37 in person (45 online)
  - Collected hair sample (cortisol)
  - 1 centimeter = 1 month

Before Storm

Interview

Outcomes and Results

Unmarried Women

- Higher stress before and after hurricane
- Both perceived and biological stress
- Even with same level of distress

Research Resources ▾

Effects of Stress on Pregnancy

Outcomes After a Hurricane

Michaela Howells
Colorado State University

Kelsey Needham Dancause
University of Quebec at Montreal

Publication Date: 2021

Abstract

Natural disasters can have broad sweeping effects on the physical and psychological health of populations. Pregnant individuals may be at particular risk from these disasters. Following

Follow-Up:
What impact does this stress have on pregnancy outcomes?

Follow-Up: Populations Level Approach

- N = 7,240 pregnant people

- All who were pregnant on landfall date

  - Trimester of pregnancy?

  - Risk of poor birth outcomes:
     Birthweight, gestation length, APGAR

- Comparison
   Same date, 1 year and 2 years prior
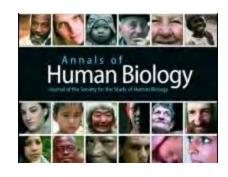
Implications and Applications

Disasters Increases:

- Prenatal stress across groups

- Risk of ALL poor birth outcomes

Greatest Risk

- 1st trimester

- Unmarried individuals

Key Take Aways

- Hidden risk community = unmarried

- Refocus disaster response = 1st trimester

MedNorth HEALTH CENTER

Planned Parenthood South Atlantic

MedNorth HEALTH CENTER

UQÀM Université du Québec à Montréal

Colorado State University

BINGHAMTON UNIVERSITY STATE UNIVERSITY OF NEW YORK
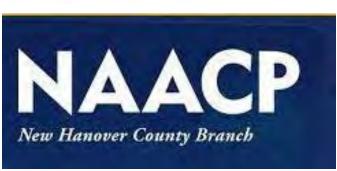
eliminating racism empowering women

ywca

Michaela.Howells@colostate.edu

UNCW

NAACP

New Hanover County Branch

UNCW

Before The 2023
Winter Storms

Our QR Proposal

DISASTER EXAMINED
2023 Winter Floods (December 2022 – March 2023)

AFFECTED COMMUNITY
Pájaro Valley of Central Coastal California

TOPICS OF FOCUS
Influences of rural(ity) and unincorporated governance status on equitable disaster recovery

RESEARCH METHODS
Interviews with key officials and community leaders

Participant observation and observant participation of community meetings

Participatory geospatial analyses of flood extents

Toward Equitable Recovery for Unincorporated Areas

Lessons From California's 2023 Winter Storms

Danielle Rivera
University of California, Berkeley

Eliza Breder
University of California, Berkeley

Adrienne Dodd
University of California, Berkeley

Publication Date: 2024

Abstract

One-third of U.S. residents live in unincorporated areas, which are defined by their absence of local, municipal government. However, hazard mitigation and disaster recovery strategies are largely predicated on strong municipal planning. This is problematic for rural, low-income communities of color with high flood risks, which face yet more barriers to receiving planning assistance. This report examines contextual policy and programmatic changes needed to mitigate flood risks and enact equitable recovery in unincorporated areas. Here, the case of the Pájaro Valley in California is examined through the 2023 Winter Storms, a series of atmospheric rivers which passed across the state between December 2022 and March 2023. In the Pájaro Valley, these storms caused persistent flooding and three levee failures. This Quick Response report examines the extent of flooding, its severity, and barriers to equitable recovery in unincorporated areas across the region. Through semi-structured interviews with community leaders and public officials in the Pájaro Valley, flood risk mapping, and observations of planning meetings, we sought to achieve three goals: (1) determine the distribution and severity of flooding in the region's unincorporated areas; (2) identify major barriers to equitable

Report: Quick Response

YEAR(S)
2023-2024
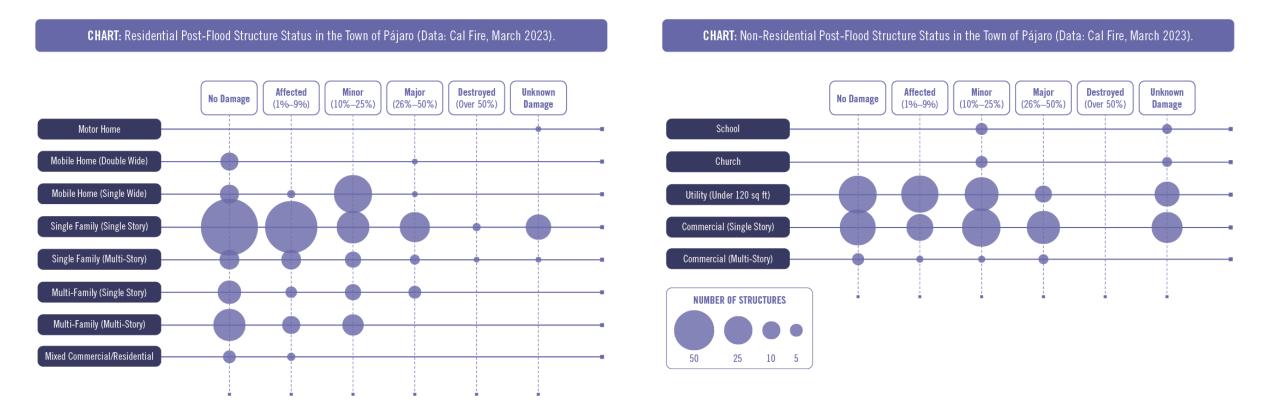
COMMUNITY
Pájaro Valley of California

AUTHORS
Rivera, Danielle Z.; Breder, Eliza; & Dodd Adrienne
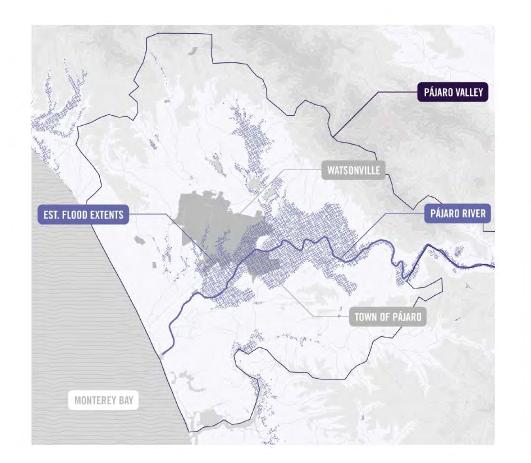
SUPPORT
Natural Hazards Center, Quick Response Grant

CHART: Residential Post-Flood Structure Status in the Town of Pájaro (Data: Cal Fire, March 2023).

CHART: Non-Residential Post-Flood Structure Status in the Town of Pájaro (Data: Cal Fire, March 2023).
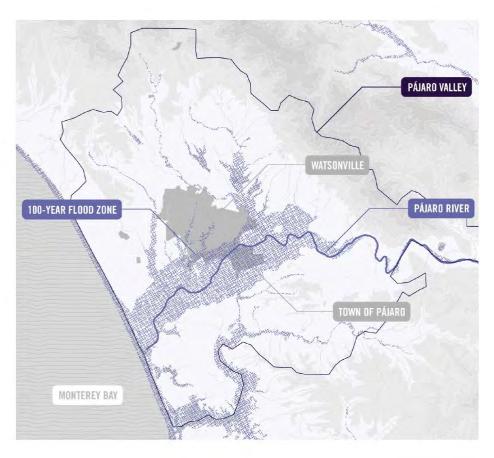
Flooded Structures in Pájaro
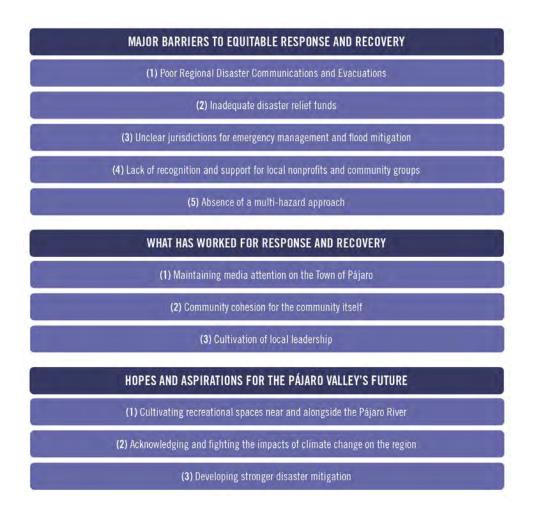
(Data: CalFire, March 2023)

Flooded Areas versus Flood Risks
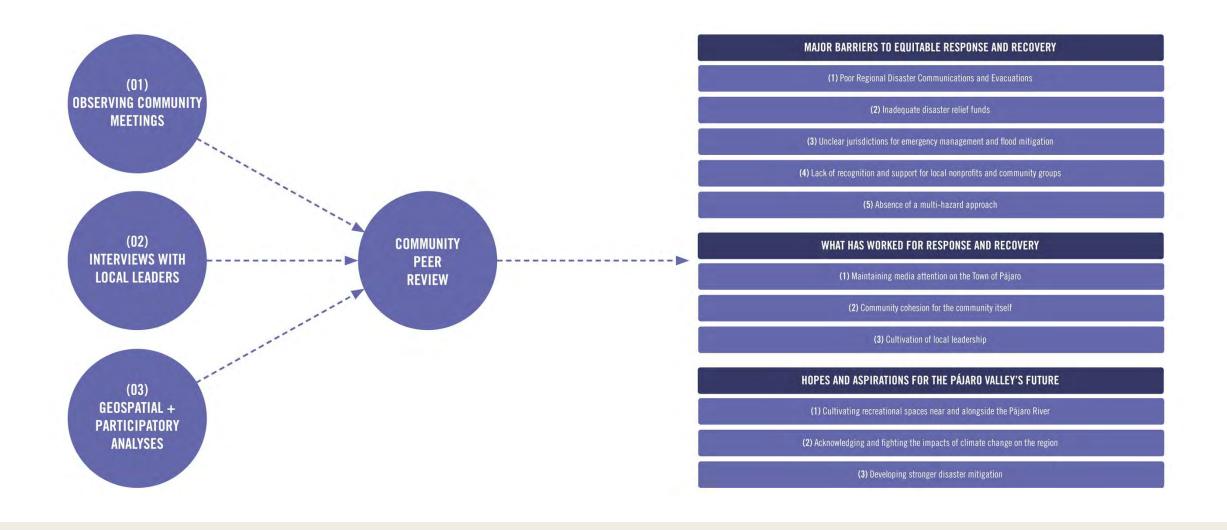
(Data: left - AER, January 16, 2023; right – FEMA, 2023)

MAJOR BARRIERS TO EQUITABLE RESPONSE AND RECOVERY

(1) Poor Regional Disaster Communications and Evacuations

(2) Inadequate disaster relief funds

(3) Unclear jurisdictions for emergency management and flood mitigation

(4) Lack of recognition and support for local nonprofits and community groups

(5) Absence of a multi-hazard approach

WHAT HAS WORKED FOR RESPONSE AND RECOVERY

(1) Maintaining media attention on the Town of Pájaro

(2) Community cohesion for the community itself

(3) Cultivation of local leadership

HOPES AND ASPIRATIONS FOR THE PÁJARO VALLEY'S FUTURE

(1) Cultivating recreational spaces near and alongside the Pájaro River

(2) Acknowledging and fighting the impacts of climate change on the region

(3) Developing stronger disaster mitigation

Core Themes from Qualitative Data

WHAT HAPPENED NEXT

Continuing Efforts through our UCANR Grant and More

Community Peer Review Process

Report:
To the Community

JUST ENVIRONMENTS LAB

EQUITABLE RECOVERY /
\ FOR THE PAJARO VALLEY
AFTER THE 2023 WINTER STORMS •

FEBRUARY 2025 | REPORT TO THE COMMUNITY

YEAR(S)
2023-2025

COMMUNITY
Pájaro Valley of California

AUTHORS
Rivera, Danielle Z.; Breder, Eliza; & Dodd, Adrienne

PHOTO ALBUM
MARJORIE & ISABELLE SECONDO
2009.50.02

LORRAINE SCOTT

STEVE BANKHEAD

TRAFTON

HISTORY — IN GENERAL

FLOODS
Floods, history, news clippings
Flood Control/Flood Statistics
Flood Street Scenes Booklet
Floods, in general, pre 1921
Flood Scenes 1890-1900/1900-1910
Flood 1911/1911-1920/1914
Floods, Pajaro 1921-1930
Flood Scenes 1931-1940/1938
Flood Scenes 1950-1960
Flood Scenes 1950, 55, 60
Floods 1961-1979
Flood Scenes 1980-1989
Floods 1990-1997
Flood 1995, PVHA booklets
Flood Scenes 1998 El Nino
Floods 1999-2022
Floods 2023

Flood Risk Timeline

Pájaro Valley of California – 1850 to 2023

REDESIGNING TO ADAPT TO FLOODS IN UNINCORPORATED AREAS

This project examines the physical and socio-economic complexities involved with planning for flooding in regions with complex jurisdictional challenges. In particular, the project focuses on the Pájaro Valley in California (Valley) to assist in post-flood recovery and reconstruction following the 2023 Winter Storms.

The project investigated the history of the Pájaro Valley's waterways, flood risks, and flood events. Eight archives throughout California were searched providing geospatial data, photographs, maps, news articles, and stories. These data sources were then cross-analyzed to construct an historical ecology of floods and flood risks in the Valley identifying: governance and planning dynamics; different forms of vulnerability to hazards; and the spatial spread of high flood risk.

OUR TEAM

DANIELLE ZOE RIVERA
ANNA SERRA-LLOBET
ELIZA BREDER
ERICA GRASBERGER

OUR PARTNERS

U.S. ARMY CORPS OF
ENGINEERS IN SAN FRANCISCO

JE-L Just Environments Lab

LAU CLIMATE FUTURES GRANT — FINAL REPORT

REDESIGNING TO ADAPT TO FLOODS IN UNINCORPORATED AREAS

Report:
To the Army Corps

JE-L Just Environments Lab

LAU CLIMATE FUTURES GRANT — FINAL REPORT

REDESIGNING TO ADAPT TO FLOODS IN UNINCORPORATED AREAS

JUST ENVIRONMENTS LAB

EQUITABLE RECOVERY /

\ FOR THE PAJARO VALLEY

AFTER THE 2023 WINTER STORMS •

FEBRUARY 2025 | REPORT TO THE COMMUNITY

TURAL ZARDS NTER

ABOUT US   PUBLICATIONS   TRAINING   WORKSHOP   AWARD PROG

Home   About ▾   Open Call ▾   Past Call ▾   Awards ▾   Reports ▾   F

Research Resources ▾

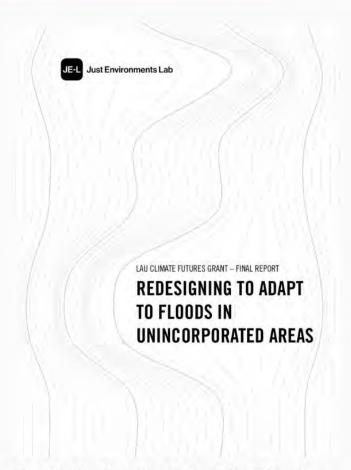**Toward Equitable Recovery for Unincorporated Areas**

Lessons From California's 2023 Winter St

Danielle Rivera
University of California, Berkeley

Eliza Breder
University of California, Berkeley

Adrienne Dodd
University of California, Berkeley

Publication Date: 2024

Abstract

One-third of U.S. residents live in unincorporated areas, which are defined by t municipal government. However, hazard mitigation and disaster recovery strat predicated on strong municipal planning. This is problematic for rural, low-inc color with high flood risks, which face yet more barriers to receiving planning a examines contextual policy and programmatic changes needed to mitigate floc equitable recovery in unincorporated areas. Here, the case of the Pájaro Valley examined through the 2023 Winter Storms, a series of atmospheric rivers whic
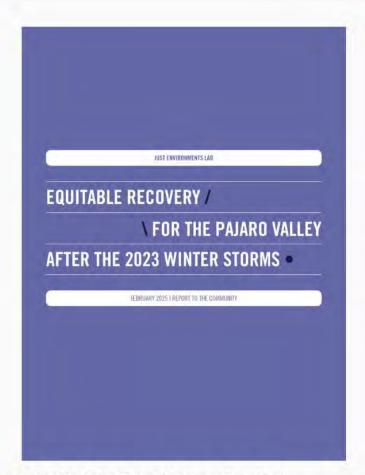
Redesigning to Adapt to Floods in Unincorporated Areas

MAY 2025 - Report for Government Partners and Funders

AUTHORS: Danielle Zoe Rivera & Eliza Breder

Equitable Resilience for the Pájaro Valley After the 2023 Winter Storms

FEBRUARY 2025 — Report for Community Partners

AUTHORS: Danielle Zoe Rivera, Eliza

Toward Equitable Recovery for Unincorporated Areas: Lessons From California's 2023 Winter Storms

JULY 2024 — Report for Grantor

AUTHORS: Danielle Zoe Rivera, Eliza

OUR TEAM!

JUST ENVIRONMENTS LAB | University of California Berkeley

QUICK RESPONSE PROJECT | Danielle Rivera, Eliza Breder, & Adrienne Dodd

UCANR EARLY CAREER PROJECT | Danielle Rivera, Salvador Gomez, & Elizabeth Garcia

LAU CLIMATE FUTURES PROJECT | Danielle Rivera & Eliza Breder

THANKS NHC + NSF!!!

DR. DANIELLE ZOE RIVERA

Assistant Professor | Landscape Architecture and Environmental Planning

Just Environments Lab | University of California Berkeley

dzrivera@berkeley.edu | www.just-environments.org

University of Colorado **Boulder**

THANK YOU

Jessica Austin
jess.austin@colorado.edu

Burçak Basbug
bbasbug@gmail.com

Julia Crowley
jcc45g@umkc.edu

Michaela Howells
michaela.howells@colostate.edu

Sara O'Connor
sara.oconnor@csulb.edu

Danielle Rivera
dzrivera@berkeley.edu

Subscribe Now

Natural Hazards Center