

Active Home Defense During the LA Fires: Health Harms and the Case for Public Health Integration

David P. Eisenman, MD MSHS · Arash Naeim, MD PhD · David Elashoff, PhD · Keren Chen, PhD

UCLA David Geffen School of Medicine

UCLA Center for Healthy Climate Solutions, Fielding School of Public Health

NASEM Wildfire Preparedness, Response and Recovery Series

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Los Angeles Wildfires

January 2025

Archer Fire

Start Date: January 10th, 2025
Burned Area: 19 acres

Hurst Fire

Start Date: January 7th, 2025
Burned Area: 799 Acres

Lidia Fire

Start Date: January 8th, 2025
Burned Area: 395 Acres

Kenneth Fire

Start Date: January 9th, 2025
Burned Area: 1,052 Acres

Eaton Fire

Start Date: January 7th, 2025
Burned Area: 14,021 Acres

Sunset Fire

Start Date: January 8th, 2025
Burned Area: 43 Acres

Palisades Fire

Start Date: January 7th, 2025
Burned Area: 23,448 Acres

San Fernando

Pasadena

Hollywood

Downtown
Los Angeles

Santa Monica



NASA



LA Fire HEALTH Study

The wildfires in Los Angeles County in 2025 have brought devastating loss of life, homes, schools, businesses, communities, and mountain landscapes. Due to the smoke carried many miles by the plumes, the impacts of these fires extend far beyond the burned areas.

To address the need for answers in the community, the Los Angeles Fire Human Exposure and Long-Term Health Study (L.A. Fire HEALTH Study) is working to evaluate which pollutants are present, at what levels, and where, as the concentrations diminish over time and to assess the health impacts of the wildfire emissions.

[About the Study →](#)[Resources →](#)

Study Consortium



**LA FIRE
HEALTH
STUDY**

The multi-institutional collaboration is a consortium led by researchers from Cedars-Sinai; Harvard T.H. Chan School of Public Health; the Keck School of Medicine of USC; Stanford University; University of California, Los Angeles (David Geffen School of Medicine, Fielding School of Public Health, and UCLA Health); University of California, Davis; University of California, Irvine; University of Texas at Austin; and Yale University, with expertise in environmental exposure assessment, health outcomes, wildfire risk assessment and management, and data science.

[Meet the Study Team →](#)

UCLA Wildfire Research Registry

- A centralized platform to connect individuals affected by the fires to research studies.
- Over 4800 adults consented and surveyed.
- Recruitment source for three studies currently, including a longitudinal cohort study of physical and mental health outcomes (9 years).



Photo by Tanner Charles
Schaff/NYTimes, January 2025

A POLICY SHIFT WITHOUT A HEALTH INFRASTRUCTURE

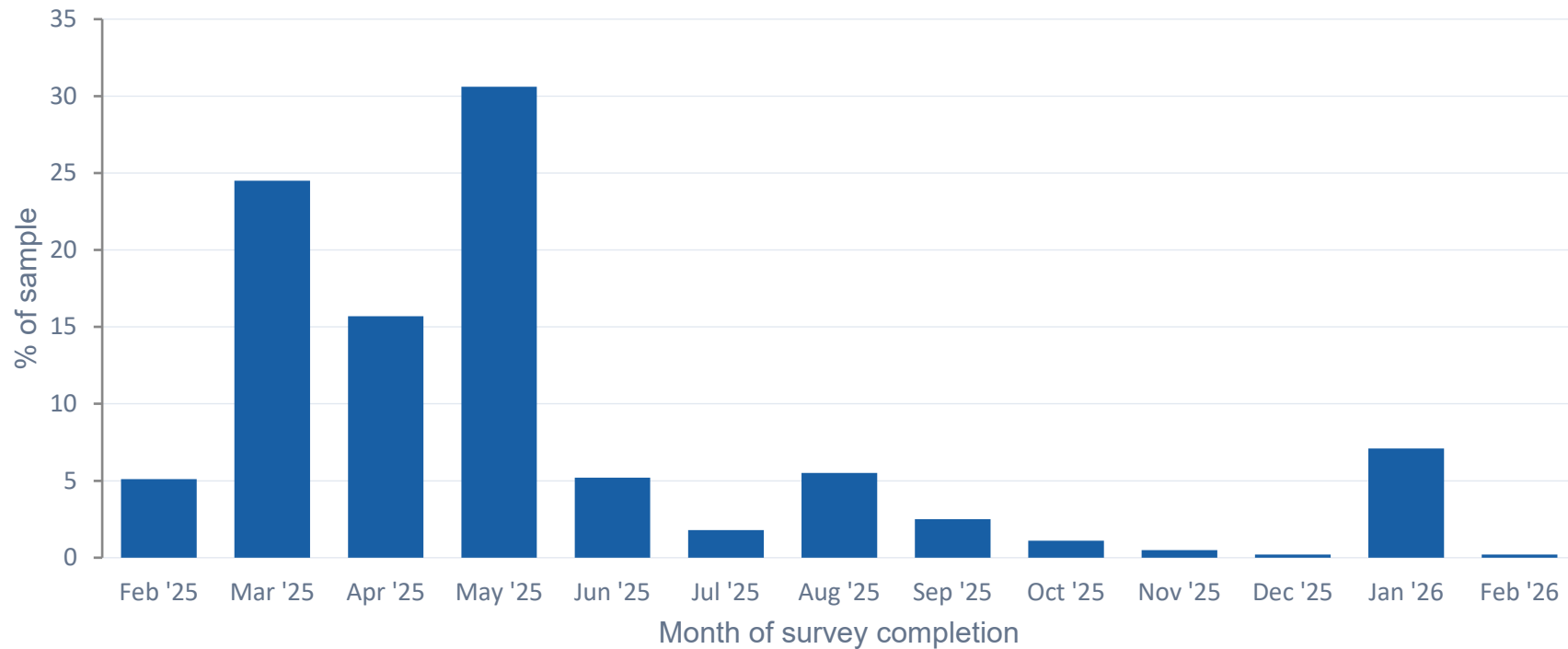
- Active home defense is common in the US — documented in multiple wildfires, and now in the largest urban wildfire in US history.
- We are authorizing civilians to fight fires who have no training mandate, no protective equipment standards, and no post-exposure health care — unlike every professional firefighter.

This is the first US study to quantify the health consequences of active home defense in a civilian population.

WHAT WE DID

- Used the UCLA Wildfire Registry to analyze 1,504 adults who lived in mandatory evacuation zones during the LA Fires.
- Surveyed on active defense during the fires, home damage, physical injury, respiratory symptoms, and mental health.
 - During the Fire, did you do anything to actively defend your home or other homes in your neighborhood from fire or smoke damage (e.g. extinguish burning embers on or near your home, hose down your roof)?

Survey Completion by Month



WHAT WE FOUND

- 21.1% of adults reported actively defending their homes (n=317).
- Median hours defending = 4, IQR = 6 hours
- Defenders compared to non-defenders were:
 - Younger (56 vs 59 years, $p=0.001$)
 - Less likely to be female (64% vs 72%, $p=0.008$)
 - Less likely to identify as White (74% vs 84%, $p<0.001$)
 - More likely to reside in Eaton fire zone (39% vs 28%, $p=0.052$).
 - Similar proportions were home-owners vs renters (81% vs 76%, $p=0.052$)

ACTIVE DEFENDERS HAD FEWER DESTROYED HOMES

Home Fire Damage by CalFIRE DINS level	Overall (N = 1504)	Active Defenders (N = 317; 21.1%)	Not Active Defender (N = 1187; 78.9%)
No Damage	812 (54%)	179 (56.5%)	633 (53.3%)
Affected (1–9%)	71 (4.7%)	16 (5.0%)	55 (4.6%)
Minor Damage (10–25%)	90 (6.0%)	33 (10.4%)	57 (4.8%)
Major Damage (26–50%)	62 (4.1%)	17 (5.4%)	45 (3.8%)
Destroyed (>50%)	469 (31.2%)	72 (22.7%)	397 (33.4%)

P<.001

BUT MORE ACTIVE DEFENDERS REPORTED SMOKE DAMAGE

Home Smoke Damage	Overall	Active Defenders	Not Active Defenders
No	711 (47.3%)	124 (39.1%)	587 (49.5%)
Yes	793 (52.7%)	193 (60.9%)	600 (50.5%)

P<.001

ACTIVE DEFENDERS HAD MORE SMOKE INHALATION

Home Fire Damage	Overall	Active Defenders	Not Active Defenders
No smoke inhalation	600 (40.9%)	60 (19.4%)	540 (46.6%)
Smoke inhalation, no current symptoms	345 (23.5%)	87 (28.1%)	258 (22.3%)
Smoke inhalation, symptoms < 1 week	268 (18.3%)	84 (27.1%)	184 (15.9%)
Smoke inhalation, symptoms > 1 week, returned to normal	155 (10.6%)	45 (14.5%)	110 (9.5%)
Smoke inhalation, symptoms > 1 week, no return to normal	100 (6.8%)	34 (11%)	66 (5.7%)

ACTIVE DEFENDERS HAD MORE PHYSICAL INJURIES

Physical Injuries	Overall	Active Defenders	Not Active Defenders
No	1292 (87.4%)	253 (81.6%)	1039 (89.0%)
Yes	186 (12.6%)	57 (18.4%)	129 (11.0%)

P<.001

ACTIVE DEFENDERS HAD MORE FAMILY MEMBER PHYSICAL INJURIES

Physical Injuries	Overall	Active Defenders	Not Active Defenders
No	1358 (91.5%)	269 (86.5%)	1089 (92.8%)
Yes	126 (8.5%)	42 (13.5%)	84 (7.2%)

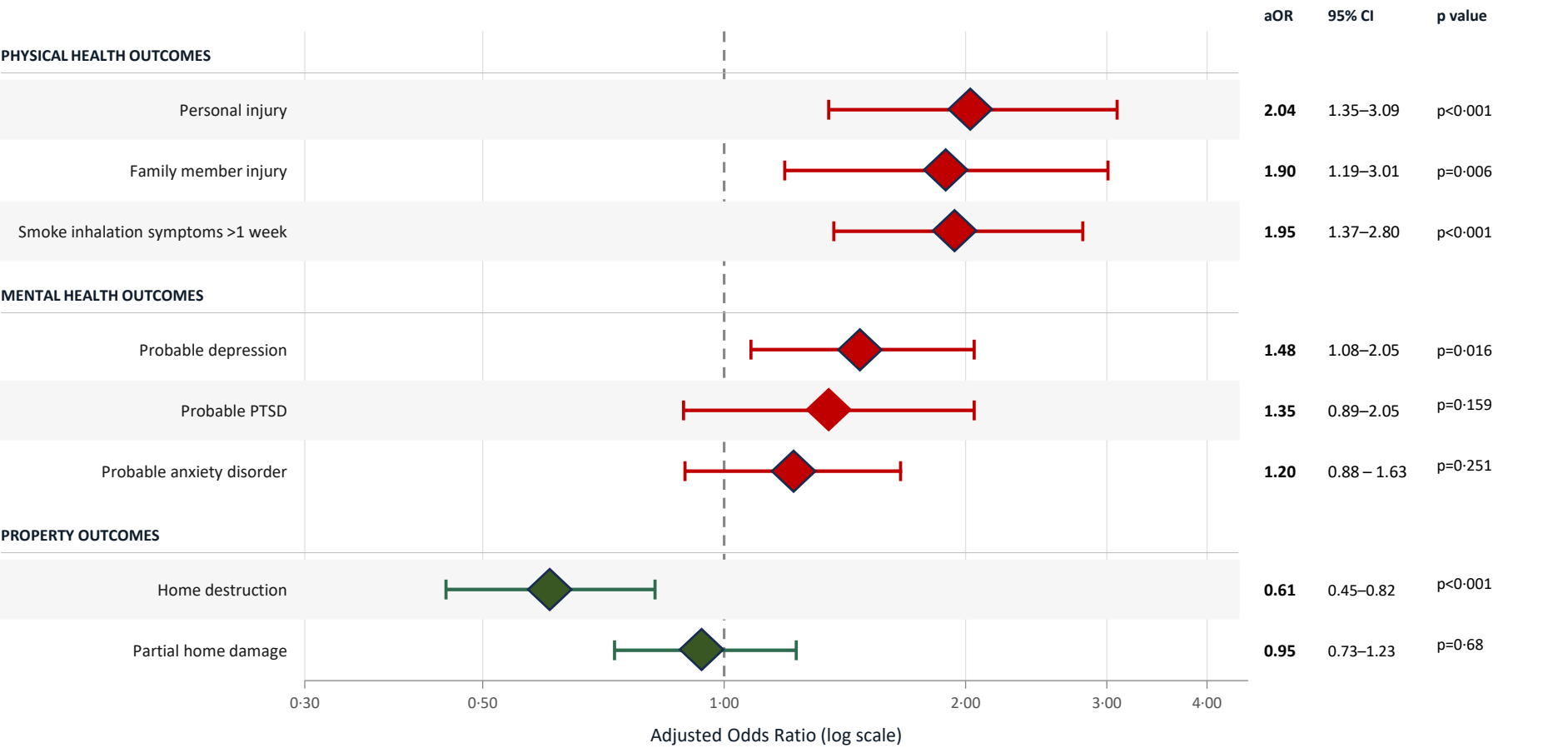
P<.001

ACTIVE DEFENDERS HAD WORSE MENTAL HEALTH

Mental Health Outcomes	Overall	Active Defenders	Not Active Defenders	p-value
Probable Depression	30.1%	37.3%	28.1%.	p=0.019
Probable Anxiety Disorder	32.9%	37.3%	31.7%	p=0.063
Probable PTSD	36.8%	40.7%	35.8%	p=0.132

Active Home Defence and Health Outcomes

Adjusted odds ratios · Los Angeles wildfires, January 2025 · n=1,504 · Reference: non-defenders



Models adjusted for fire location, age, sex, race, ethnicity, employment status, household income, and pre-existing health conditions.

LIMITATIONS

- UCLA Registry is a non-representative sample.
- Used a single question for active defense and have unmeasured variables.
- Awaits replication in other LA Fire studies.
- Needs follow up for longer term health effects.

” ‘We've always told people that when the evacuation order comes, you must leave,’ L.A. County Fire Chief Anthony Marrone told CBS News. ‘We've departed from that narrative. With the proper training, with the proper equipment, and with the proper home hardening and defensible space, you can stay behind and prevent your house from burning down.’”



<https://www.cbsnews.com/news/citizen-firefighters-wildfire-community-brigade-los-angeles/>

THREE PRIORITIES FOR POLICY

Unlike professional firefighters, civilian defenders have no occupational health infrastructure, training mandate, or guaranteed access to post-exposure care.

- Integrate public health into wildfire planning.
 - *Defenders face 2x injury risk and 50% higher odds of depression with no post-exposure care system.*
- Require health safety training and protective equipment for civilian defenders.
 - *Certified respiratory protection—the standard required of professional firefighters.*
- Mandate post-fire health and mental health monitoring.
 - *The trauma doesn't end when the fire does and defenders fall through the system.*

Thank You

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- Spiegel Family Fund to the LA Fire Health Study
- UCLA Clinical and Translational Science Institute (CTSI)
- UCLA Health

Contact: David Eisenman, deisenman@mednet.ucla.edu